Appendix-4 Assay Reports of Direct Flotation of Kainite-1 Sample without Decomposition

Mining and Minerals
Attention: Jack Zhang
PO #/Project: 14081
Samples: 10

SRC Geoanalytical Laboratories
125 - 15 Innovation Blvd., Saskatoon, Saskatchewan, S7N 2X8
Tel: (306) 933-8118 Fax: (306) 933-5656 Email: geolab@src.sk.ca

Report No: G-2017-1488

Date of Report: Aug 11, 2017

Potash ICP1 Total Digestion

Sample Number	Ag ppm	Al2O3 wt %	Ba ppm	Be ppm	CaO wt %	Cd ppm	Ce ppm	Co ppm	Cr ppm	Cu ppm	Dy ppm	Er ppm	Eu ppm	Fe2O3 wt %	Ga ppm	Gd ppm	Hf ppm
POT003B	<0.2	0.39	11	<0.2	0.94	<1	<1	1	4	<1	<0.2	<0.2	<0.2	0.22	1	<1	<1
AF-3-CONC (-0.85)	<0.2	<0.01	1	<0.2	0.01	<1	<1	1	<1	<1	<0.2	<0.2	<0.2	<0.01	<1	<1	<1
AF-3-TAILS(-0.85)	0.2	<0.01	3	<0.2	0.02	<1	<1	1	<1	<1	<0.2	<0.2	<0.2	<0.01	<1	<1	<1
AF-4-C.CONC(-0.425)	<0.2	<0.01	1	<0.2	0.01	<1	<1	<1	<1	<1	<0.2	<0.2	<0.2	<0.01	<1	<1	<1
AF-4-C.TAILS(-0.425)	<0.2	0.02	<1	<0.2	<0.01	<1	<1	<1	<1	<1	<0.2	<0.2	<0.2	<0.01	<1	<1	<1
AF-4-R.TAILS(-0.425)	<0.2	<0.01	<1	<0.2	<0.01	<1	<1	<1	<1	<1	<0.2	<0.2	<0.2	<0.01	<1	<1	<1
AF-5-C.CONC(-0.106)	<0.2	<0.01	1	<0.2	<0.01	<1	<1	1	<1	<1	<0.2	<0.2	<0.2	<0.01	<1	<1	<1
AF-5-C.TAILS(-0.106)	<0.2	<0.01	<1	<0.2	<0.01	<1	<1	<1	<1	<1	<0.2	<0.2	<0.2	<0.01	<1	<1	<1
AF-5-R.TAILS(-0.106)	<0.2	<0.01	1	<0.2	0.01	<1	<1	<1	<1	<1	<0.2	<0.2	<0.2	<0.01	<1	<1	<1
AF-5-R.TAILS(-0.106) R	0.2	<0.01	<1	<0.2	<0.01	<1	<1	<1	<1	<1	<0.2	<0.2	<0.2	<0.01	<1	<1	<1

Sample Number	Ho ppm	K2O wt %	La ppm	Li ppm	MgO wt %	MnO wt %	Mo ppm	Na2O wt %	Nb ppm	Nd ppm	Ni ppm	P2O5 wt %	Pb ppm	Pr ppm	S ppm	Sc ppm	Sm ppm
POT003B	<1	19.1	<1	3	2.34	<0.01	<1	30.4	<1	<1	3	<0.01	2	<1	1810	<1	<1
AF-3-CONC (-0.85)	<1	12.6	<1	<1	13.3	<0.01	<1	13.0	<1	<1	<1	<0.01	1	<1	88700	<1	<1
AF-3-TAILS(-0.85)	<1	5.25	<1	<1	10.8	<0.01	<1	25.7	<1	<1	<1	<0.01	<1	<1	72400	<1	<1
AF-4-C.CONC(-0.425)	<1	13.3	<1	<1	13.6	<0.01	<1	11.2	<1	<1	1	<0.01	<1	<1	91500	<1	<1
AF-4-C.TAILS(-0.425)	<1	7.58	<1	18	10.7	<0.01	<1	23.9	<1	<1	<1	<0.01	1	<1	74800	<1	<1
AF-4-R.TAILS(-0.425)	<1	3.86	<1	1	11.0	<0.01	<1	25.6	<1	<1	1	<0.01	1	<1	73600	<1	<1
AF-5-C.CONC(-0.106)	<1	13.2	<1	<1	14.0	<0.01	<1	10.6	<1	<1	<1	<0.01	1	<1	94200	<1	<1
AF-5-C.TAILS(-0.106)	<1	7.43	<1	1	11.6	<0.01	<1	22.5	<1	<1	<1	<0.01	1	<1	80800	<1	<1
AF-5-R.TAILS(-0.106)	<1	4.17	<1	<1	9.85	<0.01	<1	28.6	<1	<1	<1	<0.01	1	<1	66500	<1	<1
AF-5-R.TAILS(-0.106) R	<1	4.21	<1	<1	9.88	<0.01	<1	28.7	<1	<1	1	<0.01	1	<1	67300	<1	<1

Sample Number	Sn ppm	Sr ppm	Ta ppm	Tb ppm	Th ppm	TiO2 wt %	U, ICP ppm	V ppm	W ppm	Y ppm	Yb ppm	Zn ppm	Zr ppm
POT003B	<1	22	1	<1	<1	0.02	<2	3	2	<1	0.1	6	3
AF-3-CONC (-0.85)	<1	2	1	<1	<1	<0.01	<2	<1	<1	<1	<0.1	<1	13
AF-3-TAILS(-0.85)	<1	1	1	<1	<1	<0.01	<2	<1	<1	<1	<0.1	<1	4
AF-4-C.CONC(-0.425)	<1	2	<1	<1	<1	<0.01	<2	<1	<1	<1	<0.1	<1	17
AF-4-C.TAILS(-0.425)	<1	<1	<1	<1	<1	<0.01	<2	<1	<1	<1	<0.1	<1	6
AF-4-R.TAILS(-0.425)	<1	1	2	<1	<1	<0.01	<2	<1	<1	<1	<0.1	<1	3
AF-5-C.CONC(-0.106)	<1	1	<1	<1	<1	<0.01	<2	<1	<1	<1	<0.1	<1	14
AF-5-C.TAILS(-0.106)	<1	2	1	<1	<1	<0.01	<2	<1	<1	<1	<0.1	<1	8
AF-5-R.TAILS(-0.106)	<1	1	1	<1	<1	<0.01	<2	<1	<1	<1	<0.1	<1	5
AF-5-R.TAILS(-0.106) R	<1	1	1	<1	<1	<0.01	<2	<1	<1	<1	<0.1	<1	5

Appendix-5 Assay Reports of Direct Flotation of Kainite-1 Sample after Decomposition

Mining and Minerals
Attention: Jack Zhang
PO #/Project: 14205
Samples: 8

SRC Geoanalytical Laboratories
125 - 15 Innovation Blvd., Saskatoon, Saskatchewan, S7N 2X8
Tel: (306) 933-8118 Fax: (306) 933-5656 Email: geolab@src.sk.ca

Report No: G-2017-1538

Date of Report: Aug 17, 2017

Potash ICP1 Total Digestion

Sample Number	Ag ppm	Al2O3 wt %	Ba ppm	Be ppm	CaO wt %	Cd ppm	Ce ppm	Co ppm	Cr ppm	Cu ppm	Dy ppm	Er ppm	Eu ppm	Fe2O3 wt %	Ga ppm	Gd ppm	Hf ppm
POT003B	<0.2	0.39	12	0.3	0.96	<1	1	<1	5	<1	<0.2	<0.2	<0.2	0.22	1	<1	<1
AF-6-C.CONC	<0.2	<0.01	<1	<0.2	0.01	<1	<1	<1	3	<1	<0.2	<0.2	<0.2	<0.01	<1	<1	<1
AF-7-C.CONC	<0.2	<0.01	<1	<0.2	0.01	<1	<1	<1	<1	<1	<0.2	<0.2	<0.2	<0.01	<1	<1	<1
AF-6-C.TAIL	<0.2	<0.01	<1	<0.2	0.01	<1	<1	<1	4	<1	<0.2	<0.2	<0.2	<0.01	<1	<1	<1
AF-7-C.TAIL	<0.2	<0.01	<1	<0.2	0.02	<1	<1	<1	1	<1	<0.2	<0.2	<0.2	<0.01	<1	<1	<1
AF-6-R.TAIL	<0.2	<0.01	<1	<0.2	0.01	<1	<1	<1	3	<1	<0.2	<0.2	<0.2	<0.01	<1	<1	<1
AF-7-R.TAIL	<0.2	<0.01	1	<0.2	0.01	<1	<1	<1	<1	<1	<0.2	<0.2	<0.2	<0.01	<1	<1	<1
AF-7-R.TAIL R	<0.2	<0.01	<1	<0.2	<0.01	<1	<1	<1	<1	<1	<0.2	<0.2	<0.2	<0.01	<1	<1	<1

Sample Number	Ho ppm	K2O wt %	La ppm	Li ppm	MgO wt %	MnO wt %	Mo ppm	Na2O wt %	Nb ppm	Nd ppm	Ni ppm	P2O5 wt %	Pb ppm	Pr ppm	S ppm	Sc ppm	Sm ppm
POT003B	<1	19.2	<1	4	2.34	<0.01	1	30.1	<1	<1	3	<0.01	<1	<1	1860	<1	<1
AF-6-C.CONC	<1	22.9	<1	<1	10.9	<0.01	<1	3.57	<1	<1	1	<0.01	<1	<1	157000	<1	<1
AF-7-C.CONC	<1	24.3	<1	<1	11.7	<0.01	<1	3.37	<1	<1	<1	<0.01	<1	<1	166000	<1	<1
AF-6-C.TAIL	<1	15.9	<1	<1	7.65	<0.01	<1	19.4	<1	<1	1	<0.01	<1	<1	109000	<1	<1
AF-7-C.TAIL	<1	11.3	<1	<1	5.64	<0.01	<1	29.9	<1	<1	1	<0.01	<1	<1	79900	<1	<1
AF-6-R.TAIL	<1	8.24	<1	<1	7.98	<0.01	<1	29.6	<1	<1	1	<0.01	<1	<1	85700	<1	<1
AF-7-R.TAIL	<1	4.56	<1	<1	7.19	<0.01	<1	34.2	<1	<1	<1	<0.01	<1	<1	63300	<1	<1
AF-7-R.TAIL R	<1	4.55	<1	<1	7.24	<0.01	<1	34.5	<1	<1	1	<0.01	<1	<1	66400	<1	<1

Sample Number	Sn ppm	Sr ppm	Ta ppm	Tb ppm	Th ppm	TiO2 wt %	U, ICP ppm	V ppm	W ppm	Y ppm	Yb ppm	Zn ppm	Zr ppm
POT003B	<1	22	1	<1	<1	0.03	<2	3	4	<1	0.1	7	3
AF-6-C.CONC	<1	3	1	<1	<1	<0.01	<2	<1	<1	<1	<0.1	1	6
AF-7-C.CONC	<1	2	1	<1	<1	<0.01	<2	<1	<1	<1	<0.1	<1	5
AF-6-C.TAIL	<1	3	<1	<1	<1	<0.01	<2	<1	<1	<1	<0.1	1	7
AF-7-C.TAIL	<1	4	1	<1	<1	<0.01	<2	<1	<1	<1	<0.1	1	11
AF-6-R.TAIL	<1	2	<1	<1	<1	<0.01	<2	<1	<1	<1	<0.1	<1	3
AF-7-R.TAIL	<1	2	1	<1	<1	<0.01	<2	<1	<1	<1	<0.1	<1	5
AF-7-R.TAIL R	<1	2	1	<1	<1	<0.01	<2	<1	<1	<1	<0.1	<1	5

Potash Total Digestion: A 0.125 g pulp is gently heated in a mixture of HF/HNO3/HClO4 until dry and the residue is dissolved in dilute HNO3.
The standard is POT003B.

Appendix-6 Assay Reports of the Large Direct Flotation of Kainite-1 Sample without Decomposition

Mining and Minerals
Attention: Jack Zhang
PO #/Project: 14081
Samples: 8

SRC Geoanalytical Laboratories
125 - 15 Innovation Blvd., Saskatoon, Saskatchewan, S7N 2X8
Tel: (306) 933-8118 Fax: (306) 933-5656 Email: geolab@src.sk.ca

Report No: G-2017-1739

Date of Report: Sep 15, 2017

Potash ICP1 Total Digestion

Sample Number	Ag ppm	Al2O3 wt %	Ba ppm	Be ppm	CaO wt %	Cd ppm	Ce ppm	Co ppm	Cr ppm	Cu ppm	Dy ppm	Er ppm	Eu ppm	Fe2O3 wt %	Ga ppm	Gd ppm	Hf ppm
POT003B	<0.2	0.39	12	0.2	0.93	<1	<1	1	5	<1	<0.2	<0.2	<0.2	0.22	1	<1	<1
Ag1-CF-C.C	<0.2	<0.01	1	<0.2	0.01	<1	<1	<1	<1	<1	<0.2	<0.2	<0.2	0.01	<1	<1	<1
Ag1-CF-C.T	<0.2	<0.01	1	<0.2	<0.01	<1	<1	<1	<1	<1	<0.2	<0.2	<0.2	<0.01	<1	<1	<1
Ag1-CF-R.T	<0.2	<0.01	<1	<0.2	<0.01	<1	<1	<1	<1	<1	<0.2	<0.2	<0.2	<0.01	1	<1	<1
Ag2-CF-C.C	<0.2	0.01	2	<0.2	0.01	<1	<1	<1	<1	<1	0.2	<0.2	<0.2	0.02	<1	<1	<1
Ag2-CF-C.T	<0.2	<0.01	1	<0.2	<0.01	<1	<1	<1	<1	<1	<0.2	<0.2	<0.2	0.01	1	<1	<1
Ag2-CF-R.T	<0.2	<0.01	<1	<0.2	<0.01	<1	<1	<1	<1	<1	<0.2	<0.2	<0.2	<0.01	1	<1	<1
Ag2-CF-R.T R	<0.2	0.01	1	<0.2	<0.01	<1	<1	<1	<1	<1	<0.2	<0.2	<0.2	0.01	1	<1	<1

Sample Number	Ho ppm	K2O wt %	La ppm	Li ppm	MgO wt %	MnO wt %	Mo ppm	Na2O wt %	Nb ppm	Nd ppm	Ni ppm	P2O5 wt %	Pb ppm	Pr ppm	S ppm	Sc ppm	Sm ppm
POT003B	<1	19.0	<1	3	2.32	<0.01	1	30.3	<1	<1	3	<0.01	<1	<1	1790	<1	<1
Ag1-CF-C.C	<1	14.3	<1	<1	15.1	<0.01	<1	10.7	<1	<1	<1	<0.01	<1	<1	106000	<1	<1
Ag1-CF-C.T	<1	6.88	<1	<1	7.87	<0.01	<1	32.0	<1	<1	<1	<0.01	<1	<1	51900	<1	<1
Ag1-CF-R.T	<1	4.85	<1	<1	7.07	<0.01	<1	36.0	<1	<1	<1	<0.01	<1	<1	42900	<1	<1
Ag2-CF-C.C	<1	12.8	<1	<1	13.2	<0.01	<1	15.0	<1	<1	<1	<0.01	<1	<1	94700	<1	<1
Ag2-CF-C.T	<1	5.43	<1	<1	6.04	<0.01	<1	37.0	<1	<1	<1	<0.01	<1	<1	39600	<1	<1
Ag2-CF-R.T	<1	2.33	<1	<1	7.24	<0.01	<1	36.8	<1	<1	<1	<0.01	<1	<1	49800	<1	<1
Ag2-CF-R.T R	<1	2.40	<1	<1	7.42	<0.01	<1	37.8	<1	<1	1	<0.01	<1	<1	51400	<1	<1

Sample Number	Sn ppm	Sr ppm	Ta ppm	Tb ppm	Th ppm	TiO2 wt %	U, ICP ppm	V ppm	W ppm	Y ppm	Yb ppm	Zn ppm	Zr ppm
POT003B	<1	23	<1	<1	<1	0.02	2	3	7	<1	0.1	6	3
Ag1-CF-C.C	<1	1	<1	<1	<1	<0.01	<2	<1	<1	<1	<0.1	<1	12
Ag1-CF-C.T	<1	1	1	<1	<1	<0.01	<2	<1	<1	<1	<0.1	<1	6
Ag1-CF-R.T	<1	1	<1	<1	<1	<0.01	<2	<1	<1	<1	<0.1	<1	4
Ag2-CF-C.C	<1	3	<1	<1	<1	<0.01	2	<1	<1	<1	<0.1	<1	29
Ag2-CF-C.T	<1	2	1	<1	<1	<0.01	<2	<1	<1	<1	<0.1	1	13
Ag2-CF-R.T	<1	1	<1	<1	<1	<0.01	<2	<1	<1	<1	<0.1	<1	5
Ag2-CF-R.T R	<1	1	<1	<1	<1	<0.01	<2	<1	<1	<1	<0.1	<1	4

Potash Total Digestion: A 0.125 g pulp is gently heated in a mixture of HF/HNO3/HClO4 until dry and the residue is dissolved in dilute HNO3.
The standard is POT003B.

Appendix-7 Size by Size Analysis of the Kainite-2 Sample

Mining and Minerals
Attention: Jack Zhang
PO #/Project: 14081
Samples: 9

SRC Geoanalytical Laboratories
125 - 15 Innovation Blvd., Saskatoon, Saskatchewan, S7N 2X8
Tel: (306) 933-8118 Fax: (306) 933-5656 Email: geolab@src.sk.ca

Report No: G-2017-1671

Date of Report: Sep 07, 2017

Potash ICP1 Total Digestion

Sample Number	Ag ppm	Al2O3 wt %	Ba ppm	Be ppm	CaO wt %	Cd ppm	Ce ppm	Co ppm	Cr ppm	Cu ppm	Dy ppm	Er ppm	Eu ppm	Fe2O3 wt %	Ga ppm	Gd ppm	Hf ppm
POT003B	<0.2	0.38	11	0.2	0.91	<1	<1	1	5	<1	<0.2	<0.2	<0.2	0.21	1	<1	<1
Ag-Feed +2.0	<0.2	<0.01	<1	<0.2	<0.01	<1	<1	<1	<1	<1	<0.2	<0.2	<0.2	<0.01	<1	<1	<1
Ag-Feed +1.0	<0.2	<0.01	<1	<0.2	<0.01	<1	<1	<1	1	<1	<0.2	<0.2	<0.2	<0.01	<1	<1	<1
Ag-Feed +0.85	<0.2	<0.01	<1	<0.2	<0.01	<1	<1	<1	<1	<1	<0.2	<0.2	<0.2	<0.01	<1	<1	<1
Ag-Feed +0.425	<0.2	<0.01	<1	<0.2	<0.01	<1	<1	<1	<1	<1	<0.2	<0.2	<0.2	<0.01	<1	<1	<1
Ag-Feed +0.212	<0.2	<0.01	<1	<0.2	0.01	<1	<1	<1	<1	<1	<0.2	<0.2	<0.2	<0.01	<1	<1	<1
Ag-Feed +0.106	<0.2	0.02	1	<0.2	<0.01	<1	<1	<1	<1	<1	<0.2	<0.2	<0.2	<0.01	<1	<1	<1
Ag-Feed -0.106	<0.2	<0.01	<1	<0.2	<0.01	<1	<1	<1	<1	<1	<0.2	<0.2	<0.2	<0.01	<1	<1	<1
Ag-Feed -0.106 R	<0.2	<0.01	<1	<0.2	<0.01	<1	<1	<1	<1	<1	<0.2	<0.2	<0.2	<0.01	<1	<1	<1

Sample Number	Ho ppm	K2O wt %	La ppm	Li ppm	MgO wt %	MnO wt %	Mo ppm	Na2O wt %	Nb ppm	Nd ppm	Ni ppm	P2O5 wt %	Pb ppm	Pr ppm	S ppm	Sc ppm	Sm ppm
POT003B	<1	19.6	<1	3	2.28	<0.01	<1	30.1	<1	<1	2	<0.01	<1	<1	1820	<1	<1
Ag-Feed +2.0	<1	3.26	<1	<1	15.9	<0.01	<1	15.8	<1	<1	<1	<0.01	<1	<1	122000	<1	<1
Ag-Feed +1.0	<1	4.26	<1	<1	15.3	<0.01	<1	16.3	<1	<1	2	<0.01	<1	<1	122000	<1	<1
Ag-Feed +0.85	<1	4.00	<1	<1	15.1	<0.01	<1	16.1	<1	<1	<1	<0.01	<1	<1	122000	<1	<1
Ag-Feed +0.425	<1	4.94	<1	<1	14.7	<0.01	<1	18.5	<1	<1	1	<0.01	<1	<1	119000	<1	<1
Ag-Feed +0.212	<1	2.22	<1	<1	13.0	<0.01	<1	24.2	<1	<1	<1	<0.01	<1	<1	99000	<1	<1
Ag-Feed +0.106	<1	0.87	<1	2	10.3	<0.01	<1	29.2	<1	<1	<1	<0.01	<1	<1	74800	<1	<1
Ag-Feed -0.106	<1	4.33	<1	<1	7.50	<0.01	<1	31.8	<1	<1	<1	<0.01	<1	<1	49200	<1	<1
Ag-Feed -0.106 R	<1	4.31	<1	<1	7.47	<0.01	<1	31.4	<1	<1	1	<0.01	1	<1	49200	<1	<1

Sample Number	Sn ppm	Sr ppm	Ta ppm	Tb ppm	Th ppm	TiO2 wt %	U, ICP ppm	V ppm	W ppm	Y ppm	Yb ppm	Zn ppm	Zr ppm
POT003B	<1	22	<1	<1	<1	0.02	<2	3	7	<1	0.1	7	3
Ag-Feed +2.0	<1	<1	1	<1	<1	<0.01	<2	<1	<1	<1	<0.1	<1	1
Ag-Feed +1.0	<1	1	1	<1	<1	<0.01	<2	<1	<1	<1	<0.1	<1	1
Ag-Feed +0.85	<1	<1	<1	<1	<1	<0.01	<2	<1	<1	<1	<0.1	<1	<1
Ag-Feed +0.425	<1	<1	1	<1	<1	<0.01	<2	<1	<1	<1	<0.1	<1	1
Ag-Feed +0.212	<1	<1	<1	<1	<1	<0.01	<2	<1	<1	<1	<0.1	<1	<1
Ag-Feed +0.106	<1	1	1	<1	<1	<0.01	<2	<1	2	<1	<0.1	<1	1
Ag-Feed -0.106	1	1	<1	<1	<1	<0.01	<2	<1	<1	<1	<0.1	<1	2
Ag-Feed -0.106 R	<1	1	<1	<1	<1	<0.01	<2	<1	<1	<1	<0.1	<1	2

Potash Total Digestion: A 0.125 g pulp is gently heated in a mixture of HF/HNO3/HClO4 until dry and the residue is dissolved in dilute HNO3.
The standard is POT003B.

Appendix-8 Assay of the Leonite Flotation Test

Mining and Minerals
Attention: Jack Zhang
PO #/Project: 14081
Samples: 4

SRC Geoanalytical Laboratories
125 - 15 Innovation Blvd., Saskatoon, Saskatchewan, S7N 2X8
Tel: (306) 933-8118 Fax: (306) 933-5656 Email: geolab@src.sk.ca

Report No: G-2017-1886
Date of Report: Sep 27, 2017

Potash ICP1 Total Digestion

Sample Number	Ag ppm	Al2O3 wt %	Ba ppm	Be ppm	CaO wt %	Cd ppm	Ce ppm	Co ppm	Cr ppm	Cu ppm	Dy ppm	Er ppm	Eu ppm	Fe2O3 wt %	Ga ppm	Gd ppm	Hf ppm
POT003B	<0.2	0.39	12	0.3	0.92	<1	<1	1	5	<1	<0.2	<0.2	<0.2	0.21	1	<1	<1
Ag-CF-P1-C.C	<0.2	<0.01	<1	<0.2	0.01	<1	<1	<1	<1	<1	<0.2	<0.2	<0.2	<0.01	<1	<1	<1
Ag-CF-P1-C.T	<0.2	<0.01	<1	<0.2	0.01	<1	<1	<1	<1	<1	<0.2	<0.2	<0.2	<0.01	1	<1	<1
Ag-CF-P1-C.T R	<0.2	<0.01	<1	<0.2	0.01	<1	<1	<1	<1	<1	<0.2	<0.2	<0.2	<0.01	1	<1	<1

Mining and Minerals
Attention: Jack Zhang
PO #/Project: 14081
Samples: 4

SRC Geoanalytical Laboratories
125 - 15 Innovation Blvd., Saskatoon, Saskatchewan, S7N 2X8
Tel: (306) 933-8118 Fax: (306) 933-5656 Email: geolab@src.sk.ca

Report No: G-2017-1886
Date of Report: Sep 27, 2017

Potash ICP1 Total Digestion

Sample Number	Ho ppm	K2O wt %	La ppm	Li ppm	MgO wt %	MnO wt %	Mo ppm	Na2O wt %	Nb ppm	Nd ppm	Ni ppm	P2O5 wt %	Pb ppm	Pr ppm	S ppm	Sc ppm	Sm ppm
POT003B	<1	19.2	<1	3	2.38	<0.01	1	30.4	<1	<1	3	<0.01	<1	<1	1870	<1	<1
Ag-CF-P1-C.C	<1	24.5	<1	<1	7.98	<0.01	<1	14.5	<1	<1	<1	<0.01	<1	<1	89200	<1	<1
Ag-CF-P1-C.T	<1	2.65	<1	<1	3.47	<0.01	<1	44.0	<1	<1	<1	<0.01	<1	<1	14400	<1	<1
Ag-CF-P1-C.T R	<1	2.60	<1	<1	3.49	<0.01	<1	44.0	<1	<1	<1	<0.01	<1	<1	14400	<1	<1

Mining and Minerals
Attention: Jack Zhang
PO #/Project: 14081
Samples: 4

SRC Geoanalytical Laboratories
125 - 15 Innovation Blvd., Saskatoon, Saskatchewan, S7N 2X8
Tel: (306) 933-8118 Fax: (306) 933-5656 Email: geolab@src.sk.ca

Report No: G-2017-1886
Date of Report: Sep 27, 2017

Potash ICP1 Total Digestion

Sample Number	Sn ppm	Sr ppm	Ta ppm	Tb ppm	Th ppm	TiO2 wt %	U, ICP ppm	V ppm	W ppm	Y ppm	Yb ppm	Zn ppm	Zr ppm
POT003B	<1	22	<1	<1	<1	0.02	3	3	3	<1	0.1	6	3
Ag-CF-P1-C.C	<1	2	1	<1	<1	<0.01	2	<1	<1	<1	<0.1	<1	<1
Ag-CF-P1-C.T	<1	3	1	<1	<1	<0.01	<2	<1	<1	<1	<0.1	<1	<1
Ag-CF-P1-C.T R	<1	2	<1	<1	<1	<0.01	<2	<1	<1	<1	<0.1	<1	<1

Potash Total Digestion: A 0.125 g pulp is gently heated in a mixture of HF/HNO3/HClO4 until dry and the residue is dissolved in dilute HNO3.
The standard is POT003B.

Appendix-9 Assay of Kainite Decomposition Products

Mining and Minerals
Attention: Jack Zhang
PO #/Project: 14081
Samples: 6

SRC Geoanalytical Laboratories
125 - 15 Innovation Blvd., Saskatoon, Saskatchewan, S7N 2X8
Tel: (306) 933-8118 Fax: (306) 933-5656 Email: geolab@src.sk.ca

Report No: G-2017-1782
Date of Report: Sep 15, 2017

Potash ICP1 Total Digestion

Sample Number	Ag ppm	Al2O3 wt %	Ba ppm	Be ppm	CaO wt %	Cd ppm	Ce ppm	Co ppm	Cr ppm	Cu ppm	Dy ppm	Er ppm	Eu ppm	Fe2O3 wt %	Ga ppm	Gd ppm	Hf ppm
POT003B	<0.2	0.40	12	0.2	0.92	<1	1	<1	5	<1	<0.2	<0.2	<0.2	0.23	1	<1	<1
DT-FDS	<0.2	<0.01	1	<0.2	0.01	<1	<1	<1	<1	<1	<0.2	<0.2	<0.2	0.01	<1	<1	<1
DT-TIS	<0.2	<0.01	<1	<0.2	<0.01	<1	<1	<1	<1	<1	<0.2	<0.2	<0.2	<0.01	<1	<1	<1
DT-T2S	<0.2	<0.01	1	<0.2	0.01	<1	<1	<1	<1	<1	0.3	<0.2	<0.2	<0.01	<1	<1	<1
DT-T3S	<0.2	<0.01	1	<0.2	0.01	<1	<1	<1	<1	<1	<0.2	<0.2	<0.2	0.02	<1	<1	<1
DT-T3S R	<0.2	<0.01	1	<0.2	0.01	<1	<1	<1	<1	<1	<0.2	<0.2	<0.2	0.02	<1	<1	<1

Mining and Minerals
Attention: Jack Zhang
PO #/Project: 14081
Samples: 6

SRC Geoanalytical Laboratories
125 - 15 Innovation Blvd., Saskatoon, Saskatchewan, S7N 2X8
Tel: (306) 933-8118 Fax: (306) 933-5656 Email: geolab@src.sk.ca

Report No: G-2017-1782
Date of Report: Sep 15, 2017

Potash ICP1 Total Digestion

Sample Number	Ho ppm	K2O wt %	La ppm	Li ppm	MgO wt %	MnO wt %	Mo ppm	Na2O wt %	Nb ppm	Nd ppm	Ni ppm	P2O5 wt %	Pb ppm	Pr ppm	S ppm	Sc ppm	Sm ppm
POT003B	<1	19.0	<1	3	2.30	<0.01	<1	30.4	<1	<1	4	<0.01	1	<1	1850	<1	<1
DT-FDS	<1	13.3	<1	<1	14.0	<0.01	<1	11.1	<1	<1	1	<0.01	1	<1	99200	<1	<1
DT-TIS	<1	19.8	<1	<1	11.1	<0.01	<1	9.03	<1	<1	1	<0.01	<1	<1	148000	<1	<1
DT-T2S	<1	17.3	<1	<1	11.9	<0.01	<1	11.1	<1	<1	1	<0.01	<1	<1	137000	<1	<1
DT-T3S	<1	16.1	<1	<1	12.9	<0.01	<1	11.1	<1	<1	1	<0.01	<1	<1	123000	<1	<1
DT-T3S R	<1	16.6	<1	<1	13.1	<0.01	<1	11.4	<1	<1	1	<0.01	<1	<1	126000	<1	<1

Sample Number	Sn ppm	Sr ppm	Ta ppm	Tb ppm	Th ppm	TiO2 wt %	U, ICP ppm	V ppm	W ppm	Y ppm	Yb ppm	Zn ppm	Zr ppm
POT003B	<1	23	1	<1	<1	0.02	2	4	4	<1	0.1	8	4
DT-FDS	<1	2	1	<1	<1	<0.01	<2	<1	<1	<1	<0.1	<1	16
DT-TIS	<1	1	<1	<1	<1	<0.01	<2	<1	<1	<1	<0.1	<1	9
DT-T2S	<1	3	<1	<1	<1	<0.01	<2	<1	<1	<1	<0.1	<1	17
DT-T3S	<1	3	1	<1	<1	<0.01	<2	<1	<1	<1	<0.1	<1	17
DT-T3S R	<1	3	1	<1	<1	<0.01	<2	<1	<1	<1	<0.1	<1	18

Sample Number	Ag ppm	Al2O3 wt %	Ba ppm	Be ppm	CaO wt %	Cd ppm	Ce ppm	Co ppm	Cr ppm	Cu ppm	Dy ppm	Er ppm	Eu ppm	Fe2O3 wt %	Ga ppm	Gd ppm	Hf ppm
POT003B	<0.2	0.38	14	<0.2	0.96	<1	<1	<1	5	<1	<0.2	<0.2	<0.2	0.22	1	<1	<1
Ag-DC-30	<0.2	<0.01	1	<0.2	<0.01	<1	<1	<1	<1	<1	<0.2	<0.2	<0.2	<0.01	<1	<1	<1

Sample Number	Ho ppm	K2O wt %	La ppm	Li ppm	MgO wt %	MnO wt %	Mo ppm	Na2O wt %	Nb ppm	Nd ppm	Ni ppm	P2O5 wt %	Pb ppm	Pr ppm	S ppm	Sc ppm	Sm ppm
POT003B	<1	18.9	1	3	2.30	<0.01	1	30.5	<1	<1	2	<0.01	<1	<1	1860	<1	<1
Ag-DC-30	<1	25.6	<1	<1	11.4	<0.01	<1	0.18	<1	<1	<1	<0.01	<1	<1	163000	<1	<1

Appendix-10 SOP Conversion Feed by Kainite Decomposition at 40% Solids

Mining and Minerals
Attention: Jack Zhang
PO #/Project: 14081
Samples: 4

SRC Geoanalytical Laboratories
125 - 15 Innovation Blvd., Saskatoon, Saskatchewan, S7N 2X8
Tel: (306) 933-8118 Fax: (306) 933-5656 Email: geolab@src.sk.ca

Report No: G-2017-1805
Date of Report: Sep 15, 2017

Potash ICP1 Total Digestion

Sample Number	Ag ppm	Al2O3 wt %	Ba ppm	Be ppm	CaO wt %	Cd ppm	Ce ppm	Co ppm	Cr ppm	Cu ppm	Dy ppm	Er ppm	Eu ppm	Fe2O3 wt %	Ga ppm	Gd ppm	Hf ppm
POT003B	<0.2	0.39	11	0.2	0.90	<1	1	1	4	<1	<0.2	<0.2	<0.2	0.23	1	<1	<1
DT-T4S	<0.2	<0.01	1	<0.2	0.01	<1	<1	<1	<1	<1	<0.2	<0.2	<0.2	0.01	<1	<1	<1
DT-T4AS	<0.2	<0.01	1	<0.2	0.02	<1	<1	<1	<1	<1	0.4	<0.2	<0.2	0.01	<1	<1	<1
DT-T4AS R	<0.2	0.01	1	<0.2	0.02	<1	<1	<1	<1	<1	0.4	<0.2	<0.2	<0.01	<1	<1	<1

Mining and Minerals
Attention: Jack Zhang
PO #/Project: 14081
Samples: 4

SRC Geoanalytical Laboratories
125 - 15 Innovation Blvd., Saskatoon, Saskatchewan, S7N 2X8
Tel: (306) 933-8118 Fax: (306) 933-5656 Email: geolab@src.sk.ca

Report No: G-2017-1805
Date of Report: Sep 15, 2017

Potash ICP1 Total Digestion

Sample Number	Ho ppm	K2O wt %	La ppm	Li ppm	MgO wt %	MnO wt %	Mo ppm	Na2O wt %	Nb ppm	Nd ppm	Ni ppm	P2O5 wt %	Pb ppm	Pr ppm	S ppm	Sc ppm	Sm ppm
POT003B	<1	19.0	<1	3	2.29	<0.01	<1	30.3	<1	<1	3	<0.01	<1	<1	1830	<1	<1
DT-T4S	<1	24.5	<1	<1	11.9	<0.01	<1	1.26	<1	<1	1	<0.01	1	<1	171000	<1	<1
DT-T4AS	<1	24.1	<1	<1	12.5	<0.01	<1	1.55	<1	<1	1	<0.01	<1	<1	169000	<1	<1
DT-T4AS R	<1	23.4	<1	<1	12.3	<0.01	<1	1.54	<1	<1	<1	<0.01	<1	<1	166000	<1	<1

Mining and Minerals
Attention: Jack Zhang
PO #/Project: 14081
Samples: 4

SRC Geoanalytical Laboratories
125 - 15 Innovation Blvd., Saskatoon, Saskatchewan, S7N 2X8
Tel: (306) 933-8118 Fax: (306) 933-5656 Email: geolab@src.sk.ca

Report No: G-2017-1805
Date of Report: Sep 15, 2017

Potash ICP1 Total Digestion

Sample Number	Sn ppm	Sr ppm	Ta ppm	Tb ppm	Th ppm	TiO2 wt %	U, ICP ppm	V ppm	W ppm	Y ppm	Yb ppm	Zn ppm	Zr ppm
POT003B	<1	23	<1	<1	<1	0.02	<2	3	4	<1	0.1	8	3
DT-T4S	<1	2	<1	<1	<1	<0.01	<2	<1	<1	<1	<0.1	<1	19
DT-T4AS	<1	6	<1	<1	<1	<0.01	<2	<1	<1	<1	<0.1	1	40
DT-T4AS R	<1	7	<1	<1	<1	<0.01	<2	<1	<1	<1	<0.1	<1	40

Potash Total Digestion: A 0.125 g pulp is gently heated in a mixture of HF/HNO3/HClO4 until dry and the residue is dissolved in dilute HNO3.
The standard is POT003B.

Appendix-11 Assay of SOP Tests at Different Water/Solid Ratios between 1.2 and 1.6

Mining and Minerals
Attention: Jack Zhang
PO #/Project: 14081
Samples: 5

SRC Geoanalytical Laboratories
125 - 15 Innovation Blvd., Saskatoon, Saskatchewan, S7N 2X8
Tel: (306) 933-8118 Fax: (306) 933-5656 Email: geolab@src.sk.ca

Report No: G-2017-1821
Date of Report: Sep 21, 2017

Potash ICP1 Total Digestion

Sample Number	Ag ppm	Al2O3 wt %	Ba ppm	Be ppm	CaO wt %	Cd ppm	Ce ppm	Co ppm	Cr ppm	Cu ppm	Dy ppm	Er ppm	Eu ppm	Fe2O3 wt %	Ga ppm	Gd ppm	Hf ppm
POT003B	<0.2	0.44	13	0.4	0.94	<1	1	1	5	1	<0.2	<0.2	<0.2	0.24	1	<1	<1
AG-SOP1 (1.2)	<0.2	0.03	4	<0.2	0.03	<1	<1	1	2	2	0.6	<0.2	<0.2	0.08	<1	<1	<1
AG-SOP2 (1.4)	<0.2	0.03	4	<0.2	0.03	<1	1	<1	3	4	0.8	<0.2	<0.2	0.09	<1	<1	<1
AG-SOP3 (1.6)	<0.2	0.02	6	<0.2	0.05	<1	2	<1	7	5	1.4	0.2	<0.2	0.02	<1	<1	<1
AG-SOP3 (1.6) R	<0.2	0.02	6	<0.2	0.05	<1	2	<1	6	5	1.4	0.2	<0.2	0.02	<1	<1	<1

Mining and Minerals
Attention: Jack Zhang
PO #/Project: 14081
Samples: 5

SRC Geoanalytical Laboratories
125 - 15 Innovation Blvd., Saskatoon, Saskatchewan, S7N 2X8
Tel: (306) 933-8118 Fax: (306) 933-5656 Email: geolab@src.sk.ca

Report No: G-2017-1821
Date of Report: Sep 21, 2017

Potash ICP1 Total Digestion

Sample Number	Ho ppm	K2O wt %	La ppm	Li ppm	MgO wt %	MnO wt %	Mo ppm	Na2O wt %	Nb ppm	Nd ppm	Ni ppm	P2O5 wt %	Pb ppm	Pr ppm	S ppm	Sc ppm	Sm ppm
POT003B	<1	19.0	<1	3	2.35	<0.01	<1	30.3	<1	<1	4	<0.01	<1	<1	1800	<1	<1
AG-SOP1 (1.2)	<1	32.1	<1	<1	9.47	<0.01	<1	0.30	<1	<1	1	<0.01	1	<1	174000	<1	<1
AG-SOP2 (1.4)	<1	39.0	<1	<1	6.27	<0.01	<1	0.18	<1	<1	2	<0.01	1	<1	171000	<1	<1
AG-SOP3 (1.6)	<1	52.4	1	1	1.14	<0.01	<1	0.09	<1	<1	3	<0.01	<1	<1	176000	<1	<1
AG-SOP3 (1.6) R	<1	53.3	<1	1	1.14	<0.01	<1	0.09	<1	<1	3	<0.01	<1	<1	176000	<1	<1

Mining and Minerals
Attention: Jack Zhang
PO #/Project: 14081
Samples: 5

SRC Geoanalytical Laboratories
125 - 15 Innovation Blvd., Saskatoon, Saskatchewan, S7N 2X8
Tel: (306) 933-8118 Fax: (306) 933-5656 Email: geolab@src.sk.ca

Report No: G-2017-1821
Date of Report: Sep 21, 2017

Potash ICP1 Total Digestion

Sample Number	Sn ppm	Sr ppm	Ta ppm	Tb ppm	Th ppm	TiO2 wt %	U, ICP ppm	V ppm	W ppm	Y ppm	Yb ppm	Zn ppm	Zr ppm
POT003B	<1	23	2	<1	<1	0.02	<2	3	7	<1	0.1	10	3
AG-SOP1 (1.2)	<1	7	1	<1	<1	<0.01	<2	<1	<1	<1	<0.1	5	42
AG-SOP2 (1.4)	<1	13	1	<1	<1	<0.01	<2	<1	<1	<1	<0.1	8	60
AG-SOP3 (1.6)	3	25	<1	<1	<1	<0.01	<2	<1	<1	<1	<0.1	6	98
AG-SOP3 (1.6) R	3	25	<1	<1	<1	<0.01	<2	<1	<1	<1	<0.1	5	105

Potash Total Digestion: A 0.125 g pulp is gently heated in a mixture of HF/HNO3/HClO4 until dry and the residue is dissolved in dilute HNO3.
The standard is POT003B.

Appendix-12 Assay of SOP and by-Products at Water/Solid Ratios of 1.55 and 1.60

Mining and Minerals
Attention: Jack Zhang
PO #/Project: 14081
Samples: 6

SRC Geoanalytical Laboratories
125 - 15 Innovation Blvd., Saskatoon, Saskatchewan, S7N 2X8
Tel: (306) 933-8118 Fax: (306) 933-5656 Email: geolab@src.sk.ca

Report No: G-2017-1887

Date of Report: Sep 27, 2017

Potash ICP1 Total Digestion

Sample Number	Ag ppm	Al2O3 wt %	Ba ppm	Be ppm	CaO wt %	Cd ppm	Ce ppm	Co ppm	Cr ppm	Cu ppm	Dy ppm	Er ppm	Eu ppm	Fe2O3 wt %	Ga ppm	Gd ppm	Hf ppm
POT003B	<0.2	0.40	12	0.2	0.93	<1	<1	<1	5	1	<0.2	<0.2	<0.2	0.21	1	<1	<1
Ag-D(30)-SOP(1.55)	<0.2	<0.01	1	<0.2	<0.01	<1	<1	<1	<1	<1	<0.2	<0.2	<0.2	<0.01	<1	<1	<1
Ag-D(30)-Leonite(1.55)	<0.2	0.01	2	<0.2	0.04	<1	<1	<1	4	4	1.4	0.2	<0.2	<0.01	<1	<1	<1
Ag-D(40)-SOP(1.6)	<0.2	0.01	8	<0.2	0.09	<1	<1	<1	5	4	0.6	<0.2	<0.2	0.01	<1	<1	<1
Ag-D(40)-Leonite(1.6)	<0.2	<0.01	<1	<0.2	<0.01	<1	<1	<1	<1	<1	<0.2	<0.2	<0.2	<0.01	<1	<1	<1
Ag-D(40)-Leonite(1.6) R	<0.2	<0.01	<1	<0.2	<0.01	<1	<1	<1	<1	<1	<0.2	<0.2	<0.2	<0.01	<1	<1	<1

Sample Number	Ho ppm	K2O wt %	La ppm	Li ppm	MgO wt %	MnO wt %	Mo ppm	Na2O wt %	Nb ppm	Nd ppm	Ni ppm	P2O5 wt %	Pb ppm	Pr ppm	S ppm	Sc ppm	Sm ppm
POT003B	<1	19.2	<1	3	2.35	<0.01	<1	30.4	<1	<1	3	<0.01	1	<1	1860	<1	<1
Ag-D(30)-SOP(1.55)	<1	26.8	<1	<1	11.5	<0.01	<1	0.06	<1	<1	1	<0.01	<1	<1	170000	<1	<1
Ag-D(30)-Leonite(1.55)	<1	54.0	<1	3	0.37	<0.01	<1	0.04	<1	<1	1	<0.01	<1	<1	172000	<1	<1
Ag-D(40)-SOP(1.6)	<1	53.6	<1	3	0.34	<0.01	<1	0.06	<1	<1	1	<0.01	<1	<1	172000	<1	<1
Ag-D(40)-Leonite(1.6)	<1	26.7	<1	<1	11.6	<0.01	<1	0.06	<1	<1	<1	<0.01	<1	<1	168000	<1	<1
Ag-D(40)-Leonite(1.6) R	<1	26.7	<1	<1	11.6	<0.01	<1	0.06	<1	<1	<1	<0.01	<1	<1	166000	<1	<1

Sample Number	Sn ppm	Sr ppm	Ta ppm	Tb ppm	Th ppm	TiO2 wt %	U, ICP ppm	V ppm	W ppm	Y ppm	Yb ppm	Zn ppm	Zr ppm
POT003B	<1	22	<1	<1	<1	0.02	2	4	5	<1	0.1	7	3
Ag-D(30)-SOP(1.55)	<1	<1	<1	<1	<1	<0.01	9	<1	<1	<1	<0.1	<1	1
Ag-D(30)-Leonite(1.55)	<1	11	<1	<1	<1	<0.01	52	<1	<1	<1	<0.1	5	20
Ag-D(40)-SOP(1.6)	<1	24	<1	<1	<1	<0.01	11	<1	<1	<1	<0.1	6	26
Ag-D(40)-Leonite(1.6)	<1	<1	<1	<1	<1	<0.01	4	<1	<1	<1	<0.1	<1	1
Ag-D(40)-Leonite(1.6) R	<1	<1	<1	<1	<1	<0.01	3	<1	<1	<1	<0.1	<1	1

Potash Total Digestion: A 0.125 g pulp is gently heated in a mixture of HF/HNO3/HClO4 until dry and the residue is dissolved in dilute HNO3.
The standard is POT003B.

Appendix-13 Assay of SOP and by-Products using High Purity Leonite as SOP Feed

Mining and Minerals
Attention: Jack Zhang
PO #/Project: 14081
Samples: 11

SRC Geoanalytical Laboratories
125 - 15 Innovation Blvd., Saskatoon, Saskatchewan, S7N 2X8
Tel: (306) 933-8118 Fax: (306) 933-5656 Email: geolab@src.sk.ca

Report No: G-2017-2372

Date of Report: Nov 29, 2017

Potash ICP1 Total Digestion

Sample Number	Ho ppm	K2O wt %	La ppm	Li ppm	MgO wt %	MnO wt %	Mo ppm	Na2O wt %	Nb ppm	Nd ppm	Ni ppm	P2O5 wt %	Pb ppm	Pr ppm	S ppm	Sc ppm	Sm ppm
POT003B	<1	19.1	<1	3	2.39	<0.01	<1	30.3	<1	<1	3	<0.01	<1	<1	1870	<1	<1
Ag-SOP-F	<1	26.0	<1	<1	11.4	<0.01	<1	0.11	<1	<1	2	<0.01	<1	<1	171000	<1	<1
Ag-LN-1.0	<1	25.7	<1	<1	11.5	<0.01	<1	<0.01	<1	<1	5	<0.01	<1	<1	170000	<1	<1
Ag-SOP-1.15	<1	52.0	<1	<1	1.22	<0.01	<1	0.01	<1	<1	<1	<0.01	<1	<1	186000	<1	<1
Ag-LN-1.15	<1	25.3	<1	<1	11.7	<0.01	<1	0.02	<1	<1	5	<0.01	<1	<1	174000	<1	<1

Mining and Minerals
Attention: Jack Zhang
PO #/Project: 14081
Samples: 11

SRC Geoanalytical Laboratories
125 - 15 Innovation Blvd., Saskatoon, Saskatchewan, S7N 2X8
Tel: (306) 933-8118 Fax: (306) 933-5656 Email: geolab@src.sk.ca

Report No: G-2017-2372

Date of Report: Nov 29, 2017

Potash ICP1 Total Digestion

Sample Number	Ho ppm	K2O wt %	La ppm	Li ppm	MgO wt %	MnO wt %	Mo ppm	Na2O wt %	Nb ppm	Nd ppm	Ni ppm	P2O5 wt %	Pb ppm	Pr ppm	S ppm	Sc ppm	Sm ppm
POT003B	<1	19.1	<1	3	2.39	<0.01	<1	30.3	<1	<1	3	<0.01	<1	<1	1870	<1	<1
Ag-SOP-F	<1	26.0	<1	<1	11.4	<0.01	<1	0.11	<1	<1	2	<0.01	<1	<1	171000	<1	<1
Ag-SOP-1.15	<1	52.0	<1	<1	1.22	<0.01	<1	0.01	<1	<1	<1	<0.01	<1	<1	186000	<1	<1
Ag-LN-1.15	<1	25.3	<1	<1	11.7	<0.01	<1	0.02	<1	<1	5	<0.01	<1	<1	174000	<1	<1

Mining and Minerals
Attention: Jack Zhang
PO #/Project: 14081
Samples: 11

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Report No: G-2017-2372

Date of Report: Nov 29, 2017

Potash ICP1 Total Digestion

Sample Number	Sn ppm	Sr ppm	Ta ppm	Tb ppm	Th ppm	TiO2 wt %	U, ICP ppm	V ppm	W ppm	Y ppm	Yb ppm	Zn ppm	Zr ppm
POT003B	<1	23	1	<1	<1	0.02	<2	4	6	<1	<0.1	8	3
Ag-SOP-F	<1	<1	<1	<1	<1	<0.01	2	<1	<1	<1	<0.1	<1	<1
Ag-SOP-1.15	<1	1	1	<1	<1	<0.01	<2	<1	<1	<1	<0.1	<1	<1
Ag-LN-1.15	<1	<1	<1	<1	<1	<0.01	<2	<1	<1	<1	<0.1	3	<1

Mining and Minerals
Attention: Jack Zhang
PO #/Project: 14081
Samples: 6

SRC Geoanalytical Laboratories
125 - 15 Innovation Blvd., Saskatoon, Saskatchewan, S7N 2X8
Tel: (306) 933-8118 Fax: (306) 933-5656 Email: geolab@src.sk.ca

Report No: G-2017-2445
Date of Report: Dec 11, 2017

Potash ICP1 Total Digestion

Sample Number	Ag ppm	Al2O3 wt %	Ba ppm	Be ppm	CaO wt %	Cd ppm	Ce ppm	Co ppm	Cr ppm	Cu ppm	Dy ppm	Er ppm	Eu ppm	Fe2O3 wt %	Ga ppm	Gd ppm	Hf ppm
POT003B	<0.2	0.39	12	<0.2	0.90	<1	1	1	4	<1	<0.2	<0.2	<0.2	0.22	<1	<1	<1
Ag-LN-1.3	<0.2	<0.01	<1	<0.2	<0.01	<1	<1	<1	<1	<1	<0.2	<0.2	<0.2	<0.01	<1	<1	<1
Ag-SOP-Conv-1.3	<0.2	<0.01	<1	<0.2	0.02	<1	<1	<1	<1	1	<0.2	<0.2	<0.2	<0.01	<1	<1	<1
Ag-LN-1.4	<0.2	<0.01	<1	<0.2	<0.01	<1	<1	1	<1	1	<0.2	<0.2	<0.2	<0.01	<1	<1	<1
Ag-SOP-Conv-1.4	<0.2	<0.01	<1	<0.2	0.03	<1	<1	<1	<1	1	<0.2	<0.2	<0.2	<0.01	<1	<1	<1
Ag-SOP-Conv-1.4 R	<0.2	<0.01	<1	<0.2	0.03	<1	<1	<1	<1	1	<0.2	<0.2	<0.2	<0.01	<1	<1	<1

Mining and Minerals
Attention: Jack Zhang
PO #/Project: 14081
Samples: 6

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Report No: G-2017-2445
Date of Report: Dec 11, 2017

Potash ICP1 Total Digestion

Sample Number	Ho ppm	K2O wt %	La ppm	Li ppm	MgO wt %	MnO wt %	Mo ppm	Na2O wt %	Nb ppm	Nd ppm	Ni ppm	P2O5 wt %	Pb ppm	Pr ppm	S ppm	Sc ppm	Sm ppm
POT003B	<1	19.2	<1	3	2.29	<0.01	<1	30.4	<1	<1	3	<0.01	<1	<1	1870	<1	<1
Ag-LN-1.3	<1	25.9	<1	<1	11.5	<0.01	<1	0.03	<1	<1	4	<0.01	<1	<1	163000	<1	<1
Ag-SOP-Conv-1.3	<1	52.0	<1	<1	0.67	<0.01	<1	<0.01	<1	<1	<1	<0.01	<1	<1	164000	<1	<1
Ag-LN-1.4	<1	25.8	<1	<1	11.3	<0.01	<1	0.01	<1	<1	5	<0.01	<1	<1	161000	<1	<1
Ag-SOP-Conv-1.4	<1	54.0	<1	<1	0.47	<0.01	<1	0.01	<1	<1	<1	<0.01	<1	<1	168000	<1	<1
Ag-SOP-Conv-1.4 R	<1	54.1	<1	<1	0.46	<0.01	<1	0.01	<1	<1	<1	<0.01	<1	<1	169000	<1	<1

Mining and Minerals
Attention: Jack Zhang
PO #/Project: 14081
Samples: 6

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Report No: G-2017-2445
Date of Report: Dec 11, 2017

Potash ICP1 Total Digestion

Sample Number	Sn ppm	Sr ppm	Ta ppm	Tb ppm	Th ppm	TiO2 wt %	U, ICP ppm	V ppm	W ppm	Y ppm	Yb ppm	Zn ppm	Zr ppm
POT003B	<1	23	<1	<1	<1	0.02	2	3	5	<1	<0.1	9	3
Ag-LN-1.3	<1	6	<1	<1	<1	<0.01	<2	<1	<1	<1	<0.1	6	<1
Ag-SOP-Conv-1.3	<1	2	<1	<1	<1	<0.01	<2	<1	<1	<1	<0.1	<1	<1
Ag-LN-1.4	<1	<1	2	<1	<1	<0.01	3	<1	<1	<1	<0.1	4	<1
Ag-SOP-Conv-1.4	<1	2	<1	<1	<1	<0.01	<2	<1	<1	<1	<0.1	<1	<1
Ag-SOP-Conv-1.4 R	<1	2	<1	<1	<1	<0.01	<2	<1	<1	<1	<0.1	1	<1

Total Digestion: A 0.125 g pulp is gently heated in a mixture of HF/HNO3/HClO4 until dry and the residue is dissolved in dilute HNO3.
The standard is POT003B.

Chain of Custody Record

Send samples to:	Eurofins MGT Unit 2, 91 Leach Highway Kewdale WA 6105	**Project name:**	Agrimin ASS Lake Mackay
Delivery method:	Courier	**Project number:**	2731
Samples from:	360 Environmental 10 Bermondsey Street West Leederville WA	**Name of samplers:**	Gerry Bradley
Send reports to:	labresults@360environmental.com.au juliepalich@360environmental.com.au	**Details verified by:**	Sarah Breheny
		Lab quote reference:	
		Turn around time:	Normal

360 environmental

COC Number: 2731-01

Notes:

Lab Reference	Sample Name	Matrix/Container					Date	Sample Analysis											
		Soil (jar)	Soil (bag)	Water	Fibre Cement	Other			pHf	pFox	CRS	M8, Fe, Al	Groundwater R15	Total uranium and thorioum					
	PPDS1 -0.03		X				23/04/2018		x	x									
	PPDS2-0.03		x				23/04/2018		x	x									
	PPDS3-0.03		x				23/04/2018		x	x									
	PPDS4-0.03		x				23/04/2018		x	x									
	PPDS5-0.03		x				23/04/2018		x	x									
	PPUS1 -0.02		x				23/04/2018		x	x									
	PPUS2 -0.02		x				23/04/2018		x	x									
	PPUS3 -0.02		x				23/04/2018		x	x									
	PPUS4 -0.02		x				23/04/2018		x	x									
	PPUS5 -0.02		x				23/04/2018		x	x									
	PPASB1			x			26/04/2018						x	x					
	PPASB2			x			26/04/2018						x	x					
	PPASB3			x			26/04/2018						x	x					
	PPASB4			x			26/04/2018						x	x					

Relinquished by (print name): Sarah Breheny	**Signature:**	**Date:** 9/5/18 **Time:**	**Received by** (print name): MARK VAN DEAGER	**Signature:**	**Date:** 2-44 **Time:**
Relinquished by (print name):	**Signature:**	**Date:** **Time:**	**Received by** (print name):	**Signature:**	**Date:** 09/05/18 **Time:**

Caitlyn Gibson 9/5/18 3:11PM -8.7°C 597569

Melbourne
3-5 Kingston Town Close
Oakleigh Vic 3166
Phone : +61 3 8564 5000
NATA # 1261
Site # 1254 & 14271

Sydney
Unit F3, Building F
16 Mars Road
Lane Cove West NSW 2066
Phone : +61 2 9900 8400
NATA # 1261 Site # 18217

Brisbane
1/21 Smallwood Place
Murarrie QLD 4172
Phone : +61 7 3902 4600
NATA # 1261 Site # 20794

Perth
2/91 Leach Highway
Kewdale WA 6105
Phone : +61 8 9251 9600
NATA # 1261 Site # 23736

ABN – 50 005 085 521 e.mail : EnviroSales@eurofins.com web : www.eurofins.com.au

Sample Receipt Advice

Company name: **360 Environmental**

Contact name: Sarah Breheny
Project name: AGRIMIN ASS LAKE MACKAY
Project ID: 2731
COC number: Not provided
Turn around time: 5 Day
Date/Time received: May 9, 2018 3:11 PM
Eurofins | mgt reference: **597569**

Sample information

☑ A detailed list of analytes logged into our LIMS, is included in the attached summary table.

☑ All samples have been received as described on the above COC.

☑ COC has been completed correctly.

☑ Attempt to chill was evident.

☑ Appropriately preserved sample containers have been used.

☑ All samples were received in good condition.

☑ Samples have been provided with adequate time to commence analysis in accordance with the relevant holding times.

☑ Appropriate sample containers have been used.

☑ Sample containers for volatile analysis received with zero headspace.

☒ Split sample sent to requested external lab.

☒ Some samples have been subcontracted.

☑ Custody Seals intact (if used).

Contact notes

If you have any questions with respect to these samples please contact:

Robert Johnston on Phone : or by e.mail: RobertJohnston@eurofins.com

Results will be delivered electronically via e.mail to Sarah Breheny - SarahBreheny@360environmental.com.au.

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ABN– 50 005 085 521
e.mail : EnviroSales@eurofins.com
web : www.eurofins.com.au

Melbourne
2-5 Kingston Town Close
Oakleigh VIC 3166
Phone : +61 3 8564 5000
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NATA # 1261
Site # 23736

Company Name: 360 Environmental
Address: 10 Bermondsey St
West Leederville
WA 6007

Project Name: AGRIMIN ASS LAKE MACKAY
Project ID: 2731

Order No.:
Report #: 597569
Phone: 08 9388 8360
Fax: 08 9381 2360

Received: May 9, 2018 3:11 PM
Due: May 16, 2018
Priority: 5 Day
Contact Name: Sarah Breheny

Eurofins | mgt Analytical Services Manager : Robert Johnston

Sample Detail						Thorium	Uranium	Acid Sulfate Soils Field pH Test	ASS Groundwater Quality Suite - WA Department of Environment and
Melbourne Laboratory - NATA Site # 1254 & 14271						X	X		X
Sydney Laboratory - NATA Site # 18217									
Brisbane Laboratory - NATA Site # 20794									
Perth Laboratory - NATA Site # 23736								X	
External Laboratory									
No	**Sample ID**	**Sample Date**	**Sampling Time**	**Matrix**	**LAB ID**				
1	PPDS1- 0.03	Apr 23, 2018		Soil	P18-My11115			X	
2	PPDS2 - 0.03	Apr 23, 2018		Soil	P18-My11116			X	
3	PPDS3 - 0.03	Apr 23, 2018		Soil	P18-My11117			X	
4	PPDS4 - 0.03	Apr 23, 2018		Soil	P18-My11118			X	
5	PPDS5 - 0.03	Apr 23, 2018		Soil	P18-My11119			X	
6	PPUS1 - 0.02	Apr 23, 2018		Soil	P18-My11120			X	
7	PPUS2 - 0.02	Apr 23, 2018		Soil	P18-My11121			X	
8	PPUS3 - 0.02	Apr 23, 2018		Soil	P18-My11122			X	
9	PPUS4 - 0.02	Apr 23, 2018		Soil	P18-My11123			X	

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ABN– 50 005 085 521
e.mail : EnviroSales@eurofins.com
web : www.eurofins.com.au

Melbourne
2-5 Kingston Town Close
Oakleigh VIC 3166
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NATA # 1261
Site # 23736

Company Name: 360 Environmental
Address: 10 Bermondsey St
West Leederville
WA 6007

Project Name: AGRIMIN ASS LAKE MACKAY
Project ID: 2731

Order No.:
Report #: 597569
Phone: 08 9388 8360
Fax: 08 9381 2360

Received: May 9, 2018 3:11 PM
Due: May 16, 2018
Priority: 5 Day
Contact Name: Sarah Breheny

Eurofins | mgt Analytical Services Manager : Robert Johnston

Sample Detail						Thorium	Uranium	Acid Sulfate Soils Field pH Test	ASS Groundwater Quality Suite - WA Department of Environment and
Melbourne Laboratory - NATA Site # 1254 & 14271						X	X		X
Sydney Laboratory - NATA Site # 18217									
Brisbane Laboratory - NATA Site # 20794									
Perth Laboratory - NATA Site # 23736								X	
10	PPUS5 - 0.02	Apr 23, 2018		Soil	P18-My11124			X	
11	PPASB1	Apr 26, 2018		Water	P18-My11125	X	X		X
12	PPASB2	Apr 26, 2018		Water	P18-My11126	X	X		X
13	PPASB3	Apr 26, 2018		Water	P18-My11127	X	X		X
14	PPASB4	Apr 26, 2018		Water	P18-My11128	X	X		X
Test Counts						4	4	10	4

Certificate of Analysis

360 Environmental
10 Bermondsey St
West Leederville
WA 6007

Attention: **Sarah Breheny**

Report **597569-W-V2**
Project name AGRIMIN ASS LAKE MACKAY
Project ID 2731
Received Date May 09, 2018

Client Sample ID **Sample Matrix** **Eurofins | mgt Sample No.** **Date Sampled** Test/Reference	LOR	Unit	[G01]**PPASB1** **Water** **P18-My11125** **Apr 26, 2018**	[G01]**PPASB2** **Water** **P18-My11126** **Apr 26, 2018**	[G01]**PPASB3** **Water** **P18-My11127** **Apr 26, 2018**	[G01]**PPASB4** **Water** **P18-My11128** **Apr 26, 2018**
Acidity (as CaCO3)	10	mg/L	62	31	28	26
Ammonia (as N)	0.01	mg/L	0.46	0.12	< 0.01	< 0.01
Chloride	1	mg/L	140000	110000	94000	110000
Conductivity (at 25°C)	1	uS/cm	180000	180000	180000	180000
Nitrate & Nitrite (as N)	0.05	mg/L	5.1	4.5	4.0	4.9
pH (at 25°C)	0.1	pH Units	6.7	6.8	6.9	7.2
Phosphate total (as P)	0.05	mg/L	5.1	0.12	0.12	0.15
Phosphorus filterable reactive (as P)	0.05	mg/L	< 0.05	< 0.05	0.10	0.16
Sulphate (as S)	5	mg/L	140	11000	5100	11000
Total Dissolved Solids	10	mg/L	[Q19]450000	[Q19]280000	[Q19]240000	[Q19]280000
Total Kjeldahl Nitrogen (as N)	0.2	mg/L	2.8	< 0.2	0.3	< 0.2
Total Nitrogen (as N)	0.2	mg/L	7.9	4.5	4.3	4.9
Alkalinity (speciated)						
Total Alkalinity (as CaCO3)	20	mg/L	38	26	28	24
Heavy Metals						
Aluminium	0.05	mg/L	190	< 1	< 1	< 1
Aluminium (filtered)	0.05	mg/L	< 1	< 1	< 1	< 1
Arsenic (filtered)	0.001	mg/L	< 0.02	< 0.02	< 0.02	< 0.02
Barium	0.02	mg/L	0.75	< 0.1	< 0.1	< 0.1
Beryllium	0.001	mg/L	< 0.02	< 0.02	< 0.02	< 0.02
Cadmium (filtered)	0.0002	mg/L	0.0043	< 0.004	< 0.004	< 0.004
Chromium (filtered)	0.001	mg/L	< 0.02	< 0.02	< 0.02	< 0.02
Cobalt	0.001	mg/L	0.074	< 0.02	< 0.02	< 0.02
Iron	0.05	mg/L	290	1.1	< 1	< 1
Iron (filtered)	0.05	mg/L	< 1	< 1	< 1	< 1
Lead	0.001	mg/L	0.46	0.16	0.067	0.11
Manganese (filtered)	0.005	mg/L	2.7	1.4	< 0.1	< 0.1
Mercury	0.0001	mg/L	< 0.002	< 0.002	< 0.002	< 0.002
Molybdenum	0.005	mg/L	< 0.1	< 0.1	< 0.1	< 0.1
Nickel (filtered)	0.001	mg/L	< 0.02	< 0.02	< 0.02	< 0.02
Selenium (filtered)	0.001	mg/L	0.031	0.032	0.027	0.031
Strontium	0.005	mg/L	6.1	8.2	8.5	8.4
Thorium	1	mg/L	3.2	3.2	3.2	3.0
Uranium	0.005	mg/L	0.13	< 0.1	< 0.1	< 0.1
Zinc (filtered)	0.005	mg/L	0.43	0.23	0.14	0.24

Client Sample ID			[G01]PPASB1	[G01]PPASB2	[G01]PPASB3	[G01]PPASB4
Sample Matrix			**Water**	**Water**	**Water**	**Water**
Eurofins | mgt Sample No.			**P18-My11125**	**P18-My11126**	**P18-My11127**	**P18-My11128**
Date Sampled			**Apr 26, 2018**	**Apr 26, 2018**	**Apr 26, 2018**	**Apr 26, 2018**
Test/Reference	LOR	Unit				
Alkali Metals						
Sodium	0.5	mg/L	150000	140000	140000	130000

Sample History

Where samples are submitted/analysed over several days, the last date of extraction and analysis is reported.
A recent review of our LIMS has resulted in the correction or clarification of some method identifications. Due to this, some of the method reference information on reports has changed. However, no substantive change has been made to our laboratory methods, and as such there is no change in the validity of current or previous results (regarding both quality and NATA accreditation).

If the date and time of sampling are not provided, the Laboratory will not be responsible for compromised results should testing be performed outside the recommended holding time.

Description	Testing Site	Extracted	Holding Time
ASS Groundwater Quality Suite - WA Department of Environment and Conservation			
Acidity (as CaCO3)	Melbourne	May 11, 2018	14 Day
- Method: LTM-INO-4210 Acidity			
Ammonia (as N)	Melbourne	May 11, 2018	28 Day
- Method: APHA 4500-NH3 Ammonia Nitrogen by FIA			
Chloride	Melbourne	May 11, 2018	28 Day
- Method: LTM-INO-4090 Chloride by Discrete Analyser			
Conductivity (at 25°C)	Melbourne	May 11, 2018	28 Day
- Method: LTM-INO-4030 Conductivity			
pH (at 25°C)	Melbourne	May 11, 2018	0 Hours
- Method: LTM-GEN-7090 pH in water by ISE			
Phosphate total (as P)	Melbourne	May 11, 2018	28 Day
- Method: APHA 4500-P E. Phosphorous			
Phosphorus filterable reactive (as P)	Melbourne	May 11, 2018	2 Day
- Method: APHA 4500-P Phosphate (filterable reactive)			
Sulphate (as S)	Melbourne	May 11, 2018	28 Day
- Method: LTM-INO-4110 Sulfate by Discrete Analyser			
Total Dissolved Solids	Melbourne	May 11, 2018	7 Day
- Method: LTM-INO-4170 Total Dissolved Solids in Water			
Alkalinity (speciated)	Melbourne	May 11, 2018	14 Day
- Method: APHA 2320 Alkalinity by Titration			
Heavy Metals	Melbourne	May 17, 2018	180 Day
- Method: LTM-MET-3040 Metals in Waters by ICP-MS			
Acid Sulphate Metals : Metals M9 filtered	Melbourne	May 11, 2018	180 Day
- Method: LTM-MET-3040 Metals in Waters by ICP-MS			
Alkali Metals	Melbourne	May 11, 2018	180 Day
- Method: USEPA 6010 Alkali Metals			
Total Nitrogen Set (as N)			
Nitrate & Nitrite (as N)	Melbourne	May 11, 2018	28 Day
- Method: APHA 4500-NO3/NO2 Nitrate-Nitrite Nitrogen by FIA			
Total Kjeldahl Nitrogen (as N)	Melbourne	May 15, 2018	7 Day
- Method: LTM-INO-4310 TKN in Waters & Soils by FIA			
Thorium	Melbourne	May 11, 2018	6 Month
- Method: LTM-MET-3040 Metals in Waters by ICP-MS			

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ABN– 50 005 085 521
e.mail : EnviroSales@eurofins.com
web : www.eurofins.com.au

Melbourne
2-5 Kingston Town Close
Oakleigh VIC 3166
Phone : +61 3 8564 5000
NATA # 1261
Site # 1254 & 14271

Sydney
Unit F3, Building F
16 Mars Road
Lane Cove West NSW 2066
Phone : +61 2 9900 8400
NATA # 1261 Site # 18217

Brisbane
1/21 Smallwood Place
Murarrie QLD 4172
Phone : +61 7 3902 4600
NATA # 1261 Site # 20794

Perth
2/91 Leach Highway
Kewdale WA 6105
Phone : +61 8 9251 9600
NATA # 1261
Site # 23736

Company Name: 360 Environmental
Address: 10 Bermondsey St
West Leederville
WA 6007

Project Name: AGRIMIN ASS LAKE MACKAY
Project ID: 2731

Order No.:
Report #: 597569
Phone: 08 9388 8360
Fax: 08 9381 2360

Received: May 9, 2018 3:11 PM
Due: May 16, 2018
Priority: 5 Day
Contact Name: Sarah Breheny

Eurofins | mgt Analytical Services Manager : Robert Johnston

Sample Detail						Thorium	Uranium	Acid Sulfate Soils Field pH Test	ASS Groundwater Quality Suite - WA Department of Environment and
Melbourne Laboratory - NATA Site # 1254 & 14271						X	X		X
Sydney Laboratory - NATA Site # 18217									
Brisbane Laboratory - NATA Site # 20794									
Perth Laboratory - NATA Site # 23736								X	
External Laboratory									
No	**Sample ID**	**Sample Date**	**Sampling Time**	**Matrix**	**LAB ID**				
1	PPDS1- 0.03	Apr 23, 2018		Soil	P18-My11115			X	
2	PPDS2 - 0.03	Apr 23, 2018		Soil	P18-My11116			X	
3	PPDS3 - 0.03	Apr 23, 2018		Soil	P18-My11117			X	
4	PPDS4 - 0.03	Apr 23, 2018		Soil	P18-My11118			X	
5	PPDS5 - 0.03	Apr 23, 2018		Soil	P18-My11119			X	
6	PPUS1 - 0.02	Apr 23, 2018		Soil	P18-My11120			X	
7	PPUS2 - 0.02	Apr 23, 2018		Soil	P18-My11121			X	
8	PPUS3 - 0.02	Apr 23, 2018		Soil	P18-My11122			X	
9	PPUS4 - 0.02	Apr 23, 2018		Soil	P18-My11123			X	

ABN– 50 005 085 521
e.mail : EnviroSales@eurofins.com
web : www.eurofins.com.au

Melbourne
2-5 Kingston Town Close
Oakleigh VIC 3166
Phone : +61 3 8564 5000
NATA # 1261
Site # 1254 & 14271

Sydney
Unit F3, Building F
16 Mars Road
Lane Cove West NSW 2066
Phone : +61 2 9900 8400
NATA # 1261 Site # 18217

Brisbane
1/21 Smallwood Place
Murarrie QLD 4172
Phone : +61 7 3902 4600
NATA # 1261 Site # 20794

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Melbourne Laboratory - NATA Site # 1254 & 14271						X	X		X
Sydney Laboratory - NATA Site # 18217									
Brisbane Laboratory - NATA Site # 20794									
Perth Laboratory - NATA Site # 23736								X	
10	PPUS5 - 0.02	Apr 23, 2018		Soil	P18-My11124			X	
11	PPASB1	Apr 26, 2018		Water	P18-My11125	X	X		X
12	PPASB2	Apr 26, 2018		Water	P18-My11126	X	X		X
13	PPASB3	Apr 26, 2018		Water	P18-My11127	X	X		X
14	PPASB4	Apr 26, 2018		Water	P18-My11128	X	X		X
Test Counts						4	4	10	4

Internal Quality Control Review and Glossary

General

1. Laboratory QC results for Method Blanks, Duplicates, Matrix Spikes, and Laboratory Control Samples are included in this QC report where applicable. Additional QC data may be available on request.
2. All soil results are reported on a dry basis, unless otherwise stated.
3. All biota/food results are reported on a wet weight basis on the edible portion, unless otherwise stated.
4. Actual LORs are matrix dependant. Quoted LORs may be raised where sample extracts are diluted due to interferences.
5. Results are uncorrected for matrix spikes or surrogate recoveries except for PFAS compounds.
6. SVOC analysis on waters are performed on homogenised, unfiltered samples, unless noted otherwise.
7. Samples were analysed on an 'as received' basis.
8. This report replaces any interim results previously issued.

Holding Times

Please refer to 'Sample Preservation and Container Guide' for holding times (QS3001).

For samples received on the last day of holding time, notification of testing requirements should have been received at least 6 hours prior to sample receipt deadlines as stated on the SRA.

If the Laboratory did not receive the information in the required timeframe, and regardless of any other integrity issues, suitably qualified results may still be reported.

Holding times apply from the date of sampling, therefore compliance to these may be outside the laboratory's control.

For VOCs containing vinyl chloride, styrene and 2-chloroethyl vinyl ether the holding time is 7 days however for all other VOCs such as BTEX or C6-10 TRH then the holding time is 14 days.

****NOTE:** pH duplicates are reported as a range NOT as RPD

Units

mg/kg: milligrams per kilogram

mg/L: milligrams per litre

ug/L: micrograms per litre

ppm: Parts per million

ppb: Parts per billion

%: Percentage

org/100mL: Organisms per 100 millilitres

NTU: Nephelometric Turbidity Units

MPN/100mL: Most Probable Number of organisms per 100 millilitres

Terms

Dry	Where a moisture has been determined on a solid sample the result is expressed on a dry basis.
LOR	Limit of Reporting.
SPIKE	Addition of the analyte to the sample and reported as percentage recovery.
RPD	Relative Percent Difference between two Duplicate pieces of analysis.
LCS	Laboratory Control Sample - reported as percent recovery.
CRM	Certified Reference Material - reported as percent recovery.
Method Blank	In the case of solid samples these are performed on laboratory certified clean sands and in the case of water samples these are performed on de-ionised water.
Surr - Surrogate	The addition of a like compound to the analyte target and reported as percentage recovery.
Duplicate	A second piece of analysis from the same sample and reported in the same units as the result to show comparison.
USEPA	United States Environmental Protection Agency
APHA	American Public Health Association
TCLP	Toxicity Characteristic Leaching Procedure
COC	Chain of Custody
SRA	Sample Receipt Advice
QSM	Quality Systems Manual ver 5.1 US Department of Defense
CP	Client Parent - QC was performed on samples pertaining to this report
NCP	Non-Client Parent - QC performed on samples not pertaining to this report, QC is representative of the sequence or batch that client samples were analysed within.
TEQ	Toxic Equivalency Quotient

QC - Acceptance Criteria

RPD Duplicates: Global RPD Duplicates Acceptance Criteria is 30% however the following acceptance guidelines are equally applicable:

Results <10 times the LOR : No Limit

Results between 10-20 times the LOR : RPD must lie between 0-50%

Results >20 times the LOR : RPD must lie between 0-30%

Surrogate Recoveries: Recoveries must lie between 50-150%-Phenols & PFASs

PFAS field samples that contain surrogate recoveries in excess of the QC limit designated in QSM 5.1 where no positive PFAS results have been reported have been reviewed and no data was affected.

QC Data General Comments

1. Where a result is reported as a less than (<), higher than the nominated LOR, this is due to either matrix interference, extract dilution required due to interferences or contaminant levels within the sample, high moisture content or insufficient sample provided.
2. Duplicate data shown within this report that states the word "BATCH" is a Batch Duplicate from outside of your sample batch, but within the laboratory sample batch at a 1:10 ratio. The Parent and Duplicate data shown is not data from your samples.
3. Organochlorine Pesticide analysis - where reporting LCS data, Toxaphene & Chlordane are not added to the LCS.
4. Organochlorine Pesticide analysis - where reporting Spike data, Toxaphene is not added to the Spike.
5. Total Recoverable Hydrocarbons - where reporting Spike & LCS data, a single spike of commercial Hydrocarbon products in the range of C12-C30 is added and it's Total Recovery is reported in the C10-C14 cell of the Report.
6. pH and Free Chlorine analysed in the laboratory - Analysis on this test must begin within 30 minutes of sampling.Therefore laboratory analysis is unlikely to be completed within holding time. Analysis will begin as soon as possible after sample receipt.
7. Recovery Data (Spikes & Surrogates) - where chromatographic interference does not allow the determination of Recovery the term "INT" appears against that analyte.
8. Polychlorinated Biphenyls are spiked only using Aroclor 1260 in Matrix Spikes and LCS.
9. For Matrix Spikes and LCS results a dash " -" in the report means that the specific analyte was not added to the QC sample.
10. Duplicate RPDs are calculated from raw analytical data thus it is possible to have two sets of data.

Quality Control Results

Test	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
Method Blank							
Acidity (as CaCO3)	mg/L	< 10			10	Pass	
Ammonia (as N)	mg/L	< 0.01			0.01	Pass	
Chloride	mg/L	< 1			1	Pass	
Nitrate & Nitrite (as N)	mg/L	< 0.05			0.05	Pass	
Phosphate total (as P)	mg/L	< 0.05			0.05	Pass	
Phosphorus filterable reactive (as P)	mg/L	< 0.05			0.05	Pass	
Sulphate (as S)	mg/L	< 5			5	Pass	
Total Dissolved Solids	mg/L	< 10			10	Pass	
Total Kjeldahl Nitrogen (as N)	mg/L	< 0.2			0.2	Pass	
Method Blank							
Alkalinity (speciated)							
Total Alkalinity (as CaCO3)	mg/L	< 20			20	Pass	
Method Blank							
Heavy Metals							
Aluminium	mg/L	< 0.05			0.05	Pass	
Aluminium (filtered)	mg/L	< 0.05			0.05	Pass	
Arsenic (filtered)	mg/L	< 0.001			0.001	Pass	
Barium	mg/L	< 0.02			0.02	Pass	
Beryllium	mg/L	< 0.001			0.001	Pass	
Cadmium (filtered)	mg/L	< 0.0002			0.0002	Pass	
Chromium (filtered)	mg/L	< 0.001			0.001	Pass	
Cobalt	mg/L	< 0.001			0.001	Pass	
Iron	mg/L	< 0.05			0.05	Pass	
Iron (filtered)	mg/L	< 0.05			0.05	Pass	
Lead	mg/L	< 0.001			0.001	Pass	
Manganese (filtered)	mg/L	< 0.005			0.005	Pass	
Mercury	mg/L	< 0.0001			0.0001	Pass	
Molybdenum	mg/L	< 0.005			0.005	Pass	
Nickel (filtered)	mg/L	< 0.001			0.001	Pass	
Selenium (filtered)	mg/L	< 0.001			0.001	Pass	
Strontium	mg/L	< 0.005			0.005	Pass	
Uranium	mg/L	< 0.005			0.005	Pass	
Zinc (filtered)	mg/L	< 0.005			0.005	Pass	
Method Blank							
Alkali Metals							
Sodium	mg/L	< 0.5			0.5	Pass	
LCS - % Recovery							
Ammonia (as N)	%	104			70-130	Pass	
Chloride	%	124			70-130	Pass	
Nitrate & Nitrite (as N)	%	103			70-130	Pass	
Phosphate total (as P)	%	82			70-130	Pass	
Sulphate (as S)	%	107			70-130	Pass	
Total Dissolved Solids	%	82			70-130	Pass	
Total Kjeldahl Nitrogen (as N)	%	95			70-130	Pass	
LCS - % Recovery							
Alkalinity (speciated)							
Total Alkalinity (as CaCO3)	%	94			70-130	Pass	
LCS - % Recovery							
Heavy Metals							
Aluminium	%	105			80-120	Pass	
Aluminium (filtered)	%	97			80-120	Pass	

Test	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
Arsenic (filtered)	%	99			80-120	Pass	
Barium	%	110			80-120	Pass	
Beryllium	%	94			80-120	Pass	
Cadmium (filtered)	%	94			80-120	Pass	
Chromium (filtered)	%	98			80-120	Pass	
Cobalt	%	102			80-120	Pass	
Iron	%	101			80-120	Pass	
Iron (filtered)	%	94			80-120	Pass	
Lead	%	109			80-120	Pass	
Manganese (filtered)	%	95			80-120	Pass	
Mercury	%	104			75-125	Pass	
Molybdenum	%	103			80-120	Pass	
Nickel (filtered)	%	92			80-120	Pass	
Selenium (filtered)	%	94			80-120	Pass	
Strontium	%	107			80-120	Pass	
Thorium	%	102			70-130	Pass	
Uranium	%	100			80-120	Pass	
Zinc (filtered)	%	95			80-120	Pass	
LCS - % Recovery							
Alkali Metals							
Sodium	%	115			70-130	Pass	

Test	Lab Sample ID	QA Source	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
Spike - % Recovery									
				Result 1					
Ammonia (as N)	M18-My13441	NCP	%	101			70-130	Pass	
Chloride	B18-My15571	NCP	%	92			70-130	Pass	
Nitrate & Nitrite (as N)	M18-My13441	NCP	%	93			70-130	Pass	
Phosphorus filterable reactive (as P)	M18-My16732	NCP	%	80			70-130	Pass	
Sulphate (as S)	M18-My14182	NCP	%	107			70-130	Pass	
Total Kjeldahl Nitrogen (as N)	M18-My16735	NCP	%	119			70-130	Pass	
Spike - % Recovery									
Alkalinity (speciated)				Result 1					
Total Alkalinity (as CaCO3)	B18-My15578	NCP	%	104			70-130	Pass	
Spike - % Recovery									
Heavy Metals				Result 1					
Aluminium	M18-My13428	NCP	%	105			75-125	Pass	
Aluminium (filtered)	P18-My10382	NCP	%	96			75-125	Pass	
Arsenic (filtered)	P18-My10382	NCP	%	97			70-130	Pass	
Barium	M18-My13428	NCP	%	116			75-125	Pass	
Beryllium	M18-My13428	NCP	%	91			75-125	Pass	
Cadmium (filtered)	P18-My10382	NCP	%	96			70-130	Pass	
Chromium (filtered)	P18-My10382	NCP	%	97			70-130	Pass	
Cobalt	M18-My13428	NCP	%	102			75-125	Pass	
Iron	M18-My13428	NCP	%	105			75-125	Pass	
Iron (filtered)	P18-My10382	NCP	%	93			70-130	Pass	
Lead	M18-My13428	NCP	%	106			75-125	Pass	
Manganese (filtered)	P18-My10382	NCP	%	94			70-130	Pass	
Mercury	M18-My13428	NCP	%	108			70-130	Pass	
Molybdenum	M18-My13428	NCP	%	101			75-125	Pass	
Nickel (filtered)	P18-My10382	NCP	%	93			70-130	Pass	
Selenium (filtered)	P18-My10382	NCP	%	94			70-130	Pass	
Strontium	M18-My13428	NCP	%	113			75-125	Pass	
Uranium	M18-My13428	NCP	%	98			75-125	Pass	

Test	Lab Sample ID	QA Source	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
Zinc (filtered)	P18-My10382	NCP	%	96			70-130	Pass	
Spike - % Recovery									
Alkali Metals				Result 1					
Sodium	M18-My14082	NCP	%	104			70-130	Pass	
Test	**Lab Sample ID**	**QA Source**	**Units**	**Result 1**			**Acceptance Limits**	**Pass Limits**	**Qualifying Code**
Duplicate									
				Result 1	Result 2	RPD			
Acidity (as CaCO3)	M18-My12728	NCP	mg/L	27	27	1.1	30%	Pass	
Ammonia (as N)	M18-My16982	NCP	mg/L	0.69	0.64	8.0	30%	Pass	
Chloride	M18-My16770	NCP	mg/L	290	300	<1	30%	Pass	
Conductivity (at 25°C)	M18-My15954	NCP	uS/cm	2800	2800	<1	30%	Pass	
Nitrate & Nitrite (as N)	M18-My16982	NCP	mg/L	< 0.5	< 0.5	<1	30%	Pass	
pH (at 25°C)	M18-My15954	NCP	pH Units	7.4	7.5	pass	30%	Pass	
Phosphate total (as P)	P18-My10379	NCP	mg/L	8.8	10	14	30%	Pass	
Phosphorus filterable reactive (as P)	P18-My10370	NCP	mg/L	< 0.05	< 0.05	<1	30%	Pass	
Sulphate (as S)	M18-My14116	NCP	mg/L	120	120	2.0	30%	Pass	
Total Kjeldahl Nitrogen (as N)	P18-My10379	NCP	mg/L	2.9	3.3	12	30%	Pass	
Duplicate									
Alkalinity (speciated)				Result 1	Result 2	RPD			
Total Alkalinity (as CaCO3)	M18-My13442	NCP	mg/L	790	790	1.0	30%	Pass	
Duplicate									
Heavy Metals				Result 1	Result 2	RPD			
Aluminium	M18-My13428	NCP	mg/L	< 0.05	< 0.05	<1	30%	Pass	
Aluminium (filtered)	P18-My10382	NCP	mg/L	< 0.05	< 0.05	<1	30%	Pass	
Arsenic (filtered)	P18-My10382	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
Barium	M18-My13428	NCP	mg/L	< 0.02	< 0.02	<1	30%	Pass	
Beryllium	M18-My13428	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
Cadmium (filtered)	P18-My10382	NCP	mg/L	< 0.0002	< 0.0002	<1	30%	Pass	
Chromium (filtered)	P18-My10382	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
Cobalt	M18-My13428	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
Iron	M18-My13428	NCP	mg/L	< 0.05	< 0.05	<1	30%	Pass	
Iron (filtered)	P18-My10382	NCP	mg/L	< 0.05	< 0.05	<1	30%	Pass	
Lead	M18-My13428	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
Manganese (filtered)	P18-My10382	NCP	mg/L	< 0.005	< 0.005	<1	30%	Pass	
Mercury	M18-My13428	NCP	mg/L	< 0.0001	< 0.0001	<1	30%	Pass	
Molybdenum	M18-My13428	NCP	mg/L	< 0.005	< 0.005	<1	30%	Pass	
Nickel (filtered)	P18-My10382	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
Selenium (filtered)	P18-My10382	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
Strontium	M18-My13428	NCP	mg/L	0.025	0.026	4.0	30%	Pass	
Uranium	M18-My13428	NCP	mg/L	< 0.005	< 0.005	<1	30%	Pass	
Zinc (filtered)	P18-My10382	NCP	mg/L	< 0.005	< 0.005	<1	30%	Pass	
Duplicate									
Alkali Metals				Result 1	Result 2	RPD			
Sodium	M18-My14082	NCP	mg/L	1100	1300	12	30%	Pass	
Duplicate									
				Result 1	Result 2	RPD			
Total Dissolved Solids	P18-My11126	CP	mg/L	280000	290000	3.0	30%	Pass	

Comments

V2 - This report has been amended to include extra metals results

Sample Integrity

Custody Seals Intact (if used)	Yes
Attempt to Chill was evident	Yes
Sample correctly preserved	Yes
Appropriate sample containers have been used	Yes
Sample containers for volatile analysis received with minimal headspace	Yes
Samples received within HoldingTime	Yes
Some samples have been subcontracted	No

Qualifier Codes/Comments

Code	Description
G01	The LORs have been raised due to matrix interference
Q19	TDS may bias high due to the presence of fine particulate or colloidal matter that may pass through the filter paper.

Authorised By

Robert Johnston	Analytical Services Manager
Alex Petridis	Senior Analyst-Metal (VIC)
Michael Brancati	Senior Analyst-Inorganic (VIC)

Glenn Jackson
National Operations Manager

Final report - this Report replaces any previously issued Report

- Indicates Not Requested

* Indicates NATA accreditation does not cover the performance of this service

Measurement uncertainty of test data is available on request or please click here.

Enviro Sample WA

From: Robert Johnston
Sent: Tuesday, 15 May 2018 2:49 PM
To: Enviro Sample WA
Subject: 5 DAY: CRS suite analysis for 597569

ADDITIONAL ANALYSIS – 5 DAY TAT

From: Sarah Breheny [mailto:SarahBreheny@360environmental.com.au]
Sent: Tuesday, 15 May 2018 12:56 PM
To: Robert Johnston
Subject: RE: CRS suite analysis for 597569

Hi Robert,

Can you please replace the previous COC I just sent an hour ago with this one attached. The client wants to go ahead with metals and Th, U on the 5 sediment samples.

Can you advise how long will this analysis take? Also I still want to clarify how long is the holding time for CRS?

Thanks

Sarah

From: Sarah Breheny
Sent: Tuesday, 15 May 2018 12:13 PM
To: 'Robert Johnston' <RobertJohnston@eurofins.com>
Subject: CRS suite analysis for 597569

Hi Rob,

Please find attached the COC for further analysis for sample batch number 597569. Please note 5 of the samples we may want to do CRS, metals, and ASLP in a few weeks. How long will you hold the samples and how long is the holding time for CRS?

Thanks

Sarah

Rob Johnston 15/5/18 598704

Chain of Custody Record

Send samples to:	Eurofins MGT Unit 2, 91 Leach Highway Kewdale WA 6105	**Project name:**	Agrimin ASS Lake Mackay
Delivery method:	Courier	**Project number:**	2731
Samples from:	360 Environmental 10 Bermondsey Street West Leederville WA	**Name of samplers:**	Gerry Bradley
		Details verified by:	Sarah Breheny
		Lab quote reference:	
Send reports to:	labresults@360environmental.com.au juliepalich@360environmental.com.au	**Turn around time:**	Normal

360 environmental

COC Number: 2731-02

Notes:

Lab Reference	Sample Name	Matrix/Container					Date	Sample Analysis										
		Soil (jar)	Soil (bag)	Water	Fibre Cement	Other		pHf	pFox	CRS	M8, Fe, Al	Groundwater R15	Total uranium and thoriom	ASLP				
	PPDS1 -0.03		X				23/04/2018	x	x	x								
	PPDS2-0.03		x				23/04/2018	x	x	x								
	PPDS3-0.03		x				23/04/2018	x	x	x								
	PPDS4-0.03		x				23/04/2018	x	x	x								
	PPDS5-0.03		x				23/04/2018	x	x	x								
	PPUS1 -0.02		x				23/04/2018	x	x		x		x					
	PPUS2 -0.02		x				23/04/2018	x	x		x		x					
	PPUS3 -0.02		x				23/04/2018	x	x		x		x					
	PPUS4 -0.02		x				23/04/2018	x	x		x		x					
	PPUS5 -0.02		x				23/04/2018	x	x		x		x					
	PPASB1			x			26/04/2018					x	x					
	PPASB2			x			26/04/2018					x	x					
	PPASB3			x			26/04/2018					x	x					
	PPASB4			x			26/04/2018					x	x					

Relinquished by (print name): Sarah Breheny	**Signature:**	**Date:** **Time:**	**Received by** (print name): Rob Johnston	**Signature:**	**Date:** 16/5/18 **Time:** 14:49
Relinquished by (print name): Sarah Breheny	**Signature:** Sbreheny	**Date:** 15-May-18 **Time:** 12.53 pm	**Received by** (print name):	**Signature:**	**Date:** **Time:**

598704

Melbourne
3-5 Kingston Town Close
Oakleigh Vic 3166
Phone : +61 3 8564 5000
NATA # 1261
Site # 1254 & 14271

Sydney
Unit F3, Building F
16 Mars Road
Lane Cove West NSW 2066
Phone : +61 2 9900 8400
NATA # 1261 Site # 18217

Brisbane
1/21 Smallwood Place
Murarrie QLD 4172
Phone : +61 7 3902 4600
NATA # 1261 Site # 20794

Perth
2/91 Leach Highway
Kewdale WA 6105
Phone : +61 8 9251 9600
NATA # 1261 Site # 23736

ABN – 50 005 085 521 e.mail : EnviroSales@eurofins.com web : www.eurofins.com.au

Sample Receipt Advice

Company name:	**360 Environmental**
Contact name:	Sarah Breheny
Project name:	AGRIMIN ASS LAKE
Project ID:	2731
COC number:	2731-02
Turn around time:	5 Day
Date/Time received:	May 15, 2018 2:49 PM
Eurofins | mgt reference:	**598704**

Sample information

☑ A detailed list of analytes logged into our LIMS, is included in the attached summary table.

☑ All samples have been received as described on the above COC.

☑ COC has been completed correctly.

☒ Attempt to chill was evident.

☑ Appropriately preserved sample containers have been used.

☑ All samples were received in good condition.

☑ Samples have been provided with adequate time to commence analysis in accordance with the relevant holding times.

☑ Appropriate sample containers have been used.

☒ Split sample sent to requested external lab.

☒ Some samples have been subcontracted.

N/A Custody Seals intact (if used).

Contact notes

If you have any questions with respect to these samples please contact:

Robert Johnston on Phone : or by e.mail: RobertJohnston@eurofins.com

Results will be delivered electronically via e.mail to Sarah Breheny - SarahBreheny@360environmental.com.au.

ABN– 50 005 085 521
e.mail : EnviroSales@eurofins.com
web : www.eurofins.com.au

Melbourne
2-5 Kingston Town Close
Oakleigh VIC 3166
Phone : +61 3 8564 5000
NATA # 1261
Site # 1254 & 14271

Sydney
Unit F3, Building F
16 Mars Road
Lane Cove West NSW 2066
Phone : +61 2 9900 8400
NATA # 1261 Site # 18217

Brisbane
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Murarrie QLD 4172
Phone : +61 7 3902 4600
NATA # 1261 Site # 20794

Perth
2/91 Leach Highway
Kewdale WA 6105
Phone : +61 8 9251 9600
NATA # 1261
Site # 23736

Company Name: 360 Environmental
Address: 10 Bermondsey St
West Leederville
WA 6007

Project Name: AGRIMIN ASS LAKE
Project ID: 2731

Order No.:
Report #: 598704
Phone: 08 9388 8360
Fax: 08 9381 2360

Received: May 15, 2018 2:49 PM
Due: May 22, 2018
Priority: 5 Day
Contact Name: Sarah Breheny

Eurofins | mgt Analytical Services Manager : Robert Johnston

Sample Detail						Aluminium	Iron	Thorium	Uranium	Metals M8	Moisture Set	Moisture Set	Chromium Suite (Minus ANC- WA)
Melbourne Laboratory - NATA Site # 1254 & 14271						X	X	X	X	X	X	X	
Sydney Laboratory - NATA Site # 18217													
Brisbane Laboratory - NATA Site # 20794											X	X	X
Perth Laboratory - NATA Site # 23736													
External Laboratory													
No	**Sample ID**	**Sample Date**	**Sampling Time**	**Matrix**	**LAB ID**								
1	PPDS1-0.03	Apr 23, 2018		Soil	P18-My21721							X	X
2	PPDS2-0.03	Apr 23, 2018		Soil	P18-My21722							X	X
3	PPDS3-0.03	Apr 23, 2018		Soil	P18-My21723							X	X
4	PPDS4-0.03	Apr 23, 2018		Soil	P18-My21724							X	X
5	PPDS5-0.03	Apr 23, 2018		Soil	P18-My21725							X	X
6	PPUS1-0.02	Apr 23, 2018		Soil	P18-My21726	X	X	X	X	X	X		
7	PPUS2-0.02	Apr 23, 2018		Soil	P18-My21727	X	X	X	X	X	X		
8	PPUS3-0.02	Apr 23, 2018		Soil	P18-My21728	X	X	X	X	X	X		
9	PPUS4-0.02	Apr 23, 2018		Soil	P18-My21729	X	X	X	X	X	X		

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Sample Detail						Aluminium	Iron	Thorium	Uranium	Metals M8	Moisture Set	Moisture Set	Chromium Suite (Minus ANC- WA)
Melbourne Laboratory - NATA Site # 1254 & 14271						X	X	X	X	X	X	X	
Sydney Laboratory - NATA Site # 18217													
Brisbane Laboratory - NATA Site # 20794											X	X	X
Perth Laboratory - NATA Site # 23736													
10	PPUS5-0.02	Apr 23, 2018		Soil	P18-My21730	X	X	X	X	X	X		
Test Counts						5	5	5	5	5	10	10	5

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Certificate of Analysis

360 Environmental
10 Bermondsey St
West Leederville
WA 6007

NATA Accredited
Accreditation Number 1261
Site Number 23736

Accredited for compliance with ISO/IEC 17025 – Testing
The results of the tests, calibrations and/or measurements included in this document are traceable to Australian/national standards.

Attention: **Sarah Breheny**

Report **598704-S**
Project name AGRIMIN ASS LAKE
Project ID 2731
Received Date May 15, 2018

Client Sample ID			**PPDS1-0.03**	**PPDS2-0.03**	**PPDS3-0.03**	**PPDS4-0.03**
Sample Matrix			**Soil**	**Soil**	**Soil**	**Soil**
Eurofins | mgt Sample No.			**P18-My21721**	**P18-My21722**	**P18-My21723**	**P18-My21724**
Date Sampled			**Apr 23, 2018**	**Apr 23, 2018**	**Apr 23, 2018**	**Apr 23, 2018**
Test/Reference	LOR	Unit				
Extraneous Material						
<2mm Fraction	0.005	g	49	54	49	59
>2mm Fraction	0.005	g	2.8	1.1	0.26	3.0
Analysed Material	0.1	%	95	98	99	95
Extraneous Material	0.1	%	5.4	1.9	0.5	4.8
Chromium Suite (Minus ANC- WA)						
CRS suite WA (-ANC) - Liming Rate	1	kg CaCO3/t	< 1	< 1	< 1	1.0
CRS suite WA (-ANC) - Net Acidity (Acidity Units)	10	mol H+/t	< 10	< 10	< 10	15
CRS Suite WA (-ANC) - Net Acidity (Sulfur Units)	0.02	% S	< 0.02	< 0.02	< 0.02	0.02
pH-KCL	0.1	pH Units	8.2	8.1	8.2	8.2
Acid trail - Titratable Actual Acidity	2	mol H+/t	< 2	< 2	< 2	< 2
sulfidic - TAA equiv. S% pyrite	0.02	% pyrite S	< 0.02	< 0.02	< 0.02	< 0.02
Chromium Reducible Sulfur[S04]	0.005	% S	< 0.005	< 0.005	< 0.005	0.023
Chromium Reducible Sulfur -acidity units	3	mol H+/t	< 3	< 3	< 3	15
Sulfur - KCl Extractable	0.02	% S	n/a	n/a	n/a	n/a
HCl Extractable Sulfur	0.02	% S	n/a	n/a	n/a	n/a
Net Acid soluble sulfur	0.02	% S	n/a	n/a	n/a	n/a
Net Acid soluble sulfur - acidity units	10	mol H+/t	n/a	n/a	n/a	n/a
Net Acid soluble sulfur - equivalent S% pyrite[S02]	0.02	% S	n/a	n/a	n/a	n/a
Acid Neutralising Capacity (ANCbt)	0.01	%CaCO3	0.67	0.82	0.54	1.0
Acid Neutralising Capacity - acidity (a-ANCbt)	2	mol H+/t	130	170	110	210
Acid Neutralising Capacity - equivalent S% pyrite (s-ANCbt)[S03]	0.02	% S	0.21	0.26	0.17	0.33
ANC Fineness Factor		factor	1.5	1.5	1.5	1.5
CRS Suite - Net Acidity (Sulfur Units)	0.02	% S	< 0.02	< 0.02	< 0.02	< 0.02
CRS Suite - Net Acidity (Acidity Units)	10	mol H+/t	< 10	< 10	< 10	< 10
CRS Suite - Liming Rate[S01]	1	kg CaCO3/t	< 1	< 1	< 1	< 1
% Moisture	1	%	16	21	17	26

Client Sample ID			PPDS5-0.03	PPUS1-0.02	PPUS2-0.02	PPUS3-0.02
Sample Matrix			Soil	Soil	Soil	Soil
Eurofins | mgt Sample No.			P18-My21725	P18-My21726	P18-My21727	P18-My21728
Date Sampled			Apr 23, 2018	Apr 23, 2018	Apr 23, 2018	Apr 23, 2018
Test/Reference	LOR	Unit				
Heavy Metals						
Aluminium	10	mg/kg	-	11000	2600	3300
Arsenic	2	mg/kg	-	< 2	< 2	< 2
Barium	10	mg/kg	-	100	< 10	24
Beryllium	2	mg/kg	-	< 2	< 2	< 2
Cadmium	0.4	mg/kg	-	< 0.4	< 0.4	< 0.4
Chromium	5	mg/kg	-	18	7.4	9.1
Cobalt	5	mg/kg	-	< 5	< 5	< 5
Copper	5	mg/kg	-	8.8	< 5	< 5
Iron	20	mg/kg	-	14000	4000	4100
Lead	5	mg/kg	-	< 5	< 5	< 5
Mercury	0.1	mg/kg	-	< 0.1	< 0.1	< 0.1
Molybdenum	5	mg/kg	-	< 5	< 5	< 5
Nickel	5	mg/kg	-	6.4	< 5	< 5
Selenium	2	mg/kg	-	< 2	< 2	< 2
Strontium	10	mg/kg	-	580	84	11
Thorium	1	mg/kg	-	17	6.0	7.1
Uranium	10	mg/kg	-	< 10	< 10	< 10
Zinc	5	mg/kg	-	20	6.2	9.1
Extraneous Material						
<2mm Fraction	0.005	g	65	-	-	-
>2mm Fraction	0.005	g	0.22	-	-	-
Analysed Material	0.1	%	100	-	-	-
Extraneous Material	0.1	%	0.3	-	-	-
Chromium Suite (Minus ANC- WA)						
CRS suite WA (-ANC) - Liming Rate	1	kg CaCO3/t	< 1	-	-	-
CRS suite WA (-ANC) - Net Acidity (Acidity Units)	10	mol H+/t	< 10	-	-	-
CRS Suite WA (-ANC) - Net Acidity (Sulfur Units)	0.02	% S	< 0.02	-	-	-
pH-KCL	0.1	pH Units	8.3	-	-	-
Acid trail - Titratable Actual Acidity	2	mol H+/t	< 2	-	-	-
sulfidic - TAA equiv. S% pyrite	0.02	% pyrite S	< 0.02	-	-	-
Chromium Reducible Sulfur[S04]	0.005	% S	< 0.005	-	-	-
Chromium Reducible Sulfur -acidity units	3	mol H+/t	< 3	-	-	-
Sulfur - KCl Extractable	0.02	% S	n/a	-	-	-
HCl Extractable Sulfur	0.02	% S	n/a	-	-	-
Net Acid soluble sulfur	0.02	% S	n/a	-	-	-
Net Acid soluble sulfur - acidity units	10	mol H+/t	n/a	-	-	-
Net Acid soluble sulfur - equivalent S% pyrite[S02]	0.02	% S	n/a	-	-	-
Acid Neutralising Capacity (ANCbt)	0.01	%CaCO3	0.57	-	-	-
Acid Neutralising Capacity - acidity (a-ANCbt)	2	mol H+/t	110	-	-	-
Acid Neutralising Capacity - equivalent S% pyrite (s-ANCbt)[S03]	0.02	% S	0.18	-	-	-
ANC Fineness Factor		factor	1.5	-	-	-
CRS Suite - Net Acidity (Sulfur Units)	0.02	% S	< 0.02	-	-	-
CRS Suite - Net Acidity (Acidity Units)	10	mol H+/t	< 10	-	-	-
CRS Suite - Liming Rate[S01]	1	kg CaCO3/t	< 1	-	-	-
% Moisture	1	%	16	15	16	16

Client Sample ID			PPUS4-0.02	PPUS5-0.02
Sample Matrix			Soil	Soil
Eurofins | mgt Sample No.			P18-My21729	P18-My21730
Date Sampled			Apr 23, 2018	Apr 23, 2018
Test/Reference	LOR	Unit		
Heavy Metals				
Aluminium	10	mg/kg	6900	4800
Arsenic	2	mg/kg	< 2	< 2
Barium	10	mg/kg	15	16
Beryllium	2	mg/kg	< 2	< 2
Cadmium	0.4	mg/kg	< 0.4	< 0.4
Chromium	5	mg/kg	14	12
Cobalt	5	mg/kg	< 5	< 5
Copper	5	mg/kg	6.4	< 5
Iron	20	mg/kg	9300	6300
Lead	5	mg/kg	< 5	< 5
Mercury	0.1	mg/kg	< 0.1	< 0.1
Molybdenum	5	mg/kg	< 5	< 5
Nickel	5	mg/kg	< 5	< 5
Selenium	2	mg/kg	< 2	< 2
Strontium	10	mg/kg	14	21
Thorium	1	mg/kg	13	10
Uranium	10	mg/kg	< 10	< 10
Zinc	5	mg/kg	18	15
% Moisture	1	%	20	15

Sample History

Where samples are submitted/analysed over several days, the last date of extraction and analysis is reported.
A recent review of our LIMS has resulted in the correction or clarification of some method identifications. Due to this, some of the method reference information on reports has changed. However, no substantive change has been made to our laboratory methods, and as such there is no change in the validity of current or previous results (regarding both quality and NATA accreditation).

If the date and time of sampling are not provided, the Laboratory will not be responsible for compromised results should testing be performed outside the recommended holding time.

Description	Testing Site	Extracted	Holding Time
Heavy Metals	Melbourne	May 21, 2018	180 Day
- Method: LTM-MET-3030 by ICP-OES (hydride ICP-OES for Mercury)			
Metals M8	Melbourne	May 21, 2018	28 Days
- Method: LTM-MET-3040 Metals in Waters, Soils & Sediments by ICP-MS			
Thorium	Melbourne	May 21, 2018	6 Month
- Method: LTM-MET-3030 by ICP-OES			
Extraneous Material	Brisbane	May 21, 2018	6 Week
- Method: LTM-GEN-7050/7070			
Chromium Suite (Minus ANC- WA)	Brisbane	May 21, 2018	6 Week
- Method: LTM-GEN-7070			
% Moisture	Melbourne	May 16, 2018	14 Day
- Method: LTM-GEN-7080 Moisture			

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ABN– 50 005 085 521
e.mail : EnviroSales@eurofins.com
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Melbourne
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Project Name: AGRIMIN ASS LAKE
Project ID: 2731

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Phone: 08 9388 8360
Fax: 08 9381 2360

Received: May 15, 2018 2:49 PM
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Priority: 5 Day
Contact Name: Sarah Breheny

Eurofins | mgt Analytical Services Manager : Robert Johnston

Sample Detail						Aluminium	Barium	Beryllium	Cobalt	Iron	Molybdenum	Selenium	Strontium	Thorium	Uranium	Metals M8	Moisture Set	Moisture Set	Chromium Suite (Minus ANC- WA)
Melbourne Laboratory - NATA Site # 1254 & 14271						X	X	X	X	X	X	X	X	X	X	X	X	X	
Sydney Laboratory - NATA Site # 18217																			
Brisbane Laboratory - NATA Site # 20794																	X	X	X
Perth Laboratory - NATA Site # 23736																			
External Laboratory																			
No	**Sample ID**	**Sample Date**	**Sampling Time**	**Matrix**	**LAB ID**														
1	PPDS1-0.03	Apr 23, 2018		Soil	P18-My21721													X	X
2	PPDS2-0.03	Apr 23, 2018		Soil	P18-My21722													X	X
3	PPDS3-0.03	Apr 23, 2018		Soil	P18-My21723													X	X
4	PPDS4-0.03	Apr 23, 2018		Soil	P18-My21724													X	X
5	PPDS5-0.03	Apr 23, 2018		Soil	P18-My21725													X	X
6	PPUS1-0.02	Apr 23, 2018		Soil	P18-My21726	X	X	X	X	X	X	X	X	X	X	X	X		
7	PPUS2-0.02	Apr 23, 2018		Soil	P18-My21727	X	X	X	X	X	X	X	X	X	X	X	X		
8	PPUS3-0.02	Apr 23, 2018		Soil	P18-My21728	X	X	X	X	X	X	X	X	X	X	X	X		
9	PPUS4-0.02	Apr 23, 2018		Soil	P18-My21729	X	X	X	X	X	X	X	X	X	X	X	X		

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Sample Detail						Aluminium	Barium	Beryllium	Cobalt	Iron	Molybdenum	Selenium	Strontium	Thorium	Uranium	Metals M8	Moisture Set	Moisture Set	Chromium Suite (Minus ANC- WA)
Melbourne Laboratory - NATA Site # 1254 & 14271						X	X	X	X	X	X	X	X	X	X	X	X	X	
Sydney Laboratory - NATA Site # 18217																			
Brisbane Laboratory - NATA Site # 20794																	X	X	X
Perth Laboratory - NATA Site # 23736																			
10	PPUS5-0.02	Apr 23, 2018		Soil	P18-My21730	X	X	X	X	X	X	X	X	X	X	X	X		
Test Counts						5	5	5	5	5	5	5	5	5	5	5	10	10	5

Internal Quality Control Review and Glossary

General

1. Laboratory QC results for Method Blanks, Duplicates, Matrix Spikes, and Laboratory Control Samples are included in this QC report where applicable. Additional QC data may be available on request.
2. All soil results are reported on a dry basis, unless otherwise stated.
3. All biota/food results are reported on a wet weight basis on the edible portion, unless otherwise stated.
4. Actual LORs are matrix dependant. Quoted LORs may be raised where sample extracts are diluted due to interferences.
5. Results are uncorrected for matrix spikes or surrogate recoveries except for PFAS compounds.
6. SVOC analysis on waters are performed on homogenised, unfiltered samples, unless noted otherwise.
7. Samples were analysed on an 'as received' basis.
8. This report replaces any interim results previously issued.

Holding Times

Please refer to 'Sample Preservation and Container Guide' for holding times (QS3001).

For samples received on the last day of holding time, notification of testing requirements should have been received at least 6 hours prior to sample receipt deadlines as stated on the SRA.

If the Laboratory did not receive the information in the required timeframe, and regardless of any other integrity issues, suitably qualified results may still be reported.

Holding times apply from the date of sampling, therefore compliance to these may be outside the laboratory's control.

For VOCs containing vinyl chloride, styrene and 2-chloroethyl vinyl ether the holding time is 7 days however for all other VOCs such as BTEX or C6-10 TRH then the holding time is 14 days.

****NOTE:** pH duplicates are reported as a range NOT as RPD

Units

mg/kg: milligrams per kilogram

mg/L: milligrams per litre

ug/L: micrograms per litre

ppm: Parts per million

ppb: Parts per billion

%: Percentage

org/100mL: Organisms per 100 millilitres

NTU: Nephelometric Turbidity Units

MPN/100mL: Most Probable Number of organisms per 100 millilitres

Terms

Dry	Where a moisture has been determined on a solid sample the result is expressed on a dry basis.
LOR	Limit of Reporting.
SPIKE	Addition of the analyte to the sample and reported as percentage recovery.
RPD	Relative Percent Difference between two Duplicate pieces of analysis.
LCS	Laboratory Control Sample - reported as percent recovery.
CRM	Certified Reference Material - reported as percent recovery.
Method Blank	In the case of solid samples these are performed on laboratory certified clean sands and in the case of water samples these are performed on de-ionised water.
Surr - Surrogate	The addition of a like compound to the analyte target and reported as percentage recovery.
Duplicate	A second piece of analysis from the same sample and reported in the same units as the result to show comparison.
USEPA	United States Environmental Protection Agency
APHA	American Public Health Association
TCLP	Toxicity Characteristic Leaching Procedure
COC	Chain of Custody
SRA	Sample Receipt Advice
QSM	Quality Systems Manual ver 5.1 US Department of Defense
CP	Client Parent - QC was performed on samples pertaining to this report
NCP	Non-Client Parent - QC performed on samples not pertaining to this report, QC is representative of the sequence or batch that client samples were analysed within.
TEQ	Toxic Equivalency Quotient

QC - Acceptance Criteria

RPD Duplicates: Global RPD Duplicates Acceptance Criteria is 30% however the following acceptance guidelines are equally applicable:

Results <10 times the LOR : No Limit

Results between 10-20 times the LOR : RPD must lie between 0-50%

Results >20 times the LOR : RPD must lie between 0-30%

Surrogate Recoveries: Recoveries must lie between 50-150%-Phenols & PFASs

PFAS field samples that contain surrogate recoveries in excess of the QC limit designated in QSM 5.1 where no positive PFAS results have been reported have been reviewed and no data was affected.

QC Data General Comments

1. Where a result is reported as a less than (<), higher than the nominated LOR, this is due to either matrix interference, extract dilution required due to interferences or contaminant levels within the sample, high moisture content or insufficient sample provided.
2. Duplicate data shown within this report that states the word "BATCH" is a Batch Duplicate from outside of your sample batch, but within the laboratory sample batch at a 1:10 ratio. The Parent and Duplicate data shown is not data from your samples.
3. Organochlorine Pesticide analysis - where reporting LCS data, Toxaphene & Chlordane are not added to the LCS.
4. Organochlorine Pesticide analysis - where reporting Spike data, Toxaphene is not added to the Spike.
5. Total Recoverable Hydrocarbons - where reporting Spike & LCS data, a single spike of commercial Hydrocarbon products in the range of C12-C30 is added and it's Total Recovery is reported in the C10-C14 cell of the Report.
6. pH and Free Chlorine analysed in the laboratory - Analysis on this test must begin within 30 minutes of sampling.Therefore laboratory analysis is unlikely to be completed within holding time. Analysis will begin as soon as possible after sample receipt.
7. Recovery Data (Spikes & Surrogates) - where chromatographic interference does not allow the determination of Recovery the term "INT" appears against that analyte.
8. Polychlorinated Biphenyls are spiked only using Aroclor 1260 in Matrix Spikes and LCS.
9. For Matrix Spikes and LCS results a dash " -" in the report means that the specific analyte was not added to the QC sample.
10. Duplicate RPDs are calculated from raw analytical data thus it is possible to have two sets of data.

Quality Control Results

Test	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
Method Blank							
Heavy Metals							
Aluminium	mg/kg	< 10			10	Pass	
Arsenic	mg/kg	< 2			2	Pass	
Barium	mg/kg	< 10			10	Pass	
Beryllium	mg/kg	< 2			2	Pass	
Cadmium	mg/kg	< 0.4			0.4	Pass	
Chromium	mg/kg	< 5			5	Pass	
Cobalt	mg/kg	< 5			5	Pass	
Copper	mg/kg	< 5			5	Pass	
Iron	mg/kg	< 20			20	Pass	
Lead	mg/kg	< 5			5	Pass	
Mercury	mg/kg	< 0.1			0.1	Pass	
Molybdenum	mg/kg	< 5			5	Pass	
Nickel	mg/kg	< 5			5	Pass	
Selenium	mg/kg	< 2			2	Pass	
Strontium	mg/kg	< 10			10	Pass	
Uranium	mg/kg	< 10			10	Pass	
Zinc	mg/kg	< 5			5	Pass	
LCS - % Recovery							
Heavy Metals							
Arsenic	%	110			80-120	Pass	
Barium	%	113			80-120	Pass	
Beryllium	%	114			80-120	Pass	
Cadmium	%	103			80-120	Pass	
Chromium	%	113			80-120	Pass	
Cobalt	%	119			80-120	Pass	
Copper	%	112			80-120	Pass	
Lead	%	117			80-120	Pass	
Mercury	%	98			75-125	Pass	
Molybdenum	%	113			80-120	Pass	
Nickel	%	112			80-120	Pass	
Selenium	%	111			80-120	Pass	
Zinc	%	110			80-120	Pass	
LCS - % Recovery							
Chromium Suite (Minus ANC- WA)							
Chromium Reducible Sulfur	%	100			70-130	Pass	
Acid Neutralising Capacity (ANCbt)	%	105			70-130	Pass	

Test	Lab Sample ID	QA Source	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
Spike - % Recovery									
Heavy Metals				Result 1					
Arsenic	M18-My26751	NCP	%	105			75-125	Pass	
Barium	M18-My26751	NCP	%	134			75-125	Fail	Q08
Beryllium	M18-My26751	NCP	%	115			75-125	Pass	
Cadmium	M18-My26751	NCP	%	101			75-125	Pass	
Chromium	M18-My26751	NCP	%	129			75-125	Fail	Q08
Cobalt	M18-My26751	NCP	%	91			75-125	Pass	
Copper	M18-My26751	NCP	%	109			75-125	Pass	
Lead	M18-My26751	NCP	%	98			75-125	Pass	
Mercury	M18-My26751	NCP	%	90			70-130	Pass	
Molybdenum	M18-My26751	NCP	%	112			75-125	Pass	

Test	Lab Sample ID	QA Source	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
Nickel	M18-My26751	NCP	%	111			75-125	Pass	
Selenium	M18-My26751	NCP	%	95			75-125	Pass	
Zinc	M18-My26751	NCP	%	123			75-125	Pass	
Test	**Lab Sample ID**	**QA Source**	**Units**	**Result 1**			**Acceptance Limits**	**Pass Limits**	**Qualifying Code**
Duplicate									
Chromium Suite (Minus ANC- WA)				Result 1	Result 2	RPD			
CRS suite WA (-ANC) - Liming Rate	P18-My21725	CP	kg CaCO3/t	< 1	< 1	<1	30%	Pass	
CRS suite WA (-ANC) - Net Acidity (Acidity Units)	P18-My21725	CP	mol H+/t	< 10	< 10	<1	30%	Pass	
CRS Suite WA (-ANC) - Net Acidity (Sulfur Units)	P18-My21725	CP	% S	< 0.02	< 0.02	<1	30%	Pass	
pH-KCL	P18-My21725	CP	pH Units	8.3	8.2	<1	30%	Pass	
Acid trail - Titratable Actual Acidity	P18-My21725	CP	mol H+/t	< 2	< 2	<1	30%	Pass	
sulfidic - TAA equiv. S% pyrite	P18-My21725	CP	% pyrite S	< 0.02	< 0.02	<1	30%	Pass	
Chromium Reducible Sulfur	P18-My21725	CP	% S	< 0.005	< 0.005	<1	30%	Pass	
Chromium Reducible Sulfur -acidity units	P18-My21725	CP	mol H+/t	< 3	< 3	<1	30%	Pass	
Sulfur - KCl Extractable	P18-My21725	CP	% S	n/a	n/a	n/a	30%	Pass	
HCl Extractable Sulfur	P18-My21725	CP	% S	n/a	n/a	n/a	30%	Pass	
Net Acid soluble sulfur	P18-My21725	CP	% S	n/a	n/a	n/a	30%	Pass	
Net Acid soluble sulfur - acidity units	P18-My21725	CP	mol H+/t	n/a	n/a	n/a	30%	Pass	
Net Acid soluble sulfur - equivalent S% pyrite	P18-My21725	CP	% S	n/a	n/a	n/a	30%	Pass	
Acid Neutralising Capacity (ANCbt)	P18-My21725	CP	%CaCO3	0.57	0.54	6.0	30%	Pass	
Acid Neutralising Capacity - equivalent S% pyrite (s-ANCbt)	P18-My21725	CP	% S	0.18	0.17	6.0	30%	Pass	
ANC Fineness Factor	P18-My21725	CP	factor	1.5	1.5	<1	30%	Pass	
CRS Suite - Net Acidity (Sulfur Units)	P18-My21725	CP	% S	< 0.02	< 0.02	<1	30%	Pass	
CRS Suite - Net Acidity (Acidity Units)	P18-My21725	CP	mol H+/t	< 10	< 10	<1	30%	Pass	
CRS Suite - Liming Rate	P18-My21725	CP	kg CaCO3/t	< 1	< 1	<1	30%	Pass	
Duplicate									
Heavy Metals				Result 1	Result 2	RPD			
Aluminium	M18-My22778	NCP	mg/kg	71000	68000	4.0	30%	Pass	
Arsenic	M18-My25782	NCP	mg/kg	2.2	2.3	3.0	30%	Pass	
Barium	M18-My26750	NCP	mg/kg	190	220	14	30%	Pass	
Beryllium	M18-My26750	NCP	mg/kg	< 2	< 2	<1	30%	Pass	
Cadmium	M18-My26750	NCP	mg/kg	< 0.4	< 0.4	<1	30%	Pass	
Chromium	M18-My26750	NCP	mg/kg	29	35	18	30%	Pass	
Cobalt	M18-My26750	NCP	mg/kg	11	12	8.0	30%	Pass	
Copper	M18-My26750	NCP	mg/kg	< 5	< 5	<1	30%	Pass	
Iron	M18-My22768	NCP	mg/kg	110000	93000	20	30%	Pass	
Lead	M18-My26750	NCP	mg/kg	10	12	14	30%	Pass	
Mercury	M18-My26750	NCP	mg/kg	< 0.1	< 0.1	<1	30%	Pass	
Molybdenum	M18-My26750	NCP	mg/kg	< 5	< 5	<1	30%	Pass	
Nickel	M18-My26750	NCP	mg/kg	16	18	10	30%	Pass	
Selenium	M18-My26750	NCP	mg/kg	< 2	< 2	<1	30%	Pass	
Strontium	M18-My26750	NCP	mg/kg	37	40	8.0	30%	Pass	
Zinc	M18-My26750	NCP	mg/kg	11	13	17	30%	Pass	
Duplicate									
				Result 1	Result 2	RPD			
% Moisture	P18-My21726	CP	%	15	14	7.0	30%	Pass	

Comments

Sample Integrity

Custody Seals Intact (if used)	N/A
Attempt to Chill was evident	No
Sample correctly preserved	Yes
Appropriate sample containers have been used	Yes
Sample containers for volatile analysis received with minimal headspace	N/A
Samples received within HoldingTime	Yes
Some samples have been subcontracted	No

Qualifier Codes/Comments

Code	Description
Q08	The matrix spike recovery is outside of the recommended acceptance criteria. An acceptable recovery was obtained for the laboratory control sample indicating a sample matrix interference
S01	Liming rate is calculated and reported on a dry weight basis assuming use of fine agricultural lime (CaCO3) and using a safety factor of 1.5 to allow for non-homogeneous mixing and poor reactivity of lime. For conversion of Liming Rate from 'kg/t dry weight' to 'kg/m3 in-situ soil' multiply 'reported results' x 'wet bulk density of soil in t/m3'
S02	Retained Acidity is Reported when the pHKCl is less than pH 4.5
S03	Acid Neutralising Capacity is only required if the pHKCl if greater than or equal to pH 6.5
S04	Acid Sulfate Soil Samples have a 24 hour holding time unless frozen or dried within that period

Authorised By

Robert Johnston	Analytical Services Manager
Alex Petridis	Senior Analyst-Metal (VIC)
Myles Clark	Senior Analyst-Metal (QLD)

Glenn Jackson

National Operations Manager

Final report - this Report replaces any previously issued Report

- Indicates Not Requested

* Indicates NATA accreditation does not cover the performance of this service

Measurement uncertainty of test data is available on request or please click here.

Enviro Sample WA

From: Enviro Sample Bris
Sent: Tuesday, 5 June 2018 8:56 AM
To: Enviro Sample WA
Cc: Andrew Black
Subject: RE: 5 DAY TAT ADDITIONAL: FW: Eurofins | mgt Test Results, Invoice - Report 598704 : Site AGRIMIN ASS LAKE (2731)

Thanks for the update.
I'll log in the samples when they get here in Brisbane, with a note to check 598704 for the moisture set

Daniel Clancy
Enquiries Brisbane
Phone : +61 7 3902 4611
Email : EnviroSampleQLD@eurofins.com

From: Enviro Sample WA
Sent: Tuesday, 5 June 2018 10:39 AM
To: Enviro Sample Bris
Subject: FW: 5 DAY TAT ADDITIONAL: FW: Eurofins | mgt Test Results, Invoice - Report 598704 : Site AGRIMIN ASS LAKE (2731)

Hi Dan,

Have located dry samples. Assume wet samples in MEL as per 598704.

Cheers,

Eddy

Eurofins | mgt
Unit 2, 91 Leach Highway
KEWDALE WA 6105
Australia

Phone : +61 8 9251 9692
Email : EnviroSampleWA@eurofins.com

From: Enviro Sample WA
Sent: Tuesday, 5 June 2018 8:29 AM
To: Enviro Sample Bris
Cc: Andrew Black
Subject: RE: 5 DAY TAT ADDITIONAL: FW: Eurofins | mgt Test Results, Invoice - Report 598704 : Site AGRIMIN ASS LAKE (2731)

Hi Daniel,

It was a public holiday over here last week.
We will send these over tonight.

Cheers

Eddy

Eurofins | mgt
Unit 2, 91 Leach Highway
KEWDALE WA 6105
Australia

Phone : +61 8 9251 9692
Email : EnviroSampleWA@eurofins.com

From: Enviro Sample Bris
Sent: Monday, 4 June 2018 11:09 AM
To: Enviro Sample WA
Cc: Andrew Black
Subject: RE: 5 DAY TAT ADDITIONAL: FW: Eurofins | mgt Test Results, Invoice - Report 598704 : Site AGRIMIN ASS LAKE (2731)

Hi team,
Can you please send us the dry and holds for report 597569, samples My11120,My11121,My11122,My11123 and My11124?

Kind Regards,
Daniel Clancy
Enquiries Brisbane
Phone : +61 7 3902 4611
Email : EnviroSampleQLD@eurofins.com

From: Andrew Black
Sent: Monday, 4 June 2018 8:14 AM
To: Enviro Sample Bris
Subject: 5 DAY TAT ADDITIONAL: FW: Eurofins | mgt Test Results, Invoice - Report 598704 : Site AGRIMIN ASS LAKE (2731)

Hi Team

Additional analysis for CrSuite please.

Many thanks

Andrew Black
Phone: +61 410 220 750
Email: AndrewBlack@eurofins.com

From: Sarah Breheny [mailto:SarahBreheny@360environmental.com.au]
Sent: Friday, 1 June 2018 7:32 PM
To: Robert Johnston
Subject: Re: Eurofins | mgt Test Results, Invoice - Report 598704 : Site AGRIMIN ASS LAKE (2731)

EXTERNAL EMAIL*

Hi Robert.

Can you please organise for further analysis (CRS)
For PPUS1-0.02, PPUS2-0.02, PPUS3-0.02, PPUS4-0.02, PPUS5-0.02. Report 598704

Thank you

Sarah.

Sent from my iPhone

On 24 May 2018, at 10:05 am, "RobertJohnston@eurofins.com" <RobertJohnston@eurofins.com> wrote:

> Hi Sarah,
>
> Please find attached results and invoice for AGRIMIN ASS LAKE (2731).
>
> My apologies for the delay in these results.
>
> Kind Regards,
>
> Robert Johnston
> **Analytical Services Manager**
>
> **Eurofins | mgt**
> Unit 2, 91 Leach Highway
> KEWDALE WA 6105
> AUSTRALIA
> Phone: +61 8 9251 9605
> Email: RobertJohnston@eurofins.com
> Website:environment.eurofins.com.au
> EnviroNote 1076 - PFAS Biota
> EnviroNote 1074 - Passive Samplers for VOCs in Air
>
> *Are you on TOP of PFASs? Find out more by reading Eurofins | mgt's Environote by clicking here*
>
> *EnviroNote 1075 – for Eurofins | mgt Christmas Shutdown Dates, click here*
>
> <598704-S_report.pdf>
>
> <2731.598704.Header.xml>
>
> <AGRIMIN ASS LAKE 2731.598704.Chemistry2e.csv>

<AGRIMIN ASS LAKE 2731.598704.Sample2e.csv>

<598704-S.xls>

<598704_data.csv>

<598704_COC.pdf>

<598704_sample_receipt_coc.pdf>

<598704_invoice_458792.pdf>

Melbourne
3-5 Kingston Town Close
Oakleigh Vic 3166
Phone : +61 3 8564 5000
NATA # 1261
Site # 1254 & 14271

Sydney
Unit F3, Building F
16 Mars Road
Lane Cove West NSW 2066
Phone : +61 2 9900 8400
NATA # 1261 Site # 18217

Brisbane
1/21 Smallwood Place
Murarrie QLD 4172
Phone : +61 7 3902 4600
NATA # 1261 Site # 20794

Perth
2/91 Leach Highway
Kewdale WA 6105
Phone : +61 8 9251 9600
NATA # 1261 Site # 23736

ABN – 50 005 085 521 e.mail : EnviroSales@eurofins.com web : www.eurofins.com.au

Sample Receipt Advice

Company name: **360 Environmental**

Contact name: Sarah Breheny
Project name: AGRIMIN ASS LAKE MACKAY
Project ID: 2731
COC number: Not provided
Turn around time: 5 Day
Date/Time received: Jun 4, 2018 8:14 AM
Eurofins | mgt reference: **601705**

Sample information

☑ A detailed list of analytes logged into our LIMS, is included in the attached summary table.

☑ All samples have been received as described on the above COC.

☑ COC has been completed correctly.

☑ Attempt to chill was evident.

☑ Appropriately preserved sample containers have been used.

☑ All samples were received in good condition.

☑ Samples have been provided with adequate time to commence analysis in accordance with the relevant holding times.

☑ Appropriate sample containers have been used.

☒ Split sample sent to requested external lab.

☒ Some samples have been subcontracted.

N/A Custody Seals intact (if used).

Contact notes

If you have any questions with respect to these samples please contact:

Robert Johnston on Phone : or by e.mail: RobertJohnston@eurofins.com

Results will be delivered electronically via e.mail to Sarah Breheny - SarahBreheny@360environmental.com.au.

ABN– 50 005 085 521
e.mail : EnviroSales@eurofins.com
web : www.eurofins.com.au

Melbourne
2-5 Kingston Town Close
Oakleigh VIC 3166
Phone : +61 3 8564 5000
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Unit F3, Building F
16 Mars Road
Lane Cove West NSW 2066
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Phone : +61 7 3902 4600
NATA # 1261 Site # 20794

Perth
2/91 Leach Highway
Kewdale WA 6105
Phone : +61 8 9251 9600
NATA # 1261
Site # 23736

Company Name:	360 Environmental	**Order No.:**		**Received:**	Jun 4, 2018 8:14 AM
Address:	10 Bermondsey St West Leederville WA 6007	**Report #:**	601705	**Due:**	Jun 11, 2018
		Phone:	08 9388 8360	**Priority:**	5 Day
		Fax:	08 9381 2360	**Contact Name:**	Sarah Breheny
Project Name:	AGRIMIN ASS LAKE MACKAY				
Project ID:	2731				

Eurofins | mgt Analytical Services Manager : Robert Johnston

Sample Detail						Chromium Reducible Sulfur Suite	Moisture Set
Melbourne Laboratory - NATA Site # 1254 & 14271							
Sydney Laboratory - NATA Site # 18217							
Brisbane Laboratory - NATA Site # 20794						X	X
Perth Laboratory - NATA Site # 23736							
External Laboratory							
No	**Sample ID**	**Sample Date**	**Sampling Time**	**Matrix**	**LAB ID**		
1	PPUS1-0.02	Apr 23, 2018		Soil	B18-Jn05355	X	X
2	PPUS2-0.02	Apr 23, 2018		Soil	B18-Jn05356	X	X
3	PPUS3-0.02	Apr 23, 2018		Soil	B18-Jn05357	X	X
4	PPUS4-0.02	Apr 23, 2018		Soil	B18-Jn05358	X	X
5	PPUS5-0.02	Apr 23, 2018		Soil	B18-Jn05359	X	X
Test Counts						5	5

eurofins | mgt

30 years Testing For Life 1987–2017
Celebrating 30 years Testing and Protecting Human Health

Certificate of Analysis

360 Environmental
10 Bermondsey St
West Leederville
WA 6007

NATA Accredited
Accreditation Number 1261
Site Number 20794

Accredited for compliance with ISO/IEC 17025 – Testing
The results of the tests, calibrations and/or measurements included in this document are traceable to Australian/national standards.

Attention: **Sarah Breheny**

Report **601705-S**
Project name AGRIMIN ASS LAKE MACKAY
Project ID 2731
Received Date Jun 04, 2018

Client Sample ID **Sample Matrix** **Eurofins | mgt Sample No.** **Date Sampled** Test/Reference	LOR	Unit	**PPUS1-0.02** **Soil** **B18-Jn05355** **Apr 23, 2018**	**PPUS2-0.02** **Soil** **B18-Jn05356** **Apr 23, 2018**	**PPUS3-0.02** **Soil** **B18-Jn05357** **Apr 23, 2018**	**PPUS4-0.02** **Soil** **B18-Jn05358** **Apr 23, 2018**
Extraneous Material						
<2mm Fraction	0.005	g	37	69	49	81
>2mm Fraction	0.005	g	< 0.005	< 0.005	< 0.005	< 0.005
Analysed Material	0.1	%	100	100	100	100
Extraneous Material	0.1	%	< 0.1	< 0.1	< 0.1	< 0.1
Chromium Suite (Minus ANC- WA)						
CRS suite WA (-ANC) - Liming Rate	1	kg CaCO3/t	< 1	< 1	< 1	< 1
CRS suite WA (-ANC) - Net Acidity (Acidity Units)	10	mol H+/t	< 10	< 10	< 10	< 10
CRS Suite WA (-ANC) - Net Acidity (Sulfur Units)	0.02	% S	< 0.02	< 0.02	< 0.02	< 0.02
pH-KCL	0.1	pH Units	8.4	7.9	8.2	8.0
Acid trail - Titratable Actual Acidity	2	mol H+/t	< 2	< 2	< 2	< 2
sulfidic - TAA equiv. S% pyrite	0.02	% pyrite S	< 0.02	< 0.02	< 0.02	< 0.02
Chromium Reducible Sulfur[S04]	0.005	% S	< 0.005	< 0.005	< 0.005	< 0.005
Chromium Reducible Sulfur -acidity units	3	mol H+/t	< 3	< 3	< 3	< 3
Sulfur - KCl Extractable	0.02	% S	n/a	n/a	n/a	n/a
HCl Extractable Sulfur	0.02	% S	n/a	n/a	n/a	n/a
Net Acid soluble sulfur	0.02	% S	n/a	n/a	n/a	n/a
Net Acid soluble sulfur - acidity units	10	mol H+/t	n/a	n/a	n/a	n/a
Net Acid soluble sulfur - equivalent S% pyrite[S02]	0.02	% S	n/a	n/a	n/a	n/a
Acid Neutralising Capacity (ANCbt)	0.01	%CaCO3	1.7	0.58	0.76	0.94
Acid Neutralising Capacity - acidity (a-ANCbt)	2	mol H+/t	340	120	150	190
Acid Neutralising Capacity - equivalent S% pyrite (s-ANCbt)[S03]	0.02	% S	0.54	0.18	0.24	0.30
ANC Fineness Factor		factor	1.5	1.5	1.5	1.5
CRS Suite - Net Acidity (Sulfur Units)	0.02	% S	< 0.02	< 0.02	< 0.02	< 0.02
CRS Suite - Net Acidity (Acidity Units)	10	mol H+/t	< 10	< 10	< 10	< 10
CRS Suite - Liming Rate[S01]	1	kg CaCO3/t	< 1	< 1	< 1	< 1
% Moisture	1	%	15	16	16	20

Client Sample ID			PPUS5-0.02
Sample Matrix			**Soil**
Eurofins | mgt Sample No.			**B18-Jn05359**
Date Sampled			**Apr 23, 2018**
Test/Reference	LOR	Unit	
Extraneous Material			
<2mm Fraction	0.005	g	63
>2mm Fraction	0.005	g	< 0.005
Analysed Material	0.1	%	100
Extraneous Material	0.1	%	< 0.1
Chromium Suite (Minus ANC- WA)			
CRS suite WA (-ANC) - Liming Rate	1	kg CaCO3/t	< 1
CRS suite WA (-ANC) - Net Acidity (Acidity Units)	10	mol H+/t	< 10
CRS Suite WA (-ANC) - Net Acidity (Sulfur Units)	0.02	% S	< 0.02
pH-KCL	0.1	pH Units	8.1
Acid trail - Titratable Actual Acidity	2	mol H+/t	< 2
sulfidic - TAA equiv. S% pyrite	0.02	% pyrite S	< 0.02
Chromium Reducible Sulfur[S04]	0.005	% S	< 0.005
Chromium Reducible Sulfur -acidity units	3	mol H+/t	< 3
Sulfur - KCl Extractable	0.02	% S	n/a
HCl Extractable Sulfur	0.02	% S	n/a
Net Acid soluble sulfur	0.02	% S	n/a
Net Acid soluble sulfur - acidity units	10	mol H+/t	n/a
Net Acid soluble sulfur - equivalent S% pyrite[S02]	0.02	% S	n/a
Acid Neutralising Capacity (ANCbt)	0.01	%CaCO3	0.59
Acid Neutralising Capacity - acidity (a-ANCbt)	2	mol H+/t	120
Acid Neutralising Capacity - equivalent S% pyrite (s-ANCbt)[S03]	0.02	% S	0.19
ANC Fineness Factor		factor	1.5
CRS Suite - Net Acidity (Sulfur Units)	0.02	% S	< 0.02
CRS Suite - Net Acidity (Acidity Units)	10	mol H+/t	< 10
CRS Suite - Liming Rate[S01]	1	kg CaCO3/t	< 1
% Moisture	1	%	15

Sample History

Where samples are submitted/analysed over several days, the last date of extraction and analysis is reported.
A recent review of our LIMS has resulted in the correction or clarification of some method identifications. Due to this, some of the method reference information on reports has changed. However, no substantive change has been made to our laboratory methods, and as such there is no change in the validity of current or previous results (regarding both quality and NATA accreditation).

If the date and time of sampling are not provided, the Laboratory will not be responsible for compromised results should testing be performed outside the recommended holding time.

Description	Testing Site	Extracted	Holding Time
Extraneous Material	Brisbane	Jun 06, 2018	6 Week
- Method: LTM-GEN-7050/7070			
Chromium Suite (Minus ANC- WA)	Brisbane	Jun 07, 2018	6 Week
- Method: LTM-GEN-7070			
% Moisture	Brisbane	Jun 06, 2018	14 Day
- Method: LTM-GEN-7080 Moisture			

ABN– 50 005 085 521
e.mail : EnviroSales@eurofins.com
web : www.eurofins.com.au

Melbourne
2-5 Kingston Town Close
Oakleigh VIC 3166
Phone : +61 3 8564 5000
NATA # 1261
Site # 1254 & 14271

Sydney
Unit F3, Building F
16 Mars Road
Lane Cove West NSW 2066
Phone : +61 2 9900 8400
NATA # 1261 Site # 18217

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Murarrie QLD 4172
Phone : +61 7 3902 4600
NATA # 1261 Site # 20794

Perth
2/91 Leach Highway
Kewdale WA 6105
Phone : +61 8 9251 9600
NATA # 1261
Site # 23736

Company Name: 360 Environmental
Address: 10 Bermondsey St
West Leederville
WA 6007

Project Name: AGRIMIN ASS LAKE MACKAY
Project ID: 2731

Order No.:
Report #: 601705
Phone: 08 9388 8360
Fax: 08 9381 2360

Received: Jun 4, 2018 8:14 AM
Due: Jun 11, 2018
Priority: 5 Day
Contact Name: Sarah Breheny

Eurofins | mgt Analytical Services Manager : Robert Johnston

Sample Detail						Chromium Reducible Sulfur Suite	Moisture Set
Melbourne Laboratory - NATA Site # 1254 & 14271							
Sydney Laboratory - NATA Site # 18217							
Brisbane Laboratory - NATA Site # 20794						X	X
Perth Laboratory - NATA Site # 23736							
External Laboratory							
No	**Sample ID**	**Sample Date**	**Sampling Time**	**Matrix**	**LAB ID**		
1	PPUS1-0.02	Apr 23, 2018		Soil	B18-Jn05355	X	X
2	PPUS2-0.02	Apr 23, 2018		Soil	B18-Jn05356	X	X
3	PPUS3-0.02	Apr 23, 2018		Soil	B18-Jn05357	X	X
4	PPUS4-0.02	Apr 23, 2018		Soil	B18-Jn05358	X	X
5	PPUS5-0.02	Apr 23, 2018		Soil	B18-Jn05359	X	X
Test Counts						5	5

Internal Quality Control Review and Glossary

General

1. Laboratory QC results for Method Blanks, Duplicates, Matrix Spikes, and Laboratory Control Samples are included in this QC report where applicable. Additional QC data may be available on request.
2. All soil results are reported on a dry basis, unless otherwise stated.
3. All biota/food results are reported on a wet weight basis on the edible portion, unless otherwise stated.
4. Actual LORs are matrix dependant. Quoted LORs may be raised where sample extracts are diluted due to interferences.
5. Results are uncorrected for matrix spikes or surrogate recoveries except for PFAS compounds.
6. SVOC analysis on waters are performed on homogenised, unfiltered samples, unless noted otherwise.
7. Samples were analysed on an 'as received' basis.
8. This report replaces any interim results previously issued.

Holding Times

Please refer to 'Sample Preservation and Container Guide' for holding times (QS3001).

For samples received on the last day of holding time, notification of testing requirements should have been received at least 6 hours prior to sample receipt deadlines as stated on the SRA.

If the Laboratory did not receive the information in the required timeframe, and regardless of any other integrity issues, suitably qualified results may still be reported.

Holding times apply from the date of sampling, therefore compliance to these may be outside the laboratory's control.

For VOCs containing vinyl chloride, styrene and 2-chloroethyl vinyl ether the holding time is 7 days however for all other VOCs such as BTEX or C6-10 TRH then the holding time is 14 days.

****NOTE:** pH duplicates are reported as a range NOT as RPD

Units

mg/kg: milligrams per kilogram

mg/L: milligrams per litre

ug/L: micrograms per litre

ppm: Parts per million

ppb: Parts per billion

%: Percentage

org/100mL: Organisms per 100 millilitres

NTU: Nephelometric Turbidity Units

MPN/100mL: Most Probable Number of organisms per 100 millilitres

Terms

Dry	Where a moisture has been determined on a solid sample the result is expressed on a dry basis.
LOR	Limit of Reporting.
SPIKE	Addition of the analyte to the sample and reported as percentage recovery.
RPD	Relative Percent Difference between two Duplicate pieces of analysis.
LCS	Laboratory Control Sample - reported as percent recovery.
CRM	Certified Reference Material - reported as percent recovery.
Method Blank	In the case of solid samples these are performed on laboratory certified clean sands and in the case of water samples these are performed on de-ionised water.
Surr - Surrogate	The addition of a like compound to the analyte target and reported as percentage recovery.
Duplicate	A second piece of analysis from the same sample and reported in the same units as the result to show comparison.
USEPA	United States Environmental Protection Agency
APHA	American Public Health Association
TCLP	Toxicity Characteristic Leaching Procedure
COC	Chain of Custody
SRA	Sample Receipt Advice
QSM	Quality Systems Manual ver 5.1 US Department of Defense
CP	Client Parent - QC was performed on samples pertaining to this report
NCP	Non-Client Parent - QC performed on samples not pertaining to this report, QC is representative of the sequence or batch that client samples were analysed within.
TEQ	Toxic Equivalency Quotient

QC - Acceptance Criteria

RPD Duplicates: Global RPD Duplicates Acceptance Criteria is 30% however the following acceptance guidelines are equally applicable:

Results <10 times the LOR : No Limit

Results between 10-20 times the LOR : RPD must lie between 0-50%

Results >20 times the LOR : RPD must lie between 0-30%

Surrogate Recoveries: Recoveries must lie between 50-150%-Phenols & PFASs

PFAS field samples that contain surrogate recoveries in excess of the QC limit designated in QSM 5.1 where no positive PFAS results have been reported have been reviewed and no data was affected.

QC Data General Comments

1. Where a result is reported as a less than (<), higher than the nominated LOR, this is due to either matrix interference, extract dilution required due to interferences or contaminant levels within the sample, high moisture content or insufficient sample provided.
2. Duplicate data shown within this report that states the word "BATCH" is a Batch Duplicate from outside of your sample batch, but within the laboratory sample batch at a 1:10 ratio. The Parent and Duplicate data shown is not data from your samples.
3. Organochlorine Pesticide analysis - where reporting LCS data, Toxaphene & Chlordane are not added to the LCS.
4. Organochlorine Pesticide analysis - where reporting Spike data, Toxaphene is not added to the Spike.
5. Total Recoverable Hydrocarbons - where reporting Spike & LCS data, a single spike of commercial Hydrocarbon products in the range of C12-C30 is added and it's Total Recovery is reported in the C10-C14 cell of the Report.
6. pH and Free Chlorine analysed in the laboratory - Analysis on this test must begin within 30 minutes of sampling.Therefore laboratory analysis is unlikely to be completed within holding time. Analysis will begin as soon as possible after sample receipt.
7. Recovery Data (Spikes & Surrogates) - where chromatographic interference does not allow the determination of Recovery the term "INT" appears against that analyte.
8. Polychlorinated Biphenyls are spiked only using Aroclor 1260 in Matrix Spikes and LCS.
9. For Matrix Spikes and LCS results a dash " -" in the report means that the specific analyte was not added to the QC sample.
10. Duplicate RPDs are calculated from raw analytical data thus it is possible to have two sets of data.

Quality Control Results

Test			Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
LCS - % Recovery									
Chromium Suite (Minus ANC- WA)									
Chromium Reducible Sulfur			%	103			70-130	Pass	
Acid Neutralising Capacity (ANCbt)			%	104			70-130	Pass	
Test	**Lab Sample ID**	**QA Source**	**Units**	**Result 1**			**Acceptance Limits**	**Pass Limits**	**Qualifying Code**
Duplicate									
Chromium Suite (Minus ANC- WA)				Result 1	Result 2	RPD			
CRS suite WA (-ANC) - Liming Rate	B18-Jn03113	NCP	kg CaCO3/t	1.0	1.0	2.0	30%	Pass	
CRS suite WA (-ANC) - Net Acidity (Acidity Units)	B18-Jn03113	NCP	mol H+/t	< 10	< 10	<1	30%	Pass	
CRS Suite WA (-ANC) - Net Acidity (Sulfur Units)	B18-Jn03113	NCP	% S	< 0.02	< 0.02	<1	30%	Pass	
pH-KCL	B18-Jn03113	NCP	pH Units	5.4	5.4	<1	30%	Pass	
Acid trail - Titratable Actual Acidity	B18-Jn03113	NCP	mol H+/t	8.7	8.5	2.1	30%	Pass	
sulfidic - TAA equiv. S% pyrite	B18-Jn03113	NCP	% pyrite S	< 0.02	< 0.02	<1	30%	Pass	
Chromium Reducible Sulfur	B18-Jn03113	NCP	% S	< 0.005	< 0.005	<1	30%	Pass	
Chromium Reducible Sulfur -acidity units	B18-Jn03113	NCP	mol H+/t	< 3	< 3	<1	30%	Pass	
Sulfur - KCl Extractable	B18-Jn03113	NCP	% S	n/a	n/a	n/a	30%	Pass	
HCl Extractable Sulfur	B18-Jn03113	NCP	% S	n/a	n/a	n/a	30%	Pass	
Net Acid soluble sulfur	B18-Jn03113	NCP	% S	n/a	n/a	n/a	30%	Pass	
Net Acid soluble sulfur - acidity units	B18-Jn03113	NCP	mol H+/t	n/a	n/a	n/a	30%	Pass	
Net Acid soluble sulfur - equivalent S% pyrite	B18-Jn03113	NCP	% S	n/a	n/a	n/a	30%	Pass	
Acid Neutralising Capacity (ANCbt)	B18-Jn03113	NCP	%CaCO3	n/a	n/a	n/a	30%	Pass	
Acid Neutralising Capacity - equivalent S% pyrite (s-ANCbt)	B18-Jn03113	NCP	% S	n/a	n/a	n/a	30%	Pass	
ANC Fineness Factor	B18-Jn03113	NCP	factor	1.5	1.5	<1	30%	Pass	
CRS Suite - Net Acidity (Sulfur Units)	B18-Jn03113	NCP	% S	< 0.02	< 0.02	<1	30%	Pass	
CRS Suite - Net Acidity (Acidity Units)	B18-Jn03113	NCP	mol H+/t	< 10	< 10	<1	30%	Pass	
CRS Suite - Liming Rate	B18-Jn03113	NCP	kg CaCO3/t	< 1	< 1	<1	30%	Pass	
Duplicate									
				Result 1	Result 2	RPD			
% Moisture	B18-My01812	NCP	%	17	18	2.0	30%	Pass	

Comments

Sample Integrity

Custody Seals Intact (if used)	N/A
Attempt to Chill was evident	Yes
Sample correctly preserved	Yes
Appropriate sample containers have been used	Yes
Sample containers for volatile analysis received with minimal headspace	Yes
Samples received within HoldingTime	Yes
Some samples have been subcontracted	No

Qualifier Codes/Comments

Code	Description
S01	Liming rate is calculated and reported on a dry weight basis assuming use of fine agricultural lime (CaCO3) and using a safety factor of 1.5 to allow for non-homogeneous mixing and poor reactivity of lime. For conversion of Liming Rate from 'kg/t dry weight' to 'kg/m3 in-situ soil' multiply 'reported results' x 'wet bulk density of soil in t/m3'
S02	Retained Acidity is Reported when the pHKCl is less than pH 4.5
S03	Acid Neutralising Capacity is only required if the pHKCl if greater than or equal to pH 6.5
S04	Acid Sulfate Soil Samples have a 24 hour holding time unless frozen or dried within that period

Authorised By

Robert Johnston	Analytical Services Manager
Myles Clark	Senior Analyst-Metal (QLD)

Glenn Jackson
National Operations Manager

Final report - this Report replaces any previously issued Report

- Indicates Not Requested

* Indicates NATA accreditation does not cover the performance of this service

Measurement uncertainty of test data is available on request or please click here.

Chain of Custody Record

Send samples to:	Eurofins MGT Unit 2, 91 Leach Highway Kewdale WA 6105	**Project name:**	Agrimin ASS Lak
Delivery method:	Courier	**Project number:**	2731
Samples from:	360 Environmental 10 Bermondsey Street West Leederville WA	**Name of samplers:**	Gerry Bradley
Send reports to:	labresults@360environmental.com.au sarahbreheny@360environmental.com.au	**Details verified by:**	Sarah Breheny
		Lab quote reference:	
		Turn around time:	Normal
		COC Number:	2731-05

Notes:

Lab Reference	Sample Name	Matrix/Container					Date	Sample Analysis					
		Soil (jar)	Soil (bag)	Water (unfiltered)	Fibre Cement	Other			Total metals (uranium, thorium, aluminium, iron, arsenic, chromium, cadmium, manganese, nickel, selenium, zinc, Barium, Beryllium, Cobalt, Lead, Molybdenum, Strontium and Mercury)				
	MC36-11			x			unknown		x				
	MA07			x			unknown		x				

Relinquished by Sarah Breheny **(print name):**	**Signature:**	**Date:** **Time:**	31/05/2018	**Date:** **Time:**
Relinquished by **(print name):** Cheryl 635 civic	**Signature:**	**Date:** **Time:** Caitlyn Gibson 31/5/18 3:03PM		**Date:** **Time:**

Mark Beazonos Mgr 2/6 2.26pm #601310

Melbourne
3-5 Kingston Town Close
Oakleigh Vic 3166
Phone : +61 3 8564 5000
NATA # 1261
Site # 1254 & 14271

Sydney
Unit F3, Building F
16 Mars Road
Lane Cove West NSW 2066
Phone : +61 2 9900 8400
NATA # 1261 Site # 18217

Brisbane
1/21 Smallwood Place
Murarrie QLD 4172
Phone : +61 7 3902 4600
NATA # 1261 Site # 20794

Perth
2/91 Leach Highway
Kewdale WA 6105
Phone : +61 8 9251 9600
NATA # 1261 Site # 23736

ABN – 50 005 085 521 e.mail : EnviroSales@eurofins.com web : www.eurofins.com.au

Sample Receipt Advice

Company name:	**360 Environmental**
Contact name:	Sarah Breheny
Project name:	AGRIMIN ASS LAKE
Project ID:	2731
COC number:	Not provided
Turn around time:	5 Day
Date/Time received:	May 31, 2018 3:03 PM
Eurofins | mgt reference:	**601310**

Sample information

☑ A detailed list of analytes logged into our LIMS, is included in the attached summary table.

☑ All samples have been received as described on the above COC.

☑ COC has been completed correctly.

☑ Attempt to chill was evident.

☑ Appropriately preserved sample containers have been used.

☑ All samples were received in good condition.

☑ Samples have been provided with adequate time to commence analysis in accordance with the relevant holding times.

☑ Appropriate sample containers have been used.

☑ Sample containers for volatile analysis received with zero headspace.

☒ Split sample sent to requested external lab.

☒ Some samples have been subcontracted.

N/A Custody Seals intact (if used).

Contact notes

If you have any questions with respect to these samples please contact:

Robert Johnston on Phone : or by e.mail: RobertJohnston@eurofins.com

Results will be delivered electronically via e.mail to Sarah Breheny - SarahBreheny@360environmental.com.au.

eurofins | mgt

30 years Testing For Life 1987–2017
Celebrating 30 years Testing and Protecting Human Health

Certificate of Analysis

360 Environmental
10 Bermondsey St
West Leederville
WA 6007

NATA Accredited
Accreditation Number 1261
Site Number 1254

Accredited for compliance with ISO/IEC 17025 – Testing
The results of the tests, calibrations and/or measurements included in this document are traceable to Australian/national standards.

Attention: **Sarah Breheny**

Report **601310-W**
Project name AGRIMIN ASS LAKE
Project ID 2731
Received Date May 31, 2018

Client Sample ID			[G01]**MC36-11**	[G01]**MA07**
Sample Matrix			**Water**	**Water**
Eurofins | mgt Sample No.			**M18-Jn02296**	**M18-Jn02297**
Date Sampled			**Not Provided**	**Not Provided**
Test/Reference	LOR	Unit		
Heavy Metals				
Aluminium	0.05	mg/L	< 0.5	0.85
Barium	0.02	mg/L	< 0.05	< 0.05
Beryllium	0.001	mg/L	< 0.01	< 0.01
Cadmium	0.0002	mg/L	0.0030	< 0.002
Chromium	0.001	mg/L	< 0.01	< 0.01
Cobalt	0.001	mg/L	< 0.01	< 0.01
Iron	0.05	mg/L	< 0.5	1.3
Lead	0.001	mg/L	0.036	0.033
Manganese	0.005	mg/L	0.18	0.36
Mercury	0.0001	mg/L	< 0.001	< 0.001
Molybdenum	0.005	mg/L	< 0.05	< 0.05
Nickel	0.001	mg/L	< 0.01	< 0.01
Selenium	0.001	mg/L	< 0.01	< 0.01
Strontium	0.005	mg/L	9.1	8.8
Thorium	1	mg/L	1.2	1.0
Uranium	0.005	mg/L	< 0.05	< 0.05
Zinc	0.005	mg/L	0.22	0.079

Sample History

Where samples are submitted/analysed over several days, the last date of extraction and analysis is reported.
A recent review of our LIMS has resulted in the correction or clarification of some method identifications. Due to this, some of the method reference information on reports has changed. However, no substantive change has been made to our laboratory methods, and as such there is no change in the validity of current or previous results (regarding both quality and NATA accreditation).

If the date and time of sampling are not provided, the Laboratory will not be responsible for compromised results should testing be performed outside the recommended holding time.

Description	Testing Site	Extracted	Holding Time
Heavy Metals	Melbourne	Jun 04, 2018	180 Day
- Method: LTM-MET-3040 Metals in Waters Solids Soils & Sediments by ICP-MS			
Thorium	Melbourne	Jun 04, 2018	6 Month
- Method: LTM-MET-3040 Metals in Waters by ICP-MS			

ABN– 50 005 085 521
e.mail : EnviroSales@eurofins.com
web : www.eurofins.com.au

Melbourne
2-5 Kingston Town Close
Oakleigh VIC 3166
Phone : +61 3 8564 5000
NATA # 1261
Site # 1254 & 14271

Sydney
Unit F3, Building F
16 Mars Road
Lane Cove West NSW 2066
Phone : +61 2 9900 8400
NATA # 1261 Site # 18217

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1/21 Smallwood Place
Murarrie QLD 4172
Phone : +61 7 3902 4600
NATA # 1261 Site # 20794

Perth
2/91 Leach Highway
Kewdale WA 6105
Phone : +61 8 9251 9600
NATA # 1261
Site # 23736

Company Name: 360 Environmental
Address: 10 Bermondsey St
West Leederville
WA 6007

Project Name: AGRIMIN ASS LAKE
Project ID: 2731

Order No.:
Report #: 601310
Phone: 08 9388 8360
Fax: 08 9381 2360

Received: May 31, 2018 3:03 PM
Due: Jun 7, 2018
Priority: 5 Day
Contact Name: Sarah Breheny

Eurofins | mgt Analytical Services Manager : Robert Johnston

Sample Detail						Aluminium	Barium	Beryllium	Cadmium	Chromium	Cobalt	Iron	Lead	Manganese	Mercury	Molybdenum	Nickel	Selenium	Strontium	Thorium	Uranium	Zinc
Melbourne Laboratory - NATA Site # 1254 & 14271						X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Sydney Laboratory - NATA Site # 18217																						
Brisbane Laboratory - NATA Site # 20794																						
Perth Laboratory - NATA Site # 23736																						
External Laboratory																						
No	**Sample ID**	**Sample Date**	**Sampling Time**	**Matrix**	**LAB ID**																	
1	MC36-11	Not Provided		Water	M18-Jn02296	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
2	MA07	Not Provided		Water	M18-Jn02297	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Test Counts						2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2

Internal Quality Control Review and Glossary

General

1. Laboratory QC results for Method Blanks, Duplicates, Matrix Spikes, and Laboratory Control Samples are included in this QC report where applicable. Additional QC data may be available on request.
2. All soil results are reported on a dry basis, unless otherwise stated.
3. All biota/food results are reported on a wet weight basis on the edible portion, unless otherwise stated.
4. Actual LORs are matrix dependant. Quoted LORs may be raised where sample extracts are diluted due to interferences.
5. Results are uncorrected for matrix spikes or surrogate recoveries except for PFAS compounds.
6. SVOC analysis on waters are performed on homogenised, unfiltered samples, unless noted otherwise.
7. Samples were analysed on an 'as received' basis.
8. This report replaces any interim results previously issued.

Holding Times

Please refer to 'Sample Preservation and Container Guide' for holding times (QS3001).

For samples received on the last day of holding time, notification of testing requirements should have been received at least 6 hours prior to sample receipt deadlines as stated on the SRA.

If the Laboratory did not receive the information in the required timeframe, and regardless of any other integrity issues, suitably qualified results may still be reported.

Holding times apply from the date of sampling, therefore compliance to these may be outside the laboratory's control.

For VOCs containing vinyl chloride, styrene and 2-chloroethyl vinyl ether the holding time is 7 days however for all other VOCs such as BTEX or C6-10 TRH then the holding time is 14 days.

****NOTE:** pH duplicates are reported as a range NOT as RPD

Units

mg/kg: milligrams per kilogram

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MPN/100mL: Most Probable Number of organisms per 100 millilitres

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Method Blank	In the case of solid samples these are performed on laboratory certified clean sands and in the case of water samples these are performed on de-ionised water.
Surr - Surrogate	The addition of a like compound to the analyte target and reported as percentage recovery.
Duplicate	A second piece of analysis from the same sample and reported in the same units as the result to show comparison.
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QC - Acceptance Criteria

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Results <10 times the LOR : No Limit

Results between 10-20 times the LOR : RPD must lie between 0-50%

Results >20 times the LOR : RPD must lie between 0-30%

Surrogate Recoveries: Recoveries must lie between 50-150%-Phenols & PFASs

PFAS field samples that contain surrogate recoveries in excess of the QC limit designated in QSM 5.1 where no positive PFAS results have been reported have been reviewed and no data was affected.

QC Data General Comments

1. Where a result is reported as a less than (<), higher than the nominated LOR, this is due to either matrix interference, extract dilution required due to interferences or contaminant levels within the sample, high moisture content or insufficient sample provided.
2. Duplicate data shown within this report that states the word "BATCH" is a Batch Duplicate from outside of your sample batch, but within the laboratory sample batch at a 1:10 ratio. The Parent and Duplicate data shown is not data from your samples.
3. Organochlorine Pesticide analysis - where reporting LCS data, Toxaphene & Chlordane are not added to the LCS.
4. Organochlorine Pesticide analysis - where reporting Spike data, Toxaphene is not added to the Spike.
5. Total Recoverable Hydrocarbons - where reporting Spike & LCS data, a single spike of commercial Hydrocarbon products in the range of C12-C30 is added and it's Total Recovery is reported in the C10-C14 cell of the Report.
6. pH and Free Chlorine analysed in the laboratory - Analysis on this test must begin within 30 minutes of sampling.Therefore laboratory analysis is unlikely to be completed within holding time. Analysis will begin as soon as possible after sample receipt.
7. Recovery Data (Spikes & Surrogates) - where chromatographic interference does not allow the determination of Recovery the term "INT" appears against that analyte.
8. Polychlorinated Biphenyls are spiked only using Aroclor 1260 in Matrix Spikes and LCS.
9. For Matrix Spikes and LCS results a dash " -" in the report means that the specific analyte was not added to the QC sample.
10. Duplicate RPDs are calculated from raw analytical data thus it is possible to have two sets of data.

Quality Control Results

Test	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
Method Blank							
Heavy Metals							
Aluminium	mg/L	< 0.05			0.05	Pass	
Barium	mg/L	< 0.02			0.02	Pass	
Beryllium	mg/L	< 0.001			0.001	Pass	
Cadmium	mg/L	< 0.0002			0.0002	Pass	
Chromium	mg/L	< 0.001			0.001	Pass	
Cobalt	mg/L	< 0.001			0.001	Pass	
Iron	mg/L	< 0.05			0.05	Pass	
Lead	mg/L	< 0.001			0.001	Pass	
Manganese	mg/L	< 0.005			0.005	Pass	
Mercury	mg/L	< 0.0001			0.0001	Pass	
Molybdenum	mg/L	< 0.005			0.005	Pass	
Nickel	mg/L	< 0.001			0.001	Pass	
Selenium	mg/L	< 0.001			0.001	Pass	
Strontium	mg/L	< 0.005			0.005	Pass	
Uranium	mg/L	< 0.005			0.005	Pass	
Zinc	mg/L	< 0.005			0.005	Pass	
LCS - % Recovery							
Heavy Metals							
Aluminium	%	101			80-120	Pass	
Barium	%	118			80-120	Pass	
Beryllium	%	92			80-120	Pass	
Cadmium	%	96			80-120	Pass	
Chromium	%	99			80-120	Pass	
Cobalt	%	101			80-120	Pass	
Iron	%	99			80-120	Pass	
Lead	%	102			80-120	Pass	
Manganese	%	103			80-120	Pass	
Mercury	%	99			75-125	Pass	
Molybdenum	%	98			80-120	Pass	
Nickel	%	99			80-120	Pass	
Selenium	%	102			80-120	Pass	
Strontium	%	106			80-120	Pass	
Thorium	%	99			70-130	Pass	
Uranium	%	97			80-120	Pass	
Zinc	%	104			80-120	Pass	

Test	Lab Sample ID	QA Source	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
Spike - % Recovery									
Heavy Metals				Result 1					
Aluminium	M18-Jn00399	NCP	%	91			75-125	Pass	
Barium	M18-Jn00399	NCP	%	99			75-125	Pass	
Beryllium	M18-Jn00399	NCP	%	87			75-125	Pass	
Cadmium	M18-Jn00399	NCP	%	100			75-125	Pass	
Chromium	M18-Jn00399	NCP	%	98			75-125	Pass	
Cobalt	M18-Jn00399	NCP	%	100			75-125	Pass	
Iron	M18-Jn00399	NCP	%	93			75-125	Pass	
Lead	M18-Jn00399	NCP	%	103			75-125	Pass	
Manganese	M18-Jn00399	NCP	%	94			75-125	Pass	
Mercury	M18-Jn00399	NCP	%	102			70-130	Pass	
Molybdenum	M18-Jn00399	NCP	%	99			75-125	Pass	

Test	Lab Sample ID	QA Source	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
Nickel	M18-Jn00399	NCP	%	97			75-125	Pass	
Selenium	M18-Jn00399	NCP	%	95			75-125	Pass	
Strontium	M18-Jn00399	NCP	%	96			75-125	Pass	
Uranium	M18-Jn00399	NCP	%	105			75-125	Pass	
Zinc	M18-Jn00399	NCP	%	99			75-125	Pass	
Test	**Lab Sample ID**	**QA Source**	**Units**	**Result 1**			**Acceptance Limits**	**Pass Limits**	**Qualifying Code**
Duplicate									
Heavy Metals				Result 1	Result 2	RPD			
Aluminium	M18-Jn00399	NCP	mg/L	< 0.05	< 0.05	<1	30%	Pass	
Barium	M18-Jn00399	NCP	mg/L	0.03	0.03	2.0	30%	Pass	
Beryllium	M18-Jn00399	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
Cadmium	M18-Jn00399	NCP	mg/L	< 0.0002	< 0.0002	<1	30%	Pass	
Chromium	M18-Jn00399	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
Cobalt	M18-Jn00399	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
Iron	M18-Jn00399	NCP	mg/L	< 0.05	< 0.05	<1	30%	Pass	
Lead	M18-Jn00399	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
Manganese	M18-Jn00399	NCP	mg/L	< 0.005	< 0.005	<1	30%	Pass	
Mercury	M18-Jn00399	NCP	mg/L	< 0.0001	< 0.0001	<1	30%	Pass	
Molybdenum	M18-Jn00399	NCP	mg/L	< 0.005	< 0.005	<1	30%	Pass	
Nickel	M18-Jn00399	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
Selenium	M18-Jn00399	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
Strontium	M18-Jn00399	NCP	mg/L	0.042	0.041	3.0	30%	Pass	
Uranium	M18-Jn00399	NCP	mg/L	< 0.005	< 0.005	<1	30%	Pass	
Zinc	M18-Jn00399	NCP	mg/L	0.022	0.022	1.0	30%	Pass	

Comments

Sample Integrity

Custody Seals Intact (if used)	N/A
Attempt to Chill was evident	Yes
Sample correctly preserved	Yes
Appropriate sample containers have been used	Yes
Sample containers for volatile analysis received with minimal headspace	Yes
Samples received within HoldingTime	Yes
Some samples have been subcontracted	No

Qualifier Codes/Comments

Code	Description
G01	The LORs have been raised due to matrix interference

Authorised By

Robert Johnston	Analytical Services Manager
Alex Petridis	Senior Analyst-Metal (VIC)

Glenn Jackson
National Operations Manager

Final report - this Report replaces any previously issued Report

- Indicates Not Requested

* Indicates NATA accreditation does not cover the performance of this service

Measurement uncertainty of test data is available on request or please click here.

Sample	Al	Co	Cr	Fe	Mn	Ni	Zn	As
UNITS	%	ppm	ppm	%	ppm	ppm	ppm	ppm
BLANK 1	-0.01	-1	-5	-0.01	-1	-1	-1	-0.2
S1 - Waste	-0.01	2	-5	-0.01	3	20	-1	-0.2
S1 - Waste	-0.01	3	-5	-0.01	2	21	-1	-0.2
S2 - Waste	-0.01	1	-5	-0.01	2	1	-1	-0.2
Potash	-0.01	1	-5	-0.01	-1	-1	-1	-0.2
Potash Rpt	-0.01	1	-5	-0.01	1	1	-1	-0.2
Gannet ST-	0.22	21	15	1.07	67	28	36	12
STD 1.1	0.2	20	10	1.04	65	26	35	11.8
Gannet ST-	0.63	6	5	1.78	175	8	39	
STD 2.1	0.63	7	5	1.79	180	8	40	-0.2
Gannet ST-589								
STD 3.1	0.7	9	10	2.11	211	11	45	0.4

Sample Preparation

No sample preparation was required on these samples.

Analytical Methods

The samples have been digested with Aqua Regia. This partial digest is extremely efficient for extraction of Gold. Easily digested elements show good recoveries however others (particularly the refractory oxides and silicates) are poorly extracted.

Al Co Cr Fe Mn Ni Zn
determined by Inductively Coupled Plasma (ICP) Optical Emission Spectrometry.

The samples have been digested with Aqua Regia. This partial digest is extremely efficient for extraction of Gold. Easily digested elements show good recoveries however others (particularly the refractory oxides and silicates) are poorly extracted.

As Ba Cd Be Hg Mo Pb Th Se
determined by Inductively Coupled Plasma (ICP) Mass Spectrometry.

Special Messages

Ba ppm	Cd ppm	Be ppm	Hg ppm	Mo ppm	Pb ppm	Th ppm	Se ppm	Sr ppm
-1	-0.05	-0.001	-0.01	-0.1	-1	-0.02	-1	-0.1
-1	-0.05	0.001	-0.01	-0.1	-1	-0.02	-1	29
-1	-0.05	-0.001	-0.01	-0.1	-1	-0.02	-1	28.4
-1	-0.05	-0.001	-0.01	-0.1	-1	-0.02	-1	28.4
-1	-0.05	-0.001	-0.01	-0.1	2	0.02	-1	8.3
-1	-0.05	-0.001	-0.01	-0.1	2	0.02	-1	8.3
5	-0.05	0.1	-0.01	9.7	36	0.36	-1	6.6
4	-0.05	0.095	-0.01	9.4	36	0.36	-1	6.5
37	0.05	0.246	-0.01	34.4	14	13.5	-1	13.7
47	-0.05	0.253	-0.01	1.1	14	13.1	-1	12.8

Sr	U

U ppm
-0.02
-0.02
-0.02
-0.02
0.12
0.12
0.16
0.16
5.74
5.72

Sample	Al	Co	Cr	Fe	Mn	Ni	Zn	As
UNITS	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	ug/L
BLANK 1	-1	-0.5	-0.5	-0.5	-0.5	-0.5	-0.5	-10
MC36-11	-1	-0.5	-0.5	-0.5	-0.5	-0.5	0.5	20
MA07	-1	-0.5	-0.5	-0.5	-0.5	-0.5	-0.5	10
MA07 Rpt	-1	-0.5	-0.5	0.5	-0.5	-0.5	-0.5	20
BLANK 2	-1	-0.5	-0.5	-0.5	-0.5	-0.5	-0.5	-10
STFUS2	100	10	20	200	20	20	20	
STD 1.1	99	10.5	20	200	20	20	20	
CaMg1000	-1	-0.5	-0.5	-0.5	-0.5	-0.5	-0.5	
STD 2.1	-1	0.5	-0.5	0.5	-0.5	0.5	-0.5	
Mg10000	4	1		2.5	1.5	1	1	
STD 3.1	3	-0.5	0.5	3	2	1	1.5	
ME SOLN1								
STD 4.1	2	0.5	-0.5	2	-0.5	-0.5	0.5	
Na10000	-1	-0.5	-0.5	-0.5	-0.5	-0.5	-0.5	
STD 5.1	-1	-0.5	-0.5	0.5	-0.5	-0.5	-0.5	
NA 100000								
STD 6.1	-1	0.5	-0.5	0.5	-0.5	0.5	0.5	

Sample Preparation

No sample preparation was required on these samples.

Analytical Methods

The solutions have not been treated other than by dilution.

Al Co Cr Fe Mn Ni Zn

determined by Inductively Coupled Plasma (ICP) Optical Emission Spectrometry.

The solutions have not been treated other than by dilution.

As Ba Cd Be Mo Pb Th Se U

determined by Inductively Coupled Plasma (ICP) Mass Spectrometry.

Special Messages

Ba	Cd	Be	Mo	Pb	Th	Se	U
ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L
-10	-10	-1	-10	-50	-1	-100	-1
20	-10	-1	-10	-50	-1	-100	1
20	-10	-1	10	-50	2	-100	2
20	-10	-1	10	-50	2	-100	1
-10	-10	-1	-10	-50	-1	-100	-1

Sample	U	Th	Al	Fe	As	Cr	Cd	Mn
UNITS	ug/L	ug/L	mg/L	mg/L	ug/L	mg/L	mg/L	mg/L
BLANK 1	-1	-1	-1	-0.5	-10	-0.5	-0.01	-0.5
PPASB1 26,	6	-1	-1	-0.5	70	-0.5	-0.01	2.5
PPASB2 26,	3	-1	1	-0.5	60	-0.5	-0.01	1.5
PPASB3 26,	4	-1	1	-0.5	50	-0.5	-0.01	-0.5
PPASB4 26,	2	-1	1	-0.5	100	-0.5	-0.01	-0.5
PPASB4 26,	2	-1	-1	-0.5	90	-0.5	-0.01	-0.5
BLANK 2	-1	-1	-1	-0.5	-10	-0.5	-0.01	-0.5
STFUS2			100	200		20		20
STD 1.1			97	202		20		20
CaMg1000			-1	-0.5		-0.5		-0.5
STD 2.1			1	0.5		-0.5		-0.5
Mg10000			4	2.5				1.5
STD 3.1			3	2.5		-0.5		2
S 10000K								
STD 4.1			2	0.5		-0.5		-0.5
ME SOLN1								
STD 5.1			1	1		-0.5		-0.5
Na10000			-1	-0.5		-0.5		-0.5
STD 6.1			1	-0.5		-0.5		-0.5
NA 100000								
STD 7.1			1	0.5		-0.5		-0.5

Sample Preparation

No sample preparation was required on these samples.

Analytical Methods

The solutions have not been treated other than by dilution.

U Th As Cd Se Ba Be Co Pb

determined by Inductively Coupled Plasma (ICP) Mass Spectrometry.

The solutions have not been treated other than by dilution.

Al Fe Cr Mn Ni Zn

determined by Inductively Coupled Plasma (ICP) Optical Emission Spectrometry.

Special Messages

Ni	Se	Zn	Ba	Be	Co	Pb	Mo	Sr
mg/L	mg/L	mg/L	mg/L	ug/L	mg/L	ug/L	mg/L	mg/L
-0.5	-0.1	-0.5	-0.01	-1	-0.01	-50	-0.01	-0.005
-0.5	0.2	-0.5	0.03	-1	-0.01	250	0.06	6.04
-0.5	-0.1	-0.5	0.02	-1	-0.01	150	0.03	9.08
-0.5	-0.1	-0.5	0.02	-1	-0.01	-50	-0.01	9.19
-0.5	0.2	-0.5	0.02	-1	-0.01	100	0.02	9.29
-0.5	0.2	0.5	0.02	-1	-0.01	100	0.02	9.42
-0.5	-0.1	-0.5	-0.01	-1	-0.01	-50	-0.01	-0.005
20		20						
20		20.5						
-0.5		-0.5						
1		-0.5						
1		1						
-0.5		1.5						
-0.5		-0.5						
-0.5		0.5						
-0.5		-0.5						
-0.5		-0.5						
-0.5		-0.5						

Mo	Sr	Hg

Hg
mg/L
-0.001
0.007
0.003
-0.001
-0.001
-0.001
-0.001