



Australian Laboratory Services Pty. Ltd.

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No: 825, Corporate Site No: 23001.

## QC CERTIFICATE PH18191327

Project: THOMAS CREEK

P.O. No.: SSF007

This report is for 220 Drill Core samples submitted to our lab in Perth, WA, Australia  
on 1-AUG-2018.

The following have access to data associated with this certificate:

ANDY RUST

Page: 1  
Total # Pages: 7 (A - D)  
Plus Appendix Pages  
Finalized Date: 23-AUG-2018  
Account: ACCELE

## SAMPLE PREPARATION

ALS CODE	DESCRIPTION
WEI-21	Received Sample Weight
LEV-01	Waste Disposal Levy
TRSPEC-20	Spectral Scan VNIR and SWIR
CRU-31	Fine crushing - 70% <2mm
SPLIT-D	Create D Split
CRU-QC	Crushing QC Test
LOG-22	Sample login - Rcd w/o BarCode
SAM-COR01	Sample Core from Boxes - Regular
CRU-21	Crush entire sample >70% -6 mm
PUL-23	Pulv Sample - Split/Retain
BAG-01	Bulk Master for Storage
SPL-21	Split sample - riffle splitter
PUL-QC	Pulverizing QC Test

## ANALYTICAL PROCEDURES

ALS CODE	DESCRIPTION
ME-MS61	48 element four acid ICP-MS
Au-AA25	Ore Grade Au 30g FA AA finish AAS

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

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

Signature:

Cameron Brosnan, Laboratory Manager, Perth



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Page: 2 - A  
Total # Pages: 7 (A - D)  
Plus Appendix Pages  
Finalized Date: 23-AUG-2018  
Account: ACCELE

## QC CERTIFICATE OF ANALYSIS PH18191327

Method Analyte Units LOD	Au-AA25 Au ppm 0.01	ME-MS61 Ag ppm 0.01	ME-MS61 Al % 0.01	ME-MS61 As ppm 0.2	ME-MS61 Ba ppm 10	ME-MS61 Be ppm 0.05	ME-MS61 Bi ppm 0.01	ME-MS61 Ca % 0.01	ME-MS61 Cd ppm 0.02	ME-MS61 Ce ppm 0.01	ME-MS61 Co ppm 0.1	ME-MS61 Cr ppm 1	ME-MS61 Cs ppm 0.05	ME-MS61 Cu ppm 0.2	ME-MS61 Fe % 0.01
<b>Sample Description</b>	<b>STANDARDS</b>														
G914-10	10.45														
G914-10	10.30														
G914-10	10.05														
Target Range - Lower Bound	9.63														
Upper Bound	10.90														
GBM908-10		2.86	7.06	55.4	1160	1.47	1.12	3.92	1.68	108.0	27.0	143	3.75	3600	5.65
GBM908-10		2.70	7.08	51.0	1100	1.32	1.24	3.72	1.67	103.5	25.6	140	3.68	3510	5.57
GBM908-10		2.86	7.36	55.8	1130	1.43	1.33	3.75	1.73	103.0	26.6	141	3.82	3580	5.74
Target Range - Lower Bound		2.60	6.40	50.2	930	1.27	1.12	3.33	1.53	99.0	24.0	125	3.44	3350	4.98
Upper Bound		3.20	7.84	61.8	1280	1.66	1.39	4.10	1.91	121.0	29.6	155	4.32	3850	6.10
JK-17	1.96														
JK-17	1.97														
Target Range - Lower Bound	1.87														
Upper Bound	2.13														
LEA-16	0.52														
LEA-16	0.51														
LEA-16	0.49														
LEA-16	0.51														
Target Range - Lower Bound	0.46														
Upper Bound	0.54														
MRGeo08		4.58	7.96	30.6	1180	3.42	0.75	2.80	2.34	87.4	20.8	90	13.75	647	4.25
MRGeo08		4.17	7.85	31.1	1120	3.39	0.64	2.64	2.17	70.9	19.5	93	11.75	620	4.02
MRGeo08		4.35	7.81	32.6	1090	3.50	0.64	2.56	2.29	77.9	19.7	87	12.45	607	3.93
Target Range - Lower Bound		4.00	6.64	29.5	920	2.98	0.60	2.35	2.00	66.2	17.7	81	11.20	587	3.55
Upper Bound		4.92	8.14	36.5	1270	3.76	0.76	2.90	2.48	81.0	21.9	102	13.80	675	4.37
OGGeo08		20.1	7.29	118.0	580	3.19	11.00	2.40	19.70	75.5	101.5	81	11.95	8950	5.85
OGGeo08		18.85	6.99	118.0	250	3.03	10.15	2.21	18.85	70.6	97.7	84	11.05	8410	5.44
OGGeo08		19.80	7.26	118.0	270	2.91	10.20	2.27	19.10	73.6	96.7	85	11.25	8490	5.69
OGGeo08		19.45	7.16	120.5	310	2.93	10.25	2.24	19.20	72.2	96.4	86	11.15	8520	5.51
Target Range - Lower Bound		18.15	6.07	106.0	700	2.59	9.44	1.98	16.70	64.8	87.2	78	9.85	7800	4.81
Upper Bound		22.2	7.44	130.0	980	3.27	11.55	2.44	20.5	79.2	107.0	98	12.15	8980	5.91
OREAS 24b		0.08	7.57	8.3	740	2.57	0.68	1.07	0.05	87.6	15.9	117	11.00	36.9	4.40
OREAS 24b		0.07	7.59	8.2	760	2.53	0.87	1.08	0.04	85.3	15.4	117	10.90	38.2	4.47
OREAS 24b		0.07	7.81	7.8	740	2.06	0.52	1.07	0.03	78.9	14.9	119	9.92	35.3	4.37
OREAS 24b		0.07	7.93	9.2	750	2.57	0.64	1.08	0.05	84.7	15.8	121	10.45	35.3	4.43
OREAS 24b		0.07	8.07	8.6	750	2.59	0.61	1.09	0.05	86.1	16.2	121	10.50	37.3	4.47
OREAS 24b		0.07	7.67	9.3	720	2.36	0.63	1.04	0.04	79.8	15.1	120	10.15	35.2	4.27



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Project: THOMAS CREEK

Page: 2 - B  
Total # Pages: 7 (A - D)  
Plus Appendix Pages  
Finalized Date: 23-AUG-2018  
Account: ACCELE

## QC CERTIFICATE OF ANALYSIS PH18191327

Method Analyte Units LOD	ME-MS61 Ga ppm 0.05	ME-MS61 Ge ppm 0.05	ME-MS61 Hf ppm 0.1	ME-MS61 In ppm 0.005	ME-MS61 K % 0.01	ME-MS61 La ppm 0.5	ME-MS61 Li ppm 0.2	ME-MS61 Mg % 0.01	ME-MS61 Mn ppm 5	ME-MS61 Mo ppm 0.05	ME-MS61 Na % 0.01	ME-MS61 Nb ppm 0.1	ME-MS61 Ni ppm 0.2	ME-MS61 P ppm 10	ME-MS61 Pb ppm 0.5
<b>Sample Description</b>															
<b>STANDARDS</b>															
G914-10															
G914-10															
G914-10															
Target Range - Lower Bound															
Upper Bound															
GBM908-10	19.70	0.15	3.9	0.078	2.17	54.9	12.3	1.90	816	64.9	2.22	10.3	2210	990	2070
GBM908-10	20.5	0.32	3.6	0.076	2.12	52.5	9.9	1.77	811	63.1	2.11	9.9	2200	980	1970
GBM908-10	21.0	0.17	3.6	0.073	2.15	52.0	10.9	1.84	809	62.9	2.23	10.2	2330	990	2090
Target Range - Lower Bound	18.65	0.13	3.3	0.064	1.87	49.0	9.8	1.61	715	57.9	1.93	9.5	2020	880	1845
Upper Bound	22.9	0.35	4.3	0.092	2.31	61.0	12.4	1.99	885	70.9	2.38	11.9	2470	1100	2250
JK-17															
JK-17															
Target Range - Lower Bound															
Upper Bound															
LEA-16															
LEA-16															
LEA-16															
LEA-16															
Target Range - Lower Bound															
Upper Bound															
MRGeo08	19.25	0.16	3.5	0.196	3.32	43.6	35.2	1.45	590	15.80	2.10	21.8	723	1100	1140
MRGeo08	19.25	0.23	3.1	0.166	3.22	33.4	33.5	1.34	573	14.90	2.00	20.6	708	1050	1060
MRGeo08	19.10	0.13	3.2	0.170	3.14	39.0	33.1	1.33	542	14.95	1.98	20.5	690	1040	1065
Target Range - Lower Bound	17.50	<0.05	2.8	0.155	2.79	31.1	29.5	1.17	497	13.65	1.76	19.0	622	930	971
Upper Bound	21.5	0.27	3.6	0.201	3.43	39.1	36.5	1.45	619	16.75	2.18	23.4	760	1160	1185
OGGeo08	17.40	0.15	3.2	1.500	3.17	38.1	32.9	1.38	548	967	1.99	18.8	9280	890	7730
OGGeo08	17.15	0.21	2.8	1.440	2.96	33.8	34.8	1.26	523	895	1.81	17.7	8750	830	7080
OGGeo08	18.10	0.23	2.8	1.540	3.06	36.1	31.4	1.29	534	925	1.88	17.7	9050	890	7290
OGGeo08	17.90	0.29	2.9	1.600	3.02	35.8	33.2	1.27	528	914	1.85	17.5	8930	860	7200
Target Range - Lower Bound	16.05	0.25	2.5	1.320	2.59	31.0	29.7	1.11	447	841	1.62	15.4	8000	760	6520
Upper Bound	19.75	0.49	3.3	1.620	3.19	39.0	36.7	1.38	557	1030	2.00	19.0	9770	950	7970
OREAS 24b	20.4	0.15	4.1	0.077	2.78	44.7	56.7	1.59	437	3.93	0.83	15.7	60.6	680	22.3
OREAS 24b	19.30	0.14	4.0	0.075	2.82	43.5	53.2	1.60	445	3.76	0.83	15.0	59.3	700	23.0
OREAS 24b	19.15	0.25	3.5	0.073	2.78	38.3	45.5	1.57	449	3.56	0.81	13.5	56.1	700	20.4
OREAS 24b	19.15	0.19	3.7	0.068	2.86	41.6	51.4	1.58	457	3.51	0.82	13.2	57.8	690	23.6
OREAS 24b	20.9	0.22	4.0	0.068	2.86	42.9	55.1	1.59	459	3.99	0.83	14.3	60.8	700	23.3
OREAS 24b	19.40	0.21	3.8	0.064	2.75	40.3	50.1	1.53	439	3.83	0.79	13.3	56.6	670	21.2



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Page: 2 - C  
Total # Pages: 7 (A - D)  
Plus Appendix Pages  
Finalized Date: 23-AUG-2018  
Account: ACCELE

## QC CERTIFICATE OF ANALYSIS PH18191327

Sample Description	Method Analyte Units LOD	ME-MS61 Rb ppm 0.1	ME-MS61 Re ppm 0.002	ME-MS61 S % 0.01	ME-MS61 Sb ppm 0.05	ME-MS61 Sc ppm 0.1	ME-MS61 Se ppm 1	ME-MS61 Sn ppm 0.2	ME-MS61 Sr ppm 0.2	ME-MS61 Ta ppm 0.05	ME-MS61 Te ppm 0.05	ME-MS61 Th ppm 0.01	ME-MS61 Ti % 0.005	ME-MS61 Tl ppm 0.02	ME-MS61 U ppm 0.1	ME-MS61 V ppm 1
STANDARDS																
G914-10																
G914-10																
G914-10																
Target Range - Lower Bound																
Upper Bound																
GBM908-10		173.5	<0.002	0.38	1.60	17.6	<1	3.2	302	0.75	0.05	17.50	0.673	1.22	2.3	147
GBM908-10		159.5	<0.002	0.36	1.61	18.1	<1	3.1	291	0.78	0.05	16.65	0.652	1.16	2.2	137
GBM908-10		164.0	<0.002	0.38	1.64	19.0	1	3.0	299	0.79	<0.05	16.75	0.685	1.21	2.0	140
Target Range - Lower Bound		153.0	<0.002	0.33	1.40	17.0	<1	2.7	258	0.68	<0.05	16.55	0.591	1.00	2.0	123
Upper Bound		187.0	0.006	0.43	2.01	21.0	3	3.9	316	0.97	0.16	20.3	0.733	1.40	2.6	153
JK-17																
JK-17																
Target Range - Lower Bound																
Upper Bound																
LEA-16																
LEA-16																
LEA-16																
LEA-16																
Target Range - Lower Bound																
Upper Bound																
MRGeo08		232	0.009	0.32	4.67	12.7	1	4.2	330	1.67	<0.05	23.3	0.522	1.09	6.8	119
MRGeo08		185.0	0.008	0.30	4.34	12.2	1	3.8	317	1.50	<0.05	18.15	0.499	1.04	5.3	110
MRGeo08		206	0.009	0.30	4.36	12.6	1	3.8	308	1.55	<0.05	21.2	0.498	1.04	5.5	106
Target Range - Lower Bound		173.5	0.005	0.27	3.89	11.1	<1	3.5	277	1.39	<0.05	17.90	0.443	0.89	4.9	97
Upper Bound		212	0.013	0.35	5.39	13.7	4	4.7	339	1.81	0.14	21.9	0.553	1.25	6.2	121
OGGeo08		199.5	1.475	2.98	28.8	10.2	11	14.3	273	1.35	0.13	19.40	0.433	1.78	5.7	96
OGGeo08		185.0	1.330	2.76	24.9	10.4	9	13.9	253	1.33	0.14	18.50	0.405	1.76	5.2	86
OGGeo08		191.5	1.365	2.86	25.3	10.2	10	14.0	260	1.36	0.13	18.35	0.414	1.81	5.3	89
OGGeo08		192.0	1.350	2.83	26.4	10.1	10	13.9	257	1.31	0.15	17.60	0.407	1.71	5.0	88
Target Range - Lower Bound		164.5	1.285	2.51	22.8	9.2	8	12.5	224	1.19	0.09	16.90	0.353	1.43	4.5	77
Upper Bound		201	1.575	3.09	31.0	11.4	14	15.7	274	1.57	0.31	20.7	0.443	1.98	5.8	97
OREAS 24b		167.5	<0.002	0.19	0.93	15.3	<1	4.2	127.5	1.14	<0.05	16.85	0.458	0.89	3.0	111
OREAS 24b		169.0	<0.002	0.19	0.89	14.6	1	4.1	125.5	1.18	<0.05	16.50	0.456	0.85	3.0	111
OREAS 24b		155.0	<0.002	0.19	0.83	14.5	<1	4.1	120.5	1.04	<0.05	14.80	0.441	0.83	2.7	107
OREAS 24b		155.0	<0.002	0.20	0.81	14.6	<1	3.7	122.5	1.13	0.05	16.75	0.440	0.96	2.9	107
OREAS 24b		160.0	<0.002	0.20	0.94	16.0	<1	4.0	127.5	1.10	<0.05	16.35	0.452	0.88	3.0	108
OREAS 24b		153.5	<0.002	0.19	0.93	14.4	<1	3.8	121.0	1.07	<0.05	15.40	0.432	0.87	2.8	105



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Page: 2 - D  
Total # Pages: 7 (A - D)  
Plus Appendix Pages  
Finalized Date: 23-AUG-2018  
Account: ACCELE

## QC CERTIFICATE OF ANALYSIS PH18191327

Sample Description	Method Analyte Units LOD	ME-MS61 W ppm 0.1	ME-MS61 Y ppm 0.1	ME-MS61 Zn ppm 2	ME-MS61 Zr ppm 0.5
STANDARDS					
G914-10					
G914-10					
G914-10					
Target Range - Lower Bound					
Upper Bound					
GBM908-10		3.4	38.2	1080	143.0
GBM908-10		3.3	37.2	1050	132.5
GBM908-10		3.4	35.4	1050	141.0
Target Range - Lower Bound		2.9	35.2	939	117.5
Upper Bound		4.1	43.2	1150	160.5
JK-17					
JK-17					
Target Range - Lower Bound					
Upper Bound					
LEA-16					
LEA-16					
LEA-16					
LEA-16					
Target Range - Lower Bound					
Upper Bound					
MRGeo08		5.1	30.2	839	116.0
MRGeo08		4.7	26.5	798	104.0
MRGeo08		4.5	26.6	761	107.0
Target Range - Lower Bound		4.1	23.8	722	92.2
Upper Bound		5.8	29.3	886	126.0
OGGeo08		4.6	25.3	7620	101.5
OGGeo08		4.5	24.3	7150	90.4
OGGeo08		4.6	25.7	7370	93.8
OGGeo08		4.8	23.7	7270	94.5
Target Range - Lower Bound		3.9	21.1	6500	78.6
Upper Bound		5.4	26.0	7950	107.5
OREAS 24b		3.5	20.5	106	139.0
OREAS 24b		4.2	20.4	107	132.5
OREAS 24b		3.2	19.3	105	124.0
OREAS 24b		3.8	18.7	106	125.0
OREAS 24b		3.4	20.3	107	134.5
OREAS 24b		3.3	26.6	103	125.5



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Page: 3 - A  
Total # Pages: 7 (A - D)  
Plus Appendix Pages  
Finalized Date: 23-AUG-2018  
Account: ACCELE

## QC CERTIFICATE OF ANALYSIS PH18191327

Sample Description	Method Analyte Units LOD	Au-AA25 Au ppm 0.01	ME-MS61 Ag ppm 0.01	ME-MS61 Al % 0.01	ME-MS61 As ppm 0.2	ME-MS61 Ba ppm 10	ME-MS61 Be ppm 0.05	ME-MS61 Bi ppm 0.01	ME-MS61 Ca % 0.01	ME-MS61 Cd ppm 0.02	ME-MS61 Ce ppm 0.01	ME-MS61 Co ppm 0.1	ME-MS61 Cr ppm 1	ME-MS61 Cs ppm 0.05	ME-MS61 Cu ppm 0.2	ME-MS61 Fe % 0.01
STANDARDS																
OREAS 24b		0.08	7.80	8.6	720	2.57	0.58	1.03	0.05	86.8	16.1	111	10.70	38.0	4.35	
Target Range - Lower Bound		0.05	7.02	7.3	600	2.25	0.60	0.94	<0.02	76.8	14.3	105	9.58	35.1	3.94	
Upper Bound		0.10	8.60	9.4	830	2.86	0.76	1.18	0.09	93.8	17.8	131	11.80	40.9	4.84	
OREAS 601		50.0	6.23	288	710	2.05	21.3	1.36	7.89	62.2	5.2	36	6.60	1010	2.52	
OREAS 601		49.1	6.53	331	330	2.15	21.6	1.35	7.87	64.2	5.7	43	6.82	1010	2.51	
OREAS 601		50.3	6.64	338	210	2.02	20.9	1.38	7.71	63.8	5.5	48	6.82	1030	2.56	
OREAS 601		48.6	6.48	333	330	1.97	20.9	1.34	7.62	62.0	5.6	89	6.63	1000	2.53	
Target Range - Lower Bound		44.3	5.66	276	740	1.81	18.80	1.17	7.05	56.7	4.5	37	6.00	939	2.22	
Upper Bound		54.1	6.94	338	1020	2.33	23.0	1.45	8.67	69.3	5.8	47	7.44	1080	2.74	
OREAS 61f	4.79															
OREAS 61f	4.81															
OREAS 61f	4.67															
OREAS 61f	4.70															
OREAS 61f	4.86															
Target Range - Lower Bound	4.31															
Upper Bound	4.89															
BLANKS																
BLANK	<0.01															
BLANK	<0.01															
BLANK	0.01															
BLANK	<0.01															
BLANK	0.01															
BLANK	0.01															
BLANK	0.03															
Target Range - Lower Bound	<0.01															
Upper Bound	0.02															
BLANK		<0.01	0.01	<0.2	<10	<0.05	<0.01	<0.01	<0.02	0.04	0.1	<1	<0.05	1.3	0.01	
BLANK		0.01	0.01	0.2	<10	<0.05	<0.01	<0.01	<0.02	0.01	0.1	<1	<0.05	1.2	0.01	
BLANK		0.01	0.02	<0.2	<10	<0.05	0.01	0.01	<0.02	0.14	0.3	1	<0.05	1.4	0.02	
BLANK		<0.01	<0.01	0.9	<10	<0.05	0.01	<0.01	<0.02	<0.01	<0.1	<1	<0.05	<0.2	<0.01	
BLANK		0.01	<0.01	<0.2	<10	<0.05	<0.01	<0.01	<0.02	0.01	<0.1	1	<0.05	0.2	<0.01	
BLANK		0.01	<0.01	<0.2	<10	<0.05	<0.01	<0.01	<0.02	0.01	<0.1	<1	<0.05	0.2	<0.01	
BLANK		<0.01	<0.01	<0.2	<10	<0.05	0.01	<0.01	<0.02	0.01	<0.1	<1	<0.05	0.4	<0.01	
Target Range - Lower Bound		<0.01	<0.01	<0.2	<10	<0.05	<0.01	<0.01	<0.02	<0.01	<0.1	<1	<0.05	<0.2	<0.01	
Upper Bound		0.02	0.02	0.4	20	0.10	0.02	0.02	0.04	0.02	0.2	2	0.10	0.4	0.02	



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Project: THOMAS CREEK

Page: 3 - B  
Total # Pages: 7 (A - D)  
Plus Appendix Pages  
Finalized Date: 23-AUG-2018  
Account: ACCELE

## QC CERTIFICATE OF ANALYSIS PH18191327

Sample Description	Method Analyte Units LOD	ME-MS61 Ga ppm 0.05	ME-MS61 Ge ppm 0.05	ME-MS61 Hf ppm 0.1	ME-MS61 In ppm 0.005	ME-MS61 K % 0.01	ME-MS61 La ppm 0.5	ME-MS61 Li ppm 0.2	ME-MS61 Mg % 0.01	ME-MS61 Mn ppm 5	ME-MS61 Mo ppm 0.05	ME-MS61 Na % 0.01	ME-MS61 Nb ppm 0.1	ME-MS61 Ni ppm 0.2	ME-MS61 P ppm 10	ME-MS61 Pb ppm 0.5
STANDARDS																
OREAS 24b		21.2	0.13	3.9	0.076	2.76	43.5	56.1	1.53	425	3.92	0.81	14.3	59.7	680	21.4
Target Range - Lower Bound		18.05	<0.05	3.4	0.063	2.52	37.7	48.4	1.39	391	3.46	0.70	13.0	53.8	610	20.3
Upper Bound		22.2	0.26	4.4	0.091	3.10	47.1	59.6	1.72	489	4.34	0.88	16.2	66.2	770	25.9
OREAS 601		20.8	0.17	4.7	1.770	2.13	31.2	21.6	0.38	484	3.87	1.48	13.3	23.2	460	342
OREAS 601		20.6	0.13	4.2	1.705	2.15	31.5	22.7	0.38	494	3.92	1.44	12.0	25.3	480	338
OREAS 601		21.5	0.18	4.4	1.845	2.20	30.8	21.3	0.38	499	3.73	1.49	12.8	27.6	490	342
OREAS 601		20.9	0.18	4.4	1.840	2.14	31.1	20.7	0.37	498	5.00	1.45	12.5	47.8	470	328
Target Range - Lower Bound		18.30	<0.05	4.0	1.550	1.88	27.3	18.3	0.34	427	3.43	1.30	11.2	21.7	410	296
Upper Bound		22.5	0.27	5.1	1.910	2.32	34.5	22.8	0.44	533	4.31	1.61	14.0	26.9	530	362
BLANKS																
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BLANK																
Target Range - Lower Bound																
Upper Bound																
BLANK		0.05	<0.05	<0.1	<0.005	<0.01	<0.5	0.2	<0.01	<5	<0.05	<0.01	<0.1	0.3	<10	0.5
BLANK		0.05	<0.05	<0.1	<0.005	<0.01	<0.5	0.2	<0.01	<5	<0.05	<0.01	<0.1	0.3	<10	0.7
BLANK		0.11	<0.05	<0.1	<0.005	<0.01	<0.5	0.4	0.01	<5	0.05	0.01	<0.1	0.5	<10	1.0
BLANK		0.14	0.05	<0.1	<0.005	<0.01	<0.5	0.2	<0.01	<5	<0.05	<0.01	<0.1	<0.2	<10	<0.5
BLANK		0.17	0.07	<0.1	<0.005	<0.01	<0.5	<0.2	<0.01	<5	<0.05	<0.01	<0.1	<0.2	<10	<0.5
BLANK		0.20	0.09	<0.1	<0.005	<0.01	<0.5	0.3	<0.01	<5	<0.05	<0.01	<0.1	<0.2	<10	<0.5
BLANK		<0.05	<0.05	<0.1	<0.005	<0.01	<0.5	<0.2	<0.01	<5	<0.05	<0.01	<0.1	0.2	<10	<0.5
Target Range - Lower Bound		<0.05	<0.05	<0.1	<0.005	<0.01	<0.5	<0.2	<0.01	<5	<0.05	<0.01	<0.1	<0.2	<10	<0.5
Upper Bound		0.10	0.10	0.2	0.010	0.02	1.0	0.4	0.02	10	0.10	0.02	0.2	0.4	20	1.0



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Project: THOMAS CREEK

Page: 3 - C  
Total # Pages: 7 (A - D)  
Plus Appendix Pages  
Finalized Date: 23-AUG-2018  
Account: ACCELE

## QC CERTIFICATE OF ANALYSIS PH18191327

Sample Description	Method Analyte Units LOD	ME-MS61	ME-MS61	ME-MS61	ME-MS61	ME-MS61	ME-MS61	ME-MS61	ME-MS61	ME-MS61	ME-MS61	ME-MS61	ME-MS61	ME-MS61	ME-MS61
		Rb	Re	S	Sb	Sc	Se	Sn	Sr	Ta	Te	Th	Ti	Tl	U
		ppm	ppm	%	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	%	ppm	ppm
		0.1	0.002	0.01	0.05	0.1	1	0.2	0.2	0.05	0.05	0.01	0.005	0.02	0.1
STANDARDS															
OREAS 24b		161.5	<0.002	0.19	0.90	15.6	1	4.1	121.5	1.12	<0.05	16.60	0.440	0.82	2.9
Target Range - Lower Bound		147.5	<0.002	0.17	0.76	13.7	<1	3.6	111.5	0.99	<0.05	14.75	0.387	0.71	2.7
Upper Bound		180.5	0.006	0.23	1.15	16.9	3	4.9	136.5	1.33	0.10	18.05	0.484	1.01	3.5
OREAS 601		95.8	<0.002	1.08	33.9	4.8	13	4.2	234	0.97	15.95	11.05	0.187	1.22	3.8
OREAS 601		94.1	<0.002	1.05	30.1	5.0	12	4.2	233	0.94	15.45	10.75	0.175	1.31	4.1
OREAS 601		93.6	<0.002	1.08	29.8	4.8	12	4.2	237	0.99	15.65	10.60	0.190	1.21	4.0
OREAS 601		91.7	<0.002	1.06	30.5	4.7	12	4.1	236	0.96	15.20	10.00	0.187	1.20	3.8
Target Range - Lower Bound		87.2	<0.002	0.95	25.8	4.3	9	3.5	207	0.89	14.35	9.80	0.157	1.01	3.5
Upper Bound		107.0	0.004	1.19	35.0	5.4	15	4.8	253	1.19	17.65	12.00	0.203	1.41	4.5
OREAS 61f															
OREAS 61f															
OREAS 61f															
OREAS 61f															
Target Range - Lower Bound															
Upper Bound															
BLANKS															
BLANK															
BLANK															
BLANK															
BLANK															
BLANK															
BLANK															
Target Range - Lower Bound															
Upper Bound															
BLANK		0.1	<0.002	<0.01	<0.05	<0.1	<1	<0.2	<0.2	<0.05	<0.05	<0.01	<0.005	0.02	<0.1
BLANK		0.1	<0.002	<0.01	<0.05	<0.1	<1	<0.2	<0.2	<0.05	<0.05	<0.01	<0.005	<0.02	<0.1
BLANK		0.2	<0.002	<0.01	<0.05	0.1	<1	<0.2	0.3	<0.05	<0.05	0.02	<0.005	<0.02	<0.1
BLANK		<0.1	<0.002	<0.01	<0.05	<0.1	<1	<0.2	<0.2	<0.05	<0.05	<0.01	<0.005	<0.02	<0.1
BLANK		<0.1	<0.002	<0.01	<0.05	<0.1	<1	<0.2	<0.2	<0.05	<0.05	<0.01	<0.005	<0.02	<0.1
BLANK		<0.1	<0.002	<0.01	<0.05	<0.1	<1	<0.2	<0.2	<0.05	<0.05	<0.01	<0.005	<0.02	<0.1
BLANK		<0.1	<0.002	<0.01	<0.05	<0.1	<1	<0.2	<0.2	<0.05	<0.05	<0.01	<0.005	<0.02	<0.1
Target Range - Lower Bound		<0.1	<0.002	<0.01	<0.05	<0.1	<1	<0.2	<0.2	<0.05	<0.05	<0.01	<0.005	<0.02	<0.1
Upper Bound		0.2	0.004	0.02	0.10	0.2	2	0.4	0.4	0.10	0.10	0.02	0.010	0.04	0.2





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Project: THOMAS CREEK

Page: 3 - D  
Total # Pages: 7 (A - D)  
Plus Appendix Pages  
Finalized Date: 23-AUG-2018  
Account: ACCELE

**QC CERTIFICATE OF ANALYSIS PH18191327**

Sample Description	Method Analyte Units LOD	ME-MS61 W ppm 0.1	ME-MS61 Y ppm 0.1	ME-MS61 Zn ppm 2	ME-MS61 Zr ppm 0.5
STANDARDS					
OREAS 24b		3.9	22.0	102	135.5
Target Range - Lower Bound		3.0	18.3	93	113.5
Upper Bound		4.3	22.5	118	154.5
OREAS 601		5.8	11.9	1360	162.0
OREAS 601		5.3	11.6	1380	154.5
OREAS 601		5.8	12.0	1380	166.5
OREAS 601		6.1	10.7	1360	162.0
Target Range - Lower Bound		4.8	10.0	1195	131.5
Upper Bound		6.8	12.4	1465	179.0
OREAS 61f					
OREAS 61f					
OREAS 61f					
OREAS 61f					
OREAS 61f					
Target Range - Lower Bound					
Upper Bound					
BLANKS					
BLANK					
BLANK					
BLANK					
BLANK					
BLANK					
BLANK					
BLANK					
Target Range - Lower Bound					
Upper Bound					
BLANK		<0.1	<0.1	<2	<0.5
BLANK		<0.1	<0.1	<2	<0.5
BLANK		<0.1	<0.1	3	<0.5
BLANK		<0.1	<0.1	<2	<0.5
BLANK		<0.1	<0.1	<2	<0.5
BLANK		<0.1	<0.1	<2	<0.5
BLANK		<0.1	<0.1	<2	<0.5
Target Range - Lower Bound		<0.1	<0.1	<2	<0.5
Upper Bound		0.2	0.2	4	1.0



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Project: THOMAS CREEK

Page: 4 - A  
Total # Pages: 7 (A - D)  
Plus Appendix Pages  
Finalized Date: 23-AUG-2018  
Account: ACCELE

## QC CERTIFICATE OF ANALYSIS PH18191327

Sample Description	Method Analyte Units LOD	Au-AA25 Au ppm 0.01	ME-MS61 Ag ppm 0.01	ME-MS61 Al % 0.01	ME-MS61 As ppm 0.2	ME-MS61 Ba ppm 10	ME-MS61 Be ppm 0.05	ME-MS61 Bi ppm 0.01	ME-MS61 Ca % 0.01	ME-MS61 Cd ppm 0.02	ME-MS61 Ce ppm 0.01	ME-MS61 Co ppm 0.1	ME-MS61 Cr ppm 1	ME-MS61 Cs ppm 0.05	ME-MS61 Cu ppm 0.2	ME-MS61 Fe % 0.01
DUPLICATES																
ORIGINAL		0.03														
DUP		0.04														
Target Range - Lower Bound		0.02														
Upper Bound		0.05														
ORIGINAL		<0.01														
DUP		<0.01														
Target Range - Lower Bound		<0.01														
Upper Bound		0.02														
ORIGINAL		<0.01														
DUP		<0.01														
Target Range - Lower Bound		<0.01														
Upper Bound		0.02														
TCD 333			0.02	7.50	6.4	220	1.41	0.22	3.01	<0.02	34.7	46.0	185	0.89	47.5	6.12
DUP			0.03	8.14	6.6	240	1.47	0.23	3.25	<0.02	37.0	47.1	191	0.95	51.6	6.55
Target Range - Lower Bound			<0.01	7.42	6.0	200	1.32	0.20	2.96	<0.02	34.0	44.1	178	0.82	47.6	6.01
Upper Bound			0.04	8.22	7.0	260	1.56	0.25	3.30	0.04	37.7	49.0	198	1.02	51.5	6.66
TCD 345		<0.01														
DUP		<0.01														
Target Range - Lower Bound		<0.01														
Upper Bound		0.02														
TCD 353			0.03	7.88	4.8	400	1.25	0.11	1.69	<0.02	28.4	30.6	92	1.51	33.5	5.89
DUP			0.03	7.85	4.8	400	1.26	0.11	1.68	<0.02	27.7	30.5	93	1.52	35.3	5.88
Target Range - Lower Bound			0.02	7.46	4.4	360	1.14	0.09	1.59	<0.02	26.6	28.9	87	1.39	33.0	5.58
Upper Bound			0.04	8.27	5.2	440	1.37	0.13	1.78	0.04	29.5	32.2	98	1.64	35.8	6.19
TCD 367			0.11	8.40	8.8	540	1.63	0.21	1.77	<0.02	66.7	52.3	85	2.76	613	5.70
DUP			0.10	8.31	8.8	540	1.61	0.20	1.77	<0.02	64.9	53.9	88	2.71	596	5.61
Target Range - Lower Bound			0.09	7.93	8.2	490	1.49	0.18	1.67	<0.02	62.5	50.3	81	2.55	583	5.36
Upper Bound			0.12	8.78	9.4	590	1.75	0.23	1.87	0.04	69.1	55.9	92	2.92	626	5.95



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Project: THOMAS CREEK

Page: 4 - B  
Total # Pages: 7 (A - D)  
Plus Appendix Pages  
Finalized Date: 23-AUG-2018  
Account: ACCELE

## QC CERTIFICATE OF ANALYSIS PH18191327

Sample Description	Method Analyte Units LOD	ME-MS61 Ga ppm 0.05	ME-MS61 Ge ppm 0.05	ME-MS61 Hf ppm 0.1	ME-MS61 In ppm 0.005	ME-MS61 K % 0.01	ME-MS61 La ppm 0.5	ME-MS61 Li ppm 0.2	ME-MS61 Mg % 0.01	ME-MS61 Mn ppm 5	ME-MS61 Mo ppm 0.05	ME-MS61 Na % 0.01	ME-MS61 Nb ppm 0.1	ME-MS61 Ni ppm 0.2	ME-MS61 P ppm 10	ME-MS61 Pb ppm 0.5
ORIGINAL DUP Target Range - Lower Bound Upper Bound		DUPLICATES														
ORIGINAL DUP Target Range - Lower Bound Upper Bound																
ORIGINAL DUP Target Range - Lower Bound Upper Bound																
ORIGINAL DUP Target Range - Lower Bound Upper Bound																
TCD 333 DUP Target Range - Lower Bound Upper Bound		14.45 15.15 14.00 15.60	0.12 0.13 0.07 0.18	3.5 3.8 3.4 3.9	0.054 0.055 0.047 0.062	1.17 1.25 1.14 1.28	18.0 19.3 17.2 20.1	23.8 24.7 22.8 25.7	3.09 3.36 3.05 3.40	468 505 457 516	6.55 7.90 6.81 7.64	2.87 3.05 2.80 3.12	5.6 5.8 5.3 6.1	48.8 52.2 47.8 53.2	340 370 330 380	1.7 1.8 1.2 2.3
TCD 345 DUP Target Range - Lower Bound Upper Bound																
TCD 353 DUP Target Range - Lower Bound Upper Bound		14.70 14.65 13.90 15.45	0.11 0.11 <0.05 0.17	3.3 3.5 3.1 3.7	0.030 0.032 0.024 0.038	2.02 2.04 1.92 2.14	16.7 16.3 15.2 17.8	29.3 29.5 27.7 31.1	2.94 2.92 2.77 3.09	455 461 430 486	5.80 5.80 5.46 6.14	2.62 2.61 2.47 2.76	5.9 5.9 5.5 6.3	38.7 39.1 36.8 41.0	150 150 130 170	2.1 2.6 1.7 3.0
TCD 367 DUP Target Range - Lower Bound Upper Bound		16.50 16.30 15.55 17.25	0.12 0.14 0.07 0.19	3.0 2.9 2.7 3.2	0.049 0.046 0.040 0.055	2.28 2.26 2.15 2.39	42.1 41.5 39.2 44.4	45.7 43.8 42.3 47.2	3.32 3.31 3.14 3.49	824 827 779 872	3.69 3.50 3.37 3.82	2.14 2.11 2.01 2.24	5.7 5.6 5.3 6.0	92.2 90.4 86.5 96.1	320 320 290 350	3.0 2.9 2.3 3.6



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Project: THOMAS CREEK

Page: 4 - C  
Total # Pages: 7 (A - D)  
Plus Appendix Pages  
Finalized Date: 23-AUG-2018  
Account: ACCELE

## QC CERTIFICATE OF ANALYSIS PH18191327

Sample Description	Method Analyte Units LOD	ME-MS61 Rb ppm 0.1	ME-MS61 Re ppm 0.002	ME-MS61 S % 0.01	ME-MS61 Sb ppm 0.05	ME-MS61 Sc ppm 0.1	ME-MS61 Se ppm 1	ME-MS61 Sn ppm 0.2	ME-MS61 Sr ppm 0.2	ME-MS61 Ta ppm 0.05	ME-MS61 Te ppm 0.05	ME-MS61 Th ppm 0.01	ME-MS61 Ti % 0.005	ME-MS61 Tl ppm 0.02	ME-MS61 U ppm 0.1	ME-MS61 V ppm 1
ORIGINAL DUP Target Range - Lower Bound Upper Bound		DUPLICATES														
ORIGINAL DUP Target Range - Lower Bound Upper Bound																
ORIGINAL DUP Target Range - Lower Bound Upper Bound																
ORIGINAL DUP Target Range - Lower Bound Upper Bound																
TCD 333 DUP Target Range - Lower Bound Upper Bound		71.5 77.3 70.6 78.2	0.005 0.013 0.007 0.011	0.23 0.24 0.21 0.26	0.54 0.56 0.46 0.64	27.8 29.0 26.9 29.9	<1 <1 <1 2	2.9 3.2 2.7 3.4	218 234 215 238	0.45 0.48 0.39 0.54	<0.05 <0.05 <0.05 0.10	10.75 11.85 10.75 11.90	0.350 0.383 0.343 0.390	0.15 0.16 0.12 0.19	3.0 3.2 2.8 3.4	143 155 141 157
TCD 345 DUP Target Range - Lower Bound Upper Bound																
TCD 353 DUP Target Range - Lower Bound Upper Bound		127.5 125.5 120.0 133.0	0.003 0.004 <0.002 0.004	0.22 0.22 0.20 0.24	0.53 0.51 0.43 0.61	28.7 28.9 27.3 30.3	<1 <1 <1 2	1.6 1.6 1.3 1.9	196.5 196.0 186.0 206	0.47 0.48 0.40 0.55	<0.05 <0.05 <0.05 0.10	12.90 13.25 12.40 13.75	0.405 0.410 0.382 0.433	0.21 0.22 0.18 0.25	2.7 2.7 2.5 2.9	77 78 73 82
TCD 367 DUP Target Range - Lower Bound Upper Bound		150.5 148.0 141.5 157.0	0.008 0.006 0.005 0.009	0.38 0.39 0.36 0.41	0.65 0.52 0.49 0.68	27.9 26.7 25.8 28.8	1 <1 <1 2	2.7 2.6 2.3 3.0	217 214 205 226	0.49 0.49 0.42 0.56	<0.05 <0.05 <0.05 0.10	10.50 10.30 9.87 10.95	0.419 0.412 0.390 0.441	0.27 0.25 0.22 0.30	2.6 2.5 2.3 2.8	111 110 104 117



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Project: THOMAS CREEK

Page: 4 - D  
Total # Pages: 7 (A - D)  
Plus Appendix Pages  
Finalized Date: 23-AUG-2018  
Account: ACCELE

QC CERTIFICATE OF ANALYSIS PH18191327

Sample Description	Method Analyte Units LOD	ME-MS61 W ppm 0.1	ME-MS61 Y ppm 0.1	ME-MS61 Zn ppm 2	ME-MS61 Zr ppm 0.5
ORIGINAL DUP Target Range - Lower Bound Upper Bound		DUPLICATES			
ORIGINAL DUP Target Range - Lower Bound Upper Bound					
ORIGINAL DUP Target Range - Lower Bound Upper Bound					
ORIGINAL DUP Target Range - Lower Bound Upper Bound					
TCD 333 DUP Target Range - Lower Bound Upper Bound		0.7 0.8 0.6 0.9	22.6 24.1 22.1 24.6	25 27 23 29	125.0 137.0 120.5 141.5
TCD 345 DUP Target Range - Lower Bound Upper Bound					
TCD 353 DUP Target Range - Lower Bound Upper Bound		0.6 0.7 0.5 0.8	6.7 6.6 6.2 7.1	35 35 31 39	126.0 122.5 114.5 134.0
TCD 367 DUP Target Range - Lower Bound Upper Bound		1.0 1.0 0.8 1.2	7.6 7.3 7.0 7.9	60 60 55 65	103.0 101.5 94.1 110.5



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Project: THOMAS CREEK

Page: 5 - A  
Total # Pages: 7 (A - D)  
Plus Appendix Pages  
Finalized Date: 23-AUG-2018  
Account: ACCELE

## QC CERTIFICATE OF ANALYSIS PH18191327

Sample Description	Method Analyte Units LOD	Au-AA25 ppm 0.01	ME-MS61 Ag ppm 0.01	ME-MS61 Al % 0.01	ME-MS61 As ppm 0.2	ME-MS61 Ba ppm 10	ME-MS61 Be ppm 0.05	ME-MS61 Bi ppm 0.01	ME-MS61 Ca % 0.01	ME-MS61 Cd ppm 0.02	ME-MS61 Ce ppm 0.01	ME-MS61 Co ppm 0.1	ME-MS61 Cr ppm 1	ME-MS61 Cs ppm 0.05	ME-MS61 Cu ppm 0.2	ME-MS61 Fe % 0.01
DUPLICATES																
TCD 373		0.02														
DUP		0.02														
Target Range - Lower Bound		<0.01														
Upper Bound		0.03														
TCD 387			0.05	8.24	5.0	370	1.19	0.13	1.37	<0.02	27.0	42.8	197	1.51	166.5	4.79
DUP			0.04	8.54	5.5	380	1.26	0.13	1.43	<0.02	27.8	45.0	206	1.58	174.0	5.01
Target Range - Lower Bound			0.03	7.96	4.8	340	1.11	0.11	1.32	<0.02	26.0	41.6	190	1.42	164.0	4.65
Upper Bound			0.06	8.82	5.7	410	1.34	0.15	1.48	0.04	28.8	46.2	213	1.67	176.5	5.16
TCD 393		<0.01														
DUP		<0.01														
Target Range - Lower Bound		<0.01														
Upper Bound		0.02														
TCD 401			0.04	7.88	4.0	630	1.34	0.07	1.54	0.03	61.7	33.0	175	7.77	57.2	5.96
DUP			0.04	8.20	4.1	640	1.46	0.08	1.61	0.03	58.7	34.3	178	8.22	58.6	6.20
Target Range - Lower Bound			0.03	7.63	3.6	580	1.28	0.06	1.49	<0.02	57.2	31.9	167	7.55	55.7	5.77
Upper Bound			0.05	8.45	4.5	690	1.52	0.09	1.66	0.04	63.2	35.4	186	8.44	60.1	6.39
TCD 413		<0.01														
DUP		<0.01														
Target Range - Lower Bound		<0.01														
Upper Bound		0.02														
TCD 421			0.13	8.07	7.5	430	1.55	0.35	1.50	0.02	32.2	137.5	72	2.68	265	4.36
DUP			0.12	8.02	6.5	430	1.55	0.35	1.49	0.02	32.7	133.0	71	2.66	258	4.31
Target Range - Lower Bound			0.11	7.63	6.5	390	1.42	0.32	1.41	<0.02	30.8	128.5	67	2.49	252	4.11
Upper Bound			0.14	8.46	7.6	470	1.68	0.38	1.58	0.04	34.1	142.0	76	2.85	271	4.56
TCD 435			0.12	8.10	8.0	450	1.14	0.52	1.07	0.10	57.4	102.5	112	2.49	265	5.02
DUP			0.12	7.86	8.2	610	1.20	0.52	1.05	0.13	64.1	94.6	113	2.52	261	4.82
Target Range - Lower Bound			0.10	7.57	7.5	480	1.06	0.48	1.00	0.09	57.7	93.5	106	2.33	254	4.66
Upper Bound			0.14	8.39	8.7	580	1.28	0.56	1.12	0.14	63.8	103.5	119	2.68	272	5.18
TCD 455			0.02	8.27	5.7	420	2.07	0.13	0.63	<0.02	83.9	40.8	91	12.25	42.7	4.18
DUP			0.02	8.08	5.3	410	1.94	0.12	0.61	0.03	80.5	39.8	87	11.80	41.1	4.08
Target Range - Lower Bound			<0.01	7.76	5.0	370	1.85	0.11	0.58	<0.02	78.1	38.2	84	11.35	40.2	3.91
Upper Bound			0.03	8.59	6.0	460	2.16	0.14	0.66	0.04	86.3	42.4	94	12.70	43.6	4.35



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Project: THOMAS CREEK

Page: 5 - B  
Total # Pages: 7 (A - D)  
Plus Appendix Pages  
Finalized Date: 23-AUG-2018  
Account: ACCELE

## QC CERTIFICATE OF ANALYSIS PH18191327

Sample Description	Method Analyte Units LOD	ME-MS61 Ga ppm 0.05	ME-MS61 Ge ppm 0.05	ME-MS61 Hf ppm 0.1	ME-MS61 In ppm 0.005	ME-MS61 K % 0.01	ME-MS61 La ppm 0.5	ME-MS61 Li ppm 0.2	ME-MS61 Mg % 0.01	ME-MS61 Mn ppm 5	ME-MS61 Mo ppm 0.05	ME-MS61 Na % 0.01	ME-MS61 Nb ppm 0.1	ME-MS61 Ni ppm 0.2	ME-MS61 P ppm 10	ME-MS61 Pb ppm 0.5
DUPLICATES																
TCD 373 DUP																
Target Range - Lower Bound																
Upper Bound																
TCD 387 DUP		14.45	0.11	3.0	0.025	1.65	16.2	38.6	3.00	646	10.40	3.60	5.1	78.6	150	3.2
		15.35	0.11	3.1	0.030	1.71	16.7	39.6	3.16	677	10.85	3.74	5.3	81.7	150	3.5
Target Range - Lower Bound		14.10	<0.05	2.8	0.021	1.59	15.1	36.9	2.92	623	10.05	3.48	4.8	75.9	130	2.7
Upper Bound		15.70	0.17	3.3	0.034	1.77	17.8	41.3	3.24	700	11.20	3.86	5.6	84.4	170	4.0
TCD 393 DUP																
Target Range - Lower Bound																
Upper Bound																
TCD 401 DUP		15.70	0.15	3.5	0.020	1.99	29.2	31.1	2.64	314	0.82	1.42	7.8	50.4	460	3.0
		17.00	0.17	3.8	0.016	2.07	28.1	33.0	2.74	330	0.84	1.48	8.3	51.2	470	2.9
Target Range - Lower Bound		15.50	0.10	3.4	0.012	1.92	26.7	30.2	2.55	301	0.74	1.37	7.5	48.1	430	2.3
Upper Bound		17.20	0.22	3.9	0.024	2.14	30.6	33.9	2.83	343	0.92	1.53	8.6	53.5	500	3.6
TCD 413 DUP																
Target Range - Lower Bound																
Upper Bound																
TCD 421 DUP		15.45	0.14	3.7	0.022	1.30	17.4	31.0	2.06	435	6.98	2.78	6.1	81.6	370	10.3
		16.00	0.15	3.7	0.025	1.28	17.5	31.6	2.03	435	6.72	2.75	6.3	80.2	370	10.0
Target Range - Lower Bound		14.90	0.09	3.4	0.017	1.22	16.1	29.5	1.93	408	6.46	2.62	5.8	76.7	340	9.1
Upper Bound		16.55	0.20	4.0	0.030	1.36	18.8	33.1	2.16	462	7.24	2.91	6.6	85.1	400	11.2
TCD 435 DUP		13.15	0.08	3.8	0.018	2.16	31.7	21.2	1.30	392	3.03	2.50	4.6	48.2	550	12.1
		13.35	0.11	3.7	0.014	2.05	35.0	20.8	1.28	389	3.12	2.43	4.7	47.7	520	11.2
Target Range - Lower Bound		12.55	<0.05	3.5	0.010	1.99	31.2	19.8	1.22	366	2.87	2.33	4.3	45.4	500	10.6
Upper Bound		13.95	0.10	4.0	0.022	2.22	35.5	22.3	1.36	415	3.28	2.60	5.0	50.5	570	12.7
TCD 455 DUP		21.1	0.12	3.0	0.014	1.83	44.0	46.9	3.03	514	0.77	1.20	3.2	35.1	510	2.8
		20.8	0.12	2.8	0.016	1.83	41.9	45.0	2.95	503	0.68	1.18	3.1	33.7	500	2.9
Target Range - Lower Bound		19.85	0.06	2.7	0.009	1.73	40.3	43.5	2.83	478	0.64	1.12	2.9	32.5	470	2.2
Upper Bound		22.0	0.18	3.1	0.021	1.93	45.6	48.4	3.15	539	0.81	1.26	3.4	36.3	540	3.5



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Project: THOMAS CREEK

Page: 5 - C  
Total # Pages: 7 (A - D)  
Plus Appendix Pages  
Finalized Date: 23-AUG-2018  
Account: ACCELE

## QC CERTIFICATE OF ANALYSIS PH18191327

Sample Description	Method Analyte Units LOD	ME-MS61 Rb ppm 0.1	ME-MS61 Re ppm 0.002	ME-MS61 S % 0.01	ME-MS61 Sb ppm 0.05	ME-MS61 Sc ppm 0.1	ME-MS61 Se ppm 1	ME-MS61 Sn ppm 0.2	ME-MS61 Sr ppm 0.2	ME-MS61 Ta ppm 0.05	ME-MS61 Te ppm 0.05	ME-MS61 Th ppm 0.01	ME-MS61 Ti % 0.005	ME-MS61 Tl ppm 0.02	ME-MS61 U ppm 0.1	ME-MS61 V ppm 1
TCD 373 DUP Target Range - Lower Bound Upper Bound		DUPLICATES														
TCD 387 DUP Target Range - Lower Bound Upper Bound		99.8 102.5 96.0 106.5	0.010 0.010 0.008 0.013	0.29 0.30 0.27 0.32	0.55 0.58 0.47 0.66	25.6 27.0 24.9 27.7	<1 <1 <1 2	1.3 1.4 1.1 1.6	194.5 203 188.5 209	0.47 0.47 0.40 0.54	<0.05 <0.05 <0.05 0.10	13.15 13.40 12.60 13.95	0.360 0.373 0.343 0.390	0.18 0.19 0.15 0.22	2.6 2.5 2.3 2.8	73 76 70 79
TCD 393 DUP Target Range - Lower Bound Upper Bound																
TCD 401 DUP Target Range - Lower Bound Upper Bound		108.0 115.5 106.0 117.5	<0.002 <0.002 <0.002 0.004	1.29 1.34 1.24 1.39	0.31 0.33 0.25 0.39	28.0 29.4 27.2 30.2	1 1 <1 2	2.4 2.6 2.2 2.8	174.5 180.5 168.5 186.5	0.47 0.50 0.41 0.56	0.24 0.24 0.18 0.30	10.30 10.30 9.78 10.85	0.351 0.357 0.331 0.377	0.28 0.30 0.25 0.33	2.1 2.1 1.9 2.3	214 223 207 230
TCD 413 DUP Target Range - Lower Bound Upper Bound																
TCD 421 DUP Target Range - Lower Bound Upper Bound		79.5 85.1 78.1 86.5	0.003 <0.002 <0.002 0.004	1.74 1.69 1.62 1.81	0.45 0.46 0.37 0.54	23.0 22.6 21.6 24.0	1 1 <1 2	1.0 1.1 0.8 1.3	181.0 180.0 171.5 189.5	0.44 0.42 0.36 0.50	0.09 0.07 <0.05 0.10	9.77 9.49 9.14 10.10	0.376 0.372 0.350 0.398	0.14 0.14 0.11 0.17	4.3 4.3 4.0 4.6	122 121 114 129
TCD 435 DUP Target Range - Lower Bound Upper Bound		100.5 104.5 97.3 107.5	0.004 0.003 <0.002 0.004	2.87 2.66 2.62 2.91	0.69 0.72 0.60 0.81	22.4 22.4 21.2 23.6	1 1 <1 2	1.2 1.3 1.0 1.5	155.0 151.0 145.0 161.0	0.33 0.32 0.26 0.39	0.26 0.23 0.18 0.31	10.35 9.64 9.49 10.50	0.267 0.264 0.247 0.284	0.20 0.20 0.17 0.24	11.5 11.8 11.0 12.3	81 80 75 86
TCD 455 DUP Target Range - Lower Bound Upper Bound		108.0 105.5 101.5 112.0	<0.002 <0.002 <0.002 0.004	1.53 1.46 1.41 1.58	0.46 0.45 0.37 0.54	29.5 27.8 27.1 30.2	1 1 <1 2	1.3 1.3 1.0 1.6	91.9 89.3 85.9 95.3	0.24 0.23 0.17 0.30	0.07 0.06 <0.05 0.10	9.20 9.06 8.66 9.60	0.252 0.248 0.233 0.268	0.27 0.24 0.22 0.29	2.6 2.5 2.3 2.8	260 254 243 271





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Project: THOMAS CREEK

Page: 5 - D  
Total # Pages: 7 (A - D)  
Plus Appendix Pages  
Finalized Date: 23-AUG-2018  
Account: ACCELE

## QC CERTIFICATE OF ANALYSIS PH18191327

Sample Description	Method Analyte Units LOD	ME-MS61 W ppm 0.1	ME-MS61 Y ppm 0.1	ME-MS61 Zn ppm 2	ME-MS61 Zr ppm 0.5
TCD 373 DUP Target Range - Lower Bound Upper Bound		DUPLICATES			
TCD 387 DUP Target Range - Lower Bound Upper Bound		0.8 0.8 0.6 1.0	5.4 5.7 5.2 5.9	68 71 64 75	105.5 110.0 99.2 116.5
TCD 393 DUP Target Range - Lower Bound Upper Bound					
TCD 401 DUP Target Range - Lower Bound Upper Bound		0.4 0.5 0.3 0.6	19.7 20.6 19.0 21.3	17 17 14 20	130.5 138.0 123.5 145.0
TCD 413 DUP Target Range - Lower Bound Upper Bound					
TCD 421 DUP Target Range - Lower Bound Upper Bound		1.2 1.2 1.0 1.4	10.5 10.9 10.1 11.3	43 43 39 47	140.0 143.0 130.5 152.5
TCD 435 DUP Target Range - Lower Bound Upper Bound		2.3 2.2 2.0 2.5	17.8 18.4 17.1 19.1	35 33 30 38	145.0 145.0 133.5 156.5
TCD 455 DUP Target Range - Lower Bound Upper Bound		2.0 1.8 1.7 2.1	17.0 16.4 15.8 17.6	25 25 22 28	118.0 106.0 103.0 121.0



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Project: THOMAS CREEK

Page: 6 - A  
Total # Pages: 7 (A - D)  
Plus Appendix Pages  
Finalized Date: 23-AUG-2018  
Account: ACCELE

## QC CERTIFICATE OF ANALYSIS PH18191327

Sample Description	Method Analyte Units LOD	Au-AA25 Au ppm 0.01	ME-MS61 Ag ppm 0.01	ME-MS61 Al % 0.01	ME-MS61 As ppm 0.2	ME-MS61 Ba ppm 10	ME-MS61 Be ppm 0.05	ME-MS61 Bi ppm 0.01	ME-MS61 Ca % 0.01	ME-MS61 Cd ppm 0.02	ME-MS61 Ce ppm 0.01	ME-MS61 Co ppm 0.1	ME-MS61 Cr ppm 1	ME-MS61 Cs ppm 0.05	ME-MS61 Cu ppm 0.2	ME-MS61 Fe % 0.01
DUPLICATES																
TCD 469			0.04	7.52	5.2	310	1.35	0.16	0.48	0.04	60.9	49.7	141	10.05	197.5	4.48
DUP			0.05	7.84	5.4	280	1.35	0.16	0.50	0.05	65.9	50.7	141	10.60	199.0	4.58
Target Range - Lower Bound			0.03	7.29	4.8	260	1.23	0.14	0.46	<0.02	60.2	47.6	133	9.76	191.0	4.29
Upper Bound			0.06	8.07	5.8	330	1.47	0.18	0.52	0.07	66.6	52.8	149	10.90	205	4.77
TCD 478		0.01														
DUP		<0.01														
Target Range - Lower Bound		<0.01														
Upper Bound		0.02														
TCD 489			0.02	8.73	7.3	180	0.70	0.22	0.39	<0.02	101.5	68.4	128	6.46	30.3	3.46
DUP			0.03	8.70	7.4	200	0.72	0.21	0.39	<0.02	98.0	67.3	128	6.16	27.2	3.43
Target Range - Lower Bound			<0.01	8.27	6.8	170	0.62	0.19	0.36	<0.02	94.8	64.4	121	5.94	27.5	3.26
Upper Bound			0.04	9.16	7.9	210	0.80	0.24	0.42	0.04	104.5	71.3	135	6.68	30.0	3.63
TCD 502		<0.01														
DUP		<0.01														
Target Range - Lower Bound		<0.01														
Upper Bound		0.02														
TCD 503			0.04	8.98	9.8	970	1.13	0.17	0.67	<0.02	12.45	112.0	50	3.92	28.2	3.92
DUP			0.04	8.66	9.3	940	1.04	0.16	0.65	<0.02	12.35	103.0	48	3.70	25.5	3.72
Target Range - Lower Bound			0.03	8.37	8.9	870	0.98	0.15	0.62	<0.02	11.75	102.0	46	3.57	25.7	3.62
Upper Bound			0.05	9.27	10.2	1040	1.19	0.18	0.70	0.04	13.05	113.0	52	4.05	28.0	4.02
TCD 522		<0.01														
DUP		<0.01														
Target Range - Lower Bound		<0.01														
Upper Bound		0.02														
TCD 523			0.03	8.76	9.6	320	0.90	0.16	0.27	<0.02	66.4	46.7	174	13.15	22.8	3.77
DUP			0.02	8.68	9.8	220	0.89	0.17	0.27	<0.02	68.5	47.1	159	13.35	23.6	3.76
Target Range - Lower Bound			<0.01	8.27	9.0	240	0.80	0.15	0.25	<0.02	64.1	44.5	157	12.55	22.2	3.57
Upper Bound			0.04	9.17	10.4	300	0.99	0.18	0.29	0.04	70.8	49.3	176	13.95	24.2	3.96
TCD 537			0.04	8.74	7.4	210	1.25	0.32	0.34	0.02	65.8	66.6	113	8.95	74.3	4.25
DUP			0.03	9.33	8.0	310	1.36	0.31	0.37	0.02	67.3	69.0	128	9.31	75.2	4.55
Target Range - Lower Bound			0.02	8.57	7.1	230	1.19	0.29	0.33	<0.02	63.2	64.3	113	8.62	71.9	4.17
Upper Bound			0.05	9.50	8.3	290	1.42	0.34	0.38	0.04	69.9	71.3	128	9.64	77.6	4.63



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Project: THOMAS CREEK

Page: 6 - B  
Total # Pages: 7 (A - D)  
Plus Appendix Pages  
Finalized Date: 23-AUG-2018  
Account: ACCELE

## QC CERTIFICATE OF ANALYSIS PH18191327

Sample Description	Method Analyte Units LOD	ME-MS61 Ga ppm 0.05	ME-MS61 Ge ppm 0.05	ME-MS61 Hf ppm 0.1	ME-MS61 In ppm 0.005	ME-MS61 K % 0.01	ME-MS61 La ppm 0.5	ME-MS61 Li ppm 0.2	ME-MS61 Mg % 0.01	ME-MS61 Mn ppm 5	ME-MS61 Mo ppm 0.05	ME-MS61 Na % 0.01	ME-MS61 Nb ppm 0.1	ME-MS61 Ni ppm 0.2	ME-MS61 P ppm 10	ME-MS61 Pb ppm 0.5
DUPLICATES																
TCD 469		17.20	0.14	3.3	0.019	2.33	28.8	31.4	2.26	300	0.94	1.13	2.4	55.9	350	3.6
DUP		17.80	0.17	3.5	0.017	2.42	31.7	31.2	2.33	304	0.93	1.15	2.4	56.6	350	3.9
Target Range - Lower Bound		16.60	0.10	3.1	0.012	2.25	28.2	29.5	2.17	282	0.84	1.07	2.2	53.2	320	3.1
Upper Bound		18.45	0.21	3.7	0.024	2.50	32.3	33.1	2.42	322	1.03	1.21	2.6	59.3	380	4.4
TCD 478																
DUP																
Target Range - Lower Bound																
Upper Bound																
TCD 489		14.85	0.25	4.2	0.015	3.32	50.3	28.4	0.30	76	5.86	0.45	4.0	21.8	520	2.2
DUP		13.50	0.18	4.1	0.016	3.35	48.2	27.1	0.29	75	6.09	0.46	3.4	21.4	530	2.4
Target Range - Lower Bound		13.40	0.15	3.8	0.010	3.16	46.3	26.2	0.27	67	5.63	0.42	3.4	20.3	490	1.7
Upper Bound		14.95	0.28	4.5	0.021	3.51	52.2	29.3	0.32	84	6.32	0.49	4.0	22.9	560	2.9
TCD 502																
DUP																
Target Range - Lower Bound																
Upper Bound																
TCD 503		16.90	0.10	2.8	0.021	2.79	5.5	32.0	2.49	1120	9.69	2.24	4.0	30.5	540	4.0
DUP		15.90	0.20	2.5	0.017	2.65	5.6	29.9	2.37	1070	8.74	2.12	3.7	27.9	490	3.5
Target Range - Lower Bound		15.55	0.09	2.4	0.013	2.57	4.8	29.2	2.30	1035	8.70	2.06	3.6	27.5	480	3.1
Upper Bound		17.25	0.21	2.9	0.025	2.87	6.3	32.7	2.56	1155	9.73	2.30	4.1	30.9	550	4.4
TCD 522																
DUP																
Target Range - Lower Bound																
Upper Bound																
TCD 523		12.15	0.20	3.0	0.015	3.74	32.9	18.6	0.63	117	1.85	0.29	2.9	26.8	520	4.3
DUP		12.75	0.24	2.9	0.013	3.68	34.4	18.8	0.62	117	1.85	0.29	2.7	27.7	510	4.2
Target Range - Lower Bound		11.80	0.16	2.7	0.008	3.51	31.5	17.6	0.58	106	1.71	0.27	2.6	25.7	480	3.5
Upper Bound		13.10	0.28	3.2	0.020	3.91	35.8	19.8	0.67	128	1.99	0.31	3.0	28.8	550	5.0
TCD 537		17.15	0.23	3.4	0.027	2.95	32.1	17.5	1.42	373	2.82	1.17	3.0	36.0	600	3.5
DUP		17.05	0.19	3.4	0.028	3.12	32.9	17.1	1.52	392	2.79	1.25	2.9	36.6	650	3.7
Target Range - Lower Bound		16.20	0.15	3.1	0.021	2.87	30.4	16.2	1.39	358	2.61	1.14	2.7	34.3	580	2.9
Upper Bound		18.00	0.27	3.7	0.034	3.20	34.6	18.4	1.55	407	3.00	1.28	3.2	38.3	670	4.3



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Project: THOMAS CREEK

Page: 6 - C  
Total # Pages: 7 (A - D)  
Plus Appendix Pages  
Finalized Date: 23-AUG-2018  
Account: ACCELE

## QC CERTIFICATE OF ANALYSIS PH18191327

Sample Description	Method Analyte Units LOD	ME-MS61 Rb ppm 0.1	ME-MS61 Re ppm 0.002	ME-MS61 S % 0.01	ME-MS61 Sb ppm 0.05	ME-MS61 Sc ppm 0.1	ME-MS61 Se ppm 1	ME-MS61 Sn ppm 0.2	ME-MS61 Sr ppm 0.2	ME-MS61 Ta ppm 0.05	ME-MS61 Te ppm 0.05	ME-MS61 Th ppm 0.01	ME-MS61 Ti % 0.005	ME-MS61 Tl ppm 0.02	ME-MS61 U ppm 0.1	ME-MS61 V ppm 1
DUPLICATES																
TCD 469		84.1	0.003	3.01	0.47	33.9	2	0.8	91.5	0.19	0.15	13.30	0.174	0.29	3.8	217
DUP		97.8	0.003	3.08	0.46	35.4	2	0.8	94.0	0.19	0.16	14.65	0.180	0.30	4.0	222
Target Range - Lower Bound		86.3	<0.002	2.88	0.38	32.8	<1	0.6	87.9	0.13	0.10	13.25	0.163	0.25	3.6	208
Upper Bound		95.6	0.004	3.21	0.55	36.5	3	1.0	97.6	0.25	0.21	14.70	0.191	0.34	4.2	231
TCD 478																
DUP																
Target Range - Lower Bound																
Upper Bound																
TCD 489		84.9	0.002	3.07	0.64	18.4	2	1.3	111.5	0.32	0.06	5.53	0.190	0.27	12.8	228
DUP		80.4	0.002	3.03	0.57	17.8	2	1.1	106.5	0.29	0.07	5.33	0.164	0.26	12.2	218
Target Range - Lower Bound		78.4	<0.002	2.89	0.51	17.1	<1	0.9	103.5	0.24	<0.05	5.15	0.163	0.23	11.8	211
Upper Bound		86.9	0.004	3.21	0.70	19.1	3	1.5	114.5	0.37	0.10	5.71	0.191	0.30	13.2	235
TCD 502																
DUP																
Target Range - Lower Bound																
Upper Bound																
TCD 503		78.2	<0.002	1.58	0.88	10.7	1	3.1	143.0	0.28	0.05	3.89	0.314	0.20	25.8	119
DUP		79.6	<0.002	1.50	0.80	10.0	<1	2.8	136.5	0.25	<0.05	3.97	0.300	0.18	23.7	112
Target Range - Lower Bound		74.9	<0.002	1.45	0.73	9.7	<1	2.6	132.5	0.20	<0.05	3.72	0.287	0.16	23.4	109
Upper Bound		82.9	0.004	1.63	0.95	11.0	2	3.3	147.0	0.33	0.10	4.14	0.327	0.22	26.1	122
TCD 522																
DUP																
Target Range - Lower Bound																
Upper Bound																
TCD 523		147.0	<0.002	3.20	0.57	14.6	2	1.6	66.9	0.25	0.11	3.21	0.171	0.50	17.7	187
DUP		150.5	0.002	3.15	0.54	14.4	2	1.5	68.4	0.23	0.14	3.22	0.154	0.50	18.0	183
Target Range - Lower Bound		141.0	<0.002	3.01	0.46	13.7	<1	1.3	64.1	0.18	0.07	3.04	0.149	0.44	16.9	175
Upper Bound		156.5	0.004	3.34	0.65	15.3	3	1.8	71.2	0.30	0.18	3.39	0.176	0.56	18.8	195
TCD 537		88.5	<0.002	3.14	0.60	18.2	2	1.6	105.5	0.21	0.20	8.87	0.167	0.39	3.6	130
DUP		87.2	<0.002	3.35	0.60	19.1	2	1.9	108.0	0.22	0.17	8.96	0.173	0.37	3.6	140
Target Range - Lower Bound		83.4	<0.002	3.07	0.51	17.6	<1	1.5	101.0	0.15	0.13	8.46	0.157	0.33	3.3	127
Upper Bound		92.3	0.004	3.42	0.70	19.7	3	2.0	112.5	0.28	0.24	9.37	0.184	0.43	3.9	143



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Project: THOMAS CREEK

Page: 6 - D  
Total # Pages: 7 (A - D)  
Plus Appendix Pages  
Finalized Date: 23-AUG-2018  
Account: ACCELE

## QC CERTIFICATE OF ANALYSIS PH18191327

Sample Description	Method Analyte Units LOD	ME-MS61 W ppm 0.1	ME-MS61 Y ppm 0.1	ME-MS61 Zn ppm 2	ME-MS61 Zr ppm 0.5
DUPLICATES					
TCD 469		1.4	17.8	28	125.0
DUP		1.4	18.7	28	129.5
Target Range - Lower Bound		1.2	17.2	25	117.0
Upper Bound		1.6	19.3	31	137.5
TCD 478					
DUP					
Target Range - Lower Bound					
Upper Bound					
TCD 489		2.9	24.7	4	151.5
DUP		2.6	22.5	4	140.0
Target Range - Lower Bound		2.4	22.3	<2	134.5
Upper Bound		3.1	24.9	6	157.0
TCD 502					
DUP					
Target Range - Lower Bound					
Upper Bound					
TCD 503		6.5	9.9	54	101.5
DUP		6.0	9.4	51	95.2
Target Range - Lower Bound		5.7	9.1	48	90.5
Upper Bound		6.8	10.2	57	106.0
TCD 522					
DUP					
Target Range - Lower Bound					
Upper Bound					
TCD 523		2.9	19.1	6	102.0
DUP		2.7	19.6	6	100.0
Target Range - Lower Bound		2.5	18.3	4	92.9
Upper Bound		3.1	20.4	8	109.0
TCD 537		2.0	19.6	29	133.5
DUP		2.0	19.1	30	133.5
Target Range - Lower Bound		1.8	18.3	26	123.0
Upper Bound		2.3	20.4	33	144.0



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Project: THOMAS CREEK

Page: 7 - A  
Total # Pages: 7 (A - D)  
Plus Appendix Pages  
Finalized Date: 23-AUG-2018  
Account: ACCELE

## QC CERTIFICATE OF ANALYSIS PH18191327

Sample Description	Method Analyte Units LOD	Au-AA25 Au ppm 0.01	ME-MS61 Ag ppm 0.01	ME-MS61 Al % 0.01	ME-MS61 As ppm 0.2	ME-MS61 Ba ppm 10	ME-MS61 Be ppm 0.05	ME-MS61 Bi ppm 0.01	ME-MS61 Ca % 0.01	ME-MS61 Cd ppm 0.02	ME-MS61 Ce ppm 0.01	ME-MS61 Co ppm 0.1	ME-MS61 Cr ppm 1	ME-MS61 Cs ppm 0.05	ME-MS61 Cu ppm 0.2	ME-MS61 Fe % 0.01
DUPLICATES																
ORIGINAL		0.53														
DUP		0.47														
Target Range - Lower Bound		0.47														
Upper Bound		0.54														
ORIGINAL		0.01														
DUP		0.02														
Target Range - Lower Bound		<0.01														
Upper Bound		0.02														
ORIGINAL		0.01														
DUP		0.01														
Target Range - Lower Bound		<0.01														
Upper Bound		0.02														
ORIGINAL		0.32														
DUP		0.31														
Target Range - Lower Bound		0.29														
Upper Bound		0.34														
ORIGINAL		0.19														
DUP		0.21														
Target Range - Lower Bound		0.18														
Upper Bound		0.22														
ORIGINAL		0.26														
DUP		0.26														
Target Range - Lower Bound		0.24														
Upper Bound		0.28														



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Project: THOMAS CREEK

Page: 7 - B  
Total # Pages: 7 (A - D)  
Plus Appendix Pages  
Finalized Date: 23-AUG-2018  
Account: ACCELE

**QC CERTIFICATE OF ANALYSIS PH18191327**

Sample Description	Method Analyte Units LOD	ME-MS61 Ga ppm 0.05	ME-MS61 Ge ppm 0.05	ME-MS61 Hf ppm 0.1	ME-MS61 In ppm 0.005	ME-MS61 K % 0.01	ME-MS61 La ppm 0.5	ME-MS61 Li ppm 0.2	ME-MS61 Mg % 0.01	ME-MS61 Mn ppm 5	ME-MS61 Mo ppm 0.05	ME-MS61 Na % 0.01	ME-MS61 Nb ppm 0.1	ME-MS61 Ni ppm 0.2	ME-MS61 P ppm 10	ME-MS61 Pb ppm 0.5
ORIGINAL DUP Target Range - Lower Bound Upper Bound		DUPLICATES														
ORIGINAL DUP Target Range - Lower Bound Upper Bound																
ORIGINAL DUP Target Range - Lower Bound Upper Bound																
ORIGINAL DUP Target Range - Lower Bound Upper Bound																
ORIGINAL DUP Target Range - Lower Bound Upper Bound																
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ORIGINAL DUP Target Range - Lower Bound Upper Bound																



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No: 825, Corporate Site No: 23001.

Project: THOMAS CREEK

Page: 7 - C  
Total # Pages: 7 (A - D)  
Plus Appendix Pages  
Finalized Date: 23-AUG-2018  
Account: ACCELE

**QC CERTIFICATE OF ANALYSIS PH18191327**

Sample Description	Method Analyte Units LOD	ME-MS61 Rb ppm 0.1	ME-MS61 Re ppm 0.002	ME-MS61 S % 0.01	ME-MS61 Sb ppm 0.05	ME-MS61 Sc ppm 0.1	ME-MS61 Se ppm 1	ME-MS61 Sn ppm 0.2	ME-MS61 Sr ppm 0.2	ME-MS61 Ta ppm 0.05	ME-MS61 Te ppm 0.05	ME-MS61 Th ppm 0.01	ME-MS61 Ti % 0.005	ME-MS61 Tl ppm 0.02	ME-MS61 U ppm 0.1	ME-MS61 V ppm 1
ORIGINAL DUP Target Range - Lower Bound Upper Bound		DUPLICATES														
ORIGINAL DUP Target Range - Lower Bound Upper Bound																
ORIGINAL DUP Target Range - Lower Bound Upper Bound																
ORIGINAL DUP Target Range - Lower Bound Upper Bound																
ORIGINAL DUP Target Range - Lower Bound Upper Bound																
ORIGINAL DUP Target Range - Lower Bound Upper Bound																
ORIGINAL DUP Target Range - Lower Bound Upper Bound																





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Project: THOMAS CREEK

Page: 7 - D  
Total # Pages: 7 (A - D)  
Plus Appendix Pages  
Finalized Date: 23-AUG-2018  
Account: ACCELE

**QC CERTIFICATE OF ANALYSIS PH18191327**

Sample Description	Method Analyte Units LOD	ME-MS61 W ppm 0.1	ME-MS61 Y ppm 0.1	ME-MS61 Zn ppm 2	ME-MS61 Zr ppm 0.5
ORIGINAL DUP Target Range - Lower Bound Upper Bound	DUPLICATES				
ORIGINAL DUP Target Range - Lower Bound Upper Bound					
ORIGINAL DUP Target Range - Lower Bound Upper Bound					
ORIGINAL DUP Target Range - Lower Bound Upper Bound					
ORIGINAL DUP Target Range - Lower Bound Upper Bound					
ORIGINAL DUP Target Range - Lower Bound Upper Bound					
ORIGINAL DUP Target Range - Lower Bound Upper Bound					



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Project: THOMAS CREEK

Page: Appendix 1  
Total # Appendix Pages: 1  
Finalized Date: 23-AUG-2018  
Account: ACCELE

**QC CERTIFICATE OF ANALYSIS PH18191327**

**CERTIFICATE COMMENTS**

**ANALYTICAL COMMENTS**

Applies to Method:

REE's may not be totally soluble in this method.  
ME-MS61

**ACCREDITATION COMMENTS**

Applies to Method:

NATA Accreditation covers the performance of this service but does not cover the performance of ALS Perth Sample Preparation. Corporate Accreditation No: 825, Corporate Site No: 23001. The Technical Signatory is Wendy Wong, Senior QC Chemist  
Au-AA25 ME-MS61

**LABORATORY ADDRESSES**

Applies to Method:

Processed at ALS Perth located at 31 Denninup Way, Malaga, Australia. Processed at ALS Perth Sample Preparation at 79 Distinction Road, Wangara, WA, Australia

Au-AA25	BAG-01	CRU-21	CRU-31
CRU-QC	LEV-01	LOG-22	ME-MS61
PUL-23	PUL-QC	SAM-COR01	SPL-21
SPLIT-D	TRSPEC-20	WEI-21	