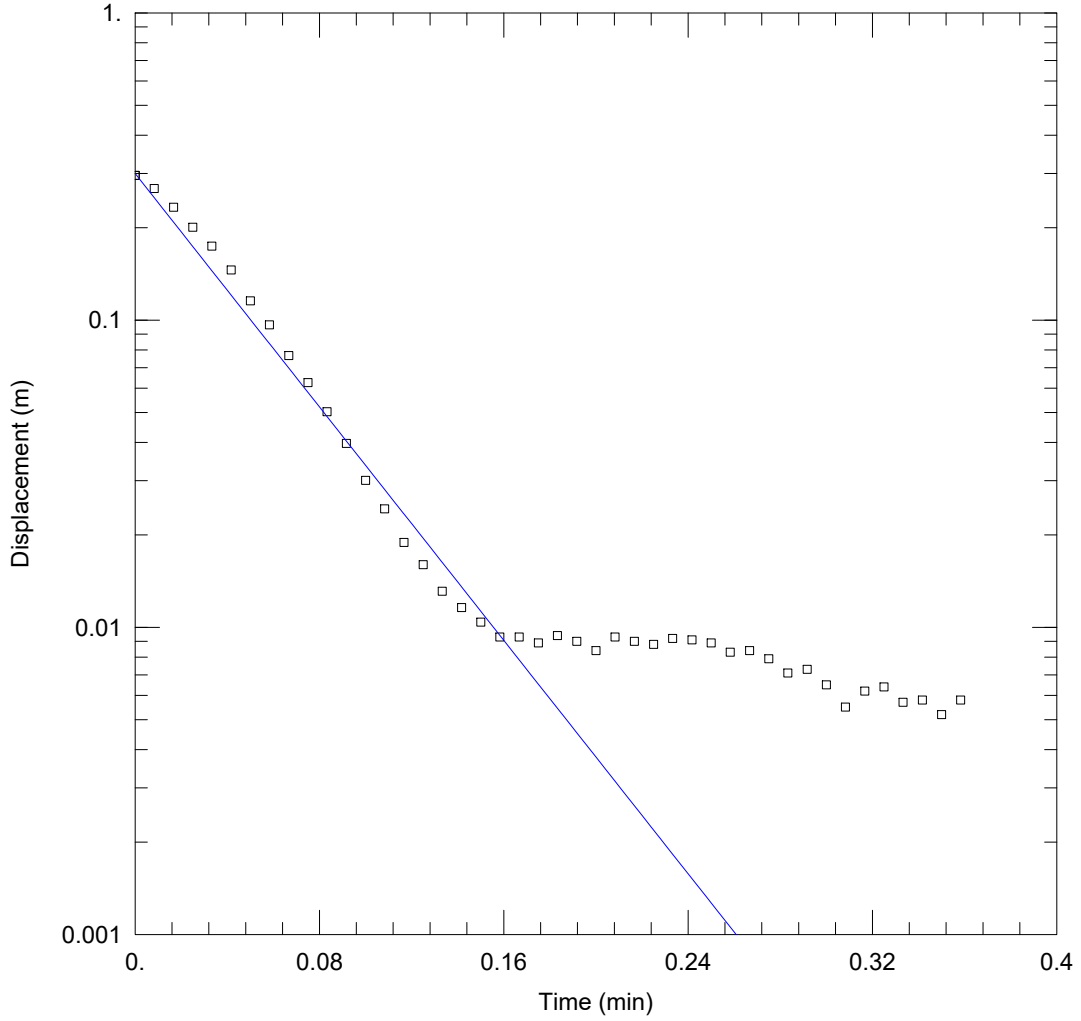
Appendix E

Aquifer Testing Analyses

Appendix E.1. Slug Test Analyses



WELL TEST ANALYSIS

Data Set: C:\Users\dickins\Desktop\CanWhite Slug Testing\Bru 95-5.aqt
Date: 01/25/21 Time: 15:57:43

PROJECT INFORMATION

Company: AECOM
Client: CanWhite Sands
Project: 60640258
Location: Vivian MB
Test Well: Bru 95-5
Test Date: 2020-11-17

AQUIFER DATA

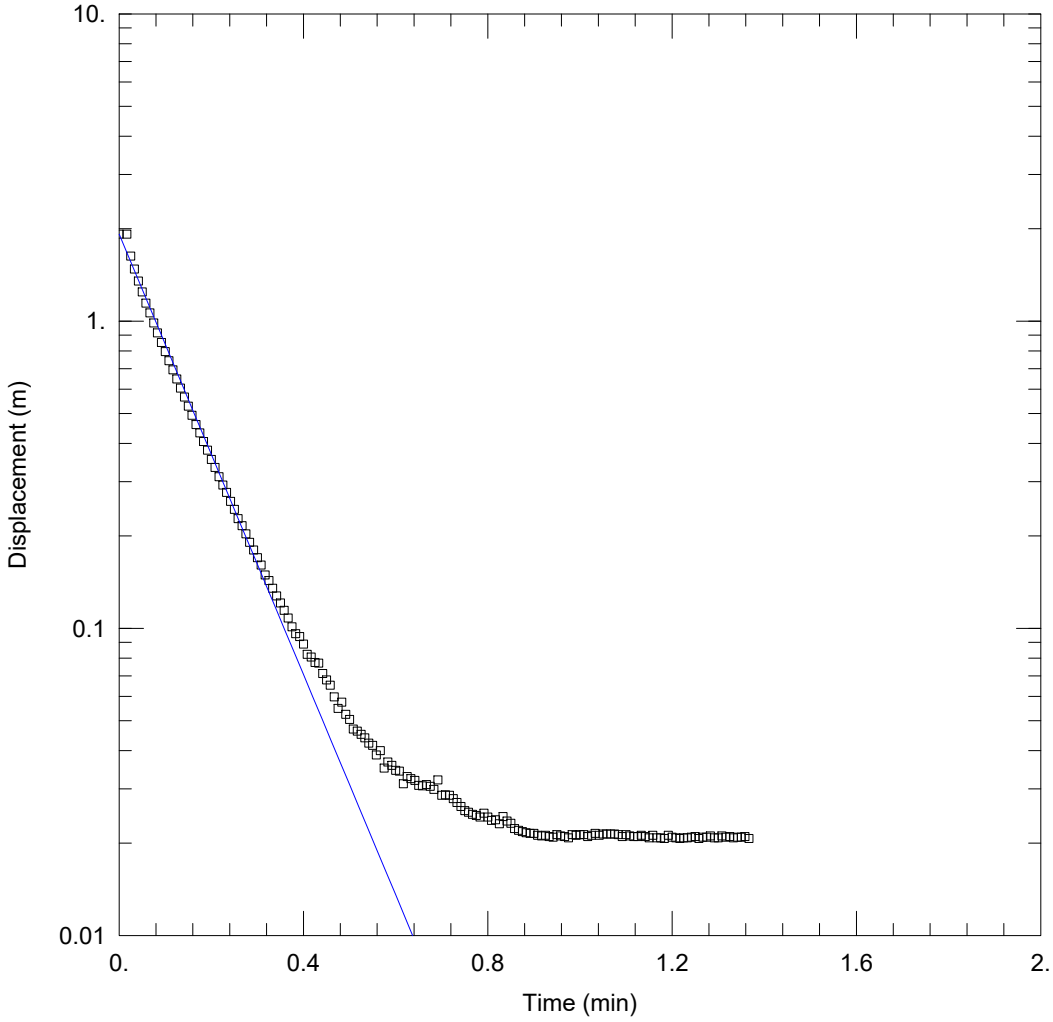
Saturated Thickness: 9.7 m Anisotropy Ratio (Kz/Kr): 1.

WELL DATA (Bru 95-5)

Initial Displacement: 0.2958 m
Total Well Penetration Depth: 7.35 m
Casing Radius: 0.064 m
Static Water Column Height: 36.85 m
Screen Length: 6.44 m
Well Radius: 0.06 m

SOLUTION

Aquifer Model: Confined
Solution Method: Bouwer-Rice
K = 0.00039 m/sec
y0 = 0.3 m



WELL TEST ANALYSIS

Data Set: C:\Users\dickins\Desktop\CanWhite Slug Testing\Bru 95-6.aqt
Date: 01/25/21 Time: 15:39:02

PROJECT INFORMATION

Company: AECOM
Client: CanWhite Sands
Project: 60640258
Location: Vivian MB
Test Well: Bru 95-6
Test Date: 2020-11-16

AQUIFER DATA

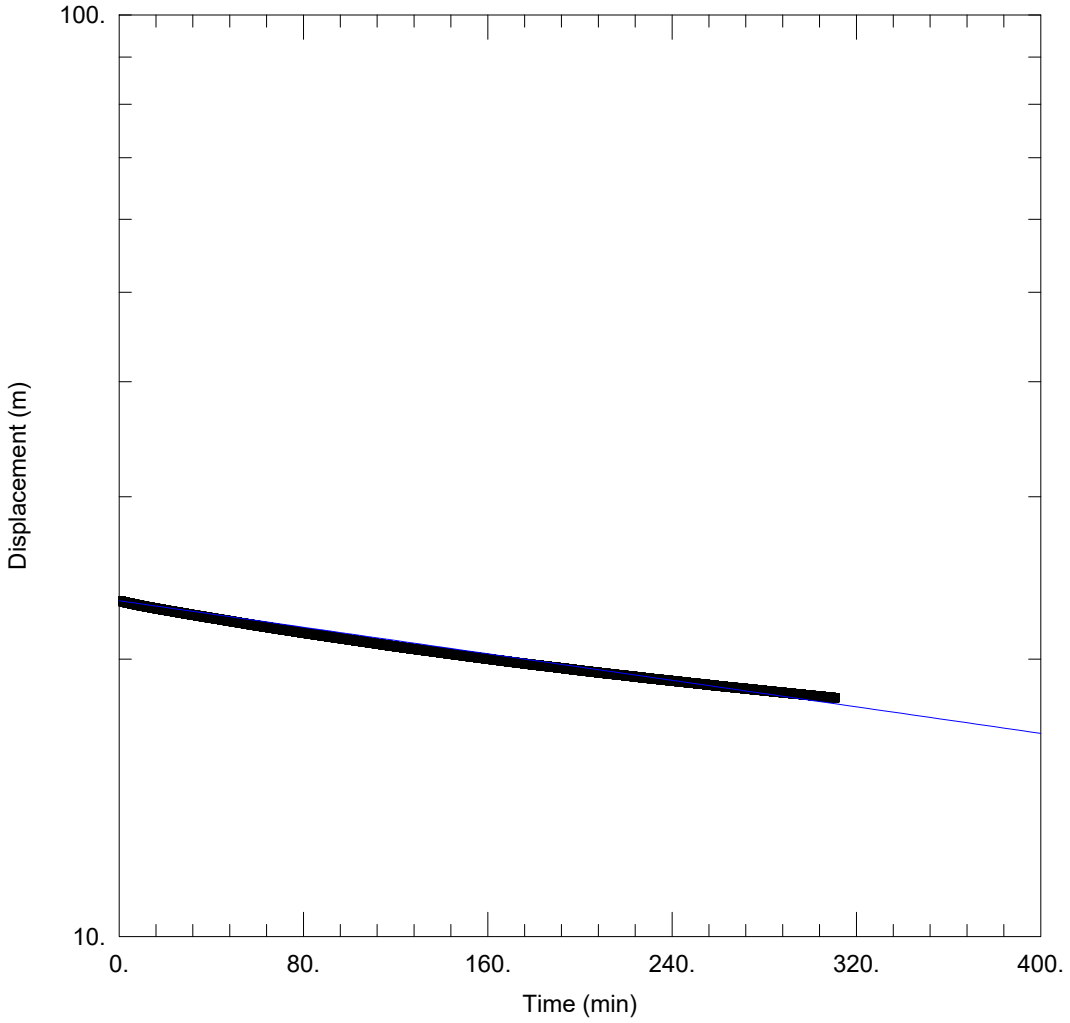
Saturated Thickness: 22.9 m
Anisotropy Ratio (Kz/Kr): 1.

WELL DATA (Bru 95-6)

Initial Displacement: 1.918 m
Total Well Penetration Depth: 6.4 m
Casing Radius: 0.0254 m
Static Water Column Height: 47.08 m
Screen Length: 3.05 m
Well Radius: 0.0254 m

SOLUTION

Aquifer Model: Confined
Solution Method: Bouwer-Rice
K = 5.2E-5 m/sec
y0 = 1.92 m



WELL TEST ANALYSIS

Data Set: C:\Users\dickins\Desktop\CanWhite Slug Testing\Bru 95-9.aqt
Date: 01/25/21 Time: 15:04:10

PROJECT INFORMATION

Company: AECOM
Client: CanWhite Sands
Project: 60640258
Location: Vivian MB
Test Well: Bru 95-9
Test Date: 2020-11-23

AQUIFER DATA

Saturated Thickness: 2.5 m Anisotropy Ratio (Kz/Kr): 1.

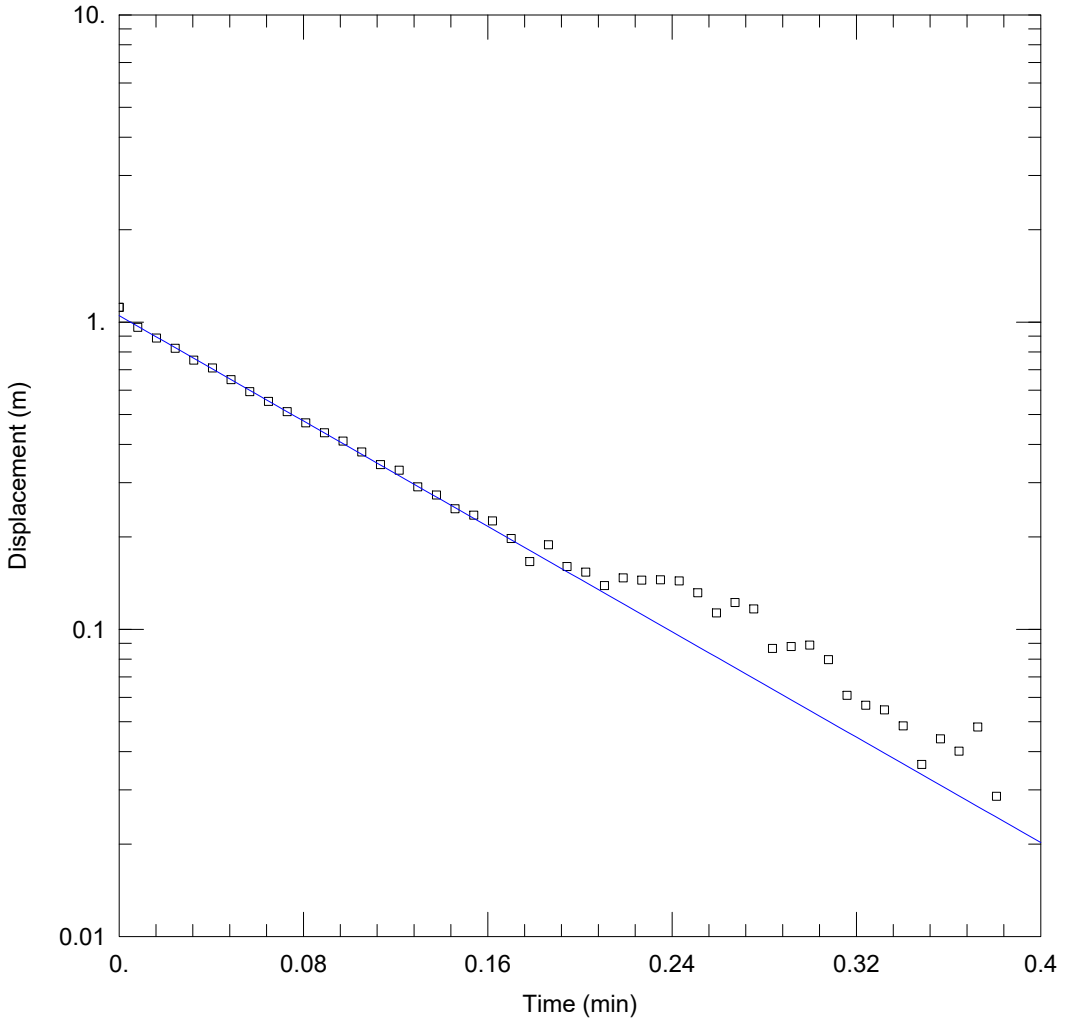
WELL DATA (Bru 95-9)

Initial Displacement: 23.14 m Static Water Column Height: 40.92 m
Total Well Penetration Depth: 1.51 m Screen Length: 0.31 m
Casing Radius: 0.0254 m Well Radius: 0.0254 m

SOLUTION

Aquifer Model: Confined Solution Method: Bouwer-Rice

K = 2.8E-8 m/sec y0 = 23.14 m



WELL TEST ANALYSIS

Data Set: C:\Users\dickins\Desktop\CanWhite Slug Testing\Bru 96-1.aqt
Date: 01/25/21 Time: 14:52:40

PROJECT INFORMATION

Company: AECOM
Client: CanWhite Sands
Project: 60640258
Location: Vivian MB
Test Well: Bru 96-1
Test Date: 2020-11-20

AQUIFER DATA

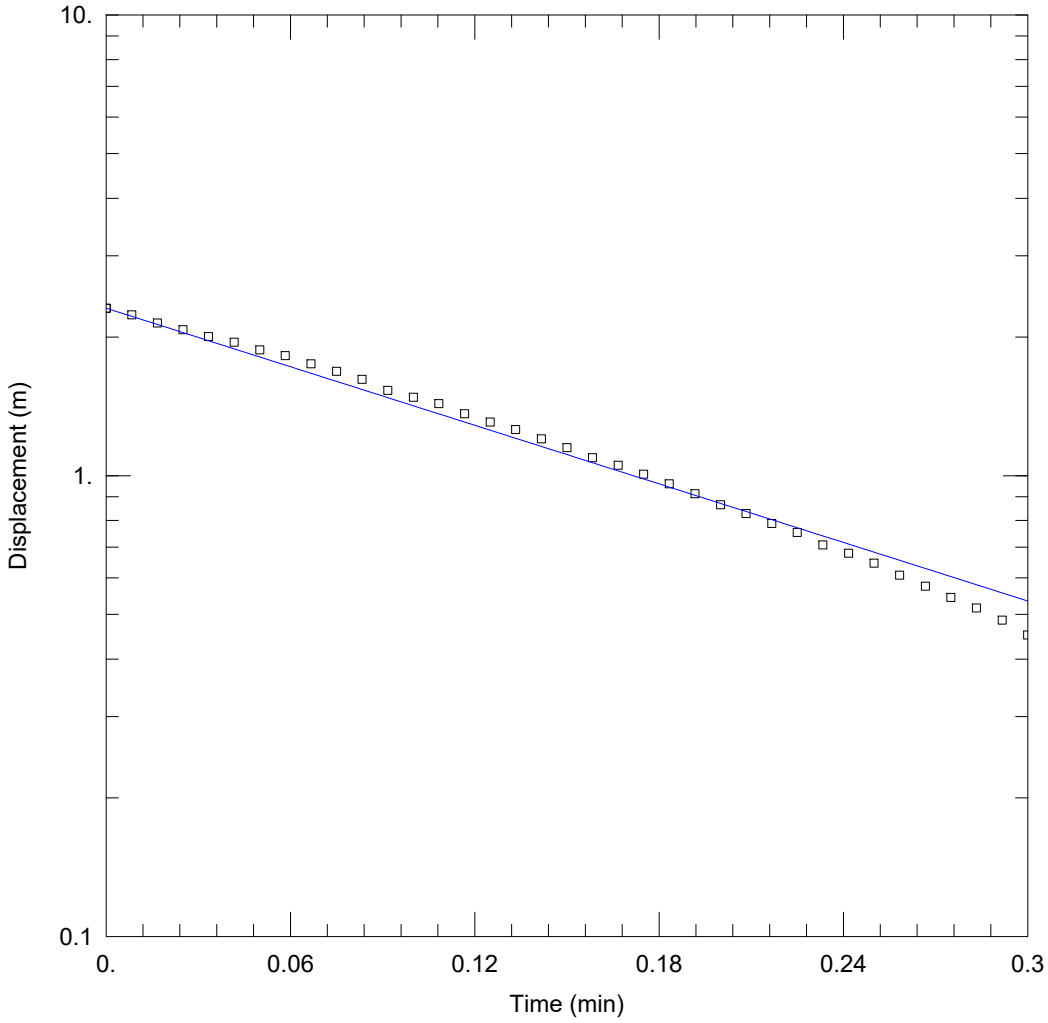
Saturated Thickness: 19.85 m
Anisotropy Ratio (Kz/Kr): 1.

WELL DATA (Bru 96-1)

Initial Displacement: 1.117 m
Total Well Penetration Depth: 6.23 m
Casing Radius: 0.0254 m
Static Water Column Height: 45.61 m
Screen Length: 3.05 m
Well Radius: 0.0254 m

SOLUTION

Aquifer Model: Confined
Solution Method: Bouwer-Rice
K = 6.2E-5 m/sec
y0 = 1.05 m



WELL TEST ANALYSIS

Data Set: C:\Users\dickins\Desktop\CanWhite Slug Testing\Bru 96-2.aqt
Date: 01/25/21 Time: 14:40:56

PROJECT INFORMATION

Company: AECOM
Client: CanWhite Sands
Project: 60640258
Location: Vivian MB
Test Well: Bru 96-2
Test Date: 2020-11-20

AQUIFER DATA

Saturated Thickness: 8.25 m Anisotropy Ratio (Kz/Kr): 1.

WELL DATA (Bru 96-2)

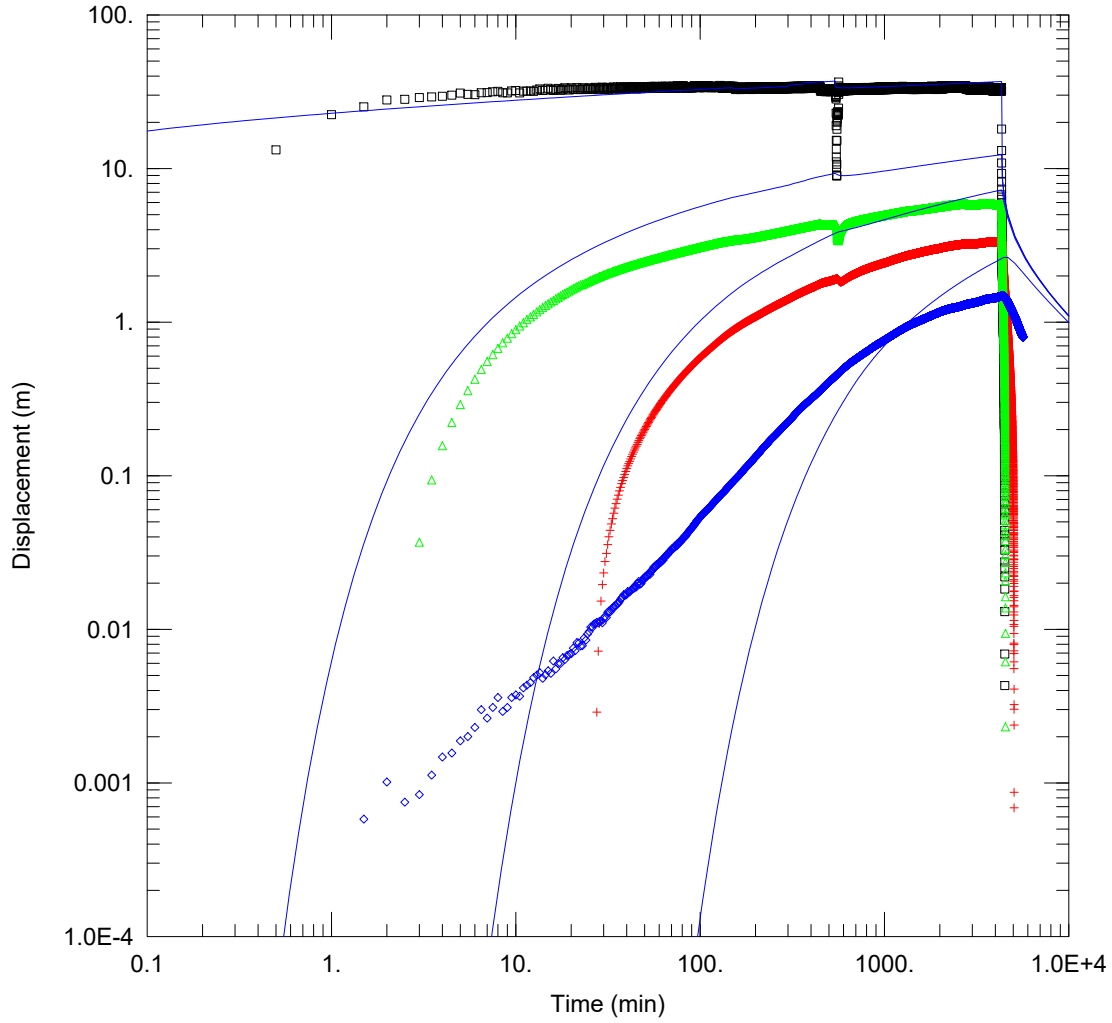
Initial Displacement: 2.309 m
Total Well Penetration Depth: 6.7 m
Casing Radius: 0.0254 m
Static Water Column Height: 35.11 m
Screen Length: 5.79 m
Well Radius: 0.06 m

SOLUTION

Aquifer Model: Confined
Solution Method: Bouwer-Rice

K = 1.5E-5 m/sec
y0 = 2.31 m

Appendix E.2. Pumping Test Analyses



WELL TEST ANALYSIS

Data Set: C:\Users\dickins\Desktop\Pumping Test\Theis - Pumping Well Fit.aqt
Date: 02/06/21 Time: 20:25:06

PROJECT INFORMATION

Company: AECOM
Client: CanWhite Sands
Project: 60640258
Location: Vivian MB
Test Well: Bru 95-7
Test Date: Nov 28 2020 - Dec 1 2020

WELL DATA

Pumping Wells

Well Name	X (m)	Y (m)
Bru 95-7	681865.27	5527611.99

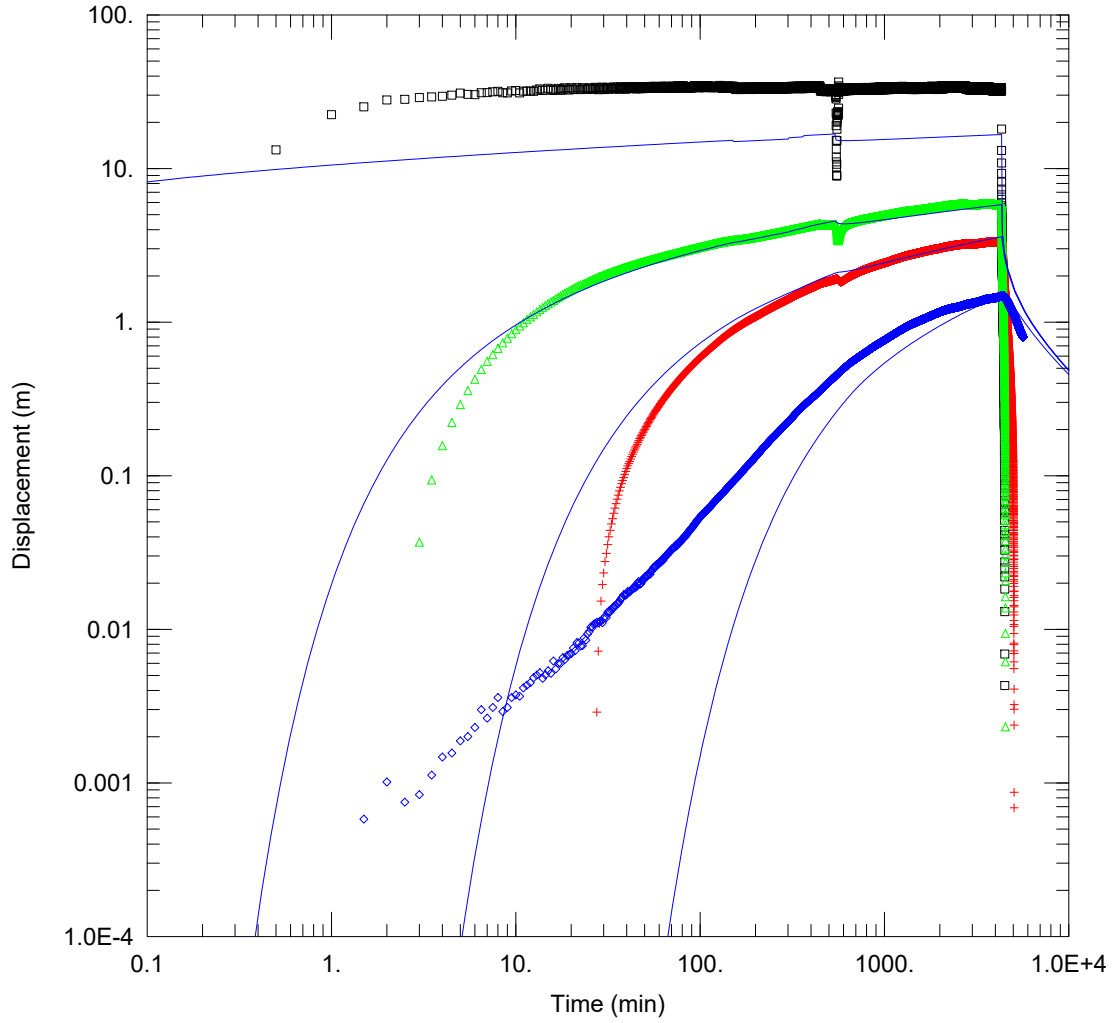
Observation Wells

Well Name	X (m)	Y (m)
Bru 95-7	681865.27	5527611.99
Bru 95-6	682199.25	5527624.2
Bru 95-8	681953	5527630
Bru 96-1	683064	5527787

SOLUTION

Aquifer Model: Confined
Solution Method: Theis

T = 0.00097 m^2/sec
S = 0.00012
Kz/Kr = 1.
b = 20.14 m



WELL TEST ANALYSIS

Data Set: C:\Users\dickins\Desktop\Pumping Test\Theis - Observation Well Fit.aqt
Date: 02/06/21 Time: 20:14:44

PROJECT INFORMATION

Company: AECOM
Client: CanWhite Sands
Project: 60640258
Location: Vivian MB
Test Well: Bru 95-7
Test Date: Nov 28 2020 - Dec 1 2020

WELL DATA

Pumping Wells

Well Name	X (m)	Y (m)
Bru 95-7	681865.27	5527611.99

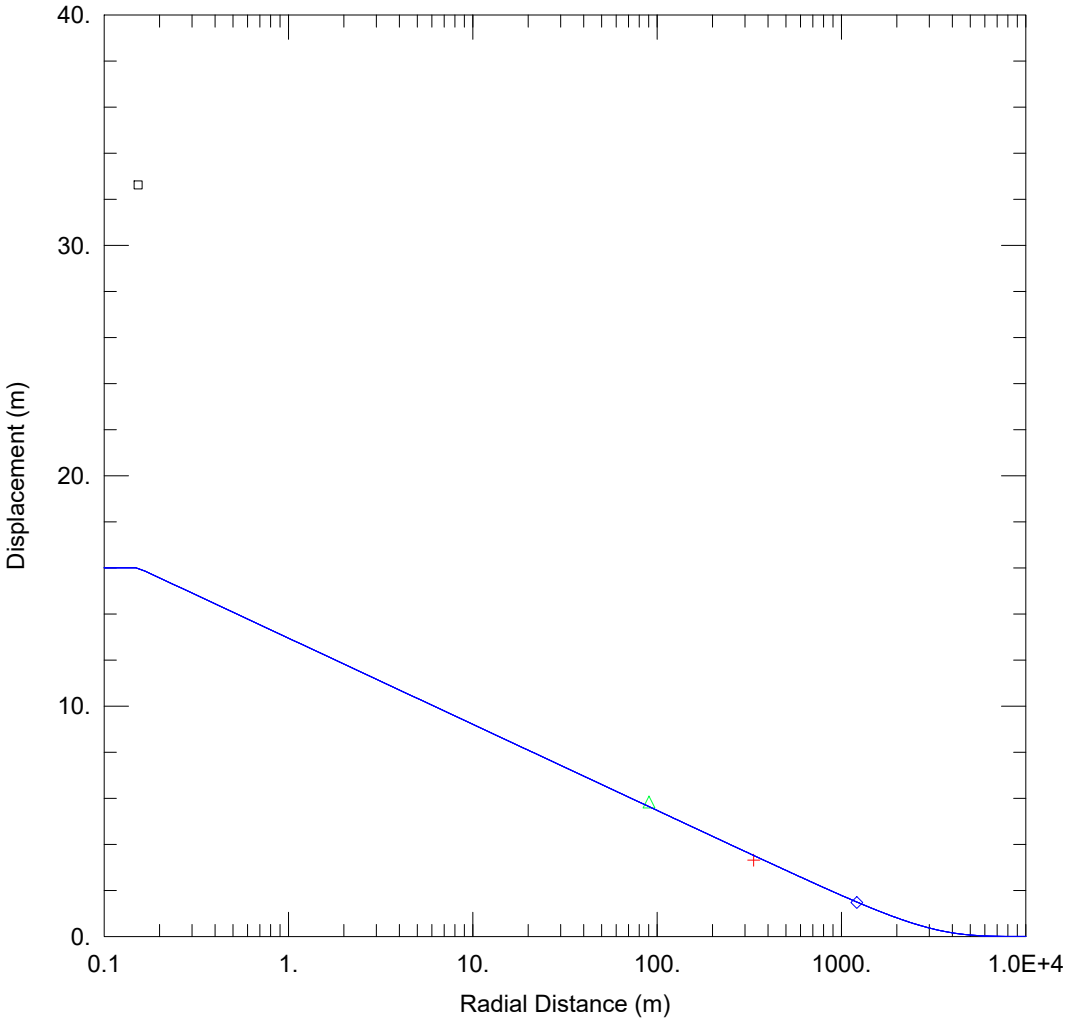
Observation Wells

Well Name	X (m)	Y (m)
Bru 95-7	681865.27	5527611.99
Bru 95-6	682199.25	5527624.2
Bru 95-8	681953	5527630
Bru 96-1	683064	5527787

SOLUTION

Aquifer Model: Confined
Solution Method: Theis

T = 0.0022 m^2/sec
S = 0.00017
Kz/Kr = 1.
b = 20.14 m



WELL TEST ANALYSIS

Data Set: C:\Users\dickins\Desktop\Pumping Test\Theis - Distance Drawdown.aqt
Date: 02/07/21 Time: 11:01:16

PROJECT INFORMATION

Company: AECOM
Client: CanWhite Sands
Project: 60640258
Location: Vivian MB
Test Well: Bru 95-7
Test Date: Nov 28 2020 - Dec 1 2020

WELL DATA

Pumping Wells

Well Name	X (m)	Y (m)
Bru 95-7	681865.27	5527611.99

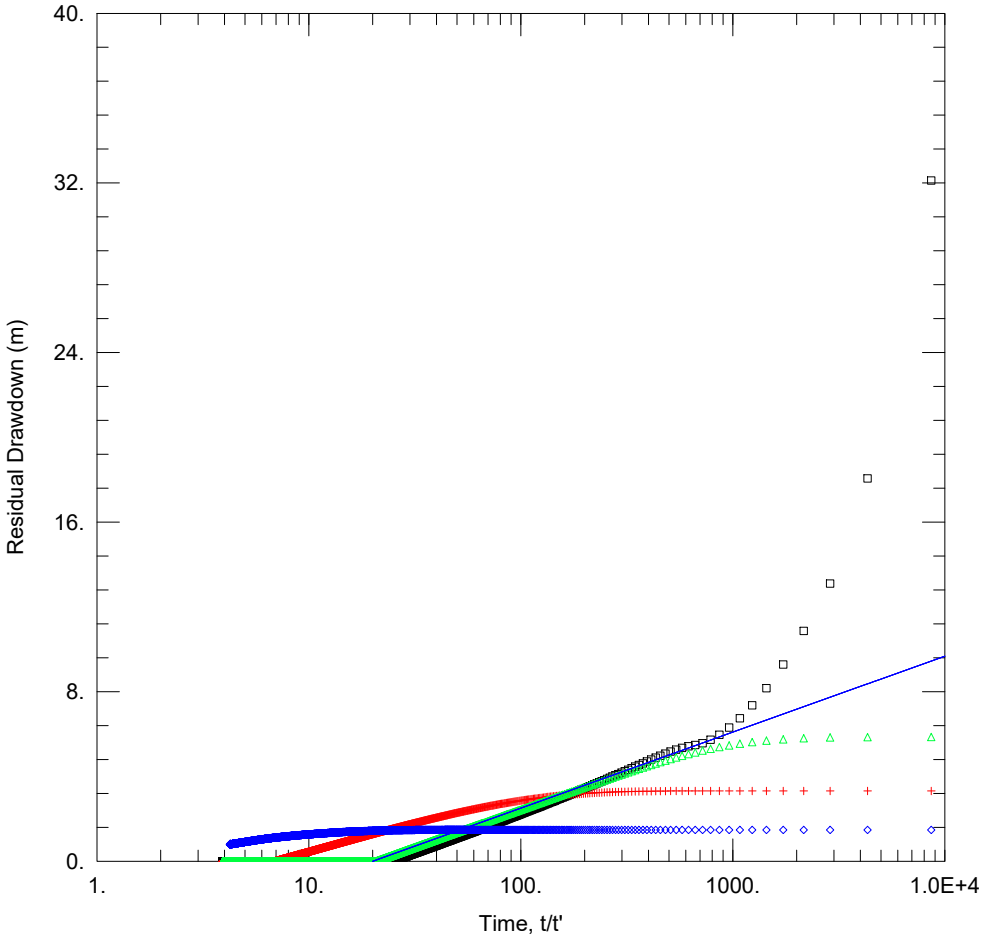
Observation Wells

Well Name	X (m)	Y (m)
▫ Bru 95-7	681865.27	5527611.99
+ Bru 95-6	682199.25	5527624.2
△ Bru 95-8	681953.74	5527630.417
◇ Bru 96-1	683064.23	5527787.13

SOLUTION

Aquifer Model: Confined
Solution Method: Theis

T = 0.0023 m^2/sec
S = 0.00016
Kz/Kr = 1.
b = 20.14 m



WELL TEST ANALYSIS

Data Set: C:\Users\dickins\Desktop\Pumping Test\Theis Recovery - Observation Well Fit.aqt
Date: 02/07/21 Time: 11:44:14

PROJECT INFORMATION

Company: AECOM
Client: CanWhite Sands
Project: 60640258
Location: Vivian MB
Test Well: Bru 95-7
Test Date: Nov 28 2020 - Dec 1 2020

AQUIFER DATA

Saturated Thickness: 20.14 m Anisotropy Ratio (Kz/Kr): 1.

WELL DATA

Pumping Wells

Well Name	X (m)	Y (m)
Bru 95-7	681865.27	5527611.99

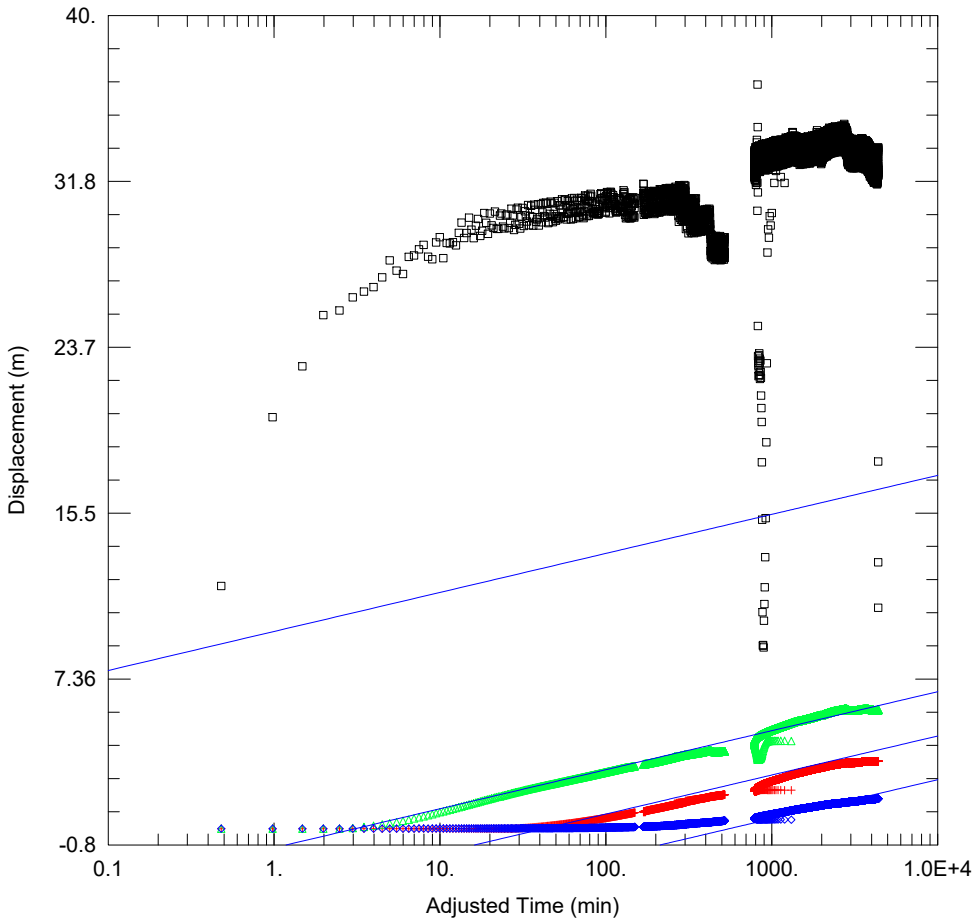
Observation Wells

Well Name	X (m)	Y (m)
Bru 95-7	681865.27	5527611.99
Bru 95-6	682199.25	5527624.2
Bru 95-8	681953.742	5527630.417
Bru 96-1	683064.234	5527787.13

SOLUTION

Aquifer Model: Confined Solution Method: Theis (Recovery)

T = 0.0012 m^2/sec S/S' = 20.



WELL TEST ANALYSIS

Data Set: C:\Users\dickins\Desktop\Pumping Test\Cooper Jacob - Observation Well Fit.aqt
Date: 02/07/21 Time: 11:11:43

PROJECT INFORMATION

Company: AECOM
Client: CanWhite Sands
Project: 60640258
Location: Vivian MB
Test Well: Bru 95-7
Test Date: Nov 28 2020 - Dec 1 2020

AQUIFER DATA

Saturated Thickness: 20.14 m Anisotropy Ratio (Kz/Kr): 1.

WELL DATA

Pumping Wells

Well Name	X (m)	Y (m)
Bru 95-7	681865.27	5527611.99

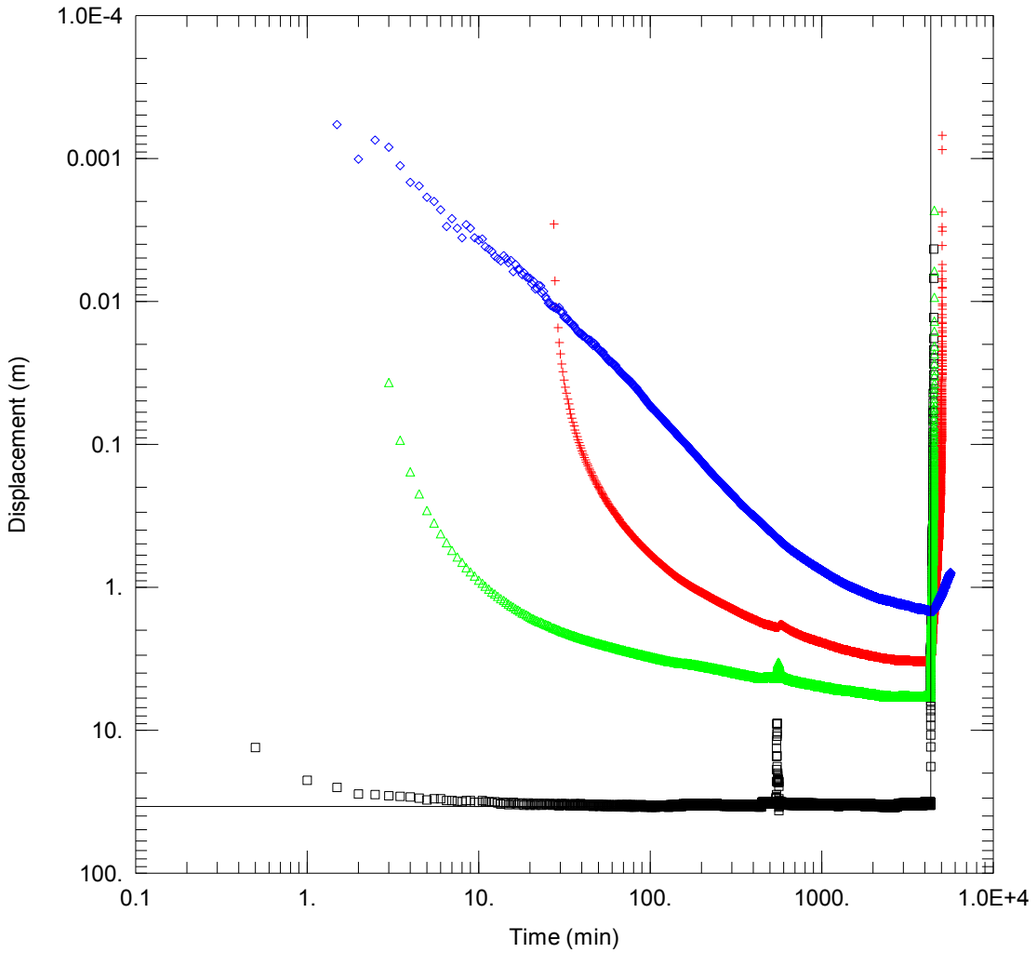
Observation Wells

Well Name	X (m)	Y (m)
Bru 95-7	681865.27	5527611.99
Bru 95-6	682199.25	5527624.2
Bru 95-8	681953.74	5527630.417
Bru 96-1	683064.23	5527787.13

SOLUTION

Aquifer Model: Confined Solution Method: Cooper-Jacob

T = 0.00224 m^2/sec S = 0.000114



WELL TEST ANALYSIS

Data Set: C:\...\Hantush1960 - Pumping Well Fit_leaky.aqt
Date: 03/06/23 Time: 13:46:37

PROJECT INFORMATION

Company: AECOM
Client: CanWhite Sands
Project: 60640258
Location: Vivian MB
Test Well: Bru 95-7
Test Date: Nov 28 2020 - Dec 1 2020

AQUIFER DATA

Saturated Thickness: 20.14 m
Aquitard Thickness (b'): 1. m
Anisotropy Ratio (Kz/Kr): 0.1
Aquitard Thickness (b"): 1. m

WELL DATA

Pumping Wells

Well Name	X (m)	Y (m)
Bru 95-7	681865.27	5527611.99

Observation Wells

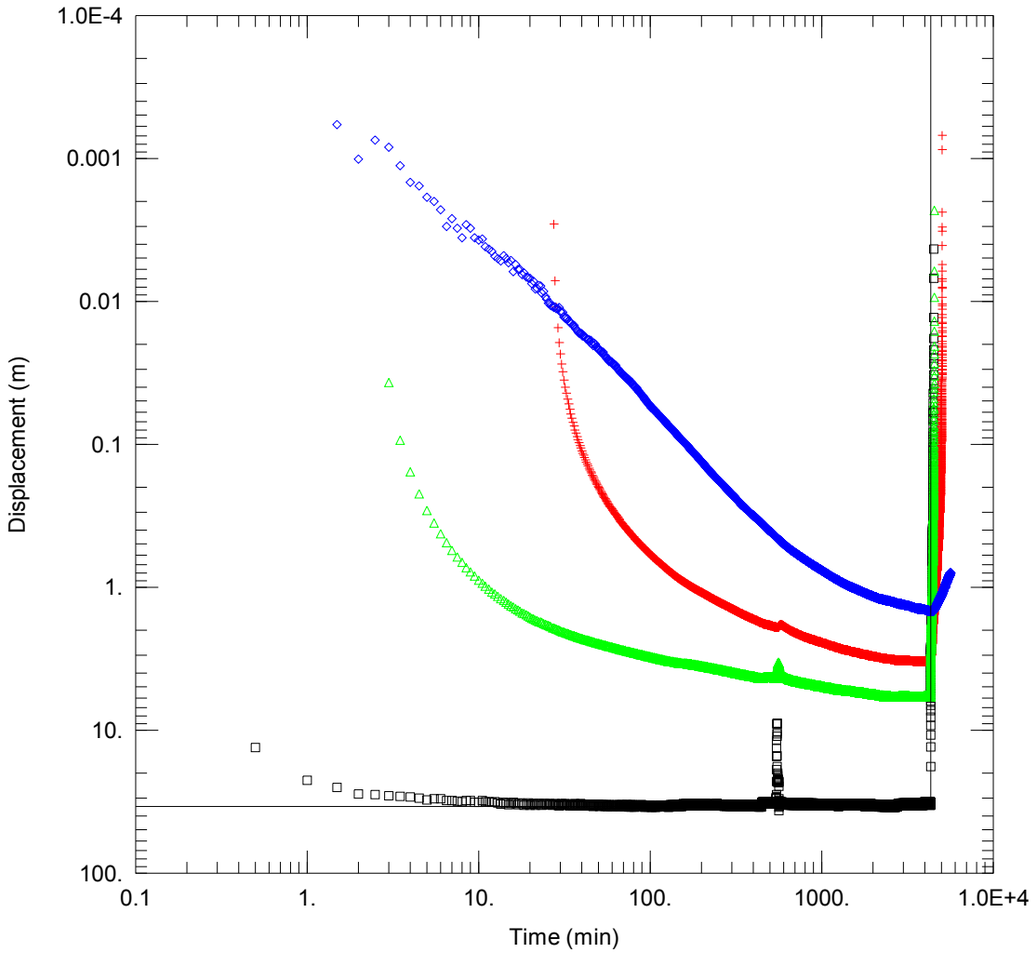
Well Name	X (m)	Y (m)
□ Bru 95-7	681865.27	5527611.99
+ Bru 95-6	682199.25	5527624.2
△ Bru 95-8	681953	5527630
◇ Bru 96-1	683064	5527787

SOLUTION

Aquifer Model: Leaky
Solution Method: Hantush

T = 0.000334 m^2/sec
1/B' = 0.4627 m^{-1}
1/B" = 6.672E-5 m^{-1}

S = 9.377E-7
ß'/r = 0.4627 m^{-1}
ß"/r = 6.672E-5 m^{-1}



WELL TEST ANALYSIS

Data Set: C:\...\Hantush-Jacob - Pumping Well Fit_leaky.aqt
Date: 03/06/23 Time: 13:46:23

PROJECT INFORMATION

Company: AECOM
Client: CanWhite Sands
Project: 60640258
Location: Vivian MB
Test Well: Bru 95-7
Test Date: Nov 28 2020 - Dec 1 2020

WELL DATA

Pumping Wells

Well Name	X (m)	Y (m)
Bru 95-7	681865.27	5527611.99

Observation Wells

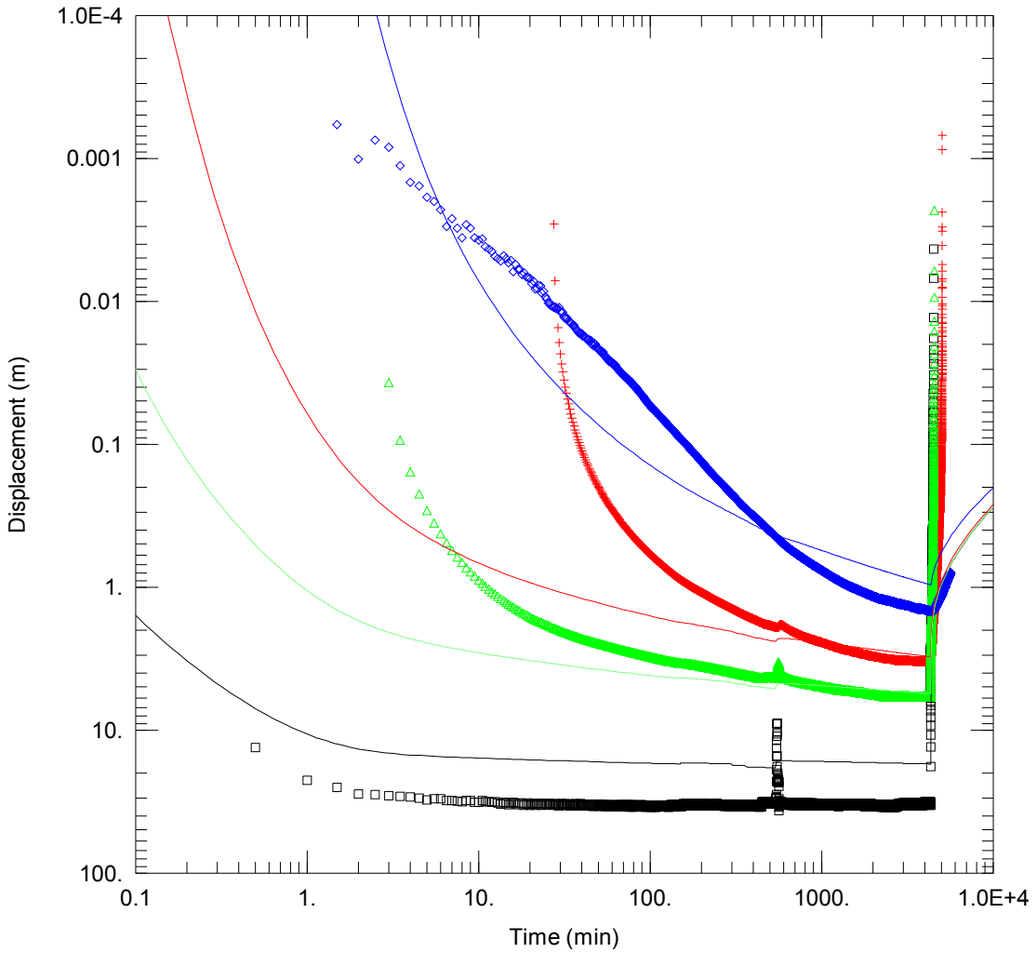
Well Name	X (m)	Y (m)
□ Bru 95-7	681865.27	5527611.99
+ Bru 95-6	682199.25	5527624.2
△ Bru 95-8	681953	5527630
◇ Bru 96-1	683064	5527787

SOLUTION

Aquifer Model: Leaky
Solution Method: Hantush-Jacob

T = 0.000334 m^2/sec
1/B = 0.4627 m^{-1}
b = 20.14 m

S = 9.212E-7
Kz/Kr = 0.1



WELL TEST ANALYSIS

Data Set: C:\...\Moench Case 2 - OBs Well Fit_leaky.aqt
Date: 03/06/23 Time: 13:46:01

PROJECT INFORMATION

Company: AECOM
Client: CanWhite Sands
Project: 60640258
Location: Vivian MB
Test Well: Bru 95-7
Test Date: Nov 28 2020 - Dec 1 2020

AQUIFER DATA

Saturated Thickness: 20.14 m
Aquitard Thickness (b'): 1. m
Anisotropy Ratio (Kz/Kr): 0.1
Aquitard Thickness (b"): 1. m

WELL DATA

Pumping Wells

Well Name	X (m)	Y (m)
Bru 95-7	681865.27	5527611.99

Observation Wells

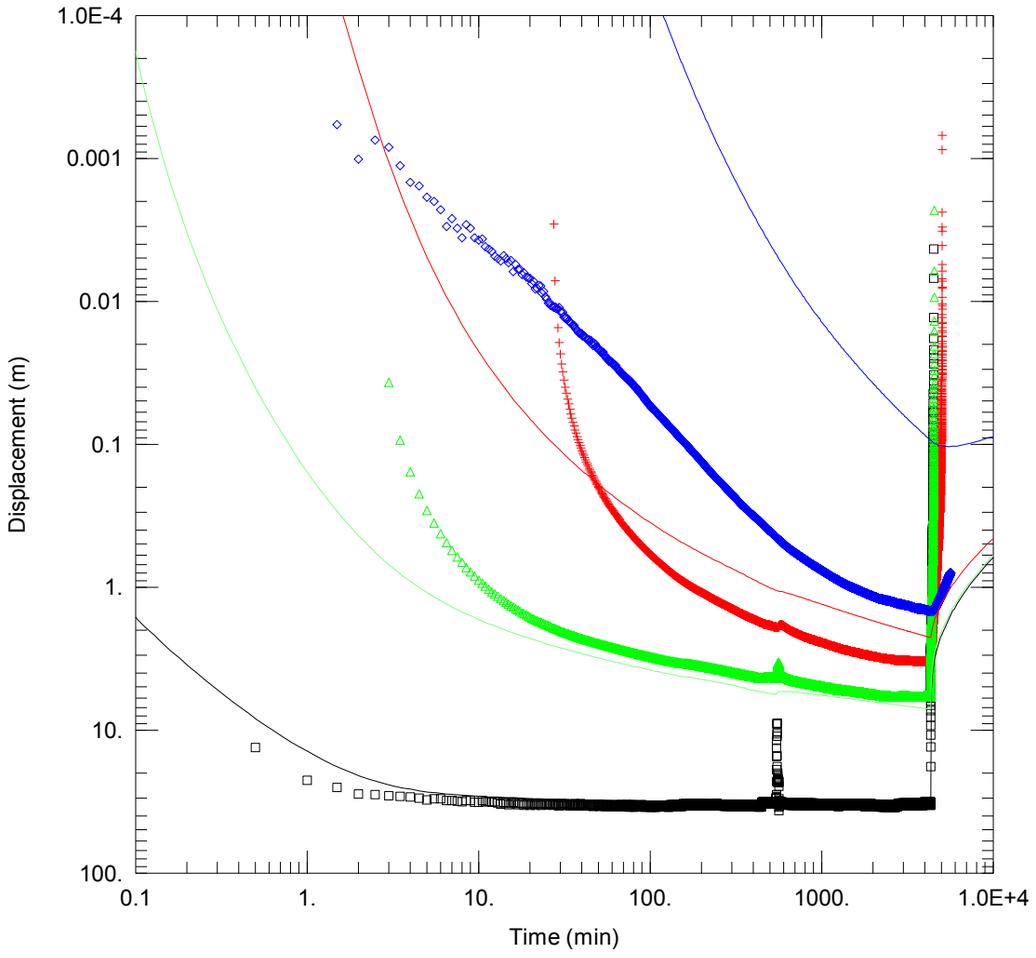
Well Name	X (m)	Y (m)
□ Bru 95-7	681865.27	5527611.99
+ Bru 95-6	682199.25	5527624.2
△ Bru 95-8	681953	5527630
◇ Bru 96-1	683064	5527787

SOLUTION

Aquifer Model: Leaky
Solution Method: Moench (Case 2)

T = 0.001934 m^2/sec
1/B' = 0.0002104 m^{-1}
1/B" = 6.536E-5 m^{-1}
Sw = -0.3
r(c) = 0.153 m

S = 1.756E-6
ß'/r = 0.003733 m^{-1}
ß"/r = 6.536E-5 m^{-1}
r(w) = 0.153 m



WELL TEST ANALYSIS

Data Set: C:\...\Moench Case 2 - Pumping Well Fit_leaky.aqt
Date: 03/06/23 Time: 13:45:40

PROJECT INFORMATION

Company: AECOM
Client: CanWhite Sands
Project: 60640258
Location: Vivian MB
Test Well: Bru 95-7
Test Date: Nov 28 2020 - Dec 1 2020

AQUIFER DATA

Saturated Thickness: 20.14 m
Aquitard Thickness (b'): 1. m
Anisotropy Ratio (Kz/Kr): 1.
Aquitard Thickness (b"): 1. m

WELL DATA

Pumping Wells

Well Name	X (m)	Y (m)
Bru 95-7	681865.27	5527611.99

Observation Wells

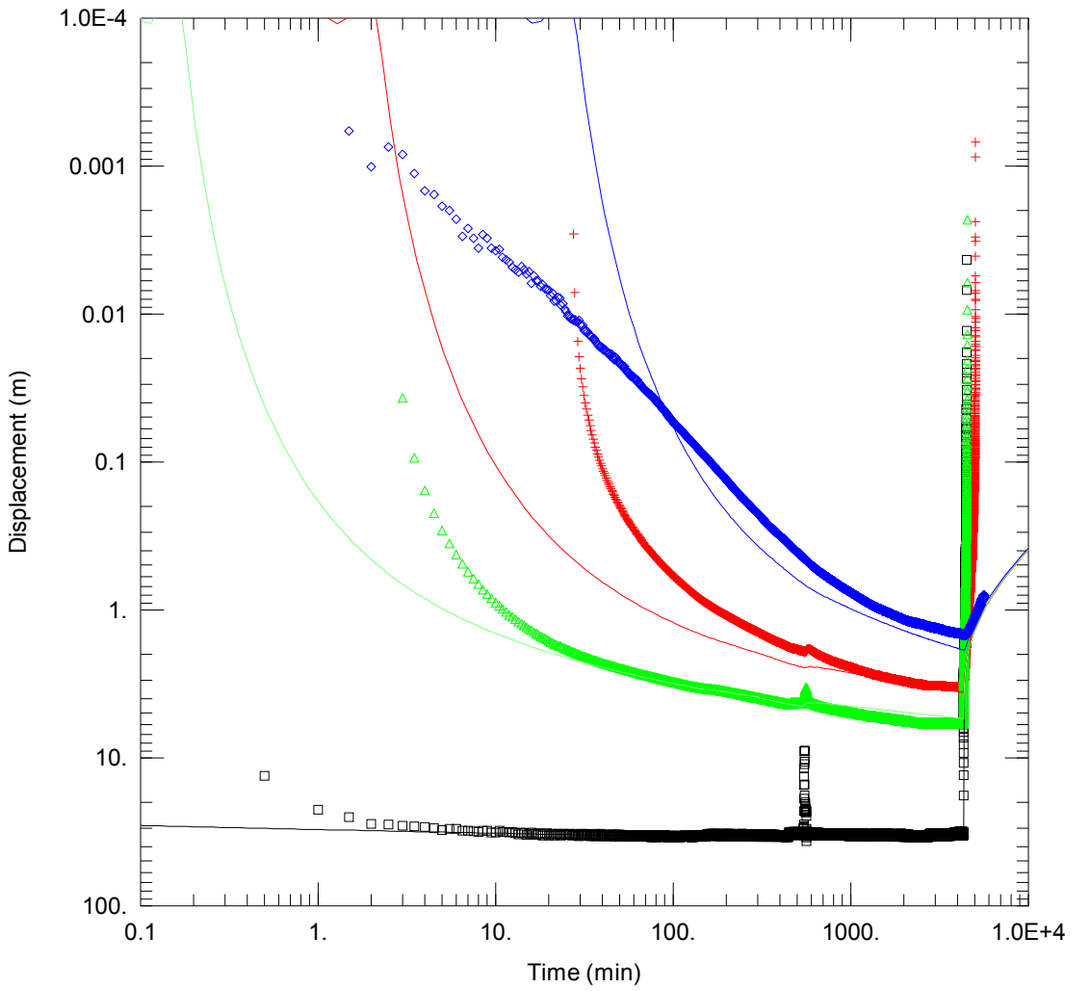
Well Name	X (m)	Y (m)
□ Bru 95-7	681865.27	5527611.99
+ Bru 95-6	682199.25	5527624.2
△ Bru 95-8	681953	5527630
◇ Bru 96-1	683064	5527787

SOLUTION

Aquifer Model: Leaky
Solution Method: Moench (Case 2)

T = 0.0008638 m^2/sec
1/B' = 9.182E-5 m^{-1}
1/B" = 6.672E-5 m^{-1}
Sw = -0.3
r(c) = 0.153 m

S = 4.462E-6
ß'/r = 0.01959 m^{-1}
ß"/r = 6.672E-5 m^{-1}
r(w) = 0.153 m



WELL TEST ANALYSIS

Data Set: C:\...\Neuman-Witherspoon - All Wells Fit_leaky.aqt
Date: 03/06/23 Time: 13:43:56

PROJECT INFORMATION

Company: AECOM
Client: CanWhite Sands
Project: 60640258
Location: Vivian MB
Test Well: Bru 95-7
Test Date: Nov 28 2020 - Dec 1 2020

AQUIFER DATA

Saturated Thickness: 20.14 m
Aquitard Thickness (b'): 1. m
Anisotropy Ratio (Kz/Kr): 0.1
Aquitard Thickness (b"): 1. m

WELL DATA

Pumping Wells

Well Name	X (m)	Y (m)
Bru 95-7	681865.27	5527611.99

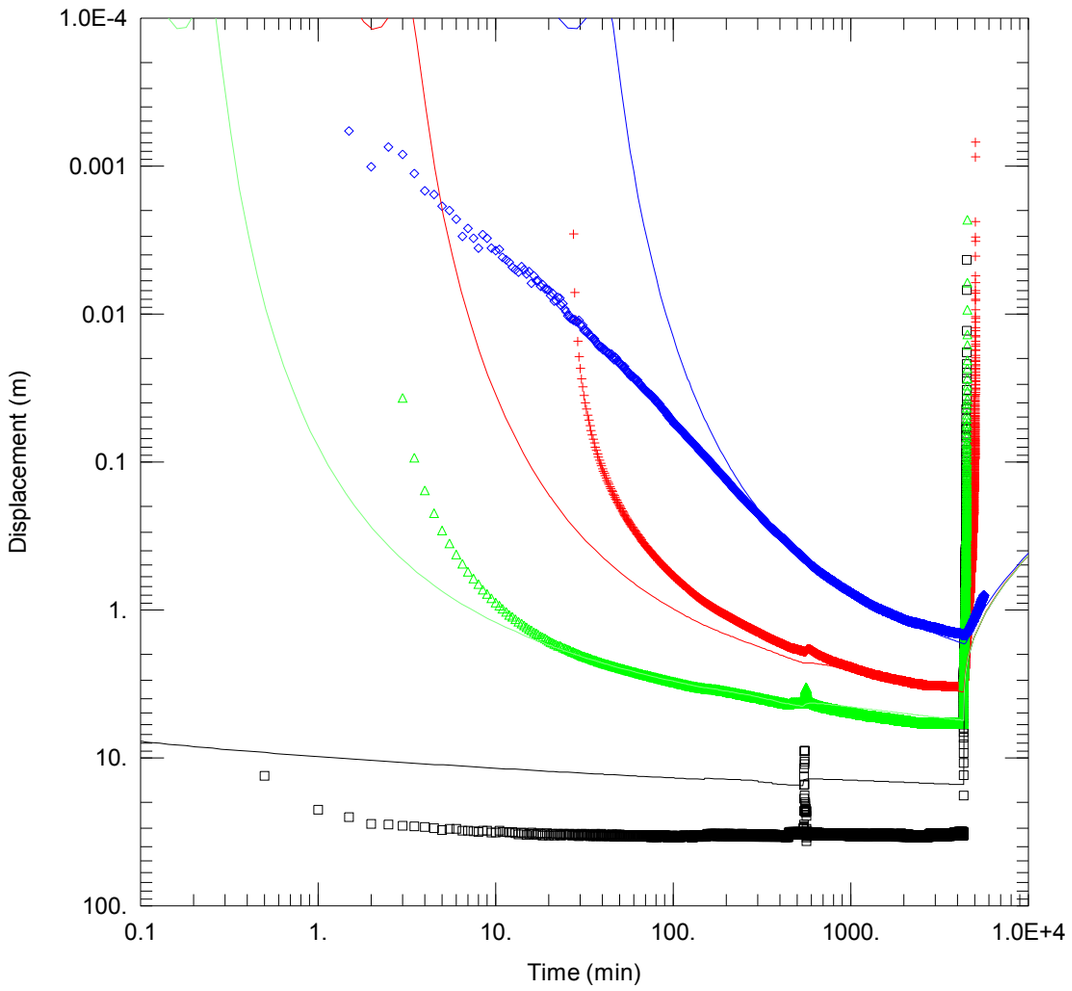
Observation Wells

Well Name	X (m)	Y (m)
□ Bru 95-7	681865.27	5527611.99
+ Bru 95-6	682199.25	5527624.2
△ Bru 95-8	681953	5527630
◇ Bru 96-1	683064	5527787

SOLUTION

Aquifer Model: Leaky
Solution Method: Neuman-Witherspoon

T = 5.358E-6 m^2/sec
1/B = 20.89 m^{-1}
T2 = 0.002698 m^2/sec
S = 2.498E-6
ß/r = 0.0001467 m^{-1}
S2 = 7.249E-5



WELL TEST ANALYSIS

Data Set: C:\...\Neuman-Witherspoon - OB Wells Fit_leaky.aqt
Date: 03/06/23 Time: 13:42:15

PROJECT INFORMATION

Company: AECOM
Client: CanWhite Sands
Project: 60640258
Location: Vivian MB
Test Well: Bru 95-7
Test Date: Nov 28 2020 - Dec 1 2020

AQUIFER DATA

Saturated Thickness: 20.14 m
Aquitard Thickness (b'): 1. m
Anisotropy Ratio (Kz/Kr): 0.1
Aquitard Thickness (b"): 1. m

WELL DATA

Pumping Wells

Well Name	X (m)	Y (m)
Bru 95-7	681865.27	5527611.99

Observation Wells

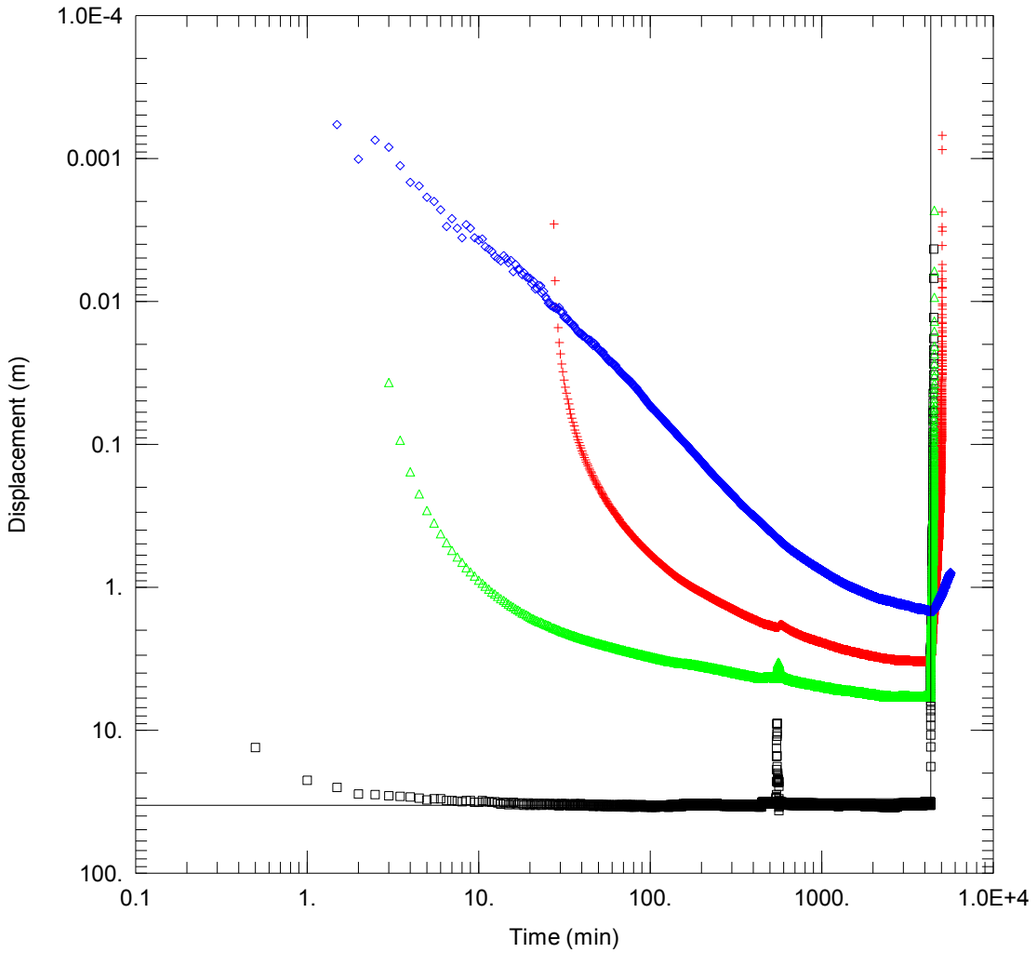
Well Name	X (m)	Y (m)
□ Bru 95-7	681865.27	5527611.99
+ Bru 95-6	682199.25	5527624.2
△ Bru 95-8	681953	5527630
◇ Bru 96-1	683064	5527787

SOLUTION

Aquifer Model: Leaky
Solution Method: Neuman-Witherspoon

T = 0.0021988 m^2/sec
1/B = 6.456 m^{-1}
T2 = 0.0002698 m^2/sec

S = 9.828E-6
ß/r = 0.0001934 m^{-1}
S2 = 0.0001024



WELL TEST ANALYSIS

Data Set: C:\...\Cooley-Case (1973) - Pumping Well Fit_leaky.aqt
Date: 03/06/23 Time: 13:46:55

PROJECT INFORMATION

Company: AECOM
Client: CanWhite Sands
Project: 60640258
Location: Vivian MB
Test Well: Bru 95-7
Test Date: Nov 28 2020 - Dec 1 2020

AQUIFER DATA

Saturated Thickness: 20.14 m
Aquitard Thickness (b'): 1. m
Anisotropy Ratio (Kz/Kr): 0.1
Aquitard Thickness (b"): 1. m

WELL DATA

Pumping Wells

Well Name	X (m)	Y (m)
Bru 95-7	681865.27	5527611.99

Observation Wells

Well Name	X (m)	Y (m)
□ Bru 95-7	681865.27	5527611.99
+ Bru 95-6	682199.25	5527624.2
△ Bru 95-8	681953	5527630
◇ Bru 96-1	683064	5527787

SOLUTION

Aquifer Model: Leaky
Solution Method: Cooley-Case

T = 0.0003412 m^2/sec
1/B = 0.4627 m^{-1}
S'/Sy = 0.

S = 9.579E-7
ß/r = 0.4627 m^{-1}
L/b' = 0.

Appendix F

Laboratory Certificates of Analysis

Appendix F.1. Combined Solid Phase Lab Certificates of Analysis

QUANTITATIVE PHASE ANALYSIS OF TWO POWDER SAMPLES USING THE RIETVELD METHOD AND X-RAY POWDER DIFFRACTION DATA.

WO#: VA20C2173

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February 11, 2021

EXPERIMENTAL METHOD

The two samples of **WO# VA20C2173** were reduced to the optimum grain-size range for quantitative X-ray analysis (<10 μm) by grinding under ethanol in a vibratory McCrone XRD Mill (Retsch GmbH, Germany) for 10 minutes. Continuous-scan X-ray powder-diffraction data were collected over a range 3-80°2θ with CoKα radiation on a Bruker D8 Focus Bragg-Brentano diffractometer equipped with an Fe filter foil, 0.6 mm (0.3°) divergence slit, incident- and diffracted-beam Soller slits and a LynxEye-XE detector. The long fine-focus Co X-ray tube was operated at 35 kV and 40 mA, using a take-off angle of 6°.

RESULTS

The X-ray diffractograms were analyzed using the International Centre for Diffraction Database PDF-4 using Search-Match software by Bruker. X-ray powder-diffraction data of the samples were refined with Rietveld program Topas 4.2 (Bruker AXS). The results of quantitative phase analysis by Rietveld refinements are given in Table 1. These amounts represent the relative amounts of crystalline phases normalized to 100%. The Rietveld refinement plots are shown in Figures 1 and 2.

Table 1. Results of quantitative phase analysis (wt.%)

Mineral	**Ideal Formula**	**#1 VA20C2173-001 (Bru 121-1_174 to 179)**	**#2 VA20C2173-002 (Bru 146_189 to 194)**
Calcite	$CaCO_3$		0.2
Iron	α-Fe	0.1	0.1
Kaolinite	$Al_2Si_2O_5(OH)_4$	0.8	0.2
Plagioclase	$NaAlSi_3O_8 – CaAl_2Si_2O_8$	0.9	0.7
Quartz	SiO_2	97.3	98.7
Siderite	$Fe^{2+}CO_3$	0.9	0.1
Total		**100.0**	**100.0**

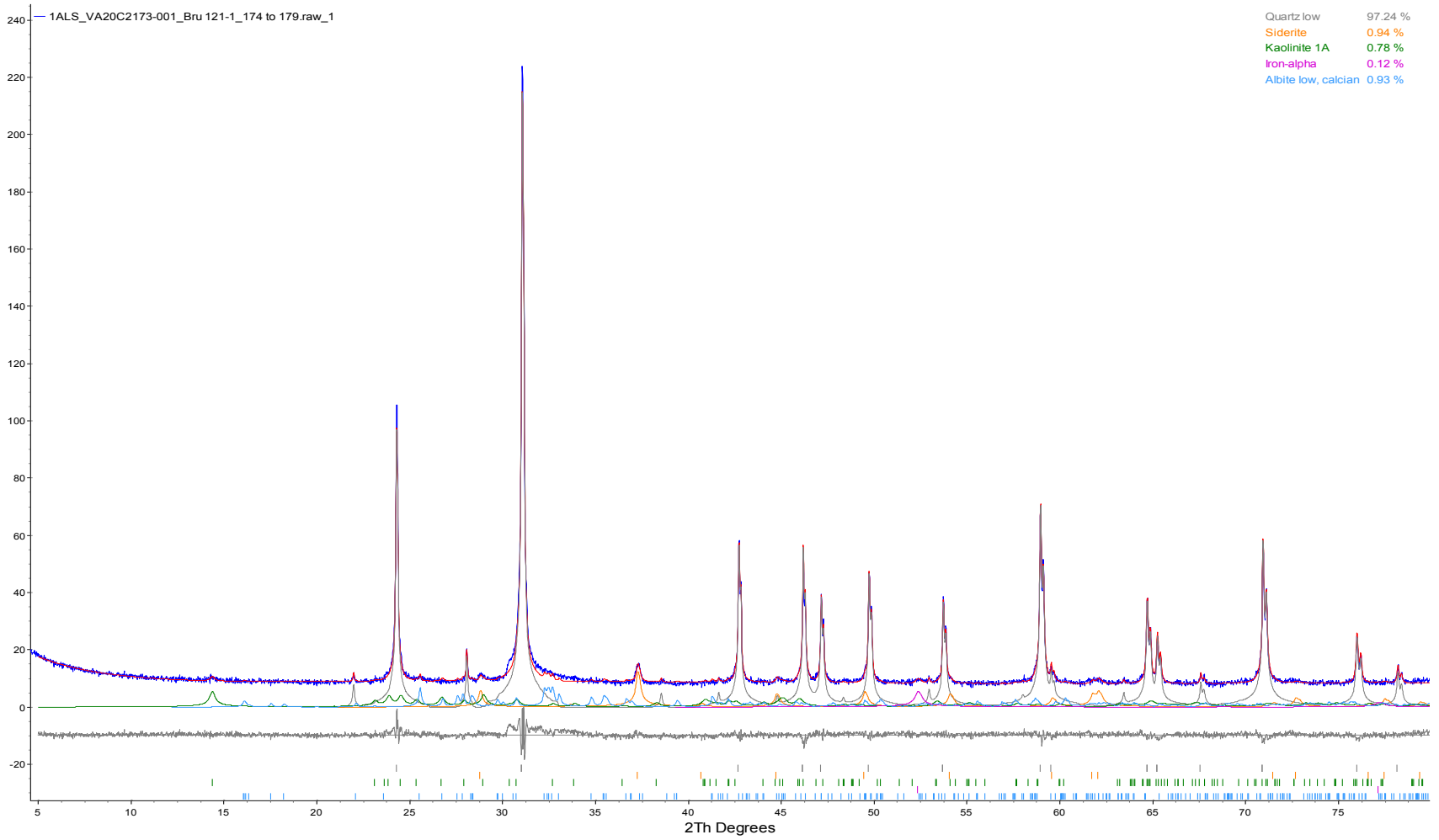

Figure 1. Rietveld refinement plot of sample **ALS Environmental #1: VA20C2173-001 (Bru 121-1_174 to 179)** (blue line - observed intensity at each step; red line - calculated pattern; solid grey line below - difference between observed and calculated intensities; vertical bars - positions of all Bragg reflections; vertical blue line - position of peak phase). Coloured lines are individual diffraction patterns of all phases.

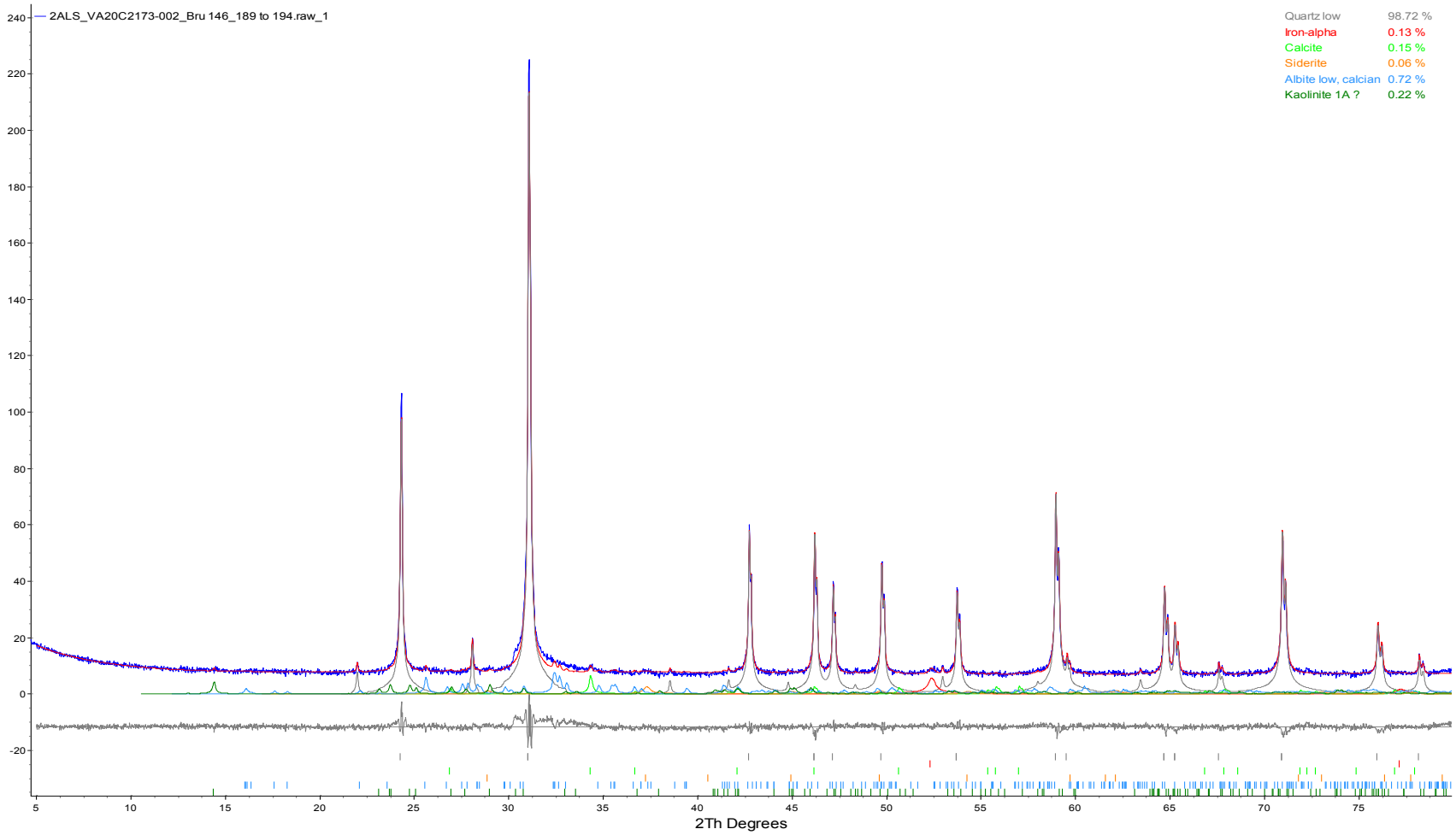

Figure 2. Rietveld refinement plot of sample **ALS Environmental #2: VA20C2173-002 (Bru 146_189 to 194)** (blue line - observed intensity at each step; red line - calculated pattern; solid grey line below - difference between observed and calculated intensities; vertical bars - positions of all Bragg reflections; vertical blue line - position of peak phase). Coloured lines are individual diffraction patterns of all phases.

QUANTITATIVE PHASE ANALYSIS OF SEVEN POWDER SAMPLES USING THE RIETVELD METHOD AND X-RAY POWDER DIFFRACTION DATA.

WO#: VA20C2029

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January 20, 2021

EXPERIMENTAL METHOD

The seven samples of **WO# VA20C2029** were reduced to the optimum grain-size range for quantitative X-ray analysis (<10 μm) by grinding under ethanol in a vibratory McCrone XRD Mill (Retsch GmbH, Germany) for 10 minutes. Continuous-scan X-ray powder-diffraction data were collected over a range 3-80°2θ with CoKα radiation on a Bruker D8 Focus Bragg-Brentano diffractometer equipped with an Fe filter foil, 0.6 mm (0.3°) divergence slit, incident- and diffracted-beam Soller slits and a LynxEye-XE detector. The long fine-focus Co X-ray tube was operated at 35 kV and 40 mA, using a take-off angle of 6°.

RESULTS

The X-ray diffractograms were analyzed using the International Centre for Diffraction Database PDF-4 and Search-Match software by Bruker. X-ray powder-diffraction data of the samples were refined with Rietveld program Topas 4.2 (Bruker AXS). The results of quantitative phase analysis by Rietveld refinements are given in Table 1 (separate file, ***ALS Environmental (Bby) Results Jan 20 2021 – WO# VA20C2029 – 7 samples.xlsx***). These amounts represent the relative amounts of crystalline phases normalized to 100%. The Rietveld refinement plots are shown in Figures 1 – 7. Ideal formulae for the minerals present are given in Table 2.

The X-ray pattern of sample #1, Figure #1, shows the presence of some amorphous/nanoscale material that was accounted for by fitting the pattern with a broad calculated peak at about 30.7º2θ (vertical line).

The X-ray patterns of samples #3, #5 and #7 show the presence of some unknown clay minerals, likely interstratified illite-smectite which could not be analyzed (see humps at around 10º2θ fitted with calculated peaks) as well as some amorphous/nanoscale material that was accounted for by fitting the pattern with broad calculated peaks (see vertical lines in Figures).

Therefore, the results should be considered approximate.

Table 2.

Mineral	**Ideal Formula**
Anatase	TiO_2
Ankerite-Dolomite	$Ca(Fe^{2+},Mg,Mn)(CO_3)_2$-$CaMg(CO_3)_2$
Calcite	$CaCO_3$
Clinochlore	$(Mg,Fe^{2+})_5Al(Si_3Al)O_{10}(OH)_8$
Goethite	α-$Fe^{3+}O(OH)$
Gypsum	$CaSO_4 \cdot 2H_2O$
Hematite	α-Fe_2O_3
Illite-Muscovite 2M	$K_{0.65}Al_{2.0}Al_{0.65}Si_{3.35}O_{10}(OH)_2$-$KAl_2AlSi_3O_{10}(OH)_2$
Kaolinite	$Al_2Si_2O_5(OH)_4$
K-feldspar (orthoclase)	$KAlSi_3O_8$
Plagioclase (albite,calc.)	$NaAlSi_3O_8 – CaAl_2Si_2O_8$
Pyrite	FeS_2
Quartz	SiO_2
Rutile ?	TiO_2
Siderite	$FeCO_3$

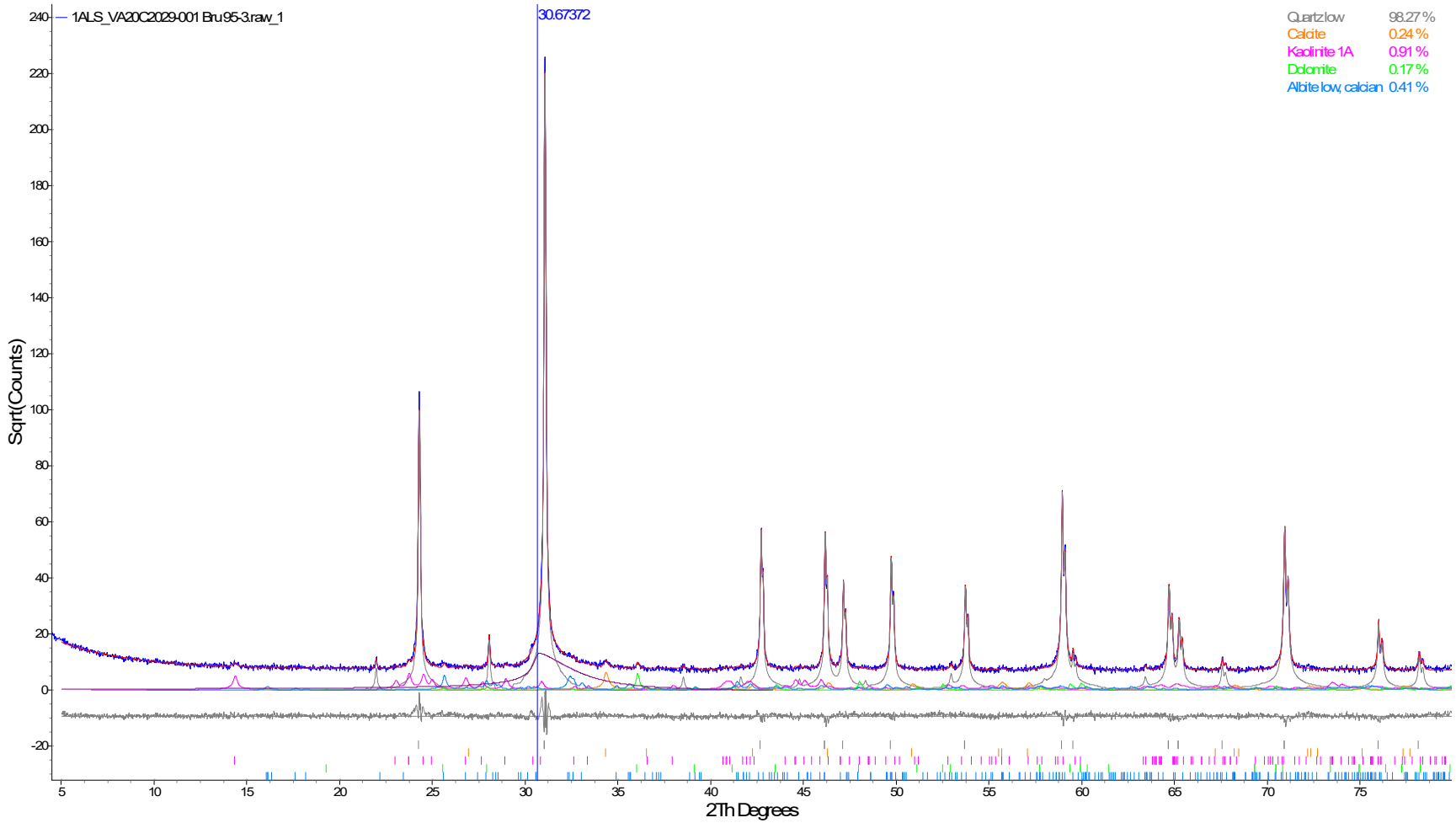

Figure 1. Rietveld refinement plot of sample **ALS Geochemistry #1: VA20C2029-001 Bru 95-3** (blue line - observed intensity at each step; red line - calculated pattern; solid grey line below - difference between observed and calculated intensities; vertical bars - positions of all Bragg reflections; vertical blue line - position of peak phase). Coloured lines are individual diffraction patterns of all phases.

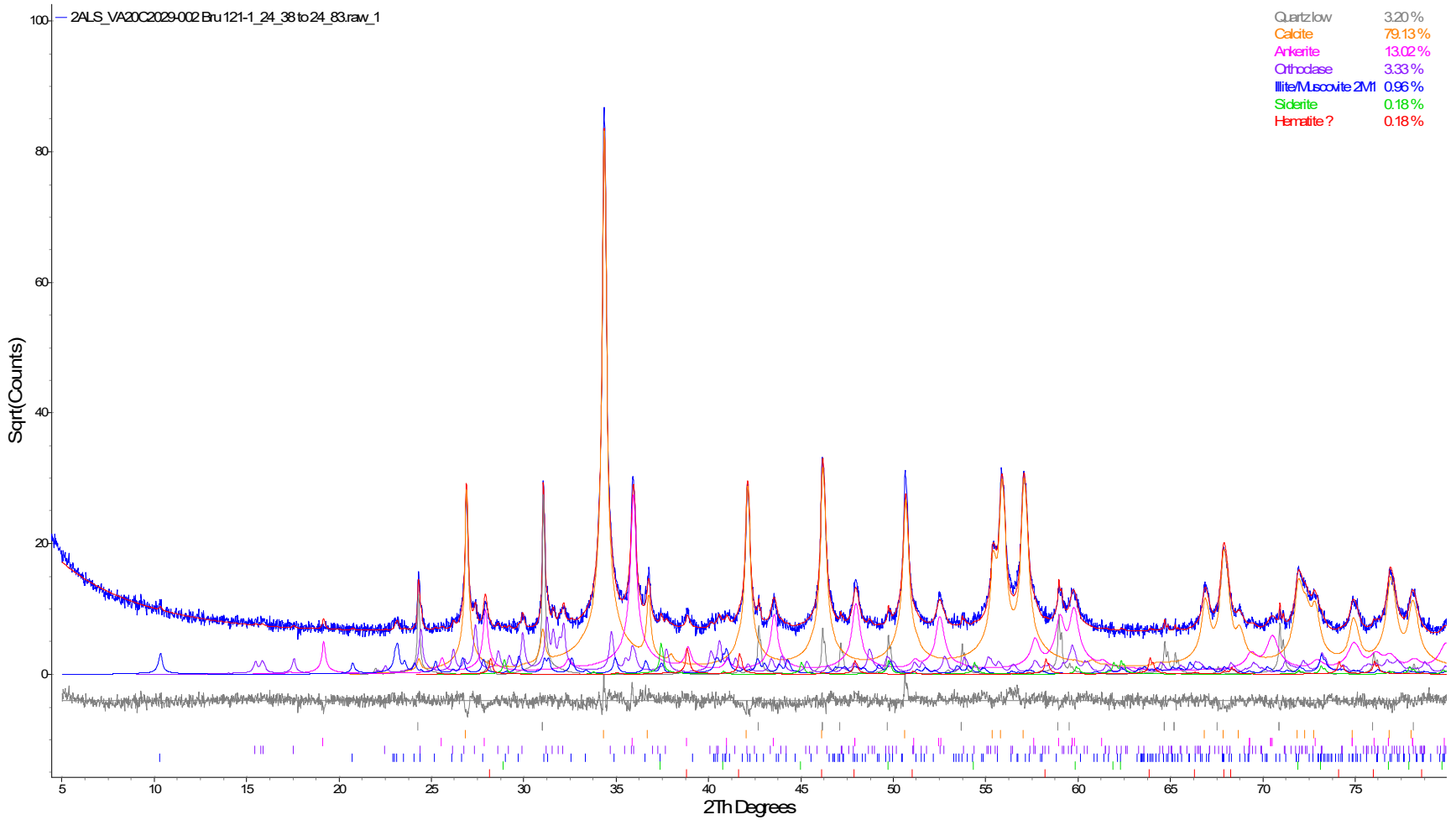

Figure 2. Rietveld refinement plot of sample **ALS Geochemistry #2: VA20C2029-002 Bru 121-1_24.38 to 24.83** (blue line - observed intensity at each step; red line - calculated pattern; solid grey line below - difference between observed and calculated intensities; vertical bars - positions of all Bragg reflections; vertical blue line - position of peak phase). Coloured lines are individual diffraction patterns of all phases.

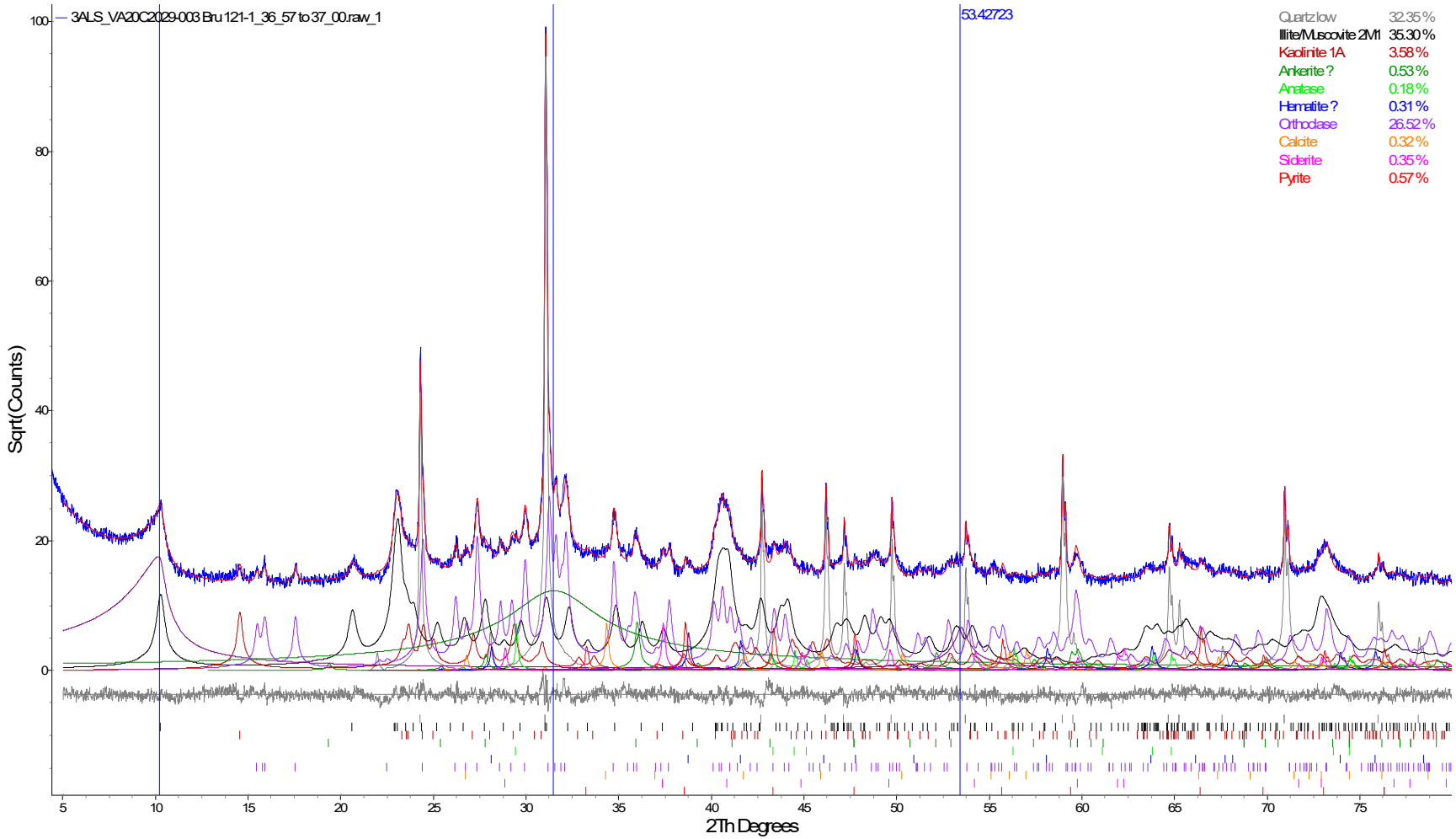

Figure 3. Rietveld refinement plot of sample **ALS Geochemistry #3: VA20C2029-003 Bru 121-1_36.57 to 37.00** (blue line - observed intensity at each step; red line - calculated pattern; solid grey line below - difference between observed and calculated intensities; vertical bars - positions of all Bragg reflections; vertical blue line - position of peak phase). Coloured lines are individual diffraction patterns of all phases.

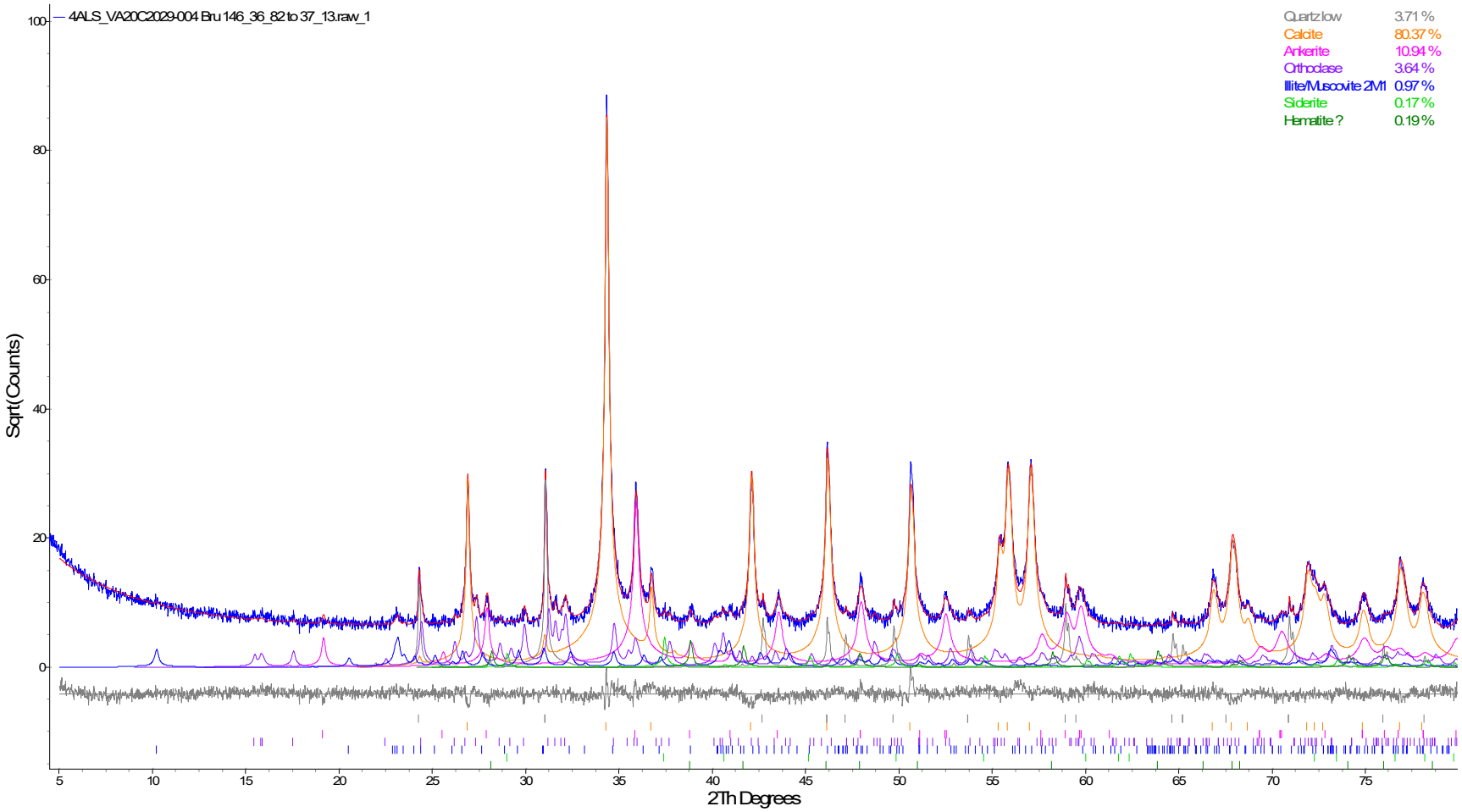

Figure 4. Rietveld refinement plot of sample **ALS Geochemistry #4: VA20C2029-004 Bru 146_36.82 to 37.13** (blue line - observed intensity at each step; red line - calculated pattern; solid grey line below - difference between observed and calculated intensities; vertical bars - positions of all Bragg reflections; vertical blue line - position of peak phase). Coloured lines are individual diffraction patterns of all phases.

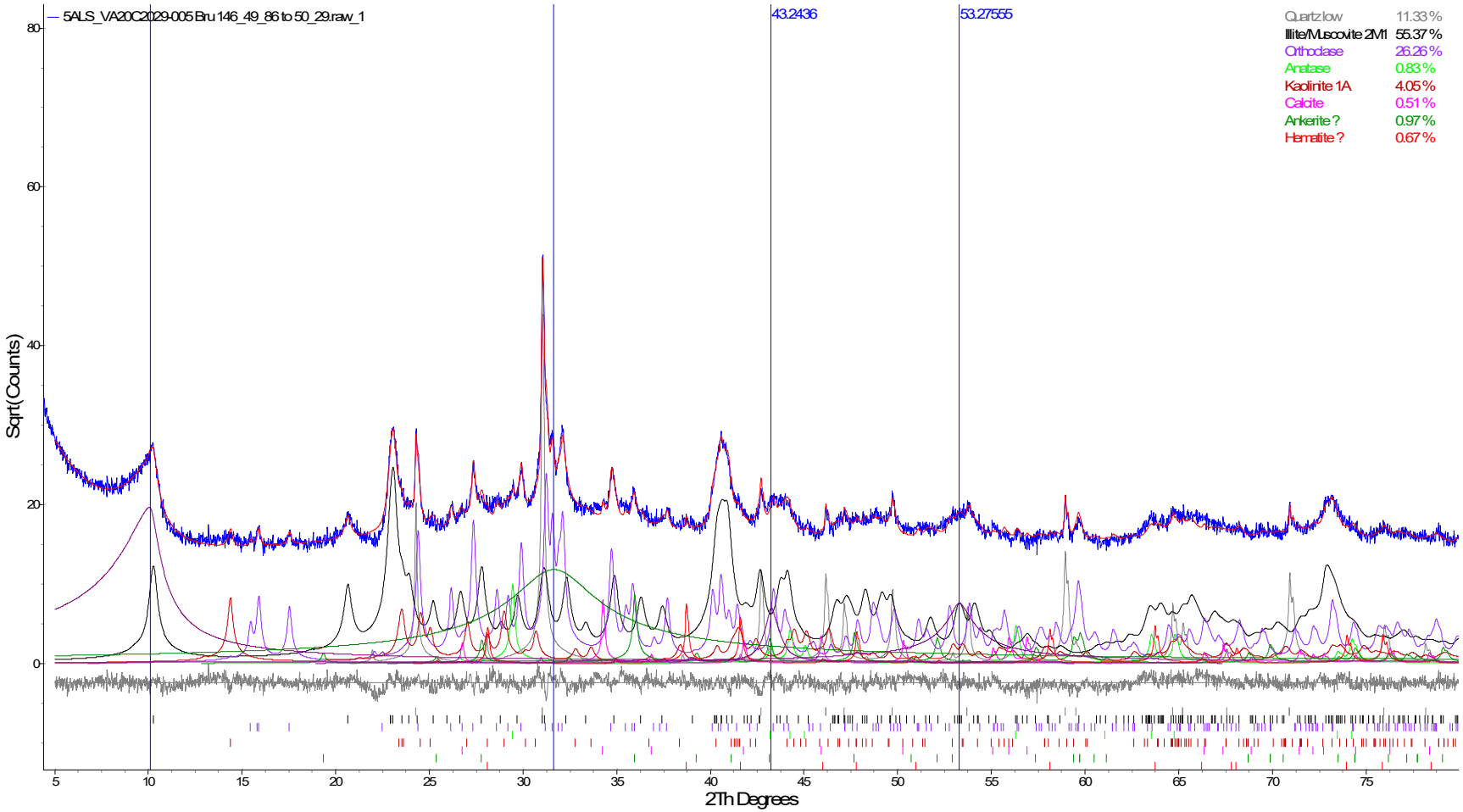

Figure 5. Rietveld refinement plot of sample **ALS Geochemistry #5: VA20C2029-005 Bru 146_49.86 to 50.29** (blue line - observed intensity at each step; red line - calculated pattern; solid grey line below - difference between observed and calculated intensities; vertical bars - positions of all Bragg reflections; vertical blue line - position of peak phase). Coloured lines are individual diffraction patterns of all phases.

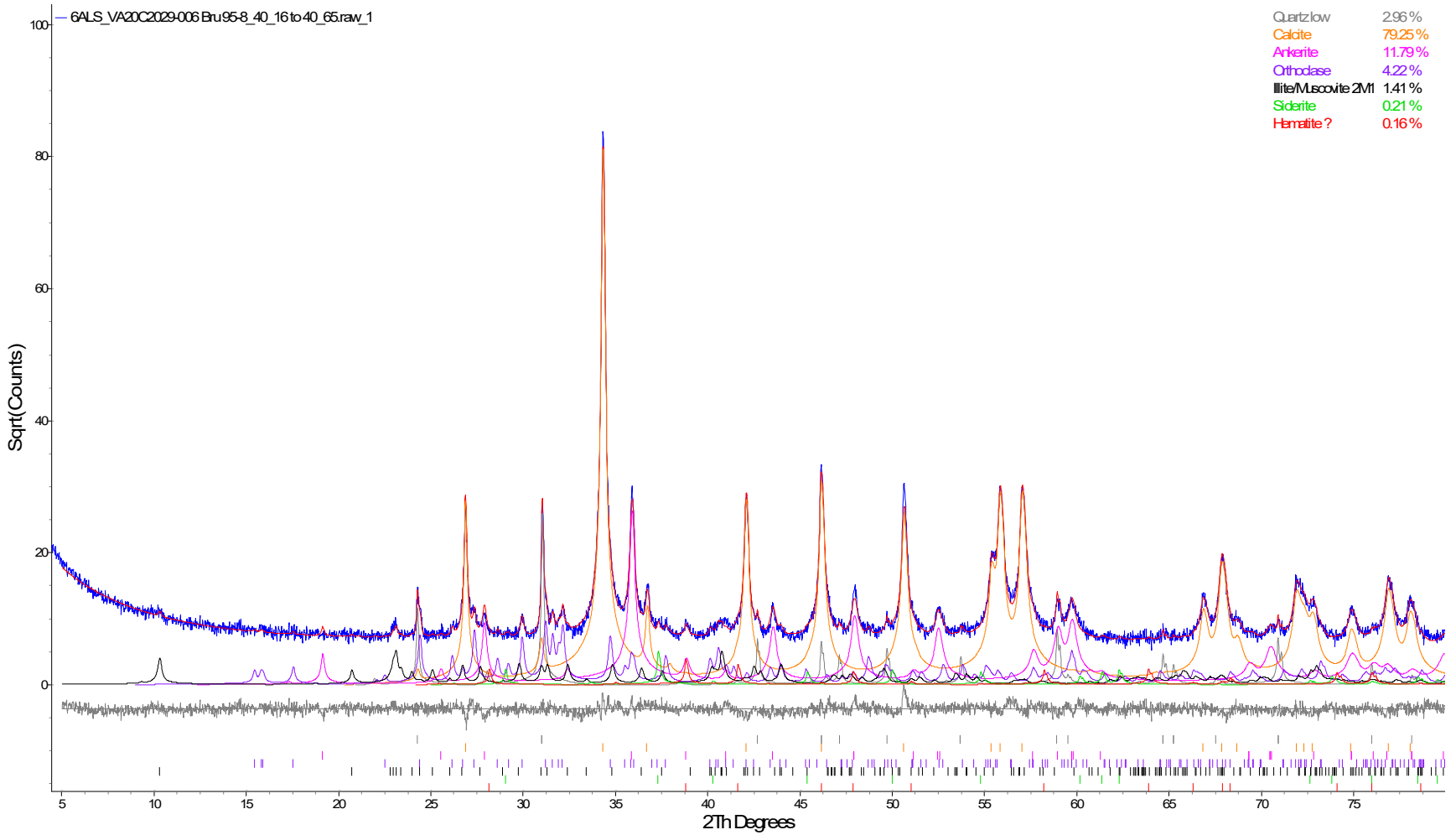

Figure 6. Rietveld refinement plot of sample **ALS Geochemistry #6: VA20C2029-006 Bru 95-8_40.16 to 40.65** (blue line - observed intensity at each step; red line - calculated pattern; solid grey line below - difference between observed and calculated intensities; vertical bars - positions of all Bragg reflections; vertical blue line - position of peak phase). Coloured lines are individual diffraction patterns of all phases.

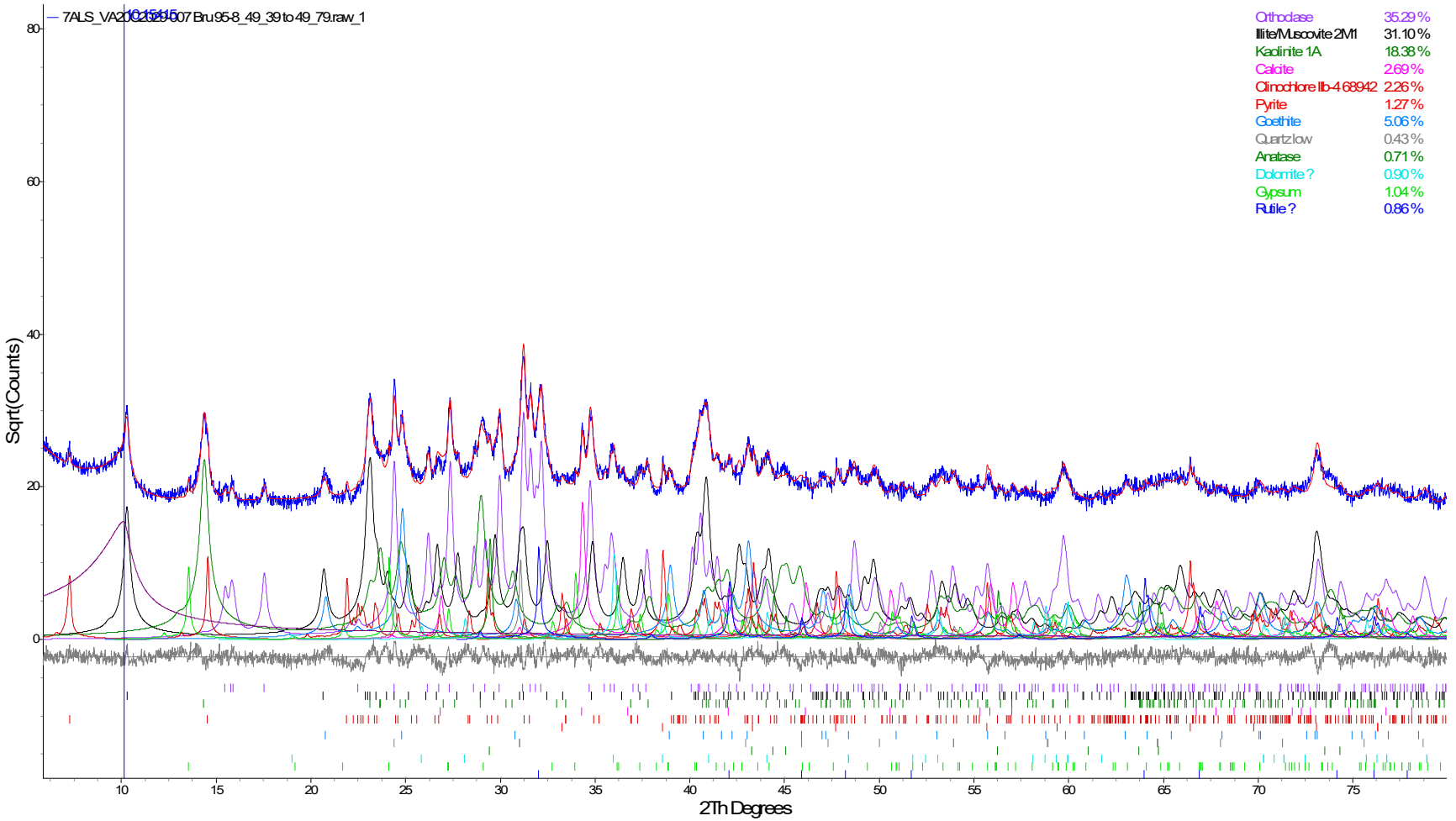

Figure 7. Rietveld refinement plot of sample **ALS Geochemistry #7: VA20C2029-007 Bru 95-8_49.39 to 49.79** (blue line - observed intensity at each step; red line - calculated pattern; solid grey line below - difference between observed and calculated intensities; vertical bars - positions of all Bragg reflections; vertical blue line - position of peak phase). Coloured lines are individual diffraction patterns of all phases.

Table 1. Results of quantitative phase analysis (wt.%) XRD-Rietveld - ALS Environmental (Bby) WO# VA20C2029

UBC	#1		#2		#3		#4		#5		#6		#7
Sample ID	VA20C2029-001 Bru 95-3		VA20C2029-002 Bru 121-1_24.38 to 24.83		VA20C2029-003 Bru 121-1_36.57 to 37.00		VA20C2029-004 Bru 146_36.82 to 37.13		VA20C2029-005 Bru 146_49.86 to 50.29		VA20C2029-006 Bru 95-8_40.16 to 40.65		VA20C2029-007 Bru 95-8_49.39 to 49.79
Quartz	98.3	Quartz	3.2	Quartz	32.4	Quartz	3.7	Quartz	11.3	Quartz	3.0	K-feldspar	35.3
Calcite	0.2	Calcite	79.1	Illite/Muscovite 2M1	35.3	Calcite	80.4	Illite/Muscovite 2M1	55.4	Calcite	79.2	Illite/Muscovite 2M1	31.1
Kaolinite	0.9	Ankerite	13.0	Kaolinite	3.6	Ankerite	10.9	K-feldspar	26.3	Ankerite	11.8	Kaolinite	18.4
Dolomite	0.2	K-feldspar	3.3	Ankerite ?	0.5	K-feldspar	3.6	Anatase	0.8	K-feldspar	4.2	Calcite	2.7
Albite low, calcian	0.4	Illite/Muscovite 2M1	1.0	Anatase	0.2	Illite/Muscovite 2M1	1.0	Kaolinite	4.0	Illite/Muscovite 2M1	1.4	Clinochlore	2.3
		Siderite	0.2	Hematite ?	0.3	Siderite	0.2	Calcite	0.5	Siderite	0.2	Pyrite	1.3
		Hematite ?	0.2	Pyrite	0.6	Hematite ?	0.2	Ankerite ?	1.0	Hematite ?	0.2	Goethite	5.1
				K-feldspar	26.5			Hematite ?	0.7			Quartz	0.4
				Calcite	0.3							Anatase	0.7
				Siderite	0.3							Dolomite ?	0.9
												Gypsum	1.0
												Rutile ?	0.9
Total	**100.0**		**100.0**		**100.0**		**100.0**		**100.0**		**100.0**		**100.0**

ALS Environmental

CERTIFICATE OF ANALYSIS

Work Order	: **VA20C2029**	Page	: 1 of 10
Amendment	: **2**		
Client	: **AECOM Canada Ltd.**	Laboratory	: Vancouver - Environmental
Contact	: Ryan Mills	Account Manager	: Dean Watt
Address	: 3292 Production Way Burnaby BC Canada V5A 4R4	Address	: 8081 Lougheed Highway Burnaby BC Canada V5A 1W9
Telephone	: ----	Telephone	: +1 604 253 4188
Project	: 60640258 - CanWhite Sands	Date Samples Received	: 27-Nov-2020 12:55
PO	: ----	Date Analysis Commenced	: 15-Dec-2020
C-O-C number	: ----	Issue Date	: 16-Feb-2021 15:04
Sampler	: SD/RD		
Site	: ----		
Quote number	: Aecom 2020 Price List (BC/YT)		
No. of samples received	: 10		
No. of samples analysed	: 7		

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. This document shall not be reproduced, except in full.

This Certificate of Analysis contains the following information:

- General Comments
- Analytical Results

Additional information pertinent to this report will be found in the following separate attachments: Quality Control Report, QC Interpretive report to assist with Quality Review and Sample Receipt Notification (SRN).

Signatories

This document has been electronically signed by the authorized signatories below. Electronic signing is conducted in accordance with US FDA 21 CFR Part 11.

Signatories	*Position*	*Laboratory Department*
Dee Lee	Analyst	Metals, Burnaby, British Columbia
Erin Gatdula	Account Manager Assistant	Internal Subcontracting, North Vancouver, British Columbia
Janice Leung	Supervisor - Organics Extractions	Organics, Burnaby, British Columbia
Kim Jensen	Department Manager - Metals	Metals, Burnaby, British Columbia
Lindsay Gung	Supervisor - Water Chemistry	Inorganics, Burnaby, British Columbia

General Comments

The analytical methods used by ALS are developed using internationally recognized reference methods (where available), such as those published by US EPA, APHA Standard Methods, ASTM, ISO, Environment Canada, BC MOE, and Ontario MOE. Refer to the ALS Quality Control Interpretive report (QCI) for applicable references and methodology summaries. Reference methods may incorporate modifications to improve performance.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis.

Where the LOR of a reported result differs from standard LOR, this may be due to high moisture content, insufficient sample (reduced weight employed) or matrix interference.

Please refer to Quality Control Interpretive report (QCI) for information regarding Holding Time compliance.

Key : CAS Number: Chemical Abstracts Services number is a unique identifier assigned to discrete substances
LOR: Limit of Reporting (detection limit).

Unit	*Description*
-	No Unit
%	percent
kg	kilograms
mg/L	milligrams per litre
pH units	pH units
ppm	parts per million
tCaCO3/kt	tons CaCO3 per kiloton

<: less than.

>: greater than.

Surrogate: An analyte that is similar in behavior to target analyte(s), but that does not occur naturally in environmental samples. For applicable tests, surrogates are added to samples prior to analysis as a check on recovery.

Test results reported relate only to the samples as received by the laboratory.

UNLESS OTHERWISE STATED on SRN or QCI Report, ALL SAMPLES WERE RECEIVED IN ACCEPTABLE CONDITION.

Analytical results in reports identified as "Preliminary Report" are considered authorized for use.

Workorder Comments

XRD Rietveld data has been added.

Geochemistry data upload has been updated to correctly report parameter names.

Analytical Results

Sub-Matrix: **Solid**
(Matrix: **Soil/Solid**)

Analyte	CAS Number	Method	LOR	Unit	Client sample ID	Bru 95-3	Bru 121-1_24.38 to 24.83	Bru 121-1_36.57 to 37.00	Bru 146_36.82 to 37.13	Bru 146_49-86 to 50.29
					Client sampling date / time	19-Nov-2020 08:00	11-Nov-2020 12:30	11-Nov-2020 12:30	11-Nov-2020 00:50	11-Nov-2020 12:50
						VA20C2029-001	VA20C2029-002	VA20C2029-003	VA20C2029-004	VA20C2029-005
						Result	Result	Result	Result	Result
Physical Tests										
moisture	----	E144	0.25	%		0.61	<0.25	0.52	<0.25	1.02
pH	----	E116	0.10	pH units		7.05	8.08	8.07	8.17	8.18
Acid Base Accounting										
carbon dioxide	124-38-9	C-GAS05	0.2	%		0.3	39.6	0.3	39.6	0.2
carbon, total [TC]	----	C-IR07	0.01	%		0.12	11.00	0.11	10.90	0.05
carbon, total inorganic [TIC]	----	C-GAS05	0.05	%		0.09	10.80	0.07	10.80	0.05
fizz rating	----	OA-VOL08m	1	-		1	4	1	4	1
maximum potential acidity [MPA]	----	OA-VOL08m	0.3	tCaCO3/kt		0.6	2.2	7.2	1.3	2.2
net neutralization potential [NNP]	----	OA-VOL08m	1	tCaCO3/kt		5	866	3	819	3
neutralization potential [NP]	----	OA-VOL08m	1	tCaCO3/kt		6	868	10	820	5
neutralization potential ratio [NPR], (NP/MPA)	----	OA-VOL08m	0.01	-		9.60	396.80	1.39	656.00	2.29
pH (1:1 soil:water)	----	OA-ELE07	0.10	pH units		8.50	8.00	7.40	8.00	7.80
sulfate (as S), carbonate leach	14808-79-8	S-GRA06	0.01	%		<0.01	<0.01	0.06	<0.01	0.01
sulfate (as S), HCl leach	14808-79-8	S-GRA06A	0.01	%		<0.01	<0.01	<0.01	<0.01	<0.01
sulfide (as S), total minus carbonate leach	18496-25-8	S-CAL06	0.01	%		<0.01	<0.01	<0.01	<0.01	<0.01
sulfur, total	7704-34-9	S-IR08	0.01	%		0.02	0.07	0.23	0.04	0.07
weight, sample received	NA	WEI-21	0.02	kg		6.00	3.36	2.50	3.18	2.24
sulfur, residual	----	S-IR04B	0.01	%		<0.01	<0.01	<0.01	<0.01	<0.01
Metals										
aluminum	7429-90-5	ME-MS41	0.01	%		0.10	0.15	1.56	0.16	1.70
antimony	7440-36-0	ME-MS41	0.05	ppm		<0.05	<0.05	<0.05	<0.05	<0.05
arsenic	7440-38-2	ME-MS41	0.1	ppm		0.9	1.7	30.4	0.8	13.3
barium	7440-39-3	ME-MS41	10	ppm		<10	10	30	10	40
beryllium	7440-41-7	ME-MS41	0.05	ppm		<0.05	0.18	1.01	0.18	1.26
bismuth	7440-69-9	ME-MS41	0.01	ppm		0.01	0.02	0.18	0.02	0.10
boron	7440-42-8	ME-MS41	10	ppm		<10	10	70	10	70
cadmium	7440-43-9	ME-MS41	0.01	ppm		<0.01	<0.01	<0.01	<0.01	<0.01
calcium	7440-70-2	ME-MS41	0.01	%		0.21	>25.0	0.81	>25.0	0.43
cerium	7440-45-1	ME-MS41	0.02	ppm		2.19	9.41	54.6	8.86	28.7

Analytical Results

Sub-Matrix: **Solid**
(Matrix: **Soil/Solid**)

Analyte	CAS Number	Method	LOR	Unit	Client sample ID	Bru 95-3	Bru 121-1_24.38 to 24.83	Bru 121-1_36.57 to 37.00	Bru 146_36.82 to 37.13	Bru 146_49-86 to 50.29
					Client sampling date / time	19-Nov-2020 08:00	11-Nov-2020 12:30	11-Nov-2020 12:30	11-Nov-2020 00:50	11-Nov-2020 12:50
						VA20C2029-001	VA20C2029-002	VA20C2029-003	VA20C2029-004	VA20C2029-005
						Result	Result	Result	Result	Result
Metals										
cesium	7440-46-2	ME-MS41	0.05	ppm		0.05	0.25	1.05	0.21	1.04
chromium	7440-47-3	ME-MS41	1	ppm		2	4	24	4	42
cobalt	7440-48-4	ME-MS41	0.1	ppm		0.4	1.7	16.9	1.6	22.0
copper	7440-50-8	ME-MS41	0.2	ppm		6.6	3.3	24.9	5.7	24.8
gallium	7440-55-3	ME-MS41	0.05	ppm		0.27	0.75	6.65	0.73	7.80
germanium	7440-56-4	ME-MS41	0.05	ppm		<0.05	<0.05	0.13	<0.05	0.05
gold	7440-57-5	ME-MS41	0.02	ppm		<0.02	<0.02	<0.02	<0.02	<0.02
hafnium	7440-58-6	ME-MS41	0.02	ppm		0.15	0.09	0.08	0.09	0.26
indium	7440-74-6	ME-MS41	0.005	ppm		<0.005	0.011	0.016	0.008	0.020
iron	7439-89-6	ME-MS41	0.01	%		0.22	0.49	1.59	0.47	2.23
lanthanum	7439-91-0	ME-MS41	0.2	ppm		1.0	4.1	18.7	3.8	12.6
lead	7439-92-1	ME-MS41	0.2	ppm		1.1	1.3	13.1	1.3	7.4
lithium	7439-93-2	ME-MS41	0.1	ppm		1.9	2.8	17.6	2.5	25.7
magnesium	7439-95-4	ME-MS41	0.01	%		0.04	1.53	0.39	1.30	0.45
manganese	7439-96-5	ME-MS41	5	ppm		24	305	101	265	64
mercury	7439-97-6	ME-MS41	0.01	ppm		<0.01	0.01	0.25	0.01	0.05
molybdenum	7439-98-7	ME-MS41	0.05	ppm		0.06	0.07	0.22	0.14	0.41
nickel	7440-02-0	ME-MS41	0.2	ppm		1.2	3.0	38.0	4.0	52.6
niobium	7440-03-1	ME-MS41	0.05	ppm		0.06	0.07	<0.05	0.07	<0.05
phosphorus	7723-14-0	ME-MS41	10	ppm		30	820	2180	600	490
potassium	7440-09-7	ME-MS41	0.01	%		0.02	0.08	0.88	0.09	0.95
rhenium	7440-15-5	ME-MS41	0.001	ppm		<0.001	0.002	0.013	0.001	0.010
rubidium	7440-17-7	ME-MS41	0.1	ppm		1.0	3.9	36.8	3.8	41.2
scandium	7440-20-2	ME-MS41	0.1	ppm		0.1	0.9	4.2	0.9	3.4
selenium	7782-49-2	ME-MS41	0.2	ppm		<0.2	0.3	13.1	0.5	<0.2
silver	7440-22-4	ME-MS41	0.01	ppm		0.01	<0.01	0.40	0.01	0.10
sodium	7440-23-5	ME-MS41	0.01	%		0.01	0.02	0.03	0.02	0.02
strontium	7440-24-6	ME-MS41	0.2	ppm		3.0	198.5	91.7	205	141.5
sulfur	7704-34-9	ME-MS41	0.01	%		<0.01	0.07	0.23	0.03	0.07
tantalum	7440-25-7	ME-MS41	0.01	ppm		<0.01	<0.01	<0.01	<0.01	<0.01

Analytical Results

Sub-Matrix: **Solid**
(Matrix: **Soil/Solid**)

Analyte	CAS Number	Method	LOR	Unit	Client sample ID	Bru 95-3	Bru 121-1_24.38 to 24.83	Bru 121-1_36.57 to 37.00	Bru 146_36.82 to 37.13	Bru 146_49-86 to 50.29
					Client sampling date / time	19-Nov-2020 08:00	11-Nov-2020 12:30	11-Nov-2020 12:30	11-Nov-2020 00:50	11-Nov-2020 12:50
						VA20C2029-001	VA20C2029-002	VA20C2029-003	VA20C2029-004	VA20C2029-005
						Result	Result	Result	Result	Result
Metals										
tellurium	13494-80-9	ME-MS41	0.01	ppm		<0.01	<0.01	0.03	<0.01	0.01
thallium	7440-28-0	ME-MS41	0.02	ppm		0.02	0.03	0.21	0.02	0.29
thorium	7440-29-1	ME-MS41	0.2	ppm		0.4	0.9	10.8	0.9	11.5
tin	7440-31-5	ME-MS41	0.2	ppm		<0.2	<0.2	0.4	0.2	0.5
titanium	7440-32-6	ME-MS41	0.005	%		0.006	<0.005	0.007	<0.005	0.006
tungsten	7440-33-7	ME-MS41	0.05	ppm		<0.05	<0.05	0.20	<0.05	0.07
uranium	7440-61-1	ME-MS41	0.05	ppm		0.14	0.64	30.0	0.60	11.65
vanadium	7440-62-2	ME-MS41	1	ppm		1	6	17	6	18
yttrium	7440-65-5	ME-MS41	0.05	ppm		0.51	2.83	19.95	2.62	4.68
zinc	7440-66-6	ME-MS41	2	ppm		12	6	28	11	34
zirconium	7440-67-7	ME-MS41	0.5	ppm		4.4	2.3	5.1	2.2	8.3
Leachable Metals										
aluminum, leachable	7429-90-5	E446	0.0050	mg/L		1.26	0.131	<0.0050	0.179	<0.0050
antimony, leachable	7440-36-0	E446	0.00010	mg/L		<0.00010	0.00016	0.00012	0.00013	<0.00010
arsenic, leachable	7440-38-2	E446	0.0010	mg/L		0.0014	<0.0010	0.0307	<0.0010	0.0029
barium, leachable	7440-39-3	E446	0.0010	mg/L		0.0052	0.0106	0.0937	0.0084	0.0961
beryllium, leachable	7440-41-7	E446	0.00050	mg/L		<0.00050	<0.00050	<0.00050	<0.00050	<0.00050
bismuth, leachable	7440-69-9	E446	0.00050	mg/L		<0.00050	<0.00050	<0.00050	<0.00050	<0.00050
boron, leachable	7440-42-8	E446	0.010	mg/L		0.025	0.068	0.415	0.042	0.204
cadmium, leachable	7440-43-9	E446	0.000050	mg/L		<0.000050	<0.000050	<0.000050	<0.000050	<0.000050
calcium, leachable	7440-70-2	E446	0.10	mg/L		6.25	16.8	77.4	16.2	27.2
chromium, leachable	7440-47-3	E446	0.00050	mg/L		0.00194	<0.00050	<0.00050	<0.00050	0.00098
cobalt, leachable	7440-48-4	E446	0.00010	mg/L		0.00022	0.00011	0.00153	<0.00010	0.00017
copper, leachable	7440-50-8	E446	0.0010	mg/L		<0.0010	<0.0010	<0.0010	<0.0010	<0.0010
iron, leachable	7439-89-6	E446	0.030	mg/L		0.311	<0.030	<0.030	<0.030	<0.030
lead, leachable	7439-92-1	E446	0.00010	mg/L		0.00094	<0.00010	<0.00010	<0.00010	<0.00010
lithium, leachable	7439-93-2	E446	0.0050	mg/L		<0.0050	0.0052	0.0821	0.0050	0.0496
magnesium, leachable	7439-95-4	E446	0.050	mg/L		0.974	6.37	24.0	5.55	9.23
manganese, leachable	7439-96-5	E446	0.00050	mg/L		0.00103	0.00067	0.00149	<0.00050	<0.00050
mercury, leachable	7439-97-6	E515	0.000050	mg/L		<0.000050	<0.000050	<0.000050	<0.000050	<0.000050

Analytical Results

Sub-Matrix: **Solid**
(Matrix: **Soil/Solid**)

Analyte	CAS Number	Method	LOR	Unit	Client sample ID	Bru 95-3	Bru 121-1_24.38 to 24.83	Bru 121-1_36.57 to 37.00	Bru 146_36.82 to 37.13	Bru 146_49-86 to 50.29
					Client sampling date / time	19-Nov-2020 08:00	11-Nov-2020 12:30	11-Nov-2020 12:30	11-Nov-2020 00:50	11-Nov-2020 12:50
						VA20C2029-001	VA20C2029-002	VA20C2029-003	VA20C2029-004	VA20C2029-005
						Result	Result	Result	Result	Result
Leachable Metals										
molybdenum, leachable	7439-98-7	E446	0.00010	mg/L		0.00012	0.00099	0.00623	0.00092	0.00608
nickel, leachable	7440-02-0	E446	0.00050	mg/L		0.00083	<0.00050	0.0101	0.00059	<0.00050
phosphorus, leachable	7723-14-0	E446	0.30	mg/L		<0.30	<0.30	<0.30	<0.30	<0.30
potassium, leachable	7440-09-7	E446	0.050	mg/L		1.16	6.82	53.9	6.32	29.7
selenium, leachable	7782-49-2	E446	0.00050	mg/L		<0.00050	0.00220	1.64	0.00997	0.00747
silicon, leachable	7440-21-3	E446	0.050	mg/L		2.68	1.44	2.26	1.79	2.32
silver, leachable	7440-22-4	E446	0.000050	mg/L		<0.000050	<0.000050	0.000066	<0.000050	<0.000050
sodium, leachable	7440-23-5	E446	0.050	mg/L		0.354	2.23	19.5	1.99	9.87
strontium, leachable	7440-24-6	E446	0.00050	mg/L		0.0170	0.120	0.505	0.109	0.164
sulfur, leachable	----	E446	0.50	mg/L		2.45	6.60	86.2	4.87	9.59
thallium, leachable	7440-28-0	E446	0.00010	mg/L		<0.00010	<0.00010	0.00024	<0.00010	<0.00010
tin, leachable	7440-31-5	E446	0.00050	mg/L		<0.00050	<0.00050	<0.00050	<0.00050	<0.00050
titanium, leachable	7440-32-6	E446	0.010	mg/L		0.115	<0.010	<0.010	<0.010	<0.010
uranium, leachable	7440-61-1	E446	0.000010	mg/L		0.000228	0.000650	0.117	0.000931	0.0137
vanadium, leachable	7440-62-2	E446	0.0010	mg/L		0.0020	0.0032	<0.0010	0.0042	0.0016
zinc, leachable	7440-66-6	E446	0.010	mg/L		<0.010	<0.010	<0.010	<0.010	<0.010
hardness (as CaCO3), dissolved	----	E446	0.60	mg/L		19.6	68.2	292	63.3	106

Please refer to the General Comments section for an explanation of any qualifiers detected.

Analytical Results

Sub-Matrix: **Solid**
(Matrix: **Soil/Solid**)

Analyte	CAS Number	Method	LOR	Unit	Client sample ID	Bru 95-8_40.16 to 40.65	Bru 95-8_49.39 to 49.79	----	----	----
					Client sampling date / time	18-Nov-2020 13:30	18-Nov-2020 15:00	----	----	----
						VA20C2029-006	VA20C2029-007	--------	--------	--------
						Result	Result	----	----	----
Physical Tests										
moisture	----	E144	0.25	%		<0.25	0.91	----	----	----
pH	----	E116	0.10	pH units		8.20	7.94	----	----	----
Acid Base Accounting										
carbon dioxide	124-38-9	C-GAS05	0.2	%		39.0	1.3	----	----	----
carbon, total [TC]	----	C-IR07	0.01	%		10.85	0.55	----	----	----
carbon, total inorganic [TIC]	----	C-GAS05	0.05	%		10.65	0.36	----	----	----
fizz rating	----	OA-VOL08m	1	-		4	2	----	----	----
maximum potential acidity [MPA]	----	OA-VOL08m	0.3	tCaCO3/kt		1.6	20.0	----	----	----
net neutralization potential [NNP]	----	OA-VOL08m	1	tCaCO3/kt		819	5	----	----	----
neutralization potential [NP]	----	OA-VOL08m	1	tCaCO3/kt		821	25	----	----	----
neutralization potential ratio [NPR], (NP/MPA)	----	OA-VOL08m	0.01	-		525.44	1.25	----	----	----
pH (1:1 soil:water)	----	OA-ELE07	0.10	pH units		8.30	7.50	----	----	----
sulfate (as S), carbonate leach	14808-79-8	S-GRA06	0.01	%		<0.01	0.12	----	----	----
sulfate (as S), HCl leach	14808-79-8	S-GRA06A	0.01	%		<0.01	<0.01	----	----	----
sulfide (as S), total minus carbonate leach	18496-25-8	S-CAL06	0.01	%		<0.01	<0.01	----	----	----
sulfur, total	7704-34-9	S-IR08	0.01	%		0.05	0.64	----	----	----
weight, sample received	NA	WEI-21	0.02	kg		3.66	2.54	----	----	----
sulfur, residual	----	S-IR04B	0.01	%		<0.01	<0.01	----	----	----
Metals										
aluminum	7429-90-5	ME-MS41	0.01	%		0.20	1.49	----	----	----
antimony	7440-36-0	ME-MS41	0.05	ppm		<0.05	<0.05	----	----	----
arsenic	7440-38-2	ME-MS41	0.1	ppm		0.7	24.2	----	----	----
barium	7440-39-3	ME-MS41	10	ppm		10	30	----	----	----
beryllium	7440-41-7	ME-MS41	0.05	ppm		0.24	0.92	----	----	----
bismuth	7440-69-9	ME-MS41	0.01	ppm		0.02	0.12	----	----	----
boron	7440-42-8	ME-MS41	10	ppm		10	50	----	----	----
cadmium	7440-43-9	ME-MS41	0.01	ppm		<0.01	<0.01	----	----	----
calcium	7440-70-2	ME-MS41	0.01	%		>25.0	1.32	----	----	----
cerium	7440-45-1	ME-MS41	0.02	ppm		13.50	36.1	----	----	----
cesium	7440-46-2	ME-MS41	0.05	ppm		0.32	0.73	----	----	----

Analytical Results

Sub-Matrix: **Solid**
(Matrix: **Soil/Solid**)

Analyte	CAS Number	Method	LOR	Unit	Client sample ID	Bru 95-8_40.16 to 40.65	Bru 95-8_49.39 to 49.79	----	----	----
					Client sampling date / time	18-Nov-2020 13:30	18-Nov-2020 15:00	----	----	----
						VA20C2029-006	VA20C2029-007	--------	--------	--------
						Result	Result	----	----	----
Metals										
chromium	7440-47-3	ME-MS41	1	ppm		5	58	----	----	----
cobalt	7440-48-4	ME-MS41	0.1	ppm		1.5	20.6	----	----	----
copper	7440-50-8	ME-MS41	0.2	ppm		3.2	7.4	----	----	----
gallium	7440-55-3	ME-MS41	0.05	ppm		0.97	8.17	----	----	----
germanium	7440-56-4	ME-MS41	0.05	ppm		<0.05	0.07	----	----	----
gold	7440-57-5	ME-MS41	0.02	ppm		<0.02	<0.02	----	----	----
hafnium	7440-58-6	ME-MS41	0.02	ppm		0.12	0.34	----	----	----
indium	7440-74-6	ME-MS41	0.005	ppm		0.010	0.047	----	----	----
iron	7439-89-6	ME-MS41	0.01	%		0.58	5.56	----	----	----
lanthanum	7439-91-0	ME-MS41	0.2	ppm		5.2	15.0	----	----	----
lead	7439-92-1	ME-MS41	0.2	ppm		1.1	4.6	----	----	----
lithium	7439-93-2	ME-MS41	0.1	ppm		3.5	25.7	----	----	----
magnesium	7439-95-4	ME-MS41	0.01	%		1.49	0.41	----	----	----
manganese	7439-96-5	ME-MS41	5	ppm		321	206	----	----	----
mercury	7439-97-6	ME-MS41	0.01	ppm		0.01	0.03	----	----	----
molybdenum	7439-98-7	ME-MS41	0.05	ppm		0.13	0.54	----	----	----
nickel	7440-02-0	ME-MS41	0.2	ppm		3.1	25.8	----	----	----
niobium	7440-03-1	ME-MS41	0.05	ppm		0.08	0.21	----	----	----
phosphorus	7723-14-0	ME-MS41	10	ppm		870	580	----	----	----
potassium	7440-09-7	ME-MS41	0.01	%		0.11	0.49	----	----	----
rhenium	7440-15-5	ME-MS41	0.001	ppm		0.001	0.003	----	----	----
rubidium	7440-17-7	ME-MS41	0.1	ppm		5.4	22.7	----	----	----
scandium	7440-20-2	ME-MS41	0.1	ppm		1.1	6.1	----	----	----
selenium	7782-49-2	ME-MS41	0.2	ppm		0.7	0.3	----	----	----
silver	7440-22-4	ME-MS41	0.01	ppm		0.01	0.02	----	----	----
sodium	7440-23-5	ME-MS41	0.01	%		0.02	0.02	----	----	----
strontium	7440-24-6	ME-MS41	0.2	ppm		205	34.2	----	----	----
sulfur	7704-34-9	ME-MS41	0.01	%		0.05	0.69	----	----	----
tantalum	7440-25-7	ME-MS41	0.01	ppm		<0.01	<0.01	----	----	----
tellurium	13494-80-9	ME-MS41	0.01	ppm		<0.01	0.09	----	----	----
thallium	7440-28-0	ME-MS41	0.02	ppm		0.02	0.10	----	----	----

Analytical Results

Sub-Matrix: **Solid**
(Matrix: **Soil/Solid**)

Analyte	CAS Number	Method	LOR	Unit	Client sample ID	Bru 95-8_40.16 to 40.65	Bru 95-8_49.39 to 49.79	----	----	----
					Client sampling date / time	18-Nov-2020 13:30	18-Nov-2020 15:00	----	----	----
						VA20C2029-006	VA20C2029-007	--------	--------	--------
						Result	Result	----	----	----
Metals										
thorium	7440-29-1	ME-MS41	0.2	ppm		1.2	11.6	----	----	----
tin	7440-31-5	ME-MS41	0.2	ppm		<0.2	0.6	----	----	----
titanium	7440-32-6	ME-MS41	0.005	%		<0.005	0.036	----	----	----
tungsten	7440-33-7	ME-MS41	0.05	ppm		<0.05	0.12	----	----	----
uranium	7440-61-1	ME-MS41	0.05	ppm		0.73	0.40	----	----	----
vanadium	7440-62-2	ME-MS41	1	ppm		8	60	----	----	----
yttrium	7440-65-5	ME-MS41	0.05	ppm		3.16	8.90	----	----	----
zinc	7440-66-6	ME-MS41	2	ppm		6	38	----	----	----
zirconium	7440-67-7	ME-MS41	0.5	ppm		2.8	10.7	----	----	----
Leachable Metals										
aluminum, leachable	7429-90-5	E446	0.0050	mg/L		0.144	<0.0050	----	----	----
antimony, leachable	7440-36-0	E446	0.00010	mg/L		<0.00010	<0.00010	----	----	----
arsenic, leachable	7440-38-2	E446	0.0010	mg/L		<0.0010	<0.0010	----	----	----
barium, leachable	7440-39-3	E446	0.0010	mg/L		0.0128	0.0845	----	----	----
beryllium, leachable	7440-41-7	E446	0.00050	mg/L		<0.00050	<0.00050	----	----	----
bismuth, leachable	7440-69-9	E446	0.00050	mg/L		<0.00050	<0.00050	----	----	----
boron, leachable	7440-42-8	E446	0.010	mg/L		0.071	1.20	----	----	----
cadmium, leachable	7440-43-9	E446	0.000050	mg/L		<0.000050	<0.000050	----	----	----
calcium, leachable	7440-70-2	E446	0.10	mg/L		17.7	246	----	----	----
chromium, leachable	7440-47-3	E446	0.00050	mg/L		<0.00050	<0.00050	----	----	----
cobalt, leachable	7440-48-4	E446	0.00010	mg/L		<0.00010	0.00141	----	----	----
copper, leachable	7440-50-8	E446	0.0010	mg/L		<0.0010	<0.0010	----	----	----
iron, leachable	7439-89-6	E446	0.030	mg/L		<0.030	<0.030	----	----	----
lead, leachable	7439-92-1	E446	0.00010	mg/L		<0.00010	<0.00010	----	----	----
lithium, leachable	7439-93-2	E446	0.0050	mg/L		0.0069	0.0908	----	----	----
magnesium, leachable	7439-95-4	E446	0.050	mg/L		6.28	54.5	----	----	----
manganese, leachable	7439-96-5	E446	0.00050	mg/L		0.00050	0.0540	----	----	----
mercury, leachable	7439-97-6	E515	0.000050	mg/L		<0.000050	<0.000050	----	----	----
molybdenum, leachable	7439-98-7	E446	0.00010	mg/L		0.00077	0.00016	----	----	----
nickel, leachable	7440-02-0	E446	0.00050	mg/L		<0.00050	0.00162	----	----	----
phosphorus, leachable	7723-14-0	E446	0.30	mg/L		<0.30	<0.30	----	----	----

Analytical Results

Sub-Matrix: **Solid**
(Matrix: **Soil/Solid**)

Analyte	CAS Number	Method	LOR	Unit	Client sample ID	Bru 95-8_40.16 to 40.65	Bru 95-8_49.39 to 49.79	----	----	----
					Client sampling date / time	18-Nov-2020 13:30	18-Nov-2020 15:00	----	----	----
						VA20C2029-006	VA20C2029-007	--------	--------	--------
						Result	Result	----	----	----
Leachable Metals										
potassium, leachable	7440-09-7	E446	0.050	mg/L		8.03	63.9	----	----	----
selenium, leachable	7782-49-2	E446	0.00050	mg/L		0.0165	0.0118	----	----	----
silicon, leachable	7440-21-3	E446	0.050	mg/L		2.14	4.61	----	----	----
silver, leachable	7440-22-4	E446	0.000050	mg/L		<0.000050	<0.000050	----	----	----
sodium, leachable	7440-23-5	E446	0.050	mg/L		2.16	15.4	----	----	----
strontium, leachable	7440-24-6	E446	0.00050	mg/L		0.123	1.03	----	----	----
sulfur, leachable	----	E446	0.50	mg/L		13.2	288	----	----	----
thallium, leachable	7440-28-0	E446	0.00010	mg/L		<0.00010	0.00012	----	----	----
tin, leachable	7440-31-5	E446	0.00050	mg/L		<0.00050	<0.00050	----	----	----
titanium, leachable	7440-32-6	E446	0.010	mg/L		<0.010	<0.010	----	----	----
uranium, leachable	7440-61-1	E446	0.000010	mg/L		0.000456	0.000182	----	----	----
vanadium, leachable	7440-62-2	E446	0.0010	mg/L		0.0040	<0.0010	----	----	----
zinc, leachable	7440-66-6	E446	0.010	mg/L		<0.010	<0.010	----	----	----
hardness (as CaCO3), dissolved	----	E446	0.60	mg/L		70.0	839	----	----	----

Please refer to the General Comments section for an explanation of any qualifiers detected.

QUALITY CONTROL INTERPRETIVE REPORT

Work Order	: **VA20C2029**	Page	: 1 of 18
Amendment	: **2**		
Client	: **AECOM Canada Ltd.**	Laboratory	: Vancouver - Environmental
Contact	: Ryan Mills	Account Manager	: Dean Watt
Address	: 3292 Production Way Burnaby BC Canada V5A 4R4	Address	: 8081 Lougheed Highway Burnaby, British Columbia Canada V5A 1W9
Telephone	: ----	Telephone	: +1 604 253 4188
Project	: 60640258 - CanWhite Sands	Date Samples Received	: 27-Nov-2020 12:55
PO	: ----	Issue Date	: 16-Feb-2021 15:04
C-O-C number	: ----		
Sampler	: SD/RD		
Site	: ----		
Quote number	: Aecom 2020 Price List (BC/YT)		
No. of samples received	: 10		
No. of samples analysed	: 7		

This report is automatically generated by the ALS LIMS (Laboratory Information Management System) through evaluation of Quality Control (QC) results and other QA parameters associated with this submission, and is intended to facilitate rapid data validation by auditors or reviewers. The report highlights any exceptions and outliers to ALS Data Quality Objectives, provides holding time details and exceptions, summarizes QC sample frequencies, and lists applicable methodology references and summaries.

Key

Anonymous: Refers to samples which are not part of this work order, but which formed part of the QC process lot.
CAS Number: Chemical Abstracts Services number is a unique identifier assigned to discrete substances.
DQO: Data Quality Objective.
LOR: Limit of Reporting (detection limit).
RPD: Relative Percent Difference.

Workorder Comments

Summary of Outliers

Outliers : Quality Control Samples

- No Method Blank value outliers occur.
- No Duplicate outliers occur.
- No Laboratory Control Sample (LCS) outliers occur
- No Matrix Spike outliers occur.
- No Test sample Surrogate recovery outliers exist.

Outliers: Reference Material (RM) Samples

- No Reference Material (RM) Sample outliers occur.

Outliers : Analysis Holding Time Compliance (Breaches)

- Analysis Holding Time Outliers exist - please see following pages for full details.

Outliers : Frequency of Quality Control Samples

- No Quality Control Sample Frequency Outliers occur.

Analysis Holding Time Compliance

This report summarizes extraction / preparation and analysis times and compares each with ALS recommended holding times, which are selected to meet known provincial and /or federal requirements. In the absence of regulatory hold times, ALS establishes recommendations based on guidelines published by organizations such as CCME, US EPA, APHA Standard Methods, ASTM, or Environment Canada (where available). Dates and holding times reported below represent the first dates of extraction or analysis. If subsequent tests or dilutions exceeded holding times, qualifiers are added (refer to COA).

If samples are identified below as having been analyzed or extracted outside of recommended holding times, measurement uncertainties may be increased, and this should be taken into consideration when interpreting results.

Where actual sampling date is not provided on the chain of custody, the date of receipt with time at 15:00 is used for calculation purposes.

Where only the sample date without time is provided on the chain of custody, the sampling date at 15:00 is used for calculation purposes.

Matrix: **Soil/Solid**

Evaluation: × = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group / Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times Rec	Holding Times Actual	Eval	Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Acid Base Accounting : Acid Base Accounting (Modified Sobek)										
LDPE bag										
Bru 121-1_24.38 to 24.83	OA-VOL08m	11-Nov-2020	----	----	----		05-Jan-2021	----	----	
Acid Base Accounting : Acid Base Accounting (Modified Sobek)										
LDPE bag										
Bru 121-1_36.57 to 37.00	OA-VOL08m	11-Nov-2020	----	----	----		05-Jan-2021	----	----	
Acid Base Accounting : Acid Base Accounting (Modified Sobek)										
LDPE bag										
Bru 146_36.82 to 37.13	OA-VOL08m	11-Nov-2020	----	----	----		05-Jan-2021	----	----	
Acid Base Accounting : Acid Base Accounting (Modified Sobek)										
LDPE bag										
Bru 146_49-86 to 50.29	OA-VOL08m	11-Nov-2020	----	----	----		05-Jan-2021	----	----	
Acid Base Accounting : Acid Base Accounting (Modified Sobek)										
LDPE bag										
Bru 95-3	OA-VOL08m	19-Nov-2020	----	----	----		05-Jan-2021	----	----	
Acid Base Accounting : Acid Base Accounting (Modified Sobek)										
LDPE bag										
Bru 95-8_40.16 to 40.65	OA-VOL08m	18-Nov-2020	----	----	----		05-Jan-2021	----	----	
Acid Base Accounting : Acid Base Accounting (Modified Sobek)										
LDPE bag										
Bru 95-8_49.39 to 49.79	OA-VOL08m	18-Nov-2020	----	----	----		05-Jan-2021	----	----	

Matrix: **Soil/Solid**

Evaluation: × = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group / Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times Rec	Holding Times Actual	Eval	Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Acid Base Accounting : IC by coulometer										
LDPE bag Bru 121-1_24.38 to 24.83	C-GAS05	11-Nov-2020	----	----	----		05-Jan-2021	----	----	
Acid Base Accounting : IC by coulometer										
LDPE bag Bru 121-1_36.57 to 37.00	C-GAS05	11-Nov-2020	----	----	----		05-Jan-2021	----	----	
Acid Base Accounting : IC by coulometer										
LDPE bag Bru 146_36.82 to 37.13	C-GAS05	11-Nov-2020	----	----	----		05-Jan-2021	----	----	
Acid Base Accounting : IC by coulometer										
LDPE bag Bru 146_49-86 to 50.29	C-GAS05	11-Nov-2020	----	----	----		05-Jan-2021	----	----	
Acid Base Accounting : IC by coulometer										
LDPE bag Bru 95-3	C-GAS05	19-Nov-2020	----	----	----		05-Jan-2021	----	----	
Acid Base Accounting : IC by coulometer										
LDPE bag Bru 95-8_40.16 to 40.65	C-GAS05	18-Nov-2020	----	----	----		05-Jan-2021	----	----	
Acid Base Accounting : IC by coulometer										
LDPE bag Bru 95-8_49.39 to 49.79	C-GAS05	18-Nov-2020	----	----	----		05-Jan-2021	----	----	
Acid Base Accounting : Received Sample Weight										
LDPE bag Bru 95-3	WEI-21	19-Nov-2020	----	----	----		05-Jan-2021	180 days	47 days	✓
Acid Base Accounting : Received Sample Weight										
LDPE bag Bru 95-8_40.16 to 40.65	WEI-21	18-Nov-2020	----	----	----		05-Jan-2021	180 days	48 days	✓

Matrix: **Soil/Solid**

Evaluation: × = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group / Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times Rec	Holding Times Actual	Eval	Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Acid Base Accounting : Received Sample Weight										
LDPE bag Bru 95-8_49.39 to 49.79	WEI-21	18-Nov-2020	----	----	----		05-Jan-2021	180 days	48 days	✓
Acid Base Accounting : Received Sample Weight										
LDPE bag Bru 121-1_24.38 to 24.83	WEI-21	11-Nov-2020	----	----	----		05-Jan-2021	180 days	55 days	✓
Acid Base Accounting : Received Sample Weight										
LDPE bag Bru 121-1_36.57 to 37.00	WEI-21	11-Nov-2020	----	----	----		05-Jan-2021	180 days	55 days	✓
Acid Base Accounting : Received Sample Weight										
LDPE bag Bru 146_36.82 to 37.13	WEI-21	11-Nov-2020	----	----	----		05-Jan-2021	180 days	55 days	✓
Acid Base Accounting : Received Sample Weight										
LDPE bag Bru 146_49-86 to 50.29	WEI-21	11-Nov-2020	----	----	----		05-Jan-2021	180 days	55 days	✓
Acid Base Accounting : Residual sulfur by LECO and IR										
LDPE bag Bru 95-3	S-IR04B	19-Nov-2020	----	----	----		05-Jan-2021	180 days	47 days	✓
Acid Base Accounting : Residual sulfur by LECO and IR										
LDPE bag Bru 95-8_40.16 to 40.65	S-IR04B	18-Nov-2020	----	----	----		05-Jan-2021	180 days	48 days	✓
Acid Base Accounting : Residual sulfur by LECO and IR										
LDPE bag Bru 95-8_49.39 to 49.79	S-IR04B	18-Nov-2020	----	----	----		05-Jan-2021	180 days	48 days	✓
Acid Base Accounting : Residual sulfur by LECO and IR										
LDPE bag Bru 121-1_24.38 to 24.83	S-IR04B	11-Nov-2020	----	----	----		05-Jan-2021	180 days	55 days	✓

Matrix: **Soil/Solid**

Evaluation: × = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group / Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times Rec	Holding Times Actual	Eval	Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Acid Base Accounting : Residual sulfur by LECO and IR										
LDPE bag Bru 121-1_36.57 to 37.00	S-IR04B	11-Nov-2020	----	----	----		05-Jan-2021	180 days	55 days	✓
Acid Base Accounting : Residual sulfur by LECO and IR										
LDPE bag Bru 146_36.82 to 37.13	S-IR04B	11-Nov-2020	----	----	----		05-Jan-2021	180 days	55 days	✓
Acid Base Accounting : Residual sulfur by LECO and IR										
LDPE bag Bru 146_49-86 to 50.29	S-IR04B	11-Nov-2020	----	----	----		05-Jan-2021	180 days	55 days	✓
Acid Base Accounting : Saturated Paste pH										
LDPE bag Bru 121-1_24.38 to 24.83	OA-ELE07	11-Nov-2020	----	----	----		05-Jan-2021	----	----	
Acid Base Accounting : Saturated Paste pH										
LDPE bag Bru 121-1_36.57 to 37.00	OA-ELE07	11-Nov-2020	----	----	----		05-Jan-2021	----	----	
Acid Base Accounting : Saturated Paste pH										
LDPE bag Bru 146_36.82 to 37.13	OA-ELE07	11-Nov-2020	----	----	----		05-Jan-2021	----	----	
Acid Base Accounting : Saturated Paste pH										
LDPE bag Bru 146_49-86 to 50.29	OA-ELE07	11-Nov-2020	----	----	----		05-Jan-2021	----	----	
Acid Base Accounting : Saturated Paste pH										
LDPE bag Bru 95-3	OA-ELE07	19-Nov-2020	----	----	----		05-Jan-2021	----	----	
Acid Base Accounting : Saturated Paste pH										
LDPE bag Bru 95-8_40.16 to 40.65	OA-ELE07	18-Nov-2020	----	----	----		05-Jan-2021	----	----	

Matrix: **Soil/Solid**

Evaluation: × = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group / Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times Rec	Holding Times Actual	Eval	Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Acid Base Accounting : Saturated Paste pH										
LDPE bag Bru 95-8_49.39 to 49.79	OA-ELE07	18-Nov-2020	----	----	----		05-Jan-2021	----	----	
Acid Base Accounting : Sulfates by HCl Leaching and Gravimetry with Sulfide S Calc.										
LDPE bag Bru 121-1_24.38 to 24.83	S-GRA06A	11-Nov-2020	----	----	----		05-Jan-2021	----	----	
Acid Base Accounting : Sulfates by HCl Leaching and Gravimetry with Sulfide S Calc.										
LDPE bag Bru 121-1_36.57 to 37.00	S-GRA06A	11-Nov-2020	----	----	----		05-Jan-2021	----	----	
Acid Base Accounting : Sulfates by HCl Leaching and Gravimetry with Sulfide S Calc.										
LDPE bag Bru 146_36.82 to 37.13	S-GRA06A	11-Nov-2020	----	----	----		05-Jan-2021	----	----	
Acid Base Accounting : Sulfates by HCl Leaching and Gravimetry with Sulfide S Calc.										
LDPE bag Bru 146_49-86 to 50.29	S-GRA06A	11-Nov-2020	----	----	----		05-Jan-2021	----	----	
Acid Base Accounting : Sulfates by HCl Leaching and Gravimetry with Sulfide S Calc.										
LDPE bag Bru 95-3	S-GRA06A	19-Nov-2020	----	----	----		05-Jan-2021	----	----	
Acid Base Accounting : Sulfates by HCl Leaching and Gravimetry with Sulfide S Calc.										
LDPE bag Bru 95-8_40.16 to 40.65	S-GRA06A	18-Nov-2020	----	----	----		05-Jan-2021	----	----	
Acid Base Accounting : Sulfates by HCl Leaching and Gravimetry with Sulfide S Calc.										
LDPE bag Bru 95-8_49.39 to 49.79	S-GRA06A	18-Nov-2020	----	----	----		05-Jan-2021	----	----	
Acid Base Accounting : Sulfates by NaCO3 Leaching and Gravimetry with Sulfide S Calc.										
LDPE bag Bru 121-1_24.38 to 24.83	S-GRA06	11-Nov-2020	----	----	----		05-Jan-2021	----	----	

Matrix: **Soil/Solid**

Evaluation: × = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group / Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times Rec	Holding Times Actual	Eval	Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Acid Base Accounting : Sulfates by NaCO3 Leaching and Gravimetry with Sulfide S Calc.										
LDPE bag Bru 121-1_36.57 to 37.00	S-GRA06	11-Nov-2020	----	----	----		05-Jan-2021	----	----	
Acid Base Accounting : Sulfates by NaCO3 Leaching and Gravimetry with Sulfide S Calc.										
LDPE bag Bru 146_36.82 to 37.13	S-GRA06	11-Nov-2020	----	----	----		05-Jan-2021	----	----	
Acid Base Accounting : Sulfates by NaCO3 Leaching and Gravimetry with Sulfide S Calc.										
LDPE bag Bru 146_49-86 to 50.29	S-GRA06	11-Nov-2020	----	----	----		05-Jan-2021	----	----	
Acid Base Accounting : Sulfates by NaCO3 Leaching and Gravimetry with Sulfide S Calc.										
LDPE bag Bru 95-3	S-GRA06	19-Nov-2020	----	----	----		05-Jan-2021	----	----	
Acid Base Accounting : Sulfates by NaCO3 Leaching and Gravimetry with Sulfide S Calc.										
LDPE bag Bru 95-8_40.16 to 40.65	S-GRA06	18-Nov-2020	----	----	----		05-Jan-2021	----	----	
Acid Base Accounting : Sulfates by NaCO3 Leaching and Gravimetry with Sulfide S Calc.										
LDPE bag Bru 95-8_49.39 to 49.79	S-GRA06	18-Nov-2020	----	----	----		05-Jan-2021	----	----	
Acid Base Accounting : Sulfide S (as S) Calc. (Total-S - SO4-S)										
LDPE bag Bru 95-3	S-CAL06	19-Nov-2020	----	----	----		05-Jan-2021	28 days	47 days	× EHT
Acid Base Accounting : Sulfide S (as S) Calc. (Total-S - SO4-S)										
LDPE bag Bru 95-8_40.16 to 40.65	S-CAL06	18-Nov-2020	----	----	----		05-Jan-2021	28 days	48 days	× EHT
Acid Base Accounting : Sulfide S (as S) Calc. (Total-S - SO4-S)										
LDPE bag Bru 95-8_49.39 to 49.79	S-CAL06	18-Nov-2020	----	----	----		05-Jan-2021	28 days	48 days	× EHT

Matrix: **Soil/Solid**

Evaluation: × = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group / Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times Rec	Holding Times Actual	Eval	Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Acid Base Accounting : Sulfide S (as S) Calc. (Total-S - SO4-S)										
LDPE bag Bru 121-1_24.38 to 24.83	S-CAL06	11-Nov-2020	----	----	----		05-Jan-2021	28 days	55 days	× EHT
Acid Base Accounting : Sulfide S (as S) Calc. (Total-S - SO4-S)										
LDPE bag Bru 121-1_36.57 to 37.00	S-CAL06	11-Nov-2020	----	----	----		05-Jan-2021	28 days	55 days	× EHT
Acid Base Accounting : Sulfide S (as S) Calc. (Total-S - SO4-S)										
LDPE bag Bru 146_36.82 to 37.13	S-CAL06	11-Nov-2020	----	----	----		05-Jan-2021	28 days	55 days	× EHT
Acid Base Accounting : Sulfide S (as S) Calc. (Total-S - SO4-S)										
LDPE bag Bru 146_49-86 to 50.29	S-CAL06	11-Nov-2020	----	----	----		05-Jan-2021	28 days	55 days	× EHT
Acid Base Accounting : Total C by Leco and IR										
LDPE bag Bru 121-1_24.38 to 24.83	C-IR07	11-Nov-2020	----	----	----		05-Jan-2021	----	----	
Acid Base Accounting : Total C by Leco and IR										
LDPE bag Bru 121-1_36.57 to 37.00	C-IR07	11-Nov-2020	----	----	----		05-Jan-2021	----	----	
Acid Base Accounting : Total C by Leco and IR										
LDPE bag Bru 146_36.82 to 37.13	C-IR07	11-Nov-2020	----	----	----		05-Jan-2021	----	----	
Acid Base Accounting : Total C by Leco and IR										
LDPE bag Bru 146_49-86 to 50.29	C-IR07	11-Nov-2020	----	----	----		05-Jan-2021	----	----	
Acid Base Accounting : Total C by Leco and IR										
LDPE bag Bru 95-3	C-IR07	19-Nov-2020	----	----	----		05-Jan-2021	----	----	

Matrix: **Soil/Solid**

Evaluation: × = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group / Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times Rec	Holding Times Actual	Eval	Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Acid Base Accounting : Total C by Leco and IR										
LDPE bag Bru 95-8_40.16 to 40.65	C-IR07	18-Nov-2020	----	----	----		05-Jan-2021	----	----	
Acid Base Accounting : Total C by Leco and IR										
LDPE bag Bru 95-8_49.39 to 49.79	C-IR07	18-Nov-2020	----	----	----		05-Jan-2021	----	----	
Acid Base Accounting : Total S by combustion										
LDPE bag Bru 121-1_24.38 to 24.83	S-IR08	11-Nov-2020	----	----	----		05-Jan-2021	----	----	
Acid Base Accounting : Total S by combustion										
LDPE bag Bru 121-1_36.57 to 37.00	S-IR08	11-Nov-2020	----	----	----		05-Jan-2021	----	----	
Acid Base Accounting : Total S by combustion										
LDPE bag Bru 146_36.82 to 37.13	S-IR08	11-Nov-2020	----	----	----		05-Jan-2021	----	----	
Acid Base Accounting : Total S by combustion										
LDPE bag Bru 146_49-86 to 50.29	S-IR08	11-Nov-2020	----	----	----		05-Jan-2021	----	----	
Acid Base Accounting : Total S by combustion										
LDPE bag Bru 95-3	S-IR08	19-Nov-2020	----	----	----		05-Jan-2021	----	----	
Acid Base Accounting : Total S by combustion										
LDPE bag Bru 95-8_40.16 to 40.65	S-IR08	18-Nov-2020	----	----	----		05-Jan-2021	----	----	
Acid Base Accounting : Total S by combustion										
LDPE bag Bru 95-8_49.39 to 49.79	S-IR08	18-Nov-2020	----	----	----		05-Jan-2021	----	----	

Matrix: **Soil/Solid**

Evaluation: × = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group / Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times Rec	Holding Times Actual	Eval	Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Leachable Metals : Mercury by CVAAS (Shakeflask, 3:1 Ratio with Water)										
Glass soil jar/Teflon lined cap										
Bru 95-3	E515	19-Nov-2020	15-Dec-2020	28 days	26 days	✓	17-Dec-2020	1 days	1 days	✓
Leachable Metals : Mercury by CVAAS (Shakeflask, 3:1 Ratio with Water)										
Glass soil jar/Teflon lined cap										
Bru 95-8_40.16 to 40.65	E515	18-Nov-2020	17-Dec-2020	28 days	29 days	× EHT	19-Dec-2020	-2 days	1 days	×
Leachable Metals : Mercury by CVAAS (Shakeflask, 3:1 Ratio with Water)										
Glass soil jar/Teflon lined cap										
Bru 95-8_49.39 to 49.79	E515	18-Nov-2020	17-Dec-2020	28 days	29 days	× EHT	19-Dec-2020	-2 days	1 days	×
Leachable Metals : Mercury by CVAAS (Shakeflask, 3:1 Ratio with Water)										
Glass soil jar/Teflon lined cap										
Bru 121-1_24.38 to 24.83	E515	11-Nov-2020	17-Dec-2020	28 days	36 days	× EHT	19-Dec-2020	-9 days	1 days	×
Leachable Metals : Mercury by CVAAS (Shakeflask, 3:1 Ratio with Water)										
Glass soil jar/Teflon lined cap										
Bru 121-1_36.57 to 37.00	E515	11-Nov-2020	17-Dec-2020	28 days	36 days	× EHT	19-Dec-2020	-9 days	1 days	×
Leachable Metals : Mercury by CVAAS (Shakeflask, 3:1 Ratio with Water)										
Glass soil jar/Teflon lined cap										
Bru 146_36.82 to 37.13	E515	11-Nov-2020	17-Dec-2020	28 days	36 days	× EHT	19-Dec-2020	-9 days	1 days	×
Leachable Metals : Mercury by CVAAS (Shakeflask, 3:1 Ratio with Water)										
Glass soil jar/Teflon lined cap										
Bru 146_49-86 to 50.29	E515	11-Nov-2020	17-Dec-2020	28 days	36 days	× EHT	19-Dec-2020	-9 days	1 days	×
Leachable Metals : Metals by CRC ICPMS (Shakeflask, 3:1 Ratio with Water)										
Glass soil jar/Teflon lined cap										
Bru 95-3	E446	19-Nov-2020	15-Dec-2020	180 days	26 days	✓	16-Dec-2020	153 days	1 days	✓
Leachable Metals : Metals by CRC ICPMS (Shakeflask, 3:1 Ratio with Water)										
Glass soil jar/Teflon lined cap										
Bru 95-8_40.16 to 40.65	E446	18-Nov-2020	17-Dec-2020	180 days	29 days	✓	20-Dec-2020	150 days	2 days	✓

Matrix: **Soil/Solid**

Evaluation: × = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group / Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times Rec	Holding Times Actual	Eval	Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Leachable Metals : Metals by CRC ICPMS (Shakeflask, 3:1 Ratio with Water)										
Glass soil jar/Teflon lined cap										
Bru 95-8_49.39 to 49.79	E446	18-Nov-2020	17-Dec-2020	180 days	29 days	✓	20-Dec-2020	150 days	2 days	✓
Leachable Metals : Metals by CRC ICPMS (Shakeflask, 3:1 Ratio with Water)										
Glass soil jar/Teflon lined cap										
Bru 121-1_24.38 to 24.83	E446	11-Nov-2020	17-Dec-2020	180 days	36 days	✓	20-Dec-2020	143 days	2 days	✓
Leachable Metals : Metals by CRC ICPMS (Shakeflask, 3:1 Ratio with Water)										
Glass soil jar/Teflon lined cap										
Bru 121-1_36.57 to 37.00	E446	11-Nov-2020	17-Dec-2020	180 days	36 days	✓	20-Dec-2020	143 days	2 days	✓
Leachable Metals : Metals by CRC ICPMS (Shakeflask, 3:1 Ratio with Water)										
Glass soil jar/Teflon lined cap										
Bru 146_36.82 to 37.13	E446	11-Nov-2020	17-Dec-2020	180 days	36 days	✓	20-Dec-2020	143 days	2 days	✓
Leachable Metals : Metals by CRC ICPMS (Shakeflask, 3:1 Ratio with Water)										
Glass soil jar/Teflon lined cap										
Bru 146_49-86 to 50.29	E446	11-Nov-2020	17-Dec-2020	180 days	36 days	✓	20-Dec-2020	143 days	2 days	✓
Metals : 51 Elements by Aqua Regia digestion and ICP-AES/MS										
LDPE bag										
Bru 121-1_24.38 to 24.83	ME-MS41	11-Nov-2020	----	----	----		05-Jan-2021	----	----	
Metals : 51 Elements by Aqua Regia digestion and ICP-AES/MS										
LDPE bag										
Bru 121-1_36.57 to 37.00	ME-MS41	11-Nov-2020	----	----	----		05-Jan-2021	----	----	
Metals : 51 Elements by Aqua Regia digestion and ICP-AES/MS										
LDPE bag										
Bru 146_36.82 to 37.13	ME-MS41	11-Nov-2020	----	----	----		05-Jan-2021	----	----	
Metals : 51 Elements by Aqua Regia digestion and ICP-AES/MS										
LDPE bag										
Bru 146_49-86 to 50.29	ME-MS41	11-Nov-2020	----	----	----		05-Jan-2021	----	----	

Matrix: **Soil/Solid**

Evaluation: × = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group / Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times Rec	Holding Times Actual	Eval	Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Metals : 51 Elements by Aqua Regia digestion and ICP-AES/MS										
LDPE bag										
Bru 95-3	ME-MS41	19-Nov-2020	----	----	----		05-Jan-2021	----	----	
Metals : 51 Elements by Aqua Regia digestion and ICP-AES/MS										
LDPE bag										
Bru 95-8_40.16 to 40.65	ME-MS41	18-Nov-2020	----	----	----		05-Jan-2021	----	----	
Metals : 51 Elements by Aqua Regia digestion and ICP-AES/MS										
LDPE bag										
Bru 95-8_49.39 to 49.79	ME-MS41	18-Nov-2020	----	----	----		05-Jan-2021	----	----	
Physical Tests : Moisture Content by Gravimetry										
Glass soil jar/Teflon lined cap										
Bru 121-1_24.38 to 24.83	E144	11-Nov-2020	----	----	----		17-Dec-2020	----	----	
Physical Tests : Moisture Content by Gravimetry										
Glass soil jar/Teflon lined cap										
Bru 121-1_36.57 to 37.00	E144	11-Nov-2020	----	----	----		17-Dec-2020	----	----	
Physical Tests : Moisture Content by Gravimetry										
Glass soil jar/Teflon lined cap										
Bru 146_36.82 to 37.13	E144	11-Nov-2020	----	----	----		17-Dec-2020	----	----	
Physical Tests : Moisture Content by Gravimetry										
Glass soil jar/Teflon lined cap										
Bru 146_49-86 to 50.29	E144	11-Nov-2020	----	----	----		17-Dec-2020	----	----	
Physical Tests : Moisture Content by Gravimetry										
Glass soil jar/Teflon lined cap										
Bru 95-3	E144	19-Nov-2020	----	----	----		15-Dec-2020	----	----	
Physical Tests : Moisture Content by Gravimetry										
Glass soil jar/Teflon lined cap										
Bru 95-8_40.16 to 40.65	E144	18-Nov-2020	----	----	----		17-Dec-2020	----	----	

Matrix: **Soil/Solid**

Evaluation: × = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group / Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times Rec	Holding Times Actual	Eval	Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Physical Tests : Moisture Content by Gravimetry										
Glass soil jar/Teflon lined cap Bru 95-8_49.39 to 49.79	E144	18-Nov-2020	----	----	----		17-Dec-2020	----	----	
Physical Tests : pH by Electrode (Shakeflask, 3:1 Ratio with Water)										
Glass soil jar/Teflon lined cap Bru 95-3	E116	19-Nov-2020	15-Dec-2020	30 days	26 days	✓	16-Dec-2020	3 days	1 days	✓
Physical Tests : pH by Electrode (Shakeflask, 3:1 Ratio with Water)										
Glass soil jar/Teflon lined cap Bru 95-8_40.16 to 40.65	E116	18-Nov-2020	17-Dec-2020	30 days	29 days	✓	19-Dec-2020	0 days	1 days	× EHT
Physical Tests : pH by Electrode (Shakeflask, 3:1 Ratio with Water)										
Glass soil jar/Teflon lined cap Bru 95-8_49.39 to 49.79	E116	18-Nov-2020	17-Dec-2020	30 days	29 days	✓	19-Dec-2020	0 days	1 days	× EHT
Physical Tests : pH by Electrode (Shakeflask, 3:1 Ratio with Water)										
Glass soil jar/Teflon lined cap Bru 121-1_24.38 to 24.83	E116	11-Nov-2020	17-Dec-2020	30 days	36 days	× EHT	19-Dec-2020	-7 days	1 days	×
Physical Tests : pH by Electrode (Shakeflask, 3:1 Ratio with Water)										
Glass soil jar/Teflon lined cap Bru 121-1_36.57 to 37.00	E116	11-Nov-2020	17-Dec-2020	30 days	36 days	× EHT	19-Dec-2020	-7 days	1 days	×
Physical Tests : pH by Electrode (Shakeflask, 3:1 Ratio with Water)										
Glass soil jar/Teflon lined cap Bru 146_36.82 to 37.13	E116	11-Nov-2020	17-Dec-2020	30 days	36 days	× EHT	19-Dec-2020	-7 days	1 days	×
Physical Tests : pH by Electrode (Shakeflask, 3:1 Ratio with Water)										
Glass soil jar/Teflon lined cap Bru 146_49-86 to 50.29	E116	11-Nov-2020	17-Dec-2020	30 days	36 days	× EHT	19-Dec-2020	-7 days	1 days	×

Legend & Qualifier Definitions

EHT: Exceeded ALS recommended hold time prior to analysis.

Rec. HT: ALS recommended hold time (see units).

Quality Control Parameter Frequency Compliance

The following report summarizes the frequency of laboratory QC samples analyzed within the analytical batches (QC lots) in which the submitted samples were processed. The actual frequency should be greater than or equal to the expected frequency.

Matrix: **Soil/Solid**

Evaluation: × = *QC frequency outside specification*; ✓ = *QC frequency within specification.*

Quality Control Sample Type			Count		Frequency (%)		
Analytical Methods	*Method*	*QC Lot #*	*QC*	*Regular*	*Actual*	*Expected*	*Evaluation*
Laboratory Duplicates (DUP)							
Mercury by CVAAS (Shakeflask, 3:1 Ratio with Water)	E515	132215	1	10	10.0	5.0	✓
Metals by CRC ICPMS (Shakeflask, 3:1 Ratio with Water)	E446	132217	1	10	10.0	5.0	✓
Moisture Content by Gravimetry	E144	130855	2	10	20.0	5.0	✓
pH by Electrode (Shakeflask, 3:1 Ratio with Water)	E116	132216	1	10	10.0	5.0	✓
Laboratory Control Samples (LCS)							
Mercury by CVAAS (Shakeflask, 3:1 Ratio with Water)	E515	132215	2	10	20.0	5.0	✓
Metals by CRC ICPMS (Shakeflask, 3:1 Ratio with Water)	E446	132217	2	10	20.0	5.0	✓
Moisture Content by Gravimetry	E144	130855	2	10	20.0	5.0	✓
pH by Electrode (Shakeflask, 3:1 Ratio with Water)	E116	132216	2	10	20.0	5.0	✓
Method Blanks (MB)							
Mercury by CVAAS (Shakeflask, 3:1 Ratio with Water)	E515	132215	2	10	20.0	5.0	✓
Metals by CRC ICPMS (Shakeflask, 3:1 Ratio with Water)	E446	132217	2	10	20.0	5.0	✓
Moisture Content by Gravimetry	E144	130855	2	10	20.0	5.0	✓
Matrix Spikes (MS)							
Mercury by CVAAS (Shakeflask, 3:1 Ratio with Water)	E515	132215	1	10	10.0	5.0	✓
Metals by CRC ICPMS (Shakeflask, 3:1 Ratio with Water)	E446	132217	1	10	10.0	5.0	✓

Methodology References and Summaries

The analytical methods used by ALS are developed using internationally recognized reference methods (where available), such as those published by US EPA, APHA Standard Methods, ASTM, ISO, Environment Canada, BC MOE, and Ontario MOE. Reference methods may incorporate modifications to improve performance (indicated by "mod").

Analytical Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
IC by coulometer	C-GAS05 ALS Minerals (Vancouver) - 2103 Dollarton Hwy North Vancouver British Columbia Canada V7H 0A7	Soil/Solid	ALS Minerals C-GAS05	Determine Total Inorganic Carbon (TIC) by using diluted perchloric acid to react with metal carbonate and yield carbon dioxide. Concentration of CO_2 is determined by coulometer.
Total C by Leco and IR	C-IR07 ALS Minerals (Vancouver) - 2103 Dollarton Hwy North Vancouver British Columbia Canada V7H 0A7	Soil/Solid	ALS Minerals C-IR07	A sample is heated to approximately 1350°C in an induction furnace with oxygen stream. Carbon dioxide released from the sample are measured by an IR detection system (Leco analyzer).
pH by Electrode (Shakeflask, 3:1 Ratio with Water)	E116 Vancouver - Environmental	Soil/Solid	MEND (mod)/APHA 4500-H (mod)	pH is determined by potentiometric measurement with a pH electrode, and is conducted at ambient laboratory temperature (normally 20 ± 5°C) on an extract from a soil sample that has been added in a 3:1 ratio of deionized water to soil, then leached and the extract filtered prior to analysis. The pH is then measured by a standard pH probe. .
Moisture Content by Gravimetry	E144 Vancouver - Environmental	Soil/Solid	CCME PHC in Soil - Tier 1	Moisture is measured gravimetrically by drying the sample at 105°C. Moisture content is calculated as the weight loss (due to water) divided by the wet weight of the sample, expressed as a percentage.
Metals by CRC ICPMS (Shakeflask, 3:1 Ratio with Water)	E446 Vancouver - Environmental	Soil/Solid	BC MINISTRY OF ENERGY AND MINES/EPA 6020B (mod)	A sample is extracted with water at a 3:1 liquid to solid ratio for 24 hours, then filtered through a 0.45 micron membrane filter. Analysis is by Collision/Reaction Cell ICPMS. This extraction is an empirical procedure with pre-defined characteristics. Recovery of some elements (Ag, Bi, and Sn) by this method can be variable due to the neutral pH of the extraction fluid, and therefore the LCS DQOs has been established at 50-130% for these elements.
Mercury by CVAAS (Shakeflask, 3:1 Ratio with Water)	E515 Vancouver - Environmental	Soil/Solid	BC MINISTRY OF ENERGY AND MINES/EPA 245.7	A sample is extracted with water at a 3:1 liquid to solid ratio for 24 hours, then filtered through a 0.45 micron membrane filter. Analysis is by CVAAS. This extraction is an empirical procedure with pre-defined characteristics. Recovery of mercury can be variable due to the neutral pH of the extraction fluid, and therefore the LCS DQO has been established at 50-130%.

Analytical Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
51 Elements by Aqua Regia digestion and ICP-AES/MS	ME-MS41 ALS Minerals (Vancouver) - 2103 Dollarton Hwy North Vancouver British Columbia Canada V7H 0A7	Soil/Solid	ALS Minerals ME-MS41	A prepared sample is digested with aqua regia in a graphite heating block. After cooling, the resulting solution is diluted to with deionized water, mixed and analyzed by ICP-AES. Samples are then analyzed by ICP-MS for the remaining suite of elements.
Saturated Paste pH	OA-ELE07 ALS Minerals (Vancouver) - 2103 Dollarton Hwy North Vancouver British Columbia Canada V7H 0A7	Soil/Solid	ALS Minerals OA-ELE07	Sample mix with water in 1:1 ratio to make a paste, pH is then determined.
Acid Base Accounting (Modified Sobek)	OA-VOL08m ALS Minerals (Vancouver) - 2103 Dollarton Hwy North Vancouver British Columbia Canada V7H 0A7	Soil/Solid	ALS Minerals OA-VOL08m	Determine the acid generation power of a sample as tonne $CaCO_3$ per kilo-tonne using modified Sobek method
Sulfide S (as S) Calc. (Total-S - SO4-S)	S-CAL06 ALS Minerals (Vancouver) - 2103 Dollarton Hwy North Vancouver British Columbia Canada V7H 0A7	Soil/Solid	ALS Minerals S-CAL06	Sulfide Sulfur (as S) is calculated by subtracting the Carbonate Leachable Sulfate Sulfur (as S) from the Total Sulfur (as S) obtained from combustion.
Sulfates by NaCO3 Leaching and Gravimetry with Sulfide S Calc.	S-GRA06 ALS Minerals (Vancouver) - 2103 Dollarton Hwy North Vancouver British Columbia Canada V7H 0A7	Soil/Solid	ALS Minerals S-GRA06	A preppared sample is heated with diluted Na□CO□ and then filtered. The sulfate in the filtrate is precipitated with $BaCl_2$ in a dilute HCl. The $BaSO_4$ precipitate is filtered, ignited, weighed and the Sulfate Sulfur is determined (as S). Sulfide Sulfur (as S) is calculated by Total Sulfur from combustion minus Sulfate Sulfur from the Na□CO□ leach.

Analytical Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
Sulfates by HCl Leaching and Gravimetry with Sulfide S Calc.	S-GRA06A ALS Minerals (Vancouver) - 2103 Dollarton Hwy North Vancouver British Columbia Canada V7H 0A7	Soil/Solid	ALS Minerals S-GRA06A	A prepared sample is heated with dilute HCl and then filtered. The sulfate in the filtrate is precipitated with $BaCl_2$ in a dilute HCl. The $BaSO_4$ precipitate is filtered, ignited, weighed and the Sulfate Sulfur is determined (as S). Sulfide sulfur is calculated by Total Sulfur from combustion minus Sulfate Sulfur from the HCl leach.
Residual sulfur by LECO and IR	S-IR04B ALS Minerals (Vancouver) - 2103 Dollarton Hwy North Vancouver British Columbia Canada V7H 0A7	Soil/Solid	ASL Minerals S-IR04B	Residual sulfur determined by oxidation, induction furnace and infrared spectroscopy following hot nitric leach.
Total S by combustion	S-IR08 ALS Minerals (Vancouver) - 2103 Dollarton Hwy North Vancouver British Columbia Canada V7H 0A7	Soil/Solid	ALS Minerals S-IR08	A prepared sample is heated to approximately 1350°C in an induction furnace with oxygen stream. Sulfur dioxide released from the sample are measured by IR (Leco analyzer) and the Total Sulfur result is provided.
Received Sample Weight	WEI-21 ALS Minerals (Vancouver) - 2103 Dollarton Hwy North Vancouver British Columbia Canada V7H 0A7	Soil/Solid	ALS Minerals WEI-21	Weigh out sample received.

Preparation Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
Shakeflask Leachate Preparation (3:1 Ratio with Water)	EP446 Vancouver - Environmental	Soil/Solid	BC MINISTRY OF ENERGY AND MINES	A sample is extracted with water at a 3:1 liquid to solids ratio for 24 hours, then filtered through a 0.45 micron membrane filter.

QUALITY CONTROL REPORT

Work Order	: **VA20C2029**	Page	: 1 of 12
Amendment	: **2**		

Client	: AECOM Canada Ltd.	Laboratory	: Vancouver - Environmental
Contact	: Ryan Mills	Account Manager	: Dean Watt
Address	: 3292 Production Way Burnaby BC Canada V5A 4R4	Address	: 8081 Lougheed Highway Burnaby, British Columbia Canada V5A 1W9
Telephone	: ----	Telephone	: +1 604 253 4188
Project	: 60640258 - CanWhite Sands	Date Samples Received	: 27-Nov-2020 12:55
PO	: ----	Date Analysis Commenced	: 15-Dec-2020
C-O-C number	: ----	Issue Date	: 16-Feb-2021 15:04
Sampler	: SD/RD		
Site	: ----		
Quote number	: Aecom 2020 Price List (BC/YT)		
No. of samples received	: 10		
No. of samples analysed	: 7		

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. This document shall not be reproduced, except in full.

This Quality Control Report contains the following information:

- Laboratory Duplicate (DUP) Report; Relative Percentage Difference (RPD) and Acceptance Limits
- Matrix Spike (MS) Report; Recovery and Acceptance Limits
- Reference Material (RM) Report; Recovery and Acceptance Limits
- Method Blank (MB) Report; Recovery and Acceptance Limits
- Laboratory Control Sample (LCS) Report; Recovery and Acceptance Limits

Signatories

This document has been electronically signed by the authorized signatories below. Electronic signing is conducted in accordance with US FDA 21 CFR Part 11.

Signatories	*Position*	*Laboratory Department*
Dee Lee	Analyst	Metals, Burnaby, British Columbia
Erin Gatdula	Account Manager Assistant	Internal Subcontracting, North Vancouver, British Columbia
Janice Leung	Supervisor - Organics Extractions	Organics, Burnaby, British Columbia
Kim Jensen	Department Manager - Metals	Metals, Burnaby, British Columbia
Lindsay Gung	Supervisor - Water Chemistry	Inorganics, Burnaby, British Columbia

General Comments

The ALS Quality Control (QC) report is optionally provided to ALS clients upon request. ALS test methods include comprehensive QC checks with every analysis to ensure our high standards of quality are met. Each QC result has a known or expected target value, which is compared against predetermined Data Quality Objectives (DQOs) to provide confidence in the accuracy of associated test results. This report contains detailed results for all QC results applicable to this sample submission. Please refer to the ALS Quality Control Interpretation report (QCI) for applicable method references and methodology summaries.

Key :

Anonymous = Refers to samples which are not part of this work order, but which formed part of the QC process lot.
CAS Number = Chemical Abstracts Services number is a unique identifier assigned to discrete substances.
DQO = Data Quality Objective.
LOR = Limit of Reporting (detection limit).
RPD = Relative Percentage Difference
# = Indicates a QC result that did not meet the ALS DQO.

Workorder Comments

Laboratory Duplicate (DUP) Report

A Laboratory Duplicate (DUP) is a randomly selected intralaboratory replicate sample. Laboratory Duplicates provide information regarding method precision and sample heterogeneity. ALS DQOs for Laboratory Duplicates are expressed as test-specific limits for Relative Percent Difference (RPD), or as an absolute difference limit of 2 times the LOR for low concentration duplicates within ~ 4-10 times the LOR (cut-off is test specific).

Sub-Matrix: **Soil/Solid**

					Laboratory Duplicate (DUP) Report						
Laboratory sample ID	*Client sample ID*	*Analyte*	*CAS Number*	*Method*	*LOR*	*Unit*	*Original Result*	*Duplicate Result*	*RPD(%) or Difference*	*Duplicate Limits*	*Qualifier*
Physical Tests (QC Lot: 130855)											
VA20C2029-001	Bru 95-3	moisture	----	E144	0.25	%	0.61	0.74	0.12	Diff <2x LOR	----
Physical Tests (QC Lot: 132183)											
VA20C2029-002	Bru 121-1_24.38 to 24.83	moisture	----	E144	0.25	%	<0.25	<0.25	0	Diff <2x LOR	----
Physical Tests (QC Lot: 132216)											
VA20C3552-001	Anonymous	pH	----	E116	0.10	pH units	8.43	8.36	0.834%	5%	----
Leachable Metals (QC Lot: 132215)											
VA20C3552-001	Anonymous	mercury, leachable	7439-97-6	E515	0.000050	mg/L	<0.000050	<0.000050	0	Diff <2x LOR	----
Leachable Metals (QC Lot: 132217)											
VA20C3552-001	Anonymous	aluminum, leachable	7429-90-5	E446	0.0050	mg/L	0.0476	0.0503	5.51%	30%	----
		antimony, leachable	7440-36-0	E446	0.00010	mg/L	0.00062	0.00057	0.00005	Diff <2x LOR	----
		arsenic, leachable	7440-38-2	E446	0.0010	mg/L	0.0044	0.0043	0.0001	Diff <2x LOR	----
		barium, leachable	7440-39-3	E446	0.0010	mg/L	0.0205	0.0188	8.71%	30%	----
		beryllium, leachable	7440-41-7	E446	0.00050	mg/L	<0.00050	<0.00050	0	Diff <2x LOR	----
		bismuth, leachable	7440-69-9	E446	0.00050	mg/L	<0.00050	<0.00050	0	Diff <2x LOR	----
		boron, leachable	7440-42-8	E446	0.010	mg/L	0.013	0.012	0.0002	Diff <2x LOR	----
		cadmium, leachable	7440-43-9	E446	0.000050	mg/L	<0.000050	<0.000050	0	Diff <2x LOR	----
		calcium, leachable	7440-70-2	E446	0.10	mg/L	9.97	9.46	5.27%	30%	----
		chromium, leachable	7440-47-3	E446	0.00050	mg/L	<0.00050	<0.00050	0	Diff <2x LOR	----
		cobalt, leachable	7440-48-4	E446	0.00010	mg/L	<0.00010	<0.00010	0	Diff <2x LOR	----
		copper, leachable	7440-50-8	E446	0.0010	mg/L	<0.0010	<0.0010	0	Diff <2x LOR	----
		iron, leachable	7439-89-6	E446	0.030	mg/L	<0.030	<0.030	0	Diff <2x LOR	----
		lead, leachable	7439-92-1	E446	0.00010	mg/L	<0.00010	<0.00010	0	Diff <2x LOR	----
		lithium, leachable	7439-93-2	E446	0.0050	mg/L	<0.0050	<0.0050	0	Diff <2x LOR	----
		magnesium, leachable	7439-95-4	E446	0.050	mg/L	10.2	9.76	4.72%	30%	----
		manganese, leachable	7439-96-5	E446	0.00050	mg/L	0.00147	0.00145	0.00002	Diff <2x LOR	----
		molybdenum, leachable	7439-98-7	E446	0.00010	mg/L	0.0131	0.0127	3.24%	30%	----
		nickel, leachable	7440-02-0	E446	0.00050	mg/L	<0.00050	<0.00050	0	Diff <2x LOR	----
		phosphorus, leachable	7723-14-0	E446	0.30	mg/L	<0.30	<0.30	0	Diff <2x LOR	----
		potassium, leachable	7440-09-7	E446	0.050	mg/L	5.18	5.05	2.56%	30%	----
		selenium, leachable	7782-49-2	E446	0.00050	mg/L	<0.00050	0.00056	0.00006	Diff <2x LOR	----
		silicon, leachable	7440-21-3	E446	0.050	mg/L	7.84	7.76	0.978%	40%	----

Sub-Matrix: **Soil/Solid**

					Laboratory Duplicate (DUP) Report						
Laboratory sample ID	*Client sample ID*	*Analyte*	*CAS Number*	*Method*	*LOR*	*Unit*	*Original Result*	*Duplicate Result*	*RPD(%) or Difference*	*Duplicate Limits*	*Qualifier*
Leachable Metals (QC Lot: 132217) - continued											
VA20C3552-001	Anonymous	silver, leachable	7440-22-4	E446	0.000050	mg/L	<0.000050	<0.000050	0	Diff <2x LOR	----
		sodium, leachable	7440-23-5	E446	0.050	mg/L	8.65	8.65	0.0116%	30%	----
		strontium, leachable	7440-24-6	E446	0.00050	mg/L	0.0802	0.0738	8.27%	30%	----
		sulfur, leachable	----	E446	0.50	mg/L	13.2	12.6	5.02%	30%	----
		thallium, leachable	7440-28-0	E446	0.00010	mg/L	<0.00010	<0.00010	0	Diff <2x LOR	----
		tin, leachable	7440-31-5	E446	0.00050	mg/L	<0.00050	<0.00050	0	Diff <2x LOR	----
		titanium, leachable	7440-32-6	E446	0.010	mg/L	<0.010	<0.010	0	Diff <2x LOR	----
		uranium, leachable	7440-61-1	E446	0.000010	mg/L	0.000209	0.000197	5.85%	30%	----
		vanadium, leachable	7440-62-2	E446	0.0010	mg/L	0.0117	0.0116	1.14%	30%	----
		zinc, leachable	7440-66-6	E446	0.010	mg/L	<0.010	<0.010	0	Diff <2x LOR	----

Method Blank (MB) Report

A Method Blank is an analyte-free matrix that undergoes sample processing identical to that carried out for test samples. Method Blank results are used to monitor and control for potential contamination from the laboratory environment and reagents. For most tests, the DQO for Method Blanks is for the result to be < LOR.

Sub-Matrix: **Soil/Solid**

Analyte	CAS Number	Method	LOR	Unit	Result	Qualifier
Physical Tests (QCLot: 130855)						
moisture	----	E144	0.25	%	<0.25	----
Physical Tests (QCLot: 132183)						
moisture	----	E144	0.25	%	<0.25	----
Leachable Metals (QCLot: 130889)						
mercury, leachable	7439-97-6	E515	0.00005	mg/L	<0.000050	----
Leachable Metals (QCLot: 130891)						
aluminum, leachable	7429-90-5	E446	0.005	mg/L	<0.0050	----
antimony, leachable	7440-36-0	E446	0.0001	mg/L	<0.00010	----
arsenic, leachable	7440-38-2	E446	0.001	mg/L	<0.0010	----
barium, leachable	7440-39-3	E446	0.001	mg/L	<0.0010	----
beryllium, leachable	7440-41-7	E446	0.0005	mg/L	<0.00050	----
bismuth, leachable	7440-69-9	E446	0.0005	mg/L	<0.00050	----
boron, leachable	7440-42-8	E446	0.01	mg/L	<0.010	----
cadmium, leachable	7440-43-9	E446	0.00005	mg/L	<0.000050	----
calcium, leachable	7440-70-2	E446	0.1	mg/L	<0.10	----
chromium, leachable	7440-47-3	E446	0.0005	mg/L	<0.00050	----
cobalt, leachable	7440-48-4	E446	0.0001	mg/L	<0.00010	----
copper, leachable	7440-50-8	E446	0.001	mg/L	<0.0010	----
iron, leachable	7439-89-6	E446	0.03	mg/L	<0.030	----
lead, leachable	7439-92-1	E446	0.0001	mg/L	<0.00010	----
lithium, leachable	7439-93-2	E446	0.005	mg/L	<0.0050	----
magnesium, leachable	7439-95-4	E446	0.05	mg/L	<0.050	----
manganese, leachable	7439-96-5	E446	0.0005	mg/L	<0.00050	----
molybdenum, leachable	7439-98-7	E446	0.0001	mg/L	<0.00010	----
nickel, leachable	7440-02-0	E446	0.0005	mg/L	<0.00050	----
phosphorus, leachable	7723-14-0	E446	0.3	mg/L	<0.30	----
potassium, leachable	7440-09-7	E446	0.05	mg/L	<0.050	----
selenium, leachable	7782-49-2	E446	0.0005	mg/L	<0.00050	----
silicon, leachable	7440-21-3	E446	0.05	mg/L	<0.050	----
silver, leachable	7440-22-4	E446	0.00005	mg/L	<0.000050	----
sodium, leachable	7440-23-5	E446	0.05	mg/L	<0.050	----
strontium, leachable	7440-24-6	E446	0.0005	mg/L	<0.00050	----
sulfur, leachable	----	E446	0.5	mg/L	<0.50	----

Sub-Matrix: **Soil/Solid**

Analyte	CAS Number	Method	LOR	Unit	Result	Qualifier
Leachable Metals (QCLot: 130891) - continued						
thallium, leachable	7440-28-0	E446	0.0001	mg/L	<0.00010	----
tin, leachable	7440-31-5	E446	0.0005	mg/L	<0.00050	----
titanium, leachable	7440-32-6	E446	0.01	mg/L	<0.010	----
uranium, leachable	7440-61-1	E446	0.00001	mg/L	<0.000010	----
vanadium, leachable	7440-62-2	E446	0.001	mg/L	<0.0010	----
zinc, leachable	7440-66-6	E446	0.01	mg/L	<0.010	----
Leachable Metals (QCLot: 132215)						
mercury, leachable	7439-97-6	E515	0.00005	mg/L	<0.000050	----
Leachable Metals (QCLot: 132217)						
aluminum, leachable	7429-90-5	E446	0.005	mg/L	<0.0050	----
antimony, leachable	7440-36-0	E446	0.0001	mg/L	<0.00010	----
arsenic, leachable	7440-38-2	E446	0.001	mg/L	<0.0010	----
barium, leachable	7440-39-3	E446	0.001	mg/L	<0.0010	----
beryllium, leachable	7440-41-7	E446	0.0005	mg/L	<0.00050	----
bismuth, leachable	7440-69-9	E446	0.0005	mg/L	<0.00050	----
boron, leachable	7440-42-8	E446	0.01	mg/L	<0.010	----
cadmium, leachable	7440-43-9	E446	0.00005	mg/L	<0.000050	----
calcium, leachable	7440-70-2	E446	0.1	mg/L	<0.10	----
chromium, leachable	7440-47-3	E446	0.0005	mg/L	<0.00050	----
cobalt, leachable	7440-48-4	E446	0.0001	mg/L	<0.00010	----
copper, leachable	7440-50-8	E446	0.001	mg/L	<0.0010	----
iron, leachable	7439-89-6	E446	0.03	mg/L	<0.030	----
lead, leachable	7439-92-1	E446	0.0001	mg/L	<0.00010	----
lithium, leachable	7439-93-2	E446	0.005	mg/L	<0.0050	----
magnesium, leachable	7439-95-4	E446	0.05	mg/L	<0.050	----
manganese, leachable	7439-96-5	E446	0.0005	mg/L	<0.00050	----
molybdenum, leachable	7439-98-7	E446	0.0001	mg/L	<0.00010	----
nickel, leachable	7440-02-0	E446	0.0005	mg/L	<0.00050	----
phosphorus, leachable	7723-14-0	E446	0.3	mg/L	<0.30	----
potassium, leachable	7440-09-7	E446	0.05	mg/L	<0.050	----
selenium, leachable	7782-49-2	E446	0.0005	mg/L	<0.00050	----
silicon, leachable	7440-21-3	E446	0.05	mg/L	<0.050	----
silver, leachable	7440-22-4	E446	0.00005	mg/L	<0.000050	----
sodium, leachable	7440-23-5	E446	0.05	mg/L	<0.050	----
strontium, leachable	7440-24-6	E446	0.0005	mg/L	<0.00050	----
sulfur, leachable	----	E446	0.5	mg/L	<0.50	----

Sub-Matrix: **Soil/Solid**

Analyte	CAS Number	Method	LOR	Unit	Result	Qualifier
Leachable Metals (QCLot: 132217) - continued						
thallium, leachable	7440-28-0	E446	0.0001	mg/L	<0.00010	----
tin, leachable	7440-31-5	E446	0.0005	mg/L	<0.00050	----
titanium, leachable	7440-32-6	E446	0.01	mg/L	<0.010	----
uranium, leachable	7440-61-1	E446	0.00001	mg/L	<0.000010	----
vanadium, leachable	7440-62-2	E446	0.001	mg/L	<0.0010	----
zinc, leachable	7440-66-6	E446	0.01	mg/L	<0.010	----

Laboratory Control Sample (LCS) Report

A Laboratory Control Sample (LCS) is an analyte-free matrix that has been fortified (spiked) with test analytes at known concentration and processed in an identical manner to test samples. LCS results are expressed as percent recovery, and are used to monitor and control test method accuracy and precision, independent of test sample matrix.

Sub-Matrix: **Soil/Solid**

					Laboratory Control Sample (LCS) Report				
					Spike	Recovery (%)	Recovery Limits (%)		
Analyte	CAS Number	Method	LOR	Unit	Concentration	LCS	Low	High	Qualifier
Physical Tests (QCLot: 130855)									
moisture	----	E144	0.25	%	50 %	101	90.0	110	----
Physical Tests (QCLot: 130890)									
pH	----	E116	----	pH units	7.04 pH units	99.4	95.0	105	----
Physical Tests (QCLot: 132183)									
moisture	----	E144	0.25	%	50 %	101	90.0	110	----
Physical Tests (QCLot: 132216)									
pH	----	E116	----	pH units	7.04 pH units	99.4	95.0	105	----
Leachable Metals (QCLot: 130889)									
mercury, leachable	7439-97-6	E515	0.00005	mg/L	0.0005 mg/L	78.0	50.0	130	----
Leachable Metals (QCLot: 130891)									
aluminum, leachable	7429-90-5	E446	0.005	mg/L	0.2 mg/L	98.0	70.0	130	----
antimony, leachable	7440-36-0	E446	0.0001	mg/L	0.1 mg/L	99.2	70.0	130	----
arsenic, leachable	7440-38-2	E446	0.001	mg/L	0.1 mg/L	96.6	70.0	130	----
barium, leachable	7440-39-3	E446	0.001	mg/L	0.025 mg/L	97.6	70.0	130	----
beryllium, leachable	7440-41-7	E446	0.0005	mg/L	0.01 mg/L	95.0	70.0	130	----
bismuth, leachable	7440-69-9	E446	0.0005	mg/L	0.1 mg/L	92.8	70.0	130	----
boron, leachable	7440-42-8	E446	0.01	mg/L	0.1 mg/L	96.8	70.0	130	----
cadmium, leachable	7440-43-9	E446	0.00005	mg/L	0.01 mg/L	95.6	70.0	130	----
calcium, leachable	7440-70-2	E446	0.1	mg/L	5 mg/L	97.3	70.0	130	----
chromium, leachable	7440-47-3	E446	0.0005	mg/L	0.025 mg/L	95.4	70.0	130	----
cobalt, leachable	7440-48-4	E446	0.0001	mg/L	0.025 mg/L	94.8	70.0	130	----
copper, leachable	7440-50-8	E446	0.001	mg/L	0.025 mg/L	94.8	70.0	130	----
iron, leachable	7439-89-6	E446	0.03	mg/L	0.1 mg/L	90.1	70.0	130	----
lead, leachable	7439-92-1	E446	0.0001	mg/L	0.05 mg/L	93.5	70.0	130	----
lithium, leachable	7439-93-2	E446	0.005	mg/L	0.025 mg/L	94.2	70.0	130	----
magnesium, leachable	7439-95-4	E446	0.05	mg/L	5 mg/L	97.1	70.0	130	----
manganese, leachable	7439-96-5	E446	0.0005	mg/L	0.025 mg/L	96.8	70.0	130	----
molybdenum, leachable	7439-98-7	E446	0.0001	mg/L	0.025 mg/L	98.7	70.0	130	----
nickel, leachable	7440-02-0	E446	0.0005	mg/L	0.05 mg/L	95.4	70.0	130	----
phosphorus, leachable	7723-14-0	E446	0.3	mg/L	1 mg/L	104	70.0	130	----
potassium, leachable	7440-09-7	E446	0.05	mg/L	5 mg/L	103	70.0	130	----
selenium, leachable	7782-49-2	E446	0.0005	mg/L	0.1 mg/L	97.6	70.0	130	----
silicon, leachable	7440-21-3	E446	0.05	mg/L	1 mg/L	91.8	70.0	130	----

Sub-Matrix: **Soil/Solid**

					Laboratory Control Sample (LCS) Report				
					Spike	Recovery (%)	Recovery Limits (%)		
Analyte	CAS Number	Method	LOR	Unit	Concentration	LCS	Low	High	Qualifier
Leachable Metals (QCLot: 130891) - continued									
silver, leachable	7440-22-4	E446	0.00005	mg/L	0.01 mg/L	94.2	70.0	130	----
sodium, leachable	7440-23-5	E446	0.05	mg/L	5 mg/L	97.5	70.0	130	----
strontium, leachable	7440-24-6	E446	0.0005	mg/L	0.025 mg/L	102	70.0	130	----
sulfur, leachable	----	E446	0.5	mg/L	5 mg/L	95.6	70.0	130	----
thallium, leachable	7440-28-0	E446	0.0001	mg/L	0.11 mg/L	88.8	70.0	130	----
tin, leachable	7440-31-5	E446	0.0005	mg/L	0.05 mg/L	95.0	70.0	130	----
titanium, leachable	7440-32-6	E446	0.01	mg/L	0.025 mg/L	95.5	70.0	130	----
uranium, leachable	7440-61-1	E446	0.00001	mg/L	0.0005 mg/L	96.7	70.0	130	----
vanadium, leachable	7440-62-2	E446	0.001	mg/L	0.05 mg/L	96.5	70.0	130	----
zinc, leachable	7440-66-6	E446	0.01	mg/L	0.05 mg/L	91.7	70.0	130	----
Leachable Metals (QCLot: 132215)									
mercury, leachable	7439-97-6	E515	0.00005	mg/L	0.0005 mg/L	82.8	50.0	130	----
Leachable Metals (QCLot: 132217)									
aluminum, leachable	7429-90-5	E446	0.005	mg/L	0.2 mg/L	105	70.0	130	----
antimony, leachable	7440-36-0	E446	0.0001	mg/L	0.1 mg/L	113	70.0	130	----
arsenic, leachable	7440-38-2	E446	0.001	mg/L	0.1 mg/L	99.7	70.0	130	----
barium, leachable	7440-39-3	E446	0.001	mg/L	0.025 mg/L	103	70.0	130	----
beryllium, leachable	7440-41-7	E446	0.0005	mg/L	0.01 mg/L	94.1	70.0	130	----
bismuth, leachable	7440-69-9	E446	0.0005	mg/L	0.1 mg/L	97.9	70.0	130	----
boron, leachable	7440-42-8	E446	0.01	mg/L	0.1 mg/L	89.1	70.0	130	----
cadmium, leachable	7440-43-9	E446	0.00005	mg/L	0.01 mg/L	98.0	70.0	130	----
calcium, leachable	7440-70-2	E446	0.1	mg/L	5 mg/L	98.0	70.0	130	----
chromium, leachable	7440-47-3	E446	0.0005	mg/L	0.025 mg/L	102	70.0	130	----
cobalt, leachable	7440-48-4	E446	0.0001	mg/L	0.025 mg/L	100	70.0	130	----
copper, leachable	7440-50-8	E446	0.001	mg/L	0.025 mg/L	98.4	70.0	130	----
iron, leachable	7439-89-6	E446	0.03	mg/L	0.1 mg/L	93.8	70.0	130	----
lead, leachable	7439-92-1	E446	0.0001	mg/L	0.05 mg/L	102	70.0	130	----
lithium, leachable	7439-93-2	E446	0.005	mg/L	0.025 mg/L	90.8	70.0	130	----
magnesium, leachable	7439-95-4	E446	0.05	mg/L	5 mg/L	109	70.0	130	----
manganese, leachable	7439-96-5	E446	0.0005	mg/L	0.025 mg/L	96.8	70.0	130	----
molybdenum, leachable	7439-98-7	E446	0.0001	mg/L	0.025 mg/L	105	70.0	130	----
nickel, leachable	7440-02-0	E446	0.0005	mg/L	0.05 mg/L	99.2	70.0	130	----
phosphorus, leachable	7723-14-0	E446	0.3	mg/L	1 mg/L	113	70.0	130	----
potassium, leachable	7440-09-7	E446	0.05	mg/L	5 mg/L	106	70.0	130	----
selenium, leachable	7782-49-2	E446	0.0005	mg/L	0.1 mg/L	98.8	70.0	130	----
silicon, leachable	7440-21-3	E446	0.05	mg/L	1 mg/L	94.2	70.0	130	----
silver, leachable	7440-22-4	E446	0.00005	mg/L	0.01 mg/L	103	70.0	130	----

Sub-Matrix: **Soil/Solid**

					Laboratory Control Sample (LCS) Report				
					Spike	Recovery (%)	Recovery Limits (%)		
Analyte	CAS Number	Method	LOR	Unit	Concentration	LCS	Low	High	Qualifier
Leachable Metals (QCLot: 132217) - continued									
sodium, leachable	7440-23-5	E446	0.05	mg/L	5 mg/L	107	70.0	130	----
strontium, leachable	7440-24-6	E446	0.0005	mg/L	0.025 mg/L	102	70.0	130	----
sulfur, leachable	----	E446	0.5	mg/L	5 mg/L	103	70.0	130	----
thallium, leachable	7440-28-0	E446	0.0001	mg/L	0.11 mg/L	96.1	70.0	130	----
tin, leachable	7440-31-5	E446	0.0005	mg/L	0.05 mg/L	102	70.0	130	----
titanium, leachable	7440-32-6	E446	0.01	mg/L	0.025 mg/L	100	70.0	130	----
uranium, leachable	7440-61-1	E446	0.00001	mg/L	0.0005 mg/L	91.8	70.0	130	----
vanadium, leachable	7440-62-2	E446	0.001	mg/L	0.05 mg/L	102	70.0	130	----
zinc, leachable	7440-66-6	E446	0.01	mg/L	0.05 mg/L	102	70.0	130	----

Matrix Spike (MS) Report

A Matrix Spike (MS) is a randomly selected intra-laboratory replicate sample that has been fortified (spiked) with test analytes at known concentration, and processed in an identical manner to test samples. Matrix Spikes provide information regarding analyte recovery and potential matrix effects. MS DQO exceedances due to sample matrix may sometimes be unavoidable; in such cases, test results for the associated sample (or similar samples) may be subject to bias. ND – Recovery not determined, background level >= 1x spike level.

Sub-Matrix: **Soil/Solid**

					Matrix Spike (MS) Report					
					Spike		Recovery (%)	Recovery Limits (%)		
Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	Concentration	Target	MS	Low	High	Qualifier
Leachable Metals (QCLot: 132215)										
VA20C3552-002	Anonymous	mercury, leachable	7439-97-6	E515	0.000096 mg/L	0.0001 mg/L	96.5	70.0	130	----
Leachable Metals (QCLot: 132217)										
VA20C3552-002	Anonymous	aluminum, leachable	7429-90-5	E446	0.210 mg/L	0.2 mg/L	105	70.0	130	----
		antimony, leachable	7440-36-0	E446	0.0210 mg/L	0.02 mg/L	105	70.0	130	----
		arsenic, leachable	7440-38-2	E446	0.0198 mg/L	0.02 mg/L	98.9	70.0	130	----
		barium, leachable	7440-39-3	E446	ND mg/L	0.02 mg/L	ND	70.0	130	----
		beryllium, leachable	7440-41-7	E446	0.0413 mg/L	0.04 mg/L	103	70.0	130	----
		bismuth, leachable	7440-69-9	E446	0.00912 mg/L	0.01 mg/L	91.2	70.0	130	----
		boron, leachable	7440-42-8	E446	0.087 mg/L	0.1 mg/L	87.1	70.0	130	----
		cadmium, leachable	7440-43-9	E446	0.00400 mg/L	0.004 mg/L	100.0	70.0	130	----
		calcium, leachable	7440-70-2	E446	ND mg/L	4 mg/L	ND	70.0	130	----
		chromium, leachable	7440-47-3	E446	0.0395 mg/L	0.04 mg/L	98.8	70.0	130	----
		cobalt, leachable	7440-48-4	E446	0.0196 mg/L	0.02 mg/L	97.8	70.0	130	----
		copper, leachable	7440-50-8	E446	0.0190 mg/L	0.02 mg/L	95.3	70.0	130	----
		iron, leachable	7439-89-6	E446	1.97 mg/L	2 mg/L	98.6	70.0	130	----
		lead, leachable	7439-92-1	E446	0.0193 mg/L	0.02 mg/L	96.5	70.0	130	----
		lithium, leachable	7439-93-2	E446	0.106 mg/L	0.1 mg/L	106	70.0	130	----
		magnesium, leachable	7439-95-4	E446	ND mg/L	1 mg/L	ND	70.0	130	----
		manganese, leachable	7439-96-5	E446	0.0192 mg/L	0.02 mg/L	96.0	70.0	130	----
		molybdenum, leachable	7439-98-7	E446	0.0213 mg/L	0.02 mg/L	106	70.0	130	----
		nickel, leachable	7440-02-0	E446	0.0381 mg/L	0.04 mg/L	95.4	70.0	130	----
		phosphorus, leachable	7723-14-0	E446	11.5 mg/L	10 mg/L	115	70.0	130	----
		potassium, leachable	7440-09-7	E446	ND mg/L	4 mg/L	ND	70.0	130	----
		selenium, leachable	7782-49-2	E446	0.0419 mg/L	0.04 mg/L	105	70.0	130	----
		silicon, leachable	7440-21-3	E446	9.37 mg/L	10 mg/L	93.7	70.0	130	----
		silver, leachable	7440-22-4	E446	0.00399 mg/L	0.004 mg/L	99.7	70.0	130	----
		sodium, leachable	7440-23-5	E446	ND mg/L	2 mg/L	ND	70.0	130	----
		strontium, leachable	7440-24-6	E446	ND mg/L	0.02 mg/L	ND	70.0	130	----
		sulfur, leachable	----	E446	ND mg/L	20 mg/L	ND	70.0	130	----
		thallium, leachable	7440-28-0	E446	0.00372 mg/L	0.004 mg/L	93.1	70.0	130	----
		tin, leachable	7440-31-5	E446	0.0202 mg/L	0.02 mg/L	101	70.0	130	----

Sub-Matrix: **Soil/Solid**

					Matrix Spike (MS) Report					
					Spike		Recovery (%)	Recovery Limits (%)		
Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	Concentration	Target	MS	Low	High	Qualifier
Leachable Metals (QCLot: 132217) - continued										
VA20C3552-002	Anonymous	titanium, leachable	7440-32-6	E446	0.040 mg/L	0.04 mg/L	100	70.0	130	----
		uranium, leachable	7440-61-1	E446	0.00380 mg/L	0.004 mg/L	95.0	70.0	130	----
		vanadium, leachable	7440-62-2	E446	0.102 mg/L	0.1 mg/L	102	70.0	130	----
		zinc, leachable	7440-66-6	E446	0.394 mg/L	0.4 mg/L	98.4	70.0	130	----

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To: **ALS ENVIRONMENTAL**
100 - 8081 LOUGHEED HWY.
BURNABY BC V5A 1W9

Finalized Date: 6-JAN-2021
Account: APN

CERTIFICATE VA20282171

Project: VA20C2029

This report is for 7 Drill Core samples submitted to our lab in Vancouver, BC, Canada on 30-NOV-2020.

The following have access to data associated with this certificate:

ALSE VANCOUVER WEBTRIEVE DEAN WATT	ALSEV DATASUBLET	SOFTWARE DEVELOPMENT GROUP

SAMPLE PREPARATION

ALS CODE	DESCRIPTION
WEI-21	Received Sample Weight
LOG-21	Sample logging - ClientBarCode
CRU-31	Fine crushing - 70% <2mm
SPL-21	Split sample - riffle splitter
PUL-31	Pulverize up to 250g 85% <75 um
SPL-21X	Addnl Crush Split w No Analysis
SND-01	Send samples to external laboratory
SPL-34X	Pulp Split - For send out
PUL-QC	Pulverizing QC Test

ANALYTICAL PROCEDURES

ALS CODE	DESCRIPTION	
OA-VOL08m	Modified NP	
S-IR08	Total Sulphur (IR Spectroscopy)	LECO
OA-ELE07	Paste pH	
S-GRA06	Sulfate Sulfur-carbonate leach	WST-SEQ
S-CAL06	Sufide Sulfur (calculated)	LECO
C-GAS05	Inorganic Carbon (CO2)	
S-GRA06a	Sulfate Sulfur (HCl leachable)	WST-SEQ
ME-MS41	Ultra Trace Aqua Regia ICP-MS	
C-IR07	Total Carbon (IR Spectroscopy)	LECO
S-CAL04c	Non extractable sulfur	
S-IR04b	Residual Sulfur IR - Nitric Leach	LECO

This is the Final Report and supersedes any preliminary report with this certificate number. Results apply to samples as submitted. All pages of this report have been checked and approved for release.

***** See Appendix Page for comments regarding this certificate *****

Signature: [redacted]
Saa Traxler, General Manager, North Vancouver

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To: **ALS ENVIRONMENTAL**
100 - 8081 LOUGHEED HWY.
BURNABY BC V5A 1W9

Finalized Date: 6-JAN-2021
Account: APN

Project: VA20C2029

CERTIFICATE OF ANALYSIS VA20282171

Sample Description	Method Analyte Units LOD	WEI-21 Recvd Wt. kg 0.02	OA-VOL08m MPA tCaCO3/1Kt 0.3	OA-VOL08m FIZZ RAT Unity 1	OA-VOL08m NNP tCaCO3/1Kt 1	OA-VOL08m NP tCaCO3/1Kt 1	OA-ELE07 pH Unity 0.1	OA-VOL08m Ratio (N Unity 0.01	S-IR08 S % 0.01	S-GRA06 S % 0.01	S-GRA06a S % 0.01	S-CAL06 S % 0.01	C-GAS05 C % 0.05	C-GAS05 CO2 % 0.2	ME-MS41 Ag ppm 0.01	ME-MS41 Al % 0.01
VA20C2029-001		6.00	0.6	1	5	6	8.5	9.60	0.02	<0.01	<0.01	0.02	0.09	0.3	0.01	0.10
VA20C2029-002		3.36	2.2	4	866	868	8.0	396.80	0.07	<0.01	<0.01	0.07	10.80	39.6	<0.01	0.15
VA20C2029-003		2.50	7.2	1	3	10	7.4	1.39	0.23	0.06	<0.01	0.17	0.07	0.3	0.40	1.56
VA20C2029-004		3.18	1.3	4	819	820	8.0	656.00	0.04	<0.01	<0.01	0.04	10.80	39.6	0.01	0.16
VA20C2029-005		2.24	2.2	1	3	5	7.8	2.29	0.07	0.01	<0.01	0.06	0.05	0.2	0.10	1.70
VA20C2029-006		3.66	1.6	4	819	821	8.3	525.44	0.05	<0.01	<0.01	0.05	10.65	39.0	0.01	0.20
VA20C2029-007		2.54	20.0	2	5	25	7.5	1.25	0.64	0.12	<0.01	0.52	0.36	1.3	0.02	1.49

***** See Appendix Page for comments regarding this certificate *****

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To: **ALS ENVIRONMENTAL**
100 - 8081 LOUGHEED HWY.
BURNABY BC V5A 1W9

Finalized Date: 6-JAN-2021
Account: APN

Project: VA20C2029

CERTIFICATE OF ANALYSIS VA20282171

Sample Description	Method	ME-MS41	ME-MS41	ME-MS41	ME-MS41	ME-MS41	ME-MS41	ME-MS41	ME-MS41	ME-MS41	ME-MS41	ME-MS41	ME-MS41	ME-MS41	ME-MS41	ME-MS41
	Analyte	As	Au	B	Ba	Be	Bi	Ca	Cd	Ce	Co	Cr	Cs	Cu	Fe	Ga
	Units	ppm	ppm	ppm	ppm	ppm	ppm	%	ppm	ppm	ppm	ppm	ppm	ppm	%	ppm
	LOD	0.1	0.02	10	10	0.05	0.01	0.01	0.01	0.02	0.1	1	0.05	0.2	0.01	0.05
VA20C2029-001		0.9	<0.02	<10	<10	<0.05	0.01	0.21	<0.01	2.19	0.4	2	0.05	6.6	0.22	0.27
VA20C2029-002		1.7	<0.02	10	10	0.18	0.02	>25.0	<0.01	9.41	1.7	4	0.25	3.3	0.49	0.75
VA20C2029-003		30.4	<0.02	70	30	1.01	0.18	0.81	<0.01	54.6	16.9	24	1.05	24.9	1.59	6.65
VA20C2029-004		0.8	<0.02	10	10	0.18	0.02	>25.0	<0.01	8.86	1.6	4	0.21	5.7	0.47	0.73
VA20C2029-005		13.3	<0.02	70	40	1.26	0.10	0.43	<0.01	28.7	22.0	42	1.04	24.8	2.23	7.80
VA20C2029-006		0.7	<0.02	10	10	0.24	0.02	>25.0	<0.01	13.50	1.5	5	0.32	3.2	0.58	0.97
VA20C2029-007		24.2	<0.02	50	30	0.92	0.12	1.32	<0.01	36.1	20.6	58	0.73	7.4	5.56	8.17

***** See Appendix Page for comments regarding this certificate *****

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To: **ALS ENVIRONMENTAL**
100 - 8081 LOUGHEED HWY.
BURNABY BC V5A 1W9

Finalized Date: 6-JAN-2021
Account: APN

Project: VA20C2029

CERTIFICATE OF ANALYSIS VA20282171

Sample Description	Method	ME-MS41	ME-MS41	ME-MS41	ME-MS41	ME-MS41	ME-MS41	ME-MS41	ME-MS41	ME-MS41	ME-MS41	ME-MS41	ME-MS41	ME-MS41	ME-MS41	ME-MS41
	Analyte	Ge	Hf	Hg	In	K	La	Li	Mg	Mn	Mo	Na	Nb	Ni	P	Pb
	Units	ppm	ppm	ppm	ppm	%	ppm	ppm	%	ppm	ppm	%	ppm	ppm	ppm	ppm
	LOD	0.05	0.02	0.01	0.005	0.01	0.2	0.1	0.01	5	0.05	0.01	0.05	0.2	10	0.2
VA20C2029-001		<0.05	0.15	<0.01	<0.005	0.02	1.0	1.9	0.04	24	0.06	0.01	0.06	1.2	30	1.1
VA20C2029-002		<0.05	0.09	0.01	0.011	0.08	4.1	2.8	1.53	305	0.07	0.02	0.07	3.0	820	1.3
VA20C2029-003		0.13	0.08	0.25	0.016	0.88	18.7	17.6	0.39	101	0.22	0.03	<0.05	38.0	2180	13.1
VA20C2029-004		<0.05	0.09	0.01	0.008	0.09	3.8	2.5	1.30	265	0.14	0.02	0.07	4.0	600	1.3
VA20C2029-005		0.05	0.26	0.05	0.020	0.95	12.6	25.7	0.45	64	0.41	0.02	<0.05	52.6	490	7.4
VA20C2029-006		<0.05	0.12	0.01	0.010	0.11	5.2	3.5	1.49	321	0.13	0.02	0.08	3.1	870	1.1
VA20C2029-007		0.07	0.34	0.03	0.047	0.49	15.0	25.7	0.41	206	0.54	0.02	0.21	25.8	580	4.6

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CERTIFICATE OF ANALYSIS VA20282171

Sample Description	Method	ME-MS41	ME-MS41	ME-MS41	ME-MS41	ME-MS41	ME-MS41	ME-MS41	ME-MS41	ME-MS41	ME-MS41	ME-MS41	ME-MS41	ME-MS41	ME-MS41	ME-MS41
	Analyte	Rb	Re	S	Sb	Sc	Se	Sn	Sr	Ta	Te	Th	Ti	Tl	U	V
	Units	ppm	ppm	%	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	%	ppm	ppm	ppm
	LOD	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
VA20C2029-001		1.0	<0.001	<0.01	<0.05	0.1	<0.2	<0.2	3.0	<0.01	<0.01	0.4	0.006	0.02	0.14	1
VA20C2029-002		3.9	0.002	0.07	<0.05	0.9	0.3	<0.2	198.5	<0.01	<0.01	0.9	<0.005	0.03	0.64	6
VA20C2029-003		36.8	0.013	0.23	<0.05	4.2	13.1	0.4	91.7	<0.01	0.03	10.8	0.007	0.21	30.0	17
VA20C2029-004		3.8	0.001	0.03	<0.05	0.9	0.5	0.2	205	<0.01	<0.01	0.9	<0.005	0.02	0.60	6
VA20C2029-005		41.2	0.010	0.07	<0.05	3.4	<0.2	0.5	141.5	<0.01	0.01	11.5	0.006	0.29	11.65	18
VA20C2029-006		5.4	0.001	0.05	<0.05	1.1	0.7	<0.2	205	<0.01	<0.01	1.2	<0.005	0.02	0.73	8
VA20C2029-007		22.7	0.003	0.69	<0.05	6.1	0.3	0.6	34.2	<0.01	0.09	11.6	0.036	0.10	0.40	60

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BURNABY BC V5A 1W9

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Account: APN

Project: VA20C2029

CERTIFICATE OF ANALYSIS VA20282171

Sample Description	Method Analyte Units LOD	ME-MS41 W ppm 0.05	ME-MS41 Y ppm 0.05	ME-MS41 Zn ppm 2	ME-MS41 Zr ppm 0.5	C-IR07 C % 0.01	S-CAL04c S-HNO3 tCaCO3/1Kt 0.01	S-IR04b S % 0.01
VA20C2029-001		<0.05	0.51	12	4.4	0.12	<0.01	<0.01
VA20C2029-002		<0.05	2.83	6	2.3	11.00	<0.01	<0.01
VA20C2029-003		0.20	19.95	28	5.1	0.11	<0.01	<0.01
VA20C2029-004		<0.05	2.62	11	2.2	10.90	<0.01	<0.01
VA20C2029-005		0.07	4.68	34	8.3	0.05	<0.01	<0.01
VA20C2029-006		<0.05	3.16	6	2.8	10.85	<0.01	<0.01
VA20C2029-007		0.12	8.90	38	10.7	0.55	<0.01	<0.01

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BURNABY BC V5A 1W9

Finalized Date: 6-JAN-2021
Account: APN

Project: VA20C2029

CERTIFICATE OF ANALYSIS VA20282171

CERTIFICATE COMMENTS

ANALYTICAL COMMENTS

Applies to Method: Gold determinations by this method are semi-quantitative due to the small sample weight used (0.5g).
ME-MS41

LABORATORY ADDRESSES

Applies to Method: Processed at ALS Vancouver located at 2103 Dollarton Hwy, North Vancouver, BC, Canada.

C-GAS05	C-IR07	CRU-31	LOG-21
ME-MS41	OA-ELE07	OA-VOL08m	PUL-31
PUL-QC	S-CAL04c	S-CAL06	S-GRA06
S-GRA06a	S-IR04b	S-IR08	SND-01
SPL-21	SPL-21X	SPL-34X	WEI-21

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Finalized Date: 6-JAN-2021
Account: APN

QC CERTIFICATE VA20282171

Project: VA20C2029

This report is for 7 Drill Core samples submitted to our lab in Vancouver, BC, Canada on 30-NOV-2020.

The following have access to data associated with this certificate:

ALSE VANCOUVER WEBTRIEVE DEAN WATT	ALSEV DATASUBLET	SOFTWARE DEVELOPMENT GROUP

SAMPLE PREPARATION

ALS CODE	DESCRIPTION
WEI-21	Received Sample Weight
LOG-21	Sample logging - ClientBarCode
CRU-31	Fine crushing - 70% <2mm
SPL-21	Split sample - riffle splitter
PUL-31	Pulverize up to 250g 85% <75 um
SPL-21X	Addnl Crush Split w No Analysis
SND-01	Send samples to external laboratory
SPL-34X	Pulp Split - For send out
PUL-QC	Pulverizing QC Test

ANALYTICAL PROCEDURES

ALS CODE	DESCRIPTION	
OA-VOL08m	Modified NP	
S-IR08	Total Sulphur (IR Spectroscopy)	LECO
OA-ELE07	Paste pH	
S-GRA06	Sulfate Sulfur-carbonate leach	WST-SEQ
S-CAL06	Sufide Sulfur (calculated)	LECO
C-GAS05	Inorganic Carbon (CO2)	
S-GRA06a	Sulfate Sulfur (HCl leachable)	WST-SEQ
ME-MS41	Ultra Trace Aqua Regia ICP-MS	
C-IR07	Total Carbon (IR Spectroscopy)	LECO
S-CAL04c	Non extractable sulfur	
S-IR04b	Residual Sulfur IR - Nitric Leach	LECO

This is the Final Report and supersedes any preliminary report with this certificate number. Results apply to samples as submitted. All pages of this report have been checked and approved for release.

***** See Appendix Page for comments regarding this certificate *****

Signature: [redacted]
Saa Traxler, General Manager, North Vancouver

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To: **ALS ENVIRONMENTAL**
100 - 8081 LOUGHEED HWY.
BURNABY BC V5A 1W9

Finalized Date: 6-JAN-2021
Account: APN

Project: VA20C2029

QC CERTIFICATE OF ANALYSIS VA20282171

Sample Description	Method Analyte Units LOD	OA-VOL08m MPA tCaCO3/1Kt 0.3	OA-VOL08m FIZZ RAT Unity 1	OA-VOL08m NNP tCaCO3/1Kt 1	OA-VOL08m NP tCaCO3/1Kt 1	OA-ELE07 pH Unity 0.1	OA-VOL08m Ratio (N Unity 0.01	S-IR08 S % 0.01	S-GRA06 S % 0.01	S-GRA06a S % 0.01	C-GAS05 C % 0.05	C-GAS05 CO2 % 0.2	ME-MS41 Ag ppm 0.01	ME-MS41 Al % 0.01	ME-MS41 As ppm 0.1	ME-MS41 Au ppm 0.02
STANDARDS																
Buffer pH6						6.0										
Buffer pH6						6.1										
Target Range - Lower Bound						5.3										
Upper Bound						6.7										
DS-1								2.63								
Target Range - Lower Bound								2.51								
Upper Bound								2.71								
EMOG-17													69.7	1.63	613	0.88
Target Range - Lower Bound													60.3	1.45	522	0.77
Upper Bound													73.7	1.79	638	0.99
GS313-8								1.25								
Target Range - Lower Bound								1.19								
Upper Bound								1.29								
KZK-1		25.0	2	30	55		2.20									
KZK-1		25.0	2	29	54		2.16									
Target Range - Lower Bound		22.9	<1	30	54		2.18									
Upper Bound		27.1	>4	38	64		2.53									
MA-3a											2.44	9.0				
Target Range - Lower Bound											2.31	8.4				
Upper Bound											2.77	10.2				
MP-1b																
Target Range - Lower Bound																
Upper Bound																
OREAS 920													0.10	2.41	5.1	<0.02
Target Range - Lower Bound													0.07	2.18	4.2	<0.02
Upper Bound													0.12	2.68	5.3	0.04
SY-4											0.91	3.3				
Target Range - Lower Bound											0.84	3.0				
Upper Bound											1.08	4.0				
UTS-1									0.87							
Target Range - Lower Bound									0.83							
Upper Bound									0.93							
UTS-1										0.88						
Target Range - Lower Bound										0.81						
Upper Bound										0.95						
UTS-2																
Target Range - Lower Bound																
Upper Bound																
UTS-4									1.77							

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To: **ALS ENVIRONMENTAL**
100 - 8081 LOUGHEED HWY.
BURNABY BC V5A 1W9

Finalized Date: 6-JAN-2021
Account: APN

Project: VA20C2029

QC CERTIFICATE OF ANALYSIS VA20282171

Sample Description	Method	ME-MS41	ME-MS41	ME-MS41	ME-MS41	ME-MS41	ME-MS41	ME-MS41	ME-MS41	ME-MS41	ME-MS41	ME-MS41	ME-MS41	ME-MS41	ME-MS41	ME-MS41
	Analyte	B	Ba	Be	Bi	Ca	Cd	Ce	Co	Cr	Cs	Cu	Fe	Ga	Ge	Hf
	Units	ppm	ppm	ppm	ppm	%	ppm	ppm	ppm	ppm	ppm	ppm	%	ppm	ppm	ppm
	LOD	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
STANDARDS																
Buffer pH6																
Buffer pH6																
Target Range - Lower Bound																
Upper Bound																
DS-1																
Target Range - Lower Bound																
Upper Bound																
EMOG-17		10	40	0.41	5.29	1.01	21.1	42.3	793	48	5.75	8760	4.80	6.00	0.14	0.44
Target Range - Lower Bound		<10	30	0.32	5.32	0.87	18.35	37.6	680	42	5.57	7780	4.18	5.56	0.08	0.39
Upper Bound		20	80	0.56	6.52	1.09	22.5	46.0	832	54	6.91	8960	5.14	6.90	0.30	0.53
GS313-8																
Target Range - Lower Bound																
Upper Bound																
KZK-1																
KZK-1																
Target Range - Lower Bound																
Upper Bound																
MA-3a																
Target Range - Lower Bound																
Upper Bound																
MP-1b																
Target Range - Lower Bound																
Upper Bound																
OREAS 920		<10	80	0.71	0.54	0.35	0.07	76.0	14.9	43	1.94	114.5	3.64	6.87	0.09	0.61
Target Range - Lower Bound		<10	50	0.59	0.60	0.28	0.04	64.8	13.4	37	1.84	102.0	3.26	6.12	<0.05	0.48
Upper Bound		20	110	0.87	0.76	0.37	0.08	79.2	16.6	48	2.36	118.0	4.00	7.60	0.22	0.63
SY-4																
Target Range - Lower Bound																
Upper Bound																
UTS-1																
Target Range - Lower Bound																
Upper Bound																
UTS-1																
Target Range - Lower Bound																
Upper Bound																
UTS-2																
Target Range - Lower Bound																
Upper Bound																
UTS-4																

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100 - 8081 LOUGHEED HWY.
BURNABY BC V5A 1W9

Finalized Date: 6-JAN-2021
Account: APN

Project: VA20C2029

QC CERTIFICATE OF ANALYSIS VA20282171

Sample Description	Method	ME-MS41	ME-MS41	ME-MS41	ME-MS41	ME-MS41	ME-MS41	ME-MS41	ME-MS41	ME-MS41	ME-MS41	ME-MS41	ME-MS41	ME-MS41	ME-MS41	ME-MS41
	Analyte	Hg	In	K	La	Li	Mg	Mn	Mo	Na	Nb	Ni	P	Pb	Rb	Re
	Units	ppm	ppm	%	ppm	ppm	%	ppm	ppm	%	ppm	ppm	ppm	ppm	ppm	ppm
	LOD	0.01	0.005	0.01	0.2	0.1	0.01	5	0.05	0.01	0.05	0.2	10	0.2	0.1	0.001
STANDARDS																
Buffer pH6																
Buffer pH6																
Target Range - Lower Bound																
Upper Bound																
DS-1																
Target Range - Lower Bound																
Upper Bound																
EMOG-17		0.53	0.917	0.67	20.9	17.3	0.81	666	1125	0.18	1.34	8110	790	7440	72.7	0.318
Target Range - Lower Bound		0.46	0.814	0.60	18.3	17.2	0.69	595	971	0.15	1.24	6930	680	6510	66.5	0.287
Upper Bound		0.64	1.005	0.76	22.9	21.2	0.87	739	1185	0.20	1.80	8470	850	7950	81.5	0.353
GS313-8																
Target Range - Lower Bound																
Upper Bound																
KZK-1																
KZK-1																
Target Range - Lower Bound																
Upper Bound																
MA-3a																
Target Range - Lower Bound																
Upper Bound																
MP-1b																
Target Range - Lower Bound																
Upper Bound																
OREAS 920		<0.01	0.031	0.41	38.5	19.6	1.09	520	0.36	0.03	0.38	39.2	740	21.4	25.6	<0.001
Target Range - Lower Bound		<0.01	0.019	0.37	33.3	19.0	0.93	454	0.26	<0.01	0.21	34.4	610	19.2	22.2	<0.001
Upper Bound		0.02	0.043	0.47	41.1	23.4	1.15	566	0.50	0.04	0.47	42.4	770	23.9	27.4	0.002
SY-4																
Target Range - Lower Bound																
Upper Bound																
UTS-1																
Target Range - Lower Bound																
Upper Bound																
UTS-1																
Target Range - Lower Bound																
Upper Bound																
UTS-2																
Target Range - Lower Bound																
Upper Bound																
UTS-4																

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QC CERTIFICATE OF ANALYSIS VA20282171

Sample Description	Method	ME-MS41	ME-MS41	ME-MS41	ME-MS41	ME-MS41	ME-MS41	ME-MS41	ME-MS41	ME-MS41	ME-MS41	ME-MS41	ME-MS41	ME-MS41	ME-MS41	ME-MS41
	Analyte	S	Sb	Sc	Se	Sn	Sr	Ta	Te	Th	Ti	Tl	U	V	W	Y
	Units	%	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	%	ppm	ppm	ppm	ppm	ppm
	LOD	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
STANDARDS																
Buffer pH6																
Buffer pH6																
Target Range - Lower Bound																
Upper Bound																
DS-1																
Target Range - Lower Bound																
Upper Bound																
EMOG-17		3.29	700	4.5	6.6	1.9	51.8	<0.01	1.30	9.9	0.228	2.01	2.61	66	2.09	11.50
Target Range - Lower Bound		2.90	574	4.3	5.5	1.5	47.5	<0.01	1.16	9.3	0.188	1.71	2.57	58	1.65	10.20
Upper Bound		3.56	776	5.5	7.2	2.6	58.5	0.03	1.44	11.8	0.240	2.37	3.25	74	2.35	12.60
GS313-8																
Target Range - Lower Bound																
Upper Bound																
KZK-1																
KZK-1																
Target Range - Lower Bound																
Upper Bound																
MA-3a																
Target Range - Lower Bound																
Upper Bound																
MP-1b																
Target Range - Lower Bound																
Upper Bound																
OREAS 920		0.02	0.58	2.7	0.4	1.0	17.8	0.01	0.01	15.8	0.135	0.16	1.90	25	0.50	18.90
Target Range - Lower Bound		<0.01	0.45	2.5	<0.2	0.6	15.0	<0.01	<0.01	13.6	0.106	0.09	1.89	21	0.31	15.80
Upper Bound		0.05	0.77	3.3	0.6	1.6	18.8	0.02	0.04	17.0	0.140	0.20	2.42	28	0.61	19.40
SY-4																
Target Range - Lower Bound																
Upper Bound																
UTS-1																
Target Range - Lower Bound																
Upper Bound																
UTS-1																
Target Range - Lower Bound																
Upper Bound																
UTS-2																
Target Range - Lower Bound																
Upper Bound																
UTS-4																

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Finalized Date: 6-JAN-2021
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Project: VA20C2029

QC CERTIFICATE OF ANALYSIS VA20282171

Sample Description	Method / Analyte / Units / LOD	ME-MS41 Zn ppm 2	ME-MS41 Zr ppm 0.5	C-IR07 C % 0.01	S-CAL04c S-HNO3 tCaCO3/1Kt 0.01	S-IR04b S % 0.01
STANDARDS						
Buffer pH6						
Buffer pH6						
Target Range - Lower Bound						
Upper Bound						
DS-1				3.09		
Target Range - Lower Bound				3.01		
Upper Bound				3.25		
EMOG-17		7610	13.1			
Target Range - Lower Bound		6780	10.6			
Upper Bound		8290	15.5			
GS313-8				0.92		
Target Range - Lower Bound				0.90		
Upper Bound				0.98		
KZK-1						
KZK-1						
Target Range - Lower Bound						
Upper Bound						
MA-3a						
Target Range - Lower Bound						
Upper Bound						
MP-1b					7.63	7.35
Target Range - Lower Bound						6.72
Upper Bound						8.24
OREAS 920		106	23.4			
Target Range - Lower Bound		93	17.6			
Upper Bound		119	25.0			
SY-4						
Target Range - Lower Bound						
Upper Bound						
UTS-1						
Target Range - Lower Bound						
Upper Bound						
UTS-1						
Target Range - Lower Bound						
Upper Bound						
UTS-2					0.05	0.05
Target Range - Lower Bound						0.05
Upper Bound						0.09
UTS-4						

***** See Appendix Page for comments regarding this certificate *****

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To: **ALS ENVIRONMENTAL**
100 - 8081 LOUGHEED HWY.
BURNABY BC V5A 1W9

Finalized Date: 6-JAN-2021
Account: APN

Project: VA20C2029

QC CERTIFICATE OF ANALYSIS VA20282171

Sample Description	Method	OA-VOL08m	OA-VOL08m	OA-VOL08m	OA-VOL08m	OA-ELE07	OA-VOL08m	S-IR08	S-GRA06	S-GRA06a	C-GAS05	C-GAS05	ME-MS41	ME-MS41	ME-MS41	ME-MS41
	Analyte	MPA	FIZZ RAT	NNP	NP	pH	Ratio (N	S	S	S	C	CO2	Ag	Al	As	Au
	Units	tCaCO3/1Kt	Unity	tCaCO3/1Kt	tCaCO3/1Kt	Unity	Unity	%	%	%	%	%	ppm	%	ppm	ppm
	LOD	0.3	1	1	1	0.1	0.01	0.01	0.01	0.01	0.05	0.2	0.01	0.01	0.1	0.02
STANDARDS																
Target Range - Lower Bound									1.64							
Upper Bound									1.84							
UTS-4										1.72						
Target Range - Lower Bound										1.61						
Upper Bound										1.87						
BLANKS																
BLANK											<0.05	<0.2				
Target Range - Lower Bound											<0.05	<0.2				
Upper Bound											0.10	0.4				
BLANK													<0.01	<0.01	<0.1	<0.02
Target Range - Lower Bound													<0.01	<0.01	<0.1	<0.02
Upper Bound													0.02	0.02	0.2	0.04
BLANK						6.0										
Target Range - Lower Bound						5.5										
Upper Bound						6.9										
BLANK									<0.01							
Target Range - Lower Bound									<0.01							
Upper Bound									0.02							
BLANK										<0.01						
Target Range - Lower Bound										<0.01						
Upper Bound										0.02						
BLANK																
Target Range - Lower Bound																
Upper Bound																
BLANK								0.01								
Target Range - Lower Bound								<0.01								
Upper Bound								0.02								

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QC CERTIFICATE OF ANALYSIS VA20282171

Sample Description	Method	ME-MS41	ME-MS41	ME-MS41	ME-MS41	ME-MS41	ME-MS41	ME-MS41	ME-MS41	ME-MS41	ME-MS41	ME-MS41	ME-MS41	ME-MS41	ME-MS41	ME-MS41
	Analyte	B	Ba	Be	Bi	Ca	Cd	Ce	Co	Cr	Cs	Cu	Fe	Ga	Ge	Hf
	Units	ppm	ppm	ppm	ppm	%	ppm	ppm	ppm	ppm	ppm	ppm	%	ppm	ppm	ppm
	LOD	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
STANDARDS																
Target Range - Lower Bound																
Upper Bound																
UTS-4																
Target Range - Lower Bound																
Upper Bound																
BLANKS																
BLANK																
Target Range - Lower Bound																
Upper Bound																
BLANK		<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
Target Range - Lower Bound		<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
Upper Bound		20	20	0.10	0.02	0.02	0.02	0.04	0.2	2	0.10	0.4	0.02	0.10	0.10	0.04
BLANK																
Target Range - Lower Bound																
Upper Bound																
BLANK																
Target Range - Lower Bound																
Upper Bound																
BLANK																
Target Range - Lower Bound																
Upper Bound																
BLANK																
Target Range - Lower Bound																
Upper Bound																
BLANK																
Target Range - Lower Bound																
Upper Bound																

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Project: VA20C2029

QC CERTIFICATE OF ANALYSIS VA20282171

Sample Description	Method	ME-MS41	ME-MS41	ME-MS41	ME-MS41	ME-MS41	ME-MS41	ME-MS41	ME-MS41	ME-MS41	ME-MS41	ME-MS41	ME-MS41	ME-MS41	ME-MS41	ME-MS41
	Analyte	Hg	In	K	La	Li	Mg	Mn	Mo	Na	Nb	Ni	P	Pb	Rb	Re
	Units	ppm	ppm	%	ppm	ppm	%	ppm	ppm	%	ppm	ppm	ppm	ppm	ppm	ppm
	LOD	0.01	0.005	0.01	0.2	0.1	0.01	5	0.05	0.01	0.05	0.2	10	0.2	0.1	0.001
STANDARDS																
Target Range - Lower Bound																
Upper Bound																
UTS-4																
Target Range - Lower Bound																
Upper Bound																
BLANKS																
BLANK																
Target Range - Lower Bound																
Upper Bound																
BLANK		<0.01	<0.005	<0.01	<0.2	0.1	<0.01	<5	<0.05	<0.01	<0.05	<0.2	<10	<0.2	<0.1	<0.001
Target Range - Lower Bound		<0.01	<0.005	<0.01	<0.2	<0.1	<0.01	<5	<0.05	<0.01	<0.05	<0.2	<10	<0.2	<0.1	<0.001
Upper Bound		0.02	0.010	0.02	0.4	0.2	0.02	10	0.10	0.02	0.10	0.4	20	0.4	0.2	0.002
BLANK																
Target Range - Lower Bound																
Upper Bound																
BLANK																
Target Range - Lower Bound																
Upper Bound																
BLANK																
Target Range - Lower Bound																
Upper Bound																
BLANK																
Target Range - Lower Bound																
Upper Bound																
BLANK																
Target Range - Lower Bound																
Upper Bound																

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QC CERTIFICATE OF ANALYSIS VA20282171

Sample Description	Method Analyte Units LOD	ME-MS41 S % 0.01	ME-MS41 Sb ppm 0.05	ME-MS41 Sc ppm 0.1	ME-MS41 Se ppm 0.2	ME-MS41 Sn ppm 0.2	ME-MS41 Sr ppm 0.2	ME-MS41 Ta ppm 0.01	ME-MS41 Te ppm 0.01	ME-MS41 Th ppm 0.2	ME-MS41 Ti % 0.005	ME-MS41 Tl ppm 0.02	ME-MS41 U ppm 0.05	ME-MS41 V ppm 1	ME-MS41 W ppm 0.05	ME-MS41 Y ppm 0.05
STANDARDS																
Target Range - Lower Bound																
Upper Bound																
UTS-4																
Target Range - Lower Bound																
Upper Bound																
BLANKS																
BLANK																
Target Range - Lower Bound																
Upper Bound																
BLANK		<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
Target Range - Lower Bound		<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
Upper Bound		0.02	0.10	0.2	0.4	0.4	0.4	0.02	0.02	0.4	0.010	0.04	0.10	2	0.10	0.10
BLANK																
Target Range - Lower Bound																
Upper Bound																
BLANK																
Target Range - Lower Bound																
Upper Bound																
BLANK																
Target Range - Lower Bound																
Upper Bound																
BLANK																
Target Range - Lower Bound																
Upper Bound																
BLANK																
Target Range - Lower Bound																
Upper Bound																

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QC CERTIFICATE OF ANALYSIS VA20282171

Sample Description	Method	ME-MS41	ME-MS41	C-IR07	S-CAL04c	S-IR04b
	Analyte	Zn	Zr	C	S-HNO3	S
	Units	ppm	ppm	%	tCaCO3/1Kt	%
	LOD	2	0.5	0.01	0.01	0.01
STANDARDS						
Target Range - Lower Bound						
Upper Bound						
UTS-4						
Target Range - Lower Bound						
Upper Bound						
BLANKS						
BLANK						
Target Range - Lower Bound						
Upper Bound						
BLANK		<2	<0.5			
Target Range - Lower Bound		<2	<0.5			
Upper Bound		4	1.0			
BLANK						
Target Range - Lower Bound						
Upper Bound						
BLANK						
Target Range - Lower Bound						
Upper Bound						
BLANK						
Target Range - Lower Bound						
Upper Bound						
BLANK					<0.01	<0.01
Target Range - Lower Bound						<0.01
Upper Bound						0.02
BLANK				<0.01		
Target Range - Lower Bound				<0.01		
Upper Bound				0.02		

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QC CERTIFICATE OF ANALYSIS VA20282171

Sample Description	Method / Analyte / Units / LOD	OA-VOL08m MPA tCaCO3/1Kt 0.3	OA-VOL08m FIZZ RAT Unity 1	OA-VOL08m NNP tCaCO3/1Kt 1	OA-VOL08m NP tCaCO3/1Kt 1	OA-ELE07 pH Unity 0.1	OA-VOL08m Ratio (N Unity 0.01	S-IR08 S % 0.01	S-GRA06 S % 0.01	S-GRA06a S % 0.01	C-GAS05 C % 0.05	C-GAS05 CO2 % 0.2	ME-MS41 Ag ppm 0.01	ME-MS41 Al % 0.01	ME-MS41 As ppm 0.1	ME-MS41 Au ppm 0.02
DUPLICATES																
ORIGINAL								0.05								
DUP								0.04								
Target Range - Lower Bound								0.03								
Upper Bound								0.06								
ORIGINAL													0.43	0.32	0.3	0.11
DUP													0.51	0.34	0.2	0.14
Target Range - Lower Bound													0.44	0.30	<0.1	0.10
Upper Bound													0.50	0.36	0.4	0.15
ORIGINAL											0.23	0.8				
DUP											0.22	0.8				
Target Range - Lower Bound											0.16	0.6				
Upper Bound											0.29	1.0				
VA20C2029-002										<0.01						
DUP										<0.01						
Target Range - Lower Bound										<0.01						
Upper Bound										0.02						
VA20C2029-003						7.4										
DUP						7.7										
Target Range - Lower Bound						7.1										
Upper Bound						8.0										
VA20C2029-005									0.01							
DUP									0.01							
Target Range - Lower Bound									<0.01							
Upper Bound									0.02							
VA20C2029-007																
DUP																
Target Range - Lower Bound																
Upper Bound																
VA20C1588-001		166.0	2	-131	35		0.21									
DUP		166.0	2	-131	35		0.21									
Target Range - Lower Bound		157.5	<1	-139	32		0.19									
Upper Bound		174.5	3	-123	38		0.23									

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Finalized Date: 6-JAN-2021
Account: APN

Project: VA20C2029

QC CERTIFICATE OF ANALYSIS VA20282171

Sample Description / Method / Analyte / Units / LOD	ME-MS41 B ppm 10	ME-MS41 Ba ppm 10	ME-MS41 Be ppm 0.05	ME-MS41 Bi ppm 0.01	ME-MS41 Ca % 0.01	ME-MS41 Cd ppm 0.01	ME-MS41 Ce ppm 0.02	ME-MS41 Co ppm 0.1	ME-MS41 Cr ppm 1	ME-MS41 Cs ppm 0.05	ME-MS41 Cu ppm 0.2	ME-MS41 Fe % 0.01	ME-MS41 Ga ppm 0.05	ME-MS41 Ge ppm 0.05	ME-MS41 Hf ppm 0.02
DUPLICATES															
ORIGINAL															
DUP															
Target Range - Lower Bound															
Upper Bound															
ORIGINAL	<10	420	0.54	0.38	1.34	0.13	50.5	5.3	5	1.08	18.2	1.54	1.11	0.07	0.02
DUP	<10	440	0.59	0.45	1.41	0.14	54.4	5.3	5	1.17	19.1	1.58	1.19	0.06	0.03
Target Range - Lower Bound	<10	390	0.49	0.38	1.30	0.12	49.8	4.9	4	1.02	17.8	1.47	1.04	<0.05	<0.02
Upper Bound	20	470	0.64	0.45	1.45	0.15	55.1	5.7	6	1.23	19.5	1.65	1.26	0.10	0.04
ORIGINAL															
DUP															
Target Range - Lower Bound															
Upper Bound															
VA20C2029-002															
DUP															
Target Range - Lower Bound															
Upper Bound															
VA20C2029-003															
DUP															
Target Range - Lower Bound															
Upper Bound															
VA20C2029-005															
DUP															
Target Range - Lower Bound															
Upper Bound															
VA20C2029-007															
DUP															
Target Range - Lower Bound															
Upper Bound															
VA20C1588-001															
DUP															
Target Range - Lower Bound															
Upper Bound															

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QC CERTIFICATE OF ANALYSIS VA20282171

Sample Description	Method / Analyte / Units / LOD	ME-MS41 Hg ppm 0.01	ME-MS41 In ppm 0.005	ME-MS41 K % 0.01	ME-MS41 La ppm 0.2	ME-MS41 Li ppm 0.1	ME-MS41 Mg % 0.01	ME-MS41 Mn ppm 5	ME-MS41 Mo ppm 0.05	ME-MS41 Na % 0.01	ME-MS41 Nb ppm 0.05	ME-MS41 Ni ppm 0.2	ME-MS41 P ppm 10	ME-MS41 Pb ppm 0.2	ME-MS41 Rb ppm 0.1	ME-MS41 Re ppm 0.001
		DUPLICATES														
ORIGINAL																
DUP																
Target Range - Lower Bound																
	Upper Bound															
ORIGINAL		0.01	0.010	0.23	24.4	1.1	0.99	612	0.37	0.02	<0.05	7.0	350	1.8	12.5	<0.001
DUP		0.01	0.010	0.25	25.6	1.3	1.02	625	0.35	0.02	<0.05	7.1	360	1.8	13.0	<0.001
Target Range - Lower Bound		<0.01	<0.005	0.22	23.6	1.0	0.94	583	0.29	<0.01	<0.05	6.5	330	1.5	12.0	<0.001
	Upper Bound	0.02	0.016	0.26	26.5	1.4	1.07	654	0.43	0.03	0.10	7.6	380	2.1	13.5	0.002
ORIGINAL																
DUP																
Target Range - Lower Bound																
	Upper Bound															
VA20C2029-002																
DUP																
Target Range - Lower Bound																
	Upper Bound															
VA20C2029-003																
DUP																
Target Range - Lower Bound																
	Upper Bound															
VA20C2029-005																
DUP																
Target Range - Lower Bound																
	Upper Bound															
VA20C2029-007																
DUP																
Target Range - Lower Bound																
	Upper Bound															
VA20C1588-001																
DUP																
Target Range - Lower Bound																
	Upper Bound															

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QC CERTIFICATE OF ANALYSIS VA20282171

Sample Description	Method / Analyte / Units / LOD	ME-MS41 S % 0.01	ME-MS41 Sb ppm 0.05	ME-MS41 Sc ppm 0.1	ME-MS41 Se ppm 0.2	ME-MS41 Sn ppm 0.2	ME-MS41 Sr ppm 0.2	ME-MS41 Ta ppm 0.01	ME-MS41 Te ppm 0.01	ME-MS41 Th ppm 0.2	ME-MS41 Ti % 0.005	ME-MS41 Tl ppm 0.02	ME-MS41 U ppm 0.05	ME-MS41 V ppm 1	ME-MS41 W ppm 0.05	ME-MS41 Y ppm 0.05
		DUPLICATES														
ORIGINAL																
DUP																
Target Range - Lower Bound																
Upper Bound																
ORIGINAL		0.01	0.08	1.5	<0.2	0.2	90.5	<0.01	0.27	6.2	<0.005	0.07	0.88	7	0.12	2.83
DUP		0.01	0.09	1.5	<0.2	0.2	92.2	<0.01	0.35	6.6	<0.005	0.07	0.96	7	0.13	2.92
Target Range - Lower Bound		<0.01	<0.05	1.3	<0.2	<0.2	86.6	<0.01	0.28	5.9	<0.005	0.04	0.82	6	0.07	2.68
Upper Bound		0.02	0.10	1.7	0.4	0.4	96.1	0.02	0.34	6.9	0.010	0.10	1.02	8	0.18	3.07
ORIGINAL																
DUP																
Target Range - Lower Bound																
Upper Bound																
VA20C2029-002																
DUP																
Target Range - Lower Bound																
Upper Bound																
VA20C2029-003																
DUP																
Target Range - Lower Bound																
Upper Bound																
VA20C2029-005																
DUP																
Target Range - Lower Bound																
Upper Bound																
VA20C2029-007																
DUP																
Target Range - Lower Bound																
Upper Bound																
VA20C1588-001																
DUP																
Target Range - Lower Bound																
Upper Bound																

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Project: VA20C2029

QC CERTIFICATE OF ANALYSIS VA20282171

Sample Description	Method / Analyte / Units / LOD	ME-MS41 Zn ppm 2	ME-MS41 Zr ppm 0.5	C-IR07 C % 0.01	S-CAL04c S-HNO3 tCaCO3/1Kt 0.01	S-IR04b S % 0.01
DUPLICATES						
ORIGINAL				11.00		
DUP				11.05		
Target Range - Lower Bound				10.75		
Upper Bound				11.30		
ORIGINAL		9	0.8			
DUP		9	0.8			
Target Range - Lower Bound		7	<0.5			
Upper Bound		11	1.0			
ORIGINAL						
DUP						
Target Range - Lower Bound						
Upper Bound						
VA20C2029-002						
DUP						
Target Range - Lower Bound						
Upper Bound						
VA20C2029-003						
DUP						
Target Range - Lower Bound						
Upper Bound						
VA20C2029-005						
DUP						
Target Range - Lower Bound						
Upper Bound						
VA20C2029-007					<0.01	<0.01
DUP					<0.01	<0.01
Target Range - Lower Bound					<0.01	<0.01
Upper Bound					0.02	0.02
VA20C1588-001						
DUP						
Target Range - Lower Bound						
Upper Bound						

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QC CERTIFICATE OF ANALYSIS VA20282171

CERTIFICATE COMMENTS

ANALYTICAL COMMENTS

Applies to Method: Gold determinations by this method are semi-quantitative due to the small sample weight used (0.5g).
ME-MS41

LABORATORY ADDRESSES

Applies to Method: Processed at ALS Vancouver located at 2103 Dollarton Hwy, North Vancouver, BC, Canada.

C-GAS05	C-IR07	CRU-31	LOG-21
ME-MS41	OA-ELE07	OA-VOL08m	PUL-31
PUL-QC	S-CAL04c	S-CAL06	S-GRA06
S-GRA06a	S-IR04b	S-IR08	SND-01
SPL-21	SPL-21X	SPL-34X	WEI-21

Chain of Custody (COC) / Analytical Request Form

COC Number: 20 -

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Page 1 of 1 of

Report To	Contact and company name below will appear on the final report	Reports / Recipients	Turnaround Time (TAT) Requested
Company:	AECOM	Select Report Format: ☐ PDF ☑ EXCEL ☑ EDD (DIGITAL)	☐ Routine [R] if received by 3pm M-F - no surcharges apply
Contact:	Ryan Mills	Merge QC/QCI Reports with COA: ☑ YES ☐ NO ☐ N/A	☐ 4 day [P4] if received by 3pm M-F - 20% rush surcharge minimum
Phone:	604 353 0384	☐ Compare Results to Criteria on Report - provide details below if box checked	☐ 3 day [P3] if received by 3pm M-F - 25% rush surcharge minimum
	Company address below will Appear on the final report	Select Distribution: ☑ EMAIL ☐ MAIL ☐ FAX	☐ 2 day [P2] if received by 3pm M-F - 50% rush surcharge minimum
Street:	3292 production way	Email 1 or Fax: ryan.mills@aecom.com; mehmoush.javadi@aecom.com	☐ 1 day [E] if received by 3pm M-F - 100% rush surcharge minimum
City/Province:	Burnaby, BC	Email 2: stephen.dickin@aecom.com	Same day [EW] if received by 10am M-S - 200% rush surcharge. Additional fees may apply to rush requests on weekends, statutory holidays and non-routine tests.
Postal Code:	V5A 4R4	Email 3: reuben.dandurand@aecom.com	
Invoice To	Same as Report To ☑ YES ☐ NO	Invoice Recipients	Date and Time Required for all E&P TATs: / / TAT:
	Copy of Invoice with Report ☑ YES ☐ NO	Select Invoice Distribution: ☑ EMAIL ☐ MAIL ☐ FAX	For all tests with rush TATs requested, please contact your AM to confirm availability.
Company:		Email 1 or Fax: ryan.mills@aecom.com	
Contact:		Email 2:	

Project Information		Oil and Gas Required Fields (client use)		
ALS Account # / Quote #:		AFE/Cost Center:	PO#	
Job #:	60640256 - CanWhite Sands	Major/Minor Code:	Routing Code:	
PO / AFE:		Requisitioner:		
LSD:		Location:		
ALS Lab Work Order # (ALS use only):		ALS Contact: Dean Watt, Burnaby, BC	Sampler: SC/RD	

Analysis Request

ALS Sample # (ALS use only)	Sample Identification and/or Coordinates (This description will appear on the report)	Date (dd-mmm-yy)	Time (hh:mm)	Sample Type	NUMBER OF CONTAINERS	Aqua Regia ICP-MS Multielement	Modified Sobek ASA Package	Sulphide sulphur	Sulphate Sulphur	Residual Sulphur	SPE	XRD Retained	Total Inorganic Carbon	Total Carbon	SAMPLES ON HOLD	EXTENDED STORAGE REQUIRED	SUSPECTED HAZARD (see notes)
	Bru 95-3	19-Nov-20	9:00	Rock	1	X	X	X	X	X	X	X	X	X	X		
	~~Dup 213-1_45.45 to 45.95~~	~~14-Nov-20~~	~~12:00~~	~~Rock~~	~~1~~										X		
	~~Dup 213-1_61.30 to 61.93~~	~~17-Nov-20~~	~~13:00~~	~~Rock~~	~~1~~										X		
	Bru 121-1_21.58 to 21.83	11-Nov-20	12:30	Rock	1	X	X	X	X	X	X	X	X	X			
	Dru 121-1_36.57 to 37.09	11-Nov-20	12:30	Rock	1	X	X	X	X	X	X	X	X	X			
	Bru 145_36.82 to 37.13	11-Nov-20	12:50	Rock	1	X	X	X	X	X	X	X	X	X			
	Bru 146_49.96 to 50.29	11-Nov-20	12:30	Rock	1	X	X	X	X	X	X	X	X	X			
	~~Bru 95-8_33.85 to 34.25~~	~~18-Nov-20~~	~~8:30~~	~~Rock~~	~~1~~										X		
	Bru 95-8_40.16 to 40.65	18-Nov-20	12:30	Rock	1	X	X	X	X	X	X	X	X	X			
	Bru 95-8_49.30 to 49.79	18-Nov-20	15:00	Rock	1	X	X	X	X	X	X	X	X	X			

Environmental Division
Vancouver
Work Order Reference
VA20C2029

Telephone : 1 604 984 4188

Drinking Water (DW) Samples[1] (client use)	Notes / Specify Limits for result evaluation by selecting from drop-down below (Excel COC only)
Are samples taken from a Regulated DW System? ☐ YES ☐ NO	Alberta City Of Calgary - Bylaw 14M2012 Schedules A,B & C (MAY, 2012)
Are samples for human consumption/use? ☐ YES ☐ NO	Ship samples to ALS Burnaby Attention Dean Watt. AECOM Burnaby geochemist (Mehmoush) would like to view the samples in person prior to selecting which samples/analysis will be required - please phone directly before shipping

SAMPLE RECEIPT DETAILS (ALS use only)

Cooling Method: ☐ NONE ☐ ICE ☐ ICE PACKS ☐ FROZEN ☐ COOLING INITIATED

Submission Comments identified on Sample Receipt Notification: ☐ YES ☐ NO

Cooler Custody Seals Intact: ☐ YES ☐ N/A Sample Custody Seals Intact: ☐ YES ☐ N/A

INITIAL COOLER TEMPERATURES °C				FINAL COOLER TEMPERATURES °C				
								14

SHIPMENT RELEASE (client use)			INITIAL SHIPMENT RECEPTION (ALS use only)			FINAL SHIPMENT RECEPTION (ALS use only)		
Released by: Stephen Dickin	Date: Nov 25, 2020	Time:	Received by:	Date:	Time:	Received by: HA	Date: 11/24	Time: 12:30

REFER TO BACK PAGE FOR ALS LOCATIONS AND SAMPLING INFORMATION

WHITE - LABORATORY COPY YELLOW - CLIENT COPY

AMC-0611

[1] To complete all portions of this form you may need to analysis. Please fill in this form LEGIBLY. By the use of this form the user acknowledges and agrees with the Terms and Conditions as specified on the back page of the white - report copy.

[1] If samples are taken from a Regulated Drinking Water (DW) System, please select the appropriate Authorized DW QC Form.

Report To Ryan Mills, AECOM Canada Ltd.
3292 Production Way
Burnaby, BC V5A 4R4, Canada

Client Phone (604) 444-6400

Date Received 27-Nov-2020 12:55
Issue Date 16-Feb-2021 15:04
Amendment 2
Version FINAL

Certificate of Analysis

Lab Work Order # VA20C2029
Project PO #
Project 60640258 - CanWhite Sands
Legal Site Description
C of C Numbers

Comments
Where possible, ALS will store samples for the following durations, measured from date of sample submission: 45 days for Soil and Water samples; 6 months for Tissue/Biota samples; 14 days for air samples collected on re-usable media; and 3 days for water samples submitted for microbiological testing. Longer storage times are available upon request.
Received sample "Bru 95-8_33.8 to 34.25", Den 216-1_4.45 to 45.95 and Den 216-1_61.26 to 61.82 but crossed off on the CoC; placed these on hold until further notice.
XRD Rietveld data has been added.

Temperature 14

Signatories

This document has been electronically signed by the authorized signatories below. Electronic signing is conducted in accordance with US FDA 21 CFR Part 11.

Signatories	*Position*	*Laboratory Department*
Janice Leung	Supervisor - Organics Extractions	Organics, Burnaby, British Columbia
Lindsay Gung	Supervisor - Water Chemistry	Inorganics, Burnaby, British Columbia
Kim Jensen	Department Manager - Metals	Metals, Burnaby, British Columbia
Erin Gatdula	Account Manager Assistant	Internal Subcontracting, North Vancouver, British Columbia
Dee Lee	Analyst	Metals, Burnaby, British Columbia

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Sample Summary VA20C2029

Project	60640258 - CanWhite Sands
Report To	Ryan Mills, AECOM Canada Ltd.
Date Received	27-Nov-2020 12:55
Issue Date	16-Feb-2021 15:04
Amendment	2

Sample Details

ALS Sample ID	Client Sample ID	Matrix	Sub-Matrix	Date Sampled	Time Sampled
VA20C2029-001	Bru 95-3	Soil/Solid	Solid	19-Nov-2020	08:00
VA20C2029-002	Bru 121-1_24.38 to 2	Soil/Solid	Solid	11-Nov-2020	12:30
VA20C2029-003	Bru 121-1_36.57 to 3	Soil/Solid	Solid	11-Nov-2020	12:30
VA20C2029-004	Bru 146_36.82 to 37	Soil/Solid	Solid	11-Nov-2020	00:50
VA20C2029-005	Bru 146_49-86 to 50	Soil/Solid	Solid	11-Nov-2020	12:50
VA20C2029-006	Bru 95-8_40.16 to 4(	Soil/Solid	Solid	18-Nov-2020	13:30
VA20C2029-007	Bru 95-8_49.39 to 4(	Soil/Solid	Solid	18-Nov-2020	15:00

Results Summary VA20C2029

Project	60640258 - CanWhite Sands
Report To	Ryan Mills, AECOM Canada Ltd.
Date Received	27-Nov-2020 12:55
Issue Date	16-Feb-2021 15:04
Amendment	2

Client Sample ID			Bru 95-3	Bru 121-1_24.38 to 24.83	Bru 121-1_36.57 to 37.00	Bru 146_36.82 to 37.13	Bru 146_49-86 to 50.29	Bru 95-8_40.16 to 40.65	Bru 95-8_49.39 to 49.79
Date Sampled			19-Nov-2020	11-Nov-2020	11-Nov-2020	11-Nov-2020	11-Nov-2020	18-Nov-2020	18-Nov-2020
Time Sampled			08:00	12:30	12:30	00:50	12:50	13:30	15:00
ALS Sample ID			VA20C2029-001	VA20C2029-002	VA20C2029-003	VA20C2029-004	VA20C2029-005	VA20C2029-006	VA20C2029-007
Analyte	Lowest Detection Limit	Units	Sub-Matrix: Solid	Sub-Matrix: Solid	Sub-Matrix: Solid	Sub-Matrix: Solid	Sub-Matrix: Solid	Sub-Matrix: Solid	Sub-Matrix: Solid
Physical Tests (Matrix: Soil/Solid)									
moisture	0.25	%	0.61	<0.25	0.52	<0.25	1.02	<0.25	0.91
pH	0.10	pH units	7.05	8.08	8.07	8.17	8.18	8.20	7.94
Acid Base Accounting (Matrix: Soil/Solid)									
fizz rating	1		1	4	1	4	1	4	2
maximum potential acidity [MPA]	0.3	tCaCO3/kt	0.6	2.2	7.2	1.3	2.2	1.6	20.0
net neutralization potential [NNP]	1	tCaCO3/kt	5	866	3	819	3	819	5
neutralization potential [NP]	1	tCaCO3/kt	6	868	10	820	5	821	25
neutralization potential ratio [NPR], (NP/MPA)	0.01		9.60	396.80	1.39	656.00	2.29	525.44	1.25
carbon dioxide	0.2	%	0.3	39.6	0.3	39.6	0.2	39.0	1.3
carbon, total [TC]	0.01	%	0.12	11.00	0.11	10.90	0.05	10.85	0.55
pH (1:1 soil:water)	0.10	pH units	8.50	8.00	7.40	8.00	7.80	8.30	7.50
sulfide (as S), total minus carbonate leach	0.01	%	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
sulfur, residual	0.01	%	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
sulfur, total	0.01	%	0.02	0.07	0.23	0.04	0.07	0.05	0.64
weight, sample received	0.02	kg	6.00	3.36	2.50	3.18	2.24	3.66	2.54
sulfate (as S), HCl leach	0.01	%	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
sulfate (as S), carbonate leach	0.01	%	<0.01	<0.01	0.06	<0.01	0.01	<0.01	0.12
carbon, total inorganic [TIC]	0.05	%	0.09	10.80	0.07	10.80	0.05	10.65	0.36
Metals (Matrix: Soil/Solid)									
aluminum	0.01	%	0.10	0.15	1.56	0.16	1.70	0.20	1.49
antimony	0.05	ppm	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
arsenic	0.1	ppm	0.9	1.7	30.4	0.8	13.3	0.7	24.2
barium	10	ppm	<10	10	30	10	40	10	30
beryllium	0.05	ppm	<0.05	0.18	1.01	0.18	1.26	0.24	0.92
bismuth	0.01	ppm	0.01	0.02	0.18	0.02	0.10	0.02	0.12
boron	10	ppm	<10	10	70	10	70	10	50
cadmium	0.01	ppm	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
calcium	0.01	%	0.21	>25.0	0.81	>25.0	0.43	>25.0	1.32
cerium	0.02	ppm	2.19	9.41	54.6	8.86	28.7	13.50	36.1
cesium	0.05	ppm	0.05	0.25	1.05	0.21	1.04	0.32	0.73
chromium	1	ppm	2	4	24	4	42	5	58
cobalt	0.1	ppm	0.4	1.7	16.9	1.6	22.0	1.5	20.6
copper	0.2	ppm	6.6	3.3	24.9	5.7	24.8	3.2	7.4
gallium	0.05	ppm	0.27	0.75	6.65	0.73	7.80	0.97	8.17
germanium	0.05	ppm	<0.05	<0.05	0.13	<0.05	0.05	<0.05	0.07
gold	0.02	ppm	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
hafnium	0.02	ppm	0.15	0.09	0.08	0.09	0.26	0.12	0.34
indium	0.005	ppm	<0.005	0.011	0.016	0.008	0.020	0.010	0.047
iron	0.01	%	0.22	0.49	1.59	0.47	2.23	0.58	5.56
lanthanum	0.2	ppm	1.0	4.1	18.7	3.8	12.6	5.2	15.0
lead	0.2	ppm	1.1	1.3	13.1	1.3	7.4	1.1	4.6
lithium	0.1	ppm	1.9	2.8	17.6	2.5	25.7	3.5	25.7
magnesium	0.01	%	0.04	1.53	0.39	1.30	0.45	1.49	0.41
manganese	5	ppm	24	305	101	265	64	321	206
mercury	0.01	ppm	<0.01	0.01	0.25	0.01	0.05	0.01	0.03
molybdenum	0.05	ppm	0.06	0.07	0.22	0.14	0.41	0.13	0.54
nickel	0.2	ppm	1.2	3.0	38.0	4.0	52.6	3.1	25.8
niobium	0.05	ppm	0.06	0.07	<0.05	0.07	<0.05	0.08	0.21
phosphorus	10	ppm	30	820	2180	600	490	870	580
potassium	0.01	%	0.02	0.08	0.88	0.09	0.95	0.11	0.49
rhenium	0.001	ppm	<0.001	0.002	0.013	0.001	0.010	0.001	0.003
rubidium	0.1	ppm	1.0	3.9	36.8	3.8	41.2	5.4	22.7
scandium	0.1	ppm	0.1	0.9	4.2	0.9	3.4	1.1	6.1
selenium	0.2	ppm	<0.2	0.3	13.1	0.5	<0.2	0.7	0.3
silver	0.01	ppm	0.01	<0.01	0.40	0.01	0.10	0.01	0.02
sodium	0.01	%	0.01	0.02	0.03	0.02	0.02	0.02	0.02
strontium	0.2	ppm	3.0	198.5	91.7	205	141.5	205	34.2
sulfur	0.01	%	<0.01	0.07	0.23	0.03	0.07	0.05	0.69
tantalum	0.01	ppm	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
tellurium	0.01	ppm	<0.01	<0.01	0.03	<0.01	0.01	<0.01	0.09
thallium	0.02	ppm	0.02	0.03	0.21	0.02	0.29	0.02	0.10
thorium	0.2	ppm	0.4	0.9	10.8	0.9	11.5	1.2	11.6
tin	0.2	ppm	<0.2	<0.2	0.4	0.2	0.5	<0.2	0.6
titanium	0.005	%	0.006	<0.005	0.007	<0.005	0.006	<0.005	0.036
tungsten	0.05	ppm	<0.05	<0.05	0.20	<0.05	0.07	<0.05	0.12
uranium	0.05	ppm	0.14	0.64	30.0	0.60	11.65	0.73	0.40

vanadium	1	ppm	1	6	17	6	18	8	60
yttrium	0.05	ppm	0.51	2.83	19.95	2.62	4.68	3.16	8.90
zinc	2	ppm	12	6	28	11	34	6	38
zirconium	0.5	ppm	4.4	2.3	5.1	2.2	8.3	2.8	10.7

Leachable Metals (Matrix: Soil/Solid)

aluminum, leachable	0.0050	mg/L	1.26	0.131	<0.0050	0.179	<0.0050	0.144	<0.0050
antimony, leachable	0.00010	mg/L	<0.00010	0.00016	0.00012	0.00013	<0.00010	<0.00010	<0.00010
arsenic, leachable	0.0010	mg/L	0.0014	<0.0010	0.0307	<0.0010	0.0029	<0.0010	<0.0010
barium, leachable	0.0010	mg/L	0.0052	0.0106	0.0937	0.0084	0.0961	0.0128	0.0845
beryllium, leachable	0.00050	mg/L	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050
bismuth, leachable	0.00050	mg/L	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050
boron, leachable	0.010	mg/L	0.025	0.068	0.415	0.042	0.204	0.071	1.20
cadmium, leachable	0.000050	mg/L	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050
calcium, leachable	0.10	mg/L	6.25	16.8	77.4	16.2	27.2	17.7	246
chromium, leachable	0.00050	mg/L	0.00194	<0.00050	<0.00050	<0.00050	0.00098	<0.00050	<0.00050
cobalt, leachable	0.00010	mg/L	0.00022	0.00011	0.00153	<0.00010	0.00017	<0.00010	0.00141
copper, leachable	0.0010	mg/L	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010
iron, leachable	0.030	mg/L	0.311	<0.030	<0.030	<0.030	<0.030	<0.030	<0.030
lead, leachable	0.00010	mg/L	0.00094	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010
lithium, leachable	0.0050	mg/L	<0.0050	0.0052	0.0821	0.0050	0.0496	0.0069	0.0908
magnesium, leachable	0.050	mg/L	0.974	6.37	24.0	5.55	9.23	6.28	54.5
manganese, leachable	0.00050	mg/L	0.00103	0.00067	0.00149	<0.00050	<0.00050	0.00050	0.0540
molybdenum, leachable	0.00010	mg/L	0.00012	0.00099	0.00623	0.00092	0.00608	0.00077	0.00016
nickel, leachable	0.00050	mg/L	0.00083	<0.00050	0.0101	0.00059	<0.00050	<0.00050	0.00162
phosphorus, leachable	0.30	mg/L	<0.30	<0.30	<0.30	<0.30	<0.30	<0.30	<0.30
potassium, leachable	0.050	mg/L	1.16	6.82	53.9	6.32	29.7	8.03	63.9
selenium, leachable	0.00050	mg/L	<0.00050	0.00220	1.64	0.00997	0.00747	0.0165	0.0118
silicon, leachable	0.050	mg/L	2.68	1.44	2.26	1.79	2.32	2.14	4.61
silver, leachable	0.000050	mg/L	<0.000050	<0.000050	0.000066	<0.000050	<0.000050	<0.000050	<0.000050
sodium, leachable	0.050	mg/L	0.354	2.23	19.5	1.99	9.87	2.16	15.4
strontium, leachable	0.00050	mg/L	0.0170	0.120	0.505	0.109	0.164	0.123	1.03
sulfur, leachable	0.50	mg/L	2.45	6.60	86.2	4.87	9.59	13.2	288
thallium, leachable	0.00010	mg/L	<0.00010	<0.00010	0.00024	<0.00010	<0.00010	<0.00010	0.00012
tin, leachable	0.00050	mg/L	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050
titanium, leachable	0.010	mg/L	0.115	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010
uranium, leachable	0.000010	mg/L	0.000228	0.000650	0.117	0.000931	0.0137	0.000456	0.000182
vanadium, leachable	0.0010	mg/L	0.0020	0.0032	<0.0010	0.0042	0.0016	0.0040	<0.0010
zinc, leachable	0.010	mg/L	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010
mercury, leachable	0.000050	mg/L	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050
hardness (as CaCO3), dissolved	0.60	mg/L	19.6	68.2	292	63.3	106	70.0	839

Results of Analysis VA20C2029

Project	60640258 - Carl/White Sands
Report To	Ryan Mills, AECOM Canada Ltd.
Date Received	27-Nov-2020 12:55
Issue Date	16-Feb-2021 15:04
Amendment	2

Analyte	ALS Sample ID	Client Sample ID	Matrix	Sub-Matrix	Method	Results	Detection Limit	Units	Qual	Date Sampled	Time Sampled	Prep Date	Analysis Date	QC Lot	QC Eval	Hold Time Eval
Physical Tests (Matrix: Soil/Solid)																
moisture	VA20C2029-001	Bru 95-3	Soil/Solid	Solid	E144	0.61	0.25	%		19-Nov-2020	08:00		15-Dec-2020	130855	✓	✓
pH	VA20C2029-001	Bru 95-3	Soil/Solid	Solid	E116	7.05	0.10	pH units		19-Nov-2020	08:00	15-Dec-2020	16-Dec-2020	130890	✓	✓
Acid Base Accounting (Matrix: Soil/Solid)																
fizz rating	VA20C2029-001	Bru 95-3	Soil/Solid	Solid	OA-VOL08m	1	1			19-Nov-2020	08:00		05-Jan-2021		✓	✓
maximum potential acidity [MPA]	VA20C2029-001	Bru 95-3	Soil/Solid	Solid	OA-VOL08m	0.6	0.3	tCaCO3/kt		19-Nov-2020	08:00		05-Jan-2021		✓	✓
net neutralization potential [NNP]	VA20C2029-001	Bru 95-3	Soil/Solid	Solid	OA-VOL08m	5	1	tCaCO3/kt		19-Nov-2020	08:00		05-Jan-2021		✓	✓
neutralization potential [NP]	VA20C2029-001	Bru 95-3	Soil/Solid	Solid	OA-VOL08m	6	1	tCaCO3/kt		19-Nov-2020	08:00		05-Jan-2021		✓	✓
neutralization potential ratio [NPR], (NP/MPA)	VA20C2029-001	Bru 95-3	Soil/Solid	Solid	OA-VOL08m	9.60	0.01			19-Nov-2020	08:00		05-Jan-2021		✓	✓
carbon dioxide	VA20C2029-001	Bru 95-3	Soil/Solid	Solid	C-GAS05	0.3	0.2	%		19-Nov-2020	08:00		05-Jan-2021		✓	✓
carbon, total [TC]	VA20C2029-001	Bru 95-3	Soil/Solid	Solid	C-IR07	0.12	0.01	%		19-Nov-2020	08:00		05-Jan-2021		✓	✓
pH (1:1 soil:water)	VA20C2029-001	Bru 95-3	Soil/Solid	Solid	OA-ELE07	8.50	0.10	pH units		19-Nov-2020	08:00		05-Jan-2021		✓	✓
sulfide (as S), total minus carbonate leach	VA20C2029-001	Bru 95-3	Soil/Solid	Solid	S-CAL06	<0.01	0.01	%		19-Nov-2020	08:00		05-Jan-2021		✓	*
sulfur, residual	VA20C2029-001	Bru 95-3	Soil/Solid	Solid	S-IR04B	<0.01	0.01	%		19-Nov-2020	08:00		05-Jan-2021		✓	✓
sulfur, total	VA20C2029-001	Bru 95-3	Soil/Solid	Solid	S-IR08	0.02	0.01	%		19-Nov-2020	08:00		05-Jan-2021		✓	✓
weight, sample received	VA20C2029-001	Bru 95-3	Soil/Solid	Solid	WEI-21	6.00	0.02	kg		19-Nov-2020	08:00		05-Jan-2021		✓	✓
sulfate (as S), HCl leach	VA20C2029-001	Bru 95-3	Soil/Solid	Solid	S-GRA06A	<0.01	0.01	%		19-Nov-2020	08:00		05-Jan-2021		✓	✓
sulfate (as S), carbonate leach	VA20C2029-001	Bru 95-3	Soil/Solid	Solid	S-GRA06	<0.01	0.01	%		19-Nov-2020	08:00		05-Jan-2021		✓	✓
carbon, total inorganic [TIC]	VA20C2029-001	Bru 95-3	Soil/Solid	Solid	C-GAS05	0.09	0.05	%		19-Nov-2020	08:00		05-Jan-2021		✓	✓
Metals (Matrix: Soil/Solid)																
aluminum	VA20C2029-001	Bru 95-3	Soil/Solid	Solid	ME-MS41	0.10	0.01	%		19-Nov-2020	08:00		05-Jan-2021		✓	✓
antimony	VA20C2029-001	Bru 95-3	Soil/Solid	Solid	ME-MS41	<0.05	0.05	ppm		19-Nov-2020	08:00		05-Jan-2021		✓	✓
arsenic	VA20C2029-001	Bru 95-3	Soil/Solid	Solid	ME-MS41	0.9	0.1	ppm		19-Nov-2020	08:00		05-Jan-2021		✓	✓
barium	VA20C2029-001	Bru 95-3	Soil/Solid	Solid	ME-MS41	<10	10	ppm		19-Nov-2020	08:00		05-Jan-2021		✓	✓
beryllium	VA20C2029-001	Bru 95-3	Soil/Solid	Solid	ME-MS41	<0.05	0.05	ppm		19-Nov-2020	08:00		05-Jan-2021		✓	✓
bismuth	VA20C2029-001	Bru 95-3	Soil/Solid	Solid	ME-MS41	0.01	0.01	ppm		19-Nov-2020	08:00		05-Jan-2021		✓	✓
boron	VA20C2029-001	Bru 95-3	Soil/Solid	Solid	ME-MS41	<10	10	ppm		19-Nov-2020	08:00		05-Jan-2021		✓	✓
cadmium	VA20C2029-001	Bru 95-3	Soil/Solid	Solid	ME-MS41	<0.01	0.01	ppm		19-Nov-2020	08:00		05-Jan-2021		✓	✓
calcium	VA20C2029-001	Bru 95-3	Soil/Solid	Solid	ME-MS41	0.21	0.01	%		19-Nov-2020	08:00		05-Jan-2021		✓	✓
cerium	VA20C2029-001	Bru 95-3	Soil/Solid	Solid	ME-MS41	2.19	0.02	ppm		19-Nov-2020	08:00		05-Jan-2021		✓	✓
cesium	VA20C2029-001	Bru 95-3	Soil/Solid	Solid	ME-MS41	0.05	0.05	ppm		19-Nov-2020	08:00		05-Jan-2021		✓	✓
chromium	VA20C2029-001	Bru 95-3	Soil/Solid	Solid	ME-MS41	2	1	ppm		19-Nov-2020	08:00		05-Jan-2021		✓	✓
cobalt	VA20C2029-001	Bru 95-3	Soil/Solid	Solid	ME-MS41	0.4	0.1	ppm		19-Nov-2020	08:00		05-Jan-2021		✓	✓
copper	VA20C2029-001	Bru 95-3	Soil/Solid	Solid	ME-MS41	6.6	0.2	ppm		19-Nov-2020	08:00		05-Jan-2021		✓	✓
gallium	VA20C2029-001	Bru 95-3	Soil/Solid	Solid	ME-MS41	0.27	0.05	ppm		19-Nov-2020	08:00		05-Jan-2021		✓	✓
germanium	VA20C2029-001	Bru 95-3	Soil/Solid	Solid	ME-MS41	<0.05	0.05	ppm		19-Nov-2020	08:00		05-Jan-2021		✓	✓
gold	VA20C2029-001	Bru 95-3	Soil/Solid	Solid	ME-MS41	<0.02	0.02	ppm		19-Nov-2020	08:00		05-Jan-2021		✓	✓
hafnium	VA20C2029-001	Bru 95-3	Soil/Solid	Solid	ME-MS41	0.15	0.02	ppm		19-Nov-2020	08:00		05-Jan-2021		✓	✓
indium	VA20C2029-001	Bru 95-3	Soil/Solid	Solid	ME-MS41	<0.005	0.005	ppm		19-Nov-2020	08:00		05-Jan-2021		✓	✓
iron	VA20C2029-001	Bru 95-3	Soil/Solid	Solid	ME-MS41	0.22	0.01	%		19-Nov-2020	08:00		05-Jan-2021		✓	✓
lanthanum	VA20C2029-001	Bru 95-3	Soil/Solid	Solid	ME-MS41	1.0	0.2	ppm		19-Nov-2020	08:00		05-Jan-2021		✓	✓
lead	VA20C2029-001	Bru 95-3	Soil/Solid	Solid	ME-MS41	1.1	0.2	ppm		19-Nov-2020	08:00		05-Jan-2021		✓	✓
lithium	VA20C2029-001	Bru 95-3	Soil/Solid	Solid	ME-MS41	1.9	0.1	ppm		19-Nov-2020	08:00		05-Jan-2021		✓	✓
magnesium	VA20C2029-001	Bru 95-3	Soil/Solid	Solid	ME-MS41	0.04	0.01	%		19-Nov-2020	08:00		05-Jan-2021		✓	✓
manganese	VA20C2029-001	Bru 95-3	Soil/Solid	Solid	ME-MS41	24	5	ppm		19-Nov-2020	08:00		05-Jan-2021		✓	✓
mercury	VA20C2029-001	Bru 95-3	Soil/Solid	Solid	ME-MS41	<0.01	0.01	ppm		19-Nov-2020	08:00		05-Jan-2021		✓	✓
molybdenum	VA20C2029-001	Bru 95-3	Soil/Solid	Solid	ME-MS41	0.06	0.05	ppm		19-Nov-2020	08:00		05-Jan-2021		✓	✓
nickel	VA20C2029-001	Bru 95-3	Soil/Solid	Solid	ME-MS41	1.2	0.2	ppm		19-Nov-2020	08:00		05-Jan-2021		✓	✓
niobium	VA20C2029-001	Bru 95-3	Soil/Solid	Solid	ME-MS41	0.06	0.05	ppm		19-Nov-2020	08:00		05-Jan-2021		✓	✓
phosphorus	VA20C2029-001	Bru 95-3	Soil/Solid	Solid	ME-MS41	30	10	ppm		19-Nov-2020	08:00		05-Jan-2021		✓	✓
potassium	VA20C2029-001	Bru 95-3	Soil/Solid	Solid	ME-MS41	0.02	0.01	%		19-Nov-2020	08:00		05-Jan-2021		✓	✓
rhenium	VA20C2029-001	Bru 95-3	Soil/Solid	Solid	ME-MS41	<0.001	0.001	ppm		19-Nov-2020	08:00		05-Jan-2021		✓	✓
rubidium	VA20C2029-001	Bru 95-3	Soil/Solid	Solid	ME-MS41	1.0	0.1	ppm		19-Nov-2020	08:00		05-Jan-2021		✓	✓
scandium	VA20C2029-001	Bru 95-3	Soil/Solid	Solid	ME-MS41	0.1	0.1	ppm		19-Nov-2020	08:00		05-Jan-2021		✓	✓
selenium	VA20C2029-001	Bru 95-3	Soil/Solid	Solid	ME-MS41	<0.2	0.2	ppm		19-Nov-2020	08:00		05-Jan-2021		✓	✓
silver	VA20C2029-001	Bru 95-3	Soil/Solid	Solid	ME-MS41	0.01	0.01	ppm		19-Nov-2020	08:00		05-Jan-2021		✓	✓
sodium	VA20C2029-001	Bru 95-3	Soil/Solid	Solid	ME-MS41	0.01	0.01	%		19-Nov-2020	08:00		05-Jan-2021		✓	✓
strontium	VA20C2029-001	Bru 95-3	Soil/Solid	Solid	ME-MS41	3.0	0.2	ppm		19-Nov-2020	08:00		05-Jan-2021		✓	✓
sulfur	VA20C2029-001	Bru 95-3	Soil/Solid	Solid	ME-MS41	<0.01	0.01	%		19-Nov-2020	08:00		05-Jan-2021		✓	✓
tantalum	VA20C2029-001	Bru 95-3	Soil/Solid	Solid	ME-MS41	<0.01	0.01	ppm		19-Nov-2020	08:00		05-Jan-2021		✓	✓
tellurium	VA20C2029-001	Bru 95-3	Soil/Solid	Solid	ME-MS41	<0.01	0.01	ppm		19-Nov-2020	08:00		05-Jan-2021		✓	✓
thallium	VA20C2029-001	Bru 95-3	Soil/Solid	Solid	ME-MS41	0.02	0.02	ppm		19-Nov-2020	08:00		05-Jan-2021		✓	✓
thorium	VA20C2029-001	Bru 95-3	Soil/Solid	Solid	ME-MS41	0.4	0.2	ppm		19-Nov-2020	08:00		05-Jan-2021		✓	✓
tin	VA20C2029-001	Bru 95-3	Soil/Solid	Solid	ME-MS41	<0.2	0.2	ppm		19-Nov-2020	08:00		05-Jan-2021		✓	✓
titanium	VA20C2029-001	Bru 95-3	Soil/Solid	Solid	ME-MS41	0.006	0.005	%		19-Nov-2020	08:00		05-Jan-2021		✓	✓
tungsten	VA20C2029-001	Bru 95-3	Soil/Solid	Solid	ME-MS41	<0.05	0.05	ppm		19-Nov-2020	08:00		05-Jan-2021		✓	✓
uranium	VA20C2029-001	Bru 95-3	Soil/Solid	Solid	ME-MS41	0.14	0.05	ppm		19-Nov-2020	08:00		05-Jan-2021		✓	✓
vanadium	VA20C2029-001	Bru 95-3	Soil/Solid	Solid	ME-MS41	1	1	ppm		19-Nov-2020	08:00		05-Jan-2021		✓	✓
yttrium	VA20C2029-001	Bru 95-3	Soil/Solid	Solid	ME-MS41	0.51	0.05	ppm		19-Nov-2020	08:00		05-Jan-2021		✓	✓
zinc	VA20C2029-001	Bru 95-3	Soil/Solid	Solid	ME-MS41	12	2	ppm		19-Nov-2020	08:00		05-Jan-2021		✓	✓
zirconium	VA20C2029-001	Bru 95-3	Soil/Solid	Solid	ME-MS41	4.4	0.5	ppm		19-Nov-2020	08:00		05-Jan-2021		✓	✓
Leachable Metals (Matrix: Soil/Solid)																
aluminum, leachable	VA20C2029-001	Bru 95-3	Soil/Solid	Solid	E446	1.26	0.0050	mg/L		19-Nov-2020	08:00	15-Dec-2020	16-Dec-2020	130891	✓	✓
antimony, leachable	VA20C2029-001	Bru 95-3	Soil/Solid	Solid	E446	<0.00010	0.00010	mg/L		19-Nov-2020	08:00	15-Dec-2020	16-Dec-2020	130891	✓	✓
arsenic, leachable	VA20C2029-001	Bru 95-3	Soil/Solid	Solid	E446	0.0014	0.0010	mg/L		19-Nov-2020	08:00	15-Dec-2020	16-Dec-2020	130891	✓	✓
barium, leachable	VA20C2029-001	Bru 95-3	Soil/Solid	Solid	E446	0.0052	0.0010	mg/L		19-Nov-2020	08:00	15-Dec-2020	16-Dec-2020	130891	✓	✓
beryllium, leachable	VA20C2029-001	Bru 95-3	Soil/Solid	Solid	E446	<0.00050	0.00050	mg/L		19-Nov-2020	08:00	15-Dec-2020	16-Dec-2020	130891	✓	✓
bismuth, leachable	VA20C2029-001	Bru 95-3	Soil/Solid	Solid	E446	<0.00050	0.00050	mg/L		19-Nov-2020	08:00	15-Dec-2020	16-Dec-2020	130891	✓	✓
boron, leachable	VA20C2029-001	Bru 95-3	Soil/Solid	Solid	E446	0.025	0.010	mg/L		19-Nov-2020	08:00	15-Dec-2020	16-Dec-2020	130891	✓	✓
cadmium, leachable	VA20C2029-001	Bru 95-3	Soil/Solid	Solid	E446	<0.000050	0.000050	mg/L		19-Nov-2020	08:00	15-Dec-2020	16-Dec-2020	130891	✓	✓
calcium, leachable	VA20C2029-001	Bru 95-3	Soil/Solid	Solid	E446	6.25	0.10	mg/L		19-Nov-2020	08:00	15-Dec-2020	16-Dec-2020	130891	✓	✓
chromium, leachable	VA20C2029-001	Bru 95-3	Soil/Solid	Solid	E446	0.00194	0.00050	mg/L		19-Nov-2020	08:00	15-Dec-2020	16-Dec-2020	130891	✓	✓
cobalt, leachable	VA20C2029-001	Bru 95-3	Soil/Solid	Solid	E446	0.00022	0.00010	mg/L		19-Nov-2020	08:00	15-Dec-2020	16-Dec-2020	130891	✓	✓
copper, leachable	VA20C2029-001	Bru 95-3	Soil/Solid	Solid	E446	<0.0010	0.0010	mg/L		19-Nov-2020	08:00	15-Dec-2020	16-Dec-2020	130891	✓	✓
iron, leachable	VA20C2029-001	Bru 95-3	Soil/Solid	Solid	E446	0.311	0.030	mg/L		19-Nov-2020	08:00	15-Dec-2020	16-Dec-2020	130891	✓	✓
lead, leachable	VA20C2029-001	Bru 95-3	Soil/Solid	Solid	E446	0.00094	0.00010	mg/L		19-Nov-2020	08:00	15-Dec-2020	16-Dec-2020	130891	✓	✓
lithium, leachable	VA20C2029-001	Bru 95-3	Soil/Solid	Solid	E446	<0.0050	0.0050	mg/L		19-Nov-2020	08:00	15-Dec-2020	16-Dec-2020	130891	✓	✓
magnesium, leachable	VA20C2029-001	Bru 95-3	Soil/Solid	Solid	E446	0.974	0.050	mg/L		19-Nov-2020	08:00	15-Dec-2020	16-Dec-2020	130891	✓	✓
manganese, leachable	VA20C2029-001	Bru 95-3	Soil/Solid	Solid	E446	0.00103	0.00050	mg/L		19-Nov-2020	08:00	15-Dec-2020	16-Dec-2020	130891	✓	✓
molybdenum, leachable	VA20C2029-001	Bru 95-3	Soil/Solid	Solid	E446	0.00012	0.00010	mg/L		19-Nov-2020	08:00	15-Dec-2020	16-Dec-2020	130891	✓	✓
nickel, leachable	VA20C2029-001	Bru 95-3	Soil/Solid	Solid	E446	0.00083	0.00050	mg/L		19-Nov-2020	08:00	15-Dec-2020	16-Dec-2020	130891	✓	✓
phosphorus, leachable	VA20C2029-001	Bru 95-3	Soil/Solid	Solid	E446	<0.30	0.30	mg/L		19-Nov-2020	08:00	15-Dec-2020	16-Dec-2020	130891	✓	✓
potassium, leachable	VA20C2029-001	Bru 95-3	Soil/Solid	Solid	E446	1.16	0.050	mg/L		19-Nov-2020	08:00	15-Dec-2020	16-Dec-2020	130891	✓	✓
selenium, leachable	VA20C2029-001	Bru 95-3	Soil/Solid	Solid	E446	<0.00050	0.00050	mg/L		19-Nov-2020	08:00	15-Dec-2020	16-Dec-2020	130891	✓	✓
silicon, leachable	VA20C2029-001	Bru 95-3	Soil/Solid	Solid	E446	2.68	0.050	mg/L		19-Nov-2020	08:00	15-Dec-2020	16-Dec-2020	130891	✓	✓
silver, leachable	VA20C2029-001	Bru 95-3	Soil/Solid	Solid	E446	<0.000050	0.000050	mg/L		19-Nov-2020	08:00	15-Dec-2020	16-Dec-2020	130891	✓	✓
sodium, leachable	VA20C2029-001	Bru 95-3	Soil/Solid	Solid	E446	0.354	0.050	mg/L		19-Nov-2020	08:00	15-Dec-2020	16-Dec-2020	130891	✓	✓
strontium, leachable	VA20C2029-001	Bru 95-3	Soil/Solid	Solid	E446	0.0170	0.00050	mg/L		19-Nov-2020	08:00	15-Dec-2020	16-Dec-2020	130891	✓	✓
sulfur, leachable	VA20C2029-001	Bru 95-3	Soil/Solid	Solid	E446	2.45	0.50	mg/L		19-Nov-2020	08:00	15-Dec-2020	16-Dec-2020	130891	✓	✓
thallium, leachable	VA20C2029-001	Bru 95-3	Soil/Solid	Solid	E446	<0.00010	0.00010	mg/L		19-Nov-2020	08:00	15-Dec-2020	16-Dec-2020	130891	✓	✓
tin, leachable	VA20C2029-001	Bru 95-3	Soil/Solid	Solid	E446	<0.00050	0.00050	mg/L		19-Nov-2020	08:00	15-Dec-2020	16-Dec-2020	130891	✓	✓
titanium, leachable	VA20C2029-001	Bru 95-3	Soil/Solid	Solid	E446	0.115	0.010	mg/L		19-Nov-2020	08:00	15-Dec-2020	16-Dec-2020	130891	✓	✓
uranium, leachable	VA20C2029-001	Bru 95-3	Soil/Solid	Solid	E446	0.000228	0.000010	mg/L		19-Nov-2020	08:00	15-Dec-2020	16-Dec-2020	130891	✓	✓
vanadium, leachable	VA20C2029-001	Bru 95-3	Soil/Solid	Solid	E446	0.0020	0.0010	mg/L		19-Nov-2020	08:00	15-Dec-2020	16-Dec-2020	130891	✓	✓
zinc, leachable	VA20C2029-001	Bru 95-3	Soil/Solid	Solid	E446	<0.010	0.010	mg/L		19-Nov-2020	08:00	15-Dec-2020	16-Dec-2020	130891	✓	✓
mercury, leachable	VA20C2029-001	Bru 95-3	Soil/Solid	Solid	E515	<0.000050	0.000050	mg/L		19-Nov-2020	08:00	15-Dec-2020	17-Dec-2020	130889	✓	✓
hardness (as CaCO3), dissolved	VA20C2029-001	Bru 95-3	Soil/Solid	Solid	E446	19.6	0.60	mg/L		19-Nov-2020	08:00	15-Dec-2020	16-Dec-2020	130891	✓	✓
Physical Tests (Matrix: Soil/Solid)																
moisture	VA20C2029-002	Bru 121-1_24.38 to 24.83	Soil/Solid	Solid	E144	<0.25	0.25	%		11-Nov-2020	12:30		17-Dec-2020	132183	✓	✓
pH	VA20C2029-002	Bru 121-1_24.38 to 24.83	Soil/Solid	Solid	E116	8.08	0.10	pH units		11-Nov-2020	12:30	17-Dec-2020	19-Dec-2020	132216	✓	*
Acid Base Accounting (Matrix: Soil/Solid)																
fizz rating	VA20C2029-002	Bru 121-1_24.38 to 24.83	Soil/Solid	Solid	OA-VOL08m	4	1			11-Nov-2020	12:30		05-Jan-2021		✓	✓
maximum potential acidity [MPA]	VA20C2029-002	Bru 121-1_24.38 to 24.83	Soil/Solid	Solid	OA-VOL08m	2.2	0.3	tCaCO3/kt		11-Nov-2020	12:30		05-Jan-2021		✓	✓
net neutralization potential [NNP]	VA20C2029-002	Bru 121-1_24.38 to 24.83	Soil/Solid	Solid	OA-VOL08m	866	1	tCaCO3/kt		11-Nov-2020	12:30		05-Jan-2021		✓	✓
neutralization potential [NP]	VA20C2029-002	Bru 121-1_24.38 to 24.83	Soil/Solid	Solid	OA-VOL08m	868	1	tCaCO3/kt		11-Nov-2020	12:30		05-Jan-2021		✓	✓
neutralization potential ratio [NPR], (NP/MPA)	VA20C2029-002	Bru 121-1_24.38 to 24.83	Soil/Solid	Solid	OA-VOL08m	396.80	0.01			11-Nov-2020	12:30		05-Jan-2021		✓	✓
carbon dioxide	VA20C2029-002	Bru 121-1_24.38 to 24.83	Soil/Solid	Solid	C-GAS05	39.6	0.2	%		11-Nov-2020	12:30		05-Jan-2021		✓	✓
carbon, total [TC]	VA20C2029-002	Bru 121-1_24.38 to 24.83	Soil/Solid	Solid	C-IR07	11.00	0.01	%		11-Nov-2020	12:30		05-Jan-2021		✓	✓
pH (1:1 soil:water)	VA20C2029-002	Bru 121-1_24.38 to 24.83	Soil/Solid	Solid	OA-ELE07	8.00	0.10	pH units		11-Nov-2020	12:30		05-Jan-2021		✓	✓
sulfide (as S), total minus carbonate leach	VA20C2029-002	Bru 121-1_24.38 to 24.83	Soil/Solid	Solid	S-CAL06	<0.01	0.01	%		11-Nov-2020	12:30		05-Jan-2021		✓	*
sulfur, residual	VA20C2029-002	Bru 121-1_24.38 to 24.83	Soil/Solid	Solid	S-IR04B	<0.01	0.01	%		11-Nov-2020	12:30		05-Jan-2021		✓	✓
sulfur, total	VA20C2029-002	Bru 121-1_24.38 to 24.83	Soil/Solid	Solid	S-IR08	0.07	0.01	%		11-Nov-2020	12:30		05-Jan-2021		✓	✓
weight, sample received	VA20C2029-002	Bru 121-1_24.38 to 24.83	Soil/Solid	Solid	WEI-21	3.36	0.02	kg		11-Nov-2020	12:30		05-Jan-2021		✓	✓
sulfate (as S), HCl leach	VA20C2029-002	Bru 121-1_24.38 to 24.83	Soil/Solid	Solid	S-GRA06A	<0.01	0.01	%		11-Nov-2020	12:30		05-Jan-2021		✓	✓
sulfate (as S), carbonate leach	VA20C2029-002	Bru 121-1_24.38 to 24.83	Soil/Solid	Solid	S-GRA06	<0.01	0.01	%		11-Nov-2020	12:30		05-Jan-2021		✓	✓
carbon, total inorganic [TIC]	VA20C2029-002	Bru 121-1_24.38 to 24.83	Soil/Solid	Solid	C-GAS05	10.80	0.05	%		11-Nov-2020	12:30		05-Jan-2021		✓	✓
Metals (Matrix: Soil/Solid)																
aluminum	VA20C2029-002	Bru 121-1_24.38 to 24.83	Soil/Solid	Solid	ME-MS41	0.15	0.01	%		11-Nov-2020	12:30		05-Jan-2021		✓	✓
antimony	VA20C2029-002	Bru 121-1_24.38 to 24.83	Soil/Solid	Solid	ME-MS41	<0.05	0.05	ppm		11-Nov-2020	12:30		05-Jan-2021		✓	✓
arsenic	VA20C2029-002	Bru 121-1_24.38 to 24.83	Soil/Solid	Solid	ME-MS41	1.7	0.1	ppm		11-Nov-2020	12:30		05-Jan-2021		✓	✓
barium	VA20C2029-002	Bru 121-1_24.38 to 24.83	Soil/Solid	Solid	ME-MS41	10	10	ppm		11-Nov-2020	12:30		05-Jan-2021		✓	✓
beryllium	VA20C2029-002	Bru 121-1_24.38 to 24.83	Soil/Solid	Solid	ME-MS41	0.18	0.05	ppm		11-Nov-2020	12:30		05-Jan-2021		✓	✓
bismuth	VA20C2029-002	Bru 121-1_24.38 to 24.83	Soil/Solid	Solid	ME-MS41	0.02	0.01	ppm		11-Nov-2020	12:30		05-Jan-2021		✓	✓
boron	VA20C2029-002	Bru 121-1_24.38 to 24.83	Soil/Solid	Solid	ME-MS41	10	10	ppm		11-Nov-2020	12:30		05-Jan-2021		✓	✓

Analyte	ALS Sample ID	Client Sample ID	Matrix	Sub-Matrix	Method	Results	Detection Limit	Units	Qual	Date Sampled	Time Sampled	Prep Date	Analysis Date	QC Lot	QC Eval	Hold Time Eval
cadmium	VA20C2029-002	Bru 121-1_24.38 to 24.83	Soil/Solid	Solid	ME-MS41	<0.01	0.01	ppm		11-Nov-2020	12:30		05-Jan-2021		✓	✓
calcium	VA20C2029-002	Bru 121-1_24.38 to 24.83	Soil/Solid	Solid	ME-MS41	>25.0	0.01	%		11-Nov-2020	12:30		05-Jan-2021		✓	✓
cerium	VA20C2029-002	Bru 121-1_24.38 to 24.83	Soil/Solid	Solid	ME-MS41	0.41	0.02	ppm		11-Nov-2020	12:30		05-Jan-2021		✓	✓
cesium	VA20C2029-002	Bru 121-1_24.38 to 24.83	Soil/Solid	Solid	ME-MS41	0.25	0.05	ppm		11-Nov-2020	12:30		05-Jan-2021		✓	✓
chromium	VA20C2029-002	Bru 121-1_24.38 to 24.83	Soil/Solid	Solid	ME-MS41	4	1	ppm		11-Nov-2020	12:30		05-Jan-2021		✓	✓
cobalt	VA20C2029-002	Bru 121-1_24.38 to 24.83	Soil/Solid	Solid	ME-MS41	1.7	0.1	ppm		11-Nov-2020	12:30		05-Jan-2021		✓	✓
copper	VA20C2029-002	Bru 121-1_24.38 to 24.83	Soil/Solid	Solid	ME-MS41	3.3	0.2	ppm		11-Nov-2020	12:30		05-Jan-2021		✓	✓
gallium	VA20C2029-002	Bru 121-1_24.38 to 24.83	Soil/Solid	Solid	ME-MS41	0.75	0.05	ppm		11-Nov-2020	12:30		05-Jan-2021		✓	✓
germanium	VA20C2029-002	Bru 121-1_24.38 to 24.83	Soil/Solid	Solid	ME-MS41	<0.05	0.05	ppm		11-Nov-2020	12:30		05-Jan-2021		✓	✓
gold	VA20C2029-002	Bru 121-1_24.38 to 24.83	Soil/Solid	Solid	ME-MS41	<0.02	0.02	ppm		11-Nov-2020	12:30		05-Jan-2021		✓	✓
hafnium	VA20C2029-002	Bru 121-1_24.38 to 24.83	Soil/Solid	Solid	ME-MS41	0.09	0.02	ppm		11-Nov-2020	12:30		05-Jan-2021		✓	✓
indium	VA20C2029-002	Bru 121-1_24.38 to 24.83	Soil/Solid	Solid	ME-MS41	0.011	0.005	ppm		11-Nov-2020	12:30		05-Jan-2021		✓	✓
iron	VA20C2029-002	Bru 121-1_24.38 to 24.83	Soil/Solid	Solid	ME-MS41	0.49	0.01	%		11-Nov-2020	12:30		05-Jan-2021		✓	✓
lanthanum	VA20C2029-002	Bru 121-1_24.38 to 24.83	Soil/Solid	Solid	ME-MS41	4.1	0.2	ppm		11-Nov-2020	12:30		05-Jan-2021		✓	✓
lead	VA20C2029-002	Bru 121-1_24.38 to 24.83	Soil/Solid	Solid	ME-MS41	1.3	0.2	ppm		11-Nov-2020	12:30		05-Jan-2021		✓	✓
lithium	VA20C2029-002	Bru 121-1_24.38 to 24.83	Soil/Solid	Solid	ME-MS41	2.8	0.1	ppm		11-Nov-2020	12:30		05-Jan-2021		✓	✓
magnesium	VA20C2029-002	Bru 121-1_24.38 to 24.83	Soil/Solid	Solid	ME-MS41	1.53	0.01	%		11-Nov-2020	12:30		05-Jan-2021		✓	✓
manganese	VA20C2029-002	Bru 121-1_24.38 to 24.83	Soil/Solid	Solid	ME-MS41	305	5	ppm		11-Nov-2020	12:30		05-Jan-2021		✓	✓
mercury	VA20C2029-002	Bru 121-1_24.38 to 24.83	Soil/Solid	Solid	ME-MS41	0.01	0.01	ppm		11-Nov-2020	12:30		05-Jan-2021		✓	✓
molybdenum	VA20C2029-002	Bru 121-1_24.38 to 24.83	Soil/Solid	Solid	ME-MS41	0.07	0.05	ppm		11-Nov-2020	12:30		05-Jan-2021		✓	✓
nickel	VA20C2029-002	Bru 121-1_24.38 to 24.83	Soil/Solid	Solid	ME-MS41	3.0	0.2	ppm		11-Nov-2020	12:30		05-Jan-2021		✓	✓
niobium	VA20C2029-002	Bru 121-1_24.38 to 24.83	Soil/Solid	Solid	ME-MS41	0.07	0.05	ppm		11-Nov-2020	12:30		05-Jan-2021		✓	✓
phosphorus	VA20C2029-002	Bru 121-1_24.38 to 24.83	Soil/Solid	Solid	ME-MS41	820	10	ppm		11-Nov-2020	12:30		05-Jan-2021		✓	✓
potassium	VA20C2029-002	Bru 121-1_24.38 to 24.83	Soil/Solid	Solid	ME-MS41	0.08	0.01	%		11-Nov-2020	12:30		05-Jan-2021		✓	✓
rhenium	VA20C2029-002	Bru 121-1_24.38 to 24.83	Soil/Solid	Solid	ME-MS41	0.002	0.001	ppm		11-Nov-2020	12:30		05-Jan-2021		✓	✓
rubidium	VA20C2029-002	Bru 121-1_24.38 to 24.83	Soil/Solid	Solid	ME-MS41	3.9	0.1	ppm		11-Nov-2020	12:30		05-Jan-2021		✓	✓
scandium	VA20C2029-002	Bru 121-1_24.38 to 24.83	Soil/Solid	Solid	ME-MS41	0.9	0.1	ppm		11-Nov-2020	12:30		05-Jan-2021		✓	✓
selenium	VA20C2029-002	Bru 121-1_24.38 to 24.83	Soil/Solid	Solid	ME-MS41	0.3	0.2	ppm		11-Nov-2020	12:30		05-Jan-2021		✓	✓
silver	VA20C2029-002	Bru 121-1_24.38 to 24.83	Soil/Solid	Solid	ME-MS41	<0.01	0.01	ppm		11-Nov-2020	12:30		05-Jan-2021		✓	✓
sodium	VA20C2029-002	Bru 121-1_24.38 to 24.83	Soil/Solid	Solid	ME-MS41	0.02	0.01	%		11-Nov-2020	12:30		05-Jan-2021		✓	✓
strontium	VA20C2029-002	Bru 121-1_24.38 to 24.83	Soil/Solid	Solid	ME-MS41	198.5	0.2	ppm		11-Nov-2020	12:30		05-Jan-2021		✓	✓
sulfur	VA20C2029-002	Bru 121-1_24.38 to 24.83	Soil/Solid	Solid	ME-MS41	0.07	0.01	%		11-Nov-2020	12:30		05-Jan-2021		✓	✓
tantalum	VA20C2029-002	Bru 121-1_24.38 to 24.83	Soil/Solid	Solid	ME-MS41	<0.01	0.01	ppm		11-Nov-2020	12:30		05-Jan-2021		✓	✓
tellurium	VA20C2029-002	Bru 121-1_24.38 to 24.83	Soil/Solid	Solid	ME-MS41	<0.01	0.01	ppm		11-Nov-2020	12:30		05-Jan-2021		✓	✓
thallium	VA20C2029-002	Bru 121-1_24.38 to 24.83	Soil/Solid	Solid	ME-MS41	0.03	0.02	ppm		11-Nov-2020	12:30		05-Jan-2021		✓	✓
thorium	VA20C2029-002	Bru 121-1_24.38 to 24.83	Soil/Solid	Solid	ME-MS41	0.9	0.2	ppm		11-Nov-2020	12:30		05-Jan-2021		✓	✓
tin	VA20C2029-002	Bru 121-1_24.38 to 24.83	Soil/Solid	Solid	ME-MS41	<0.2	0.2	ppm		11-Nov-2020	12:30		05-Jan-2021		✓	✓
titanium	VA20C2029-002	Bru 121-1_24.38 to 24.83	Soil/Solid	Solid	ME-MS41	<0.005	0.005	%		11-Nov-2020	12:30		05-Jan-2021		✓	✓
tungsten	VA20C2029-002	Bru 121-1_24.38 to 24.83	Soil/Solid	Solid	ME-MS41	<0.05	0.05	ppm		11-Nov-2020	12:30		05-Jan-2021		✓	✓
uranium	VA20C2029-002	Bru 121-1_24.38 to 24.83	Soil/Solid	Solid	ME-MS41	0.64	0.05	ppm		11-Nov-2020	12:30		05-Jan-2021		✓	✓
vanadium	VA20C2029-002	Bru 121-1_24.38 to 24.83	Soil/Solid	Solid	ME-MS41	6	1	ppm		11-Nov-2020	12:30		05-Jan-2021		✓	✓
yttrium	VA20C2029-002	Bru 121-1_24.38 to 24.83	Soil/Solid	Solid	ME-MS41	2.83	0.05	ppm		11-Nov-2020	12:30		05-Jan-2021		✓	✓
zinc	VA20C2029-002	Bru 121-1_24.38 to 24.83	Soil/Solid	Solid	ME-MS41	6	2	ppm		11-Nov-2020	12:30		05-Jan-2021		✓	✓
zirconium	VA20C2029-002	Bru 121-1_24.38 to 24.83	Soil/Solid	Solid	ME-MS41	2.3	0.5	ppm		11-Nov-2020	12:30		05-Jan-2021		✓	✓
Leachable Metals (Matrix: Soil/Solid)																
aluminum, leachable	VA20C2029-002	Bru 121-1_24.38 to 24.83	Soil/Solid	Solid	E446	0.131	0.0050	mg/L		11-Nov-2020	12:30	17-Dec-2020	20-Dec-2020	132217	✓	✓
antimony, leachable	VA20C2029-002	Bru 121-1_24.38 to 24.83	Soil/Solid	Solid	E446	0.000016	0.000010	mg/L		11-Nov-2020	12:30	17-Dec-2020	20-Dec-2020	132217	✓	✓
arsenic, leachable	VA20C2029-002	Bru 121-1_24.38 to 24.83	Soil/Solid	Solid	E446	<0.0010	0.0010	mg/L		11-Nov-2020	12:30	17-Dec-2020	20-Dec-2020	132217	✓	✓
barium, leachable	VA20C2029-002	Bru 121-1_24.38 to 24.83	Soil/Solid	Solid	E446	0.0106	0.0010	mg/L		11-Nov-2020	12:30	17-Dec-2020	20-Dec-2020	132217	✓	✓
beryllium, leachable	VA20C2029-002	Bru 121-1_24.38 to 24.83	Soil/Solid	Solid	E446	<0.00050	0.00050	mg/L		11-Nov-2020	12:30	17-Dec-2020	20-Dec-2020	132217	✓	✓
bismuth, leachable	VA20C2029-002	Bru 121-1_24.38 to 24.83	Soil/Solid	Solid	E446	<0.00050	0.00050	mg/L		11-Nov-2020	12:30	17-Dec-2020	20-Dec-2020	132217	✓	✓
boron, leachable	VA20C2029-002	Bru 121-1_24.38 to 24.83	Soil/Solid	Solid	E446	0.068	0.010	mg/L		11-Nov-2020	12:30	17-Dec-2020	20-Dec-2020	132217	✓	✓
cadmium, leachable	VA20C2029-002	Bru 121-1_24.38 to 24.83	Soil/Solid	Solid	E446	<0.000050	0.000050	mg/L		11-Nov-2020	12:30	17-Dec-2020	20-Dec-2020	132217	✓	✓
calcium, leachable	VA20C2029-002	Bru 121-1_24.38 to 24.83	Soil/Solid	Solid	E446	16.8	0.10	mg/L		11-Nov-2020	12:30	17-Dec-2020	20-Dec-2020	132217	✓	✓
chromium, leachable	VA20C2029-002	Bru 121-1_24.38 to 24.83	Soil/Solid	Solid	E446	<0.00050	0.00050	mg/L		11-Nov-2020	12:30	17-Dec-2020	20-Dec-2020	132217	✓	✓
cobalt, leachable	VA20C2029-002	Bru 121-1_24.38 to 24.83	Soil/Solid	Solid	E446	0.00011	0.00010	mg/L		11-Nov-2020	12:30	17-Dec-2020	20-Dec-2020	132217	✓	✓
copper, leachable	VA20C2029-002	Bru 121-1_24.38 to 24.83	Soil/Solid	Solid	E446	<0.0010	0.0010	mg/L		11-Nov-2020	12:30	17-Dec-2020	20-Dec-2020	132217	✓	✓
iron, leachable	VA20C2029-002	Bru 121-1_24.38 to 24.83	Soil/Solid	Solid	E446	<0.030	0.030	mg/L		11-Nov-2020	12:30	17-Dec-2020	20-Dec-2020	132217	✓	✓
lead, leachable	VA20C2029-002	Bru 121-1_24.38 to 24.83	Soil/Solid	Solid	E446	<0.00010	0.00010	mg/L		11-Nov-2020	12:30	17-Dec-2020	20-Dec-2020	132217	✓	✓
lithium, leachable	VA20C2029-002	Bru 121-1_24.38 to 24.83	Soil/Solid	Solid	E446	0.0052	0.0050	mg/L		11-Nov-2020	12:30	17-Dec-2020	20-Dec-2020	132217	✓	✓
magnesium, leachable	VA20C2029-002	Bru 121-1_24.38 to 24.83	Soil/Solid	Solid	E446	6.37	0.050	mg/L		11-Nov-2020	12:30	17-Dec-2020	20-Dec-2020	132217	✓	✓
manganese, leachable	VA20C2029-002	Bru 121-1_24.38 to 24.83	Soil/Solid	Solid	E446	0.00067	0.00050	mg/L		11-Nov-2020	12:30	17-Dec-2020	20-Dec-2020	132217	✓	✓
molybdenum, leachable	VA20C2029-002	Bru 121-1_24.38 to 24.83	Soil/Solid	Solid	E446	0.00099	0.00010	mg/L		11-Nov-2020	12:30	17-Dec-2020	20-Dec-2020	132217	✓	✓
nickel, leachable	VA20C2029-002	Bru 121-1_24.38 to 24.83	Soil/Solid	Solid	E446	<0.00050	0.00050	mg/L		11-Nov-2020	12:30	17-Dec-2020	20-Dec-2020	132217	✓	✓
phosphorus, leachable	VA20C2029-002	Bru 121-1_24.38 to 24.83	Soil/Solid	Solid	E446	<0.30	0.30	mg/L		11-Nov-2020	12:30	17-Dec-2020	20-Dec-2020	132217	✓	✓
potassium, leachable	VA20C2029-002	Bru 121-1_24.38 to 24.83	Soil/Solid	Solid	E446	6.82	0.050	mg/L		11-Nov-2020	12:30	17-Dec-2020	20-Dec-2020	132217	✓	✓
selenium, leachable	VA20C2029-002	Bru 121-1_24.38 to 24.83	Soil/Solid	Solid	E446	0.00220	0.00050	mg/L		11-Nov-2020	12:30	17-Dec-2020	20-Dec-2020	132217	✓	✓
silicon, leachable	VA20C2029-002	Bru 121-1_24.38 to 24.83	Soil/Solid	Solid	E446	1.44	0.050	mg/L		11-Nov-2020	12:30	17-Dec-2020	20-Dec-2020	132217	✓	✓
silver, leachable	VA20C2029-002	Bru 121-1_24.38 to 24.83	Soil/Solid	Solid	E446	<0.000050	0.000050	mg/L		11-Nov-2020	12:30	17-Dec-2020	20-Dec-2020	132217	✓	✓
sodium, leachable	VA20C2029-002	Bru 121-1_24.38 to 24.83	Soil/Solid	Solid	E446	2.23	0.050	mg/L		11-Nov-2020	12:30	17-Dec-2020	20-Dec-2020	132217	✓	✓
strontium, leachable	VA20C2029-002	Bru 121-1_24.38 to 24.83	Soil/Solid	Solid	E446	0.120	0.00050	mg/L		11-Nov-2020	12:30	17-Dec-2020	20-Dec-2020	132217	✓	✓
sulfur, leachable	VA20C2029-002	Bru 121-1_24.38 to 24.83	Soil/Solid	Solid	E446	6.60	0.50	mg/L		11-Nov-2020	12:30	17-Dec-2020	20-Dec-2020	132217	✓	✓
thallium, leachable	VA20C2029-002	Bru 121-1_24.38 to 24.83	Soil/Solid	Solid	E446	<0.00010	0.00010	mg/L		11-Nov-2020	12:30	17-Dec-2020	20-Dec-2020	132217	✓	✓
tin, leachable	VA20C2029-002	Bru 121-1_24.38 to 24.83	Soil/Solid	Solid	E446	<0.00050	0.00050	mg/L		11-Nov-2020	12:30	17-Dec-2020	20-Dec-2020	132217	✓	✓
titanium, leachable	VA20C2029-002	Bru 121-1_24.38 to 24.83	Soil/Solid	Solid	E446	<0.010	0.010	mg/L		11-Nov-2020	12:30	17-Dec-2020	20-Dec-2020	132217	✓	✓
uranium, leachable	VA20C2029-002	Bru 121-1_24.38 to 24.83	Soil/Solid	Solid	E446	0.000650	0.000010	mg/L		11-Nov-2020	12:30	17-Dec-2020	20-Dec-2020	132217	✓	✓
vanadium, leachable	VA20C2029-002	Bru 121-1_24.38 to 24.83	Soil/Solid	Solid	E446	0.0032	0.0010	mg/L		11-Nov-2020	12:30	17-Dec-2020	20-Dec-2020	132217	✓	✓
zinc, leachable	VA20C2029-002	Bru 121-1_24.38 to 24.83	Soil/Solid	Solid	E446	<0.010	0.010	mg/L		11-Nov-2020	12:30	17-Dec-2020	20-Dec-2020	132217	✓	✓
mercury, leachable	VA20C2029-002	Bru 121-1_24.38 to 24.83	Soil/Solid	Solid	E515	<0.000050	0.000050	mg/L		11-Nov-2020	12:30	17-Dec-2020	19-Dec-2020	132215	✓	✗
hardness (as CaCO3), dissolved	VA20C2029-002	Bru 121-1_24.38 to 24.83	Soil/Solid	Solid	E446	68.2	0.60	mg/L		11-Nov-2020	12:30	17-Dec-2020	20-Dec-2020	132217	✓	✓
Physical Tests (Matrix: Soil/Solid)																
moisture	VA20C2029-003	Bru 121-1_36.57 to 37.00	Soil/Solid	Solid	E144	0.52	0.25	%		11-Nov-2020	12:30		17-Dec-2020	132183	✓	✓
pH	VA20C2029-003	Bru 121-1_36.57 to 37.00	Soil/Solid	Solid	E116	8.07	0.10	pH units		11-Nov-2020	12:30	17-Dec-2020	19-Dec-2020	132216	✓	✗
Acid Base Accounting (Matrix: Soil/Solid)																
fizz rating	VA20C2029-003	Bru 121-1_36.57 to 37.00	Soil/Solid	Solid	OA-VOL08m	1	1			11-Nov-2020	12:30		05-Jan-2021		✓	✓
maximum potential acidity [MPA]	VA20C2029-003	Bru 121-1_36.57 to 37.00	Soil/Solid	Solid	OA-VOL08m	7.2	0.3	tCaCO3/kt		11-Nov-2020	12:30		05-Jan-2021		✓	✓
net neutralization potential [NNP]	VA20C2029-003	Bru 121-1_36.57 to 37.00	Soil/Solid	Solid	OA-VOL08m	3	1	tCaCO3/kt		11-Nov-2020	12:30		05-Jan-2021		✓	✓
neutralization potential [NP]	VA20C2029-003	Bru 121-1_36.57 to 37.00	Soil/Solid	Solid	OA-VOL08m	10	1	tCaCO3/kt		11-Nov-2020	12:30		05-Jan-2021		✓	✓
neutralization potential ratio [NPR], (NP/MPA)	VA20C2029-003	Bru 121-1_36.57 to 37.00	Soil/Solid	Solid	OA-VOL08m	1.39	0.01			11-Nov-2020	12:30		05-Jan-2021		✓	✓
carbon dioxide	VA20C2029-003	Bru 121-1_36.57 to 37.00	Soil/Solid	Solid	C-GAS05	0.3	0.2	%		11-Nov-2020	12:30		05-Jan-2021		✓	✓
carbon, total [TC]	VA20C2029-003	Bru 121-1_36.57 to 37.00	Soil/Solid	Solid	C-IR07	0.11	0.01	%		11-Nov-2020	12:30		05-Jan-2021		✓	✓
pH (1:1 soil:water)	VA20C2029-003	Bru 121-1_36.57 to 37.00	Soil/Solid	Solid	OA-ELE07	7.40	0.10	pH units		11-Nov-2020	12:30		05-Jan-2021		✓	✓
sulfide (as S), total minus carbonate leach	VA20C2029-003	Bru 121-1_36.57 to 37.00	Soil/Solid	Solid	S-CAL06	<0.01	0.01	%		11-Nov-2020	12:30		05-Jan-2021		✓	✗
sulfur, residual	VA20C2029-003	Bru 121-1_36.57 to 37.00	Soil/Solid	Solid	S-IR04B	<0.01	0.01	%		11-Nov-2020	12:30		05-Jan-2021		✓	✓
sulfur, total	VA20C2029-003	Bru 121-1_36.57 to 37.00	Soil/Solid	Solid	S-IR08	0.23	0.01	%		11-Nov-2020	12:30		05-Jan-2021		✓	✓
weight, sample received	VA20C2029-003	Bru 121-1_36.57 to 37.00	Soil/Solid	Solid	WEI-21	2.50	0.02	kg		11-Nov-2020	12:30		05-Jan-2021		✓	✓
sulfate (as S), HCl leach	VA20C2029-003	Bru 121-1_36.57 to 37.00	Soil/Solid	Solid	S-GRA06A	<0.01	0.01	%		11-Nov-2020	12:30		05-Jan-2021		✓	✓
sulfate (as S), carbonate leach	VA20C2029-003	Bru 121-1_36.57 to 37.00	Soil/Solid	Solid	S-GRA06	0.06	0.01	%		11-Nov-2020	12:30		05-Jan-2021		✓	✓
carbon, total inorganic [TIC]	VA20C2029-003	Bru 121-1_36.57 to 37.00	Soil/Solid	Solid	C-GAS05	0.07	0.05	%		11-Nov-2020	12:30		05-Jan-2021		✓	✓
Metals (Matrix: Soil/Solid)																
aluminum	VA20C2029-003	Bru 121-1_36.57 to 37.00	Soil/Solid	Solid	ME-MS41	1.56	0.01	%		11-Nov-2020	12:30		05-Jan-2021		✓	✓
antimony	VA20C2029-003	Bru 121-1_36.57 to 37.00	Soil/Solid	Solid	ME-MS41	<0.05	0.05	ppm		11-Nov-2020	12:30		05-Jan-2021		✓	✓
arsenic	VA20C2029-003	Bru 121-1_36.57 to 37.00	Soil/Solid	Solid	ME-MS41	30.4	0.1	ppm		11-Nov-2020	12:30		05-Jan-2021		✓	✓
barium	VA20C2029-003	Bru 121-1_36.57 to 37.00	Soil/Solid	Solid	ME-MS41	30	10	ppm		11-Nov-2020	12:30		05-Jan-2021		✓	✓
beryllium	VA20C2029-003	Bru 121-1_36.57 to 37.00	Soil/Solid	Solid	ME-MS41	1.01	0.05	ppm		11-Nov-2020	12:30		05-Jan-2021		✓	✓
bismuth	VA20C2029-003	Bru 121-1_36.57 to 37.00	Soil/Solid	Solid	ME-MS41	0.18	0.01	ppm		11-Nov-2020	12:30		05-Jan-2021		✓	✓
boron	VA20C2029-003	Bru 121-1_36.57 to 37.00	Soil/Solid	Solid	ME-MS41	70	10	ppm		11-Nov-2020	12:30		05-Jan-2021		✓	✓
cadmium	VA20C2029-003	Bru 121-1_36.57 to 37.00	Soil/Solid	Solid	ME-MS41	<0.01	0.01	ppm		11-Nov-2020	12:30		05-Jan-2021		✓	✓
calcium	VA20C2029-003	Bru 121-1_36.57 to 37.00	Soil/Solid	Solid	ME-MS41	0.81	0.01	%		11-Nov-2020	12:30		05-Jan-2021		✓	✓
cerium	VA20C2029-003	Bru 121-1_36.57 to 37.00	Soil/Solid	Solid	ME-MS41	54.6	0.02	ppm		11-Nov-2020	12:30		05-Jan-2021		✓	✓
cesium	VA20C2029-003	Bru 121-1_36.57 to 37.00	Soil/Solid	Solid	ME-MS41	1.05	0.05	ppm		11-Nov-2020	12:30		05-Jan-2021		✓	✓
chromium	VA20C2029-003	Bru 121-1_36.57 to 37.00	Soil/Solid	Solid	ME-MS41	24	1	ppm		11-Nov-2020	12:30		05-Jan-2021		✓	✓
cobalt	VA20C2029-003	Bru 121-1_36.57 to 37.00	Soil/Solid	Solid	ME-MS41	16.9	0.1	ppm		11-Nov-2020	12:30		05-Jan-2021		✓	✓
copper	VA20C2029-003	Bru 121-1_36.57 to 37.00	Soil/Solid	Solid	ME-MS41	24.9	0.2	ppm		11-Nov-2020	12:30		05-Jan-2021		✓	✓
gallium	VA20C2029-003	Bru 121-1_36.57 to 37.00	Soil/Solid	Solid	ME-MS41	6.65	0.05	ppm		11-Nov-2020	12:30		05-Jan-2021		✓	✓
germanium	VA20C2029-003	Bru 121-1_36.57 to 37.00	Soil/Solid	Solid	ME-MS41	0.13	0.05	ppm		11-Nov-2020	12:30		05-Jan-2021		✓	✓
gold	VA20C2029-003	Bru 121-1_36.57 to 37.00	Soil/Solid	Solid	ME-MS41	<0.02	0.02	ppm		11-Nov-2020	12:30		05-Jan-2021		✓	✓
hafnium	VA20C2029-003	Bru 121-1_36.57 to 37.00	Soil/Solid	Solid	ME-MS41	0.08	0.02	ppm		11-Nov-2020	12:30		05-Jan-2021		✓	✓
indium	VA20C2029-003	Bru 121-1_36.57 to 37.00	Soil/Solid	Solid	ME-MS41	0.016	0.005	ppm		11-Nov-2020	12:30		05-Jan-2021		✓	✓
iron	VA20C2029-003	Bru 121-1_36.57 to 37.00	Soil/Solid	Solid	ME-MS41	1.59	0.01	%		11-Nov-2020	12:30		05-Jan-2021		✓	✓
lanthanum	VA20C2029-003	Bru 121-1_36.57 to 37.00	Soil/Solid	Solid	ME-MS41	18.7	0.2	ppm		11-Nov-2020	12:30		05-Jan-2021		✓	✓
lead	VA20C2029-003	Bru 121-1_36.57 to 37.00	Soil/Solid	Solid	ME-MS41	13.1	0.2	ppm		11-Nov-2020	12:30		05-Jan-2021		✓	✓
lithium	VA20C2029-003	Bru 121-1_36.57 to 37.00	Soil/Solid	Solid	ME-MS41	17.6	0.1	ppm		11-Nov-2020	12:30		05-Jan-2021		✓	✓
magnesium	VA20C2029-003	Bru 121-1_36.57 to 37.00	Soil/Solid	Solid	ME-MS41	0.39	0.01	%		11-Nov-2020	12:30		05-Jan-2021		✓	✓
manganese	VA20C2029-003	Bru 121-1_36.57 to 37.00	Soil/Solid	Solid	ME-MS41	101	5	ppm		11-Nov-2020	12:30		05-Jan-2021		✓	✓
mercury	VA20C2029-003	Bru 121-1_36.57 to 37.00	Soil/Solid	Solid	ME-MS41	0.25	0.01	ppm		11-Nov-2020	12:30		05-Jan-2021		✓	✓
molybdenum	VA20C2029-003	Bru 121-1_36.57 to 37.00	Soil/Solid	Solid	ME-MS41	0.22	0.05	ppm		11-Nov-2020	12:30		05-Jan-2021		✓	✓
nickel	VA20C2029-003	Bru 121-1_36.57 to 37.00	Soil/Solid	Solid	ME-MS41	38.0	0.2	ppm		11-Nov-2020	12:30		05-Jan-2021		✓	✓
niobium	VA20C2029-003	Bru 121-1_36.57 to 37.00	Soil/Solid	Solid	ME-MS41	<0.05	0.05	ppm		11-Nov-2020	12:30		05-Jan-2021		✓	✓
phosphorus	VA20C2029-003	Bru 121-1_36.57 to 37.00	Soil/Solid	Solid	ME-MS41	2180	10	ppm		11-Nov-2020	12:30		05-Jan-2021		✓	✓
potassium	VA20C2029-003	Bru 121-1_36.57 to 37.00	Soil/Solid	Solid	ME-MS41	0.88	0.01	%		11-Nov-2020	12:30		05-Jan-2021		✓	✓
rhenium	VA20C2029-003	Bru 121-1_36.57 to 37.00	Soil/Solid	Solid	ME-MS41	0.013	0.001	ppm		11-Nov-2020	12:30		05-Jan-2021		✓	✓
rubidium	VA20C2029-003	Bru 121-1_36.57 to 37.00	Soil/Solid	Solid	ME-MS41	36.8	0.1	ppm		11-Nov-2020	12:30		05-Jan-2021		✓	✓
scandium	VA20C2029-003	Bru 121-1_36.57 to 37.00	Soil/Solid	Solid	ME-MS41	4.2	0.1	ppm		11-Nov-2020	12:30		05-Jan-2021		✓	✓
selenium	VA20C2029-003	Bru 121-1_36.57 to 37.00	Soil/Solid	Solid	ME-MS41	13.1	0.2	ppm		11-Nov-2020	12:30		05-Jan-2021		✓	✓
silver	VA20C2029-003	Bru 121-1_36.57 to 37.00	Soil/Solid	Solid	ME-MS41	0.40	0.01	ppm		11-Nov-2020	12:30		05-Jan-2021		✓	✓
sodium	VA20C2029-003	Bru 121-1_36.57 to 37.00	Soil/Solid	Solid	ME-MS41	0.03	0.01	%		11-Nov-2020	12:30		05-Jan-2021		✓	✓
strontium	VA20C2029-003	Bru 121-1_36.57 to 37.00	Soil/Solid	Solid	ME-MS41	91.7	0.2	ppm		11-Nov-2020	12:30		05-Jan-2021		✓	✓
sulfur	VA20C2029-003	Bru 121

Analyte	ALS Sample ID	Client Sample ID	Matrix	Sub-Matrix	Method	Results	Detection Limit	Units	Qual	Date Sampled	Time Sampled	Prep Date	Analysis Date	QC Lot	QC Eval	Hold Time Eval
tungsten	VA20C2029-003	Bru 121-1_36.57 to 37.00	Soil/Solid	Solid	ME-MS41	0.20	0.05	ppm		11-Nov-2020	12:30		05-Jan-2021		✓	✓
uranium	VA20C2029-003	Bru 121-1_36.57 to 37.00	Soil/Solid	Solid	ME-MS41	30.0	0.05	ppm		11-Nov-2020	12:30		05-Jan-2021		✓	✓
vanadium	VA20C2029-003	Bru 121-1_36.57 to 37.00	Soil/Solid	Solid	ME-MS41	17	1	ppm		11-Nov-2020	12:30		05-Jan-2021		✓	✓
yttrium	VA20C2029-003	Bru 121-1_36.57 to 37.00	Soil/Solid	Solid	ME-MS41	19.95	0.05	ppm		11-Nov-2020	12:30		05-Jan-2021		✓	✓
zinc	VA20C2029-003	Bru 121-1_36.57 to 37.00	Soil/Solid	Solid	ME-MS41	28	2	ppm		11-Nov-2020	12:30		05-Jan-2021		✓	✓
zirconium	VA20C2029-003	Bru 121-1_36.57 to 37.00	Soil/Solid	Solid	ME-MS41	5.1	0.5	ppm		11-Nov-2020	12:30		05-Jan-2021		✓	✓
Leachable Metals (Matrix: Soil/Solid)																
aluminum, leachable	VA20C2029-003	Bru 121-1_36.57 to 37.00	Soil/Solid	Solid	E446	<0.0050	0.0050	mg/L		11-Nov-2020	12:30	17-Dec-2020	20-Dec-2020	132217	✓	✓
antimony, leachable	VA20C2029-003	Bru 121-1_36.57 to 37.00	Soil/Solid	Solid	E446	0.00012	0.00010	mg/L		11-Nov-2020	12:30	17-Dec-2020	20-Dec-2020	132217	✓	✓
arsenic, leachable	VA20C2029-003	Bru 121-1_36.57 to 37.00	Soil/Solid	Solid	E446	0.0307	0.0010	mg/L		11-Nov-2020	12:30	17-Dec-2020	20-Dec-2020	132217	✓	✓
barium, leachable	VA20C2029-003	Bru 121-1_36.57 to 37.00	Soil/Solid	Solid	E446	0.0937	0.0010	mg/L		11-Nov-2020	12:30	17-Dec-2020	20-Dec-2020	132217	✓	✓
beryllium, leachable	VA20C2029-003	Bru 121-1_36.57 to 37.00	Soil/Solid	Solid	E446	<0.00050	0.00050	mg/L		11-Nov-2020	12:30	17-Dec-2020	20-Dec-2020	132217	✓	✓
bismuth, leachable	VA20C2029-003	Bru 121-1_36.57 to 37.00	Soil/Solid	Solid	E446	<0.00050	0.00050	mg/L		11-Nov-2020	12:30	17-Dec-2020	20-Dec-2020	132217	✓	✓
boron, leachable	VA20C2029-003	Bru 121-1_36.57 to 37.00	Soil/Solid	Solid	E446	0.415	0.010	mg/L		11-Nov-2020	12:30	17-Dec-2020	20-Dec-2020	132217	✓	✓
cadmium, leachable	VA20C2029-003	Bru 121-1_36.57 to 37.00	Soil/Solid	Solid	E446	<0.000050	0.000050	mg/L		11-Nov-2020	12:30	17-Dec-2020	20-Dec-2020	132217	✓	✓
calcium, leachable	VA20C2029-003	Bru 121-1_36.57 to 37.00	Soil/Solid	Solid	E446	77.4	0.10	mg/L		11-Nov-2020	12:30	17-Dec-2020	20-Dec-2020	132217	✓	✓
chromium, leachable	VA20C2029-003	Bru 121-1_36.57 to 37.00	Soil/Solid	Solid	E446	<0.00050	0.00050	mg/L		11-Nov-2020	12:30	17-Dec-2020	20-Dec-2020	132217	✓	✓
cobalt, leachable	VA20C2029-003	Bru 121-1_36.57 to 37.00	Soil/Solid	Solid	E446	0.00153	0.00010	mg/L		11-Nov-2020	12:30	17-Dec-2020	20-Dec-2020	132217	✓	✓
copper, leachable	VA20C2029-003	Bru 121-1_36.57 to 37.00	Soil/Solid	Solid	E446	<0.0010	0.0010	mg/L		11-Nov-2020	12:30	17-Dec-2020	20-Dec-2020	132217	✓	✓
iron, leachable	VA20C2029-003	Bru 121-1_36.57 to 37.00	Soil/Solid	Solid	E446	<0.030	0.030	mg/L		11-Nov-2020	12:30	17-Dec-2020	20-Dec-2020	132217	✓	✓
lead, leachable	VA20C2029-003	Bru 121-1_36.57 to 37.00	Soil/Solid	Solid	E446	<0.00010	0.00010	mg/L		11-Nov-2020	12:30	17-Dec-2020	20-Dec-2020	132217	✓	✓
lithium, leachable	VA20C2029-003	Bru 121-1_36.57 to 37.00	Soil/Solid	Solid	E446	0.0821	0.0050	mg/L		11-Nov-2020	12:30	17-Dec-2020	20-Dec-2020	132217	✓	✓
magnesium, leachable	VA20C2029-003	Bru 121-1_36.57 to 37.00	Soil/Solid	Solid	E446	24.0	0.050	mg/L		11-Nov-2020	12:30	17-Dec-2020	20-Dec-2020	132217	✓	✓
manganese, leachable	VA20C2029-003	Bru 121-1_36.57 to 37.00	Soil/Solid	Solid	E446	0.00149	0.00050	mg/L		11-Nov-2020	12:30	17-Dec-2020	20-Dec-2020	132217	✓	✓
molybdenum, leachable	VA20C2029-003	Bru 121-1_36.57 to 37.00	Soil/Solid	Solid	E446	0.00623	0.00010	mg/L		11-Nov-2020	12:30	17-Dec-2020	20-Dec-2020	132217	✓	✓
nickel, leachable	VA20C2029-003	Bru 121-1_36.57 to 37.00	Soil/Solid	Solid	E446	0.0101	0.00050	mg/L		11-Nov-2020	12:30	17-Dec-2020	20-Dec-2020	132217	✓	✓
phosphorus, leachable	VA20C2029-003	Bru 121-1_36.57 to 37.00	Soil/Solid	Solid	E446	<0.30	0.30	mg/L		11-Nov-2020	12:30	17-Dec-2020	20-Dec-2020	132217	✓	✓
potassium, leachable	VA20C2029-003	Bru 121-1_36.57 to 37.00	Soil/Solid	Solid	E446	53.9	0.050	mg/L		11-Nov-2020	12:30	17-Dec-2020	20-Dec-2020	132217	✓	✓
selenium, leachable	VA20C2029-003	Bru 121-1_36.57 to 37.00	Soil/Solid	Solid	E446	1.64	0.00050	mg/L		11-Nov-2020	12:30	17-Dec-2020	20-Dec-2020	132217	✓	✓
silicon, leachable	VA20C2029-003	Bru 121-1_36.57 to 37.00	Soil/Solid	Solid	E446	2.26	0.050	mg/L		11-Nov-2020	12:30	17-Dec-2020	20-Dec-2020	132217	✓	✓
silver, leachable	VA20C2029-003	Bru 121-1_36.57 to 37.00	Soil/Solid	Solid	E446	0.000066	0.000050	mg/L		11-Nov-2020	12:30	17-Dec-2020	20-Dec-2020	132217	✓	✓
sodium, leachable	VA20C2029-003	Bru 121-1_36.57 to 37.00	Soil/Solid	Solid	E446	19.5	0.050	mg/L		11-Nov-2020	12:30	17-Dec-2020	20-Dec-2020	132217	✓	✓
strontium, leachable	VA20C2029-003	Bru 121-1_36.57 to 37.00	Soil/Solid	Solid	E446	0.505	0.00050	mg/L		11-Nov-2020	12:30	17-Dec-2020	20-Dec-2020	132217	✓	✓
sulfur, leachable	VA20C2029-003	Bru 121-1_36.57 to 37.00	Soil/Solid	Solid	E446	86.2	0.50	mg/L		11-Nov-2020	12:30	17-Dec-2020	20-Dec-2020	132217	✓	✓
thallium, leachable	VA20C2029-003	Bru 121-1_36.57 to 37.00	Soil/Solid	Solid	E446	0.00024	0.00010	mg/L		11-Nov-2020	12:30	17-Dec-2020	20-Dec-2020	132217	✓	✓
tin, leachable	VA20C2029-003	Bru 121-1_36.57 to 37.00	Soil/Solid	Solid	E446	<0.00050	0.00050	mg/L		11-Nov-2020	12:30	17-Dec-2020	20-Dec-2020	132217	✓	✓
titanium, leachable	VA20C2029-003	Bru 121-1_36.57 to 37.00	Soil/Solid	Solid	E446	<0.010	0.010	mg/L		11-Nov-2020	12:30	17-Dec-2020	20-Dec-2020	132217	✓	✓
uranium, leachable	VA20C2029-003	Bru 121-1_36.57 to 37.00	Soil/Solid	Solid	E446	0.117	0.000010	mg/L		11-Nov-2020	12:30	17-Dec-2020	20-Dec-2020	132217	✓	✓
vanadium, leachable	VA20C2029-003	Bru 121-1_36.57 to 37.00	Soil/Solid	Solid	E446	<0.0010	0.0010	mg/L		11-Nov-2020	12:30	17-Dec-2020	20-Dec-2020	132217	✓	✓
zinc, leachable	VA20C2029-003	Bru 121-1_36.57 to 37.00	Soil/Solid	Solid	E446	<0.010	0.010	mg/L		11-Nov-2020	12:30	17-Dec-2020	20-Dec-2020	132217	✓	✓
mercury, leachable	VA20C2029-003	Bru 121-1_36.57 to 37.00	Soil/Solid	Solid	E515	<0.000050	0.000050	mg/L		11-Nov-2020	12:30	17-Dec-2020	19-Dec-2020	132215	✓	✓
hardness (as CaCO3), dissolved	VA20C2029-003	Bru 121-1_36.57 to 37.00	Soil/Solid	Solid	E446	292	0.60	mg/L		11-Nov-2020	12:30	17-Dec-2020	20-Dec-2020	132217	✓	✓
Physical Tests (Matrix: Soil/Solid)																
moisture	VA20C2029-004	Bru 146_36.82 to 37.13	Soil/Solid	Solid	E144	<0.25	0.25	%		11-Nov-2020	00:50		17-Dec-2020	132183	✓	✓
pH	VA20C2029-004	Bru 146_36.82 to 37.13	Soil/Solid	Solid	E116	8.17	0.10	pH units		11-Nov-2020	00:50	17-Dec-2020	19-Dec-2020	132216	✓	✗
Acid Base Accounting (Matrix: Soil/Solid)																
fizz rating	VA20C2029-004	Bru 146_36.82 to 37.13	Soil/Solid	Solid	OA-VOL08m	4	1			11-Nov-2020	00:50		05-Jan-2021		✓	✓
maximum potential acidity [MPA]	VA20C2029-004	Bru 146_36.82 to 37.13	Soil/Solid	Solid	OA-VOL08m	1.3	0.3	tCaCO3/kt		11-Nov-2020	00:50		05-Jan-2021		✓	✓
net neutralization potential [NNP]	VA20C2029-004	Bru 146_36.82 to 37.13	Soil/Solid	Solid	OA-VOL08m	819	1	tCaCO3/kt		11-Nov-2020	00:50		05-Jan-2021		✓	✓
neutralization potential [NP]	VA20C2029-004	Bru 146_36.82 to 37.13	Soil/Solid	Solid	OA-VOL08m	820	1	tCaCO3/kt		11-Nov-2020	00:50		05-Jan-2021		✓	✓
neutralization potential ratio [NPR], (NP/MPA)	VA20C2029-004	Bru 146_36.82 to 37.13	Soil/Solid	Solid	OA-VOL08m	656.00	0.01			11-Nov-2020	00:50		05-Jan-2021		✓	✓
carbon dioxide	VA20C2029-004	Bru 146_36.82 to 37.13	Soil/Solid	Solid	C-GAS05	39.6	0.2	%		11-Nov-2020	00:50		05-Jan-2021		✓	✓
carbon, total [TC]	VA20C2029-004	Bru 146_36.82 to 37.13	Soil/Solid	Solid	C-IR07	10.90	0.01	%		11-Nov-2020	00:50		05-Jan-2021		✓	✓
pH (1:1 soil:water)	VA20C2029-004	Bru 146_36.82 to 37.13	Soil/Solid	Solid	OA-ELE07	8.00	0.10	pH units		11-Nov-2020	00:50		05-Jan-2021		✓	✓
sulfide (as S), total minus carbonate leach	VA20C2029-004	Bru 146_36.82 to 37.13	Soil/Solid	Solid	S-CAL06	<0.01	0.01	%		11-Nov-2020	00:50		05-Jan-2021		✓	✗
sulfur, residual	VA20C2029-004	Bru 146_36.82 to 37.13	Soil/Solid	Solid	S-IR04B	<0.01	0.01	%		11-Nov-2020	00:50		05-Jan-2021		✓	✓
sulfur, total	VA20C2029-004	Bru 146_36.82 to 37.13	Soil/Solid	Solid	S-IR08	0.04	0.01	%		11-Nov-2020	00:50		05-Jan-2021		✓	✓
weight, sample received	VA20C2029-004	Bru 146_36.82 to 37.13	Soil/Solid	Solid	WEI-21	3.18	0.02	kg		11-Nov-2020	00:50		05-Jan-2021		✓	✓
sulfate (as S), HCl leach	VA20C2029-004	Bru 146_36.82 to 37.13	Soil/Solid	Solid	S-GRA06A	<0.01	0.01	%		11-Nov-2020	00:50		05-Jan-2021		✓	✓
sulfate (as S), carbonate leach	VA20C2029-004	Bru 146_36.82 to 37.13	Soil/Solid	Solid	S-GRA06	<0.01	0.01	%		11-Nov-2020	00:50		05-Jan-2021		✓	✓
carbon, total inorganic [TIC]	VA20C2029-004	Bru 146_36.82 to 37.13	Soil/Solid	Solid	C-GAS05	10.80	0.05	%		11-Nov-2020	00:50		05-Jan-2021		✓	✓
Metals (Matrix: Soil/Solid)																
aluminum	VA20C2029-004	Bru 146_36.82 to 37.13	Soil/Solid	Solid	ME-MS41	0.16	0.01	%		11-Nov-2020	00:50		05-Jan-2021		✓	✓
antimony	VA20C2029-004	Bru 146_36.82 to 37.13	Soil/Solid	Solid	ME-MS41	<0.05	0.05	ppm		11-Nov-2020	00:50		05-Jan-2021		✓	✓
arsenic	VA20C2029-004	Bru 146_36.82 to 37.13	Soil/Solid	Solid	ME-MS41	0.8	0.1	ppm		11-Nov-2020	00:50		05-Jan-2021		✓	✓
barium	VA20C2029-004	Bru 146_36.82 to 37.13	Soil/Solid	Solid	ME-MS41	10	10	ppm		11-Nov-2020	00:50		05-Jan-2021		✓	✓
beryllium	VA20C2029-004	Bru 146_36.82 to 37.13	Soil/Solid	Solid	ME-MS41	0.18	0.05	ppm		11-Nov-2020	00:50		05-Jan-2021		✓	✓
bismuth	VA20C2029-004	Bru 146_36.82 to 37.13	Soil/Solid	Solid	ME-MS41	0.02	0.01	ppm		11-Nov-2020	00:50		05-Jan-2021		✓	✓
boron	VA20C2029-004	Bru 146_36.82 to 37.13	Soil/Solid	Solid	ME-MS41	10	10	ppm		11-Nov-2020	00:50		05-Jan-2021		✓	✓
cadmium	VA20C2029-004	Bru 146_36.82 to 37.13	Soil/Solid	Solid	ME-MS41	<0.01	0.01	ppm		11-Nov-2020	00:50		05-Jan-2021		✓	✓
calcium	VA20C2029-004	Bru 146_36.82 to 37.13	Soil/Solid	Solid	ME-MS41	>25.0	0.01	%		11-Nov-2020	00:50		05-Jan-2021		✓	✓
cerium	VA20C2029-004	Bru 146_36.82 to 37.13	Soil/Solid	Solid	ME-MS41	8.86	0.02	ppm		11-Nov-2020	00:50		05-Jan-2021		✓	✓
cesium	VA20C2029-004	Bru 146_36.82 to 37.13	Soil/Solid	Solid	ME-MS41	0.21	0.05	ppm		11-Nov-2020	00:50		05-Jan-2021		✓	✓
chromium	VA20C2029-004	Bru 146_36.82 to 37.13	Soil/Solid	Solid	ME-MS41	4	1	ppm		11-Nov-2020	00:50		05-Jan-2021		✓	✓
cobalt	VA20C2029-004	Bru 146_36.82 to 37.13	Soil/Solid	Solid	ME-MS41	1.6	0.1	ppm		11-Nov-2020	00:50		05-Jan-2021		✓	✓
copper	VA20C2029-004	Bru 146_36.82 to 37.13	Soil/Solid	Solid	ME-MS41	5.7	0.2	ppm		11-Nov-2020	00:50		05-Jan-2021		✓	✓
gallium	VA20C2029-004	Bru 146_36.82 to 37.13	Soil/Solid	Solid	ME-MS41	0.73	0.05	ppm		11-Nov-2020	00:50		05-Jan-2021		✓	✓
germanium	VA20C2029-004	Bru 146_36.82 to 37.13	Soil/Solid	Solid	ME-MS41	<0.05	0.05	ppm		11-Nov-2020	00:50		05-Jan-2021		✓	✓
gold	VA20C2029-004	Bru 146_36.82 to 37.13	Soil/Solid	Solid	ME-MS41	<0.02	0.02	ppm		11-Nov-2020	00:50		05-Jan-2021		✓	✓
hafnium	VA20C2029-004	Bru 146_36.82 to 37.13	Soil/Solid	Solid	ME-MS41	0.09	0.02	ppm		11-Nov-2020	00:50		05-Jan-2021		✓	✓
indium	VA20C2029-004	Bru 146_36.82 to 37.13	Soil/Solid	Solid	ME-MS41	0.008	0.005	ppm		11-Nov-2020	00:50		05-Jan-2021		✓	✓
iron	VA20C2029-004	Bru 146_36.82 to 37.13	Soil/Solid	Solid	ME-MS41	0.47	0.01	%		11-Nov-2020	00:50		05-Jan-2021		✓	✓
lanthanum	VA20C2029-004	Bru 146_36.82 to 37.13	Soil/Solid	Solid	ME-MS41	3.8	0.2	ppm		11-Nov-2020	00:50		05-Jan-2021		✓	✓
lead	VA20C2029-004	Bru 146_36.82 to 37.13	Soil/Solid	Solid	ME-MS41	1.3	0.2	ppm		11-Nov-2020	00:50		05-Jan-2021		✓	✓
lithium	VA20C2029-004	Bru 146_36.82 to 37.13	Soil/Solid	Solid	ME-MS41	2.5	0.1	ppm		11-Nov-2020	00:50		05-Jan-2021		✓	✓
magnesium	VA20C2029-004	Bru 146_36.82 to 37.13	Soil/Solid	Solid	ME-MS41	1.30	0.01	%		11-Nov-2020	00:50		05-Jan-2021		✓	✓
manganese	VA20C2029-004	Bru 146_36.82 to 37.13	Soil/Solid	Solid	ME-MS41	265	5	ppm		11-Nov-2020	00:50		05-Jan-2021		✓	✓
mercury	VA20C2029-004	Bru 146_36.82 to 37.13	Soil/Solid	Solid	ME-MS41	0.01	0.01	ppm		11-Nov-2020	00:50		05-Jan-2021		✓	✓
molybdenum	VA20C2029-004	Bru 146_36.82 to 37.13	Soil/Solid	Solid	ME-MS41	0.14	0.05	ppm		11-Nov-2020	00:50		05-Jan-2021		✓	✓
nickel	VA20C2029-004	Bru 146_36.82 to 37.13	Soil/Solid	Solid	ME-MS41	4.0	0.2	ppm		11-Nov-2020	00:50		05-Jan-2021		✓	✓
niobium	VA20C2029-004	Bru 146_36.82 to 37.13	Soil/Solid	Solid	ME-MS41	0.07	0.05	ppm		11-Nov-2020	00:50		05-Jan-2021		✓	✓
phosphorus	VA20C2029-004	Bru 146_36.82 to 37.13	Soil/Solid	Solid	ME-MS41	600	10	ppm		11-Nov-2020	00:50		05-Jan-2021		✓	✓
potassium	VA20C2029-004	Bru 146_36.82 to 37.13	Soil/Solid	Solid	ME-MS41	0.09	0.01	%		11-Nov-2020	00:50		05-Jan-2021		✓	✓
rhenium	VA20C2029-004	Bru 146_36.82 to 37.13	Soil/Solid	Solid	ME-MS41	0.001	0.001	ppm		11-Nov-2020	00:50		05-Jan-2021		✓	✓
rubidium	VA20C2029-004	Bru 146_36.82 to 37.13	Soil/Solid	Solid	ME-MS41	3.8	0.1	ppm		11-Nov-2020	00:50		05-Jan-2021		✓	✓
scandium	VA20C2029-004	Bru 146_36.82 to 37.13	Soil/Solid	Solid	ME-MS41	0.9	0.1	ppm		11-Nov-2020	00:50		05-Jan-2021		✓	✓
selenium	VA20C2029-004	Bru 146_36.82 to 37.13	Soil/Solid	Solid	ME-MS41	0.5	0.2	ppm		11-Nov-2020	00:50		05-Jan-2021		✓	✓
silver	VA20C2029-004	Bru 146_36.82 to 37.13	Soil/Solid	Solid	ME-MS41	0.01	0.01	ppm		11-Nov-2020	00:50		05-Jan-2021		✓	✓
sodium	VA20C2029-004	Bru 146_36.82 to 37.13	Soil/Solid	Solid	ME-MS41	0.02	0.01	%		11-Nov-2020	00:50		05-Jan-2021		✓	✓
strontium	VA20C2029-004	Bru 146_36.82 to 37.13	Soil/Solid	Solid	ME-MS41	205	0.2	ppm		11-Nov-2020	00:50		05-Jan-2021		✓	✓
sulfur	VA20C2029-004	Bru 146_36.82 to 37.13	Soil/Solid	Solid	ME-MS41	0.03	0.01	%		11-Nov-2020	00:50		05-Jan-2021		✓	✓
tantalum	VA20C2029-004	Bru 146_36.82 to 37.13	Soil/Solid	Solid	ME-MS41	<0.01	0.01	ppm		11-Nov-2020	00:50		05-Jan-2021		✓	✓
tellurium	VA20C2029-004	Bru 146_36.82 to 37.13	Soil/Solid	Solid	ME-MS41	<0.01	0.01	ppm		11-Nov-2020	00:50		05-Jan-2021		✓	✓
thallium	VA20C2029-004	Bru 146_36.82 to 37.13	Soil/Solid	Solid	ME-MS41	0.02	0.02	ppm		11-Nov-2020	00:50		05-Jan-2021		✓	✓
thorium	VA20C2029-004	Bru 146_36.82 to 37.13	Soil/Solid	Solid	ME-MS41	0.9	0.2	ppm		11-Nov-2020	00:50		05-Jan-2021		✓	✓
tin	VA20C2029-004	Bru 146_36.82 to 37.13	Soil/Solid	Solid	ME-MS41	0.2	0.2	ppm		11-Nov-2020	00:50		05-Jan-2021		✓	✓
titanium	VA20C2029-004	Bru 146_36.82 to 37.13	Soil/Solid	Solid	ME-MS41	<0.005	0.005	%		11-Nov-2020	00:50		05-Jan-2021		✓	✓
tungsten	VA20C2029-004	Bru 146_36.82 to 37.13	Soil/Solid	Solid	ME-MS41	<0.05	0.05	ppm		11-Nov-2020	00:50		05-Jan-2021		✓	✓
uranium	VA20C2029-004	Bru 146_36.82 to 37.13	Soil/Solid	Solid	ME-MS41	0.60	0.05	ppm		11-Nov-2020	00:50		05-Jan-2021		✓	✓
vanadium	VA20C2029-004	Bru 146_36.82 to 37.13	Soil/Solid	Solid	ME-MS41	6	1	ppm		11-Nov-2020	00:50		05-Jan-2021		✓	✓
yttrium	VA20C2029-004	Bru 146_36.82 to 37.13	Soil/Solid	Solid	ME-MS41	2.62	0.05	ppm		11-Nov-2020	00:50		05-Jan-2021		✓	✓
zinc	VA20C2029-004	Bru 146_36.82 to 37.13	Soil/Solid	Solid	ME-MS41	11	2	ppm		11-Nov-2020	00:50		05-Jan-2021		✓	✓
zirconium	VA20C2029-004	Bru 146_36.82 to 37.13	Soil/Solid	Solid	ME-MS41	2.2	0.5	ppm		11-Nov-2020	00:50		05-Jan-2021		✓	✓
Leachable Metals (Matrix: Soil/Solid)																
aluminum, leachable	VA20C2029-004	Bru 146_36.82 to 37.13	Soil/Solid	Solid	E446	0.179	0.0050	mg/L		11-Nov-2020	00:50	17-Dec-2020	20-Dec-2020	132217	✓	✓
antimony, leachable	VA20C2029-004	Bru 146_36.82 to 37.13	Soil/Solid	Solid	E446	0.00013	0.00010	mg/L		11-Nov-2020	00:50	17-Dec-2020	20-Dec-2020	132217	✓	✓
arsenic, leachable	VA20C2029-004	Bru 146_36.82 to 37.13	Soil/Solid	Solid	E446	<0.0010	0.0010	mg/L		11-Nov-2020	00:50	17-Dec-2020	20-Dec-2020	132217	✓	✓
barium, leachable	VA20C2029-004	Bru 146_36.82 to 37.13	Soil/Solid	Solid	E446	0.0084	0.0010	mg/L		11-Nov-2020	00:50	17-Dec-2020	20-Dec-2020	132217	✓	✓
beryllium, leachable	VA20C2029-004	Bru 146_36.82 to 37.13	Soil/Solid	Solid	E446	<0.00050	0.00050	mg/L		11-Nov-2020	00:50	17-Dec-2020	20-Dec-2020	132217	✓	✓
bismuth, leachable	VA20C2029-004	Bru 146_36.82 to 37.13	Soil/Solid	Solid	E446	<0.00050	0.00050	mg/L		11-Nov-2020	00:50	17-Dec-2020	20-Dec-2020	132217	✓	✓
boron, leachable	VA20C2029-004	Bru 146_36.82 to 37.13	Soil/Solid	Solid	E446	0.042	0.010	mg/L		11-Nov-2020	00:50	17-Dec-2020	20-Dec-2020	132217	✓	✓
cadmium, leachable	VA20C2029-004	Bru 146_36.82 to 37.13	Soil/Solid	Solid	E446	<0.000050	0.000050	mg/L		11-Nov-2020	00:50	17-Dec-2020	20-Dec-2020	132217	✓	✓
calcium, leachable	VA20C2029-004	Bru 146_36.82 to 37.13	Soil/Solid	Solid	E446	16.2	0.10	mg/L		11-Nov-2020	00:50	17-Dec-2020	20-Dec-2020	132217	✓	✓
chromium, leachable	VA20C2029-004	Bru 146_36.82 to 37.13	Soil/Solid	Solid	E446	<0.00050	0.00050	mg/L		11-Nov-2020	00:50	17-Dec-2020	20-Dec-2020	132217	✓	✓
cobalt, leachable	VA20C2029-004	Bru 146_36.82 to 37.13	Soil/Solid	Solid	E446	<0.00010	0.00010	mg/L		11-Nov-2020	00:50	17-Dec-2020	20-Dec-2020	132217	✓	✓
copper, leachable	VA20C2029-004	Bru 146_36.82 to 37.13	Soil/Solid	Solid	E446	<0.0010	0.0010	mg/L		11-Nov-2020	00:50	17-Dec-2020	20-Dec-2020	132217	✓	✓
iron, leachable	VA20C2029-004	Bru 146_36.82 to 37.13	Soil/Solid	Solid	E446	<0.030	0.030	mg/L		11-Nov-2020	00:50	17-Dec-2020	20-Dec-2020	132217	✓	✓
lead, leachable	VA20C2029-004	Bru 146_36.82 to 37.13	Soil/Solid	Solid	E446	<0.00010	0.00010	mg/L		11-Nov-2020	00:50	17-Dec-2020	20-Dec-2020	132217	✓	✓
lithium, leachable	VA20C2029-004	Bru 146_36.82 to 37.13	Soil/Solid	Solid	E446	0.0050	0.0050	mg/L		11-Nov-2020	00:50	17-Dec-2020	20-Dec-2020	132217	✓	✓
magnesium, leachable	VA20C2029-004	Bru 146_36.82 to 37.13	Soil/Solid	Solid	E446	5.55	0.050	mg/L		11-Nov-2020	00:50	17-Dec-2020	20-Dec-2020	132217	✓	✓
manganese, leachable	VA20C2029-004	Bru 146_36.82 to 37.13	Soil/Solid	Solid	E446	<0.00050	0.00050	mg/L		11-Nov-2020	00:50	17-Dec-2020	20-Dec-2020	132217	✓	✓
molybdenum, leachable	VA20C2029-004	Bru 146_36.82 to 37.13	Soil/Solid	Solid	E446	0.00092	0.00010	mg/L		11-Nov-2020	00:50	17-Dec-2020	20-Dec-2020	132217	✓	✓
nickel, leachable	VA20C2029-004	Bru 146_36.82 to 37.13	Soil/Solid	Solid	E446	0.00059	0.00050	mg/L		11-Nov-2020	00:50	17-Dec-2020	20-Dec-2020	132217	✓	✓
phosphorus, leachable	VA20C2029-004	Bru 146_36.82 to 37.13	Soil/Solid	Solid	E446	<0.30	0.30	mg/L		11-Nov-2020	00:50	17-Dec-2020	20-Dec-2020	132217	✓	✓
potassium, leachable	VA20C2029-004	Bru 146_36.82 to 37.13	Soil/Solid	Solid	E446	6.32	0.050	mg/L		11-Nov-2020	00:50	17-Dec-2020	20-Dec-2020	132217	✓	✓
selenium, leachable	VA20C2029-004	Bru 146_36.82 to 37.13	Soil/Solid	Solid	E446	0.00997	0.00050	mg/L		11-Nov-2020	00:50	17-Dec-2020	20-Dec-2020	132217	✓	✓
silicon, leachable	VA20C2029-004	Bru 146_36.82 to 37.13	Soil/Solid	Solid	E446	1.79	0.050	mg/L		11-Nov-2020	00:50	17-Dec-2020	20-Dec-2020	132217	✓	✓

Analyte	ALS Sample ID	Client Sample ID	Matrix	Sub-Matrix	Method	Results	Detection Limit	Units	Qual	Date Sampled	Time Sampled	Prep Date	Analysis Date	QC Lot	QC Eval	Hold Time Eval
uranium, leachable	VA20C2029-004	Bru 146_36.82 to 37.13	Soil/Solid	Solid	E446	0.000931	0.000010	mg/L		11-Nov-2020	00:50	17-Dec-2020	20-Dec-2020	132217	✓	✓
vanadium, leachable	VA20C2029-004	Bru 146_36.82 to 37.13	Soil/Solid	Solid	E446	0.0042	0.0010	mg/L		11-Nov-2020	00:50	17-Dec-2020	20-Dec-2020	132217	✓	✓
zinc, leachable	VA20C2029-004	Bru 146_36.82 to 37.13	Soil/Solid	Solid	E446	<0.010	0.010	mg/L		11-Nov-2020	00:50	17-Dec-2020	20-Dec-2020	132217	✓	✓
mercury, leachable	VA20C2029-004	Bru 146_36.82 to 37.13	Soil/Solid	Solid	ES15	<0.000050	0.000050	mg/L		11-Nov-2020	00:50	17-Dec-2020	19-Dec-2020	132215	✓	*
hardness (as CaCO3), dissolved	VA20C2029-004	Bru 146_36.82 to 37.13	Soil/Solid	Solid	E446	63.3	0.60	mg/L		11-Nov-2020	00:50	17-Dec-2020	20-Dec-2020	132217	✓	✓
Physical Tests (Matrix: Soil/Solid)																
moisture	VA20C2029-005	Bru 146_49-86 to 50.29	Soil/Solid	Solid	E144	1.02	0.25	%		11-Nov-2020	12:50		17-Dec-2020	132183	✓	✓
pH	VA20C2029-005	Bru 146_49-86 to 50.29	Soil/Solid	Solid	E116	8.18	0.10	pH units		11-Nov-2020	12:50	17-Dec-2020	19-Dec-2020	132216	✓	*
Acid Base Accounting (Matrix: Soil/Solid)																
fizz rating	VA20C2029-005	Bru 146_49-86 to 50.29	Soil/Solid	Solid	OA-VOL08m	1	1			11-Nov-2020	12:50		05-Jan-2021		✓	✓
maximum potential acidity [MPA]	VA20C2029-005	Bru 146_49-86 to 50.29	Soil/Solid	Solid	OA-VOL08m	2.2	0.3	tCaCO3/kt		11-Nov-2020	12:50		05-Jan-2021		✓	✓
net neutralization potential [NNP]	VA20C2029-005	Bru 146_49-86 to 50.29	Soil/Solid	Solid	OA-VOL08m	3	1	tCaCO3/kt		11-Nov-2020	12:50		05-Jan-2021		✓	✓
neutralization potential [NP]	VA20C2029-005	Bru 146_49-86 to 50.29	Soil/Solid	Solid	OA-VOL08m	5	1	tCaCO3/kt		11-Nov-2020	12:50		05-Jan-2021		✓	✓
neutralization potential ratio [NPR], (NP/MPA)	VA20C2029-005	Bru 146_49-86 to 50.29	Soil/Solid	Solid	OA-VOL08m	2.29	0.01			11-Nov-2020	12:50		05-Jan-2021		✓	✓
carbon dioxide	VA20C2029-005	Bru 146_49-86 to 50.29	Soil/Solid	Solid	C-GAS05	0.2	0.2	%		11-Nov-2020	12:50		05-Jan-2021		✓	✓
carbon, total [TC]	VA20C2029-005	Bru 146_49-86 to 50.29	Soil/Solid	Solid	C-IR07	0.05	0.01	%		11-Nov-2020	12:50		05-Jan-2021		✓	✓
pH (1:1 soil:water)	VA20C2029-005	Bru 146_49-86 to 50.29	Soil/Solid	Solid	OA-ELE07	7.80	0.10	pH units		11-Nov-2020	12:50		05-Jan-2021		✓	✓
sulfide (as S), total minus carbonate leach	VA20C2029-005	Bru 146_49-86 to 50.29	Soil/Solid	Solid	S-CAL06	<0.01	0.01	%		11-Nov-2020	12:50		05-Jan-2021		✓	*
sulfur, residual	VA20C2029-005	Bru 146_49-86 to 50.29	Soil/Solid	Solid	S-IR04B	<0.01	0.01	%		11-Nov-2020	12:50		05-Jan-2021		✓	✓
sulfur, total	VA20C2029-005	Bru 146_49-86 to 50.29	Soil/Solid	Solid	S-IR08	0.07	0.01	%		11-Nov-2020	12:50		05-Jan-2021		✓	✓
weight, sample received	VA20C2029-005	Bru 146_49-86 to 50.29	Soil/Solid	Solid	WEI-21	2.24	0.02	kg		11-Nov-2020	12:50		05-Jan-2021		✓	✓
sulfate (as S), HCl leach	VA20C2029-005	Bru 146_49-86 to 50.29	Soil/Solid	Solid	S-GRA06A	<0.01	0.01	%		11-Nov-2020	12:50		05-Jan-2021		✓	✓
sulfate (as S), carbonate leach	VA20C2029-005	Bru 146_49-86 to 50.29	Soil/Solid	Solid	S-GRA06	0.01	0.01	%		11-Nov-2020	12:50		05-Jan-2021		✓	✓
carbon, total inorganic [TIC]	VA20C2029-005	Bru 146_49-86 to 50.29	Soil/Solid	Solid	C-GAS05	0.05	0.05	%		11-Nov-2020	12:50		05-Jan-2021		✓	✓
Metals (Matrix: Soil/Solid)																
aluminum	VA20C2029-005	Bru 146_49-86 to 50.29	Soil/Solid	Solid	ME-MS41	1.70	0.01	%		11-Nov-2020	12:50		05-Jan-2021		✓	✓
antimony	VA20C2029-005	Bru 146_49-86 to 50.29	Soil/Solid	Solid	ME-MS41	<0.05	0.05	ppm		11-Nov-2020	12:50		05-Jan-2021		✓	✓
arsenic	VA20C2029-005	Bru 146_49-86 to 50.29	Soil/Solid	Solid	ME-MS41	13.3	0.1	ppm		11-Nov-2020	12:50		05-Jan-2021		✓	✓
barium	VA20C2029-005	Bru 146_49-86 to 50.29	Soil/Solid	Solid	ME-MS41	40	10	ppm		11-Nov-2020	12:50		05-Jan-2021		✓	✓
beryllium	VA20C2029-005	Bru 146_49-86 to 50.29	Soil/Solid	Solid	ME-MS41	1.26	0.05	ppm		11-Nov-2020	12:50		05-Jan-2021		✓	✓
bismuth	VA20C2029-005	Bru 146_49-86 to 50.29	Soil/Solid	Solid	ME-MS41	0.10	0.01	ppm		11-Nov-2020	12:50		05-Jan-2021		✓	✓
boron	VA20C2029-005	Bru 146_49-86 to 50.29	Soil/Solid	Solid	ME-MS41	70	10	ppm		11-Nov-2020	12:50		05-Jan-2021		✓	✓
cadmium	VA20C2029-005	Bru 146_49-86 to 50.29	Soil/Solid	Solid	ME-MS41	<0.01	0.01	ppm		11-Nov-2020	12:50		05-Jan-2021		✓	✓
calcium	VA20C2029-005	Bru 146_49-86 to 50.29	Soil/Solid	Solid	ME-MS41	0.43	0.01	%		11-Nov-2020	12:50		05-Jan-2021		✓	✓
cerium	VA20C2029-005	Bru 146_49-86 to 50.29	Soil/Solid	Solid	ME-MS41	28.7	0.02	ppm		11-Nov-2020	12:50		05-Jan-2021		✓	✓
cesium	VA20C2029-005	Bru 146_49-86 to 50.29	Soil/Solid	Solid	ME-MS41	1.04	0.05	ppm		11-Nov-2020	12:50		05-Jan-2021		✓	✓
chromium	VA20C2029-005	Bru 146_49-86 to 50.29	Soil/Solid	Solid	ME-MS41	42	1	ppm		11-Nov-2020	12:50		05-Jan-2021		✓	✓
cobalt	VA20C2029-005	Bru 146_49-86 to 50.29	Soil/Solid	Solid	ME-MS41	22.0	0.1	ppm		11-Nov-2020	12:50		05-Jan-2021		✓	✓
copper	VA20C2029-005	Bru 146_49-86 to 50.29	Soil/Solid	Solid	ME-MS41	24.9	0.2	ppm		11-Nov-2020	12:50		05-Jan-2021		✓	✓
gallium	VA20C2029-005	Bru 146_49-86 to 50.29	Soil/Solid	Solid	ME-MS41	7.80	0.05	ppm		11-Nov-2020	12:50		05-Jan-2021		✓	✓
germanium	VA20C2029-005	Bru 146_49-86 to 50.29	Soil/Solid	Solid	ME-MS41	0.05	0.05	ppm		11-Nov-2020	12:50		05-Jan-2021		✓	✓
gold	VA20C2029-005	Bru 146_49-86 to 50.29	Soil/Solid	Solid	ME-MS41	<0.02	0.02	ppm		11-Nov-2020	12:50		05-Jan-2021		✓	✓
hafnium	VA20C2029-005	Bru 146_49-86 to 50.29	Soil/Solid	Solid	ME-MS41	0.26	0.02	ppm		11-Nov-2020	12:50		05-Jan-2021		✓	✓
indium	VA20C2029-005	Bru 146_49-86 to 50.29	Soil/Solid	Solid	ME-MS41	0.020	0.005	ppm		11-Nov-2020	12:50		05-Jan-2021		✓	✓
iron	VA20C2029-005	Bru 146_49-86 to 50.29	Soil/Solid	Solid	ME-MS41	2.23	0.01	%		11-Nov-2020	12:50		05-Jan-2021		✓	✓
lanthanum	VA20C2029-005	Bru 146_49-86 to 50.29	Soil/Solid	Solid	ME-MS41	12.6	0.2	ppm		11-Nov-2020	12:50		05-Jan-2021		✓	✓
lead	VA20C2029-005	Bru 146_49-86 to 50.29	Soil/Solid	Solid	ME-MS41	7.4	0.2	ppm		11-Nov-2020	12:50		05-Jan-2021		✓	✓
lithium	VA20C2029-005	Bru 146_49-86 to 50.29	Soil/Solid	Solid	ME-MS41	25.7	0.1	ppm		11-Nov-2020	12:50		05-Jan-2021		✓	✓
magnesium	VA20C2029-005	Bru 146_49-86 to 50.29	Soil/Solid	Solid	ME-MS41	0.45	0.01	%		11-Nov-2020	12:50		05-Jan-2021		✓	✓
manganese	VA20C2029-005	Bru 146_49-86 to 50.29	Soil/Solid	Solid	ME-MS41	64	5	ppm		11-Nov-2020	12:50		05-Jan-2021		✓	✓
mercury	VA20C2029-005	Bru 146_49-86 to 50.29	Soil/Solid	Solid	ME-MS41	0.05	0.01	ppm		11-Nov-2020	12:50		05-Jan-2021		✓	✓
molybdenum	VA20C2029-005	Bru 146_49-86 to 50.29	Soil/Solid	Solid	ME-MS41	0.41	0.05	ppm		11-Nov-2020	12:50		05-Jan-2021		✓	✓
nickel	VA20C2029-005	Bru 146_49-86 to 50.29	Soil/Solid	Solid	ME-MS41	52.6	0.2	ppm		11-Nov-2020	12:50		05-Jan-2021		✓	✓
niobium	VA20C2029-005	Bru 146_49-86 to 50.29	Soil/Solid	Solid	ME-MS41	<0.05	0.05	ppm		11-Nov-2020	12:50		05-Jan-2021		✓	✓
phosphorus	VA20C2029-005	Bru 146_49-86 to 50.29	Soil/Solid	Solid	ME-MS41	490	10	ppm		11-Nov-2020	12:50		05-Jan-2021		✓	✓
potassium	VA20C2029-005	Bru 146_49-86 to 50.29	Soil/Solid	Solid	ME-MS41	0.95	0.01	%		11-Nov-2020	12:50		05-Jan-2021		✓	✓
rhenium	VA20C2029-005	Bru 146_49-86 to 50.29	Soil/Solid	Solid	ME-MS41	0.010	0.001	ppm		11-Nov-2020	12:50		05-Jan-2021		✓	✓
rubidium	VA20C2029-005	Bru 146_49-86 to 50.29	Soil/Solid	Solid	ME-MS41	41.2	0.1	ppm		11-Nov-2020	12:50		05-Jan-2021		✓	✓
scandium	VA20C2029-005	Bru 146_49-86 to 50.29	Soil/Solid	Solid	ME-MS41	3.4	0.1	ppm		11-Nov-2020	12:50		05-Jan-2021		✓	✓
selenium	VA20C2029-005	Bru 146_49-86 to 50.29	Soil/Solid	Solid	ME-MS41	<0.2	0.2	ppm		11-Nov-2020	12:50		05-Jan-2021		✓	✓
silver	VA20C2029-005	Bru 146_49-86 to 50.29	Soil/Solid	Solid	ME-MS41	0.10	0.01	ppm		11-Nov-2020	12:50		05-Jan-2021		✓	✓
sodium	VA20C2029-005	Bru 146_49-86 to 50.29	Soil/Solid	Solid	ME-MS41	0.02	0.01	%		11-Nov-2020	12:50		05-Jan-2021		✓	✓
strontium	VA20C2029-005	Bru 146_49-86 to 50.29	Soil/Solid	Solid	ME-MS41	141.5	0.2	ppm		11-Nov-2020	12:50		05-Jan-2021		✓	✓
sulfur	VA20C2029-005	Bru 146_49-86 to 50.29	Soil/Solid	Solid	ME-MS41	0.07	0.01	%		11-Nov-2020	12:50		05-Jan-2021		✓	✓
tantalum	VA20C2029-005	Bru 146_49-86 to 50.29	Soil/Solid	Solid	ME-MS41	<0.01	0.01	ppm		11-Nov-2020	12:50		05-Jan-2021		✓	✓
tellurium	VA20C2029-005	Bru 146_49-86 to 50.29	Soil/Solid	Solid	ME-MS41	0.01	0.01	ppm		11-Nov-2020	12:50		05-Jan-2021		✓	✓
thallium	VA20C2029-005	Bru 146_49-86 to 50.29	Soil/Solid	Solid	ME-MS41	0.29	0.02	ppm		11-Nov-2020	12:50		05-Jan-2021		✓	✓
thorium	VA20C2029-005	Bru 146_49-86 to 50.29	Soil/Solid	Solid	ME-MS41	11.5	0.2	ppm		11-Nov-2020	12:50		05-Jan-2021		✓	✓
tin	VA20C2029-005	Bru 146_49-86 to 50.29	Soil/Solid	Solid	ME-MS41	0.5	0.2	ppm		11-Nov-2020	12:50		05-Jan-2021		✓	✓
titanium	VA20C2029-005	Bru 146_49-86 to 50.29	Soil/Solid	Solid	ME-MS41	0.006	0.005	%		11-Nov-2020	12:50		05-Jan-2021		✓	✓
tungsten	VA20C2029-005	Bru 146_49-86 to 50.29	Soil/Solid	Solid	ME-MS41	0.07	0.05	ppm		11-Nov-2020	12:50		05-Jan-2021		✓	✓
uranium	VA20C2029-005	Bru 146_49-86 to 50.29	Soil/Solid	Solid	ME-MS41	11.65	0.05	ppm		11-Nov-2020	12:50		05-Jan-2021		✓	✓
vanadium	VA20C2029-005	Bru 146_49-86 to 50.29	Soil/Solid	Solid	ME-MS41	18	1	ppm		11-Nov-2020	12:50		05-Jan-2021		✓	✓
yttrium	VA20C2029-005	Bru 146_49-86 to 50.29	Soil/Solid	Solid	ME-MS41	4.68	0.05	ppm		11-Nov-2020	12:50		05-Jan-2021		✓	✓
zinc	VA20C2029-005	Bru 146_49-86 to 50.29	Soil/Solid	Solid	ME-MS41	34	2	ppm		11-Nov-2020	12:50		05-Jan-2021		✓	✓
zirconium	VA20C2029-005	Bru 146_49-86 to 50.29	Soil/Solid	Solid	ME-MS41	8.3	0.5	ppm		11-Nov-2020	12:50		05-Jan-2021		✓	✓
Leachable Metals (Matrix: Soil/Solid)																
aluminum, leachable	VA20C2029-005	Bru 146_49-86 to 50.29	Soil/Solid	Solid	E446	<0.0050	0.0050	mg/L		11-Nov-2020	12:50	17-Dec-2020	20-Dec-2020	132217	✓	✓
antimony, leachable	VA20C2029-005	Bru 146_49-86 to 50.29	Soil/Solid	Solid	E446	<0.00010	0.00010	mg/L		11-Nov-2020	12:50	17-Dec-2020	20-Dec-2020	132217	✓	✓
arsenic, leachable	VA20C2029-005	Bru 146_49-86 to 50.29	Soil/Solid	Solid	E446	0.0029	0.0010	mg/L		11-Nov-2020	12:50	17-Dec-2020	20-Dec-2020	132217	✓	✓
barium, leachable	VA20C2029-005	Bru 146_49-86 to 50.29	Soil/Solid	Solid	E446	0.0961	0.0010	mg/L		11-Nov-2020	12:50	17-Dec-2020	20-Dec-2020	132217	✓	✓
beryllium, leachable	VA20C2029-005	Bru 146_49-86 to 50.29	Soil/Solid	Solid	E446	<0.00050	0.00050	mg/L		11-Nov-2020	12:50	17-Dec-2020	20-Dec-2020	132217	✓	✓
bismuth, leachable	VA20C2029-005	Bru 146_49-86 to 50.29	Soil/Solid	Solid	E446	<0.00050	0.00050	mg/L		11-Nov-2020	12:50	17-Dec-2020	20-Dec-2020	132217	✓	✓
boron, leachable	VA20C2029-005	Bru 146_49-86 to 50.29	Soil/Solid	Solid	E446	0.204	0.010	mg/L		11-Nov-2020	12:50	17-Dec-2020	20-Dec-2020	132217	✓	✓
cadmium, leachable	VA20C2029-005	Bru 146_49-86 to 50.29	Soil/Solid	Solid	E446	<0.000050	0.000050	mg/L		11-Nov-2020	12:50	17-Dec-2020	20-Dec-2020	132217	✓	✓
calcium, leachable	VA20C2029-005	Bru 146_49-86 to 50.29	Soil/Solid	Solid	E446	27.2	0.10	mg/L		11-Nov-2020	12:50	17-Dec-2020	20-Dec-2020	132217	✓	✓
chromium, leachable	VA20C2029-005	Bru 146_49-86 to 50.29	Soil/Solid	Solid	E446	0.00098	0.00050	mg/L		11-Nov-2020	12:50	17-Dec-2020	20-Dec-2020	132217	✓	✓
cobalt, leachable	VA20C2029-005	Bru 146_49-86 to 50.29	Soil/Solid	Solid	E446	0.00017	0.00010	mg/L		11-Nov-2020	12:50	17-Dec-2020	20-Dec-2020	132217	✓	✓
copper, leachable	VA20C2029-005	Bru 146_49-86 to 50.29	Soil/Solid	Solid	E446	<0.0010	0.0010	mg/L		11-Nov-2020	12:50	17-Dec-2020	20-Dec-2020	132217	✓	✓
iron, leachable	VA20C2029-005	Bru 146_49-86 to 50.29	Soil/Solid	Solid	E446	<0.030	0.030	mg/L		11-Nov-2020	12:50	17-Dec-2020	20-Dec-2020	132217	✓	✓
lead, leachable	VA20C2029-005	Bru 146_49-86 to 50.29	Soil/Solid	Solid	E446	<0.00010	0.00010	mg/L		11-Nov-2020	12:50	17-Dec-2020	20-Dec-2020	132217	✓	✓
lithium, leachable	VA20C2029-005	Bru 146_49-86 to 50.29	Soil/Solid	Solid	E446	0.0496	0.0050	mg/L		11-Nov-2020	12:50	17-Dec-2020	20-Dec-2020	132217	✓	✓
magnesium, leachable	VA20C2029-005	Bru 146_49-86 to 50.29	Soil/Solid	Solid	E446	9.23	0.050	mg/L		11-Nov-2020	12:50	17-Dec-2020	20-Dec-2020	132217	✓	✓
manganese, leachable	VA20C2029-005	Bru 146_49-86 to 50.29	Soil/Solid	Solid	E446	<0.00050	0.00050	mg/L		11-Nov-2020	12:50	17-Dec-2020	20-Dec-2020	132217	✓	✓
molybdenum, leachable	VA20C2029-005	Bru 146_49-86 to 50.29	Soil/Solid	Solid	E446	0.00608	0.00010	mg/L		11-Nov-2020	12:50	17-Dec-2020	20-Dec-2020	132217	✓	✓
nickel, leachable	VA20C2029-005	Bru 146_49-86 to 50.29	Soil/Solid	Solid	E446	<0.00050	0.00050	mg/L		11-Nov-2020	12:50	17-Dec-2020	20-Dec-2020	132217	✓	✓
phosphorus, leachable	VA20C2029-005	Bru 146_49-86 to 50.29	Soil/Solid	Solid	E446	<0.30	0.30	mg/L		11-Nov-2020	12:50	17-Dec-2020	20-Dec-2020	132217	✓	✓
potassium, leachable	VA20C2029-005	Bru 146_49-86 to 50.29	Soil/Solid	Solid	E446	29.7	0.050	mg/L		11-Nov-2020	12:50	17-Dec-2020	20-Dec-2020	132217	✓	✓
selenium, leachable	VA20C2029-005	Bru 146_49-86 to 50.29	Soil/Solid	Solid	E446	0.00747	0.00050	mg/L		11-Nov-2020	12:50	17-Dec-2020	20-Dec-2020	132217	✓	✓
silicon, leachable	VA20C2029-005	Bru 146_49-86 to 50.29	Soil/Solid	Solid	E446	2.32	0.050	mg/L		11-Nov-2020	12:50	17-Dec-2020	20-Dec-2020	132217	✓	✓
silver, leachable	VA20C2029-005	Bru 146_49-86 to 50.29	Soil/Solid	Solid	E446	<0.000050	0.000050	mg/L		11-Nov-2020	12:50	17-Dec-2020	20-Dec-2020	132217	✓	✓
sodium, leachable	VA20C2029-005	Bru 146_49-86 to 50.29	Soil/Solid	Solid	E446	9.87	0.050	mg/L		11-Nov-2020	12:50	17-Dec-2020	20-Dec-2020	132217	✓	✓
strontium, leachable	VA20C2029-005	Bru 146_49-86 to 50.29	Soil/Solid	Solid	E446	0.164	0.00050	mg/L		11-Nov-2020	12:50	17-Dec-2020	20-Dec-2020	132217	✓	✓
sulfur, leachable	VA20C2029-005	Bru 146_49-86 to 50.29	Soil/Solid	Solid	E446	9.59	0.50	mg/L		11-Nov-2020	12:50	17-Dec-2020	20-Dec-2020	132217	✓	✓
thallium, leachable	VA20C2029-005	Bru 146_49-86 to 50.29	Soil/Solid	Solid	E446	<0.00010	0.00010	mg/L		11-Nov-2020	12:50	17-Dec-2020	20-Dec-2020	132217	✓	✓
tin, leachable	VA20C2029-005	Bru 146_49-86 to 50.29	Soil/Solid	Solid	E446	<0.00050	0.00050	mg/L		11-Nov-2020	12:50	17-Dec-2020	20-Dec-2020	132217	✓	✓
titanium, leachable	VA20C2029-005	Bru 146_49-86 to 50.29	Soil/Solid	Solid	E446	<0.010	0.010	mg/L		11-Nov-2020	12:50	17-Dec-2020	20-Dec-2020	132217	✓	✓
uranium, leachable	VA20C2029-005	Bru 146_49-86 to 50.29	Soil/Solid	Solid	E446	0.0137	0.000010	mg/L		11-Nov-2020	12:50	17-Dec-2020	20-Dec-2020	132217	✓	✓
vanadium, leachable	VA20C2029-005	Bru 146_49-86 to 50.29	Soil/Solid	Solid	E446	0.0016	0.0010	mg/L		11-Nov-2020	12:50	17-Dec-2020	20-Dec-2020	132217	✓	✓
zinc, leachable	VA20C2029-005	Bru 146_49-86 to 50.29	Soil/Solid	Solid	E446	<0.010	0.010	mg/L		11-Nov-2020	12:50	17-Dec-2020	20-Dec-2020	132217	✓	✓
mercury, leachable	VA20C2029-005	Bru 146_49-86 to 50.29	Soil/Solid	Solid	ES15	<0.000050	0.000050	mg/L		11-Nov-2020	12:50	17-Dec-2020	19-Dec-2020	132215	✓	*
hardness (as CaCO3), dissolved	VA20C2029-005	Bru 146_49-86 to 50.29	Soil/Solid	Solid	E446	106	0.60	mg/L		11-Nov-2020	12:50	17-Dec-2020	20-Dec-2020	132217	✓	✓
Physical Tests (Matrix: Soil/Solid)																
moisture	VA20C2029-006	Bru 95-8_40.16 to 40.65	Soil/Solid	Solid	E144	<0.25	0.25	%		18-Nov-2020	13:30		17-Dec-2020	132183	✓	✓
pH	VA20C2029-006	Bru 95-8_40.16 to 40.65	Soil/Solid	Solid	E116	8.20	0.10	pH units		18-Nov-2020	13:30	17-Dec-2020	19-Dec-2020	132216	✓	*
Acid Base Accounting (Matrix: Soil/Solid)																
fizz rating	VA20C2029-006	Bru 95-8_40.16 to 40.65	Soil/Solid	Solid	OA-VOL08m	4	1			18-Nov-2020	13:30		05-Jan-2021		✓	✓
maximum potential acidity [MPA]	VA20C2029-006	Bru 95-8_40.16 to 40.65	Soil/Solid	Solid	OA-VOL08m	1.6	0.3	tCaCO3/kt		18-Nov-2020	13:30		05-Jan-2021		✓	✓
net neutralization potential [NNP]	VA20C2029-006	Bru 95-8_40.16 to 40.65	Soil/Solid	Solid	OA-VOL08m	819	1	tCaCO3/kt		18-Nov-2020	13:30		05-Jan-2021		✓	✓
neutralization potential [NP]	VA20C2029-006	Bru 95-8_40.16 to 40.65	Soil/Solid	Solid	OA-VOL08m	821	1	tCaCO3/kt		18-Nov-2020	13:30		05-Jan-2021		✓	✓
neutralization potential ratio [NPR], (NP/MPA)	VA20C2029-006	Bru 95-8_40.16 to 40.65	Soil/Solid	Solid	OA-VOL08m	525.44	0.01			18-Nov-2020	13:30		05-Jan-2021		✓	✓
carbon dioxide	VA20C2029-006	Bru 95-8_40.16 to 40.65	Soil/Solid	Solid	C-GAS05	39.0	0.2	%		18-Nov-2020	13:30		05-Jan-2021		✓	✓
carbon, total [TC]	VA20C2029-006	Bru 95-8_40.16 to 40.65	Soil/Solid	Solid	C-IR07	10.85	0.01	%		18-Nov-2020	13:30		05-Jan-2021		✓	✓
pH (1:1 soil:water)	VA20C2029-006	Bru 95-8_40.16 to 40.65	Soil/Solid	Solid	OA-ELE07	8.30	0.10	pH units		18-Nov-2020	13:30		05-Jan-2021		✓	✓
sulfide (as S), total minus carbonate leach	VA20C2029-006	Bru 95-8_40.16 to 40.65	Soil/Solid	Solid	S-CAL06	<0.01	0.01	%		18-Nov-2020	13:30		05-Jan-2021		✓	*
sulfur, residual	VA20C2029-006	Bru 95-8_40.16 to 40.65	Soil/Solid	Solid	S-IR04B	<0.01	0.01	%		18-Nov-2020	13:30		05-Jan-2021		✓	✓
sulfur, total	VA20C2029-006	Bru 95-8_40.16 to 40.65	Soil/Solid	Solid	S-IR08	0.05	0.01	%		18-Nov-2020	13:30		05-Jan-2021		✓	✓
weight, sample received	VA20C2029-006	Bru 95-8_40.16 to 40.65	Soil/Solid	Solid	WEI-21	3.66	0.02	kg		18-Nov-2020	13:30		05-Jan-2021		✓	✓
sulfate (as S), HCl leach	VA20C2029-006	Bru 95-8_40.16 to 40.65	Soil/Solid	Solid	S-GRA06A	<0.01	0.01	%		18-Nov-2020	13:30		05-Jan-2021		✓	✓
sulfate (as S), carbonate leach	VA20C2029-006	Bru 95-8_40.16 to 40.65	Soil/Solid	Solid	S-GRA06	<0.01	0.01	%		18-Nov-2020	13:30		05-Jan-2021		✓	✓
carbon, total inorganic [TIC]	VA20C2029-006	Bru 95-8_40.16 to 40.65	Soil/Solid	Solid	C-GAS05	10.65	0.05	%		18-Nov-2020	13:30		05-Jan-2021		✓	✓
Metals (Matrix: Soil/Solid)																
aluminum	VA20C2029-006	Bru 95-8_40.16 to 40.65	Soil/Solid	Solid	ME-MS41	0.20	0.01	%		18-Nov-2020	13:30		05-Jan-2021		✓	✓
antimony	VA20C2029-006	Bru 95-8_40.16 to 40.65	Soil/Solid	Solid	ME-MS41	<0.05	0.05	ppm		18-Nov-2020	13:30		05-Jan-2021		✓	✓
arsenic	VA20C2029-006	Bru 95-8_40.16 to 40.65	Soil/Solid	Solid	ME-MS41	0.7	0.1	ppm		18-Nov-2020	13:30		05-Jan-2021		✓	✓
barium	VA20C2029-006	Bru 95-8_40.16 to 40.65	Soil/Solid	Solid	ME-MS41	10	10	ppm		18-Nov-2020	13:30		05-Jan-2021		✓	✓
beryllium	VA20C2029-006	Bru 95-8_40.16 to 40.65	Soil/Solid	Solid	ME-MS41	0.24	0.05	ppm		18-Nov-2020	13:30		05-Jan-2021		✓	✓
bismuth	VA20C2029-006	Bru 95-8_40.16 to 40.65	Soil/Solid	Solid	ME-MS41	0.02	0.01	ppm		18-Nov-2020	13:30		05-Jan-2021		✓	✓
boron	VA20C2029-006	Bru 95-8_40.16 to 40.65	Soil/Solid	Solid	ME-MS41	10	10	ppm		18-Nov-2020	13:30		05-Jan-2021		✓	✓
cadmium	VA20C2029-006	Bru 95-8_40.16 to 40.65	Soil/Solid	Solid	ME-MS41	<0.01	0.01	ppm		18-Nov-2020	13:30		05-Jan-2021		✓	✓
calcium	VA20C2029-006	Bru 95-8_40.16 to 40.

Analyte	ALS Sample ID	Client Sample ID	Matrix	Sub-Matrix	Method	Results	Detection Limit	Units	Qual	Date Sampled	Time Sampled	Prep Date	Analysis Date	QC Lot	QC Eval	Hold Time Eval
cesium	VA20C2029-006	Bru 95-8_40.16 to 40.65	Soil/Solid	Solid	ME-MS41	0.32	0.05	ppm		18-Nov-2020	13:30		05-Jan-2021		✓	✓
chromium	VA20C2029-006	Bru 95-8_40.16 to 40.65	Soil/Solid	Solid	ME-MS41	5	1	ppm		18-Nov-2020	13:30		05-Jan-2021		✓	✓
cobalt	VA20C2029-006	Bru 95-8_40.16 to 40.65	Soil/Solid	Solid	ME-MS41	1.5	0.1	ppm		18-Nov-2020	13:30		05-Jan-2021		✓	✓
copper	VA20C2029-006	Bru 95-8_40.16 to 40.65	Soil/Solid	Solid	ME-MS41	3.2	0.2	ppm		18-Nov-2020	13:30		05-Jan-2021		✓	✓
gallium	VA20C2029-006	Bru 95-8_40.16 to 40.65	Soil/Solid	Solid	ME-MS41	0.97	0.05	ppm		18-Nov-2020	13:30		05-Jan-2021		✓	✓
germanium	VA20C2029-006	Bru 95-8_40.16 to 40.65	Soil/Solid	Solid	ME-MS41	<0.05	0.05	ppm		18-Nov-2020	13:30		05-Jan-2021		✓	✓
gold	VA20C2029-006	Bru 95-8_40.16 to 40.65	Soil/Solid	Solid	ME-MS41	<0.02	0.02	ppm		18-Nov-2020	13:30		05-Jan-2021		✓	✓
hafnium	VA20C2029-006	Bru 95-8_40.16 to 40.65	Soil/Solid	Solid	ME-MS41	0.12	0.02	ppm		18-Nov-2020	13:30		05-Jan-2021		✓	✓
indium	VA20C2029-006	Bru 95-8_40.16 to 40.65	Soil/Solid	Solid	ME-MS41	0.010	0.005	ppm		18-Nov-2020	13:30		05-Jan-2021		✓	✓
iron	VA20C2029-006	Bru 95-8_40.16 to 40.65	Soil/Solid	Solid	ME-MS41	0.58	0.01	%		18-Nov-2020	13:30		05-Jan-2021		✓	✓
lanthanum	VA20C2029-006	Bru 95-8_40.16 to 40.65	Soil/Solid	Solid	ME-MS41	5.2	0.2	ppm		18-Nov-2020	13:30		05-Jan-2021		✓	✓
lead	VA20C2029-006	Bru 95-8_40.16 to 40.65	Soil/Solid	Solid	ME-MS41	1.1	0.2	ppm		18-Nov-2020	13:30		05-Jan-2021		✓	✓
lithium	VA20C2029-006	Bru 95-8_40.16 to 40.65	Soil/Solid	Solid	ME-MS41	3.5	0.1	ppm		18-Nov-2020	13:30		05-Jan-2021		✓	✓
magnesium	VA20C2029-006	Bru 95-8_40.16 to 40.65	Soil/Solid	Solid	ME-MS41	1.49	0.01	%		18-Nov-2020	13:30		05-Jan-2021		✓	✓
manganese	VA20C2029-006	Bru 95-8_40.16 to 40.65	Soil/Solid	Solid	ME-MS41	321	5	ppm		18-Nov-2020	13:30		05-Jan-2021		✓	✓
mercury	VA20C2029-006	Bru 95-8_40.16 to 40.65	Soil/Solid	Solid	ME-MS41	0.01	0.01	ppm		18-Nov-2020	13:30		05-Jan-2021		✓	✓
molybdenum	VA20C2029-006	Bru 95-8_40.16 to 40.65	Soil/Solid	Solid	ME-MS41	0.13	0.05	ppm		18-Nov-2020	13:30		05-Jan-2021		✓	✓
nickel	VA20C2029-006	Bru 95-8_40.16 to 40.65	Soil/Solid	Solid	ME-MS41	3.1	0.2	ppm		18-Nov-2020	13:30		05-Jan-2021		✓	✓
niobium	VA20C2029-006	Bru 95-8_40.16 to 40.65	Soil/Solid	Solid	ME-MS41	0.08	0.05	ppm		18-Nov-2020	13:30		05-Jan-2021		✓	✓
phosphorus	VA20C2029-006	Bru 95-8_40.16 to 40.65	Soil/Solid	Solid	ME-MS41	870	10	ppm		18-Nov-2020	13:30		05-Jan-2021		✓	✓
potassium	VA20C2029-006	Bru 95-8_40.16 to 40.65	Soil/Solid	Solid	ME-MS41	0.11	0.01	%		18-Nov-2020	13:30		05-Jan-2021		✓	✓
rhenium	VA20C2029-006	Bru 95-8_40.16 to 40.65	Soil/Solid	Solid	ME-MS41	0.001	0.001	ppm		18-Nov-2020	13:30		05-Jan-2021		✓	✓
rubidium	VA20C2029-006	Bru 95-8_40.16 to 40.65	Soil/Solid	Solid	ME-MS41	5.4	0.1	ppm		18-Nov-2020	13:30		05-Jan-2021		✓	✓
scandium	VA20C2029-006	Bru 95-8_40.16 to 40.65	Soil/Solid	Solid	ME-MS41	1.1	0.1	ppm		18-Nov-2020	13:30		05-Jan-2021		✓	✓
selenium	VA20C2029-006	Bru 95-8_40.16 to 40.65	Soil/Solid	Solid	ME-MS41	0.7	0.2	ppm		18-Nov-2020	13:30		05-Jan-2021		✓	✓
silver	VA20C2029-006	Bru 95-8_40.16 to 40.65	Soil/Solid	Solid	ME-MS41	0.01	0.01	ppm		18-Nov-2020	13:30		05-Jan-2021		✓	✓
sodium	VA20C2029-006	Bru 95-8_40.16 to 40.65	Soil/Solid	Solid	ME-MS41	0.02	0.01	%		18-Nov-2020	13:30		05-Jan-2021		✓	✓
strontium	VA20C2029-006	Bru 95-8_40.16 to 40.65	Soil/Solid	Solid	ME-MS41	205	0.2	ppm		18-Nov-2020	13:30		05-Jan-2021		✓	✓
sulfur	VA20C2029-006	Bru 95-8_40.16 to 40.65	Soil/Solid	Solid	ME-MS41	0.05	0.01	%		18-Nov-2020	13:30		05-Jan-2021		✓	✓
tantalum	VA20C2029-006	Bru 95-8_40.16 to 40.65	Soil/Solid	Solid	ME-MS41	<0.01	0.01	ppm		18-Nov-2020	13:30		05-Jan-2021		✓	✓
tellurium	VA20C2029-006	Bru 95-8_40.16 to 40.65	Soil/Solid	Solid	ME-MS41	<0.01	0.01	ppm		18-Nov-2020	13:30		05-Jan-2021		✓	✓
thallium	VA20C2029-006	Bru 95-8_40.16 to 40.65	Soil/Solid	Solid	ME-MS41	0.02	0.02	ppm		18-Nov-2020	13:30		05-Jan-2021		✓	✓
thorium	VA20C2029-006	Bru 95-8_40.16 to 40.65	Soil/Solid	Solid	ME-MS41	1.2	0.2	ppm		18-Nov-2020	13:30		05-Jan-2021		✓	✓
tin	VA20C2029-006	Bru 95-8_40.16 to 40.65	Soil/Solid	Solid	ME-MS41	<0.2	0.2	ppm		18-Nov-2020	13:30		05-Jan-2021		✓	✓
titanium	VA20C2029-006	Bru 95-8_40.16 to 40.65	Soil/Solid	Solid	ME-MS41	<0.005	0.005	%		18-Nov-2020	13:30		05-Jan-2021		✓	✓
tungsten	VA20C2029-006	Bru 95-8_40.16 to 40.65	Soil/Solid	Solid	ME-MS41	<0.05	0.05	ppm		18-Nov-2020	13:30		05-Jan-2021		✓	✓
uranium	VA20C2029-006	Bru 95-8_40.16 to 40.65	Soil/Solid	Solid	ME-MS41	0.73	0.05	ppm		18-Nov-2020	13:30		05-Jan-2021		✓	✓
vanadium	VA20C2029-006	Bru 95-8_40.16 to 40.65	Soil/Solid	Solid	ME-MS41	8	1	ppm		18-Nov-2020	13:30		05-Jan-2021		✓	✓
yttrium	VA20C2029-006	Bru 95-8_40.16 to 40.65	Soil/Solid	Solid	ME-MS41	3.16	0.05	ppm		18-Nov-2020	13:30		05-Jan-2021		✓	✓
zinc	VA20C2029-006	Bru 95-8_40.16 to 40.65	Soil/Solid	Solid	ME-MS41	6	2	ppm		18-Nov-2020	13:30		05-Jan-2021		✓	✓
zirconium	VA20C2029-006	Bru 95-8_40.16 to 40.65	Soil/Solid	Solid	ME-MS41	2.8	0.5	ppm		18-Nov-2020	13:30		05-Jan-2021		✓	✓
Leachable Metals (Matrix: Soil/Solid)																
aluminum, leachable	VA20C2029-006	Bru 95-8_40.16 to 40.65	Soil/Solid	Solid	E446	0.144	0.0050	mg/L		18-Nov-2020	13:30	17-Dec-2020	20-Dec-2020	132217	✓	✓
antimony, leachable	VA20C2029-006	Bru 95-8_40.16 to 40.65	Soil/Solid	Solid	E446	<0.00010	0.00010	mg/L		18-Nov-2020	13:30	17-Dec-2020	20-Dec-2020	132217	✓	✓
arsenic, leachable	VA20C2029-006	Bru 95-8_40.16 to 40.65	Soil/Solid	Solid	E446	<0.0010	0.0010	mg/L		18-Nov-2020	13:30	17-Dec-2020	20-Dec-2020	132217	✓	✓
barium, leachable	VA20C2029-006	Bru 95-8_40.16 to 40.65	Soil/Solid	Solid	E446	0.0128	0.0010	mg/L		18-Nov-2020	13:30	17-Dec-2020	20-Dec-2020	132217	✓	✓
beryllium, leachable	VA20C2029-006	Bru 95-8_40.16 to 40.65	Soil/Solid	Solid	E446	<0.00050	0.00050	mg/L		18-Nov-2020	13:30	17-Dec-2020	20-Dec-2020	132217	✓	✓
bismuth, leachable	VA20C2029-006	Bru 95-8_40.16 to 40.65	Soil/Solid	Solid	E446	<0.00050	0.00050	mg/L		18-Nov-2020	13:30	17-Dec-2020	20-Dec-2020	132217	✓	✓
boron, leachable	VA20C2029-006	Bru 95-8_40.16 to 40.65	Soil/Solid	Solid	E446	0.071	0.010	mg/L		18-Nov-2020	13:30	17-Dec-2020	20-Dec-2020	132217	✓	✓
cadmium, leachable	VA20C2029-006	Bru 95-8_40.16 to 40.65	Soil/Solid	Solid	E446	<0.000050	0.000050	mg/L		18-Nov-2020	13:30	17-Dec-2020	20-Dec-2020	132217	✓	✓
calcium, leachable	VA20C2029-006	Bru 95-8_40.16 to 40.65	Soil/Solid	Solid	E446	17.7	0.10	mg/L		18-Nov-2020	13:30	17-Dec-2020	20-Dec-2020	132217	✓	✓
chromium, leachable	VA20C2029-006	Bru 95-8_40.16 to 40.65	Soil/Solid	Solid	E446	<0.00050	0.00050	mg/L		18-Nov-2020	13:30	17-Dec-2020	20-Dec-2020	132217	✓	✓
cobalt, leachable	VA20C2029-006	Bru 95-8_40.16 to 40.65	Soil/Solid	Solid	E446	<0.00010	0.00010	mg/L		18-Nov-2020	13:30	17-Dec-2020	20-Dec-2020	132217	✓	✓
copper, leachable	VA20C2029-006	Bru 95-8_40.16 to 40.65	Soil/Solid	Solid	E446	<0.0010	0.0010	mg/L		18-Nov-2020	13:30	17-Dec-2020	20-Dec-2020	132217	✓	✓
iron, leachable	VA20C2029-006	Bru 95-8_40.16 to 40.65	Soil/Solid	Solid	E446	<0.030	0.030	mg/L		18-Nov-2020	13:30	17-Dec-2020	20-Dec-2020	132217	✓	✓
lead, leachable	VA20C2029-006	Bru 95-8_40.16 to 40.65	Soil/Solid	Solid	E446	<0.00010	0.00010	mg/L		18-Nov-2020	13:30	17-Dec-2020	20-Dec-2020	132217	✓	✓
lithium, leachable	VA20C2029-006	Bru 95-8_40.16 to 40.65	Soil/Solid	Solid	E446	0.0069	0.0050	mg/L		18-Nov-2020	13:30	17-Dec-2020	20-Dec-2020	132217	✓	✓
magnesium, leachable	VA20C2029-006	Bru 95-8_40.16 to 40.65	Soil/Solid	Solid	E446	6.28	0.050	mg/L		18-Nov-2020	13:30	17-Dec-2020	20-Dec-2020	132217	✓	✓
manganese, leachable	VA20C2029-006	Bru 95-8_40.16 to 40.65	Soil/Solid	Solid	E446	0.00050	0.00050	mg/L		18-Nov-2020	13:30	17-Dec-2020	20-Dec-2020	132217	✓	✓
molybdenum, leachable	VA20C2029-006	Bru 95-8_40.16 to 40.65	Soil/Solid	Solid	E446	0.00077	0.00010	mg/L		18-Nov-2020	13:30	17-Dec-2020	20-Dec-2020	132217	✓	✓
nickel, leachable	VA20C2029-006	Bru 95-8_40.16 to 40.65	Soil/Solid	Solid	E446	<0.00050	0.00050	mg/L		18-Nov-2020	13:30	17-Dec-2020	20-Dec-2020	132217	✓	✓
phosphorus, leachable	VA20C2029-006	Bru 95-8_40.16 to 40.65	Soil/Solid	Solid	E446	<0.30	0.30	mg/L		18-Nov-2020	13:30	17-Dec-2020	20-Dec-2020	132217	✓	✓
potassium, leachable	VA20C2029-006	Bru 95-8_40.16 to 40.65	Soil/Solid	Solid	E446	8.03	0.050	mg/L		18-Nov-2020	13:30	17-Dec-2020	20-Dec-2020	132217	✓	✓
selenium, leachable	VA20C2029-006	Bru 95-8_40.16 to 40.65	Soil/Solid	Solid	E446	0.0165	0.00050	mg/L		18-Nov-2020	13:30	17-Dec-2020	20-Dec-2020	132217	✓	✓
silicon, leachable	VA20C2029-006	Bru 95-8_40.16 to 40.65	Soil/Solid	Solid	E446	2.14	0.050	mg/L		18-Nov-2020	13:30	17-Dec-2020	20-Dec-2020	132217	✓	✓
silver, leachable	VA20C2029-006	Bru 95-8_40.16 to 40.65	Soil/Solid	Solid	E446	<0.000050	0.000050	mg/L		18-Nov-2020	13:30	17-Dec-2020	20-Dec-2020	132217	✓	✓
sodium, leachable	VA20C2029-006	Bru 95-8_40.16 to 40.65	Soil/Solid	Solid	E446	2.16	0.050	mg/L		18-Nov-2020	13:30	17-Dec-2020	20-Dec-2020	132217	✓	✓
strontium, leachable	VA20C2029-006	Bru 95-8_40.16 to 40.65	Soil/Solid	Solid	E446	0.123	0.00050	mg/L		18-Nov-2020	13:30	17-Dec-2020	20-Dec-2020	132217	✓	✓
sulfur, leachable	VA20C2029-006	Bru 95-8_40.16 to 40.65	Soil/Solid	Solid	E446	13.2	0.50	mg/L		18-Nov-2020	13:30	17-Dec-2020	20-Dec-2020	132217	✓	✓
thallium, leachable	VA20C2029-006	Bru 95-8_40.16 to 40.65	Soil/Solid	Solid	E446	<0.00010	0.00010	mg/L		18-Nov-2020	13:30	17-Dec-2020	20-Dec-2020	132217	✓	✓
tin, leachable	VA20C2029-006	Bru 95-8_40.16 to 40.65	Soil/Solid	Solid	E446	<0.00050	0.00050	mg/L		18-Nov-2020	13:30	17-Dec-2020	20-Dec-2020	132217	✓	✓
titanium, leachable	VA20C2029-006	Bru 95-8_40.16 to 40.65	Soil/Solid	Solid	E446	<0.010	0.010	mg/L		18-Nov-2020	13:30	17-Dec-2020	20-Dec-2020	132217	✓	✓
uranium, leachable	VA20C2029-006	Bru 95-8_40.16 to 40.65	Soil/Solid	Solid	E446	0.000456	0.000010	mg/L		18-Nov-2020	13:30	17-Dec-2020	20-Dec-2020	132217	✓	✓
vanadium, leachable	VA20C2029-006	Bru 95-8_40.16 to 40.65	Soil/Solid	Solid	E446	0.0040	0.0010	mg/L		18-Nov-2020	13:30	17-Dec-2020	20-Dec-2020	132217	✓	✓
zinc, leachable	VA20C2029-006	Bru 95-8_40.16 to 40.65	Soil/Solid	Solid	E446	<0.010	0.010	mg/L		18-Nov-2020	13:30	17-Dec-2020	20-Dec-2020	132217	✓	✓
mercury, leachable	VA20C2029-006	Bru 95-8_40.16 to 40.65	Soil/Solid	Solid	E515	<0.000050	0.000050	mg/L		18-Nov-2020	13:30	17-Dec-2020	19-Dec-2020	132215	✓	x
hardness (as CaCO3), dissolved	VA20C2029-006	Bru 95-8_40.16 to 40.65	Soil/Solid	Solid	E446	70.0	0.60	mg/L		18-Nov-2020	13:30	17-Dec-2020	20-Dec-2020	132217	✓	✓
Physical Tests (Matrix: Soil/Solid)																
moisture	VA20C2029-007	Bru 95-8_49.39 to 49.79	Soil/Solid	Solid	E144	0.91	0.25	%		18-Nov-2020	15:00		17-Dec-2020	132183	✓	✓
pH	VA20C2029-007	Bru 95-8_49.39 to 49.79	Soil/Solid	Solid	E116	7.94	0.10	pH units		18-Nov-2020	15:00	17-Dec-2020	19-Dec-2020	132216	✓	x
Acid Base Accounting (Matrix: Soil/Solid)																
fizz rating	VA20C2029-007	Bru 95-8_49.39 to 49.79	Soil/Solid	Solid	OA-VOL08m	2	1			18-Nov-2020	15:00		05-Jan-2021		✓	✓
maximum potential acidity [MPA]	VA20C2029-007	Bru 95-8_49.39 to 49.79	Soil/Solid	Solid	OA-VOL08m	20.0	0.3	tCaCO3/kt		18-Nov-2020	15:00		05-Jan-2021		✓	✓
net neutralization potential [NNP]	VA20C2029-007	Bru 95-8_49.39 to 49.79	Soil/Solid	Solid	OA-VOL08m	5	1	tCaCO3/kt		18-Nov-2020	15:00		05-Jan-2021		✓	✓
neutralization potential [NP]	VA20C2029-007	Bru 95-8_49.39 to 49.79	Soil/Solid	Solid	OA-VOL08m	25	1	tCaCO3/kt		18-Nov-2020	15:00		05-Jan-2021		✓	✓
neutralization potential ratio [NPR], (NP/MPA)	VA20C2029-007	Bru 95-8_49.39 to 49.79	Soil/Solid	Solid	OA-VOL08m	1.25	0.01			18-Nov-2020	15:00		05-Jan-2021		✓	✓
carbon dioxide	VA20C2029-007	Bru 95-8_49.39 to 49.79	Soil/Solid	Solid	C-GAS05	1.3	0.2	%		18-Nov-2020	15:00		05-Jan-2021		✓	✓
carbon, total [TC]	VA20C2029-007	Bru 95-8_49.39 to 49.79	Soil/Solid	Solid	C-IR07	0.55	0.01	%		18-Nov-2020	15:00		05-Jan-2021		✓	✓
pH (1:1 soil:water)	VA20C2029-007	Bru 95-8_49.39 to 49.79	Soil/Solid	Solid	OA-ELE07	7.50	0.10	pH units		18-Nov-2020	15:00		05-Jan-2021		✓	✓
sulfide (as S), total minus carbonate leach	VA20C2029-007	Bru 95-8_49.39 to 49.79	Soil/Solid	Solid	S-CAL06	<0.01	0.01	%		18-Nov-2020	15:00		05-Jan-2021		✓	x
sulfur, residual	VA20C2029-007	Bru 95-8_49.39 to 49.79	Soil/Solid	Solid	S-IR04B	<0.01	0.01	%		18-Nov-2020	15:00		05-Jan-2021		✓	✓
sulfur, total	VA20C2029-007	Bru 95-8_49.39 to 49.79	Soil/Solid	Solid	S-IR08	0.64	0.01	%		18-Nov-2020	15:00		05-Jan-2021		✓	✓
weight, sample received	VA20C2029-007	Bru 95-8_49.39 to 49.79	Soil/Solid	Solid	WEI-21	2.54	0.02	kg		18-Nov-2020	15:00		05-Jan-2021		✓	✓
sulfate (as S), HCl leach	VA20C2029-007	Bru 95-8_49.39 to 49.79	Soil/Solid	Solid	S-GRA06A	<0.01	0.01	%		18-Nov-2020	15:00		05-Jan-2021		✓	✓
sulfate (as S), carbonate leach	VA20C2029-007	Bru 95-8_49.39 to 49.79	Soil/Solid	Solid	S-GRA06	0.12	0.01	%		18-Nov-2020	15:00		05-Jan-2021		✓	✓
carbon, total inorganic [TIC]	VA20C2029-007	Bru 95-8_49.39 to 49.79	Soil/Solid	Solid	C-GAS05	0.36	0.05	%		18-Nov-2020	15:00		05-Jan-2021		✓	✓
Metals (Matrix: Soil/Solid)																
aluminum	VA20C2029-007	Bru 95-8_49.39 to 49.79	Soil/Solid	Solid	ME-MS41	1.49	0.01	%		18-Nov-2020	15:00		05-Jan-2021		✓	✓
antimony	VA20C2029-007	Bru 95-8_49.39 to 49.79	Soil/Solid	Solid	ME-MS41	<0.05	0.05	ppm		18-Nov-2020	15:00		05-Jan-2021		✓	✓
arsenic	VA20C2029-007	Bru 95-8_49.39 to 49.79	Soil/Solid	Solid	ME-MS41	24.2	0.1	ppm		18-Nov-2020	15:00		05-Jan-2021		✓	✓
barium	VA20C2029-007	Bru 95-8_49.39 to 49.79	Soil/Solid	Solid	ME-MS41	30	10	ppm		18-Nov-2020	15:00		05-Jan-2021		✓	✓
beryllium	VA20C2029-007	Bru 95-8_49.39 to 49.79	Soil/Solid	Solid	ME-MS41	0.92	0.05	ppm		18-Nov-2020	15:00		05-Jan-2021		✓	✓
bismuth	VA20C2029-007	Bru 95-8_49.39 to 49.79	Soil/Solid	Solid	ME-MS41	0.12	0.01	ppm		18-Nov-2020	15:00		05-Jan-2021		✓	✓
boron	VA20C2029-007	Bru 95-8_49.39 to 49.79	Soil/Solid	Solid	ME-MS41	50	10	ppm		18-Nov-2020	15:00		05-Jan-2021		✓	✓
cadmium	VA20C2029-007	Bru 95-8_49.39 to 49.79	Soil/Solid	Solid	ME-MS41	<0.01	0.01	ppm		18-Nov-2020	15:00		05-Jan-2021		✓	✓
calcium	VA20C2029-007	Bru 95-8_49.39 to 49.79	Soil/Solid	Solid	ME-MS41	1.32	0.01	%		18-Nov-2020	15:00		05-Jan-2021		✓	✓
cerium	VA20C2029-007	Bru 95-8_49.39 to 49.79	Soil/Solid	Solid	ME-MS41	36.1	0.02	ppm		18-Nov-2020	15:00		05-Jan-2021		✓	✓
cesium	VA20C2029-007	Bru 95-8_49.39 to 49.79	Soil/Solid	Solid	ME-MS41	0.73	0.05	ppm		18-Nov-2020	15:00		05-Jan-2021		✓	✓
chromium	VA20C2029-007	Bru 95-8_49.39 to 49.79	Soil/Solid	Solid	ME-MS41	58	1	ppm		18-Nov-2020	15:00		05-Jan-2021		✓	✓
cobalt	VA20C2029-007	Bru 95-8_49.39 to 49.79	Soil/Solid	Solid	ME-MS41	20.6	0.1	ppm		18-Nov-2020	15:00		05-Jan-2021		✓	✓
copper	VA20C2029-007	Bru 95-8_49.39 to 49.79	Soil/Solid	Solid	ME-MS41	7.4	0.2	ppm		18-Nov-2020	15:00		05-Jan-2021		✓	✓
gallium	VA20C2029-007	Bru 95-8_49.39 to 49.79	Soil/Solid	Solid	ME-MS41	8.17	0.05	ppm		18-Nov-2020	15:00		05-Jan-2021		✓	✓
germanium	VA20C2029-007	Bru 95-8_49.39 to 49.79	Soil/Solid	Solid	ME-MS41	0.07	0.05	ppm		18-Nov-2020	15:00		05-Jan-2021		✓	✓
gold	VA20C2029-007	Bru 95-8_49.39 to 49.79	Soil/Solid	Solid	ME-MS41	<0.02	0.02	ppm		18-Nov-2020	15:00		05-Jan-2021		✓	✓
hafnium	VA20C2029-007	Bru 95-8_49.39 to 49.79	Soil/Solid	Solid	ME-MS41	0.34	0.02	ppm		18-Nov-2020	15:00		05-Jan-2021		✓	✓
indium	VA20C2029-007	Bru 95-8_49.39 to 49.79	Soil/Solid	Solid	ME-MS41	0.047	0.005	ppm		18-Nov-2020	15:00		05-Jan-2021		✓	✓
iron	VA20C2029-007	Bru 95-8_49.39 to 49.79	Soil/Solid	Solid	ME-MS41	5.56	0.01	%		18-Nov-2020	15:00		05-Jan-2021		✓	✓
lanthanum	VA20C2029-007	Bru 95-8_49.39 to 49.79	Soil/Solid	Solid	ME-MS41	15.0	0.2	ppm		18-Nov-2020	15:00		05-Jan-2021		✓	✓
lead	VA20C2029-007	Bru 95-8_49.39 to 49.79	Soil/Solid	Solid	ME-MS41	4.6	0.2	ppm		18-Nov-2020	15:00		05-Jan-2021		✓	✓
lithium	VA20C2029-007	Bru 95-8_49.39 to 49.79	Soil/Solid	Solid	ME-MS41	25.7	0.1	ppm		18-Nov-2020	15:00		05-Jan-2021		✓	✓
magnesium	VA20C2029-007	Bru 95-8_49.39 to 49.79	Soil/Solid	Solid	ME-MS41	0.41	0.01	%		18-Nov-2020	15:00		05-Jan-2021		✓	✓
manganese	VA20C2029-007	Bru 95-8_49.39 to 49.79	Soil/Solid	Solid	ME-MS41	206	5	ppm		18-Nov-2020	15:00		05-Jan-2021		✓	✓
mercury	VA20C2029-007	Bru 95-8_49.39 to 49.79	Soil/Solid	Solid	ME-MS41	0.03	0.01	ppm		18-Nov-2020	15:00		05-Jan-2021		✓	✓
molybdenum	VA20C2029-007	Bru 95-8_49.39 to 49.79	Soil/Solid	Solid	ME-MS41	0.54	0.05	ppm		18-Nov-2020	15:00		05-Jan-2021		✓	✓
nickel	VA20C2029-007	Bru 95-8_49.39 to 49.79	Soil/Solid	Solid	ME-MS41	25.8	0.2	ppm		18-Nov-2020	15:00		05-Jan-2021		✓	✓
niobium	VA20C2029-007	Bru 95-8_49.39 to 49.79	Soil/Solid	Solid	ME-MS41	0.21	0.05	ppm		18-Nov-2020	15:00		05-Jan-2021		✓	✓
phosphorus	VA20C2029-007	Bru 95-8_49.39 to 49.79	Soil/Solid	Solid	ME-MS41	580	10	ppm		18-Nov-2020	15:00		05-Jan-2021		✓	✓
potassium	VA20C2029-007	Bru 95-8_49.39 to 49.79	Soil/Solid	Solid	ME-MS41	0.49	0.01	%		18-Nov-2020	15:00		05-Jan-2021		✓	✓
rhenium	VA20C2029-007	Bru 95-8_49.39 to 49.79	Soil/Solid	Solid	ME-MS41	0.003	0.001	ppm		18-Nov-2020	15:00		05-Jan-2021		✓	✓
rubidium	VA20C2029-007	Bru 95-8_49.39 to 49.79	Soil/Solid	Solid	ME-MS41	22.7	0.1	ppm		18-Nov-2020	15:00		05-Jan-2021		✓	✓
scandium	VA20C2029-007	Bru 95-8_49.39 to 49.79	Soil/Solid	Solid	ME-MS41	6.1	0.1	ppm		18-Nov-2020	15:00		05-Jan-2021		✓	✓
selenium	VA20C2029-007	Bru 95-8_49.39 to 49.79	Soil/Solid	Solid	ME-MS41	0.3	0.2	ppm		18-Nov-2020	15:00		05-Jan-2021		✓	✓
silver	VA20C2029-007	Bru 95-8_49.39 to 49.79	Soil/Solid	Solid	ME-MS41	0.02	0.01	ppm		18-Nov-2020	15:00		05-Jan-2021		✓	✓
sodium	VA20C2029-007	Bru 95-8_49.39 to 49.79	Soil/Solid	Solid	ME-MS41	0.02	0.01	%		18-Nov-2020	15:00		05-Jan-2021		✓	✓
strontium	VA20C2029-007	Bru 95-8_49.39 to 49.79	Soil/Solid	Solid	ME-MS41	34.2	0.2	ppm		18-Nov-2020	15:00		05-Jan-2021		✓	✓
sulfur	VA20C2029-007	Bru 95-8_49.39 to 49.79	Soil/Solid	Solid	ME-MS41	0.69	0.01	%		18-Nov-2020	15:00		05-Jan-2021		✓	✓
tantalum	VA20C2029-007	Bru 95-8_49.39 to 49.79	Soil/Solid	Solid	ME-MS41	<0.01	0.01	ppm		18-Nov-2020	15:00		05-Jan-2021		✓	✓
tellurium	VA20C2029-007	Bru 95-8_49.39 to 49.79	Soil/Solid	Solid	ME-MS41	0.09	0.01	ppm		18-Nov-2020	15:00		05-Jan-2021		✓	✓
thallium	VA20C2029-007	Bru 95-8_49.39 to 49.

Analyte	ALS Sample ID	Client Sample ID	Matrix	Sub-Matrix	Method	Results	Detection Limit	Units	Qual	Date Sampled	Time Sampled	Prep Date	Analysis Date	QC Lot	QC Eval	Hold Time Eval
yttrium	VA20C2029-007	Bru 95-8_49.39 to 49.79	Soil/Solid	Solid	ME-MS41	8.90	0.05	ppm		18-Nov-2020	15:00		05-Jan-2021		✓	✓
zinc	VA20C2029-007	Bru 95-8_49.39 to 49.79	Soil/Solid	Solid	ME-MS41	38	2	ppm		18-Nov-2020	15:00		05-Jan-2021		✓	✓
zirconium	VA20C2029-007	Bru 95-8_49.39 to 49.79	Soil/Solid	Solid	ME-MS41	10.7	0.5	ppm		18-Nov-2020	15:00		05-Jan-2021		✓	✓
Leachable Metals (Matrix: Soil/Solid)																
aluminum, leachable	VA20C2029-007	Bru 95-8_49.39 to 49.79	Soil/Solid	Solid	E446	<0.0050	0.0050	mg/L		18-Nov-2020	15:00	17-Dec-2020	20-Dec-2020	132217	✓	✓
antimony, leachable	VA20C2029-007	Bru 95-8_49.39 to 49.79	Soil/Solid	Solid	E446	<0.00010	0.00010	mg/L		18-Nov-2020	15:00	17-Dec-2020	20-Dec-2020	132217	✓	✓
arsenic, leachable	VA20C2029-007	Bru 95-8_49.39 to 49.79	Soil/Solid	Solid	E446	<0.0010	0.0010	mg/L		18-Nov-2020	15:00	17-Dec-2020	20-Dec-2020	132217	✓	✓
barium, leachable	VA20C2029-007	Bru 95-8_49.39 to 49.79	Soil/Solid	Solid	E446	0.0845	0.0010	mg/L		18-Nov-2020	15:00	17-Dec-2020	20-Dec-2020	132217	✓	✓
beryllium, leachable	VA20C2029-007	Bru 95-8_49.39 to 49.79	Soil/Solid	Solid	E446	<0.00050	0.00050	mg/L		18-Nov-2020	15:00	17-Dec-2020	20-Dec-2020	132217	✓	✓
bismuth, leachable	VA20C2029-007	Bru 95-8_49.39 to 49.79	Soil/Solid	Solid	E446	<0.00050	0.00050	mg/L		18-Nov-2020	15:00	17-Dec-2020	20-Dec-2020	132217	✓	✓
boron, leachable	VA20C2029-007	Bru 95-8_49.39 to 49.79	Soil/Solid	Solid	E446	1.20	0.010	mg/L		18-Nov-2020	15:00	17-Dec-2020	20-Dec-2020	132217	✓	✓
cadmium, leachable	VA20C2029-007	Bru 95-8_49.39 to 49.79	Soil/Solid	Solid	E446	<0.000050	0.000050	mg/L		18-Nov-2020	15:00	17-Dec-2020	20-Dec-2020	132217	✓	✓
calcium, leachable	VA20C2029-007	Bru 95-8_49.39 to 49.79	Soil/Solid	Solid	E446	246	0.10	mg/L		18-Nov-2020	15:00	17-Dec-2020	20-Dec-2020	132217	✓	✓
chromium, leachable	VA20C2029-007	Bru 95-8_49.39 to 49.79	Soil/Solid	Solid	E446	<0.00050	0.00050	mg/L		18-Nov-2020	15:00	17-Dec-2020	20-Dec-2020	132217	✓	✓
cobalt, leachable	VA20C2029-007	Bru 95-8_49.39 to 49.79	Soil/Solid	Solid	E446	0.00141	0.00010	mg/L		18-Nov-2020	15:00	17-Dec-2020	20-Dec-2020	132217	✓	✓
copper, leachable	VA20C2029-007	Bru 95-8_49.39 to 49.79	Soil/Solid	Solid	E446	<0.0010	0.0010	mg/L		18-Nov-2020	15:00	17-Dec-2020	20-Dec-2020	132217	✓	✓
iron, leachable	VA20C2029-007	Bru 95-8_49.39 to 49.79	Soil/Solid	Solid	E446	<0.030	0.030	mg/L		18-Nov-2020	15:00	17-Dec-2020	20-Dec-2020	132217	✓	✓
lead, leachable	VA20C2029-007	Bru 95-8_49.39 to 49.79	Soil/Solid	Solid	E446	<0.00010	0.00010	mg/L		18-Nov-2020	15:00	17-Dec-2020	20-Dec-2020	132217	✓	✓
lithium, leachable	VA20C2029-007	Bru 95-8_49.39 to 49.79	Soil/Solid	Solid	E446	0.0908	0.0050	mg/L		18-Nov-2020	15:00	17-Dec-2020	20-Dec-2020	132217	✓	✓
magnesium, leachable	VA20C2029-007	Bru 95-8_49.39 to 49.79	Soil/Solid	Solid	E446	54.5	0.050	mg/L		18-Nov-2020	15:00	17-Dec-2020	20-Dec-2020	132217	✓	✓
manganese, leachable	VA20C2029-007	Bru 95-8_49.39 to 49.79	Soil/Solid	Solid	E446	0.0540	0.00050	mg/L		18-Nov-2020	15:00	17-Dec-2020	20-Dec-2020	132217	✓	✓
molybdenum, leachable	VA20C2029-007	Bru 95-8_49.39 to 49.79	Soil/Solid	Solid	E446	0.00016	0.00010	mg/L		18-Nov-2020	15:00	17-Dec-2020	20-Dec-2020	132217	✓	✓
nickel, leachable	VA20C2029-007	Bru 95-8_49.39 to 49.79	Soil/Solid	Solid	E446	0.00162	0.00050	mg/L		18-Nov-2020	15:00	17-Dec-2020	20-Dec-2020	132217	✓	✓
phosphorus, leachable	VA20C2029-007	Bru 95-8_49.39 to 49.79	Soil/Solid	Solid	E446	<0.30	0.30	mg/L		18-Nov-2020	15:00	17-Dec-2020	20-Dec-2020	132217	✓	✓
potassium, leachable	VA20C2029-007	Bru 95-8_49.39 to 49.79	Soil/Solid	Solid	E446	63.9	0.050	mg/L		18-Nov-2020	15:00	17-Dec-2020	20-Dec-2020	132217	✓	✓
selenium, leachable	VA20C2029-007	Bru 95-8_49.39 to 49.79	Soil/Solid	Solid	E446	0.0118	0.00050	mg/L		18-Nov-2020	15:00	17-Dec-2020	20-Dec-2020	132217	✓	✓
silicon, leachable	VA20C2029-007	Bru 95-8_49.39 to 49.79	Soil/Solid	Solid	E446	4.61	0.050	mg/L		18-Nov-2020	15:00	17-Dec-2020	20-Dec-2020	132217	✓	✓
silver, leachable	VA20C2029-007	Bru 95-8_49.39 to 49.79	Soil/Solid	Solid	E446	<0.000050	0.000050	mg/L		18-Nov-2020	15:00	17-Dec-2020	20-Dec-2020	132217	✓	✓
sodium, leachable	VA20C2029-007	Bru 95-8_49.39 to 49.79	Soil/Solid	Solid	E446	15.4	0.050	mg/L		18-Nov-2020	15:00	17-Dec-2020	20-Dec-2020	132217	✓	✓
strontium, leachable	VA20C2029-007	Bru 95-8_49.39 to 49.79	Soil/Solid	Solid	E446	1.03	0.00050	mg/L		18-Nov-2020	15:00	17-Dec-2020	20-Dec-2020	132217	✓	✓
sulfur, leachable	VA20C2029-007	Bru 95-8_49.39 to 49.79	Soil/Solid	Solid	E446	288	0.50	mg/L		18-Nov-2020	15:00	17-Dec-2020	20-Dec-2020	132217	✓	✓
thallium, leachable	VA20C2029-007	Bru 95-8_49.39 to 49.79	Soil/Solid	Solid	E446	0.00012	0.00010	mg/L		18-Nov-2020	15:00	17-Dec-2020	20-Dec-2020	132217	✓	✓
tin, leachable	VA20C2029-007	Bru 95-8_49.39 to 49.79	Soil/Solid	Solid	E446	<0.00050	0.00050	mg/L		18-Nov-2020	15:00	17-Dec-2020	20-Dec-2020	132217	✓	✓
titanium, leachable	VA20C2029-007	Bru 95-8_49.39 to 49.79	Soil/Solid	Solid	E446	<0.010	0.010	mg/L		18-Nov-2020	15:00	17-Dec-2020	20-Dec-2020	132217	✓	✓
uranium, leachable	VA20C2029-007	Bru 95-8_49.39 to 49.79	Soil/Solid	Solid	E446	0.000182	0.000010	mg/L		18-Nov-2020	15:00	17-Dec-2020	20-Dec-2020	132217	✓	✓
vanadium, leachable	VA20C2029-007	Bru 95-8_49.39 to 49.79	Soil/Solid	Solid	E446	<0.0010	0.0010	mg/L		18-Nov-2020	15:00	17-Dec-2020	20-Dec-2020	132217	✓	✓
zinc, leachable	VA20C2029-007	Bru 95-8_49.39 to 49.79	Soil/Solid	Solid	E446	<0.010	0.010	mg/L		18-Nov-2020	15:00	17-Dec-2020	20-Dec-2020	132217	✓	✓
mercury, leachable	VA20C2029-007	Bru 95-8_49.39 to 49.79	Soil/Solid	Solid	E515	<0.000050	0.000050	mg/L		18-Nov-2020	15:00	17-Dec-2020	19-Dec-2020	132215	✓	*
hardness (as CaCO3), dissolved	VA20C2029-007	Bru 95-8_49.39 to 49.79	Soil/Solid	Solid	E446	839	0.60	mg/L		18-Nov-2020	15:00	17-Dec-2020	20-Dec-2020	132217	✓	✓

Evaluation Legend

✓	QC Lot met ALS Data Quality Objectives

Hold Time Evaluation Legend

*	= holding time exceedance
✓	= within holding time

Duplicates VA20C2029

Project 60640258 - CanWhite Sands
Report To Ryan Mills, AECOM Canada Ltd.
Date Received 27-Nov-2020 12:55
Issue Date 16-Feb-2021 15:04
Amendment 2

ALS ID	Reference	Client Sample ID	QC Type	QC Lot	Analyte	Method	Sample Result	Duplicate Result	Detection Limit	Units	RPD(%) or Diff.	Duplicate Limits	Qual	Eval
Physical Tests (Matrix: Soil/Solid)														
QC-130855-004	VA20C2029-001	Bru 95-3	DUP	130855	moisture	E144	0.61	0.74	0.25	%	0.12	Diff <2x LOR		✓
QC-132183-004	VA20C2029-002	Bru 121-1_24.38 to 24.83	DUP	132183	moisture	E144	<0.25	<0.25	0.25	%	0	Diff <2x LOR		✓
QC-MRG10-132219004	Anonymous	Anonymous	DUP	132216	pH	E116	8.43	8.36	0.1	pH units	0.834%	5		✓
Leachable Metals (Matrix: Soil/Solid)														
QC-MRG10-132219004	Anonymous	Anonymous	DUP	132217	aluminum, leachable	E446	0.0476	0.0503	0.005	mg/L	5.51%	30		✓
QC-MRG10-132219004	Anonymous	Anonymous	DUP	132217	antimony, leachable	E446	0.00062	0.00057	0.0001	mg/L	0.00005	Diff <2x LOR		✓
QC-MRG10-132219004	Anonymous	Anonymous	DUP	132217	arsenic, leachable	E446	0.0044	0.0043	0.001	mg/L	0.0001	Diff <2x LOR		✓
QC-MRG10-132219004	Anonymous	Anonymous	DUP	132217	barium, leachable	E446	0.0205	0.0188	0.001	mg/L	8.71%	30		✓
QC-MRG10-132219004	Anonymous	Anonymous	DUP	132217	beryllium, leachable	E446	<0.00050	<0.00050	0.0005	mg/L	0	Diff <2x LOR		✓
QC-MRG10-132219004	Anonymous	Anonymous	DUP	132217	bismuth, leachable	E446	<0.00050	<0.00050	0.0005	mg/L	0	Diff <2x LOR		✓
QC-MRG10-132219004	Anonymous	Anonymous	DUP	132217	boron, leachable	E446	0.013	0.012	0.01	mg/L	0.0002	Diff <2x LOR		✓
QC-MRG10-132219004	Anonymous	Anonymous	DUP	132217	cadmium, leachable	E446	<0.000050	<0.000050	0.00005	mg/L	0	Diff <2x LOR		✓
QC-MRG10-132219004	Anonymous	Anonymous	DUP	132217	calcium, leachable	E446	9.97	9.46	0.1	mg/L	5.27%	30		✓
QC-MRG10-132219004	Anonymous	Anonymous	DUP	132217	chromium, leachable	E446	<0.00050	<0.00050	0.0005	mg/L	0	Diff <2x LOR		✓
QC-MRG10-132219004	Anonymous	Anonymous	DUP	132217	cobalt, leachable	E446	<0.00010	<0.00010	0.0001	mg/L	0	Diff <2x LOR		✓
QC-MRG10-132219004	Anonymous	Anonymous	DUP	132217	copper, leachable	E446	<0.0010	<0.0010	0.001	mg/L	0	Diff <2x LOR		✓
QC-MRG10-132219004	Anonymous	Anonymous	DUP	132217	iron, leachable	E446	<0.030	<0.030	0.03	mg/L	0	Diff <2x LOR		✓
QC-MRG10-132219004	Anonymous	Anonymous	DUP	132217	lead, leachable	E446	<0.00010	<0.00010	0.0001	mg/L	0	Diff <2x LOR		✓
QC-MRG10-132219004	Anonymous	Anonymous	DUP	132217	lithium, leachable	E446	<0.0050	<0.0050	0.005	mg/L	0	Diff <2x LOR		✓
QC-MRG10-132219004	Anonymous	Anonymous	DUP	132217	magnesium, leachable	E446	10.2	9.76	0.05	mg/L	4.72%	30		✓
QC-MRG10-132219004	Anonymous	Anonymous	DUP	132217	manganese, leachable	E446	0.00147	0.00145	0.0005	mg/L	0.00002	Diff <2x LOR		✓
QC-MRG10-132219004	Anonymous	Anonymous	DUP	132217	molybdenum, leachable	E446	0.0131	0.0127	0.0001	mg/L	3.24%	30		✓
QC-MRG10-132219004	Anonymous	Anonymous	DUP	132217	nickel, leachable	E446	<0.00050	<0.00050	0.0005	mg/L	0	Diff <2x LOR		✓
QC-MRG10-132219004	Anonymous	Anonymous	DUP	132217	phosphorus, leachable	E446	<0.30	<0.30	0.3	mg/L	0	Diff <2x LOR		✓
QC-MRG10-132219004	Anonymous	Anonymous	DUP	132217	potassium, leachable	E446	5.18	5.05	0.05	mg/L	2.56%	30		✓
QC-MRG10-132219004	Anonymous	Anonymous	DUP	132217	selenium, leachable	E446	<0.00050	0.00056	0.0005	mg/L	0.00006	Diff <2x LOR		✓
QC-MRG10-132219004	Anonymous	Anonymous	DUP	132217	silicon, leachable	E446	7.84	7.76	0.05	mg/L	0.978%	40		✓
QC-MRG10-132219004	Anonymous	Anonymous	DUP	132217	silver, leachable	E446	<0.000050	<0.000050	0.00005	mg/L	0	Diff <2x LOR		✓
QC-MRG10-132219004	Anonymous	Anonymous	DUP	132217	sodium, leachable	E446	8.65	8.65	0.05	mg/L	0.0116%	30		✓
QC-MRG10-132219004	Anonymous	Anonymous	DUP	132217	strontium, leachable	E446	0.0802	0.0738	0.0005	mg/L	8.27%	30		✓
QC-MRG10-132219004	Anonymous	Anonymous	DUP	132217	sulfur, leachable	E446	13.2	12.6	0.5	mg/L	5.02%	30		✓
QC-MRG10-132219004	Anonymous	Anonymous	DUP	132217	thallium, leachable	E446	<0.00010	<0.00010	0.0001	mg/L	0	Diff <2x LOR		✓
QC-MRG10-132219004	Anonymous	Anonymous	DUP	132217	tin, leachable	E446	<0.00050	<0.00050	0.0005	mg/L	0	Diff <2x LOR		✓
QC-MRG10-132219004	Anonymous	Anonymous	DUP	132217	titanium, leachable	E446	<0.010	<0.010	0.01	mg/L	0	Diff <2x LOR		✓
QC-MRG10-132219004	Anonymous	Anonymous	DUP	132217	uranium, leachable	E446	0.000209	0.000197	0.00001	mg/L	5.85%	30		✓
QC-MRG10-132219004	Anonymous	Anonymous	DUP	132217	vanadium, leachable	E446	0.0117	0.0116	0.001	mg/L	1.14%	30		✓
QC-MRG10-132219004	Anonymous	Anonymous	DUP	132217	zinc, leachable	E446	<0.010	<0.010	0.01	mg/L	0	Diff <2x LOR		✓
QC-MRG10-132219004	Anonymous	Anonymous	DUP	132215	mercury, leachable	E515	<0.000050	<0.000050	0.00005	mg/L	0	Diff <2x LOR		✓

Evaluation Legend

✓ QC Lot met ALS Data Quality Objectives

Quality Control VA20C2029

Project	60640258 - CanWhite Sands
Report To	Ryan Mills, AECOM Canada Ltd.
Date Received	27-Nov-2020 12:55
Issue Date	16-Feb-2021 15:04
Amendment	2

QC Type	Analyte	QC Lot	ALS QC ID	Method	Result	Target	Units	%	Limit	Units	Qual	Eval
Physical Tests (Matrix: Soil/Solid)												
MB	moisture	130855	QC-130855-001	E144	<0.25		%	-	0.25	%		✓
LCS	moisture	130855	QC-130855-002	E144	50.4	50 %	%	101	90-110	%		✓
LCS	pH	130890	QC-130890-001	E116	7.00	7.04 pH units	pH units	99.4	95-105	%		✓
MB	moisture	132183	QC-132183-001	E144	<0.25		%	-	0.25	%		✓
LCS	moisture	132183	QC-132183-002	E144	50.5	50 %	%	101	90-110	%		✓
LCS	pH	132216	QC-132216-001	E116	7.00	7.04 pH units	pH units	99.4	95-105	%		✓
Leachable Metals (Matrix: Soil/Solid)												
LCS	aluminum, leachable	130891	QC-MRG2-130889002	E446	0.196	0.2 mg/L	mg/L	98.0	70-130	%		✓
LCS	antimony, leachable	130891	QC-MRG2-130889002	E446	0.0992	0.1 mg/L	mg/L	99.2	70-130	%		✓
LCS	arsenic, leachable	130891	QC-MRG2-130889002	E446	0.0966	0.1 mg/L	mg/L	96.6	70-130	%		✓
LCS	barium, leachable	130891	QC-MRG2-130889002	E446	0.0244	0.025 mg/L	mg/L	97.6	70-130	%		✓
LCS	beryllium, leachable	130891	QC-MRG2-130889002	E446	0.00950	0.01 mg/L	mg/L	95.0	70-130	%		✓
LCS	bismuth, leachable	130891	QC-MRG2-130889002	E446	0.0928	0.1 mg/L	mg/L	92.8	70-130	%		✓
LCS	boron, leachable	130891	QC-MRG2-130889002	E446	0.097	0.1 mg/L	mg/L	96.8	70-130	%		✓
LCS	cadmium, leachable	130891	QC-MRG2-130889002	E446	0.00956	0.01 mg/L	mg/L	95.6	70-130	%		✓
LCS	calcium, leachable	130891	QC-MRG2-130889002	E446	4.86	5 mg/L	mg/L	97.3	70-130	%		✓
LCS	chromium, leachable	130891	QC-MRG2-130889002	E446	0.0238	0.025 mg/L	mg/L	95.4	70-130	%		✓
LCS	cobalt, leachable	130891	QC-MRG2-130889002	E446	0.0237	0.025 mg/L	mg/L	94.8	70-130	%		✓
LCS	copper, leachable	130891	QC-MRG2-130889002	E446	0.0237	0.025 mg/L	mg/L	94.8	70-130	%		✓
LCS	iron, leachable	130891	QC-MRG2-130889002	E446	0.090	0.1 mg/L	mg/L	90.1	70-130	%		✓
LCS	lead, leachable	130891	QC-MRG2-130889002	E446	0.0467	0.05 mg/L	mg/L	93.5	70-130	%		✓
LCS	lithium, leachable	130891	QC-MRG2-130889002	E446	0.0235	0.025 mg/L	mg/L	94.2	70-130	%		✓
LCS	magnesium, leachable	130891	QC-MRG2-130889002	E446	4.86	5 mg/L	mg/L	97.1	70-130	%		✓
LCS	manganese, leachable	130891	QC-MRG2-130889002	E446	0.0242	0.025 mg/L	mg/L	96.8	70-130	%		✓
LCS	molybdenum, leachable	130891	QC-MRG2-130889002	E446	0.0247	0.025 mg/L	mg/L	98.7	70-130	%		✓
LCS	nickel, leachable	130891	QC-MRG2-130889002	E446	0.0477	0.05 mg/L	mg/L	95.4	70-130	%		✓
LCS	phosphorus, leachable	130891	QC-MRG2-130889002	E446	1.04	1 mg/L	mg/L	104	70-130	%		✓
LCS	potassium, leachable	130891	QC-MRG2-130889002	E446	5.17	5 mg/L	mg/L	103	70-130	%		✓
LCS	selenium, leachable	130891	QC-MRG2-130889002	E446	0.0976	0.1 mg/L	mg/L	97.6	70-130	%		✓
LCS	silicon, leachable	130891	QC-MRG2-130889002	E446	0.918	1 mg/L	mg/L	91.8	70-130	%		✓
LCS	silver, leachable	130891	QC-MRG2-130889002	E446	0.00942	0.01 mg/L	mg/L	94.2	70-130	%		✓
LCS	sodium, leachable	130891	QC-MRG2-130889002	E446	4.88	5 mg/L	mg/L	97.5	70-130	%		✓
LCS	strontium, leachable	130891	QC-MRG2-130889002	E446	0.0255	0.025 mg/L	mg/L	102	70-130	%		✓
LCS	sulfur, leachable	130891	QC-MRG2-130889002	E446	4.78	5 mg/L	mg/L	95.6	70-130	%		✓
LCS	thallium, leachable	130891	QC-MRG2-130889002	E446	0.0977	0.11 mg/L	mg/L	88.8	70-130	%		✓
LCS	tin, leachable	130891	QC-MRG2-130889002	E446	0.0475	0.05 mg/L	mg/L	95.0	70-130	%		✓
LCS	titanium, leachable	130891	QC-MRG2-130889002	E446	0.024	0.025 mg/L	mg/L	95.5	70-130	%		✓
LCS	uranium, leachable	130891	QC-MRG2-130889002	E446	0.000483	0.0005 mg/L	mg/L	96.7	70-130	%		✓
LCS	vanadium, leachable	130891	QC-MRG2-130889002	E446	0.0483	0.05 mg/L	mg/L	96.5	70-130	%		✓
LCS	zinc, leachable	130891	QC-MRG2-130889002	E446	0.046	0.05 mg/L	mg/L	91.7	70-130	%		✓
LCS	mercury, leachable	130889	QC-MRG2-130889002	E515	0.000390	0.0005 mg/L	mg/L	78.0	50-130	%		✓
LCS	aluminum, leachable	132217	QC-MRG8-132215002	E446	0.210	0.2 mg/L	mg/L	105	70-130	%		✓
LCS	antimony, leachable	132217	QC-MRG8-132215002	E446	0.113	0.1 mg/L	mg/L	113	70-130	%		✓
LCS	arsenic, leachable	132217	QC-MRG8-132215002	E446	0.0997	0.1 mg/L	mg/L	99.7	70-130	%		✓
LCS	barium, leachable	132217	QC-MRG8-132215002	E446	0.0257	0.025 mg/L	mg/L	103	70-130	%		✓
LCS	beryllium, leachable	132217	QC-MRG8-132215002	E446	0.00941	0.01 mg/L	mg/L	94.1	70-130	%		✓
LCS	bismuth, leachable	132217	QC-MRG8-132215002	E446	0.0979	0.1 mg/L	mg/L	97.9	70-130	%		✓
LCS	boron, leachable	132217	QC-MRG8-132215002	E446	0.089	0.1 mg/L	mg/L	89.1	70-130	%		✓
LCS	cadmium, leachable	132217	QC-MRG8-132215002	E446	0.00980	0.01 mg/L	mg/L	98.0	70-130	%		✓
LCS	calcium, leachable	132217	QC-MRG8-132215002	E446	4.90	5 mg/L	mg/L	98.0	70-130	%		✓
LCS	chromium, leachable	132217	QC-MRG8-132215002	E446	0.0254	0.025 mg/L	mg/L	102	70-130	%		✓
LCS	cobalt, leachable	132217	QC-MRG8-132215002	E446	0.0251	0.025 mg/L	mg/L	100	70-130	%		✓
LCS	copper, leachable	132217	QC-MRG8-132215002	E446	0.0246	0.025 mg/L	mg/L	98.4	70-130	%		✓
LCS	iron, leachable	132217	QC-MRG8-132215002	E446	0.094	0.1 mg/L	mg/L	93.8	70-130	%		✓
LCS	lead, leachable	132217	QC-MRG8-132215002	E446	0.0512	0.05 mg/L	mg/L	102	70-130	%		✓
LCS	lithium, leachable	132217	QC-MRG8-132215002	E446	0.0227	0.025 mg/L	mg/L	90.8	70-130	%		✓
LCS	magnesium, leachable	132217	QC-MRG8-132215002	E446	5.44	5 mg/L	mg/L	109	70-130	%		✓
LCS	manganese, leachable	132217	QC-MRG8-132215002	E446	0.0242	0.025 mg/L	mg/L	96.8	70-130	%		✓
LCS	molybdenum, leachable	132217	QC-MRG8-132215002	E446	0.0264	0.025 mg/L	mg/L	105	70-130	%		✓
LCS	nickel, leachable	132217	QC-MRG8-132215002	E446	0.0496	0.05 mg/L	mg/L	99.2	70-130	%		✓
LCS	phosphorus, leachable	132217	QC-MRG8-132215002	E446	1.13	1 mg/L	mg/L	113	70-130	%		✓
LCS	potassium, leachable	132217	QC-MRG8-132215002	E446	5.28	5 mg/L	mg/L	106	70-130	%		✓
LCS	selenium, leachable	132217	QC-MRG8-132215002	E446	0.0988	0.1 mg/L	mg/L	98.8	70-130	%		✓
LCS	silicon, leachable	132217	QC-MRG8-132215002	E446	0.942	1 mg/L	mg/L	94.2	70-130	%		✓
LCS	silver, leachable	132217	QC-MRG8-132215002	E446	0.0103	0.01 mg/L	mg/L	103	70-130	%		✓

LCS	sodium, leachable	132217	QC-MRG8-132215002	E446	5.34	5 mg/L	mg/L	107	70-130	%	✓
LCS	strontium, leachable	132217	QC-MRG8-132215002	E446	0.0256	0.025 mg/L	mg/L	102	70-130	%	✓
LCS	sulfur, leachable	132217	QC-MRG8-132215002	E446	5.15	5 mg/L	mg/L	103	70-130	%	✓
LCS	thallium, leachable	132217	QC-MRG8-132215002	E446	0.106	0.11 mg/L	mg/L	96.1	70-130	%	✓
LCS	tin, leachable	132217	QC-MRG8-132215002	E446	0.0508	0.05 mg/L	mg/L	102	70-130	%	✓
LCS	titanium, leachable	132217	QC-MRG8-132215002	E446	0.025	0.025 mg/L	mg/L	100	70-130	%	✓
LCS	uranium, leachable	132217	QC-MRG8-132215002	E446	0.000459	0.0005 mg/L	mg/L	91.8	70-130	%	✓
LCS	vanadium, leachable	132217	QC-MRG8-132215002	E446	0.0512	0.05 mg/L	mg/L	102	70-130	%	✓
LCS	zinc, leachable	132217	QC-MRG8-132215002	E446	0.051	0.05 mg/L	mg/L	102	70-130	%	✓
LCS	mercury, leachable	132215	QC-MRG8-132215002	E515	0.000414	0.0005 mg/L	mg/L	82.8	50-130	%	✓
MS	aluminum, leachable	132217	Anonymous	E446	0.210	0.2 mg/L	mg/L	105	70-130	%	✓
MS	antimony, leachable	132217	Anonymous	E446	0.0210	0.02 mg/L	mg/L	105	70-130	%	✓
MS	arsenic, leachable	132217	Anonymous	E446	0.0198	0.02 mg/L	mg/L	98.9	70-130	%	✓
MS	barium, leachable	132217	Anonymous	E446	ND	0.02 mg/L	mg/L	ND	70-130	%	✓
MS	beryllium, leachable	132217	Anonymous	E446	0.0413	0.04 mg/L	mg/L	103	70-130	%	✓
MS	bismuth, leachable	132217	Anonymous	E446	0.00912	0.01 mg/L	mg/L	91.2	70-130	%	✓
MS	cadmium, leachable	132217	Anonymous	E446	0.00400	0.004 mg/L	mg/L	100.0	70-130	%	✓
MS	calcium, leachable	132217	Anonymous	E446	ND	4 mg/L	mg/L	ND	70-130	%	✓
MS	chromium, leachable	132217	Anonymous	E446	0.0395	0.04 mg/L	mg/L	98.8	70-130	%	✓
MS	cobalt, leachable	132217	Anonymous	E446	0.0196	0.02 mg/L	mg/L	97.8	70-130	%	✓
MS	copper, leachable	132217	Anonymous	E446	0.0190	0.02 mg/L	mg/L	95.3	70-130	%	✓
MS	iron, leachable	132217	Anonymous	E446	1.97	2 mg/L	mg/L	98.6	70-130	%	✓
MS	lead, leachable	132217	Anonymous	E446	0.0193	0.02 mg/L	mg/L	96.5	70-130	%	✓
MS	lithium, leachable	132217	Anonymous	E446	0.106	0.1 mg/L	mg/L	106	70-130	%	✓
MS	magnesium, leachable	132217	Anonymous	E446	ND	1 mg/L	mg/L	ND	70-130	%	✓
MS	manganese, leachable	132217	Anonymous	E446	0.0192	0.02 mg/L	mg/L	96.0	70-130	%	✓
MS	molybdenum, leachable	132217	Anonymous	E446	0.0213	0.02 mg/L	mg/L	106	70-130	%	✓
MS	nickel, leachable	132217	Anonymous	E446	0.0381	0.04 mg/L	mg/L	95.4	70-130	%	✓
MS	phosphorus, leachable	132217	Anonymous	E446	11.5	10 mg/L	mg/L	115	70-130	%	✓
MS	potassium, leachable	132217	Anonymous	E446	ND	4 mg/L	mg/L	ND	70-130	%	✓
MS	selenium, leachable	132217	Anonymous	E446	0.0419	0.04 mg/L	mg/L	105	70-130	%	✓
MS	silicon, leachable	132217	Anonymous	E446	9.37	10 mg/L	mg/L	93.7	70-130	%	✓
MS	silver, leachable	132217	Anonymous	E446	0.00399	0.004 mg/L	mg/L	99.7	70-130	%	✓
MS	sodium, leachable	132217	Anonymous	E446	ND	2 mg/L	mg/L	ND	70-130	%	✓
MS	strontium, leachable	132217	Anonymous	E446	ND	0.02 mg/L	mg/L	ND	70-130	%	✓
MS	sulfur, leachable	132217	Anonymous	E446	ND	20 mg/L	mg/L	ND	70-130	%	✓
MS	thallium, leachable	132217	Anonymous	E446	0.00372	0.004 mg/L	mg/L	93.1	70-130	%	✓
MS	tin, leachable	132217	Anonymous	E446	0.0202	0.02 mg/L	mg/L	101	70-130	%	✓
MS	titanium, leachable	132217	Anonymous	E446	0.040	0.04 mg/L	mg/L	100	70-130	%	✓
MS	uranium, leachable	132217	Anonymous	E446	0.00380	0.004 mg/L	mg/L	95.0	70-130	%	✓
MS	vanadium, leachable	132217	Anonymous	E446	0.102	0.1 mg/L	mg/L	102	70-130	%	✓
MS	zinc, leachable	132217	Anonymous	E446	0.394	0.4 mg/L	mg/L	98.4	70-130	%	✓
MS	boron, leachable	132217	Anonymous	E446	0.087	0.1 mg/L	mg/L	87.1	70-130	%	✓
MS	mercury, leachable	132215	Anonymous	E515	0.000096	0.0001 mg/L	mg/L	96.5	70-130	%	✓
MB	aluminum, leachable	130891	QC-MRG2-130889001	E446	<0.0050		mg/L	-	0.005	mg/L	✓
MB	antimony, leachable	130891	QC-MRG2-130889001	E446	<0.00010		mg/L	-	0.0001	mg/L	✓
MB	arsenic, leachable	130891	QC-MRG2-130889001	E446	<0.0010		mg/L	-	0.001	mg/L	✓
MB	barium, leachable	130891	QC-MRG2-130889001	E446	<0.0010		mg/L	-	0.001	mg/L	✓
MB	beryllium, leachable	130891	QC-MRG2-130889001	E446	<0.00050		mg/L	-	0.0005	mg/L	✓
MB	bismuth, leachable	130891	QC-MRG2-130889001	E446	<0.00050		mg/L	-	0.0005	mg/L	✓
MB	boron, leachable	130891	QC-MRG2-130889001	E446	<0.010		mg/L	-	0.01	mg/L	✓
MB	cadmium, leachable	130891	QC-MRG2-130889001	E446	<0.000050		mg/L	-	0.00005	mg/L	✓
MB	calcium, leachable	130891	QC-MRG2-130889001	E446	<0.10		mg/L	-	0.1	mg/L	✓
MB	chromium, leachable	130891	QC-MRG2-130889001	E446	<0.00050		mg/L	-	0.0005	mg/L	✓
MB	cobalt, leachable	130891	QC-MRG2-130889001	E446	<0.00010		mg/L	-	0.0001	mg/L	✓
MB	copper, leachable	130891	QC-MRG2-130889001	E446	<0.0010		mg/L	-	0.001	mg/L	✓
MB	iron, leachable	130891	QC-MRG2-130889001	E446	<0.030		mg/L	-	0.03	mg/L	✓
MB	lead, leachable	130891	QC-MRG2-130889001	E446	<0.00010		mg/L	-	0.0001	mg/L	✓
MB	lithium, leachable	130891	QC-MRG2-130889001	E446	<0.0050		mg/L	-	0.005	mg/L	✓
MB	magnesium, leachable	130891	QC-MRG2-130889001	E446	<0.050		mg/L	-	0.05	mg/L	✓
MB	manganese, leachable	130891	QC-MRG2-130889001	E446	<0.00050		mg/L	-	0.0005	mg/L	✓
MB	molybdenum, leachable	130891	QC-MRG2-130889001	E446	<0.00010		mg/L	-	0.0001	mg/L	✓
MB	nickel, leachable	130891	QC-MRG2-130889001	E446	<0.00050		mg/L	-	0.0005	mg/L	✓
MB	phosphorus, leachable	130891	QC-MRG2-130889001	E446	<0.30		mg/L	-	0.3	mg/L	✓
MB	potassium, leachable	130891	QC-MRG2-130889001	E446	<0.050		mg/L	-	0.05	mg/L	✓
MB	selenium, leachable	130891	QC-MRG2-130889001	E446	<0.00050		mg/L	-	0.0005	mg/L	✓
MB	silicon, leachable	130891	QC-MRG2-130889001	E446	<0.050		mg/L	-	0.05	mg/L	✓
MB	silver, leachable	130891	QC-MRG2-130889001	E446	<0.000050		mg/L	-	0.00005	mg/L	✓
MB	sodium, leachable	130891	QC-MRG2-130889001	E446	<0.050		mg/L	-	0.05	mg/L	✓
MB	strontium, leachable	130891	QC-MRG2-130889001	E446	<0.00050		mg/L	-	0.0005	mg/L	✓
MB	sulfur, leachable	130891	QC-MRG2-130889001	E446	<0.50		mg/L	-	0.5	mg/L	✓
MB	thallium, leachable	130891	QC-MRG2-130889001	E446	<0.00010		mg/L	-	0.0001	mg/L	✓
MB	tin, leachable	130891	QC-MRG2-130889001	E446	<0.00050		mg/L	-	0.0005	mg/L	✓
MB	titanium, leachable	130891	QC-MRG2-130889001	E446	<0.010		mg/L	-	0.01	mg/L	✓
MB	uranium, leachable	130891	QC-MRG2-130889001	E446	<0.000010		mg/L	-	0.00001	mg/L	✓
MB	vanadium, leachable	130891	QC-MRG2-130889001	E446	<0.0010		mg/L	-	0.001	mg/L	✓
MB	zinc, leachable	130891	QC-MRG2-130889001	E446	<0.010		mg/L	-	0.01	mg/L	✓

MB	mercury, leachable	130889	QC-MRG2-130889001	E515	<0.000050	mg/L	-	0.00005	mg/L	✓
MB	aluminum, leachable	132217	QC-MRG10-132215001	E446	<0.0050	mg/L	-	0.005	mg/L	✓
MB	antimony, leachable	132217	QC-MRG10-132215001	E446	<0.00010	mg/L	-	0.0001	mg/L	✓
MB	arsenic, leachable	132217	QC-MRG10-132215001	E446	<0.0010	mg/L	-	0.001	mg/L	✓
MB	barium, leachable	132217	QC-MRG10-132215001	E446	<0.0010	mg/L	-	0.001	mg/L	✓
MB	beryllium, leachable	132217	QC-MRG10-132215001	E446	<0.00050	mg/L	-	0.0005	mg/L	✓
MB	bismuth, leachable	132217	QC-MRG10-132215001	E446	<0.00050	mg/L	-	0.0005	mg/L	✓
MB	boron, leachable	132217	QC-MRG10-132215001	E446	<0.010	mg/L	-	0.01	mg/L	✓
MB	cadmium, leachable	132217	QC-MRG10-132215001	E446	<0.000050	mg/L	-	0.00005	mg/L	✓
MB	calcium, leachable	132217	QC-MRG10-132215001	E446	<0.10	mg/L	-	0.1	mg/L	✓
MB	chromium, leachable	132217	QC-MRG10-132215001	E446	<0.00050	mg/L	-	0.0005	mg/L	✓
MB	cobalt, leachable	132217	QC-MRG10-132215001	E446	<0.00010	mg/L	-	0.0001	mg/L	✓
MB	copper, leachable	132217	QC-MRG10-132215001	E446	<0.0010	mg/L	-	0.001	mg/L	✓
MB	iron, leachable	132217	QC-MRG10-132215001	E446	<0.030	mg/L	-	0.03	mg/L	✓
MB	lead, leachable	132217	QC-MRG10-132215001	E446	<0.00010	mg/L	-	0.0001	mg/L	✓
MB	lithium, leachable	132217	QC-MRG10-132215001	E446	<0.0050	mg/L	-	0.005	mg/L	✓
MB	magnesium, leachable	132217	QC-MRG10-132215001	E446	<0.050	mg/L	-	0.05	mg/L	✓
MB	manganese, leachable	132217	QC-MRG10-132215001	E446	<0.00050	mg/L	-	0.0005	mg/L	✓
MB	molybdenum, leachable	132217	QC-MRG10-132215001	E446	<0.00010	mg/L	-	0.0001	mg/L	✓
MB	nickel, leachable	132217	QC-MRG10-132215001	E446	<0.00050	mg/L	-	0.0005	mg/L	✓
MB	phosphorus, leachable	132217	QC-MRG10-132215001	E446	<0.30	mg/L	-	0.3	mg/L	✓
MB	potassium, leachable	132217	QC-MRG10-132215001	E446	<0.050	mg/L	-	0.05	mg/L	✓
MB	selenium, leachable	132217	QC-MRG10-132215001	E446	<0.00050	mg/L	-	0.0005	mg/L	✓
MB	silicon, leachable	132217	QC-MRG10-132215001	E446	<0.050	mg/L	-	0.05	mg/L	✓
MB	silver, leachable	132217	QC-MRG10-132215001	E446	<0.000050	mg/L	-	0.00005	mg/L	✓
MB	sodium, leachable	132217	QC-MRG10-132215001	E446	<0.050	mg/L	-	0.05	mg/L	✓
MB	strontium, leachable	132217	QC-MRG10-132215001	E446	<0.00050	mg/L	-	0.0005	mg/L	✓
MB	sulfur, leachable	132217	QC-MRG10-132215001	E446	<0.50	mg/L	-	0.5	mg/L	✓
MB	thallium, leachable	132217	QC-MRG10-132215001	E446	<0.00010	mg/L	-	0.0001	mg/L	✓
MB	tin, leachable	132217	QC-MRG10-132215001	E446	<0.00050	mg/L	-	0.0005	mg/L	✓
MB	titanium, leachable	132217	QC-MRG10-132215001	E446	<0.010	mg/L	-	0.01	mg/L	✓
MB	uranium, leachable	132217	QC-MRG10-132215001	E446	<0.000010	mg/L	-	0.00001	mg/L	✓
MB	vanadium, leachable	132217	QC-MRG10-132215001	E446	<0.0010	mg/L	-	0.001	mg/L	✓
MB	zinc, leachable	132217	QC-MRG10-132215001	E446	<0.010	mg/L	-	0.01	mg/L	✓
MB	mercury, leachable	132215	QC-MRG10-132215001	E515	<0.000050	mg/L	-	0.00005	mg/L	✓

Evaluation Legend

✓	QC Lot met ALS Data Quality Objectives
ND	Recovery not determined, background level >= 1x spike level

Methodology VA20C2029

Project	60640258 - CanWhite Sands
Report To	Ryan Mills, AECOM Canada Ltd.
Date Received	27-Nov-2020 12:55
Issue Date	16-Feb-2021 15:04
Amendment	2

Method	ALS Test Description	Lab Location	Matrix	Method Reference	Methodology Description
Acid Base Accounting (Matrix: Soil/Solid)					
C-GAS05	IC by coulometer	ALS Minerals (Vancouv	Soil/Solid	ALS Minerals C-GAS05	Determine Total Inorganic Carbon (TIC) by using diluted perchloric acid to react with metal carbonate and yield carbon dioxide. Concentration of CO2 is determined by coulometer.
C-IR07	Total C by Leco and IR	ALS Minerals (Vancouv	Soil/Solid	ALS Minerals C-IR07	A sample is heated to approximately 1350°C in an induction furnace with oxygen stream. Carbon dioxide released from the sample are measured by an IR detection system (Leco analyzer).
OA-ELE07	Saturated Paste pH	ALS Minerals (Vancouv	Soil/Solid	ALS Minerals OA-ELE07	Sample mix with water in 1:1 ratio to make a paste, pH is then determined.
OA-VOL08m	Acid Base Accounting (Modified Sobek)	ALS Minerals (Vancouv	Soil/Solid	ALS Minerals OA-VOL08m	Determine the acid generation power of a sample as tonne CaCO3 per kilo-tonne using modified Sobek method
S-CAL06	Sulfide S (as S) Calc. (Total-S - SO4-S)	ALS Minerals (Vancouv	Soil/Solid	ALS Minerals S-CAL06	Sulfide Sulfur (as S) is calculated by subtracting the Carbonate Leachable Sulfate Sulfur (as S) from the Total Sulfur (as S) obtained from combustion.
S-GRA06A	Sulfates by HCl Leaching and Gravimetry with Sulfide S Calc.	ALS Minerals (Vancouv	Soil/Solid	ALS Minerals S-GRA06A	A prepared sample is heated with dilute HCl and then filtered. The sulfate in the filtrate is precipitated with BaCl2 in a dilute HCl. The BaSO4 precipitate is filtered, ignited, weighed and the Sulfate Sulfur is determined (as S). Sulfide sulfur is calculated by Total Sulfur from combustion minus Sulfate Sulfur from the HCl leach.
S-GRA06	Sulfates by NaCO3 Leaching and Gravimetry with Sulfide S Calc.	ALS Minerals (Vancouv	Soil/Solid	ALS Minerals S-GRA06	A preppared sample is heated with diluted Na_2CO_3 and then filtered. The sulfate in the filtrate is precipitated with BaCl2 in a dilute HCl. The BaSO4 precipitate is filtered, ignited, weighed and the Sulfate Sulfur is determined (as S). Sulfide Sulfur (as S) is calculated by Total Sulfur from combustion minus Sulfate Sulfur from the Na_2CO_3 leach.
S-IR04B	Residual sulfur by LECO and IR	ALS Minerals (Vancouv	Soil/Solid	ASL Minerals S-IR04B	Residual sulfur determined by oxidation, induction furnace and infrared spectroscopy following hot nitric leach.
S-IR08	Total S by combustion	ALS Minerals (Vancouv	Soil/Solid	ALS Minerals S-IR08	A prepared sample is heated to approximately 1350°C in an induction furnace with oxygen stream. Sulfur dioxide released from the sample are measured by IR (Leco analyzer) and the Total Sulfur result is provided.
WEI-21	Received Sample Weight	ALS Minerals (Vancouv	Soil/Solid	ALS Minerals WEI-21	Weigh out sample received.
Leachable Metals (Matrix: Soil/Solid)					
E446	Metals by CRC ICPMS (Shakeflask, 3:1 Ratio with Water)	Vancouver - Environme	Soil/Solid	BC MINISTRY OF ENERGY AND MINES/EI	A sample is extracted with water at a 3:1 liquid to solid ratio for 24 hours, then filtered through a 0.45 micron membrane filter. Analysis is by Collision/Reaction Cell ICPMS. This extraction is an empirical procedure with pre-defined characteristics. Recovery of some elements (Ag, Bi, and Sn) by this method can be variable due to the neutral pH of the extraction fluid, and therefore the LCS DQOs has been established at 50-130% for these elements.
E515	Mercury by CVAAS (Shakeflask, 3:1 Ratio with Water)	Vancouver - Environme	Soil/Solid	BC MINISTRY OF ENERGY AND MINES/EI	A sample is extracted with water at a 3:1 liquid to solid ratio for 24 hours, then filtered through a 0.45 micron membrane filter. Analysis is by CVAAS. This extraction is an empirical procedure with pre-defined characteristics. Recovery of mercury can be variable due to the neutral pH of the extraction fluid, and therefore the LCS DQO has been established at 50-130%.
Metals (Matrix: Soil/Solid)					
ME-MS41	51 Elements by Aqua Regia digestion and ICP-AES/MS	ALS Minerals (Vancouv	Soil/Solid	ALS Minerals ME-MS41	A prepared sample is digested with aqua regia in a graphite heating block. After cooling, the resulting solution is diluted to with deionized water, mixed and analyzed by ICP-AES. Samples are then analyzed by ICP-MS for the remaining suite of elements.
Physical Tests (Matrix: Soil/Solid)					
E116	pH by Electrode (Shakeflask, 3:1 Ratio with Water)	Vancouver - Environme	Soil/Solid	MEND (mod)/APHA 4500-H (mod)	pH is determined by potentiometric measurement with a pH electrode, and is conducted at ambient laboratory temperature (normally 20 ± 5°C) on an extract from a soil sample that has been added in a 3:1 ratio of deionized water to soil, then leached and the extract filtered prior to analysis. The pH is then measured by a standard pH probe. .
E144	Moisture Content by Gravimetry	Vancouver - Environme	Soil/Solid	CCME PHC in Soil - Tier 1	Moisture is measured gravimetrically by drying the sample at 105°C. Moisture content is calculated as the weight loss (due to water) divided by the wet weight of the sample, expressed as a percentage.

Method References

The analytical methods used by ALS are developed using internationally recognized reference methods (where available), such as those published by US EPA, APHA Standard Methods, ASTM, ISO, Environment Canada, BC MOE, and Ontario MOE. Reference methods may incorporate modifications to improve performance

Hold Time Exceedance Details VA20C2029

Project	60640258 - CanWhite Sands
Report To	Ryan Mills, AECOM Canada Ltd.
Date Received	27-Nov-2020 12:55
Issue Date	16-Feb-2021 15:04
Amendment	2

				Preparation					Analysis				
ALS Method Description	**Client Sample ID**	**Method**	**Sampling Date**	**Preparation Date**	**Recommended Holding Time**	**Actual Holding Times**	**Eval**	**Qualifier**	**Analysis Date**	**Recommended Holding Time**	**Actual Holding Times**	**Eval**	**Qualifier**
Physical Tests (Matrix: Soil/Solid)													
pH by Electrode (Shakeflask, 3:1 Ratio with \	Bru 121-1_24.38 to :	E116	11-Nov-2020	17-Dec-2020 16:00	30 days	36 days	×	EHT	19-Dec-2020 09:00	-7 days	1 days	×	
pH by Electrode (Shakeflask, 3:1 Ratio with \	Bru 121-1_36.57 to :	E116	11-Nov-2020	17-Dec-2020 16:00	30 days	36 days	×	EHT	19-Dec-2020 09:00	-7 days	1 days	×	
pH by Electrode (Shakeflask, 3:1 Ratio with \	Bru 146_36.82 to 37	E116	11-Nov-2020	17-Dec-2020 16:00	30 days	36 days	×	EHT	19-Dec-2020 09:00	-7 days	1 days	×	
pH by Electrode (Shakeflask, 3:1 Ratio with \	Bru 146_49-86 to 5(	E116	11-Nov-2020	17-Dec-2020 16:00	30 days	36 days	×	EHT	19-Dec-2020 09:00	-7 days	1 days	×	
pH by Electrode (Shakeflask, 3:1 Ratio with \	Bru 95-8_40.16 to 4(	E116	18-Nov-2020	17-Dec-2020 16:00	30 days	29 days	✓		19-Dec-2020 09:00	0 days	1 days	×	EHT
pH by Electrode (Shakeflask, 3:1 Ratio with \	Bru 95-8_49.39 to 4(	E116	18-Nov-2020	17-Dec-2020 16:00	30 days	29 days	✓		19-Dec-2020 09:00	0 days	1 days	×	EHT
Acid Base Accounting (Matrix: Soil/Solid)													
Sulfide S (as S) Calc. (Total-S - SO4-S)	Bru 95-3	S-CAL06	19-Nov-2020						05-Jan-2021 16:00	28 days	47 days	×	EHT
Sulfide S (as S) Calc. (Total-S - SO4-S)	Bru 121-1_24.38 to :	S-CAL06	11-Nov-2020						05-Jan-2021 16:00	28 days	55 days	×	EHT
Sulfide S (as S) Calc. (Total-S - SO4-S)	Bru 121-1_36.57 to :	S-CAL06	11-Nov-2020						05-Jan-2021 16:00	28 days	55 days	×	EHT
Sulfide S (as S) Calc. (Total-S - SO4-S)	Bru 146_36.82 to 37	S-CAL06	11-Nov-2020						05-Jan-2021 16:00	28 days	55 days	×	EHT
Sulfide S (as S) Calc. (Total-S - SO4-S)	Bru 146_49-86 to 5(	S-CAL06	11-Nov-2020						05-Jan-2021 16:00	28 days	55 days	×	EHT
Sulfide S (as S) Calc. (Total-S - SO4-S)	Bru 95-8_40.16 to 4(	S-CAL06	18-Nov-2020						05-Jan-2021 16:00	28 days	48 days	×	EHT
Sulfide S (as S) Calc. (Total-S - SO4-S)	Bru 95-8_49.39 to 4(	S-CAL06	18-Nov-2020						05-Jan-2021 16:00	28 days	48 days	×	EHT
Leachable Metals (Matrix: Soil/Solid)													
Mercury by CVAAS (Shakeflask, 3:1 Ratio wi	Bru 121-1_24.38 to :	E515	11-Nov-2020	17-Dec-2020 16:00	28 days	36 days	×	EHT	19-Dec-2020 01:47	-9 days	1 days	×	
Mercury by CVAAS (Shakeflask, 3:1 Ratio wi	Bru 121-1_36.57 to :	E515	11-Nov-2020	17-Dec-2020 16:00	28 days	36 days	×	EHT	19-Dec-2020 01:47	-9 days	1 days	×	
Mercury by CVAAS (Shakeflask, 3:1 Ratio wi	Bru 146_36.82 to 37	E515	11-Nov-2020	17-Dec-2020 16:00	28 days	36 days	×	EHT	19-Dec-2020 01:47	-9 days	1 days	×	
Mercury by CVAAS (Shakeflask, 3:1 Ratio wi	Bru 146_49-86 to 5(	E515	11-Nov-2020	17-Dec-2020 16:00	28 days	36 days	×	EHT	19-Dec-2020 01:47	-9 days	1 days	×	
Mercury by CVAAS (Shakeflask, 3:1 Ratio wi	Bru 95-8_40.16 to 4(	E515	18-Nov-2020	17-Dec-2020 16:00	28 days	29 days	×	EHT	19-Dec-2020 01:47	-2 days	1 days	×	
Mercury by CVAAS (Shakeflask, 3:1 Ratio wi	Bru 95-8_49.39 to 4(	E515	18-Nov-2020	17-Dec-2020 16:00	28 days	29 days	×	EHT	19-Dec-2020 01:47	-2 days	1 days	×	

Legend & Qualifier Definitions

EHT: Exceeded ALS recommended hold time prior to analysis.

Evaluation Legend

✓ = within holding time

× = holding time exceedance

Analysis Holding Time Compliance

This report summarizes extraction / preparation and analysis times and compares each with ALS recommended holding times, which are selected to meet known provincial and/or federal requirements.

In the absence of regulatory hold times, ALS establishes recommendations based on guidelines published by organizations such as CCME, US EPA, APHA Standard Methods, ASTM, or Environment Canada (where available).

Dates and holding times reported above represent the first dates of extraction or analysis. If subsequent tests or dilutions exceeded holding times, qualifiers are added.

If samples are identified above as having been analyzed or extracted outside of recommended holding times, measurement uncertainties may be increased, and this should be taken into consideration when interpreting results.

Where actual sampling date is not provided on chain of custody, the date of receipt with the time at 15:00 is used for calculation purposes.

Where only the sample date without time is provided on chain of custody, the sampling date at 15:00 is used for calculation purposes.

Detection Limits VA20C2029

Project	60640258 - CanWhite Sands
Report To	Ryan Mills, AECOM Canada Ltd.
Date Received	27-Nov-2020 12:55
Issue Date	16-Feb-2021 15:04
Amendment	2

Client Sample ID		Bru 95-3	Bru 121-1_24.38 to 24.83	Bru 121-1_36.57 to 37.00	Bru 146_36.82 to 37.13	Bru 146_49-86 to 50.29	Bru 95-8_40.16 to 40.65	Bru 95-8_49.39 to 49.79
Date Sampled		19-Nov-2020	11-Nov-2020	11-Nov-2020	11-Nov-2020	11-Nov-2020	18-Nov-2020	18-Nov-2020
Time Sampled		08:00	12:30	12:30	00:50	12:50	13:30	15:00
ALS Sample ID		VA20C2029-001	VA20C2029-002	VA20C2029-003	VA20C2029-004	VA20C2029-005	VA20C2029-006	VA20C2029-007
Analyte	Units	Sub-Matrix: Solid	Sub-Matrix: Solid	Sub-Matrix: Solid	Sub-Matrix: Solid	Sub-Matrix: Solid	Sub-Matrix: Solid	Sub-Matrix: Solid
Physical Tests (Matrix: Soil/Solid)								
moisture	%	0.25	0.25	0.25	0.25	0.25	0.25	0.25
pH	pH units	0.10	0.10	0.10	0.10	0.10	0.10	0.10
Acid Base Accounting (Matrix: Soil/Solid)								
fizz rating		1	1	1	1	1	1	1
maximum potential acidity [MPA]	tCaCO3/kt	0.3	0.3	0.3	0.3	0.3	0.3	0.3
net neutralization potential [NNP]	tCaCO3/kt	1	1	1	1	1	1	1
neutralization potential [NP]	tCaCO3/kt	1	1	1	1	1	1	1
neutralization potential ratio [NPR], (NP/MPA)		0.01	0.01	0.01	0.01	0.01	0.01	0.01
carbon dioxide	%	0.2	0.2	0.2	0.2	0.2	0.2	0.2
carbon, total [TC]	%	0.01	0.01	0.01	0.01	0.01	0.01	0.01
pH (1:1 soil:water)	pH units	0.10	0.10	0.10	0.10	0.10	0.10	0.10
sulfide (as S), total minus carbonate leach	%	0.01	0.01	0.01	0.01	0.01	0.01	0.01
sulfur, residual	%	0.01	0.01	0.01	0.01	0.01	0.01	0.01
sulfur, total	%	0.01	0.01	0.01	0.01	0.01	0.01	0.01
weight, sample received	kg	0.02	0.02	0.02	0.02	0.02	0.02	0.02
sulfate (as S), HCl leach	%	0.01	0.01	0.01	0.01	0.01	0.01	0.01
sulfate (as S), carbonate leach	%	0.01	0.01	0.01	0.01	0.01	0.01	0.01
carbon, total inorganic [TIC]	%	0.05	0.05	0.05	0.05	0.05	0.05	0.05
Metals (Matrix: Soil/Solid)								
aluminum	%	0.01	0.01	0.01	0.01	0.01	0.01	0.01
antimony	ppm	0.05	0.05	0.05	0.05	0.05	0.05	0.05
arsenic	ppm	0.1	0.1	0.1	0.1	0.1	0.1	0.1
barium	ppm	10	10	10	10	10	10	10
beryllium	ppm	0.05	0.05	0.05	0.05	0.05	0.05	0.05
bismuth	ppm	0.01	0.01	0.01	0.01	0.01	0.01	0.01
boron	ppm	10	10	10	10	10	10	10
cadmium	ppm	0.01	0.01	0.01	0.01	0.01	0.01	0.01
calcium	%	0.01	0.01	0.01	0.01	0.01	0.01	0.01
cerium	ppm	0.02	0.02	0.02	0.02	0.02	0.02	0.02
cesium	ppm	0.05	0.05	0.05	0.05	0.05	0.05	0.05
chromium	ppm	1	1	1	1	1	1	1
cobalt	ppm	0.1	0.1	0.1	0.1	0.1	0.1	0.1
copper	ppm	0.2	0.2	0.2	0.2	0.2	0.2	0.2
gallium	ppm	0.05	0.05	0.05	0.05	0.05	0.05	0.05
germanium	ppm	0.05	0.05	0.05	0.05	0.05	0.05	0.05
gold	ppm	0.02	0.02	0.02	0.02	0.02	0.02	0.02
hafnium	ppm	0.02	0.02	0.02	0.02	0.02	0.02	0.02
indium	ppm	0.005	0.005	0.005	0.005	0.005	0.005	0.005
iron	%	0.01	0.01	0.01	0.01	0.01	0.01	0.01
lanthanum	ppm	0.2	0.2	0.2	0.2	0.2	0.2	0.2
lead	ppm	0.2	0.2	0.2	0.2	0.2	0.2	0.2
lithium	ppm	0.1	0.1	0.1	0.1	0.1	0.1	0.1
magnesium	%	0.01	0.01	0.01	0.01	0.01	0.01	0.01
manganese	ppm	5	5	5	5	5	5	5
mercury	ppm	0.01	0.01	0.01	0.01	0.01	0.01	0.01
molybdenum	ppm	0.05	0.05	0.05	0.05	0.05	0.05	0.05
nickel	ppm	0.2	0.2	0.2	0.2	0.2	0.2	0.2
niobium	ppm	0.05	0.05	0.05	0.05	0.05	0.05	0.05
phosphorus	ppm	10	10	10	10	10	10	10
potassium	%	0.01	0.01	0.01	0.01	0.01	0.01	0.01
rhenium	ppm	0.001	0.001	0.001	0.001	0.001	0.001	0.001
rubidium	ppm	0.1	0.1	0.1	0.1	0.1	0.1	0.1
scandium	ppm	0.1	0.1	0.1	0.1	0.1	0.1	0.1
selenium	ppm	0.2	0.2	0.2	0.2	0.2	0.2	0.2
silver	ppm	0.01	0.01	0.01	0.01	0.01	0.01	0.01
sodium	%	0.01	0.01	0.01	0.01	0.01	0.01	0.01
strontium	ppm	0.2	0.2	0.2	0.2	0.2	0.2	0.2

sulfur	%	0.01	0.01	0.01	0.01	0.01	0.01	0.01
tantalum	ppm	0.01	0.01	0.01	0.01	0.01	0.01	0.01
tellurium	ppm	0.01	0.01	0.01	0.01	0.01	0.01	0.01
thallium	ppm	0.02	0.02	0.02	0.02	0.02	0.02	0.02
thorium	ppm	0.2	0.2	0.2	0.2	0.2	0.2	0.2
tin	ppm	0.2	0.2	0.2	0.2	0.2	0.2	0.2
titanium	%	0.005	0.005	0.005	0.005	0.005	0.005	0.005
tungsten	ppm	0.05	0.05	0.05	0.05	0.05	0.05	0.05
uranium	ppm	0.05	0.05	0.05	0.05	0.05	0.05	0.05
vanadium	ppm	1	1	1	1	1	1	1
yttrium	ppm	0.05	0.05	0.05	0.05	0.05	0.05	0.05
zinc	ppm	2	2	2	2	2	2	2
zirconium	ppm	0.5	0.5	0.5	0.5	0.5	0.5	0.5

Leachable Metals (Matrix: Soil/Solid)

aluminum, leachable	mg/L	0.0050	0.0050	0.0050	0.0050	0.0050	0.0050	0.0050
antimony, leachable	mg/L	0.00010	0.00010	0.00010	0.00010	0.00010	0.00010	0.00010
arsenic, leachable	mg/L	0.0010	0.0010	0.0010	0.0010	0.0010	0.0010	0.0010
barium, leachable	mg/L	0.0010	0.0010	0.0010	0.0010	0.0010	0.0010	0.0010
beryllium, leachable	mg/L	0.00050	0.00050	0.00050	0.00050	0.00050	0.00050	0.00050
bismuth, leachable	mg/L	0.00050	0.00050	0.00050	0.00050	0.00050	0.00050	0.00050
boron, leachable	mg/L	0.010	0.010	0.010	0.010	0.010	0.010	0.010
cadmium, leachable	mg/L	0.000050	0.000050	0.000050	0.000050	0.000050	0.000050	0.000050
calcium, leachable	mg/L	0.10	0.10	0.10	0.10	0.10	0.10	0.10
chromium, leachable	mg/L	0.00050	0.00050	0.00050	0.00050	0.00050	0.00050	0.00050
cobalt, leachable	mg/L	0.00010	0.00010	0.00010	0.00010	0.00010	0.00010	0.00010
copper, leachable	mg/L	0.0010	0.0010	0.0010	0.0010	0.0010	0.0010	0.0010
iron, leachable	mg/L	0.030	0.030	0.030	0.030	0.030	0.030	0.030
lead, leachable	mg/L	0.00010	0.00010	0.00010	0.00010	0.00010	0.00010	0.00010
lithium, leachable	mg/L	0.0050	0.0050	0.0050	0.0050	0.0050	0.0050	0.0050
magnesium, leachable	mg/L	0.050	0.050	0.050	0.050	0.050	0.050	0.050
manganese, leachable	mg/L	0.00050	0.00050	0.00050	0.00050	0.00050	0.00050	0.00050
molybdenum, leachable	mg/L	0.00010	0.00010	0.00010	0.00010	0.00010	0.00010	0.00010
nickel, leachable	mg/L	0.00050	0.00050	0.00050	0.00050	0.00050	0.00050	0.00050
phosphorus, leachable	mg/L	0.30	0.30	0.30	0.30	0.30	0.30	0.30
potassium, leachable	mg/L	0.050	0.050	0.050	0.050	0.050	0.050	0.050
selenium, leachable	mg/L	0.00050	0.00050	0.00050	0.00050	0.00050	0.00050	0.00050
silicon, leachable	mg/L	0.050	0.050	0.050	0.050	0.050	0.050	0.050
silver, leachable	mg/L	0.000050	0.000050	0.000050	0.000050	0.000050	0.000050	0.000050
sodium, leachable	mg/L	0.050	0.050	0.050	0.050	0.050	0.050	0.050
strontium, leachable	mg/L	0.00050	0.00050	0.00050	0.00050	0.00050	0.00050	0.00050
sulfur, leachable	mg/L	0.50	0.50	0.50	0.50	0.50	0.50	0.50
thallium, leachable	mg/L	0.00010	0.00010	0.00010	0.00010	0.00010	0.00010	0.00010
tin, leachable	mg/L	0.00050	0.00050	0.00050	0.00050	0.00050	0.00050	0.00050
titanium, leachable	mg/L	0.010	0.010	0.010	0.010	0.010	0.010	0.010
uranium, leachable	mg/L	0.000010	0.000010	0.000010	0.000010	0.000010	0.000010	0.000010
vanadium, leachable	mg/L	0.0010	0.0010	0.0010	0.0010	0.0010	0.0010	0.0010
zinc, leachable	mg/L	0.010	0.010	0.010	0.010	0.010	0.010	0.010
mercury, leachable	mg/L	0.000050	0.000050	0.000050	0.000050	0.000050	0.000050	0.000050
hardness (as CaCO3), dissolved	mg/L	0.60	0.60	0.60	0.60	0.60	0.60	0.60

Report To Ryan Mills, AECOM Canada Ltd.
3292 Production Way
Burnaby, BC V5A 4R4, Canada

Client Phone (604) 444-6400

Date Received 27-Nov-2020 12:55
Issue Date 16-Feb-2021 15:04
Amendment 2
Version FINAL

Certificate of Analysis

Lab Work Order # VA20C2029
Project PO #
Project 60640258 - CanWhite Sands
Legal Site Description
C of C Numbers

Comments
Where possible, ALS will store samples for the following durations, measured from date of sample submission: 45 days for Soil and Water samples; 6 months for Tissue/Biota samples; 14 days for air samples collected on re-usable media; and 3 days for water samples submitted for microbiological testing. Longer storage times are available upon request.
Received sample "Bru 95-8_33.8 to 34.25", Den 216-1_4.45 to 45.95 and Den 216-1_61.26 to 61.82 but crossed off on the CoC; placed these on hold until further notice.
XRD Rietveld data has been added.

Temperature 14

Signatories

This document has been electronically signed by the authorized signatories below. Electronic signing is conducted in accordance with US FDA 21 CFR Part 11.

Signatories	*Position*	*Laboratory Department*
Janice Leung	Supervisor - Organics Extractions	Organics, Burnaby, British Columbia
Lindsay Gung	Supervisor - Water Chemistry	Inorganics, Burnaby, British Columbia
Kim Jensen	Department Manager - Metals	Metals, Burnaby, British Columbia
Erin Gatdula	Account Manager Assistant	Internal Subcontracting, North Vancouver, British Columbia
Dee Lee	Analyst	Metals, Burnaby, British Columbia

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Sample Summary VA20C2029

Project	60640258 - CanWhite Sands
Report To	Ryan Mills, AECOM Canada Ltd.
Date Received	27-Nov-2020 12:55
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Sample Details

ALS Sample ID	Client Sample ID	Matrix	Sub-Matrix	Date Sampled	Time Sampled
VA20C2029-001	Bru 95-3	Soil/Solid	Solid	19-Nov-2020	08:00
VA20C2029-002	Bru 121-1_24.38 to 2	Soil/Solid	Solid	11-Nov-2020	12:30
VA20C2029-003	Bru 121-1_36.57 to 3	Soil/Solid	Solid	11-Nov-2020	12:30
VA20C2029-004	Bru 146_36.82 to 37	Soil/Solid	Solid	11-Nov-2020	00:50
VA20C2029-005	Bru 146_49-86 to 50	Soil/Solid	Solid	11-Nov-2020	12:50
VA20C2029-006	Bru 95-8_40.16 to 4(	Soil/Solid	Solid	18-Nov-2020	13:30
VA20C2029-007	Bru 95-8_49.39 to 4(	Soil/Solid	Solid	18-Nov-2020	15:00

Results Summary VA20C2029

Project	60640258 - CanWhite Sands
Report To	Ryan Mills, AECOM Canada Ltd.
Date Received	27-Nov-2020 12:55
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Amendment	2

Client Sample ID			Bru 95-3	Bru 121-1_24.38 to 24.83	Bru 121-1_36.57 to 37.00	Bru 146_36.82 to 37.13	Bru 146_49-86 to 50.29	Bru 95-8_40.16 to 40.65	Bru 95-8_49.39 to 49.79
Date Sampled			19-Nov-2020	11-Nov-2020	11-Nov-2020	11-Nov-2020	11-Nov-2020	18-Nov-2020	18-Nov-2020
Time Sampled			08:00	12:30	12:30	00:50	12:50	13:30	15:00
ALS Sample ID			VA20C2029-001	VA20C2029-002	VA20C2029-003	VA20C2029-004	VA20C2029-005	VA20C2029-006	VA20C2029-007
Analyte	Lowest Detection Limit	Units	Sub-Matrix: Solid	Sub-Matrix: Solid	Sub-Matrix: Solid	Sub-Matrix: Solid	Sub-Matrix: Solid	Sub-Matrix: Solid	Sub-Matrix: Solid
Physical Tests (Matrix: Soil/Solid)									
moisture	0.25	%	0.61	<0.25	0.52	<0.25	1.02	<0.25	0.91
pH	0.10	pH units	7.05	8.08	8.07	8.17	8.18	8.20	7.94
Acid Base Accounting (Matrix: Soil/Solid)									
fizz rating	1		1	4	1	4	1	4	2
maximum potential acidity [MPA]	0.3	tCaCO3/kt	0.6	2.2	7.2	1.3	2.2	1.6	20.0
net neutralization potential [NNP]	1	tCaCO3/kt	5	866	3	819	3	819	5
neutralization potential [NP]	1	tCaCO3/kt	6	868	10	820	5	821	25
neutralization potential ratio [NPR], (NP/MPA)	0.01		9.60	396.80	1.39	656.00	2.29	525.44	1.25
carbon dioxide	0.2	%	0.3	39.6	0.3	39.6	0.2	39.0	1.3
carbon, total [TC]	0.01	%	0.12	11.00	0.11	10.90	0.05	10.85	0.55
pH (1:1 soil:water)	0.10	pH units	8.50	8.00	7.40	8.00	7.80	8.30	7.50
sulfide (as S), total minus carbonate leach	0.01	%	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
sulfur, residual	0.01	%	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
sulfur, total	0.01	%	0.02	0.07	0.23	0.04	0.07	0.05	0.64
weight, sample received	0.02	kg	6.00	3.36	2.50	3.18	2.24	3.66	2.54
sulfate (as S), HCl leach	0.01	%	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
sulfate (as S), carbonate leach	0.01	%	<0.01	<0.01	0.06	<0.01	0.01	<0.01	0.12
carbon, total inorganic [TIC]	0.05	%	0.09	10.80	0.07	10.80	0.05	10.65	0.36
Metals (Matrix: Soil/Solid)									
aluminum	0.01	%	0.10	0.15	1.56	0.16	1.70	0.20	1.49
antimony	0.05	ppm	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
arsenic	0.1	ppm	0.9	1.7	30.4	0.8	13.3	0.7	24.2
barium	10	ppm	<10	10	30	10	40	10	30
beryllium	0.05	ppm	<0.05	0.18	1.01	0.18	1.26	0.24	0.92
bismuth	0.01	ppm	0.01	0.02	0.18	0.02	0.10	0.02	0.12
boron	10	ppm	<10	10	70	10	70	10	50
cadmium	0.01	ppm	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
calcium	0.01	%	0.21	>25.0	0.81	>25.0	0.43	>25.0	1.32
cerium	0.02	ppm	2.19	9.41	54.6	8.86	28.7	13.50	36.1
cesium	0.05	ppm	0.05	0.25	1.05	0.21	1.04	0.32	0.73
chromium	1	ppm	2	4	24	4	42	5	58
cobalt	0.1	ppm	0.4	1.7	16.9	1.6	22.0	1.5	20.6
copper	0.2	ppm	6.6	3.3	24.9	5.7	24.8	3.2	7.4
gallium	0.05	ppm	0.27	0.75	6.65	0.73	7.80	0.97	8.17
germanium	0.05	ppm	<0.05	<0.05	0.13	<0.05	0.05	<0.05	0.07
gold	0.02	ppm	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
hafnium	0.02	ppm	0.15	0.09	0.08	0.09	0.26	0.12	0.34
indium	0.005	ppm	<0.005	0.011	0.016	0.008	0.020	0.010	0.047
iron	0.01	%	0.22	0.49	1.59	0.47	2.23	0.58	5.56
lanthanum	0.2	ppm	1.0	4.1	18.7	3.8	12.6	5.2	15.0
lead	0.2	ppm	1.1	1.3	13.1	1.3	7.4	1.1	4.6
lithium	0.1	ppm	1.9	2.8	17.6	2.5	25.7	3.5	25.7
magnesium	0.01	%	0.04	1.53	0.39	1.30	0.45	1.49	0.41
manganese	5	ppm	24	305	101	265	64	321	206
mercury	0.01	ppm	<0.01	0.01	0.25	0.01	0.05	0.01	0.03
molybdenum	0.05	ppm	0.06	0.07	0.22	0.14	0.41	0.13	0.54
nickel	0.2	ppm	1.2	3.0	38.0	4.0	52.6	3.1	25.8
niobium	0.05	ppm	0.06	0.07	<0.05	0.07	<0.05	0.08	0.21
phosphorus	10	ppm	30	820	2180	600	490	870	580
potassium	0.01	%	0.02	0.08	0.88	0.09	0.95	0.11	0.49
rhenium	0.001	ppm	<0.001	0.002	0.013	0.001	0.010	0.001	0.003
rubidium	0.1	ppm	1.0	3.9	36.8	3.8	41.2	5.4	22.7
scandium	0.1	ppm	0.1	0.9	4.2	0.9	3.4	1.1	6.1
selenium	0.2	ppm	<0.2	0.3	13.1	0.5	<0.2	0.7	0.3
silver	0.01	ppm	0.01	<0.01	0.40	0.01	0.10	0.01	0.02
sodium	0.01	%	0.01	0.02	0.03	0.02	0.02	0.02	0.02
strontium	0.2	ppm	3.0	198.5	91.7	205	141.5	205	34.2
sulfur	0.01	%	<0.01	0.07	0.23	0.03	0.07	0.05	0.69
tantalum	0.01	ppm	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
tellurium	0.01	ppm	<0.01	<0.01	0.03	<0.01	0.01	<0.01	0.09
thallium	0.02	ppm	0.02	0.03	0.21	0.02	0.29	0.02	0.10
thorium	0.2	ppm	0.4	0.9	10.8	0.9	11.5	1.2	11.6
tin	0.2	ppm	<0.2	<0.2	0.4	0.2	0.5	<0.2	0.6
titanium	0.005	%	0.006	<0.005	0.007	<0.005	0.006	<0.005	0.036
tungsten	0.05	ppm	<0.05	<0.05	0.20	<0.05	0.07	<0.05	0.12
uranium	0.05	ppm	0.14	0.64	30.0	0.60	11.65	0.73	0.40

vanadium	1	ppm	1	6	17	6	18	8	60
yttrium	0.05	ppm	0.51	2.83	19.95	2.62	4.68	3.16	8.90
zinc	2	ppm	12	6	28	11	34	6	38
zirconium	0.5	ppm	4.4	2.3	5.1	2.2	8.3	2.8	10.7

Leachable Metals (Matrix: Soil/Solid)

aluminum, leachable	0.0050	mg/L	1.26	0.131	<0.0050	0.179	<0.0050	0.144	<0.0050
antimony, leachable	0.00010	mg/L	<0.00010	0.00016	0.00012	0.00013	<0.00010	<0.00010	<0.00010
arsenic, leachable	0.0010	mg/L	0.0014	<0.0010	0.0307	<0.0010	0.0029	<0.0010	<0.0010
barium, leachable	0.0010	mg/L	0.0052	0.0106	0.0937	0.0084	0.0961	0.0128	0.0845
beryllium, leachable	0.00050	mg/L	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050
bismuth, leachable	0.00050	mg/L	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050
boron, leachable	0.010	mg/L	0.025	0.068	0.415	0.042	0.204	0.071	1.20
cadmium, leachable	0.000050	mg/L	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050
calcium, leachable	0.10	mg/L	6.25	16.8	77.4	16.2	27.2	17.7	246
chromium, leachable	0.00050	mg/L	0.00194	<0.00050	<0.00050	<0.00050	0.00098	<0.00050	<0.00050
cobalt, leachable	0.00010	mg/L	0.00022	0.00011	0.00153	<0.00010	0.00017	<0.00010	0.00141
copper, leachable	0.0010	mg/L	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010
iron, leachable	0.030	mg/L	0.311	<0.030	<0.030	<0.030	<0.030	<0.030	<0.030
lead, leachable	0.00010	mg/L	0.00094	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010
lithium, leachable	0.0050	mg/L	<0.0050	0.0052	0.0821	0.0050	0.0496	0.0069	0.0908
magnesium, leachable	0.050	mg/L	0.974	6.37	24.0	5.55	9.23	6.28	54.5
manganese, leachable	0.00050	mg/L	0.00103	0.00067	0.00149	<0.00050	<0.00050	0.00050	0.0540
molybdenum, leachable	0.00010	mg/L	0.00012	0.00099	0.00623	0.00092	0.00608	0.00077	0.00016
nickel, leachable	0.00050	mg/L	0.00083	<0.00050	0.0101	0.00059	<0.00050	<0.00050	0.00162
phosphorus, leachable	0.30	mg/L	<0.30	<0.30	<0.30	<0.30	<0.30	<0.30	<0.30
potassium, leachable	0.050	mg/L	1.16	6.82	53.9	6.32	29.7	8.03	63.9
selenium, leachable	0.00050	mg/L	<0.00050	0.00220	1.64	0.00997	0.00747	0.0165	0.0118
silicon, leachable	0.050	mg/L	2.68	1.44	2.26	1.79	2.32	2.14	4.61
silver, leachable	0.000050	mg/L	<0.000050	<0.000050	0.000066	<0.000050	<0.000050	<0.000050	<0.000050
sodium, leachable	0.050	mg/L	0.354	2.23	19.5	1.99	9.87	2.16	15.4
strontium, leachable	0.00050	mg/L	0.0170	0.120	0.505	0.109	0.164	0.123	1.03
sulfur, leachable	0.50	mg/L	2.45	6.60	86.2	4.87	9.59	13.2	288
thallium, leachable	0.00010	mg/L	<0.00010	<0.00010	0.00024	<0.00010	<0.00010	<0.00010	0.00012
tin, leachable	0.00050	mg/L	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050
titanium, leachable	0.010	mg/L	0.115	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010
uranium, leachable	0.000010	mg/L	0.000228	0.000650	0.117	0.000931	0.0137	0.000456	0.000182
vanadium, leachable	0.0010	mg/L	0.0020	0.0032	<0.0010	0.0042	0.0016	0.0040	<0.0010
zinc, leachable	0.010	mg/L	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010
mercury, leachable	0.000050	mg/L	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050
hardness (as CaCO3), dissolved	0.60	mg/L	19.6	68.2	292	63.3	106	70.0	839

Results of Analysis VA20C2029

Project	60640258 - Carl/White Sands
Report To	Ryan Mills, AECOM Canada Ltd.
Date Received	27-Nov-2020 12:55
Issue Date	16-Feb-2021 15:04
Amendment	2

Analyte	ALS Sample ID	Client Sample ID	Matrix	Sub-Matrix	Method	Results	Detection Limit	Units	Qual	Date Sampled	Time Sampled	Prep Date	Analysis Date	QC Lot	QC Eval	Hold Time Eval
Physical Tests (Matrix: Soil/Solid)																
moisture	VA20C2029-001	Bru 95-3	Soil/Solid	Solid	E144	0.61	0.25	%		19-Nov-2020	08:00		15-Dec-2020	130855	✓	✓
pH	VA20C2029-001	Bru 95-3	Soil/Solid	Solid	E116	7.05	0.10	pH units		19-Nov-2020	08:00	15-Dec-2020	16-Dec-2020	130890	✓	✓
Acid Base Accounting (Matrix: Soil/Solid)																
fizz rating	VA20C2029-001	Bru 95-3	Soil/Solid	Solid	OA-VOL08m	1	1			19-Nov-2020	08:00		05-Jan-2021		✓	✓
maximum potential acidity [MPA]	VA20C2029-001	Bru 95-3	Soil/Solid	Solid	OA-VOL08m	0.6	0.3	tCaCO3/kt		19-Nov-2020	08:00		05-Jan-2021		✓	✓
net neutralization potential [NNP]	VA20C2029-001	Bru 95-3	Soil/Solid	Solid	OA-VOL08m	5	1	tCaCO3/kt		19-Nov-2020	08:00		05-Jan-2021		✓	✓
neutralization potential [NP]	VA20C2029-001	Bru 95-3	Soil/Solid	Solid	OA-VOL08m	6	1	tCaCO3/kt		19-Nov-2020	08:00		05-Jan-2021		✓	✓
neutralization potential ratio [NPR], (NP/MPA)	VA20C2029-001	Bru 95-3	Soil/Solid	Solid	OA-VOL08m	9.60	0.01			19-Nov-2020	08:00		05-Jan-2021		✓	✓
carbon dioxide	VA20C2029-001	Bru 95-3	Soil/Solid	Solid	C-GAS05	0.3	0.2	%		19-Nov-2020	08:00		05-Jan-2021		✓	✓
carbon, total [TC]	VA20C2029-001	Bru 95-3	Soil/Solid	Solid	C-IR07	0.12	0.01	%		19-Nov-2020	08:00		05-Jan-2021		✓	✓
pH (1:1 soil:water)	VA20C2029-001	Bru 95-3	Soil/Solid	Solid	OA-ELE07	8.50	0.10	pH units		19-Nov-2020	08:00		05-Jan-2021		✓	✓
sulfide (as S), total minus carbonate leach	VA20C2029-001	Bru 95-3	Soil/Solid	Solid	S-CAL06	<0.01	0.01	%		19-Nov-2020	08:00		05-Jan-2021		✓	*
sulfur, residual	VA20C2029-001	Bru 95-3	Soil/Solid	Solid	S-IR04B	<0.01	0.01	%		19-Nov-2020	08:00		05-Jan-2021		✓	✓
sulfur, total	VA20C2029-001	Bru 95-3	Soil/Solid	Solid	S-IR08	0.02	0.01	%		19-Nov-2020	08:00		05-Jan-2021		✓	✓
weight, sample received	VA20C2029-001	Bru 95-3	Soil/Solid	Solid	WEI-21	6.00	0.02	kg		19-Nov-2020	08:00		05-Jan-2021		✓	✓
sulfate (as S), HCl leach	VA20C2029-001	Bru 95-3	Soil/Solid	Solid	S-GRA06A	<0.01	0.01	%		19-Nov-2020	08:00		05-Jan-2021		✓	✓
sulfate (as S), carbonate leach	VA20C2029-001	Bru 95-3	Soil/Solid	Solid	S-GRA06	<0.01	0.01	%		19-Nov-2020	08:00		05-Jan-2021		✓	✓
carbon, total inorganic [TIC]	VA20C2029-001	Bru 95-3	Soil/Solid	Solid	C-GAS05	0.09	0.05	%		19-Nov-2020	08:00		05-Jan-2021		✓	✓
Metals (Matrix: Soil/Solid)																
aluminum	VA20C2029-001	Bru 95-3	Soil/Solid	Solid	ME-MS41	0.10	0.01	%		19-Nov-2020	08:00		05-Jan-2021		✓	✓
antimony	VA20C2029-001	Bru 95-3	Soil/Solid	Solid	ME-MS41	<0.05	0.05	ppm		19-Nov-2020	08:00		05-Jan-2021		✓	✓
arsenic	VA20C2029-001	Bru 95-3	Soil/Solid	Solid	ME-MS41	0.9	0.1	ppm		19-Nov-2020	08:00		05-Jan-2021		✓	✓
barium	VA20C2029-001	Bru 95-3	Soil/Solid	Solid	ME-MS41	<10	10	ppm		19-Nov-2020	08:00		05-Jan-2021		✓	✓
beryllium	VA20C2029-001	Bru 95-3	Soil/Solid	Solid	ME-MS41	<0.05	0.05	ppm		19-Nov-2020	08:00		05-Jan-2021		✓	✓
bismuth	VA20C2029-001	Bru 95-3	Soil/Solid	Solid	ME-MS41	0.01	0.01	ppm		19-Nov-2020	08:00		05-Jan-2021		✓	✓
boron	VA20C2029-001	Bru 95-3	Soil/Solid	Solid	ME-MS41	<10	10	ppm		19-Nov-2020	08:00		05-Jan-2021		✓	✓
cadmium	VA20C2029-001	Bru 95-3	Soil/Solid	Solid	ME-MS41	<0.01	0.01	ppm		19-Nov-2020	08:00		05-Jan-2021		✓	✓
calcium	VA20C2029-001	Bru 95-3	Soil/Solid	Solid	ME-MS41	0.21	0.01	%		19-Nov-2020	08:00		05-Jan-2021		✓	✓
cerium	VA20C2029-001	Bru 95-3	Soil/Solid	Solid	ME-MS41	2.19	0.02	ppm		19-Nov-2020	08:00		05-Jan-2021		✓	✓
cesium	VA20C2029-001	Bru 95-3	Soil/Solid	Solid	ME-MS41	0.05	0.05	ppm		19-Nov-2020	08:00		05-Jan-2021		✓	✓
chromium	VA20C2029-001	Bru 95-3	Soil/Solid	Solid	ME-MS41	2	1	ppm		19-Nov-2020	08:00		05-Jan-2021		✓	✓
cobalt	VA20C2029-001	Bru 95-3	Soil/Solid	Solid	ME-MS41	0.4	0.1	ppm		19-Nov-2020	08:00		05-Jan-2021		✓	✓
copper	VA20C2029-001	Bru 95-3	Soil/Solid	Solid	ME-MS41	6.6	0.2	ppm		19-Nov-2020	08:00		05-Jan-2021		✓	✓
gallium	VA20C2029-001	Bru 95-3	Soil/Solid	Solid	ME-MS41	0.27	0.05	ppm		19-Nov-2020	08:00		05-Jan-2021		✓	✓
germanium	VA20C2029-001	Bru 95-3	Soil/Solid	Solid	ME-MS41	<0.05	0.05	ppm		19-Nov-2020	08:00		05-Jan-2021		✓	✓
gold	VA20C2029-001	Bru 95-3	Soil/Solid	Solid	ME-MS41	<0.02	0.02	ppm		19-Nov-2020	08:00		05-Jan-2021		✓	✓
hafnium	VA20C2029-001	Bru 95-3	Soil/Solid	Solid	ME-MS41	0.15	0.02	ppm		19-Nov-2020	08:00		05-Jan-2021		✓	✓
indium	VA20C2029-001	Bru 95-3	Soil/Solid	Solid	ME-MS41	<0.005	0.005	ppm		19-Nov-2020	08:00		05-Jan-2021		✓	✓
iron	VA20C2029-001	Bru 95-3	Soil/Solid	Solid	ME-MS41	0.22	0.01	%		19-Nov-2020	08:00		05-Jan-2021		✓	✓
lanthanum	VA20C2029-001	Bru 95-3	Soil/Solid	Solid	ME-MS41	1.0	0.2	ppm		19-Nov-2020	08:00		05-Jan-2021		✓	✓
lead	VA20C2029-001	Bru 95-3	Soil/Solid	Solid	ME-MS41	1.1	0.2	ppm		19-Nov-2020	08:00		05-Jan-2021		✓	✓
lithium	VA20C2029-001	Bru 95-3	Soil/Solid	Solid	ME-MS41	1.9	0.1	ppm		19-Nov-2020	08:00		05-Jan-2021		✓	✓
magnesium	VA20C2029-001	Bru 95-3	Soil/Solid	Solid	ME-MS41	0.04	0.01	%		19-Nov-2020	08:00		05-Jan-2021		✓	✓
manganese	VA20C2029-001	Bru 95-3	Soil/Solid	Solid	ME-MS41	24	5	ppm		19-Nov-2020	08:00		05-Jan-2021		✓	✓
mercury	VA20C2029-001	Bru 95-3	Soil/Solid	Solid	ME-MS41	<0.01	0.01	ppm		19-Nov-2020	08:00		05-Jan-2021		✓	✓
molybdenum	VA20C2029-001	Bru 95-3	Soil/Solid	Solid	ME-MS41	0.06	0.05	ppm		19-Nov-2020	08:00		05-Jan-2021		✓	✓
nickel	VA20C2029-001	Bru 95-3	Soil/Solid	Solid	ME-MS41	1.2	0.2	ppm		19-Nov-2020	08:00		05-Jan-2021		✓	✓
niobium	VA20C2029-001	Bru 95-3	Soil/Solid	Solid	ME-MS41	0.06	0.05	ppm		19-Nov-2020	08:00		05-Jan-2021		✓	✓
phosphorus	VA20C2029-001	Bru 95-3	Soil/Solid	Solid	ME-MS41	30	10	ppm		19-Nov-2020	08:00		05-Jan-2021		✓	✓
potassium	VA20C2029-001	Bru 95-3	Soil/Solid	Solid	ME-MS41	0.02	0.01	%		19-Nov-2020	08:00		05-Jan-2021		✓	✓
rhenium	VA20C2029-001	Bru 95-3	Soil/Solid	Solid	ME-MS41	<0.001	0.001	ppm		19-Nov-2020	08:00		05-Jan-2021		✓	✓
rubidium	VA20C2029-001	Bru 95-3	Soil/Solid	Solid	ME-MS41	1.0	0.1	ppm		19-Nov-2020	08:00		05-Jan-2021		✓	✓
scandium	VA20C2029-001	Bru 95-3	Soil/Solid	Solid	ME-MS41	0.1	0.1	ppm		19-Nov-2020	08:00		05-Jan-2021		✓	✓
selenium	VA20C2029-001	Bru 95-3	Soil/Solid	Solid	ME-MS41	<0.2	0.2	ppm		19-Nov-2020	08:00		05-Jan-2021		✓	✓
silver	VA20C2029-001	Bru 95-3	Soil/Solid	Solid	ME-MS41	0.01	0.01	ppm		19-Nov-2020	08:00		05-Jan-2021		✓	✓
sodium	VA20C2029-001	Bru 95-3	Soil/Solid	Solid	ME-MS41	0.01	0.01	%		19-Nov-2020	08:00		05-Jan-2021		✓	✓
strontium	VA20C2029-001	Bru 95-3	Soil/Solid	Solid	ME-MS41	3.0	0.2	ppm		19-Nov-2020	08:00		05-Jan-2021		✓	✓
sulfur	VA20C2029-001	Bru 95-3	Soil/Solid	Solid	ME-MS41	<0.01	0.01	%		19-Nov-2020	08:00		05-Jan-2021		✓	✓
tantalum	VA20C2029-001	Bru 95-3	Soil/Solid	Solid	ME-MS41	<0.01	0.01	ppm		19-Nov-2020	08:00		05-Jan-2021		✓	✓
tellurium	VA20C2029-001	Bru 95-3	Soil/Solid	Solid	ME-MS41	<0.01	0.01	ppm		19-Nov-2020	08:00		05-Jan-2021		✓	✓
thallium	VA20C2029-001	Bru 95-3	Soil/Solid	Solid	ME-MS41	0.02	0.02	ppm		19-Nov-2020	08:00		05-Jan-2021		✓	✓
thorium	VA20C2029-001	Bru 95-3	Soil/Solid	Solid	ME-MS41	0.4	0.2	ppm		19-Nov-2020	08:00		05-Jan-2021		✓	✓
tin	VA20C2029-001	Bru 95-3	Soil/Solid	Solid	ME-MS41	<0.2	0.2	ppm		19-Nov-2020	08:00		05-Jan-2021		✓	✓
titanium	VA20C2029-001	Bru 95-3	Soil/Solid	Solid	ME-MS41	0.006	0.005	%		19-Nov-2020	08:00		05-Jan-2021		✓	✓
tungsten	VA20C2029-001	Bru 95-3	Soil/Solid	Solid	ME-MS41	<0.05	0.05	ppm		19-Nov-2020	08:00		05-Jan-2021		✓	✓
uranium	VA20C2029-001	Bru 95-3	Soil/Solid	Solid	ME-MS41	0.14	0.05	ppm		19-Nov-2020	08:00		05-Jan-2021		✓	✓
vanadium	VA20C2029-001	Bru 95-3	Soil/Solid	Solid	ME-MS41	1	1	ppm		19-Nov-2020	08:00		05-Jan-2021		✓	✓
yttrium	VA20C2029-001	Bru 95-3	Soil/Solid	Solid	ME-MS41	0.51	0.05	ppm		19-Nov-2020	08:00		05-Jan-2021		✓	✓
zinc	VA20C2029-001	Bru 95-3	Soil/Solid	Solid	ME-MS41	12	2	ppm		19-Nov-2020	08:00		05-Jan-2021		✓	✓
zirconium	VA20C2029-001	Bru 95-3	Soil/Solid	Solid	ME-MS41	4.4	0.5	ppm		19-Nov-2020	08:00		05-Jan-2021		✓	✓
Leachable Metals (Matrix: Soil/Solid)																
aluminum, leachable	VA20C2029-001	Bru 95-3	Soil/Solid	Solid	E446	1.26	0.0050	mg/L		19-Nov-2020	08:00	15-Dec-2020	16-Dec-2020	130891	✓	✓
antimony, leachable	VA20C2029-001	Bru 95-3	Soil/Solid	Solid	E446	<0.00010	0.00010	mg/L		19-Nov-2020	08:00	15-Dec-2020	16-Dec-2020	130891	✓	✓
arsenic, leachable	VA20C2029-001	Bru 95-3	Soil/Solid	Solid	E446	0.0014	0.0010	mg/L		19-Nov-2020	08:00	15-Dec-2020	16-Dec-2020	130891	✓	✓
barium, leachable	VA20C2029-001	Bru 95-3	Soil/Solid	Solid	E446	0.0052	0.0010	mg/L		19-Nov-2020	08:00	15-Dec-2020	16-Dec-2020	130891	✓	✓
beryllium, leachable	VA20C2029-001	Bru 95-3	Soil/Solid	Solid	E446	<0.00050	0.00050	mg/L		19-Nov-2020	08:00	15-Dec-2020	16-Dec-2020	130891	✓	✓
bismuth, leachable	VA20C2029-001	Bru 95-3	Soil/Solid	Solid	E446	<0.00050	0.00050	mg/L		19-Nov-2020	08:00	15-Dec-2020	16-Dec-2020	130891	✓	✓
boron, leachable	VA20C2029-001	Bru 95-3	Soil/Solid	Solid	E446	0.025	0.010	mg/L		19-Nov-2020	08:00	15-Dec-2020	16-Dec-2020	130891	✓	✓
cadmium, leachable	VA20C2029-001	Bru 95-3	Soil/Solid	Solid	E446	<0.000050	0.000050	mg/L		19-Nov-2020	08:00	15-Dec-2020	16-Dec-2020	130891	✓	✓
calcium, leachable	VA20C2029-001	Bru 95-3	Soil/Solid	Solid	E446	6.25	0.10	mg/L		19-Nov-2020	08:00	15-Dec-2020	16-Dec-2020	130891	✓	✓
chromium, leachable	VA20C2029-001	Bru 95-3	Soil/Solid	Solid	E446	0.00194	0.00050	mg/L		19-Nov-2020	08:00	15-Dec-2020	16-Dec-2020	130891	✓	✓
cobalt, leachable	VA20C2029-001	Bru 95-3	Soil/Solid	Solid	E446	0.00022	0.00010	mg/L		19-Nov-2020	08:00	15-Dec-2020	16-Dec-2020	130891	✓	✓
copper, leachable	VA20C2029-001	Bru 95-3	Soil/Solid	Solid	E446	<0.0010	0.0010	mg/L		19-Nov-2020	08:00	15-Dec-2020	16-Dec-2020	130891	✓	✓
iron, leachable	VA20C2029-001	Bru 95-3	Soil/Solid	Solid	E446	0.311	0.030	mg/L		19-Nov-2020	08:00	15-Dec-2020	16-Dec-2020	130891	✓	✓
lead, leachable	VA20C2029-001	Bru 95-3	Soil/Solid	Solid	E446	0.00094	0.00010	mg/L		19-Nov-2020	08:00	15-Dec-2020	16-Dec-2020	130891	✓	✓
lithium, leachable	VA20C2029-001	Bru 95-3	Soil/Solid	Solid	E446	<0.0050	0.0050	mg/L		19-Nov-2020	08:00	15-Dec-2020	16-Dec-2020	130891	✓	✓
magnesium, leachable	VA20C2029-001	Bru 95-3	Soil/Solid	Solid	E446	0.974	0.050	mg/L		19-Nov-2020	08:00	15-Dec-2020	16-Dec-2020	130891	✓	✓
manganese, leachable	VA20C2029-001	Bru 95-3	Soil/Solid	Solid	E446	0.00103	0.00050	mg/L		19-Nov-2020	08:00	15-Dec-2020	16-Dec-2020	130891	✓	✓
molybdenum, leachable	VA20C2029-001	Bru 95-3	Soil/Solid	Solid	E446	0.00012	0.00010	mg/L		19-Nov-2020	08:00	15-Dec-2020	16-Dec-2020	130891	✓	✓
nickel, leachable	VA20C2029-001	Bru 95-3	Soil/Solid	Solid	E446	0.00083	0.00050	mg/L		19-Nov-2020	08:00	15-Dec-2020	16-Dec-2020	130891	✓	✓
phosphorus, leachable	VA20C2029-001	Bru 95-3	Soil/Solid	Solid	E446	<0.30	0.30	mg/L		19-Nov-2020	08:00	15-Dec-2020	16-Dec-2020	130891	✓	✓
potassium, leachable	VA20C2029-001	Bru 95-3	Soil/Solid	Solid	E446	1.16	0.050	mg/L		19-Nov-2020	08:00	15-Dec-2020	16-Dec-2020	130891	✓	✓
selenium, leachable	VA20C2029-001	Bru 95-3	Soil/Solid	Solid	E446	<0.00050	0.00050	mg/L		19-Nov-2020	08:00	15-Dec-2020	16-Dec-2020	130891	✓	✓
silicon, leachable	VA20C2029-001	Bru 95-3	Soil/Solid	Solid	E446	2.68	0.050	mg/L		19-Nov-2020	08:00	15-Dec-2020	16-Dec-2020	130891	✓	✓
silver, leachable	VA20C2029-001	Bru 95-3	Soil/Solid	Solid	E446	<0.000050	0.000050	mg/L		19-Nov-2020	08:00	15-Dec-2020	16-Dec-2020	130891	✓	✓
sodium, leachable	VA20C2029-001	Bru 95-3	Soil/Solid	Solid	E446	0.354	0.050	mg/L		19-Nov-2020	08:00	15-Dec-2020	16-Dec-2020	130891	✓	✓
strontium, leachable	VA20C2029-001	Bru 95-3	Soil/Solid	Solid	E446	0.0170	0.00050	mg/L		19-Nov-2020	08:00	15-Dec-2020	16-Dec-2020	130891	✓	✓
sulfur, leachable	VA20C2029-001	Bru 95-3	Soil/Solid	Solid	E446	2.45	0.50	mg/L		19-Nov-2020	08:00	15-Dec-2020	16-Dec-2020	130891	✓	✓
thallium, leachable	VA20C2029-001	Bru 95-3	Soil/Solid	Solid	E446	<0.00010	0.00010	mg/L		19-Nov-2020	08:00	15-Dec-2020	16-Dec-2020	130891	✓	✓
tin, leachable	VA20C2029-001	Bru 95-3	Soil/Solid	Solid	E446	<0.00050	0.00050	mg/L		19-Nov-2020	08:00	15-Dec-2020	16-Dec-2020	130891	✓	✓
titanium, leachable	VA20C2029-001	Bru 95-3	Soil/Solid	Solid	E446	0.115	0.010	mg/L		19-Nov-2020	08:00	15-Dec-2020	16-Dec-2020	130891	✓	✓
uranium, leachable	VA20C2029-001	Bru 95-3	Soil/Solid	Solid	E446	0.000228	0.000010	mg/L		19-Nov-2020	08:00	15-Dec-2020	16-Dec-2020	130891	✓	✓
vanadium, leachable	VA20C2029-001	Bru 95-3	Soil/Solid	Solid	E446	0.0020	0.0010	mg/L		19-Nov-2020	08:00	15-Dec-2020	16-Dec-2020	130891	✓	✓
zinc, leachable	VA20C2029-001	Bru 95-3	Soil/Solid	Solid	E446	<0.010	0.010	mg/L		19-Nov-2020	08:00	15-Dec-2020	16-Dec-2020	130891	✓	✓
mercury, leachable	VA20C2029-001	Bru 95-3	Soil/Solid	Solid	E515	<0.000050	0.000050	mg/L		19-Nov-2020	08:00	15-Dec-2020	17-Dec-2020	130889	✓	✓
hardness (as CaCO3), dissolved	VA20C2029-001	Bru 95-3	Soil/Solid	Solid	E446	19.6	0.60	mg/L		19-Nov-2020	08:00	15-Dec-2020	16-Dec-2020	130891	✓	✓
Physical Tests (Matrix: Soil/Solid)																
moisture	VA20C2029-002	Bru 121-1_24.38 to 24.83	Soil/Solid	Solid	E144	<0.25	0.25	%		11-Nov-2020	12:30		17-Dec-2020	132183	✓	✓
pH	VA20C2029-002	Bru 121-1_24.38 to 24.83	Soil/Solid	Solid	E116	8.08	0.10	pH units		11-Nov-2020	12:30	17-Dec-2020	19-Dec-2020	132216	✓	*
Acid Base Accounting (Matrix: Soil/Solid)																
fizz rating	VA20C2029-002	Bru 121-1_24.38 to 24.83	Soil/Solid	Solid	OA-VOL08m	4	1			11-Nov-2020	12:30		05-Jan-2021		✓	✓
maximum potential acidity [MPA]	VA20C2029-002	Bru 121-1_24.38 to 24.83	Soil/Solid	Solid	OA-VOL08m	2.2	0.3	tCaCO3/kt		11-Nov-2020	12:30		05-Jan-2021		✓	✓
net neutralization potential [NNP]	VA20C2029-002	Bru 121-1_24.38 to 24.83	Soil/Solid	Solid	OA-VOL08m	866	1	tCaCO3/kt		11-Nov-2020	12:30		05-Jan-2021		✓	✓
neutralization potential [NP]	VA20C2029-002	Bru 121-1_24.38 to 24.83	Soil/Solid	Solid	OA-VOL08m	868	1	tCaCO3/kt		11-Nov-2020	12:30		05-Jan-2021		✓	✓
neutralization potential ratio [NPR], (NP/MPA)	VA20C2029-002	Bru 121-1_24.38 to 24.83	Soil/Solid	Solid	OA-VOL08m	396.80	0.01			11-Nov-2020	12:30		05-Jan-2021		✓	✓
carbon dioxide	VA20C2029-002	Bru 121-1_24.38 to 24.83	Soil/Solid	Solid	C-GAS05	39.6	0.2	%		11-Nov-2020	12:30		05-Jan-2021		✓	✓
carbon, total [TC]	VA20C2029-002	Bru 121-1_24.38 to 24.83	Soil/Solid	Solid	C-IR07	11.00	0.01	%		11-Nov-2020	12:30		05-Jan-2021		✓	✓
pH (1:1 soil:water)	VA20C2029-002	Bru 121-1_24.38 to 24.83	Soil/Solid	Solid	OA-ELE07	8.00	0.10	pH units		11-Nov-2020	12:30		05-Jan-2021		✓	✓
sulfide (as S), total minus carbonate leach	VA20C2029-002	Bru 121-1_24.38 to 24.83	Soil/Solid	Solid	S-CAL06	<0.01	0.01	%		11-Nov-2020	12:30		05-Jan-2021		✓	*
sulfur, residual	VA20C2029-002	Bru 121-1_24.38 to 24.83	Soil/Solid	Solid	S-IR04B	<0.01	0.01	%		11-Nov-2020	12:30		05-Jan-2021		✓	✓
sulfur, total	VA20C2029-002	Bru 121-1_24.38 to 24.83	Soil/Solid	Solid	S-IR08	0.07	0.01	%		11-Nov-2020	12:30		05-Jan-2021		✓	✓
weight, sample received	VA20C2029-002	Bru 121-1_24.38 to 24.83	Soil/Solid	Solid	WEI-21	3.36	0.02	kg		11-Nov-2020	12:30		05-Jan-2021		✓	✓
sulfate (as S), HCl leach	VA20C2029-002	Bru 121-1_24.38 to 24.83	Soil/Solid	Solid	S-GRA06A	<0.01	0.01	%		11-Nov-2020	12:30		05-Jan-2021		✓	✓
sulfate (as S), carbonate leach	VA20C2029-002	Bru 121-1_24.38 to 24.83	Soil/Solid	Solid	S-GRA06	<0.01	0.01	%		11-Nov-2020	12:30		05-Jan-2021		✓	✓
carbon, total inorganic [TIC]	VA20C2029-002	Bru 121-1_24.38 to 24.83	Soil/Solid	Solid	C-GAS05	10.80	0.05	%		11-Nov-2020	12:30		05-Jan-2021		✓	✓
Metals (Matrix: Soil/Solid)																
aluminum	VA20C2029-002	Bru 121-1_24.38 to 24.83	Soil/Solid	Solid	ME-MS41	0.15	0.01	%		11-Nov-2020	12:30		05-Jan-2021		✓	✓
antimony	VA20C2029-002	Bru 121-1_24.38 to 24.83	Soil/Solid	Solid	ME-MS41	<0.05	0.05	ppm		11-Nov-2020	12:30		05-Jan-2021		✓	✓
arsenic	VA20C2029-002	Bru 121-1_24.38 to 24.83	Soil/Solid	Solid	ME-MS41	1.7	0.1	ppm		11-Nov-2020	12:30		05-Jan-2021		✓	✓
barium	VA20C2029-002	Bru 121-1_24.38 to 24.83	Soil/Solid	Solid	ME-MS41	10	10	ppm		11-Nov-2020	12:30		05-Jan-2021		✓	✓
beryllium	VA20C2029-002	Bru 121-1_24.38 to 24.83	Soil/Solid	Solid	ME-MS41	0.18	0.05	ppm		11-Nov-2020	12:30		05-Jan-2021		✓	✓
bismuth	VA20C2029-002	Bru 121-1_24.38 to 24.83	Soil/Solid	Solid	ME-MS41	0.02	0.01	ppm		11-Nov-2020	12:30		05-Jan-2021		✓	✓
boron	VA20C2029-002	Bru 121-1_24.38 to 24.83	Soil/Solid	Solid	ME-MS41	10	10	ppm		11-Nov-2020	12:30		05-Jan-2021		✓	✓

Analyte	ALS Sample ID	Client Sample ID	Matrix	Sub-Matrix	Method	Results	Detection Limit	Units	Qual	Date Sampled	Time Sampled	Prep Date	Analysis Date	QC Lot	QC Eval	Hold Time Eval
cadmium	VA20C2029-002	Bru 121-1_24.38 to 24.83	Soil/Solid	Solid	ME-MS41	<0.01	0.01	ppm		11-Nov-2020	12:30		05-Jan-2021		✓	✓
calcium	VA20C2029-002	Bru 121-1_24.38 to 24.83	Soil/Solid	Solid	ME-MS41	>25.0	0.01	%		11-Nov-2020	12:30		05-Jan-2021		✓	✓
cerium	VA20C2029-002	Bru 121-1_24.38 to 24.83	Soil/Solid	Solid	ME-MS41	0.41	0.02	ppm		11-Nov-2020	12:30		05-Jan-2021		✓	✓
cesium	VA20C2029-002	Bru 121-1_24.38 to 24.83	Soil/Solid	Solid	ME-MS41	0.25	0.05	ppm		11-Nov-2020	12:30		05-Jan-2021		✓	✓
chromium	VA20C2029-002	Bru 121-1_24.38 to 24.83	Soil/Solid	Solid	ME-MS41	4	1	ppm		11-Nov-2020	12:30		05-Jan-2021		✓	✓
cobalt	VA20C2029-002	Bru 121-1_24.38 to 24.83	Soil/Solid	Solid	ME-MS41	1.7	0.1	ppm		11-Nov-2020	12:30		05-Jan-2021		✓	✓
copper	VA20C2029-002	Bru 121-1_24.38 to 24.83	Soil/Solid	Solid	ME-MS41	3.3	0.2	ppm		11-Nov-2020	12:30		05-Jan-2021		✓	✓
gallium	VA20C2029-002	Bru 121-1_24.38 to 24.83	Soil/Solid	Solid	ME-MS41	0.75	0.05	ppm		11-Nov-2020	12:30		05-Jan-2021		✓	✓
germanium	VA20C2029-002	Bru 121-1_24.38 to 24.83	Soil/Solid	Solid	ME-MS41	<0.05	0.05	ppm		11-Nov-2020	12:30		05-Jan-2021		✓	✓
gold	VA20C2029-002	Bru 121-1_24.38 to 24.83	Soil/Solid	Solid	ME-MS41	<0.02	0.02	ppm		11-Nov-2020	12:30		05-Jan-2021		✓	✓
hafnium	VA20C2029-002	Bru 121-1_24.38 to 24.83	Soil/Solid	Solid	ME-MS41	0.09	0.02	ppm		11-Nov-2020	12:30		05-Jan-2021		✓	✓
indium	VA20C2029-002	Bru 121-1_24.38 to 24.83	Soil/Solid	Solid	ME-MS41	0.011	0.005	ppm		11-Nov-2020	12:30		05-Jan-2021		✓	✓
iron	VA20C2029-002	Bru 121-1_24.38 to 24.83	Soil/Solid	Solid	ME-MS41	0.49	0.01	%		11-Nov-2020	12:30		05-Jan-2021		✓	✓
lanthanum	VA20C2029-002	Bru 121-1_24.38 to 24.83	Soil/Solid	Solid	ME-MS41	4.1	0.2	ppm		11-Nov-2020	12:30		05-Jan-2021		✓	✓
lead	VA20C2029-002	Bru 121-1_24.38 to 24.83	Soil/Solid	Solid	ME-MS41	1.3	0.2	ppm		11-Nov-2020	12:30		05-Jan-2021		✓	✓
lithium	VA20C2029-002	Bru 121-1_24.38 to 24.83	Soil/Solid	Solid	ME-MS41	2.8	0.1	ppm		11-Nov-2020	12:30		05-Jan-2021		✓	✓
magnesium	VA20C2029-002	Bru 121-1_24.38 to 24.83	Soil/Solid	Solid	ME-MS41	1.53	0.01	%		11-Nov-2020	12:30		05-Jan-2021		✓	✓
manganese	VA20C2029-002	Bru 121-1_24.38 to 24.83	Soil/Solid	Solid	ME-MS41	305	5	ppm		11-Nov-2020	12:30		05-Jan-2021		✓	✓
mercury	VA20C2029-002	Bru 121-1_24.38 to 24.83	Soil/Solid	Solid	ME-MS41	0.01	0.01	ppm		11-Nov-2020	12:30		05-Jan-2021		✓	✓
molybdenum	VA20C2029-002	Bru 121-1_24.38 to 24.83	Soil/Solid	Solid	ME-MS41	0.07	0.05	ppm		11-Nov-2020	12:30		05-Jan-2021		✓	✓
nickel	VA20C2029-002	Bru 121-1_24.38 to 24.83	Soil/Solid	Solid	ME-MS41	3.0	0.2	ppm		11-Nov-2020	12:30		05-Jan-2021		✓	✓
niobium	VA20C2029-002	Bru 121-1_24.38 to 24.83	Soil/Solid	Solid	ME-MS41	0.07	0.05	ppm		11-Nov-2020	12:30		05-Jan-2021		✓	✓
phosphorus	VA20C2029-002	Bru 121-1_24.38 to 24.83	Soil/Solid	Solid	ME-MS41	820	10	ppm		11-Nov-2020	12:30		05-Jan-2021		✓	✓
potassium	VA20C2029-002	Bru 121-1_24.38 to 24.83	Soil/Solid	Solid	ME-MS41	0.08	0.01	%		11-Nov-2020	12:30		05-Jan-2021		✓	✓
rhenium	VA20C2029-002	Bru 121-1_24.38 to 24.83	Soil/Solid	Solid	ME-MS41	0.002	0.001	ppm		11-Nov-2020	12:30		05-Jan-2021		✓	✓
rubidium	VA20C2029-002	Bru 121-1_24.38 to 24.83	Soil/Solid	Solid	ME-MS41	3.9	0.1	ppm		11-Nov-2020	12:30		05-Jan-2021		✓	✓
scandium	VA20C2029-002	Bru 121-1_24.38 to 24.83	Soil/Solid	Solid	ME-MS41	0.9	0.1	ppm		11-Nov-2020	12:30		05-Jan-2021		✓	✓
selenium	VA20C2029-002	Bru 121-1_24.38 to 24.83	Soil/Solid	Solid	ME-MS41	0.3	0.2	ppm		11-Nov-2020	12:30		05-Jan-2021		✓	✓
silver	VA20C2029-002	Bru 121-1_24.38 to 24.83	Soil/Solid	Solid	ME-MS41	<0.01	0.01	ppm		11-Nov-2020	12:30		05-Jan-2021		✓	✓
sodium	VA20C2029-002	Bru 121-1_24.38 to 24.83	Soil/Solid	Solid	ME-MS41	0.02	0.01	%		11-Nov-2020	12:30		05-Jan-2021		✓	✓
strontium	VA20C2029-002	Bru 121-1_24.38 to 24.83	Soil/Solid	Solid	ME-MS41	198.5	0.2	ppm		11-Nov-2020	12:30		05-Jan-2021		✓	✓
sulfur	VA20C2029-002	Bru 121-1_24.38 to 24.83	Soil/Solid	Solid	ME-MS41	0.07	0.01	%		11-Nov-2020	12:30		05-Jan-2021		✓	✓
tantalum	VA20C2029-002	Bru 121-1_24.38 to 24.83	Soil/Solid	Solid	ME-MS41	<0.01	0.01	ppm		11-Nov-2020	12:30		05-Jan-2021		✓	✓
tellurium	VA20C2029-002	Bru 121-1_24.38 to 24.83	Soil/Solid	Solid	ME-MS41	<0.01	0.01	ppm		11-Nov-2020	12:30		05-Jan-2021		✓	✓
thallium	VA20C2029-002	Bru 121-1_24.38 to 24.83	Soil/Solid	Solid	ME-MS41	0.03	0.02	ppm		11-Nov-2020	12:30		05-Jan-2021		✓	✓
thorium	VA20C2029-002	Bru 121-1_24.38 to 24.83	Soil/Solid	Solid	ME-MS41	0.9	0.2	ppm		11-Nov-2020	12:30		05-Jan-2021		✓	✓
tin	VA20C2029-002	Bru 121-1_24.38 to 24.83	Soil/Solid	Solid	ME-MS41	<0.2	0.2	ppm		11-Nov-2020	12:30		05-Jan-2021		✓	✓
titanium	VA20C2029-002	Bru 121-1_24.38 to 24.83	Soil/Solid	Solid	ME-MS41	<0.005	0.005	%		11-Nov-2020	12:30		05-Jan-2021		✓	✓
tungsten	VA20C2029-002	Bru 121-1_24.38 to 24.83	Soil/Solid	Solid	ME-MS41	<0.05	0.05	ppm		11-Nov-2020	12:30		05-Jan-2021		✓	✓
uranium	VA20C2029-002	Bru 121-1_24.38 to 24.83	Soil/Solid	Solid	ME-MS41	0.64	0.05	ppm		11-Nov-2020	12:30		05-Jan-2021		✓	✓
vanadium	VA20C2029-002	Bru 121-1_24.38 to 24.83	Soil/Solid	Solid	ME-MS41	6	1	ppm		11-Nov-2020	12:30		05-Jan-2021		✓	✓
yttrium	VA20C2029-002	Bru 121-1_24.38 to 24.83	Soil/Solid	Solid	ME-MS41	2.83	0.05	ppm		11-Nov-2020	12:30		05-Jan-2021		✓	✓
zinc	VA20C2029-002	Bru 121-1_24.38 to 24.83	Soil/Solid	Solid	ME-MS41	6	2	ppm		11-Nov-2020	12:30		05-Jan-2021		✓	✓
zirconium	VA20C2029-002	Bru 121-1_24.38 to 24.83	Soil/Solid	Solid	ME-MS41	2.3	0.5	ppm		11-Nov-2020	12:30		05-Jan-2021		✓	✓
Leachable Metals (Matrix: Soil/Solid)																
aluminum, leachable	VA20C2029-002	Bru 121-1_24.38 to 24.83	Soil/Solid	Solid	E446	0.131	0.0050	mg/L		11-Nov-2020	12:30	17-Dec-2020	20-Dec-2020	132217	✓	✓
antimony, leachable	VA20C2029-002	Bru 121-1_24.38 to 24.83	Soil/Solid	Solid	E446	0.000016	0.000010	mg/L		11-Nov-2020	12:30	17-Dec-2020	20-Dec-2020	132217	✓	✓
arsenic, leachable	VA20C2029-002	Bru 121-1_24.38 to 24.83	Soil/Solid	Solid	E446	<0.0010	0.0010	mg/L		11-Nov-2020	12:30	17-Dec-2020	20-Dec-2020	132217	✓	✓
barium, leachable	VA20C2029-002	Bru 121-1_24.38 to 24.83	Soil/Solid	Solid	E446	0.0106	0.0010	mg/L		11-Nov-2020	12:30	17-Dec-2020	20-Dec-2020	132217	✓	✓
beryllium, leachable	VA20C2029-002	Bru 121-1_24.38 to 24.83	Soil/Solid	Solid	E446	<0.00050	0.00050	mg/L		11-Nov-2020	12:30	17-Dec-2020	20-Dec-2020	132217	✓	✓
bismuth, leachable	VA20C2029-002	Bru 121-1_24.38 to 24.83	Soil/Solid	Solid	E446	<0.00050	0.00050	mg/L		11-Nov-2020	12:30	17-Dec-2020	20-Dec-2020	132217	✓	✓
boron, leachable	VA20C2029-002	Bru 121-1_24.38 to 24.83	Soil/Solid	Solid	E446	0.068	0.010	mg/L		11-Nov-2020	12:30	17-Dec-2020	20-Dec-2020	132217	✓	✓
cadmium, leachable	VA20C2029-002	Bru 121-1_24.38 to 24.83	Soil/Solid	Solid	E446	<0.000050	0.000050	mg/L		11-Nov-2020	12:30	17-Dec-2020	20-Dec-2020	132217	✓	✓
calcium, leachable	VA20C2029-002	Bru 121-1_24.38 to 24.83	Soil/Solid	Solid	E446	16.8	0.10	mg/L		11-Nov-2020	12:30	17-Dec-2020	20-Dec-2020	132217	✓	✓
chromium, leachable	VA20C2029-002	Bru 121-1_24.38 to 24.83	Soil/Solid	Solid	E446	<0.00050	0.00050	mg/L		11-Nov-2020	12:30	17-Dec-2020	20-Dec-2020	132217	✓	✓
cobalt, leachable	VA20C2029-002	Bru 121-1_24.38 to 24.83	Soil/Solid	Solid	E446	0.00011	0.00010	mg/L		11-Nov-2020	12:30	17-Dec-2020	20-Dec-2020	132217	✓	✓
copper, leachable	VA20C2029-002	Bru 121-1_24.38 to 24.83	Soil/Solid	Solid	E446	<0.0010	0.0010	mg/L		11-Nov-2020	12:30	17-Dec-2020	20-Dec-2020	132217	✓	✓
iron, leachable	VA20C2029-002	Bru 121-1_24.38 to 24.83	Soil/Solid	Solid	E446	<0.030	0.030	mg/L		11-Nov-2020	12:30	17-Dec-2020	20-Dec-2020	132217	✓	✓
lead, leachable	VA20C2029-002	Bru 121-1_24.38 to 24.83	Soil/Solid	Solid	E446	<0.00010	0.00010	mg/L		11-Nov-2020	12:30	17-Dec-2020	20-Dec-2020	132217	✓	✓
lithium, leachable	VA20C2029-002	Bru 121-1_24.38 to 24.83	Soil/Solid	Solid	E446	0.0052	0.0050	mg/L		11-Nov-2020	12:30	17-Dec-2020	20-Dec-2020	132217	✓	✓
magnesium, leachable	VA20C2029-002	Bru 121-1_24.38 to 24.83	Soil/Solid	Solid	E446	6.37	0.050	mg/L		11-Nov-2020	12:30	17-Dec-2020	20-Dec-2020	132217	✓	✓
manganese, leachable	VA20C2029-002	Bru 121-1_24.38 to 24.83	Soil/Solid	Solid	E446	0.00067	0.00050	mg/L		11-Nov-2020	12:30	17-Dec-2020	20-Dec-2020	132217	✓	✓
molybdenum, leachable	VA20C2029-002	Bru 121-1_24.38 to 24.83	Soil/Solid	Solid	E446	0.00099	0.00010	mg/L		11-Nov-2020	12:30	17-Dec-2020	20-Dec-2020	132217	✓	✓
nickel, leachable	VA20C2029-002	Bru 121-1_24.38 to 24.83	Soil/Solid	Solid	E446	<0.00050	0.00050	mg/L		11-Nov-2020	12:30	17-Dec-2020	20-Dec-2020	132217	✓	✓
phosphorus, leachable	VA20C2029-002	Bru 121-1_24.38 to 24.83	Soil/Solid	Solid	E446	<0.30	0.30	mg/L		11-Nov-2020	12:30	17-Dec-2020	20-Dec-2020	132217	✓	✓
potassium, leachable	VA20C2029-002	Bru 121-1_24.38 to 24.83	Soil/Solid	Solid	E446	6.82	0.050	mg/L		11-Nov-2020	12:30	17-Dec-2020	20-Dec-2020	132217	✓	✓
selenium, leachable	VA20C2029-002	Bru 121-1_24.38 to 24.83	Soil/Solid	Solid	E446	0.00220	0.00050	mg/L		11-Nov-2020	12:30	17-Dec-2020	20-Dec-2020	132217	✓	✓
silicon, leachable	VA20C2029-002	Bru 121-1_24.38 to 24.83	Soil/Solid	Solid	E446	1.44	0.050	mg/L		11-Nov-2020	12:30	17-Dec-2020	20-Dec-2020	132217	✓	✓
silver, leachable	VA20C2029-002	Bru 121-1_24.38 to 24.83	Soil/Solid	Solid	E446	<0.000050	0.000050	mg/L		11-Nov-2020	12:30	17-Dec-2020	20-Dec-2020	132217	✓	✓
sodium, leachable	VA20C2029-002	Bru 121-1_24.38 to 24.83	Soil/Solid	Solid	E446	2.23	0.050	mg/L		11-Nov-2020	12:30	17-Dec-2020	20-Dec-2020	132217	✓	✓
strontium, leachable	VA20C2029-002	Bru 121-1_24.38 to 24.83	Soil/Solid	Solid	E446	0.120	0.00050	mg/L		11-Nov-2020	12:30	17-Dec-2020	20-Dec-2020	132217	✓	✓
sulfur, leachable	VA20C2029-002	Bru 121-1_24.38 to 24.83	Soil/Solid	Solid	E446	6.60	0.50	mg/L		11-Nov-2020	12:30	17-Dec-2020	20-Dec-2020	132217	✓	✓
thallium, leachable	VA20C2029-002	Bru 121-1_24.38 to 24.83	Soil/Solid	Solid	E446	<0.00010	0.00010	mg/L		11-Nov-2020	12:30	17-Dec-2020	20-Dec-2020	132217	✓	✓
tin, leachable	VA20C2029-002	Bru 121-1_24.38 to 24.83	Soil/Solid	Solid	E446	<0.00050	0.00050	mg/L		11-Nov-2020	12:30	17-Dec-2020	20-Dec-2020	132217	✓	✓
titanium, leachable	VA20C2029-002	Bru 121-1_24.38 to 24.83	Soil/Solid	Solid	E446	<0.010	0.010	mg/L		11-Nov-2020	12:30	17-Dec-2020	20-Dec-2020	132217	✓	✓
uranium, leachable	VA20C2029-002	Bru 121-1_24.38 to 24.83	Soil/Solid	Solid	E446	0.000650	0.000010	mg/L		11-Nov-2020	12:30	17-Dec-2020	20-Dec-2020	132217	✓	✓
vanadium, leachable	VA20C2029-002	Bru 121-1_24.38 to 24.83	Soil/Solid	Solid	E446	0.0032	0.0010	mg/L		11-Nov-2020	12:30	17-Dec-2020	20-Dec-2020	132217	✓	✓
zinc, leachable	VA20C2029-002	Bru 121-1_24.38 to 24.83	Soil/Solid	Solid	E446	<0.010	0.010	mg/L		11-Nov-2020	12:30	17-Dec-2020	20-Dec-2020	132217	✓	✓
mercury, leachable	VA20C2029-002	Bru 121-1_24.38 to 24.83	Soil/Solid	Solid	E515	<0.000050	0.000050	mg/L		11-Nov-2020	12:30	17-Dec-2020	19-Dec-2020	132215	✓	✗
hardness (as CaCO3), dissolved	VA20C2029-002	Bru 121-1_24.38 to 24.83	Soil/Solid	Solid	E446	68.2	0.60	mg/L		11-Nov-2020	12:30	17-Dec-2020	20-Dec-2020	132217	✓	✓
Physical Tests (Matrix: Soil/Solid)																
moisture	VA20C2029-003	Bru 121-1_36.57 to 37.00	Soil/Solid	Solid	E144	0.52	0.25	%		11-Nov-2020	12:30		17-Dec-2020	132183	✓	✓
pH	VA20C2029-003	Bru 121-1_36.57 to 37.00	Soil/Solid	Solid	E116	8.07	0.10	pH units		11-Nov-2020	12:30	17-Dec-2020	19-Dec-2020	132216	✓	✗
Acid Base Accounting (Matrix: Soil/Solid)																
fizz rating	VA20C2029-003	Bru 121-1_36.57 to 37.00	Soil/Solid	Solid	OA-VOL08m	1	1			11-Nov-2020	12:30		05-Jan-2021		✓	✓
maximum potential acidity [MPA]	VA20C2029-003	Bru 121-1_36.57 to 37.00	Soil/Solid	Solid	OA-VOL08m	7.2	0.3	tCaCO3/kt		11-Nov-2020	12:30		05-Jan-2021		✓	✓
net neutralization potential [NNP]	VA20C2029-003	Bru 121-1_36.57 to 37.00	Soil/Solid	Solid	OA-VOL08m	3	1	tCaCO3/kt		11-Nov-2020	12:30		05-Jan-2021		✓	✓
neutralization potential [NP]	VA20C2029-003	Bru 121-1_36.57 to 37.00	Soil/Solid	Solid	OA-VOL08m	10	1	tCaCO3/kt		11-Nov-2020	12:30		05-Jan-2021		✓	✓
neutralization potential ratio [NPR], (NP/MPA)	VA20C2029-003	Bru 121-1_36.57 to 37.00	Soil/Solid	Solid	OA-VOL08m	1.39	0.01			11-Nov-2020	12:30		05-Jan-2021		✓	✓
carbon dioxide	VA20C2029-003	Bru 121-1_36.57 to 37.00	Soil/Solid	Solid	C-GAS05	0.3	0.2	%		11-Nov-2020	12:30		05-Jan-2021		✓	✓
carbon, total [TC]	VA20C2029-003	Bru 121-1_36.57 to 37.00	Soil/Solid	Solid	C-IR07	0.11	0.01	%		11-Nov-2020	12:30		05-Jan-2021		✓	✓
pH (1:1 soil:water)	VA20C2029-003	Bru 121-1_36.57 to 37.00	Soil/Solid	Solid	OA-ELE07	7.40	0.10	pH units		11-Nov-2020	12:30		05-Jan-2021		✓	✓
sulfide (as S), total minus carbonate leach	VA20C2029-003	Bru 121-1_36.57 to 37.00	Soil/Solid	Solid	S-CAL06	<0.01	0.01	%		11-Nov-2020	12:30		05-Jan-2021		✓	✗
sulfur, residual	VA20C2029-003	Bru 121-1_36.57 to 37.00	Soil/Solid	Solid	S-IR04B	<0.01	0.01	%		11-Nov-2020	12:30		05-Jan-2021		✓	✓
sulfur, total	VA20C2029-003	Bru 121-1_36.57 to 37.00	Soil/Solid	Solid	S-IR08	0.23	0.01	%		11-Nov-2020	12:30		05-Jan-2021		✓	✓
weight, sample received	VA20C2029-003	Bru 121-1_36.57 to 37.00	Soil/Solid	Solid	WEI-21	2.50	0.02	kg		11-Nov-2020	12:30		05-Jan-2021		✓	✓
sulfate (as S), HCl leach	VA20C2029-003	Bru 121-1_36.57 to 37.00	Soil/Solid	Solid	S-GRA06A	<0.01	0.01	%		11-Nov-2020	12:30		05-Jan-2021		✓	✓
sulfate (as S), carbonate leach	VA20C2029-003	Bru 121-1_36.57 to 37.00	Soil/Solid	Solid	S-GRA06	0.06	0.01	%		11-Nov-2020	12:30		05-Jan-2021		✓	✓
carbon, total inorganic [TIC]	VA20C2029-003	Bru 121-1_36.57 to 37.00	Soil/Solid	Solid	C-GAS05	0.07	0.05	%		11-Nov-2020	12:30		05-Jan-2021		✓	✓
Metals (Matrix: Soil/Solid)																
aluminum	VA20C2029-003	Bru 121-1_36.57 to 37.00	Soil/Solid	Solid	ME-MS41	1.56	0.01	%		11-Nov-2020	12:30		05-Jan-2021		✓	✓
antimony	VA20C2029-003	Bru 121-1_36.57 to 37.00	Soil/Solid	Solid	ME-MS41	<0.05	0.05	ppm		11-Nov-2020	12:30		05-Jan-2021		✓	✓
arsenic	VA20C2029-003	Bru 121-1_36.57 to 37.00	Soil/Solid	Solid	ME-MS41	30.4	0.1	ppm		11-Nov-2020	12:30		05-Jan-2021		✓	✓
barium	VA20C2029-003	Bru 121-1_36.57 to 37.00	Soil/Solid	Solid	ME-MS41	30	10	ppm		11-Nov-2020	12:30		05-Jan-2021		✓	✓
beryllium	VA20C2029-003	Bru 121-1_36.57 to 37.00	Soil/Solid	Solid	ME-MS41	1.01	0.05	ppm		11-Nov-2020	12:30		05-Jan-2021		✓	✓
bismuth	VA20C2029-003	Bru 121-1_36.57 to 37.00	Soil/Solid	Solid	ME-MS41	0.18	0.01	ppm		11-Nov-2020	12:30		05-Jan-2021		✓	✓
boron	VA20C2029-003	Bru 121-1_36.57 to 37.00	Soil/Solid	Solid	ME-MS41	70	10	ppm		11-Nov-2020	12:30		05-Jan-2021		✓	✓
cadmium	VA20C2029-003	Bru 121-1_36.57 to 37.00	Soil/Solid	Solid	ME-MS41	<0.01	0.01	ppm		11-Nov-2020	12:30		05-Jan-2021		✓	✓
calcium	VA20C2029-003	Bru 121-1_36.57 to 37.00	Soil/Solid	Solid	ME-MS41	0.81	0.01	%		11-Nov-2020	12:30		05-Jan-2021		✓	✓
cerium	VA20C2029-003	Bru 121-1_36.57 to 37.00	Soil/Solid	Solid	ME-MS41	54.6	0.02	ppm		11-Nov-2020	12:30		05-Jan-2021		✓	✓
cesium	VA20C2029-003	Bru 121-1_36.57 to 37.00	Soil/Solid	Solid	ME-MS41	1.05	0.05	ppm		11-Nov-2020	12:30		05-Jan-2021		✓	✓
chromium	VA20C2029-003	Bru 121-1_36.57 to 37.00	Soil/Solid	Solid	ME-MS41	24	1	ppm		11-Nov-2020	12:30		05-Jan-2021		✓	✓
cobalt	VA20C2029-003	Bru 121-1_36.57 to 37.00	Soil/Solid	Solid	ME-MS41	16.9	0.1	ppm		11-Nov-2020	12:30		05-Jan-2021		✓	✓
copper	VA20C2029-003	Bru 121-1_36.57 to 37.00	Soil/Solid	Solid	ME-MS41	24.9	0.2	ppm		11-Nov-2020	12:30		05-Jan-2021		✓	✓
gallium	VA20C2029-003	Bru 121-1_36.57 to 37.00	Soil/Solid	Solid	ME-MS41	6.65	0.05	ppm		11-Nov-2020	12:30		05-Jan-2021		✓	✓
germanium	VA20C2029-003	Bru 121-1_36.57 to 37.00	Soil/Solid	Solid	ME-MS41	0.13	0.05	ppm		11-Nov-2020	12:30		05-Jan-2021		✓	✓
gold	VA20C2029-003	Bru 121-1_36.57 to 37.00	Soil/Solid	Solid	ME-MS41	<0.02	0.02	ppm		11-Nov-2020	12:30		05-Jan-2021		✓	✓
hafnium	VA20C2029-003	Bru 121-1_36.57 to 37.00	Soil/Solid	Solid	ME-MS41	0.08	0.02	ppm		11-Nov-2020	12:30		05-Jan-2021		✓	✓
indium	VA20C2029-003	Bru 121-1_36.57 to 37.00	Soil/Solid	Solid	ME-MS41	0.016	0.005	ppm		11-Nov-2020	12:30		05-Jan-2021		✓	✓
iron	VA20C2029-003	Bru 121-1_36.57 to 37.00	Soil/Solid	Solid	ME-MS41	1.59	0.01	%		11-Nov-2020	12:30		05-Jan-2021		✓	✓
lanthanum	VA20C2029-003	Bru 121-1_36.57 to 37.00	Soil/Solid	Solid	ME-MS41	18.7	0.2	ppm		11-Nov-2020	12:30		05-Jan-2021		✓	✓
lead	VA20C2029-003	Bru 121-1_36.57 to 37.00	Soil/Solid	Solid	ME-MS41	13.1	0.2	ppm		11-Nov-2020	12:30		05-Jan-2021		✓	✓
lithium	VA20C2029-003	Bru 121-1_36.57 to 37.00	Soil/Solid	Solid	ME-MS41	17.6	0.1	ppm		11-Nov-2020	12:30		05-Jan-2021		✓	✓
magnesium	VA20C2029-003	Bru 121-1_36.57 to 37.00	Soil/Solid	Solid	ME-MS41	0.39	0.01	%		11-Nov-2020	12:30		05-Jan-2021		✓	✓
manganese	VA20C2029-003	Bru 121-1_36.57 to 37.00	Soil/Solid	Solid	ME-MS41	101	5	ppm		11-Nov-2020	12:30		05-Jan-2021		✓	✓
mercury	VA20C2029-003	Bru 121-1_36.57 to 37.00	Soil/Solid	Solid	ME-MS41	0.25	0.01	ppm		11-Nov-2020	12:30		05-Jan-2021		✓	✓
molybdenum	VA20C2029-003	Bru 121-1_36.57 to 37.00	Soil/Solid	Solid	ME-MS41	0.22	0.05	ppm		11-Nov-2020	12:30		05-Jan-2021		✓	✓
nickel	VA20C2029-003	Bru 121-1_36.57 to 37.00	Soil/Solid	Solid	ME-MS41	38.0	0.2	ppm		11-Nov-2020	12:30		05-Jan-2021		✓	✓
niobium	VA20C2029-003	Bru 121-1_36.57 to 37.00	Soil/Solid	Solid	ME-MS41	<0.05	0.05	ppm		11-Nov-2020	12:30		05-Jan-2021		✓	✓
phosphorus	VA20C2029-003	Bru 121-1_36.57 to 37.00	Soil/Solid	Solid	ME-MS41	2180	10	ppm		11-Nov-2020	12:30		05-Jan-2021		✓	✓
potassium	VA20C2029-003	Bru 121-1_36.57 to 37.00	Soil/Solid	Solid	ME-MS41	0.88	0.01	%		11-Nov-2020	12:30		05-Jan-2021		✓	✓
rhenium	VA20C2029-003	Bru 121-1_36.57 to 37.00	Soil/Solid	Solid	ME-MS41	0.013	0.001	ppm		11-Nov-2020	12:30		05-Jan-2021		✓	✓
rubidium	VA20C2029-003	Bru 121-1_36.57 to 37.00	Soil/Solid	Solid	ME-MS41	36.8	0.1	ppm		11-Nov-2020	12:30		05-Jan-2021		✓	✓
scandium	VA20C2029-003	Bru 121-1_36.57 to 37.00	Soil/Solid	Solid	ME-MS41	4.2	0.1	ppm		11-Nov-2020	12:30		05-Jan-2021		✓	✓
selenium	VA20C2029-003	Bru 121-1_36.57 to 37.00	Soil/Solid	Solid	ME-MS41	13.1	0.2	ppm		11-Nov-2020	12:30		05-Jan-2021		✓	✓
silver	VA20C2029-003	Bru 121-1_36.57 to 37.00	Soil/Solid	Solid	ME-MS41	0.40	0.01	ppm		11-Nov-2020	12:30		05-Jan-2021		✓	✓
sodium	VA20C2029-003	Bru 121-1_36.57 to 37.00	Soil/Solid	Solid	ME-MS41	0.03	0.01	%		11-Nov-2020	12:30		05-Jan-2021		✓	✓
strontium	VA20C2029-003	Bru 121-1_36.57 to 37.00	Soil/Solid	Solid	ME-MS41	91.7	0.2	ppm		11-Nov-2020	12:30		05-Jan-2021		✓	✓
sulfur	VA20C2029-003	Bru 121

Analyte	ALS Sample ID	Client Sample ID	Matrix	Sub-Matrix	Method	Results	Detection Limit	Units	Qual	Date Sampled	Time Sampled	Prep Date	Analysis Date	QC Lot	QC Eval	Hold Time Eval
tungsten	VA20C2029-003	Bru 121-1_36.57 to 37.00	Soil/Solid	Solid	ME-MS41	0.20	0.05	ppm		11-Nov-2020	12:30		05-Jan-2021		✓	✓
uranium	VA20C2029-003	Bru 121-1_36.57 to 37.00	Soil/Solid	Solid	ME-MS41	30.0	0.05	ppm		11-Nov-2020	12:30		05-Jan-2021		✓	✓
vanadium	VA20C2029-003	Bru 121-1_36.57 to 37.00	Soil/Solid	Solid	ME-MS41	17	1	ppm		11-Nov-2020	12:30		05-Jan-2021		✓	✓
yttrium	VA20C2029-003	Bru 121-1_36.57 to 37.00	Soil/Solid	Solid	ME-MS41	19.95	0.05	ppm		11-Nov-2020	12:30		05-Jan-2021		✓	✓
zinc	VA20C2029-003	Bru 121-1_36.57 to 37.00	Soil/Solid	Solid	ME-MS41	28	2	ppm		11-Nov-2020	12:30		05-Jan-2021		✓	✓
zirconium	VA20C2029-003	Bru 121-1_36.57 to 37.00	Soil/Solid	Solid	ME-MS41	5.1	0.5	ppm		11-Nov-2020	12:30		05-Jan-2021		✓	✓
Leachable Metals (Matrix: Soil/Solid)																
aluminum, leachable	VA20C2029-003	Bru 121-1_36.57 to 37.00	Soil/Solid	Solid	E446	<0.0050	0.0050	mg/L		11-Nov-2020	12:30	17-Dec-2020	20-Dec-2020	132217	✓	✓
antimony, leachable	VA20C2029-003	Bru 121-1_36.57 to 37.00	Soil/Solid	Solid	E446	0.00012	0.00010	mg/L		11-Nov-2020	12:30	17-Dec-2020	20-Dec-2020	132217	✓	✓
arsenic, leachable	VA20C2029-003	Bru 121-1_36.57 to 37.00	Soil/Solid	Solid	E446	0.0307	0.0010	mg/L		11-Nov-2020	12:30	17-Dec-2020	20-Dec-2020	132217	✓	✓
barium, leachable	VA20C2029-003	Bru 121-1_36.57 to 37.00	Soil/Solid	Solid	E446	0.0937	0.0010	mg/L		11-Nov-2020	12:30	17-Dec-2020	20-Dec-2020	132217	✓	✓
beryllium, leachable	VA20C2029-003	Bru 121-1_36.57 to 37.00	Soil/Solid	Solid	E446	<0.00050	0.00050	mg/L		11-Nov-2020	12:30	17-Dec-2020	20-Dec-2020	132217	✓	✓
bismuth, leachable	VA20C2029-003	Bru 121-1_36.57 to 37.00	Soil/Solid	Solid	E446	<0.00050	0.00050	mg/L		11-Nov-2020	12:30	17-Dec-2020	20-Dec-2020	132217	✓	✓
boron, leachable	VA20C2029-003	Bru 121-1_36.57 to 37.00	Soil/Solid	Solid	E446	0.415	0.010	mg/L		11-Nov-2020	12:30	17-Dec-2020	20-Dec-2020	132217	✓	✓
cadmium, leachable	VA20C2029-003	Bru 121-1_36.57 to 37.00	Soil/Solid	Solid	E446	<0.000050	0.000050	mg/L		11-Nov-2020	12:30	17-Dec-2020	20-Dec-2020	132217	✓	✓
calcium, leachable	VA20C2029-003	Bru 121-1_36.57 to 37.00	Soil/Solid	Solid	E446	77.4	0.10	mg/L		11-Nov-2020	12:30	17-Dec-2020	20-Dec-2020	132217	✓	✓
chromium, leachable	VA20C2029-003	Bru 121-1_36.57 to 37.00	Soil/Solid	Solid	E446	<0.00050	0.00050	mg/L		11-Nov-2020	12:30	17-Dec-2020	20-Dec-2020	132217	✓	✓
cobalt, leachable	VA20C2029-003	Bru 121-1_36.57 to 37.00	Soil/Solid	Solid	E446	0.00153	0.00010	mg/L		11-Nov-2020	12:30	17-Dec-2020	20-Dec-2020	132217	✓	✓
copper, leachable	VA20C2029-003	Bru 121-1_36.57 to 37.00	Soil/Solid	Solid	E446	<0.0010	0.0010	mg/L		11-Nov-2020	12:30	17-Dec-2020	20-Dec-2020	132217	✓	✓
iron, leachable	VA20C2029-003	Bru 121-1_36.57 to 37.00	Soil/Solid	Solid	E446	<0.030	0.030	mg/L		11-Nov-2020	12:30	17-Dec-2020	20-Dec-2020	132217	✓	✓
lead, leachable	VA20C2029-003	Bru 121-1_36.57 to 37.00	Soil/Solid	Solid	E446	<0.00010	0.00010	mg/L		11-Nov-2020	12:30	17-Dec-2020	20-Dec-2020	132217	✓	✓
lithium, leachable	VA20C2029-003	Bru 121-1_36.57 to 37.00	Soil/Solid	Solid	E446	0.0821	0.0050	mg/L		11-Nov-2020	12:30	17-Dec-2020	20-Dec-2020	132217	✓	✓
magnesium, leachable	VA20C2029-003	Bru 121-1_36.57 to 37.00	Soil/Solid	Solid	E446	24.0	0.050	mg/L		11-Nov-2020	12:30	17-Dec-2020	20-Dec-2020	132217	✓	✓
manganese, leachable	VA20C2029-003	Bru 121-1_36.57 to 37.00	Soil/Solid	Solid	E446	0.00149	0.00050	mg/L		11-Nov-2020	12:30	17-Dec-2020	20-Dec-2020	132217	✓	✓
molybdenum, leachable	VA20C2029-003	Bru 121-1_36.57 to 37.00	Soil/Solid	Solid	E446	0.00623	0.00010	mg/L		11-Nov-2020	12:30	17-Dec-2020	20-Dec-2020	132217	✓	✓
nickel, leachable	VA20C2029-003	Bru 121-1_36.57 to 37.00	Soil/Solid	Solid	E446	0.0101	0.00050	mg/L		11-Nov-2020	12:30	17-Dec-2020	20-Dec-2020	132217	✓	✓
phosphorus, leachable	VA20C2029-003	Bru 121-1_36.57 to 37.00	Soil/Solid	Solid	E446	<0.30	0.30	mg/L		11-Nov-2020	12:30	17-Dec-2020	20-Dec-2020	132217	✓	✓
potassium, leachable	VA20C2029-003	Bru 121-1_36.57 to 37.00	Soil/Solid	Solid	E446	53.9	0.050	mg/L		11-Nov-2020	12:30	17-Dec-2020	20-Dec-2020	132217	✓	✓
selenium, leachable	VA20C2029-003	Bru 121-1_36.57 to 37.00	Soil/Solid	Solid	E446	1.64	0.00050	mg/L		11-Nov-2020	12:30	17-Dec-2020	20-Dec-2020	132217	✓	✓
silicon, leachable	VA20C2029-003	Bru 121-1_36.57 to 37.00	Soil/Solid	Solid	E446	2.26	0.050	mg/L		11-Nov-2020	12:30	17-Dec-2020	20-Dec-2020	132217	✓	✓
silver, leachable	VA20C2029-003	Bru 121-1_36.57 to 37.00	Soil/Solid	Solid	E446	0.000066	0.000050	mg/L		11-Nov-2020	12:30	17-Dec-2020	20-Dec-2020	132217	✓	✓
sodium, leachable	VA20C2029-003	Bru 121-1_36.57 to 37.00	Soil/Solid	Solid	E446	19.5	0.050	mg/L		11-Nov-2020	12:30	17-Dec-2020	20-Dec-2020	132217	✓	✓
strontium, leachable	VA20C2029-003	Bru 121-1_36.57 to 37.00	Soil/Solid	Solid	E446	0.505	0.00050	mg/L		11-Nov-2020	12:30	17-Dec-2020	20-Dec-2020	132217	✓	✓
sulfur, leachable	VA20C2029-003	Bru 121-1_36.57 to 37.00	Soil/Solid	Solid	E446	86.2	0.50	mg/L		11-Nov-2020	12:30	17-Dec-2020	20-Dec-2020	132217	✓	✓
thallium, leachable	VA20C2029-003	Bru 121-1_36.57 to 37.00	Soil/Solid	Solid	E446	0.00024	0.00010	mg/L		11-Nov-2020	12:30	17-Dec-2020	20-Dec-2020	132217	✓	✓
tin, leachable	VA20C2029-003	Bru 121-1_36.57 to 37.00	Soil/Solid	Solid	E446	<0.00050	0.00050	mg/L		11-Nov-2020	12:30	17-Dec-2020	20-Dec-2020	132217	✓	✓
titanium, leachable	VA20C2029-003	Bru 121-1_36.57 to 37.00	Soil/Solid	Solid	E446	<0.010	0.010	mg/L		11-Nov-2020	12:30	17-Dec-2020	20-Dec-2020	132217	✓	✓
uranium, leachable	VA20C2029-003	Bru 121-1_36.57 to 37.00	Soil/Solid	Solid	E446	0.117	0.000010	mg/L		11-Nov-2020	12:30	17-Dec-2020	20-Dec-2020	132217	✓	✓
vanadium, leachable	VA20C2029-003	Bru 121-1_36.57 to 37.00	Soil/Solid	Solid	E446	<0.0010	0.0010	mg/L		11-Nov-2020	12:30	17-Dec-2020	20-Dec-2020	132217	✓	✓
zinc, leachable	VA20C2029-003	Bru 121-1_36.57 to 37.00	Soil/Solid	Solid	E446	<0.010	0.010	mg/L		11-Nov-2020	12:30	17-Dec-2020	20-Dec-2020	132217	✓	✓
mercury, leachable	VA20C2029-003	Bru 121-1_36.57 to 37.00	Soil/Solid	Solid	E515	<0.000050	0.000050	mg/L		11-Nov-2020	12:30	17-Dec-2020	19-Dec-2020	132215	✓	✓
hardness (as CaCO3), dissolved	VA20C2029-003	Bru 121-1_36.57 to 37.00	Soil/Solid	Solid	E446	292	0.60	mg/L		11-Nov-2020	12:30	17-Dec-2020	20-Dec-2020	132217	✓	✓
Physical Tests (Matrix: Soil/Solid)																
moisture	VA20C2029-004	Bru 146_36.82 to 37.13	Soil/Solid	Solid	E144	<0.25	0.25	%		11-Nov-2020	00:50		17-Dec-2020	132183	✓	✓
pH	VA20C2029-004	Bru 146_36.82 to 37.13	Soil/Solid	Solid	E116	8.17	0.10	pH units		11-Nov-2020	00:50	17-Dec-2020	19-Dec-2020	132216	✓	✗
Acid Base Accounting (Matrix: Soil/Solid)																
fizz rating	VA20C2029-004	Bru 146_36.82 to 37.13	Soil/Solid	Solid	OA-VOL08m	4	1			11-Nov-2020	00:50		05-Jan-2021		✓	✓
maximum potential acidity [MPA]	VA20C2029-004	Bru 146_36.82 to 37.13	Soil/Solid	Solid	OA-VOL08m	1.3	0.3	tCaCO3/kt		11-Nov-2020	00:50		05-Jan-2021		✓	✓
net neutralization potential [NNP]	VA20C2029-004	Bru 146_36.82 to 37.13	Soil/Solid	Solid	OA-VOL08m	819	1	tCaCO3/kt		11-Nov-2020	00:50		05-Jan-2021		✓	✓
neutralization potential [NP]	VA20C2029-004	Bru 146_36.82 to 37.13	Soil/Solid	Solid	OA-VOL08m	820	1	tCaCO3/kt		11-Nov-2020	00:50		05-Jan-2021		✓	✓
neutralization potential ratio [NPR], (NP/MPA)	VA20C2029-004	Bru 146_36.82 to 37.13	Soil/Solid	Solid	OA-VOL08m	656.00	0.01			11-Nov-2020	00:50		05-Jan-2021		✓	✓
carbon dioxide	VA20C2029-004	Bru 146_36.82 to 37.13	Soil/Solid	Solid	C-GAS05	39.6	0.2	%		11-Nov-2020	00:50		05-Jan-2021		✓	✓
carbon, total [TC]	VA20C2029-004	Bru 146_36.82 to 37.13	Soil/Solid	Solid	C-IR07	10.90	0.01	%		11-Nov-2020	00:50		05-Jan-2021		✓	✓
pH (1:1 soil:water)	VA20C2029-004	Bru 146_36.82 to 37.13	Soil/Solid	Solid	OA-ELE07	8.00	0.10	pH units		11-Nov-2020	00:50		05-Jan-2021		✓	✓
sulfide (as S), total minus carbonate leach	VA20C2029-004	Bru 146_36.82 to 37.13	Soil/Solid	Solid	S-CAL06	<0.01	0.01	%		11-Nov-2020	00:50		05-Jan-2021		✓	✗
sulfur, residual	VA20C2029-004	Bru 146_36.82 to 37.13	Soil/Solid	Solid	S-IR04B	<0.01	0.01	%		11-Nov-2020	00:50		05-Jan-2021		✓	✓
sulfur, total	VA20C2029-004	Bru 146_36.82 to 37.13	Soil/Solid	Solid	S-IR08	0.04	0.01	%		11-Nov-2020	00:50		05-Jan-2021		✓	✓
weight, sample received	VA20C2029-004	Bru 146_36.82 to 37.13	Soil/Solid	Solid	WEI-21	3.18	0.02	kg		11-Nov-2020	00:50		05-Jan-2021		✓	✓
sulfate (as S), HCl leach	VA20C2029-004	Bru 146_36.82 to 37.13	Soil/Solid	Solid	S-GRA06A	<0.01	0.01	%		11-Nov-2020	00:50		05-Jan-2021		✓	✓
sulfate (as S), carbonate leach	VA20C2029-004	Bru 146_36.82 to 37.13	Soil/Solid	Solid	S-GRA06	<0.01	0.01	%		11-Nov-2020	00:50		05-Jan-2021		✓	✓
carbon, total inorganic [TIC]	VA20C2029-004	Bru 146_36.82 to 37.13	Soil/Solid	Solid	C-GAS05	10.80	0.05	%		11-Nov-2020	00:50		05-Jan-2021		✓	✓
Metals (Matrix: Soil/Solid)																
aluminum	VA20C2029-004	Bru 146_36.82 to 37.13	Soil/Solid	Solid	ME-MS41	0.16	0.01	%		11-Nov-2020	00:50		05-Jan-2021		✓	✓
antimony	VA20C2029-004	Bru 146_36.82 to 37.13	Soil/Solid	Solid	ME-MS41	<0.05	0.05	ppm		11-Nov-2020	00:50		05-Jan-2021		✓	✓
arsenic	VA20C2029-004	Bru 146_36.82 to 37.13	Soil/Solid	Solid	ME-MS41	0.8	0.1	ppm		11-Nov-2020	00:50		05-Jan-2021		✓	✓
barium	VA20C2029-004	Bru 146_36.82 to 37.13	Soil/Solid	Solid	ME-MS41	10	10	ppm		11-Nov-2020	00:50		05-Jan-2021		✓	✓
beryllium	VA20C2029-004	Bru 146_36.82 to 37.13	Soil/Solid	Solid	ME-MS41	0.18	0.05	ppm		11-Nov-2020	00:50		05-Jan-2021		✓	✓
bismuth	VA20C2029-004	Bru 146_36.82 to 37.13	Soil/Solid	Solid	ME-MS41	0.02	0.01	ppm		11-Nov-2020	00:50		05-Jan-2021		✓	✓
boron	VA20C2029-004	Bru 146_36.82 to 37.13	Soil/Solid	Solid	ME-MS41	10	10	ppm		11-Nov-2020	00:50		05-Jan-2021		✓	✓
cadmium	VA20C2029-004	Bru 146_36.82 to 37.13	Soil/Solid	Solid	ME-MS41	<0.01	0.01	ppm		11-Nov-2020	00:50		05-Jan-2021		✓	✓
calcium	VA20C2029-004	Bru 146_36.82 to 37.13	Soil/Solid	Solid	ME-MS41	>25.0	0.01	%		11-Nov-2020	00:50		05-Jan-2021		✓	✓
cerium	VA20C2029-004	Bru 146_36.82 to 37.13	Soil/Solid	Solid	ME-MS41	8.86	0.02	ppm		11-Nov-2020	00:50		05-Jan-2021		✓	✓
cesium	VA20C2029-004	Bru 146_36.82 to 37.13	Soil/Solid	Solid	ME-MS41	0.21	0.05	ppm		11-Nov-2020	00:50		05-Jan-2021		✓	✓
chromium	VA20C2029-004	Bru 146_36.82 to 37.13	Soil/Solid	Solid	ME-MS41	4	1	ppm		11-Nov-2020	00:50		05-Jan-2021		✓	✓
cobalt	VA20C2029-004	Bru 146_36.82 to 37.13	Soil/Solid	Solid	ME-MS41	1.6	0.1	ppm		11-Nov-2020	00:50		05-Jan-2021		✓	✓
copper	VA20C2029-004	Bru 146_36.82 to 37.13	Soil/Solid	Solid	ME-MS41	5.7	0.2	ppm		11-Nov-2020	00:50		05-Jan-2021		✓	✓
gallium	VA20C2029-004	Bru 146_36.82 to 37.13	Soil/Solid	Solid	ME-MS41	0.73	0.05	ppm		11-Nov-2020	00:50		05-Jan-2021		✓	✓
germanium	VA20C2029-004	Bru 146_36.82 to 37.13	Soil/Solid	Solid	ME-MS41	<0.05	0.05	ppm		11-Nov-2020	00:50		05-Jan-2021		✓	✓
gold	VA20C2029-004	Bru 146_36.82 to 37.13	Soil/Solid	Solid	ME-MS41	<0.02	0.02	ppm		11-Nov-2020	00:50		05-Jan-2021		✓	✓
hafnium	VA20C2029-004	Bru 146_36.82 to 37.13	Soil/Solid	Solid	ME-MS41	0.09	0.02	ppm		11-Nov-2020	00:50		05-Jan-2021		✓	✓
indium	VA20C2029-004	Bru 146_36.82 to 37.13	Soil/Solid	Solid	ME-MS41	0.008	0.005	ppm		11-Nov-2020	00:50		05-Jan-2021		✓	✓
iron	VA20C2029-004	Bru 146_36.82 to 37.13	Soil/Solid	Solid	ME-MS41	0.47	0.01	%		11-Nov-2020	00:50		05-Jan-2021		✓	✓
lanthanum	VA20C2029-004	Bru 146_36.82 to 37.13	Soil/Solid	Solid	ME-MS41	3.8	0.2	ppm		11-Nov-2020	00:50		05-Jan-2021		✓	✓
lead	VA20C2029-004	Bru 146_36.82 to 37.13	Soil/Solid	Solid	ME-MS41	1.3	0.2	ppm		11-Nov-2020	00:50		05-Jan-2021		✓	✓
lithium	VA20C2029-004	Bru 146_36.82 to 37.13	Soil/Solid	Solid	ME-MS41	2.5	0.1	ppm		11-Nov-2020	00:50		05-Jan-2021		✓	✓
magnesium	VA20C2029-004	Bru 146_36.82 to 37.13	Soil/Solid	Solid	ME-MS41	1.30	0.01	%		11-Nov-2020	00:50		05-Jan-2021		✓	✓
manganese	VA20C2029-004	Bru 146_36.82 to 37.13	Soil/Solid	Solid	ME-MS41	265	5	ppm		11-Nov-2020	00:50		05-Jan-2021		✓	✓
mercury	VA20C2029-004	Bru 146_36.82 to 37.13	Soil/Solid	Solid	ME-MS41	0.01	0.01	ppm		11-Nov-2020	00:50		05-Jan-2021		✓	✓
molybdenum	VA20C2029-004	Bru 146_36.82 to 37.13	Soil/Solid	Solid	ME-MS41	0.14	0.05	ppm		11-Nov-2020	00:50		05-Jan-2021		✓	✓
nickel	VA20C2029-004	Bru 146_36.82 to 37.13	Soil/Solid	Solid	ME-MS41	4.0	0.2	ppm		11-Nov-2020	00:50		05-Jan-2021		✓	✓
niobium	VA20C2029-004	Bru 146_36.82 to 37.13	Soil/Solid	Solid	ME-MS41	0.07	0.05	ppm		11-Nov-2020	00:50		05-Jan-2021		✓	✓
phosphorus	VA20C2029-004	Bru 146_36.82 to 37.13	Soil/Solid	Solid	ME-MS41	600	10	ppm		11-Nov-2020	00:50		05-Jan-2021		✓	✓
potassium	VA20C2029-004	Bru 146_36.82 to 37.13	Soil/Solid	Solid	ME-MS41	0.09	0.01	%		11-Nov-2020	00:50		05-Jan-2021		✓	✓
rhenium	VA20C2029-004	Bru 146_36.82 to 37.13	Soil/Solid	Solid	ME-MS41	0.001	0.001	ppm		11-Nov-2020	00:50		05-Jan-2021		✓	✓
rubidium	VA20C2029-004	Bru 146_36.82 to 37.13	Soil/Solid	Solid	ME-MS41	3.8	0.1	ppm		11-Nov-2020	00:50		05-Jan-2021		✓	✓
scandium	VA20C2029-004	Bru 146_36.82 to 37.13	Soil/Solid	Solid	ME-MS41	0.9	0.1	ppm		11-Nov-2020	00:50		05-Jan-2021		✓	✓
selenium	VA20C2029-004	Bru 146_36.82 to 37.13	Soil/Solid	Solid	ME-MS41	0.5	0.2	ppm		11-Nov-2020	00:50		05-Jan-2021		✓	✓
silver	VA20C2029-004	Bru 146_36.82 to 37.13	Soil/Solid	Solid	ME-MS41	0.01	0.01	ppm		11-Nov-2020	00:50		05-Jan-2021		✓	✓
sodium	VA20C2029-004	Bru 146_36.82 to 37.13	Soil/Solid	Solid	ME-MS41	0.02	0.01	%		11-Nov-2020	00:50		05-Jan-2021		✓	✓
strontium	VA20C2029-004	Bru 146_36.82 to 37.13	Soil/Solid	Solid	ME-MS41	205	0.2	ppm		11-Nov-2020	00:50		05-Jan-2021		✓	✓
sulfur	VA20C2029-004	Bru 146_36.82 to 37.13	Soil/Solid	Solid	ME-MS41	0.03	0.01	%		11-Nov-2020	00:50		05-Jan-2021		✓	✓
tantalum	VA20C2029-004	Bru 146_36.82 to 37.13	Soil/Solid	Solid	ME-MS41	<0.01	0.01	ppm		11-Nov-2020	00:50		05-Jan-2021		✓	✓
tellurium	VA20C2029-004	Bru 146_36.82 to 37.13	Soil/Solid	Solid	ME-MS41	<0.01	0.01	ppm		11-Nov-2020	00:50		05-Jan-2021		✓	✓
thallium	VA20C2029-004	Bru 146_36.82 to 37.13	Soil/Solid	Solid	ME-MS41	0.02	0.02	ppm		11-Nov-2020	00:50		05-Jan-2021		✓	✓
thorium	VA20C2029-004	Bru 146_36.82 to 37.13	Soil/Solid	Solid	ME-MS41	0.9	0.2	ppm		11-Nov-2020	00:50		05-Jan-2021		✓	✓
tin	VA20C2029-004	Bru 146_36.82 to 37.13	Soil/Solid	Solid	ME-MS41	0.2	0.2	ppm		11-Nov-2020	00:50		05-Jan-2021		✓	✓
titanium	VA20C2029-004	Bru 146_36.82 to 37.13	Soil/Solid	Solid	ME-MS41	<0.005	0.005	%		11-Nov-2020	00:50		05-Jan-2021		✓	✓
tungsten	VA20C2029-004	Bru 146_36.82 to 37.13	Soil/Solid	Solid	ME-MS41	<0.05	0.05	ppm		11-Nov-2020	00:50		05-Jan-2021		✓	✓
uranium	VA20C2029-004	Bru 146_36.82 to 37.13	Soil/Solid	Solid	ME-MS41	0.60	0.05	ppm		11-Nov-2020	00:50		05-Jan-2021		✓	✓
vanadium	VA20C2029-004	Bru 146_36.82 to 37.13	Soil/Solid	Solid	ME-MS41	6	1	ppm		11-Nov-2020	00:50		05-Jan-2021		✓	✓
yttrium	VA20C2029-004	Bru 146_36.82 to 37.13	Soil/Solid	Solid	ME-MS41	2.62	0.05	ppm		11-Nov-2020	00:50		05-Jan-2021		✓	✓
zinc	VA20C2029-004	Bru 146_36.82 to 37.13	Soil/Solid	Solid	ME-MS41	11	2	ppm		11-Nov-2020	00:50		05-Jan-2021		✓	✓
zirconium	VA20C2029-004	Bru 146_36.82 to 37.13	Soil/Solid	Solid	ME-MS41	2.2	0.5	ppm		11-Nov-2020	00:50		05-Jan-2021		✓	✓
Leachable Metals (Matrix: Soil/Solid)																
aluminum, leachable	VA20C2029-004	Bru 146_36.82 to 37.13	Soil/Solid	Solid	E446	0.179	0.0050	mg/L		11-Nov-2020	00:50	17-Dec-2020	20-Dec-2020	132217	✓	✓
antimony, leachable	VA20C2029-004	Bru 146_36.82 to 37.13	Soil/Solid	Solid	E446	0.00013	0.00010	mg/L		11-Nov-2020	00:50	17-Dec-2020	20-Dec-2020	132217	✓	✓
arsenic, leachable	VA20C2029-004	Bru 146_36.82 to 37.13	Soil/Solid	Solid	E446	<0.0010	0.0010	mg/L		11-Nov-2020	00:50	17-Dec-2020	20-Dec-2020	132217	✓	✓
barium, leachable	VA20C2029-004	Bru 146_36.82 to 37.13	Soil/Solid	Solid	E446	0.0084	0.0010	mg/L		11-Nov-2020	00:50	17-Dec-2020	20-Dec-2020	132217	✓	✓
beryllium, leachable	VA20C2029-004	Bru 146_36.82 to 37.13	Soil/Solid	Solid	E446	<0.00050	0.00050	mg/L		11-Nov-2020	00:50	17-Dec-2020	20-Dec-2020	132217	✓	✓
bismuth, leachable	VA20C2029-004	Bru 146_36.82 to 37.13	Soil/Solid	Solid	E446	<0.00050	0.00050	mg/L		11-Nov-2020	00:50	17-Dec-2020	20-Dec-2020	132217	✓	✓
boron, leachable	VA20C2029-004	Bru 146_36.82 to 37.13	Soil/Solid	Solid	E446	0.042	0.010	mg/L		11-Nov-2020	00:50	17-Dec-2020	20-Dec-2020	132217	✓	✓
cadmium, leachable	VA20C2029-004	Bru 146_36.82 to 37.13	Soil/Solid	Solid	E446	<0.000050	0.000050	mg/L		11-Nov-2020	00:50	17-Dec-2020	20-Dec-2020	132217	✓	✓
calcium, leachable	VA20C2029-004	Bru 146_36.82 to 37.13	Soil/Solid	Solid	E446	16.2	0.10	mg/L		11-Nov-2020	00:50	17-Dec-2020	20-Dec-2020	132217	✓	✓
chromium, leachable	VA20C2029-004	Bru 146_36.82 to 37.13	Soil/Solid	Solid	E446	<0.00050	0.00050	mg/L		11-Nov-2020	00:50	17-Dec-2020	20-Dec-2020	132217	✓	✓
cobalt, leachable	VA20C2029-004	Bru 146_36.82 to 37.13	Soil/Solid	Solid	E446	<0.00010	0.00010	mg/L		11-Nov-2020	00:50	17-Dec-2020	20-Dec-2020	132217	✓	✓
copper, leachable	VA20C2029-004	Bru 146_36.82 to 37.13	Soil/Solid	Solid	E446	<0.0010	0.0010	mg/L		11-Nov-2020	00:50	17-Dec-2020	20-Dec-2020	132217	✓	✓
iron, leachable	VA20C2029-004	Bru 146_36.82 to 37.13	Soil/Solid	Solid	E446	<0.030	0.030	mg/L		11-Nov-2020	00:50	17-Dec-2020	20-Dec-2020	132217	✓	✓
lead, leachable	VA20C2029-004	Bru 146_36.82 to 37.13	Soil/Solid	Solid	E446	<0.00010	0.00010	mg/L		11-Nov-2020	00:50	17-Dec-2020	20-Dec-2020	132217	✓	✓
lithium, leachable	VA20C2029-004	Bru 146_36.82 to 37.13	Soil/Solid	Solid	E446	0.0050	0.0050	mg/L		11-Nov-2020	00:50	17-Dec-2020	20-Dec-2020	132217	✓	✓
magnesium, leachable	VA20C2029-004	Bru 146_36.82 to 37.13	Soil/Solid	Solid	E446	5.55	0.050	mg/L		11-Nov-2020	00:50	17-Dec-2020	20-Dec-2020	132217	✓	✓
manganese, leachable	VA20C2029-004	Bru 146_36.82 to 37.13	Soil/Solid	Solid	E446	<0.00050	0.00050	mg/L		11-Nov-2020	00:50	17-Dec-2020	20-Dec-2020	132217	✓	✓
molybdenum, leachable	VA20C2029-004	Bru 146_36.82 to 37.13	Soil/Solid	Solid	E446	0.00092	0.00010	mg/L		11-Nov-2020	00:50	17-Dec-2020	20-Dec-2020	132217	✓	✓
nickel, leachable	VA20C2029-004	Bru 146_36.82 to 37.13	Soil/Solid	Solid	E446	0.00059	0.00050	mg/L		11-Nov-2020	00:50	17-Dec-2020	20-Dec-2020	132217	✓	✓
phosphorus, leachable	VA20C2029-004	Bru 146_36.82 to 37.13	Soil/Solid	Solid	E446	<0.30	0.30	mg/L		11-Nov-2020	00:50	17-Dec-2020	20-Dec-2020	132217	✓	✓
potassium, leachable	VA20C2029-004	Bru 146_36.82 to 37.13	Soil/Solid	Solid	E446	6.32	0.050	mg/L		11-Nov-2020	00:50	17-Dec-2020	20-Dec-2020	132217	✓	✓
selenium, leachable	VA20C2029-004	Bru 146_36.82 to 37.13	Soil/Solid	Solid	E446	0.00997	0.00050	mg/L		11-Nov-2020	00:50	17-Dec-2020	20-Dec-2020	132217	✓	✓
silicon, leachable	VA20C2029-004	Bru 146_36.82 to 37.13	Soil/Solid	Solid	E446	1.79	0.050	mg/L		11-Nov-2020	00:50	17-Dec-2020	20-Dec-2020	132217	✓	✓

Analyte	ALS Sample ID	Client Sample ID	Matrix	Sub-Matrix	Method	Results	Detection Limit	Units	Qual	Date Sampled	Time Sampled	Prep Date	Analysis Date	QC Lot	QC Eval	Hold Time Eval
uranium, leachable	VA20C2029-004	Bru 146_36.82 to 37.13	Soil/Solid	Solid	E446	0.000931	0.000010	mg/L		11-Nov-2020	00:50	17-Dec-2020	20-Dec-2020	132217	✓	✓
vanadium, leachable	VA20C2029-004	Bru 146_36.82 to 37.13	Soil/Solid	Solid	E446	0.0042	0.0010	mg/L		11-Nov-2020	00:50	17-Dec-2020	20-Dec-2020	132217	✓	✓
zinc, leachable	VA20C2029-004	Bru 146_36.82 to 37.13	Soil/Solid	Solid	E446	<0.010	0.010	mg/L		11-Nov-2020	00:50	17-Dec-2020	20-Dec-2020	132217	✓	✓
mercury, leachable	VA20C2029-004	Bru 146_36.82 to 37.13	Soil/Solid	Solid	ES15	<0.000050	0.000050	mg/L		11-Nov-2020	00:50	17-Dec-2020	19-Dec-2020	132215	✓	*
hardness (as CaCO3), dissolved	VA20C2029-004	Bru 146_36.82 to 37.13	Soil/Solid	Solid	E446	63.3	0.60	mg/L		11-Nov-2020	00:50	17-Dec-2020	20-Dec-2020	132217	✓	✓
Physical Tests (Matrix: Soil/Solid)																
moisture	VA20C2029-005	Bru 146_49-86 to 50.29	Soil/Solid	Solid	E144	1.02	0.25	%		11-Nov-2020	12:50		17-Dec-2020	132183	✓	✓
pH	VA20C2029-005	Bru 146_49-86 to 50.29	Soil/Solid	Solid	E116	8.18	0.10	pH units		11-Nov-2020	12:50	17-Dec-2020	19-Dec-2020	132216	✓	*
Acid Base Accounting (Matrix: Soil/Solid)																
fizz rating	VA20C2029-005	Bru 146_49-86 to 50.29	Soil/Solid	Solid	OA-VOL08m	1	1			11-Nov-2020	12:50		05-Jan-2021		✓	✓
maximum potential acidity [MPA]	VA20C2029-005	Bru 146_49-86 to 50.29	Soil/Solid	Solid	OA-VOL08m	2.2	0.3	tCaCO3/kt		11-Nov-2020	12:50		05-Jan-2021		✓	✓
net neutralization potential [NNP]	VA20C2029-005	Bru 146_49-86 to 50.29	Soil/Solid	Solid	OA-VOL08m	3	1	tCaCO3/kt		11-Nov-2020	12:50		05-Jan-2021		✓	✓
neutralization potential [NP]	VA20C2029-005	Bru 146_49-86 to 50.29	Soil/Solid	Solid	OA-VOL08m	5	1	tCaCO3/kt		11-Nov-2020	12:50		05-Jan-2021		✓	✓
neutralization potential ratio [NPR], (NP/MPA)	VA20C2029-005	Bru 146_49-86 to 50.29	Soil/Solid	Solid	OA-VOL08m	2.29	0.01			11-Nov-2020	12:50		05-Jan-2021		✓	✓
carbon dioxide	VA20C2029-005	Bru 146_49-86 to 50.29	Soil/Solid	Solid	C-GAS05	0.2	0.2	%		11-Nov-2020	12:50		05-Jan-2021		✓	✓
carbon, total [TC]	VA20C2029-005	Bru 146_49-86 to 50.29	Soil/Solid	Solid	C-IR07	0.05	0.01	%		11-Nov-2020	12:50		05-Jan-2021		✓	✓
pH (1:1 soil:water)	VA20C2029-005	Bru 146_49-86 to 50.29	Soil/Solid	Solid	OA-ELE07	7.80	0.10	pH units		11-Nov-2020	12:50		05-Jan-2021		✓	✓
sulfide (as S), total minus carbonate leach	VA20C2029-005	Bru 146_49-86 to 50.29	Soil/Solid	Solid	S-CAL06	<0.01	0.01	%		11-Nov-2020	12:50		05-Jan-2021		✓	*
sulfur, residual	VA20C2029-005	Bru 146_49-86 to 50.29	Soil/Solid	Solid	S-IR04B	<0.01	0.01	%		11-Nov-2020	12:50		05-Jan-2021		✓	✓
sulfur, total	VA20C2029-005	Bru 146_49-86 to 50.29	Soil/Solid	Solid	S-IR08	0.07	0.01	%		11-Nov-2020	12:50		05-Jan-2021		✓	✓
weight, sample received	VA20C2029-005	Bru 146_49-86 to 50.29	Soil/Solid	Solid	WEI-21	2.24	0.02	kg		11-Nov-2020	12:50		05-Jan-2021		✓	✓
sulfate (as S), HCl leach	VA20C2029-005	Bru 146_49-86 to 50.29	Soil/Solid	Solid	S-GRA06A	<0.01	0.01	%		11-Nov-2020	12:50		05-Jan-2021		✓	✓
sulfate (as S), carbonate leach	VA20C2029-005	Bru 146_49-86 to 50.29	Soil/Solid	Solid	S-GRA06	0.01	0.01	%		11-Nov-2020	12:50		05-Jan-2021		✓	✓
carbon, total inorganic [TIC]	VA20C2029-005	Bru 146_49-86 to 50.29	Soil/Solid	Solid	C-GAS05	0.05	0.05	%		11-Nov-2020	12:50		05-Jan-2021		✓	✓
Metals (Matrix: Soil/Solid)																
aluminum	VA20C2029-005	Bru 146_49-86 to 50.29	Soil/Solid	Solid	ME-MS41	1.70	0.01	%		11-Nov-2020	12:50		05-Jan-2021		✓	✓
antimony	VA20C2029-005	Bru 146_49-86 to 50.29	Soil/Solid	Solid	ME-MS41	<0.05	0.05	ppm		11-Nov-2020	12:50		05-Jan-2021		✓	✓
arsenic	VA20C2029-005	Bru 146_49-86 to 50.29	Soil/Solid	Solid	ME-MS41	13.3	0.1	ppm		11-Nov-2020	12:50		05-Jan-2021		✓	✓
barium	VA20C2029-005	Bru 146_49-86 to 50.29	Soil/Solid	Solid	ME-MS41	40	10	ppm		11-Nov-2020	12:50		05-Jan-2021		✓	✓
beryllium	VA20C2029-005	Bru 146_49-86 to 50.29	Soil/Solid	Solid	ME-MS41	1.26	0.05	ppm		11-Nov-2020	12:50		05-Jan-2021		✓	✓
bismuth	VA20C2029-005	Bru 146_49-86 to 50.29	Soil/Solid	Solid	ME-MS41	0.10	0.01	ppm		11-Nov-2020	12:50		05-Jan-2021		✓	✓
boron	VA20C2029-005	Bru 146_49-86 to 50.29	Soil/Solid	Solid	ME-MS41	70	10	ppm		11-Nov-2020	12:50		05-Jan-2021		✓	✓
cadmium	VA20C2029-005	Bru 146_49-86 to 50.29	Soil/Solid	Solid	ME-MS41	<0.01	0.01	ppm		11-Nov-2020	12:50		05-Jan-2021		✓	✓
calcium	VA20C2029-005	Bru 146_49-86 to 50.29	Soil/Solid	Solid	ME-MS41	0.43	0.01	%		11-Nov-2020	12:50		05-Jan-2021		✓	✓
cerium	VA20C2029-005	Bru 146_49-86 to 50.29	Soil/Solid	Solid	ME-MS41	28.7	0.02	ppm		11-Nov-2020	12:50		05-Jan-2021		✓	✓
cesium	VA20C2029-005	Bru 146_49-86 to 50.29	Soil/Solid	Solid	ME-MS41	1.04	0.05	ppm		11-Nov-2020	12:50		05-Jan-2021		✓	✓
chromium	VA20C2029-005	Bru 146_49-86 to 50.29	Soil/Solid	Solid	ME-MS41	42	1	ppm		11-Nov-2020	12:50		05-Jan-2021		✓	✓
cobalt	VA20C2029-005	Bru 146_49-86 to 50.29	Soil/Solid	Solid	ME-MS41	22.0	0.1	ppm		11-Nov-2020	12:50		05-Jan-2021		✓	✓
copper	VA20C2029-005	Bru 146_49-86 to 50.29	Soil/Solid	Solid	ME-MS41	24.9	0.2	ppm		11-Nov-2020	12:50		05-Jan-2021		✓	✓
gallium	VA20C2029-005	Bru 146_49-86 to 50.29	Soil/Solid	Solid	ME-MS41	7.80	0.05	ppm		11-Nov-2020	12:50		05-Jan-2021		✓	✓
germanium	VA20C2029-005	Bru 146_49-86 to 50.29	Soil/Solid	Solid	ME-MS41	0.05	0.05	ppm		11-Nov-2020	12:50		05-Jan-2021		✓	✓
gold	VA20C2029-005	Bru 146_49-86 to 50.29	Soil/Solid	Solid	ME-MS41	<0.02	0.02	ppm		11-Nov-2020	12:50		05-Jan-2021		✓	✓
hafnium	VA20C2029-005	Bru 146_49-86 to 50.29	Soil/Solid	Solid	ME-MS41	0.26	0.02	ppm		11-Nov-2020	12:50		05-Jan-2021		✓	✓
indium	VA20C2029-005	Bru 146_49-86 to 50.29	Soil/Solid	Solid	ME-MS41	0.020	0.005	ppm		11-Nov-2020	12:50		05-Jan-2021		✓	✓
iron	VA20C2029-005	Bru 146_49-86 to 50.29	Soil/Solid	Solid	ME-MS41	2.23	0.01	%		11-Nov-2020	12:50		05-Jan-2021		✓	✓
lanthanum	VA20C2029-005	Bru 146_49-86 to 50.29	Soil/Solid	Solid	ME-MS41	12.6	0.2	ppm		11-Nov-2020	12:50		05-Jan-2021		✓	✓
lead	VA20C2029-005	Bru 146_49-86 to 50.29	Soil/Solid	Solid	ME-MS41	7.4	0.2	ppm		11-Nov-2020	12:50		05-Jan-2021		✓	✓
lithium	VA20C2029-005	Bru 146_49-86 to 50.29	Soil/Solid	Solid	ME-MS41	25.7	0.1	ppm		11-Nov-2020	12:50		05-Jan-2021		✓	✓
magnesium	VA20C2029-005	Bru 146_49-86 to 50.29	Soil/Solid	Solid	ME-MS41	0.45	0.01	%		11-Nov-2020	12:50		05-Jan-2021		✓	✓
manganese	VA20C2029-005	Bru 146_49-86 to 50.29	Soil/Solid	Solid	ME-MS41	64	5	ppm		11-Nov-2020	12:50		05-Jan-2021		✓	✓
mercury	VA20C2029-005	Bru 146_49-86 to 50.29	Soil/Solid	Solid	ME-MS41	0.05	0.01	ppm		11-Nov-2020	12:50		05-Jan-2021		✓	✓
molybdenum	VA20C2029-005	Bru 146_49-86 to 50.29	Soil/Solid	Solid	ME-MS41	0.41	0.05	ppm		11-Nov-2020	12:50		05-Jan-2021		✓	✓
nickel	VA20C2029-005	Bru 146_49-86 to 50.29	Soil/Solid	Solid	ME-MS41	52.6	0.2	ppm		11-Nov-2020	12:50		05-Jan-2021		✓	✓
niobium	VA20C2029-005	Bru 146_49-86 to 50.29	Soil/Solid	Solid	ME-MS41	<0.05	0.05	ppm		11-Nov-2020	12:50		05-Jan-2021		✓	✓
phosphorus	VA20C2029-005	Bru 146_49-86 to 50.29	Soil/Solid	Solid	ME-MS41	490	10	ppm		11-Nov-2020	12:50		05-Jan-2021		✓	✓
potassium	VA20C2029-005	Bru 146_49-86 to 50.29	Soil/Solid	Solid	ME-MS41	0.95	0.01	%		11-Nov-2020	12:50		05-Jan-2021		✓	✓
rhenium	VA20C2029-005	Bru 146_49-86 to 50.29	Soil/Solid	Solid	ME-MS41	0.010	0.001	ppm		11-Nov-2020	12:50		05-Jan-2021		✓	✓
rubidium	VA20C2029-005	Bru 146_49-86 to 50.29	Soil/Solid	Solid	ME-MS41	41.2	0.1	ppm		11-Nov-2020	12:50		05-Jan-2021		✓	✓
scandium	VA20C2029-005	Bru 146_49-86 to 50.29	Soil/Solid	Solid	ME-MS41	3.4	0.1	ppm		11-Nov-2020	12:50		05-Jan-2021		✓	✓
selenium	VA20C2029-005	Bru 146_49-86 to 50.29	Soil/Solid	Solid	ME-MS41	<0.2	0.2	ppm		11-Nov-2020	12:50		05-Jan-2021		✓	✓
silver	VA20C2029-005	Bru 146_49-86 to 50.29	Soil/Solid	Solid	ME-MS41	0.10	0.01	ppm		11-Nov-2020	12:50		05-Jan-2021		✓	✓
sodium	VA20C2029-005	Bru 146_49-86 to 50.29	Soil/Solid	Solid	ME-MS41	0.02	0.01	%		11-Nov-2020	12:50		05-Jan-2021		✓	✓
strontium	VA20C2029-005	Bru 146_49-86 to 50.29	Soil/Solid	Solid	ME-MS41	141.5	0.2	ppm		11-Nov-2020	12:50		05-Jan-2021		✓	✓
sulfur	VA20C2029-005	Bru 146_49-86 to 50.29	Soil/Solid	Solid	ME-MS41	0.07	0.01	%		11-Nov-2020	12:50		05-Jan-2021		✓	✓
tantalum	VA20C2029-005	Bru 146_49-86 to 50.29	Soil/Solid	Solid	ME-MS41	<0.01	0.01	ppm		11-Nov-2020	12:50		05-Jan-2021		✓	✓
tellurium	VA20C2029-005	Bru 146_49-86 to 50.29	Soil/Solid	Solid	ME-MS41	0.01	0.01	ppm		11-Nov-2020	12:50		05-Jan-2021		✓	✓
thallium	VA20C2029-005	Bru 146_49-86 to 50.29	Soil/Solid	Solid	ME-MS41	0.29	0.02	ppm		11-Nov-2020	12:50		05-Jan-2021		✓	✓
thorium	VA20C2029-005	Bru 146_49-86 to 50.29	Soil/Solid	Solid	ME-MS41	11.5	0.2	ppm		11-Nov-2020	12:50		05-Jan-2021		✓	✓
tin	VA20C2029-005	Bru 146_49-86 to 50.29	Soil/Solid	Solid	ME-MS41	0.5	0.2	ppm		11-Nov-2020	12:50		05-Jan-2021		✓	✓
titanium	VA20C2029-005	Bru 146_49-86 to 50.29	Soil/Solid	Solid	ME-MS41	0.006	0.005	%		11-Nov-2020	12:50		05-Jan-2021		✓	✓
tungsten	VA20C2029-005	Bru 146_49-86 to 50.29	Soil/Solid	Solid	ME-MS41	0.07	0.05	ppm		11-Nov-2020	12:50		05-Jan-2021		✓	✓
uranium	VA20C2029-005	Bru 146_49-86 to 50.29	Soil/Solid	Solid	ME-MS41	11.65	0.05	ppm		11-Nov-2020	12:50		05-Jan-2021		✓	✓
vanadium	VA20C2029-005	Bru 146_49-86 to 50.29	Soil/Solid	Solid	ME-MS41	18	1	ppm		11-Nov-2020	12:50		05-Jan-2021		✓	✓
yttrium	VA20C2029-005	Bru 146_49-86 to 50.29	Soil/Solid	Solid	ME-MS41	4.68	0.05	ppm		11-Nov-2020	12:50		05-Jan-2021		✓	✓
zinc	VA20C2029-005	Bru 146_49-86 to 50.29	Soil/Solid	Solid	ME-MS41	34	2	ppm		11-Nov-2020	12:50		05-Jan-2021		✓	✓
zirconium	VA20C2029-005	Bru 146_49-86 to 50.29	Soil/Solid	Solid	ME-MS41	8.3	0.5	ppm		11-Nov-2020	12:50		05-Jan-2021		✓	✓
Leachable Metals (Matrix: Soil/Solid)																
aluminum, leachable	VA20C2029-005	Bru 146_49-86 to 50.29	Soil/Solid	Solid	E446	<0.0050	0.0050	mg/L		11-Nov-2020	12:50	17-Dec-2020	20-Dec-2020	132217	✓	✓
antimony, leachable	VA20C2029-005	Bru 146_49-86 to 50.29	Soil/Solid	Solid	E446	<0.00010	0.00010	mg/L		11-Nov-2020	12:50	17-Dec-2020	20-Dec-2020	132217	✓	✓
arsenic, leachable	VA20C2029-005	Bru 146_49-86 to 50.29	Soil/Solid	Solid	E446	0.0029	0.0010	mg/L		11-Nov-2020	12:50	17-Dec-2020	20-Dec-2020	132217	✓	✓
barium, leachable	VA20C2029-005	Bru 146_49-86 to 50.29	Soil/Solid	Solid	E446	0.0961	0.0010	mg/L		11-Nov-2020	12:50	17-Dec-2020	20-Dec-2020	132217	✓	✓
beryllium, leachable	VA20C2029-005	Bru 146_49-86 to 50.29	Soil/Solid	Solid	E446	<0.00050	0.00050	mg/L		11-Nov-2020	12:50	17-Dec-2020	20-Dec-2020	132217	✓	✓
bismuth, leachable	VA20C2029-005	Bru 146_49-86 to 50.29	Soil/Solid	Solid	E446	<0.00050	0.00050	mg/L		11-Nov-2020	12:50	17-Dec-2020	20-Dec-2020	132217	✓	✓
boron, leachable	VA20C2029-005	Bru 146_49-86 to 50.29	Soil/Solid	Solid	E446	0.204	0.010	mg/L		11-Nov-2020	12:50	17-Dec-2020	20-Dec-2020	132217	✓	✓
cadmium, leachable	VA20C2029-005	Bru 146_49-86 to 50.29	Soil/Solid	Solid	E446	<0.000050	0.000050	mg/L		11-Nov-2020	12:50	17-Dec-2020	20-Dec-2020	132217	✓	✓
calcium, leachable	VA20C2029-005	Bru 146_49-86 to 50.29	Soil/Solid	Solid	E446	27.2	0.10	mg/L		11-Nov-2020	12:50	17-Dec-2020	20-Dec-2020	132217	✓	✓
chromium, leachable	VA20C2029-005	Bru 146_49-86 to 50.29	Soil/Solid	Solid	E446	0.00098	0.00050	mg/L		11-Nov-2020	12:50	17-Dec-2020	20-Dec-2020	132217	✓	✓
cobalt, leachable	VA20C2029-005	Bru 146_49-86 to 50.29	Soil/Solid	Solid	E446	0.00017	0.00010	mg/L		11-Nov-2020	12:50	17-Dec-2020	20-Dec-2020	132217	✓	✓
copper, leachable	VA20C2029-005	Bru 146_49-86 to 50.29	Soil/Solid	Solid	E446	<0.0010	0.0010	mg/L		11-Nov-2020	12:50	17-Dec-2020	20-Dec-2020	132217	✓	✓
iron, leachable	VA20C2029-005	Bru 146_49-86 to 50.29	Soil/Solid	Solid	E446	<0.030	0.030	mg/L		11-Nov-2020	12:50	17-Dec-2020	20-Dec-2020	132217	✓	✓
lead, leachable	VA20C2029-005	Bru 146_49-86 to 50.29	Soil/Solid	Solid	E446	<0.00010	0.00010	mg/L		11-Nov-2020	12:50	17-Dec-2020	20-Dec-2020	132217	✓	✓
lithium, leachable	VA20C2029-005	Bru 146_49-86 to 50.29	Soil/Solid	Solid	E446	0.0496	0.0050	mg/L		11-Nov-2020	12:50	17-Dec-2020	20-Dec-2020	132217	✓	✓
magnesium, leachable	VA20C2029-005	Bru 146_49-86 to 50.29	Soil/Solid	Solid	E446	9.23	0.050	mg/L		11-Nov-2020	12:50	17-Dec-2020	20-Dec-2020	132217	✓	✓
manganese, leachable	VA20C2029-005	Bru 146_49-86 to 50.29	Soil/Solid	Solid	E446	<0.00050	0.00050	mg/L		11-Nov-2020	12:50	17-Dec-2020	20-Dec-2020	132217	✓	✓
molybdenum, leachable	VA20C2029-005	Bru 146_49-86 to 50.29	Soil/Solid	Solid	E446	0.00608	0.00010	mg/L		11-Nov-2020	12:50	17-Dec-2020	20-Dec-2020	132217	✓	✓
nickel, leachable	VA20C2029-005	Bru 146_49-86 to 50.29	Soil/Solid	Solid	E446	<0.00050	0.00050	mg/L		11-Nov-2020	12:50	17-Dec-2020	20-Dec-2020	132217	✓	✓
phosphorus, leachable	VA20C2029-005	Bru 146_49-86 to 50.29	Soil/Solid	Solid	E446	<0.30	0.30	mg/L		11-Nov-2020	12:50	17-Dec-2020	20-Dec-2020	132217	✓	✓
potassium, leachable	VA20C2029-005	Bru 146_49-86 to 50.29	Soil/Solid	Solid	E446	29.7	0.050	mg/L		11-Nov-2020	12:50	17-Dec-2020	20-Dec-2020	132217	✓	✓
selenium, leachable	VA20C2029-005	Bru 146_49-86 to 50.29	Soil/Solid	Solid	E446	0.00747	0.00050	mg/L		11-Nov-2020	12:50	17-Dec-2020	20-Dec-2020	132217	✓	✓
silicon, leachable	VA20C2029-005	Bru 146_49-86 to 50.29	Soil/Solid	Solid	E446	2.32	0.050	mg/L		11-Nov-2020	12:50	17-Dec-2020	20-Dec-2020	132217	✓	✓
silver, leachable	VA20C2029-005	Bru 146_49-86 to 50.29	Soil/Solid	Solid	E446	<0.000050	0.000050	mg/L		11-Nov-2020	12:50	17-Dec-2020	20-Dec-2020	132217	✓	✓
sodium, leachable	VA20C2029-005	Bru 146_49-86 to 50.29	Soil/Solid	Solid	E446	9.87	0.050	mg/L		11-Nov-2020	12:50	17-Dec-2020	20-Dec-2020	132217	✓	✓
strontium, leachable	VA20C2029-005	Bru 146_49-86 to 50.29	Soil/Solid	Solid	E446	0.164	0.00050	mg/L		11-Nov-2020	12:50	17-Dec-2020	20-Dec-2020	132217	✓	✓
sulfur, leachable	VA20C2029-005	Bru 146_49-86 to 50.29	Soil/Solid	Solid	E446	9.59	0.50	mg/L		11-Nov-2020	12:50	17-Dec-2020	20-Dec-2020	132217	✓	✓
thallium, leachable	VA20C2029-005	Bru 146_49-86 to 50.29	Soil/Solid	Solid	E446	<0.00010	0.00010	mg/L		11-Nov-2020	12:50	17-Dec-2020	20-Dec-2020	132217	✓	✓
tin, leachable	VA20C2029-005	Bru 146_49-86 to 50.29	Soil/Solid	Solid	E446	<0.00050	0.00050	mg/L		11-Nov-2020	12:50	17-Dec-2020	20-Dec-2020	132217	✓	✓
titanium, leachable	VA20C2029-005	Bru 146_49-86 to 50.29	Soil/Solid	Solid	E446	<0.010	0.010	mg/L		11-Nov-2020	12:50	17-Dec-2020	20-Dec-2020	132217	✓	✓
uranium, leachable	VA20C2029-005	Bru 146_49-86 to 50.29	Soil/Solid	Solid	E446	0.0137	0.000010	mg/L		11-Nov-2020	12:50	17-Dec-2020	20-Dec-2020	132217	✓	✓
vanadium, leachable	VA20C2029-005	Bru 146_49-86 to 50.29	Soil/Solid	Solid	E446	0.0016	0.0010	mg/L		11-Nov-2020	12:50	17-Dec-2020	20-Dec-2020	132217	✓	✓
zinc, leachable	VA20C2029-005	Bru 146_49-86 to 50.29	Soil/Solid	Solid	E446	<0.010	0.010	mg/L		11-Nov-2020	12:50	17-Dec-2020	20-Dec-2020	132217	✓	✓
mercury, leachable	VA20C2029-005	Bru 146_49-86 to 50.29	Soil/Solid	Solid	ES15	<0.000050	0.000050	mg/L		11-Nov-2020	12:50	17-Dec-2020	19-Dec-2020	132215	✓	*
hardness (as CaCO3), dissolved	VA20C2029-005	Bru 146_49-86 to 50.29	Soil/Solid	Solid	E446	106	0.60	mg/L		11-Nov-2020	12:50	17-Dec-2020	20-Dec-2020	132217	✓	✓
Physical Tests (Matrix: Soil/Solid)																
moisture	VA20C2029-006	Bru 95-8_40.16 to 40.65	Soil/Solid	Solid	E144	<0.25	0.25	%		18-Nov-2020	13:30		17-Dec-2020	132183	✓	✓
pH	VA20C2029-006	Bru 95-8_40.16 to 40.65	Soil/Solid	Solid	E116	8.20	0.10	pH units		18-Nov-2020	13:30	17-Dec-2020	19-Dec-2020	132216	✓	*
Acid Base Accounting (Matrix: Soil/Solid)																
fizz rating	VA20C2029-006	Bru 95-8_40.16 to 40.65	Soil/Solid	Solid	OA-VOL08m	4	1			18-Nov-2020	13:30		05-Jan-2021		✓	✓
maximum potential acidity [MPA]	VA20C2029-006	Bru 95-8_40.16 to 40.65	Soil/Solid	Solid	OA-VOL08m	1.6	0.3	tCaCO3/kt		18-Nov-2020	13:30		05-Jan-2021		✓	✓
net neutralization potential [NNP]	VA20C2029-006	Bru 95-8_40.16 to 40.65	Soil/Solid	Solid	OA-VOL08m	819	1	tCaCO3/kt		18-Nov-2020	13:30		05-Jan-2021		✓	✓
neutralization potential [NP]	VA20C2029-006	Bru 95-8_40.16 to 40.65	Soil/Solid	Solid	OA-VOL08m	821	1	tCaCO3/kt		18-Nov-2020	13:30		05-Jan-2021		✓	✓
neutralization potential ratio [NPR], (NP/MPA)	VA20C2029-006	Bru 95-8_40.16 to 40.65	Soil/Solid	Solid	OA-VOL08m	525.44	0.01			18-Nov-2020	13:30		05-Jan-2021		✓	✓
carbon dioxide	VA20C2029-006	Bru 95-8_40.16 to 40.65	Soil/Solid	Solid	C-GAS05	39.0	0.2	%		18-Nov-2020	13:30		05-Jan-2021		✓	✓
carbon, total [TC]	VA20C2029-006	Bru 95-8_40.16 to 40.65	Soil/Solid	Solid	C-IR07	10.85	0.01	%		18-Nov-2020	13:30		05-Jan-2021		✓	✓
pH (1:1 soil:water)	VA20C2029-006	Bru 95-8_40.16 to 40.65	Soil/Solid	Solid	OA-ELE07	8.30	0.10	pH units		18-Nov-2020	13:30		05-Jan-2021		✓	✓
sulfide (as S), total minus carbonate leach	VA20C2029-006	Bru 95-8_40.16 to 40.65	Soil/Solid	Solid	S-CAL06	<0.01	0.01	%		18-Nov-2020	13:30		05-Jan-2021		✓	*
sulfur, residual	VA20C2029-006	Bru 95-8_40.16 to 40.65	Soil/Solid	Solid	S-IR04B	<0.01	0.01	%		18-Nov-2020	13:30		05-Jan-2021		✓	✓
sulfur, total	VA20C2029-006	Bru 95-8_40.16 to 40.65	Soil/Solid	Solid	S-IR08	0.05	0.01	%		18-Nov-2020	13:30		05-Jan-2021		✓	✓
weight, sample received	VA20C2029-006	Bru 95-8_40.16 to 40.65	Soil/Solid	Solid	WEI-21	3.66	0.02	kg		18-Nov-2020	13:30		05-Jan-2021		✓	✓
sulfate (as S), HCl leach	VA20C2029-006	Bru 95-8_40.16 to 40.65	Soil/Solid	Solid	S-GRA06A	<0.01	0.01	%		18-Nov-2020	13:30		05-Jan-2021		✓	✓
sulfate (as S), carbonate leach	VA20C2029-006	Bru 95-8_40.16 to 40.65	Soil/Solid	Solid	S-GRA06	<0.01	0.01	%		18-Nov-2020	13:30		05-Jan-2021		✓	✓
carbon, total inorganic [TIC]	VA20C2029-006	Bru 95-8_40.16 to 40.65	Soil/Solid	Solid	C-GAS05	10.65	0.05	%		18-Nov-2020	13:30		05-Jan-2021		✓	✓
Metals (Matrix: Soil/Solid)																
aluminum	VA20C2029-006	Bru 95-8_40.16 to 40.65	Soil/Solid	Solid	ME-MS41	0.20	0.01	%		18-Nov-2020	13:30		05-Jan-2021		✓	✓
antimony	VA20C2029-006	Bru 95-8_40.16 to 40.65	Soil/Solid	Solid	ME-MS41	<0.05	0.05	ppm		18-Nov-2020	13:30		05-Jan-2021		✓	✓
arsenic	VA20C2029-006	Bru 95-8_40.16 to 40.65	Soil/Solid	Solid	ME-MS41	0.7	0.1	ppm		18-Nov-2020	13:30		05-Jan-2021		✓	✓
barium	VA20C2029-006	Bru 95-8_40.16 to 40.65	Soil/Solid	Solid	ME-MS41	10	10	ppm		18-Nov-2020	13:30		05-Jan-2021		✓	✓
beryllium	VA20C2029-006	Bru 95-8_40.16 to 40.65	Soil/Solid	Solid	ME-MS41	0.24	0.05	ppm		18-Nov-2020	13:30		05-Jan-2021		✓	✓
bismuth	VA20C2029-006	Bru 95-8_40.16 to 40.65	Soil/Solid	Solid	ME-MS41	0.02	0.01	ppm		18-Nov-2020	13:30		05-Jan-2021		✓	✓
boron	VA20C2029-006	Bru 95-8_40.16 to 40.65	Soil/Solid	Solid	ME-MS41	10	10	ppm		18-Nov-2020	13:30		05-Jan-2021		✓	✓
cadmium	VA20C2029-006	Bru 95-8_40.16 to 40.65	Soil/Solid	Solid	ME-MS41	<0.01	0.01	ppm		18-Nov-2020	13:30		05-Jan-2021		✓	✓
calcium	VA20C2029-006	Bru 95-8_40.16 to 40.

Analyte	ALS Sample ID	Client Sample ID	Matrix	Sub-Matrix	Method	Results	Detection Limit	Units	Qual	Date Sampled	Time Sampled	Prep Date	Analysis Date	QC Lot	QC Eval	Hold Time Eval
cesium	VA20C2029-006	Bru 95-8_40.16 to 40.65	Soil/Solid	Solid	ME-MS41	0.32	0.05	ppm		18-Nov-2020	13:30		05-Jan-2021		✓	✓
chromium	VA20C2029-006	Bru 95-8_40.16 to 40.65	Soil/Solid	Solid	ME-MS41	5	1	ppm		18-Nov-2020	13:30		05-Jan-2021		✓	✓
cobalt	VA20C2029-006	Bru 95-8_40.16 to 40.65	Soil/Solid	Solid	ME-MS41	1.5	0.1	ppm		18-Nov-2020	13:30		05-Jan-2021		✓	✓
copper	VA20C2029-006	Bru 95-8_40.16 to 40.65	Soil/Solid	Solid	ME-MS41	3.2	0.2	ppm		18-Nov-2020	13:30		05-Jan-2021		✓	✓
gallium	VA20C2029-006	Bru 95-8_40.16 to 40.65	Soil/Solid	Solid	ME-MS41	0.97	0.05	ppm		18-Nov-2020	13:30		05-Jan-2021		✓	✓
germanium	VA20C2029-006	Bru 95-8_40.16 to 40.65	Soil/Solid	Solid	ME-MS41	<0.05	0.05	ppm		18-Nov-2020	13:30		05-Jan-2021		✓	✓
gold	VA20C2029-006	Bru 95-8_40.16 to 40.65	Soil/Solid	Solid	ME-MS41	<0.02	0.02	ppm		18-Nov-2020	13:30		05-Jan-2021		✓	✓
hafnium	VA20C2029-006	Bru 95-8_40.16 to 40.65	Soil/Solid	Solid	ME-MS41	0.12	0.02	ppm		18-Nov-2020	13:30		05-Jan-2021		✓	✓
indium	VA20C2029-006	Bru 95-8_40.16 to 40.65	Soil/Solid	Solid	ME-MS41	0.010	0.005	ppm		18-Nov-2020	13:30		05-Jan-2021		✓	✓
iron	VA20C2029-006	Bru 95-8_40.16 to 40.65	Soil/Solid	Solid	ME-MS41	0.58	0.01	%		18-Nov-2020	13:30		05-Jan-2021		✓	✓
lanthanum	VA20C2029-006	Bru 95-8_40.16 to 40.65	Soil/Solid	Solid	ME-MS41	5.2	0.2	ppm		18-Nov-2020	13:30		05-Jan-2021		✓	✓
lead	VA20C2029-006	Bru 95-8_40.16 to 40.65	Soil/Solid	Solid	ME-MS41	1.1	0.2	ppm		18-Nov-2020	13:30		05-Jan-2021		✓	✓
lithium	VA20C2029-006	Bru 95-8_40.16 to 40.65	Soil/Solid	Solid	ME-MS41	3.5	0.1	ppm		18-Nov-2020	13:30		05-Jan-2021		✓	✓
magnesium	VA20C2029-006	Bru 95-8_40.16 to 40.65	Soil/Solid	Solid	ME-MS41	1.49	0.01	%		18-Nov-2020	13:30		05-Jan-2021		✓	✓
manganese	VA20C2029-006	Bru 95-8_40.16 to 40.65	Soil/Solid	Solid	ME-MS41	321	5	ppm		18-Nov-2020	13:30		05-Jan-2021		✓	✓
mercury	VA20C2029-006	Bru 95-8_40.16 to 40.65	Soil/Solid	Solid	ME-MS41	0.01	0.01	ppm		18-Nov-2020	13:30		05-Jan-2021		✓	✓
molybdenum	VA20C2029-006	Bru 95-8_40.16 to 40.65	Soil/Solid	Solid	ME-MS41	0.13	0.05	ppm		18-Nov-2020	13:30		05-Jan-2021		✓	✓
nickel	VA20C2029-006	Bru 95-8_40.16 to 40.65	Soil/Solid	Solid	ME-MS41	3.1	0.2	ppm		18-Nov-2020	13:30		05-Jan-2021		✓	✓
niobium	VA20C2029-006	Bru 95-8_40.16 to 40.65	Soil/Solid	Solid	ME-MS41	0.08	0.05	ppm		18-Nov-2020	13:30		05-Jan-2021		✓	✓
phosphorus	VA20C2029-006	Bru 95-8_40.16 to 40.65	Soil/Solid	Solid	ME-MS41	870	10	ppm		18-Nov-2020	13:30		05-Jan-2021		✓	✓
potassium	VA20C2029-006	Bru 95-8_40.16 to 40.65	Soil/Solid	Solid	ME-MS41	0.11	0.01	%		18-Nov-2020	13:30		05-Jan-2021		✓	✓
rhenium	VA20C2029-006	Bru 95-8_40.16 to 40.65	Soil/Solid	Solid	ME-MS41	0.001	0.001	ppm		18-Nov-2020	13:30		05-Jan-2021		✓	✓
rubidium	VA20C2029-006	Bru 95-8_40.16 to 40.65	Soil/Solid	Solid	ME-MS41	5.4	0.1	ppm		18-Nov-2020	13:30		05-Jan-2021		✓	✓
scandium	VA20C2029-006	Bru 95-8_40.16 to 40.65	Soil/Solid	Solid	ME-MS41	1.1	0.1	ppm		18-Nov-2020	13:30		05-Jan-2021		✓	✓
selenium	VA20C2029-006	Bru 95-8_40.16 to 40.65	Soil/Solid	Solid	ME-MS41	0.7	0.2	ppm		18-Nov-2020	13:30		05-Jan-2021		✓	✓
silver	VA20C2029-006	Bru 95-8_40.16 to 40.65	Soil/Solid	Solid	ME-MS41	0.01	0.01	ppm		18-Nov-2020	13:30		05-Jan-2021		✓	✓
sodium	VA20C2029-006	Bru 95-8_40.16 to 40.65	Soil/Solid	Solid	ME-MS41	0.02	0.01	%		18-Nov-2020	13:30		05-Jan-2021		✓	✓
strontium	VA20C2029-006	Bru 95-8_40.16 to 40.65	Soil/Solid	Solid	ME-MS41	205	0.2	ppm		18-Nov-2020	13:30		05-Jan-2021		✓	✓
sulfur	VA20C2029-006	Bru 95-8_40.16 to 40.65	Soil/Solid	Solid	ME-MS41	0.05	0.01	%		18-Nov-2020	13:30		05-Jan-2021		✓	✓
tantalum	VA20C2029-006	Bru 95-8_40.16 to 40.65	Soil/Solid	Solid	ME-MS41	<0.01	0.01	ppm		18-Nov-2020	13:30		05-Jan-2021		✓	✓
tellurium	VA20C2029-006	Bru 95-8_40.16 to 40.65	Soil/Solid	Solid	ME-MS41	<0.01	0.01	ppm		18-Nov-2020	13:30		05-Jan-2021		✓	✓
thallium	VA20C2029-006	Bru 95-8_40.16 to 40.65	Soil/Solid	Solid	ME-MS41	0.02	0.02	ppm		18-Nov-2020	13:30		05-Jan-2021		✓	✓
thorium	VA20C2029-006	Bru 95-8_40.16 to 40.65	Soil/Solid	Solid	ME-MS41	1.2	0.2	ppm		18-Nov-2020	13:30		05-Jan-2021		✓	✓
tin	VA20C2029-006	Bru 95-8_40.16 to 40.65	Soil/Solid	Solid	ME-MS41	<0.2	0.2	ppm		18-Nov-2020	13:30		05-Jan-2021		✓	✓
titanium	VA20C2029-006	Bru 95-8_40.16 to 40.65	Soil/Solid	Solid	ME-MS41	<0.005	0.005	%		18-Nov-2020	13:30		05-Jan-2021		✓	✓
tungsten	VA20C2029-006	Bru 95-8_40.16 to 40.65	Soil/Solid	Solid	ME-MS41	<0.05	0.05	ppm		18-Nov-2020	13:30		05-Jan-2021		✓	✓
uranium	VA20C2029-006	Bru 95-8_40.16 to 40.65	Soil/Solid	Solid	ME-MS41	0.73	0.05	ppm		18-Nov-2020	13:30		05-Jan-2021		✓	✓
vanadium	VA20C2029-006	Bru 95-8_40.16 to 40.65	Soil/Solid	Solid	ME-MS41	8	1	ppm		18-Nov-2020	13:30		05-Jan-2021		✓	✓
yttrium	VA20C2029-006	Bru 95-8_40.16 to 40.65	Soil/Solid	Solid	ME-MS41	3.16	0.05	ppm		18-Nov-2020	13:30		05-Jan-2021		✓	✓
zinc	VA20C2029-006	Bru 95-8_40.16 to 40.65	Soil/Solid	Solid	ME-MS41	6	2	ppm		18-Nov-2020	13:30		05-Jan-2021		✓	✓
zirconium	VA20C2029-006	Bru 95-8_40.16 to 40.65	Soil/Solid	Solid	ME-MS41	2.8	0.5	ppm		18-Nov-2020	13:30		05-Jan-2021		✓	✓
Leachable Metals (Matrix: Soil/Solid)																
aluminum, leachable	VA20C2029-006	Bru 95-8_40.16 to 40.65	Soil/Solid	Solid	E446	0.144	0.0050	mg/L		18-Nov-2020	13:30	17-Dec-2020	20-Dec-2020	132217	✓	✓
antimony, leachable	VA20C2029-006	Bru 95-8_40.16 to 40.65	Soil/Solid	Solid	E446	<0.00010	0.00010	mg/L		18-Nov-2020	13:30	17-Dec-2020	20-Dec-2020	132217	✓	✓
arsenic, leachable	VA20C2029-006	Bru 95-8_40.16 to 40.65	Soil/Solid	Solid	E446	<0.0010	0.0010	mg/L		18-Nov-2020	13:30	17-Dec-2020	20-Dec-2020	132217	✓	✓
barium, leachable	VA20C2029-006	Bru 95-8_40.16 to 40.65	Soil/Solid	Solid	E446	0.0128	0.0010	mg/L		18-Nov-2020	13:30	17-Dec-2020	20-Dec-2020	132217	✓	✓
beryllium, leachable	VA20C2029-006	Bru 95-8_40.16 to 40.65	Soil/Solid	Solid	E446	<0.00050	0.00050	mg/L		18-Nov-2020	13:30	17-Dec-2020	20-Dec-2020	132217	✓	✓
bismuth, leachable	VA20C2029-006	Bru 95-8_40.16 to 40.65	Soil/Solid	Solid	E446	<0.00050	0.00050	mg/L		18-Nov-2020	13:30	17-Dec-2020	20-Dec-2020	132217	✓	✓
boron, leachable	VA20C2029-006	Bru 95-8_40.16 to 40.65	Soil/Solid	Solid	E446	0.071	0.010	mg/L		18-Nov-2020	13:30	17-Dec-2020	20-Dec-2020	132217	✓	✓
cadmium, leachable	VA20C2029-006	Bru 95-8_40.16 to 40.65	Soil/Solid	Solid	E446	<0.000050	0.000050	mg/L		18-Nov-2020	13:30	17-Dec-2020	20-Dec-2020	132217	✓	✓
calcium, leachable	VA20C2029-006	Bru 95-8_40.16 to 40.65	Soil/Solid	Solid	E446	17.7	0.10	mg/L		18-Nov-2020	13:30	17-Dec-2020	20-Dec-2020	132217	✓	✓
chromium, leachable	VA20C2029-006	Bru 95-8_40.16 to 40.65	Soil/Solid	Solid	E446	<0.00050	0.00050	mg/L		18-Nov-2020	13:30	17-Dec-2020	20-Dec-2020	132217	✓	✓
cobalt, leachable	VA20C2029-006	Bru 95-8_40.16 to 40.65	Soil/Solid	Solid	E446	<0.00010	0.00010	mg/L		18-Nov-2020	13:30	17-Dec-2020	20-Dec-2020	132217	✓	✓
copper, leachable	VA20C2029-006	Bru 95-8_40.16 to 40.65	Soil/Solid	Solid	E446	<0.0010	0.0010	mg/L		18-Nov-2020	13:30	17-Dec-2020	20-Dec-2020	132217	✓	✓
iron, leachable	VA20C2029-006	Bru 95-8_40.16 to 40.65	Soil/Solid	Solid	E446	<0.030	0.030	mg/L		18-Nov-2020	13:30	17-Dec-2020	20-Dec-2020	132217	✓	✓
lead, leachable	VA20C2029-006	Bru 95-8_40.16 to 40.65	Soil/Solid	Solid	E446	<0.00010	0.00010	mg/L		18-Nov-2020	13:30	17-Dec-2020	20-Dec-2020	132217	✓	✓
lithium, leachable	VA20C2029-006	Bru 95-8_40.16 to 40.65	Soil/Solid	Solid	E446	0.0069	0.0050	mg/L		18-Nov-2020	13:30	17-Dec-2020	20-Dec-2020	132217	✓	✓
magnesium, leachable	VA20C2029-006	Bru 95-8_40.16 to 40.65	Soil/Solid	Solid	E446	6.28	0.050	mg/L		18-Nov-2020	13:30	17-Dec-2020	20-Dec-2020	132217	✓	✓
manganese, leachable	VA20C2029-006	Bru 95-8_40.16 to 40.65	Soil/Solid	Solid	E446	0.00050	0.00050	mg/L		18-Nov-2020	13:30	17-Dec-2020	20-Dec-2020	132217	✓	✓
molybdenum, leachable	VA20C2029-006	Bru 95-8_40.16 to 40.65	Soil/Solid	Solid	E446	0.00077	0.00010	mg/L		18-Nov-2020	13:30	17-Dec-2020	20-Dec-2020	132217	✓	✓
nickel, leachable	VA20C2029-006	Bru 95-8_40.16 to 40.65	Soil/Solid	Solid	E446	<0.00050	0.00050	mg/L		18-Nov-2020	13:30	17-Dec-2020	20-Dec-2020	132217	✓	✓
phosphorus, leachable	VA20C2029-006	Bru 95-8_40.16 to 40.65	Soil/Solid	Solid	E446	<0.30	0.30	mg/L		18-Nov-2020	13:30	17-Dec-2020	20-Dec-2020	132217	✓	✓
potassium, leachable	VA20C2029-006	Bru 95-8_40.16 to 40.65	Soil/Solid	Solid	E446	8.03	0.050	mg/L		18-Nov-2020	13:30	17-Dec-2020	20-Dec-2020	132217	✓	✓
selenium, leachable	VA20C2029-006	Bru 95-8_40.16 to 40.65	Soil/Solid	Solid	E446	0.0165	0.00050	mg/L		18-Nov-2020	13:30	17-Dec-2020	20-Dec-2020	132217	✓	✓
silicon, leachable	VA20C2029-006	Bru 95-8_40.16 to 40.65	Soil/Solid	Solid	E446	2.14	0.050	mg/L		18-Nov-2020	13:30	17-Dec-2020	20-Dec-2020	132217	✓	✓
silver, leachable	VA20C2029-006	Bru 95-8_40.16 to 40.65	Soil/Solid	Solid	E446	<0.000050	0.000050	mg/L		18-Nov-2020	13:30	17-Dec-2020	20-Dec-2020	132217	✓	✓
sodium, leachable	VA20C2029-006	Bru 95-8_40.16 to 40.65	Soil/Solid	Solid	E446	2.16	0.050	mg/L		18-Nov-2020	13:30	17-Dec-2020	20-Dec-2020	132217	✓	✓
strontium, leachable	VA20C2029-006	Bru 95-8_40.16 to 40.65	Soil/Solid	Solid	E446	0.123	0.00050	mg/L		18-Nov-2020	13:30	17-Dec-2020	20-Dec-2020	132217	✓	✓
sulfur, leachable	VA20C2029-006	Bru 95-8_40.16 to 40.65	Soil/Solid	Solid	E446	13.2	0.50	mg/L		18-Nov-2020	13:30	17-Dec-2020	20-Dec-2020	132217	✓	✓
thallium, leachable	VA20C2029-006	Bru 95-8_40.16 to 40.65	Soil/Solid	Solid	E446	<0.00010	0.00010	mg/L		18-Nov-2020	13:30	17-Dec-2020	20-Dec-2020	132217	✓	✓
tin, leachable	VA20C2029-006	Bru 95-8_40.16 to 40.65	Soil/Solid	Solid	E446	<0.00050	0.00050	mg/L		18-Nov-2020	13:30	17-Dec-2020	20-Dec-2020	132217	✓	✓
titanium, leachable	VA20C2029-006	Bru 95-8_40.16 to 40.65	Soil/Solid	Solid	E446	<0.010	0.010	mg/L		18-Nov-2020	13:30	17-Dec-2020	20-Dec-2020	132217	✓	✓
uranium, leachable	VA20C2029-006	Bru 95-8_40.16 to 40.65	Soil/Solid	Solid	E446	0.000456	0.000010	mg/L		18-Nov-2020	13:30	17-Dec-2020	20-Dec-2020	132217	✓	✓
vanadium, leachable	VA20C2029-006	Bru 95-8_40.16 to 40.65	Soil/Solid	Solid	E446	0.0040	0.0010	mg/L		18-Nov-2020	13:30	17-Dec-2020	20-Dec-2020	132217	✓	✓
zinc, leachable	VA20C2029-006	Bru 95-8_40.16 to 40.65	Soil/Solid	Solid	E446	<0.010	0.010	mg/L		18-Nov-2020	13:30	17-Dec-2020	20-Dec-2020	132217	✓	✓
mercury, leachable	VA20C2029-006	Bru 95-8_40.16 to 40.65	Soil/Solid	Solid	E515	<0.000050	0.000050	mg/L		18-Nov-2020	13:30	17-Dec-2020	19-Dec-2020	132215	✓	x
hardness (as CaCO3), dissolved	VA20C2029-006	Bru 95-8_40.16 to 40.65	Soil/Solid	Solid	E446	70.0	0.60	mg/L		18-Nov-2020	13:30	17-Dec-2020	20-Dec-2020	132217	✓	✓
Physical Tests (Matrix: Soil/Solid)																
moisture	VA20C2029-007	Bru 95-8_49.39 to 49.79	Soil/Solid	Solid	E144	0.91	0.25	%		18-Nov-2020	15:00		17-Dec-2020	132183	✓	✓
pH	VA20C2029-007	Bru 95-8_49.39 to 49.79	Soil/Solid	Solid	E116	7.94	0.10	pH units		18-Nov-2020	15:00	17-Dec-2020	19-Dec-2020	132216	✓	x
Acid Base Accounting (Matrix: Soil/Solid)																
fizz rating	VA20C2029-007	Bru 95-8_49.39 to 49.79	Soil/Solid	Solid	OA-VOL08m	2	1			18-Nov-2020	15:00		05-Jan-2021		✓	✓
maximum potential acidity [MPA]	VA20C2029-007	Bru 95-8_49.39 to 49.79	Soil/Solid	Solid	OA-VOL08m	20.0	0.3	tCaCO3/kt		18-Nov-2020	15:00		05-Jan-2021		✓	✓
net neutralization potential [NNP]	VA20C2029-007	Bru 95-8_49.39 to 49.79	Soil/Solid	Solid	OA-VOL08m	5	1	tCaCO3/kt		18-Nov-2020	15:00		05-Jan-2021		✓	✓
neutralization potential [NP]	VA20C2029-007	Bru 95-8_49.39 to 49.79	Soil/Solid	Solid	OA-VOL08m	25	1	tCaCO3/kt		18-Nov-2020	15:00		05-Jan-2021		✓	✓
neutralization potential ratio [NPR], (NP/MPA)	VA20C2029-007	Bru 95-8_49.39 to 49.79	Soil/Solid	Solid	OA-VOL08m	1.25	0.01			18-Nov-2020	15:00		05-Jan-2021		✓	✓
carbon dioxide	VA20C2029-007	Bru 95-8_49.39 to 49.79	Soil/Solid	Solid	C-GAS05	1.3	0.2	%		18-Nov-2020	15:00		05-Jan-2021		✓	✓
carbon, total [TC]	VA20C2029-007	Bru 95-8_49.39 to 49.79	Soil/Solid	Solid	C-IR07	0.55	0.01	%		18-Nov-2020	15:00		05-Jan-2021		✓	✓
pH (1:1 soil:water)	VA20C2029-007	Bru 95-8_49.39 to 49.79	Soil/Solid	Solid	OA-ELE07	7.50	0.10	pH units		18-Nov-2020	15:00		05-Jan-2021		✓	✓
sulfide (as S), total minus carbonate leach	VA20C2029-007	Bru 95-8_49.39 to 49.79	Soil/Solid	Solid	S-CAL06	<0.01	0.01	%		18-Nov-2020	15:00		05-Jan-2021		✓	x
sulfur, residual	VA20C2029-007	Bru 95-8_49.39 to 49.79	Soil/Solid	Solid	S-IR04B	<0.01	0.01	%		18-Nov-2020	15:00		05-Jan-2021		✓	✓
sulfur, total	VA20C2029-007	Bru 95-8_49.39 to 49.79	Soil/Solid	Solid	S-IR08	0.64	0.01	%		18-Nov-2020	15:00		05-Jan-2021		✓	✓
weight, sample received	VA20C2029-007	Bru 95-8_49.39 to 49.79	Soil/Solid	Solid	WEI-21	2.54	0.02	kg		18-Nov-2020	15:00		05-Jan-2021		✓	✓
sulfate (as S), HCl leach	VA20C2029-007	Bru 95-8_49.39 to 49.79	Soil/Solid	Solid	S-GRA06A	<0.01	0.01	%		18-Nov-2020	15:00		05-Jan-2021		✓	✓
sulfate (as S), carbonate leach	VA20C2029-007	Bru 95-8_49.39 to 49.79	Soil/Solid	Solid	S-GRA06	0.12	0.01	%		18-Nov-2020	15:00		05-Jan-2021		✓	✓
carbon, total inorganic [TIC]	VA20C2029-007	Bru 95-8_49.39 to 49.79	Soil/Solid	Solid	C-GAS05	0.36	0.05	%		18-Nov-2020	15:00		05-Jan-2021		✓	✓
Metals (Matrix: Soil/Solid)																
aluminum	VA20C2029-007	Bru 95-8_49.39 to 49.79	Soil/Solid	Solid	ME-MS41	1.49	0.01	%		18-Nov-2020	15:00		05-Jan-2021		✓	✓
antimony	VA20C2029-007	Bru 95-8_49.39 to 49.79	Soil/Solid	Solid	ME-MS41	<0.05	0.05	ppm		18-Nov-2020	15:00		05-Jan-2021		✓	✓
arsenic	VA20C2029-007	Bru 95-8_49.39 to 49.79	Soil/Solid	Solid	ME-MS41	24.2	0.1	ppm		18-Nov-2020	15:00		05-Jan-2021		✓	✓
barium	VA20C2029-007	Bru 95-8_49.39 to 49.79	Soil/Solid	Solid	ME-MS41	30	10	ppm		18-Nov-2020	15:00		05-Jan-2021		✓	✓
beryllium	VA20C2029-007	Bru 95-8_49.39 to 49.79	Soil/Solid	Solid	ME-MS41	0.92	0.05	ppm		18-Nov-2020	15:00		05-Jan-2021		✓	✓
bismuth	VA20C2029-007	Bru 95-8_49.39 to 49.79	Soil/Solid	Solid	ME-MS41	0.12	0.01	ppm		18-Nov-2020	15:00		05-Jan-2021		✓	✓
boron	VA20C2029-007	Bru 95-8_49.39 to 49.79	Soil/Solid	Solid	ME-MS41	50	10	ppm		18-Nov-2020	15:00		05-Jan-2021		✓	✓
cadmium	VA20C2029-007	Bru 95-8_49.39 to 49.79	Soil/Solid	Solid	ME-MS41	<0.01	0.01	ppm		18-Nov-2020	15:00		05-Jan-2021		✓	✓
calcium	VA20C2029-007	Bru 95-8_49.39 to 49.79	Soil/Solid	Solid	ME-MS41	1.32	0.01	%		18-Nov-2020	15:00		05-Jan-2021		✓	✓
cerium	VA20C2029-007	Bru 95-8_49.39 to 49.79	Soil/Solid	Solid	ME-MS41	36.1	0.02	ppm		18-Nov-2020	15:00		05-Jan-2021		✓	✓
cesium	VA20C2029-007	Bru 95-8_49.39 to 49.79	Soil/Solid	Solid	ME-MS41	0.73	0.05	ppm		18-Nov-2020	15:00		05-Jan-2021		✓	✓
chromium	VA20C2029-007	Bru 95-8_49.39 to 49.79	Soil/Solid	Solid	ME-MS41	58	1	ppm		18-Nov-2020	15:00		05-Jan-2021		✓	✓
cobalt	VA20C2029-007	Bru 95-8_49.39 to 49.79	Soil/Solid	Solid	ME-MS41	20.6	0.1	ppm		18-Nov-2020	15:00		05-Jan-2021		✓	✓
copper	VA20C2029-007	Bru 95-8_49.39 to 49.79	Soil/Solid	Solid	ME-MS41	7.4	0.2	ppm		18-Nov-2020	15:00		05-Jan-2021		✓	✓
gallium	VA20C2029-007	Bru 95-8_49.39 to 49.79	Soil/Solid	Solid	ME-MS41	8.17	0.05	ppm		18-Nov-2020	15:00		05-Jan-2021		✓	✓
germanium	VA20C2029-007	Bru 95-8_49.39 to 49.79	Soil/Solid	Solid	ME-MS41	0.07	0.05	ppm		18-Nov-2020	15:00		05-Jan-2021		✓	✓
gold	VA20C2029-007	Bru 95-8_49.39 to 49.79	Soil/Solid	Solid	ME-MS41	<0.02	0.02	ppm		18-Nov-2020	15:00		05-Jan-2021		✓	✓
hafnium	VA20C2029-007	Bru 95-8_49.39 to 49.79	Soil/Solid	Solid	ME-MS41	0.34	0.02	ppm		18-Nov-2020	15:00		05-Jan-2021		✓	✓
indium	VA20C2029-007	Bru 95-8_49.39 to 49.79	Soil/Solid	Solid	ME-MS41	0.047	0.005	ppm		18-Nov-2020	15:00		05-Jan-2021		✓	✓
iron	VA20C2029-007	Bru 95-8_49.39 to 49.79	Soil/Solid	Solid	ME-MS41	5.56	0.01	%		18-Nov-2020	15:00		05-Jan-2021		✓	✓
lanthanum	VA20C2029-007	Bru 95-8_49.39 to 49.79	Soil/Solid	Solid	ME-MS41	15.0	0.2	ppm		18-Nov-2020	15:00		05-Jan-2021		✓	✓
lead	VA20C2029-007	Bru 95-8_49.39 to 49.79	Soil/Solid	Solid	ME-MS41	4.6	0.2	ppm		18-Nov-2020	15:00		05-Jan-2021		✓	✓
lithium	VA20C2029-007	Bru 95-8_49.39 to 49.79	Soil/Solid	Solid	ME-MS41	25.7	0.1	ppm		18-Nov-2020	15:00		05-Jan-2021		✓	✓
magnesium	VA20C2029-007	Bru 95-8_49.39 to 49.79	Soil/Solid	Solid	ME-MS41	0.41	0.01	%		18-Nov-2020	15:00		05-Jan-2021		✓	✓
manganese	VA20C2029-007	Bru 95-8_49.39 to 49.79	Soil/Solid	Solid	ME-MS41	206	5	ppm		18-Nov-2020	15:00		05-Jan-2021		✓	✓
mercury	VA20C2029-007	Bru 95-8_49.39 to 49.79	Soil/Solid	Solid	ME-MS41	0.03	0.01	ppm		18-Nov-2020	15:00		05-Jan-2021		✓	✓
molybdenum	VA20C2029-007	Bru 95-8_49.39 to 49.79	Soil/Solid	Solid	ME-MS41	0.54	0.05	ppm		18-Nov-2020	15:00		05-Jan-2021		✓	✓
nickel	VA20C2029-007	Bru 95-8_49.39 to 49.79	Soil/Solid	Solid	ME-MS41	25.8	0.2	ppm		18-Nov-2020	15:00		05-Jan-2021		✓	✓
niobium	VA20C2029-007	Bru 95-8_49.39 to 49.79	Soil/Solid	Solid	ME-MS41	0.21	0.05	ppm		18-Nov-2020	15:00		05-Jan-2021		✓	✓
phosphorus	VA20C2029-007	Bru 95-8_49.39 to 49.79	Soil/Solid	Solid	ME-MS41	580	10	ppm		18-Nov-2020	15:00		05-Jan-2021		✓	✓
potassium	VA20C2029-007	Bru 95-8_49.39 to 49.79	Soil/Solid	Solid	ME-MS41	0.49	0.01	%		18-Nov-2020	15:00		05-Jan-2021		✓	✓
rhenium	VA20C2029-007	Bru 95-8_49.39 to 49.79	Soil/Solid	Solid	ME-MS41	0.003	0.001	ppm		18-Nov-2020	15:00		05-Jan-2021		✓	✓
rubidium	VA20C2029-007	Bru 95-8_49.39 to 49.79	Soil/Solid	Solid	ME-MS41	22.7	0.1	ppm		18-Nov-2020	15:00		05-Jan-2021		✓	✓
scandium	VA20C2029-007	Bru 95-8_49.39 to 49.79	Soil/Solid	Solid	ME-MS41	6.1	0.1	ppm		18-Nov-2020	15:00		05-Jan-2021		✓	✓
selenium	VA20C2029-007	Bru 95-8_49.39 to 49.79	Soil/Solid	Solid	ME-MS41	0.3	0.2	ppm		18-Nov-2020	15:00		05-Jan-2021		✓	✓
silver	VA20C2029-007	Bru 95-8_49.39 to 49.79	Soil/Solid	Solid	ME-MS41	0.02	0.01	ppm		18-Nov-2020	15:00		05-Jan-2021		✓	✓
sodium	VA20C2029-007	Bru 95-8_49.39 to 49.79	Soil/Solid	Solid	ME-MS41	0.02	0.01	%		18-Nov-2020	15:00		05-Jan-2021		✓	✓
strontium	VA20C2029-007	Bru 95-8_49.39 to 49.79	Soil/Solid	Solid	ME-MS41	34.2	0.2	ppm		18-Nov-2020	15:00		05-Jan-2021		✓	✓
sulfur	VA20C2029-007	Bru 95-8_49.39 to 49.79	Soil/Solid	Solid	ME-MS41	0.69	0.01	%		18-Nov-2020	15:00		05-Jan-2021		✓	✓
tantalum	VA20C2029-007	Bru 95-8_49.39 to 49.79	Soil/Solid	Solid	ME-MS41	<0.01	0.01	ppm		18-Nov-2020	15:00		05-Jan-2021		✓	✓
tellurium	VA20C2029-007	Bru 95-8_49.39 to 49.79	Soil/Solid	Solid	ME-MS41	0.09	0.01	ppm		18-Nov-2020	15:00		05-Jan-2021		✓	✓
thallium	VA20C2029-007	Bru 95-8_49.39 to 49.

Analyte	ALS Sample ID	Client Sample ID	Matrix	Sub-Matrix	Method	Results	Detection Limit	Units	Qual	Date Sampled	Time Sampled	Prep Date	Analysis Date	QC Lot	QC Eval	Hold Time Eval
yttrium	VA20C2029-007	Bru 95-8_49.39 to 49.79	Soil/Solid	Solid	ME-MS41	8.90	0.05	ppm		18-Nov-2020	15:00		05-Jan-2021		✓	✓
zinc	VA20C2029-007	Bru 95-8_49.39 to 49.79	Soil/Solid	Solid	ME-MS41	38	2	ppm		18-Nov-2020	15:00		05-Jan-2021		✓	✓
zirconium	VA20C2029-007	Bru 95-8_49.39 to 49.79	Soil/Solid	Solid	ME-MS41	10.7	0.5	ppm		18-Nov-2020	15:00		05-Jan-2021		✓	✓
Leachable Metals (Matrix: Soil/Solid)																
aluminum, leachable	VA20C2029-007	Bru 95-8_49.39 to 49.79	Soil/Solid	Solid	E446	<0.0050	0.0050	mg/L		18-Nov-2020	15:00	17-Dec-2020	20-Dec-2020	132217	✓	✓
antimony, leachable	VA20C2029-007	Bru 95-8_49.39 to 49.79	Soil/Solid	Solid	E446	<0.00010	0.00010	mg/L		18-Nov-2020	15:00	17-Dec-2020	20-Dec-2020	132217	✓	✓
arsenic, leachable	VA20C2029-007	Bru 95-8_49.39 to 49.79	Soil/Solid	Solid	E446	<0.0010	0.0010	mg/L		18-Nov-2020	15:00	17-Dec-2020	20-Dec-2020	132217	✓	✓
barium, leachable	VA20C2029-007	Bru 95-8_49.39 to 49.79	Soil/Solid	Solid	E446	0.0845	0.0010	mg/L		18-Nov-2020	15:00	17-Dec-2020	20-Dec-2020	132217	✓	✓
beryllium, leachable	VA20C2029-007	Bru 95-8_49.39 to 49.79	Soil/Solid	Solid	E446	<0.00050	0.00050	mg/L		18-Nov-2020	15:00	17-Dec-2020	20-Dec-2020	132217	✓	✓
bismuth, leachable	VA20C2029-007	Bru 95-8_49.39 to 49.79	Soil/Solid	Solid	E446	<0.00050	0.00050	mg/L		18-Nov-2020	15:00	17-Dec-2020	20-Dec-2020	132217	✓	✓
boron, leachable	VA20C2029-007	Bru 95-8_49.39 to 49.79	Soil/Solid	Solid	E446	1.20	0.010	mg/L		18-Nov-2020	15:00	17-Dec-2020	20-Dec-2020	132217	✓	✓
cadmium, leachable	VA20C2029-007	Bru 95-8_49.39 to 49.79	Soil/Solid	Solid	E446	<0.000050	0.000050	mg/L		18-Nov-2020	15:00	17-Dec-2020	20-Dec-2020	132217	✓	✓
calcium, leachable	VA20C2029-007	Bru 95-8_49.39 to 49.79	Soil/Solid	Solid	E446	246	0.10	mg/L		18-Nov-2020	15:00	17-Dec-2020	20-Dec-2020	132217	✓	✓
chromium, leachable	VA20C2029-007	Bru 95-8_49.39 to 49.79	Soil/Solid	Solid	E446	<0.00050	0.00050	mg/L		18-Nov-2020	15:00	17-Dec-2020	20-Dec-2020	132217	✓	✓
cobalt, leachable	VA20C2029-007	Bru 95-8_49.39 to 49.79	Soil/Solid	Solid	E446	0.00141	0.00010	mg/L		18-Nov-2020	15:00	17-Dec-2020	20-Dec-2020	132217	✓	✓
copper, leachable	VA20C2029-007	Bru 95-8_49.39 to 49.79	Soil/Solid	Solid	E446	<0.0010	0.0010	mg/L		18-Nov-2020	15:00	17-Dec-2020	20-Dec-2020	132217	✓	✓
iron, leachable	VA20C2029-007	Bru 95-8_49.39 to 49.79	Soil/Solid	Solid	E446	<0.030	0.030	mg/L		18-Nov-2020	15:00	17-Dec-2020	20-Dec-2020	132217	✓	✓
lead, leachable	VA20C2029-007	Bru 95-8_49.39 to 49.79	Soil/Solid	Solid	E446	<0.00010	0.00010	mg/L		18-Nov-2020	15:00	17-Dec-2020	20-Dec-2020	132217	✓	✓
lithium, leachable	VA20C2029-007	Bru 95-8_49.39 to 49.79	Soil/Solid	Solid	E446	0.0908	0.0050	mg/L		18-Nov-2020	15:00	17-Dec-2020	20-Dec-2020	132217	✓	✓
magnesium, leachable	VA20C2029-007	Bru 95-8_49.39 to 49.79	Soil/Solid	Solid	E446	54.5	0.050	mg/L		18-Nov-2020	15:00	17-Dec-2020	20-Dec-2020	132217	✓	✓
manganese, leachable	VA20C2029-007	Bru 95-8_49.39 to 49.79	Soil/Solid	Solid	E446	0.0540	0.00050	mg/L		18-Nov-2020	15:00	17-Dec-2020	20-Dec-2020	132217	✓	✓
molybdenum, leachable	VA20C2029-007	Bru 95-8_49.39 to 49.79	Soil/Solid	Solid	E446	0.00016	0.00010	mg/L		18-Nov-2020	15:00	17-Dec-2020	20-Dec-2020	132217	✓	✓
nickel, leachable	VA20C2029-007	Bru 95-8_49.39 to 49.79	Soil/Solid	Solid	E446	0.00162	0.00050	mg/L		18-Nov-2020	15:00	17-Dec-2020	20-Dec-2020	132217	✓	✓
phosphorus, leachable	VA20C2029-007	Bru 95-8_49.39 to 49.79	Soil/Solid	Solid	E446	<0.30	0.30	mg/L		18-Nov-2020	15:00	17-Dec-2020	20-Dec-2020	132217	✓	✓
potassium, leachable	VA20C2029-007	Bru 95-8_49.39 to 49.79	Soil/Solid	Solid	E446	63.9	0.050	mg/L		18-Nov-2020	15:00	17-Dec-2020	20-Dec-2020	132217	✓	✓
selenium, leachable	VA20C2029-007	Bru 95-8_49.39 to 49.79	Soil/Solid	Solid	E446	0.0118	0.00050	mg/L		18-Nov-2020	15:00	17-Dec-2020	20-Dec-2020	132217	✓	✓
silicon, leachable	VA20C2029-007	Bru 95-8_49.39 to 49.79	Soil/Solid	Solid	E446	4.61	0.050	mg/L		18-Nov-2020	15:00	17-Dec-2020	20-Dec-2020	132217	✓	✓
silver, leachable	VA20C2029-007	Bru 95-8_49.39 to 49.79	Soil/Solid	Solid	E446	<0.000050	0.000050	mg/L		18-Nov-2020	15:00	17-Dec-2020	20-Dec-2020	132217	✓	✓
sodium, leachable	VA20C2029-007	Bru 95-8_49.39 to 49.79	Soil/Solid	Solid	E446	15.4	0.050	mg/L		18-Nov-2020	15:00	17-Dec-2020	20-Dec-2020	132217	✓	✓
strontium, leachable	VA20C2029-007	Bru 95-8_49.39 to 49.79	Soil/Solid	Solid	E446	1.03	0.00050	mg/L		18-Nov-2020	15:00	17-Dec-2020	20-Dec-2020	132217	✓	✓
sulfur, leachable	VA20C2029-007	Bru 95-8_49.39 to 49.79	Soil/Solid	Solid	E446	288	0.50	mg/L		18-Nov-2020	15:00	17-Dec-2020	20-Dec-2020	132217	✓	✓
thallium, leachable	VA20C2029-007	Bru 95-8_49.39 to 49.79	Soil/Solid	Solid	E446	0.00012	0.00010	mg/L		18-Nov-2020	15:00	17-Dec-2020	20-Dec-2020	132217	✓	✓
tin, leachable	VA20C2029-007	Bru 95-8_49.39 to 49.79	Soil/Solid	Solid	E446	<0.00050	0.00050	mg/L		18-Nov-2020	15:00	17-Dec-2020	20-Dec-2020	132217	✓	✓
titanium, leachable	VA20C2029-007	Bru 95-8_49.39 to 49.79	Soil/Solid	Solid	E446	<0.010	0.010	mg/L		18-Nov-2020	15:00	17-Dec-2020	20-Dec-2020	132217	✓	✓
uranium, leachable	VA20C2029-007	Bru 95-8_49.39 to 49.79	Soil/Solid	Solid	E446	0.000182	0.000010	mg/L		18-Nov-2020	15:00	17-Dec-2020	20-Dec-2020	132217	✓	✓
vanadium, leachable	VA20C2029-007	Bru 95-8_49.39 to 49.79	Soil/Solid	Solid	E446	<0.0010	0.0010	mg/L		18-Nov-2020	15:00	17-Dec-2020	20-Dec-2020	132217	✓	✓
zinc, leachable	VA20C2029-007	Bru 95-8_49.39 to 49.79	Soil/Solid	Solid	E446	<0.010	0.010	mg/L		18-Nov-2020	15:00	17-Dec-2020	20-Dec-2020	132217	✓	✓
mercury, leachable	VA20C2029-007	Bru 95-8_49.39 to 49.79	Soil/Solid	Solid	E515	<0.000050	0.000050	mg/L		18-Nov-2020	15:00	17-Dec-2020	19-Dec-2020	132215	✓	*
hardness (as CaCO3), dissolved	VA20C2029-007	Bru 95-8_49.39 to 49.79	Soil/Solid	Solid	E446	839	0.60	mg/L		18-Nov-2020	15:00	17-Dec-2020	20-Dec-2020	132217	✓	✓

Evaluation Legend

✓	QC Lot met ALS Data Quality Objectives

Hold Time Evaluation Legend

*	= holding time exceedance
✓	= within holding time

Duplicates VA20C2029

Project 60640258 - CanWhite Sands
Report To Ryan Mills, AECOM Canada Ltd.
Date Received 27-Nov-2020 12:55
Issue Date 16-Feb-2021 15:04
Amendment 2

ALS ID	Reference	Client Sample ID	QC Type	QC Lot	Analyte	Method	Sample Result	Duplicate Result	Detection Limit	Units	RPD(%) or Diff.	Duplicate Limits	Qual	Eval
Physical Tests (Matrix: Soil/Solid)														
QC-130855-004	VA20C2029-001	Bru 95-3	DUP	130855	moisture	E144	0.61	0.74	0.25	%	0.12	Diff <2x LOR		✓
QC-132183-004	VA20C2029-002	Bru 121-1_24.38 to 24.83	DUP	132183	moisture	E144	<0.25	<0.25	0.25	%	0	Diff <2x LOR		✓
QC-MRG10-132219004	Anonymous	Anonymous	DUP	132216	pH	E116	8.43	8.36	0.1	pH units	0.834%	5		✓
Leachable Metals (Matrix: Soil/Solid)														
QC-MRG10-132219004	Anonymous	Anonymous	DUP	132217	aluminum, leachable	E446	0.0476	0.0503	0.005	mg/L	5.51%	30		✓
QC-MRG10-132219004	Anonymous	Anonymous	DUP	132217	antimony, leachable	E446	0.00062	0.00057	0.0001	mg/L	0.00005	Diff <2x LOR		✓
QC-MRG10-132219004	Anonymous	Anonymous	DUP	132217	arsenic, leachable	E446	0.0044	0.0043	0.001	mg/L	0.0001	Diff <2x LOR		✓
QC-MRG10-132219004	Anonymous	Anonymous	DUP	132217	barium, leachable	E446	0.0205	0.0188	0.001	mg/L	8.71%	30		✓
QC-MRG10-132219004	Anonymous	Anonymous	DUP	132217	beryllium, leachable	E446	<0.00050	<0.00050	0.0005	mg/L	0	Diff <2x LOR		✓
QC-MRG10-132219004	Anonymous	Anonymous	DUP	132217	bismuth, leachable	E446	<0.00050	<0.00050	0.0005	mg/L	0	Diff <2x LOR		✓
QC-MRG10-132219004	Anonymous	Anonymous	DUP	132217	boron, leachable	E446	0.013	0.012	0.01	mg/L	0.0002	Diff <2x LOR		✓
QC-MRG10-132219004	Anonymous	Anonymous	DUP	132217	cadmium, leachable	E446	<0.000050	<0.000050	0.00005	mg/L	0	Diff <2x LOR		✓
QC-MRG10-132219004	Anonymous	Anonymous	DUP	132217	calcium, leachable	E446	9.97	9.46	0.1	mg/L	5.27%	30		✓
QC-MRG10-132219004	Anonymous	Anonymous	DUP	132217	chromium, leachable	E446	<0.00050	<0.00050	0.0005	mg/L	0	Diff <2x LOR		✓
QC-MRG10-132219004	Anonymous	Anonymous	DUP	132217	cobalt, leachable	E446	<0.00010	<0.00010	0.0001	mg/L	0	Diff <2x LOR		✓
QC-MRG10-132219004	Anonymous	Anonymous	DUP	132217	copper, leachable	E446	<0.0010	<0.0010	0.001	mg/L	0	Diff <2x LOR		✓
QC-MRG10-132219004	Anonymous	Anonymous	DUP	132217	iron, leachable	E446	<0.030	<0.030	0.03	mg/L	0	Diff <2x LOR		✓
QC-MRG10-132219004	Anonymous	Anonymous	DUP	132217	lead, leachable	E446	<0.00010	<0.00010	0.0001	mg/L	0	Diff <2x LOR		✓
QC-MRG10-132219004	Anonymous	Anonymous	DUP	132217	lithium, leachable	E446	<0.0050	<0.0050	0.005	mg/L	0	Diff <2x LOR		✓
QC-MRG10-132219004	Anonymous	Anonymous	DUP	132217	magnesium, leachable	E446	10.2	9.76	0.05	mg/L	4.72%	30		✓
QC-MRG10-132219004	Anonymous	Anonymous	DUP	132217	manganese, leachable	E446	0.00147	0.00145	0.0005	mg/L	0.00002	Diff <2x LOR		✓
QC-MRG10-132219004	Anonymous	Anonymous	DUP	132217	molybdenum, leachable	E446	0.0131	0.0127	0.0001	mg/L	3.24%	30		✓
QC-MRG10-132219004	Anonymous	Anonymous	DUP	132217	nickel, leachable	E446	<0.00050	<0.00050	0.0005	mg/L	0	Diff <2x LOR		✓
QC-MRG10-132219004	Anonymous	Anonymous	DUP	132217	phosphorus, leachable	E446	<0.30	<0.30	0.3	mg/L	0	Diff <2x LOR		✓
QC-MRG10-132219004	Anonymous	Anonymous	DUP	132217	potassium, leachable	E446	5.18	5.05	0.05	mg/L	2.56%	30		✓
QC-MRG10-132219004	Anonymous	Anonymous	DUP	132217	selenium, leachable	E446	<0.00050	0.00056	0.0005	mg/L	0.00006	Diff <2x LOR		✓
QC-MRG10-132219004	Anonymous	Anonymous	DUP	132217	silicon, leachable	E446	7.84	7.76	0.05	mg/L	0.978%	40		✓
QC-MRG10-132219004	Anonymous	Anonymous	DUP	132217	silver, leachable	E446	<0.000050	<0.000050	0.00005	mg/L	0	Diff <2x LOR		✓
QC-MRG10-132219004	Anonymous	Anonymous	DUP	132217	sodium, leachable	E446	8.65	8.65	0.05	mg/L	0.0116%	30		✓
QC-MRG10-132219004	Anonymous	Anonymous	DUP	132217	strontium, leachable	E446	0.0802	0.0738	0.0005	mg/L	8.27%	30		✓
QC-MRG10-132219004	Anonymous	Anonymous	DUP	132217	sulfur, leachable	E446	13.2	12.6	0.5	mg/L	5.02%	30		✓
QC-MRG10-132219004	Anonymous	Anonymous	DUP	132217	thallium, leachable	E446	<0.00010	<0.00010	0.0001	mg/L	0	Diff <2x LOR		✓
QC-MRG10-132219004	Anonymous	Anonymous	DUP	132217	tin, leachable	E446	<0.00050	<0.00050	0.0005	mg/L	0	Diff <2x LOR		✓
QC-MRG10-132219004	Anonymous	Anonymous	DUP	132217	titanium, leachable	E446	<0.010	<0.010	0.01	mg/L	0	Diff <2x LOR		✓
QC-MRG10-132219004	Anonymous	Anonymous	DUP	132217	uranium, leachable	E446	0.000209	0.000197	0.00001	mg/L	5.85%	30		✓
QC-MRG10-132219004	Anonymous	Anonymous	DUP	132217	vanadium, leachable	E446	0.0117	0.0116	0.001	mg/L	1.14%	30		✓
QC-MRG10-132219004	Anonymous	Anonymous	DUP	132217	zinc, leachable	E446	<0.010	<0.010	0.01	mg/L	0	Diff <2x LOR		✓
QC-MRG10-132219004	Anonymous	Anonymous	DUP	132215	mercury, leachable	E515	<0.000050	<0.000050	0.00005	mg/L	0	Diff <2x LOR		✓

Evaluation Legend

✓ QC Lot met ALS Data Quality Objectives

Quality Control VA20C2029

Project	60640258 - CanWhite Sands
Report To	Ryan Mills, AECOM Canada Ltd.
Date Received	27-Nov-2020 12:55
Issue Date	16-Feb-2021 15:04
Amendment	2

QC Type	Analyte	QC Lot	ALS QC ID	Method	Result	Target	Units	%	Limit	Units	Qual	Eval
Physical Tests (Matrix: Soil/Solid)												
MB	moisture	130855	QC-130855-001	E144	<0.25		%	-	0.25	%		✓
LCS	moisture	130855	QC-130855-002	E144	50.4	50 %	%	101	90-110	%		✓
LCS	pH	130890	QC-130890-001	E116	7.00	7.04 pH units	pH units	99.4	95-105	%		✓
MB	moisture	132183	QC-132183-001	E144	<0.25		%	-	0.25	%		✓
LCS	moisture	132183	QC-132183-002	E144	50.5	50 %	%	101	90-110	%		✓
LCS	pH	132216	QC-132216-001	E116	7.00	7.04 pH units	pH units	99.4	95-105	%		✓
Leachable Metals (Matrix: Soil/Solid)												
LCS	aluminum, leachable	130891	QC-MRG2-130889002	E446	0.196	0.2 mg/L	mg/L	98.0	70-130	%		✓
LCS	antimony, leachable	130891	QC-MRG2-130889002	E446	0.0992	0.1 mg/L	mg/L	99.2	70-130	%		✓
LCS	arsenic, leachable	130891	QC-MRG2-130889002	E446	0.0966	0.1 mg/L	mg/L	96.6	70-130	%		✓
LCS	barium, leachable	130891	QC-MRG2-130889002	E446	0.0244	0.025 mg/L	mg/L	97.6	70-130	%		✓
LCS	beryllium, leachable	130891	QC-MRG2-130889002	E446	0.00950	0.01 mg/L	mg/L	95.0	70-130	%		✓
LCS	bismuth, leachable	130891	QC-MRG2-130889002	E446	0.0928	0.1 mg/L	mg/L	92.8	70-130	%		✓
LCS	boron, leachable	130891	QC-MRG2-130889002	E446	0.097	0.1 mg/L	mg/L	96.8	70-130	%		✓
LCS	cadmium, leachable	130891	QC-MRG2-130889002	E446	0.00956	0.01 mg/L	mg/L	95.6	70-130	%		✓
LCS	calcium, leachable	130891	QC-MRG2-130889002	E446	4.86	5 mg/L	mg/L	97.3	70-130	%		✓
LCS	chromium, leachable	130891	QC-MRG2-130889002	E446	0.0238	0.025 mg/L	mg/L	95.4	70-130	%		✓
LCS	cobalt, leachable	130891	QC-MRG2-130889002	E446	0.0237	0.025 mg/L	mg/L	94.8	70-130	%		✓
LCS	copper, leachable	130891	QC-MRG2-130889002	E446	0.0237	0.025 mg/L	mg/L	94.8	70-130	%		✓
LCS	iron, leachable	130891	QC-MRG2-130889002	E446	0.090	0.1 mg/L	mg/L	90.1	70-130	%		✓
LCS	lead, leachable	130891	QC-MRG2-130889002	E446	0.0467	0.05 mg/L	mg/L	93.5	70-130	%		✓
LCS	lithium, leachable	130891	QC-MRG2-130889002	E446	0.0235	0.025 mg/L	mg/L	94.2	70-130	%		✓
LCS	magnesium, leachable	130891	QC-MRG2-130889002	E446	4.86	5 mg/L	mg/L	97.1	70-130	%		✓
LCS	manganese, leachable	130891	QC-MRG2-130889002	E446	0.0242	0.025 mg/L	mg/L	96.8	70-130	%		✓
LCS	molybdenum, leachable	130891	QC-MRG2-130889002	E446	0.0247	0.025 mg/L	mg/L	98.7	70-130	%		✓
LCS	nickel, leachable	130891	QC-MRG2-130889002	E446	0.0477	0.05 mg/L	mg/L	95.4	70-130	%		✓
LCS	phosphorus, leachable	130891	QC-MRG2-130889002	E446	1.04	1 mg/L	mg/L	104	70-130	%		✓
LCS	potassium, leachable	130891	QC-MRG2-130889002	E446	5.17	5 mg/L	mg/L	103	70-130	%		✓
LCS	selenium, leachable	130891	QC-MRG2-130889002	E446	0.0976	0.1 mg/L	mg/L	97.6	70-130	%		✓
LCS	silicon, leachable	130891	QC-MRG2-130889002	E446	0.918	1 mg/L	mg/L	91.8	70-130	%		✓
LCS	silver, leachable	130891	QC-MRG2-130889002	E446	0.00942	0.01 mg/L	mg/L	94.2	70-130	%		✓
LCS	sodium, leachable	130891	QC-MRG2-130889002	E446	4.88	5 mg/L	mg/L	97.5	70-130	%		✓
LCS	strontium, leachable	130891	QC-MRG2-130889002	E446	0.0255	0.025 mg/L	mg/L	102	70-130	%		✓
LCS	sulfur, leachable	130891	QC-MRG2-130889002	E446	4.78	5 mg/L	mg/L	95.6	70-130	%		✓
LCS	thallium, leachable	130891	QC-MRG2-130889002	E446	0.0977	0.11 mg/L	mg/L	88.8	70-130	%		✓
LCS	tin, leachable	130891	QC-MRG2-130889002	E446	0.0475	0.05 mg/L	mg/L	95.0	70-130	%		✓
LCS	titanium, leachable	130891	QC-MRG2-130889002	E446	0.024	0.025 mg/L	mg/L	95.5	70-130	%		✓
LCS	uranium, leachable	130891	QC-MRG2-130889002	E446	0.000483	0.0005 mg/L	mg/L	96.7	70-130	%		✓
LCS	vanadium, leachable	130891	QC-MRG2-130889002	E446	0.0483	0.05 mg/L	mg/L	96.5	70-130	%		✓
LCS	zinc, leachable	130891	QC-MRG2-130889002	E446	0.046	0.05 mg/L	mg/L	91.7	70-130	%		✓
LCS	mercury, leachable	130889	QC-MRG2-130889002	E515	0.000390	0.0005 mg/L	mg/L	78.0	50-130	%		✓
LCS	aluminum, leachable	132217	QC-MRG8-132215002	E446	0.210	0.2 mg/L	mg/L	105	70-130	%		✓
LCS	antimony, leachable	132217	QC-MRG8-132215002	E446	0.113	0.1 mg/L	mg/L	113	70-130	%		✓
LCS	arsenic, leachable	132217	QC-MRG8-132215002	E446	0.0997	0.1 mg/L	mg/L	99.7	70-130	%		✓
LCS	barium, leachable	132217	QC-MRG8-132215002	E446	0.0257	0.025 mg/L	mg/L	103	70-130	%		✓
LCS	beryllium, leachable	132217	QC-MRG8-132215002	E446	0.00941	0.01 mg/L	mg/L	94.1	70-130	%		✓
LCS	bismuth, leachable	132217	QC-MRG8-132215002	E446	0.0979	0.1 mg/L	mg/L	97.9	70-130	%		✓
LCS	boron, leachable	132217	QC-MRG8-132215002	E446	0.089	0.1 mg/L	mg/L	89.1	70-130	%		✓
LCS	cadmium, leachable	132217	QC-MRG8-132215002	E446	0.00980	0.01 mg/L	mg/L	98.0	70-130	%		✓
LCS	calcium, leachable	132217	QC-MRG8-132215002	E446	4.90	5 mg/L	mg/L	98.0	70-130	%		✓
LCS	chromium, leachable	132217	QC-MRG8-132215002	E446	0.0254	0.025 mg/L	mg/L	102	70-130	%		✓
LCS	cobalt, leachable	132217	QC-MRG8-132215002	E446	0.0251	0.025 mg/L	mg/L	100	70-130	%		✓
LCS	copper, leachable	132217	QC-MRG8-132215002	E446	0.0246	0.025 mg/L	mg/L	98.4	70-130	%		✓
LCS	iron, leachable	132217	QC-MRG8-132215002	E446	0.094	0.1 mg/L	mg/L	93.8	70-130	%		✓
LCS	lead, leachable	132217	QC-MRG8-132215002	E446	0.0512	0.05 mg/L	mg/L	102	70-130	%		✓
LCS	lithium, leachable	132217	QC-MRG8-132215002	E446	0.0227	0.025 mg/L	mg/L	90.8	70-130	%		✓
LCS	magnesium, leachable	132217	QC-MRG8-132215002	E446	5.44	5 mg/L	mg/L	109	70-130	%		✓
LCS	manganese, leachable	132217	QC-MRG8-132215002	E446	0.0242	0.025 mg/L	mg/L	96.8	70-130	%		✓
LCS	molybdenum, leachable	132217	QC-MRG8-132215002	E446	0.0264	0.025 mg/L	mg/L	105	70-130	%		✓
LCS	nickel, leachable	132217	QC-MRG8-132215002	E446	0.0496	0.05 mg/L	mg/L	99.2	70-130	%		✓
LCS	phosphorus, leachable	132217	QC-MRG8-132215002	E446	1.13	1 mg/L	mg/L	113	70-130	%		✓
LCS	potassium, leachable	132217	QC-MRG8-132215002	E446	5.28	5 mg/L	mg/L	106	70-130	%		✓
LCS	selenium, leachable	132217	QC-MRG8-132215002	E446	0.0988	0.1 mg/L	mg/L	98.8	70-130	%		✓
LCS	silicon, leachable	132217	QC-MRG8-132215002	E446	0.942	1 mg/L	mg/L	94.2	70-130	%		✓
LCS	silver, leachable	132217	QC-MRG8-132215002	E446	0.0103	0.01 mg/L	mg/L	103	70-130	%		✓

LCS	sodium, leachable	132217	QC-MRG8-132215002	E446	5.34	5 mg/L	mg/L	107	70-130	%	✓
LCS	strontium, leachable	132217	QC-MRG8-132215002	E446	0.0256	0.025 mg/L	mg/L	102	70-130	%	✓
LCS	sulfur, leachable	132217	QC-MRG8-132215002	E446	5.15	5 mg/L	mg/L	103	70-130	%	✓
LCS	thallium, leachable	132217	QC-MRG8-132215002	E446	0.106	0.11 mg/L	mg/L	96.1	70-130	%	✓
LCS	tin, leachable	132217	QC-MRG8-132215002	E446	0.0508	0.05 mg/L	mg/L	102	70-130	%	✓
LCS	titanium, leachable	132217	QC-MRG8-132215002	E446	0.025	0.025 mg/L	mg/L	100	70-130	%	✓
LCS	uranium, leachable	132217	QC-MRG8-132215002	E446	0.000459	0.0005 mg/L	mg/L	91.8	70-130	%	✓
LCS	vanadium, leachable	132217	QC-MRG8-132215002	E446	0.0512	0.05 mg/L	mg/L	102	70-130	%	✓
LCS	zinc, leachable	132217	QC-MRG8-132215002	E446	0.051	0.05 mg/L	mg/L	102	70-130	%	✓
LCS	mercury, leachable	132215	QC-MRG8-132215002	E515	0.000414	0.0005 mg/L	mg/L	82.8	50-130	%	✓
MS	aluminum, leachable	132217	Anonymous	E446	0.210	0.2 mg/L	mg/L	105	70-130	%	✓
MS	antimony, leachable	132217	Anonymous	E446	0.0210	0.02 mg/L	mg/L	105	70-130	%	✓
MS	arsenic, leachable	132217	Anonymous	E446	0.0198	0.02 mg/L	mg/L	98.9	70-130	%	✓
MS	barium, leachable	132217	Anonymous	E446	ND	0.02 mg/L	mg/L	ND	70-130	%	✓
MS	beryllium, leachable	132217	Anonymous	E446	0.0413	0.04 mg/L	mg/L	103	70-130	%	✓
MS	bismuth, leachable	132217	Anonymous	E446	0.00912	0.01 mg/L	mg/L	91.2	70-130	%	✓
MS	cadmium, leachable	132217	Anonymous	E446	0.00400	0.004 mg/L	mg/L	100.0	70-130	%	✓
MS	calcium, leachable	132217	Anonymous	E446	ND	4 mg/L	mg/L	ND	70-130	%	✓
MS	chromium, leachable	132217	Anonymous	E446	0.0395	0.04 mg/L	mg/L	98.8	70-130	%	✓
MS	cobalt, leachable	132217	Anonymous	E446	0.0196	0.02 mg/L	mg/L	97.8	70-130	%	✓
MS	copper, leachable	132217	Anonymous	E446	0.0190	0.02 mg/L	mg/L	95.3	70-130	%	✓
MS	iron, leachable	132217	Anonymous	E446	1.97	2 mg/L	mg/L	98.6	70-130	%	✓
MS	lead, leachable	132217	Anonymous	E446	0.0193	0.02 mg/L	mg/L	96.5	70-130	%	✓
MS	lithium, leachable	132217	Anonymous	E446	0.106	0.1 mg/L	mg/L	106	70-130	%	✓
MS	magnesium, leachable	132217	Anonymous	E446	ND	1 mg/L	mg/L	ND	70-130	%	✓
MS	manganese, leachable	132217	Anonymous	E446	0.0192	0.02 mg/L	mg/L	96.0	70-130	%	✓
MS	molybdenum, leachable	132217	Anonymous	E446	0.0213	0.02 mg/L	mg/L	106	70-130	%	✓
MS	nickel, leachable	132217	Anonymous	E446	0.0381	0.04 mg/L	mg/L	95.4	70-130	%	✓
MS	phosphorus, leachable	132217	Anonymous	E446	11.5	10 mg/L	mg/L	115	70-130	%	✓
MS	potassium, leachable	132217	Anonymous	E446	ND	4 mg/L	mg/L	ND	70-130	%	✓
MS	selenium, leachable	132217	Anonymous	E446	0.0419	0.04 mg/L	mg/L	105	70-130	%	✓
MS	silicon, leachable	132217	Anonymous	E446	9.37	10 mg/L	mg/L	93.7	70-130	%	✓
MS	silver, leachable	132217	Anonymous	E446	0.00399	0.004 mg/L	mg/L	99.7	70-130	%	✓
MS	sodium, leachable	132217	Anonymous	E446	ND	2 mg/L	mg/L	ND	70-130	%	✓
MS	strontium, leachable	132217	Anonymous	E446	ND	0.02 mg/L	mg/L	ND	70-130	%	✓
MS	sulfur, leachable	132217	Anonymous	E446	ND	20 mg/L	mg/L	ND	70-130	%	✓
MS	thallium, leachable	132217	Anonymous	E446	0.00372	0.004 mg/L	mg/L	93.1	70-130	%	✓
MS	tin, leachable	132217	Anonymous	E446	0.0202	0.02 mg/L	mg/L	101	70-130	%	✓
MS	titanium, leachable	132217	Anonymous	E446	0.040	0.04 mg/L	mg/L	100	70-130	%	✓
MS	uranium, leachable	132217	Anonymous	E446	0.00380	0.004 mg/L	mg/L	95.0	70-130	%	✓
MS	vanadium, leachable	132217	Anonymous	E446	0.102	0.1 mg/L	mg/L	102	70-130	%	✓
MS	zinc, leachable	132217	Anonymous	E446	0.394	0.4 mg/L	mg/L	98.4	70-130	%	✓
MS	boron, leachable	132217	Anonymous	E446	0.087	0.1 mg/L	mg/L	87.1	70-130	%	✓
MS	mercury, leachable	132215	Anonymous	E515	0.000096	0.0001 mg/L	mg/L	96.5	70-130	%	✓
MB	aluminum, leachable	130891	QC-MRG2-130889001	E446	<0.0050		mg/L	-	0.005	mg/L	✓
MB	antimony, leachable	130891	QC-MRG2-130889001	E446	<0.00010		mg/L	-	0.0001	mg/L	✓
MB	arsenic, leachable	130891	QC-MRG2-130889001	E446	<0.0010		mg/L	-	0.001	mg/L	✓
MB	barium, leachable	130891	QC-MRG2-130889001	E446	<0.0010		mg/L	-	0.001	mg/L	✓
MB	beryllium, leachable	130891	QC-MRG2-130889001	E446	<0.00050		mg/L	-	0.0005	mg/L	✓
MB	bismuth, leachable	130891	QC-MRG2-130889001	E446	<0.00050		mg/L	-	0.0005	mg/L	✓
MB	boron, leachable	130891	QC-MRG2-130889001	E446	<0.010		mg/L	-	0.01	mg/L	✓
MB	cadmium, leachable	130891	QC-MRG2-130889001	E446	<0.000050		mg/L	-	0.00005	mg/L	✓
MB	calcium, leachable	130891	QC-MRG2-130889001	E446	<0.10		mg/L	-	0.1	mg/L	✓
MB	chromium, leachable	130891	QC-MRG2-130889001	E446	<0.00050		mg/L	-	0.0005	mg/L	✓
MB	cobalt, leachable	130891	QC-MRG2-130889001	E446	<0.00010		mg/L	-	0.0001	mg/L	✓
MB	copper, leachable	130891	QC-MRG2-130889001	E446	<0.0010		mg/L	-	0.001	mg/L	✓
MB	iron, leachable	130891	QC-MRG2-130889001	E446	<0.030		mg/L	-	0.03	mg/L	✓
MB	lead, leachable	130891	QC-MRG2-130889001	E446	<0.00010		mg/L	-	0.0001	mg/L	✓
MB	lithium, leachable	130891	QC-MRG2-130889001	E446	<0.0050		mg/L	-	0.005	mg/L	✓
MB	magnesium, leachable	130891	QC-MRG2-130889001	E446	<0.050		mg/L	-	0.05	mg/L	✓
MB	manganese, leachable	130891	QC-MRG2-130889001	E446	<0.00050		mg/L	-	0.0005	mg/L	✓
MB	molybdenum, leachable	130891	QC-MRG2-130889001	E446	<0.00010		mg/L	-	0.0001	mg/L	✓
MB	nickel, leachable	130891	QC-MRG2-130889001	E446	<0.00050		mg/L	-	0.0005	mg/L	✓
MB	phosphorus, leachable	130891	QC-MRG2-130889001	E446	<0.30		mg/L	-	0.3	mg/L	✓
MB	potassium, leachable	130891	QC-MRG2-130889001	E446	<0.050		mg/L	-	0.05	mg/L	✓
MB	selenium, leachable	130891	QC-MRG2-130889001	E446	<0.00050		mg/L	-	0.0005	mg/L	✓
MB	silicon, leachable	130891	QC-MRG2-130889001	E446	<0.050		mg/L	-	0.05	mg/L	✓
MB	silver, leachable	130891	QC-MRG2-130889001	E446	<0.000050		mg/L	-	0.00005	mg/L	✓
MB	sodium, leachable	130891	QC-MRG2-130889001	E446	<0.050		mg/L	-	0.05	mg/L	✓
MB	strontium, leachable	130891	QC-MRG2-130889001	E446	<0.00050		mg/L	-	0.0005	mg/L	✓
MB	sulfur, leachable	130891	QC-MRG2-130889001	E446	<0.50		mg/L	-	0.5	mg/L	✓
MB	thallium, leachable	130891	QC-MRG2-130889001	E446	<0.00010		mg/L	-	0.0001	mg/L	✓
MB	tin, leachable	130891	QC-MRG2-130889001	E446	<0.00050		mg/L	-	0.0005	mg/L	✓
MB	titanium, leachable	130891	QC-MRG2-130889001	E446	<0.010		mg/L	-	0.01	mg/L	✓
MB	uranium, leachable	130891	QC-MRG2-130889001	E446	<0.000010		mg/L	-	0.00001	mg/L	✓
MB	vanadium, leachable	130891	QC-MRG2-130889001	E446	<0.0010		mg/L	-	0.001	mg/L	✓
MB	zinc, leachable	130891	QC-MRG2-130889001	E446	<0.010		mg/L	-	0.01	mg/L	✓

MB	mercury, leachable	130889	QC-MRG2-130889001	E515	<0.000050	mg/L	-	0.00005	mg/L	✓
MB	aluminum, leachable	132217	QC-MRG10-132215001	E446	<0.0050	mg/L	-	0.005	mg/L	✓
MB	antimony, leachable	132217	QC-MRG10-132215001	E446	<0.00010	mg/L	-	0.0001	mg/L	✓
MB	arsenic, leachable	132217	QC-MRG10-132215001	E446	<0.0010	mg/L	-	0.001	mg/L	✓
MB	barium, leachable	132217	QC-MRG10-132215001	E446	<0.0010	mg/L	-	0.001	mg/L	✓
MB	beryllium, leachable	132217	QC-MRG10-132215001	E446	<0.00050	mg/L	-	0.0005	mg/L	✓
MB	bismuth, leachable	132217	QC-MRG10-132215001	E446	<0.00050	mg/L	-	0.0005	mg/L	✓
MB	boron, leachable	132217	QC-MRG10-132215001	E446	<0.010	mg/L	-	0.01	mg/L	✓
MB	cadmium, leachable	132217	QC-MRG10-132215001	E446	<0.000050	mg/L	-	0.00005	mg/L	✓
MB	calcium, leachable	132217	QC-MRG10-132215001	E446	<0.10	mg/L	-	0.1	mg/L	✓
MB	chromium, leachable	132217	QC-MRG10-132215001	E446	<0.00050	mg/L	-	0.0005	mg/L	✓
MB	cobalt, leachable	132217	QC-MRG10-132215001	E446	<0.00010	mg/L	-	0.0001	mg/L	✓
MB	copper, leachable	132217	QC-MRG10-132215001	E446	<0.0010	mg/L	-	0.001	mg/L	✓
MB	iron, leachable	132217	QC-MRG10-132215001	E446	<0.030	mg/L	-	0.03	mg/L	✓
MB	lead, leachable	132217	QC-MRG10-132215001	E446	<0.00010	mg/L	-	0.0001	mg/L	✓
MB	lithium, leachable	132217	QC-MRG10-132215001	E446	<0.0050	mg/L	-	0.005	mg/L	✓
MB	magnesium, leachable	132217	QC-MRG10-132215001	E446	<0.050	mg/L	-	0.05	mg/L	✓
MB	manganese, leachable	132217	QC-MRG10-132215001	E446	<0.00050	mg/L	-	0.0005	mg/L	✓
MB	molybdenum, leachable	132217	QC-MRG10-132215001	E446	<0.00010	mg/L	-	0.0001	mg/L	✓
MB	nickel, leachable	132217	QC-MRG10-132215001	E446	<0.00050	mg/L	-	0.0005	mg/L	✓
MB	phosphorus, leachable	132217	QC-MRG10-132215001	E446	<0.30	mg/L	-	0.3	mg/L	✓
MB	potassium, leachable	132217	QC-MRG10-132215001	E446	<0.050	mg/L	-	0.05	mg/L	✓
MB	selenium, leachable	132217	QC-MRG10-132215001	E446	<0.00050	mg/L	-	0.0005	mg/L	✓
MB	silicon, leachable	132217	QC-MRG10-132215001	E446	<0.050	mg/L	-	0.05	mg/L	✓
MB	silver, leachable	132217	QC-MRG10-132215001	E446	<0.000050	mg/L	-	0.00005	mg/L	✓
MB	sodium, leachable	132217	QC-MRG10-132215001	E446	<0.050	mg/L	-	0.05	mg/L	✓
MB	strontium, leachable	132217	QC-MRG10-132215001	E446	<0.00050	mg/L	-	0.0005	mg/L	✓
MB	sulfur, leachable	132217	QC-MRG10-132215001	E446	<0.50	mg/L	-	0.5	mg/L	✓
MB	thallium, leachable	132217	QC-MRG10-132215001	E446	<0.00010	mg/L	-	0.0001	mg/L	✓
MB	tin, leachable	132217	QC-MRG10-132215001	E446	<0.00050	mg/L	-	0.0005	mg/L	✓
MB	titanium, leachable	132217	QC-MRG10-132215001	E446	<0.010	mg/L	-	0.01	mg/L	✓
MB	uranium, leachable	132217	QC-MRG10-132215001	E446	<0.000010	mg/L	-	0.00001	mg/L	✓
MB	vanadium, leachable	132217	QC-MRG10-132215001	E446	<0.0010	mg/L	-	0.001	mg/L	✓
MB	zinc, leachable	132217	QC-MRG10-132215001	E446	<0.010	mg/L	-	0.01	mg/L	✓
MB	mercury, leachable	132215	QC-MRG10-132215001	E515	<0.000050	mg/L	-	0.00005	mg/L	✓

Evaluation Legend

✓	QC Lot met ALS Data Quality Objectives
ND	Recovery not determined, background level >= 1x spike level

Methodology VA20C2029

Project	60640258 - CanWhite Sands
Report To	Ryan Mills, AECOM Canada Ltd.
Date Received	27-Nov-2020 12:55
Issue Date	16-Feb-2021 15:04
Amendment	2

Method	ALS Test Description	Lab Location	Matrix	Method Reference	Methodology Description
Acid Base Accounting (Matrix: Soil/Solid)					
C-GAS05	IC by coulometer	ALS Minerals (Vancouv	Soil/Solid	ALS Minerals C-GAS05	Determine Total Inorganic Carbon (TIC) by using diluted perchloric acid to react with metal carbonate and yield carbon dioxide. Concentration of CO2 is determined by coulometer.
C-IR07	Total C by Leco and IR	ALS Minerals (Vancouv	Soil/Solid	ALS Minerals C-IR07	A sample is heated to approximately 1350°C in an induction furnace with oxygen stream. Carbon dioxide released from the sample are measured by an IR detection system (Leco analyzer).
OA-ELE07	Saturated Paste pH	ALS Minerals (Vancouv	Soil/Solid	ALS Minerals OA-ELE07	Sample mix with water in 1:1 ratio to make a paste, pH is then determined.
OA-VOL08m	Acid Base Accounting (Modified Sobek)	ALS Minerals (Vancouv	Soil/Solid	ALS Minerals OA-VOL08m	Determine the acid generation power of a sample as tonne CaCO3 per kilo-tonne using modified Sobek method
S-CAL06	Sulfide S (as S) Calc. (Total-S - SO4-S)	ALS Minerals (Vancouv	Soil/Solid	ALS Minerals S-CAL06	Sulfide Sulfur (as S) is calculated by subtracting the Carbonate Leachable Sulfate Sulfur (as S) from the Total Sulfur (as S) obtained from combustion.
S-GRA06A	Sulfates by HCl Leaching and Gravimetry with Sulfide S Calc.	ALS Minerals (Vancouv	Soil/Solid	ALS Minerals S-GRA06A	A prepared sample is heated with dilute HCl and then filtered. The sulfate in the filtrate is precipitated with BaCl2 in a dilute HCl. The BaSO4 precipitate is filtered, ignited, weighed and the Sulfate Sulfur is determined (as S). Sulfide sulfur is calculated by Total Sulfur from combustion minus Sulfate Sulfur from the HCl leach.
S-GRA06	Sulfates by NaCO3 Leaching and Gravimetry with Sulfide S Calc.	ALS Minerals (Vancouv	Soil/Solid	ALS Minerals S-GRA06	A preppared sample is heated with diluted Na_2CO_3 and then filtered. The sulfate in the filtrate is precipitated with BaCl2 in a dilute HCl. The BaSO4 precipitate is filtered, ignited, weighed and the Sulfate Sulfur is determined (as S). Sulfide Sulfur (as S) is calculated by Total Sulfur from combustion minus Sulfate Sulfur from the Na_2CO_3 leach.
S-IR04B	Residual sulfur by LECO and IR	ALS Minerals (Vancouv	Soil/Solid	ASL Minerals S-IR04B	Residual sulfur determined by oxidation, induction furnace and infrared spectroscopy following hot nitric leach.
S-IR08	Total S by combustion	ALS Minerals (Vancouv	Soil/Solid	ALS Minerals S-IR08	A prepared sample is heated to approximately 1350°C in an induction furnace with oxygen stream. Sulfur dioxide released from the sample are measured by IR (Leco analyzer) and the Total Sulfur result is provided.
WEI-21	Received Sample Weight	ALS Minerals (Vancouv	Soil/Solid	ALS Minerals WEI-21	Weigh out sample received.
Leachable Metals (Matrix: Soil/Solid)					
E446	Metals by CRC ICPMS (Shakeflask, 3:1 Ratio with Water)	Vancouver - Environme	Soil/Solid	BC MINISTRY OF ENERGY AND MINES/EI	A sample is extracted with water at a 3:1 liquid to solid ratio for 24 hours, then filtered through a 0.45 micron membrane filter. Analysis is by Collision/Reaction Cell ICPMS. This extraction is an empirical procedure with pre-defined characteristics. Recovery of some elements (Ag, Bi, and Sn) by this method can be variable due to the neutral pH of the extraction fluid, and therefore the LCS DQOs has been established at 50-130% for these elements.
E515	Mercury by CVAAS (Shakeflask, 3:1 Ratio with Water)	Vancouver - Environme	Soil/Solid	BC MINISTRY OF ENERGY AND MINES/EI	A sample is extracted with water at a 3:1 liquid to solid ratio for 24 hours, then filtered through a 0.45 micron membrane filter. Analysis is by CVAAS. This extraction is an empirical procedure with pre-defined characteristics. Recovery of mercury can be variable due to the neutral pH of the extraction fluid, and therefore the LCS DQO has been established at 50-130%.
Metals (Matrix: Soil/Solid)					
ME-MS41	51 Elements by Aqua Regia digestion and ICP-AES/MS	ALS Minerals (Vancouv	Soil/Solid	ALS Minerals ME-MS41	A prepared sample is digested with aqua regia in a graphite heating block. After cooling, the resulting solution is diluted to with deionized water, mixed and analyzed by ICP-AES. Samples are then analyzed by ICP-MS for the remaining suite of elements.
Physical Tests (Matrix: Soil/Solid)					
E116	pH by Electrode (Shakeflask, 3:1 Ratio with Water)	Vancouver - Environme	Soil/Solid	MEND (mod)/APHA 4500-H (mod)	pH is determined by potentiometric measurement with a pH electrode, and is conducted at ambient laboratory temperature (normally 20 ± 5°C) on an extract from a soil sample that has been added in a 3:1 ratio of deionized water to soil, then leached and the extract filtered prior to analysis. The pH is then measured by a standard pH probe. .
E144	Moisture Content by Gravimetry	Vancouver - Environme	Soil/Solid	CCME PHC in Soil - Tier 1	Moisture is measured gravimetrically by drying the sample at 105°C. Moisture content is calculated as the weight loss (due to water) divided by the wet weight of the sample, expressed as a percentage.

Method References

The analytical methods used by ALS are developed using internationally recognized reference methods (where available), such as those published by US EPA, APHA Standard Methods, ASTM, ISO, Environment Canada, BC MOE, and Ontario MOE. Reference methods may incorporate modifications to improve performance

Hold Time Exceedance Details VA20C2029

Project	60640258 - CanWhite Sands
Report To	Ryan Mills, AECOM Canada Ltd.
Date Received	27-Nov-2020 12:55
Issue Date	16-Feb-2021 15:04
Amendment	2

				Preparation					Analysis				
ALS Method Description	**Client Sample ID**	**Method**	**Sampling Date**	**Preparation Date**	**Recommended Holding Time**	**Actual Holding Times**	**Eval**	**Qualifier**	**Analysis Date**	**Recommended Holding Time**	**Actual Holding Times**	**Eval**	**Qualifier**
Physical Tests (Matrix: Soil/Solid)													
pH by Electrode (Shakeflask, 3:1 Ratio with \	Bru 121-1_24.38 to :	E116	11-Nov-2020	17-Dec-2020 16:00	30 days	36 days	×	EHT	19-Dec-2020 09:00	-7 days	1 days	×	
pH by Electrode (Shakeflask, 3:1 Ratio with \	Bru 121-1_36.57 to :	E116	11-Nov-2020	17-Dec-2020 16:00	30 days	36 days	×	EHT	19-Dec-2020 09:00	-7 days	1 days	×	
pH by Electrode (Shakeflask, 3:1 Ratio with \	Bru 146_36.82 to 37	E116	11-Nov-2020	17-Dec-2020 16:00	30 days	36 days	×	EHT	19-Dec-2020 09:00	-7 days	1 days	×	
pH by Electrode (Shakeflask, 3:1 Ratio with \	Bru 146_49-86 to 5(	E116	11-Nov-2020	17-Dec-2020 16:00	30 days	36 days	×	EHT	19-Dec-2020 09:00	-7 days	1 days	×	
pH by Electrode (Shakeflask, 3:1 Ratio with \	Bru 95-8_40.16 to 4(	E116	18-Nov-2020	17-Dec-2020 16:00	30 days	29 days	✓		19-Dec-2020 09:00	0 days	1 days	×	EHT
pH by Electrode (Shakeflask, 3:1 Ratio with \	Bru 95-8_49.39 to 4(	E116	18-Nov-2020	17-Dec-2020 16:00	30 days	29 days	✓		19-Dec-2020 09:00	0 days	1 days	×	EHT
Acid Base Accounting (Matrix: Soil/Solid)													
Sulfide S (as S) Calc. (Total-S - SO4-S)	Bru 95-3	S-CAL06	19-Nov-2020						05-Jan-2021 16:00	28 days	47 days	×	EHT
Sulfide S (as S) Calc. (Total-S - SO4-S)	Bru 121-1_24.38 to :	S-CAL06	11-Nov-2020						05-Jan-2021 16:00	28 days	55 days	×	EHT
Sulfide S (as S) Calc. (Total-S - SO4-S)	Bru 121-1_36.57 to :	S-CAL06	11-Nov-2020						05-Jan-2021 16:00	28 days	55 days	×	EHT
Sulfide S (as S) Calc. (Total-S - SO4-S)	Bru 146_36.82 to 37	S-CAL06	11-Nov-2020						05-Jan-2021 16:00	28 days	55 days	×	EHT
Sulfide S (as S) Calc. (Total-S - SO4-S)	Bru 146_49-86 to 5(	S-CAL06	11-Nov-2020						05-Jan-2021 16:00	28 days	55 days	×	EHT
Sulfide S (as S) Calc. (Total-S - SO4-S)	Bru 95-8_40.16 to 4(	S-CAL06	18-Nov-2020						05-Jan-2021 16:00	28 days	48 days	×	EHT
Sulfide S (as S) Calc. (Total-S - SO4-S)	Bru 95-8_49.39 to 4(	S-CAL06	18-Nov-2020						05-Jan-2021 16:00	28 days	48 days	×	EHT
Leachable Metals (Matrix: Soil/Solid)													
Mercury by CVAAS (Shakeflask, 3:1 Ratio wi	Bru 121-1_24.38 to :	E515	11-Nov-2020	17-Dec-2020 16:00	28 days	36 days	×	EHT	19-Dec-2020 01:47	-9 days	1 days	×	
Mercury by CVAAS (Shakeflask, 3:1 Ratio wi	Bru 121-1_36.57 to :	E515	11-Nov-2020	17-Dec-2020 16:00	28 days	36 days	×	EHT	19-Dec-2020 01:47	-9 days	1 days	×	
Mercury by CVAAS (Shakeflask, 3:1 Ratio wi	Bru 146_36.82 to 37	E515	11-Nov-2020	17-Dec-2020 16:00	28 days	36 days	×	EHT	19-Dec-2020 01:47	-9 days	1 days	×	
Mercury by CVAAS (Shakeflask, 3:1 Ratio wi	Bru 146_49-86 to 5(	E515	11-Nov-2020	17-Dec-2020 16:00	28 days	36 days	×	EHT	19-Dec-2020 01:47	-9 days	1 days	×	
Mercury by CVAAS (Shakeflask, 3:1 Ratio wi	Bru 95-8_40.16 to 4(	E515	18-Nov-2020	17-Dec-2020 16:00	28 days	29 days	×	EHT	19-Dec-2020 01:47	-2 days	1 days	×	
Mercury by CVAAS (Shakeflask, 3:1 Ratio wi	Bru 95-8_49.39 to 4(	E515	18-Nov-2020	17-Dec-2020 16:00	28 days	29 days	×	EHT	19-Dec-2020 01:47	-2 days	1 days	×	

Legend & Qualifier Definitions

EHT: Exceeded ALS recommended hold time prior to analysis.

Evaluation Legend

✓ = within holding time

× = holding time exceedance

Analysis Holding Time Compliance

This report summarizes extraction / preparation and analysis times and compares each with ALS recommended holding times, which are selected to meet known provincial and/or federal requirements.

In the absence of regulatory hold times, ALS establishes recommendations based on guidelines published by organizations such as CCME, US EPA, APHA Standard Methods, ASTM, or Environment Canada (where available).

Dates and holding times reported above represent the first dates of extraction or analysis. If subsequent tests or dilutions exceeded holding times, qualifiers are added.

If samples are identified above as having been analyzed or extracted outside of recommended holding times, measurement uncertainties may be increased, and this should be taken into consideration when interpreting results.

Where actual sampling date is not provided on chain of custody, the date of receipt with the time at 15:00 is used for calculation purposes.

Where only the sample date without time is provided on chain of custody, the sampling date at 15:00 is used for calculation purposes.

Detection Limits VA20C2029

Project	60640258 - CanWhite Sands
Report To	Ryan Mills, AECOM Canada Ltd.
Date Received	27-Nov-2020 12:55
Issue Date	16-Feb-2021 15:04
Amendment	2

Client Sample ID		Bru 95-3	Bru 121-1_24.38 to 24.83	Bru 121-1_36.57 to 37.00	Bru 146_36.82 to 37.13	Bru 146_49-86 to 50.29	Bru 95-8_40.16 to 40.65	Bru 95-8_49.39 to 49.79
Date Sampled		19-Nov-2020	11-Nov-2020	11-Nov-2020	11-Nov-2020	11-Nov-2020	18-Nov-2020	18-Nov-2020
Time Sampled		08:00	12:30	12:30	00:50	12:50	13:30	15:00
ALS Sample ID		VA20C2029-001	VA20C2029-002	VA20C2029-003	VA20C2029-004	VA20C2029-005	VA20C2029-006	VA20C2029-007
Analyte	Units	Sub-Matrix: Solid	Sub-Matrix: Solid	Sub-Matrix: Solid	Sub-Matrix: Solid	Sub-Matrix: Solid	Sub-Matrix: Solid	Sub-Matrix: Solid
Physical Tests (Matrix: Soil/Solid)								
moisture	%	0.25	0.25	0.25	0.25	0.25	0.25	0.25
pH	pH units	0.10	0.10	0.10	0.10	0.10	0.10	0.10
Acid Base Accounting (Matrix: Soil/Solid)								
fizz rating		1	1	1	1	1	1	1
maximum potential acidity [MPA]	tCaCO3/kt	0.3	0.3	0.3	0.3	0.3	0.3	0.3
net neutralization potential [NNP]	tCaCO3/kt	1	1	1	1	1	1	1
neutralization potential [NP]	tCaCO3/kt	1	1	1	1	1	1	1
neutralization potential ratio [NPR], (NP/MPA)		0.01	0.01	0.01	0.01	0.01	0.01	0.01
carbon dioxide	%	0.2	0.2	0.2	0.2	0.2	0.2	0.2
carbon, total [TC]	%	0.01	0.01	0.01	0.01	0.01	0.01	0.01
pH (1:1 soil:water)	pH units	0.10	0.10	0.10	0.10	0.10	0.10	0.10
sulfide (as S), total minus carbonate leach	%	0.01	0.01	0.01	0.01	0.01	0.01	0.01
sulfur, residual	%	0.01	0.01	0.01	0.01	0.01	0.01	0.01
sulfur, total	%	0.01	0.01	0.01	0.01	0.01	0.01	0.01
weight, sample received	kg	0.02	0.02	0.02	0.02	0.02	0.02	0.02
sulfate (as S), HCl leach	%	0.01	0.01	0.01	0.01	0.01	0.01	0.01
sulfate (as S), carbonate leach	%	0.01	0.01	0.01	0.01	0.01	0.01	0.01
carbon, total inorganic [TIC]	%	0.05	0.05	0.05	0.05	0.05	0.05	0.05
Metals (Matrix: Soil/Solid)								
aluminum	%	0.01	0.01	0.01	0.01	0.01	0.01	0.01
antimony	ppm	0.05	0.05	0.05	0.05	0.05	0.05	0.05
arsenic	ppm	0.1	0.1	0.1	0.1	0.1	0.1	0.1
barium	ppm	10	10	10	10	10	10	10
beryllium	ppm	0.05	0.05	0.05	0.05	0.05	0.05	0.05
bismuth	ppm	0.01	0.01	0.01	0.01	0.01	0.01	0.01
boron	ppm	10	10	10	10	10	10	10
cadmium	ppm	0.01	0.01	0.01	0.01	0.01	0.01	0.01
calcium	%	0.01	0.01	0.01	0.01	0.01	0.01	0.01
cerium	ppm	0.02	0.02	0.02	0.02	0.02	0.02	0.02
cesium	ppm	0.05	0.05	0.05	0.05	0.05	0.05	0.05
chromium	ppm	1	1	1	1	1	1	1
cobalt	ppm	0.1	0.1	0.1	0.1	0.1	0.1	0.1
copper	ppm	0.2	0.2	0.2	0.2	0.2	0.2	0.2
gallium	ppm	0.05	0.05	0.05	0.05	0.05	0.05	0.05
germanium	ppm	0.05	0.05	0.05	0.05	0.05	0.05	0.05
gold	ppm	0.02	0.02	0.02	0.02	0.02	0.02	0.02
hafnium	ppm	0.02	0.02	0.02	0.02	0.02	0.02	0.02
indium	ppm	0.005	0.005	0.005	0.005	0.005	0.005	0.005
iron	%	0.01	0.01	0.01	0.01	0.01	0.01	0.01
lanthanum	ppm	0.2	0.2	0.2	0.2	0.2	0.2	0.2
lead	ppm	0.2	0.2	0.2	0.2	0.2	0.2	0.2
lithium	ppm	0.1	0.1	0.1	0.1	0.1	0.1	0.1
magnesium	%	0.01	0.01	0.01	0.01	0.01	0.01	0.01
manganese	ppm	5	5	5	5	5	5	5
mercury	ppm	0.01	0.01	0.01	0.01	0.01	0.01	0.01
molybdenum	ppm	0.05	0.05	0.05	0.05	0.05	0.05	0.05
nickel	ppm	0.2	0.2	0.2	0.2	0.2	0.2	0.2
niobium	ppm	0.05	0.05	0.05	0.05	0.05	0.05	0.05
phosphorus	ppm	10	10	10	10	10	10	10
potassium	%	0.01	0.01	0.01	0.01	0.01	0.01	0.01
rhenium	ppm	0.001	0.001	0.001	0.001	0.001	0.001	0.001
rubidium	ppm	0.1	0.1	0.1	0.1	0.1	0.1	0.1
scandium	ppm	0.1	0.1	0.1	0.1	0.1	0.1	0.1
selenium	ppm	0.2	0.2	0.2	0.2	0.2	0.2	0.2
silver	ppm	0.01	0.01	0.01	0.01	0.01	0.01	0.01
sodium	%	0.01	0.01	0.01	0.01	0.01	0.01	0.01
strontium	ppm	0.2	0.2	0.2	0.2	0.2	0.2	0.2

sulfur	%	0.01	0.01	0.01	0.01	0.01	0.01	0.01
tantalum	ppm	0.01	0.01	0.01	0.01	0.01	0.01	0.01
tellurium	ppm	0.01	0.01	0.01	0.01	0.01	0.01	0.01
thallium	ppm	0.02	0.02	0.02	0.02	0.02	0.02	0.02
thorium	ppm	0.2	0.2	0.2	0.2	0.2	0.2	0.2
tin	ppm	0.2	0.2	0.2	0.2	0.2	0.2	0.2
titanium	%	0.005	0.005	0.005	0.005	0.005	0.005	0.005
tungsten	ppm	0.05	0.05	0.05	0.05	0.05	0.05	0.05
uranium	ppm	0.05	0.05	0.05	0.05	0.05	0.05	0.05
vanadium	ppm	1	1	1	1	1	1	1
yttrium	ppm	0.05	0.05	0.05	0.05	0.05	0.05	0.05
zinc	ppm	2	2	2	2	2	2	2
zirconium	ppm	0.5	0.5	0.5	0.5	0.5	0.5	0.5

Leachable Metals (Matrix: Soil/Solid)

aluminum, leachable	mg/L	0.0050	0.0050	0.0050	0.0050	0.0050	0.0050	0.0050
antimony, leachable	mg/L	0.00010	0.00010	0.00010	0.00010	0.00010	0.00010	0.00010
arsenic, leachable	mg/L	0.0010	0.0010	0.0010	0.0010	0.0010	0.0010	0.0010
barium, leachable	mg/L	0.0010	0.0010	0.0010	0.0010	0.0010	0.0010	0.0010
beryllium, leachable	mg/L	0.00050	0.00050	0.00050	0.00050	0.00050	0.00050	0.00050
bismuth, leachable	mg/L	0.00050	0.00050	0.00050	0.00050	0.00050	0.00050	0.00050
boron, leachable	mg/L	0.010	0.010	0.010	0.010	0.010	0.010	0.010
cadmium, leachable	mg/L	0.000050	0.000050	0.000050	0.000050	0.000050	0.000050	0.000050
calcium, leachable	mg/L	0.10	0.10	0.10	0.10	0.10	0.10	0.10
chromium, leachable	mg/L	0.00050	0.00050	0.00050	0.00050	0.00050	0.00050	0.00050
cobalt, leachable	mg/L	0.00010	0.00010	0.00010	0.00010	0.00010	0.00010	0.00010
copper, leachable	mg/L	0.0010	0.0010	0.0010	0.0010	0.0010	0.0010	0.0010
iron, leachable	mg/L	0.030	0.030	0.030	0.030	0.030	0.030	0.030
lead, leachable	mg/L	0.00010	0.00010	0.00010	0.00010	0.00010	0.00010	0.00010
lithium, leachable	mg/L	0.0050	0.0050	0.0050	0.0050	0.0050	0.0050	0.0050
magnesium, leachable	mg/L	0.050	0.050	0.050	0.050	0.050	0.050	0.050
manganese, leachable	mg/L	0.00050	0.00050	0.00050	0.00050	0.00050	0.00050	0.00050
molybdenum, leachable	mg/L	0.00010	0.00010	0.00010	0.00010	0.00010	0.00010	0.00010
nickel, leachable	mg/L	0.00050	0.00050	0.00050	0.00050	0.00050	0.00050	0.00050
phosphorus, leachable	mg/L	0.30	0.30	0.30	0.30	0.30	0.30	0.30
potassium, leachable	mg/L	0.050	0.050	0.050	0.050	0.050	0.050	0.050
selenium, leachable	mg/L	0.00050	0.00050	0.00050	0.00050	0.00050	0.00050	0.00050
silicon, leachable	mg/L	0.050	0.050	0.050	0.050	0.050	0.050	0.050
silver, leachable	mg/L	0.000050	0.000050	0.000050	0.000050	0.000050	0.000050	0.000050
sodium, leachable	mg/L	0.050	0.050	0.050	0.050	0.050	0.050	0.050
strontium, leachable	mg/L	0.00050	0.00050	0.00050	0.00050	0.00050	0.00050	0.00050
sulfur, leachable	mg/L	0.50	0.50	0.50	0.50	0.50	0.50	0.50
thallium, leachable	mg/L	0.00010	0.00010	0.00010	0.00010	0.00010	0.00010	0.00010
tin, leachable	mg/L	0.00050	0.00050	0.00050	0.00050	0.00050	0.00050	0.00050
titanium, leachable	mg/L	0.010	0.010	0.010	0.010	0.010	0.010	0.010
uranium, leachable	mg/L	0.000010	0.000010	0.000010	0.000010	0.000010	0.000010	0.000010
vanadium, leachable	mg/L	0.0010	0.0010	0.0010	0.0010	0.0010	0.0010	0.0010
zinc, leachable	mg/L	0.010	0.010	0.010	0.010	0.010	0.010	0.010
mercury, leachable	mg/L	0.000050	0.000050	0.000050	0.000050	0.000050	0.000050	0.000050
hardness (as CaCO3), dissolved	mg/L	0.60	0.60	0.60	0.60	0.60	0.60	0.60

ALS Environmental

CERTIFICATE OF ANALYSIS

Work Order	: **VA20C2173**	Page	: 1 of 6
Client	: **AECOM Canada Ltd.**	Laboratory	: Vancouver - Environmental
Contact	: Ryan Mills	Account Manager	: Dean Watt
Address	: 3292 Production Way Burnaby BC Canada V5A 4R4	Address	: 8081 Lougheed Highway Burnaby BC Canada V5A 1W9
Telephone	: ----	Telephone	: +1 604 253 4188
Project	: 60640258 - CanWhite Sands	Date Samples Received	: 27-Nov-2020 12:55
PO	: ----	Date Analysis Commenced	: 02-Dec-2020
C-O-C number	: ----	Issue Date	: 16-Feb-2021 15:08
Sampler	: SD/RD		
Site	: ----		
Quote number	: Aecom 2020 Price List (BC/YT)		
No. of samples received	: 14		
No. of samples analysed	: 2		

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. This document shall not be reproduced, except in full.

This Certificate of Analysis contains the following information:

- General Comments
- Analytical Results

Additional information pertinent to this report will be found in the following separate attachments: Quality Control Report, QC Interpretive report to assist with Quality Review and Sample Receipt Notification (SRN).

Signatories

This document has been electronically signed by the authorized signatories below. Electronic signing is conducted in accordance with US FDA 21 CFR Part 11.

Signatories	*Position*	*Laboratory Department*
Erick Magalhaes	Analyst	Metals, Burnaby, British Columbia
Erin Gatdula	Account Manager Assistant	External Subcontracting, Vancouver, British Columbia
Erin Gatdula	Account Manager Assistant	Internal Subcontracting, North Vancouver, British Columbia
Ophelia Chiu	Department Manager - Organics	Organics, Burnaby, British Columbia

General Comments

The analytical methods used by ALS are developed using internationally recognized reference methods (where available), such as those published by US EPA, APHA Standard Methods, ASTM, ISO, Environment Canada, BC MOE, and Ontario MOE. Refer to the ALS Quality Control Interpretive report (QCI) for applicable references and methodology summaries. Reference methods may incorporate modifications to improve performance.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis.

Where the LOR of a reported result differs from standard LOR, this may be due to high moisture content, insufficient sample (reduced weight employed) or matrix interference.

Please refer to Quality Control Interpretive report (QCI) for information regarding Holding Time compliance.

Key : CAS Number: Chemical Abstracts Services number is a unique identifier assigned to discrete substances
LOR: Limit of Reporting (detection limit).

Unit	*Description*
-	No Unit
%	percent
kg	kilograms
mg/L	milligrams per litre
pH units	pH units
ppm	parts per million
tCaCO3/kt	tons CaCO3 per kiloton

<: less than.

>: greater than.

Surrogate: An analyte that is similar in behavior to target analyte(s), but that does not occur naturally in environmental samples. For applicable tests, surrogates are added to samples prior to analysis as a check on recovery.

Test results reported relate only to the samples as received by the laboratory.

UNLESS OTHERWISE STATED on SRN or QCI Report, ALL SAMPLES WERE RECEIVED IN ACCEPTABLE CONDITION.

Analytical results in reports identified as "Preliminary Report" are considered authorized for use.

Workorder Comments

XRD analysis still in progress and will be added once complete.

Analytical Results

Sub-Matrix: **Solid**
(Matrix: **Soil/Solid**)

Analyte	CAS Number	Method	LOR	Unit	Client sample ID	Bru 121-1_174 to 179	Bru 146_189 to 194	----	----	----
					Client sampling date / time	10-Dec-2018 08:00	06-Dec-2018 08:00	----	----	----
						VA20C2173-001	VA20C2173-002	--------	--------	--------
						Result	Result	----	----	----
Physical Tests										
moisture	----	E144	0.25	%		<0.25	<0.25	----	----	----
quantitative phase analysis	----	XRD	-	-		see attached	see attached	----	----	----
Acid Base Accounting										
carbon dioxide	124-38-9	C-GAS05	0.2	%		0.3	0.2	----	----	----
carbon, total [TC]	----	C-IR07	0.01	%		0.12	0.07	----	----	----
carbon, total inorganic [TIC]	----	C-GAS05	0.05	%		0.09	0.05	----	----	----
fizz rating	----	OA-VOL08m	1	-		1	1	----	----	----
maximum potential acidity [MPA]	----	OA-VOL08m	0.3	tCaCO3/kt		0.3	<0.3	----	----	----
net neutralization potential [NNP]	----	OA-VOL08m	1	tCaCO3/kt		3	4	----	----	----
neutralization potential [NP]	----	OA-VOL08m	1	tCaCO3/kt		3	4	----	----	----
neutralization potential ratio [NPR], (NP/MPA)	----	OA-VOL08m	0.01	-		9.60	25.60	----	----	----
pH (1:1 soil:water)	----	OA-ELE07	0.10	pH units		7.00	8.10	----	----	----
sulfate (as S), carbonate leach	14808-79-8	S-GRA06	0.01	%		0.01	0.02	----	----	----
sulfate (as S), HCl leach	14808-79-8	S-GRA06A	0.01	%		<0.01	<0.01	----	----	----
sulfide (as S), total minus carbonate leach	18496-25-8	S-CAL06	0.01	%		<0.01	<0.01	----	----	----
sulfur, total	7704-34-9	S-IR08	0.01	%		0.01	<0.01	----	----	----
weight, sample received	NA	WEI-21	0.02	kg		1.04	0.30	----	----	----
Metals										
aluminum	7429-90-5	ME-MS41	0.01	%		0.09	0.05	----	----	----
antimony	7440-36-0	ME-MS41	0.05	ppm		<0.05	<0.05	----	----	----
arsenic	7440-38-2	ME-MS41	0.1	ppm		1.5	0.2	----	----	----
barium	7440-39-3	ME-MS41	10	ppm		<10	<10	----	----	----
beryllium	7440-41-7	ME-MS41	0.05	ppm		<0.05	<0.05	----	----	----
bismuth	7440-69-9	ME-MS41	0.01	ppm		0.01	0.01	----	----	----
boron	7440-42-8	ME-MS41	10	ppm		<10	<10	----	----	----
cadmium	7440-43-9	ME-MS41	0.01	ppm		<0.01	<0.01	----	----	----
calcium	7440-70-2	ME-MS41	0.01	%		0.03	0.12	----	----	----
cerium	7440-45-1	ME-MS41	0.02	ppm		1.67	1.48	----	----	----
cesium	7440-46-2	ME-MS41	0.05	ppm		<0.05	<0.05	----	----	----

Analytical Results

Sub-Matrix: **Solid**
(Matrix: **Soil/Solid**)

Analyte	CAS Number	Method	LOR	Unit	Client sample ID	Bru 121-1_174 to 179	Bru 146_189 to 194	----	----	----
					Client sampling date / time	10-Dec-2018 08:00	06-Dec-2018 08:00	----	----	----
						VA20C2173-001	VA20C2173-002	--------	--------	--------
						Result	Result	----	----	----
Metals										
chromium	7440-47-3	ME-MS41	1	ppm		3	2	----	----	----
cobalt	7440-48-4	ME-MS41	0.1	ppm		0.6	0.2	----	----	----
copper	7440-50-8	ME-MS41	0.2	ppm		1.0	0.8	----	----	----
gallium	7440-55-3	ME-MS41	0.05	ppm		0.18	0.12	----	----	----
germanium	7440-56-4	ME-MS41	0.05	ppm		<0.05	<0.05	----	----	----
gold	7440-57-5	ME-MS41	0.02	ppm		<0.02	<0.02	----	----	----
hafnium	7440-58-6	ME-MS41	0.02	ppm		0.13	0.09	----	----	----
indium	7440-74-6	ME-MS41	0.005	ppm		<0.005	<0.005	----	----	----
iron	7439-89-6	ME-MS41	0.01	%		0.65	0.30	----	----	----
lanthanum	7439-91-0	ME-MS41	0.2	ppm		0.8	0.7	----	----	----
lead	7439-92-1	ME-MS41	0.2	ppm		0.9	6.3	----	----	----
lithium	7439-93-2	ME-MS41	0.1	ppm		1.9	1.3	----	----	----
magnesium	7439-95-4	ME-MS41	0.01	%		0.01	0.02	----	----	----
manganese	7439-96-5	ME-MS41	5	ppm		45	33	----	----	----
mercury	7439-97-6	ME-MS41	0.01	ppm		<0.01	<0.01	----	----	----
molybdenum	7439-98-7	ME-MS41	0.05	ppm		0.09	0.06	----	----	----
nickel	7440-02-0	ME-MS41	0.2	ppm		1.3	0.5	----	----	----
niobium	7440-03-1	ME-MS41	0.05	ppm		<0.05	<0.05	----	----	----
phosphorus	7723-14-0	ME-MS41	10	ppm		30	20	----	----	----
potassium	7440-09-7	ME-MS41	0.01	%		0.01	0.01	----	----	----
rhenium	7440-15-5	ME-MS41	0.001	ppm		<0.001	<0.001	----	----	----
rubidium	7440-17-7	ME-MS41	0.1	ppm		0.3	0.2	----	----	----
scandium	7440-20-2	ME-MS41	0.1	ppm		0.1	0.1	----	----	----
selenium	7782-49-2	ME-MS41	0.2	ppm		0.2	<0.2	----	----	----
silver	7440-22-4	ME-MS41	0.01	ppm		0.01	0.01	----	----	----
sodium	7440-23-5	ME-MS41	0.01	%		<0.01	<0.01	----	----	----
strontium	7440-24-6	ME-MS41	0.2	ppm		1.9	1.9	----	----	----
sulfur	7704-34-9	ME-MS41	0.01	%		0.01	0.01	----	----	----
tantalum	7440-25-7	ME-MS41	0.01	ppm		<0.01	<0.01	----	----	----
tellurium	13494-80-9	ME-MS41	0.01	ppm		<0.01	<0.01	----	----	----
thallium	7440-28-0	ME-MS41	0.02	ppm		0.03	<0.02	----	----	----

Analytical Results

Sub-Matrix: **Solid**
(Matrix: **Soil/Solid**)

Analyte	CAS Number	Method	LOR	Unit	Client sample ID	Bru 121-1_174 to 179	Bru 146_189 to 194	----	----	----
					Client sampling date / time	10-Dec-2018 08:00	06-Dec-2018 08:00	----	----	----
						VA20C2173-001	VA20C2173-002	--------	--------	--------
						Result	Result	----	----	----
Metals										
thorium	7440-29-1	ME-MS41	0.2	ppm		0.3	0.3	----	----	----
tin	7440-31-5	ME-MS41	0.2	ppm		<0.2	<0.2	----	----	----
titanium	7440-32-6	ME-MS41	0.005	%		<0.005	<0.005	----	----	----
tungsten	7440-33-7	ME-MS41	0.05	ppm		<0.05	<0.05	----	----	----
uranium	7440-61-1	ME-MS41	0.05	ppm		0.16	0.14	----	----	----
vanadium	7440-62-2	ME-MS41	1	ppm		1	1	----	----	----
yttrium	7440-65-5	ME-MS41	0.05	ppm		0.33	0.27	----	----	----
zinc	7440-66-6	ME-MS41	2	ppm		2	2	----	----	----
zirconium	7440-67-7	ME-MS41	0.5	ppm		3.8	2.9	----	----	----
Leachable Metals										
aluminum, leachable	7429-90-5	E446	0.0050	mg/L		1.88	0.713	----	----	----
antimony, leachable	7440-36-0	E446	0.00010	mg/L		<0.00010	<0.00010	----	----	----
arsenic, leachable	7440-38-2	E446	0.0010	mg/L		<0.0010	<0.0010	----	----	----
barium, leachable	7440-39-3	E446	0.0010	mg/L		0.0118	0.0051	----	----	----
beryllium, leachable	7440-41-7	E446	0.00050	mg/L		<0.00050	<0.00050	----	----	----
bismuth, leachable	7440-69-9	E446	0.00050	mg/L		<0.00050	<0.00050	----	----	----
boron, leachable	7440-42-8	E446	0.010	mg/L		0.016	<0.010	----	----	----
cadmium, leachable	7440-43-9	E446	0.000050	mg/L		<0.000050	<0.000050	----	----	----
calcium, leachable	7440-70-2	E446	0.10	mg/L		0.96	4.94	----	----	----
chromium, leachable	7440-47-3	E446	0.00050	mg/L		0.00376	0.00103	----	----	----
cobalt, leachable	7440-48-4	E446	0.00010	mg/L		0.00015	0.00014	----	----	----
copper, leachable	7440-50-8	E446	0.0010	mg/L		<0.0010	0.0015	----	----	----
iron, leachable	7439-89-6	E446	0.030	mg/L		0.161	0.060	----	----	----
lead, leachable	7439-92-1	E446	0.00010	mg/L		0.00028	0.00016	----	----	----
lithium, leachable	7439-93-2	E446	0.0050	mg/L		0.0089	0.0091	----	----	----
magnesium, leachable	7439-95-4	E446	0.050	mg/L		0.476	1.18	----	----	----
manganese, leachable	7439-96-5	E446	0.00050	mg/L		<0.00050	0.00071	----	----	----
molybdenum, leachable	7439-98-7	E446	0.00010	mg/L		0.00032	0.00077	----	----	----
nickel, leachable	7440-02-0	E446	0.00050	mg/L		0.00067	<0.00050	----	----	----
phosphorus, leachable	7723-14-0	E446	0.30	mg/L		<0.30	<0.30	----	----	----
potassium, leachable	7440-09-7	E446	0.050	mg/L		0.493	0.313	----	----	----

Analytical Results

Sub-Matrix: **Solid**
(Matrix: **Soil/Solid**)

Analyte	CAS Number	Method	LOR	Unit	Client sample ID	Bru 121-1_174 to 179	Bru 146_189 to 194	----	----	----
					Client sampling date / time	10-Dec-2018 08:00	06-Dec-2018 08:00	----	----	----
						VA20C2173-001	VA20C2173-002	--------	--------	--------
						Result	Result	----	----	----
Leachable Metals										
selenium, leachable	7782-49-2	E446	0.00050	mg/L		0.00203	<0.00050	----	----	----
silicon, leachable	7440-21-3	E446	0.050	mg/L		2.96	1.56	----	----	----
silver, leachable	7440-22-4	E446	0.000050	mg/L		<0.000050	<0.000050	----	----	----
sodium, leachable	7440-23-5	E446	0.050	mg/L		0.757	0.356	----	----	----
strontium, leachable	7440-24-6	E446	0.00050	mg/L		0.00841	0.0165	----	----	----
sulfur, leachable	----	E446	0.50	mg/L		<0.50	0.70	----	----	----
thallium, leachable	7440-28-0	E446	0.00010	mg/L		<0.00010	<0.00010	----	----	----
tin, leachable	7440-31-5	E446	0.00050	mg/L		<0.00050	<0.00050	----	----	----
titanium, leachable	7440-32-6	E446	0.010	mg/L		0.037	0.025	----	----	----
uranium, leachable	7440-61-1	E446	0.000010	mg/L		0.000207	0.000134	----	----	----
vanadium, leachable	7440-62-2	E446	0.0010	mg/L		<0.0010	0.0018	----	----	----
zinc, leachable	7440-66-6	E446	0.010	mg/L		<0.010	<0.010	----	----	----
hardness (as CaCO3), dissolved	----	E446	0.60	mg/L		4.36	17.2	----	----	----

Please refer to the General Comments section for an explanation of any qualifiers detected.

QUALITY CONTROL INTERPRETIVE REPORT

Work Order	: **VA20C2173**	Page	: 1 of 10
Client	: **AECOM Canada Ltd.**	Laboratory	: Vancouver - Environmental
Contact	: Ryan Mills	Account Manager	: Dean Watt
Address	: 3292 Production Way Burnaby BC Canada V5A 4R4	Address	: 8081 Lougheed Highway Burnaby, British Columbia Canada V5A 1W9
Telephone	: ----	Telephone	: +1 604 253 4188
Project	: 60640258 - CanWhite Sands	Date Samples Received	: 27-Nov-2020 12:55
PO	: ----	Issue Date	: 16-Feb-2021 15:08
C-O-C number	: ----		
Sampler	: SD/RD		
Site	: ----		
Quote number	: Aecom 2020 Price List (BC/YT)		
No. of samples received	: 14		
No. of samples analysed	: 2		

This report is automatically generated by the ALS LIMS (Laboratory Information Management System) through evaluation of Quality Control (QC) results and other QA parameters associated with this submission, and is intended to facilitate rapid data validation by auditors or reviewers. The report highlights any exceptions and outliers to ALS Data Quality Objectives, provides holding time details and exceptions, summarizes QC sample frequencies, and lists applicable methodology references and summaries.

Key

Anonymous: Refers to samples which are not part of this work order, but which formed part of the QC process lot.
CAS Number: Chemical Abstracts Services number is a unique identifier assigned to discrete substances.
DQO: Data Quality Objective.
LOR: Limit of Reporting (detection limit).
RPD: Relative Percent Difference.

Workorder Comments

Summary of Outliers

Outliers : Quality Control Samples

- No Method Blank value outliers occur.
- No Duplicate outliers occur.
- No Laboratory Control Sample (LCS) outliers occur
- No Matrix Spike outliers occur.
- No Test sample Surrogate recovery outliers exist.

Outliers: Reference Material (RM) Samples

- No Reference Material (RM) Sample outliers occur.

Outliers : Analysis Holding Time Compliance (Breaches)

- Analysis Holding Time Outliers exist - please see following pages for full details.

Outliers : Frequency of Quality Control Samples

- Quality Control Sample Frequency Outliers occur - please see following pages for full details.

Analysis Holding Time Compliance

This report summarizes extraction / preparation and analysis times and compares each with ALS recommended holding times, which are selected to meet known provincial and /or federal requirements. In the absence of regulatory hold times, ALS establishes recommendations based on guidelines published by organizations such as CCME, US EPA, APHA Standard Methods, ASTM, or Environment Canada (where available). Dates and holding times reported below represent the first dates of extraction or analysis. If subsequent tests or dilutions exceeded holding times, qualifiers are added (refer to COA).

If samples are identified below as having been analyzed or extracted outside of recommended holding times, measurement uncertainties may be increased, and this should be taken into consideration when interpreting results.

Where actual sampling date is not provided on the chain of custody, the date of receipt with time at 15:00 is used for calculation purposes.

Where only the sample date without time is provided on the chain of custody, the sampling date at 15:00 is used for calculation purposes.

Matrix: **Soil/Solid**

Evaluation: × = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group / Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times Rec	Holding Times Actual	Eval	Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Acid Base Accounting : Acid Base Accounting (Modified Sobek)										
LDPE bag										
Bru 121-1_174 to 179	OA-VOL08m	10-Dec-2018	----	----	----		23-Jan-2021	----	----	
Acid Base Accounting : Acid Base Accounting (Modified Sobek)										
LDPE bag										
Bru 146_189 to 194	OA-VOL08m	06-Dec-2018	----	----	----		23-Jan-2021	----	----	
Acid Base Accounting : IC by coulometer										
LDPE bag										
Bru 121-1_174 to 179	C-GAS05	10-Dec-2018	----	----	----		23-Jan-2021	----	----	
Acid Base Accounting : IC by coulometer										
LDPE bag										
Bru 146_189 to 194	C-GAS05	06-Dec-2018	----	----	----		23-Jan-2021	----	----	
Acid Base Accounting : Received Sample Weight										
LDPE bag										
Bru 121-1_174 to 179	WEI-21	10-Dec-2018	----	----	----		23-Jan-2021	180 days	775 days	× EHTR
Acid Base Accounting : Received Sample Weight										
LDPE bag										
Bru 146_189 to 194	WEI-21	06-Dec-2018	----	----	----		23-Jan-2021	180 days	779 days	× EHTR
Acid Base Accounting : Saturated Paste pH										
LDPE bag										
Bru 121-1_174 to 179	OA-ELE07	10-Dec-2018	----	----	----		23-Jan-2021	----	----	

Matrix: **Soil/Solid**

Evaluation: × = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group / Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times Rec	Holding Times Actual	Eval	Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Acid Base Accounting : Saturated Paste pH										
LDPE bag Bru 146_189 to 194	OA-ELE07	06-Dec-2018	----	----	----		23-Jan-2021	----	----	
Acid Base Accounting : Sulfates by HCl Leaching and Gravimetry with Sulfide S Calc.										
LDPE bag Bru 121-1_174 to 179	S-GRA06A	10-Dec-2018	----	----	----		23-Jan-2021	----	----	
Acid Base Accounting : Sulfates by HCl Leaching and Gravimetry with Sulfide S Calc.										
LDPE bag Bru 146_189 to 194	S-GRA06A	06-Dec-2018	----	----	----		23-Jan-2021	----	----	
Acid Base Accounting : Sulfates by NaCO3 Leaching and Gravimetry with Sulfide S Calc.										
LDPE bag Bru 121-1_174 to 179	S-GRA06	10-Dec-2018	----	----	----		23-Jan-2021	----	----	
Acid Base Accounting : Sulfates by NaCO3 Leaching and Gravimetry with Sulfide S Calc.										
LDPE bag Bru 146_189 to 194	S-GRA06	06-Dec-2018	----	----	----		23-Jan-2021	----	----	
Acid Base Accounting : Sulfide S (as S) Calc. (Total-S - SO4-S)										
LDPE bag Bru 121-1_174 to 179	S-CAL06	10-Dec-2018	----	----	----		23-Jan-2021	28 days	775 days	× EHTR
Acid Base Accounting : Sulfide S (as S) Calc. (Total-S - SO4-S)										
LDPE bag Bru 146_189 to 194	S-CAL06	06-Dec-2018	----	----	----		23-Jan-2021	28 days	779 days	× EHTR
Acid Base Accounting : Total C by Leco and IR										
LDPE bag Bru 121-1_174 to 179	C-IR07	10-Dec-2018	----	----	----		23-Jan-2021	----	----	
Acid Base Accounting : Total C by Leco and IR										
LDPE bag Bru 146_189 to 194	C-IR07	06-Dec-2018	----	----	----		23-Jan-2021	----	----	

Matrix: **Soil/Solid**

Evaluation: × = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group / Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times Rec	Holding Times Actual	Eval	Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Acid Base Accounting : Total S by combustion										
LDPE bag Bru 121-1_174 to 179	S-IR08	10-Dec-2018	----	----	----		23-Jan-2021	----	----	
Acid Base Accounting : Total S by combustion										
LDPE bag Bru 146_189 to 194	S-IR08	06-Dec-2018	----	----	----		23-Jan-2021	----	----	
Leachable Metals : Metals by CRC ICPMS (Shakeflask, 3:1 Ratio with Water)										
Glass soil jar/Teflon lined cap Bru 121-1_174 to 179	E446	10-Dec-2018	03-Dec-2020	180 days	724 days	× EHTR	04-Dec-2020	-545 days	1 days	× EHTR-FM
Leachable Metals : Metals by CRC ICPMS (Shakeflask, 3:1 Ratio with Water)										
Glass soil jar/Teflon lined cap Bru 146_189 to 194	E446	06-Dec-2018	03-Dec-2020	180 days	728 days	× EHTR	04-Dec-2020	-549 days	1 days	× EHTR-FM
Metals : 51 Elements by Aqua Regia digestion and ICP-AES/MS										
LDPE bag Bru 121-1_174 to 179	ME-MS41	10-Dec-2018	----	----	----		23-Jan-2021	----	----	
Metals : 51 Elements by Aqua Regia digestion and ICP-AES/MS										
LDPE bag Bru 146_189 to 194	ME-MS41	06-Dec-2018	----	----	----		23-Jan-2021	----	----	
Physical Tests : Moisture Content by Gravimetry										
Glass soil jar/Teflon lined cap Bru 121-1_174 to 179	E144	10-Dec-2018	----	----	----		02-Dec-2020	----	----	
Physical Tests : Moisture Content by Gravimetry										
Glass soil jar/Teflon lined cap Bru 146_189 to 194	E144	06-Dec-2018	----	----	----		02-Dec-2020	----	----	
Physical Tests : Quantitative Phase Analysis by XRD (Rietveld)										
Glass soil jar/Teflon lined cap Bru 121-1_174 to 179	XRD	10-Dec-2018	----	----	----		12-Feb-2021	----	----	

Matrix: **Soil/Solid**

Evaluation: × = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group / Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times Rec	Holding Times Actual	Eval	Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Physical Tests : Quantitative Phase Analysis by XRD (Rietveld)										
Glass soil jar/Teflon lined cap										
Bru 146_189 to 194	XRD	06-Dec-2018	----	----	----		12-Feb-2021	----	----	

Legend & Qualifier Definitions

Rec. HT: ALS recommended hold time (see units).

Quality Control Parameter Frequency Compliance

The following report summarizes the frequency of laboratory QC samples analyzed within the analytical batches (QC lots) in which the submitted samples were processed. The actual frequency should be greater than or equal to the expected frequency.

Matrix: **Soil/Solid**

Evaluation: × = *QC frequency outside specification*; ✓ = *QC frequency within specification.*

Quality Control Sample Type			Count		Frequency (%)		
Analytical Methods	*Method*	*QC Lot #*	*QC*	*Regular*	*Actual*	*Expected*	*Evaluation*
Laboratory Duplicates (DUP)							
Metals by CRC ICPMS (Shakeflask, 3:1 Ratio with Water)	E446	125541	0	2	0.0	5.0	×
Moisture Content by Gravimetry	E144	125222	1	4	25.0	5.0	✓
Laboratory Control Samples (LCS)							
Metals by CRC ICPMS (Shakeflask, 3:1 Ratio with Water)	E446	125541	1	2	50.0	5.0	✓
Moisture Content by Gravimetry	E144	125222	1	4	25.0	5.0	✓
Method Blanks (MB)							
Metals by CRC ICPMS (Shakeflask, 3:1 Ratio with Water)	E446	125541	1	2	50.0	5.0	✓
Moisture Content by Gravimetry	E144	125222	1	4	25.0	5.0	✓
Matrix Spikes (MS)							
Metals by CRC ICPMS (Shakeflask, 3:1 Ratio with Water)	E446	125541	1	2	50.0	5.0	✓

Methodology References and Summaries

The analytical methods used by ALS are developed using internationally recognized reference methods (where available), such as those published by US EPA, APHA Standard Methods, ASTM, ISO, Environment Canada, BC MOE, and Ontario MOE. Reference methods may incorporate modifications to improve performance (indicated by "mod").

Analytical Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
IC by coulometer	C-GAS05 ALS Minerals (Vancouver) - 2103 Dollarton Hwy North Vancouver British Columbia Canada V7H 0A7	Soil/Solid	ALS Minerals C-GAS05	Determine Total Inorganic Carbon (TIC) by using diluted perchloric acid to react with metal carbonate and yield carbon dioxide. Concentration of CO_2 is determined by coulometer.
Total C by Leco and IR	C-IR07 ALS Minerals (Vancouver) - 2103 Dollarton Hwy North Vancouver British Columbia Canada V7H 0A7	Soil/Solid	ALS Minerals C-IR07	A sample is heated to approximately 1350°C in an induction furnace with oxygen stream. Carbon dioxide released from the sample are measured by an IR detection system (Leco analyzer).
Moisture Content by Gravimetry	E144 Vancouver - Environmental	Soil/Solid	CCME PHC in Soil - Tier 1	Moisture is measured gravimetrically by drying the sample at 105°C. Moisture content is calculated as the weight loss (due to water) divided by the wet weight of the sample, expressed as a percentage.
Metals by CRC ICPMS (Shakeflask, 3:1 Ratio with Water)	E446 Vancouver - Environmental	Soil/Solid	BC MINISTRY OF ENERGY AND MINES/EPA 6020B (mod)	A sample is extracted with water at a 3:1 liquid to solid ratio for 24 hours, then filtered through a 0.45 micron membrane filter. Analysis is by Collision/Reaction Cell ICPMS. This extraction is an empirical procedure with pre-defined characteristics. Recovery of some elements (Ag, Bi, and Sn) by this method can be variable due to the neutral pH of the extraction fluid, and therefore the LCS DQOs has been established at 50-130% for these elements.
51 Elements by Aqua Regia digestion and ICP-AES/MS	ME-MS41 ALS Minerals (Vancouver) - 2103 Dollarton Hwy North Vancouver British Columbia Canada V7H 0A7	Soil/Solid	ALS Minerals ME-MS41	A prepared sample is digested with aqua regia in a graphite heating block. After cooling, the resulting solution is diluted to with deionized water, mixed and analyzed by ICP-AES. Samples are then analyzed by ICP-MS for the remaining suite of elements.

Analytical Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
Saturated Paste pH	OA-ELE07 ALS Minerals (Vancouver) - 2103 Dollarton Hwy North Vancouver British Columbia Canada V7H 0A7	Soil/Solid	ALS Minerals OA-ELE07	Sample mix with water in 1:1 ratio to make a paste, pH is then determined.
Acid Base Accounting (Modified Sobek)	OA-VOL08m ALS Minerals (Vancouver) - 2103 Dollarton Hwy North Vancouver British Columbia Canada V7H 0A7	Soil/Solid	ALS Minerals OA-VOL08m	Determine the acid generation power of a sample as tonne $CaCO_3$ per kilo-tonne using modified Sobek method
Sulfide S (as S) Calc. (Total-S - SO4-S)	S-CAL06 ALS Minerals (Vancouver) - 2103 Dollarton Hwy North Vancouver British Columbia Canada V7H 0A7	Soil/Solid	ALS Minerals S-CAL06	Sulfide Sulfur (as S) is calculated by subtracting the Carbonate Leachable Sulfate Sulfur (as S) from the Total Sulfur (as S) obtained from combustion.
Sulfates by NaCO3 Leaching and Gravimetry with Sulfide S Calc.	S-GRA06 ALS Minerals (Vancouver) - 2103 Dollarton Hwy North Vancouver British Columbia Canada V7H 0A7	Soil/Solid	ALS Minerals S-GRA06	A preppared sample is heated with diluted Na□CO□ and then filtered. The sulfate in the filtrate is precipitated with BaCl2 in a dilute HCl. The BaSO4 precipitate is filtered, ignited, weighed and the Sulfate Sulfur is determined (as S). Sulfide Sulfur (as S) is calculated by Total Sulfur from combustion minus Sulfate Sulfur from the Na□CO□ leach.
Sulfates by HCl Leaching and Gravimetry with Sulfide S Calc.	S-GRA06A ALS Minerals (Vancouver) - 2103 Dollarton Hwy North Vancouver British Columbia Canada V7H 0A7	Soil/Solid	ALS Minerals S-GRA06A	A prepared sample is heated with dilute HCl and then filtered. The sulfate in the filtrate is precipitated with BaCl2 in a dilute HCl. The BaSO4 precipitate is filtered, ignited, weighed and the Sulfate Sulfur is determined (as S). Sulfide sulfur is calculated by Total Sulfur from combustion minus Sulfate Sulfur from the HCl leach.

Analytical Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
Total S by combustion	S-IR08 ALS Minerals (Vancouver) - 2103 Dollarton Hwy North Vancouver British Columbia Canada V7H 0A7	Soil/Solid	ALS Minerals S-IR08	A prepared sample is heated to approximately 1350°C in an induction furnace with oxygen stream. Sulfur dioxide released from the sample are measured by IR (Leco analyzer) and the Total Sulfur result is provided.
Received Sample Weight	WEI-21 ALS Minerals (Vancouver) - 2103 Dollarton Hwy North Vancouver British Columbia Canada V7H 0A7	Soil/Solid	ALS Minerals WEI-21	Weigh out sample received.
Quantitative Phase Analysis by XRD (Rietveld)	XRD University of British Columbia (Vancouver) - 517 - 6350 Stories Road Vancouver British Columbia Canada V6T 1Z4	Soil/Solid	see attached	Quantitative phase analysis of one powder sample using the Rietveld method and x-ray powder diffraction data.

Preparation Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
Shakeflask Leachate Preparation (3:1 Ratio with Water)	EP446 Vancouver - Environmental	Soil/Solid	BC MINISTRY OF ENERGY AND MINES	A sample is extracted with water at a 3:1 liquid to solids ratio for 24 hours, then filtered through a 0.45 micron membrane filter.

QUALITY CONTROL REPORT

Work Order	: **VA20C2173**	Page	: 1 of 8
Client	: AECOM Canada Ltd.	Laboratory	: Vancouver - Environmental
Contact	: Ryan Mills	Account Manager	: Dean Watt
Address	: 3292 Production Way Burnaby BC Canada V5A 4R4	Address	: 8081 Lougheed Highway Burnaby, British Columbia Canada V5A 1W9
Telephone	: ----	Telephone	: +1 604 253 4188
Project	: 60640258 - CanWhite Sands	Date Samples Received	: 27-Nov-2020 12:55
PO	: ----	Date Analysis Commenced	: 02-Dec-2020
C-O-C number	: ----	Issue Date	: 16-Feb-2021 15:08
Sampler	: SD/RD		
Site	: ----		
Quote number	: Aecom 2020 Price List (BC/YT)		
No. of samples received	: 14		
No. of samples analysed	: 2		

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. This document shall not be reproduced, except in full.

This Quality Control Report contains the following information:

- Laboratory Duplicate (DUP) Report; Relative Percentage Difference (RPD) and Acceptance Limits
- Matrix Spike (MS) Report; Recovery and Acceptance Limits
- Reference Material (RM) Report; Recovery and Acceptance Limits
- Method Blank (MB) Report; Recovery and Acceptance Limits
- Laboratory Control Sample (LCS) Report; Recovery and Acceptance Limits

Signatories

This document has been electronically signed by the authorized signatories below. Electronic signing is conducted in accordance with US FDA 21 CFR Part 11.

Signatories	*Position*	*Laboratory Department*
Erick Magalhaes	Analyst	Metals, Burnaby, British Columbia
Erin Gatdula	Account Manager Assistant	External Subcontracting, Vancouver, British Columbia
Erin Gatdula	Account Manager Assistant	Internal Subcontracting, North Vancouver, British Columbia
Ophelia Chiu	Department Manager - Organics	Organics, Burnaby, British Columbia

General Comments

The ALS Quality Control (QC) report is optionally provided to ALS clients upon request. ALS test methods include comprehensive QC checks with every analysis to ensure our high standards of quality are met. Each QC result has a known or expected target value, which is compared against predetermined Data Quality Objectives (DQOs) to provide confidence in the accuracy of associated test results. This report contains detailed results for all QC results applicable to this sample submission. Please refer to the ALS Quality Control Interpretation report (QCI) for applicable method references and methodology summaries.

Key :

Anonymous = Refers to samples which are not part of this work order, but which formed part of the QC process lot.
CAS Number = Chemical Abstracts Services number is a unique identifier assigned to discrete substances.
DQO = Data Quality Objective.
LOR = Limit of Reporting (detection limit).
RPD = Relative Percentage Difference
# = Indicates a QC result that did not meet the ALS DQO.

Workorder Comments

Laboratory Duplicate (DUP) Report

A Laboratory Duplicate (DUP) is a randomly selected intralaboratory replicate sample. Laboratory Duplicates provide information regarding method precision and sample heterogeneity. ALS DQOs for Laboratory Duplicates are expressed as test-specific limits for Relative Percent Difference (RPD), or as an absolute difference limit of 2 times the LOR for low concentration duplicates within ~ 4-10 times the LOR (cut-off is test specific).

Sub-Matrix: **Soil/Solid**

					Laboratory Duplicate (DUP) Report						
Laboratory sample ID	*Client sample ID*	*Analyte*	*CAS Number*	*Method*	*LOR*	*Unit*	*Original Result*	*Duplicate Result*	*RPD(%) or Difference*	*Duplicate Limits*	*Qualifier*
Physical Tests (QC Lot: 125222)											
VA20C1893-002	Anonymous	moisture	----	E144	0.25	%	78.5	78.6	0.157%	20%	----

Method Blank (MB) Report

A Method Blank is an analyte-free matrix that undergoes sample processing identical to that carried out for test samples. Method Blank results are used to monitor and control for potential contamination from the laboratory environment and reagents. For most tests, the DQO for Method Blanks is for the result to be < LOR.

Sub-Matrix: **Soil/Solid**

Analyte	CAS Number	Method	LOR	Unit	Result	Qualifier
Physical Tests (QCLot: 125222)						
moisture	----	E144	0.25	%	<0.25	----
Leachable Metals (QCLot: 125541)						
aluminum, leachable	7429-90-5	E446	0.005	mg/L	<0.0050	----
antimony, leachable	7440-36-0	E446	0.0001	mg/L	<0.00010	----
arsenic, leachable	7440-38-2	E446	0.001	mg/L	<0.0010	----
barium, leachable	7440-39-3	E446	0.001	mg/L	<0.0010	----
beryllium, leachable	7440-41-7	E446	0.0005	mg/L	<0.00050	----
bismuth, leachable	7440-69-9	E446	0.0005	mg/L	<0.00050	----
boron, leachable	7440-42-8	E446	0.01	mg/L	<0.010	----
cadmium, leachable	7440-43-9	E446	0.00005	mg/L	<0.000050	----
calcium, leachable	7440-70-2	E446	0.1	mg/L	<0.10	----
chromium, leachable	7440-47-3	E446	0.0005	mg/L	<0.00050	----
cobalt, leachable	7440-48-4	E446	0.0001	mg/L	<0.00010	----
copper, leachable	7440-50-8	E446	0.001	mg/L	<0.0010	----
iron, leachable	7439-89-6	E446	0.03	mg/L	<0.030	----
lead, leachable	7439-92-1	E446	0.0001	mg/L	<0.00010	----
lithium, leachable	7439-93-2	E446	0.005	mg/L	<0.0050	----
magnesium, leachable	7439-95-4	E446	0.05	mg/L	<0.050	----
manganese, leachable	7439-96-5	E446	0.0005	mg/L	<0.00050	----
molybdenum, leachable	7439-98-7	E446	0.0001	mg/L	<0.00010	----
nickel, leachable	7440-02-0	E446	0.0005	mg/L	<0.00050	----
phosphorus, leachable	7723-14-0	E446	0.3	mg/L	<0.30	----
potassium, leachable	7440-09-7	E446	0.05	mg/L	<0.050	----
selenium, leachable	7782-49-2	E446	0.0005	mg/L	<0.00050	----
silicon, leachable	7440-21-3	E446	0.05	mg/L	<0.050	----
silver, leachable	7440-22-4	E446	0.00005	mg/L	<0.000050	----
sodium, leachable	7440-23-5	E446	0.05	mg/L	<0.050	----
strontium, leachable	7440-24-6	E446	0.0005	mg/L	<0.00050	----
sulfur, leachable	----	E446	0.5	mg/L	<0.50	----
thallium, leachable	7440-28-0	E446	0.0001	mg/L	<0.00010	----
tin, leachable	7440-31-5	E446	0.0005	mg/L	<0.00050	----
titanium, leachable	7440-32-6	E446	0.01	mg/L	<0.010	----
uranium, leachable	7440-61-1	E446	0.00001	mg/L	<0.000010	----

Sub-Matrix: **Soil/Solid**

Analyte	CAS Number	Method	LOR	Unit	Result	Qualifier
Leachable Metals (QCLot: 125541) - continued						
vanadium, leachable	7440-62-2	E446	0.001	mg/L	<0.0010	----
zinc, leachable	7440-66-6	E446	0.01	mg/L	<0.010	----

Laboratory Control Sample (LCS) Report

A Laboratory Control Sample (LCS) is an analyte-free matrix that has been fortified (spiked) with test analytes at known concentration and processed in an identical manner to test samples. LCS results are expressed as percent recovery, and are used to monitor and control test method accuracy and precision, independent of test sample matrix.

Sub-Matrix: **Soil/Solid**

					Laboratory Control Sample (LCS) Report				
					Spike	Recovery (%)	Recovery Limits (%)		
Analyte	CAS Number	Method	LOR	Unit	Concentration	LCS	Low	High	Qualifier
Physical Tests (QCLot: 125222)									
moisture	----	E144	0.25	%	50 %	99.9	90.0	110	----
Leachable Metals (QCLot: 125541)									
aluminum, leachable	7429-90-5	E446	0.005	mg/L	0.2 mg/L	98.4	70.0	130	----
antimony, leachable	7440-36-0	E446	0.0001	mg/L	0.1 mg/L	97.1	70.0	130	----
arsenic, leachable	7440-38-2	E446	0.001	mg/L	0.1 mg/L	96.9	70.0	130	----
barium, leachable	7440-39-3	E446	0.001	mg/L	0.025 mg/L	96.4	70.0	130	----
beryllium, leachable	7440-41-7	E446	0.0005	mg/L	0.01 mg/L	93.0	70.0	130	----
bismuth, leachable	7440-69-9	E446	0.0005	mg/L	0.1 mg/L	89.8	70.0	130	----
boron, leachable	7440-42-8	E446	0.01	mg/L	0.1 mg/L	84.7	70.0	130	----
cadmium, leachable	7440-43-9	E446	0.00005	mg/L	0.01 mg/L	95.7	70.0	130	----
calcium, leachable	7440-70-2	E446	0.1	mg/L	5 mg/L	89.7	70.0	130	----
chromium, leachable	7440-47-3	E446	0.0005	mg/L	0.025 mg/L	96.7	70.0	130	----
cobalt, leachable	7440-48-4	E446	0.0001	mg/L	0.025 mg/L	95.7	70.0	130	----
copper, leachable	7440-50-8	E446	0.001	mg/L	0.025 mg/L	95.5	70.0	130	----
iron, leachable	7439-89-6	E446	0.03	mg/L	0.1 mg/L	92.9	70.0	130	----
lead, leachable	7439-92-1	E446	0.0001	mg/L	0.05 mg/L	93.3	70.0	130	----
lithium, leachable	7439-93-2	E446	0.005	mg/L	0.025 mg/L	95.3	70.0	130	----
magnesium, leachable	7439-95-4	E446	0.05	mg/L	5 mg/L	97.5	70.0	130	----
manganese, leachable	7439-96-5	E446	0.0005	mg/L	0.025 mg/L	96.6	70.0	130	----
molybdenum, leachable	7439-98-7	E446	0.0001	mg/L	0.025 mg/L	95.8	70.0	130	----
nickel, leachable	7440-02-0	E446	0.0005	mg/L	0.05 mg/L	94.3	70.0	130	----
phosphorus, leachable	7723-14-0	E446	0.3	mg/L	1 mg/L	103	70.0	130	----
potassium, leachable	7440-09-7	E446	0.05	mg/L	5 mg/L	90.3	70.0	130	----
selenium, leachable	7782-49-2	E446	0.0005	mg/L	0.1 mg/L	96.7	70.0	130	----
silicon, leachable	7440-21-3	E446	0.05	mg/L	1 mg/L	90.8	70.0	130	----
silver, leachable	7440-22-4	E446	0.00005	mg/L	0.01 mg/L	91.2	70.0	130	----
sodium, leachable	7440-23-5	E446	0.05	mg/L	5 mg/L	94.2	70.0	130	----
strontium, leachable	7440-24-6	E446	0.0005	mg/L	0.025 mg/L	96.9	70.0	130	----
sulfur, leachable	----	E446	0.5	mg/L	5 mg/L	88.5	70.0	130	----
thallium, leachable	7440-28-0	E446	0.0001	mg/L	0.11 mg/L	84.2	70.0	130	----
tin, leachable	7440-31-5	E446	0.0005	mg/L	0.05 mg/L	96.0	70.0	130	----
titanium, leachable	7440-32-6	E446	0.01	mg/L	0.025 mg/L	95.9	70.0	130	----
uranium, leachable	7440-61-1	E446	0.00001	mg/L	0.0005 mg/L	95.2	70.0	130	----

Sub-Matrix: **Soil/Solid**

					Laboratory Control Sample (LCS) Report				
					Spike	Recovery (%)	Recovery Limits (%)		
Analyte	CAS Number	Method	LOR	Unit	Concentration	LCS	Low	High	Qualifier
Leachable Metals (QCLot: 125541) - continued									
vanadium, leachable	7440-62-2	E446	0.001	mg/L	0.05 mg/L	96.3	70.0	130	----
zinc, leachable	7440-66-6	E446	0.01	mg/L	0.05 mg/L	93.2	70.0	130	----

Matrix Spike (MS) Report

A Matrix Spike (MS) is a randomly selected intra-laboratory replicate sample that has been fortified (spiked) with test analytes at known concentration, and processed in an identical manner to test samples. Matrix Spikes provide information regarding analyte recovery and potential matrix effects. MS DQO exceedances due to sample matrix may sometimes be unavoidable; in such cases, test results for the associated sample (or similar samples) may be subject to bias. ND – Recovery not determined, background level >= 1x spike level.

Sub-Matrix: **Soil/Solid**

					Matrix Spike (MS) Report					
					Spike		Recovery (%)	Recovery Limits (%)		
Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	Concentration	Target	MS	Low	High	Qualifier
Leachable Metals (QCLot: 125541)										
VA20C2173-002	Bru 146_189 to 194	aluminum, leachable	7429-90-5	E446	ND mg/L	0.2 mg/L	ND	70.0	130	----
		antimony, leachable	7440-36-0	E446	0.0205 mg/L	0.02 mg/L	102	70.0	130	----
		arsenic, leachable	7440-38-2	E446	0.0196 mg/L	0.02 mg/L	97.9	70.0	130	----
		barium, leachable	7440-39-3	E446	0.0203 mg/L	0.02 mg/L	102	70.0	130	----
		beryllium, leachable	7440-41-7	E446	0.0421 mg/L	0.04 mg/L	105	70.0	130	----
		bismuth, leachable	7440-69-9	E446	0.0102 mg/L	0.01 mg/L	102	70.0	130	----
		boron, leachable	7440-42-8	E446	0.094 mg/L	0.1 mg/L	94.2	70.0	130	----
		cadmium, leachable	7440-43-9	E446	0.00405 mg/L	0.004 mg/L	101	70.0	130	----
		calcium, leachable	7440-70-2	E446	ND mg/L	4 mg/L	ND	70.0	130	----
		chromium, leachable	7440-47-3	E446	0.0401 mg/L	0.04 mg/L	100	70.0	130	----
		cobalt, leachable	7440-48-4	E446	0.0202 mg/L	0.02 mg/L	101	70.0	130	----
		copper, leachable	7440-50-8	E446	0.0202 mg/L	0.02 mg/L	101	70.0	130	----
		iron, leachable	7439-89-6	E446	2.08 mg/L	2 mg/L	104	70.0	130	----
		lead, leachable	7439-92-1	E446	0.0206 mg/L	0.02 mg/L	103	70.0	130	----
		lithium, leachable	7439-93-2	E446	0.105 mg/L	0.1 mg/L	105	70.0	130	----
		magnesium, leachable	7439-95-4	E446	ND mg/L	1 mg/L	ND	70.0	130	----
		manganese, leachable	7439-96-5	E446	0.0208 mg/L	0.02 mg/L	104	70.0	130	----
		molybdenum, leachable	7439-98-7	E446	0.0197 mg/L	0.02 mg/L	98.5	70.0	130	----
		nickel, leachable	7440-02-0	E446	0.0405 mg/L	0.04 mg/L	101	70.0	130	----
		phosphorus, leachable	7723-14-0	E446	10.4 mg/L	10 mg/L	104	70.0	130	----
		potassium, leachable	7440-09-7	E446	4.00 mg/L	4 mg/L	100	70.0	130	----
		selenium, leachable	7782-49-2	E446	0.0408 mg/L	0.04 mg/L	102	70.0	130	----
		silicon, leachable	7440-21-3	E446	9.69 mg/L	10 mg/L	96.9	70.0	130	----
		silver, leachable	7440-22-4	E446	0.00395 mg/L	0.004 mg/L	98.7	70.0	130	----
		sodium, leachable	7440-23-5	E446	1.97 mg/L	2 mg/L	98.4	70.0	130	----
		strontium, leachable	7440-24-6	E446	0.0193 mg/L	0.02 mg/L	96.5	70.0	130	----
		sulfur, leachable	----	E446	20.9 mg/L	20 mg/L	105	70.0	130	----
		thallium, leachable	7440-28-0	E446	0.00395 mg/L	0.004 mg/L	98.7	70.0	130	----
		tin, leachable	7440-31-5	E446	0.0198 mg/L	0.02 mg/L	99.2	70.0	130	----
		titanium, leachable	7440-32-6	E446	0.040 mg/L	0.04 mg/L	99.2	70.0	130	----
		uranium, leachable	7440-61-1	E446	0.00412 mg/L	0.004 mg/L	103	70.0	130	----
		vanadium, leachable	7440-62-2	E446	0.101 mg/L	0.1 mg/L	101	70.0	130	----

Sub-Matrix: **Soil/Solid**

					Matrix Spike (MS) Report					
					Spike		Recovery (%)	Recovery Limits (%)		
Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	Concentration	Target	MS	Low	High	Qualifier
Leachable Metals (QCLot: 125541) - continued										
VA20C2173-002	Bru 146_189 to 194	zinc, leachable	7440-66-6	E446	0.394 mg/L	0.4 mg/L	98.6	70.0	130	----

QUANTITATIVE PHASE ANALYSIS OF TWO POWDER SAMPLES USING THE RIETVELD METHOD AND X-RAY POWDER DIFFRACTION DATA.

WO#: VA20C2173

Dean Watt
ALS Environmental
Suite 100 – 8081 Lougheed Hwy
Burnaby, BC V5A 1W9

Jacob Kabel, B.Sc.
Edith Czech, M.Sc.
Jenny Lai, B.Sc.
Lan Kato, B.A.
Connor Turvey, Ph.D.

Dept. of Earth, Ocean & Atmospheric Sciences
The University of British Columbia
6339 Stores Road
Vancouver, BC V6T 1Z4

February 11, 2021

EXPERIMENTAL METHOD

The two samples of **WO# VA20C2173** were reduced to the optimum grain-size range for quantitative X-ray analysis (<10 μm) by grinding under ethanol in a vibratory McCrone XRD Mill (Retsch GmbH, Germany) for 10 minutes. Continuous-scan X-ray powder-diffraction data were collected over a range 3-80°2θ with CoKα radiation on a Bruker D8 Focus Bragg-Brentano diffractometer equipped with an Fe filter foil, 0.6 mm (0.3°) divergence slit, incident- and diffracted-beam Soller slits and a LynxEye-XE detector. The long fine-focus Co X-ray tube was operated at 35 kV and 40 mA, using a take-off angle of 6°.

RESULTS

The X-ray diffractograms were analyzed using the International Centre for Diffraction Database PDF-4 using Search-Match software by Bruker. X-ray powder-diffraction data of the samples were refined with Rietveld program Topas 4.2 (Bruker AXS). The results of quantitative phase analysis by Rietveld refinements are given in Table 1. These amounts represent the relative amounts of crystalline phases normalized to 100%. The Rietveld refinement plots are shown in Figures 1 and 2.

Table 1. Results of quantitative phase analysis (wt.%)

Mineral	**Ideal Formula**	**#1 VA20C2173-001 (Bru 121-1_174 to 179)**	**#2 VA20C2173-002 (Bru 146_189 to 194)**
Calcite	$CaCO_3$		0.2
Iron	α-Fe	0.1	0.1
Kaolinite	$Al_2Si_2O_5(OH)_4$	0.8	0.2
Plagioclase	$NaAlSi_3O_8 – CaAl_2Si_2O_8$	0.9	0.7
Quartz	SiO_2	97.3	98.7
Siderite	$Fe^{2+}CO_3$	0.9	0.1
Total		**100.0**	**100.0**

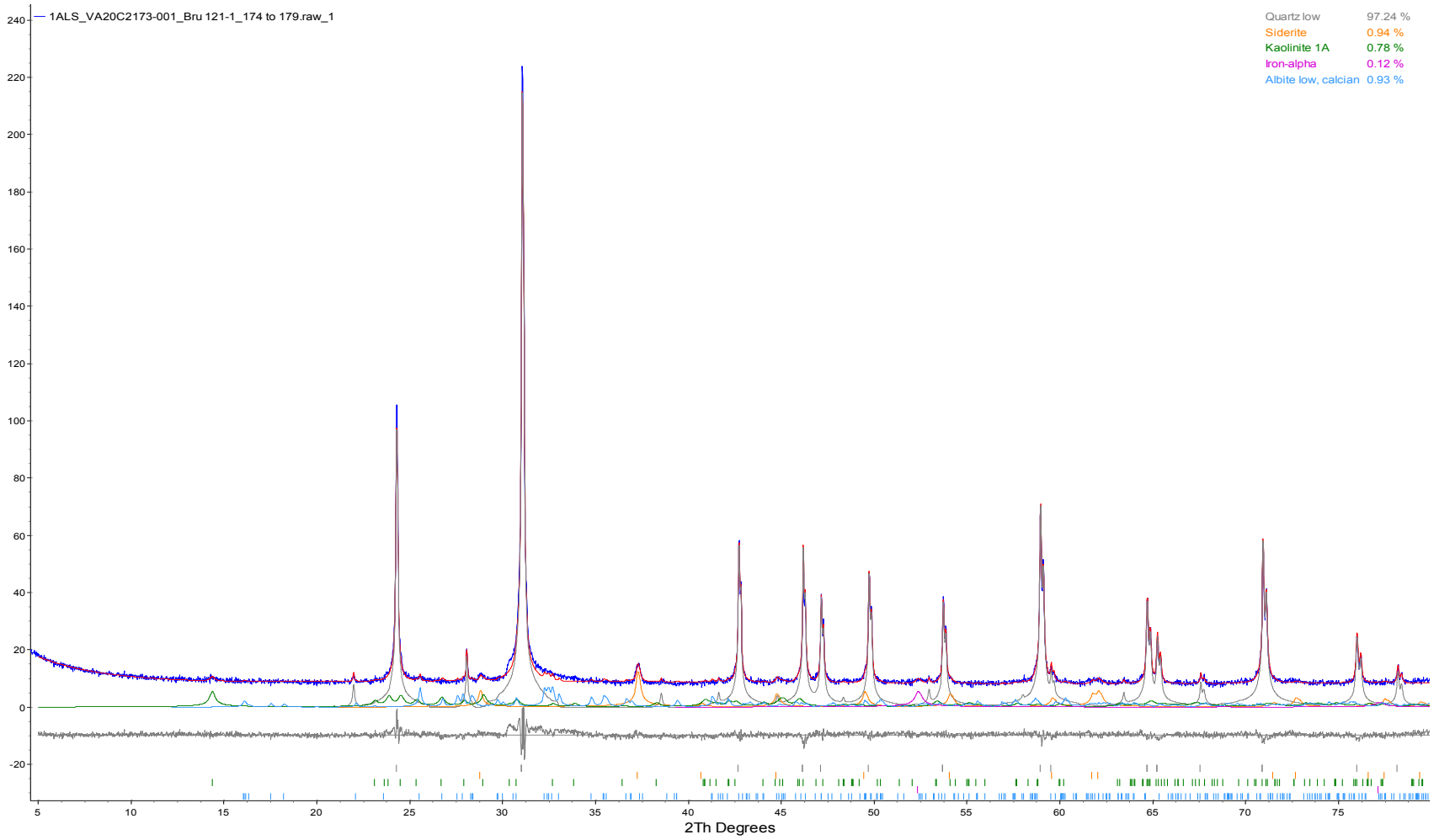

Figure 1. Rietveld refinement plot of sample **ALS Environmental #1: VA20C2173-001 (Bru 121-1_174 to 179)** (blue line - observed intensity at each step; red line - calculated pattern; solid grey line below - difference between observed and calculated intensities; vertical bars - positions of all Bragg reflections; vertical blue line - position of peak phase). Coloured lines are individual diffraction patterns of all phases.

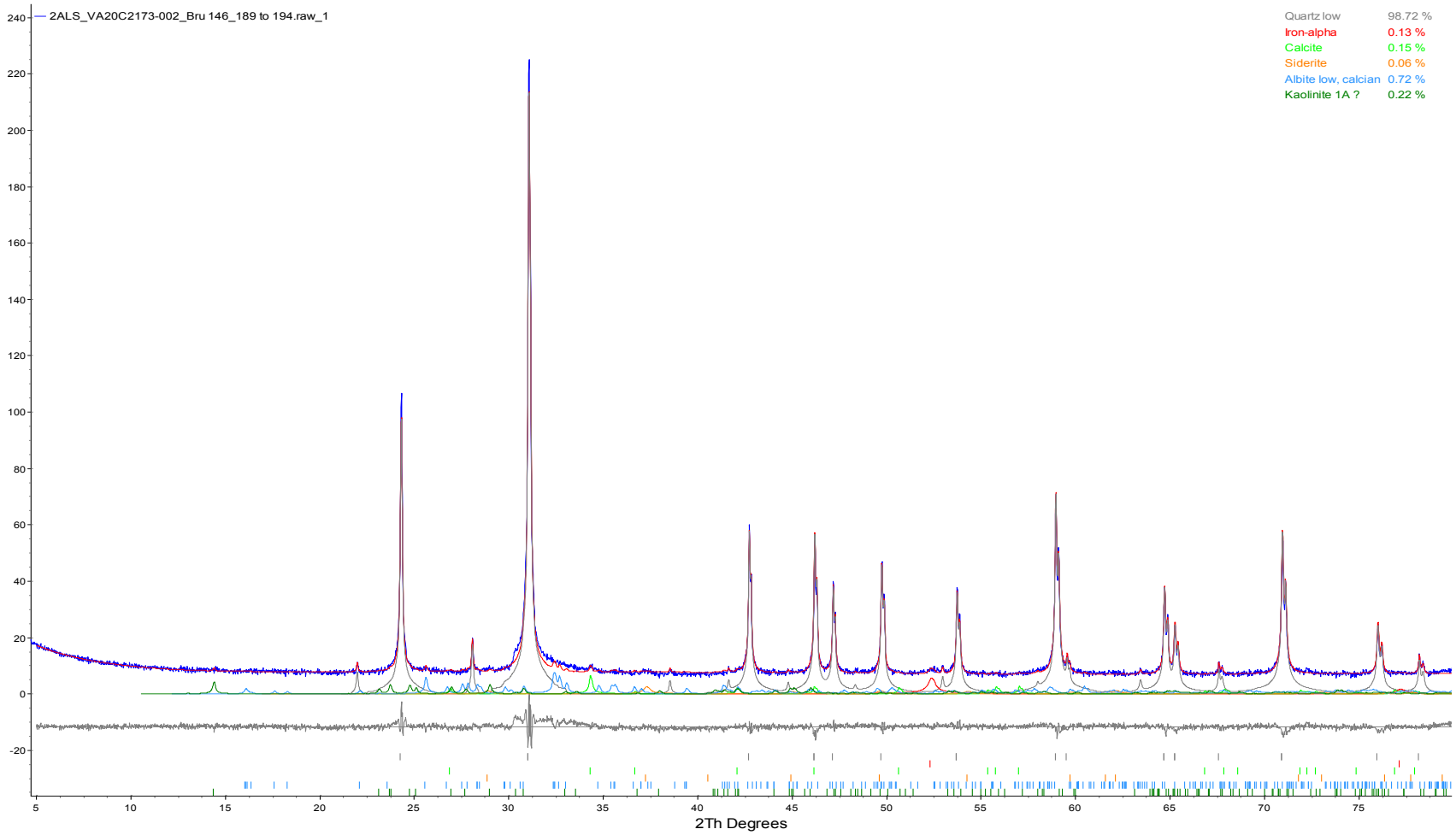

Figure 2. Rietveld refinement plot of sample **ALS Environmental #2: VA20C2173-002 (Bru 146_189 to 194)** (blue line - observed intensity at each step; red line - calculated pattern; solid grey line below - difference between observed and calculated intensities; vertical bars - positions of all Bragg reflections; vertical blue line - position of peak phase). Coloured lines are individual diffraction patterns of all phases.

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www.alsglobal.com/geochemistry

To: **ALS ENVIRONMENTAL**
100 - 8081 LOUGHEED HWY.
BURNABY BC V5A 1W9

Finalized Date: 24-JAN-2021
Account: APN

CERTIFICATE VA20284593

Project: VA20C2173

This report is for 2 Rock samples submitted to our lab in Vancouver, BC, Canada on 2-DEC-2020.

The following have access to data associated with this certificate:

ALSE VANCOUVER WEBTRIEVE DEAN WATT	ALSEV DATASUBLET	SOFTWARE DEVELOPMENT GROUP

SAMPLE PREPARATION

ALS CODE	DESCRIPTION
WEI-21	Received Sample Weight
DISP-01	Disposal of all sample fractions
LOG-21	Sample logging - ClientBarCode
SPL-34X	Pulp Split - For send out
CRU-31	Fine crushing - 70% <2mm
SPL-21	Split sample - riffle splitter
PUL-31	Pulverize up to 250g 85% <75 um

ANALYTICAL PROCEDURES

ALS CODE	DESCRIPTION	
OA-VOL08	Basic Acid Base Accounting	
S-IR08	Total Sulphur (IR Spectroscopy)	LECO
OA-ELE07	Paste pH	
S-CAL06	Sufide Sulfur (calculated)	LECO
S-GRA06	Sulfate Sulfur-carbonate leach	WST-SEQ
C-GAS05	Inorganic Carbon (CO2)	
S-GRA06a	Sulfate Sulfur (HCl leachable)	WST-SEQ
C-IR07	Total Carbon (IR Spectroscopy)	LECO
ME-MS41	Ultra Trace Aqua Regia ICP-MS	

This is the Final Report and supersedes any preliminary report with this certificate number. Results apply to samples as submitted. All pages of this report have been checked and approved for release.

***** See Appendix Page for comments regarding this certificate *****

Signature: [redacted]
Saa Traxler, General Manager, North Vancouver

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BURNABY BC V5A 1W9

Finalized Date: 24-JAN-2021
Account: APN

Project: VA20C2173

CERTIFICATE OF ANALYSIS VA20284593

Sample Description	Method / Analyte / Units / LOD	WEI-21 Recvd Wt. kg 0.02	ME-MS41 Ag ppm 0.01	ME-MS41 Al % 0.01	ME-MS41 As ppm 0.1	ME-MS41 Au ppm 0.02	ME-MS41 B ppm 10	ME-MS41 Ba ppm 10	ME-MS41 Be ppm 0.05	ME-MS41 Bi ppm 0.01	ME-MS41 Ca % 0.01	ME-MS41 Cd ppm 0.01	ME-MS41 Ce ppm 0.02	ME-MS41 Co ppm 0.1	ME-MS41 Cr ppm 1	ME-MS41 Cs ppm 0.05
VA20C2173-001		1.04	0.01	0.09	1.5	<0.02	<10	<10	<0.05	0.01	0.03	<0.01	1.67	0.6	3	<0.05
VA20C2173-002		0.30	0.01	0.05	0.2	<0.02	<10	<10	<0.05	0.01	0.12	<0.01	1.48	0.2	2	<0.05

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BURNABY BC V5A 1W9

Finalized Date: 24-JAN-2021
Account: APN

Project: VA20C2173

CERTIFICATE OF ANALYSIS VA20284593

Sample Description	Method	ME-MS41	ME-MS41	ME-MS41	ME-MS41	ME-MS41	ME-MS41	ME-MS41	ME-MS41	ME-MS41	ME-MS41	ME-MS41	ME-MS41	ME-MS41	ME-MS41	ME-MS41
	Analyte	Cu	Fe	Ga	Ge	Hf	Hg	In	K	La	Li	Mg	Mn	Mo	Na	Nb
	Units	ppm	%	ppm	ppm	ppm	ppm	ppm	%	ppm	ppm	%	ppm	ppm	%	ppm
	LOD	0.2	0.01	0.05	0.05	0.02	0.01	0.005	0.01	0.2	0.1	0.01	5	0.05	0.01	0.05
VA20C2173-001		1.0	0.65	0.18	<0.05	0.13	<0.01	<0.005	0.01	0.8	1.9	0.01	45	0.09	<0.01	<0.05
VA20C2173-002		0.8	0.30	0.12	<0.05	0.09	<0.01	<0.005	0.01	0.7	1.3	0.02	33	0.06	<0.01	<0.05

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CERTIFICATE OF ANALYSIS VA20284593

Sample Description	Method	ME-MS41	ME-MS41	ME-MS41	ME-MS41	ME-MS41	ME-MS41	ME-MS41	ME-MS41	ME-MS41	ME-MS41	ME-MS41	ME-MS41	ME-MS41	ME-MS41	ME-MS41
	Analyte	Ni	P	Pb	Rb	Re	S	Sb	Sc	Se	Sn	Sr	Ta	Te	Th	Ti
	Units	ppm	ppm	ppm	ppm	ppm	%	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	%
	LOD	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
VA20C2173-001		1.3	30	0.9	0.3	<0.001	0.01	<0.05	0.1	0.2	<0.2	1.9	<0.01	<0.01	0.3	<0.005
VA20C2173-002		0.5	20	6.3	0.2	<0.001	0.01	<0.05	0.1	<0.2	<0.2	1.9	<0.01	<0.01	0.3	<0.005

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CERTIFICATE OF ANALYSIS VA20284593

Sample Description	Method	ME-MS41	ME-MS41	ME-MS41	ME-MS41	ME-MS41	ME-MS41	ME-MS41	OA-VOL08	OA-VOL08	OA-VOL08	OA-VOL08	OA-ELE07	OA-VOL08	S-IR08	S-GRA06
	Analyte	Tl	U	V	W	Y	Zn	Zr	MPA	FIZZ RAT	NNP	NP	pH	Ratio (N	S	S
	Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm	tCaCO3/1Kt	Unity	tCaCO3/1Kt	tCaCO3/1Kt	Unity	Unity	%	%
	LOD	0.02	0.05	1	0.05	0.05	2	0.5	0.3	1	1	1	0.1	0.01	0.01	0.01
VA20C2173-001		0.03	0.16	1	<0.05	0.33	2	3.8	0.3	1	3	3	7.0	9.60	0.01	0.01
VA20C2173-002		<0.02	0.14	1	<0.05	0.27	2	2.9	<0.3	1	4	4	8.1	25.60	<0.01	0.02

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CERTIFICATE OF ANALYSIS VA20284593

Sample Description	Method	S-GRA06a	S-CAL06	C-GAS05	C-GAS05	C-IR07
	Analyte	S	S	C	CO2	C
	Units	%	%	%	%	%
	LOD	0.01	0.01	0.05	0.2	0.01
VA20C2173-001		<0.01	<0.01	0.09	0.3	0.12
VA20C2173-002		<0.01	<0.01	0.05	0.2	0.07

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Project: VA20C2173

CERTIFICATE OF ANALYSIS VA20284593

CERTIFICATE COMMENTS

ANALYTICAL COMMENTS

Applies to Method: Gold determinations by this method are semi-quantitative due to the small sample weight used (0.5g).
ME-MS41

LABORATORY ADDRESSES

Applies to Method: Processed at ALS Vancouver located at 2103 Dollarton Hwy, North Vancouver, BC, Canada.

C-GAS05	C-IR07	CRU-31	DISP-01
LOG-21	ME-MS41	OA-ELE07	OA-VOL08
PUL-31	S-CAL06	S-GRA06	S-GRA06a
S-IR08	SPL-21	SPL-34X	WEI-21

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BURNABY BC V5A 1W9

Finalized Date: 24-JAN-2021
Account: APN

QC CERTIFICATE VA20284593

Project: VA20C2173

This report is for 2 Rock samples submitted to our lab in Vancouver, BC, Canada on 2-DEC-2020.

The following have access to data associated with this certificate:

ALSE VANCOUVER WEBTRIEVE DEAN WATT	ALSEV DATASUBLET	SOFTWARE DEVELOPMENT GROUP

SAMPLE PREPARATION

ALS CODE	DESCRIPTION
WEI-21	Received Sample Weight
DISP-01	Disposal of all sample fractions
LOG-21	Sample logging - ClientBarCode
SPL-34X	Pulp Split - For send out
CRU-31	Fine crushing - 70% <2mm
SPL-21	Split sample - riffle splitter
PUL-31	Pulverize up to 250g 85% <75 um

ANALYTICAL PROCEDURES

ALS CODE	DESCRIPTION	
OA-VOL08	Basic Acid Base Accounting	
S-IR08	Total Sulphur (IR Spectroscopy)	LECO
OA-ELE07	Paste pH	
S-CAL06	Sufide Sulfur (calculated)	LECO
S-GRA06	Sulfate Sulfur-carbonate leach	WST-SEQ
C-GAS05	Inorganic Carbon (CO2)	
S-GRA06a	Sulfate Sulfur (HCl leachable)	WST-SEQ
C-IR07	Total Carbon (IR Spectroscopy)	LECO
ME-MS41	Ultra Trace Aqua Regia ICP-MS	

This is the Final Report and supersedes any preliminary report with this certificate number. Results apply to samples as submitted. All pages of this report have been checked and approved for release.

***** See Appendix Page for comments regarding this certificate *****

Signature: [redacted]
Saa Traxler, General Manager, North Vancouver

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Project: VA20C2173

QC CERTIFICATE OF ANALYSIS VA20284593

Sample Description	Method	ME-MS41	ME-MS41	ME-MS41	ME-MS41	ME-MS41	ME-MS41	ME-MS41	ME-MS41	ME-MS41	ME-MS41	ME-MS41	ME-MS41	ME-MS41	ME-MS41	ME-MS41
	Analyte	Ag	Al	As	Au	B	Ba	Be	Bi	Ca	Cd	Ce	Co	Cr	Cs	Cu
	Units	ppm	%	ppm	ppm	ppm	ppm	ppm	ppm	%	ppm	ppm	ppm	ppm	ppm	ppm
	LOD	0.01	0.01	0.1	0.02	10	10	0.05	0.01	0.01	0.01	0.02	0.1	1	0.05	0.2
STANDARDS																
Buffer pH6																
Buffer pH6																
Target Range - Lower Bound																
Upper Bound																
CO-ASSAY																
Target Range - Lower Bound																
Upper Bound																
EMOG-17		65.3	1.54	588	0.90	10	50	0.40	5.97	0.92	20.4	41.5	752	44	6.34	8180
Target Range - Lower Bound		60.3	1.45	522	0.77	<10	30	0.32	5.32	0.87	18.35	37.6	680	42	5.57	7780
Upper Bound		73.7	1.79	638	0.99	20	80	0.56	6.52	1.09	22.5	46.0	832	54	6.91	8960
GS310-10																
Target Range - Lower Bound																
Upper Bound																
KZK-1																
Target Range - Lower Bound																
Upper Bound																
MA-1b																
Target Range - Lower Bound																
Upper Bound																
NBM-1																
Target Range - Lower Bound																
Upper Bound																
OREAS 920		0.09	2.28	5.3	<0.02	<10	70	0.65	0.63	0.30	0.07	76.4	14.7	40	1.86	109.0
Target Range - Lower Bound		0.07	2.18	4.2	<0.02	<10	50	0.59	0.60	0.28	0.04	64.8	13.4	37	1.84	102.0
Upper Bound		0.12	2.68	5.3	0.04	20	110	0.87	0.76	0.37	0.08	79.2	16.6	48	2.36	118.0
UTS-1																
Target Range - Lower Bound																
Upper Bound																
UTS-1																
Target Range - Lower Bound																
Upper Bound																
UTS-4																
Target Range - Lower Bound																
Upper Bound																
UTS-4																
Target Range - Lower Bound																
Upper Bound																

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To: **ALS ENVIRONMENTAL**
100 - 8081 LOUGHEED HWY.
BURNABY BC V5A 1W9

Finalized Date: 24-JAN-2021
Account: APN

Project: VA20C2173

QC CERTIFICATE OF ANALYSIS VA20284593

Sample Description	Method Analyte Units LOD	ME-MS41 Fe % 0.01	ME-MS41 Ga ppm 0.05	ME-MS41 Ge ppm 0.05	ME-MS41 Hf ppm 0.02	ME-MS41 Hg ppm 0.01	ME-MS41 In ppm 0.005	ME-MS41 K % 0.01	ME-MS41 La ppm 0.2	ME-MS41 Li ppm 0.1	ME-MS41 Mg % 0.01	ME-MS41 Mn ppm 5	ME-MS41 Mo ppm 0.05	ME-MS41 Na % 0.01	ME-MS41 Nb ppm 0.05	ME-MS41 Ni ppm 0.2
STANDARDS																
Buffer pH6																
Buffer pH6																
Target Range - Lower Bound																
Upper Bound																
CO-ASSAY																
Target Range - Lower Bound																
Upper Bound																
EMOG-17		4.59	5.89	0.14	0.42	0.57	0.894	0.67	20.8	17.7	0.76	625	1040	0.16	1.25	7840
Target Range - Lower Bound		4.18	5.56	0.08	0.39	0.46	0.814	0.60	18.3	17.2	0.69	595	971	0.15	1.24	6930
Upper Bound		5.14	6.90	0.30	0.53	0.64	1.005	0.76	22.9	21.2	0.87	739	1185	0.20	1.80	8470
GS310-10																
Target Range - Lower Bound																
Upper Bound																
KZK-1																
Target Range - Lower Bound																
Upper Bound																
MA-1b																
Target Range - Lower Bound																
Upper Bound																
NBM-1																
Target Range - Lower Bound																
Upper Bound																
OREAS 920		3.55	6.61	0.11	0.52	0.01	0.031	0.39	38.1	19.3	1.04	498	0.35	0.02	0.29	39.4
Target Range - Lower Bound		3.26	6.12	<0.05	0.48	<0.01	0.019	0.37	33.3	19.0	0.93	454	0.26	<0.01	0.21	34.4
Upper Bound		4.00	7.60	0.22	0.63	0.02	0.043	0.47	41.1	23.4	1.15	566	0.50	0.04	0.47	42.4
UTS-1																
Target Range - Lower Bound																
Upper Bound																
UTS-1																
Target Range - Lower Bound																
Upper Bound																
UTS-4																
Target Range - Lower Bound																
Upper Bound																
UTS-4																
Target Range - Lower Bound																
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To: **ALS ENVIRONMENTAL**
100 - 8081 LOUGHEED HWY.
BURNABY BC V5A 1W9

Finalized Date: 24-JAN-2021
Account: APN

Project: VA20C2173

QC CERTIFICATE OF ANALYSIS VA20284593

Sample Description	Method Analyte Units LOD	ME-MS41 P ppm 10	ME-MS41 Pb ppm 0.2	ME-MS41 Rb ppm 0.1	ME-MS41 Re ppm 0.001	ME-MS41 S % 0.01	ME-MS41 Sb ppm 0.05	ME-MS41 Sc ppm 0.1	ME-MS41 Se ppm 0.2	ME-MS41 Sn ppm 0.2	ME-MS41 Sr ppm 0.2	ME-MS41 Ta ppm 0.01	ME-MS41 Te ppm 0.01	ME-MS41 Th ppm 0.2	ME-MS41 Ti % 0.005	ME-MS41 Tl ppm 0.02
STANDARDS																
Buffer pH6																
Buffer pH6																
Target Range - Lower Bound																
Upper Bound																
CO-ASSAY																
Target Range - Lower Bound																
Upper Bound																
EMOG-17		760	7000	71.8	0.313	3.10	680	4.8	6.4	1.9	49.9	0.01	1.26	10.8	0.201	2.00
Target Range - Lower Bound		680	6510	66.5	0.287	2.90	574	4.3	5.5	1.5	47.5	<0.01	1.16	9.3	0.188	1.71
Upper Bound		850	7950	81.5	0.353	3.56	776	5.5	7.2	2.6	58.5	0.03	1.44	11.8	0.240	2.37
GS310-10																
Target Range - Lower Bound																
Upper Bound																
KZK-1																
Target Range - Lower Bound																
Upper Bound																
MA-1b																
Target Range - Lower Bound																
Upper Bound																
NBM-1																
Target Range - Lower Bound																
Upper Bound																
OREAS 920		690	20.6	22.6	<0.001	0.04	0.56	2.8	0.3	1.0	16.8	0.01	0.01	15.6	0.104	0.15
Target Range - Lower Bound		610	19.2	22.2	<0.001	<0.01	0.45	2.5	<0.2	0.6	15.0	<0.01	<0.01	13.6	0.106	0.09
Upper Bound		770	23.9	27.4	0.002	0.05	0.77	3.3	0.6	1.6	18.8	0.02	0.04	17.0	0.140	0.20
UTS-1																
Target Range - Lower Bound																
Upper Bound																
UTS-1																
Target Range - Lower Bound																
Upper Bound																
UTS-4																
Target Range - Lower Bound																
Upper Bound																
UTS-4																
Target Range - Lower Bound																
Upper Bound																

***** See Appendix Page for comments regarding this certificate *****

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www.alsglobal.com/geochemistry

To: **ALS ENVIRONMENTAL**
100 - 8081 LOUGHEED HWY.
BURNABY BC V5A 1W9

Project: VA20C2173

QC CERTIFICATE OF ANALYSIS VA20284593

Sample Description	Method	ME-MS41	ME-MS41	ME-MS41	ME-MS41	ME-MS41	ME-MS41	OA-VOL08	OA-VOL08	OA-VOL08	OA-VOL08	OA-ELE07	OA-VOL08	S-IR08	S-GRA06	S-GRA06a
	Analyte	U	V	W	Y	Zn	Zr	MPA	FIZZ RAT	NNP	NP	pH	Ratio (N	S	S	S
	Units	ppm	ppm	ppm	ppm	ppm	ppm	tCaCO3/1Kt	Unity	tCaCO3/1Kt	tCaCO3/1Kt	Unity	Unity	%	%	%
	LOD	0.05	1	0.05	0.05	2	0.5	0.3	1	1	1	0.1	0.01	0.01	0.01	0.01
STANDARDS																
Buffer pH6												6.0				
Buffer pH6												6.0				
Target Range - Lower Bound												5.3				
Upper Bound												6.7				
CO-ASSAY																
Target Range - Lower Bound																
Upper Bound																
EMOG-17		2.76	62	1.99	10.80	7310	12.7									
Target Range - Lower Bound		2.57	58	1.65	10.20	6780	10.6									
Upper Bound		3.25	74	2.35	12.60	8290	15.5									
GS310-10														0.29		
Target Range - Lower Bound														0.25		
Upper Bound														0.29		
KZK-1								25.0	2	35	60		2.40			
Target Range - Lower Bound								22.9		30	54		2.18			
Upper Bound								27.1		38	64		2.54			
MA-1b														1.22		
Target Range - Lower Bound														1.12		
Upper Bound														1.22		
NBM-1								8.8	2	41	50		5.71			
Target Range - Lower Bound								7.8		37	45		5.26			
Upper Bound								9.7		47	54		6.08			
OREAS 920		1.95	23	0.47	16.70	103	19.4									
Target Range - Lower Bound		1.89	21	0.31	15.80	93	17.6									
Upper Bound		2.42	28	0.61	19.40	119	25.0									
UTS-1															0.89	
Target Range - Lower Bound															0.83	
Upper Bound															0.93	
UTS-1																0.93
Target Range - Lower Bound																0.81
Upper Bound																0.95
UTS-4															1.80	
Target Range - Lower Bound															1.64	
Upper Bound															1.84	
UTS-4																1.81
Target Range - Lower Bound																1.61
Upper Bound																1.87

***** See Appendix Page for comments regarding this certificate *****

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To: **ALS ENVIRONMENTAL**
100 - 8081 LOUGHEED HWY.
BURNABY BC V5A 1W9

Finalized Date: 24-JAN-2021
Account: APN

Project: VA20C2173

QC CERTIFICATE OF ANALYSIS VA20284593

Sample Description	Method / Analyte / Units / LOD	C-GAS05 C % 0.05	C-GAS05 CO2 % 0.2	C-IR07 C % 0.01
STANDARDS				
Buffer pH6				
Buffer pH6				
Target Range - Lower Bound				
Upper Bound				
CO-ASSAY		0.49	1.8	
Target Range - Lower Bound		0.42	1.5	
Upper Bound		0.64	2.4	
EMOG-17				
Target Range - Lower Bound				
Upper Bound				
GS310-10				1.07
Target Range - Lower Bound				1.03
Upper Bound				1.13
KZK-1				
Target Range - Lower Bound				
Upper Bound				
MA-1b				2.41
Target Range - Lower Bound				2.34
Upper Bound				2.54
NBM-1				
Target Range - Lower Bound				
Upper Bound				
OREAS 920				
Target Range - Lower Bound				
Upper Bound				
UTS-1				
Target Range - Lower Bound				
Upper Bound				
UTS-1				
Target Range - Lower Bound				
Upper Bound				
UTS-4				
Target Range - Lower Bound				
Upper Bound				
UTS-4				
Target Range - Lower Bound				
Upper Bound				

***** See Appendix Page for comments regarding this certificate *****

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To: **ALS ENVIRONMENTAL**
100 - 8081 LOUGHEED HWY.
BURNABY BC V5A 1W9

Finalized Date: 24-JAN-2021
Account: APN

Project: VA20C2173

QC CERTIFICATE OF ANALYSIS VA20284593

Sample Description	Method / Analyte / Units / LOD	ME-MS41 Ag ppm 0.01	ME-MS41 Al % 0.01	ME-MS41 As ppm 0.1	ME-MS41 Au ppm 0.02	ME-MS41 B ppm 10	ME-MS41 Ba ppm 10	ME-MS41 Be ppm 0.05	ME-MS41 Bi ppm 0.01	ME-MS41 Ca % 0.01	ME-MS41 Cd ppm 0.01	ME-MS41 Ce ppm 0.02	ME-MS41 Co ppm 0.1	ME-MS41 Cr ppm 1	ME-MS41 Cs ppm 0.05	ME-MS41 Cu ppm 0.2
BLANKS																
BLANK																
Target Range - Lower Bound																
Upper Bound																
BLANK		<0.01	<0.01	<0.1	<0.02	<10	<10	<0.05	<0.01	<0.01	<0.01	<0.02	<0.1	<1	<0.05	<0.2
Target Range - Lower Bound		<0.01	<0.01	<0.1	<0.02	<10	<10	<0.05	<0.01	<0.01	<0.01	<0.02	<0.1	<1	<0.05	<0.2
Upper Bound		0.02	0.02	0.2	0.04	20	20	0.10	0.02	0.02	0.02	0.04	0.2	2	0.10	0.4
BLANK																
Target Range - Lower Bound																
Upper Bound																
BLANK																
Target Range - Lower Bound																
Upper Bound																
BLANK																
Target Range - Lower Bound																
Upper Bound																
BLANK																
Target Range - Lower Bound																
Upper Bound																
DUPLICATES																
ORIGINAL																
DUP																
Target Range - Lower Bound																
Upper Bound																
VA20C2173-002		0.01	0.05	0.2	<0.02	<10	<10	<0.05	0.01	0.12	<0.01	1.48	0.2	2	<0.05	0.8
DUP		0.01	0.05	0.2	<0.02	<10	<10	<0.05	0.01	0.12	0.01	1.39	0.2	2	<0.05	0.7
Target Range - Lower Bound		<0.01	0.04	<0.1	<0.02	<10	<10	<0.05	<0.01	0.10	<0.01	1.34	<0.1	<1	<0.05	0.5
Upper Bound		0.02	0.06	0.3	0.04	20	20	0.10	0.02	0.14	0.02	1.53	0.3	3	0.10	1.0
VA20C3516-009																
DUP																
Target Range - Lower Bound																
Upper Bound																

***** See Appendix Page for comments regarding this certificate *****

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To: **ALS ENVIRONMENTAL**
100 - 8081 LOUGHEED HWY.
BURNABY BC V5A 1W9

Finalized Date: 24-JAN-2021
Account: APN

Project: VA20C2173

QC CERTIFICATE OF ANALYSIS VA20284593

Sample Description	Method / Analyte / Units / LOD	ME-MS41 Fe % 0.01	ME-MS41 Ga ppm 0.05	ME-MS41 Ge ppm 0.05	ME-MS41 Hf ppm 0.02	ME-MS41 Hg ppm 0.01	ME-MS41 In ppm 0.005	ME-MS41 K % 0.01	ME-MS41 La ppm 0.2	ME-MS41 Li ppm 0.1	ME-MS41 Mg % 0.01	ME-MS41 Mn ppm 5	ME-MS41 Mo ppm 0.05	ME-MS41 Na % 0.01	ME-MS41 Nb ppm 0.05	ME-MS41 Ni ppm 0.2
BLANKS																
BLANK																
Target Range - Lower Bound																
Upper Bound																
BLANK		<0.01	<0.05	<0.05	<0.02	<0.01	<0.005	<0.01	<0.2	<0.1	<0.01	<5	<0.05	<0.01	<0.05	<0.2
Target Range - Lower Bound		<0.01	<0.05	<0.05	<0.02	<0.01	<0.005	<0.01	<0.2	<0.1	<0.01	<5	<0.05	<0.01	<0.05	<0.2
Upper Bound		0.02	0.10	0.10	0.04	0.02	0.010	0.02	0.4	0.2	0.02	10	0.10	0.02	0.10	0.4
BLANK																
Target Range - Lower Bound																
Upper Bound																
BLANK																
Target Range - Lower Bound																
Upper Bound																
BLANK																
Target Range - Lower Bound																
Upper Bound																
BLANK																
Target Range - Lower Bound																
Upper Bound																
DUPLICATES																
ORIGINAL																
DUP																
Target Range - Lower Bound																
Upper Bound																
VA20C2173-002		0.30	0.12	<0.05	0.09	<0.01	<0.005	0.01	0.7	1.3	0.02	33	0.06	<0.01	<0.05	0.5
DUP		0.31	0.12	<0.05	0.10	<0.01	<0.005	0.01	0.7	1.2	0.02	34	0.06	<0.01	<0.05	0.5
Target Range - Lower Bound		0.28	0.06	<0.05	0.07	<0.01	<0.005	<0.01	0.5	1.1	<0.01	27	<0.05	<0.01	<0.05	0.3
Upper Bound		0.33	0.18	0.10	0.12	0.02	0.010	0.02	0.9	1.4	0.03	40	0.10	0.02	0.10	0.7
VA20C3516-009																
DUP																
Target Range - Lower Bound																
Upper Bound																

***** See Appendix Page for comments regarding this certificate *****

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To: **ALS ENVIRONMENTAL**
100 - 8081 LOUGHEED HWY.
BURNABY BC V5A 1W9

Finalized Date: 24-JAN-2021
Account: APN

Project: VA20C2173

QC CERTIFICATE OF ANALYSIS VA20284593

Sample Description	Method / Analyte / Units / LOD	ME-MS41 P ppm 10	ME-MS41 Pb ppm 0.2	ME-MS41 Rb ppm 0.1	ME-MS41 Re ppm 0.001	ME-MS41 S % 0.01	ME-MS41 Sb ppm 0.05	ME-MS41 Sc ppm 0.1	ME-MS41 Se ppm 0.2	ME-MS41 Sn ppm 0.2	ME-MS41 Sr ppm 0.2	ME-MS41 Ta ppm 0.01	ME-MS41 Te ppm 0.01	ME-MS41 Th ppm 0.2	ME-MS41 Ti % 0.005	ME-MS41 Tl ppm 0.02
BLANKS																
BLANK																
Target Range - Lower Bound																
Upper Bound																
BLANK		<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
Target Range - Lower Bound		<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
Upper Bound		20	0.4	0.2	0.002	0.02	0.10	0.2	0.4	0.4	0.4	0.02	0.02	0.4	0.010	0.04
BLANK																
Target Range - Lower Bound																
Upper Bound																
BLANK																
Target Range - Lower Bound																
Upper Bound																
BLANK																
Target Range - Lower Bound																
Upper Bound																
BLANK																
Target Range - Lower Bound																
Upper Bound																
DUPLICATES																
ORIGINAL																
DUP																
Target Range - Lower Bound																
Upper Bound																
VA20C2173-002		20	6.3	0.2	<0.001	0.01	<0.05	0.1	<0.2	<0.2	1.9	<0.01	<0.01	0.3	<0.005	<0.02
DUP		10	6.3	0.2	<0.001	0.01	<0.05	0.1	<0.2	<0.2	1.9	<0.01	<0.01	0.3	<0.005	<0.02
Target Range - Lower Bound		<10	5.8	<0.1	<0.001	<0.01	<0.05	<0.1	<0.2	<0.2	1.6	<0.01	<0.01	<0.2	<0.005	<0.02
Upper Bound		20	6.8	0.3	0.002	0.02	0.10	0.2	0.4	0.4	2.2	0.02	0.02	0.4	0.010	0.04
VA20C3516-009																
DUP																
Target Range - Lower Bound																
Upper Bound																

***** See Appendix Page for comments regarding this certificate *****

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To: **ALS ENVIRONMENTAL**
100 - 8081 LOUGHEED HWY.
BURNABY BC V5A 1W9

Project: VA20C2173

QC CERTIFICATE OF ANALYSIS VA20284593

Sample Description	Method	ME-MS41	ME-MS41	ME-MS41	ME-MS41	ME-MS41	ME-MS41	OA-VOL08	OA-VOL08	OA-VOL08	OA-VOL08	OA-ELE07	OA-VOL08	S-IR08	S-GRA06	S-GRA06a
	Analyte	U	V	W	Y	Zn	Zr	MPA	FIZZ RAT	NNP	NP	pH	Ratio (N	S	S	S
	Units	ppm	ppm	ppm	ppm	ppm	ppm	tCaCO3/1Kt	Unity	tCaCO3/1Kt	tCaCO3/1Kt	Unity	Unity	%	%	%
	LOD	0.05	1	0.05	0.05	2	0.5	0.3	1	1	1	0.1	0.01	0.01	0.01	0.01
BLANKS																
BLANK																
Target Range - Lower Bound																
Upper Bound																
BLANK		<0.05	<1	<0.05	<0.05	<2	<0.5									
Target Range - Lower Bound		<0.05	<1	<0.05	<0.05	<2	<0.5									
Upper Bound		0.10	2	0.10	0.10	4	1.0									
BLANK												6.0				
Target Range - Lower Bound												5.5				
Upper Bound												6.9				
BLANK															<0.01	
Target Range - Lower Bound															<0.01	
Upper Bound															0.02	
BLANK																<0.01
Target Range - Lower Bound																<0.01
Upper Bound																0.02
BLANK														<0.01		
Target Range - Lower Bound														<0.01		
Upper Bound														0.02		
DUPLICATES																
ORIGINAL														0.01		
DUP														0.01		
Target Range - Lower Bound														<0.01		
Upper Bound														0.02		
VA20C2173-002		0.14	1	<0.05	0.27	2	2.9	<0.3	1	4	4	8.1	25.60		0.02	
DUP		0.14	1	<0.05	0.26	2	2.8	<0.3	1	4	4	8.1	25.60		0.02	
Target Range - Lower Bound		0.08	<1	<0.05	0.20	<2	2.1	<0.3	<1	3	3	7.6	24.31		<0.01	
Upper Bound		0.20	2	0.10	0.33	4	3.6	0.6	2	5	5	8.6	26.89		0.03	
VA20C3516-009																<0.01
DUP																<0.01
Target Range - Lower Bound																<0.01
Upper Bound																0.02

***** See Appendix Page for comments regarding this certificate *****

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To: **ALS ENVIRONMENTAL**
100 - 8081 LOUGHEED HWY.
BURNABY BC V5A 1W9

Finalized Date: 24-JAN-2021
Account: APN

Project: VA20C2173

QC CERTIFICATE OF ANALYSIS VA20284593

Sample Description	Method / Analyte / Units / LOD	C-GAS05 C % 0.05	C-GAS05 CO2 % 0.2	C-IR07 C % 0.01
		BLANKS		
BLANK		<0.05	<0.2	
Target Range - Lower Bound		<0.05	<0.2	
Upper Bound		0.10	0.4	
BLANK				
Target Range - Lower Bound				
Upper Bound				
BLANK				
Target Range - Lower Bound				
Upper Bound				
BLANK				
Target Range - Lower Bound				
Upper Bound				
BLANK				
Target Range - Lower Bound				
Upper Bound				
BLANK				<0.01
Target Range - Lower Bound				<0.01
Upper Bound				0.02
		DUPLICATES		
ORIGINAL				0.05
DUP				0.05
Target Range - Lower Bound				0.04
Upper Bound				0.06
VA20C2173-002				
DUP				
Target Range - Lower Bound				
Upper Bound				
VA20C3516-009				
DUP				
Target Range - Lower Bound				
Upper Bound				

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To: **ALS ENVIRONMENTAL**
100 - 8081 LOUGHEED HWY.
BURNABY BC V5A 1W9

Finalized Date: 24-JAN-2021
Account: APN

Project: VA20C2173

QC CERTIFICATE OF ANALYSIS VA20284593

CERTIFICATE COMMENTS

ANALYTICAL COMMENTS

Applies to Method: Gold determinations by this method are semi-quantitative due to the small sample weight used (0.5g).
ME-MS41

LABORATORY ADDRESSES

Applies to Method: Processed at ALS Vancouver located at 2103 Dollarton Hwy, North Vancouver, BC, Canada.

C-GAS05	C-IR07	CRU-31	DISP-01
LOG-21	ME-MS41	OA-ELE07	OA-VOL08
PUL-31	S-CAL06	S-GRA06	S-GRA06a
S-IR08	SPL-21	SPL-34X	WEI-21

Chain of Custody (COC) / Analytical Request Form

COC Number: 20 -

www.alsglobal.com

Canada Toll Free: 1 800 668 9878

Page 1 of 1

Report To	Contact and company name below will appear on the final report	Reports / Recipients	Turnaround Time (TAT) Requested
Company:	AECOM	Select Report Format: ☑ PDF ☑ EXCEL ☑ DIGITAL	☑ Routine [R] if received by 3pm M-F - no surcharges apply
Contact:	Ryan Mills	Merge QC/QCI Reports with COA: ☑ YES ☐ NO ☐ N/A	☐ 1 day [P1] if received by 3pm M-F - 200% rush surcharge minimum
Phone:	604 553 0384	☐ Compare Results to Criteria on Report - provide details below if box checked	☐ 2 day [P2] if received by 3pm M-F - 100% rush surcharge minimum
	Company address below will appear on the final report	Select Distribution: ☑ EMAIL ☐ MAIL ☐ FAX	☐ 3 day [P3] if received by 3pm M-F - 50% rush surcharge minimum
Street:	3292 production way	Email 1 or Fax: ryan.mills@aecom.com; mehmoush.javadi@aecom.com	☐ Day [E], if received by 3pm M-F - 100% rush surcharge minimum
City/Province:	Burnaby, BC	Email 2: stephen.dickin@aecom.com	Same day [E2] if received by 10am M-S - 200% rush surcharge minimum
Postal Code:	V5A 4N4	Email 3: reuben.dandurand@aecom.com	Regular apply to rush requests on weekends, statutory holidays and non-routine tests
Invoice To	Same as Report To ☑ YES ☐ NO	**Invoice Recipients**	Date and Time Required for all E&P TATs: TA
	Copy of Invoice with Report ☑ YES ☐ NO	Select Invoice Distribution: ☑ EMAIL ☐ MAIL ☐ FAX	For all tests with rush TATs requested, please contact your AM to confirm availability.
Company:		Email 1 or Fax: ryan.mills@aecom.com	
Contact:		Email 2:	

Project Information

ALS Account # / Quote #:	
Job #:	BR64C25R - Cat/White Sands
PO / AFE:	
LSD:	

Oil and Gas Required Fields (client use)

AFE/Cost Center:	PO#:
Major/Minor Code:	Routing Code:
Requisitioner:	
Location:	

ALS Lab Work Order # (ALS use only): C4123 — ALS Contact: Dean Wall, Burnaby, BC — Sampler: SD/RD

Analysis Request

Indicate Filtered (F), Preserved (P) or Filtered and Preserved (F/P) below

ALS Sample # (ALS use only)	Sample Identification and/or Coordinates (This description will appear on the report)	Date (dd-mmm-yy)	Time (hh:mm)	Sample Type	NUMBER OF CONTAINERS	Anion Regist KP-MS Wet/Inert P	Mounted Sabo - ASA Package	Sulphide sulphur	Sulphate Sulphur	Residual Sulphur	SPLP	XRD Request	Total Inorganic Carbon	Total Carbon				SAMPLES ON HOLD	EXTENDED STORAGE REQUIRED	SUSPECTED HAZARD (see notes)
	Bca 121-1-174 to 179	6-Dec-18	8:00	Rock	1	X	X	X	X	X	X	X	X	X						
	Bca 146-189 to 194	6-Dec-18	8:30	Rock	1	X	X	X	X	X	X	X	X	X						

Environmental Division
Vancouver

[redacted]

Drinking Water (DW) Samples[1] (client use)

Are samples taken from a Regulated DW System? ☐ YES ☐ NO

Are samples for human consumption/use? ☐ YES ☐ NO

Notes / Specify Limits for result evaluation by selecting from drop-down below (Excel COC only)

Alberta City Of Calgary Bylaw 14M2012 Schedules A,B & C (MAY, 2012)
Put extra samples on Hold.
Ignore above alberta bylaw criteria.

SAMPLE RECEIPT DETAIL

Cooling Method: ☐ NONE ☐ ICE ☐ ICE PACKS ☐ FROZEN ☐ COOLING INITIATED

Submission Comments identified on Sample Receipt Notification: ☐ YES ☐ NO

Cooler Custody Seals Intact: ☐ YES ☐ N/A Sample Custody Seals Intact: ☐ YES ☐ N/A

INITIAL COOLER TEMPERATURES °C				FINAL COOLER TEMPERATURES °C			
							14

SHIPMENT RELEASE (client use)			INITIAL SHIPMENT RECEPTION (ALS use only)			FINAL SHIPMENT RECEPTION (ALS use only)		
Released by: Mehmoush Javadi	Date: Nov 27, 2020	Time: 12:15	Received by:	Date:	Time:	Received by: MA	Date: 11/27	Time: 12:30 pm

REFER TO BACK PAGE FOR ALS LOCATIONS AND SAMPLING INFORMATION

WHITE - LABORATORY COPY YELLOW - CLIENT COPY

Failure to complete all portions of this form may delay analysis. Please fill in this form LEGIBLY. By the use of this form the user acknowledges and agrees with the Terms and Conditions as listed on the back page of the white - report copy.

1 If any water samples are taken from a Regulated Drinking Water (DW) System, please submit using an Authorized DW COC form

Instrument	NONE	Departmen	300	Analyst:	ALSGeo	AnalDate F	DD-MON-YY HH24:MI:SS									
Email_user	SEEKPAK	Parm_MODE		SAMP_MO	ALL	List type(s)										
Approved	Workgroup	PROD	Samplenun	QCTYPE	Listpointer	Dilution	AnalData	Prep	Comments	RPTRemark	Parameter	Result	Units	Flag(Text/N	Qual	D.L
Approved		CARBON-C	VA20C2029-001		300		########	6-Jan-21			Carbon (C)	0.09	%	0		0.05
Approved		CARBON-C	VA20C2029-001		300		########	6-Jan-21			Carbon Dio	0.3	%	0		0.2
Approved		CARBON-C	VA20C2029-001		300		########	6-Jan-21			Carbon (C)	0.12	%	0		0.01
Approved		ME-MS41-A	VA20C2029-001		300		########	6-Jan-21			Silver (Ag)	0.01	ppm	0		0.01
Approved		ME-MS41-A	VA20C2029-001		300		########	6-Jan-21			Aluminum	0.1	%	0		0.01
Approved		ME-MS41-A	VA20C2029-001		300		########	6-Jan-21			Arsenic (As	0.9	ppm	0		0.1
Approved		ME-MS41-A	VA20C2029-001		300		########	6-Jan-21			Gold (Au)	<0.02	ppm	0		0.02
Approved		ME-MS41-A	VA20C2029-001		300		########	6-Jan-21			Boron (B)	<10	ppm	0		10
Approved		ME-MS41-A	VA20C2029-001		300		########	6-Jan-21			Barium (Ba	<10	ppm	0		10
Approved		ME-MS41-A	VA20C2029-001		300		########	6-Jan-21			Beryllium (	<0.05	ppm	0		0.05
Approved		ME-MS41-A	VA20C2029-001		300		########	6-Jan-21			Bismuth (B	0.01	ppm	0		0.01
Approved		ME-MS41-A	VA20C2029-001		300		########	6-Jan-21			Calcium (Ca	0.21	%	0		0.01
Approved		ME-MS41-A	VA20C2029-001		300		########	6-Jan-21			Cadmium (	<0.01	ppm	0		0.01
Approved		ME-MS41-A	VA20C2029-001		300		########	6-Jan-21			Cerium (Ce	2.19	ppm	0		0.02
Approved		ME-MS41-A	VA20C2029-001		300		########	6-Jan-21			Cobalt (Co)	0.4	ppm	0		0.1
Approved		ME-MS41-A	VA20C2029-001		300		########	6-Jan-21			Chromium	2	ppm	0		1
Approved		ME-MS41-A	VA20C2029-001		300		########	6-Jan-21			Cesium (Cs	0.05	ppm	0		0.05
Approved		ME-MS41-A	VA20C2029-001		300		########	6-Jan-21			Copper (Cu	6.6	ppm	0		0.2
Approved		ME-MS41-A	VA20C2029-001		300		########	6-Jan-21			Iron (Fe)	0.22	%	0		0.01
Approved		ME-MS41-A	VA20C2029-001		300		########	6-Jan-21			Gallium (Ga	0.27	ppm	0		0.05
Approved		ME-MS41-A	VA20C2029-001		300		########	6-Jan-21			Germaniun	<0.05	ppm	0		0.05
Approved		ME-MS41-A	VA20C2029-001		300		########	6-Jan-21			Hafnium (H	0.15	ppm	0		0.02
Approved		ME-MS41-A	VA20C2029-001		300		########	6-Jan-21			Mercury (H	<0.01	ppm	0		0.01
Approved		ME-MS41-A	VA20C2029-001		300		########	6-Jan-21			Indium (In)	<0.005	ppm	0		0.005
Approved		ME-MS41-A	VA20C2029-001		300		########	6-Jan-21			Potassium	0.02	%	0		0.01
Approved		ME-MS41-A	VA20C2029-001		300		########	6-Jan-21			Lanthanum	1	ppm	0		0.2
Approved		ME-MS41-A	VA20C2029-001		300		########	6-Jan-21			Lithium (Li)	1.9	ppm	0		0.1
Approved		ME-MS41-A	VA20C2029-001		300		########	6-Jan-21			Magnesiun	0.04	%	0		0.01
Approved		ME-MS41-A	VA20C2029-001		300		########	6-Jan-21			Manganese	24	ppm	0		5
Approved		ME-MS41-A	VA20C2029-001		300		########	6-Jan-21			Molybdenu	0.06	ppm	0		0.05
Approved		ME-MS41-A	VA20C2029-001		300		########	6-Jan-21			Sodium (Na	0.01	%	0		0.01
Approved		ME-MS41-A	VA20C2029-001		300		########	6-Jan-21			Niobium (N	0.06	ppm	0		0.05
Approved		ME-MS41-A	VA20C2029-001		300		########	6-Jan-21			Nickel (Ni)	1.2	ppm	0		0.2
Approved		ME-MS41-A	VA20C2029-001		300		########	6-Jan-21			Phosphoru	30	ppm	0		10
Approved		ME-MS41-A	VA20C2029-001		300		########	6-Jan-21			Lead (Pb)	1.1	ppm	0		0.2
Approved		ME-MS41-A	VA20C2029-001		300		########	6-Jan-21			Rubidium (	1	ppm	0		0.1
Approved		ME-MS41-A	VA20C2029-001		300		########	6-Jan-21			Rhenium (F	<0.001	ppm	0		0.001
Approved		ME-MS41-A	VA20C2029-001		300		########	6-Jan-21			Sulfur (S)	<0.01	%	0		0.01
Approved		ME-MS41-A	VA20C2029-001		300		########	6-Jan-21			Antimony (	<0.05	ppm	0		0.05
Approved		ME-MS41-A	VA20C2029-001		300		########	6-Jan-21			Scandium (	0.1	ppm	0		0.1
Approved		ME-MS41-A	VA20C2029-001		300		########	6-Jan-21			Selenium (S	<0.2	ppm	0		0.2
Approved		ME-MS41-A	VA20C2029-001		300		########	6-Jan-21			Tin (Sn)	<0.2	ppm	0		0.2
Approved		ME-MS41-A	VA20C2029-001		300		########	6-Jan-21			Strontium (	3	ppm	0		0.2
Approved		ME-MS41-A	VA20C2029-001		300		########	6-Jan-21			Tantalum (	<0.01	ppm	0		0.01
Approved		ME-MS41-A	VA20C2029-001		300		########	6-Jan-21			Tellurium (	<0.01	ppm	0		0.01
Approved		ME-MS41-A	VA20C2029-001		300		########	6-Jan-21			Thorium (T	0.4	ppm	0		0.2
Approved		ME-MS41-A	VA20C2029-001		300		########	6-Jan-21			Titanium (T	0.006	%	0		0.005
Approved		ME-MS41-A	VA20C2029-001		300		########	6-Jan-21			Thallium (T	0.02	ppm	0		0.02
Approved		ME-MS41-A	VA20C2029-001		300		########	6-Jan-21			Uranium (U	0.14	ppm	0		0.05
Approved		ME-MS41-A	VA20C2029-001		300		########	6-Jan-21			Vanadium (	1	ppm	0		1
Approved		ME-MS41-A	VA20C2029-001		300		########	6-Jan-21			Tungsten ('	<0.05	ppm	0		0.05
Approved		ME-MS41-A	VA20C2029-001		300		########	6-Jan-21			Yttrium (Y)	0.51	ppm	0		0.05
Approved		ME-MS41-A	VA20C2029-001		300		########	6-Jan-21			Zinc (Zn)	12	ppm	0		2
Approved		ME-MS41-A	VA20C2029-001		300		########	6-Jan-21			Zirconium (	4.4	ppm	0		0.5
Approved		PH-OA-ELE	VA20C2029-001		300		########	6-Jan-21			pH	8.5	Unity	0		0.1
Approved		ABA-OA-VC	VA20C2029-001		300		########	6-Jan-21			FIZZ RATIN	1	Unity	0		1
Approved		ABA-OA-VC	VA20C2029-001		300		########	6-Jan-21			MPA	0.6	tCaCO3/1K	0		0.3
Approved		ABA-OA-VC	VA20C2029-001		300		########	6-Jan-21			NNP	5	tCaCO3/1K	0		1
Approved		ABA-OA-VC	VA20C2029-001		300		########	6-Jan-21			Neutralizat	6	tCaCO3/1K	0		1
Approved		ABA-OA-VC	VA20C2029-001		300		########	6-Jan-21			Ratio (NP/M	9.6	Unity	0		0.01
Approved		S-CAL04c-A	VA20C2029-001		300		########	6-Jan-21			S-HNO3	<0.01	tCaCO3/1K	0		0.01
Approved		SULPHUR-S	VA20C2029-001		300		########	6-Jan-21			Sulfide Sulf	0.02	%	0		0.01
Approved		SULPHUR-S	VA20C2029-001		300		########	6-Jan-21			Sulfate Sulf	<0.01	%	0		0.01
Approved		SULPHUR-S	VA20C2029-001		300		########	6-Jan-21			Sulfate Sulf	<0.01	%	0		0.01
Approved		S-IR04b-AX	VA20C2029-001		300		########	6-Jan-21			Sulphur (S)	<0.01	%	0		0.01
Approved		SULPHUR-S	VA20C2029-001		300		########	6-Jan-21			Total Sulfu	0.02	%	0		0.01
Approved		WEIGHT-W	VA20C2029-001		300		########	6-Jan-21			Weight	6	kg	0		0.02
Approved		CARBON-C	VA20C2029-002		300		########	6-Jan-21			Carbon (C)	10.8	%	0		0.05
Approved		CARBON-C	VA20C2029-002		300		########	6-Jan-21			Carbon Dio	39.6	%	0		0.2
Approved		CARBON-C	VA20C2029-002		300		########	6-Jan-21			Carbon (C)	11	%	0		0.01
Approved		ME-MS41-A	VA20C2029-002		300		########	6-Jan-21			Silver (Ag)	<0.01	ppm	0		0.01
Approved		ME-MS41-A	VA20C2029-002		300		########	6-Jan-21			Aluminum	0.15	%	0		0.01
Approved		ME-MS41-A	VA20C2029-002		300		########	6-Jan-21			Arsenic (As	1.7	ppm	0		0.1
Approved		ME-MS41-A	VA20C2029-002		300		########	6-Jan-21			Gold (Au)	<0.02	ppm	0		0.02
Approved		ME-MS41-A	VA20C2029-002		300		########	6-Jan-21			Boron (B)	10	ppm	0		10
Approved		ME-MS41-A	VA20C2029-002		300		########	6-Jan-21			Barium (Ba	10	ppm	0		10
Approved		ME-MS41-A	VA20C2029-002		300		########	6-Jan-21			Beryllium (	0.18	ppm	0		0.05
Approved		ME-MS41-A	VA20C2029-002		300		########	6-Jan-21			Bismuth (B	0.02	ppm	0		0.01

Approved	ME-MS41-/	VA20C2029-002	300	########	6-Jan-21	Calcium (Ca	>25.0	%	0	0.01
Approved	ME-MS41-/	VA20C2029-002	300	########	6-Jan-21	Cadmium (	<0.01	ppm	0	0.01
Approved	ME-MS41-/	VA20C2029-002	300	########	6-Jan-21	Cerium (Ce	9.41	ppm	0	0.02
Approved	ME-MS41-/	VA20C2029-002	300	########	6-Jan-21	Cobalt (Co)	1.7	ppm	0	0.1
Approved	ME-MS41-/	VA20C2029-002	300	########	6-Jan-21	Chromium	4	ppm	0	1
Approved	ME-MS41-/	VA20C2029-002	300	########	6-Jan-21	Cesium (Cs	0.25	ppm	0	0.05
Approved	ME-MS41-/	VA20C2029-002	300	########	6-Jan-21	Copper (Cu	3.3	ppm	0	0.2
Approved	ME-MS41-/	VA20C2029-002	300	########	6-Jan-21	Iron (Fe)	0.49	%	0	0.01
Approved	ME-MS41-/	VA20C2029-002	300	########	6-Jan-21	Gallium (Ga	0.75	ppm	0	0.05
Approved	ME-MS41-/	VA20C2029-002	300	########	6-Jan-21	Germaniun	<0.05	ppm	0	0.05
Approved	ME-MS41-/	VA20C2029-002	300	########	6-Jan-21	Hafnium (H	0.09	ppm	0	0.02
Approved	ME-MS41-/	VA20C2029-002	300	########	6-Jan-21	Mercury (H	0.01	ppm	0	0.01
Approved	ME-MS41-/	VA20C2029-002	300	########	6-Jan-21	Indium (In)	0.011	ppm	0	0.005
Approved	ME-MS41-/	VA20C2029-002	300	########	6-Jan-21	Potassium	0.08	%	0	0.01
Approved	ME-MS41-/	VA20C2029-002	300	########	6-Jan-21	Lanthanum	4.1	ppm	0	0.2
Approved	ME-MS41-/	VA20C2029-002	300	########	6-Jan-21	Lithium (Li)	2.8	ppm	0	0.1
Approved	ME-MS41-/	VA20C2029-002	300	########	6-Jan-21	Magnesiun	1.53	%	0	0.01
Approved	ME-MS41-/	VA20C2029-002	300	########	6-Jan-21	Manganese	305	ppm	0	5
Approved	ME-MS41-/	VA20C2029-002	300	########	6-Jan-21	Molybdenu	0.07	ppm	0	0.05
Approved	ME-MS41-/	VA20C2029-002	300	########	6-Jan-21	Sodium (Na	0.02	%	0	0.01
Approved	ME-MS41-/	VA20C2029-002	300	########	6-Jan-21	Niobium (N	0.07	ppm	0	0.05
Approved	ME-MS41-/	VA20C2029-002	300	########	6-Jan-21	Nickel (Ni)	3	ppm	0	0.2
Approved	ME-MS41-/	VA20C2029-002	300	########	6-Jan-21	Phosphoru	820	ppm	0	10
Approved	ME-MS41-/	VA20C2029-002	300	########	6-Jan-21	Lead (Pb)	1.3	ppm	0	0.2
Approved	ME-MS41-/	VA20C2029-002	300	########	6-Jan-21	Rubidium (	3.9	ppm	0	0.1
Approved	ME-MS41-/	VA20C2029-002	300	########	6-Jan-21	Rhenium (F	0.002	ppm	0	0.001
Approved	ME-MS41-/	VA20C2029-002	300	########	6-Jan-21	Sulfur (S)	0.07	%	0	0.01
Approved	ME-MS41-/	VA20C2029-002	300	########	6-Jan-21	Antimony (	<0.05	ppm	0	0.05
Approved	ME-MS41-/	VA20C2029-002	300	########	6-Jan-21	Scandium (	0.9	ppm	0	0.1
Approved	ME-MS41-/	VA20C2029-002	300	########	6-Jan-21	Selenium (S	0.3	ppm	0	0.2
Approved	ME-MS41-/	VA20C2029-002	300	########	6-Jan-21	Tin (Sn)	<0.2	ppm	0	0.2
Approved	ME-MS41-/	VA20C2029-002	300	########	6-Jan-21	Strontium (	198.5	ppm	0	0.2
Approved	ME-MS41-/	VA20C2029-002	300	########	6-Jan-21	Tantalum (	<0.01	ppm	0	0.01
Approved	ME-MS41-/	VA20C2029-002	300	########	6-Jan-21	Tellurium (	<0.01	ppm	0	0.01
Approved	ME-MS41-/	VA20C2029-002	300	########	6-Jan-21	Thorium (T	0.9	ppm	0	0.2
Approved	ME-MS41-/	VA20C2029-002	300	########	6-Jan-21	Titanium (T	<0.005	%	0	0.005
Approved	ME-MS41-/	VA20C2029-002	300	########	6-Jan-21	Thallium (T	0.03	ppm	0	0.02
Approved	ME-MS41-/	VA20C2029-002	300	########	6-Jan-21	Uranium (U	0.64	ppm	0	0.05
Approved	ME-MS41-/	VA20C2029-002	300	########	6-Jan-21	Vanadium (	6	ppm	0	1
Approved	ME-MS41-/	VA20C2029-002	300	########	6-Jan-21	Tungsten (\	<0.05	ppm	0	0.05
Approved	ME-MS41-/	VA20C2029-002	300	########	6-Jan-21	Yttrium (Y)	2.83	ppm	0	0.05
Approved	ME-MS41-/	VA20C2029-002	300	########	6-Jan-21	Zinc (Zn)	6	ppm	0	2
Approved	ME-MS41-/	VA20C2029-002	300	########	6-Jan-21	Zirconium (	2.3	ppm	0	0.5
Approved	PH-OA-ELE	VA20C2029-002	300	########	6-Jan-21	pH	8	Unity	0	0.1
Approved	ABA-OA-VC	VA20C2029-002	300	########	6-Jan-21	FIZZ RATIN	4	Unity	0	1
Approved	ABA-OA-VC	VA20C2029-002	300	########	6-Jan-21	MPA	2.2	tCaCO3/1K	0	0.3
Approved	ABA-OA-VC	VA20C2029-002	300	########	6-Jan-21	NNP	866	tCaCO3/1K	0	1
Approved	ABA-OA-VC	VA20C2029-002	300	########	6-Jan-21	Neutralizat	868	tCaCO3/1K	0	1
Approved	ABA-OA-VC	VA20C2029-002	300	########	6-Jan-21	Ratio (NP/M	396.8	Unity	0	0.01
Approved	S-CAL04c-A	VA20C2029-002	300	########	6-Jan-21	S-HNO3	<0.01	tCaCO3/1K	0	0.01
Approved	SULPHUR-S	VA20C2029-002	300	########	6-Jan-21	Sulfide Sulf	0.07	%	0	0.01
Approved	SULPHUR-S	VA20C2029-002	300	########	6-Jan-21	Sulfate Sulf	<0.01	%	0	0.01
Approved	SULPHUR-S	VA20C2029-002	300	########	6-Jan-21	Sulfate Sulf	<0.01	%	0	0.01
Approved	S-IR04b-AX	VA20C2029-002	300	########	6-Jan-21	Sulphur (S)	<0.01	%	0	0.01
Approved	SULPHUR-S	VA20C2029-002	300	########	6-Jan-21	Total Sulfu	0.07	%	0	0.01
Approved	WEIGHT-W	VA20C2029-002	300	########	6-Jan-21	Weight	3.36	kg	0	0.02
Approved	CARBON-C	VA20C2029-003	300	########	6-Jan-21	Carbon (C)	0.07	%	0	0.05
Approved	CARBON-C	VA20C2029-003	300	########	6-Jan-21	Carbon Dio	0.3	%	0	0.2
Approved	CARBON-C	VA20C2029-003	300	########	6-Jan-21	Carbon (C)	0.11	%	0	0.01
Approved	ME-MS41-/	VA20C2029-003	300	########	6-Jan-21	Silver (Ag)	0.4	ppm	0	0.01
Approved	ME-MS41-/	VA20C2029-003	300	########	6-Jan-21	Aluminum	1.56	%	0	0.01
Approved	ME-MS41-/	VA20C2029-003	300	########	6-Jan-21	Arsenic (As	30.4	ppm	0	0.1
Approved	ME-MS41-/	VA20C2029-003	300	########	6-Jan-21	Gold (Au)	<0.02	ppm	0	0.02
Approved	ME-MS41-/	VA20C2029-003	300	########	6-Jan-21	Boron (B)	70	ppm	0	10
Approved	ME-MS41-/	VA20C2029-003	300	########	6-Jan-21	Barium (Ba	30	ppm	0	10
Approved	ME-MS41-/	VA20C2029-003	300	########	6-Jan-21	Beryllium (	1.01	ppm	0	0.05
Approved	ME-MS41-/	VA20C2029-003	300	########	6-Jan-21	Bismuth (B	0.18	ppm	0	0.01
Approved	ME-MS41-/	VA20C2029-003	300	########	6-Jan-21	Calcium (Ca	0.81	%	0	0.01
Approved	ME-MS41-/	VA20C2029-003	300	########	6-Jan-21	Cadmium (	<0.01	ppm	0	0.01
Approved	ME-MS41-/	VA20C2029-003	300	########	6-Jan-21	Cerium (Ce	54.6	ppm	0	0.02
Approved	ME-MS41-/	VA20C2029-003	300	########	6-Jan-21	Cobalt (Co)	16.9	ppm	0	0.1
Approved	ME-MS41-/	VA20C2029-003	300	########	6-Jan-21	Chromium	24	ppm	0	1
Approved	ME-MS41-/	VA20C2029-003	300	########	6-Jan-21	Cesium (Cs	1.05	ppm	0	0.05
Approved	ME-MS41-/	VA20C2029-003	300	########	6-Jan-21	Copper (Cu	24.9	ppm	0	0.2
Approved	ME-MS41-/	VA20C2029-003	300	########	6-Jan-21	Iron (Fe)	1.59	%	0	0.01
Approved	ME-MS41-/	VA20C2029-003	300	########	6-Jan-21	Gallium (Ga	6.65	ppm	0	0.05
Approved	ME-MS41-/	VA20C2029-003	300	########	6-Jan-21	Germaniun	0.13	ppm	0	0.05
Approved	ME-MS41-/	VA20C2029-003	300	########	6-Jan-21	Hafnium (H	0.08	ppm	0	0.02
Approved	ME-MS41-/	VA20C2029-003	300	########	6-Jan-21	Mercury (H	0.25	ppm	0	0.01
Approved	ME-MS41-/	VA20C2029-003	300	########	6-Jan-21	Indium (In)	0.016	ppm	0	0.005
Approved	ME-MS41-/	VA20C2029-003	300	########	6-Jan-21	Potassium	0.88	%	0	0.01

Approved	ME-MS41-A	VA20C2029-003	300	########	6-Jan-21	Lanthanum	18.7	ppm	0	0.2
Approved	ME-MS41-A	VA20C2029-003	300	########	6-Jan-21	Lithium (Li)	17.6	ppm	0	0.1
Approved	ME-MS41-A	VA20C2029-003	300	########	6-Jan-21	Magnesium	0.39	%	0	0.01
Approved	ME-MS41-A	VA20C2029-003	300	########	6-Jan-21	Manganese	101	ppm	0	5
Approved	ME-MS41-A	VA20C2029-003	300	########	6-Jan-21	Molybdenu	0.22	ppm	0	0.05
Approved	ME-MS41-A	VA20C2029-003	300	########	6-Jan-21	Sodium (Na	0.03	%	0	0.01
Approved	ME-MS41-A	VA20C2029-003	300	########	6-Jan-21	Niobium (N	<0.05	ppm	0	0.05
Approved	ME-MS41-A	VA20C2029-003	300	########	6-Jan-21	Nickel (Ni)	38	ppm	0	0.2
Approved	ME-MS41-A	VA20C2029-003	300	########	6-Jan-21	Phosphoru	2180	ppm	0	10
Approved	ME-MS41-A	VA20C2029-003	300	########	6-Jan-21	Lead (Pb)	13.1	ppm	0	0.2
Approved	ME-MS41-A	VA20C2029-003	300	########	6-Jan-21	Rubidium (	36.8	ppm	0	0.1
Approved	ME-MS41-A	VA20C2029-003	300	########	6-Jan-21	Rhenium (F	0.013	ppm	0	0.001
Approved	ME-MS41-A	VA20C2029-003	300	########	6-Jan-21	Sulfur (S)	0.23	%	0	0.01
Approved	ME-MS41-A	VA20C2029-003	300	########	6-Jan-21	Antimony (	<0.05	ppm	0	0.05
Approved	ME-MS41-A	VA20C2029-003	300	########	6-Jan-21	Scandium (	4.2	ppm	0	0.1
Approved	ME-MS41-A	VA20C2029-003	300	########	6-Jan-21	Selenium (S	13.1	ppm	0	0.2
Approved	ME-MS41-A	VA20C2029-003	300	########	6-Jan-21	Tin (Sn)	0.4	ppm	0	0.2
Approved	ME-MS41-A	VA20C2029-003	300	########	6-Jan-21	Strontium (	91.7	ppm	0	0.2
Approved	ME-MS41-A	VA20C2029-003	300	########	6-Jan-21	Tantalum (	<0.01	ppm	0	0.01
Approved	ME-MS41-A	VA20C2029-003	300	########	6-Jan-21	Tellurium (	0.03	ppm	0	0.01
Approved	ME-MS41-A	VA20C2029-003	300	########	6-Jan-21	Thorium (T	10.8	ppm	0	0.2
Approved	ME-MS41-A	VA20C2029-003	300	########	6-Jan-21	Titanium (T	0.007	%	0	0.005
Approved	ME-MS41-A	VA20C2029-003	300	########	6-Jan-21	Thallium (T	0.21	ppm	0	0.02
Approved	ME-MS41-A	VA20C2029-003	300	########	6-Jan-21	Uranium (U	30	ppm	0	0.05
Approved	ME-MS41-A	VA20C2029-003	300	########	6-Jan-21	Vanadium (	17	ppm	0	1
Approved	ME-MS41-A	VA20C2029-003	300	########	6-Jan-21	Tungsten (W	0.2	ppm	0	0.05
Approved	ME-MS41-A	VA20C2029-003	300	########	6-Jan-21	Yttrium (Y)	19.95	ppm	0	0.05
Approved	ME-MS41-A	VA20C2029-003	300	########	6-Jan-21	Zinc (Zn)	28	ppm	0	2
Approved	ME-MS41-A	VA20C2029-003	300	########	6-Jan-21	Zirconium (	5.1	ppm	0	0.5
Approved	PH-OA-ELE	VA20C2029-003	300	########	6-Jan-21	pH	7.4	Unity	0	0.1
Approved	ABA-OA-VC	VA20C2029-003	300	########	6-Jan-21	FIZZ RATIN	1	Unity	0	1
Approved	ABA-OA-VC	VA20C2029-003	300	########	6-Jan-21	MPA	7.2	tCaCO3/1K	0	0.3
Approved	ABA-OA-VC	VA20C2029-003	300	########	6-Jan-21	NNP	3	tCaCO3/1K	0	1
Approved	ABA-OA-VC	VA20C2029-003	300	########	6-Jan-21	Neutralizat	10	tCaCO3/1K	0	1
Approved	ABA-OA-VC	VA20C2029-003	300	########	6-Jan-21	Ratio (NP/M	1.39	Unity	0	0.01
Approved	S-CAL04c-A	VA20C2029-003	300	########	6-Jan-21	S-HNO3	<0.01	tCaCO3/1K	0	0.01
Approved	SULPHUR-S	VA20C2029-003	300	########	6-Jan-21	Sulfide Sulf	0.17	%	0	0.01
Approved	SULPHUR-S	VA20C2029-003	300	########	6-Jan-21	Sulfate Sulf	0.06	%	0	0.01
Approved	SULPHUR-S	VA20C2029-003	300	########	6-Jan-21	Sulfate Sulf	<0.01	%	0	0.01
Approved	S-IR04b-AX	VA20C2029-003	300	########	6-Jan-21	Sulphur (S)	<0.01	%	0	0.01
Approved	SULPHUR-S	VA20C2029-003	300	########	6-Jan-21	Total Sulfu	0.23	%	0	0.01
Approved	WEIGHT-W	VA20C2029-003	300	########	6-Jan-21	Weight	2.5	kg	0	0.02
Approved	CARBON-C	VA20C2029-004	300	########	6-Jan-21	Carbon (C)	10.8	%	0	0.05
Approved	CARBON-C	VA20C2029-004	300	########	6-Jan-21	Carbon Dio	39.6	%	0	0.2
Approved	CARBON-C	VA20C2029-004	300	########	6-Jan-21	Carbon (C)	10.9	%	0	0.01
Approved	ME-MS41-A	VA20C2029-004	300	########	6-Jan-21	Silver (Ag)	0.01	ppm	0	0.01
Approved	ME-MS41-A	VA20C2029-004	300	########	6-Jan-21	Aluminum	0.16	%	0	0.01
Approved	ME-MS41-A	VA20C2029-004	300	########	6-Jan-21	Arsenic (As	0.8	ppm	0	0.1
Approved	ME-MS41-A	VA20C2029-004	300	########	6-Jan-21	Gold (Au)	<0.02	ppm	0	0.02
Approved	ME-MS41-A	VA20C2029-004	300	########	6-Jan-21	Boron (B)	10	ppm	0	10
Approved	ME-MS41-A	VA20C2029-004	300	########	6-Jan-21	Barium (Ba	10	ppm	0	10
Approved	ME-MS41-A	VA20C2029-004	300	########	6-Jan-21	Beryllium (	0.18	ppm	0	0.05
Approved	ME-MS41-A	VA20C2029-004	300	########	6-Jan-21	Bismuth (B	0.02	ppm	0	0.01
Approved	ME-MS41-A	VA20C2029-004	300	########	6-Jan-21	Calcium (Ca	>25.0	%	0	0.01
Approved	ME-MS41-A	VA20C2029-004	300	########	6-Jan-21	Cadmium (	<0.01	ppm	0	0.01
Approved	ME-MS41-A	VA20C2029-004	300	########	6-Jan-21	Cerium (Ce	8.86	ppm	0	0.02
Approved	ME-MS41-A	VA20C2029-004	300	########	6-Jan-21	Cobalt (Co)	1.6	ppm	0	0.1
Approved	ME-MS41-A	VA20C2029-004	300	########	6-Jan-21	Chromium	4	ppm	0	1
Approved	ME-MS41-A	VA20C2029-004	300	########	6-Jan-21	Cesium (Cs	0.21	ppm	0	0.05
Approved	ME-MS41-A	VA20C2029-004	300	########	6-Jan-21	Copper (Cu	5.7	ppm	0	0.2
Approved	ME-MS41-A	VA20C2029-004	300	########	6-Jan-21	Iron (Fe)	0.47	%	0	0.01
Approved	ME-MS41-A	VA20C2029-004	300	########	6-Jan-21	Gallium (Ga	0.73	ppm	0	0.05
Approved	ME-MS41-A	VA20C2029-004	300	########	6-Jan-21	Germaniun	<0.05	ppm	0	0.05
Approved	ME-MS41-A	VA20C2029-004	300	########	6-Jan-21	Hafnium (H	0.09	ppm	0	0.02
Approved	ME-MS41-A	VA20C2029-004	300	########	6-Jan-21	Mercury (H	0.01	ppm	0	0.01
Approved	ME-MS41-A	VA20C2029-004	300	########	6-Jan-21	Indium (In)	0.008	ppm	0	0.005
Approved	ME-MS41-A	VA20C2029-004	300	########	6-Jan-21	Potassium	0.09	%	0	0.01
Approved	ME-MS41-A	VA20C2029-004	300	########	6-Jan-21	Lanthanum	3.8	ppm	0	0.2
Approved	ME-MS41-A	VA20C2029-004	300	########	6-Jan-21	Lithium (Li)	2.5	ppm	0	0.1
Approved	ME-MS41-A	VA20C2029-004	300	########	6-Jan-21	Magnesium	1.3	%	0	0.01
Approved	ME-MS41-A	VA20C2029-004	300	########	6-Jan-21	Manganese	265	ppm	0	5
Approved	ME-MS41-A	VA20C2029-004	300	########	6-Jan-21	Molybdenu	0.14	ppm	0	0.05
Approved	ME-MS41-A	VA20C2029-004	300	########	6-Jan-21	Sodium (Na	0.02	%	0	0.01
Approved	ME-MS41-A	VA20C2029-004	300	########	6-Jan-21	Niobium (N	0.07	ppm	0	0.05
Approved	ME-MS41-A	VA20C2029-004	300	########	6-Jan-21	Nickel (Ni)	4	ppm	0	0.2
Approved	ME-MS41-A	VA20C2029-004	300	########	6-Jan-21	Phosphoru	600	ppm	0	10
Approved	ME-MS41-A	VA20C2029-004	300	########	6-Jan-21	Lead (Pb)	1.3	ppm	0	0.2
Approved	ME-MS41-A	VA20C2029-004	300	########	6-Jan-21	Rubidium (	3.8	ppm	0	0.1
Approved	ME-MS41-A	VA20C2029-004	300	########	6-Jan-21	Rhenium (F	0.001	ppm	0	0.001
Approved	ME-MS41-A	VA20C2029-004	300	########	6-Jan-21	Sulfur (S)	0.03	%	0	0.01
Approved	ME-MS41-A	VA20C2029-004	300	########	6-Jan-21	Antimony (	<0.05	ppm	0	0.05

Approved	ME-MS41-A	VA20C2029-004	300	########	6-Jan-21	Scandium (	0.9	ppm	0	0.1
Approved	ME-MS41-A	VA20C2029-004	300	########	6-Jan-21	Selenium (S	0.5	ppm	0	0.2
Approved	ME-MS41-A	VA20C2029-004	300	########	6-Jan-21	Tin (Sn)	0.2	ppm	0	0.2
Approved	ME-MS41-A	VA20C2029-004	300	########	6-Jan-21	Strontium (	205	ppm	0	0.2
Approved	ME-MS41-A	VA20C2029-004	300	########	6-Jan-21	Tantalum (	<0.01	ppm	0	0.01
Approved	ME-MS41-A	VA20C2029-004	300	########	6-Jan-21	Tellurium (	<0.01	ppm	0	0.01
Approved	ME-MS41-A	VA20C2029-004	300	########	6-Jan-21	Thorium (T	0.9	ppm	0	0.2
Approved	ME-MS41-A	VA20C2029-004	300	########	6-Jan-21	Titanium (T	<0.005	%	0	0.005
Approved	ME-MS41-A	VA20C2029-004	300	########	6-Jan-21	Thallium (T	0.02	ppm	0	0.02
Approved	ME-MS41-A	VA20C2029-004	300	########	6-Jan-21	Uranium (U	0.6	ppm	0	0.05
Approved	ME-MS41-A	VA20C2029-004	300	########	6-Jan-21	Vanadium (	6	ppm	0	1
Approved	ME-MS41-A	VA20C2029-004	300	########	6-Jan-21	Tungsten (\	<0.05	ppm	0	0.05
Approved	ME-MS41-A	VA20C2029-004	300	########	6-Jan-21	Yttrium (Y)	2.62	ppm	0	0.05
Approved	ME-MS41-A	VA20C2029-004	300	########	6-Jan-21	Zinc (Zn)	11	ppm	0	2
Approved	ME-MS41-A	VA20C2029-004	300	########	6-Jan-21	Zirconium (	2.2	ppm	0	0.5
Approved	PH-OA-ELE	VA20C2029-004	300	########	6-Jan-21	pH	8	Unity	0	0.1
Approved	ABA-OA-VC	VA20C2029-004	300	########	6-Jan-21	FIZZ RATIN	4	Unity	0	1
Approved	ABA-OA-VC	VA20C2029-004	300	########	6-Jan-21	MPA	1.3	tCaCO3/1K	0	0.3
Approved	ABA-OA-VC	VA20C2029-004	300	########	6-Jan-21	NNP	819	tCaCO3/1K	0	1
Approved	ABA-OA-VC	VA20C2029-004	300	########	6-Jan-21	Neutralizat	820	tCaCO3/1K	0	1
Approved	ABA-OA-VC	VA20C2029-004	300	########	6-Jan-21	Ratio (NP/M	656	Unity	0	0.01
Approved	S-CAL04c-A	VA20C2029-004	300	########	6-Jan-21	S-HNO3	<0.01	tCaCO3/1K	0	0.01
Approved	SULPHUR-S	VA20C2029-004	300	########	6-Jan-21	Sulfide Sulf	0.04	%	0	0.01
Approved	SULPHUR-S	VA20C2029-004	300	########	6-Jan-21	Sulfate Sulf	<0.01	%	0	0.01
Approved	SULPHUR-S	VA20C2029-004	300	########	6-Jan-21	Sulfate Sulf	<0.01	%	0	0.01
Approved	S-IR04b-AX	VA20C2029-004	300	########	6-Jan-21	Sulphur (S)	<0.01	%	0	0.01
Approved	SULPHUR-S	VA20C2029-004	300	########	6-Jan-21	Total Sulfu	0.04	%	0	0.01
Approved	WEIGHT-W	VA20C2029-004	300	########	6-Jan-21	Weight	3.18	kg	0	0.02
Approved	CARBON-C	VA20C2029-005	300	########	6-Jan-21	Carbon (C)	0.05	%	0	0.05
Approved	CARBON-C	VA20C2029-005	300	########	6-Jan-21	Carbon Dio	0.2	%	0	0.2
Approved	CARBON-C	VA20C2029-005	300	########	6-Jan-21	Carbon (C)	0.05	%	0	0.01
Approved	ME-MS41-A	VA20C2029-005	300	########	6-Jan-21	Silver (Ag)	0.1	ppm	0	0.01
Approved	ME-MS41-A	VA20C2029-005	300	########	6-Jan-21	Aluminum	1.7	%	0	0.01
Approved	ME-MS41-A	VA20C2029-005	300	########	6-Jan-21	Arsenic (As	13.3	ppm	0	0.1
Approved	ME-MS41-A	VA20C2029-005	300	########	6-Jan-21	Gold (Au)	<0.02	ppm	0	0.02
Approved	ME-MS41-A	VA20C2029-005	300	########	6-Jan-21	Boron (B)	70	ppm	0	10
Approved	ME-MS41-A	VA20C2029-005	300	########	6-Jan-21	Barium (Ba	40	ppm	0	10
Approved	ME-MS41-A	VA20C2029-005	300	########	6-Jan-21	Beryllium (	1.26	ppm	0	0.05
Approved	ME-MS41-A	VA20C2029-005	300	########	6-Jan-21	Bismuth (B	0.1	ppm	0	0.01
Approved	ME-MS41-A	VA20C2029-005	300	########	6-Jan-21	Calcium (Ca	0.43	%	0	0.01
Approved	ME-MS41-A	VA20C2029-005	300	########	6-Jan-21	Cadmium (	<0.01	ppm	0	0.01
Approved	ME-MS41-A	VA20C2029-005	300	########	6-Jan-21	Cerium (Ce	28.7	ppm	0	0.02
Approved	ME-MS41-A	VA20C2029-005	300	########	6-Jan-21	Cobalt (Co)	22	ppm	0	0.1
Approved	ME-MS41-A	VA20C2029-005	300	########	6-Jan-21	Chromium	42	ppm	0	1
Approved	ME-MS41-A	VA20C2029-005	300	########	6-Jan-21	Cesium (Cs	1.04	ppm	0	0.05
Approved	ME-MS41-A	VA20C2029-005	300	########	6-Jan-21	Copper (Cu	24.8	ppm	0	0.2
Approved	ME-MS41-A	VA20C2029-005	300	########	6-Jan-21	Iron (Fe)	2.23	%	0	0.01
Approved	ME-MS41-A	VA20C2029-005	300	########	6-Jan-21	Gallium (Ga	7.8	ppm	0	0.05
Approved	ME-MS41-A	VA20C2029-005	300	########	6-Jan-21	Germaniun	0.05	ppm	0	0.05
Approved	ME-MS41-A	VA20C2029-005	300	########	6-Jan-21	Hafnium (H	0.26	ppm	0	0.02
Approved	ME-MS41-A	VA20C2029-005	300	########	6-Jan-21	Mercury (H	0.05	ppm	0	0.01
Approved	ME-MS41-A	VA20C2029-005	300	########	6-Jan-21	Indium (In)	0.02	ppm	0	0.005
Approved	ME-MS41-A	VA20C2029-005	300	########	6-Jan-21	Potassium	0.95	%	0	0.01
Approved	ME-MS41-A	VA20C2029-005	300	########	6-Jan-21	Lanthanum	12.6	ppm	0	0.2
Approved	ME-MS41-A	VA20C2029-005	300	########	6-Jan-21	Lithium (Li)	25.7	ppm	0	0.1
Approved	ME-MS41-A	VA20C2029-005	300	########	6-Jan-21	Magnesiun	0.45	%	0	0.01
Approved	ME-MS41-A	VA20C2029-005	300	########	6-Jan-21	Manganese	64	ppm	0	5
Approved	ME-MS41-A	VA20C2029-005	300	########	6-Jan-21	Molybdenu	0.41	ppm	0	0.05
Approved	ME-MS41-A	VA20C2029-005	300	########	6-Jan-21	Sodium (Na	0.02	%	0	0.01
Approved	ME-MS41-A	VA20C2029-005	300	########	6-Jan-21	Niobium (N	<0.05	ppm	0	0.05
Approved	ME-MS41-A	VA20C2029-005	300	########	6-Jan-21	Nickel (Ni)	52.6	ppm	0	0.2
Approved	ME-MS41-A	VA20C2029-005	300	########	6-Jan-21	Phosphoru	490	ppm	0	10
Approved	ME-MS41-A	VA20C2029-005	300	########	6-Jan-21	Lead (Pb)	7.4	ppm	0	0.2
Approved	ME-MS41-A	VA20C2029-005	300	########	6-Jan-21	Rubidium (	41.2	ppm	0	0.1
Approved	ME-MS41-A	VA20C2029-005	300	########	6-Jan-21	Rhenium (F	0.01	ppm	0	0.001
Approved	ME-MS41-A	VA20C2029-005	300	########	6-Jan-21	Sulfur (S)	0.07	%	0	0.01
Approved	ME-MS41-A	VA20C2029-005	300	########	6-Jan-21	Antimony (	<0.05	ppm	0	0.05
Approved	ME-MS41-A	VA20C2029-005	300	########	6-Jan-21	Scandium (	3.4	ppm	0	0.1
Approved	ME-MS41-A	VA20C2029-005	300	########	6-Jan-21	Selenium (S	<0.2	ppm	0	0.2
Approved	ME-MS41-A	VA20C2029-005	300	########	6-Jan-21	Tin (Sn)	0.5	ppm	0	0.2
Approved	ME-MS41-A	VA20C2029-005	300	########	6-Jan-21	Strontium (	141.5	ppm	0	0.2
Approved	ME-MS41-A	VA20C2029-005	300	########	6-Jan-21	Tantalum (	<0.01	ppm	0	0.01
Approved	ME-MS41-A	VA20C2029-005	300	########	6-Jan-21	Tellurium (	0.01	ppm	0	0.01
Approved	ME-MS41-A	VA20C2029-005	300	########	6-Jan-21	Thorium (T	11.5	ppm	0	0.2
Approved	ME-MS41-A	VA20C2029-005	300	########	6-Jan-21	Titanium (T	0.006	%	0	0.005
Approved	ME-MS41-A	VA20C2029-005	300	########	6-Jan-21	Thallium (T	0.29	ppm	0	0.02
Approved	ME-MS41-A	VA20C2029-005	300	########	6-Jan-21	Uranium (U	11.65	ppm	0	0.05
Approved	ME-MS41-A	VA20C2029-005	300	########	6-Jan-21	Vanadium (	18	ppm	0	1
Approved	ME-MS41-A	VA20C2029-005	300	########	6-Jan-21	Tungsten (\	0.07	ppm	0	0.05
Approved	ME-MS41-A	VA20C2029-005	300	########	6-Jan-21	Yttrium (Y)	4.68	ppm	0	0.05
Approved	ME-MS41-A	VA20C2029-005	300	########	6-Jan-21	Zinc (Zn)	34	ppm	0	2

Approved	ME-MS41-/	VA20C2029-005	300	########	6-Jan-21	Zirconium (	8.3	ppm	0	0.5
Approved	PH-OA-ELE	VA20C2029-005	300	########	6-Jan-21	pH	7.8	Unity	0	0.1
Approved	ABA-OA-V(	VA20C2029-005	300	########	6-Jan-21	FIZZ RATIN	1	Unity	0	1
Approved	ABA-OA-V(	VA20C2029-005	300	########	6-Jan-21	MPA	2.2	tCaCO3/1K	0	0.3
Approved	ABA-OA-V(	VA20C2029-005	300	########	6-Jan-21	NNP	3	tCaCO3/1K	0	1
Approved	ABA-OA-V(	VA20C2029-005	300	########	6-Jan-21	Neutralizat	5	tCaCO3/1K	0	1
Approved	ABA-OA-V(	VA20C2029-005	300	########	6-Jan-21	Ratio (NP/I	2.29	Unity	0	0.01
Approved	S-CAL04c-A	VA20C2029-005	300	########	6-Jan-21	S-HNO3	<0.01	tCaCO3/1K	0	0.01
Approved	SULPHUR-S	VA20C2029-005	300	########	6-Jan-21	Sulfide Sulf	0.06	%	0	0.01
Approved	SULPHUR-S	VA20C2029-005	300	########	6-Jan-21	Sulfate Sulf	0.01	%	0	0.01
Approved	SULPHUR-S	VA20C2029-005	300	########	6-Jan-21	Sulfate Sulf	<0.01	%	0	0.01
Approved	S-IR04b-AX	VA20C2029-005	300	########	6-Jan-21	Sulphur (S)	<0.01	%	0	0.01
Approved	SULPHUR-S	VA20C2029-005	300	########	6-Jan-21	Total Sulfu	0.07	%	0	0.01
Approved	WEIGHT-W	VA20C2029-005	300	########	6-Jan-21	Weight	2.24	kg	0	0.02
Approved	CARBON-C	VA20C2029-006	300	########	6-Jan-21	Carbon (C)	10.65	%	0	0.05
Approved	CARBON-C	VA20C2029-006	300	########	6-Jan-21	Carbon Dio	39	%	0	0.2
Approved	CARBON-C	VA20C2029-006	300	########	6-Jan-21	Carbon (C)	10.85	%	0	0.01
Approved	ME-MS41-/	VA20C2029-006	300	########	6-Jan-21	Silver (Ag)	0.01	ppm	0	0.01
Approved	ME-MS41-/	VA20C2029-006	300	########	6-Jan-21	Aluminum	0.2	%	0	0.01
Approved	ME-MS41-/	VA20C2029-006	300	########	6-Jan-21	Arsenic (As	0.7	ppm	0	0.1
Approved	ME-MS41-/	VA20C2029-006	300	########	6-Jan-21	Gold (Au)	<0.02	ppm	0	0.02
Approved	ME-MS41-/	VA20C2029-006	300	########	6-Jan-21	Boron (B)	10	ppm	0	10
Approved	ME-MS41-/	VA20C2029-006	300	########	6-Jan-21	Barium (Ba	10	ppm	0	10
Approved	ME-MS41-/	VA20C2029-006	300	########	6-Jan-21	Beryllium (	0.24	ppm	0	0.05
Approved	ME-MS41-/	VA20C2029-006	300	########	6-Jan-21	Bismuth (B	0.02	ppm	0	0.01
Approved	ME-MS41-/	VA20C2029-006	300	########	6-Jan-21	Calcium (Ca	>25.0	%	0	0.01
Approved	ME-MS41-/	VA20C2029-006	300	########	6-Jan-21	Cadmium (	<0.01	ppm	0	0.01
Approved	ME-MS41-/	VA20C2029-006	300	########	6-Jan-21	Cerium (Ce	13.5	ppm	0	0.02
Approved	ME-MS41-/	VA20C2029-006	300	########	6-Jan-21	Cobalt (Co)	1.5	ppm	0	0.1
Approved	ME-MS41-/	VA20C2029-006	300	########	6-Jan-21	Chromium	5	ppm	0	1
Approved	ME-MS41-/	VA20C2029-006	300	########	6-Jan-21	Cesium (Cs	0.32	ppm	0	0.05
Approved	ME-MS41-/	VA20C2029-006	300	########	6-Jan-21	Copper (Cu	3.2	ppm	0	0.2
Approved	ME-MS41-/	VA20C2029-006	300	########	6-Jan-21	Iron (Fe)	0.58	%	0	0.01
Approved	ME-MS41-/	VA20C2029-006	300	########	6-Jan-21	Gallium (Ga	0.97	ppm	0	0.05
Approved	ME-MS41-/	VA20C2029-006	300	########	6-Jan-21	Germaniun	<0.05	ppm	0	0.05
Approved	ME-MS41-/	VA20C2029-006	300	########	6-Jan-21	Hafnium (H	0.12	ppm	0	0.02
Approved	ME-MS41-/	VA20C2029-006	300	########	6-Jan-21	Mercury (H	0.01	ppm	0	0.01
Approved	ME-MS41-/	VA20C2029-006	300	########	6-Jan-21	Indium (In)	0.01	ppm	0	0.005
Approved	ME-MS41-/	VA20C2029-006	300	########	6-Jan-21	Potassium	0.11	%	0	0.01
Approved	ME-MS41-/	VA20C2029-006	300	########	6-Jan-21	Lanthanum	5.2	ppm	0	0.2
Approved	ME-MS41-/	VA20C2029-006	300	########	6-Jan-21	Lithium (Li)	3.5	ppm	0	0.1
Approved	ME-MS41-/	VA20C2029-006	300	########	6-Jan-21	Magnesiun	1.49	%	0	0.01
Approved	ME-MS41-/	VA20C2029-006	300	########	6-Jan-21	Manganese	321	ppm	0	5
Approved	ME-MS41-/	VA20C2029-006	300	########	6-Jan-21	Molybdenu	0.13	ppm	0	0.05
Approved	ME-MS41-/	VA20C2029-006	300	########	6-Jan-21	Sodium (Na	0.02	%	0	0.01
Approved	ME-MS41-/	VA20C2029-006	300	########	6-Jan-21	Niobium (N	0.08	ppm	0	0.05
Approved	ME-MS41-/	VA20C2029-006	300	########	6-Jan-21	Nickel (Ni)	3.1	ppm	0	0.2
Approved	ME-MS41-/	VA20C2029-006	300	########	6-Jan-21	Phosphoru	870	ppm	0	10
Approved	ME-MS41-/	VA20C2029-006	300	########	6-Jan-21	Lead (Pb)	1.1	ppm	0	0.2
Approved	ME-MS41-/	VA20C2029-006	300	########	6-Jan-21	Rubidium (	5.4	ppm	0	0.1
Approved	ME-MS41-/	VA20C2029-006	300	########	6-Jan-21	Rhenium (F	0.001	ppm	0	0.001
Approved	ME-MS41-/	VA20C2029-006	300	########	6-Jan-21	Sulfur (S)	0.05	%	0	0.01
Approved	ME-MS41-/	VA20C2029-006	300	########	6-Jan-21	Antimony (	<0.05	ppm	0	0.05
Approved	ME-MS41-/	VA20C2029-006	300	########	6-Jan-21	Scandium (	1.1	ppm	0	0.1
Approved	ME-MS41-/	VA20C2029-006	300	########	6-Jan-21	Selenium (S	0.7	ppm	0	0.2
Approved	ME-MS41-/	VA20C2029-006	300	########	6-Jan-21	Tin (Sn)	<0.2	ppm	0	0.2
Approved	ME-MS41-/	VA20C2029-006	300	########	6-Jan-21	Strontium (	205	ppm	0	0.2
Approved	ME-MS41-/	VA20C2029-006	300	########	6-Jan-21	Tantalum (	<0.01	ppm	0	0.01
Approved	ME-MS41-/	VA20C2029-006	300	########	6-Jan-21	Tellurium (	<0.01	ppm	0	0.01
Approved	ME-MS41-/	VA20C2029-006	300	########	6-Jan-21	Thorium (T	1.2	ppm	0	0.2
Approved	ME-MS41-/	VA20C2029-006	300	########	6-Jan-21	Titanium (T	<0.005	%	0	0.005
Approved	ME-MS41-/	VA20C2029-006	300	########	6-Jan-21	Thallium (T	0.02	ppm	0	0.02
Approved	ME-MS41-/	VA20C2029-006	300	########	6-Jan-21	Uranium (U	0.73	ppm	0	0.05
Approved	ME-MS41-/	VA20C2029-006	300	########	6-Jan-21	Vanadium (	8	ppm	0	1
Approved	ME-MS41-/	VA20C2029-006	300	########	6-Jan-21	Tungsten (\	<0.05	ppm	0	0.05
Approved	ME-MS41-/	VA20C2029-006	300	########	6-Jan-21	Yttrium (Y)	3.16	ppm	0	0.05
Approved	ME-MS41-/	VA20C2029-006	300	########	6-Jan-21	Zinc (Zn)	6	ppm	0	2
Approved	ME-MS41-/	VA20C2029-006	300	########	6-Jan-21	Zirconium (	2.8	ppm	0	0.5
Approved	PH-OA-ELE	VA20C2029-006	300	########	6-Jan-21	pH	8.3	Unity	0	0.1
Approved	ABA-OA-V(	VA20C2029-006	300	########	6-Jan-21	FIZZ RATIN	4	Unity	0	1
Approved	ABA-OA-V(	VA20C2029-006	300	########	6-Jan-21	MPA	1.6	tCaCO3/1K	0	0.3
Approved	ABA-OA-V(	VA20C2029-006	300	########	6-Jan-21	NNP	819	tCaCO3/1K	0	1
Approved	ABA-OA-V(	VA20C2029-006	300	########	6-Jan-21	Neutralizat	821	tCaCO3/1K	0	1
Approved	ABA-OA-V(	VA20C2029-006	300	########	6-Jan-21	Ratio (NP/I	525.44	Unity	0	0.01
Approved	S-CAL04c-A	VA20C2029-006	300	########	6-Jan-21	S-HNO3	<0.01	tCaCO3/1K	0	0.01
Approved	SULPHUR-S	VA20C2029-006	300	########	6-Jan-21	Sulfide Sulf	0.05	%	0	0.01
Approved	SULPHUR-S	VA20C2029-006	300	########	6-Jan-21	Sulfate Sulf	<0.01	%	0	0.01
Approved	SULPHUR-S	VA20C2029-006	300	########	6-Jan-21	Sulfate Sulf	<0.01	%	0	0.01
Approved	S-IR04b-AX	VA20C2029-006	300	########	6-Jan-21	Sulphur (S)	<0.01	%	0	0.01
Approved	SULPHUR-S	VA20C2029-006	300	########	6-Jan-21	Total Sulfu	0.05	%	0	0.01
Approved	WEIGHT-W	VA20C2029-006	300	########	6-Jan-21	Weight	3.66	kg	0	0.02

Approved	CARBON-C	VA20C2029-007	300	########	6-Jan-21	Carbon (C)	0.36	%	0	0.05
Approved	CARBON-C	VA20C2029-007	300	########	6-Jan-21	Carbon Dio	1.3	%	0	0.2
Approved	CARBON-C	VA20C2029-007	300	########	6-Jan-21	Carbon (C)	0.55	%	0	0.01
Approved	ME-MS41-/	VA20C2029-007	300	########	6-Jan-21	Silver (Ag)	0.02	ppm	0	0.01
Approved	ME-MS41-/	VA20C2029-007	300	########	6-Jan-21	Aluminum	1.49	%	0	0.01
Approved	ME-MS41-/	VA20C2029-007	300	########	6-Jan-21	Arsenic (As	24.2	ppm	0	0.1
Approved	ME-MS41-/	VA20C2029-007	300	########	6-Jan-21	Gold (Au)	<0.02	ppm	0	0.02
Approved	ME-MS41-/	VA20C2029-007	300	########	6-Jan-21	Boron (B)	50	ppm	0	10
Approved	ME-MS41-/	VA20C2029-007	300	########	6-Jan-21	Barium (Ba	30	ppm	0	10
Approved	ME-MS41-/	VA20C2029-007	300	########	6-Jan-21	Beryllium (	0.92	ppm	0	0.05
Approved	ME-MS41-/	VA20C2029-007	300	########	6-Jan-21	Bismuth (B	0.12	ppm	0	0.01
Approved	ME-MS41-/	VA20C2029-007	300	########	6-Jan-21	Calcium (Ca	1.32	%	0	0.01
Approved	ME-MS41-/	VA20C2029-007	300	########	6-Jan-21	Cadmium (	<0.01	ppm	0	0.01
Approved	ME-MS41-/	VA20C2029-007	300	########	6-Jan-21	Cerium (Ce	36.1	ppm	0	0.02
Approved	ME-MS41-/	VA20C2029-007	300	########	6-Jan-21	Cobalt (Co)	20.6	ppm	0	0.1
Approved	ME-MS41-/	VA20C2029-007	300	########	6-Jan-21	Chromium	58	ppm	0	1
Approved	ME-MS41-/	VA20C2029-007	300	########	6-Jan-21	Cesium (Cs	0.73	ppm	0	0.05
Approved	ME-MS41-/	VA20C2029-007	300	########	6-Jan-21	Copper (Cu	7.4	ppm	0	0.2
Approved	ME-MS41-/	VA20C2029-007	300	########	6-Jan-21	Iron (Fe)	5.56	%	0	0.01
Approved	ME-MS41-/	VA20C2029-007	300	########	6-Jan-21	Gallium (Ga	8.17	ppm	0	0.05
Approved	ME-MS41-/	VA20C2029-007	300	########	6-Jan-21	Germaniun	0.07	ppm	0	0.05
Approved	ME-MS41-/	VA20C2029-007	300	########	6-Jan-21	Hafnium (H	0.34	ppm	0	0.02
Approved	ME-MS41-/	VA20C2029-007	300	########	6-Jan-21	Mercury (H	0.03	ppm	0	0.01
Approved	ME-MS41-/	VA20C2029-007	300	########	6-Jan-21	Indium (In)	0.047	ppm	0	0.005
Approved	ME-MS41-/	VA20C2029-007	300	########	6-Jan-21	Potassium	0.49	%	0	0.01
Approved	ME-MS41-/	VA20C2029-007	300	########	6-Jan-21	Lanthanum	15	ppm	0	0.2
Approved	ME-MS41-/	VA20C2029-007	300	########	6-Jan-21	Lithium (Li)	25.7	ppm	0	0.1
Approved	ME-MS41-/	VA20C2029-007	300	########	6-Jan-21	Magnesiun	0.41	%	0	0.01
Approved	ME-MS41-/	VA20C2029-007	300	########	6-Jan-21	Manganese	206	ppm	0	5
Approved	ME-MS41-/	VA20C2029-007	300	########	6-Jan-21	Molybdenu	0.54	ppm	0	0.05
Approved	ME-MS41-/	VA20C2029-007	300	########	6-Jan-21	Sodium (Na	0.02	%	0	0.01
Approved	ME-MS41-/	VA20C2029-007	300	########	6-Jan-21	Niobium (N	0.21	ppm	0	0.05
Approved	ME-MS41-/	VA20C2029-007	300	########	6-Jan-21	Nickel (Ni)	25.8	ppm	0	0.2
Approved	ME-MS41-/	VA20C2029-007	300	########	6-Jan-21	Phosphoru	580	ppm	0	10
Approved	ME-MS41-/	VA20C2029-007	300	########	6-Jan-21	Lead (Pb)	4.6	ppm	0	0.2
Approved	ME-MS41-/	VA20C2029-007	300	########	6-Jan-21	Rubidium (	22.7	ppm	0	0.1
Approved	ME-MS41-/	VA20C2029-007	300	########	6-Jan-21	Rhenium (F	0.003	ppm	0	0.001
Approved	ME-MS41-/	VA20C2029-007	300	########	6-Jan-21	Sulfur (S)	0.69	%	0	0.01
Approved	ME-MS41-/	VA20C2029-007	300	########	6-Jan-21	Antimony (	<0.05	ppm	0	0.05
Approved	ME-MS41-/	VA20C2029-007	300	########	6-Jan-21	Scandium (	6.1	ppm	0	0.1
Approved	ME-MS41-/	VA20C2029-007	300	########	6-Jan-21	Selenium (S	0.3	ppm	0	0.2
Approved	ME-MS41-/	VA20C2029-007	300	########	6-Jan-21	Tin (Sn)	0.6	ppm	0	0.2
Approved	ME-MS41-/	VA20C2029-007	300	########	6-Jan-21	Strontium (	34.2	ppm	0	0.2
Approved	ME-MS41-/	VA20C2029-007	300	########	6-Jan-21	Tantalum (	<0.01	ppm	0	0.01
Approved	ME-MS41-/	VA20C2029-007	300	########	6-Jan-21	Tellurium (	0.09	ppm	0	0.01
Approved	ME-MS41-/	VA20C2029-007	300	########	6-Jan-21	Thorium (T	11.6	ppm	0	0.2
Approved	ME-MS41-/	VA20C2029-007	300	########	6-Jan-21	Titanium (T	0.036	%	0	0.005
Approved	ME-MS41-/	VA20C2029-007	300	########	6-Jan-21	Thallium (T	0.1	ppm	0	0.02
Approved	ME-MS41-/	VA20C2029-007	300	########	6-Jan-21	Uranium (U	0.4	ppm	0	0.05
Approved	ME-MS41-/	VA20C2029-007	300	########	6-Jan-21	Vanadium (	60	ppm	0	1
Approved	ME-MS41-/	VA20C2029-007	300	########	6-Jan-21	Tungsten (W	0.12	ppm	0	0.05
Approved	ME-MS41-/	VA20C2029-007	300	########	6-Jan-21	Yttrium (Y)	8.9	ppm	0	0.05
Approved	ME-MS41-/	VA20C2029-007	300	########	6-Jan-21	Zinc (Zn)	38	ppm	0	2
Approved	ME-MS41-/	VA20C2029-007	300	########	6-Jan-21	Zirconium (	10.7	ppm	0	0.5
Approved	PH-OA-ELE	VA20C2029-007	300	########	6-Jan-21	pH	7.5	Unity	0	0.1
Approved	ABA-OA-VC	VA20C2029-007	300	########	6-Jan-21	FIZZ RATIN	2	Unity	0	1
Approved	ABA-OA-VC	VA20C2029-007	300	########	6-Jan-21	MPA	20	tCaCO3/1K	0	0.3
Approved	ABA-OA-VC	VA20C2029-007	300	########	6-Jan-21	NNP	5	tCaCO3/1K	0	1
Approved	ABA-OA-VC	VA20C2029-007	300	########	6-Jan-21	Neutralizat	25	tCaCO3/1K	0	1
Approved	ABA-OA-VC	VA20C2029-007	300	########	6-Jan-21	Ratio (NP/M	1.25	Unity	0	0.01
Approved	S-CAL04c-A	VA20C2029-007	300	########	6-Jan-21	S-HNO3	<0.01	tCaCO3/1K	0	0.01
Approved	SULPHUR-S	VA20C2029-007	300	########	6-Jan-21	Sulfide Sulf	0.52	%	0	0.01
Approved	SULPHUR-S	VA20C2029-007	300	########	6-Jan-21	Sulfate Sulf	0.12	%	0	0.01
Approved	SULPHUR-S	VA20C2029-007	300	########	6-Jan-21	Sulfate Sulf	<0.01	%	0	0.01
Approved	S-IR04b-AX	VA20C2029-007	300	########	6-Jan-21	Sulphur (S)	<0.01	%	0	0.01
Approved	SULPHUR-S	VA20C2029-007	300	########	6-Jan-21	Total Sulfu	0.64	%	0	0.01
Approved	WEIGHT-W	VA20C2029-007	300	########	6-Jan-21	Weight	2.54	kg	0	0.02

Instrument NONE		Departmen	300	Analyst:	ALSGeo	AnalDate F	DD-MON-YY HH24:MI:SS											
Email_user SEEKPAK		Parm_MODE		SAMP_MO	ALL	List type(s)												
Approved	Workgroup	PROD	Samplenun	QCTYPE	Listpointer	Dilution	AnalData	Prep	Comments	RPTRemark	Parameter	Result	Units	Flag(Text/N	Qual	D.L		
Approved		CARBON-C	VA20C2173-001		300		########	24-Jan-21			Carbon (C)	0.09	%	0		0.05		
Approved		CARBON-C	VA20C2173-001		300		########	24-Jan-21			Carbon Dio	0.3	%	0		0.2		
Approved		CARBON-C	VA20C2173-001		300		########	24-Jan-21			Carbon (C)	0.12	%	0		0.01		
Approved		ME-MS41-A	VA20C2173-001		300		########	24-Jan-21			Silver (Ag)	0.01	ppm	0		0.01		
Approved		ME-MS41-A	VA20C2173-001		300		########	24-Jan-21			Aluminum	0.09	%	0		0.01		
Approved		ME-MS41-A	VA20C2173-001		300		########	24-Jan-21			Arsenic (As	1.5	ppm	0		0.1		
Approved		ME-MS41-A	VA20C2173-001		300		########	24-Jan-21			Gold (Au)	<0.02	ppm	0		0.02		
Approved		ME-MS41-A	VA20C2173-001		300		########	24-Jan-21			Boron (B)	<10	ppm	0		10		
Approved		ME-MS41-A	VA20C2173-001		300		########	24-Jan-21			Barium (Ba	<10	ppm	0		10		
Approved		ME-MS41-A	VA20C2173-001		300		########	24-Jan-21			Beryllium (	<0.05	ppm	0		0.05		
Approved		ME-MS41-A	VA20C2173-001		300		########	24-Jan-21			Bismuth (B	0.01	ppm	0		0.01		
Approved		ME-MS41-A	VA20C2173-001		300		########	24-Jan-21			Calcium (Ca	0.03	%	0		0.01		
Approved		ME-MS41-A	VA20C2173-001		300		########	24-Jan-21			Cadmium (	<0.01	ppm	0		0.01		
Approved		ME-MS41-A	VA20C2173-001		300		########	24-Jan-21			Cerium (Ce	1.67	ppm	0		0.02		
Approved		ME-MS41-A	VA20C2173-001		300		########	24-Jan-21			Cobalt (Co)	0.6	ppm	0		0.1		
Approved		ME-MS41-A	VA20C2173-001		300		########	24-Jan-21			Chromium	3	ppm	0		1		
Approved		ME-MS41-A	VA20C2173-001		300		########	24-Jan-21			Cesium (Cs	<0.05	ppm	0		0.05		
Approved		ME-MS41-A	VA20C2173-001		300		########	24-Jan-21			Copper (Cu	1	ppm	0		0.2		
Approved		ME-MS41-A	VA20C2173-001		300		########	24-Jan-21			Iron (Fe)	0.65	%	0		0.01		
Approved		ME-MS41-A	VA20C2173-001		300		########	24-Jan-21			Gallium (Ga	0.18	ppm	0		0.05		
Approved		ME-MS41-A	VA20C2173-001		300		########	24-Jan-21			Germaniun	<0.05	ppm	0		0.05		
Approved		ME-MS41-A	VA20C2173-001		300		########	24-Jan-21			Hafnium (H	0.13	ppm	0		0.02		
Approved		ME-MS41-A	VA20C2173-001		300		########	24-Jan-21			Mercury (H	<0.01	ppm	0		0.01		
Approved		ME-MS41-A	VA20C2173-001		300		########	24-Jan-21			Indium (In)	<0.005	ppm	0		0.005		
Approved		ME-MS41-A	VA20C2173-001		300		########	24-Jan-21			Potassium	0.01	%	0		0.01		
Approved		ME-MS41-A	VA20C2173-001		300		########	24-Jan-21			Lanthanum	0.8	ppm	0		0.2		
Approved		ME-MS41-A	VA20C2173-001		300		########	24-Jan-21			Lithium (Li)	1.9	ppm	0		0.1		
Approved		ME-MS41-A	VA20C2173-001		300		########	24-Jan-21			Magnesiun	0.01	%	0		0.01		
Approved		ME-MS41-A	VA20C2173-001		300		########	24-Jan-21			Manganese	45	ppm	0		5		
Approved		ME-MS41-A	VA20C2173-001		300		########	24-Jan-21			Molybdenu	0.09	ppm	0		0.05		
Approved		ME-MS41-A	VA20C2173-001		300		########	24-Jan-21			Sodium (Na	<0.01	%	0		0.01		
Approved		ME-MS41-A	VA20C2173-001		300		########	24-Jan-21			Niobium (N	<0.05	ppm	0		0.05		
Approved		ME-MS41-A	VA20C2173-001		300		########	24-Jan-21			Nickel (Ni)	1.3	ppm	0		0.2		
Approved		ME-MS41-A	VA20C2173-001		300		########	24-Jan-21			Phosphoru	30	ppm	0		10		
Approved		ME-MS41-A	VA20C2173-001		300		########	24-Jan-21			Lead (Pb)	0.9	ppm	0		0.2		
Approved		ME-MS41-A	VA20C2173-001		300		########	24-Jan-21			Rubidium (	0.3	ppm	0		0.1		
Approved		ME-MS41-A	VA20C2173-001		300		########	24-Jan-21			Rhenium (F	<0.001	ppm	0		0.001		
Approved		ME-MS41-A	VA20C2173-001		300		########	24-Jan-21			Sulfur (S)	0.01	%	0		0.01		
Approved		ME-MS41-A	VA20C2173-001		300		########	24-Jan-21			Antimony (	<0.05	ppm	0		0.05		
Approved		ME-MS41-A	VA20C2173-001		300		########	24-Jan-21			Scandium (	0.1	ppm	0		0.1		
Approved		ME-MS41-A	VA20C2173-001		300		########	24-Jan-21			Selenium (S	0.2	ppm	0		0.2		
Approved		ME-MS41-A	VA20C2173-001		300		########	24-Jan-21			Tin (Sn)	<0.2	ppm	0		0.2		
Approved		ME-MS41-A	VA20C2173-001		300		########	24-Jan-21			Strontium (	1.9	ppm	0		0.2		
Approved		ME-MS41-A	VA20C2173-001		300		########	24-Jan-21			Tantalum (	<0.01	ppm	0		0.01		
Approved		ME-MS41-A	VA20C2173-001		300		########	24-Jan-21			Tellurium (	<0.01	ppm	0		0.01		
Approved		ME-MS41-A	VA20C2173-001		300		########	24-Jan-21			Thorium (T	0.3	ppm	0		0.2		
Approved		ME-MS41-A	VA20C2173-001		300		########	24-Jan-21			Titanium (T	<0.005	%	0		0.005		
Approved		ME-MS41-A	VA20C2173-001		300		########	24-Jan-21			Thallium (T	0.03	ppm	0		0.02		
Approved		ME-MS41-A	VA20C2173-001		300		########	24-Jan-21			Uranium (U	0.16	ppm	0		0.05		
Approved		ME-MS41-A	VA20C2173-001		300		########	24-Jan-21			Vanadium (	1	ppm	0		1		
Approved		ME-MS41-A	VA20C2173-001		300		########	24-Jan-21			Tungsten (\	<0.05	ppm	0		0.05		
Approved		ME-MS41-A	VA20C2173-001		300		########	24-Jan-21			Yttrium (Y)	0.33	ppm	0		0.05		
Approved		ME-MS41-A	VA20C2173-001		300		########	24-Jan-21			Zinc (Zn)	2	ppm	0		2		
Approved		ME-MS41-A	VA20C2173-001		300		########	24-Jan-21			Zirconium (	3.8	ppm	0		0.5		
Approved		PH-OA-ELE	VA20C2173-001		300		########	24-Jan-21			pH	7	Unity	0		0.1		
Approved		ABA-OA-VC	VA20C2173-001		300		########	24-Jan-21			FIZZ RATIN	1	Unity	0		1		
Approved		ABA-OA-VC	VA20C2173-001		300		########	24-Jan-21			MPA	0.3	tCaCO3/1K	0		0.3		
Approved		ABA-OA-VC	VA20C2173-001		300		########	24-Jan-21			NNP	3	tCaCO3/1K	0		1		
Approved		ABA-OA-VC	VA20C2173-001		300		########	24-Jan-21			Neutralizat	3	tCaCO3/1K	0		1		
Approved		ABA-OA-VC	VA20C2173-001		300		########	24-Jan-21			Ratio (NP/M	9.6	Unity	0		0.01		
Approved		SULPHUR-S	VA20C2173-001		300		########	24-Jan-21			Sulfide Sulf	<0.01	%	0		0.01		
Approved		SULPHUR-S	VA20C2173-001		300		########	24-Jan-21			Sulfate Sulf	0.01	%	0		0.01		
Approved		SULPHUR-S	VA20C2173-001		300		########	24-Jan-21			Sulfate Sulf	<0.01	%	0		0.01		
Approved		SULPHUR-S	VA20C2173-001		300		########	24-Jan-21			Total Sulfu	0.01	%	0		0.01		
Approved		WEIGHT-W	VA20C2173-001		300		########	24-Jan-21			Weight	1.04	kg	0		0.02		
Approved		CARBON-C	VA20C2173-002		300		########	24-Jan-21			Carbon (C)	0.05	%	0		0.05		
Approved		CARBON-C	VA20C2173-002		300		########	24-Jan-21			Carbon Dio	0.2	%	0		0.2		
Approved		CARBON-C	VA20C2173-002		300		########	24-Jan-21			Carbon (C)	0.07	%	0		0.01		
Approved		ME-MS41-A	VA20C2173-002		300		########	24-Jan-21			Silver (Ag)	0.01	ppm	0		0.01		
Approved		ME-MS41-A	VA20C2173-002		300		########	24-Jan-21			Aluminum	0.05	%	0		0.01		
Approved		ME-MS41-A	VA20C2173-002		300		########	24-Jan-21			Arsenic (As	0.2	ppm	0		0.1		
Approved		ME-MS41-A	VA20C2173-002		300		########	24-Jan-21			Gold (Au)	<0.02	ppm	0		0.02		
Approved		ME-MS41-A	VA20C2173-002		300		########	24-Jan-21			Boron (B)	<10	ppm	0		10		
Approved		ME-MS41-A	VA20C2173-002		300		########	24-Jan-21			Barium (Ba	<10	ppm	0		10		
Approved		ME-MS41-A	VA20C2173-002		300		########	24-Jan-21			Beryllium (	<0.05	ppm	0		0.05		
Approved		ME-MS41-A	VA20C2173-002		300		########	24-Jan-21			Bismuth (B	0.01	ppm	0		0.01		
Approved		ME-MS41-A	VA20C2173-002		300		########	24-Jan-21			Calcium (Ca	0.12	%	0		0.01		
Approved		ME-MS41-A	VA20C2173-002		300		########	24-Jan-21			Cadmium (	<0.01	ppm	0		0.01		

Approved	ME-MS41-/	VA20C2173-002	300	########	24-Jan-21	Cerium (Ce	1.48	ppm	0	0.02
Approved	ME-MS41-/	VA20C2173-002	300	########	24-Jan-21	Cobalt (Co)	0.2	ppm	0	0.1
Approved	ME-MS41-/	VA20C2173-002	300	########	24-Jan-21	Chromium	2	ppm	0	1
Approved	ME-MS41-/	VA20C2173-002	300	########	24-Jan-21	Cesium (Cs	<0.05	ppm	0	0.05
Approved	ME-MS41-/	VA20C2173-002	300	########	24-Jan-21	Copper (Cu	0.8	ppm	0	0.2
Approved	ME-MS41-/	VA20C2173-002	300	########	24-Jan-21	Iron (Fe)	0.3	%	0	0.01
Approved	ME-MS41-/	VA20C2173-002	300	########	24-Jan-21	Gallium (Ga	0.12	ppm	0	0.05
Approved	ME-MS41-/	VA20C2173-002	300	########	24-Jan-21	Germaniun	<0.05	ppm	0	0.05
Approved	ME-MS41-/	VA20C2173-002	300	########	24-Jan-21	Hafnium (H	0.09	ppm	0	0.02
Approved	ME-MS41-/	VA20C2173-002	300	########	24-Jan-21	Mercury (H	<0.01	ppm	0	0.01
Approved	ME-MS41-/	VA20C2173-002	300	########	24-Jan-21	Indium (In)	<0.005	ppm	0	0.005
Approved	ME-MS41-/	VA20C2173-002	300	########	24-Jan-21	Potassium	0.01	%	0	0.01
Approved	ME-MS41-/	VA20C2173-002	300	########	24-Jan-21	Lanthanum	0.7	ppm	0	0.2
Approved	ME-MS41-/	VA20C2173-002	300	########	24-Jan-21	Lithium (Li)	1.3	ppm	0	0.1
Approved	ME-MS41-/	VA20C2173-002	300	########	24-Jan-21	Magnesiun	0.02	%	0	0.01
Approved	ME-MS41-/	VA20C2173-002	300	########	24-Jan-21	Manganese	33	ppm	0	5
Approved	ME-MS41-/	VA20C2173-002	300	########	24-Jan-21	Molybdenu	0.06	ppm	0	0.05
Approved	ME-MS41-/	VA20C2173-002	300	########	24-Jan-21	Sodium (Na	<0.01	%	0	0.01
Approved	ME-MS41-/	VA20C2173-002	300	########	24-Jan-21	Niobium (N	<0.05	ppm	0	0.05
Approved	ME-MS41-/	VA20C2173-002	300	########	24-Jan-21	Nickel (Ni)	0.5	ppm	0	0.2
Approved	ME-MS41-/	VA20C2173-002	300	########	24-Jan-21	Phosphoru	20	ppm	0	10
Approved	ME-MS41-/	VA20C2173-002	300	########	24-Jan-21	Lead (Pb)	6.3	ppm	0	0.2
Approved	ME-MS41-/	VA20C2173-002	300	########	24-Jan-21	Rubidium (	0.2	ppm	0	0.1
Approved	ME-MS41-/	VA20C2173-002	300	########	24-Jan-21	Rhenium (F	<0.001	ppm	0	0.001
Approved	ME-MS41-/	VA20C2173-002	300	########	24-Jan-21	Sulfur (S)	0.01	%	0	0.01
Approved	ME-MS41-/	VA20C2173-002	300	########	24-Jan-21	Antimony (	<0.05	ppm	0	0.05
Approved	ME-MS41-/	VA20C2173-002	300	########	24-Jan-21	Scandium (	0.1	ppm	0	0.1
Approved	ME-MS41-/	VA20C2173-002	300	########	24-Jan-21	Selenium (S	<0.2	ppm	0	0.2
Approved	ME-MS41-/	VA20C2173-002	300	########	24-Jan-21	Tin (Sn)	<0.2	ppm	0	0.2
Approved	ME-MS41-/	VA20C2173-002	300	########	24-Jan-21	Strontium (	1.9	ppm	0	0.2
Approved	ME-MS41-/	VA20C2173-002	300	########	24-Jan-21	Tantalum (	<0.01	ppm	0	0.01
Approved	ME-MS41-/	VA20C2173-002	300	########	24-Jan-21	Tellurium (	<0.01	ppm	0	0.01
Approved	ME-MS41-/	VA20C2173-002	300	########	24-Jan-21	Thorium (T	0.3	ppm	0	0.2
Approved	ME-MS41-/	VA20C2173-002	300	########	24-Jan-21	Titanium (T	<0.005	%	0	0.005
Approved	ME-MS41-/	VA20C2173-002	300	########	24-Jan-21	Thallium (T	<0.02	ppm	0	0.02
Approved	ME-MS41-/	VA20C2173-002	300	########	24-Jan-21	Uranium (U	0.14	ppm	0	0.05
Approved	ME-MS41-/	VA20C2173-002	300	########	24-Jan-21	Vanadium (	1	ppm	0	1
Approved	ME-MS41-/	VA20C2173-002	300	########	24-Jan-21	Tungsten (\	<0.05	ppm	0	0.05
Approved	ME-MS41-/	VA20C2173-002	300	########	24-Jan-21	Yttrium (Y)	0.27	ppm	0	0.05
Approved	ME-MS41-/	VA20C2173-002	300	########	24-Jan-21	Zinc (Zn)	2	ppm	0	2
Approved	ME-MS41-/	VA20C2173-002	300	########	24-Jan-21	Zirconium (	2.9	ppm	0	0.5
Approved	PH-OA-ELE	VA20C2173-002	300	########	24-Jan-21	pH	8.1	Unity	0	0.1
Approved	ABA-OA-VC	VA20C2173-002	300	########	24-Jan-21	FIZZ RATIN	1	Unity	0	1
Approved	ABA-OA-VC	VA20C2173-002	300	########	24-Jan-21	MPA	<0.3	tCaCO3/1K	0	0.3
Approved	ABA-OA-VC	VA20C2173-002	300	########	24-Jan-21	NNP	4	tCaCO3/1K	0	1
Approved	ABA-OA-VC	VA20C2173-002	300	########	24-Jan-21	Neutralizat	4	tCaCO3/1K	0	1
Approved	ABA-OA-VC	VA20C2173-002	300	########	24-Jan-21	Ratio (NP/M	25.6	Unity	0	0.01
Approved	SULPHUR-S	VA20C2173-002	300	########	24-Jan-21	Sulfide Sulf	<0.01	%	0	0.01
Approved	SULPHUR-S	VA20C2173-002	300	########	24-Jan-21	Sulfate Sulf	0.02	%	0	0.01
Approved	SULPHUR-S	VA20C2173-002	300	########	24-Jan-21	Sulfate Sulf	<0.01	%	0	0.01
Approved	SULPHUR-S	VA20C2173-002	300	########	24-Jan-21	Total Sulfu	<0.01	%	0	0.01
Approved	WEIGHT-W	VA20C2173-002	300	########	24-Jan-21	Weight	0.3	kg	0	0.02

Appendix F.2. Isotopic Analysis Results

	Sample ID	Depth	δ2H, in ‰	δ18O, in ‰	
Limestone	BRU 95-8 33.61 - 33.83	33.61	-96.8465	-10.9022	
Limestone	BRU 95-8 35.06 - 35.16	35.06	-99.7806	-11.443	
Limestone	BRU 95-8 35.7 - 35.82	35.7	-374.964	-44.3632	MeOH contamination
Limestone	BRU 95-8 37.12 - 37.28	37.12	-101.235	-13.1441	
Limestone	BRU 95-8 38.28 - 38.4	38.28	-100.564	-12.0434	
Limestone	BRU 95-8 38.85 - 38.97	38.85	-103.825	-12.1106	
Limestone	BRU 95-8 39.79 - 39.93	39.79	-122.765	-14.5194	MeOH contamination
Limestone	BRU 95-8 40.8 - 40.92	40.8	-98.9801	-11.9099	
Limestone	BRU 95-8 42.14 - 42.25	42.14	-100.632	-12.4117	
Limestone	BRU 95-8 43.25 - 43.37	43.25	-100.228	-12.2342	
Limestone	BRU 95-8 44.5 - 44.61	44.5	-100.791	-12.3368	
Limestone	BRU 95-8 45.695 - 45.83	45.695	-102.369	-12.7471	
Limestone	BRU 95-8 46.76 - 46.885	46.76	-102.257	-12.7471	
Limestone	BRU 95-8 47.94 - 48.115	47.94	-104.569	-11.8597	
Shale	BRU 95-8 48.91 - 49.07	48.6	-107.9	-10.7557	
Shale	BRU 95-8 48.6 - 48.85	48.91	-111.676	-9.95271	
Shale	BRU 95-8 49.27 - 49.39	49.27	-110.206	-9.12555	
Shale	BRU 95-8 49.94 - 50.045	49.94	-108.011	-12.6064	
Shale	BRU 95-8 50.17 - 50.29	50.17	-109.109	-8.23047	
Shale	BRU 95-8 50.5 - 50.6	50.5	-107.352	-10.2195	
Sand Lense	BRU 95-8 50.60 - 50.70	50.6	-145.851	-18.1779	MeOH contamination
Shale	BRU 95-8 51.27 - 51.39	51.27	-131.874	-11.7635	MeOH contamination
Shale	BRU 95-8 52.02 - 52.12	52.02	-105.519	-12.8955	

Waters			
OurLabID	Sample ID	δ2H, in ‰	δ18O, in ‰
W-9251	BRU 95-8 Drill Water 8:40 am	-103.8	-13.97
W-9252	BRU 95-8 Drill WAter 11:30 am	-103.8	-14.03
W-9253	BRU 95-8 Drill Water 12:30 pm	-104.7	-14.38
W-9254	BRU Drill Water 1:30 Pm	-104.5	-14.26
W-9255	BRU Drill Water 9:00 am	-105.7	-14.72
W-9260	BRU 95-7 S1	-105.8	-14.14
W-9261	BRU 95-7 S2	-106.4	-14.27
W-9262	BRU 95-7 S3	-106.4	-14.48
W-9263	BRU 95-7 S3-2	-106.4	-14.53
W-9264	BRU 95-7 S4	-106.2	-14.3
W-9265	BRU 95-7 S5	-107.4	-14.76
W-9266	BRU 95-7 S6	-106.6	-14.44
W-9267	BRU 95-7 S7	-106.8	-14.46

Gimli MWL

d2H=8.2d18O+10.7

Appendix F.3. Compiled Groundwater Quality Certificates of Analysis

AECOM CANADA LTD.
ATTN: REUBEN DANDURAND
330 - 3292 Production Way
Burnaby BC V5A 4R4

Date Received: 26-NOV-20
Report Date: 13-JAN-21 07:18 (MT)
Version: FINAL REV. 2

Client Phone: 604-444-6400

Certificate of Analysis

Lab Work Order #: L2533700

Project P.O. #: 60640258
Job Reference: 60640258
C of C Numbers:
Legal Site Desc:

[redacted]

Dean Watt, B.Sc.
Account Manager

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ALS ENVIRONMENTAL ANALYTICAL REPORT

	Sample ID	L2533700-1	L2533700-2			
	Description	GROUNDWATER	GROUNDWATER			
	Sampled Date	24-NOV-20	24-NOV-20			
	Sampled Time	16:00	16:00			
	Client ID	BRU 95-9	BRU 95-751			
Grouping	**Analyte**					
WATER						
Physical Tests	Conductivity (umhos/cm)	471	428			
	Hardness (as CaCO3) (ug/L)	211000	196000			
	pH (pH units)	8.09	8.11			
	Total Suspended Solids (ug/L)	1150000	5700			
	TDS (Calculated) (ug/L)	269000	239000			
	Turbidity (NTU)	1240	6.50			
Anions and Nutrients	Alkalinity, Total (as CaCO3) (ug/L)	276000	246000			
	Ammonia, Total (as N) (ug/L)	446	498			
	Bicarbonate (HCO3) (ug/L)	337000	300000			
	Carbonate (CO3) (ug/L)	<600	<600			
	Chloride (Cl) (ug/L)	1870	1040			
	Fluoride (F) (ug/L)	302	406			
	Hydroxide (OH) (ug/L)	<340	<340			
	Nitrate and Nitrite as N (ug/L)	<5.1	<5.1			
	Nitrate (as N) (ug/L)	<5.0	<5.0			
	Nitrite (as N) (ug/L)	<1.0	<1.0			
	Phosphorus (P)-Total (ug/L)	852	28.1			
	Sulfate (SO4) (ug/L)	6840	5230			
	Sulphide (as S) (ug/L)	<180 DLM	23			
	Sulphide (as H2S) (ug/L)	<190	24			
Organic / Inorganic Carbon	Dissolved Organic Carbon (ug/L)	1750	1550			
Dissolved Metals	Dissolved Mercury Filtration Location	FIELD	FIELD			
	Dissolved Metals Filtration Location	LAB	LAB			
	Aluminum (Al)-Dissolved (ug/L)	1.2	<1.0			
	Antimony (Sb)-Dissolved (ug/L)	<0.10	<0.10			
	Arsenic (As)-Dissolved (ug/L)	0.88	0.31			
	Barium (Ba)-Dissolved (ug/L)	56.7	95.1			
	Beryllium (Be)-Dissolved (ug/L)	<0.10	<0.10			
	Bismuth (Bi)-Dissolved (ug/L)	<0.050	<0.050			
	Boron (B)-Dissolved (ug/L)	334	214			
	Cadmium (Cd)-Dissolved (ug/L)	<0.0050	<0.0050			
	Calcium (Ca)-Dissolved (ug/L)	43100	36400			
	Cesium (Cs)-Dissolved (ug/L)	0.011	0.014			
	Chromium (Cr)-Dissolved (ug/L)	<0.10	<0.10			
	Cobalt (Co)-Dissolved (ug/L)	<0.10	0.40			
	Copper (Cu)-Dissolved (ug/L)	<0.20	<0.20			

* Please refer to the Reference Information section for an explanation of any qualifiers detected.

ALS ENVIRONMENTAL ANALYTICAL REPORT

	Sample ID	L2533700-1	L2533700-2			
	Description	GROUNDWATER	GROUNDWATER			
	Sampled Date	24-NOV-20	24-NOV-20			
	Sampled Time	16:00	16:00			
	Client ID	BRU 95-9	BRU 95-751			
Grouping	**Analyte**					
WATER						
Dissolved Metals	Iron (Fe)-Dissolved (ug/L)	623	198			
	Lead (Pb)-Dissolved (ug/L)	<0.050	<0.050			
	Lithium (Li)-Dissolved (ug/L)	22.1	18.0			
	Magnesium (Mg)-Dissolved (ug/L)	25200	25500			
	Manganese (Mn)-Dissolved (ug/L)	14.6	25.6			
	Mercury (Hg)-Dissolved (ug/L)	<0.0050	<0.0050			
	Molybdenum (Mo)-Dissolved (ug/L)	1.54	2.24			
	Nickel (Ni)-Dissolved (ug/L)	<0.50	<0.50			
	Phosphorus (P)-Dissolved (ug/L)	<30	<30			
	Potassium (K)-Dissolved (ug/L)	7580	4390			
	Rubidium (Rb)-Dissolved (ug/L)	4.73	1.82			
	Selenium (Se)-Dissolved (ug/L)	<0.050	<0.050			
	Silicon (Si)-Dissolved (ug/L)	5190	7040			
	Silver (Ag)-Dissolved (ug/L)	<0.010	<0.010			
	Sodium (Na)-Dissolved (ug/L)	19100	19400			
	Strontium (Sr)-Dissolved (ug/L)	304	258			
	Sulfur (S)-Dissolved (ug/L)	2420	1880			
	Tellurium (Te)-Dissolved (ug/L)	<0.20	<0.20			
	Thallium (Tl)-Dissolved (ug/L)	<0.010	<0.010			
	Thorium (Th)-Dissolved (ug/L)	<0.10	<0.10			
	Tin (Sn)-Dissolved (ug/L)	<0.10	<0.10			
	Titanium (Ti)-Dissolved (ug/L)	<0.30	<0.30			
	Tungsten (W)-Dissolved (ug/L)	<0.10	<0.10			
	Uranium (U)-Dissolved (ug/L)	0.062	0.083			
	Vanadium (V)-Dissolved (ug/L)	<0.50	<0.50			
	Zinc (Zn)-Dissolved (ug/L)	<1.0	10.6			
	Zirconium (Zr)-Dissolved (ug/L)	<0.20	<0.20			
Aggregate Organics	Biochemical Oxygen Demand (ug/L)	<6000	<2000			
	Chemical Oxygen Demand (ug/L)	38000	<20000			
	Phenols (4AAP) (ug/L)	<1.0	<1.0			
Volatile Organic Compounds	Benzene (ug/L)		<0.50			
	Ethyl benzene (ug/L)		<0.50			
	Toluene (ug/L)		<1.0			
	o-Xylene (ug/L)		<0.50			
	m+p-Xylenes (ug/L)		<0.40			
	Xylenes (Total) (ug/L)		<0.64			

* Please refer to the Reference Information section for an explanation of any qualifiers detected.

ALS ENVIRONMENTAL ANALYTICAL REPORT

	Sample ID	L2533700-1	L2533700-2			
	Description	GROUNDWATER	GROUNDWATER			
	Sampled Date	24-NOV-20	24-NOV-20			
	Sampled Time	16:00	16:00			
	Client ID	BRU 95-9	BRU 95-751			
Grouping	**Analyte**					
WATER						
Volatile Organic Compounds	F1 (C6-C10) (ug/L)		<100			
	F1-BTEX (ug/L)		<100			
	F2-Naphth (ug/L)		<100			
	F3-PAH (ug/L)		<250			
	Total Hydrocarbons (C6-C50) (ug/L)		<380			
	Surrogate: 4-Bromofluorobenzene (SS) (%)		99.5			
Hydrocarbons	F2 (C10-C16) (ug/L)		<100			
	F3 (C16-C34) (ug/L)		<250			
	F4 (C34-C50) (ug/L)		<250			
	Chrom. to baseline at nC50		YES			
	Surrogate: 2-Bromobenzotrifluoride (%)		90.1			
Polycyclic Aromatic Hydrocarbons	Acenaphthene (ug/L)		<0.020			
	Acenaphthylene (ug/L)		<0.020			
	Acridine (ug/L)		<0.020			
	Anthracene (ug/L)		<0.010			
	Benzo(a)anthracene (ug/L)		<0.010			
	Benzo(a)pyrene (ug/L)		<0.0050			
	Benzo(b&j)fluoranthene (ug/L)		<0.010			
	Benzo(g,h,i)perylene (ug/L)		<0.020			
	Benzo(k)fluoranthene (ug/L)		<0.010			
	Chrysene (ug/L)		<0.020			
	Dibenzo(a,h)anthracene (ug/L)		<0.0050			
	Fluoranthene (ug/L)		<0.020			
	Fluorene (ug/L)		<0.020			
	Indeno(1,2,3-cd)pyrene (ug/L)		<0.010			
	1-Methyl Naphthalene (ug/L)		<0.020			
	2-Methyl Naphthalene (ug/L)		<0.020			
	Naphthalene (ug/L)		<0.050			
	Phenanthrene (ug/L)		<0.050			
	Pyrene (ug/L)		<0.010			
	Quinoline (ug/L)		<0.020			
	Surrogate: d10-Acenaphthene (%)		90.7			
	Surrogate: d9-Acridine (SS) (%)		67.9			
	Surrogate: d12-Chrysene (%)		104.1			
	Surrogate: d8-Naphthalene (%)		87.5			
	Surrogate: d10-Phenanthrene (%)		96.5			

* Please refer to the Reference Information section for an explanation of any qualifiers detected.

ALS ENVIRONMENTAL ANALYTICAL REPORT

	Sample ID	L2533700-1	L2533700-2			
	Description	GROUNDWATER	GROUNDWATER			
	Sampled Date	24-NOV-20	24-NOV-20			
	Sampled Time	16:00	16:00			
	Client ID	BRU 95-9	BRU 95-751			
Grouping	**Analyte**					
WATER						
Polycyclic Aromatic Hydrocarbons	B(a)P Total Potency Equivalent (ug/L)		<0.030			

* Please refer to the Reference Information section for an explanation of any qualifiers detected.

Reference Information

QC Samples with Qualifiers & Comments:

QC Type Description	Parameter	Qualifier	Applies to Sample Number(s)
Matrix Spike	Sodium (Na)-Dissolved	MS-B	L2533700-1, -2
Matrix Spike	Phenols (4AAP)	MS-B	L2533700-1, -2
Matrix Spike	Sulphide (as S)	MS-B	L2533700-1, -2

Qualifiers for Individual Parameters Listed:

Qualifier	Description
DLM	Detection Limit Adjusted due to sample matrix effects (e.g. chemical interference, colour, turbidity).
MS-B	Matrix Spike recovery could not be accurately calculated due to high analyte background in sample.

Test Method References:

ALS Test Code	Matrix	Test Description	Method Reference**
ALK-CO3CO3-CALC-WP	Water	Alkalinity, Carbonate	CALCULATION

The Alkalinity of water is a measure of its acid neutralizing capacity.Alkalinity is imparted by bicarbonate, carbonate and hydroxide components of water. The fraction of alkalinity contributed by carbonate is calculated and reported as mg CO3 2-/L.

ALK-HCO3HCO3-CALC-WP	Water	Alkalinity, Bicarbonate	CALCULATION

The Alkalinity of water is a measure of its acid neutralizing capacity.Alkalinity is imparted by bicarbonate, carbonate and hydroxide components of water. The fraction of alkalinity contributed by bicarbonate is calculated and reported as mg HCO3-/L

ALK-OHOH-CALC-WP	Water	Alkalinity, Hydroxide	CALCULATION

The Alkalinity of water is a measure of its acid neutralizing capacity.Alkalinity is imparted by bicarbonate, carbonate and hydroxide components of water. The fraction of alkalinity contributed by hydroxide is calculated and reported as mg OH-/L.

ALK-TITR-WP	Water	Alkalinity, Total (as CaCO3)	APHA 2320B

The Alkalinity of water is a measure of its acid neutralizing capacity. Alkalinity is imparted by bicarbonate, carbonate and hydroxide components of water. Total alkalinity is determined by titration with a strong standard mineral acid to the successive HCO3- and H2CO3 endpoints indicated electrometrically.

BOD-WP	Water	Biochemical Oxygen Demand (BOD)	APHA 5210 B

Samples are diluted and seeded and then incubated in airtight bottles at 20°C for 5 days. Dissolved oxygen is measured initially and after incubation, and results are computed from the difference between initial and final DO.

BTEXS+F1-HSMS-WP	Water	BTX plus F1 by GCMS	EPA 8260C / EPA 5021A

The water sample, with added reagents, is heated in a sealed vial to equilibrium. The headspace from the vial is transfered into a gas chromatograph. Target compound concentrations are measured using mass spectrometry detection.

C-DOC-HTC-WP	Water	Dissolved Organic Carbon by Combustion	APHA 5310 B-WP

Filtered (0.45 um) sample is acidified and purged to remove inorganic carbon, then injected into a heated reaction chamber where organic carbon is oxidized to CO2 which is then transported in the carrier gas stream and measured via a non-dispersive infrared analyzer.

CL-L-IC-N-WP	Water	Chloride in Water by IC (Low Level)	EPA 300.1 (mod)

Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.

COD-WP	Water	Chemical Oxygen Demand	APHA 5220 D

This analysis is carried out using procedures adapted from APHA Method 5220 "Chemical Oxygen Demand (COD)". Chemical oxygen demand is determined using the closed reflux colorimetric method.

EC-SCREEN-WP	Water	Conductivity Screen (Internal Use Only)	APHA 2510

Qualitative analysis of conductivity where required during preparation of other test eg. IC, TDS, TSS, etc

EC-WP	Water	Conductivity	APHA 2510B

Conductivity of an aqueous solution refers to its ability to carry an electric current. Conductance of a solution is measured between two spatially fixed and chemically inert electrodes.

ETL-SOLIDS-CALC-WP	Water	TDS calculated	CALCULATION
F-IC-N-WP	Water	Fluoride in Water by IC	EPA 300.1 (mod)

Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.

F1-F4-CALC-WP	Water	CCME Total Hydrocarbons	CCME CWS-PHC, Pub #1310, Dec 2001-L

Analytical methods used for analysis of CCME Petroleum Hydrocarbons have been validated and comply with the Reference Method for the CWS PHC.

Reference Information

In cases where results for both F4 and F4G are reported, the greater of the two results must be used in any application of the CWS PHC guidelines and the gravimetric heavy hydrocarbons cannot be added to the C6 to C50 hydrocarbons.
In samples where BTEX and F1 were analyzed , F1-BTEX represents a value where the sum of Benzene, Toluene, Ethylbenzene and total Xylenes has been subtracted from F1.

In samples where PAHs, F2 and F3 were analyzed, F2-Naphth represents the result where Naphthalene has been subtracted from F2. F3-PAH represents a result where the sum of Benzo(a)anthracene, Benzo(a)pyrene, Benzo(b)fluoranthene, Benzo(k)fluoranthene, Dibenzo(a,h)anthracene, Fluoranthene, Indeno(1,2,3-cd)pyrene, Phenanthrene, and Pyrene has been subtracted from F3.

Unless otherwise qualified, the following quality control criteria have been met for the F1 hydrocarbon range:
1. All extraction and analysis holding times were met.
2. Instrument performance showing response factors for C6 and C10 within 30% of the response factor for toluene.
3. Linearity of gasoline response within 15% throughout the calibration range.

Unless otherwise qualified, the following quality control criteria have been met for the F2-F4 hydrocarbon ranges:
1. All extraction and analysis holding times were met.
2. Instrument performance showing C10, C16 and C34 response factors within 10% of their average.
3. Instrument performance showing the C50 response factor within 30% of the average of the C10, C16 and C34 response factors.
4. Linearity of diesel or motor oil response within 15% throughout the calibration range.

F2-F4-WT Water F2-F4 (O.Reg.153/04) MOE DECPH-E3421/CCME TIER 1

Petroleum Hydrocarbons (F2-F4 fractions) are extracted from water using a hexane micro-extraction technique. Instrumental analysis is by GC-FID, as per the Reference Method for the Canada-Wide Standard for Petroleum Hydrocarbons in Soil –Tier 1 Method, CCME, 2001.

HARDNESS-CALC-WP Water Hardness Calculated APHA 2340B

Hardness (also known as Total Hardness) is calculated from the sum of Calcium and Magnesium concentrations, expressed in CaCO3 equivalents. Dissolved Calcium and Magnesium concentrations are preferentially used for the hardness calculation.

HG-D-CVAA-WP Water Mercury Dissolved APHA 3030B/EPA 1631E (mod)

Water samples are filtered (0.45 um), preserved with hydrochloric acid, then undergo a cold-oxidation using bromine monochloride prior to reduction with stannous chloride, and analyzed by CVAAS.

IONBALANCE-CALC-WP Water Ion Balance Calculation APHA 1030E

Cation Sum, Anion Sum, and Ion Balance (as % difference) are calculated based on guidance from APHA Standard Methods (1030E Checking Correctness of Analysis). Because all aqueous solutions are electrically neutral, the calculated ion balance (% difference of cations minus anions) should be near-zero.

Cation and Anion Sums are the total meq/L concentration of major cations and anions. Dissolved species are used where available. Minor ions are included where data is present. Ion Balance (as % difference) cannot be calculated accurately for waters with very low electrical conductivity (EC), and is reported as "Low EC" where EC < 100 uS/cm (umhos/cm). Ion Balance is calculated as:

Ion Balance (%) = [Cation Sum-Anion Sum] / [Cation Sum+Anion Sum]

MET-D-CCMS-WP Water Dissolved Metals in Water by CRC ICPMS APHA 3030B/6020B (mod)

Water samples are filtered (0.45 um), preserved with nitric acid, and analyzed by CRC ICPMS.

Method Limitation (re: Sulfur): Sulfide and volatile sulfur species may not be recovered by this method.

NH3-COL-WP Water Ammonia by colour APHA 4500 NH3 F

Ammonia in water samples forms indophenol when reacted with hypochlorite and phenol. The intensity is amplified by the addition of sodium nitroprusside and measured colourmetrically.

NO2+NO3-CALC-L-WP Water Nitrate+Nitrite CALCULATION

NO2-L-IC-N-WP Water Nitrite in Water by IC (Low Level) EPA 300.1 (mod)

Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.

NO3-L-IC-N-WP Water Nitrate in Water by IC (Low Level) EPA 300.1 (mod)

Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.

P-T-COL-WP Water Phosphorus, Total APHA 4500 P PHOSPHORUS-L

This analysis is carried out using procedures adapted from APHA METHOD 4500-P "Phosphorus". Total Phosphorus is determined colourmetrically after persulphate digestion of the sample.

PAH-CCME-PPM-WT Water CCME PAHs in mg/L EPA 3511/8270D (mod)

Reference Information

PAHs are extracted from water using a hexane micro-extraction technique, with analysis by GC/MS. Because the two isomers cannot be readily separated chromatographically, benzo(j)fluoranthene is reported as part of the benzo(b)fluoranthene parameter.

PH-WP	Water	pH	APHA 4500H

The pH of a sample is the determination of the activity of the hydrogen ions by potentiometric measurement using a standard hydrogen electrode and a reference electrode.

PHENOLS-4AAP-WT	Water	Phenol (4AAP)	EPA 9066

An automated method is used to distill the sample. The distillate is then buffered to pH 9.4 which reacts with 4AAP and potassium ferricyanide to form a red complex which is measured colorimetrically.

S2-T>H2S-CALC-WT	Water	Total Sulphide Calculated as H2S	Calculation

This calculation converts Total Sulphide as (S2-) and reports it as Total Sulphide as (H2S). Total Sulphide as (S2-) is determined using procedures adapted from APHA 4500-S2 "Sulphide".

SO4-IC-N-WP	Water	Sulfate in Water by IC	EPA 300.1 (mod)

Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.

SOLIDS-TOTSUS-WP	Water	Total Suspended Solids	APHA 2540 D (modified)

Total suspended solids in aquesous matrices is determined gravimetrically after drying the residue at 103 – 105°C.

SULPHIDE-WT	Water	Sulphide (as S)	APHA 4500S2D

This analysis is carried out using procedures adapted from APHA Method 4500-S2-D "Methylene Blue Method". Sulphide is determined colourmetrically.

TURBIDITY-WP	Water	Turbidity	APHA 2130B (modified)

Turbidity in aqueous matrices is determined by the nephelometric method.

XYLENES-SUM-CALC-WP	Water	Sum of Xylene Isomer Concentrations	CALCULATED RESULT

Total xylenes represents the sum of o-xylene and m&p-xylene.

** ALS test methods may incorporate modifications from specified reference methods to improve performance.

The last two letters of the above test code(s) indicate the laboratory that performed analytical analysis for that test. Refer to the list below:

Laboratory Definition Code	Laboratory Location
WT	ALS ENVIRONMENTAL - WATERLOO, ONTARIO, CANADA
WP	ALS ENVIRONMENTAL - WINNIPEG, MANITOBA, CANADA

Chain of Custody Numbers:

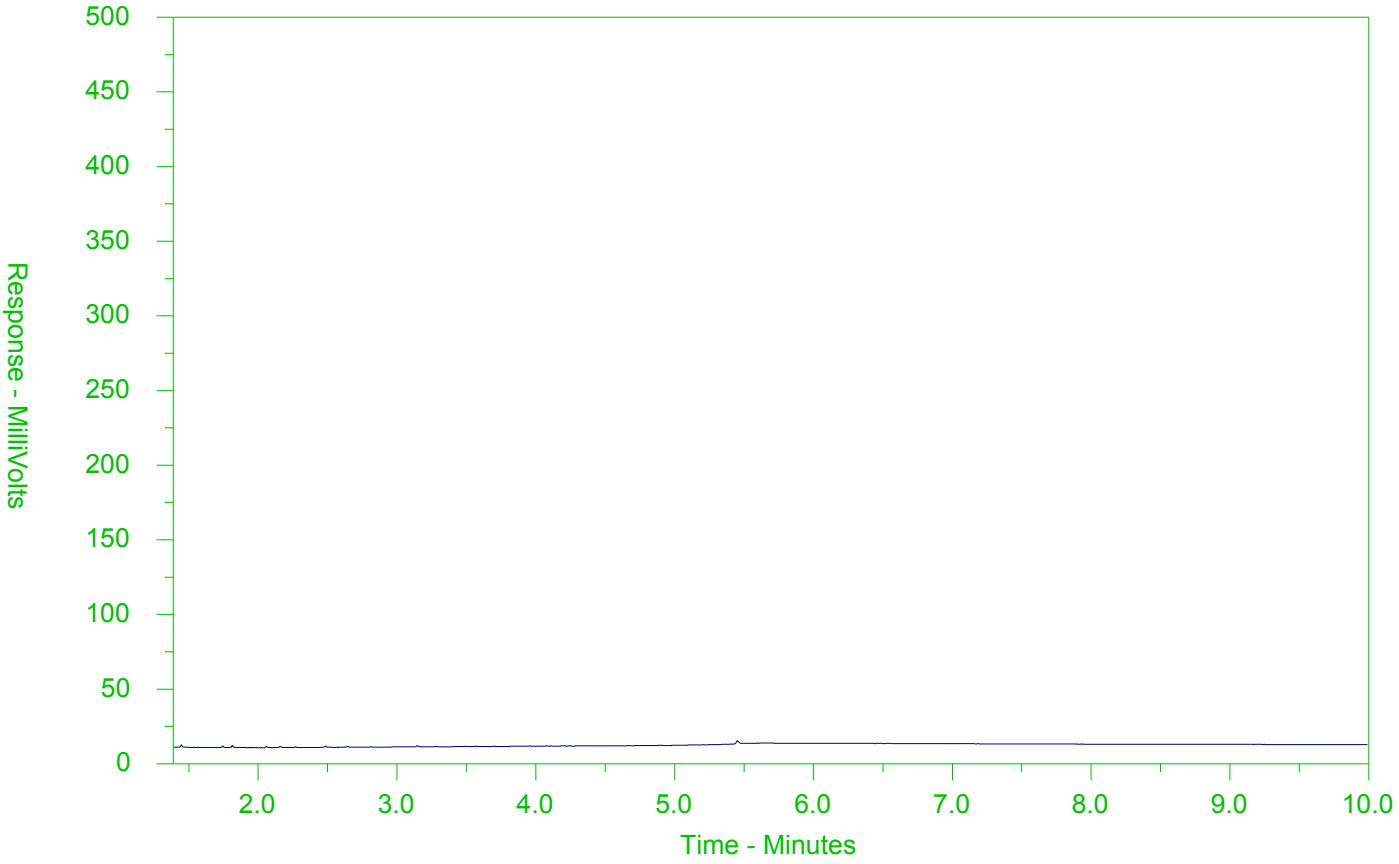
GLOSSARY OF REPORT TERMS

Surrogate - A compound that is similar in behaviour to target analyte(s), but that does not occur naturally in environmental samples. For applicable tests, surrogates are added to samples prior to analysis as a check on recovery.
mg/kg - milligrams per kilogram based on dry weight of sample.
mg/kg wwt - milligrams per kilogram based on wet weight of sample.
mg/kg lwt - milligrams per kilogram based on lipid-adjusted weight of sample.
mg/L - milligrams per litre.
< - Less than.
D.L. - The reported Detection Limit, also known as the Limit of Reporting (LOR).
N/A - Result not available. Refer to qualifier code and definition for explanation.

Test results reported relate only to the samples as received by the laboratory.
UNLESS OTHERWISE STATED, ALL SAMPLES WERE RECEIVED IN ACCEPTABLE CONDITION.
Analytical results in unsigned test reports with the DRAFT watermark are subject to change, pending final QC review.

CCME F2-F4 HYDROCARBON DISTRIBUTION REPORT

ALS Sample ID: L2533700-2
Client Sample ID: BRU 95-751



← F2 →	← F3 →	← F4 →	
nC10	nC16	nC34	nC50
174°C	287°C	481°C	575°C
346°F	549°F	898°F	1067°F
Gasoline →	← Motor Oils/Lube Oils/Grease →		
← Diesel/Jet Fuels →			

The CCME F2-F4 Hydrocarbon Distribution Report (HDR) is intended to assist you in characterizing hydrocarbon products that may be present in your sample.

The scale at the bottom of the chromatogram indicates the approximate retention times of common petroleum products and four n-alkane hydrocarbon marker compounds. Retention times may vary between samples, but general patterns and distributions will remain similar.

Peak heights in this report are a function of the sample concentration, the sample amount extracted, the sample dilution factor and the scale at the left.

Note: This chromatogram was produced using GC conditions that are specific to ALS Canada CCME F2-F4 method. Refer to the ALS Canada CCME F2-F4 Hydrocarbon Library for a collection of chromatograms from common reference samples (fuels, oils, etc.). The HDR Library can be found at www.alsglobal.com.

ALS Environmental

www.alsglobal.com

Chain of Custody (COC) / Analytical Request Form

Canada Toll Free: 1 800 668 9878

[redacted]

COC number: 17 - 884252

Page

Report To	Contact and company name below will appear on the final report	Report Format / Distribution	Select Service Level Below - Contact your AM to confirm all E&P TATs (surcharges may apply)
Company:	AECOM	Select Report Format: PDF / EXCEL / EDD (DIGITAL)	Regular [R]: Standard TAT if received by 15:00 - business days - no surcharges apply
Contact:	Reuben Dandurand	Quality Control (QC) Report with Report: YES / NO	4 day [P4-20%] / 1 Business day [E - 100%]
Phone:	236 330 2711	Compare Results to Criteria on Report - provide details below if box checked	3 day [P3-25%] / Same Day, Weekend or Statutory Holiday [E2 -200%]
	Company select below will appear on the final report	Select Distribution: EMAIL / MAIL / FAX	2 day [P2-50%] / (Laboratory opening fees may apply)
Street	8277 Production Way Suite 330	Email 1 or Fax: Reuben.Dandurand@aecom.com	Date and Time Required for all E&P TATs: dd-mmm-yy hh:mm
City/Province	Burnaby BC	Email 2: Stephen.Dickin@aecom.com	For tests that can not be performed according to the service level selected, you will be contacted.
Postal Code	V5A 4W4	Email 3:	Analysis Request
Invoice To	Same as Report To: YES / NO	Invoice Distribution	Indicate Filtered (F), Preserved (P) or Filtered and Preserved (F/P) below
	Copy of Invoice with Report: YES / NO	Select Invoice Distribution: EMAIL / MAIL / FAX	
Company:	AECOM	Email 1 or Fax: same	
Contact:	Reuben Dandurand	Email 2: same	

Project Information	Oil and Gas Required Fields (client use)	
ALS Account # / Quote #:	AFE/Cost Center:	PO#:
Job #: 606 30258	Major/Minor Code:	Routing Code:
PO / AFE:	Requisitioner:	
LSD:	Location:	
ALS Lab Work Order # (lab use only):	ALS Contact:	Sampler:

ALS Sample # (lab use only)	Sample Identification and/or Coordinates (This description will appear on the report)	Date (dd-mmm-yy)	Time (hh:mm)	Sample Type	NUMBER OF CONTAINERS	Mercury Metals	Hydrocarbons/Hydrocarbon Fingerprints (BC)	Hydrocarbons/Hydrocarbon Fingerprints (BC) Routine	Sulfide (BC)	Phenols	BOD (BC)	BTEX, F1-4 and PAH				SAMPLES ON HOLD	SUSPECTED HAZARD (see Special Instructions)
					F / FP / P												
	BH 95-9	24 NOV 20	1600	Groundwater	6	✓	✓	✓	✓	✓	✓	✓	✓				
	BH 95-7 SR1	25 NOV 20	1350	G.W.	13	✓	✓	✓	✓	✓	✓	✓	✓	✓			

Drinking Water (DW) Samples* (client use)	Special Instructions / Specify Criteria to report by on the drop-down list below (also enter in COC only)
Are samples taken from a Regulated DW System? YES / NO	
Are samples for human consumption/use? YES / NO	

*Drinking Water Samples: If a Regulated Drinking Water (DW) System, please use Drinking Water Chain of Custody Form.

SAMPLE CONDITION AS RECEIVED (lab use only)

Frozen	✓	SIF Observations: YES / NO	✓
Ice Packs ✓ Ice Cubes	Custody seal intact: YES / NO		✓
Cooling Initiated			

INITIAL COOLER TEMPERATURES (°C) | FINAL COOLER TEMPERATURES (°C)

SHIPMENT RELEASE (client use)	INITIAL SHIPMENT RECEPTION (lab use only)	FINAL SHIPMENT RECEPTION (lab use only)
Released by: [redacted] Date: Nov 25 2020 Time: 1910	Received by: [redacted] Date: NOV 26 2020	Received by: [redacted] Date: NOV 26 2020

REFER TO BACK PAGE FOR ALS LOCATIONS AND SAMPLING INFORMATION

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v 4.0 Jan 2020

Chain of Custody (COC) / Analytical Request Form

ALS Environmental
www.alsglobal.com

Canada Toll Free: 1 800 668 9878

[redacted]

ALS Work Order Number: 17 - 884252

Page ___ of ___

Report To	Contact and company name below will appear on the final report	Report Format / Distribution	Select Service Level Below - Contact your AM to confirm all E&P TATs (surcharges may apply)
Company:	AECOM	Select Report Format: ☑ PDF ☑ EXCEL ☐ EDD (DIGITAL)	Regular [R]: ☑ Standard TAT if received by 3 pm - business days - no surcharges apply
Contact:	Reuben Dandurand	Quality Control (QC) Report with Report: ☑ YES ☐ NO	4 day [P4-20%] ☐ / 3 day [P3-25%] ☐ / 2 day [P2-50%] ☐
Phone:	236 330 2711	☐ Compare Results to Criteria on Report - provide details below if box checked	1 Business day [E - 100%] ☐ / Same Day, Weekend or Statutory holiday [E2 - 200%] (Laboratory opening fees may apply) ☐
Company address below will appear on the final report		Select Distribution: ☑ EMAIL ☐ MAIL ☐ FAX	Date and Time Required for all E&P TATs:
Street:	3292 Production Way Suite 330	Email 1 or Fax: Reuben.Dandurand@aecom.com	For tests that can not be performed according to the service level selected, you will be contacted.
City/Province:	Burnaby BC	Email 2: Stephen.Dickin@aecom.com	
Postal Code:	V5A 4R4	Email 3:	Analysis Request
Invoice To	Same as Report To ☑ YES ☐ NO	Invoice Distribution	
	Copy of Invoice with Report ☑ YES ☐ NO	Select Invoice Distribution: ☑ EMAIL ☐ MAIL ☐ FAX	
Company:	AECOM	Email 1 or Fax: Same	
Contact:	Reuben Dandurand	Email 2: Same	
Project Information		Oil and Gas Required Fields (client use)	
AFE/Account # / Quote #:		AFE/Cost Center:	PO#
Job #:	60640158	Major/Minor Code:	Routing Code:
PO / AFE:		Requisitioner:	
LSD:		Location:	
ALS Lab Work Order # (lab use only):		ALS Contact:	Sampler:

ALS Sample # (lab use only)	Sample Identification and/or Coordinates (This description will appear on the report)	Date (dd-mmm-yy)	Time (hh:mm)	Sample Type	NUMBER OF CONTAINERS	Mercury	Metals	VOC/TOC/COD/TSS/TPH/PAHs	Routine	Sulfide (BC)	Phenols	BOD (BC)	BTEX / F1-F4 and PAH	SAMPLES ON HOLD	SUSPECTED HAZARD (see Special Instructions)
	Brw 95-9	24-NOV-20 to 25-NOV-20	1600	Groundwater	13	✓	✓	✓	✓	✓	✓	✓	✓		
	Brw 95-7S	25 NOV 20	1350	G.W.	13	✓	✓	✓	✓	✓	✓	✓	✓		

Drinking Water (DW) Samples (client use)
Are samples taken from a Regulated DW System? ☐ YES ☑ NO
Are samples for human consumption/use? ☐ YES ☑ NO

Special Instructions / Specify Criteria to add on report by clicking on the drop-down list below (electronic COC only):

SAMPLE CONDITION AS RECEIVED (lab use only)
Frozen ☑ SIF Observations: Yes ☐ No ☐
Ice Packs ☑ Ice Cubes ☐ Custody seal intact: Yes ☐ No ☑
Cooling Initiated ☐
INITIAL COOLER TEMPERATURE(S) °C | FINAL COOLER TEMPERATURE(S) °C

SHIPMENT RELEASE (client use)		INITIAL SHIPMENT RECEPTION (lab use only)		FINAL SHIPMENT RECEPTION (lab use only)	
Released by: [redacted]	Date: Nov 25 2020 Time: 1912	Received by: [redacted]	Date: NOV 26 2020	Received by: [redacted]	Date: NOV 26 2020 Time: [redacted]

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1 If any water samples are taken from a Regulated Drinking Water System, please select the appropriate Drinking Water (DW) Sample option.

AECOM CANADA LTD.
ATTN: REUBEN DANDURAND
3292 PRODUCTION WAY
BURNABY BC V5A 4R4

Date Received: 01-DEC-20
Report Date: 09-DEC-20 15:12 (MT)
Version: FINAL

Client Phone: 236-330-2711

Certificate of Analysis

Lab Work Order #: L2535510

Project P.O. #: 60640258
Job Reference: 60640258
C of C Numbers:
Legal Site Desc:

[redacted]
Hua Wo
Chemistry Laboratory Manager

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ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2535510-1 BRU 95-7 POST							
Sampled By: CLIENT on 01-DEC-20 @ 12:00							
Matrix: GROUNDWATER							
BTEX							
BTX plus F1 by GCMS							
Benzene	<0.00050		0.00050	mg/L		03-DEC-20	R5308139
Toluene	<0.0010		0.0010	mg/L		03-DEC-20	R5308139
Ethyl benzene	<0.00050		0.00050	mg/L		03-DEC-20	R5308139
o-Xylene	<0.00050		0.00050	mg/L		03-DEC-20	R5308139
m+p-Xylenes	<0.00040		0.00040	mg/L		03-DEC-20	R5308139
F1 (C6-C10)	<0.10		0.10	mg/L		03-DEC-20	R5308139
Surrogate: 4-Bromofluorobenzene (SS)	94.8		70-130	%		03-DEC-20	R5308139
CCME Total Hydrocarbons							
F1-BTEX	<0.10		0.10	mg/L		08-DEC-20	
F2-Naphth	<0.10		0.10	mg/L		08-DEC-20	
F3-PAH	<0.25		0.25	mg/L		08-DEC-20	
Total Hydrocarbons (C6-C50)	<0.38		0.38	mg/L		08-DEC-20	
Sum of Xylene Isomer Concentrations							
Xylenes (Total)	<0.00064		0.00064	mg/L		04-DEC-20	
Miscellaneous Parameters							
Bicarbonate (HCO3)	287		1.2	mg/L		04-DEC-20	
Carbonate (CO3)	5.28		0.60	mg/L		04-DEC-20	
Hydroxide (OH)	<0.34		0.34	mg/L		04-DEC-20	
Alkalinity, Total (as CaCO3)	244		1.0	mg/L		03-DEC-20	R5306540
Ammonia, Total (as N)	0.59		0.10	mg/L		02-DEC-20	R5305400
Biochemical Oxygen Demand	11.3		6.0	mg/L		02-DEC-20	R5309204
Chemical Oxygen Demand	<20		20	mg/L		03-DEC-20	R5306896
Chloride (Cl)	1.52		0.10	mg/L		02-DEC-20	R5307396
Conductivity	453		1.0	umhos/cm		03-DEC-20	R5306540
Dissolved Organic Carbon	1.58		0.50	mg/L		02-DEC-20	R5304368
Fluoride (F)	0.411		0.020	mg/L		02-DEC-20	R5307396
Hardness (as CaCO3)	197		0.20	mg/L		07-DEC-20	
Nitrate (as N)	<0.0050		0.0050	mg/L		02-DEC-20	R5307396
Nitrate and Nitrite as N	<0.0051		0.0051	mg/L		04-DEC-20	
Nitrite (as N)	<0.0010		0.0010	mg/L		02-DEC-20	R5307396
Phenols (4AAP)	<0.0010		0.0010	mg/L		04-DEC-20	R5308846
Phosphorus (P)-Total	0.0321		0.0030	mg/L		03-DEC-20	R5304956
Sulfate (SO4)	5.83		0.30	mg/L		02-DEC-20	R5307396
Sulphide (as S)	0.020		0.018	mg/L		07-DEC-20	R5308702
TDS (Calculated)	245		5.0	mg/L		07-DEC-20	
Total Dissolved Solids	229		20	mg/L		03-DEC-20	R5308973
Sulphide (as H2S)	0.021		0.019	mg/L		07-DEC-20	
Total Suspended Solids	<3.0		3.0	mg/L		03-DEC-20	R5307356
pH	8.36		0.10	pH units		03-DEC-20	R5306540
Dissolved Metals in Water by CRC ICPMS							
Dissolved Metals Filtration Location	FIELD					04-DEC-20	R5307359
Aluminum (Al)-Dissolved	<0.0010		0.0010	mg/L	04-DEC-20	04-DEC-20	R5308652
Antimony (Sb)-Dissolved	<0.00010		0.00010	mg/L	04-DEC-20	04-DEC-20	R5308652
Arsenic (As)-Dissolved	<0.00010		0.00010	mg/L	04-DEC-20	04-DEC-20	R5308652
Barium (Ba)-Dissolved	0.0964		0.00010	mg/L	04-DEC-20	04-DEC-20	R5308652
Beryllium (Be)-Dissolved	<0.00010		0.00010	mg/L	04-DEC-20	04-DEC-20	R5308652
Bismuth (Bi)-Dissolved	<0.000050		0.000050	mg/L	04-DEC-20	04-DEC-20	R5308652
Boron (B)-Dissolved	0.212		0.010	mg/L	04-DEC-20	04-DEC-20	R5308652

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2535510-1 BRU 95-7 POST							
Sampled By: CLIENT on 01-DEC-20 @ 12:00							
Matrix: GROUNDWATER							
Dissolved Metals in Water by CRC ICPMS							
Cadmium (Cd)-Dissolved	<0.0000050		0.0000050	mg/L	04-DEC-20	04-DEC-20	R5308652
Calcium (Ca)-Dissolved	35.2		0.050	mg/L	04-DEC-20	04-DEC-20	R5308652
Cesium (Cs)-Dissolved	<0.000010		0.000010	mg/L	04-DEC-20	04-DEC-20	R5308652
Chromium (Cr)-Dissolved	<0.00010		0.00010	mg/L	04-DEC-20	04-DEC-20	R5308652
Cobalt (Co)-Dissolved	<0.00010		0.00010	mg/L	04-DEC-20	04-DEC-20	R5308652
Copper (Cu)-Dissolved	<0.00020		0.00020	mg/L	04-DEC-20	04-DEC-20	R5308652
Iron (Fe)-Dissolved	0.474		0.010	mg/L	04-DEC-20	04-DEC-20	R5308652
Lead (Pb)-Dissolved	<0.000050		0.000050	mg/L	04-DEC-20	04-DEC-20	R5308652
Lithium (Li)-Dissolved	0.0189		0.0010	mg/L	04-DEC-20	04-DEC-20	R5308652
Magnesium (Mg)-Dissolved	26.4		0.0050	mg/L	04-DEC-20	04-DEC-20	R5308652
Manganese (Mn)-Dissolved	0.0168		0.00010	mg/L	04-DEC-20	04-DEC-20	R5308652
Molybdenum (Mo)-Dissolved	0.00193		0.000050	mg/L	04-DEC-20	04-DEC-20	R5308652
Nickel (Ni)-Dissolved	<0.00050		0.00050	mg/L	04-DEC-20	04-DEC-20	R5308652
Phosphorus (P)-Dissolved	0.033		0.030	mg/L	04-DEC-20	04-DEC-20	R5308652
Potassium (K)-Dissolved	4.57		0.050	mg/L	04-DEC-20	04-DEC-20	R5308652
Rubidium (Rb)-Dissolved	0.00164		0.00020	mg/L	04-DEC-20	04-DEC-20	R5308652
Selenium (Se)-Dissolved	<0.000050		0.000050	mg/L	04-DEC-20	04-DEC-20	R5308652
Silicon (Si)-Dissolved	7.19		0.050	mg/L	04-DEC-20	04-DEC-20	R5308652
Silver (Ag)-Dissolved	<0.000010		0.000010	mg/L	04-DEC-20	04-DEC-20	R5308652
Sodium (Na)-Dissolved	25.5		0.050	mg/L	04-DEC-20	04-DEC-20	R5308652
Strontium (Sr)-Dissolved	0.246		0.00010	mg/L	04-DEC-20	04-DEC-20	R5308652
Sulfur (S)-Dissolved	2.29		0.50	mg/L	04-DEC-20	04-DEC-20	R5308652
Tellurium (Te)-Dissolved	<0.00020		0.00020	mg/L	04-DEC-20	04-DEC-20	R5308652
Thallium (Tl)-Dissolved	<0.000010		0.000010	mg/L	04-DEC-20	04-DEC-20	R5308652
Thorium (Th)-Dissolved	<0.00010		0.00010	mg/L	04-DEC-20	04-DEC-20	R5308652
Tin (Sn)-Dissolved	<0.00010		0.00010	mg/L	04-DEC-20	04-DEC-20	R5308652
Titanium (Ti)-Dissolved	<0.00030		0.00030	mg/L	04-DEC-20	04-DEC-20	R5308652
Tungsten (W)-Dissolved	<0.00010		0.00010	mg/L	04-DEC-20	04-DEC-20	R5308652
Uranium (U)-Dissolved	0.000030		0.000010	mg/L	04-DEC-20	04-DEC-20	R5308652
Vanadium (V)-Dissolved	<0.00050		0.00050	mg/L	04-DEC-20	04-DEC-20	R5308652
Zinc (Zn)-Dissolved	0.0034		0.0010	mg/L	04-DEC-20	04-DEC-20	R5308652
Zirconium (Zr)-Dissolved	<0.00020		0.00020	mg/L	04-DEC-20	04-DEC-20	R5308652
Mercury Dissolved							
Dissolved Mercury Filtration Location	FIELD					03-DEC-20	R5310085
Mercury (Hg)-Dissolved	<0.0000050		0.0000050	mg/L	09-DEC-20	09-DEC-20	R5310096
F2-F4 (O.Reg.153/04)							
F2 (C10-C16)	<100		100	ug/L	04-DEC-20	07-DEC-20	R5309063
F3 (C16-C34)	<250		250	ug/L	04-DEC-20	07-DEC-20	R5309063
F4 (C34-C50)	<250		250	ug/L	04-DEC-20	07-DEC-20	R5309063
Chrom. to baseline at nC50	YES				04-DEC-20	07-DEC-20	R5309063
Surrogate: 2-Bromobenzotrifluoride	88.7		60-140	%	04-DEC-20	07-DEC-20	R5309063
CCME PAHs in mg/L							
1-Methyl Naphthalene	<0.000020		0.000020	mg/L	04-DEC-20	08-DEC-20	R5309535
2-Methyl Naphthalene	<0.000020		0.000020	mg/L	04-DEC-20	08-DEC-20	R5309535
Acenaphthene	<0.000020		0.000020	mg/L	04-DEC-20	08-DEC-20	R5309535
Acenaphthylene	<0.000020		0.000020	mg/L	04-DEC-20	08-DEC-20	R5309535
Anthracene	<0.000010		0.000010	mg/L	04-DEC-20	08-DEC-20	R5309535
Acridine	<0.000020		0.000020	mg/L	04-DEC-20	08-DEC-20	R5309535
Benzo(a)anthracene	<0.000010		0.000010	mg/L	04-DEC-20	08-DEC-20	R5309535
Benzo(a)pyrene	<0.0000050		0.0000050	mg/L	04-DEC-20	08-DEC-20	R5309535
Benzo(b&j)fluoranthene	<0.000010		0.000010	mg/L	04-DEC-20	08-DEC-20	R5309535
Benzo(g,h,i)perylene	<0.000020		0.000020	mg/L	04-DEC-20	08-DEC-20	R5309535

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2535510-1 BRU 95-7 POST							
Sampled By: CLIENT on 01-DEC-20 @ 12:00							
Matrix: GROUNDWATER							
CCME PAHs in mg/L							
Benzo(k)fluoranthene	<0.000010		0.000010	mg/L	04-DEC-20	08-DEC-20	R5309535
Chrysene	<0.000020		0.000020	mg/L	04-DEC-20	08-DEC-20	R5309535
Dibenzo(a,h)anthracene	<0.0000050		0.0000050	mg/L	04-DEC-20	08-DEC-20	R5309535
Fluoranthene	<0.000020		0.000020	mg/L	04-DEC-20	08-DEC-20	R5309535
Fluorene	<0.000020		0.000020	mg/L	04-DEC-20	08-DEC-20	R5309535
Indeno(1,2,3-cd)pyrene	<0.000010		0.000010	mg/L	04-DEC-20	08-DEC-20	R5309535
Naphthalene	<0.000050		0.000050	mg/L	04-DEC-20	08-DEC-20	R5309535
Phenanthrene	<0.000050		0.000050	mg/L	04-DEC-20	08-DEC-20	R5309535
Pyrene	<0.000010		0.000010	mg/L	04-DEC-20	08-DEC-20	R5309535
Quinoline	<0.000020		0.000020	mg/L	04-DEC-20	08-DEC-20	R5309535
B(a)P Total Potency Equivalent	<0.000030		0.000030	mg/L	04-DEC-20	08-DEC-20	R5309535
Surrogate: d8-Naphthalene	95.4		50-150	%	04-DEC-20	08-DEC-20	R5309535
Surrogate: d10-Phenanthrene	94.5		50-150	%	04-DEC-20	08-DEC-20	R5309535
Surrogate: d12-Chrysene	96.9		50-150	%	04-DEC-20	08-DEC-20	R5309535
Surrogate: d10-Acenaphthene	95.5		50-150	%	04-DEC-20	08-DEC-20	R5309535
Surrogate: d9-Acridine (SS)	72.3		50-150	%	04-DEC-20	08-DEC-20	R5309535
L2535510-2 BRU 95-7 (S4)							
Sampled By: CLIENT on 29-NOV-20 @ 18:18							
Matrix: GROUNDWATER							
Anions by IC							
Chloride in Water by IC							
Chloride (Cl)	1.32		0.50	mg/L		02-DEC-20	R5307396
Fluoride in Water by IC							
Fluoride (F)	0.416		0.020	mg/L		02-DEC-20	R5307396
Nitrate in Water by IC							
Nitrate (as N)	<0.020		0.020	mg/L		02-DEC-20	R5307396
Nitrite in Water by IC							
Nitrite (as N)	<0.010		0.010	mg/L		02-DEC-20	R5307396
Sulfate in Water by IC							
Sulfate (SO4)	5.69		0.30	mg/L		02-DEC-20	R5307396
Dissolved Metals in Water by CRC ICPMS							
Dissolved Metals Filtration Location	FIELD					04-DEC-20	R5307359
Aluminum (Al)-Dissolved	<0.0010		0.0010	mg/L	04-DEC-20	04-DEC-20	R5308652
Antimony (Sb)-Dissolved	<0.00010		0.00010	mg/L	04-DEC-20	04-DEC-20	R5308652
Arsenic (As)-Dissolved	<0.00010		0.00010	mg/L	04-DEC-20	04-DEC-20	R5308652
Barium (Ba)-Dissolved	0.0952		0.00010	mg/L	04-DEC-20	04-DEC-20	R5308652
Beryllium (Be)-Dissolved	<0.00010		0.00010	mg/L	04-DEC-20	04-DEC-20	R5308652
Bismuth (Bi)-Dissolved	<0.000050		0.000050	mg/L	04-DEC-20	04-DEC-20	R5308652
Boron (B)-Dissolved	0.202		0.010	mg/L	04-DEC-20	04-DEC-20	R5308652
Cadmium (Cd)-Dissolved	<0.0000050		0.0000050	mg/L	04-DEC-20	04-DEC-20	R5308652
Calcium (Ca)-Dissolved	36.7		0.050	mg/L	04-DEC-20	04-DEC-20	R5308652
Cesium (Cs)-Dissolved	<0.000010		0.000010	mg/L	04-DEC-20	04-DEC-20	R5308652
Chromium (Cr)-Dissolved	<0.00010		0.00010	mg/L	04-DEC-20	04-DEC-20	R5308652
Cobalt (Co)-Dissolved	<0.00010		0.00010	mg/L	04-DEC-20	04-DEC-20	R5308652
Copper (Cu)-Dissolved	<0.00020		0.00020	mg/L	04-DEC-20	04-DEC-20	R5308652
Iron (Fe)-Dissolved	<0.010		0.010	mg/L	04-DEC-20	04-DEC-20	R5308652
Lead (Pb)-Dissolved	<0.000050		0.000050	mg/L	04-DEC-20	04-DEC-20	R5308652
Lithium (Li)-Dissolved	0.0194		0.0010	mg/L	04-DEC-20	04-DEC-20	R5308652
Magnesium (Mg)-Dissolved	26.5		0.0050	mg/L	04-DEC-20	04-DEC-20	R5308652
Manganese (Mn)-Dissolved	0.0170		0.00010	mg/L	04-DEC-20	04-DEC-20	R5308652

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2535510-2 BRU 95-7 (S4)							
Sampled By: CLIENT on 29-NOV-20 @ 18:18							
Matrix: GROUNDWATER							
Dissolved Metals in Water by CRC ICPMS							
Molybdenum (Mo)-Dissolved	0.00195		0.000050	mg/L	04-DEC-20	04-DEC-20	R5308652
Nickel (Ni)-Dissolved	<0.00050		0.00050	mg/L	04-DEC-20	04-DEC-20	R5308652
Phosphorus (P)-Dissolved	<0.030		0.030	mg/L	04-DEC-20	04-DEC-20	R5308652
Potassium (K)-Dissolved	4.74		0.050	mg/L	04-DEC-20	04-DEC-20	R5308652
Rubidium (Rb)-Dissolved	0.00168		0.00020	mg/L	04-DEC-20	04-DEC-20	R5308652
Selenium (Se)-Dissolved	<0.000050		0.000050	mg/L	04-DEC-20	04-DEC-20	R5308652
Silicon (Si)-Dissolved	7.15		0.050	mg/L	04-DEC-20	04-DEC-20	R5308652
Silver (Ag)-Dissolved	<0.000010		0.000010	mg/L	04-DEC-20	04-DEC-20	R5308652
Sodium (Na)-Dissolved	22.8		0.050	mg/L	04-DEC-20	04-DEC-20	R5308652
Strontium (Sr)-Dissolved	0.254		0.00010	mg/L	04-DEC-20	04-DEC-20	R5308652
Sulfur (S)-Dissolved	2.07		0.50	mg/L	04-DEC-20	04-DEC-20	R5308652
Tellurium (Te)-Dissolved	<0.00020		0.00020	mg/L	04-DEC-20	04-DEC-20	R5308652
Thallium (Tl)-Dissolved	<0.000010		0.000010	mg/L	04-DEC-20	04-DEC-20	R5308652
Thorium (Th)-Dissolved	<0.00010		0.00010	mg/L	04-DEC-20	04-DEC-20	R5308652
Tin (Sn)-Dissolved	<0.00010		0.00010	mg/L	04-DEC-20	04-DEC-20	R5308652
Titanium (Ti)-Dissolved	<0.00030		0.00030	mg/L	04-DEC-20	04-DEC-20	R5308652
Tungsten (W)-Dissolved	<0.00010		0.00010	mg/L	04-DEC-20	04-DEC-20	R5308652
Uranium (U)-Dissolved	0.000028		0.000010	mg/L	04-DEC-20	04-DEC-20	R5308652
Vanadium (V)-Dissolved	<0.00050		0.00050	mg/L	04-DEC-20	04-DEC-20	R5308652
Zinc (Zn)-Dissolved	0.0013		0.0010	mg/L	04-DEC-20	04-DEC-20	R5308652
Zirconium (Zr)-Dissolved	<0.00020		0.00020	mg/L	04-DEC-20	04-DEC-20	R5308652

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

Reference Information

Test Method References:

ALS Test Code	Matrix	Test Description	Method Reference**
ALK-CO3CO3-CALC-WP	Water	Alkalinity, Carbonate	CALCULATION

The Alkalinity of water is a measure of its acid neutralizing capacity.Alkalinity is imparted by bicarbonate, carbonate and hydroxide components of water. The fraction of alkalinity contributed by carbonate is calculated and reported as mg CO3 2-/L.

ALK-HCO3HCO3-CALC-WP	Water	Alkalinity, Bicarbonate	CALCULATION

The Alkalinity of water is a measure of its acid neutralizing capacity.Alkalinity is imparted by bicarbonate, carbonate and hydroxide components of water. The fraction of alkalinity contributed by bicarbonate is calculated and reported as mg HCO3-/L

ALK-OHOH-CALC-WP	Water	Alkalinity, Hydroxide	CALCULATION

The Alkalinity of water is a measure of its acid neutralizing capacity.Alkalinity is imparted by bicarbonate, carbonate and hydroxide components of water. The fraction of alkalinity contributed by hydroxide is calculated and reported as mg OH-/L.

ALK-TITR-WP	Water	Alkalinity, Total (as CaCO3)	APHA 2320B

The Alkalinity of water is a measure of its acid neutralizing capacity. Alkalinity is imparted by bicarbonate, carbonate and hydroxide components of water. Total alkalinity is determined by titration with a strong standard mineral acid to the successive HCO3- and H2CO3 endpoints indicated electrometrically.

BOD-WP	Water	Biochemical Oxygen Demand (BOD)	APHA 5210 B

Samples are diluted and seeded and then incubated in airtight bottles at 20°C for 5 days. Dissolved oxygen is measured initially and after incubation, and results are computed from the difference between initial and final DO.

BTEXS+F1-HSMS-WP	Water	BTX plus F1 by GCMS	EPA 8260C / EPA 5021A

The water sample, with added reagents, is heated in a sealed vial to equilibrium. The headspace from the vial is transfered into a gas chromatograph. Target compound concentrations are measured using mass spectrometry detection.

C-DOC-HTC-WP	Water	Dissolved Organic Carbon by Combustion	APHA 5310 B-WP

Filtered (0.45 um) sample is acidified and purged to remove inorganic carbon, then injected into a heated reaction chamber where organic carbon is oxidized to CO2 which is then transported in the carrier gas stream and measured via a non-dispersive infrared analyzer.

CL-IC-N-WP	Water	Chloride in Water by IC	EPA 300.1 (mod)

Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.

CL-L-IC-N-WP	Water	Chloride in Water by IC (Low Level)	EPA 300.1 (mod)

Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.

COD-WP	Water	Chemical Oxygen Demand	APHA 5220 D

This analysis is carried out using procedures adapted from APHA Method 5220 "Chemical Oxygen Demand (COD)". Chemical oxygen demand is determined using the closed reflux colorimetric method.

EC-SCREEN-WP	Water	Conductivity Screen (Internal Use Only)	APHA 2510

Qualitative analysis of conductivity where required during preparation of other test eg. IC, TDS, TSS, etc

EC-WP	Water	Conductivity	APHA 2510B

Conductivity of an aqueous solution refers to its ability to carry an electric current. Conductance of a solution is measured between two spatially fixed and chemically inert electrodes.

ETL-SOLIDS-CALC-WP	Water	TDS calculated	CALCULATION
F-IC-N-WP	Water	Fluoride in Water by IC	EPA 300.1 (mod)

Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.

F1-F4-CALC-WP	Water	CCME Total Hydrocarbons	CCME CWS-PHC, Pub #1310, Dec 2001-L

Analytical methods used for analysis of CCME Petroleum Hydrocarbons have been validated and comply with the Reference Method for the CWS PHC.

In cases where results for both F4 and F4G are reported, the greater of the two results must be used in any application of the CWS PHC guidelines and the gravimetric heavy hydrocarbons cannot be added to the C6 to C50 hydrocarbons.
In samples where BTEX and F1 were analyzed , F1-BTEX represents a value where the sum of Benzene, Toluene, Ethylbenzene and total Xylenes has been subtracted from F1.

In samples where PAHs, F2 and F3 were analyzed, F2-Naphth represents the result where Naphthalene has been subtracted from F2. F3-PAH represents a result where the sum of Benzo(a)anthracene, Benzo(a)pyrene, Benzo(b)fluoranthene, Benzo(k)fluoranthene, Dibenzo(a,h)anthracene,

Reference Information

Test Method References:

ALS Test Code	Matrix	Test Description	Method Reference**

Fluoranthene, Indeno(1,2,3-cd)pyrene, Phenanthrene, and Pyrene has been subtracted from F3.

Unless otherwise qualified, the following quality control criteria have been met for the F1 hydrocarbon range:
1. All extraction and analysis holding times were met.
2. Instrument performance showing response factors for C6 and C10 within 30% of the response factor for toluene.
3. Linearity of gasoline response within 15% throughout the calibration range.

Unless otherwise qualified, the following quality control criteria have been met for the F2-F4 hydrocarbon ranges:
1. All extraction and analysis holding times were met.
2. Instrument performance showing C10, C16 and C34 response factors within 10% of their average.
3. Instrument performance showing the C50 response factor within 30% of the average of the C10, C16 and C34 response factors.
4. Linearity of diesel or motor oil response within 15% throughout the calibration range.

F2-F4-WT	Water	F2-F4 (O.Reg.153/04)	MOE DECPH-E3421/CCME TIER 1

Petroleum Hydrocarbons (F2-F4 fractions) are extracted from water using a hexane micro-extraction technique. Instrumental analysis is by GC-FID, as per the "Reference Method for the Canada-Wide Standard for Petroleum Hydrocarbons in Soil –Tier 1 Method, CCME, 2001.

HARDNESS-CALC-WP	Water	Hardness Calculated	APHA 2340B

Hardness (also known as Total Hardness) is calculated from the sum of Calcium and Magnesium concentrations, expressed in CaCO3 equivalents. Dissolved Calcium and Magnesium concentrations are preferentially used for the hardness calculation.

HG-D-CVAA-WP	Water	Mercury Dissolved	APHA 3030B/EPA 1631E (mod)

Water samples are filtered (0.45 um), preserved with hydrochloric acid, then undergo a cold-oxidation using bromine monochloride prior to reduction with stannous chloride, and analyzed by CVAAS.

IONBALANCE-CALC-WP	Water	Ion Balance Calculation	APHA 1030E

Cation Sum, Anion Sum, and Ion Balance (as % difference) are calculated based on guidance from APHA Standard Methods (1030E Checking Correctness of Analysis). Because all aqueous solutions are electrically neutral, the calculated ion balance (% difference of cations minus anions) should be near-zero.

Cation and Anion Sums are the total meq/L concentration of major cations and anions. Dissolved species are used where available. Minor ions are included where data is present. Ion Balance (as % difference) cannot be calculated accurately for waters with very low electrical conductivity (EC), and is reported as "Low EC" where EC < 100 uS/cm (umhos/cm). Ion Balance is calculated as:

Ion Balance (%) = [Cation Sum-Anion Sum] / [Cation Sum+Anion Sum]

MET-D-CCMS-WP	Water	Dissolved Metals in Water by CRC ICPMS	APHA 3030B/6020B (mod)

Water samples are filtered (0.45 um), preserved with nitric acid, and analyzed by CRC ICPMS.

Method Limitation (re: Sulfur): Sulfide and volatile sulfur species may not be recovered by this method.

NH3-COL-WP	Water	Ammonia by colour	APHA 4500 NH3 F

Ammonia in water samples forms indophenol when reacted with hypochlorite and phenol. The intensity is amplified by the addition of sodium nitroprusside and measured colourmetrically.

NO2+NO3-CALC-L-WP	Water	Nitrate+Nitrite	CALCULATION
NO2-IC-N-WP	Water	Nitrite in Water by IC	EPA 300.1 (mod)

Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.

NO2-L-IC-N-WP	Water	Nitrite in Water by IC (Low Level)	EPA 300.1 (mod)

Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.

NO3-IC-N-WP	Water	Nitrate in Water by IC	EPA 300.1 (mod)

Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.

NO3-L-IC-N-WP	Water	Nitrate in Water by IC (Low Level)	EPA 300.1 (mod)

Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.

P-T-COL-WP	Water	Phosphorus, Total	APHA 4500 P PHOSPHORUS-L

This analysis is carried out using procedures adapted from APHA METHOD 4500-P "Phosphorus". Total Phosphorus is determined colourmetrically

Reference Information

Test Method References:

ALS Test Code	Matrix	Test Description	Method Reference**
after persulphate digestion of the sample.			
PAH-CCME-PPM-WT	Water	CCME PAHs in mg/L	EPA 3511/8270D (mod)
PAHs are extracted from water using a hexane micro-extraction technique, with analysis by GC/MS. Because the two isomers cannot be readily separated chromatographically, benzo(j)fluoranthene is reported as part of the benzo(b)fluoranthene parameter.			
PH-WP	Water	pH	APHA 4500H
The pH of a sample is the determination of the activity of the hydrogen ions by potentiometric measurement using a standard hydrogen electrode and a reference electrode.			
PHENOLS-4AAP-WT	Water	Phenol (4AAP)	EPA 9066
An automated method is used to distill the sample. The distillate is then buffered to pH 9.4 which reacts with 4AAP and potassium ferricyanide to form a red complex which is measured colorimetrically.			
S2-T>H2S-CALC-WT	Water	Total Sulphide Calculated as H2S	Calculation
This calculation converts Total Sulphide as (S2-) and reports it as Total Sulphide as (H2S). Total Sulphide as (S2-) is determined using procedures adapted from APHA 4500-S2 "Sulphide".			
SO4-IC-N-WP	Water	Sulfate in Water by IC	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
SOLIDS-TOTSUS-WP	Water	Total Suspended Solids	APHA 2540 D (modified)
Total suspended solids in aquesous matrices is determined gravimetrically after drying the residue at 103 – 105°C.			
SULPHIDE-WT	Water	Sulphide (as S)	APHA 4500S2D
This analysis is carried out using procedures adapted from APHA Method 4500-S2-D "Methylene Blue Method". Sulphide is determined colourmetrically.			
TDS-WP	Water	Total Dissolved Solids (TDS)	APHA 2540 SOLIDS C,E
A well-mixed sample is filtered through a glass fiber filter paper. The filtrate is then evaportaed to dryness in a pre-weighed vial and dried at 180 ± 2C. The increase in vial weight represents the total dissolved solids.			
XYLENES-SUM-CALC-WP	Water	Sum of Xylene Isomer Concentrations	CALCULATED RESULT
Total xylenes represents the sum of o-xylene and m&p-xylene.			

** ALS test methods may incorporate modifications from specified reference methods to improve performance.

The last two letters of the above test code(s) indicate the laboratory that performed analytical analysis for that test. Refer to the list below:

Laboratory Definition Code	Laboratory Location
WP	ALS ENVIRONMENTAL - WINNIPEG, MANITOBA, CANADA
WT	ALS ENVIRONMENTAL - WATERLOO, ONTARIO, CANADA

Chain of Custody Numbers:

Reference Information

Test Method References:

ALS Test Code	Matrix	Test Description	Method Reference**

GLOSSARY OF REPORT TERMS

Surrogates are compounds that are similar in behaviour to target analyte(s), but that do not normally occur in environmental samples. For applicable tests, surrogates are added to samples prior to analysis as a check on recovery. In reports that display the D.L. column, laboratory objectives for surrogates are listed there.
mg/kg - milligrams per kilogram based on dry weight of sample
mg/kg wwt - milligrams per kilogram based on wet weight of sample
mg/kg lwt - milligrams per kilogram based on lipid-adjusted weight
mg/L - unit of concentration based on volume, parts per million.
< - Less than.
D.L. - The reporting limit.
N/A - Result not available. Refer to qualifier code and definition for explanation.

Test results reported relate only to the samples as received by the laboratory.
UNLESS OTHERWISE STATED, ALL SAMPLES WERE RECEIVED IN ACCEPTABLE CONDITION.
Analytical results in unsigned test reports with the DRAFT watermark are subject to change, pending final QC review.

ALS Environmental

www.alsglobal.com

Chain of Custody (COC) / Analytical Request Form

Canada Toll Free: 1 800 668 9878

[redacted]

COC Number 17 - 884256

Page of

Report To	Select and list only name below to appear on the final report	Report Format / Distribution	Select Report Format: PDF EXCEL EDD (DIGITAL)
Company:	AECOM		Quality Control (QC) Report with Report: YES NO
Contact:	Reuben Dandavand		Select Distribution: EMAIL MAIL FAX
Phone:	236-330-2711		
Company address below will appear on the final report			
Street:	3992 Production Way	Email 1 or Fax:	Reuben.Dandavand@aecom.com
City/Province:	Burnaby BC	Email 2:	Stephen.Dickin@aecom.com
Postal Code:	V5B 2K4	Email 3:	
Invoice To	Same as Report To: YES NO	Invoice Distribution	
	Copy of invoice with Report: YES NO	Select Invoice Distribution:	EMAIL MAIL FAX
Company:	Same	Email 1 or Fax:	Same
Contact:	Same	Email 2:	

Project Information

ALS Account # / Quote #:	
Job #:	6064 0258
PO / AFE:	
LSD:	
ALS Lab Work Order # (lab use only):	
ALS Contact:	Sampler:

Oil and Gas Required Fields (client use)

AFE/Cost Center:	PST:
Major/Minor Code:	Routing Code:
Requisitioner:	
Location:	

Turnaround Time (TAT) Option (Rush) - Contact your ALS to confirm all E&P TATs (surcharges may apply)

Regular [R] Standard TAT if received by 3 pm - business days - no surcharges apply

4 day [P4-20%] 3 day [P3-25%] 2 day [P2-50%]

1 Business day [E - 100%] Same Day, Weekend or Statutory holiday [E2-200%] (Laboratory opening fees may apply)

Date and Time Required for all E&P TATs: dd-mmm-yy hh:mm

For tests that can not be performed according to the service level selected, you will be contacted.

Analysis Request

Indicate Filtered (F), Preserved (P) or Filtered and Preserved (F/P) below

ALS Sample # (lab use only)	Sample Identification and/or Coordinates (This description will appear on the report)	Date (dd-mmm-yy)	Time (hh:mm)	Sample Type	NUMBER OF CONTAINERS	Metals (Dissolved)	Metals (Dissolved)	Nutrients (NO3/NO2/NH3)	Chloride (Cl)	Sulphide (S2-)	Phenols	BTEX, F1-F4 and PAH	Arsenic - IC-MS-VRC				SAMPLES ON HOLD	SUSPECTED HAZARD (see Special Instructions)
	Brw 95-7 post	01-Dec-20	12:00 PM	Groundwater	2	✓	✓	✓	✓	✓	✓	✓	✓					
	Brw 95-7 (54)	29-Nov-20	5:18 PM	Groundwater	2		✓						✓					

Drinking Water (DW) Samples† (client use)

Are samples taken from a Regulated DW System? YES NO

Are samples for human consumption/use? YES NO

Special Instructions / Specify Criteria to add or flag on Report (and vice versa) by clicking on the drop-down list below (electronic COC only)

SAMPLE CONDITION AS RECEIVED (lab use only)

Frozen ☑ SIF Observations No ☐ Yes ☐

Ice Packs ☑ Ice Cubes ☐ Custody seal intact Yes ☐ No ☐

Cooling Initiated ☐

INITIAL COOLER TEMPERATURES °C	FINAL COOLER TEMPERATURES °C
10.1	

SHIPMENT RELEASE (client use)

Released by: [redacted] Date: 1-DEC-20 Time: 2132 pm

INITIAL SHIPMENT RECEPTION (lab use only)

Received by: [redacted] Date: 2020 Time: 14:35

FINAL SHIPMENT RECEPTION (lab use only)

Received by: [redacted] Date: DEC 1 2020 Time: [redacted]

REFER TO BACK PAGE FOR ALS LOCATIONS AND ADDITIONAL INFORMATION

WHITE: LABORATORY COPY YELLOW: CLIENT COPY

1. If any water samples are from a Regulated Drinking Water (DW) System, please indicate on the form and select DW box.

AECOM CANADA LTD.
ATTN: Reuben Dandurand
330 - 3292 Production Way
Burnaby BC V5A 4R4

Date Received: 03-DEC-20
Report Date: 14-DEC-20 13:51 (MT)
Version: FINAL

Client Phone: 604-444-6400

Certificate of Analysis

Lab Work Order #: L2536193

Project P.O. #: 60640258
Job Reference: 60640258
C of C Numbers:
Legal Site Desc:

[redacted]
Craig Riddell, B.Sc.Ag
Account Manager

[This report shall not be reproduced except in full without the written authority of the Laboratory.]

ALS ENVIRONMENTAL ANALYTICAL REPORT

Grouping	Analyte	L2536193-1 GW 02-DEC-20 16:15 BREMNER-P	L2536193-2 GW 02-DEC-20 15:40 BRO 95-6 POST	L2536193-3 GW 02-DEC-20 14:50 BRO 95-9 POST	L2536193-4 GW 02-DEC-20 16:00 BRO 95-5 POST	L2536193-5 GW 02-DEC-20 11:03 BRO 96-1 POST
WATER						
Physical Tests	Conductivity (umhos/cm)	515	518	617	535	589
	Hardness (as CaCO3) (ug/L)	249000			265000	110000
	pH (pH units)	8.18	8.12	8.35	8.16	8.49
	Total Suspended Solids (ug/L)	<3000	403000	9450000	11100	78700
	Total Dissolved Solids (ug/L)	247000	292000	489000	258000	340000
Anions and Nutrients	Alkalinity, Total (as CaCO3) (ug/L)	283000	302000	1010000	299000	271000
	Ammonia, Total (as N) (ug/L)	429	389	810	202	380
	Bicarbonate (HCO3) (ug/L)	346000	369000	1230000	365000	313000
	Carbonate (CO3) (ug/L)	<600	<600	5520	<600	9000
	Chloride (Cl) (ug/L)	1030	1630	37400	1010	22400
	Fluoride (F) (ug/L)	350	382	481	331	876
	Hydroxide (OH) (ug/L)	<340	<340	<340	<340	<340
	Nitrate and Nitrite as N (ug/L)	<5.1	<5.1	<5.1	<5.1	<5.1
	Nitrate (as N) (ug/L)	<5.0	<5.0	<5.0	<5.0	<5.0
	Nitrite (as N) (ug/L)	<1.0	<1.0	<1.0	<1.0	<1.0
	Phosphorus (P)-Total (ug/L)	9.6	206	9600	10.8	72.4
	Sulfate (SO4) (ug/L)	3810	8010	37200	3220	32100
	Sulphide (as S) (ug/L)	21	<18	<1800 DLM	78	<18
	Sulphide (as H2S) (ug/L)	22	<19	<1900	83	<19
Organic / Inorganic Carbon	Dissolved Organic Carbon (ug/L)	2060	2120 HTP	16900 HTP	2010	1660
Dissolved Metals	Dissolved Mercury Filtration Location	FIELD	LAB	LAB	FIELD	FIELD
	Dissolved Metals Filtration Location	FIELD	LAB	LAB	FIELD	FIELD
	Aluminum (Al)-Dissolved (ug/L)	<1.0	2.9	6.0	<1.0	2.7
	Antimony (Sb)-Dissolved (ug/L)	<0.10	0.15	0.65	<0.10	0.33
	Arsenic (As)-Dissolved (ug/L)	1.49	0.56	1.79	1.53	0.63
	Barium (Ba)-Dissolved (ug/L)	105	89.8	54.0	110	42.6
	Beryllium (Be)-Dissolved (ug/L)	<0.10	<0.10	<0.10	<0.10	<0.10
	Bismuth (Bi)-Dissolved (ug/L)	<0.050	<0.050	<0.050	<0.050	<0.050
	Boron (B)-Dissolved (ug/L)	180	339	299	155	605
	Cadmium (Cd)-Dissolved (ug/L)	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050
	Calcium (Ca)-Dissolved (ug/L)	43500	45100	22100	48500	22900
	Cesium (Cs)-Dissolved (ug/L)	<0.010	0.059	0.089	<0.010	0.056
	Chromium (Cr)-Dissolved (ug/L)	<0.10	0.20	<0.10	<0.10	0.13
	Cobalt (Co)-Dissolved (ug/L)	<0.10	0.70	0.70	<0.10	0.22
	Copper (Cu)-Dissolved (ug/L)	<0.20	0.28	0.70	0.70	<0.20
	Iron (Fe)-Dissolved (ug/L)	16	<10	<10	845	<10

* Please refer to the Reference Information section for an explanation of any qualifiers detected.

ALS ENVIRONMENTAL ANALYTICAL REPORT

	Sample ID	L2536193-6	L2536193-7			
	Description	GW	GW			
	Sampled Date	02-DEC-20	02-DEC-20			
	Sampled Time	12:50	11:25			
	Client ID	JOSH-M-POST	BRU 92-2 POST			
Grouping	**Analyte**					
WATER						
Physical Tests	Conductivity (umhos/cm)	546	421			
	Hardness (as CaCO3) (ug/L)	420	125000			
	pH (pH units)	8.13	8.18			
	Total Suspended Solids (ug/L)	<3000	31500			
	Total Dissolved Solids (ug/L)	313000	217000			
Anions and Nutrients	Alkalinity, Total (as CaCO3) (ug/L)	290000	212000			
	Ammonia, Total (as N) (ug/L)	18	288			
	Bicarbonate (HCO3) (ug/L)	353000	258000			
	Carbonate (CO3) (ug/L)	<600	<600			
	Chloride (Cl) (ug/L)	2940	2760			
	Fluoride (F) (ug/L)	276	499			
	Hydroxide (OH) (ug/L)	<340	<340			
	Nitrate and Nitrite as N (ug/L)	<5.1	<5.1			
	Nitrate (as N) (ug/L)	<5.0	<5.0			
	Nitrite (as N) (ug/L)	<1.0	<1.0			
	Phosphorus (P)-Total (ug/L)	48.3	55.6			
	Sulfate (SO4) (ug/L)	8370	13400			
	Sulphide (as S) (ug/L)	30	<18			
	Sulphide (as H2S) (ug/L)	32	<19			
Organic / Inorganic Carbon	Dissolved Organic Carbon (ug/L)	1870	3650			
Dissolved Metals	Dissolved Mercury Filtration Location	FIELD	FIELD			
	Dissolved Metals Filtration Location	FIELD	FIELD			
	Aluminum (Al)-Dissolved (ug/L)	<1.0	2.5			
	Antimony (Sb)-Dissolved (ug/L)	<0.10	<0.10			
	Arsenic (As)-Dissolved (ug/L)	0.61	0.27			
	Barium (Ba)-Dissolved (ug/L)	0.19	55.6			
	Beryllium (Be)-Dissolved (ug/L)	<0.10	<0.10			
	Bismuth (Bi)-Dissolved (ug/L)	<0.050	<0.050			
	Boron (B)-Dissolved (ug/L)	97	266			
	Cadmium (Cd)-Dissolved (ug/L)	<0.0050	<0.0050			
	Calcium (Ca)-Dissolved (ug/L)	102	27100			
	Cesium (Cs)-Dissolved (ug/L)	<0.010	<0.010			
	Chromium (Cr)-Dissolved (ug/L)	<0.10	<0.10			
	Cobalt (Co)-Dissolved (ug/L)	<0.10	<0.10			
	Copper (Cu)-Dissolved (ug/L)	0.50	<0.20			
	Iron (Fe)-Dissolved (ug/L)	<10	199			

* Please refer to the Reference Information section for an explanation of any qualifiers detected.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample ID	L2536193-1	L2536193-2	L2536193-3	L2536193-4	L2536193-5
Description	GW	GW	GW	GW	GW
Sampled Date	02-DEC-20	02-DEC-20	02-DEC-20	02-DEC-20	02-DEC-20
Sampled Time	16:15	15:40	14:50	16:00	11:03
Client ID	BREMNER-P	BRO 95-6 POST	BRO 95-9 POST	BRO 95-5 POST	BRO 96-1 POST
Grouping **Analyte**					
WATER					
Dissolved Metals Lead (Pb)-Dissolved (ug/L)	<0.050	<0.050	<0.050	<0.050	<0.050
Lithium (Li)-Dissolved (ug/L)	17.3	16.6	33.4	16.4	33.6
Magnesium (Mg)-Dissolved (ug/L)	34100	32800	19000	35000	12800
Manganese (Mn)-Dissolved (ug/L)	15.1	45.4	4.64	9.32	31.3
Mercury (Hg)-Dissolved (ug/L)	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050
Molybdenum (Mo)-Dissolved (ug/L)	1.63	3.92	34.4	1.46	5.34
Nickel (Ni)-Dissolved (ug/L)	<0.50	0.87	1.58	<0.50	<0.50
Phosphorus (P)-Dissolved (ug/L)	<30	<30	<30	<30	<30
Potassium (K)-Dissolved (ug/L)	5360	5660	32100	4710	10800
Rubidium (Rb)-Dissolved (ug/L)	1.95	5.69	33.2	2.55	9.11
Selenium (Se)-Dissolved (ug/L)	<0.050	0.066	0.912	<0.050	0.101
Silicon (Si)-Dissolved (ug/L)	8010	7110	5130	7460	3840
Silver (Ag)-Dissolved (ug/L)	<0.010	<0.010	<0.010	<0.010	<0.010
Sodium (Na)-Dissolved (ug/L)	16400	18600	72700	14700	87100
Strontium (Sr)-Dissolved (ug/L)	309	334	208	318	178
Sulfur (S)-Dissolved (ug/L)	1510	3110	14300	1290	11800
Tellurium (Te)-Dissolved (ug/L)	<0.20	<0.20	<0.20	<0.20	<0.20
Thallium (Tl)-Dissolved (ug/L)	<0.010	<0.010	0.035	<0.010	<0.010
Thorium (Th)-Dissolved (ug/L)	<0.10	<0.10	<0.10	<0.10	<0.10
Tin (Sn)-Dissolved (ug/L)	<0.10	<0.10	<0.10	<0.10	<0.10
Titanium (Ti)-Dissolved (ug/L)	<0.30	<0.30	<0.30	<0.30	<0.30
Tungsten (W)-Dissolved (ug/L)	<0.10	<0.10	2.93	<0.10	0.43
Uranium (U)-Dissolved (ug/L)	0.068	0.208	1.21	0.058	0.992
Vanadium (V)-Dissolved (ug/L)	<0.50	<0.50	1.03	<0.50	<0.50
Zinc (Zn)-Dissolved (ug/L)	1.1	19.7	<1.0	2.3	3.5
Zirconium (Zr)-Dissolved (ug/L)	<0.20	<0.20	<0.20	<0.20	<0.20

* Please refer to the Reference Information section for an explanation of any qualifiers detected.

ALS ENVIRONMENTAL ANALYTICAL REPORT

	Sample ID	L2536193-6	L2536193-7			
	Description	GW	GW			
	Sampled Date	02-DEC-20	02-DEC-20			
	Sampled Time	12:50	11:25			
	Client ID	JOSH-M-POST	BRU 92-2 POST			
Grouping	**Analyte**					
WATER						
Dissolved Metals	Lead (Pb)-Dissolved (ug/L)	<0.050	<0.050			
	Lithium (Li)-Dissolved (ug/L)	<1.0	12.1			
	Magnesium (Mg)-Dissolved (ug/L)	40.5	13900			
	Manganese (Mn)-Dissolved (ug/L)	<0.10	2.97			
	Mercury (Hg)-Dissolved (ug/L)	<0.0050	<0.0050			
	Molybdenum (Mo)-Dissolved (ug/L)	0.939	7.60			
	Nickel (Ni)-Dissolved (ug/L)	<0.50	<0.50			
	Phosphorus (P)-Dissolved (ug/L)	65	<30			
	Potassium (K)-Dissolved (ug/L)	1220	3980			
	Rubidium (Rb)-Dissolved (ug/L)	0.60	2.14			
	Selenium (Se)-Dissolved (ug/L)	<0.050	0.230			
	Silicon (Si)-Dissolved (ug/L)	6490	4740			
	Silver (Ag)-Dissolved (ug/L)	0.018	<0.010			
	Sodium (Na)-Dissolved (ug/L)	134000	43300			
	Strontium (Sr)-Dissolved (ug/L)	0.39	148			
	Sulfur (S)-Dissolved (ug/L)	3210	4800			
	Tellurium (Te)-Dissolved (ug/L)	<0.20	<0.20			
	Thallium (Tl)-Dissolved (ug/L)	<0.010	<0.010			
	Thorium (Th)-Dissolved (ug/L)	<0.10	<0.10			
	Tin (Sn)-Dissolved (ug/L)	<0.10	<0.10			
	Titanium (Ti)-Dissolved (ug/L)	<0.30	<0.30			
	Tungsten (W)-Dissolved (ug/L)	<0.10	<0.10			
	Uranium (U)-Dissolved (ug/L)	0.105	0.135			
	Vanadium (V)-Dissolved (ug/L)	<0.50	<0.50			
	Zinc (Zn)-Dissolved (ug/L)	1.4	1.1			
	Zirconium (Zr)-Dissolved (ug/L)	<0.20	<0.20			

* Please refer to the Reference Information section for an explanation of any qualifiers detected.

Reference Information

QC Samples with Qualifiers & Comments:

QC Type Description	Parameter	Qualifier	Applies to Sample Number(s)
Method Blank	Cadmium (Cd)-Dissolved	B	L2536193-2, -3
Method Blank	Silicon (Si)-Dissolved	B	L2536193-1, -4, -5
Matrix Spike	Barium (Ba)-Dissolved	MS-B	L2536193-1, -4, -5
Matrix Spike	Barium (Ba)-Dissolved	MS-B	L2536193-2, -3
Matrix Spike	Boron (B)-Dissolved	MS-B	L2536193-1, -4, -5
Matrix Spike	Boron (B)-Dissolved	MS-B	L2536193-2, -3
Matrix Spike	Calcium (Ca)-Dissolved	MS-B	L2536193-1, -4, -5
Matrix Spike	Calcium (Ca)-Dissolved	MS-B	L2536193-2, -3
Matrix Spike	Magnesium (Mg)-Dissolved	MS-B	L2536193-1, -4, -5
Matrix Spike	Magnesium (Mg)-Dissolved	MS-B	L2536193-2, -3
Matrix Spike	Manganese (Mn)-Dissolved	MS-B	L2536193-2, -3
Matrix Spike	Potassium (K)-Dissolved	MS-B	L2536193-1, -4, -5
Matrix Spike	Potassium (K)-Dissolved	MS-B	L2536193-2, -3
Matrix Spike	Sodium (Na)-Dissolved	MS-B	L2536193-1, -4, -5
Matrix Spike	Sodium (Na)-Dissolved	MS-B	L2536193-6, -7
Matrix Spike	Sodium (Na)-Dissolved	MS-B	L2536193-2, -3
Matrix Spike	Strontium (Sr)-Dissolved	MS-B	L2536193-1, -4, -5
Matrix Spike	Strontium (Sr)-Dissolved	MS-B	L2536193-2, -3
Matrix Spike	Sulfur (S)-Dissolved	MS-B	L2536193-1, -4, -5
Matrix Spike	Ammonia, Total (as N)	MS-B	L2536193-1, -2, -4, -5, -7
Matrix Spike	Phosphorus (P)-Total	MS-B	L2536193-1, -2, -3, -4, -5, -6, -7
Matrix Spike	Sulphide (as S)	MS-B	L2536193-5, -6, -7
Matrix Spike	Sulphide (as S)	MS-B	L2536193-1, -2, -3, -4

Qualifiers for Individual Parameters Listed:

Qualifier	Description
B	Method Blank exceeds ALS DQO. Associated sample results which are < Limit of Reporting or > 5 times blank level are considered reliable.
DLM	Detection Limit Adjusted due to sample matrix effects (e.g. chemical interference, colour, turbidity).
HTP	Sample preparation or preservation hold time was exceeded.
MS-B	Matrix Spike recovery could not be accurately calculated due to high analyte background in sample.

Test Method References:

ALS Test Code	Matrix	Test Description	Method Reference**
ALK-CO3CO3-CALC-WP	Water	Alkalinity, Carbonate	CALCULATION

The Alkalinity of water is a measure of its acid neutralizing capacity.Alkalinity is imparted by bicarbonate, carbonate and hydroxide components of water. The fraction of alkalinity contributed by carbonate is calculated and reported as mg CO3 2-/L.

ALK-HCO3HCO3-CALC-WP	Water	Alkalinity, Bicarbonate	CALCULATION

The Alkalinity of water is a measure of its acid neutralizing capacity.Alkalinity is imparted by bicarbonate, carbonate and hydroxide components of water. The fraction of alkalinity contributed by bicarbonate is calculated and reported as mg HCO3-/L

ALK-OHOH-CALC-WP	Water	Alkalinity, Hydroxide	CALCULATION

The Alkalinity of water is a measure of its acid neutralizing capacity.Alkalinity is imparted by bicarbonate, carbonate and hydroxide components of water. The fraction of alkalinity contributed by hydroxide is calculated and reported as mg OH-/L.

ALK-TITR-WP	Water	Alkalinity, Total (as CaCO3)	APHA 2320B

The Alkalinity of water is a measure of its acid neutralizing capacity. Alkalinity is imparted by bicarbonate, carbonate and hydroxide components of water. Total alkalinity is determined by titration with a strong standard mineral acid to the successive HCO3- and H2CO3 endpoints indicated electrometrically.

C-DOC-HTC-WP	Water	Dissolved Organic Carbon by Combustion	APHA 5310 B-WP

Filtered (0.45 um) sample is acidified and purged to remove inorganic carbon, then injected into a heated reaction chamber where organic carbon is oxidized to CO2 which is then transported in the carrier gas stream and measured via a non-dispersive infrared analyzer.

CL-L-IC-N-WP	Water	Chloride in Water by IC (Low Level)	EPA 300.1 (mod)

Reference Information

Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.

EC-SCREEN-WP Water Conductivity Screen (Internal Use Only) APHA 2510

Qualitative analysis of conductivity where required during preparation of other test eg. IC, TDS, TSS, etc

EC-WP Water Conductivity APHA 2510B

Conductivity of an aqueous solution refers to its ability to carry an electric current. Conductance of a solution is measured between two spatially fixed and chemically inert electrodes.

F-IC-N-WP Water Fluoride in Water by IC EPA 300.1 (mod)

Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.

HARDNESS-CALC-WP Water Hardness Calculated APHA 2340B

Hardness (also known as Total Hardness) is calculated from the sum of Calcium and Magnesium concentrations, expressed in CaCO3 equivalents. Dissolved Calcium and Magnesium concentrations are preferentially used for the hardness calculation.

HG-D-CVAA-WP Water Mercury Dissolved APHA 3030B/EPA 1631E (mod)

Water samples are filtered (0.45 um), preserved with hydrochloric acid, then undergo a cold-oxidation using bromine monochloride prior to reduction with stannous chloride, and analyzed by CVAAS.

MET-D-CCMS-WP Water Dissolved Metals in Water by CRC ICPMS APHA 3030B/6020B (mod)

Water samples are filtered (0.45 um), preserved with nitric acid, and analyzed by CRC ICPMS.

Method Limitation (re: Sulfur): Sulfide and volatile sulfur species may not be recovered by this method.

NH3-COL-WP Water Ammonia by colour APHA 4500 NH3 F

Ammonia in water samples forms indophenol when reacted with hypochlorite and phenol. The intensity is amplified by the addition of sodium nitroprusside and measured colourmetrically.

NO2+NO3-CALC-L-WP Water Nitrate+Nitrite CALCULATION

NO2-L-IC-N-WP Water Nitrite in Water by IC (Low Level) EPA 300.1 (mod)

Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.

NO3-L-IC-N-WP Water Nitrate in Water by IC (Low Level) EPA 300.1 (mod)

Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.

P-T-COL-WP Water Phosphorus, Total APHA 4500 P PHOSPHORUS-L

This analysis is carried out using procedures adapted from APHA METHOD 4500-P "Phosphorus". Total Phosphorus is determined colourmetrically after persulphate digestion of the sample.

PH-WP Water pH APHA 4500H

The pH of a sample is the determination of the activity of the hydrogen ions by potentiometric measurement using a standard hydrogen electrode and a reference electrode.

S2-T>H2S-CALC-WT Water Total Sulphide Calculated as H2S Calculation

This calculation converts Total Sulphide as (S2-) and reports it as Total Sulphide as (H2S). Total Sulphide as (S2-) is determined using procedures adapted from APHA 4500-S2 "Sulphide".

SO4-IC-N-WP Water Sulfate in Water by IC EPA 300.1 (mod)

Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.

SOLIDS-TOTSUS-WP Water Total Suspended Solids APHA 2540 D (modified)

Total suspended solids in aquesous matrices is determined gravimetrically after drying the residue at 103 – 105°C.

SULPHIDE-WT Water Sulphide (as S) APHA 4500S2D

This analysis is carried out using procedures adapted from APHA Method 4500-S2-D "Methylene Blue Method". Sulphide is determined colourmetrically.

TDS-WP Water Total Dissolved Solids (TDS) APHA 2540 SOLIDS C,E

Reference Information

A well-mixed sample is filtered through a glass fiber filter paper. The filtrate is then evaportaed to dryness in a pre-weighed vial and dried at 180 ± 2C. The increase in vial weight represents the total dissolved solids.

** ALS test methods may incorporate modifications from specified reference methods to improve performance.

The last two letters of the above test code(s) indicate the laboratory that performed analytical analysis for that test. Refer to the list below:

Laboratory Definition Code	Laboratory Location
WT	ALS ENVIRONMENTAL - WATERLOO, ONTARIO, CANADA
WP	ALS ENVIRONMENTAL - WINNIPEG, MANITOBA, CANADA

Chain of Custody Numbers:

GLOSSARY OF REPORT TERMS

Surrogate - A compound that is similar in behaviour to target analyte(s), but that does not occur naturally in environmental samples. For applicable tests, surrogates are added to samples prior to analysis as a check on recovery.
mg/kg - milligrams per kilogram based on dry weight of sample.
mg/kg wwt - milligrams per kilogram based on wet weight of sample.
mg/kg lwt - milligrams per kilogram based on lipid-adjusted weight of sample.
mg/L - milligrams per litre.
< - Less than.
D.L. - The reported Detection Limit, also known as the Limit of Reporting (LOR).
N/A - Result not available. Refer to qualifier code and definition for explanation.

Test results reported relate only to the samples as received by the laboratory.
UNLESS OTHERWISE STATED, ALL SAMPLES WERE RECEIVED IN ACCEPTABLE CONDITION.
Analytical results in unsigned test reports with the DRAFT watermark are subject to change, pending final QC review.

ALS Environmental

www.alsglobal.com

Chain of Custody (COC) / Analytical Request Form

Canada Toll Free: 1 800 668 9878

[redacted]

COC Number: 17 - 879989

Page 1 of 1

Report To	Company: AECOM Contact: Reuben Dondurand Phone: 236-350-2711	Report Format / Distribution Select Report Format: PDF ✓ EXCEL ✓ EDD (DIGITAL) Quality Control (QC) Report with Report: ✓ YES NO Select Distribution: ✓ EMAIL MAIL FAX	Select Service Level Below - Contact your AM to confirm all E&P TATs (surcharges may apply) Regular (R) ✓ Standard TAT if received by 3 PM - business days - no surcharges apply 4 day [P4-20%] 1 Business day [E - 100%] 3 day [P3-25%] Same Day, Weekend or Statutory holiday [E2 - 200%] 2 day [P2-50%] (Laboratory opening fees may apply)
Street:	3292 Production Way Suite 310	Email 1 or Fax: Ryan.Mills@aecom.com	Date and Time Required for all E&P TATs: dd-mmm-yy hh:mm
City/Province:	Burnaby BC	Email 2: Reuben.Dondurand@aecom.com	For tests that can not be performed according to the service level selected, you will be contacted.
Postal Code:	V5A 4R1	Email 3: Stephen.Dickin@aecom.com	
Invoice To	Same as Report To ✓ YES NO	Invoice Distribution	Analysis Request
	Copy of Invoice with Report ✓ YES NO	Select Invoice Distribution: ✓ EMAIL MAIL NO	
Company:		Email 1 or Fax: Same	
Contact:		Email 2:	

Project Information	Oil and Gas Required Fields (client use)
ALS Account # / Quote #:	AFE/Cost Center: PO#
Job #: 60640758	Major/Minor Code: Routing Code
PO / AFE:	Requisitioner:
LSD:	Location:
ALS Lab Work Order # (lab use only):	ALS Contact: Sampler: RGD

ALS Sample # (lab use only)	Sample Identification and/or Coordinates (This description will appear on the report)	Date (dd-mmm-yy)	Time (hh:mm)	Sample Type	NUMBER OF CONTAINERS	Mercury (0.5)	Metals (0.5)	Nitrate+Nitrite (0.5)	Nitrite (0.5)	Routine (TDS)	Sulfide (TDS)	SAMPLES ON HOLD	SUSPECTED HAZARD (see Special Instructions)
	Bremner-P	2 Dec 20	9:15PM	G.W	6	✓	✓	✓	✓	✓	✓		
	Bra 95-6 x Post	2 Dec 20	3:40PM	G.W	6	✓	✓	✓	✓	✓	✓		
	Bra 95-9 post	2 Dec 20	2:50PM	G.W	3				✓	✓	✓		
	Bra 95-5 post	2 Dec 20	4:00PM	G.W	6	✓	✓	✓	✓	✓	✓		
	Bra 96-1 Post	2 Dec 20	11:03AM	G.W	6	✓	✓	✓	✓	✓	✓		
	~~Josh-M-post~~ Josh-M-post	2 Dec 20	12:30PM	G.W	6	✓	✓	✓	✓	✓	✓		
	Bra 96-2 post	2 Dec 20	11:25AM	G.W	6	✓	✓	✓	✓	✓	✓		

Drinking Water (DW) Samples (client use)	Special Instructions / Specify Criteria to add on report by clicking on the drop-down list below (electronic COC only)	SAMPLE CONDITION AS RECEIVED (lab use only)
Are samples taken from a Regulated DW System? YES ✓ NO		Frozen NO ✓ / Observations YES NO ✓
Are samples for human consumption/use? YES ✓ NO		Ice Packs Ice Cubes Custody seal intact YES NO ✓ Cooling Initiated
		INITIAL COOLER TEMPERATURES °C / FINAL SHIPPING TEMPERATURES °C

SHIPMENT RELEASE (client use)	INITIAL SHIPMENT RECEPTION (lab use only)	FINAL SHIPMENT RECEPTION (lab use only)
Released by: [redacted] Date: Dec 17 2020 Time: 5:45pm	Received by: [redacted] Date: DEC 03 2020 Time: 8:30	Received by: [redacted] Date: DEC 03 2020 Time: [redacted]

REFER TO BACK PAGE FOR ALS LOCATIONS AND SAMPLING INFORMATION

WHITE - LABORATORY COPY YELLOW - CLIENT COPY

1 If any water samples are regulated for human consumption/use, they must be filtered and preserved at the ALS location listed on the attached ALS COC form.

AECOM CANADA LTD.
ATTN: Stephen Dickin
330 - 3292 Production Way
Burnaby BC V5A 4R4

Date Received: 04-FEB-21
Report Date: 18-FEB-21 16:12 (MT)
Version: FINAL

Client Phone: 604-444-6400

Certificate of Analysis

Lab Work Order #: L2554881

Project P.O. #: 60610258
Job Reference:
C of C Numbers:
Legal Site Desc:

Comments: ADDITIONAL 05-FEB-21 06:07

[redacted]
Hua Wo
Chemistry Laboratory Manager

[This report shall not be reproduced except in full without the written authority of the Laboratory.]

ALS ENVIRONMENTAL ANALYTICAL REPORT

	Sample ID	L2554881-1				
	Description	WATER				
	Sampled Date	04-FEB-21				
	Sampled Time	12:00				
	Client ID	BRN 95-9				
Grouping	**Analyte**					
WATER						
Physical Tests	Conductivity (umhos/cm)	515				
	Hardness (as CaCO3) (ug/L)	204000				
	pH (pH units)	8.11				
	Total Suspended Solids (ug/L)	186000				
	TDS (Calculated) (ug/L)	302000				
	Turbidity (NTU)	171				
Anions and Nutrients	Alkalinity, Total (as CaCO3) (ug/L)	285000				
	Ammonia, Total (as N) (ug/L)	318				
	Bicarbonate (HCO3) (ug/L)	348000				
	Carbonate (CO3) (ug/L)	<600				
	Chloride (Cl) (ug/L)	7030				
	Fluoride (F) (ug/L)	397				
	Hydroxide (OH) (ug/L)	<340				
	Nitrate and Nitrite as N (ug/L)	8.3				
	Nitrate (as N) (ug/L)	6.9				
	Nitrite (as N) (ug/L)	1.3				
	Sulfate (SO4) (ug/L)	10900				
	Sulphide (as S) (ug/L)	<18				
	Sulphide (as H2S) (ug/L)	<19				
Organic / Inorganic Carbon	Dissolved Organic Carbon (ug/L)	7030				
Dissolved Metals	Dissolved Mercury Filtration Location	LAB				
	Dissolved Metals Filtration Location	LAB				
	Aluminum (Al)-Dissolved (ug/L)	3.0				
	Antimony (Sb)-Dissolved (ug/L)	0.48				
	Arsenic (As)-Dissolved (ug/L)	1.28				
	Barium (Ba)-Dissolved (ug/L)	49.0				
	Beryllium (Be)-Dissolved (ug/L)	<0.10				
	Bismuth (Bi)-Dissolved (ug/L)	<0.050				
	Boron (B)-Dissolved (ug/L)	346				
	Cadmium (Cd)-Dissolved (ug/L)	0.0847				
	Calcium (Ca)-Dissolved (ug/L)	39700				
	Cesium (Cs)-Dissolved (ug/L)	0.102				
	Chromium (Cr)-Dissolved (ug/L)	<0.10				
	Cobalt (Co)-Dissolved (ug/L)	0.34				
	Copper (Cu)-Dissolved (ug/L)	0.52				
	Iron (Fe)-Dissolved (ug/L)	<10				

* Please refer to the Reference Information section for an explanation of any qualifiers detected.

ALS ENVIRONMENTAL ANALYTICAL REPORT

	Sample ID	L2554881-1
	Description	WATER
	Sampled Date	04-FEB-21
	Sampled Time	12:00
	Client ID	BRN 95-9
Grouping	**Analyte**	
WATER		
Dissolved Metals	Lead (Pb)-Dissolved (ug/L)	0.168
	Lithium (Li)-Dissolved (ug/L)	26.5
	Magnesium (Mg)-Dissolved (ug/L)	25500
	Manganese (Mn)-Dissolved (ug/L)	5.38
	Mercury (Hg)-Dissolved (ug/L)	<0.0050
	Molybdenum (Mo)-Dissolved (ug/L)	6.93
	Nickel (Ni)-Dissolved (ug/L)	1.14
	Phosphorus (P)-Dissolved (ug/L)	<30
	Potassium (K)-Dissolved (ug/L)	16400
	Rubidium (Rb)-Dissolved (ug/L)	24.9
	Selenium (Se)-Dissolved (ug/L)	0.096
	Silicon (Si)-Dissolved (ug/L)	5500
	Silver (Ag)-Dissolved (ug/L)	<0.010
	Sodium (Na)-Dissolved (ug/L)	31300
	Strontium (Sr)-Dissolved (ug/L)	336
	Sulfur (S)-Dissolved (ug/L)	4100
	Tellurium (Te)-Dissolved (ug/L)	<0.20
	Thallium (Tl)-Dissolved (ug/L)	<0.010
	Thorium (Th)-Dissolved (ug/L)	<0.10
	Tin (Sn)-Dissolved (ug/L)	0.21
	Titanium (Ti)-Dissolved (ug/L)	<0.30
	Tungsten (W)-Dissolved (ug/L)	0.53
	Uranium (U)-Dissolved (ug/L)	0.542
	Vanadium (V)-Dissolved (ug/L)	<0.50
	Zinc (Zn)-Dissolved (ug/L)	4.4
	Zirconium (Zr)-Dissolved (ug/L)	<0.20
Aggregate Organics	Biochemical Oxygen Demand (ug/L)	9300
	Chemical Oxygen Demand (ug/L)	40000

* Please refer to the Reference Information section for an explanation of any qualifiers detected.

Reference Information

QC Samples with Qualifiers & Comments:

QC Type Description	Parameter	Qualifier	Applies to Sample Number(s)
Matrix Spike	Barium (Ba)-Dissolved	MS-B	L2554881-1
Matrix Spike	Boron (B)-Dissolved	MS-B	L2554881-1
Matrix Spike	Calcium (Ca)-Dissolved	MS-B	L2554881-1
Matrix Spike	Magnesium (Mg)-Dissolved	MS-B	L2554881-1
Matrix Spike	Manganese (Mn)-Dissolved	MS-B	L2554881-1
Matrix Spike	Potassium (K)-Dissolved	MS-B	L2554881-1
Matrix Spike	Sodium (Na)-Dissolved	MS-B	L2554881-1
Matrix Spike	Strontium (Sr)-Dissolved	MS-B	L2554881-1
Matrix Spike	Sulfur (S)-Dissolved	MS-B	L2554881-1
Matrix Spike	Sulphide (as S)	MS-B	L2554881-1

Qualifiers for Individual Parameters Listed:

Qualifier	Description
MS-B	Matrix Spike recovery could not be accurately calculated due to high analyte background in sample.

Test Method References:

ALS Test Code	Matrix	Test Description	Method Reference**
ALK-CO3CO3-CALC-WP	Water	Alkalinity, Carbonate	CALCULATION

The Alkalinity of water is a measure of its acid neutralizing capacity.Alkalinity is imparted by bicarbonate, carbonate and hydroxide components of water. The fraction of alkalinity contributed by carbonate is calculated and reported as mg CO3 2-/L.

ALK-HCO3HCO3-CALC-WP	Water	Alkalinity, Bicarbonate	CALCULATION

The Alkalinity of water is a measure of its acid neutralizing capacity.Alkalinity is imparted by bicarbonate, carbonate and hydroxide components of water. The fraction of alkalinity contributed by bicarbonate is calculated and reported as mg HCO3-/L

ALK-OHOH-CALC-WP	Water	Alkalinity, Hydroxide	CALCULATION

The Alkalinity of water is a measure of its acid neutralizing capacity.Alkalinity is imparted by bicarbonate, carbonate and hydroxide components of water. The fraction of alkalinity contributed by hydroxide is calculated and reported as mg OH-/L.

ALK-TITR-WP	Water	Alkalinity, Total (as CaCO3)	APHA 2320B

The Alkalinity of water is a measure of its acid neutralizing capacity. Alkalinity is imparted by bicarbonate, carbonate and hydroxide components of water. Total alkalinity is determined by titration with a strong standard mineral acid to the successive HCO3- and H2CO3 endpoints indicated electrometrically.

BOD-WP	Water	Biochemical Oxygen Demand (BOD)	APHA 5210 B

Samples are diluted and seeded and then incubated in airtight bottles at 20°C for 5 days. Dissolved oxygen is measured initially and after incubation, and results are computed from the difference between initial and final DO.

C-DOC-HTC-WP	Water	Dissolved Organic Carbon by Combustion	APHA 5310 B-WP

Filtered (0.45 um) sample is acidified and purged to remove inorganic carbon, then injected into a heated reaction chamber where organic carbon is oxidized to CO2 which is then transported in the carrier gas stream and measured via a non-dispersive infrared analyzer.

CL-L-IC-N-WP	Water	Chloride in Water by IC (Low Level)	EPA 300.1 (mod)

Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.

COD-WP	Water	Chemical Oxygen Demand	APHA 5220 D

This analysis is carried out using procedures adapted from APHA Method 5220 "Chemical Oxygen Demand (COD)". Chemical oxygen demand is determined using the closed reflux colorimetric method.

EC-SCREEN-WP	Water	Conductivity Screen (Internal Use Only)	APHA 2510

Qualitative analysis of conductivity where required during preparation of other test eg. IC, TDS, TSS, etc

EC-WP	Water	Conductivity	APHA 2510B

Conductivity of an aqueous solution refers to its ability to carry an electric current. Conductance of a solution is measured between two spatially fixed and chemically inert electrodes.

ETL-SOLIDS-CALC-WP	Water	TDS calculated	CALCULATION
F-IC-N-WP	Water	Fluoride in Water by IC	EPA 300.1 (mod)

Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.

Reference Information

HARDNESS-CALC-WP Water Hardness Calculated APHA 2340B

Hardness (also known as Total Hardness) is calculated from the sum of Calcium and Magnesium concentrations, expressed in CaCO3 equivalents. Dissolved Calcium and Magnesium concentrations are preferentially used for the hardness calculation.

HG-D-CVAA-WP Water Mercury Dissolved APHA 3030B/EPA 1631E (mod)

Water samples are filtered (0.45 um), preserved with hydrochloric acid, then undergo a cold-oxidation using bromine monochloride prior to reduction with stannous chloride, and analyzed by CVAAS.

IONBALANCE-CALC-WP Water Ion Balance Calculation APHA 1030E

Cation Sum, Anion Sum, and Ion Balance (as % difference) are calculated based on guidance from APHA Standard Methods (1030E Checking Correctness of Analysis). Because all aqueous solutions are electrically neutral, the calculated ion balance (% difference of cations minus anions) should be near-zero.

Cation and Anion Sums are the total meq/L concentration of major cations and anions. Dissolved species are used where available. Minor ions are included where data is present. Ion Balance (as % difference) cannot be calculated accurately for waters with very low electrical conductivity (EC), and is reported as "Low EC" where EC < 100 uS/cm (umhos/cm). Ion Balance is calculated as:

Ion Balance (%) = [Cation Sum-Anion Sum] / [Cation Sum+Anion Sum]

MET-D-CCMS-WP Water Dissolved Metals in Water by CRC ICPMS APHA 3030B/6020B (mod)

Water samples are filtered (0.45 um), preserved with nitric acid, and analyzed by CRC ICPMS.

Method Limitation (re: Sulfur): Sulfide and volatile sulfur species may not be recovered by this method.

NH3-COL-WP Water Ammonia by colour APHA 4500 NH3 F

Ammonia in water samples forms indophenol when reacted with hypochlorite and phenol. The intensity is amplified by the addition of sodium nitroprusside and measured colourmetrically.

NO2+NO3-CALC-L-WP Water Nitrate+Nitrite CALCULATION

NO2-L-IC-N-WP Water Nitrite in Water by IC (Low Level) EPA 300.1 (mod)

Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.

NO3-L-IC-N-WP Water Nitrate in Water by IC (Low Level) EPA 300.1 (mod)

Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.

PH-WP Water pH APHA 4500H

The pH of a sample is the determination of the activity of the hydrogen ions by potentiometric measurement using a standard hydrogen electrode and a reference electrode.

S2-T>H2S-CALC-WT Water Total Sulphide Calculated as H2S Calculation

This calculation converts Total Sulphide as (S2-) and reports it as Total Sulphide as (H2S). Total Sulphide as (S2-) is determined using procedures adapted from APHA 4500-S2 "Sulphide".

SO4-IC-N-WP Water Sulfate in Water by IC EPA 300.1 (mod)

Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.

SOLIDS-TOTSUS-WP Water Total Suspended Solids APHA 2540 D (modified)

Total suspended solids in aquesous matrices is determined gravimetrically after drying the residue at 103 – 105°C.

SULPHIDE-WT Water Sulphide (as S) APHA 4500S2D

This analysis is carried out using procedures adapted from APHA Method 4500-S2-D "Methylene Blue Method". Sulphide is determined colourmetrically.

TURBIDITY-WP Water Turbidity APHA 2130B (modified)

Turbidity in aqueous matrices is determined by the nephelometric method.

** ALS test methods may incorporate modifications from specified reference methods to improve performance.

The last two letters of the above test code(s) indicate the laboratory that performed analytical analysis for that test. Refer to the list below:

Reference Information

Laboratory Definition Code	Laboratory Location
WT	ALS ENVIRONMENTAL - WATERLOO, ONTARIO, CANADA
WP	ALS ENVIRONMENTAL - WINNIPEG, MANITOBA, CANADA

Chain of Custody Numbers:

GLOSSARY OF REPORT TERMS

Surrogate - A compound that is similar in behaviour to target analyte(s), but that does not occur naturally in environmental samples. For applicable tests, surrogates are added to samples prior to analysis as a check on recovery.
mg/kg - milligrams per kilogram based on dry weight of sample.
mg/kg wwt - milligrams per kilogram based on wet weight of sample.
mg/kg lwt - milligrams per kilogram based on lipid-adjusted weight of sample.
mg/L - milligrams per litre.
< - Less than.
D.L. - The reported Detection Limit, also known as the Limit of Reporting (LOR).
N/A - Result not available. Refer to qualifier code and definition for explanation.

Test results reported relate only to the samples as received by the laboratory.
UNLESS OTHERWISE STATED, ALL SAMPLES WERE RECEIVED IN ACCEPTABLE CONDITION.
Analytical results in unsigned test reports with the DRAFT watermark are subject to change, pending final QC review.

ALS Environmental

www.alsglobal.com

Chain of Custody (COC) / Analytical Request Form

Canada Toll Free: 1 800 668 9878

[redacted]

COC Number: 17 - 873714

Page: of

Report To	Report Format / Distribution	Select Service Level Below - Contact your AM to confirm all E&P TATs (surcharges may apply)
Company: AECOM	Select Report Format: PDF EXCEL EDD (DIGITAL)	Regular [R]
Contact: Stephen Dickin	Quality Control (QC) Report with Report: YES NO	Priority (Business Days): 4 day [P4-20%]; 3 day [P3-25%]; 2 day [P2-50%]; 1 Business day [E - 100%]
Phone: 604 414 8400	Compare Results to Criteria on Report - provide details below if box checked	Emergency: Same Day, Weekend or Statutory Holiday [E2 - 200%] (Laboratory opening fees may apply)
Company address below will appear on the final report	Select Distribution: EMAIL MAIL FAX	Date and Time Required for all E&P TATs: dd-mmm-yy hh:mm
Street: 330 - 3292 Production Way	Email 1 or Fax: Craig.Riddell@aecom.com	For tests that can not be performed according to the service level selected, you will be contacted.
City/Province: BC, Burnaby	Email 2: Stephen.Dickin@aecom.com	Analysis Request
Postal Code: V5A 4K4	Email 3: Alena.McCarville@aecom.com	
Invoice To: Same as Report To YES NO	Invoice Distribution: Select invoice Distribution: EMAIL MAIL FAX	Indicate Filtered (F), Preserved (P) or Filtered and Preserved (F/P) below
Copy of Invoice with Report YES NO	Email 1 or Fax: Stephen.Dickin@aecom.com	
Company:	Email 2:	
Contact:		

Project Information	Oil and Gas Required Fields (client use)
ALS Account # / Quote #: GAR200	AFE/Cost Center: PO#
Job #:	Major/Minor Code: Routing Code:
PO / AFE: 60616378	Requisitioner:
LSD:	Location:
ALS Lab Work Order # (lab use only):	ALS Contact: Sampler:

ALS Sample # (lab use only)	Sample Identification and/or Coordinates (This description will appear on the report)	Date (dd-mmm-yy)	Time (hh:mm)	Sample Type	NUMBER OF CONTAINERS	Dissolved Metals	Total Metals	Routine Sediment	SAMPLES ON HOLD
	BRN 96-9	04/02/21	12:00	Water	1	F	F	F	

Drinking Water (DW) Samples (client use)	Special Instructions / Security Criteria to be used on report, by checking on the drop-down list below (electronic COC only)
Are samples taken from a Regulated DW System? YES NO	No Field Filtering Occured, please lab Filter the Dissolved Samples, Not Preserved in Field
Are samples for human consumption/use? YES NO	

SAMPLE CONDITION AS RECEIVED (lab use only)

Frozen	SIF Observations	Yes	No
Ice Packs / Ice Cubes / Custody seal intact		Yes	No
Cooling Initiated			

INITIAL COOLER TEMPERATURES °C	FINAL COOLER TEMPERATURES °C
23	

SHIPMENT RELEASE (client use)			INITIAL SHIPMENT RECEPTION (lab use only)			FINAL SHIPMENT RECEPTION (lab use only)		
Released by: [redacted]	Date: 04/02/21	Time: 15:00	Received by: [redacted]	Date: 4 FEB 21	Time: 1510	Received by: [redacted]	Date: Feb 4/21	Time: 320

REFER TO BACK PAGE FOR ALS LOCATIONS AND SAMPLING INFORMATION

WHITE - LABORATORY COPY YELLOW - CLIENT COPY

1 If any water samples are regulated for human consumption but not listed on the Provincial Regulated Drinking Water (DW) System, please indicate by selecting "No" to Regulated DW System.

AECOM CANADA LTD.
ATTN: RYAN MILLS / Reuben Dandurand
SPERLING PLAZA
6400 ROBERTS STREET, SUITE 490
BURNABY BC V5G 4C9

Date Received: 17-NOV-20
Report Date: 24-NOV-20 14:30 (MT)
Version: FINAL

Client Phone: 604-299-4144

Certificate of Analysis

Lab Work Order #: L2530033

Project P.O. #: 60640258
Job Reference: 60640258
C of C Numbers:
Legal Site Desc:

[redacted]
Hua Wo
Chemistry Laboratory Manager

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ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2530033-1 BRU 95-5							
Sampled By: SD on 15-NOV-20 @ 16:30							
Matrix: GW							
Alkalinity species as HCO3, CO3, OH							
Alkalinity, Bicarbonate							
Bicarbonate (HCO3)	358		1.2	mg/L		20-NOV-20	
Alkalinity, Carbonate							
Carbonate (CO3)	4.92		0.60	mg/L		20-NOV-20	
Alkalinity, Hydroxide							
Hydroxide (OH)	<0.34		0.34	mg/L		20-NOV-20	
Alkalinity, Total (as CaCO3)							
Alkalinity, Total (as CaCO3)	302		1.0	mg/L		19-NOV-20	R5292024
Nitrate + Nitrite							
Nitrate in Water by IC							
Nitrate (as N)	<0.020		0.020	mg/L		17-NOV-20	R5291238
Nitrate+Nitrite							
Nitrate and Nitrite as N	<0.070		0.070	mg/L		20-NOV-20	
Nitrite in Water by IC							
Nitrite (as N)	<0.010		0.010	mg/L		17-NOV-20	R5291238
Miscellaneous Parameters							
Ammonia, Total (as N)	0.410		0.010	mg/L		17-NOV-20	R5287543
Chloride (Cl)	1.78		0.50	mg/L		17-NOV-20	R5291238
Conductivity	543		1.0	umhos/cm		19-NOV-20	R5292024
Dissolved Organic Carbon	1.74		0.50	mg/L		19-NOV-20	R5291042
Fluoride (F)	0.325		0.020	mg/L		17-NOV-20	R5291238
Hardness (as CaCO3)	268		0.20	mg/L		19-NOV-20	
Phosphorus (P)-Total	0.0156		0.0030	mg/L		18-NOV-20	R5287487
Sulfate (SO4)	4.60		0.30	mg/L		17-NOV-20	R5291238
Sulphide (as S)	<0.018		0.018	mg/L		19-NOV-20	R5288498
Total Dissolved Solids	277		20	mg/L		17-NOV-20	R5288181
Sulphide (as H2S)	<0.019		0.019	mg/L		19-NOV-20	
Total Suspended Solids	4.2		3.0	mg/L		18-NOV-20	R5288444
pH	8.33		0.10	pH units		19-NOV-20	R5292024
Dissolved Metals in Water by CRC ICPMS							
Dissolved Metals Filtration Location	FIELD					18-NOV-20	R5287724
Aluminum (Al)-Dissolved	<0.0010		0.0010	mg/L	18-NOV-20	18-NOV-20	R5288184
Antimony (Sb)-Dissolved	<0.00010		0.00010	mg/L	18-NOV-20	18-NOV-20	R5288184
Arsenic (As)-Dissolved	0.00155		0.00010	mg/L	18-NOV-20	18-NOV-20	R5288184
Barium (Ba)-Dissolved	0.110		0.00010	mg/L	18-NOV-20	18-NOV-20	R5288184
Beryllium (Be)-Dissolved	<0.00010		0.00010	mg/L	18-NOV-20	18-NOV-20	R5288184
Bismuth (Bi)-Dissolved	<0.000050		0.000050	mg/L	18-NOV-20	18-NOV-20	R5288184
Boron (B)-Dissolved	0.156		0.010	mg/L	18-NOV-20	18-NOV-20	R5288184
Cadmium (Cd)-Dissolved	<0.0000050		0.0000050	mg/L	18-NOV-20	18-NOV-20	R5288184
Calcium (Ca)-Dissolved	50.7		0.050	mg/L	18-NOV-20	18-NOV-20	R5288184
Cesium (Cs)-Dissolved	<0.000010		0.000010	mg/L	18-NOV-20	18-NOV-20	R5288184
Chromium (Cr)-Dissolved	<0.00010		0.00010	mg/L	18-NOV-20	18-NOV-20	R5288184
Cobalt (Co)-Dissolved	<0.00010		0.00010	mg/L	18-NOV-20	18-NOV-20	R5288184
Copper (Cu)-Dissolved	<0.00020		0.00020	mg/L	18-NOV-20	18-NOV-20	R5288184
Iron (Fe)-Dissolved	0.609		0.010	mg/L	18-NOV-20	18-NOV-20	R5288184
Lead (Pb)-Dissolved	<0.000050		0.000050	mg/L	18-NOV-20	18-NOV-20	R5288184
Lithium (Li)-Dissolved	0.0161		0.0010	mg/L	18-NOV-20	18-NOV-20	R5288184
Magnesium (Mg)-Dissolved	34.4		0.0050	mg/L	18-NOV-20	18-NOV-20	R5288184
Manganese (Mn)-Dissolved	0.00903		0.00010	mg/L	18-NOV-20	18-NOV-20	R5288184
Molybdenum (Mo)-Dissolved	0.00215		0.000050	mg/L	18-NOV-20	18-NOV-20	R5288184
Nickel (Ni)-Dissolved	<0.00050		0.00050	mg/L	18-NOV-20	18-NOV-20	R5288184

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2530033-1 BRU 95-5							
Sampled By: SD on 15-NOV-20 @ 16:30							
Matrix: GW							
Dissolved Metals in Water by CRC ICPMS							
Phosphorus (P)-Dissolved	<0.030		0.030	mg/L	18-NOV-20	18-NOV-20	R5288184
Potassium (K)-Dissolved	4.33		0.050	mg/L	18-NOV-20	18-NOV-20	R5288184
Rubidium (Rb)-Dissolved	0.00223		0.00020	mg/L	18-NOV-20	18-NOV-20	R5288184
Selenium (Se)-Dissolved	<0.000050		0.000050	mg/L	18-NOV-20	18-NOV-20	R5288184
Silicon (Si)-Dissolved	7.90		0.050	mg/L	18-NOV-20	18-NOV-20	R5288184
Silver (Ag)-Dissolved	<0.000010		0.000010	mg/L	18-NOV-20	18-NOV-20	R5288184
Sodium (Na)-Dissolved	14.2		0.050	mg/L	18-NOV-20	18-NOV-20	R5288184
Strontium (Sr)-Dissolved	0.325		0.00010	mg/L	18-NOV-20	18-NOV-20	R5288184
Sulfur (S)-Dissolved	1.35		0.50	mg/L	18-NOV-20	18-NOV-20	R5288184
Tellurium (Te)-Dissolved	<0.00020		0.00020	mg/L	18-NOV-20	18-NOV-20	R5288184
Thallium (Tl)-Dissolved	<0.000010		0.000010	mg/L	18-NOV-20	18-NOV-20	R5288184
Thorium (Th)-Dissolved	<0.00010		0.00010	mg/L	18-NOV-20	18-NOV-20	R5288184
Tin (Sn)-Dissolved	<0.00010		0.00010	mg/L	18-NOV-20	18-NOV-20	R5288184
Titanium (Ti)-Dissolved	<0.00030		0.00030	mg/L	18-NOV-20	18-NOV-20	R5288184
Tungsten (W)-Dissolved	<0.00010		0.00010	mg/L	18-NOV-20	18-NOV-20	R5288184
Uranium (U)-Dissolved	0.000100		0.000010	mg/L	18-NOV-20	18-NOV-20	R5288184
Vanadium (V)-Dissolved	<0.00050		0.00050	mg/L	18-NOV-20	18-NOV-20	R5288184
Zinc (Zn)-Dissolved	<0.0010		0.0010	mg/L	18-NOV-20	18-NOV-20	R5288184
Zirconium (Zr)-Dissolved	<0.00020		0.00020	mg/L	18-NOV-20	18-NOV-20	R5288184
Mercury Dissolved							
Dissolved Mercury Filtration Location	FIELD					20-NOV-20	R5296675
Mercury (Hg)-Dissolved	<0.0000050		0.0000050	mg/L	23-NOV-20	23-NOV-20	R5296853
L2530033-2 BRU 95-6							
Sampled By: SD on 15-NOV-20 @ 16:40							
Matrix: GW							
Alkalinity species as HCO3, CO3, OH							
Alkalinity, Bicarbonate							
Bicarbonate (HCO3)	322		1.2	mg/L		20-NOV-20	
Alkalinity, Carbonate							
Carbonate (CO3)	5.16		0.60	mg/L		20-NOV-20	
Alkalinity, Hydroxide							
Hydroxide (OH)	<0.34		0.34	mg/L		20-NOV-20	
Alkalinity, Total (as CaCO3)							
Alkalinity, Total (as CaCO3)	273		1.0	mg/L		19-NOV-20	R5292024
Nitrate + Nitrite							
Nitrate in Water by IC							
Nitrate (as N)	<0.020		0.020	mg/L		17-NOV-20	R5291238
Nitrate+Nitrite							
Nitrate and Nitrite as N	<0.070		0.070	mg/L		20-NOV-20	
Nitrite in Water by IC							
Nitrite (as N)	<0.010		0.010	mg/L		17-NOV-20	R5291238
Miscellaneous Parameters							
Ammonia, Total (as N)	0.415		0.010	mg/L		17-NOV-20	R5287543
Chloride (Cl)	1.48		0.50	mg/L		17-NOV-20	R5291238
Conductivity	497		1.0	umhos/cm		19-NOV-20	R5292024
Dissolved Organic Carbon	0.87		0.50	mg/L		19-NOV-20	R5291042
Fluoride (F)	0.383		0.020	mg/L		17-NOV-20	R5291238
Hardness (as CaCO3)	238		0.20	mg/L		19-NOV-20	
Phosphorus (P)-Total	0.0880		0.0030	mg/L		18-NOV-20	R5287487
Sulfate (SO4)	6.92		0.30	mg/L		17-NOV-20	R5291238
Sulphide (as S)	<0.018		0.018	mg/L		19-NOV-20	R5288498

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2530033-2 BRU 95-6							
Sampled By: SD on 15-NOV-20 @ 16:40							
Matrix: GW							
Total Dissolved Solids	264		20	mg/L		17-NOV-20	R5288181
Sulphide (as H2S)	<0.019		0.019	mg/L		19-NOV-20	
Total Suspended Solids	69.6		3.0	mg/L		18-NOV-20	R5288444
pH	8.35		0.10	pH units		19-NOV-20	R5292024
Dissolved Metals in Water by CRC ICPMS							
Dissolved Metals Filtration Location	FIELD					18-NOV-20	R5287724
Aluminum (Al)-Dissolved	0.0032		0.0010	mg/L	18-NOV-20	18-NOV-20	R5288184
Antimony (Sb)-Dissolved	<0.00010		0.00010	mg/L	18-NOV-20	18-NOV-20	R5288184
Arsenic (As)-Dissolved	0.00052		0.00010	mg/L	18-NOV-20	18-NOV-20	R5288184
Barium (Ba)-Dissolved	0.0835		0.00010	mg/L	18-NOV-20	18-NOV-20	R5288184
Beryllium (Be)-Dissolved	<0.00010		0.00010	mg/L	18-NOV-20	18-NOV-20	R5288184
Bismuth (Bi)-Dissolved	<0.000050		0.000050	mg/L	18-NOV-20	18-NOV-20	R5288184
Boron (B)-Dissolved	0.251		0.010	mg/L	18-NOV-20	18-NOV-20	R5288184
Cadmium (Cd)-Dissolved	<0.0000050		0.0000050	mg/L	18-NOV-20	18-NOV-20	R5288184
Calcium (Ca)-Dissolved	45.1		0.050	mg/L	18-NOV-20	18-NOV-20	R5288184
Cesium (Cs)-Dissolved	0.000018		0.000010	mg/L	18-NOV-20	18-NOV-20	R5288184
Chromium (Cr)-Dissolved	<0.00010		0.00010	mg/L	18-NOV-20	18-NOV-20	R5288184
Cobalt (Co)-Dissolved	0.00072		0.00010	mg/L	18-NOV-20	18-NOV-20	R5288184
Copper (Cu)-Dissolved	<0.00020		0.00020	mg/L	18-NOV-20	18-NOV-20	R5288184
Iron (Fe)-Dissolved	0.054		0.010	mg/L	18-NOV-20	18-NOV-20	R5288184
Lead (Pb)-Dissolved	<0.000050		0.000050	mg/L	18-NOV-20	18-NOV-20	R5288184
Lithium (Li)-Dissolved	0.0159		0.0010	mg/L	18-NOV-20	18-NOV-20	R5288184
Magnesium (Mg)-Dissolved	30.4		0.0050	mg/L	18-NOV-20	18-NOV-20	R5288184
Manganese (Mn)-Dissolved	0.0279		0.00010	mg/L	18-NOV-20	18-NOV-20	R5288184
Molybdenum (Mo)-Dissolved	0.00205		0.000050	mg/L	18-NOV-20	18-NOV-20	R5288184
Nickel (Ni)-Dissolved	<0.00050		0.00050	mg/L	18-NOV-20	18-NOV-20	R5288184
Phosphorus (P)-Dissolved	<0.030		0.030	mg/L	18-NOV-20	18-NOV-20	R5288184
Potassium (K)-Dissolved	4.88		0.050	mg/L	18-NOV-20	18-NOV-20	R5288184
Rubidium (Rb)-Dissolved	0.00293		0.00020	mg/L	18-NOV-20	18-NOV-20	R5288184
Selenium (Se)-Dissolved	<0.000050		0.000050	mg/L	18-NOV-20	18-NOV-20	R5288184
Silicon (Si)-Dissolved	6.71		0.050	mg/L	18-NOV-20	18-NOV-20	R5288184
Silver (Ag)-Dissolved	<0.000010		0.000010	mg/L	18-NOV-20	18-NOV-20	R5288184
Sodium (Na)-Dissolved	17.0		0.050	mg/L	18-NOV-20	18-NOV-20	R5288184
Strontium (Sr)-Dissolved	0.321		0.00010	mg/L	18-NOV-20	18-NOV-20	R5288184
Sulfur (S)-Dissolved	2.20		0.50	mg/L	18-NOV-20	18-NOV-20	R5288184
Tellurium (Te)-Dissolved	<0.00020		0.00020	mg/L	18-NOV-20	18-NOV-20	R5288184
Thallium (Tl)-Dissolved	<0.000010		0.000010	mg/L	18-NOV-20	18-NOV-20	R5288184
Thorium (Th)-Dissolved	<0.00010		0.00010	mg/L	18-NOV-20	18-NOV-20	R5288184
Tin (Sn)-Dissolved	<0.00010		0.00010	mg/L	18-NOV-20	18-NOV-20	R5288184
Titanium (Ti)-Dissolved	<0.00030		0.00030	mg/L	18-NOV-20	18-NOV-20	R5288184
Tungsten (W)-Dissolved	0.00010		0.00010	mg/L	18-NOV-20	18-NOV-20	R5288184
Uranium (U)-Dissolved	0.000308		0.000010	mg/L	18-NOV-20	18-NOV-20	R5288184
Vanadium (V)-Dissolved	<0.00050		0.00050	mg/L	18-NOV-20	18-NOV-20	R5288184
Zinc (Zn)-Dissolved	0.0090		0.0010	mg/L	18-NOV-20	18-NOV-20	R5288184
Zirconium (Zr)-Dissolved	<0.00020		0.00020	mg/L	18-NOV-20	18-NOV-20	R5288184
Mercury Dissolved							
Dissolved Mercury Filtration Location	FIELD					20-NOV-20	R5296675
Mercury (Hg)-Dissolved	<0.0000050		0.0000050	mg/L	23-NOV-20	23-NOV-20	R5296853
L2530033-3 BRU-96-1							
Sampled By: SD on 13-NOV-20 @ 15:30							
Matrix: GW							
Alkalinity species as HCO3, CO3, OH							

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2530033-3 BRU-96-1							
Sampled By: SD on 13-NOV-20 @ 15:30							
Matrix: GW							
Alkalinity, Bicarbonate							
Bicarbonate (HCO3)	304		1.2	mg/L		20-NOV-20	
Alkalinity, Carbonate							
Carbonate (CO3)	6.72		0.60	mg/L		20-NOV-20	
Alkalinity, Hydroxide							
Hydroxide (OH)	<0.34		0.34	mg/L		20-NOV-20	
Alkalinity, Total (as CaCO3)							
Alkalinity, Total (as CaCO3)	260		1.0	mg/L		19-NOV-20	R5292024
Nitrate + Nitrite							
Nitrate in Water by IC							
Nitrate (as N)	<0.020		0.020	mg/L		17-NOV-20	R5291238
Nitrate+Nitrite							
Nitrate and Nitrite as N	<0.070		0.070	mg/L		20-NOV-20	
Nitrite in Water by IC							
Nitrite (as N)	<0.010		0.010	mg/L		17-NOV-20	R5291238
Miscellaneous Parameters							
Ammonia, Total (as N)	0.415		0.010	mg/L		17-NOV-20	R5287543
Chloride (Cl)	22.9		0.50	mg/L		17-NOV-20	R5291238
Conductivity	594		1.0	umhos/cm		19-NOV-20	R5292024
Dissolved Organic Carbon	0.50		0.50	mg/L		19-NOV-20	R5291042
Fluoride (F)	0.882		0.020	mg/L		17-NOV-20	R5291238
Hardness (as CaCO3)	116		0.20	mg/L		19-NOV-20	
Phosphorus (P)-Total	0.113		0.0030	mg/L		18-NOV-20	R5287487
Sulfate (SO4)	33.5		0.30	mg/L		17-NOV-20	R5291238
Sulphide (as S)	<0.018		0.018	mg/L		19-NOV-20	R5288498
Total Dissolved Solids	358		20	mg/L		17-NOV-20	R5288181
Sulphide (as H2S)	<0.019		0.019	mg/L		19-NOV-20	
Total Suspended Solids	117		3.0	mg/L		17-NOV-20	R5287510
pH	8.44		0.10	pH units		19-NOV-20	R5292024
Dissolved Metals in Water by CRC ICPMS							
Dissolved Metals Filtration Location	FIELD					18-NOV-20	R5287724
Aluminum (Al)-Dissolved	0.0085		0.0010	mg/L	18-NOV-20	18-NOV-20	R5288184
Antimony (Sb)-Dissolved	<0.00010		0.00010	mg/L	18-NOV-20	18-NOV-20	R5288184
Arsenic (As)-Dissolved	0.00036		0.00010	mg/L	18-NOV-20	18-NOV-20	R5288184
Barium (Ba)-Dissolved	0.0473		0.00010	mg/L	18-NOV-20	18-NOV-20	R5288184
Beryllium (Be)-Dissolved	<0.00010		0.00010	mg/L	18-NOV-20	18-NOV-20	R5288184
Bismuth (Bi)-Dissolved	<0.000050		0.000050	mg/L	18-NOV-20	18-NOV-20	R5288184
Boron (B)-Dissolved	0.692		0.010	mg/L	18-NOV-20	18-NOV-20	R5288184
Cadmium (Cd)-Dissolved	<0.0000050		0.0000050	mg/L	18-NOV-20	18-NOV-20	R5288184
Calcium (Ca)-Dissolved	26.4		0.050	mg/L	18-NOV-20	18-NOV-20	R5288184
Cesium (Cs)-Dissolved	0.000012		0.000010	mg/L	18-NOV-20	18-NOV-20	R5288184
Chromium (Cr)-Dissolved	<0.00010		0.00010	mg/L	18-NOV-20	18-NOV-20	R5288184
Cobalt (Co)-Dissolved	0.00025		0.00010	mg/L	18-NOV-20	18-NOV-20	R5288184
Copper (Cu)-Dissolved	<0.00020		0.00020	mg/L	18-NOV-20	18-NOV-20	R5288184
Iron (Fe)-Dissolved	<0.010		0.010	mg/L	18-NOV-20	18-NOV-20	R5288184
Lead (Pb)-Dissolved	<0.000050		0.000050	mg/L	18-NOV-20	18-NOV-20	R5288184
Lithium (Li)-Dissolved	0.0314		0.0010	mg/L	18-NOV-20	18-NOV-20	R5288184
Magnesium (Mg)-Dissolved	12.2		0.0050	mg/L	18-NOV-20	18-NOV-20	R5288184
Manganese (Mn)-Dissolved	0.0107		0.00010	mg/L	18-NOV-20	18-NOV-20	R5288184
Molybdenum (Mo)-Dissolved	0.00332		0.000050	mg/L	18-NOV-20	18-NOV-20	R5288184
Nickel (Ni)-Dissolved	<0.00050		0.00050	mg/L	18-NOV-20	18-NOV-20	R5288184
Phosphorus (P)-Dissolved	<0.030		0.030	mg/L	18-NOV-20	18-NOV-20	R5288184

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2530033-3 BRU-96-1							
Sampled By: SD on 13-NOV-20 @ 15:30							
Matrix: GW							
Dissolved Metals in Water by CRC ICPMS							
Potassium (K)-Dissolved	7.93		0.050	mg/L	18-NOV-20	18-NOV-20	R5288184
Rubidium (Rb)-Dissolved	0.00404		0.00020	mg/L	18-NOV-20	18-NOV-20	R5288184
Selenium (Se)-Dissolved	<0.000050		0.000050	mg/L	18-NOV-20	18-NOV-20	R5288184
Silicon (Si)-Dissolved	4.10		0.050	mg/L	18-NOV-20	18-NOV-20	R5288184
Silver (Ag)-Dissolved	<0.000010		0.000010	mg/L	18-NOV-20	18-NOV-20	R5288184
Sodium (Na)-Dissolved	82.4		0.050	mg/L	18-NOV-20	18-NOV-20	R5288184
Strontium (Sr)-Dissolved	0.179		0.00010	mg/L	18-NOV-20	18-NOV-20	R5288184
Sulfur (S)-Dissolved	11.0		0.50	mg/L	18-NOV-20	18-NOV-20	R5288184
Tellurium (Te)-Dissolved	<0.00020		0.00020	mg/L	18-NOV-20	18-NOV-20	R5288184
Thallium (Tl)-Dissolved	<0.000010		0.000010	mg/L	18-NOV-20	18-NOV-20	R5288184
Thorium (Th)-Dissolved	<0.00010		0.00010	mg/L	18-NOV-20	18-NOV-20	R5288184
Tin (Sn)-Dissolved	<0.00010		0.00010	mg/L	18-NOV-20	18-NOV-20	R5288184
Titanium (Ti)-Dissolved	0.00045		0.00030	mg/L	18-NOV-20	18-NOV-20	R5288184
Tungsten (W)-Dissolved	<0.00010		0.00010	mg/L	18-NOV-20	18-NOV-20	R5288184
Uranium (U)-Dissolved	0.000391		0.000010	mg/L	18-NOV-20	18-NOV-20	R5288184
Vanadium (V)-Dissolved	<0.00050		0.00050	mg/L	18-NOV-20	18-NOV-20	R5288184
Zinc (Zn)-Dissolved	0.0023		0.0010	mg/L	18-NOV-20	18-NOV-20	R5288184
Zirconium (Zr)-Dissolved	<0.00020		0.00020	mg/L	18-NOV-20	18-NOV-20	R5288184
Mercury Dissolved							
Dissolved Mercury Filtration Location	FIELD					20-NOV-20	R5296675
Mercury (Hg)-Dissolved	<0.0000050		0.0000050	mg/L	23-NOV-20	23-NOV-20	R5296853
L2530033-4 BRU 96-2							
Sampled By: SD on 14-NOV-20 @ 14:00							
Matrix: GW							
Alkalinity species as HCO3, CO3, OH							
Alkalinity, Bicarbonate							
Bicarbonate (HCO3)	231		1.2	mg/L		20-NOV-20	
Alkalinity, Carbonate							
Carbonate (CO3)	4.68		0.60	mg/L		20-NOV-20	
Alkalinity, Hydroxide							
Hydroxide (OH)	<0.34		0.34	mg/L		20-NOV-20	
Alkalinity, Total (as CaCO3)							
Alkalinity, Total (as CaCO3)	197		1.0	mg/L		19-NOV-20	R5292024
Nitrate + Nitrite							
Nitrate in Water by IC							
Nitrate (as N)	<0.020		0.020	mg/L		17-NOV-20	R5291238
Nitrate+Nitrite							
Nitrate and Nitrite as N	<0.070		0.070	mg/L		20-NOV-20	
Nitrite in Water by IC							
Nitrite (as N)	<0.010		0.010	mg/L		17-NOV-20	R5291238
Miscellaneous Parameters							
Ammonia, Total (as N)	0.322		0.010	mg/L		17-NOV-20	R5287543
Chloride (Cl)	2.56		0.50	mg/L		17-NOV-20	R5291238
Conductivity	395		1.0	umhos/cm		19-NOV-20	R5292024
Dissolved Organic Carbon	1.45		0.50	mg/L		19-NOV-20	R5291042
Fluoride (F)	0.549		0.020	mg/L		17-NOV-20	R5291238
Hardness (as CaCO3)	112		0.20	mg/L		19-NOV-20	
Phosphorus (P)-Total	0.0458		0.0030	mg/L		18-NOV-20	R5287487
Sulfate (SO4)	14.4		0.30	mg/L		17-NOV-20	R5291238
Sulphide (as S)	<0.018		0.018	mg/L		19-NOV-20	R5288498

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2530033-4 BRU 96-2							
Sampled By: SD on 14-NOV-20 @ 14:00							
Matrix: GW							
Total Dissolved Solids	224		20	mg/L		17-NOV-20	R5288181
Sulphide (as H2S)	<0.019		0.019	mg/L		19-NOV-20	
Total Suspended Solids	36.8		3.0	mg/L		17-NOV-20	R5287510
pH	8.39		0.10	pH units		19-NOV-20	R5292024
Dissolved Metals in Water by CRC ICPMS							
Dissolved Metals Filtration Location	FIELD					18-NOV-20	R5287724
Aluminum (Al)-Dissolved	0.0025		0.0010	mg/L	18-NOV-20	18-NOV-20	R5288184
Antimony (Sb)-Dissolved	<0.00010		0.00010	mg/L	18-NOV-20	18-NOV-20	R5288184
Arsenic (As)-Dissolved	0.00018		0.00010	mg/L	18-NOV-20	18-NOV-20	R5288184
Barium (Ba)-Dissolved	0.0564		0.00010	mg/L	18-NOV-20	18-NOV-20	R5288184
Beryllium (Be)-Dissolved	<0.00010		0.00010	mg/L	18-NOV-20	18-NOV-20	R5288184
Bismuth (Bi)-Dissolved	<0.000050		0.000050	mg/L	18-NOV-20	18-NOV-20	R5288184
Boron (B)-Dissolved	0.302		0.010	mg/L	18-NOV-20	18-NOV-20	R5288184
Cadmium (Cd)-Dissolved	<0.0000050		0.0000050	mg/L	18-NOV-20	18-NOV-20	R5288184
Calcium (Ca)-Dissolved	24.7		0.050	mg/L	18-NOV-20	18-NOV-20	R5288184
Cesium (Cs)-Dissolved	<0.000010		0.000010	mg/L	18-NOV-20	18-NOV-20	R5288184
Chromium (Cr)-Dissolved	<0.00010		0.00010	mg/L	18-NOV-20	18-NOV-20	R5288184
Cobalt (Co)-Dissolved	<0.00010		0.00010	mg/L	18-NOV-20	18-NOV-20	R5288184
Copper (Cu)-Dissolved	<0.00020		0.00020	mg/L	18-NOV-20	18-NOV-20	R5288184
Iron (Fe)-Dissolved	0.259		0.010	mg/L	18-NOV-20	18-NOV-20	R5288184
Lead (Pb)-Dissolved	<0.000050		0.000050	mg/L	18-NOV-20	18-NOV-20	R5288184
Lithium (Li)-Dissolved	0.0114		0.0010	mg/L	18-NOV-20	18-NOV-20	R5288184
Magnesium (Mg)-Dissolved	12.4		0.0050	mg/L	18-NOV-20	18-NOV-20	R5288184
Manganese (Mn)-Dissolved	0.00306		0.00010	mg/L	18-NOV-20	18-NOV-20	R5288184
Molybdenum (Mo)-Dissolved	0.00840		0.000050	mg/L	18-NOV-20	18-NOV-20	R5288184
Nickel (Ni)-Dissolved	<0.00050		0.00050	mg/L	18-NOV-20	18-NOV-20	R5288184
Phosphorus (P)-Dissolved	<0.030		0.030	mg/L	18-NOV-20	18-NOV-20	R5288184
Potassium (K)-Dissolved	3.86		0.050	mg/L	18-NOV-20	18-NOV-20	R5288184
Rubidium (Rb)-Dissolved	0.00199		0.00020	mg/L	18-NOV-20	18-NOV-20	R5288184
Selenium (Se)-Dissolved	<0.000050		0.000050	mg/L	18-NOV-20	18-NOV-20	R5288184
Silicon (Si)-Dissolved	4.73		0.050	mg/L	18-NOV-20	18-NOV-20	R5288184
Silver (Ag)-Dissolved	<0.000010		0.000010	mg/L	18-NOV-20	18-NOV-20	R5288184
Sodium (Na)-Dissolved	41.4		0.050	mg/L	18-NOV-20	18-NOV-20	R5288184
Strontium (Sr)-Dissolved	0.139		0.00010	mg/L	18-NOV-20	18-NOV-20	R5288184
Sulfur (S)-Dissolved	4.78		0.50	mg/L	18-NOV-20	18-NOV-20	R5288184
Tellurium (Te)-Dissolved	<0.00020		0.00020	mg/L	18-NOV-20	18-NOV-20	R5288184
Thallium (Tl)-Dissolved	<0.000010		0.000010	mg/L	18-NOV-20	18-NOV-20	R5288184
Thorium (Th)-Dissolved	<0.00010		0.00010	mg/L	18-NOV-20	18-NOV-20	R5288184
Tin (Sn)-Dissolved	<0.00010		0.00010	mg/L	18-NOV-20	18-NOV-20	R5288184
Titanium (Ti)-Dissolved	<0.00030		0.00030	mg/L	18-NOV-20	18-NOV-20	R5288184
Tungsten (W)-Dissolved	<0.00010		0.00010	mg/L	18-NOV-20	18-NOV-20	R5288184
Uranium (U)-Dissolved	0.000069		0.000010	mg/L	18-NOV-20	18-NOV-20	R5288184
Vanadium (V)-Dissolved	<0.00050		0.00050	mg/L	18-NOV-20	18-NOV-20	R5288184
Zinc (Zn)-Dissolved	<0.0010		0.0010	mg/L	18-NOV-20	18-NOV-20	R5288184
Zirconium (Zr)-Dissolved	<0.00020		0.00020	mg/L	18-NOV-20	18-NOV-20	R5288184
Mercury Dissolved							
Dissolved Mercury Filtration Location	FIELD					20-NOV-20	R5296675
Mercury (Hg)-Dissolved	<0.0000050		0.0000050	mg/L	23-NOV-20	23-NOV-20	R5296853
L2530033-5 BRU 96-2 DUP							
Sampled By: SD on 14-NOV-20 @ 14:15							
Matrix: GW							
Alkalinity species as HCO3, CO3, OH							

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2530033-5 BRU 96-2 DUP							
Sampled By: SD on 14-NOV-20 @ 14:15							
Matrix: GW							
Alkalinity, Bicarbonate							
Bicarbonate (HCO3)	233		1.2	mg/L		20-NOV-20	
Alkalinity, Carbonate							
Carbonate (CO3)	4.44		0.60	mg/L		20-NOV-20	
Alkalinity, Hydroxide							
Hydroxide (OH)	<0.34		0.34	mg/L		20-NOV-20	
Alkalinity, Total (as CaCO3)							
Alkalinity, Total (as CaCO3)	199		1.0	mg/L		19-NOV-20	R5292024
Nitrate + Nitrite							
Nitrate in Water by IC							
Nitrate (as N)	<0.020		0.020	mg/L		17-NOV-20	R5291238
Nitrate+Nitrite							
Nitrate and Nitrite as N	<0.070		0.070	mg/L		20-NOV-20	
Nitrite in Water by IC							
Nitrite (as N)	<0.010		0.010	mg/L		17-NOV-20	R5291238
Miscellaneous Parameters							
Ammonia, Total (as N)	0.305		0.010	mg/L		17-NOV-20	R5287543
Chloride (Cl)	2.57		0.50	mg/L		17-NOV-20	R5291238
Conductivity	396		1.0	umhos/cm		19-NOV-20	R5292024
Dissolved Organic Carbon	1.46		0.50	mg/L		19-NOV-20	R5291042
Fluoride (F)	0.544		0.020	mg/L		17-NOV-20	R5291238
Hardness (as CaCO3)	113		0.20	mg/L		19-NOV-20	
Phosphorus (P)-Total	0.135		0.0030	mg/L		18-NOV-20	R5287487
Sulfate (SO4)	14.5		0.30	mg/L		17-NOV-20	R5291238
Sulphide (as S)	<0.018		0.018	mg/L		19-NOV-20	R5288498
Total Dissolved Solids	229		20	mg/L		17-NOV-20	R5288181
Sulphide (as H2S)	<0.019		0.019	mg/L		19-NOV-20	
Total Suspended Solids	88.4		3.0	mg/L		17-NOV-20	R5287510
pH	8.38		0.10	pH units		19-NOV-20	R5292024
Dissolved Metals in Water by CRC ICPMS							
Dissolved Metals Filtration Location	FIELD					18-NOV-20	R5287724
Aluminum (Al)-Dissolved	0.0011		0.0010	mg/L	18-NOV-20	18-NOV-20	R5288184
Antimony (Sb)-Dissolved	<0.00010		0.00010	mg/L	18-NOV-20	18-NOV-20	R5288184
Arsenic (As)-Dissolved	0.00018		0.00010	mg/L	18-NOV-20	18-NOV-20	R5288184
Barium (Ba)-Dissolved	0.0564		0.00010	mg/L	18-NOV-20	18-NOV-20	R5288184
Beryllium (Be)-Dissolved	<0.00010		0.00010	mg/L	18-NOV-20	18-NOV-20	R5288184
Bismuth (Bi)-Dissolved	<0.000050		0.000050	mg/L	18-NOV-20	18-NOV-20	R5288184
Boron (B)-Dissolved	0.280		0.010	mg/L	18-NOV-20	18-NOV-20	R5288184
Cadmium (Cd)-Dissolved	<0.0000050		0.0000050	mg/L	18-NOV-20	18-NOV-20	R5288184
Calcium (Ca)-Dissolved	24.5		0.050	mg/L	18-NOV-20	18-NOV-20	R5288184
Cesium (Cs)-Dissolved	<0.000010		0.000010	mg/L	18-NOV-20	18-NOV-20	R5288184
Chromium (Cr)-Dissolved	<0.00010		0.00010	mg/L	18-NOV-20	18-NOV-20	R5288184
Cobalt (Co)-Dissolved	<0.00010		0.00010	mg/L	18-NOV-20	18-NOV-20	R5288184
Copper (Cu)-Dissolved	<0.00020		0.00020	mg/L	18-NOV-20	18-NOV-20	R5288184
Iron (Fe)-Dissolved	0.240		0.010	mg/L	18-NOV-20	18-NOV-20	R5288184
Lead (Pb)-Dissolved	<0.000050		0.000050	mg/L	18-NOV-20	18-NOV-20	R5288184
Lithium (Li)-Dissolved	0.0109		0.0010	mg/L	18-NOV-20	18-NOV-20	R5288184
Magnesium (Mg)-Dissolved	12.5		0.0050	mg/L	18-NOV-20	18-NOV-20	R5288184
Manganese (Mn)-Dissolved	0.00303		0.00010	mg/L	18-NOV-20	18-NOV-20	R5288184
Molybdenum (Mo)-Dissolved	0.00788		0.000050	mg/L	18-NOV-20	18-NOV-20	R5288184
Nickel (Ni)-Dissolved	<0.00050		0.00050	mg/L	18-NOV-20	18-NOV-20	R5288184
Phosphorus (P)-Dissolved	<0.030		0.030	mg/L	18-NOV-20	18-NOV-20	R5288184

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2530033-5 BRU 96-2 DUP							
Sampled By: SD on 14-NOV-20 @ 14:15							
Matrix: GW							
Dissolved Metals in Water by CRC ICPMS							
Potassium (K)-Dissolved	3.93		0.050	mg/L	18-NOV-20	18-NOV-20	R5288184
Rubidium (Rb)-Dissolved	0.00199		0.00020	mg/L	18-NOV-20	18-NOV-20	R5288184
Selenium (Se)-Dissolved	<0.000050		0.000050	mg/L	18-NOV-20	18-NOV-20	R5288184
Silicon (Si)-Dissolved	4.61		0.050	mg/L	18-NOV-20	18-NOV-20	R5288184
Silver (Ag)-Dissolved	<0.000010		0.000010	mg/L	18-NOV-20	18-NOV-20	R5288184
Sodium (Na)-Dissolved	41.3		0.050	mg/L	18-NOV-20	18-NOV-20	R5288184
Strontium (Sr)-Dissolved	0.132		0.00010	mg/L	18-NOV-20	18-NOV-20	R5288184
Sulfur (S)-Dissolved	4.36		0.50	mg/L	18-NOV-20	18-NOV-20	R5288184
Tellurium (Te)-Dissolved	<0.00020		0.00020	mg/L	18-NOV-20	18-NOV-20	R5288184
Thallium (Tl)-Dissolved	<0.000010		0.000010	mg/L	18-NOV-20	18-NOV-20	R5288184
Thorium (Th)-Dissolved	<0.00010		0.00010	mg/L	18-NOV-20	18-NOV-20	R5288184
Tin (Sn)-Dissolved	<0.00010		0.00010	mg/L	18-NOV-20	18-NOV-20	R5288184
Titanium (Ti)-Dissolved	<0.00030		0.00030	mg/L	18-NOV-20	18-NOV-20	R5288184
Tungsten (W)-Dissolved	<0.00010		0.00010	mg/L	18-NOV-20	18-NOV-20	R5288184
Uranium (U)-Dissolved	0.000071		0.000010	mg/L	18-NOV-20	18-NOV-20	R5288184
Vanadium (V)-Dissolved	<0.00050		0.00050	mg/L	18-NOV-20	18-NOV-20	R5288184
Zinc (Zn)-Dissolved	<0.0010		0.0010	mg/L	18-NOV-20	18-NOV-20	R5288184
Zirconium (Zr)-Dissolved	<0.00020		0.00020	mg/L	18-NOV-20	18-NOV-20	R5288184
Mercury Dissolved							
Dissolved Mercury Filtration Location	FIELD					20-NOV-20	R5296675
Mercury (Hg)-Dissolved	<0.0000050		0.0000050	mg/L	23-NOV-20	23-NOV-20	R5296853
L2530033-6 J MUSTARD							
Sampled By: SD on 15-NOV-20 @ 11:00							
Matrix: GW (DW)							
Alkalinity species as HCO3, CO3, OH							
Alkalinity, Bicarbonate							
Bicarbonate (HCO3)	362		1.2	mg/L		20-NOV-20	
Alkalinity, Carbonate							
Carbonate (CO3)	7.08		0.60	mg/L		20-NOV-20	
Alkalinity, Hydroxide							
Hydroxide (OH)	<0.34		0.34	mg/L		20-NOV-20	
Alkalinity, Total (as CaCO3)							
Alkalinity, Total (as CaCO3)	309		1.0	mg/L		19-NOV-20	R5292024
Nitrate + Nitrite							
Nitrate in Water by IC							
Nitrate (as N)	<0.020		0.020	mg/L		17-NOV-20	R5291238
Nitrate+Nitrite							
Nitrate and Nitrite as N	<0.070		0.070	mg/L		20-NOV-20	
Nitrite in Water by IC							
Nitrite (as N)	<0.010		0.010	mg/L		17-NOV-20	R5291238
Miscellaneous Parameters							
Ammonia, Total (as N)	0.011		0.010	mg/L		17-NOV-20	R5287543
Chloride (Cl)	2.70		0.50	mg/L		17-NOV-20	R5291238
Conductivity	578		1.0	umhos/cm		19-NOV-20	R5292024
Dissolved Organic Carbon	1.66		0.50	mg/L		19-NOV-20	R5291042
Fluoride (F)	0.343		0.020	mg/L		17-NOV-20	R5291238
Hardness (as CaCO3)	0.99		0.20	mg/L		19-NOV-20	
Phosphorus (P)-Total	0.0191		0.0030	mg/L		18-NOV-20	R5287487
Sulfate (SO4)	5.68		0.30	mg/L		17-NOV-20	R5291238
Sulphide (as S)	<0.018		0.018	mg/L		19-NOV-20	R5288498

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2530033-6 J MUSTARD							
Sampled By: SD on 15-NOV-20 @ 11:00							
Matrix: GW (DW)							
Total Dissolved Solids	337		20	mg/L		17-NOV-20	R5288181
Sulphide (as H2S)	<0.019		0.019	mg/L		19-NOV-20	
Total Suspended Solids	<3.0		3.0	mg/L		17-NOV-20	R5287510
pH	8.46		0.10	pH units		19-NOV-20	R5292024
Dissolved Metals in Water by CRC ICPMS							
Dissolved Metals Filtration Location	FIELD					18-NOV-20	R5287724
Aluminum (Al)-Dissolved	<0.0010		0.0010	mg/L	18-NOV-20	18-NOV-20	R5288184
Antimony (Sb)-Dissolved	<0.00010		0.00010	mg/L	18-NOV-20	18-NOV-20	R5288184
Arsenic (As)-Dissolved	0.00046		0.00010	mg/L	18-NOV-20	18-NOV-20	R5288184
Barium (Ba)-Dissolved	0.00125		0.00010	mg/L	18-NOV-20	18-NOV-20	R5288184
Beryllium (Be)-Dissolved	<0.00010		0.00010	mg/L	18-NOV-20	18-NOV-20	R5288184
Bismuth (Bi)-Dissolved	<0.000050		0.000050	mg/L	18-NOV-20	18-NOV-20	R5288184
Boron (B)-Dissolved	0.147		0.010	mg/L	18-NOV-20	18-NOV-20	R5288184
Cadmium (Cd)-Dissolved	<0.0000050		0.0000050	mg/L	18-NOV-20	18-NOV-20	R5288184
Calcium (Ca)-Dissolved	0.206		0.050	mg/L	18-NOV-20	18-NOV-20	R5288184
Cesium (Cs)-Dissolved	<0.000010		0.000010	mg/L	18-NOV-20	18-NOV-20	R5288184
Chromium (Cr)-Dissolved	<0.00010		0.00010	mg/L	18-NOV-20	18-NOV-20	R5288184
Cobalt (Co)-Dissolved	<0.00010		0.00010	mg/L	18-NOV-20	18-NOV-20	R5288184
Copper (Cu)-Dissolved	0.0241		0.00020	mg/L	18-NOV-20	18-NOV-20	R5288184
Iron (Fe)-Dissolved	0.015		0.010	mg/L	18-NOV-20	18-NOV-20	R5288184
Lead (Pb)-Dissolved	0.000177		0.000050	mg/L	18-NOV-20	18-NOV-20	R5288184
Lithium (Li)-Dissolved	0.0017		0.0010	mg/L	18-NOV-20	18-NOV-20	R5288184
Magnesium (Mg)-Dissolved	0.116		0.0050	mg/L	18-NOV-20	18-NOV-20	R5288184
Manganese (Mn)-Dissolved	0.00147		0.00010	mg/L	18-NOV-20	18-NOV-20	R5288184
Molybdenum (Mo)-Dissolved	0.00125		0.000050	mg/L	18-NOV-20	18-NOV-20	R5288184
Nickel (Ni)-Dissolved	<0.00050		0.00050	mg/L	18-NOV-20	18-NOV-20	R5288184
Phosphorus (P)-Dissolved	<0.030		0.030	mg/L	18-NOV-20	18-NOV-20	R5288184
Potassium (K)-Dissolved	0.195		0.050	mg/L	18-NOV-20	18-NOV-20	R5288184
Rubidium (Rb)-Dissolved	<0.00020		0.00020	mg/L	18-NOV-20	18-NOV-20	R5288184
Selenium (Se)-Dissolved	<0.000050		0.000050	mg/L	18-NOV-20	18-NOV-20	R5288184
Silicon (Si)-Dissolved	7.01		0.050	mg/L	18-NOV-20	18-NOV-20	R5288184
Silver (Ag)-Dissolved	<0.000010		0.000010	mg/L	18-NOV-20	18-NOV-20	R5288184
Sodium (Na)-Dissolved	138		0.050	mg/L	18-NOV-20	18-NOV-20	R5288184
Strontium (Sr)-Dissolved	0.00144		0.00010	mg/L	18-NOV-20	18-NOV-20	R5288184
Sulfur (S)-Dissolved	1.64		0.50	mg/L	18-NOV-20	18-NOV-20	R5288184
Tellurium (Te)-Dissolved	<0.00020		0.00020	mg/L	18-NOV-20	18-NOV-20	R5288184
Thallium (Tl)-Dissolved	<0.000010		0.000010	mg/L	18-NOV-20	18-NOV-20	R5288184
Thorium (Th)-Dissolved	<0.00010		0.00010	mg/L	18-NOV-20	18-NOV-20	R5288184
Tin (Sn)-Dissolved	<0.00010		0.00010	mg/L	18-NOV-20	18-NOV-20	R5288184
Titanium (Ti)-Dissolved	<0.00030		0.00030	mg/L	18-NOV-20	18-NOV-20	R5288184
Tungsten (W)-Dissolved	<0.00010		0.00010	mg/L	18-NOV-20	18-NOV-20	R5288184
Uranium (U)-Dissolved	0.000019		0.000010	mg/L	18-NOV-20	18-NOV-20	R5288184
Vanadium (V)-Dissolved	<0.00050		0.00050	mg/L	18-NOV-20	18-NOV-20	R5288184
Zinc (Zn)-Dissolved	0.0075		0.0010	mg/L	18-NOV-20	18-NOV-20	R5288184
Zirconium (Zr)-Dissolved	0.00038		0.00020	mg/L	18-NOV-20	18-NOV-20	R5288184
Mercury Dissolved							
Dissolved Mercury Filtration Location	FIELD					20-NOV-20	R5296675
Mercury (Hg)-Dissolved	<0.0000050		0.0000050	mg/L	23-NOV-20	23-NOV-20	R5296853
L2530033-7 J BRENNER							
Sampled By: SD on 15-NOV-20 @ 13:00							
Matrix: GW (DW)							
Alkalinity species as HCO3, CO3, OH							

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2530033-7 J BRENNER							
Sampled By: SD on 15-NOV-20 @ 13:00							
Matrix: GW (DW)							
Alkalinity, Bicarbonate							
Bicarbonate (HCO3)	346		1.2	mg/L		20-NOV-20	
Alkalinity, Carbonate							
Carbonate (CO3)	<0.60		0.60	mg/L		20-NOV-20	
Alkalinity, Hydroxide							
Hydroxide (OH)	<0.34		0.34	mg/L		20-NOV-20	
Alkalinity, Total (as CaCO3)							
Alkalinity, Total (as CaCO3)	284		1.0	mg/L		19-NOV-20	R5292024
Nitrate + Nitrite							
Nitrate in Water by IC							
Nitrate (as N)	<0.020		0.020	mg/L		17-NOV-20	R5291238
Nitrate+Nitrite							
Nitrate and Nitrite as N	<0.070		0.070	mg/L		20-NOV-20	
Nitrite in Water by IC							
Nitrite (as N)	<0.010		0.010	mg/L		17-NOV-20	R5291238
Miscellaneous Parameters							
Ammonia, Total (as N)	0.418		0.010	mg/L		17-NOV-20	R5287543
Chloride (Cl)	1.04		0.50	mg/L		17-NOV-20	R5291238
Conductivity	510		1.0	umhos/cm		19-NOV-20	R5292024
Dissolved Organic Carbon	2.89		0.50	mg/L		19-NOV-20	R5291042
Fluoride (F)	0.358		0.020	mg/L		17-NOV-20	R5291238
Hardness (as CaCO3)	247		0.20	mg/L		19-NOV-20	
Phosphorus (P)-Total	0.0164		0.0030	mg/L		18-NOV-20	R5287487
Sulfate (SO4)	4.14		0.30	mg/L		17-NOV-20	R5291238
Sulphide (as S)	<0.018		0.018	mg/L		19-NOV-20	R5288498
Total Dissolved Solids	259		20	mg/L		17-NOV-20	R5288181
Sulphide (as H2S)	<0.019		0.019	mg/L		19-NOV-20	
Total Suspended Solids	<3.0		3.0	mg/L		17-NOV-20	R5287510
pH	8.27		0.10	pH units		19-NOV-20	R5292024
Dissolved Metals in Water by CRC ICPMS							
Dissolved Metals Filtration Location	FIELD					18-NOV-20	R5287724
Aluminum (Al)-Dissolved	<0.0010		0.0010	mg/L	18-NOV-20	18-NOV-20	R5288184
Antimony (Sb)-Dissolved	<0.00010		0.00010	mg/L	18-NOV-20	18-NOV-20	R5288184
Arsenic (As)-Dissolved	0.00168		0.00010	mg/L	18-NOV-20	18-NOV-20	R5288184
Barium (Ba)-Dissolved	0.100		0.00010	mg/L	18-NOV-20	18-NOV-20	R5288184
Beryllium (Be)-Dissolved	<0.00010		0.00010	mg/L	18-NOV-20	18-NOV-20	R5288184
Bismuth (Bi)-Dissolved	<0.000050		0.000050	mg/L	18-NOV-20	18-NOV-20	R5288184
Boron (B)-Dissolved	0.196		0.010	mg/L	18-NOV-20	18-NOV-20	R5288184
Cadmium (Cd)-Dissolved	<0.0000050		0.0000050	mg/L	18-NOV-20	18-NOV-20	R5288184
Calcium (Ca)-Dissolved	44.6		0.050	mg/L	18-NOV-20	18-NOV-20	R5288184
Cesium (Cs)-Dissolved	<0.000010		0.000010	mg/L	18-NOV-20	18-NOV-20	R5288184
Chromium (Cr)-Dissolved	<0.00010		0.00010	mg/L	18-NOV-20	18-NOV-20	R5288184
Cobalt (Co)-Dissolved	<0.00010		0.00010	mg/L	18-NOV-20	18-NOV-20	R5288184
Copper (Cu)-Dissolved	<0.00020		0.00020	mg/L	18-NOV-20	18-NOV-20	R5288184
Iron (Fe)-Dissolved	0.864		0.010	mg/L	18-NOV-20	18-NOV-20	R5288184
Lead (Pb)-Dissolved	<0.000050		0.000050	mg/L	18-NOV-20	18-NOV-20	R5288184
Lithium (Li)-Dissolved	0.0171		0.0010	mg/L	18-NOV-20	18-NOV-20	R5288184
Magnesium (Mg)-Dissolved	32.8		0.0050	mg/L	18-NOV-20	18-NOV-20	R5288184
Manganese (Mn)-Dissolved	0.0155		0.00010	mg/L	18-NOV-20	18-NOV-20	R5288184
Molybdenum (Mo)-Dissolved	0.00171		0.000050	mg/L	18-NOV-20	18-NOV-20	R5288184
Nickel (Ni)-Dissolved	<0.00050		0.00050	mg/L	18-NOV-20	18-NOV-20	R5288184
Phosphorus (P)-Dissolved	<0.030		0.030	mg/L	18-NOV-20	18-NOV-20	R5288184

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2530033-7 J BRENNER							
Sampled By: SD on 15-NOV-20 @ 13:00							
Matrix: GW (DW)							
Dissolved Metals in Water by CRC ICPMS							
Potassium (K)-Dissolved	4.51		0.050	mg/L	18-NOV-20	18-NOV-20	R5288184
Rubidium (Rb)-Dissolved	0.00167		0.00020	mg/L	18-NOV-20	18-NOV-20	R5288184
Selenium (Se)-Dissolved	<0.000050		0.000050	mg/L	18-NOV-20	18-NOV-20	R5288184
Silicon (Si)-Dissolved	7.74		0.050	mg/L	18-NOV-20	18-NOV-20	R5288184
Silver (Ag)-Dissolved	<0.000010		0.000010	mg/L	18-NOV-20	18-NOV-20	R5288184
Sodium (Na)-Dissolved	14.2		0.050	mg/L	18-NOV-20	18-NOV-20	R5288184
Strontium (Sr)-Dissolved	0.311		0.00010	mg/L	18-NOV-20	18-NOV-20	R5288184
Sulfur (S)-Dissolved	1.09		0.50	mg/L	18-NOV-20	18-NOV-20	R5288184
Tellurium (Te)-Dissolved	<0.00020		0.00020	mg/L	18-NOV-20	18-NOV-20	R5288184
Thallium (Tl)-Dissolved	<0.000010		0.000010	mg/L	18-NOV-20	18-NOV-20	R5288184
Thorium (Th)-Dissolved	<0.00010		0.00010	mg/L	18-NOV-20	18-NOV-20	R5288184
Tin (Sn)-Dissolved	<0.00010		0.00010	mg/L	18-NOV-20	18-NOV-20	R5288184
Titanium (Ti)-Dissolved	<0.00030		0.00030	mg/L	18-NOV-20	18-NOV-20	R5288184
Tungsten (W)-Dissolved	<0.00010		0.00010	mg/L	18-NOV-20	18-NOV-20	R5288184
Uranium (U)-Dissolved	0.000062		0.000010	mg/L	18-NOV-20	18-NOV-20	R5288184
Vanadium (V)-Dissolved	<0.00050		0.00050	mg/L	18-NOV-20	18-NOV-20	R5288184
Zinc (Zn)-Dissolved	<0.0010		0.0010	mg/L	18-NOV-20	18-NOV-20	R5288184
Zirconium (Zr)-Dissolved	<0.00020		0.00020	mg/L	18-NOV-20	18-NOV-20	R5288184
Mercury Dissolved							
Dissolved Mercury Filtration Location	FIELD					20-NOV-20	R5296675
Mercury (Hg)-Dissolved	<0.0000050		0.0000050	mg/L	23-NOV-20	23-NOV-20	R5296853

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

Reference Information

Test Method References:

ALS Test Code	Matrix	Test Description	Method Reference**
ALK-CO3CO3-CALC-WP	Water	Alkalinity, Carbonate	CALCULATION
The Alkalinity of water is a measure of its acid neutralizing capacity.Alkalinity is imparted by bicarbonate, carbonate and hydroxide components of water. The fraction of alkalinity contributed by carbonate is calculated and reported as mg CO3 2-/L.			
ALK-HCO3HCO3-CALC-WP	Water	Alkalinity, Bicarbonate	CALCULATION
The Alkalinity of water is a measure of its acid neutralizing capacity.Alkalinity is imparted by bicarbonate, carbonate and hydroxide components of water. The fraction of alkalinity contributed by bicarbonate is calculated and reported as mg HCO3-/L			
ALK-OHOH-CALC-WP	Water	Alkalinity, Hydroxide	CALCULATION
The Alkalinity of water is a measure of its acid neutralizing capacity.Alkalinity is imparted by bicarbonate, carbonate and hydroxide components of water. The fraction of alkalinity contributed by hydroxide is calculated and reported as mg OH-/L.			
ALK-TITR-WP	Water	Alkalinity, Total (as CaCO3)	APHA 2320B
The Alkalinity of water is a measure of its acid neutralizing capacity. Alkalinity is imparted by bicarbonate, carbonate and hydroxide components of water. Total alkalinity is determined by titration with a strong standard mineral acid to the successive HCO3- and H2CO3 endpoints indicated electrometrically.			
C-DOC-HTC-WP	Water	Dissolved Organic Carbon by Combustion	APHA 5310 B-WP
Filtered (0.45 um) sample is acidified and purged to remove inorganic carbon, then injected into a heated reaction chamber where organic carbon is oxidized to CO2 which is then transported in the carrier gas stream and measured via a non-dispersive infrared analyzer.			
CL-IC-N-WP	Water	Chloride in Water by IC	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
EC-SCREEN-WP	Water	Conductivity Screen (Internal Use Only)	APHA 2510
Qualitative analysis of conductivity where required during preparation of other test eg. IC, TDS, TSS, etc			
EC-WP	Water	Conductivity	APHA 2510B
Conductivity of an aqueous solution refers to its ability to carry an electric current. Conductance of a solution is measured between two spatially fixed and chemically inert electrodes.			
F-IC-N-WP	Water	Fluoride in Water by IC	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
HARDNESS-CALC-WP	Water	Hardness Calculated	APHA 2340B
Hardness (also known as Total Hardness) is calculated from the sum of Calcium and Magnesium concentrations, expressed in CaCO3 equivalents. Dissolved Calcium and Magnesium concentrations are preferentially used for the hardness calculation.			
HG-D-CVAA-WP	Water	Mercury Dissolved	APHA 3030B/EPA 1631E (mod)
Water samples are filtered (0.45 um), preserved with hydrochloric acid, then undergo a cold-oxidation using bromine monochloride prior to reduction with stannous chloride, and analyzed by CVAAS.			
MET-D-CCMS-WP	Water	Dissolved Metals in Water by CRC ICPMS	APHA 3030B/6020B (mod)
Water samples are filtered (0.45 um), preserved with nitric acid, and analyzed by CRC ICPMS. Method Limitation (re: Sulfur): Sulfide and volatile sulfur species may not be recovered by this method.			
NH3-COL-WP	Water	Ammonia by colour	APHA 4500 NH3 F
Ammonia in water samples forms indophenol when reacted with hypochlorite and phenol. The intensity is amplified by the addition of sodium nitroprusside and measured colourmetrically.			
NO2+NO3-CALC-WP	Water	Nitrate+Nitrite	CALCULATION
NO2-IC-N-WP	Water	Nitrite in Water by IC	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
NO3-IC-N-WP	Water	Nitrate in Water by IC	EPA 300.1 (mod)

Reference Information

Test Method References:

ALS Test Code	Matrix	Test Description	Method Reference**
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
P-T-COL-WP	Water	Phosphorus, Total	APHA 4500 P PHOSPHORUS-L
This analysis is carried out using procedures adapted from APHA METHOD 4500-P "Phosphorus". Total Phosphorus is determined colourmetrically after persulphate digestion of the sample.			
PH-WP	Water	pH	APHA 4500H
The pH of a sample is the determination of the activity of the hydrogen ions by potentiometric measurement using a standard hydrogen electrode and a reference electrode.			
S2-T>H2S-CALC-WT	Water	Total Sulphide Calculated as H2S	Calculation
This calculation converts Total Sulphide as (S2-) and reports it as Total Sulphide as (H2S). Total Sulphide as (S2-) is determined using procedures adapted from APHA 4500-S2 "Sulphide".			
SO4-IC-N-WP	Water	Sulfate in Water by IC	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
SOLIDS-TOTSUS-WP	Water	Total Suspended Solids	APHA 2540 D (modified)
Total suspended solids in aquesous matrices is determined gravimetrically after drying the residue at 103 – 105°C.			
SULPHIDE-WT	Water	Sulphide (as S)	APHA 4500S2D
This analysis is carried out using procedures adapted from APHA Method 4500-S2-D "Methylene Blue Method". Sulphide is determined colourmetrically.			
TDS-WP	Water	Total Dissolved Solids (TDS)	APHA 2540 SOLIDS C,E
A well-mixed sample is filtered through a glass fiber filter paper. The filtrate is then evaportaed to dryness in a pre-weighed vial and dried at 180 ± 2C. The increase in vial weight represents the total dissolved solids.			

** ALS test methods may incorporate modifications from specified reference methods to improve performance.

The last two letters of the above test code(s) indicate the laboratory that performed analytical analysis for that test. Refer to the list below:

Laboratory Definition Code	Laboratory Location
WP	ALS ENVIRONMENTAL - WINNIPEG, MANITOBA, CANADA
WT	ALS ENVIRONMENTAL - WATERLOO, ONTARIO, CANADA

Chain of Custody Numbers:

GLOSSARY OF REPORT TERMS

Surrogates are compounds that are similar in behaviour to target analyte(s), but that do not normally occur in environmental samples. For applicable tests, surrogates are added to samples prior to analysis as a check on recovery. In reports that display the D.L. column, laboratory objectives for surrogates are listed there.
mg/kg - milligrams per kilogram based on dry weight of sample
mg/kg wwt - milligrams per kilogram based on wet weight of sample
mg/kg lwt - milligrams per kilogram based on lipid-adjusted weight
mg/L - unit of concentration based on volume, parts per million.
< - Less than.
D.L. - The reporting limit.
N/A - Result not available. Refer to qualifier code and definition for explanation.

Test results reported relate only to the samples as received by the laboratory.
UNLESS OTHERWISE STATED, ALL SAMPLES WERE RECEIVED IN ACCEPTABLE CONDITION.
Analytical results in unsigned test reports with the DRAFT watermark are subject to change, pending final QC review.

ALS Environmental

www.alsglobal.com

Chain of Custody (COC) / Analytical Request Form

Canada Toll Free: 1 800 668 9878

[redacted]

COC Number: 17 - 782013

Page ___ of ___

Report To	Contact and company name below will appear on the final report	Report Format / Distribution	Select Service Level Below - Confirm your ...
Company:	AECOM	Select Report Format: PDF ✓ EXCEL ✓ EDD (DIGITAL)	Regular (R) ☐ Standard TAT if not indicated by client ...
Contact:	Reuben Dandurand	Quality Control (QC) Report with Report: ✓ YES ☐ NO	4 day [P4-20%] ☐
Phone:	236 330 2711	Compare results to client-provided criteria	3 day [P3-25%] ☐
	Company address below will appear on the final report	Select Distribution: ✓ EMAIL ☐ MAIL ☐ FAX	2 day [P2-50%] ☐
Street:	3292 Production Way Suite 310	Email 1 or Fax: Reuben.Dandurand@aecom.com	1 Business day [E - 100%] ☐
City/Province:	Burnaby	Email 2: Stephen.Britton@AECOM.com	Same Day, Weekend or Statutory holiday [E2 -200%] ☐ (Laboratory opening fees may apply)
Postal Code:	V5A 4W1	Email 3:	Date and Time Required for all E&P TATs: dd-mmm-yy hh:mm
Invoice To	Same as Report To ✓ YES ☐ NO	Invoice Distribution	For emergency any rush TAT requests contact your ALS Project Manager before you submit samples.
	Copy of Invoice with Report ☐ YES ☐ NO	Select Invoice Distribution: ✓ EMAIL ☐ MAIL ☐ FAX	Analysis Request
Company:		Email 1 or Fax: SAME AS ABOVE	Indicate Filtered (F), Preserved (P), or Filtered and Preserved (F/P) below
Contact:		Email 2:	

Project Information		Oil and Gas Required Fields (client use)	
ALS Account # / Quote #:	BR296212	AFE/Cost Center:	PO#:
Job #:	606 40258	Major/Minor Code:	Routing Code:
PO / AFE:		Requisitioner:	
LSD:		Location:	
ALS Lab Work Order # (lab use only):		ALS Contact:	Sampler: Stephen Britton

ALS Sample # (lab use only)	Sample Identification and/or Coordinates (This description will appear on the report)	Date (dd-mmm-yy)	Time (hh:mm)	Sample Type	NUMBER OF CONTAINERS	Metals Routine Suite Mercury	SAMPLES ON HOLD	BLM ASSESSED HAZARD (see Special Instructions)
1	BRU 95-5	13 NOV 20	16:30	GW		FP FP F		
2	BRU 95-6	13 NOV 20	16:00	GW		FP FP F		
3	BRU 96-1	13 NOV 20	15:30	GW		FP FP F		
4	BRU 96-2	14 NOV 20	14:00	GW		FP FP F		
5	BRU 96-2 DUP	14 NOV 20	14:15	GW		FP FP F		
6	Mustard	16 NOV 20	11:00	GW (DW)		FP FP F		
7	Bremner	13 NOV 20	13:00	GW (DW)		FP FP F		

Drinking Water (DW) Samples? (client use)	Special Instructions / Specify Criteria to add on report by clicking on the drop-down list below (electronic COC only)
Are samples taken from a Regulated DW System? ✓ YES ☐ NO Some are	
Are samples for human consumption/use? ✓ YES ☐ NO Some yes	

SAMPLE CONDITION AS RECEIVED (lab use only)

Frozen ☐	SIF Observations: Yes ☐	No ☐	
Ice Packs ✓	Ice Cubes ☐	Custody seal intact: Yes ☐	No ☐
Cooling Initiated ☐			
INITIAL COOLER TEMPERATURES (°C)		FINAL COOLER TEMPERATURES (°C)	

SHIPMENT RELEASE (client use)			INITIAL SHIPMENT RECEPTION (lab use only)		FINAL SHIPMENT RECEPTION (lab use only)	
Released by:	Date:	Time:	Received by: [redacted]	Date: NOV 17 2020	Received by: [redacted]	Date: NOV 17 2020

REFER TO BACK PAGE FOR ALS LOCATIONS AND SAMPLING INFORMATION

WHITE - LABORATORY COPY YELLOW - CLIENT COPY

1 If any water samples are taken from a Regulated Drinking Water (DW) System, please complete and submit the Appropriate DW COC form.

AECOM CANADA LTD.
ATTN: RYAN MILLS
330 - 3292 Production Way
Burnaby BC V5A 4R4

Date Received: 21-NOV-20
Report Date: 01-DEC-20 13:37 (MT)
Version: FINAL

Client Phone: 604-444-6400

Certificate of Analysis

Lab Work Order #: L2532264

Project P.O. #: 60640258
Job Reference: 60640258 - CANWHITE SANDS
C of C Numbers:
Legal Site Desc:

[redacted]
Judy Dalmaijer
Account Manager

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ALS ENVIRONMENTAL ANALYTICAL REPORT

	Sample ID	L2532264-1				
	Description	WATER				
	Sampled Date	18-NOV-20				
	Sampled Time	10:30				
	Client ID	JOSHUA MUSTARD - TAP				
Grouping	**Analyte**					
WATER						
Physical Tests	Conductivity (umhos/cm)	536				
	Hardness (as CaCO3) (ug/L)	510				
	pH (pH units)	8.48				
	Total Suspended Solids (ug/L)	<3000				
	TDS (Calculated) (ug/L)	319000				
	Turbidity (NTU)	0.26				
Anions and Nutrients	Alkalinity, Total (as CaCO3) (ug/L)	284000				
	Ammonia, Total (as N) (ug/L)	43				
	Bicarbonate (HCO3) (ug/L)	330000				
	Carbonate (CO3) (ug/L)	8040				
	Chloride (Cl) (ug/L)	2870				
	Fluoride (F) (ug/L)	286				
	Hydroxide (OH) (ug/L)	<340				
	Nitrate and Nitrite as N (ug/L)	<5.1				
	Nitrate (as N) (ug/L)	<5.0				
	Nitrite (as N) (ug/L)	<1.0				
	Phosphorus (P)-Total (ug/L)	58.3				
	Sulfate (SO4) (ug/L)	9070				
	Sulphide (as S) (ug/L)	24				
	Sulphide (as H2S) (ug/L)	26				
Organic / Inorganic Carbon	Dissolved Organic Carbon (ug/L)	1990				
Dissolved Metals	Dissolved Mercury Filtration Location	FIELD				
	Dissolved Metals Filtration Location	FIELD				
	Aluminum (Al)-Dissolved (ug/L)	<1.0 RRV				
	Antimony (Sb)-Dissolved (ug/L)	<0.10				
	Arsenic (As)-Dissolved (ug/L)	0.70				
	Barium (Ba)-Dissolved (ug/L)	0.24 RRV				
	Beryllium (Be)-Dissolved (ug/L)	<0.10				
	Bismuth (Bi)-Dissolved (ug/L)	<0.050				
	Boron (B)-Dissolved (ug/L)	142				
	Cadmium (Cd)-Dissolved (ug/L)	<0.0050				
	Calcium (Ca)-Dissolved (ug/L)	118 RRV				
	Cesium (Cs)-Dissolved (ug/L)	<0.010				
	Chromium (Cr)-Dissolved (ug/L)	<0.10				
	Cobalt (Co)-Dissolved (ug/L)	<0.10				
	Copper (Cu)-Dissolved (ug/L)	0.35 RRV				

* Please refer to the Reference Information section for an explanation of any qualifiers detected.

ALS ENVIRONMENTAL ANALYTICAL REPORT

	Sample ID	L2532264-1				
	Description	WATER				
	Sampled Date	18-NOV-20				
	Sampled Time	10:30				
	Client ID	JOSHUA MUSTARD - TAP				
Grouping	**Analyte**					
WATER						
Dissolved Metals	Iron (Fe)-Dissolved (ug/L)	<10				
	Lead (Pb)-Dissolved (ug/L)	<0.050				
	Lithium (Li)-Dissolved (ug/L)	<1.0				
	Magnesium (Mg)-Dissolved (ug/L)	52.4 RRV				
	Manganese (Mn)-Dissolved (ug/L)	0.18 RRV				
	Mercury (Hg)-Dissolved (ug/L)	<0.0050				
	Molybdenum (Mo)-Dissolved (ug/L)	0.974				
	Nickel (Ni)-Dissolved (ug/L)	<0.50				
	Phosphorus (P)-Dissolved (ug/L)	57				
	Potassium (K)-Dissolved (ug/L)	1410				
	Rubidium (Rb)-Dissolved (ug/L)	0.58				
	Selenium (Se)-Dissolved (ug/L)	<0.050				
	Silicon (Si)-Dissolved (ug/L)	6580				
	Silver (Ag)-Dissolved (ug/L)	<0.010				
	Sodium (Na)-Dissolved (ug/L)	135000				
	Strontium (Sr)-Dissolved (ug/L)	0.48 RRV				
	Sulfur (S)-Dissolved (ug/L)	3280				
	Tellurium (Te)-Dissolved (ug/L)	<0.20				
	Thallium (Tl)-Dissolved (ug/L)	<0.010				
	Thorium (Th)-Dissolved (ug/L)	<0.10				
	Tin (Sn)-Dissolved (ug/L)	<0.10				
	Titanium (Ti)-Dissolved (ug/L)	<0.30				
	Tungsten (W)-Dissolved (ug/L)	<0.10				
	Uranium (U)-Dissolved (ug/L)	0.094 RRV				
	Vanadium (V)-Dissolved (ug/L)	<0.50				
	Zinc (Zn)-Dissolved (ug/L)	<1.0				
	Zirconium (Zr)-Dissolved (ug/L)	<0.20				
Aggregate Organics	Chemical Oxygen Demand (ug/L)	<20000				

* Please refer to the Reference Information section for an explanation of any qualifiers detected.

Reference Information

QC Samples with Qualifiers & Comments:

QC Type Description	Parameter	Qualifier	Applies to Sample Number(s)
Matrix Spike	Boron (B)-Dissolved	MS-B	L2532264-1
Matrix Spike	Lithium (Li)-Dissolved	MS-B	L2532264-1
Matrix Spike	Potassium (K)-Dissolved	MS-B	L2532264-1
Matrix Spike	Sodium (Na)-Dissolved	MS-B	L2532264-1
Matrix Spike	Sulfur (S)-Dissolved	MS-B	L2532264-1
Matrix Spike	Sulphide (as S)	MS-B	L2532264-1

Qualifiers for Individual Parameters Listed:

Qualifier	Description
MS-B	Matrix Spike recovery could not be accurately calculated due to high analyte background in sample.
RRV	Reported Result Verified By Repeat Analysis

Test Method References:

ALS Test Code	Matrix	Test Description	Method Reference**
ALK-CO3CO3-CALC-WP	Water	Alkalinity, Carbonate	CALCULATION

The Alkalinity of water is a measure of its acid neutralizing capacity.Alkalinity is imparted by bicarbonate, carbonate and hydroxide components of water. The fraction of alkalinity contributed by carbonate is calculated and reported as mg CO3 2-/L.

ALK-HCO3HCO3-CALC-WP	Water	Alkalinity, Bicarbonate	CALCULATION

The Alkalinity of water is a measure of its acid neutralizing capacity.Alkalinity is imparted by bicarbonate, carbonate and hydroxide components of water. The fraction of alkalinity contributed by bicarbonate is calculated and reported as mg HCO3-/L

ALK-OHOH-CALC-WP	Water	Alkalinity, Hydroxide	CALCULATION

The Alkalinity of water is a measure of its acid neutralizing capacity.Alkalinity is imparted by bicarbonate, carbonate and hydroxide components of water. The fraction of alkalinity contributed by hydroxide is calculated and reported as mg OH-/L.

ALK-TITR-WP	Water	Alkalinity, Total (as CaCO3)	APHA 2320B

The Alkalinity of water is a measure of its acid neutralizing capacity. Alkalinity is imparted by bicarbonate, carbonate and hydroxide components of water. Total alkalinity is determined by titration with a strong standard mineral acid to the successive HCO3- and H2CO3 endpoints indicated electrometrically.

C-DOC-HTC-WP	Water	Dissolved Organic Carbon by Combustion	APHA 5310 B-WP

Filtered (0.45 um) sample is acidified and purged to remove inorganic carbon, then injected into a heated reaction chamber where organic carbon is oxidized to CO2 which is then transported in the carrier gas stream and measured via a non-dispersive infrared analyzer.

CL-L-IC-N-WP	Water	Chloride in Water by IC (Low Level)	EPA 300.1 (mod)

Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.

COD-WP	Water	Chemical Oxygen Demand	APHA 5220 D

This analysis is carried out using procedures adapted from APHA Method 5220 "Chemical Oxygen Demand (COD)". Chemical oxygen demand is determined using the closed reflux colorimetric method.

EC-SCREEN-WP	Water	Conductivity Screen (Internal Use Only)	APHA 2510

Qualitative analysis of conductivity where required during preparation of other test eg. IC, TDS, TSS, etc

EC-WP	Water	Conductivity	APHA 2510B

Conductivity of an aqueous solution refers to its ability to carry an electric current. Conductance of a solution is measured between two spatially fixed and chemically inert electrodes.

ETL-SOLIDS-CALC-WP	Water	TDS calculated	CALCULATION
F-IC-N-WP	Water	Fluoride in Water by IC	EPA 300.1 (mod)

Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.

HARDNESS-CALC-WP	Water	Hardness Calculated	APHA 2340B

Hardness (also known as Total Hardness) is calculated from the sum of Calcium and Magnesium concentrations, expressed in CaCO3 equivalents. Dissolved Calcium and Magnesium concentrations are preferentially used for the hardness calculation.

HG-D-CVAA-WP	Water	Mercury Dissolved	APHA 3030B/EPA 1631E (mod)

Water samples are filtered (0.45 um), preserved with hydrochloric acid, then undergo a cold-oxidation using bromine monochloride prior to reduction with stannous chloride, and analyzed by CVAAS.

Reference Information

IONBALANCE-CALC-WP Water Ion Balance Calculation APHA 1030E

Cation Sum, Anion Sum, and Ion Balance (as % difference) are calculated based on guidance from APHA Standard Methods (1030E Checking Correctness of Analysis). Because all aqueous solutions are electrically neutral, the calculated ion balance (% difference of cations minus anions) should be near-zero.

Cation and Anion Sums are the total meq/L concentration of major cations and anions. Dissolved species are used where available. Minor ions are included where data is present. Ion Balance (as % difference) cannot be calculated accurately for waters with very low electrical conductivity (EC), and is reported as "Low EC" where EC < 100 uS/cm (umhos/cm). Ion Balance is calculated as:

Ion Balance (%) = [Cation Sum-Anion Sum] / [Cation Sum+Anion Sum]

MET-D-CCMS-WP Water Dissolved Metals in Water by CRC ICPMS APHA 3030B/6020B (mod)

Water samples are filtered (0.45 um), preserved with nitric acid, and analyzed by CRC ICPMS.

Method Limitation (re: Sulfur): Sulfide and volatile sulfur species may not be recovered by this method.

NH3-COL-WP Water Ammonia by colour APHA 4500 NH3 F

Ammonia in water samples forms indophenol when reacted with hypochlorite and phenol. The intensity is amplified by the addition of sodium nitroprusside and measured colourmetrically.

NO2+NO3-CALC-L-WP Water Nitrate+Nitrite CALCULATION

NO2-L-IC-N-WP Water Nitrite in Water by IC (Low Level) EPA 300.1 (mod)

Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.

NO3-L-IC-N-WP Water Nitrate in Water by IC (Low Level) EPA 300.1 (mod)

Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.

P-T-COL-WP Water Phosphorus, Total APHA 4500 P PHOSPHORUS-L

This analysis is carried out using procedures adapted from APHA METHOD 4500-P "Phosphorus". Total Phosphorus is determined colourmetrically after persulphate digestion of the sample.

PH-WP Water pH APHA 4500H

The pH of a sample is the determination of the activity of the hydrogen ions by potentiometric measurement using a standard hydrogen electrode and a reference electrode.

S2-T>H2S-CALC-WT Water Total Sulphide Calculated as H2S Calculation

This calculation converts Total Sulphide as (S2-) and reports it as Total Sulphide as (H2S). Total Sulphide as (S2-) is determined using procedures adapted from APHA 4500-S2 "Sulphide".

SO4-IC-N-WP Water Sulfate in Water by IC EPA 300.1 (mod)

Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.

SOLIDS-TOTSUS-WP Water Total Suspended Solids APHA 2540 D (modified)

Total suspended solids in aquesous matrices is determined gravimetrically after drying the residue at 103 – 105°C.

SULPHIDE-WT Water Sulphide (as S) APHA 4500S2D

This analysis is carried out using procedures adapted from APHA Method 4500-S2-D "Methylene Blue Method". Sulphide is determined colourmetrically.

TURBIDITY-WP Water Turbidity APHA 2130B (modified)

Turbidity in aqueous matrices is determined by the nephelometric method.

** ALS test methods may incorporate modifications from specified reference methods to improve performance.

The last two letters of the above test code(s) indicate the laboratory that performed analytical analysis for that test. Refer to the list below:

Laboratory Definition Code	Laboratory Location
WT	ALS ENVIRONMENTAL - WATERLOO, ONTARIO, CANADA
WP	ALS ENVIRONMENTAL - WINNIPEG, MANITOBA, CANADA

Reference Information

Chain of Custody Numbers:

GLOSSARY OF REPORT TERMS

Surrogate - A compound that is similar in behaviour to target analyte(s), but that does not occur naturally in environmental samples. For applicable tests, surrogates are added to samples prior to analysis as a check on recovery.
mg/kg - milligrams per kilogram based on dry weight of sample.
mg/kg wwt - milligrams per kilogram based on wet weight of sample.
mg/kg lwt - milligrams per kilogram based on lipid-adjusted weight of sample.
mg/L - milligrams per litre.
< - Less than.
D.L. - The reported Detection Limit, also known as the Limit of Reporting (LOR).
N/A - Result not available. Refer to qualifier code and definition for explanation.

Test results reported relate only to the samples as received by the laboratory.
UNLESS OTHERWISE STATED, ALL SAMPLES WERE RECEIVED IN ACCEPTABLE CONDITION.
Analytical results in unsigned test reports with the DRAFT watermark are subject to change, pending final QC review.

ALS Environmental
www.alsglobal.com

Chain of Custody (COC) / Analytical Request Form

Canada Toll Free: 1 800 668 9878

[redacted]

COC Number: 17 - 673722

Page 1 of 1

Report To	Contact and company name below will appear on the final report	Report Format / Distribution	Select Service Level Below - Contact your AM to confirm all E&P TATs (surcharges may apply)
Company:	AECOM	Select Report Format: PDF EXCEL EDD (DIGITAL)	Regular [R]
Contact:	Ryan Mills	Quality Control (QC) Report with Report	4 day [P4-20%] / 3 day [P3-25%] / 2 day [P2-50%]
Phone:	604 353 0384	Select Distribution: EMAIL MAIL FAX	1 Business day [E-100%] / Same Day, Weekend or Statutory holiday [E2-200%] (Laboratory opening fees may apply)
Company address below will appear on the final report		Email or Fax: Ryan.mills@aecom.com	
Street:	3292 Production Way	Email 2: stephen.dichin@aecom.com	
City/Province:	Burnaby, BC	Email 3: reuben.dandurand@aecom.com	
Postal Code:	V5A 4R4		
Invoice To	Same as Report To: YES NO	Invoice Distribution	Analysis Request
	Copy of Invoice with Report: YES NO	Select Invoice Distribution: EMAIL MAIL FAX	
Company:		Email 1 or Fax: CANSSC_E-billing@aecom.com	
Contact:		Email 2: Ryan.Mills@aecom.com	

Project Information	Oil and Gas Required Fields (client use)
ALS Account # / Quote #:	AFE/Cost Center: PO#:
Job #: 60640258 - Cenubite Seeds	Major/Minor Code: Routing Code:
PO / AFE:	Requisitioner:
LSD:	Location:
ALS Lab Work Order # (lab use only):	ALS Contact: Judy Delmajer Sampler: S. Dichin

ALS Sample # (lab use only)	Sample Identification and/or Coordinates (This description will appear on the report)	Date (dd-mmm-yy)	Time (hh:mm)	Sample Type	Specific conductivity	pH, TSS	DOC	dis metals + hardness	TDS	Bicarbonate, calcium	Carbonate, chloride	Hydroxide, potassium	Sodium	Sulphate	Sulphide, Cloth	Fluoride	Nitrate, Nitrite	Phosphorous	SAMPLES ON HOLD	Sample is hazardous (please provide further details)	NUMBER OF CONTAINERS
	Joshua Mustard - tap	18-NOV-20	10:30	Water	X	X	X	X	X	X	X	X	X	X	X	X	X	X			6

Bottle order # BR29622

Drinking Water (DW) Samples? (client use)	Special Instructions / Specify Criteria to add or report by clicking on the drop-down list below (Reference COC only)
Are samples taken from a Regulated DW System? YES NO	See quote for parameters required. If above is unclear, filtered metals, nutrients and 1 amber for
Are samples for human consumption/use? YES NO private/ residential well	

SAMPLE CONDITION AS RECEIVED (lab use only)

Frozen: SIF Observations: Yes No

Ice Packs: Ice Cubes: Custody seal intact: Yes No

Cooling Initiated:

INITIAL COOLER TEMPERATURES °C				FINAL COOLER TEMPERATURES °C			
	13.7						

SHIPMENT RELEASE (client use)			INITIAL SHIPMENT RECEPTION (lab use only)			FINAL SHIPMENT RECEPTION (lab use only)		
Released by: [redacted]	Date: Nov 20 2020	Time: 7:30 PST	Received by: EMG	Date: 21 NOV 2020	Time: 12:33	Received: [redacted]	Date: NOV 23 2020	Time: [redacted]

REFER TO BACK PAGE FOR ALS LOCATIONS AND SAMPLING INFORMATION

WHITE - LABORATORY COPY YELLOW - CLIENT COPY

Submission of samples to this laboratory indicates acceptance of the Terms and Conditions as set forth on the back page of this document.

1. If any water samples are taken from a Regulated Drinking Water (DW) System, please check the appropriate DW box (client use).

ALS Environmental
www.alsglobal.com

Chain of Custody (COC) / Analytical Request Form

Canada Toll Free: 1 800 668 9878

[redacted]

COC Number: 17 - 673722

Page 1 of 1

Report To		Report Format / Distribution		Select Service Level Below - Contact your AM to confirm all E&P TATs (surcharges may apply)
Company:	AECOM	Select Report Format: PDF / EXCEL / EDD (DIGITAL)		Regular [R]: Standard TAT if received by 3 pm - business days - no surcharges apply
Contact:	Ryan Mills	Quality Control (QC) Report with Report: YES / NO		4 day [P4-20%] / 3 day [P3-25%] / 2 day [P2-50%] / 1 Business day [E-100%] / Same Day, Weekend or Statutory holiday [E2-200%] (Laboratory opening fees may apply)
Phone:	604 351 0384	Compare Results to Criteria on Report - provide details below if box checked		
Company address below will appear on the final report		Select Distribution: EMAIL / MAIL / FAX		Date and Time Required for all E&P TATs:
Street:	3292 Production Way	Email 1 or Fax: ryan.mills@aecom.com		For tests that can not be performed according to the service level selected, you will be contacted.
City/Province:	Burnaby, BC	Email 2: stephen.dichin@aecom.com		Analysis Request
Postal Code:	V5A 4R4	Email 3: reuben.dandurand@aecom.com		
Invoice To	Same as Report To: YES / NO	Invoice Distribution		Indicate Filtered (F), Preserved (P) or Filtered and Preserved (F/P) below
	Copy of Invoice with Report: YES / NO	Select Invoice Distribution: EMAIL / MAIL / FAX		
Company:		Email 1 or Fax: CANSSC_E-billing@aecom.com		
Contact:		Email 2: Ryan.Mills@aecom.com		
Project Information		[redacted] Oil and Gas Required Fields (client use)		
ALS Account # / Quote #:		AFE/Cost Center:	PO#:	
Job #: 60640258 - Cambrian Sands		Major/Minor Code:	Routing Code:	
PO / AFE:		Requisitioner:		
LSD:		Location:		
ALS Lab Work Order # (lab use only):		ALS Contact: Judy Dalmanjer	Sampler: S. Dichin	

ALS Sample # (lab use only)	Sample Identification and/or Coordinates (This description will appear on the report)	Date (dd-mmm-yy)	Time (hh:mm)	Sample Type	Specific Conductivity, Total Alkalinity, pH, TSS	DOC, [redacted]	Dissolved Metals + Hardness	TDS	Bicarbonate (calc)	Carbonate, Chloride, Hydroxide, Potassium	Sodium	Sulphate	Sulphide, Cyanide, Fluoride	Nitrate, Nitrite, Phosphorous			SAMPLES ON HOLD	Laboratory use only: Submitted to subcontract laboratory	# OF CONTAINERS SUBMITTED
	Joshua Mustard - Fap	18-NOV-20	10:30	Water	X	X	X	X	X	X	X	X	X	X	X	X			6

Bottle order # BR29620

Drinking Water (DW) Samples (client use)
Are samples taken from a Regulated DW System? YES / NO
Are samples for human consumption/use? YES / NO — private, single residence well

Special Instructions / Specify Criteria to add on report by clicking on the drop-down list below (Electronic COC only)

See quote for parameters required
if phase is unclear, filtered metals, mostly as 1 sample

SAMPLE CONDITION AS RECEIVED (lab use only)
Frozen / SIF Observations: YES / NO
Ice Packs / Ice Cubes / Custody seal intact: YES / NO
Cooling Initiated

Temperature (°C)			Final Cooler Temperature (°C)		
13.7					

SHIPMENT RELEASE (client use)			INITIAL SHIPMENT RECEPTION (lab use only)			FINAL SHIPMENT RECEPTION (lab use only)		
Released by: [redacted]	Date: Nov 20 2020	Time: 730 PM	Received by: RM6	Date: 21 NOV 2020	Time: 13:23	Received by: [redacted]	Date: NOV 23 2020	Time: [redacted]

REFER TO BACK PAGE FOR ALS LOCATIONS AND SAMPLING INFORMATION

WHITE - LABORATORY COPY YELLOW - CLIENT COPY

Additional fees apply to rush requests on weekends, statutory holidays and non-routine sampling. See the ALS Service Guide for details. By the use of this form the user acknowledges and agrees with the Terms and Conditions as specified on the back page of this document.

* Failure to complete all portions of this form may delay analysis. Please fill in this form LEGIBLY.

Appendix G

Regional Water Supply Wells

Regional Water Well Details

Well ID	Easting	Northing	Water Use	Well Depth (m)	Base Lithology
33132	677760	5517653	Domestic	50.29	CARBONATE
70333	679296	5521780	Domestic	20.73	FINES
6415	679339	5520143	Missing	32	BOULDERS
40017	670541	5527728	Domestic	38.1	CARBONATE
28712	675357	5515953	Domestic	48.77	CARBONATE
63834	681015	5516927	Domestic	50.29	CARBONATE
50749	680202	5518533	Domestic	45.72	CARBONATE
43020	676056	5520056	Domestic	24.38	TILL/DIAMICTON
66059	671869	5529797	Domestic	35.05	CARBONATE
107495	670746	5519506	Livestock	42.09	CARBONATE
117736	670260	5523187	Domestic	42.7	CARBONATE
101025	669388	5524812	Domestic	42.7	CARBONATE
66986	672577	5527378	Domestic	19.81	CARBONATE
29884	674329	5523292	Domestic	18.29	GRAVEL
23501	674262	5525771	Domestic	32.61	CARBONATE
21957	670280	5522381	Domestic	47.24	CARBONATE
15662	670991	5525682	Domestic	24.38	CARBONATE
32864	673478	5524917	Domestic	21.34	GRAVEL
40009	674437	5519211	Domestic	31.39	CARBONATE
64044	670299	5521544	Domestic	18.9	CARBONATE
53278	680020	5530869	Domestic	25.91	GRAVEL
77877	680068	5529278	Domestic	47.85	CARBONATE
101436	682214	5518208	Domestic	42.09	CARBONATE
26666	678444	5523394	Livestock	31.39	CARBONATE
100451	679382	5518498	Domestic	42.7	CARBONATE
26947	673389	5528226	Domestic	38.1	CARBONATE
116634	671773	5527358	Domestic	9.15	GRAVEL
68443	673435	5526555	Domestic	33.53	CARBONATE
17609	683460	5529385	Domestic	28.96	GRAVEL
17603	681591	5524359	Domestic	36.58	CARBONATE
6413	675229	5520871	Missing	3.05	GRAVEL
125973	675292	5518397	Domestic	41.18	CARBONATE
69277	675117	5524954	Domestic	41.45	CARBONATE
69278	675097	5525789	Domestic	57.91	SANDSTONE
126183	681672	5521898	Domestic	41.78	CARBONATE
46199	680996	5517766	Domestic	9.14	SAND
14497	675789	5514718	Domestic	32	GRAVEL
107487	677824	5515179	Domestic	42.09	CARBONATE
56003	680309	5514461	Domestic	28.04	SAND
121360	675442	5527868	Domestic	39.65	CARBONATE
79926	677085	5527913	Domestic	40.84	CARBONATE
24604	682258	5528507	Domestic	54.86	SANDSTONE
61928	676668	5528322	Livestock	37.8	CARBONATE
133079	674775	5528743	Missing	8.08	BOULDERS
59157	682258	5528507	Domestic	38.71	CARBONATE
6416	675177	5529117	Domestic	16.76	GRAVEL
17601	680600	5518152	Domestic	41.15	CARBONATE
112136	680804	5523489	Domestic	35.08	CARBONATE
104143	679317	5520978	Domestic	42.7	CARBONATE
28441	676157	5515972	Domestic	46.63	CARBONATE
66119	680830	5522692	Domestic	10.97	GRAVEL
61021	676157	5515972	Domestic	32	CARBONATE
44568	673981	5521235	Domestic	41.15	CARBONATE
17467	669446	5522362	Domestic	23.47	CARBONATE
66053	674283	5524935	Domestic	48.77	CARBONATE
11791	675557	5529517	Domestic	25.91	CARBONATE
29648	679141	5527548	Domestic	15.24	SAND
121410	675029	5528275	Domestic	47.88	CARBONATE
28701	684728	5527756	Domestic	28.04	CARBONATE
7836	676668	5528322	Domestic	25.91	TILL/DIAMICTON
44868	679915	5528416	Domestic	49.68	CARBONATE
43022	679117	5528397	Domestic	44.2	CARBONATE
62190	675442	5527868	Domestic	12.8	SAND
15663	677205	5529564	Domestic	45.11	CARBONATE
74055	677476	5528348	Domestic	56.08	SANDSTONE
40146	682632	5517838	Domestic	27.43	CARBONATE
125834	679029	5516444	Domestic	24.4	CARBONATE
117350	675333	5516759	Domestic	50.32	CARBONATE
28443	672293	5529417	Domestic	20.73	GRAVEL
21030	673435	5526555	Domestic	28.65	CARBONATE
67740	672554	5528203	Domestic	36.58	CARBONATE
74076	672682	5529827	Domestic	40.54	CARBONATE
28437	672256	5524476	Domestic	31.7	CARBONATE
63409	674457	5518374	Domestic	41.15	CARBONATE
125922	674416	5520017	Domestic	54.29	CARBONATE
65848	677433	5514760	Domestic	42.67	CARBONATE
17538	677205	5529564	Domestic	28.96	CARBONATE
26732	682258	5528507	Domestic	42.67	GRAVEL
77876	683088	5528532	Domestic	23.77	GRAVEL
53454	682214	5518208	Domestic	48.77	CARBONATE
27155	675621	5521278	Domestic	48.77	CARBONATE

Regional Water Well Details

Well ID	Easting	Northing	Water Use	Well Depth (m)	Base Lithology
25455	681015	5516927	Domestic	41.76	CARBONATE
24585	675357	5515953	Domestic	21.34	SAND
17531	676012	5521693	Domestic	42.67	CARBONATE
34605	675292	5518397	Domestic	73.15	SANDSTONE
110253	678617	5516839	Domestic	48.8	CARBONATE
69274	678617	5516839	Domestic	35.05	GRAVEL
117081	678554	5519314	Domestic	47.88	CARBONATE
19961	672554	5528203	Domestic	24.99	BOULDERS
29656	674195	5528252	Domestic	21.34	CARBONATE
28764	673489	5530680	Domestic	32	CARBONATE
65576	672645	5524895	Domestic	43.59	CARBONATE
59361	683904	5527727	Domestic	37.8	CARBONATE
76510	677345	5518040	Domestic	47.55	GRAVEL
10447	675575	5522914	Domestic	36.27	GRAVEL
107616	680778	5524320	Domestic	57.95	SANDSTONE
58709	672164	5527777	Domestic	38.1	CARBONATE
66056	671750	5528175	Domestic	28.04	CARBONATE
32850	672650	5530651	Domestic	47.24	CARBONATE
24671	672682	5529827	Domestic	42.67	CARBONATE
72270	678532	5520121	Livestock	42.67	CARBONATE
72191	682517	5521129	Domestic	53.34	SANDSTONE
23342	673412	5527401	Domestic	29.57	SHALE/MUDSTONE
36619	672622	5525727	Domestic	22.86	CARBONATE
79923	672210	5526110	Domestic	35.97	CARBONATE
17606	683498	5528124	Domestic	19.51	GRAVEL
17605	683128	5527705	Domestic	51.82	CARBONATE
73142	677476	5528348	Air Conditioning	36.88	CARBONATE
74897	671869	5529797	Domestic	36.58	CARBONATE
60968	671869	5529797	Air Conditioning	36.58	CARBONATE
68279	679486	5514420	Domestic	44.2	CARBONATE
72368	673737	5515069	Domestic	41.15	CARBONATE
30587	680703	5526763	Domestic	9.14	GRAVEL
30010	679915	5528416	Domestic	47.24	GRAVEL
23509	679202	5530015	Domestic	35.66	CARBONATE
22335	680068	5529278	Domestic	48.77	SHALE/MUDSTONE
117085	671885	5523228	Domestic	39.65	CARBONATE
72375	679486	5514420	Air Conditioning	47.24	CARBONATE
121855	675312	5517594	Domestic	53.98	CARBONATE
72397	676116	5517613	Domestic	35.05	CARBONATE
24949	680950	5519416	Domestic	40.23	GRAVEL
56054	672293	5529417	Domestic	36.58	CARBONATE
22336	673389	5528226	Domestic	45.72	CARBONATE
66057	672577	5527378	Domestic	33.53	CARBONATE
70313	674350	5522488	Livestock	30.48	CARBONATE
103063	677476	5528348	Domestic	48.8	CARBONATE
15661	675029	5528275	Domestic	29.87	CARBONATE
77875	683128	5527705	Domestic	22.86	TILL/DIAMICTON
76489	679117	5528397	Domestic	60.35	SANDSTONE
75810	677476	5528348	Domestic	56.08	SANDSTONE
24692	676823	5529166	Domestic	42.67	CARBONATE
17610	682629	5529361	Domestic	54.86	SAND
68293	675748	5516361	Domestic	51.21	CARBONATE
24634	675357	5515953	Domestic	48.77	CARBONATE
76360	676952	5517632	Domestic	47.24	GRAVEL
64051	678576	5518477	Livestock	35.05	CARBONATE
73329	670541	5527728	Domestic	74.98	SANDSTONE
54031	672293	5529417	Domestic	28.96	CARBONATE
73627	671773	5527358	Domestic	68.58	SANDSTONE
110368	671903	5529013	Domestic	29.58	CARBONATE
28765	673517	5529854	Domestic	8.23	GRAVEL
60967	672682	5529827	Domestic	36.58	CARBONATE
60592	672682	5529827	Air Conditioning	30.48	CARBONATE
76479	673714	5515904	Domestic	35.97	CARBONATE
40010	671094	5521561	Domestic	30.48	CARBONATE
15658	679486	5514420	Domestic	30.18	CARBONATE
115913	677824	5515179	Domestic	41.18	CARBONATE
28702	682258	5528507	Domestic	42.67	CARBONATE
121676	682198	5529740	Domestic	41.18	CARBONATE
59280	679141	5527548	Domestic	35.36	TILL/DIAMICTON
54776	675085	5531531	Domestic	62.48	SANDSTONE
104142	678617	5516839	Domestic	26.54	GRAVEL
55414	675312	5517594	Domestic	10.36	GRAVEL
50533	680979	5518582	Domestic	41.15	CARBONATE
79927	672293	5529417	Domestic	42.06	CARBONATE
63411	671773	5527358	Domestic	30.48	CARBONATE
40018	673389	5528226	Domestic	37.49	CARBONATE
117068	671773	5527358	Domestic	41.78	CARBONATE
63681	671773	5527358	Domestic	43.59	CARBONATE
79925	672554	5528203	Domestic	26.52	CARBONATE
134723	672682	5529827	Domestic	41.18	CARBONATE
72122	671869	5529797	Domestic	49.99	CARBONATE

Regional Water Well Details

Well ID	Easting	Northing	Water Use	Well Depth (m)	Base Lithology
56278	671869	5529797	Domestic	41.15	CARBONATE
130664	670583	5526076	Domestic	74.72	SANDSTONE
137097	675495	5528675	Domestic	42.09	CARBONATE
70329	682629	5529361	Domestic	47.85	SANDSTONE
133082	674775	5528743	Missing	5.49	BOULDERS
125737	679029	5516444	Domestic	36.6	CARBONATE
22556	677303	5519682	Domestic	35.05	CARBONATE
111433	676157	5515972	Domestic	39.96	CARBONATE
79921	676732	5525826	Domestic	66.45	SANDSTONE
14527	681672	5521898	Domestic	23.16	UNDIFF ROCK
56290	683498	5528124	Domestic	43.59	CARBONATE
24658	677497	5527506	Domestic	15.24	TILL/DIAMICTON
23896	678311	5528371	Domestic	59.44	SANDSTONE
21921	675115	5530726	Domestic	41.15	CARBONATE
13183	676695	5531570	Missing	9.45	GRAVEL
124067	682258	5528507	Domestic	44.22	CARBONATE
116914	676668	5528322	Domestic	38.12	CARBONATE
112941	675075	5526594	Domestic	41.18	CARBONATE
40012	674329	5523292	Domestic	37.49	CARBONATE
112693	670583	5526076	Domestic	45.14	CARBONATE
129636	671035	5524041	Domestic	42.09	BOULDERS
72229	673523	5523274	Domestic	42.67	CARBONATE
104150	671157	5519119	Domestic	43.92	CARBONATE
117746	677433	5514760	Domestic	48.8	CARBONATE
33135	676668	5528322	Domestic	47.24	CARBONATE
62191	677085	5527913	Domestic	14.94	TILL/DIAMICTON
36992	671750	5528175	Domestic	38.1	CARBONATE
20971	670924	5528151	Domestic	29.26	CARBONATE
17535	674350	5529094	Domestic	32.31	CARBONATE
51589	681445	5528474	Domestic	54.86	SANDSTONE
102039	683460	5529385	Domestic	29.58	CARBONATE
31386	675140	5524149	Domestic	36.58	CARBONATE
21428	679401	5517694	Domestic	38.71	CARBONATE
104437	682657	5517020	Domestic	36.6	CARBONATE
125897	680996	5517766	Domestic	49.72	CARBONATE
65453	680059	5523448	Domestic	32.31	CARBONATE
43021	672600	5526530	Domestic	15.24	SAND
17528	679486	5514420	Domestic	28.96	UNDIFF ROCK
33086	679117	5528397	Domestic	19.51	SAND
121831	675902	5530748	Domestic	42.09	CARBONATE
101102	675831	5528300	Domestic	35.99	CARBONATE
29540	680046	5530053	Domestic	21.34	TILL/DIAMICTON
69282	675936	5529925	Domestic	32	CARBONATE
123310	682214	5518208	Domestic	67.1	SANDSTONE
74541	675489	5526197	Domestic	42.67	CARBONATE
54033	675140	5524149	Domestic	28.04	GRAVEL
50534	676952	5517632	Domestic	59.44	CARBONATE
73640	671773	5527358	Domestic	37.49	CARBONATE
133084	674350	5529094	Missing	1.52	BOULDERS
40014	673892	5524520	Domestic	38.1	CARBONATE
119279	670319	5520740	Domestic	-9999	BOULDERS
11789	671157	5519119	Domestic	23.16	CARBONATE
4958	671157	5519119	Domestic	20.42	CARBONATE
7835	672554	5528203	Domestic	21.64	CARBONATE
77855	671773	5527358	Domestic	42.06	CARBONATE
34614	674218	5527422	Domestic	41.15	CARBONATE
69280	672577	5527378	Domestic	41.15	CARBONATE
62399	673389	5528226	Domestic	30.48	CARBONATE
46122	672650	5530651	Domestic	28.96	CARBONATE
43023	671903	5529013	Domestic	72.24	SANDSTONE
72571	672650	5530651	Domestic	38.4	CARBONATE
29474	678617	5516839	Domestic	42.67	CARBONATE
24771	676932	5518437	Domestic	35.66	GRAVEL
117109	678488	5521758	Domestic	42.7	CARBONATE
11788	677717	5519293	Domestic	39.62	CARBONATE
48407	677760	5517653	Domestic	35.05	CARBONATE
30610	671750	5528175	Domestic	10.06	SAND
29654	672164	5527777	Domestic	53.34	CARBONATE
19959	672554	5528203	Domestic	20.42	UNDIFF ROCK
29633	673517	5529854	Domestic	35.97	CARBONATE
113537	674437	5519211	Domestic	44.84	CARBONATE
126914	683498	5528124	Domestic	47.28	CARBONATE
28423	676735	5530772	Domestic	43.59	CARBONATE
19468	681479	5527648	Domestic	15.54	TILL/DIAMICTON
69284	677544	5530794	Domestic	56.39	SANDSTONE
24656	676775	5529949	Domestic	42.67	CARBONATE
101400	680068	5529278	Domestic	44.53	CARBONATE
68263	677303	5519682	Domestic	40.84	CARBONATE
69273	678617	5516839	Domestic	18.29	SAND
79922	678378	5525863	Domestic	73.15	SANDSTONE
77874	679990	5525912	Domestic	42.67	CARBONATE

Regional Water Well Details

Well ID	Easting	Northing	Water Use	Well Depth (m)	Base Lithology
59218	675965	5523328	Domestic	41.15	CARBONATE
114088	677717	5519293	Domestic	15.25	TILL/DIAMICTON
30744	673389	5528226	Domestic	38.1	CARBONATE
67845	672577	5527378	Air Conditioning	32	CARBONATE
138643	672600	5526530	Domestic	47.88	CARBONATE
70081	671773	5527358	Domestic	35.66	CARBONATE
76441	671773	5527358	Domestic	35.05	CARBONATE
34221	672650	5530651	Domestic	60.05	SHALE/MUDSTONE
13179	673544	5529068	Domestic	24.38	TILL/DIAMICTON
77858	673517	5529854	Domestic	36.58	CARBONATE
29889	673849	5526160	Domestic	31.09	CARBONATE
137282	677387	5514270	Domestic	48.8	CARBONATE
29509	680996	5517766	Domestic	36.58	CARBONATE
20242	675664	5519639	Domestic	50.29	CARBONATE
30455	680059	5523448	Domestic	33.53	CARBONATE
29465	676932	5518437	Domestic	63.09	SANDSTONE
117387	681616	5523524	Domestic	40.87	CARBONATE
76410	676932	5518437	Domestic	54.86	CARBONATE
32053	671750	5528175	Domestic	34.14	CARBONATE
23521	673412	5527401	Domestic	31.09	CARBONATE
32052	673523	5523274	Livestock	38.1	CARBONATE
113299	673065	5525169	Missing	27.45	CARBONATE
107264	674521	5515930	Domestic	42.09	CARBONATE
28735	672798	5519166	Domestic	24.38	CARBONATE
18459	675377	5515116	Domestic	9.75	GRAVEL
65452	675399	5514309	Domestic	44.5	CARBONATE
29634	675985	5529142	Domestic	35.36	CARBONATE
37639	677781	5516818	Domestic	15.24	TILL/DIAMICTON
26954	673389	5528226	Domestic	38.1	CARBONATE
66054	671773	5527358	Domestic	42.67	CARBONATE
30749	673389	5528226	Domestic	38.1	CARBONATE
104145	672600	5526530	Domestic	49.72	CARBONATE
43025	672709	5529041	Domestic	40.54	CARBONATE
138465	673291	5531157	Domestic	13.72	CARBONATE
60593	672682	5529827	Domestic	32	CARBONATE
36542	670991	5525682	Domestic	28.96	CARBONATE
121361	675377	5515116	Domestic	47.28	CARBONATE
40020	678332	5527529	Domestic	37.49	CARBONATE
112729	675856	5527463	Domestic	41.78	CARBONATE
69279	677517	5526652	Domestic	61.87	SANDSTONE
64039	683088	5528532	Domestic	55.47	SANDSTONE
59236	677497	5527506	Domestic	41.15	CARBONATE
55798	675085	5531531	Domestic	37.49	CARBONATE
25454	679401	5517694	Domestic	45.11	CARBONATE
28679	675357	5515953	Domestic	48.77	CARBONATE
26823	675162	5523313	Domestic	39.62	CARBONATE
21829	678554	5519314	Domestic	48.77	CARBONATE
101101	670541	5527728	Domestic	29.89	CARBONATE
136081	672650	5530651	Industrial	18.3	SAND
27557	673938	5522873	Domestic	35.05	CARBONATE
30385	669446	5522362	Domestic	22.86	CARBONATE
66622	671074	5522398	Air Conditioning	7.32	CARBONATE
67748	670179	5526472	Domestic	24.38	CARBONATE
10450	671903	5529013	Domestic	24.69	CARBONATE
72106	674294	5530706	Other	42.98	CARBONATE
54029	671903	5529013	Domestic	35.05	CARBONATE
50733	671903	5529013	Domestic	44.2	CARBONATE
113591	674262	5525771	Air conditioning	38.12	CARBONATE
40019	675856	5527463	Domestic	28.96	CARBONATE
77857	678725	5527959	Domestic	70.1	FINES
139055	681179	5522314	Domestic	35.99	CARBONATE
10478	681818	5517794	Domestic	34.44	GRAVEL
121678	676097	5518417	Domestic	39.65	CARBONATE
101092	675292	5518397	Domestic	47.28	CARBONATE
50730	675162	5523313	Domestic	42.06	CARBONATE
67835	670541	5527728	Domestic	38.1	CARBONATE
26952	673412	5527401	Domestic	38.1	CARBONATE
107241	671773	5527358	Domestic	31.42	CARBONATE
44567	675705	5518002	Domestic	35.05	CARBONATE
25436	682163	5519875	Domestic	41.76	GRAVEL
110269	678947	5519725	Domestic	42.09	CARBONATE
28740	681591	5524359	Domestic	17.98	SAND
27438	681616	5523524	Livestock	32	CARBONATE
101090	676157	5515972	Domestic	56.42	CARBONATE
76394	679317	5520978	Domestic	42.67	CARBONATE
112695	672293	5529417	Domestic	35.68	CARBONATE
30542	683498	5528124	Domestic	29.57	CARBONATE
29538	679141	5527548	Domestic	10.67	SAND
17608	683128	5527705	Domestic	52.43	CARBONATE
101385	679939	5527568	Domestic	48.8	CARBONATE
11792	675863	5531546	Domestic	60.05	SHALE/MUDSTONE

Regional Water Well Details

Well ID	Easting	Northing	Water Use	Well Depth (m)	Base Lithology
112701	679915	5528416	Domestic	42.09	CARBONATE
34606	675085	5531531	Domestic	48.77	SHALE/MUDSTONE
48316	675085	5531531	Domestic	57.91	SANDSTONE
69275	673714	5515904	Domestic	30.48	CARBONATE
74094	671035	5524041	Domestic	43.59	CARBONATE
76341	679486	5514420	Domestic	36.58	CARBONATE
36580	683866	5528551	Domestic	18.29	SAND
58607	675880	5526612	Domestic	49.68	CARBONATE
40604	680804	5523489	Domestic	6.4	GRAVEL
18323	675705	5518002	Domestic	32	CARBONATE
138722	681167	5523645	Missing	61	SANDSTONE
24772	676116	5517613	Domestic	52.12	CARBONATE
138865	675621	5521278	Air conditioning	48.19	CARBONATE
19467	681560	5525156	Domestic	39.62	CARBONATE
61945	671773	5527358	Domestic	44.2	CARBONATE
66058	671869	5529797	Domestic	42.67	CARBONATE
50732	671903	5529013	Domestic	41.15	CARBONATE
56138	674106	5516316	Domestic	6.1	SAND
65856	670746	5519506	Irrigation	39.62	CARBONATE
56137	674437	5519211	Domestic	41.15	CARBONATE
33136	679141	5527548	Domestic	19.51	TILL/DIAMICTON
10449	675557	5529517	Domestic	25.91	CARBONATE
110174	683088	5528532	Domestic	54.9	SANDSTONE
13182	678458	5529215	Missing	25.91	TILL/DIAMICTON
59208	676775	5529949	Domestic	30.48	CARBONATE
124162	675621	5521278	Domestic	61	SANDSTONE
109199	680804	5523489	Domestic	34.16	CARBONATE
81161	680979	5518582	Domestic	61.26	SANDSTONE
77854	678422	5524224	Domestic	38.1	CARBONATE
15660	676076	5519251	Domestic	35.05	CARBONATE
77853	676911	5519272	Domestic	47.24	CARBONATE
33489	672554	5528203	Domestic	38.1	CARBONATE
70272	672554	5528203	Domestic	71.93	SANDSTONE
101105	674264	5531511	Domestic	66.49	SANDSTONE
101100	673478	5524917	Domestic	39.65	CARBONATE
72141	669446	5522362	Livestock	49.38	CARBONATE
54034	671925	5521581	Livestock	35.05	CARBONATE
125877	678679	5514393	Domestic	45.14	CARBONATE
26430	679117	5528397	Domestic	12.19	GRAVEL
77873	683934	5526882	Livestock	51.82	SANDSTONE
50751	680068	5529278	Domestic	51.21	SHALE/MUDSTONE
21442	681591	5524359	Domestic	47.85	CARBONATE
77607	681591	5524359	Domestic	54.86	SANDSTONE
79522	676952	5517632	Domestic	48.77	CARBONATE
30100	673389	5528226	Domestic	24.99	CARBONATE
63680	671773	5527358	Domestic	43.59	CARBONATE
77863	672650	5530651	Domestic	80.77	CARBONATE
72205	671869	5529797	Domestic	14.33	GRAVEL
53261	671903	5529013	Domestic	41.15	CARBONATE
138723	673069	5525145	Missing	67.1	SANDSTONE
107620	683498	5528124	Domestic	41.18	CARBONATE
21761	675880	5526612	Domestic	27.74	CARBONATE
19976	676668	5528322	Domestic	24.08	CARBONATE
75851	675115	5530726	Domestic	47.24	CARBONATE
56053	679117	5528397	Domestic	29.57	CARBONATE
44569	677630	5529192	Domestic	41.15	CARBONATE
121575	681802	5529333	Domestic	41.18	CARBONATE
5489	674771	5528741	Missing	28.35	CARBONATE
62247	680240	5516890	Domestic	21.95	TILL/DIAMICTON
114054	675272	5519230	Domestic	70.15	SANDSTONE
67834	670541	5527728	Air Conditioning	71.32	SANDSTONE
22562	674195	5528252	Domestic	32	CARBONATE
10446	674437	5519211	Domestic	33.83	CARBONATE
23508	674416	5520017	Domestic	40.84	CARBONATE
53447	675789	5514718	Domestic	38.1	CARBONATE
29475	678679	5514393	Domestic	42.67	CARBONATE
51548	674437	5519211	Domestic	35.97	CARBONATE
46141	672820	5518332	Domestic	24.38	CARBONATE
36470	675377	5515116	Domestic	21.34	SAND
23854	676204	5514328	Domestic	39.62	CARBONATE
69038	679486	5514420	Domestic	18.29	TILL/DIAMICTON
113937	674544	5515096	Domestic	41.78	CARBONATE
36592	675085	5531531	Domestic	48.77	CARBONATE
66122	681802	5529333	Domestic	39.62	CARBONATE
34557	673933	5529470	Domestic	15.24	SAND
123770	673412	5527401	Missing	39.65	CARBONATE
70270	671773	5527358	Domestic	11.89	SAND
43024	671903	5529013	Domestic	38.1	CARBONATE
43026	671903	5529013	Domestic	43.59	CARBONATE
32763	674498	5516736	Domestic	32	CARBONATE
22555	670746	5519506	Livestock	15.24	BOULDERS

Regional Water Well Details

Well ID	Easting	Northing	Water Use	Well Depth (m)	Base Lithology
30280	672687	5523254	Domestic	41.15	CARBONATE
33195	683088	5528532	Domestic	56.69	SHALE/MUDSTONE
33138	679117	5528397	Domestic	15.24	SAND
58630	675029	5528275	Domestic	49.99	CARBONATE
26821	679224	5529241	Domestic	35.66	CARBONATE
21954	678412	5529994	Domestic	56.39	SANDSTONE
50731	675149	5529904	Domestic	38.1	CARBONATE
69047	680046	5530053	Domestic	30.48	CARBONATE
26822	679253	5523417	Domestic	35.66	SHALE/MUDSTONE
59155	676932	5518437	Domestic	48.77	CARBONATE
69026	671773	5527358	Domestic	9.14	GRAVEL
54030	671903	5529013	Domestic	9.45	GRAVEL
46123	673489	5530680	Livestock	47.24	CARBONATE
74898	671869	5529797	Domestic	10.36	GRAVEL
75831	670220	5524828	Livestock	43.59	CARBONATE
127098	677433	5514760	Domestic	36.6	CARBONATE
56005	683498	5528124	Domestic	23.47	CARBONATE
65873	671773	5527358	Domestic	44.2	CARBONATE
70724	671773	5527358	Domestic	32	CARBONATE
63679	671773	5527358	Domestic	44.2	CARBONATE
53266	672709	5529041	Domestic	74.07	SANDSTONE
112960	674106	5516316	Domestic	42.7	CARBONATE
137080	670736	5522556	Domestic	78.38	CARBONATE
117745	677433	5514760	Missing	48.8	CARBONATE
125438	677041	5514349	Missing	45.75	CARBONATE
28766	675085	5531531	Domestic	59.44	UNDIFF ROCK
73141	677476	5528348	Domestic	42.98	CARBONATE
62295	675115	5530726	Other	36.58	CARBONATE
44882	677303	5519682	Domestic	50.6	CARBONATE
117069	681616	5523524	Domestic	54.9	SANDSTONE
79919	679420	5516860	Domestic	49.99	CARBONATE
70086	680778	5524320	Domestic	45.72	CARBONATE
46197	676801	5523348	Domestic	50.29	UNDIFF ROCK
50536	675831	5528300	Domestic	28.96	CARBONATE
133080	674770	5528743	Missing	6.1	BOULDERS
53264	675177	5529117	Domestic	38.1	CARBONATE
69281	676775	5529949	Domestic	41.76	CARBONATE
46121	675705	5518002	Domestic	35.05	CARBONATE
138781	675207	5521675	Domestic	35.08	CARBONATE
126180	680830	5522692	Domestic	41.78	CARBONATE
15659	676097	5518417	Domestic	36.58	CARBONATE
64096	681869	5528074	Domestic	54.86	SANDSTONE
10448	675442	5527868	Domestic	32.61	CARBONATE
33133	679165	5526690	Domestic	35.05	CARBONATE
28700	684728	5527756	Domestic	28.96	CARBONATE
27062	675085	5531531	Domestic	36.58	CARBONATE
23902	681445	5528474	Domestic	31.39	GRAVEL
17534	677476	5528348	Domestic	41.76	SAND
66124	681479	5527648	Domestic	35.05	SHALE/MUDSTONE
66055	672577	5527378	Domestic	24.38	CARBONATE
72241	673517	5529854	Domestic	42.67	CARBONATE
58596	672709	5529041	Domestic	41.15	CARBONATE
68291	674106	5516316	Domestic	75.29	SANDSTONE
59244	670239	5524022	Domestic	30.48	CARBONATE
47961	670280	5522381	Domestic	44.2	CARBONATE
34416	677015	5515156	Domestic	39.62	CARBONATE
36540	681081	5514481	Domestic	35.05	CARBONATE
23901	681479	5527648	Domestic	50.29	CARBONATE
21953	683460	5529385	Domestic	54.86	SANDSTONE
138864	675621	5521278	Domestic	48.19	CARBONATE
101093	675333	5516759	Domestic	54.29	CARBONATE
36434	680996	5517766	Domestic	48.77	CARBONATE
49266	676138	5516777	Domestic	45.72	CARBONATE
74087	681672	5521898	Domestic	49.38	SHALE/MUDSTONE
79920	676076	5519251	Domestic	42.06	CARBONATE
32784	673517	5529854	Domestic	30.48	CARBONATE
26429	673544	5529068	Domestic	13.72	GRAVEL
50735	672650	5530651	Domestic	72.24	SANDSTONE
36986	674262	5525771	Domestic	38.1	CARBONATE
28326	673892	5524520	Domestic	31.09	CARBONATE
14498	673692	5516712	Domestic	38.71	CARBONATE
76297	670260	5523187	Domestic	41.76	CARBONATE
18710	675557	5529517	Domestic	23.47	CARBONATE
26899	680290	5527998	Domestic	50.9	CARBONATE
24657	679939	5527568	Domestic	17.37	GRAVEL
126005	676932	5518437	Domestic	47.88	CARBONATE
49284	676138	5516777	Domestic	54.86	CARBONATE
29668	675272	5519230	Domestic	53.34	CARBONATE
61927	678554	5519314	Domestic	49.99	CARBONATE
40015	674240	5526576	Domestic	37.49	CARBONATE
29560	670541	5527728	Domestic	28.96	CARBONATE

Regional Water Well Details

Well ID	Easting	Northing	Water Use	Well Depth (m)	Base Lithology
14499	674350	5529094	Domestic	25.6	CARBONATE
68294	674106	5516316	Domestic	69.49	SANDSTONE
63410	674064	5517957	Domestic	36.27	CARBONATE
22315	672622	5525727	Domestic	8.23	GRAVEL
40013	672667	5524091	Domestic	37.49	CARBONATE
74304	674262	5525771	Domestic	34.14	CARBONATE
26431	677544	5530794	Domestic	31.09	TILL/DIAMICTON
23379	676693	5527485	Domestic	24.99	CARBONATE
30930	675530	5524556	Domestic	36.58	CARBONATE
104438	681871	5516192	Domestic	41.18	CARBONATE
138721	681166	5523650	Missing	36.6	CARBONATE
104141	678617	5516839	Missing	23.79	BOULDERS
75075	679990	5525912	Domestic	54.86	SANDSTONE
76402	676973	5516797	Domestic	45.72	CARBONATE
62708	672164	5527777	Domestic	38.1	CARBONATE
62355	673877	5531091	Domestic	41.15	CARBONATE
109047	675312	5517594	Domestic	47.28	CARBONATE
76293	676097	5518417	Domestic	41.76	CARBONATE
25456	680910	5520219	Domestic	35.66	GRAVEL
50750	681672	5521898	Livestock	44.2	CARBONATE
48426	676116	5517613	Domestic	59.44	CARBONATE
13184	674306	5524131	Domestic	37.19	CARBONATE
54775	672667	5524091	Domestic	32.92	CARBONATE
49514	671819	5525698	Domestic	33.53	CARBONATE
131768	675902	5530748	Air conditioning	67.1	SANDSTONE
111432	679141	5527548	Domestic	41.18	CARBONATE
28962	674775	5528743	Missing	15.85	TILL/DIAMICTON
53265	675177	5529117	Domestic	38.1	CARBONATE
28446	675530	5524556	Domestic	37.19	CARBONATE
40603	680804	5523489	Domestic	15.24	SAND
28430	683735	5521567	Livestock	31.09	CARBONATE
24565	675748	5516361	Domestic	47.85	CARBONATE
17530	674394	5520849	Domestic	36.58	CARBONATE
40145	682258	5528507	Domestic	33.53	GRAVEL
40022	678378	5530815	Domestic	50.6	SANDSTONE
29649	679141	5527548	Domestic	15.24	SAND
15692	679915	5528416	Domestic	42.98	CARBONATE
40011	676034	5520890	Domestic	21.34	SAND
28759	679990	5525912	Domestic	41.15	CARBONATE
26733	678444	5523394	Domestic	21.34	TILL/DIAMICTON
38252	673389	5528226	Domestic	24.99	CARBONATE
17533	672577	5527378	Domestic	36.58	CARBONATE
71321	671773	5527358	Domestic	44.2	CARBONATE
77856	672554	5528203	Domestic	43.59	CARBONATE
70084	672554	5528203	Domestic	45.72	CARBONATE
62437	671773	5527358	Domestic	30.48	CARBONATE
47962	671750	5528175	Domestic	41.15	CARBONATE
117685	669388	5524812	Domestic	39.65	SANDSTONE
36571	679939	5527568	Domestic	60.96	SAND
28598	675085	5531531	Domestic	55.78	SAND
28699	683904	5527727	Domestic	28.96	CARBONATE
26244	675029	5528275	Domestic	36.58	CARBONATE
133083	674775	5528743	Missing	3.96	BOULDERS
40122	680725	5525952	Domestic	31.39	CARBONATE
73312	677345	5518040	Domestic	43.89	CARBONATE
31618	677303	5519682	Domestic	39.62	GRAVEL
44869	675097	5525789	Domestic	68.58	SANDSTONE
62397	671773	5527358	Domestic	9.14	SAND
62210	671773	5527358	Domestic	9.14	SAND
57357	674195	5528252	Domestic	24.38	CARBONATE
70220	672577	5527378	Domestic	44.2	CARBONATE
53263	673457	5525752	Other	71.02	SANDSTONE
14496	677845	5514371	Domestic	38.71	CARBONATE
43027	679168	5530835	Domestic	21.34	SAND
101437	681445	5528474	Air conditioning	48.8	CARBONATE
72235	675863	5531546	Livestock	60.96	SANDSTONE
70099	675085	5531531	Domestic	53.34	CARBONATE
59124	676775	5529949	Domestic	10.06	TILL/DIAMICTON
36593	679990	5525912	Domestic	53.34	SANDSTONE
79608	680600	5518152	Domestic	41.15	CARBONATE
24942	677345	5518040	Domestic	36.58	CARBONATE
138474	676027	5521592	Domestic	39.65	CARBONATE
46120	675292	5518397	Domestic	34.75	CARBONATE
60784	670924	5528151	Domestic	31.09	CARBONATE
134796	670239	5524022	Domestic	24.4	CARBONATE
59126	673653	5518354	Domestic	24.38	CARBONATE
18726	675399	5514309	Domestic	38.71	CARBONATE
107619	681869	5528074	Domestic	22.88	TILL/DIAMICTON
17604	684728	5527756	Domestic	27.43	CARBONATE
17607	682258	5528507	Domestic	32	GRAVEL
69276	672645	5524895	Domestic	32.61	CARBONATE

Regional Water Well Details

Well ID	Easting	Northing	Water Use	Well Depth (m)	Base Lithology
62208	681869	5528074	Domestic	27.43	SAND
116023	679117	5528397	Domestic	36.6	CARBONATE
102024	683460	5529385	Domestic	38.12	CARBONATE

Appendix H

Production Schedule

Appendix H - Mine Pads

Order of Production	Year	Production Start Day	Production End Day	Claim	Easting	Northing	Number of Wells per Cluster	Production Rate (sediment plus water) (gpm)	Injection Rate (sediment removed = 50% re-injected) (gpm)
Start Date May 1, 2025									
1	2025	1	8	Bru 92	681185.9	5526318	1	110	46.75
2	2025	9	16	Bru 92	681275.4	5526317	1	110	46.75
3	2025	17	24	Bru 92	681364.9	5526320	1	110	46.75
4	2025	25	32	Bru 92	681462	5526322	1	110	46.75
5	2025	33	40	Bru 92	681551.4	5526325	1	110	46.75
6	2025	41	48	Bru 92	681643.7	5526326	1	110	46.75
7	2025	49	56	Bru 92	681733.2	5526329	1	110	46.75
8	2025	57	64	Bru 92	681827.3	5526331	1	110	46.75
9	2025	65	72	Bru 92	681871.9	5526254	1	110	46.75
10	2025	73	80	Bru 92	681782.4	5526251	1	110	46.75
11	2025	81	88	Bru 92	681688.2	5526249	1	110	46.75
12	2025	89	96	Bru 92	681595.9	5526249	1	110	46.75
13	2025	97	104	Bru 92	681506.5	5526246	1	110	46.75
14	2025	105	112	Bru 92	681409.4	5526244	1	110	46.75
15	2025	113	120	Bru 92	681319.9	5526241	1	110	46.75
16	2025	121	128	Bru 92	681227.6	5526241	1	110	46.75
17	2025	129	136	Bru 92	681187.9	5526162	1	110	46.75
18	2025	137	144	Bru 92	681277.4	5526161	1	110	46.75
19	2025	145	152	Bru 92	681370.9	5526163	1	110	46.75
20	2025	153	160	Bru 92	681460.4	5526167	1	110	46.75
21	2025	161	168	Bru 92	681552.7	5526167	1	110	46.75
22	2025	169	176	Bru 92	681642.2	5526170	1	110	46.75
23	2025	177	184	Bru 92	681734.1	5526168	1	110	46.75
End Date Oct 31, 2025; 184 Producing Days									
Start Date Apr 15, 2026									
24	2026	185	192	Bru 92	681686.3	5526094	1	110	46.75
24	2026	185	192	Bru 92	681777.7	5526094	1	110	46.75
25	2026	193	200	Bru 92	681415.5	5526087	1	110	46.75
25	2026	193	200	Bru 92	681513.3	5526089	1	110	46.75
26	2026	201	208	Bru 92	681322.6	5526085	1	110	46.75
26	2026	201	208	Bru 92	681233.1	5526082	1	110	46.75
27	2026	209	216	Bru 92	681284.2	5526005	1	110	46.75
27	2026	209	216	Bru 92	681178.7	5526006	1	110	46.75
28	2026	217	224	Bru 92	681372.9	5526007	1	110	46.75
28	2026	217	224	Bru 92	681466.7	5526009	1	110	46.75
29	2026	225	232	Bru 92	681556.2	5526012	1	110	46.75
29	2026	225	232	Bru 92	681829.2	5526022	1	110	46.75
30	2026	233	240	Bru 92	681610.1	5525940	1	110	46.75
30	2026	233	240	Bru 92	681561.7	5525861	1	110	46.75
30	2026	233	240	Bru 92	681654.6	5525863	1	110	46.75
31	2026	241	248	Bru 92	681516.6	5525937	1	110	46.75
31	2026	241	248	Bru 92	681423.3	5525931	1	110	46.75
31	2026	241	248	Bru 92	681469.3	5525854	1	110	46.75
32	2026	249	256	Bru 92	681333.8	5525928	1	110	46.75
32	2026	249	256	Bru 92	681240.3	5525925	1	110	46.75
33	2026	257	264	Bru 92	681285.5	5525850	1	110	46.75
33	2026	257	264	Bru 92	681378.3	5525852	1	110	46.75
34	2026	265	272	Bru 83	681362.5	5525526	1	110	46.75
34	2026	265	272	Bru 83	681270.5	5525522	1	110	46.75
34	2026	265	272	Bru 83	681183.2	5525498	1	110	46.75
35	2026	273	280	Bru 83	681653.4	5525530	1	110	46.75
35	2026	273	280	Bru 83	681455.6	5525530	1	110	46.75
35	2026	273	280	Bru 83	681561.1	5525529	1	110	46.75
36	2026	281	288	Bru 83	681742.9	5525533	1	110	46.75
36	2026	281	288	Bru 83	681929.4	5525538	1	110	46.75
36	2026	281	288	Bru 83	681840	5525535	1	110	46.75
37	2026	289	296	Bru 83	681793.9	5525455	1	110	46.75
37	2026	289	296	Bru 83	681886.2	5525456	1	110	46.75
37	2026	289	296	Bru 83	681704.4	5525452	1	110	46.75
38	2026	297	304	Bru 83	681610.9	5525449	1	110	46.75
38	2026	297	304	Bru 83	681521.5	5525446	1	110	46.75
38	2026	297	304	Bru 83	681428.3	5525442	1	110	46.75
39	2026	305	312	Bru 83	681336	5525437	1	110	46.75
39	2026	305	312	Bru 83	681243.1	5525433	1	110	46.75
40	2026	313	320	Bru 83	681287.6	5525359	1	110	46.75
40	2026	313	320	Bru 83	681252.2	5525277	1	110	46.75
40	2026	313	320	Bru 83	681195.9	5525356	1	110	46.75
41	2026	321	328	Bru 83	681379.7	5525364	1	110	46.75
41	2026	321	328	Bru 83	681434.6	5525282	1	110	46.75
41	2026	321	328	Bru 83	681343.4	5525280	1	110	46.75
42	2026	329	336	Bru 83	681567.4	5525369	1	110	46.75
42	2026	329	336	Bru 83	681472.8	5525368	1	110	46.75
42	2026	329	336	Bru 83	681527.7	5525286	1	110	46.75
43	2026	337	344	Bru 83	681659.7	5525370	1	110	46.75
43	2026	337	344	Bru 83	681617.2	5525289	1	110	46.75
43	2026	337	344	Bru 83	681710.7	5525292	1	110	46.75
44	2026	345	352	Bru 83	681846.2	5525375	1	110	46.75
44	2026	345	352	Bru 83	681749.1	5525373	1	110	46.75
44	2026	345	352	Bru 83	681800.2	5525295	1	110	46.75
45	2026	353	360	Bru 83	681935.7	5525378	1	110	46.75
45	2026	353	360	Bru 83	681892.5	5525296	1	110	46.75
46	2026	353	360	Bru 83	681896.4	5525142	1	110	46.75

46	2026	361	368	Bru 83	681840.3	5525220	1	110	46.75
46	2026	361	368	Bru 83	681936.3	5525223	1	110	46.75
47	2026	369	376	Bru 83	681709.8	5525137	1	110	46.75
47	2026	369	376	Bru 83	681799.3	5525140	1	110	46.75
47	2026	369	376	Bru 83	681754.6	5525219	1	110	46.75
48	2026	377	384	Bru 83	681661	5525216	1	110	46.75
48	2026	377	384	Bru 83	681617.5	5525136	1	110	46.75
48	2026	377	384	Bru 83	681571.6	5525213	1	110	46.75
49	2026	385	392	Bru 83	681478.4	5525209	1	110	46.75
49	2026	385	392	Bru 83	681382.9	5525205	1	110	46.75
49	2026	385	392	Bru 83	681291.7	5525204	1	110	46.75
End Date Nov 9, 2026; 208 Producing Days									
Start Date Apr 15, 2027									
51	2027	393	400	Bru 83	681419.2	5525132	1	110	46.75
51	2027	393	400	Bru 83	682495.3	5524277	2	220	93.5
51	2027	393	400	Bru 93	680602.6	5526290	1	110	46.75
51	2027	393	400	Bru 93	680505.5	5526289	1	110	46.75
51	2027	393	400	Bru 93	680416.1	5526286	1	110	46.75
52	2027	401	408	Bru 83	681512	5525138	1	110	46.75
52	2027	401	408	Bru 83	682589.5	5524281	2	220	93.5
52	2027	401	408	Bru 93	680647.1	5526214	1	110	46.75
52	2027	401	408	Bru 93	680692	5526294	1	110	46.75
52	2027	401	408	Bru 93	680736.6	5526217	1	110	46.75
53	2027	409	416	Bru 83	682687.3	5524279	2	220	93.5
53	2027	409	416	Bru 83	681486.5	5525049	1	110	46.75
53	2027	409	416	Bru 93	680460.6	5526209	1	110	46.75
53	2027	409	416	Bru 93	680550	5526212	1	110	46.75
53	2027	409	416	Bru 93	680368.3	5526209	1	110	46.75
54	2027	417	424	Bru 83	682689.4	5524182	2	220	93.5
54	2027	417	424	Bru 83	681577.8	5525053	1	110	46.75
54	2027	417	424	Bru 93	680373.8	5526050	1	110	46.75
54	2027	417	424	Bru 93	680328.6	5526130	1	110	46.75
54	2027	417	424	Bru 93	680418	5526129	1	110	46.75
55	2027	425	432	Bru 83	681667.3	5525056	1	110	46.75
55	2027	425	432	Bru 83	682594.9	5524183	2	220	93.5
55	2027	425	432	Bru 93	680556.1	5526055	1	110	46.75
55	2027	425	432	Bru 93	680601	5526135	1	110	46.75
55	2027	425	432	Bru 93	680511.6	5526132	1	110	46.75
56	2027	433	440	Bru 83	681760.8	5525059	1	110	46.75
56	2027	433	440	Bru 83	682497.4	5524180	2	220	93.5
56	2027	433	440	Bru 93	680607.4	5525977	1	110	46.75
56	2027	433	440	Bru 93	680693.3	5526135	1	110	46.75
56	2027	433	440	Bru 93	680654	5526057	1	110	46.75
57	2027	441	448	Bru 83	682404.2	5524178	2	220	93.5
57	2027	441	448	Bru 83	682673.2	5524466	2	220	93.5
57	2027	441	448	Bru 83	681850.3	5525062	1	110	46.75
57	2027	441	448	Bru 93	680513.6	5525975	1	110	46.75
58	2027	449	456	Bru 83	681942.6	5525063	1	110	46.75
58	2027	449	456	Bru 83	682305.7	5524187	1	110	46.75
58	2027	449	456	Bru 83	682212	5524177	1	110	46.75
58	2027	449	456	Bru 83	682578.3	5524466	2	220	93.5
58	2027	449	456	Bru 93	680463.2	5526054	1	110	46.75
59	2027	457	464	Bru 83	681912.3	5524981	1	110	46.75
59	2027	457	464	Bru 83	682316.3	5524092	1	110	46.75
59	2027	457	464	Bru 83	682225	5524083	1	110	46.75
59	2027	457	464	Bru 83	682481.2	5524464	2	220	93.5
59	2027	457	464	Bru 93	680424.8	5525973	1	110	46.75
60	2027	465	472	Bru 83	682386.7	5524461	2	220	93.5
60	2027	465	472	Bru 83	682410	5524084	2	220	93.5
60	2027	465	472	Bru 83	681822.9	5524978	1	110	46.75
60	2027	465	472	Bru 93	680319.3	5525974	1	110	46.75
61	2027	473	480	Bru 83	681730.6	5524978	1	110	46.75
61	2027	473	480	Bru 83	682299.3	5524458	1	110	46.75
61	2027	473	480	Bru 83	682208	5524449	1	110	46.75
61	2027	473	480	Bru 83	682503.7	5524087	2	220	93.5
62	2027	481	488	Bru 83	681625.1	5524979	1	110	46.75
62	2027	481	488	Bru 83	682299.3	5524371	1	110	46.75
62	2027	481	488	Bru 83	682205.6	5524361	1	110	46.75
62	2027	481	488	Bru 83	682603.1	5524091	2	220	93.5
63	2027	489	496	Bru 83	682695.7	5524089	2	220	93.5
63	2027	489	496	Bru 83	682393.2	5524368	2	220	93.5
63	2027	489	496	Bru 83	681483	5524914	3	330	140.25
64	2027	497	504	Bru 83	682741.5	5524010	2	220	93.5
64	2027	497	504	Bru 83	681584.4	5524888	1	110	46.75
64	2027	497	504	Bru 83	682488.9	5524370	2	220	93.5
65	2027	505	512	Bru 83	682644.3	5524006	2	220	93.5
65	2027	505	512	Bru 83	681677.5	5524893	1	110	46.75
65	2027	505	512	Bru 83	682586.1	5524372	2	220	93.5
66	2027	513	520	Bru 83	682680.9	5524373	2	220	93.5
66	2027	513	520	Bru 83	681766.9	5524896	1	110	46.75
66	2027	513	520	Bru 83	682549.5	5524008	2	220	93.5
67	2027	521	528	Bru 83	682399.5	5524275	2	220	93.5
67	2027	521	528	Bru 83	681860.5	5524899	1	110	46.75
67	2027	521	528	Bru 83	682452.3	5524004	2	220	93.5
68	2027	529	536	Bru 83	682201.6	5524551	2	220	93.5
68	2027	529	536	Bru 83	681955.2	5524903	1	110	46.75
68	2027	529	536	Bru 83	682210.1	5524263	1	110	46.75
68	2027	529	536	Bru 83	682258.5	5523999	1	110	46.75

68	2027	529	536	Bru 83	682352.2	5524009	1	110	46.75
69	2027	537	544	Bru 83	682296.4	5524556	2	220	93.5
69	2027	537	544	Bru 83	681811.2	5524822	1	110	46.75
69	2027	537	544	Bru 83	681900.6	5524825	1	110	46.75
69	2027	537	544	Bru 83	682301.5	5524272	1	110	46.75
70	2027	545	552	Bru 83	682387.9	5524562	2	220	93.5
70	2027	545	552	Bru 83	681712.3	5524805	3	330	140.25
70	2027	545	552	Bru 93	680380.9	5525894	1	110	46.75
71	2027	553	560	Bru 83	681613.6	5524799	3	330	140.25
71	2027	553	560	Bru 83	682485.3	5524562	2	220	93.5
71	2027	553	560	Bru 93	680474.4	5525897	1	110	46.75
72	2027	561	568	Bru 83	681514.8	5524823	3	330	140.25
72	2027	561	568	Bru 83	682582.4	5524564	2	220	93.5
72	2027	561	568	Bru 93	680563.9	5525900	1	110	46.75
73	2027	569	576	Bru 83	682677.3	5524564	2	220	93.5
73	2027	569	576	Bru 93	680610	5525822	1	110	46.75
73	2027	569	576	Bru 93	680518.9	5525820	1	110	46.75
74	2027	577	584	Bru 93	680426.1	5525818	1	110	46.75
74	2027	577	584	Bru 93	680320.6	5525819	1	110	46.75
End Date Nov 16, 2027; 192 Producing Days									
Start Date Apr 15, 2028									
75	2028	585	592	Bru 83	682131.8	5524062	3	330	140.25
75	2028	585	592	Bru 82	679891.1	5524129	3	330	140.25
76	2028	593	600	Bru 83	682034.5	5524054	3	330	140.25
76	2028	593	600	Bru 82	679791.7	5524125	3	330	140.25
77	2028	601	608	Bru 83	682023.2	5524142	3	330	140.25
77	2028	601	608	Bru 82	679693	5524119	3	330	140.25
78	2028	609	616	Bru 83	682120.5	5524150	3	330	140.25
78	2028	609	616	Bru 82	679746.5	5524200	3	330	140.25
79	2028	617	624	Bru 83	682117	5524248	3	330	140.25
79	2028	617	624	Bru 82	679845.2	5524206	3	330	140.25
80	2028	625	632	Bru 83	682019.7	5524240	3	330	140.25
80	2028	625	632	Bru 82	679944.7	5524210	3	330	140.25
81	2028	633	640	Bru 83	682016.8	5524339	3	330	140.25
81	2028	633	640	Bru 82	679989.8	5524301	3	330	140.25
82	2028	641	648	Bru 83	682114.2	5524347	3	330	140.25
82	2028	641	648	Bru 82	679891.1	5524295	3	330	140.25
83	2028	649	656	Bru 83	682110.7	5524445	3	330	140.25
83	2028	649	656	Bru 82	679791.7	5524292	3	330	140.25
84	2028	657	664	Bru 83	682012	5524439	3	330	140.25
84	2028	657	664	Bru 82	679693	5524286	3	330	140.25
85	2028	665	672	Bru 83	682109.4	5524549	1	110	46.75
85	2028	665	672	Bru 82	680282.6	5524122	5	550	233.75
86	2028	673	680	Bru 83	682100.3	5524652	1	110	46.75
86	2028	673	680	Bru 82	680173.6	5524122	5	550	233.75
87	2028	681	688	Bru 83	682006.7	5524643	1	110	46.75
87	2028	681	688	Bru 82	680064.7	5524118	5	550	233.75
88	2028	689	696	Bru 83	682004.8	5524729	1	110	46.75
88	2028	689	696	Bru 82	680062.7	5524227	5	550	233.75
89	2028	697	704	Bru 83	682096.1	5524737	1	110	46.75
89	2028	697	704	Bru 82	680171.7	5524231	5	550	233.75
90	2028	705	712	Bru 83	682194.5	5524650	2	220	93.5
90	2028	705	712	Bru 82	680282.6	5524231	5	550	233.75
91	2028	713	720	Bru 83	682190.5	5524743	2	220	93.5
91	2028	713	720	Bru 82	680221.2	5524325	5	550	233.75
92	2028	721	728	Bru 83	682285.3	5524747	2	220	93.5
92	2028	721	728	Bru 82	680330.2	5524329	5	550	233.75
93	2028	729	736	Bru 83	682290.3	5524651	2	220	93.5
93	2028	729	736	Bru 83	682475	5524753	2	220	93.5
93	2028	729	736	Bru 83	682666.3	5524662	2	220	93.5
94	2028	737	744	Bru 83	682379.3	5524658	2	220	93.5
94	2028	737	744	Bru 83	682376.8	5524753	2	220	93.5
95	2028	745	752	Bru 83	682475	5524660	2	220	93.5
95	2028	745	752	Bru 83	682570.9	5524661	2	220	93.5
96	2028	753	760	Bru 83	682570.9	5524754	2	220	93.5
96	2028	753	760	Bru 83	682666.3	5524755	2	220	93.5
97	2028	761	768	Bru 83	682012.4	5524548	3	330	140.25
End Date Nov 7, 2028; 184 Producing Days									
Start Date Apr 15, 2029									
98	2029	769	776	Bru 82	679691	5524624	3	330	140.25
98	2029	769	776	Bru 81	680227.7	5523358	3	330	140.25
99	2029	777	784	Bru 82	679789.7	5524630	3	330	140.25
99	2029	777	784	Bru 81	680327.2	5523362	3	330	140.25
100	2029	785	792	Bru 82	679889.1	5524634	3	330	140.25
100	2029	785	792	Bru 81	680380.2	5523275	3	330	140.25
101	2029	793	800	Bru 82	679987.9	5524640	3	330	140.25
101	2029	793	800	Bru 81	680280.8	5523271	3	330	140.25
102	2029	801	808	Bru 82	680139.7	5524629	3	330	140.25
102	2029	801	808	Bru 81	680182.1	5523265	3	330	140.25
103	2029	809	816	Bru 82	680243.3	5524632	3	330	140.25
103	2029	809	816	Bru 81	680083.7	5523261	3	330	140.25
104	2029	817	824	Bru 82	680250.9	5524529	3	330	140.25
104	2029	817	824	Bru 81	679985	5523255	3	330	140.25
105	2029	825	832	Bru 82	680137.5	5524526	3	330	140.25
105	2029	825	832	Bru 81	679885.5	5523251	3	330	140.25
106	2029	833	840	Bru 82	680041.4	5524555	3	330	140.25
106	2029	833	840	Bru 81	679786.8	5523245	3	330	140.25
107	2029	841	848	Bru 82	679942.7	5524549	3	330	140.25

Appendix H - Mine Pads

107	2029	841	848	Bru 81	679733.3	5523165	3	330	140.25
108	2029	849	856	Bru 82	679843.2	5524545	3	330	140.25
108	2029	849	856	Bru 81	679832	5523171	3	330	140.25
109	2029	857	864	Bru 82	679744.5	5524539	3	330	140.25
109	2029	857	864	Bru 81	679931.5	5523175	3	330	140.25
110	2029	865	872	Bru 82	679691	5524458	3	330	140.25
110	2029	865	872	Bru 81	680030.2	5523181	3	330	140.25
111	2029	873	880	Bru 82	679789.7	5524464	3	330	140.25
111	2029	873	880	Bru 81	680131.9	5523185	3	330	140.25
112	2029	881	888	Bru 82	679889.1	5524468	3	330	140.25
112	2029	881	888	Bru 81	680230.6	5523191	3	330	140.25
113	2029	889	896	Bru 82	679987.9	5524474	3	330	140.25
113	2029	889	896	Bru 81	680330	5523195	3	330	140.25
114	2029	897	904	Bru 82	680150	5524421	3	330	140.25
114	2029	897	904	Bru 81	680380.2	5523110	3	330	140.25
115	2029	905	912	Bru 82	680041.4	5524388	3	330	140.25
115	2029	905	912	Bru 81	680280.8	5523106	3	330	140.25
116	2029	913	920	Bru 82	679942.7	5524382	3	330	140.25
116	2029	913	920	Bru 81	680182.1	5523100	3	330	140.25
117	2029	921	928	Bru 82	679843.2	5524378	3	330	140.25
117	2029	921	928	Bru 81	680083.7	5523095	3	330	140.25
118	2029	929	936	Bru 82	679744.5	5524372	3	330	140.25
118	2029	929	936	Bru 81	679985	5523089	3	330	140.25
119	2029	937	944	Bru 81	679885.5	5523085	3	330	140.25
120	2029	945	952	Bru 81	679786.8	5523079	3	330	140.25
121	2029	953	960	Bru 82	680272	5524420	5	550	233.75
End Date Nov 16, 2029; 192 Producing Days									

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