



BUREAU VERITAS MINERAL LABORATORIES
Canada

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Bureau Veritas Commodities Canada Ltd.
9050 Shaughnessy St Vancouver British Columbia V6P 6E5 Canada
PHONE (604) 253-3158

Client: Longford Exploration Services Ltd.
6970 Napier Street
Burnaby British Columbia V5B 2C4 Canada

Submitted By: James Rogers
Receiving Lab: Canada-Whitehorse
Received: July 31, 2017
Report Date: August 30, 2017
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CERTIFICATE OF ANALYSIS

WHI17000411.1

CLIENT JOB INFORMATION

Project: Catalyst
Shipment ID:
P.O. Number
Number of Samples: 171

SAMPLE DISPOSAL

PICKUP-PLP Client to Pickup Pulps
PICKUP-RJT Client to Pickup Rejects

Bureau Veritas does not accept responsibility for samples left at the laboratory after 90 days without prior written instructions for sample storage or return.

Invoice To: Longford Exploration Services Ltd.
6970 Napier Street
Burnaby British Columbia V5B 2C4
Canada

CC:

SAMPLE PREPARATION AND ANALYTICAL PROCEDURES

Procedure Code	Number of Samples	Code Description	Test Wgt (g)	Report Status	Lab
DY060	171	Dry at 60C			WHI
SS80	171	Dry at 60C sieve 100g to -80 mesh			WHI
SVRJT	171	Save all or part of Soil Reject			WHI
FA330	171	Fire assay fusion Au Pt Pd by ICP-ES	30	Completed	VAN
EN002	171	Environmental disposal charge-Fire assay lead waste			VAN
AQ300	171	1:1:1 Aqua Regia digestion ICP-ES analysis	0.5	Completed	VAN
SHP01	171	Per sample shipping charges for branch shipments			VAN

ADDITIONAL COMMENTS



This report supersedes all previous preliminary and final reports with this file number dated prior to the date on this certificate. Signature indicates final approval; preliminary reports are unsigned and should be used for reference only. All results are considered the confidential property of the client. Bureau Veritas assumes the liabilities for actual cost of analysis only. Results apply to samples as submitted. *** asterisk indicates that an analytical result could not be provided due to unusually high levels of interference from other elements.



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CERTIFICATE OF ANALYSIS

WHI17000411.1

Method	Analyte	FA330	FA330	FA330	AQ300	AQ300	AQ300	AQ300	AQ300	AQ300	AQ300	AQ300	AQ300	AQ300	AQ300	AQ300	AQ300	AQ300	AQ300	AQ300	
		Au	Pt	Pd	Mo	Cu	Pb	Zn	Ag	Ni	Co	Mn	Fe	As	Th	Sr	Cd	Sb	Bi	V	Ca
Unit		ppb	ppb	ppb	ppm	ppm	ppm	ppm	ppm	ppm	ppm	%	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	
MDL		2	3	2	1	1	3	1	0.3	1	1	2	0.01	2	2	1	0.5	3	3	1	0.01
1889901	Soil	8	7	13	<1	47	<3	70	<0.3	28	12	364	2.37	6	<2	46	<0.5	<3	<3	52	1.38
1889902	Soil	11	<3	13	1	52	4	60	<0.3	30	12	378	2.31	8	<2	51	<0.5	<3	<3	52	1.52
1889903	Soil	12	7	17	1	124	4	71	<0.3	43	20	369	3.63	4	<2	111	<0.5	<3	<3	97	1.67
1889904	Soil	7	4	10	<1	117	<3	45	<0.3	26	9	274	1.86	6	<2	54	<0.5	<3	<3	41	2.07
1889905	Soil	7	5	7	<1	57	4	67	<0.3	32	13	325	2.55	6	<2	61	<0.5	<3	<3	59	1.60
1889906	Soil	11	4	8	<1	67	3	61	0.3	34	14	397	2.46	7	<2	53	<0.5	<3	<3	59	1.57
1889907	Soil	7	<3	7	<1	41	4	60	<0.3	31	13	381	2.52	8	<2	54	<0.5	<3	<3	59	1.44
1889908	Soil	6	<3	7	<1	167	<3	93	<0.3	50	15	409	2.59	5	<2	56	1.0	<3	<3	59	2.54
1889909	Soil	9	13	11	<1	99	<3	55	<0.3	32	14	354	2.54	8	<2	61	<0.5	<3	<3	69	2.13
1889910	Soil	9	<3	13	<1	103	4	51	<0.3	33	16	431	2.67	7	<2	63	<0.5	<3	<3	75	2.39
1889911	Soil	6	<3	5	2	40	3	71	<0.3	34	13	348	2.28	10	<2	58	<0.5	<3	<3	56	2.80
1889912	Soil	8	4	4	1	35	5	68	<0.3	32	12	431	2.38	10	<2	57	<0.5	<3	<3	50	2.07
1889913	Soil	7	<3	7	2	59	5	84	<0.3	38	12	444	2.28	11	<2	71	<0.5	<3	<3	49	2.74
1889914	Soil	7	<3	6	1	43	4	56	<0.3	34	11	360	2.24	8	<2	56	<0.5	<3	<3	47	1.66
1889915	Soil	8	<3	3	<1	47	4	67	<0.3	33	14	436	2.52	10	<2	63	<0.5	<3	<3	56	2.15
1889916	Soil	20	10	5	<1	40	3	76	<0.3	31	11	391	2.28	7	<2	63	<0.5	<3	<3	52	1.98
1889917	Soil	7	<3	4	<1	39	4	57	<0.3	30	13	398	2.53	9	<2	54	<0.5	<3	<3	59	1.74
1889918	Soil	6	11	5	1	35	4	56	<0.3	32	13	440	2.51	11	<2	57	<0.5	<3	<3	55	1.41
1889919	Soil	7	3	7	1	37	3	56	<0.3	25	11	446	2.24	8	<2	62	<0.5	<3	<3	48	1.66
1889920	Soil	7	4	7	1	34	<3	63	<0.3	26	12	470	2.28	9	<2	57	<0.5	<3	<3	50	1.41
1889921	Soil	8	10	4	1	38	5	61	<0.3	33	13	456	2.61	10	<2	54	<0.5	<3	<3	58	1.27
1889922	Soil	6	8	9	<1	44	<3	64	<0.3	38	13	462	2.50	8	<2	52	<0.5	<3	<3	58	1.32
1889923	Soil	5	<3	4	1	41	<3	56	<0.3	28	8	427	1.37	5	<2	94	<0.5	<3	<3	27	3.41
1889924	Soil	7	<3	7	1	32	4	62	<0.3	30	12	425	2.30	8	<2	57	<0.5	<3	<3	52	1.49
1889925	Soil	5	<3	5	<1	46	4	61	<0.3	34	15	544	2.48	10	<2	60	<0.5	<3	<3	55	1.65
1889926	Soil	7	7	15	1	30	6	60	<0.3	33	15	444	2.84	10	<2	45	<0.5	<3	<3	66	0.96
1889927	Soil	7	13	6	1	44	<3	61	<0.3	34	12	401	2.36	7	<2	63	0.5	<3	<3	51	1.73
1889928	Soil	5	10	6	1	39	3	69	<0.3	32	13	426	2.64	9	<2	50	<0.5	<3	<3	59	1.15
1889929	Soil	9	<3	4	1	39	4	61	<0.3	29	12	397	2.21	10	<2	44	<0.5	<3	<3	47	0.96
1889930	Soil	7	7	4	1	52	4	67	<0.3	33	12	446	2.33	13	<2	53	<0.5	<3	<3	47	1.24



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CERTIFICATE OF ANALYSIS

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Method Analyte	Unit	AQ300	AQ300	AQ300	AQ300	AQ300	AQ300	AQ300	AQ300	AQ300	AQ300	AQ300	AQ300	AQ300	AQ300	AQ300	AQ300	AQ300
		P	La	Cr	Mg	Ba	Ti	B	Al	Na	K	W	S	Hg	Tl	Ga	Sc	
MDL		%	ppm	ppm	%	ppm	%	ppm	%	%	ppm	%	ppm	ppm	ppm	ppm		
1889901	Soil	0.055	8	36	0.80	97	0.080	<20	1.36	0.03	0.10	<2	<0.05	<1	<5	<5	<5	
1889902	Soil	0.058	9	34	0.69	97	0.064	<20	1.30	0.03	0.07	<2	0.08	<1	<5	<5	<5	
1889903	Soil	0.042	6	62	2.00	55	0.136	<20	2.80	0.03	0.08	<2	0.05	<1	<5	5	6	
1889904	Soil	0.062	8	30	0.69	83	0.054	<20	1.21	0.03	0.07	<2	0.10	<1	<5	<5	<5	
1889905	Soil	0.064	10	47	0.93	102	0.087	<20	1.62	0.04	0.11	<2	0.06	<1	<5	<5	<5	
1889906	Soil	0.054	9	45	0.93	85	0.081	<20	1.57	0.03	0.09	<2	0.07	<1	<5	<5	<5	
1889907	Soil	0.054	9	40	0.90	97	0.076	<20	1.56	0.03	0.09	<2	0.07	<1	<5	<5	<5	
1889908	Soil	0.050	7	45	1.22	65	0.092	<20	1.59	0.03	0.12	<2	0.07	<1	<5	<5	<5	
1889909	Soil	0.064	8	50	1.33	72	0.085	<20	1.80	0.04	0.10	<2	0.08	<1	<5	<5	<5	
1889910	Soil	0.060	8	49	1.58	69	0.095	<20	1.76	0.04	0.10	<2	0.08	<1	<5	<5	<5	
1889911	Soil	0.064	8	53	1.40	87	0.062	<20	1.67	0.03	0.10	<2	0.09	<1	<5	<5	<5	
1889912	Soil	0.058	11	38	0.68	107	0.059	<20	1.36	0.03	0.07	<2	0.11	<1	<5	<5	<5	
1889913	Soil	0.084	10	41	0.78	138	0.046	<20	1.33	0.03	0.09	<2	0.16	<1	<5	<5	<5	
1889914	Soil	0.060	11	33	0.61	99	0.060	<20	1.28	0.03	0.08	<2	0.08	<1	<5	<5	<5	
1889915	Soil	0.058	11	41	0.80	124	0.065	<20	1.43	0.03	0.08	<2	0.08	<1	<5	<5	<5	
1889916	Soil	0.064	10	40	0.82	111	0.065	<20	1.39	0.04	0.09	<2	0.09	<1	<5	<5	<5	
1889917	Soil	0.049	10	41	0.76	98	0.069	<20	1.46	0.04	0.06	<2	0.08	<1	<5	<5	<5	
1889918	Soil	0.066	11	39	0.72	123	0.065	<20	1.43	0.03	0.07	<2	0.07	<1	<5	<5	<5	
1889919	Soil	0.066	10	32	0.56	129	0.058	<20	1.26	0.03	0.07	<2	0.09	<1	<5	<5	<5	
1889920	Soil	0.062	10	35	0.62	128	0.060	<20	1.29	0.03	0.06	<2	0.07	<1	<5	<5	<5	
1889921	Soil	0.061	11	44	0.78	123	0.066	<20	1.62	0.03	0.07	<2	0.07	<1	<5	<5	<5	
1889922	Soil	0.051	10	41	0.75	119	0.074	<20	1.45	0.04	0.06	<2	0.06	<1	<5	<5	<5	
1889923	Soil	0.093	11	21	0.50	101	0.027	<20	0.82	0.02	0.06	<2	0.19	<1	<5	<5	<5	
1889924	Soil	0.062	10	40	0.74	115	0.060	<20	1.38	0.03	0.07	<2	0.08	<1	<5	<5	<5	
1889925	Soil	0.067	12	41	0.72	119	0.064	<20	1.43	0.03	0.07	<2	0.08	<1	<5	<5	<5	
1889926	Soil	0.044	9	50	0.87	103	0.090	<20	1.61	0.03	0.07	<2	0.05	<1	<5	<5	<5	
1889927	Soil	0.075	12	35	0.67	118	0.065	<20	1.42	0.03	0.08	<2	0.08	<1	<5	<5	<5	
1889928	Soil	0.065	10	38	0.69	124	0.074	<20	1.36	0.03	0.07	<2	0.06	<1	<5	<5	<5	
1889929	Soil	0.059	11	35	0.62	100	0.056	<20	1.36	0.03	0.06	<2	0.06	<1	<5	<5	<5	
1889930	Soil	0.070	13	39	0.68	109	0.055	<20	1.49	0.03	0.05	<2	0.07	<1	<5	<5	<5	



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CERTIFICATE OF ANALYSIS

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Method Analyte	Unit	MDL	FA330	FA330	FA330	AQ300	AQ300	AQ300	AQ300	AQ300	AQ300	AQ300	AQ300	AQ300	AQ300	AQ300	AQ300	AQ300	AQ300	AQ300		
			Au	Pt	Pd	Mo	Cu	Pb	Zn	Ag	Ni	Co	Mn	Fe	As	Th	Sr	Cd	Sb	Bi	V	Ca
			ppb	ppb	ppb	ppm	ppm	ppm	ppm	ppm	ppm	ppm	%	ppm	ppm	ppm	ppm	ppm	ppm	ppm	%	
			2	3	2	1	1	3	1	0.3	1	1	2	0.01	2	2	1	0.5	3	3	1	0.01
1889931	Soil		6	10	6	<1	28	4	71	<0.3	33	14	392	2.61	7	<2	53	<0.5	<3	<3	62	1.14
1889932	Soil		6	<3	8	1	43	3	68	<0.3	33	15	568	2.61	10	<2	64	<0.5	<3	<3	60	1.52
1889933	Soil		5	5	8	1	49	7	74	0.4	37	14	470	2.85	10	<2	55	<0.5	<3	<3	61	1.26
1889934	Soil		5	<3	8	1	37	3	67	<0.3	27	10	374	2.21	9	<2	56	<0.5	<3	<3	48	1.36
1889935	Soil		7	12	3	2	51	4	57	<0.3	35	14	460	2.62	11	<2	62	<0.5	<3	<3	59	1.52
1889936	Soil		7	<3	<2	<1	39	3	66	<0.3	32	13	447	2.23	8	<2	59	<0.5	<3	<3	53	1.80
1889937	Soil		9	<3	4	1	42	4	73	<0.3	30	11	309	2.20	10	<2	50	<0.5	<3	<3	43	1.83
1889938	Soil		6	<3	<2	2	35	4	53	<0.3	28	11	321	2.16	9	<2	47	<0.5	<3	<3	45	1.38
1889939	Soil		11	<3	7	1	45	4	69	<0.3	34	12	375	2.32	9	<2	55	<0.5	<3	<3	49	1.82
1889940	Soil		7	<3	<2	1	43	3	70	<0.3	33	11	362	2.38	10	<2	55	<0.5	<3	<3	52	1.73
1889941	Soil		6	<3	8	2	31	6	63	<0.3	26	11	641	2.25	9	<2	52	<0.5	<3	<3	45	1.88
1889942	Soil		8	<3	5	2	40	<3	50	<0.3	31	11	320	2.02	10	<2	80	<0.5	<3	<3	49	5.89
1889943	Soil		9	6	19	<1	100	<3	55	<0.3	35	15	333	2.65	8	<2	69	<0.5	<3	<3	66	2.07
1889944	Soil		6	<3	6	<1	84	5	108	<0.3	43	16	500	3.21	6	<2	36	<0.5	<3	<3	68	0.89
1889945	Soil		9	<3	7	<1	80	5	58	<0.3	33	14	405	2.37	6	<2	49	<0.5	<3	<3	52	1.52
1889946	Soil		8	4	2	<1	55	6	78	<0.3	47	19	621	3.72	6	3	80	<0.5	<3	<3	85	2.90
1889947	Soil		8	5	4	1	31	4	52	<0.3	26	10	297	2.13	6	<2	46	<0.5	<3	<3	47	1.33
1889948	Soil		5	<3	8	1	34	5	89	<0.3	31	15	512	2.72	6	<2	51	<0.5	<3	<3	63	1.43
1889949	Soil		7	<3	<2	1	27	5	56	<0.3	27	12	375	2.46	8	<2	37	<0.5	<3	<3	58	0.81
1889950	Soil		7	6	7	1	29	5	53	<0.3	26	10	278	2.41	8	<2	39	<0.5	<3	<3	54	0.88
1889961	Soil		5	<3	<2	<1	35	5	60	<0.3	30	13	519	2.62	5	<2	118	<0.5	<3	<3	62	4.14
1889962	Soil		6	<3	2	1	55	8	75	<0.3	44	19	654	3.77	4	3	87	<0.5	<3	<3	91	2.98
1889963	Soil		4	3	<2	<1	36	5	61	<0.3	27	14	515	3.15	2	3	44	<0.5	<3	<3	78	0.93
1889964	Soil		7	<3	<2	<1	33	5	52	<0.3	25	11	408	1.99	8	<2	58	<0.5	<3	<3	40	1.53
1889965	Soil		5	3	2	1	18	5	37	<0.3	16	9	282	1.88	5	<2	29	<0.5	<3	<3	46	0.55
1889966	Soil		4	<3	3	1	14	5	57	<0.3	17	8	220	2.05	7	<2	36	<0.5	<3	<3	49	0.55
1889967	Soil		8	<3	7	<1	43	5	48	<0.3	31	6	241	1.84	7	<2	77	<0.5	<3	<3	30	1.87
1889968	Soil		5	<3	<2	1	22	6	40	<0.3	18	11	350	2.19	9	<2	36	<0.5	<3	<3	44	0.66
1889969	Soil		4	<3	3	2	30	5	71	<0.3	28	14	481	2.90	10	<2	37	<0.5	<3	<3	64	0.75
1889970	Soil		5	5	<2	2	24	6	73	<0.3	27	15	459	2.88	9	<2	36	<0.5	<3	<3	62	0.73

This report supersedes all previous preliminary and final reports with this file number dated prior to the date on this certificate. Signature indicates final approval; preliminary reports are unsigned and should be used for reference only.



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Method	Analyte	AQ300	AQ300	AQ300	AQ300	AQ300	AQ300	AQ300	AQ300	AQ300	AQ300	AQ300	AQ300	AQ300	AQ300	AQ300	AQ300
		P	La	Cr	Mg	Ba	Ti	B	Al	Na	K	W	S	Hg	Tl	Ga	Sc
Unit		%	ppm	ppm	%	ppm	%	ppm	%	%	ppm	%	ppm	ppm	ppm	ppm	ppm
MDL		0.001	1	1	0.01	1	0.001	20	0.01	0.01	0.01	0.05	1	5	5	5	5
1889931	Soil	0.069	11	51	0.90	121	0.080	<20	1.77	0.04	0.07	<2	0.06	<1	<5	<5	<5
1889932	Soil	0.074	12	42	0.75	138	0.063	<20	1.54	0.03	0.06	<2	0.08	<1	<5	<5	<5
1889933	Soil	0.072	11	43	0.81	128	0.080	<20	1.59	0.03	0.09	<2	0.07	<1	<5	<5	<5
1889934	Soil	0.067	10	36	0.67	118	0.056	<20	1.42	0.03	0.07	<2	0.09	<1	<5	<5	<5
1889935	Soil	0.071	13	41	0.73	121	0.063	<20	1.51	0.03	0.07	<2	0.07	<1	<5	<5	<5
1889936	Soil	0.063	9	38	0.76	103	0.061	<20	1.35	0.03	0.07	<2	0.08	<1	<5	<5	<5
1889937	Soil	0.066	10	31	0.69	97	0.042	<20	1.27	0.02	0.06	<2	0.08	<1	<5	<5	<5
1889938	Soil	0.059	8	31	0.57	117	0.050	<20	1.12	0.03	0.05	<2	0.07	<1	<5	<5	<5
1889939	Soil	0.068	9	37	0.71	127	0.050	<20	1.30	0.03	0.07	<2	0.08	<1	<5	<5	<5
1889940	Soil	0.072	9	38	0.72	128	0.055	<20	1.31	0.03	0.08	<2	0.07	<1	<5	<5	<5
1889941	Soil	0.059	9	30	0.58	112	0.050	<20	1.17	0.02	0.06	<2	0.10	<1	<5	<5	<5
1889942	Soil	0.053	7	42	1.26	80	0.046	<20	1.42	0.02	0.09	<2	0.06	<1	<5	<5	<5
1889943	Soil	0.060	7	49	1.58	61	0.073	<20	1.82	0.03	0.13	<2	0.08	<1	<5	<5	<5
1889944	Soil	0.048	8	44	1.03	76	0.092	<20	1.63	0.03	0.08	<2	<0.05	<1	<5	<5	<5
1889945	Soil	0.055	8	37	0.87	81	0.066	<20	1.48	0.03	0.08	<2	0.07	<1	<5	<5	<5
1889946	Soil	0.083	13	69	1.40	154	0.099	<20	2.07	0.03	0.18	<2	<0.05	<1	<5	<5	8
1889947	Soil	0.057	8	36	0.62	117	0.048	<20	1.08	0.02	0.06	<2	0.07	<1	<5	<5	<5
1889948	Soil	0.082	10	46	0.92	111	0.065	<20	1.42	0.02	0.11	<2	0.08	<1	<5	<5	<5
1889949	Soil	0.044	7	39	0.72	94	0.062	<20	1.25	0.02	0.07	<2	0.06	<1	<5	<5	<5
1889950	Soil	0.046	7	37	0.67	95	0.055	<20	1.19	0.02	0.06	<2	0.07	<1	<5	<5	<5
1889961	Soil	0.088	10	44	1.10	87	0.101	<20	1.39	0.03	0.11	<2	0.05	<1	<5	<5	5
1889962	Soil	0.086	12	67	1.39	130	0.106	<20	2.00	0.03	0.14	<2	<0.05	<1	<5	<5	8
1889963	Soil	0.064	12	43	0.97	90	0.077	<20	1.55	0.02	0.07	<2	<0.05	<1	<5	<5	7
1889964	Soil	0.064	8	30	0.57	107	0.045	<20	1.06	0.03	0.05	<2	0.07	<1	<5	<5	<5
1889965	Soil	0.034	5	28	0.51	80	0.046	<20	0.97	0.02	0.04	<2	<0.05	<1	<5	<5	<5
1889966	Soil	0.045	6	33	0.67	82	0.049	<20	1.17	0.02	0.06	<2	<0.05	<1	<5	<5	<5
1889967	Soil	0.065	10	26	0.43	158	0.036	<20	0.98	0.02	0.05	<2	0.11	<1	<5	<5	<5
1889968	Soil	0.050	8	30	0.53	98	0.043	<20	1.15	0.02	0.04	<2	0.05	<1	<5	<5	<5
1889969	Soil	0.063	9	44	0.83	111	0.068	<20	1.51	0.02	0.07	<2	0.05	<1	<5	<5	<5
1889970	Soil	0.057	8	45	0.83	110	0.067	<20	1.36	0.02	0.07	<2	<0.05	<1	<5	<5	<5



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Method Analyte Unit MDL	FA330	FA330	FA330	AQ300	AQ300	AQ300	AQ300	AQ300	AQ300	AQ300	AQ300	AQ300	AQ300	AQ300	AQ300	AQ300	AQ300	AQ300	AQ300	AQ300	
	Au	Pt	Pd	Mo	Cu	Pb	Zn	Ag	Ni	Co	Mn	Fe	As	Th	Sr	Cd	Sb	Bi	V	Ca	
	ppb	ppb	ppb	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	%	ppm	ppm	ppm	ppm	ppm	ppm	ppm	%	
	2	3	2	1	1	3	1	0.3	1	1	2	0.01	2	2	1	0.5	3	3	1	0.01	
1889971	Soil	8	<3	<2	1	33	3	55	<0.3	28	13	420	2.60	8	<2	37	<0.5	<3	<3	53	0.83
1889972	Soil	7	<3	4	1	44	5	74	<0.3	45	17	572	3.59	10	2	44	<0.5	<3	<3	70	1.18
1889973	Soil	5	4	7	<1	57	5	56	<0.3	37	16	550	2.82	8	<2	96	<0.5	<3	<3	59	1.81
116701	Soil	5	7	4	<1	22	4	62	<0.3	27	13	438	2.54	8	<2	29	<0.5	<3	<3	55	0.55
116702	Soil	6	7	3	<1	56	7	74	<0.3	43	19	640	3.63	4	3	96	<0.5	<3	<3	87	3.21
116703	Soil	4	7	19	<1	60	8	77	<0.3	45	19	622	3.72	5	3	87	<0.5	<3	<3	91	2.55
116704	Soil	8	<3	6	1	51	6	70	<0.3	44	18	601	3.41	6	2	87	<0.5	<3	<3	82	3.26
116705	Soil	5	<3	4	<1	21	5	35	<0.3	15	7	217	1.71	7	<2	25	<0.5	<3	<3	37	0.52
116706	Soil	4	<3	<2	<1	35	6	39	<0.3	22	9	217	1.97	8	<2	33	<0.5	<3	<3	41	0.72
116707	Soil	5	<3	<2	2	27	7	70	<0.3	26	14	422	3.04	11	<2	38	<0.5	<3	<3	68	0.70
116708	Soil	4	<3	3	<1	28	5	73	<0.3	42	17	467	3.60	6	2	43	<0.5	<3	<3	71	0.70
116709	Soil	9	<3	<2	1	24	5	49	<0.3	29	13	416	2.49	7	<2	35	<0.5	<3	<3	51	0.69
116710	Soil	5	<3	3	<1	26	3	48	<0.3	29	11	367	2.36	6	<2	36	<0.5	<3	<3	46	0.73
116711	Soil	8	<3	<2	1	37	7	73	<0.3	39	15	494	3.26	7	2	43	<0.5	<3	<3	66	0.94
116712	Soil	5	<3	<2	1	35	7	88	<0.3	40	18	590	3.72	7	3	39	<0.5	<3	<3	73	0.89
1889536	Soil	5	<3	3	1	44	<3	62	0.4	26	12	555	2.38	6	<2	57	<0.5	<3	<3	54	1.55
1889537	Soil	6	<3	3	1	38	4	59	<0.3	26	13	460	2.50	10	<2	56	<0.5	<3	<3	56	1.29
1889538	Soil	4	<3	3	<1	54	4	46	<0.3	31	11	325	2.54	7	<2	75	<0.5	<3	<3	59	1.55
1889539	Soil	6	3	3	<1	45	4	37	<0.3	22	8	201	1.83	8	<2	50	<0.5	<3	<3	36	1.47
1889540	Soil	5	<3	4	1	41	4	36	<0.3	19	6	172	1.67	7	<2	43	<0.5	<3	<3	33	1.36
1889541	Soil	5	<3	3	1	53	5	61	<0.3	30	12	330	2.47	8	<2	67	<0.5	<3	<3	54	1.70
1889542	Soil	13	3	12	1	113	6	64	<0.3	48	22	468	3.63	4	<2	107	<0.5	<3	<3	84	1.35
1889543	Soil	8	<3	4	1	59	5	61	<0.3	27	11	352	2.00	7	<2	56	<0.5	<3	<3	43	1.90
1889544	Soil	5	<3	5	<1	60	6	58	<0.3	29	10	359	1.91	7	<2	37	<0.5	<3	<3	40	1.28
1889545	Soil	12	4	15	<1	91	6	55	<0.3	33	13	403	2.33	10	<2	66	<0.5	<3	<3	51	2.37
1889546	Soil	7	3	13	1	82	8	53	<0.3	36	14	387	2.47	10	<2	58	<0.5	<3	<3	54	1.93
1889547	Soil	6	<3	14	1	119	8	58	<0.3	39	16	444	3.05	7	<2	68	<0.5	<3	<3	67	1.53
1889548	Soil	4	<3	12	<1	61	5	63	<0.3	31	13	305	2.52	11	<2	49	<0.5	<3	<3	59	1.48
1889549	Soil	4	<3	<2	2	42	6	61	<0.3	36	15	360	3.44	12	<2	38	<0.5	<3	<3	71	0.54
1889550	Soil	4	<3	2	2	39	8	50	<0.3	31	12	292	3.18	10	<2	38	<0.5	<3	<3	65	0.55



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Method Analyte Unit MDL	AQ300	AQ300	AQ300	AQ300	AQ300	AQ300	AQ300	AQ300	AQ300	AQ300	AQ300	AQ300	AQ300	AQ300	AQ300	AQ300	AQ300
	P %	La ppm	Cr ppm	Mg %	Ba ppm	Ti %	B ppm	Al %	Na %	K %	W ppm	S %	Hg ppm	Tl ppm	Ga ppm	Sc ppm	
1889971	Soil	0.054	11	37	0.67	111	0.051	<20	1.42	0.02	0.05	<2	<0.05	<1	<5	<5	<5
1889972	Soil	0.071	13	55	1.04	171	0.087	<20	1.81	0.03	0.12	<2	<0.05	<1	<5	<5	6
1889973	Soil	0.046	10	41	0.93	111	0.058	<20	1.92	0.03	0.07	<2	0.05	<1	<5	<5	<5
116701	Soil	0.052	7	43	0.81	83	0.066	<20	1.35	0.02	0.07	<2	<0.05	<1	<5	<5	<5
116702	Soil	0.088	12	66	1.46	142	0.111	<20	2.03	0.03	0.13	<2	<0.05	<1	<5	<5	8
116703	Soil	0.083	12	72	1.49	139	0.098	<20	2.18	0.03	0.14	<2	<0.05	<1	<5	<5	9
116704	Soil	0.090	11	68	1.42	124	0.111	<20	1.91	0.03	0.12	<2	<0.05	<1	<5	<5	8
116705	Soil	0.040	6	23	0.42	62	0.040	<20	0.85	0.02	0.04	<2	<0.05	<1	<5	<5	<5
116706	Soil	0.047	8	26	0.46	109	0.038	<20	0.99	0.02	0.04	<2	0.06	<1	<5	<5	<5
116707	Soil	0.056	8	41	0.79	119	0.056	<20	1.51	0.02	0.06	<2	<0.05	<1	<5	<5	<5
116708	Soil	0.075	12	50	1.25	114	0.095	<20	2.04	0.04	0.08	<2	<0.05	<1	<5	<5	6
116709	Soil	0.067	10	32	0.76	96	0.052	<20	1.33	0.03	0.05	<2	<0.05	<1	<5	<5	<5
116710	Soil	0.064	11	30	0.71	95	0.047	<20	1.25	0.03	0.05	<2	<0.05	<1	<5	<5	<5
116711	Soil	0.063	13	43	0.95	142	0.092	<20	1.72	0.03	0.15	<2	<0.05	<1	<5	<5	5
116712	Soil	0.082	15	51	1.22	144	0.095	<20	2.10	0.03	0.16	<2	<0.05	<1	<5	<5	7
1889536	Soil	0.072	8	29	0.65	101	0.066	<20	1.22	0.03	0.07	<2	0.07	<1	<5	<5	<5
1889537	Soil	0.059	8	37	0.76	122	0.073	<20	1.47	0.04	0.07	<2	0.05	<1	<5	<5	<5
1889538	Soil	0.068	9	40	0.79	99	0.077	<20	1.53	0.04	0.07	<2	0.05	<1	<5	<5	<5
1889539	Soil	0.050	7	24	0.45	86	0.047	<20	1.12	0.03	0.04	<2	0.07	<1	<5	<5	<5
1889540	Soil	0.046	6	21	0.39	73	0.041	<20	0.93	0.03	0.04	<2	0.07	<1	<5	<5	<5
1889541	Soil	0.062	8	37	0.89	90	0.067	<20	1.64	0.03	0.09	<2	0.07	<1	<5	<5	<5
1889542	Soil	0.052	4	53	1.67	53	0.169	<20	2.40	0.03	0.15	<2	<0.05	<1	<5	<5	<5
1889543	Soil	0.058	8	30	0.64	79	0.051	<20	1.27	0.03	0.07	<2	0.08	<1	<5	<5	<5
1889544	Soil	0.047	8	28	0.54	73	0.051	<20	1.12	0.04	0.06	<2	<0.05	<1	<5	<5	<5
1889545	Soil	0.072	10	36	0.77	93	0.053	<20	1.54	0.03	0.08	<2	0.09	<1	<5	<5	<5
1889546	Soil	0.063	9	40	0.84	95	0.059	<20	1.61	0.03	0.07	<2	0.08	<1	<5	<5	<5
1889547	Soil	0.056	9	45	1.01	88	0.103	<20	1.88	0.04	0.10	<2	<0.05	<1	<5	<5	<5
1889548	Soil	0.051	8	36	0.79	98	0.064	<20	1.58	0.03	0.06	<2	0.06	<1	<5	<5	<5
1889549	Soil	0.044	11	42	0.81	97	0.078	<20	1.93	0.03	0.06	<2	<0.05	<1	<5	<5	<5
1889550	Soil	0.043	9	38	0.73	77	0.070	<20	1.70	0.03	0.05	<2	<0.05	<1	<5	<5	<5



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Method Analyte Unit MDL	FA330	FA330	FA330	AQ300	AQ300	AQ300	AQ300	AQ300	AQ300	AQ300	AQ300	AQ300	AQ300	AQ300	AQ300	AQ300	AQ300	AQ300	AQ300	AQ300	
	Au	Pt	Pd	Mo	Cu	Pb	Zn	Ag	Ni	Co	Mn	Fe	As	Th	Sr	Cd	Sb	Bi	V	Ca	
	ppb	ppb	ppb	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	%	ppm	ppm	ppm	ppm	ppm	ppm	ppm	%	
	2	3	2	1	1	3	1	0.3	1	1	2	0.01	2	2	1	0.5	3	3	1	0.01	
116736	Soil	4	<3	<2	2	47	7	76	<0.3	37	13	314	3.10	14	<2	32	<0.5	<3	<3	60	0.61
116737	Soil	9	<3	12	1	86	11	104	<0.3	78	21	704	4.22	16	<2	58	<0.5	<3	<3	72	1.48
116738	Soil	10	<3	2	1	29	9	60	<0.3	64	16	469	2.80	12	<2	30	<0.5	<3	<3	53	0.63
116739	Soil	6	4	4	2	69	11	136	0.4	84	22	639	4.12	12	<2	54	<0.5	<3	<3	83	1.09
116740	Soil	6	<3	5	2	76	11	125	0.4	80	21	603	3.85	11	<2	55	<0.5	<3	<3	78	1.25
116741	Soil	5	4	3	2	54	10	118	<0.3	78	20	609	4.55	10	<2	66	<0.5	<3	<3	95	1.24
116742	Soil	5	3	4	3	56	12	106	0.3	58	20	634	3.91	13	<2	44	<0.5	<3	<3	72	0.92
116743	Soil	5	<3	3	1	51	11	99	<0.3	45	14	442	2.84	9	<2	42	<0.5	<3	<3	58	1.11
116744	Soil	4	<3	3	<1	41	4	62	<0.3	48	9	296	1.84	8	<2	39	<0.5	<3	<3	39	1.30
116745	Soil	5	<3	3	2	58	10	90	<0.3	55	17	721	3.14	12	<2	40	<0.5	<3	<3	63	1.14
116746	Soil	4	<3	5	2	50	17	131	<0.3	76	23	790	3.48	20	<2	51	<0.5	<3	<3	67	1.29
116747	Soil	4	<3	4	2	55	10	94	<0.3	46	13	465	2.66	11	<2	45	<0.5	<3	<3	59	1.47
116748	Soil	6	<3	3	2	49	10	77	<0.3	51	17	613	3.33	11	<2	55	<0.5	<3	<3	64	1.23
116749	Soil	5	<3	3	6	61	12	109	0.4	48	15	544	3.19	15	<2	40	<0.5	<3	<3	81	1.08
116750	Soil	6	<3	3	4	63	12	75	<0.3	47	14	498	2.95	13	<2	40	<0.5	<3	<3	64	1.10
1889695	Soil	7	6	6	1	37	8	54	<0.3	25	12	404	2.27	9	<2	54	<0.5	<3	<3	49	1.40
1889696	Soil	10	<3	8	<1	37	6	66	<0.3	24	12	429	2.45	8	<2	56	<0.5	<3	<3	52	1.31
1889697	Soil	7	<3	6	<1	47	6	56	<0.3	34	13	427	2.67	7	<2	57	<0.5	<3	<3	60	1.11
1889698	Soil	20	5	11	1	106	8	52	<0.3	38	15	491	2.57	10	<2	43	<0.5	<3	<3	55	1.12
1889699	Soil	7	5	15	1	71	5	64	<0.3	45	19	524	3.21	7	<2	59	<0.5	<3	<3	76	1.11
1889700	Soil	9	<3	12	2	73	4	66	<0.3	44	19	564	3.26	8	<2	60	<0.5	<3	<3	76	1.20
1889751	Soil	8	5	9	1	68	6	72	<0.3	43	20	554	3.20	7	<2	75	<0.5	<3	<3	75	1.22
1889752	Soil	9	8	21	<1	233	3	57	<0.3	48	21	608	3.53	7	<2	98	<0.5	<3	<3	84	1.22
1889753	Soil	27	16	7	1	68	5	50	<0.3	37	15	289	3.07	6	<2	86	<0.5	<3	<3	75	1.00
1889754	Soil	7	7	11	<1	38	6	33	<0.3	15	6	215	1.48	8	<2	33	<0.5	<3	<3	27	1.13
1889755	Soil	8	<3	15	1	79	7	61	<0.3	38	12	342	2.33	7	<2	59	<0.5	<3	<3	48	1.76
1889756	Soil	9	4	6	1	67	5	58	<0.3	42	16	368	2.75	7	<2	76	<0.5	<3	<3	67	1.24
1889757	Soil	16	9	6	2	56	7	63	<0.3	27	13	851	2.19	9	<2	54	<0.5	<3	<3	42	1.80
1889758	Soil	9	15	<2	1	45	6	71	<0.3	26	12	437	2.15	10	<2	50	<0.5	<3	<3	45	1.60
1889759	Soil	10	6	<2	<1	67	5	43	<0.3	19	8	198	1.74	6	<2	44	<0.5	<3	<3	34	1.71

This report supersedes all previous preliminary and final reports with this file number dated prior to the date on this certificate. Signature indicates final approval; preliminary reports are unsigned and should be used for reference only.



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Method Analyte Unit MDL	AQ300	AQ300	AQ300	AQ300	AQ300	AQ300	AQ300	AQ300	AQ300	AQ300	AQ300	AQ300	AQ300	AQ300	AQ300	AQ300	AQ300
	P %	La ppm	Cr ppm	Mg %	Ba ppm	Ti %	B ppm	Al %	Na %	K %	W ppm	S %	Hg ppm	Tl ppm	Ga ppm	Sc ppm	
116736 Soil	0.047	9	39	0.73	97	0.059	<20	1.78	0.02	0.06	<2	<0.05	<1	<5	<5	<5	
116737 Soil	0.058	13	62	1.16	155	0.077	<20	2.18	0.02	0.09	<2	<0.05	<1	<5	<5	7	
116738 Soil	0.047	8	52	0.88	111	0.057	<20	1.64	0.03	0.05	<2	<0.05	<1	<5	<5	<5	
116739 Soil	0.060	12	75	1.38	211	0.100	<20	2.70	0.02	0.09	<2	<0.05	<1	<5	<5	7	
116740 Soil	0.066	13	71	1.30	205	0.089	<20	2.55	0.02	0.08	<2	0.05	<1	<5	<5	7	
116741 Soil	0.046	6	97	1.74	204	0.149	<20	3.11	0.03	0.11	<2	<0.05	<1	<5	6	7	
116742 Soil	0.067	13	56	1.11	201	0.080	<20	2.29	0.02	0.08	<2	<0.05	<1	<5	<5	6	
116743 Soil	0.066	11	49	1.00	150	0.070	<20	1.83	0.03	0.07	<2	0.06	<1	<5	<5	5	
116744 Soil	0.054	8	26	0.57	98	0.047	<20	0.97	0.03	0.04	<2	0.07	<1	<5	<5	<5	
116745 Soil	0.072	13	58	1.10	153	0.060	<20	1.98	0.02	0.07	<2	0.06	<1	<5	<5	6	
116746 Soil	0.054	8	80	1.59	134	0.085	<20	2.10	0.02	0.09	<2	0.06	<1	<5	6	6	
116747 Soil	0.054	8	48	0.95	203	0.062	<20	1.65	0.03	0.07	<2	0.07	<1	<5	<5	<5	
116748 Soil	0.058	10	53	1.13	160	0.079	<20	2.23	0.04	0.08	<2	<0.05	<1	<5	<5	5	
116749 Soil	0.058	11	48	0.96	278	0.062	<20	1.80	0.03	0.06	<2	<0.05	<1	<5	<5	<5	
116750 Soil	0.053	12	45	0.87	260	0.062	<20	1.94	0.03	0.06	<2	<0.05	<1	<5	<5	<5	
1889695 Soil	0.053	7	31	0.67	97	0.062	<20	1.31	0.03	0.06	<2	0.07	<1	<5	<5	<5	
1889696 Soil	0.062	9	33	0.69	110	0.067	<20	1.48	0.03	0.06	<2	0.06	<1	<5	<5	<5	
1889697 Soil	0.058	10	43	0.88	102	0.091	<20	1.58	0.04	0.08	<2	<0.05	<1	<5	<5	<5	
1889698 Soil	0.061	10	39	0.78	76	0.059	<20	1.48	0.02	0.05	<2	<0.05	<1	<5	<5	<5	
1889699 Soil	0.051	6	55	1.39	99	0.121	<20	1.99	0.03	0.07	<2	<0.05	<1	<5	<5	5	
1889700 Soil	0.058	7	56	1.37	104	0.109	<20	2.00	0.03	0.07	<2	0.06	<1	<5	<5	5	
1889751 Soil	0.043	6	49	1.41	93	0.124	<20	2.15	0.03	0.09	<2	<0.05	<1	<5	<5	<5	
1889752 Soil	0.044	6	50	1.58	62	0.141	<20	2.47	0.04	0.08	<2	<0.05	<1	<5	<5	<5	
1889753 Soil	0.036	5	44	1.22	54	0.127	<20	2.05	0.03	0.07	<2	<0.05	<1	<5	<5	<5	
1889754 Soil	0.037	5	16	0.31	59	0.032	<20	0.74	0.03	0.04	<2	0.05	<1	<5	<5	<5	
1889755 Soil	0.060	8	34	0.72	92	0.056	<20	1.43	0.03	0.07	<2	0.08	<1	<5	<5	<5	
1889756 Soil	0.056	9	54	1.11	104	0.084	<20	2.05	0.03	0.08	<2	<0.05	<1	<5	<5	5	
1889757 Soil	0.064	8	30	0.63	109	0.045	<20	1.19	0.03	0.06	<2	0.09	<1	<5	<5	<5	
1889758 Soil	0.071	8	29	0.61	108	0.045	<20	1.15	0.03	0.06	<2	0.08	<1	<5	<5	<5	
1889759 Soil	0.062	10	22	0.38	71	0.038	<20	1.12	0.03	0.04	<2	0.08	<1	<5	<5	<5	



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CERTIFICATE OF ANALYSIS

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Method Analyte Unit MDL	FA330	FA330	FA330	AQ300	AQ300	AQ300	AQ300	AQ300	AQ300	AQ300	AQ300	AQ300	AQ300	AQ300	AQ300	AQ300	AQ300	AQ300	AQ300	AQ300	
	Au	Pt	Pd	Mo	Cu	Pb	Zn	Ag	Ni	Co	Mn	Fe	As	Th	Sr	Cd	Sb	Bi	V	Ca	
	ppb	ppb	ppb	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	%	ppm	ppm	ppm	ppm	ppm	ppm	ppm	%	
	2	3	2	1	1	3	1	0.3	1	1	2	0.01	2	2	1	0.5	3	3	1	0.01	
1889760	Soil	12	<3	3	<1	68	6	35	<0.3	17	5	214	1.48	5	<2	40	<0.5	<3	<3	28	1.59
1889761	Soil	5	7	12	<1	29	4	42	<0.3	19	7	268	1.75	8	<2	39	<0.5	<3	<3	35	0.96
1889762	Soil	8	<3	4	2	79	3	59	<0.3	28	12	378	2.11	8	<2	65	<0.5	<3	<3	44	1.82
1889763	Soil	12	6	13	<1	113	3	54	<0.3	46	23	411	4.08	5	<2	249	<0.5	<3	<3	108	1.73
1889764	Soil	18	17	7	1	112	4	48	<0.3	49	19	388	3.46	5	<2	125	<0.5	<3	<3	82	1.80
1889765	Soil	9	4	7	<1	35	4	25	<0.3	12	4	92	1.22	6	<2	27	<0.5	<3	<3	24	0.68
1889766	Soil	7	6	5	<1	48	4	33	<0.3	17	6	245	1.49	8	<2	44	<0.5	<3	<3	29	1.47
1889767	Soil	8	6	8	1	48	<3	30	<0.3	16	7	168	1.57	9	<2	31	<0.5	<3	<3	28	0.81
1889768	Soil	9	<3	10	<1	87	4	57	<0.3	40	16	407	2.91	8	<2	80	<0.5	<3	<3	67	2.21
1889769	Soil	6	14	16	1	103	<3	58	<0.3	43	18	387	3.31	8	<2	72	<0.5	<3	<3	77	1.79
1889770	Soil	7	14	10	1	84	<3	58	<0.3	41	18	394	3.35	7	<2	71	<0.5	<3	<3	81	1.69
1889771	Soil	11	5	14	<1	96	4	56	<0.3	42	18	367	3.03	6	<2	75	<0.5	<3	<3	70	1.67
1889772	Soil	6	13	18	1	63	4	48	<0.3	47	23	414	4.15	6	<2	79	<0.5	<3	<3	113	3.26
1889773	Soil	6	5	10	1	46	6	54	<0.3	31	11	376	2.58	7	<2	61	<0.5	<3	<3	61	2.32
1889774	Soil	10	<3	7	2	45	3	89	<0.3	41	13	386	2.81	13	<2	71	<0.5	<3	<3	60	1.48
1889775	Soil	20	16	3	1	42	6	63	<0.3	31	11	429	2.21	12	<2	59	<0.5	<3	<3	45	1.89
1889776	Soil	6	<3	8	1	51	4	56	<0.3	25	12	485	2.36	8	<2	50	<0.5	<3	<3	46	1.59
1889777	Soil	14	<3	7	<1	35	5	59	<0.3	29	12	375	2.16	8	<2	55	<0.5	<3	<3	46	1.60
1889778	Soil	5	4	9	1	35	6	65	<0.3	28	13	473	2.39	10	<2	52	<0.5	<3	<3	51	1.46
1889779	Soil	6	9	9	1	50	5	63	<0.3	38	15	441	2.81	9	<2	62	<0.5	<3	<3	63	1.36
1889780	Soil	5	9	9	1	56	5	71	<0.3	41	15	482	2.99	8	<2	61	<0.5	<3	<3	65	1.43
1889781	Soil	6	11	7	1	32	7	57	<0.3	28	12	413	2.41	9	<2	48	<0.5	<3	<3	50	1.12
1889782	Soil	5	6	7	2	33	4	55	<0.3	26	13	444	2.21	8	<2	52	<0.5	<3	<3	51	1.30
1889783	Soil	6	11	6	<1	27	5	53	<0.3	26	11	367	2.34	8	<2	46	<0.5	<3	<3	48	1.05
1889784	Soil	5	14	12	<1	73	4	58	<0.3	32	13	403	2.25	7	<2	53	<0.5	<3	<3	51	1.62
1889785	Soil	4	4	10	<1	48	5	66	<0.3	29	12	372	2.38	7	<2	53	<0.5	<3	<3	56	1.57
1889786	Soil	9	10	17	<1	167	4	48	<0.3	31	14	320	2.34	5	<2	68	<0.5	<3	<3	57	2.01
1889787	Soil	7	10	12	1	54	6	60	<0.3	39	16	429	2.82	9	<2	60	<0.5	<3	<3	68	1.52
1889788	Soil	7	4	21	1	106	6	52	<0.3	35	12	247	2.31	9	<2	40	<0.5	<3	<3	47	1.50
1889789	Soil	7	12	15	<1	115	6	61	<0.3	35	13	420	2.44	9	<2	58	<0.5	<3	<3	53	1.95



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Method	Analyte	AQ300	AQ300	AQ300	AQ300	AQ300	AQ300	AQ300	AQ300	AQ300	AQ300	AQ300	AQ300	AQ300	AQ300	AQ300	AQ300
		P	La	Cr	Mg	Ba	Ti	B	Al	Na	K	W	S	Hg	Tl	Ga	Sc
Unit		%	ppm	ppm	%	ppm	%	ppm	%	%	ppm	%	ppm	ppm	ppm	ppm	
MDL		0.001	1	1	0.01	1	0.001	20	0.01	0.01	0.01	0.01	2	0.05	1	5	5
1889760	Soil	0.054	9	18	0.31	56	0.035	<20	0.98	0.03	0.04	<2	0.07	<1	<5	<5	<5
1889761	Soil	0.046	7	23	0.48	78	0.044	<20	1.00	0.03	0.05	<2	0.05	<1	<5	<5	<5
1889762	Soil	0.063	8	32	0.83	81	0.054	<20	1.33	0.03	0.07	<2	0.09	<1	<5	<5	<5
1889763	Soil	0.054	4	59	2.73	81	0.136	<20	3.50	0.03	0.18	<2	<0.05	<1	<5	6	7
1889764	Soil	0.048	5	54	1.87	48	0.120	<20	2.62	0.04	0.10	<2	0.05	<1	<5	<5	<5
1889765	Soil	0.043	5	14	0.26	46	0.033	<20	0.66	0.03	0.03	<2	<0.05	<1	<5	<5	<5
1889766	Soil	0.050	6	20	0.56	59	0.034	<20	0.94	0.03	0.04	<2	0.07	<1	<5	<5	<5
1889767	Soil	0.038	5	18	0.41	37	0.036	<20	0.88	0.03	0.04	<2	0.05	<1	<5	<5	<5
1889768	Soil	0.062	7	48	1.49	81	0.082	<20	1.88	0.04	0.13	<2	0.07	<1	<5	<5	<5
1889769	Soil	0.053	6	53	1.69	92	0.098	<20	2.21	0.04	0.14	<2	0.07	<1	<5	<5	<5
1889770	Soil	0.050	6	51	1.90	82	0.111	<20	2.24	0.04	0.15	<2	0.06	<1	<5	<5	<5
1889771	Soil	0.049	6	47	1.57	105	0.103	<20	2.27	0.04	0.13	<2	0.06	<1	<5	<5	<5
1889772	Soil	0.041	5	64	3.17	57	0.175	<20	2.94	0.11	0.21	<2	<0.05	<1	<5	<5	<5
1889773	Soil	0.059	7	44	1.34	90	0.073	<20	1.60	0.03	0.10	<2	0.08	<1	<5	<5	<5
1889774	Soil	0.085	10	44	0.83	226	0.064	<20	1.54	0.04	0.09	<2	<0.05	<1	<5	<5	<5
1889775	Soil	0.059	10	33	0.58	131	0.041	<20	1.21	0.02	0.05	<2	0.09	<1	<5	<5	<5
1889776	Soil	0.049	8	31	0.65	112	0.049	<20	1.24	0.03	0.05	<2	0.07	<1	<5	<5	<5
1889777	Soil	0.054	9	35	0.71	100	0.055	<20	1.29	0.03	0.07	<2	0.08	<1	<5	<5	<5
1889778	Soil	0.062	8	36	0.69	116	0.053	<20	1.28	0.02	0.06	<2	0.07	<1	<5	<5	<5
1889779	Soil	0.069	12	45	0.89	112	0.071	<20	1.65	0.03	0.09	<2	<0.05	<1	<5	<5	<5
1889780	Soil	0.075	11	47	0.94	123	0.078	<20	1.60	0.04	0.11	<2	<0.05	<1	<5	<5	<5
1889781	Soil	0.061	10	36	0.70	121	0.055	<20	1.42	0.03	0.05	<2	0.06	<1	<5	<5	<5
1889782	Soil	0.059	8	33	0.64	112	0.057	<20	1.25	0.03	0.05	<2	0.07	<1	<5	<5	<5
1889783	Soil	0.053	9	35	0.69	109	0.056	<20	1.37	0.03	0.05	<2	0.05	<1	<5	<5	<5
1889784	Soil	0.051	8	38	0.87	85	0.067	<20	1.45	0.03	0.08	<2	0.07	<1	<5	<5	<5
1889785	Soil	0.059	8	37	0.79	86	0.072	<20	1.29	0.03	0.08	<2	0.07	<1	<5	<5	<5
1889786	Soil	0.061	7	38	1.07	75	0.078	<20	1.68	0.03	0.06	<2	0.08	<1	<5	<5	<5
1889787	Soil	0.049	9	47	1.01	120	0.088	<20	1.70	0.03	0.12	<2	0.05	<1	<5	6	<5
1889788	Soil	0.051	11	31	0.62	76	0.051	<20	1.31	0.03	0.08	<2	0.06	<1	<5	<5	<5
1889789	Soil	0.064	9	38	0.83	95	0.057	<20	1.59	0.03	0.09	<2	0.07	<1	<5	<5	<5



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CERTIFICATE OF ANALYSIS

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Method	Analyte	FA330	FA330	FA330	AQ300	AQ300	AQ300	AQ300	AQ300	AQ300	AQ300	AQ300	AQ300	AQ300	AQ300	AQ300	AQ300	AQ300	AQ300	AQ300	
		Au	Pt	Pd	Mo	Cu	Pb	Zn	Ag	Ni	Co	Mn	Fe	As	Th	Sr	Cd	Sb	Bi	V	Ca
Unit		ppb	ppb	ppb	ppm	ppm	ppm	ppm	ppm	ppm	ppm	%	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	
MDL		2	3	2	1	1	3	1	0.3	1	1	2	0.01	2	2	1	0.5	3	3	1	0.01
1889790	Soil	7	6	18	<1	95	5	54	<0.3	31	13	386	2.39	9	<2	56	<0.5	<3	<3	53	1.77
1889791	Soil	26	10	29	<1	66	5	46	<0.3	27	11	268	2.14	10	<2	44	<0.5	<3	<3	46	1.49
1889792	Soil	6	8	28	<1	82	5	53	<0.3	31	13	333	2.27	7	<2	55	<0.5	<3	<3	53	1.69
1889793	Soil	8	15	27	<1	102	5	45	<0.3	31	12	286	2.17	7	<2	45	<0.5	<3	<3	48	1.34
1889794	Soil	5	8	18	<1	87	5	54	<0.3	33	14	372	2.37	9	<2	48	<0.5	<3	<3	55	1.47
1889795	Soil	8	11	12	1	52	7	53	<0.3	34	14	366	2.56	13	<2	37	<0.5	<3	<3	53	1.03
1889796	Soil	6	14	21	<1	92	5	57	<0.3	39	16	445	2.62	7	<2	56	<0.5	<3	<3	62	1.69
1889797	Soil	5	9	12	<1	54	5	64	<0.3	28	12	403	2.31	8	2	45	<0.5	<3	<3	55	1.81
1889798	Soil	7	12	8	<1	71	6	63	<0.3	32	13	381	2.32	13	<2	52	<0.5	<3	<3	51	1.57
1889799	Soil	8	9	11	<1	154	4	70	<0.3	31	14	368	2.56	7	<2	59	<0.5	<3	<3	63	1.57
1889800	Soil	6	<3	12	<1	57	4	44	<0.3	25	11	392	2.09	6	<2	48	<0.5	<3	<3	47	1.64
1889951	Soil	6	7	14	<1	76	5	43	<0.3	27	11	327	2.02	7	<2	49	<0.5	<3	<3	46	1.70
1889952	Soil	6	6	12	<1	54	6	44	<0.3	34	13	357	2.50	6	<2	61	<0.5	<3	<3	64	0.95
1889953	Soil	7	7	12	<1	78	5	47	<0.3	30	11	419	1.92	7	<2	48	<0.5	<3	<3	39	1.67
1889954	Soil	8	6	20	1	105	6	72	<0.3	36	15	442	2.72	10	3	59	<0.5	<3	<3	61	1.83
1889955	Soil	7	19	34	<1	46	4	39	<0.3	17	8	303	1.54	7	<2	56	<0.5	<3	<3	31	2.09
1889956	Soil	5	5	7	2	39	6	57	<0.3	24	8	324	2.05	8	<2	49	<0.5	<3	<3	41	1.29
1889957	Soil	3	3	8	<1	36	5	73	<0.3	37	16	462	2.94	4	3	43	<0.5	<3	<3	75	0.83
1889958	Soil	13	8	6	2	29	6	69	<0.3	34	17	501	3.13	7	2	39	<0.5	<3	<3	74	0.77
1889959	Soil	7	<3	8	<1	47	9	67	<0.3	41	17	592	3.19	5	2	48	<0.5	<3	<3	78	1.48
1889960	Soil	7	<3	5	<1	55	7	70	<0.3	41	17	568	3.10	5	2	57	<0.5	<3	<3	75	1.89



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CERTIFICATE OF ANALYSIS

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Method	Analyte	AQ300	AQ300	AQ300	AQ300	AQ300	AQ300	AQ300	AQ300	AQ300	AQ300	AQ300	AQ300	AQ300	AQ300	AQ300	AQ300
		P	La	Cr	Mg	Ba	Ti	B	Al	Na	K	W	S	Hg	Tl	Ga	Sc
Unit		%	ppm	ppm	%	ppm	%	ppm	%	%	ppm	%	ppm	ppm	ppm	ppm	
MDL		0.001	1	1	0.01	1	0.001	20	0.01	0.01	0.01	2	0.05	1	5	5	
1889790	Soil	0.060	9	34	0.72	88	0.061	<20	1.50	0.03	0.07	<2	0.06	<1	<5	<5	<5
1889791	Soil	0.051	7	29	0.64	92	0.049	<20	1.39	0.03	0.07	<2	0.06	<1	<5	<5	<5
1889792	Soil	0.055	8	35	0.80	86	0.068	<20	1.57	0.03	0.06	<2	0.06	<1	<5	<5	<5
1889793	Soil	0.040	8	36	0.76	75	0.064	<20	1.44	0.04	0.07	<2	<0.05	<1	<5	<5	<5
1889794	Soil	0.053	9	38	0.79	110	0.065	<20	1.49	0.03	0.06	<2	<0.05	<1	<5	<5	<5
1889795	Soil	0.034	9	36	0.67	77	0.058	<20	1.46	0.03	0.07	<2	<0.05	<1	<5	<5	<5
1889796	Soil	0.055	10	47	0.95	81	0.079	<20	1.77	0.04	0.08	<2	0.05	<1	<5	6	<5
1889797	Soil	0.064	8	32	0.63	86	0.067	<20	1.17	0.03	0.07	<2	0.07	<1	<5	<5	<5
1889798	Soil	0.059	9	36	0.68	128	0.052	<20	1.42	0.04	0.06	<2	0.06	<1	<5	<5	<5
1889799	Soil	0.058	8	33	1.02	89	0.084	<20	1.70	0.03	0.13	<2	<0.05	<1	<5	<5	<5
1889800	Soil	0.056	7	27	0.65	105	0.062	<20	1.21	0.03	0.08	<2	0.06	<1	<5	<5	<5
1889951	Soil	0.050	7	34	0.75	57	0.058	<20	1.39	0.03	0.06	<2	0.07	<1	<5	<5	<5
1889952	Soil	0.049	10	46	0.94	80	0.100	<20	1.69	0.04	0.09	<2	<0.05	<1	<5	5	<5
1889953	Soil	0.053	9	29	0.64	93	0.047	<20	1.21	0.03	0.06	<2	0.07	<1	<5	<5	<5
1889954	Soil	0.059	9	41	0.87	120	0.073	<20	1.55	0.03	0.07	<2	0.07	<1	<5	<5	<5
1889955	Soil	0.047	8	22	0.41	91	0.036	<20	0.96	0.03	0.06	<2	0.09	<1	<5	<5	<5
1889956	Soil	0.063	9	28	0.45	117	0.037	<20	1.05	0.02	0.05	<2	0.10	<1	<5	<5	<5
1889957	Soil	0.080	12	54	1.08	117	0.106	<20	1.67	0.02	0.12	<2	<0.05	<1	<5	<5	7
1889958	Soil	0.054	10	54	1.03	108	0.074	<20	1.71	0.02	0.09	<2	<0.05	<1	<5	<5	6
1889959	Soil	0.065	11	61	1.22	101	0.114	<20	1.76	0.02	0.10	<2	<0.05	<1	<5	6	7
1889960	Soil	0.071	11	61	1.19	119	0.107	<20	1.72	0.02	0.11	<2	<0.05	<1	<5	6	7



QUALITY CONTROL REPORT

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Method	Analyte	FA330	FA330	FA330	AQ300	AQ300	AQ300	AQ300	AQ300	AQ300	AQ300	AQ300	AQ300	AQ300	AQ300	AQ300	AQ300	AQ300	AQ300	AQ300	
		Au	Pt	Pd	Mo	Cu	Pb	Zn	Ag	Ni	Co	Mn	Fe	As	Th	Sr	Cd	Sb	Bi	V	Ca
Unit		ppb	ppb	ppb	ppm	ppm	ppm	ppm	ppm	ppm	ppm	%	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	
MDL		2	3	2	1	1	3	1	0.3	1	1	2	0.01	2	2	1	0.5	3	3	1	0.01
Pulp Duplicates																					
1889904	Soil	7	4	10	<1	117	<3	45	<0.3	26	9	274	1.86	6	<2	54	<0.5	<3	<3	41	2.07
REP 1889904	QC	9	<3	12																	
1889920	Soil	7	4	7	1	34	<3	63	<0.3	26	12	470	2.28	9	<2	57	<0.5	<3	<3	50	1.41
REP 1889920	QC				1	35	5	64	<0.3	26	12	488	2.29	9	<2	57	<0.5	<3	<3	51	1.46
1889939	Soil	11	<3	7	1	45	4	69	<0.3	34	12	375	2.32	9	<2	55	<0.5	<3	<3	49	1.82
REP 1889939	QC	7	<3	4																	
1889966	Soil	4	<3	3	1	14	5	57	<0.3	17	8	220	2.05	7	<2	36	<0.5	<3	<3	49	0.55
REP 1889966	QC				1	14	6	60	<0.3	18	8	220	2.06	7	<2	36	<0.5	<3	<3	51	0.56
116711	Soil	8	<3	<2	1	37	7	73	<0.3	39	15	494	3.26	7	2	43	<0.5	<3	<3	66	0.94
REP 116711	QC	9	6	2																	
116737	Soil	9	<3	12	1	86	11	104	<0.3	78	21	704	4.22	16	<2	58	<0.5	<3	<3	72	1.48
REP 116737	QC				2	84	13	106	<0.3	79	21	724	4.15	17	<2	65	<0.5	<3	<3	74	1.46
1889698	Soil	20	5	11	1	106	8	52	<0.3	38	15	491	2.57	10	<2	43	<0.5	<3	<3	55	1.12
REP 1889698	QC	9	9	12																	
1889767	Soil	8	6	8	1	48	<3	30	<0.3	16	7	168	1.57	9	<2	31	<0.5	<3	<3	28	0.81
REP 1889767	QC				1	49	4	31	<0.3	16	7	164	1.52	9	<2	30	<0.5	<3	<3	29	0.80
1889768	Soil	9	<3	10	<1	87	4	57	<0.3	40	16	407	2.91	8	<2	80	<0.5	<3	<3	67	2.21
REP 1889768	QC	10	6	<2																	
1889783	Soil	6	11	6	<1	27	5	53	<0.3	26	11	367	2.34	8	<2	46	<0.5	<3	<3	48	1.05
REP 1889783	QC	6	5	8																	
1889798	Soil	7	12	8	<1	71	6	63	<0.3	32	13	381	2.32	13	<2	52	<0.5	<3	<3	51	1.57
REP 1889798	QC				<1	68	6	62	<0.3	32	13	368	2.32	13	<2	50	<0.5	<3	<3	51	1.51
Reference Materials																					
STD CDN-PGMS-19	Standard	235	98	479																	
STD CDN-PGMS-23	Standard	536	513	2102																	
STD CDN-PGMS-19	Standard	232	120	466																	
STD CDN-PGMS-23	Standard	492	481	2116																	
STD CDN-PGMS-19	Standard	302	113	473																	



QUALITY CONTROL REPORT

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Method	AQ300	AQ300	AQ300	AQ300	AQ300	AQ300	AQ300	AQ300	AQ300	AQ300	AQ300	AQ300	AQ300	AQ300	AQ300	AQ300	AQ300
Analyte	P	La	Cr	Mg	Ba	Ti	B	Al	Na	K	W	S	Hg	Tl	Ga	Sc	
Unit	%	ppm	ppm	%	ppm	%	ppm	%	%	%	ppm	%	ppm	ppm	ppm	ppm	
MDL	0.001	1	1	0.01	1	0.001	20	0.01	0.01	0.01	2	0.05	1	5	5	5	
Pulp Duplicates																	
1889904	Soil	0.062	8	30	0.69	83	0.054	<20	1.21	0.03	0.07	<2	0.10	<1	<5	<5	
REP 1889904	QC																
1889920	Soil	0.062	10	35	0.62	128	0.060	<20	1.29	0.03	0.06	<2	0.07	<1	<5	<5	
REP 1889920	QC	0.064	10	35	0.62	128	0.061	<20	1.33	0.03	0.07	<2	0.07	<1	<5	<5	
1889939	Soil	0.068	9	37	0.71	127	0.050	<20	1.30	0.03	0.07	<2	0.08	<1	<5	<5	
REP 1889939	QC																
1889966	Soil	0.045	6	33	0.67	82	0.049	<20	1.17	0.02	0.06	<2	<0.05	<1	<5	<5	
REP 1889966	QC	0.046	7	34	0.68	84	0.051	<20	1.19	0.02	0.07	<2	<0.05	<1	<5	<5	
116711	Soil	0.063	13	43	0.95	142	0.092	<20	1.72	0.03	0.15	<2	<0.05	<1	<5	<5	
REP 116711	QC																
116737	Soil	0.058	13	62	1.16	155	0.077	<20	2.18	0.02	0.09	<2	<0.05	<1	<5	<5	
REP 116737	QC	0.059	14	63	1.29	149	0.088	<20	2.47	0.02	0.09	<2	<0.05	<1	<5	<5	
1889698	Soil	0.061	10	39	0.78	76	0.059	<20	1.48	0.02	0.05	<2	<0.05	<1	<5	<5	
REP 1889698	QC																
1889767	Soil	0.038	5	18	0.41	37	0.036	<20	0.88	0.03	0.04	<2	0.05	<1	<5	<5	
REP 1889767	QC	0.040	5	18	0.40	39	0.037	<20	0.93	0.03	0.04	<2	0.05	<1	<5	<5	
1889768	Soil	0.062	7	48	1.49	81	0.082	<20	1.88	0.04	0.13	<2	0.07	<1	<5	<5	
REP 1889768	QC																
1889783	Soil	0.053	9	35	0.69	109	0.056	<20	1.37	0.03	0.05	<2	0.05	<1	<5	<5	
REP 1889783	QC																
1889798	Soil	0.059	9	36	0.68	128	0.052	<20	1.42	0.04	0.06	<2	0.06	<1	<5	<5	
REP 1889798	QC	0.058	9	35	0.67	124	0.054	<20	1.39	0.03	0.06	<2	0.06	<1	<5	<5	
Reference Materials																	
STD CDN-PGMS-19	Standard																
STD CDN-PGMS-23	Standard																
STD CDN-PGMS-19	Standard																
STD CDN-PGMS-23	Standard																
STD CDN-PGMS-19	Standard																



QUALITY CONTROL REPORT

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		FA330	FA330	FA330	AQ300	AQ300	AQ300	AQ300	AQ300	AQ300	AQ300	AQ300	AQ300	AQ300	AQ300	AQ300	AQ300	AQ300	AQ300	AQ300	AQ300
		Au	Pt	Pd	Mo	Cu	Pb	Zn	Ag	Ni	Co	Mn	Fe	As	Th	Sr	Cd	Sb	Bi	V	Ca
		ppb	ppb	ppb	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	%	ppm	ppm	ppm	ppm	ppm	ppm	ppm	%
		2	3	2	1	1	3	1	0.3	1	1	2	0.01	2	2	1	0.5	3	3	1	0.01
STD CDN-PGMS-23	Standard	495	465	2058																	
STD CDN-PGMS-19	Standard	227	106	489																	
STD CDN-PGMS-23	Standard	534	468	2067																	
STD CDN-PGMS-19	Standard	228	106	470																	
STD CDN-PGMS-23	Standard	478	450	2053																	
STD CDN-PGMS-19	Standard	258	99	488																	
STD DS11	Standard				15	154	140	357	1.8	82	14	1065	3.28	45	9	68	2.4	7	11	53	1.11
STD DS11	Standard				14	146	137	337	1.6	75	13	1009	3.13	41	7	65	2.1	6	13	46	1.02
STD DS11	Standard				13	142	135	324	1.6	75	13	1046	3.08	42	6	67	2.0	7	10	47	1.01
STD DS11	Standard				14	147	136	334	1.7	78	13	1012	3.14	41	6	64	1.9	6	10	48	1.03
STD DS11	Standard				13	142	133	341	1.5	76	13	1013	2.96	40	7	62	2.1	7	11	47	0.99
STD OREAS45EA	Standard				2	695	15	32	0.6	375	54	405	21.71	11	11	4	<0.5	<3	<3	302	0.03
STD OREAS45EA	Standard				2	724	14	31	0.3	394	50	427	23.52	11	8	4	<0.5	<3	<3	300	0.03
STD OREAS45EA	Standard				2	699	15	32	0.4	402	54	415	23.74	11	9	4	<0.5	<3	<3	306	0.03
STD OREAS45EA	Standard				2	720	12	32	0.3	410	55	426	23.96	13	8	4	<0.5	<3	4	315	0.03
STD OREAS45EA	Standard				2	701	12	31	<0.3	383	53	410	20.80	6	8	4	<0.5	<3	<3	303	0.04
STD OREAS45EA Expected					1.6	709	14.3	31.4	0.26	381	52	400	23.51	10	10.7	3.5				303	0.036
STD DS11 Expected					13.9	156	138	345	1.71	81.9	14.2	1055	3.2082	42.8	7.65	67.3	2.37	7.2	12.2	50	1.063
STD CDN-PGMS-23 Expected		496	456	2032																	
STD CDN-PGMS-19 Expected		230	108	476																	
BLK	Blank				<1	<1	<3	<1	<0.3	<1	<1	<2	<0.01	<2	<2	<1	<0.5	<3	<3	<1	<0.01
BLK	Blank	2	<3	<2																	
BLK	Blank	<2	<3	<2																	
BLK	Blank				<1	<1	<3	<1	<0.3	<1	<1	<2	<0.01	<2	<2	<1	<0.5	<3	<3	<1	<0.01
BLK	Blank				<1	<1	<3	<1	<0.3	<1	<1	<2	<0.01	<2	<2	<1	<0.5	<3	<3	<1	<0.01
BLK	Blank				<1	<1	<3	<1	<0.3	<1	<1	<2	<0.01	<2	<2	<1	<0.5	<3	<3	<1	<0.01
BLK	Blank	<2	<3	<2																	
BLK	Blank	<2	<3	<2																	



Bureau Veritas Commodities Canada Ltd.
9050 Shaughnessy St Vancouver British Columbia V6P 6E5 Canada
PHONE (604) 253-3158

Client: Longford Exploration Services Ltd.
6970 Napier Street
Burnaby British Columbia V5B 2C4 Canada

Project: Catalyst
Report Date: August 30, 2017

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QUALITY CONTROL REPORT

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		AQ300	AQ300	AQ300	AQ300	AQ300	AQ300	AQ300	AQ300	AQ300	AQ300	AQ300	AQ300	AQ300	AQ300	AQ300	AQ300
		P	La	Cr	Mg	Ba	Ti	B	Al	Na	K	W	S	Hg	Tl	Ga	Sc
		%	ppm	ppm	%	ppm	%	ppm	%	%	%	ppm	%	ppm	ppm	ppm	ppm
		0.001	1	1	0.01	1	0.001	20	0.01	0.01	0.01	2	0.05	1	5	5	5
STD CDN-PGMS-23	Standard																
STD CDN-PGMS-19	Standard																
STD CDN-PGMS-23	Standard																
STD CDN-PGMS-19	Standard																
STD CDN-PGMS-23	Standard																
STD CDN-PGMS-19	Standard																
STD DS11	Standard	0.072	19	64	0.89	440	0.097	<20	1.21	0.08	0.42	3	0.29	<1	<5	<5	<5
STD DS11	Standard	0.070	16	55	0.84	429	0.089	<20	1.12	0.07	0.39	3	0.27	<1	<5	<5	<5
STD DS11	Standard	0.070	16	54	0.85	418	0.091	<20	1.16	0.07	0.38	3	0.27	<1	<5	<5	<5
STD DS11	Standard	0.070	16	56	0.84	425	0.088	<20	1.11	0.07	0.39	3	0.28	<1	<5	<5	<5
STD DS11	Standard	0.068	16	56	0.83	414	0.087	<20	1.08	0.07	0.39	3	0.27	<1	6	<5	<5
STD OREAS45EA	Standard	0.030	8	923	0.10	143	0.096	<20	3.43	0.02	0.06	<2	<0.05	<1	<5	14	85
STD OREAS45EA	Standard	0.030	7	877	0.10	148	0.099	<20	3.23	0.02	0.05	<2	<0.05	<1	8	<5	88
STD OREAS45EA	Standard	0.031	7	887	0.10	147	0.100	<20	3.38	0.02	0.06	<2	<0.05	<1	7	<5	87
STD OREAS45EA	Standard	0.031	7	929	0.10	149	0.102	<20	3.43	0.02	0.06	<2	<0.05	<1	9	<5	89
STD OREAS45EA	Standard	0.029	7	872	0.10	142	0.101	<20	3.28	0.02	0.06	<2	<0.05	<1	<5	15	81
STD OREAS45EA Expected		0.029	7.06	849	0.095	148	0.0984		3.13	0.02	0.053		0.036			12.4	78
STD DS11 Expected		0.0701	18.6	61.5	0.85	417	0.0976	6	1.129	0.0694	0.4	2.9	0.2835	0.3	4.9	4.7	3.1
STD CDN-PGMS-23 Expected																	
STD CDN-PGMS-19 Expected																	
BLK	Blank	<0.001	<1	<1	<0.01	<1	<0.001	<20	<0.01	<0.01	<0.01	<2	<0.05	<1	<5	<5	<5
BLK	Blank																
BLK	Blank																
BLK	Blank	<0.001	<1	<1	<0.01	<1	<0.001	<20	<0.01	<0.01	<0.01	<2	<0.05	<1	<5	<5	<5
BLK	Blank	<0.001	<1	<1	<0.01	<1	<0.001	<20	<0.01	<0.01	<0.01	<2	<0.05	<1	<5	<5	<5
BLK	Blank	<0.001	<1	<1	<0.01	<1	<0.001	<20	<0.01	<0.01	<0.01	<2	<0.05	<1	<5	<5	<5
BLK	Blank	<0.001	<1	<1	<0.01	<1	<0.001	<20	<0.01	<0.01	<0.01	<2	<0.05	<1	<5	<5	<5
BLK	Blank																
BLK	Blank																



Bureau Veritas Commodities Canada Ltd.
9050 Shaughnessy St Vancouver British Columbia V6P 6E5 Canada
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Client: Longford Exploration Services Ltd.
6970 Napier Street
Burnaby British Columbia V5B 2C4 Canada

Project: Catalyst
Report Date: August 30, 2017

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Part: 1 of 2

QUALITY CONTROL REPORT

WHI17000411.1

		FA330	FA330	FA330	AQ300	AQ300	AQ300	AQ300	AQ300	AQ300	AQ300	AQ300	AQ300	AQ300	AQ300	AQ300	AQ300	AQ300	AQ300	AQ300	AQ300
		Au	Pt	Pd	Mo	Cu	Pb	Zn	Ag	Ni	Co	Mn	Fe	As	Th	Sr	Cd	Sb	Bi	V	Ca
		ppb	ppb	ppb	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	%	ppm	ppm	ppm	ppm	ppm	ppm	ppm	%
		2	3	2	1	1	3	1	0.3	1	1	2	0.01	2	2	1	0.5	3	3	1	0.01
BLK	Blank	3	<3	<2																	
BLK	Blank	2	<3	<2																	
BLK	Blank	<2	3	2																	
BLK	Blank	<2	<3	3																	
BLK	Blank	<2	5	<2																	
BLK	Blank	<2	<3	<2																	



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Bureau Veritas Commodities Canada Ltd.
9050 Shaughnessy St Vancouver British Columbia V6P 6E5 Canada
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Project: Catalyst
Report Date: August 30, 2017

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QUALITY CONTROL REPORT

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		AQ300	AQ300	AQ300	AQ300	AQ300	AQ300	AQ300	AQ300	AQ300	AQ300	AQ300	AQ300	AQ300	AQ300	AQ300	
		P	La	Cr	Mg	Ba	Ti	B	Al	Na	K	W	S	Hg	Tl	Ga	Sc
		%	ppm	ppm	%	ppm	%	ppm	%	%	%	ppm	%	ppm	ppm	ppm	ppm
		0.001	1	1	0.01	1	0.001	20	0.01	0.01	0.01	2	0.05	1	5	5	5
BLK	Blank																
BLK	Blank																
BLK	Blank																
BLK	Blank																
BLK	Blank																
BLK	Blank																



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Client: Longford Exploration Services Ltd.
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Submitted By: James Rogers
Receiving Lab: Canada-Whitehorse
Received: August 07, 2017
Report Date: August 30, 2017
Page: 1 of 8

CERTIFICATE OF ANALYSIS

WHI17000522.1

CLIENT JOB INFORMATION

Project: Catalyst
Shipment ID:
P.O. Number
Number of Samples: 205

SAMPLE DISPOSAL

PICKUP-PLP Client to Pickup Pulps
PICKUP-RJT Client to Pickup Rejects

Bureau Veritas does not accept responsibility for samples left at the laboratory after 90 days without prior written instructions for sample storage or return.

Invoice To: Longford Exploration Services Ltd.
6970 Napier Street
Burnaby British Columbia V5B 2C4
Canada

CC:

SAMPLE PREPARATION AND ANALYTICAL PROCEDURES

Procedure Code	Number of Samples	Code Description	Test Wgt (g)	Report Status	Lab
DY060	205	Dry at 60C			WHI
SS80	205	Dry at 60C sieve 100g to -80 mesh			WHI
SVRJT	205	Save all or part of Soil Reject			WHI
FA330	205	Fire assay fusion Au Pt Pd by ICP-ES	30	Completed	VAN
EN002	205	Environmental disposal charge-Fire assay lead waste			VAN
AQ300	205	1:1:1 Aqua Regia digestion ICP-ES analysis	0.5	Completed	VAN
SHP01	205	Per sample shipping charges for branch shipments			VAN

ADDITIONAL COMMENTS



This report supersedes all previous preliminary and final reports with this file number dated prior to the date on this certificate. Signature indicates final approval; preliminary reports are unsigned and should be used for reference only. All results are considered the confidential property of the client. Bureau Veritas assumes the liabilities for actual cost of analysis only. Results apply to samples as submitted. *** asterisk indicates that an analytical result could not be provided due to unusually high levels of interference from other elements.



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Project: Catalyst

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CERTIFICATE OF ANALYSIS

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Method	Analyte	Unit	MDL	FA330	FA330	FA330	AQ300	AQ300	AQ300	AQ300	AQ300	AQ300	AQ300	AQ300	AQ300	AQ300	AQ300	AQ300	AQ300	AQ300					
				Au	Pt	Pd	Mo	Cu	Pb	Zn	Ag	Ni	Co	Mn	Fe	As	Th	Sr	Cd	Sb	Bi	V	Ca		
				ppb	ppb	ppb	ppm	ppm	ppm	ppm	ppm	ppm	%	ppm	ppm	ppm	ppm	ppm	ppm	ppm	%				
				2	3	2	1	1	3	1	0.3	1	0.3	1	1	2	0.01	2	2	1	0.5	3	3	1	0.01
1494501	Soil			6	<3	4	1	47	5	92	<0.3	50	14	486	2.90	9	<2	47	<0.5	<3	<3	66	1.04		
1494502	Soil			11	<3	7	26	101	12	94	<0.3	136	28	761	4.95	19	<2	38	<0.5	<3	<3	202	0.62		
1494503	Soil			8	<3	11	1	60	4	73	<0.3	63	12	412	2.62	10	<2	39	<0.5	<3	<3	53	1.30		
1494504	Soil			10	<3	6	2	59	6	88	<0.3	51	16	684	3.04	12	<2	36	<0.5	<3	<3	71	1.13		
1494505	Soil			4	4	6	2	67	6	81	<0.3	73	19	874	4.18	16	<2	54	<0.5	<3	<3	99	1.44		
1494506	Soil			5	<3	5	1	51	6	55	<0.3	34	10	324	2.05	10	<2	45	<0.5	<3	<3	40	1.75		
1494507	Soil			5	<3	7	2	90	6	82	0.3	59	15	508	3.26	14	<2	35	<0.5	<3	<3	66	0.84		
1494508	Soil			8	<3	3	1	55	<3	69	<0.3	39	12	483	2.33	11	<2	60	<0.5	<3	<3	47	1.97		
1494509	Soil			6	<3	2	2	34	8	60	<0.3	30	10	329	2.42	8	<2	34	<0.5	<3	<3	53	0.65		
1494510	Soil			5	<3	3	1	38	<3	51	0.4	28	8	259	2.53	9	<2	31	<0.5	<3	<3	56	0.61		
1494511	Soil			7	<3	8	3	53	5	68	<0.3	29	12	900	2.05	9	<2	56	0.6	<3	<3	39	1.75		
1494512	Soil			6	<3	4	2	65	<3	67	<0.3	43	11	526	2.09	8	<2	55	<0.5	<3	<3	41	1.71		
1494513	Soil			8	<3	4	5	58	<3	159	<0.3	72	19	544	3.63	11	<2	69	<0.5	<3	<3	91	1.11		
1494514	Soil			6	<3	8	2	61	5	124	0.5	62	16	404	3.14	8	<2	60	<0.5	<3	<3	85	1.16		
1494515	Soil			7	6	6	4	63	5	106	0.5	59	15	552	2.96	18	<2	59	<0.5	<3	<3	79	1.24		
1494516	Soil			6	5	7	2	45	<3	62	<0.3	27	9	357	1.88	7	<2	48	<0.5	<3	<3	45	1.33		
1494517	Soil			8	<3	5	2	96	<3	94	0.6	70	19	579	3.03	11	<2	49	<0.5	<3	<3	71	1.10		
1494518	Soil			6	<3	4	<1	43	5	70	<0.3	26	7	355	1.50	6	<2	46	0.8	<3	<3	35	1.49		
1494519	Soil			4	<3	4	2	50	4	73	<0.3	38	14	504	2.62	11	<2	51	<0.5	<3	<3	59	1.26		
1494520	Soil			4	<3	2	2	42	<3	79	<0.3	36	13	503	2.58	9	<2	42	<0.5	<3	<3	61	0.94		
1494521	Soil			6	<3	7	1	105	<3	81	0.5	64	21	489	3.23	7	<2	49	<0.5	<3	<3	83	1.28		
1494522	Soil			7	3	9	2	106	7	104	0.7	70	21	596	3.48	10	<2	52	<0.5	<3	<3	94	1.19		
1494523	Soil			5	5	4	1	89	4	80	<0.3	55	18	559	3.03	10	<2	41	<0.5	<3	<3	75	1.49		
1494524	Soil			7	<3	5	1	77	11	109	0.3	48	17	541	3.17	14	<2	36	<0.5	<3	<3	70	1.14		
1494525	Soil			5	<3	5	2	69	7	111	0.4	50	20	630	3.43	15	<2	37	<0.5	<3	<3	78	1.02		
1494526	Soil			5	<3	12	2	58	6	97	<0.3	47	16	696	3.49	16	<2	41	<0.5	<3	<3	68	1.10		
1494527	Soil			7	<3	5	2	76	9	86	<0.3	51	16	999	3.15	11	<2	41	<0.5	<3	<3	61	1.31		
1494528	Soil			5	<3	2	1	53	<3	67	<0.3	38	13	498	2.47	11	<2	37	<0.5	<3	<3	49	1.22		
1494529	Soil			6	6	12	<1	98	<3	59	<0.3	269	31	496	2.96	5	<2	29	<0.5	<3	<3	43	1.53		
1494530	Soil			12	<3	15	2	116	4	94	<0.3	291	37	659	3.89	10	<2	38	<0.5	<3	<3	72	1.69		



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CERTIFICATE OF ANALYSIS

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Method Analyte	Unit	AQ300	AQ300	AQ300	AQ300	AQ300	AQ300	AQ300	AQ300	AQ300	AQ300	AQ300	AQ300	AQ300	AQ300	AQ300	AQ300
		P	La	Cr	Mg	Ba	Ti	B	Al	Na	K	W	S	Hg	Tl	Ga	Sc
MDL		%	ppm	ppm	%	ppm	%	ppm	%	%	ppm	%	ppm	ppm	ppm	ppm	ppm
		0.001	1	1	0.01	1	0.001	20	0.01	0.01	0.01	0.01	2	0.05	1	5	5
1494501	Soil	0.054	7	54	1.04	160	0.074	<20	1.81	0.02	0.07	<2	<0.05	<1	<5	<5	<5
1494502	Soil	0.033	7	158	3.30	350	0.122	<20	3.64	0.02	0.05	<2	<0.05	<1	<5	11	12
1494503	Soil	0.058	12	47	0.94	119	0.053	<20	1.49	0.02	0.06	<2	0.07	<1	<5	<5	<5
1494504	Soil	0.057	11	51	0.87	163	0.052	<20	1.97	0.02	0.05	<2	<0.05	<1	<5	<5	<5
1494505	Soil	0.046	8	93	1.47	105	0.107	<20	2.62	0.02	0.07	<2	<0.05	<1	<5	8	8
1494506	Soil	0.050	8	26	0.48	102	0.038	<20	1.16	0.02	0.05	<2	0.08	<1	<5	<5	<5
1494507	Soil	0.053	16	45	0.77	123	0.058	<20	1.84	0.02	0.05	<2	<0.05	<1	<5	<5	<5
1494508	Soil	0.061	9	34	0.72	128	0.049	<20	1.44	0.03	0.05	<2	0.09	<1	<5	<5	<5
1494509	Soil	0.046	6	35	0.69	107	0.055	<20	1.45	0.02	0.06	<2	<0.05	<1	<5	<5	<5
1494510	Soil	0.042	6	33	0.63	100	0.051	<20	1.34	0.02	0.04	<2	<0.05	<1	<5	<5	<5
1494511	Soil	0.080	13	22	0.48	193	0.040	<20	1.12	0.03	0.05	<2	0.10	<1	<5	<5	<5
1494512	Soil	0.085	11	29	0.55	178	0.035	<20	1.35	0.03	0.04	<2	0.09	<1	<5	<5	<5
1494513	Soil	0.060	8	81	1.41	239	0.085	<20	2.40	0.02	0.08	<2	<0.05	<1	<5	6	5
1494514	Soil	0.071	10	75	1.34	225	0.074	<20	2.10	0.03	0.07	<2	0.05	<1	<5	5	6
1494515	Soil	0.081	11	60	0.98	223	0.052	<20	1.84	0.02	0.05	<2	0.05	<1	<5	<5	<5
1494516	Soil	0.065	8	24	0.45	136	0.051	<20	1.04	0.03	0.04	<2	0.08	<1	<5	<5	<5
1494517	Soil	0.058	11	55	0.94	165	0.059	<20	1.92	0.02	0.05	<2	<0.05	<1	<5	<5	<5
1494518	Soil	0.069	6	20	0.40	131	0.040	<20	0.87	0.03	0.05	<2	0.08	<1	<5	<5	<5
1494519	Soil	0.087	11	42	0.74	183	0.054	<20	1.62	0.02	0.06	<2	0.07	<1	<5	<5	<5
1494520	Soil	0.064	9	39	0.74	164	0.064	<20	1.56	0.02	0.06	<2	<0.05	<1	<5	<5	<5
1494521	Soil	0.059	10	65	1.21	127	0.082	<20	2.33	0.03	0.07	<2	<0.05	<1	<5	6	7
1494522	Soil	0.064	12	72	1.31	199	0.084	<20	2.35	0.03	0.06	<2	<0.05	<1	<5	5	7
1494523	Soil	0.054	9	69	1.12	122	0.076	<20	1.89	0.02	0.06	<2	0.06	<1	<5	7	6
1494524	Soil	0.056	12	52	0.96	141	0.069	<20	1.88	0.02	0.06	<2	<0.05	<1	<5	<5	6
1494525	Soil	0.063	11	57	1.07	126	0.070	<20	2.04	0.02	0.06	<2	<0.05	<1	<5	<5	5
1494526	Soil	0.054	14	46	0.94	148	0.067	<20	2.00	0.02	0.08	<2	<0.05	<1	<5	<5	5
1494527	Soil	0.066	17	47	0.95	120	0.055	<20	1.97	0.02	0.08	<2	0.05	<1	<5	<5	5
1494528	Soil	0.065	11	33	0.65	91	0.049	<20	1.46	0.02	0.05	<2	0.06	<1	<5	<5	<5
1494529	Soil	0.040	6	138	3.12	118	0.072	<20	1.65	0.02	0.03	<2	<0.05	<1	<5	5	<5
1494530	Soil	0.046	8	156	3.61	295	0.113	<20	2.22	0.02	0.05	<2	0.05	<1	<5	7	6



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Method Analyte Unit MDL	FA330	FA330	FA330	AQ300	AQ300	AQ300	AQ300	AQ300	AQ300	AQ300	AQ300	AQ300	AQ300	AQ300	AQ300	AQ300	AQ300	AQ300	AQ300	AQ300	
	Au	Pt	Pd	Mo	Cu	Pb	Zn	Ag	Ni	Co	Mn	Fe	As	Th	Sr	Cd	Sb	Bi	V	Ca	
	ppb	ppb	ppb	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	%	ppm	ppm	ppm	ppm	ppm	ppm	ppm	%	
	2	3	2	1	1	3	1	0.3	1	1	2	0.01	2	2	1	0.5	3	3	1	0.01	
1494531	Soil	5	3	3	2	33	<3	39	<0.3	23	8	276	1.78	9	<2	27	<0.5	<3	<3	38	0.57
1494532	Soil	5	<3	4	1	55	6	94	<0.3	75	22	743	3.61	10	<2	60	<0.5	<3	<3	73	1.26
1494533	Soil	9	6	3	1	55	9	90	<0.3	126	17	592	2.79	11	<2	41	<0.5	<3	<3	59	1.32
1494534	Soil	4	3	4	<1	40	5	46	<0.3	33	17	908	1.98	11	<2	26	<0.5	<3	<3	40	0.80
1494535	Soil	5	<3	<2	1	68	<3	56	<0.3	32	10	310	2.25	10	<2	25	<0.5	<3	<3	48	1.26
1494536	Soil	5	<3	6	<1	83	5	79	<0.3	46	18	603	3.36	11	<2	39	<0.5	<3	<3	70	1.93
1494537	Soil	7	<3	3	2	54	<3	79	<0.3	57	14	589	2.75	12	<2	41	<0.5	<3	<3	56	1.27
1494538	Soil	7	<3	2	1	58	<3	76	<0.3	35	10	449	2.09	9	<2	44	<0.5	<3	<3	43	1.84
1494539	Soil	5	<3	5	<1	47	<3	68	<0.3	27	9	499	1.86	8	<2	40	<0.5	<3	<3	36	1.90
1494540	Soil	6	<3	2	1	29	<3	58	<0.3	23	8	449	1.72	5	<2	35	<0.5	<3	<3	33	1.37
1494541	Soil	5	<3	10	1	77	<3	72	<0.3	80	17	586	2.83	8	<2	57	<0.5	<3	<3	58	1.38
1494542	Soil	6	<3	6	1	71	<3	78	<0.3	45	15	626	3.02	8	<2	68	<0.5	<3	<3	66	1.36
1494543	Soil	6	<3	4	1	71	5	80	<0.3	40	13	460	2.80	6	<2	44	<0.5	<3	<3	61	1.58
1494544	Soil	8	<3	6	<1	72	<3	58	<0.3	31	9	430	2.26	6	<2	48	<0.5	<3	3	52	1.68
1494545	Soil	7	<3	10	1	86	<3	68	<0.3	57	16	682	2.80	11	<2	68	<0.5	<3	<3	65	1.36
1494546	Soil	5	<3	4	1	49	<3	79	<0.3	28	10	385	2.04	9	<2	46	<0.5	<3	<3	41	1.65
1494547	Soil	22	<3	16	1	69	11	107	<0.3	52	18	789	2.91	18	<2	49	<0.5	<3	<3	67	2.15
1494548	Soil	5	8	13	<1	81	5	84	<0.3	36	11	469	2.15	10	<2	49	<0.5	<3	<3	53	1.90
1494549	Soil	5	<3	5	<1	69	<3	85	<0.3	35	12	615	2.28	12	<2	38	<0.5	<3	<3	51	1.84
1494550	Soil	5	<3	6	2	78	<3	89	<0.3	39	14	1025	2.39	11	<2	37	<0.5	<3	<3	56	1.75
1494551	Soil	6	<3	4	1	56	<3	83	<0.3	33	10	395	2.07	6	<2	50	<0.5	<3	<3	45	1.54
1494552	Soil	7	4	<2	1	50	<3	62	<0.3	34	11	427	2.55	11	<2	34	<0.5	<3	<3	53	0.62
1494553	Soil	9	<3	7	4	62	<3	120	0.5	61	12	332	2.31	8	<2	66	1.1	<3	<3	61	1.56
1494554	Soil	6	<3	3	1	51	<3	97	0.4	42	11	362	2.47	10	<2	41	<0.5	<3	<3	58	1.02
1494555	Soil	5	3	4	3	51	7	85	0.4	44	14	488	2.89	13	<2	45	<0.5	<3	<3	63	1.02
1494556	Soil	6	<3	6	4	66	6	102	0.4	66	16	411	3.18	8	<2	51	<0.5	<3	<3	78	1.19
1494557	Soil	6	<3	7	2	66	4	84	<0.3	45	12	472	2.45	9	<2	54	<0.5	<3	<3	55	1.67
1494558	Soil	6	<3	3	10	55	3	180	0.6	59	15	431	3.02	13	<2	78	1.4	<3	<3	113	1.03
1494559	Soil	5	<3	7	3	76	<3	86	0.4	50	14	637	3.16	12	<2	48	<0.5	<3	<3	73	1.51
1494560	Soil	6	<3	7	3	63	5	84	<0.3	48	14	580	3.20	11	<2	47	<0.5	<3	<3	72	1.46



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Method Analyte	Unit	AQ300	AQ300	AQ300	AQ300	AQ300	AQ300	AQ300	AQ300	AQ300	AQ300	AQ300	AQ300	AQ300	AQ300	AQ300	AQ300	AQ300
		P	La	Cr	Mg	Ba	Ti	B	Al	Na	K	W	S	Hg	Tl	Ga	Sc	
MDL		%	ppm	ppm	%	ppm	%	ppm	%	%	%	ppm	ppm	ppm	ppm			
		0.001	1	1	0.01	1	0.001	20	0.01	0.01	0.01	2	0.05	1	5	5	5	
1494531	Soil	0.044	8	24	0.44	142	0.043	<20	1.14	0.03	0.03	<2	<0.05	<1	<5	<5	<5	
1494532	Soil	0.059	12	80	1.41	128	0.076	<20	2.22	0.02	0.07	<2	0.05	<1	<5	<5	5	
1494533	Soil	0.060	8	82	1.40	113	0.069	<20	1.64	0.03	0.06	<2	0.07	<1	<5	5	<5	
1494534	Soil	0.055	8	28	0.53	88	0.047	<20	1.08	0.03	0.04	<2	0.05	<1	<5	<5	<5	
1494535	Soil	0.053	10	29	0.49	69	0.049	<20	1.25	0.03	0.05	<2	0.05	<1	<5	<5	<5	
1494536	Soil	0.056	9	52	0.99	81	0.079	<20	1.85	0.02	0.05	<2	0.06	<1	<5	<5	6	
1494537	Soil	0.063	10	57	0.88	138	0.058	<20	1.63	0.02	0.06	<2	0.07	<1	<5	<5	<5	
1494538	Soil	0.068	8	36	0.62	132	0.042	<20	1.13	0.02	0.06	<2	0.09	<1	<5	<5	<5	
1494539	Soil	0.063	7	22	0.44	91	0.042	<20	0.86	0.02	0.04	<2	0.10	<1	<5	<5	<5	
1494540	Soil	0.050	6	25	0.50	90	0.037	<20	0.99	0.02	0.04	<2	0.08	<1	<5	<5	<5	
1494541	Soil	0.053	8	61	1.33	116	0.059	<20	1.58	0.02	0.04	<2	0.07	<1	<5	<5	<5	
1494542	Soil	0.059	10	53	1.09	104	0.071	<20	1.87	0.02	0.07	<2	0.06	<1	<5	5	6	
1494543	Soil	0.057	9	53	1.05	97	0.076	<20	1.83	0.02	0.07	<2	0.05	<1	<5	<5	5	
1494544	Soil	0.054	7	35	0.84	63	0.067	<20	1.36	0.02	0.05	<2	0.07	<1	<5	<5	<5	
1494545	Soil	0.048	8	69	1.44	83	0.072	<20	1.77	0.02	0.06	<2	0.06	<1	<5	<5	<5	
1494546	Soil	0.070	8	28	0.57	125	0.040	<20	1.12	0.02	0.05	<2	0.11	<1	<5	<5	<5	
1494547	Soil	0.062	9	59	1.29	114	0.057	<20	1.67	0.02	0.06	<2	0.11	<1	<5	<5	5	
1494548	Soil	0.070	11	44	0.86	100	0.049	<20	1.31	0.03	0.05	<2	0.11	<1	<5	<5	<5	
1494549	Soil	0.060	9	38	0.76	115	0.045	<20	1.28	0.02	0.05	<2	0.09	<1	<5	<5	<5	
1494550	Soil	0.059	9	44	0.87	122	0.051	<20	1.42	0.02	0.06	<2	0.08	<1	<5	<5	<5	
1494551	Soil	0.063	9	32	0.68	335	0.051	<20	1.24	0.03	0.04	<2	0.11	<1	<5	<5	<5	
1494552	Soil	0.052	13	35	0.66	150	0.059	<20	1.58	0.03	0.06	<2	<0.05	<1	<5	<5	<5	
1494553	Soil	0.060	8	52	0.89	498	0.054	<20	1.51	0.03	0.06	<2	0.07	<1	<5	<5	<5	
1494554	Soil	0.068	9	37	0.66	255	0.048	<20	1.39	0.02	0.05	<2	0.05	<1	<5	<5	<5	
1494555	Soil	0.063	10	42	0.76	392	0.059	<20	1.68	0.03	0.06	<2	0.06	<1	<5	<5	<5	
1494556	Soil	0.063	13	70	1.18	535	0.082	<20	2.14	0.03	0.07	<2	0.05	<1	<5	<5	7	
1494557	Soil	0.056	8	44	0.78	323	0.057	<20	1.43	0.03	0.06	<2	0.07	<1	<5	<5	<5	
1494558	Soil	0.066	7	69	1.36	309	0.093	<20	2.14	0.03	0.08	<2	<0.05	<1	<5	<5	6	
1494559	Soil	0.069	14	49	0.94	216	0.071	<20	1.91	0.03	0.06	<2	0.07	<1	<5	<5	5	
1494560	Soil	0.065	12	50	0.97	218	0.074	<20	1.92	0.03	0.07	<2	0.06	<1	<5	<5	5	

This report supersedes all previous preliminary and final reports with this file number dated prior to the date on this certificate. Signature indicates final approval; preliminary reports are unsigned and should be used for reference only.



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Method Analyte	Unit	MDL	FA330	FA330	FA330	AQ300	AQ300	AQ300	AQ300	AQ300	AQ300	AQ300	AQ300	AQ300	AQ300	AQ300	AQ300	AQ300	AQ300	AQ300	AQ300	
			Au	Pt	Pd	Mo	Cu	Pb	Zn	Ag	Ni	Co	Mn	Fe	As	Th	Sr	Cd	Sb	Bi	V	Ca
			ppb	ppb	ppb	ppm	ppm	ppm	ppm	ppm	ppm	ppm	%	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	
			2	3	2	1	1	3	1	0.3	1	1	2	0.01	2	2	1	0.5	3	3	1	0.01
1494561	Soil		6	<3	5	6	61	3	161	0.7	80	16	478	3.61	9	<2	87	0.5	<3	<3	107	1.17
1494562	Soil		5	<3	5	1	41	<3	58	<0.3	27	8	317	1.87	7	<2	39	<0.5	<3	<3	41	1.33
1494563	Soil		5	<3	5	1	62	6	97	0.4	51	17	560	3.15	13	<2	40	<0.5	<3	<3	79	1.19
1494564	Soil		6	<3	9	1	73	6	102	<0.3	53	15	588	3.14	15	<2	40	<0.5	<3	<3	68	1.26
1494565	Soil		5	4	16	2	50	4	86	<0.3	44	17	596	3.38	13	<2	43	<0.5	<3	<3	75	1.03
1494566	Soil		5	<3	7	1	56	3	68	<0.3	32	11	440	2.33	9	<2	50	<0.5	<3	<3	48	1.76
1494567	Soil		5	<3	3	2	67	8	78	<0.3	32	12	522	2.68	15	<2	49	<0.5	<3	4	49	1.75
1494568	Soil		5	<3	4	2	56	17	107	<0.3	44	13	686	3.64	12	<2	121	<0.5	<3	<3	69	0.91
1494569	Soil		5	<3	<2	3	58	9	91	<0.3	52	16	637	3.28	17	<2	40	<0.5	<3	<3	74	1.82
1494570	Soil		5	<3	4	2	66	11	99	<0.3	52	17	729	3.37	15	<2	41	<0.5	<3	<3	76	1.90
1494571	Soil		6	3	<2	<1	50	<3	71	<0.3	42	13	676	2.87	9	<2	36	<0.5	<3	<3	66	1.05
1494572	Soil		6	<3	2	1	29	7	43	<0.3	18	6	247	1.56	8	<2	24	<0.5	<3	<3	33	0.63
1494573	Soil		16	<3	4	<1	64	12	87	<0.3	48	18	789	3.17	11	<2	38	<0.5	<3	<3	66	1.47
1494574	Soil		12	<3	<2	1	44	6	47	<0.3	24	11	373	2.08	11	<2	33	<0.5	<3	<3	42	1.02
1494575	Soil		6	<3	<2	2	55	9	86	<0.3	42	16	680	3.11	14	<2	46	<0.5	<3	<3	65	1.56
1494576	Soil		9	<3	3	1	59	10	93	<0.3	53	18	703	3.33	10	<2	50	<0.5	<3	<3	83	2.32
1494577	Soil		13	<3	4	1	60	9	92	<0.3	51	19	576	3.19	11	<2	45	<0.5	<3	<3	65	1.03
1494578	Soil		7	3	4	<1	54	8	99	<0.3	83	17	556	2.83	9	<2	48	<0.5	<3	<3	63	1.44
1494579	Soil		7	<3	3	2	36	7	51	<0.3	24	13	346	2.16	8	<2	38	<0.5	<3	<3	45	0.89
1494580	Soil		15	5	<2	2	45	8	51	<0.3	26	13	347	2.20	9	<2	39	<0.5	<3	<3	46	0.90
1494581	Soil		7	<3	<2	3	59	15	138	<0.3	65	27	1015	4.24	21	<2	31	<0.5	<3	<3	86	0.51
1494582	Soil		11	<3	2	1	46	7	84	<0.3	28	13	662	2.16	11	<2	40	<0.5	<3	<3	46	1.37
1494583	Soil		15	3	4	<1	57	7	89	<0.3	49	15	474	3.35	9	<2	42	<0.5	<3	<3	74	1.36
1494584	Soil		17	<3	4	1	77	7	78	<0.3	56	14	465	2.82	10	<2	45	<0.5	<3	<3	59	1.73
1494585	Soil		6	<3	2	1	68	8	65	<0.3	34	10	374	1.88	9	<2	36	<0.5	<3	<3	39	1.10
1494586	Soil		5	<3	15	1	88	7	84	<0.3	64	17	619	2.91	9	<2	92	<0.5	<3	<3	68	1.75
1494587	Soil		5	<3	4	1	65	7	87	<0.3	41	14	425	2.74	7	<2	56	<0.5	<3	<3	58	1.37
1494588	Soil		6	<3	5	1	65	6	52	<0.3	25	10	341	1.92	10	<2	38	<0.5	<3	<3	36	1.62
1494589	Soil		6	<3	<2	<1	69	6	73	<0.3	36	14	537	2.44	7	<2	48	<0.5	<3	<3	54	1.81
1494590	Soil		4	<3	4	<1	63	6	70	<0.3	31	11	365	2.34	6	<2	42	<0.5	<3	<3	53	1.35



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	P %	La ppm	Cr ppm	Mg %	Ba ppm	Ti %	B ppm	Al %	Na %	K %	W ppm	S %	Hg ppm	Tl ppm	Ga ppm	Sc ppm	
1494561	Soil	0.083	7	94	1.60	398	0.126	<20	2.57	0.03	0.10	<2	<0.05	<1	<5	8	6
1494562	Soil	0.058	7	26	0.54	121	0.045	<20	1.10	0.03	0.05	<2	0.08	<1	<5	<5	<5
1494563	Soil	0.058	7	60	1.13	111	0.089	<20	1.96	0.03	0.08	<2	<0.05	<1	<5	5	6
1494564	Soil	0.055	8	49	0.97	148	0.072	<20	1.76	0.02	0.08	<2	0.05	<1	<5	<5	<5
1494565	Soil	0.054	12	48	0.94	120	0.068	<20	2.02	0.03	0.07	<2	0.05	<1	<5	<5	<5
1494566	Soil	0.068	10	31	0.69	117	0.059	<20	1.47	0.03	0.07	<2	0.10	<1	<5	<5	<5
1494567	Soil	0.062	11	30	0.66	164	0.050	<20	1.71	0.03	0.07	<2	0.08	<1	<5	<5	<5
1494568	Soil	0.040	12	45	1.01	320	0.110	<20	2.50	0.02	0.13	<2	<0.05	<1	<5	<5	7
1494569	Soil	0.049	11	59	1.01	349	0.089	<20	1.91	0.02	0.06	<2	0.07	<1	<5	<5	6
1494570	Soil	0.051	12	56	1.03	266	0.094	<20	1.99	0.02	0.06	<2	0.07	<1	<5	<5	6
1494571	Soil	0.047	10	48	0.99	205	0.084	<20	1.79	0.02	0.08	<2	<0.05	<1	<5	<5	6
1494572	Soil	0.042	6	18	0.36	104	0.038	<20	0.83	0.03	0.04	<2	<0.05	<1	<5	<5	<5
1494573	Soil	0.051	17	51	1.00	268	0.083	<20	1.99	0.02	0.08	<2	<0.05	<1	<5	6	6
1494574	Soil	0.053	8	27	0.50	126	0.043	<20	1.15	0.03	0.05	<2	0.06	<1	<5	<5	<5
1494575	Soil	0.056	13	46	0.81	239	0.068	<20	1.70	0.02	0.07	<2	0.06	<1	<5	8	<5
1494576	Soil	0.057	15	63	0.98	276	0.090	102	2.39	0.02	0.08	<2	0.06	<1	<5	7	6
1494577	Soil	0.062	12	56	1.05	120	0.068	<20	2.07	0.02	0.08	<2	0.05	<1	<5	6	<5
1494578	Soil	0.069	8	79	1.33	120	0.075	<20	1.87	0.02	0.07	<2	0.09	<1	<5	7	<5
1494579	Soil	0.061	10	28	0.49	104	0.048	<20	1.17	0.02	0.05	<2	0.09	<1	<5	6	<5
1494580	Soil	0.061	11	29	0.51	111	0.050	<20	1.20	0.02	0.06	<2	0.08	<1	<5	<5	<5
1494581	Soil	0.061	13	88	1.02	196	0.065	<20	2.31	0.01	0.07	<2	<0.05	<1	<5	9	<5
1494582	Soil	0.074	9	33	0.58	130	0.042	<20	1.14	0.02	0.05	<2	0.09	<1	<5	<5	<5
1494583	Soil	0.059	8	63	1.22	111	0.109	<20	2.10	0.02	0.06	<2	0.06	<1	<5	7	6
1494584	Soil	0.059	11	66	1.02	115	0.069	<20	1.74	0.02	0.06	<2	0.09	<1	<5	6	<5
1494585	Soil	0.056	8	31	0.57	100	0.039	<20	1.08	0.03	0.05	<2	0.07	<1	<5	<5	<5
1494586	Soil	0.071	9	65	1.43	108	0.072	21	1.87	0.03	0.05	<2	0.14	<1	<5	5	5
1494587	Soil	0.074	9	49	1.00	131	0.065	<20	1.88	0.02	0.07	<2	0.11	<1	<5	6	<5
1494588	Soil	0.068	10	24	0.49	111	0.039	<20	1.12	0.03	0.05	<2	0.10	<1	<5	<5	<5
1494589	Soil	0.073	9	41	0.92	113	0.068	<20	1.48	0.02	0.07	<2	0.10	<1	<5	<5	<5
1494590	Soil	0.071	9	32	0.77	104	0.070	<20	1.31	0.03	0.07	<2	0.08	<1	<5	6	<5



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Method Analyte Unit MDL	FA330	FA330	FA330	AQ300	AQ300	AQ300	AQ300	AQ300	AQ300	AQ300	AQ300	AQ300	AQ300	AQ300	AQ300	AQ300	AQ300	AQ300	AQ300	AQ300	
	Au	Pt	Pd	Mo	Cu	Pb	Zn	Ag	Ni	Co	Mn	Fe	As	Th	Sr	Cd	Sb	Bi	V	Ca	
	ppb	ppb	ppb	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	%	ppm	ppm	ppm	ppm	ppm	ppm	ppm	%	
	2	3	2	1	1	3	1	0.3	1	1	2	0.01	2	2	1	0.5	3	3	1	0.01	
1494591	Soil	5	4	8	1	72	7	72	<0.3	29	15	410	2.43	11	<2	40	<0.5	<3	<3	52	1.09
1494592	Soil	4	<3	3	<1	80	12	108	<0.3	78	26	845	3.79	17	<2	47	<0.5	<3	<3	88	1.60
1494593	Soil	7	<3	6	2	114	5	93	<0.3	34	13	1153	1.96	8	<2	57	0.6	<3	<3	36	2.19
1494594	Soil	8	<3	7	1	63	5	45	<0.3	23	9	217	1.80	8	<2	75	<0.5	<3	<3	36	2.82
1494595	Soil	9	<3	10	1	105	8	82	<0.3	39	15	575	2.59	15	<2	50	<0.5	<3	<3	56	1.98
1494596	Soil	7	3	6	1	73	10	94	<0.3	38	20	1057	3.19	14	<2	47	<0.5	<3	<3	72	1.74
1494597	Soil	5	<3	5	<1	78	6	67	<0.3	41	17	655	3.12	8	<2	49	<0.5	<3	<3	77	1.48
1494598	Soil	5	<3	4	<1	91	5	62	<0.3	31	13	539	2.61	8	<2	53	<0.5	<3	<3	66	1.83
1494599	Soil	7	<3	2	<1	77	5	75	<0.3	27	11	456	2.18	6	<2	46	<0.5	<3	<3	50	1.67
1494600	Soil	6	<3	2	1	81	5	68	<0.3	29	12	517	2.34	8	<2	48	<0.5	<3	<3	56	1.51
116713	Soil	7	<3	4	1	102	5	80	<0.3	53	29	807	3.66	6	<2	101	<0.5	<3	<3	81	1.66
116714	Soil	10	9	23	<1	175	4	60	<0.3	61	36	867	5.22	<2	<2	175	<0.5	<3	<3	159	1.60
116715	Soil	4	5	14	1	124	5	66	<0.3	59	29	629	4.23	4	<2	98	<0.5	<3	<3	114	1.57
116716	Soil	4	<3	<2	<1	34	5	69	<0.3	31	14	461	2.66	5	<2	49	<0.5	<3	<3	61	1.18
116717	Soil	6	<3	<2	<1	49	6	64	<0.3	37	16	516	3.05	6	<2	55	<0.5	<3	<3	73	1.42
116718	Soil	7	<3	3	<1	60	6	65	<0.3	42	18	539	3.36	6	<2	53	<0.5	<3	<3	83	1.34
116719	Soil	6	<3	2	1	36	8	76	<0.3	27	12	257	2.57	11	<2	29	<0.5	<3	<3	64	0.47
116720	Soil	7	<3	3	2	33	9	78	<0.3	29	12	198	2.57	11	<2	27	<0.5	<3	<3	66	0.43
116721	Soil	6	<3	<2	<1	25	5	66	<0.3	24	10	219	1.85	4	<2	28	<0.5	<3	<3	54	0.45
116722	Soil	5	<3	3	2	36	<3	65	<0.3	30	13	382	4.35	7	<2	33	<0.5	<3	<3	76	0.48
116723	Soil	6	<3	4	<1	37	3	53	<0.3	21	7	138	1.56	7	<2	25	<0.5	<3	<3	42	0.38
116724	Soil	9	<3	5	2	54	6	68	<0.3	27	10	364	2.41	11	<2	36	<0.5	<3	<3	48	0.66
116725	Soil	14	<3	3	2	57	4	89	<0.3	41	19	2239	2.57	5	<2	45	<0.5	<3	<3	40	0.88
116726	Soil	6	7	5	<1	37	4	77	<0.3	27	10	272	2.22	6	<2	30	<0.5	<3	<3	62	0.53
116727	Soil	7	<3	4	<1	38	7	67	<0.3	26	11	250	1.80	5	<2	28	<0.5	<3	<3	52	0.48
116728	Soil	9	<3	5	<1	57	5	79	<0.3	54	21	561	4.03	6	2	42	<0.5	<3	<3	92	0.58
116729	Soil	4	<3	<2	1	37	5	91	<0.3	41	16	541	3.47	9	<2	36	<0.5	<3	<3	78	0.56
116730	Soil	4	<3	4	1	38	6	98	<0.3	45	16	642	3.55	9	<2	40	<0.5	<3	<3	80	0.61
116731	Soil	9	<3	4	1	21	<3	40	<0.3	14	6	192	1.64	8	<2	28	<0.5	<3	<3	26	0.51
116732	Soil	6	<3	3	<1	35	5	63	<0.3	41	16	533	3.23	8	<2	39	<0.5	<3	<3	76	0.80



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Method Analyte Unit MDL	AQ300	AQ300	AQ300	AQ300	AQ300	AQ300	AQ300	AQ300	AQ300	AQ300	AQ300	AQ300	AQ300	AQ300	AQ300	AQ300	AQ300
	P %	La ppm	Cr ppm	Mg %	Ba ppm	Ti %	B ppm	Al %	Na %	K %	W ppm	S %	Hg ppm	Tl ppm	Ga ppm	Sc ppm	
1494591	Soil	0.063	10	31	0.62	97	0.056	<20	1.36	0.03	0.05	<2	0.06	<1	<5	6	<5
1494592	Soil	0.050	9	75	1.91	96	0.103	<20	2.25	0.02	0.07	<2	0.06	<1	<5	9	8
1494593	Soil	0.076	11	27	0.61	143	0.042	<20	1.28	0.03	0.06	<2	0.11	<1	<5	<5	<5
1494594	Soil	0.073	10	20	0.39	123	0.045	<20	1.17	0.02	0.05	<2	0.17	<1	<5	<5	<5
1494595	Soil	0.075	12	45	0.85	125	0.046	<20	1.46	0.03	0.06	<2	0.10	<1	<5	7	<5
1494596	Soil	0.087	10	47	0.94	124	0.071	<20	1.66	0.03	0.07	<2	0.10	<1	<5	6	<5
1494597	Soil	0.071	9	50	1.28	104	0.092	<20	1.91	0.02	0.08	<2	0.06	<1	<5	6	6
1494598	Soil	0.066	9	36	1.00	89	0.087	<20	1.61	0.02	0.07	<2	0.08	<1	<5	5	<5
1494599	Soil	0.068	9	30	0.72	98	0.065	<20	1.29	0.02	0.06	<2	0.09	<1	<5	<5	<5
1494600	Soil	0.063	8	33	0.87	99	0.072	<20	1.47	0.02	0.06	<2	0.08	<1	<5	6	<5
116713	Soil	0.070	8	52	1.19	80	0.081	<20	1.93	0.04	0.11	<2	0.09	<1	<5	8	8
116714	Soil	0.052	6	73	1.97	55	0.246	<20	3.17	0.07	0.22	<2	<0.05	<1	<5	14	9
116715	Soil	0.050	6	54	1.84	66	0.161	<20	2.56	0.05	0.26	<2	<0.05	<1	<5	12	6
116716	Soil	0.078	10	41	0.92	100	0.079	<20	1.50	0.03	0.10	<2	<0.05	<1	<5	6	<5
116717	Soil	0.070	11	52	1.13	104	0.091	<20	1.68	0.03	0.11	<2	<0.05	<1	<5	6	6
116718	Soil	0.073	13	55	1.20	106	0.093	<20	1.91	0.03	0.09	<2	<0.05	<1	<5	8	8
116719	Soil	0.059	12	42	0.73	117	0.072	<20	1.66	0.02	0.06	<2	<0.05	<1	<5	7	<5
116720	Soil	0.059	12	45	0.78	117	0.073	<20	1.80	0.01	0.06	<2	<0.05	<1	<5	6	<5
116721	Soil	0.061	9	37	0.69	117	0.071	<20	1.42	0.01	0.05	<2	<0.05	<1	<5	<5	<5
116722	Soil	0.048	10	48	0.75	140	0.082	<20	1.56	0.02	0.06	<2	<0.05	<1	<5	<5	6
116723	Soil	0.055	10	29	0.53	110	0.058	<20	1.12	0.02	0.04	<2	0.06	<1	<5	<5	<5
116724	Soil	0.077	10	29	0.50	139	0.053	<20	1.13	0.02	0.05	<2	0.09	<1	<5	<5	<5
116725	Soil	0.088	10	28	0.50	273	0.040	<20	1.15	0.02	0.04	<2	0.13	<1	<5	<5	<5
116726	Soil	0.081	10	35	0.66	117	0.091	<20	1.29	0.02	0.04	<2	0.06	<1	<5	<5	<5
116727	Soil	0.069	11	31	0.56	122	0.065	<20	1.24	0.02	0.04	<2	0.08	<1	<5	<5	<5
116728	Soil	0.076	13	70	1.08	163	0.106	<20	2.08	0.02	0.08	<2	<0.05	<1	<5	<5	9
116729	Soil	0.069	12	58	0.96	152	0.086	<20	1.95	0.01	0.05	<2	<0.05	<1	<5	<5	7
116730	Soil	0.074	13	59	0.97	167	0.087	<20	2.01	0.02	0.06	<2	<0.05	<1	<5	<5	7
116731	Soil	0.047	6	14	0.22	83	0.037	<20	0.57	0.02	0.04	<2	0.06	<1	<5	<5	<5
116732	Soil	0.072	11	50	1.01	112	0.085	<20	1.57	0.02	0.08	<2	<0.05	<1	<5	<5	6

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	Au	Pt	Pd	Mo	Cu	Pb	Zn	Ag	Ni	Co	Mn	Fe	As	Th	Sr	Cd	Sb	Bi	V	Ca	
	ppb	ppb	ppb	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	%	ppm	ppm	ppm	ppm	ppm	ppm	ppm	%	
	2	3	2	1	1	3	1	0.3	1	1	2	0.01	2	2	1	0.5	3	3	1	0.01	
116733	Soil	7	5	4	<1	31	<3	82	<0.3	41	16	602	3.29	6	<2	49	<0.5	<3	<3	78	0.83
116734	Soil	10	<3	8	<1	58	3	73	<0.3	54	18	656	3.74	7	<2	50	<0.5	<3	<3	85	0.89
116735	Soil	5	<3	2	<1	40	7	74	<0.3	42	15	419	3.02	5	<2	45	<0.5	<3	<3	73	0.95
116951	Soil	5	<3	7	1	59	<3	72	<0.3	33	12	522	2.51	7	<2	44	<0.5	<3	<3	57	1.51
116952	Soil	5	6	9	<1	111	6	54	<0.3	25	13	1082	2.89	17	<2	47	<0.5	<3	<3	52	2.47
116953	Soil	4	<3	5	1	92	4	64	<0.3	34	13	591	2.57	8	<2	49	<0.5	<3	<3	60	2.01
116954	Soil	7	5	5	1	87	5	75	<0.3	33	11	473	2.42	9	<2	54	<0.5	<3	<3	52	1.60
116955	Soil	5	<3	2	2	73	4	79	<0.3	42	18	978	3.12	8	<2	55	<0.5	<3	<3	78	1.48
116956	Soil	6	6	7	<1	93	4	55	<0.3	29	11	419	2.14	6	<2	48	<0.5	<3	<3	55	2.24
116957	Soil	4	<3	4	<1	51	4	58	<0.3	21	6	169	1.42	3	<2	35	<0.5	<3	<3	32	1.01
116958	Soil	13	4	9	1	68	4	69	<0.3	46	17	615	3.44	11	<2	38	<0.5	<3	<3	78	1.36
116959	Soil	6	<3	3	<1	39	4	25	<0.3	11	3	240	1.03	5	<2	21	<0.5	<3	<3	21	0.64
116960	Soil	4	<3	5	2	69	5	71	<0.3	41	18	1174	3.29	10	<2	40	<0.5	<3	<3	76	1.01
116961	Soil	4	<3	5	<1	52	5	75	<0.3	34	14	468	2.55	7	<2	39	<0.5	<3	<3	59	1.22
116962	Soil	5	<3	5	2	88	10	104	<0.3	75	24	931	4.21	14	<2	30	<0.5	<3	<3	83	0.61
116963	Soil	7	<3	3	2	74	9	71	<0.3	51	16	645	3.17	13	<2	33	<0.5	<3	<3	60	1.21
116964	Soil	4	3	4	2	52	8	61	<0.3	49	17	518	3.25	14	<2	71	<0.5	<3	<3	67	0.89
116965	Soil	9	3	5	2	70	6	87	<0.3	46	17	645	3.43	13	<2	40	<0.5	<3	<3	70	1.37
116966	Soil	5	7	2	2	49	6	56	<0.3	38	15	630	2.98	13	<2	36	<0.5	<3	<3	62	1.24
116967	Soil	4	<3	5	1	79	5	51	<0.3	33	11	439	2.33	10	<2	34	<0.5	<3	<3	50	1.77
116968	Soil	4	<3	3	3	50	7	84	<0.3	47	18	552	4.30	16	<2	33	<0.5	<3	<3	89	0.72
116969	Soil	5	<3	5	3	57	7	101	<0.3	43	18	703	4.07	16	<2	32	<0.5	<3	<3	86	0.65
116970	Soil	5	<3	3	2	50	7	79	<0.3	37	16	534	3.39	13	<2	31	<0.5	<3	<3	77	0.62
116971	Soil	5	<3	4	2	56	8	69	<0.3	35	16	721	2.87	11	<2	41	<0.5	<3	<3	58	0.96
116972	Soil	6	<3	3	2	61	14	105	<0.3	54	20	766	3.79	17	<2	35	<0.5	<3	<3	79	0.87
116973	Soil	6	3	10	1	85	9	85	<0.3	38	16	793	2.45	11	<2	42	0.6	<3	<3	53	2.13
116974	Soil	6	4	<2	1	61	7	63	<0.3	33	13	554	2.36	9	<2	44	<0.5	<3	<3	52	1.52
116975	Soil	5	<3	5	<1	96	8	74	<0.3	42	16	617	3.09	8	<2	47	<0.5	<3	<3	78	1.35
116976	Soil	6	4	4	1	120	8	64	<0.3	34	14	585	2.61	10	<2	44	<0.5	<3	<3	57	1.30
116977	Soil	5	5	5	1	87	8	79	<0.3	40	18	710	3.38	11	<2	50	<0.5	<3	<3	80	0.90

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Method	Analyte	AQ300	AQ300	AQ300	AQ300	AQ300	AQ300	AQ300	AQ300	AQ300	AQ300	AQ300	AQ300	AQ300	AQ300	AQ300	AQ300
		P	La	Cr	Mg	Ba	Ti	B	Al	Na	K	W	S	Hg	Tl	Ga	Sc
Unit		%	ppm	ppm	%	ppm	%	ppm	%	%	ppm	%	ppm	ppm	ppm	ppm	
MDL		0.001	1	1	0.01	1	0.001	20	0.01	0.01	0.01	0.01	2	0.05	1	5	5
116733	Soil	0.084	9	57	1.17	139	0.098	<20	1.79	0.03	0.10	<2	<0.05	<1	<5	<5	6
116734	Soil	0.092	12	65	1.29	143	0.119	<20	2.00	0.03	0.12	<2	<0.05	<1	<5	<5	8
116735	Soil	0.079	10	54	1.07	113	0.096	<20	1.70	0.03	0.09	<2	<0.05	<1	<5	<5	6
116951	Soil	0.079	8	39	0.94	103	0.070	<20	1.56	0.03	0.06	<2	0.08	<1	<5	<5	<5
116952	Soil	0.083	9	25	0.58	112	0.039	<20	1.14	0.02	0.04	<2	0.12	<1	<5	<5	<5
116953	Soil	0.066	9	38	0.99	111	0.065	<20	1.61	0.02	0.06	<2	0.09	<1	<5	<5	<5
116954	Soil	0.100	11	36	0.77	134	0.048	<20	1.60	0.02	0.07	<2	0.12	<1	<5	<5	<5
116955	Soil	0.077	10	45	1.20	122	0.093	<20	2.09	0.03	0.07	<2	0.08	<1	<5	<5	6
116956	Soil	0.062	10	33	0.79	84	0.066	<20	1.34	0.02	0.05	<2	0.09	<1	<5	<5	<5
116957	Soil	0.059	8	22	0.47	89	0.042	<20	0.97	0.03	0.04	<2	0.08	<1	<5	<5	<5
116958	Soil	0.056	12	52	1.29	110	0.092	<20	2.03	0.02	0.07	<2	0.05	<1	<5	<5	7
116959	Soil	0.052	6	11	0.24	47	0.030	<20	0.70	0.03	0.03	<2	<0.05	<1	<5	<5	<5
116960	Soil	0.063	14	48	1.08	147	0.077	<20	2.05	0.02	0.06	<2	0.06	<1	<5	<5	7
116961	Soil	0.074	10	38	0.91	114	0.063	<20	1.55	0.02	0.05	<2	0.06	<1	<5	<5	<5
116962	Soil	0.049	17	100	1.45	117	0.082	<20	2.33	0.02	0.17	<2	<0.05	<1	<5	<5	9
116963	Soil	0.068	15	47	0.77	146	0.056	<20	1.74	0.03	0.06	<2	0.05	<1	<5	<5	5
116964	Soil	0.051	10	52	1.01	120	0.065	<20	1.87	0.03	0.07	<2	<0.05	<1	<5	<5	5
116965	Soil	0.062	13	48	0.99	151	0.069	<20	1.88	0.02	0.08	<2	<0.05	<1	<5	<5	6
116966	Soil	0.076	11	42	0.79	140	0.052	<20	1.70	0.02	0.07	<2	<0.05	<1	<5	<5	<5
116967	Soil	0.054	9	34	0.70	95	0.052	<20	1.32	0.03	0.05	<2	0.07	<1	<5	<5	<5
116968	Soil	0.049	11	51	0.97	165	0.072	<20	2.23	0.01	0.07	<2	<0.05	<1	<5	<5	<5
116969	Soil	0.066	14	49	0.95	103	0.068	<20	2.25	0.02	0.06	<2	<0.05	<1	<5	<5	<5
116970	Soil	0.060	12	41	0.86	90	0.069	<20	1.96	0.02	0.06	<2	<0.05	<1	<5	<5	<5
116971	Soil	0.091	12	39	0.78	135	0.046	<20	1.66	0.02	0.06	<2	0.06	<1	<5	<5	<5
116972	Soil	0.055	13	62	1.17	140	0.072	<20	2.07	0.02	0.08	<2	<0.05	<1	<5	<5	7
116973	Soil	0.085	14	44	0.77	108	0.059	<20	1.80	0.02	0.06	<2	0.11	<1	<5	<5	<5
116974	Soil	0.069	10	38	0.82	105	0.050	<20	1.36	0.02	0.06	<2	0.11	<1	<5	<5	<5
116975	Soil	0.078	13	52	1.12	128	0.088	<20	1.98	0.02	0.08	<2	0.06	<1	<5	5	7
116976	Soil	0.080	12	38	0.82	124	0.057	<20	1.65	0.02	0.05	<2	0.07	<1	<5	<5	<5
116977	Soil	0.082	10	50	1.19	160	0.080	<20	2.20	0.02	0.07	<2	0.05	<1	<5	5	7

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Method Analyte	Unit	MDL	FA330	FA330	FA330	AQ300	AQ300	AQ300	AQ300	AQ300	AQ300	AQ300	AQ300	AQ300	AQ300	AQ300	AQ300	AQ300	AQ300	AQ300		
			Au	Pt	Pd	Mo	Cu	Pb	Zn	Ag	Ni	Co	Mn	Fe	As	Th	Sr	Cd	Sb	Bi	V	Ca
			ppb	ppb	ppb	ppm	ppm	ppm	ppm	ppm	ppm	ppm	%	ppm	ppm	ppm	ppm	ppm	ppm	ppm	%	
			2	3	2	1	1	3	1	0.3	1	1	2	0.01	2	2	1	0.5	3	3	1	0.01
116978	Soil		7	4	5	<1	122	7	68	<0.3	42	18	839	2.93	7	<2	39	<0.5	<3	<3	76	1.04
116979	Soil		5	<3	6	1	63	7	75	<0.3	38	16	621	3.04	9	<2	42	<0.5	<3	<3	70	0.77
116980	Soil		6	<3	5	1	79	8	80	<0.3	45	18	787	3.35	9	<2	44	<0.5	<3	<3	76	0.81
1889851	Soil		5	<3	2	1	49	6	67	<0.3	27	12	676	2.44	10	<2	46	<0.5	<3	<3	52	1.07
1889852	Soil		4	5	6	<1	81	7	80	<0.3	43	16	885	3.29	9	<2	54	<0.5	<3	<3	78	1.29
1889853	Soil		4	<3	4	1	61	7	72	<0.3	50	17	581	3.43	8	<2	53	<0.5	<3	<3	91	1.45
1889863	Soil		5	<3	4	1	78	9	72	<0.3	72	17	597	2.89	11	<2	36	<0.5	<3	<3	58	1.06
1889864	Soil		6	<3	4	<1	77	11	104	<0.3	71	21	706	4.24	11	<2	40	<0.5	<3	<3	106	1.39
1889865	Soil		5	<3	3	3	56	11	106	<0.3	50	20	627	3.85	17	<2	37	<0.5	<3	<3	82	0.66
1889866	Soil		9	<3	4	2	109	29	126	0.6	105	37	991	4.14	31	<2	81	<0.5	<3	<3	79	1.82
1889867	Soil		7	<3	7	2	67	12	94	<0.3	100	24	701	3.80	16	<2	40	<0.5	<3	<3	79	1.01
1889868	Soil		9	<3	8	2	107	13	104	0.4	75	22	665	3.88	16	<2	40	<0.5	<3	<3	82	1.09
1889869	Soil		7	<3	10	<1	87	11	103	<0.3	295	37	923	3.94	13	<2	40	<0.5	<3	<3	68	1.20
1889870	Soil		6	6	10	1	88	10	105	<0.3	298	38	868	3.92	13	<2	39	<0.5	<3	<3	68	1.20
1889871	Soil		4	<3	4	1	44	8	77	<0.3	58	20	574	3.84	9	<2	45	<0.5	<3	<3	93	0.82
1889872	Soil		5	<3	<2	2	53	11	89	<0.3	58	21	632	3.88	17	<2	40	<0.5	<3	<3	90	0.74
1889873	Soil		4	<3	2	2	42	11	87	<0.3	28	10	345	2.99	15	<2	38	<0.5	<3	<3	65	0.75
1889874	Soil		7	<3	2	1	43	5	43	<0.3	25	5	127	1.63	8	<2	47	<0.5	<3	<3	33	1.33
1889875	Soil		5	<3	<2	1	65	11	102	<0.3	57	17	580	3.43	12	<2	51	<0.5	<3	<3	80	1.17
1889876	Soil		7	<3	5	2	49	7	82	<0.3	30	12	541	2.35	12	<2	31	<0.5	<3	<3	46	0.89
1889877	Soil		7	<3	4	1	52	8	103	<0.3	41	12	555	2.41	10	<2	51	<0.5	<3	<3	47	1.57
1889878	Soil		6	<3	4	1	72	9	90	<0.3	73	15	579	2.76	12	<2	50	<0.5	<3	<3	57	1.70
1889879	Soil		9	<3	12	1	47	8	122	<0.3	41	13	454	2.54	11	<2	39	<0.5	<3	<3	51	1.14
1889880	Soil		4	<3	2	1	60	13	126	<0.3	65	19	629	3.58	16	<2	41	<0.5	<3	<3	73	1.10
1889881	Soil		5	4	3	2	74	13	108	<0.3	79	21	721	3.64	23	<2	47	<0.5	<3	<3	77	1.43
1889882	Soil		4	9	<2	2	43	10	80	<0.3	27	12	394	2.26	13	<2	43	<0.5	<3	<3	45	1.31
1889883	Soil		5	<3	3	1	60	11	90	<0.3	42	16	568	2.95	12	<2	45	<0.5	<3	<3	62	1.02
1889884	Soil		3	<3	3	2	59	15	100	<0.3	68	20	575	4.06	15	<2	46	<0.5	<3	<3	88	0.75
1889974	Soil		4	8	16	1	85	6	69	<0.3	51	21	568	3.46	5	<2	63	<0.5	<3	<3	79	1.60
1889975	Soil		4	<3	9	1	87	5	63	<0.3	60	20	558	3.47	5	2	75	<0.5	<3	<3	76	1.71



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CERTIFICATE OF ANALYSIS

WHI17000522.1

Method Analyte	Unit	AQ300	AQ300	AQ300	AQ300	AQ300	AQ300	AQ300	AQ300	AQ300	AQ300	AQ300	AQ300	AQ300	AQ300	AQ300	AQ300
		P	La	Cr	Mg	Ba	Ti	B	Al	Na	K	W	S	Hg	Tl	Ga	Sc
	MDL	%	ppm	ppm	%	ppm	%	ppm	%	%	%	ppm	%	ppm	ppm	ppm	ppm
116978	Soil	0.078	14	49	1.20	118	0.081	<20	2.09	0.02	0.07	<2	0.06	<1	<5	5	8
116979	Soil	0.065	10	48	1.05	142	0.081	<20	1.98	0.02	0.06	<2	<0.05	<1	<5	5	6
116980	Soil	0.078	12	54	1.19	152	0.077	<20	2.27	0.02	0.07	<2	0.05	<1	<5	5	7
1889851	Soil	0.071	9	34	0.80	110	0.059	<20	1.46	0.02	0.05	<2	0.08	<1	<5	<5	<5
1889852	Soil	0.071	11	50	1.26	127	0.097	<20	2.16	0.02	0.07	<2	0.07	<1	<5	<5	6
1889853	Soil	0.069	9	52	1.40	144	0.119	<20	2.11	0.03	0.06	<2	0.07	<1	<5	5	6
1889863	Soil	0.060	12	68	1.02	100	0.069	<20	1.76	0.02	0.07	<2	0.06	<1	<5	<5	<5
1889864	Soil	0.056	11	112	1.75	126	0.137	<20	2.92	0.02	0.07	<2	<0.05	<1	<5	7	11
1889865	Soil	0.062	12	55	0.93	173	0.063	<20	2.11	0.02	0.06	<2	<0.05	<1	<5	8	<5
1889866	Soil	0.056	11	91	1.47	178	0.123	<20	3.22	0.01	0.13	<2	0.05	<1	<5	7	8
1889867	Soil	0.059	12	96	1.48	140	0.093	<20	2.24	0.02	0.07	<2	<0.05	<1	<5	5	7
1889868	Soil	0.052	12	68	1.36	123	0.096	<20	2.45	0.02	0.08	<2	<0.05	<1	<5	<5	9
1889869	Soil	0.064	12	198	2.79	139	0.093	<20	2.40	0.02	0.08	<2	0.06	<1	<5	6	6
1889870	Soil	0.065	12	200	2.76	140	0.092	<20	2.40	0.02	0.08	<2	0.06	<1	<5	6	7
1889871	Soil	0.038	8	72	1.39	113	0.151	<20	2.46	0.02	0.07	<2	<0.05	<1	<5	<5	7
1889872	Soil	0.051	11	64	1.20	166	0.107	<20	2.56	0.02	0.07	<2	<0.05	<1	<5	7	7
1889873	Soil	0.047	10	35	0.62	184	0.050	<20	1.49	0.02	0.05	<2	<0.05	<1	<5	6	<5
1889874	Soil	0.035	6	22	0.35	70	0.039	<20	0.78	0.03	0.04	<2	0.06	<1	<5	<5	<5
1889875	Soil	0.068	11	62	1.22	148	0.120	<20	2.14	0.03	0.09	<2	<0.05	<1	<5	<5	7
1889876	Soil	0.069	8	29	0.49	150	0.047	<20	1.20	0.03	0.06	<2	0.05	<1	<5	<5	<5
1889877	Soil	0.070	10	39	0.79	149	0.054	<20	1.52	0.03	0.06	<2	0.09	<1	<5	<5	<5
1889878	Soil	0.068	13	57	1.11	153	0.059	<20	1.79	0.02	0.07	<2	0.08	<1	<5	6	<5
1889879	Soil	0.056	9	40	0.83	166	0.060	<20	1.52	0.03	0.08	<2	0.06	<1	<5	5	<5
1889880	Soil	0.054	11	64	1.33	182	0.088	<20	2.23	0.02	0.10	<2	<0.05	<1	<5	<5	7
1889881	Soil	0.065	14	80	1.52	161	0.081	<20	2.37	0.02	0.10	<2	0.06	<1	<5	<5	8
1889882	Soil	0.060	10	25	0.53	83	0.053	<20	1.42	0.03	0.06	<2	0.10	<1	<5	<5	<5
1889883	Soil	0.068	10	47	0.87	157	0.066	<20	1.86	0.03	0.06	<2	0.05	<1	<5	<5	<5
1889884	Soil	0.039	10	72	1.33	143	0.097	<20	2.70	0.02	0.10	<2	<0.05	<1	<5	<5	6
1889974	Soil	0.082	11	57	1.52	93	0.119	<20	2.03	0.05	0.13	<2	0.07	<1	<5	<5	6
1889975	Soil	0.075	11	61	1.59	89	0.125	<20	2.09	0.04	0.16	<2	0.06	<1	<5	<5	6



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Project: Catalyst

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CERTIFICATE OF ANALYSIS

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Method	Analyte	FA330	FA330	FA330	AQ300	AQ300	AQ300	AQ300	AQ300	AQ300	AQ300	AQ300	AQ300	AQ300	AQ300	AQ300	AQ300	AQ300	AQ300	AQ300	
		Au	Pt	Pd	Mo	Cu	Pb	Zn	Ag	Ni	Co	Mn	Fe	As	Th	Sr	Cd	Sb	Bi	V	Ca
Unit		ppb	ppb	ppb	ppm	ppm	ppm	ppm	ppm	ppm	ppm	%	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	
MDL		2	3	2	1	1	3	1	0.3	1	1	2	0.01	2	2	1	0.5	3	3	1	0.01
1889976	Soil	4	4	2	<1	44	<3	53	<0.3	36	15	487	2.82	6	3	96	<0.5	<3	<3	68	3.46
1889977	Soil	18	<3	2	<1	35	<3	51	<0.3	33	14	506	2.64	6	3	74	0.5	<3	<3	73	2.48
1889978	Soil	3	6	3	2	33	5	56	<0.3	23	16	472	2.50	15	<2	35	<0.5	<3	<3	54	0.54
1889979	Soil	5	5	2	2	32	5	81	<0.3	31	18	496	3.18	18	<2	34	0.6	<3	<3	61	0.56
1889980	Soil	7	<3	3	5	38	6	106	<0.3	40	24	439	4.11	18	<2	41	0.6	<3	<3	76	0.74
1889981	Soil	6	<3	4	<1	40	6	66	<0.3	29	11	281	2.09	4	2	37	<0.5	<3	<3	52	0.62
1889982	Soil	7	5	<2	<1	22	5	51	<0.3	20	7	135	1.36	3	<2	27	<0.5	<3	<3	38	0.44
1889983	Soil	5	9	6	2	45	4	89	<0.3	38	13	617	2.35	10	<2	60	<0.5	<3	<3	47	1.29
1889984	Soil	5	4	4	<1	51	6	73	<0.3	43	14	322	3.20	8	<2	41	<0.5	<3	<3	82	0.77
1889985	Soil	5	6	3	<1	45	3	62	<0.3	44	16	501	3.32	6	3	39	<0.5	<3	<3	88	0.69
1889986	Soil	3	5	4	2	39	6	79	<0.3	39	17	556	3.37	11	2	45	<0.5	<3	<3	75	0.81
1889987	Soil	4	<3	4	2	30	7	66	<0.3	36	18	609	3.64	11	3	41	<0.5	<3	<3	87	0.67
1889988	Soil	6	5	<2	2	37	4	118	<0.3	38	14	556	2.91	10	<2	49	<0.5	<3	<3	65	1.09
1889989	Soil	3	<3	4	<1	27	<3	81	<0.3	37	14	483	2.90	6	3	47	<0.5	<3	<3	74	0.92
1889990	Soil	3	<3	6	<1	30	3	81	<0.3	37	15	667	2.91	6	2	50	<0.5	<3	<3	74	1.00
1889991	Soil	4	<3	4	<1	36	<3	43	<0.3	28	14	457	2.55	5	<2	106	<0.5	<3	<3	74	4.21
1889992	Soil	22	4	4	<1	44	<3	62	<0.3	48	18	522	3.85	5	2	63	<0.5	<3	<3	121	1.55
1889993	Soil	4	<3	3	1	58	4	71	<0.3	51	17	468	3.09	13	<2	46	<0.5	<3	<3	66	0.89
1889994	Soil	4	<3	6	1	60	6	90	0.3	82	26	569	4.20	10	<2	73	<0.5	<3	<3	101	1.38
1889995	Soil	9	5	<2	2	46	12	93	0.4	86	22	547	3.86	17	3	42	<0.5	<3	<3	86	0.76
1889996	Soil	4	7	18	1	52	6	97	0.4	55	19	608	3.21	11	<2	57	<0.5	<3	<3	78	1.29
1889997	Soil	5	6	3	2	47	6	85	0.3	47	19	667	3.19	10	<2	54	<0.5	<3	<3	75	1.11
1889998	Soil	8	7	4	1	64	6	87	0.4	69	21	505	3.42	11	<2	59	<0.5	<3	<3	79	1.41
1889999	Soil	8	5	4	1	58	5	88	0.4	57	18	518	3.19	9	<2	56	<0.5	<3	<3	74	1.40
1890000	Soil	6	<3	4	1	59	3	89	0.3	57	19	563	3.23	10	3	56	<0.5	<3	<3	76	1.37



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CERTIFICATE OF ANALYSIS

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Method	Analyte	AQ300	AQ300	AQ300	AQ300	AQ300	AQ300	AQ300	AQ300	AQ300	AQ300	AQ300	AQ300	AQ300	AQ300	AQ300	AQ300
		P	La	Cr	Mg	Ba	Ti	B	Al	Na	K	W	S	Hg	Tl	Ga	Sc
Unit		%	ppm	ppm	%	ppm	%	ppm	%	%	%	ppm	%	ppm	ppm	ppm	ppm
MDL		0.001	1	1	0.01	1	0.001	20	0.01	0.01	0.01	2	0.05	1	5	5	5
1889976	Soil	0.104	13	47	1.18	92	0.113	<20	1.61	0.06	0.11	<2	<0.05	<1	<5	<5	6
1889977	Soil	0.088	11	52	1.02	92	0.128	<20	1.55	0.03	0.09	<2	<0.05	<1	<5	<5	6
1889978	Soil	0.066	10	35	0.53	136	0.052	<20	1.39	0.03	0.05	<2	0.05	<1	<5	<5	<5
1889979	Soil	0.073	12	43	0.71	130	0.065	<20	1.60	0.02	0.07	<2	0.06	<1	<5	<5	<5
1889980	Soil	0.099	15	54	0.83	164	0.070	<20	1.85	0.02	0.07	<2	0.07	<1	<5	<5	6
1889981	Soil	0.074	11	41	0.72	139	0.076	<20	1.60	0.02	0.06	<2	0.08	<1	<5	<5	<5
1889982	Soil	0.064	9	32	0.51	95	0.054	<20	1.18	0.02	0.05	<2	0.06	<1	<5	<5	<5
1889983	Soil	0.093	11	40	0.69	161	0.047	<20	1.37	0.03	0.07	<2	0.11	<1	<5	<5	<5
1889984	Soil	0.066	11	72	1.08	145	0.110	<20	1.99	0.02	0.07	<2	<0.05	<1	<5	<5	8
1889985	Soil	0.066	11	62	1.07	116	0.116	<20	1.85	0.02	0.07	<2	<0.05	<1	<5	<5	7
1889986	Soil	0.070	13	56	0.89	166	0.080	<20	1.95	0.02	0.07	<2	<0.05	<1	<5	<5	6
1889987	Soil	0.067	12	56	0.91	153	0.096	<20	1.96	0.02	0.08	<2	<0.05	<1	<5	<5	5
1889988	Soil	0.084	12	45	0.81	127	0.069	<20	1.62	0.03	0.08	<2	0.07	<1	<5	<5	<5
1889989	Soil	0.078	11	55	1.04	111	0.103	<20	1.66	0.03	0.09	<2	<0.05	<1	<5	<5	6
1889990	Soil	0.079	10	52	1.00	123	0.093	<20	1.68	0.03	0.09	<2	<0.05	<1	<5	<5	6
1889991	Soil	0.087	10	44	0.99	85	0.151	<20	1.38	0.04	0.09	<2	<0.05	<1	<5	<5	5
1889992	Soil	0.081	9	70	1.37	147	0.168	<20	1.89	0.04	0.08	<2	<0.05	<1	<5	<5	6
1889993	Soil	0.073	12	58	0.94	126	0.068	<20	2.08	0.03	0.08	<2	0.05	<1	<5	<5	5
1889994	Soil	0.060	9	118	2.01	130	0.134	<20	3.54	0.03	0.13	<2	<0.05	<1	<5	<5	8
1889995	Soil	0.053	12	87	1.34	216	0.097	<20	2.42	0.03	0.07	<2	<0.05	<1	<5	<5	6
1889996	Soil	0.059	9	70	1.20	222	0.100	<20	2.26	0.04	0.09	<2	0.05	<1	<5	<5	6
1889997	Soil	0.067	11	64	1.06	192	0.088	<20	2.08	0.03	0.08	<2	0.06	<1	<5	<5	6
1889998	Soil	0.062	13	78	1.24	232	0.091	<20	2.36	0.03	0.08	<2	0.06	<1	<5	<5	7
1889999	Soil	0.066	12	72	1.17	155	0.089	<20	2.25	0.03	0.09	<2	0.07	<1	<5	<5	6
1890000	Soil	0.061	12	74	1.18	157	0.090	<20	2.26	0.03	0.09	<2	0.07	<1	<5	<5	6



QUALITY CONTROL REPORT

WHI17000522.1

Method Analyte Unit MDL	FA330	FA330	FA330	AQ300	AQ300	AQ300	AQ300	AQ300	AQ300	AQ300	AQ300	AQ300	AQ300	AQ300	AQ300	AQ300	AQ300	AQ300	AQ300	AQ300	
	Au ppb	Pt ppb	Pd ppb	Mo ppm	Cu ppm	Pb ppm	Zn ppm	Ag ppm	Ni ppm	Co ppm	Mn ppm	Fe %	As ppm	Th ppm	Sr ppm	Cd ppm	Sb ppm	Bi ppm	V ppm	Ca %	
Pulp Duplicates																					
1494515	Soil	7	6	6	4	63	5	106	0.5	59	15	552	2.96	18	<2	59	<0.5	<3	<3	79	1.24
REP 1494515	QC				4	62	6	105	0.5	58	15	548	3.00	17	<2	59	<0.5	<3	<3	79	1.23
1494516	Soil	6	5	7	2	45	<3	62	<0.3	27	9	357	1.88	7	<2	48	<0.5	<3	<3	45	1.33
REP 1494516	QC	5	<3	5																	
1494551	Soil	6	<3	4	1	56	<3	83	<0.3	33	10	395	2.07	6	<2	50	<0.5	<3	<3	45	1.54
REP 1494551	QC	10	<3	8	1	57	5	83	<0.3	33	10	402	2.05	7	<2	51	<0.5	<3	<3	44	1.60
1494586	Soil	5	<3	15	1	88	7	84	<0.3	64	17	619	2.91	9	<2	92	<0.5	<3	<3	68	1.75
REP 1494586	QC	7	<3	16																	
1494587	Soil	5	<3	4	1	65	7	87	<0.3	41	14	425	2.74	7	<2	56	<0.5	<3	<3	58	1.37
REP 1494587	QC				1	68	7	89	<0.3	41	14	444	2.84	8	<2	58	<0.5	<3	<3	58	1.43
116733	Soil	7	5	4	<1	31	<3	82	<0.3	41	16	602	3.29	6	<2	49	<0.5	<3	<3	78	0.83
REP 116733	QC	6	5	5																	
116735	Soil	5	<3	2	<1	40	7	74	<0.3	42	15	419	3.02	5	<2	45	<0.5	<3	<3	73	0.95
REP 116735	QC				<1	41	<3	74	<0.3	43	15	419	2.99	4	<2	44	<0.5	<3	<3	73	0.96
1889853	Soil	4	<3	4	1	61	7	72	<0.3	50	17	581	3.43	8	<2	53	<0.5	<3	<3	91	1.45
REP 1889853	QC	6	<3	5																	
1889865	Soil	5	<3	3	3	56	11	106	<0.3	50	20	627	3.85	17	<2	37	<0.5	<3	<3	82	0.66
REP 1889865	QC				3	55	12	103	<0.3	49	20	634	3.88	17	<2	37	<0.5	<3	<3	82	0.64
1889986	Soil	3	5	4	2	39	6	79	<0.3	39	17	556	3.37	11	2	45	<0.5	<3	<3	75	0.81
REP 1889986	QC	4	6	8																	
1889990	Soil	3	<3	6	<1	30	3	81	<0.3	37	15	667	2.91	6	2	50	<0.5	<3	<3	74	1.00
REP 1889990	QC				<1	30	<3	83	<0.3	38	15	677	3.02	6	2	50	<0.5	<3	<3	75	1.03
Reference Materials																					
STD CDN-PGMS-19	Standard	242	110	489																	
STD CDN-PGMS-23	Standard	481	484	2076																	
STD CDN-PGMS-19	Standard	231	120	515																	
STD CDN-PGMS-23	Standard	499	452	2056																	
STD CDN-PGMS-19	Standard	226	111	493																	



QUALITY CONTROL REPORT

WHI17000522.1

Method	AQ300	AQ300	AQ300	AQ300	AQ300	AQ300	AQ300	AQ300	AQ300	AQ300	AQ300	AQ300	AQ300	AQ300	AQ300	AQ300	AQ300
Analyte	P	La	Cr	Mg	Ba	Ti	B	Al	Na	K	W	S	Hg	Tl	Ga	Sc	
Unit	%	ppm	ppm	%	ppm	%	ppm	%	%	%	ppm	%	ppm	ppm	ppm	ppm	
MDL	0.001	1	1	0.01	1	0.001	20	0.01	0.01	0.01	2	0.05	1	5	5	5	
Pulp Duplicates																	
1494515	Soil	0.081	11	60	0.98	223	0.052	<20	1.84	0.02	0.05	<2	0.05	<1	<5	<5	<5
REP 1494515	QC	0.081	10	60	0.98	224	0.055	<20	1.82	0.02	0.05	<2	0.05	<1	<5	<5	<5
1494516	Soil	0.065	8	24	0.45	136	0.051	<20	1.04	0.03	0.04	<2	0.08	<1	<5	<5	<5
REP 1494516	QC																
1494551	Soil	0.063	9	32	0.68	335	0.051	<20	1.24	0.03	0.04	<2	0.11	<1	<5	<5	<5
REP 1494551	QC	0.064	9	31	0.68	350	0.049	<20	1.24	0.03	0.04	<2	0.11	<1	<5	<5	<5
1494586	Soil	0.071	9	65	1.43	108	0.072	21	1.87	0.03	0.05	<2	0.14	<1	<5	5	5
REP 1494586	QC																
1494587	Soil	0.074	9	49	1.00	131	0.065	<20	1.88	0.02	0.07	<2	0.11	<1	<5	6	<5
REP 1494587	QC	0.078	9	49	1.02	136	0.065	<20	1.94	0.02	0.07	<2	0.11	<1	<5	7	<5
116733	Soil	0.084	9	57	1.17	139	0.098	<20	1.79	0.03	0.10	<2	<0.05	<1	<5	<5	6
REP 116733	QC																
116735	Soil	0.079	10	54	1.07	113	0.096	<20	1.70	0.03	0.09	<2	<0.05	<1	<5	<5	6
REP 116735	QC	0.080	10	55	1.06	112	0.096	<20	1.70	0.03	0.09	<2	<0.05	<1	<5	<5	6
1889853	Soil	0.069	9	52	1.40	144	0.119	<20	2.11	0.03	0.06	<2	0.07	<1	<5	5	6
REP 1889853	QC																
1889865	Soil	0.062	12	55	0.93	173	0.063	<20	2.11	0.02	0.06	<2	<0.05	<1	<5	8	<5
REP 1889865	QC	0.061	12	56	0.94	172	0.066	<20	2.14	0.02	0.06	<2	<0.05	<1	<5	6	<5
1889986	Soil	0.070	13	56	0.89	166	0.080	<20	1.95	0.02	0.07	<2	<0.05	<1	<5	<5	6
REP 1889986	QC																
1889990	Soil	0.079	10	52	1.00	123	0.093	<20	1.68	0.03	0.09	<2	<0.05	<1	<5	<5	6
REP 1889990	QC	0.080	11	54	1.03	125	0.096	<20	1.70	0.03	0.09	<2	<0.05	<1	<5	<5	6
Reference Materials																	
STD CDN-PGMS-19	Standard																
STD CDN-PGMS-23	Standard																
STD CDN-PGMS-19	Standard																
STD CDN-PGMS-23	Standard																
STD CDN-PGMS-19	Standard																



QUALITY CONTROL REPORT

WHI17000522.1

		FA330	FA330	FA330	AQ300	AQ300	AQ300	AQ300	AQ300	AQ300	AQ300	AQ300	AQ300	AQ300	AQ300	AQ300	AQ300	AQ300	AQ300	AQ300	
		Au	Pt	Pd	Mo	Cu	Pb	Zn	Ag	Ni	Co	Mn	Fe	As	Th	Sr	Cd	Sb	Bi	V	Ca
		ppb	ppb	ppb	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	%	ppm	ppm	ppm	ppm	ppm	ppm	ppm	%
		2	3	2	1	1	3	1	0.3	1	1	2	0.01	2	2	1	0.5	3	3	1	0.01
STD CDN-PGMS-23	Standard	489	484	2077																	
STD CDN-PGMS-19	Standard	230	111	480																	
STD CDN-PGMS-23	Standard	509	505	2122																	
STD CDN-PGMS-19	Standard	244	120	482																	
STD CDN-PGMS-23	Standard	524	498	2047																	
STD CDN-PGMS-19	Standard	233	105	468																	
STD CDN-PGMS-23	Standard	481	429	2041																	
STD CDN-PGMS-19	Standard	258	99	488																	
STD DS11	Standard				13	152	138	348	1.9	78	13	1029	3.17	43	8	65	2.4	8	12	51	1.07
STD DS11	Standard				14	152	137	350	1.8	79	13	1047	3.10	43	6	65	2.1	8	10	48	1.06
STD DS11	Standard				12	137	117	333	1.3	76	10	1039	2.98	39	7	62	1.7	6	11	48	1.01
STD DS11	Standard				12	140	122	324	1.7	75	11	999	2.87	40	6	59	1.8	7	10	47	0.97
STD DS11	Standard				14	154	136	360	1.7	80	13	1038	3.04	42	4	64	2.1	6	11	48	1.07
STD DS11	Standard				13	144	130	327	1.8	75	13	994	3.05	41	5	60	2.1	8	11	46	1.00
STD OREAS45EA	Standard				2	748	13	33	0.6	396	56	425	24.88	12	12	4	<0.5	<3	<3	321	0.03
STD OREAS45EA	Standard				2	717	13	32	0.3	402	54	428	23.25	6	8	4	<0.5	<3	<3	320	0.04
STD OREAS45EA	Standard				1	691	15	30	<0.3	360	46	406	21.40	8	9	3	<0.5	<3	<3	297	0.03
STD OREAS45EA	Standard				2	701	15	30	<0.3	367	46	408	21.86	9	8	3	<0.5	<3	<3	302	0.03
STD OREAS45EA	Standard				2	725	14	31	0.4	397	55	425	22.60	5	9	4	<0.5	<3	<3	316	0.04
STD OREAS45EA	Standard				2	725	13	33	0.4	418	57	432	25.91	11	9	4	<0.5	<3	<3	321	0.03
STD CDN-PGMS-23 Expected		496	456	2032																	
STD OREAS45EA Expected					1.6	709	14.3	31.4	0.26	381	52	400	23.51	10	10.7	3.5				303	0.036
STD DS11 Expected					13.9	156	138	345	1.71	81.9	14.2	1055	3.2082	42.8	7.65	67.3	2.37	7.2	12.2	50	1.063
STD CDN-PGMS-19 Expected		230	108	476																	
BLK	Blank				<1	<1	<3	<1	<0.3	<1	<1	<2	<0.01	<2	<2	<1	<0.5	<3	<3	<1	<0.01
BLK	Blank	3	<3	<2																	
BLK	Blank	3	<3	<2																	
BLK	Blank	<2	<3	<2																	
BLK	Blank	<2	<3	<2																	



Bureau Veritas Commodities Canada Ltd.
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Client: Longford Exploration Services Ltd.
6970 Napier Street
Burnaby British Columbia V5B 2C4 Canada

Project: Catalyst
Report Date: August 30, 2017

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Part: 2 of 2

QUALITY CONTROL REPORT

WHI17000522.1

		AQ300	AQ300	AQ300	AQ300	AQ300	AQ300	AQ300	AQ300	AQ300	AQ300	AQ300	AQ300	AQ300	AQ300	AQ300	AQ300
		P	La	Cr	Mg	Ba	Ti	B	Al	Na	K	W	S	Hg	Tl	Ga	Sc
		%	ppm	ppm	%	ppm	%	ppm	%	%	%	ppm	%	ppm	ppm	ppm	ppm
		0.001	1	1	0.01	1	0.001	20	0.01	0.01	0.01	2	0.05	1	5	5	5
STD CDN-PGMS-23	Standard																
STD CDN-PGMS-19	Standard																
STD CDN-PGMS-23	Standard																
STD CDN-PGMS-19	Standard																
STD CDN-PGMS-23	Standard																
STD CDN-PGMS-19	Standard																
STD CDN-PGMS-23	Standard																
STD DS11	Standard	0.071	19	63	0.86	421	0.095	<20	1.18	0.08	0.41	3	0.28	<1	<5	<5	<5
STD DS11	Standard	0.071	17	57	0.84	432	0.089	<20	1.12	0.07	0.41	<2	0.29	<1	6	<5	<5
STD DS11	Standard	0.066	16	54	0.81	419	0.086	<20	1.08	0.06	0.37	3	0.27	<1	<5	<5	<5
STD DS11	Standard	0.064	15	55	0.78	399	0.085	<20	1.05	0.06	0.37	3	0.26	<1	<5	<5	<5
STD DS11	Standard	0.070	17	58	0.88	421	0.087	<20	1.10	0.07	0.40	3	0.29	<1	6	9	<5
STD DS11	Standard	0.069	15	55	0.82	411	0.083	<20	1.05	0.06	0.37	2	0.27	<1	7	<5	<5
STD OREAS45EA	Standard	0.032	9	969	0.11	155	0.106	<20	3.57	0.02	0.06	<2	<0.05	<1	<5	7	90
STD OREAS45EA	Standard	0.031	8	916	0.10	152	0.104	<20	3.44	0.02	0.06	<2	<0.05	<1	<5	13	85
STD OREAS45EA	Standard	0.029	7	823	0.09	138	0.096	<20	3.14	0.02	0.05	<2	<0.05	<1	<5	15	82
STD OREAS45EA	Standard	0.030	7	833	0.09	139	0.097	<20	3.14	0.02	0.05	<2	<0.05	<1	<5	21	82
STD OREAS45EA	Standard	0.030	8	906	0.10	149	0.104	<20	3.39	0.02	0.06	<2	<0.05	<1	<5	20	84
STD OREAS45EA	Standard	0.032	8	928	0.10	153	0.105	<20	3.48	0.02	0.06	<2	<0.05	<1	11	6	88
STD CDN-PGMS-23 Expected																	
STD OREAS45EA Expected		0.029	7.06	849	0.095	148	0.0984		3.13	0.02	0.053		0.036			12.4	78
STD DS11 Expected		0.0701	18.6	61.5	0.85	417	0.0976	6	1.129	0.0694	0.4	2.9	0.2835	0.3	4.9	4.7	3.1
STD CDN-PGMS-19 Expected																	
BLK	Blank	<0.001	<1	<1	<0.01	<1	<0.001	<20	<0.01	<0.01	<0.01	<2	<0.05	<1	<5	<5	<5
BLK	Blank																
BLK	Blank																
BLK	Blank																
BLK	Blank																



QUALITY CONTROL REPORT

WHI17000522.1

		FA330	FA330	FA330	AQ300	AQ300	AQ300	AQ300	AQ300	AQ300	AQ300	AQ300	AQ300	AQ300	AQ300	AQ300	AQ300	AQ300	AQ300	AQ300	AQ300
		Au	Pt	Pd	Mo	Cu	Pb	Zn	Ag	Ni	Co	Mn	Fe	As	Th	Sr	Cd	Sb	Bi	V	Ca
		ppb	ppb	ppb	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	%	ppm	ppm	ppm	ppm	ppm	ppm	ppm	%
		2	3	2	1	1	3	1	0.3	1	1	2	0.01	2	2	1	0.5	3	3	1	0.01
BLK	Blank	<2	<3	3																	
BLK	Blank	<2	<3	<2																	
BLK	Blank				<1	<1	<3	<1	<0.3	<1	<1	<2	<0.01	<2	<2	<1	<0.5	<3	<3	<1	<0.01
BLK	Blank	<2	<3	<2																	
BLK	Blank	<2	<3	<2																	
BLK	Blank	<2	5	<2																	
BLK	Blank	2	<3	2																	
BLK	Blank				<1	<1	<3	<1	<0.3	<1	<1	<2	<0.01	<2	<2	<1	<0.5	<3	<3	<1	<0.01
BLK	Blank				<1	<1	4	<1	<0.3	<1	<1	<2	<0.01	<2	<2	<1	<0.5	<3	<3	<1	<0.01
BLK	Blank				<1	<1	<3	<1	<0.3	<1	<1	<2	<0.01	<2	<2	<1	<0.5	<3	<3	<1	<0.01
BLK	Blank	<2	<3	<2																	
BLK	Blank	<2	<3	3																	
BLK	Blank				<1	<1	<3	<1	<0.3	<1	<1	<2	<0.01	<2	<2	<1	<0.5	<3	<3	<1	<0.01
BLK	Blank	<2	<3	<2																	



QUALITY CONTROL REPORT

WHI17000522.1

		AQ300	AQ300	AQ300	AQ300	AQ300	AQ300	AQ300	AQ300	AQ300	AQ300	AQ300	AQ300	AQ300	AQ300	AQ300	AQ300
		P	La	Cr	Mg	Ba	Ti	B	Al	Na	K	W	S	Hg	Tl	Ga	Sc
		%	ppm	ppm	%	ppm	%	ppm	%	%	%	ppm	%	ppm	ppm	ppm	ppm
		0.001	1	1	0.01	1	0.001	20	0.01	0.01	0.01	2	0.05	1	5	5	5
BLK	Blank																
BLK	Blank																
BLK	Blank	<0.001	<1	<1	<0.01	<1	<0.001	<20	<0.01	<0.01	<0.01	<2	<0.05	<1	<5	<5	<5
BLK	Blank																
BLK	Blank																
BLK	Blank	<0.001	<1	<1	<0.01	<1	<0.001	<20	<0.01	<0.01	<0.01	<2	<0.05	<1	<5	<5	<5
BLK	Blank	<0.001	<1	<1	<0.01	<1	<0.001	<20	<0.01	<0.01	<0.01	<2	<0.05	<1	<5	<5	<5
BLK	Blank	<0.001	<1	<1	<0.01	<1	<0.001	<20	<0.01	<0.01	<0.01	<2	<0.05	<1	<5	<5	<5
BLK	Blank																
BLK	Blank																
BLK	Blank	<0.001	<1	<1	<0.01	<1	<0.001	<20	<0.01	<0.01	<0.01	<2	<0.05	<1	<5	<5	<5
BLK	Blank																



BUREAU VERITAS MINERAL LABORATORIES
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Client: Longford Exploration Services Ltd.
6970 Napier Street
Burnaby British Columbia V5B 2C4 Canada

Submitted By: James Rogers
Receiving Lab: Canada-Whitehorse
Received: August 07, 2017
Report Date: August 30, 2017
Page: 1 of 2

CERTIFICATE OF ANALYSIS

WHI17000523.1

CLIENT JOB INFORMATION

Project: Catalyst
Shipment ID:
P.O. Number
Number of Samples: 19

SAMPLE DISPOSAL

PICKUP-PLP Client to Pickup Pulps
PICKUP-RJT Client to Pickup Rejects

Bureau Veritas does not accept responsibility for samples left at the laboratory after 90 days without prior written instructions for sample storage or return.

Invoice To: Longford Exploration Services Ltd.
6970 Napier Street
Burnaby British Columbia V5B 2C4
Canada

CC:

SAMPLE PREPARATION AND ANALYTICAL PROCEDURES

Procedure Code	Number of Samples	Code Description	Test Wgt (g)	Report Status	Lab
DY060	19	Dry at 60C			WHI
SS80	19	Dry at 60C sieve 100g to -80 mesh			WHI
SVRJT	19	Save all or part of Soil Reject			WHI
FA330	19	Fire assay fusion Au Pt Pd by ICP-ES	30	Completed	VAN
EN002	19	Environmental disposal charge-Fire assay lead waste			VAN
AQ300	19	1:1:1 Aqua Regia digestion ICP-ES analysis	0.5	Completed	VAN
SHP01	19	Per sample shipping charges for branch shipments			VAN

ADDITIONAL COMMENTS



This report supersedes all previous preliminary and final reports with this file number dated prior to the date on this certificate. Signature indicates final approval; preliminary reports are unsigned and should be used for reference only. All results are considered the confidential property of the client. Bureau Veritas assumes the liabilities for actual cost of analysis only. Results apply to samples as submitted.
*** asterisk indicates that an analytical result could not be provided due to unusually high levels of interference from other elements.



BUREAU VERITAS MINERAL LABORATORIES
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Client: Longford Exploration Services Ltd.
6970 Napier Street
Burnaby British Columbia V5B 2C4 Canada

Project: Catalyst
Report Date: August 30, 2017

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Part: 1 of 2

CERTIFICATE OF ANALYSIS

WHI17000523.1

Method	Analyte	FA330	FA330	FA330	AQ300	AQ300	AQ300	AQ300	AQ300	AQ300	AQ300	AQ300	AQ300	AQ300	AQ300	AQ300	AQ300	AQ300	AQ300	AQ300	AQ300
		Au	Pt	Pd	Mo	Cu	Pb	Zn	Ag	Ni	Co	Mn	Fe	As	Th	Sr	Cd	Sb	Bi	V	Ca
Unit		ppb	ppb	ppb	ppm	ppm	ppm	ppm	ppm	ppm	ppm	%	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	%
MDL		2	3	2	1	1	3	1	0.3	1	1	2	0.01	2	2	1	0.5	3	3	1	0.01
116909	Stream	9	7	17	<1	74	<3	83	<0.3	166	37	897	5.79	10	<2	44	<0.5	<3	<3	145	1.86
116911	Stream	8	24	7	1	78	9	156	0.4	100	31	682	5.97	12	<2	53	<0.5	<3	<3	142	1.84
116912	Stream	9	13	17	<1	70	6	89	<0.3	72	32	865	5.49	11	<2	45	0.5	<3	<3	175	2.20
116913	Stream	6	5	17	<1	31	<3	55	0.5	38	23	373	11.20	<2	2	55	<0.5	<3	<3	375	0.95
116914	Stream	9	8	12	<1	72	<3	70	0.5	74	33	735	6.04	2	<2	46	<0.5	<3	<3	227	2.80
116915	Stream	12	12	35	<1	70	<3	87	<0.3	69	32	875	6.61	5	<2	45	<0.5	<3	<3	217	2.14
116916	Stream	15	13	28	<1	61	<3	73	0.4	73	31	703	7.10	2	2	56	<0.5	<3	<3	239	1.98
116917	Stream	1201	16	11	2	43	<3	151	<0.3	45	18	529	3.94	8	<2	88	1.1	<3	<3	144	0.81
116919	Stream	10	<3	25	3	66	<3	154	0.4	49	23	749	5.11	10	2	84	0.6	<3	<3	176	0.80
116921	Stream	9	19	22	<1	34	<3	61	0.4	42	23	431	5.01	<2	<2	59	<0.5	<3	<3	180	0.92
116925	Stream	1782	16	33	<1	143	<3	55	<0.3	33	23	482	6.76	<2	<2	174	<0.5	<3	<3	195	1.57
116926	Stream	8	11	12	<1	28	<3	70	<0.3	33	18	560	9.26	<2	3	54	<0.5	<3	<3	411	1.98
116927	Stream	19	6	16	<1	46	<3	81	<0.3	32	32	475	8.06	25	<2	25	<0.5	<3	<3	207	0.75
116928	Stream	11	3	17	<1	28	<3	85	<0.3	31	22	666	10.87	6	4	28	<0.5	<3	<3	419	0.95
116929	Stream	193	8	15	<1	30	<3	77	<0.3	28	23	638	10.87	6	7	42	<0.5	<3	<3	463	1.62
116930	Stream	681	12	22	<1	20	<3	82	<0.3	32	17	562	6.97	<2	3	49	<0.5	<3	<3	311	1.88
116931	Stream	109	24	<2	<1	31	<3	50	<0.3	26	18	455	8.23	13	3	58	<0.5	<3	<3	334	3.06
116932	Stream	1227	20	9	<1	21	10	58	<0.3	36	15	654	3.70	<2	<2	43	<0.5	<3	<3	130	1.03
116933	Stream	9	31	13	<1	21	4	56	<0.3	40	15	538	4.97	3	<2	34	<0.5	<3	<3	174	0.87



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Burnaby British Columbia V5B 2C4 Canada

Project: Catalyst
Report Date: August 30, 2017

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Part: 2 of 2

CERTIFICATE OF ANALYSIS

WHI17000523.1

Method	Analyte	AQ300	AQ300	AQ300	AQ300	AQ300	AQ300	AQ300	AQ300	AQ300	AQ300	AQ300	AQ300	AQ300	AQ300	AQ300	AQ300
		P	La	Cr	Mg	Ba	Ti	B	Al	Na	K	W	S	Hg	Tl	Ga	Sc
Unit		%	ppm	ppm	%	ppm	%	ppm	%	%	%	ppm	%	ppm	ppm	ppm	ppm
MDL		0.001	1	1	0.01	1	0.001	20	0.01	0.01	0.01	2	0.05	1	5	5	5
116909	Stream	0.051	7	192	3.56	409	0.209	20	3.30	0.03	0.08	<2	<0.05	<1	<5	<5	11
116911	Stream	0.057	11	110	2.48	571	0.161	<20	3.24	0.03	0.10	<2	0.10	<1	<5	<5	12
116912	Stream	0.056	7	83	2.79	355	0.218	<20	3.41	0.02	0.07	<2	<0.05	<1	<5	<5	13
116913	Stream	0.053	5	128	1.20	30	0.400	<20	1.63	0.07	0.15	<2	<0.05	<1	<5	<5	<5
116914	Stream	0.055	5	69	3.14	27	0.310	26	3.90	0.02	0.03	<2	<0.05	<1	<5	<5	14
116915	Stream	0.063	7	75	2.50	890	0.329	<20	3.35	0.02	0.06	<2	<0.05	<1	<5	<5	11
116916	Stream	0.050	5	85	2.47	173	0.456	<20	3.15	0.03	0.05	<2	<0.05	<1	<5	<5	9
116917	Stream	0.078	7	91	0.79	249	0.132	<20	2.03	0.08	0.26	<2	0.06	<1	<5	<5	<5
116919	Stream	0.090	9	72	1.19	407	0.218	<20	2.51	0.06	0.56	<2	<0.05	<1	<5	<5	7
116921	Stream	0.060	5	75	1.39	43	0.324	<20	1.74	0.03	0.04	<2	<0.05	<1	<5	<5	<5
116925	Stream	0.049	4	92	1.15	38	0.223	<20	1.86	0.05	0.19	<2	0.16	<1	<5	<5	5
116926	Stream	0.084	15	112	0.93	46	0.284	<20	1.10	0.02	0.06	<2	<0.05	<1	<5	<5	<5
116927	Stream	0.084	11	48	0.94	31	0.290	<20	1.29	0.02	0.04	<2	1.94	<1	<5	<5	<5
116928	Stream	0.084	18	76	0.82	40	0.354	<20	0.98	0.02	0.04	<2	0.40	<1	<5	<5	<5
116929	Stream	0.081	29	94	0.70	69	0.363	<20	0.86	0.01	0.04	<2	0.29	<1	<5	<5	<5
116930	Stream	0.084	14	77	1.02	42	0.368	<20	1.13	0.02	0.05	<2	0.07	<1	<5	<5	<5
116931	Stream	0.091	17	90	0.72	40	0.218	<20	0.90	0.02	0.04	<2	0.24	<1	<5	<5	<5
116932	Stream	0.098	9	56	1.09	67	0.181	<20	1.34	0.04	0.06	<2	<0.05	<1	<5	<5	<5
116933	Stream	0.081	9	59	1.05	66	0.163	<20	1.23	0.02	0.06	<2	<0.05	<1	<5	<5	<5



QUALITY CONTROL REPORT

WHI17000523.1

Method	FA330	FA330	FA330	AQ300	AQ300	AQ300	AQ300	AQ300	AQ300	AQ300	AQ300	AQ300	AQ300	AQ300	AQ300	AQ300	AQ300	AQ300	AQ300	AQ300	AQ300
Analyte	Au	Pt	Pd	Mo	Cu	Pb	Zn	Ag	Ni	Co	Mn	Fe	As	Th	Sr	Cd	Sb	Bi	V	Ca	
Unit	ppb	ppb	ppb	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	%	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	
MDL	2	3	2	1	1	3	1	0.3	1	1	2	0.01	2	2	1	0.5	3	3	1	0.01	
Pulp Duplicates																					
116926	Stream Sedim	8	11	12	<1	28	<3	70	<0.3	33	18	560	9.26	<2	3	54	<0.5	<3	<3	411	1.98
REP 116926	QC	9	13	27																	
116929	Stream Sedim	193	8	15	<1	30	<3	77	<0.3	28	23	638	10.87	6	7	42	<0.5	<3	<3	463	1.62
REP 116929	QC				1	22	6	77	0.7	28	25	598	10.84	24	9	40	<0.5	<3	<3	455	1.56
Reference Materials																					
STD CDN-PGMS-19	Standard	244	120	482																	
STD CDN-PGMS-23	Standard	524	498	2047																	
STD CDN-PGMS-19	Standard	188	99	468																	
STD DS11	Standard				13	152	138	348	1.9	78	13	1029	3.17	43	8	65	2.4	8	12	51	1.07
STD DS11	Standard				13	153	135	362	2.3	80	13	1039	3.16	41	8	63	2.3	8	11	50	1.06
STD DS11	Standard				14	141	134	345	1.9	76	13	1069	3.11	42	7	65	2.2	8	12	49	1.04
STD OREAS45EA	Standard				2	748	13	33	0.6	396	56	425	24.88	12	12	4	<0.5	<3	<3	321	0.03
STD OREAS45EA	Standard				3	705	12	32	0.6	375	54	408	22.42	11	12	4	<0.5	<3	<3	313	0.03
STD OREAS45EA	Standard				1	703	17	30	<0.3	378	50	421	22.32	11	10	3	<0.5	<3	<3	308	0.03
STD CDN-PGMS-23 Expected		496	456	2032																	
STD CDN-PGMS-19 Expected		230	108	476																	
STD OREAS45EA Expected					1.6	709	14.3	31.4	0.26	381	52	400	23.51	10	10.7	3.5				303	0.036
STD DS11 Expected					13.9	156	138	345	1.71	81.9	14.2	1055	3.2082	42.8	7.65	67.3	2.37	7.2	12.2	50	1.063
BLK	Blank				<1	<1	<3	<1	<0.3	<1	<1	<2	<0.01	<2	<2	<1	<0.5	<3	<3	<1	<0.01
BLK	Blank				<1	<1	<3	<1	<0.3	<1	<1	<2	<0.01	<2	<2	<1	<0.5	<3	<3	<1	<0.01
BLK	Blank	<2	5	<2																	
BLK	Blank	2	<3	2																	
BLK	Blank	<2	5	<2																	
BLK	Blank				<1	<1	<3	<1	<0.3	<1	<1	<2	<0.01	<2	<2	<1	<0.5	<3	<3	<1	<0.01



QUALITY CONTROL REPORT

WHI17000523.1

Method		AQ300	AQ300	AQ300	AQ300	AQ300	AQ300	AQ300	AQ300	AQ300	AQ300	AQ300	AQ300	AQ300	AQ300	AQ300	AQ300
Analyte		P	La	Cr	Mg	Ba	Ti	B	Al	Na	K	W	S	Hg	Tl	Ga	Sc
Unit		%	ppm	ppm	%	ppm	%	ppm	%	%	%	ppm	%	ppm	ppm	ppm	ppm
MDL		0.001	1	1	0.01	1	0.001	20	0.01	0.01	0.01	2	0.05	1	5	5	5
Pulp Duplicates																	
116926	Stream Sedim	0.084	15	112	0.93	46	0.284	<20	1.10	0.02	0.06	<2	<0.05	<1	<5	<5	<5
REP 116926	QC																
116929	Stream Sedim	0.081	29	94	0.70	69	0.363	<20	0.86	0.01	0.04	<2	0.29	<1	<5	<5	<5
REP 116929	QC	0.081	25	98	0.73	57	0.329	<20	0.86	0.01	0.04	<2	0.29	<1	<5	<5	<5
Reference Materials																	
STD CDN-PGMS-19	Standard																
STD CDN-PGMS-23	Standard																
STD CDN-PGMS-19	Standard																
STD DS11	Standard	0.071	19	63	0.86	421	0.095	<20	1.18	0.08	0.41	3	0.28	<1	<5	<5	<5
STD DS11	Standard	0.071	17	63	0.86	435	0.091	<20	1.14	0.07	0.40	3	0.29	<1	<5	<5	<5
STD DS11	Standard	0.069	18	56	0.83	430	0.093	<20	1.13	0.07	0.40	3	0.28	<1	5	<5	<5
STD OREAS45EA	Standard	0.032	9	969	0.11	155	0.106	<20	3.57	0.02	0.06	<2	<0.05	<1	<5	7	90
STD OREAS45EA	Standard	0.031	8	938	0.10	150	0.102	<20	3.29	0.02	0.05	<2	<0.05	<1	<5	8	85
STD OREAS45EA	Standard	0.030	8	833	0.10	140	0.103	<20	3.25	0.02	0.05	<2	<0.05	<1	<5	17	86
STD CDN-PGMS-23 Expected																	
STD CDN-PGMS-19 Expected																	
STD OREAS45EA Expected		0.029	7.06	849	0.095	148	0.0984		3.13	0.02	0.053		0.036			12.4	78
STD DS11 Expected		0.0701	18.6	61.5	0.85	417	0.0976	6	1.129	0.0694	0.4	2.9	0.2835	0.3	4.9	4.7	3.1
BLK	Blank	<0.001	<1	<1	<0.01	<1	<0.001	<20	<0.01	<0.01	<0.01	<2	<0.05	<1	<5	<5	<5
BLK	Blank	<0.001	<1	<1	<0.01	<1	<0.001	<20	<0.01	<0.01	<0.01	<2	<0.05	<1	<5	<5	<5
BLK	Blank																
BLK	Blank																
BLK	Blank																
BLK	Blank	<0.001	<1	<1	<0.01	<1	<0.001	<20	<0.01	<0.01	<0.01	<2	<0.05	<1	<5	<5	<5



BUREAU VERITAS MINERAL LABORATORIES
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Client: Longford Exploration Services Ltd.
6970 Napier Street
Burnaby British Columbia V5B 2C4 Canada

Submitted By: James Rogers
Receiving Lab: Canada-Whitehorse
Received: July 31, 2017
Report Date: September 05, 2017
Page: 1 of 3

CERTIFICATE OF ANALYSIS

WHI17000412.1

CLIENT JOB INFORMATION

Project: Catalyst
Shipment ID:
P.O. Number
Number of Samples: 48

SAMPLE DISPOSAL

PICKUP-PLP Client to Pickup Pulps
PICKUP-RJT Client to Pickup Rejects

SAMPLE PREPARATION AND ANALYTICAL PROCEDURES

Procedure Code	Number of Samples	Code Description	Test Wgt (g)	Report Status	Lab
PRP70-250	48	Crush, split and pulverize 250 g rock to 200 mesh			WHI
FA330	48	Fire assay fusion Au Pt Pd by ICP-ES	30	Completed	VAN
EN002	48	Environmental disposal charge-Fire assay lead waste			VAN
AQ300	48	1:1:1 Aqua Regia digestion ICP-ES analysis	0.5	Completed	VAN
SHP01	48	Per sample shipping charges for branch shipments			VAN

ADDITIONAL COMMENTS

Bureau Veritas does not accept responsibility for samples left at the laboratory after 90 days without prior written instructions for sample storage or return.

Invoice To: Longford Exploration Services Ltd.
6970 Napier Street
Burnaby British Columbia V5B 2C4
Canada

CC:



This report supersedes all previous preliminary and final reports with this file number dated prior to the date on this certificate. Signature indicates final approval; preliminary reports are unsigned and should be used for reference only. All results are considered the confidential property of the client. Bureau Veritas assumes the liabilities for actual cost of analysis only. Results apply to samples as submitted.
*** asterisk indicates that an analytical result could not be provided due to unusually high levels of interference from other elements.



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Project: Catalyst
Report Date: September 05, 2017

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Part: 1 of 2

CERTIFICATE OF ANALYSIS

WHI17000412.1

Method	WGHT	FA330	FA330	FA330	AQ300	AQ300	AQ300	AQ300	AQ300	AQ300	AQ300	AQ300	AQ300	AQ300	AQ300	AQ300	AQ300	AQ300	AQ300	AQ300	AQ300
Analyte	Wgt	Au	Pt	Pd	Mo	Cu	Pb	Zn	Ag	Ni	Co	Mn	Fe	As	Th	Sr	Cd	Sb	Bi	V	
Unit	kg	ppb	ppb	ppb	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	%	ppm	ppm	ppm	ppm	ppm	ppm	ppm	
MDL	0.01	2	3	2	1	1	3	1	0.3	1	1	2	0.01	2	2	1	0.5	3	3	1	
1889601	Rock	3.26	32	4	11	5	583	<3	21	0.6	40	64	541	12.50	53	<2	176	0.7	<3	<3	76
1889602	Rock	3.60	23	<3	6	8	316	<3	30	0.5	21	41	988	11.82	27	<2	167	0.7	<3	<3	67
1889603	Rock	3.64	7	6	13	2	573	<3	13	<0.3	13	18	1245	14.23	11	<2	135	<0.5	<3	<3	43
1889604	Rock	2.18	38	7	8	4	996	<3	5	<0.3	12	457	166	>40	3	<2	6	1.0	<3	<3	6
1889605	Rock	6.77	5	5	2	1	1282	<3	9	<0.3	6	158	726	24.04	4	<2	18	<0.5	<3	<3	7
1889606	Rock	2.23	8	10	6	3	2575	<3	10	<0.3	9	279	397	>40	<2	<2	7	<0.5	<3	<3	7
1889607	Rock	2.36	21	19	6	1	2802	<3	6	<0.3	8	257	199	23.53	<2	<2	3	<0.5	<3	<3	2
1889608	Rock	5.00	6	4	<2	<1	847	<3	4	<0.3	10	117	1015	17.32	<2	<2	38	0.5	<3	<3	7
1889609	Rock	2.26	6	3	12	<1	1233	<3	5	0.3	9	185	968	26.01	<2	<2	22	<0.5	<3	<3	6
1889610	Rock	6.14	11	4	3	2	513	<3	14	<0.3	35	45	849	12.97	3	<2	454	0.9	<3	<3	46
1889611	Rock	3.99	3	6	4	<1	131	<3	18	0.3	62	16	310	3.60	<2	<2	432	<0.5	<3	<3	80
1889612	Rock	3.37	2	<3	3	2	217	<3	9	<0.3	19	13	292	4.53	3	<2	98	0.6	<3	<3	42
1889613	Rock	7.15	10	8	6	<1	833	<3	13	0.4	20	92	217	14.44	<2	<2	187	0.6	<3	<3	62
1889614	Rock	6.50	5	6	14	<1	246	<3	34	0.3	22	19	247	8.24	<2	<2	266	<0.5	<3	<3	88
1889615	Rock	6.38	2	<3	<2	1	339	<3	10	<0.3	11	38	283	9.95	<2	<2	420	<0.5	<3	<3	88
1889616	Rock	2.66	17	<3	10	4	1664	<3	5	<0.3	23	615	122	>40	<2	<2	4	0.7	<3	<3	9
1889617	Rock	4.64	9	10	4	<1	879	<3	24	0.5	19	76	311	13.71	<2	<2	241	0.6	<3	<3	102
1889618	Rock	2.60	7	11	3	2	3016	<3	7	0.4	27	362	165	30.64	<2	<2	8	<0.5	<3	<3	16
1889619	Rock	3.09	<2	<3	<2	2	373	<3	10	<0.3	19	13	314	8.63	<2	<2	213	0.6	<3	<3	63
1889620	Rock	5.06	10	24	18	4	1559	<3	4	<0.3	88	622	106	>40	<2	<2	10	1.0	<3	<3	6
1889621	Rock	4.20	31	<3	<2	7	4916	<3	6	0.4	22	219	124	19.67	<2	<2	9	0.6	<3	<3	18
1889622	Rock	1.91	16	5	11	<1	2735	<3	9	0.4	43	294	256	20.28	<2	<2	2	<0.5	<3	4	10
1889623	Rock	4.59	18	<3	14	3	3091	<3	8	<0.3	48	266	191	18.21	<2	<2	73	0.9	<3	<3	35
1889624	Rock	4.40	22	<3	3	18	3312	<3	8	0.3	44	325	226	31.46	<2	<2	22	<0.5	<3	<3	20
1889625	Rock	5.75	18	<3	8	17	3320	<3	9	<0.3	44	325	216	31.09	<2	<2	22	<0.5	<3	<3	18
1889626	Rock	4.64	18	<3	<2	2	2123	<3	3	<0.3	55	378	230	31.20	<2	<2	5	<0.5	<3	<3	5
1889627	Rock	0.76	38	6	6	3	5161	<3	9	0.7	7	536	120	>40	<2	<2	2	2.2	<3	<3	3
1889628	Rock	0.28	12	5	<2	2	307	<3	25	0.3	43	36	278	4.05	4	<2	58	<0.5	<3	<3	101
1889629	Rock	0.59	4	6	2	<1	108	<3	10	<0.3	188	30	167	2.40	<2	<2	77	<0.5	<3	<3	44
1889630	Rock	2.69	6	4	17	<1	114	<3	59	0.4	66	35	843	4.52	<2	<2	18	<0.5	<3	<3	98



BUREAU VERITAS MINERAL LABORATORIES
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6970 Napier Street
Burnaby British Columbia V5B 2C4 Canada

Project: Catalyst
Report Date: September 05, 2017

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Part: 2 of 2

CERTIFICATE OF ANALYSIS

WHI17000412.1

Method	AQ300	AQ300	AQ300	AQ300	AQ300	AQ300	AQ300	AQ300	AQ300	AQ300	AQ300	AQ300	AQ300	AQ300	AQ300	AQ300	AQ300	
Analyte	Ca	P	La	Cr	Mg	Ba	Ti	B	Al	Na	K	W	S	Hg	Tl	Ga	Sc	
Unit	%	%	ppm	ppm	%	ppm	%	ppm	%	%	%	ppm	%	ppm	ppm	ppm	ppm	
MDL	0.01	0.001	1	1	0.01	1	0.001	20	0.01	0.01	0.01	2	0.05	1	5	5	5	
1889601	Rock	5.97	0.028	3	64	1.26	16	0.164	<20	1.78	0.07	0.09	<2	4.11	<1	<5	<5	6
1889602	Rock	8.05	0.040	3	35	1.49	16	0.052	<20	1.70	0.08	0.11	<2	2.83	<1	<5	<5	5
1889603	Rock	8.61	0.021	2	17	0.81	14	0.056	<20	1.09	0.07	0.09	<2	2.62	<1	<5	<5	<5
1889604	Rock	0.39	0.006	4	<1	0.11	4	0.007	<20	0.17	<0.01	<0.01	<2	>10	<1	<5	<5	<5
1889605	Rock	4.49	0.006	2	3	0.26	3	0.013	<20	0.22	<0.01	<0.01	<2	>10	<1	<5	<5	<5
1889606	Rock	0.57	0.006	3	2	0.19	4	0.010	<20	0.21	<0.01	<0.01	<2	>10	<1	<5	<5	<5
1889607	Rock	0.53	0.006	2	3	0.08	2	0.011	<20	0.14	<0.01	<0.01	<2	>10	<1	<5	<5	<5
1889608	Rock	9.63	0.004	2	2	0.29	3	0.009	<20	0.19	<0.01	0.01	<2	9.24	<1	<5	<5	<5
1889609	Rock	5.97	0.005	2	4	0.22	2	0.008	<20	0.25	<0.01	<0.01	<2	>10	<1	<5	<5	<5
1889610	Rock	7.04	0.026	3	56	1.08	19	0.088	<20	2.16	0.16	0.13	<2	4.59	<1	<5	<5	<5
1889611	Rock	2.21	0.054	3	104	2.02	39	0.137	<20	3.29	0.18	0.19	<2	1.29	<1	<5	<5	5
1889612	Rock	2.78	0.068	3	19	3.27	11	0.061	<20	4.72	0.17	0.07	<2	1.59	<1	<5	6	<5
1889613	Rock	4.29	0.035	4	32	1.05	37	0.184	<20	1.36	0.03	0.35	<2	6.41	<1	<5	<5	6
1889614	Rock	2.96	0.047	4	61	1.26	137	0.245	<20	1.98	0.05	1.08	<2	3.10	<1	<5	<5	9
1889615	Rock	2.53	0.052	3	25	1.02	42	0.203	<20	2.05	0.13	0.20	<2	3.40	<1	<5	<5	5
1889616	Rock	0.31	0.010	3	3	0.13	3	0.036	<20	0.72	<0.01	<0.01	<2	>10	<1	<5	<5	<5
1889617	Rock	2.52	0.031	3	36	1.47	35	0.182	<20	2.17	0.09	0.65	<2	6.80	<1	<5	<5	7
1889618	Rock	0.46	0.027	3	6	0.26	5	0.098	<20	0.62	0.02	<0.01	<2	>10	<1	<5	<5	<5
1889619	Rock	1.46	0.050	3	61	2.84	20	0.075	<20	3.81	0.06	0.08	<2	1.35	<1	<5	<5	<5
1889620	Rock	0.26	0.005	3	3	0.09	2	0.006	<20	0.30	0.02	<0.01	4	>10	<1	<5	<5	<5
1889621	Rock	0.44	0.011	3	5	0.32	<1	0.044	<20	0.22	<0.01	0.02	4	8.78	<1	<5	<5	<5
1889622	Rock	0.35	0.006	2	1	0.23	2	0.011	<20	0.18	0.01	<0.01	<2	>10	<1	<5	5	<5
1889623	Rock	0.74	0.030	3	20	0.53	8	0.074	<20	1.50	0.21	0.09	<2	>10	<1	<5	<5	<5
1889624	Rock	1.13	0.014	3	6	0.26	3	0.027	<20	0.42	0.02	0.02	<2	>10	<1	<5	<5	<5
1889625	Rock	1.04	0.014	3	6	0.26	3	0.024	<20	0.42	0.02	0.02	<2	>10	<1	<5	<5	<5
1889626	Rock	1.74	0.010	3	3	0.09	<1	0.007	<20	0.36	<0.01	<0.01	<2	>10	<1	<5	<5	<5
1889627	Rock	0.13	0.006	3	2	0.09	<1	0.005	<20	0.19	<0.01	<0.01	97	>10	<1	<5	<5	<5
1889628	Rock	1.27	0.054	4	82	1.53	185	0.210	<20	2.45	0.21	0.86	<2	1.67	<1	<5	<5	<5
1889629	Rock	1.22	0.039	3	132	2.42	139	0.097	<20	2.77	0.09	0.53	<2	0.57	<1	<5	<5	<5
1889630	Rock	2.06	0.046	3	76	2.18	4	0.149	<20	2.09	0.03	0.02	<2	0.20	<1	<5	<5	14



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Project: Catalyst

Report Date: September 05, 2017

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CERTIFICATE OF ANALYSIS

WHI17000412.1

Method	Analyte	WGHT	FA330	FA330	FA330	AQ300	AQ300	AQ300	AQ300	AQ300	AQ300	AQ300	AQ300	AQ300	AQ300	AQ300	AQ300	AQ300	AQ300	AQ300	AQ300
		Wgt	Au	Pt	Pd	Mo	Cu	Pb	Zn	Ag	Ni	Co	Mn	Fe	As	Th	Sr	Cd	Sb	Bi	V
Unit	MDL	kg	ppb	ppb	ppb	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	%	ppm	ppm	ppm	ppm	ppm	ppm	ppm
		0.01	2	3	2	1	1	3	1	0.3	1	1	2	0.01	2	2	1	0.5	3	3	1
1889631	Rock	2.95	9	<3	2	1	1705	<3	8	0.7	17	56	138	11.86	<2	<2	40	<0.5	<3	<3	20
1889632	Rock	1.54	13	<3	5	<1	866	<3	11	0.5	10	18	236	13.56	10	<2	29	<0.5	<3	<3	36
1889633	Rock	2.96	17	<3	12	1	1230	<3	6	<0.3	11	387	183	25.17	<2	<2	5	0.8	<3	<3	4
1889634	Rock	1.46	42	<3	11	3	1359	<3	7	0.4	24	244	644	25.77	3	<2	6	1.1	<3	<3	2
1889635	Rock	2.39	17	<3	14	6	2681	<3	9	<0.3	35	239	252	27.44	<2	<2	3	<0.5	<3	<3	11
1889636	Rock	2.13	5	<3	4	<1	113	<3	10	<0.3	21	19	204	2.76	<2	<2	458	<0.5	<3	<3	64
1889637	Rock	1.48	18	<3	3	2	390	<3	10	<0.3	11	18	194	14.09	8	<2	88	0.8	<3	<3	29
1889638	Rock	3.12	8	4	5	1	1033	<3	15	<0.3	48	187	1281	12.97	10	<2	11	<0.5	<3	<3	37
1889639	Rock	2.48	8	<3	10	4	169	<3	15	0.3	46	27	230	2.91	<2	<2	141	<0.5	<3	<3	82
1889640	Rock	1.23	6	7	7	4	91	5	47	1.3	72	22	271	2.94	6	<2	26	1.5	<3	<3	58
1889641	Rock	1.35	3	13	29	<1	18	<3	40	<0.3	44	25	286	4.08	<2	<2	67	<0.5	<3	<3	156
1889642	Rock	1.90	12	17	34	<1	195	<3	47	<0.3	50	24	460	6.09	<2	<2	20	<0.5	<3	<3	134
1889643	Rock	1.52	16	4	5	17	44	<3	85	<0.3	15	11	681	2.24	30	<2	83	1.0	<3	<3	26
143301	Rock	1.57	11	12	17	<1	419	<3	7	0.6	28	28	186	4.03	<2	<2	17	<0.5	<3	<3	128
143302	Rock	2.00	46	3	18	<1	619	<3	10	0.8	36	19	193	4.16	<2	<2	31	<0.5	<3	<3	121
143303	Rock	2.61	33	<3	14	3	4781	<3	9	0.6	9	575	93	>40	12	<2	2	<0.5	<3	<3	7
143304	Rock	1.65	6	<3	6	2	63	<3	22	0.4	2	12	202	3.14	<2	<2	277	<0.5	<3	<3	43
143305	Rock	1.56	9	13	26	<1	403	<3	116	<0.3	4	27	1055	8.51	<2	3	12	<0.5	<3	<3	82



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Client: Longford Exploration Services Ltd.
6970 Napier Street
Burnaby British Columbia V5B 2C4 Canada

Project: Catalyst
Report Date: September 05, 2017

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CERTIFICATE OF ANALYSIS

WHI17000412.1

Method	Analyte	AQ300	AQ300	AQ300	AQ300	AQ300	AQ300	AQ300	AQ300	AQ300	AQ300	AQ300	AQ300	AQ300	AQ300	AQ300	AQ300	AQ300
		Ca	P	La	Cr	Mg	Ba	Ti	B	Al	Na	K	W	S	Hg	Tl	Ga	Sc
Unit		%	%	ppm	ppm	%	ppm	%	ppm	%	%	ppm	%	ppm	ppm	ppm	ppm	ppm
MDL		0.01	0.001	1	1	0.01	1	0.001	20	0.01	0.01	0.01	2	0.05	1	5	5	5
1889631	Rock	0.90	0.030	2	14	0.33	15	0.108	<20	1.64	0.11	0.07	<2	7.52	<1	<5	<5	<5
1889632	Rock	1.11	0.027	2	11	0.33	5	0.135	<20	1.31	<0.01	0.02	<2	4.90	<1	<5	<5	<5
1889633	Rock	0.28	0.014	4	3	0.55	<1	0.023	<20	0.45	0.02	<0.01	<2	>10	<1	<5	<5	<5
1889634	Rock	2.21	0.004	2	3	0.16	<1	0.007	<20	0.42	<0.01	0.02	<2	>10	<1	<5	<5	<5
1889635	Rock	0.55	0.013	5	3	0.18	<1	0.025	<20	0.27	<0.01	<0.01	<2	>10	<1	<5	<5	<5
1889636	Rock	2.63	0.059	2	38	0.89	25	0.096	<20	4.27	0.48	0.09	<2	0.59	<1	<5	<5	<5
1889637	Rock	10.00	0.021	3	13	1.12	3	0.070	<20	0.99	0.02	0.03	<2	9.02	<1	<5	<5	<5
1889638	Rock	11.51	0.021	4	23	0.11	1	0.031	<20	0.89	<0.01	<0.01	6	3.57	<1	<5	8	<5
1889639	Rock	1.51	0.050	4	61	1.03	137	0.157	<20	2.07	0.39	0.42	<2	1.19	<1	<5	<5	7
1889640	Rock	2.88	0.078	4	111	1.05	12	0.162	<20	1.03	0.08	0.03	<2	1.04	<1	<5	<5	<5
1889641	Rock	1.11	0.067	3	50	1.96	19	0.333	<20	2.45	0.14	0.18	<2	0.20	<1	<5	<5	<5
1889642	Rock	0.72	0.084	3	76	1.76	13	0.282	<20	1.79	0.10	0.09	<2	1.16	<1	<5	<5	7
1889643	Rock	17.28	0.015	3	12	9.11	6	0.021	47	0.92	<0.01	0.09	<2	0.84	<1	<5	<5	<5
143301	Rock	0.93	0.056	2	57	0.88	5	0.558	<20	1.36	0.11	0.03	<2	1.70	<1	<5	<5	5
143302	Rock	1.19	0.058	2	40	0.71	8	0.505	<20	1.53	0.09	0.06	<2	0.42	<1	<5	<5	<5
143303	Rock	0.17	0.004	3	2	0.19	2	0.012	<20	0.37	<0.01	<0.01	>100	>10	<1	<5	<5	<5
143304	Rock	1.94	0.083	5	<1	0.97	29	0.099	<20	3.20	0.26	0.18	<2	1.71	<1	<5	<5	<5
143305	Rock	2.50	0.135	9	4	1.15	11	0.347	<20	1.98	0.06	0.05	<2	0.61	<1	<5	<5	19



QUALITY CONTROL REPORT

WHI17000412.1

Method	WGHT	FA330	FA330	FA330	AQ300	AQ300	AQ300	AQ300	AQ300	AQ300	AQ300	AQ300	AQ300	AQ300	AQ300	AQ300	AQ300	AQ300	AQ300	AQ300	AQ300
Analyte	Wgt	Au	Pt	Pd	Mo	Cu	Pb	Zn	Ag	Ni	Co	Mn	Fe	As	Th	Sr	Cd	Sb	Bi	V	
Unit	kg	ppb	ppb	ppb	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	%	ppm	ppm	ppm	ppm	ppm	ppm	ppm	
MDL	0.01	2	3	2	1	1	3	1	0.3	1	1	2	0.01	2	2	1	0.5	3	3	1	
Pulp Duplicates																					
1889602	Rock	3.60	23	<3	6	8	316	<3	30	0.5	21	41	988	11.82	27	<2	167	0.7	<3	<3	67
REP 1889602	QC		22	4	5																
1889614	Rock	6.50	5	6	14	<1	246	<3	34	0.3	22	19	247	8.24	<2	<2	266	<0.5	<3	<3	88
REP 1889614	QC					<1	249	<3	33	<0.3	22	19	246	8.35	<2	2	266	<0.5	<3	<3	88
1889619	Rock	3.09	<2	<3	<2	2	373	<3	10	<0.3	19	13	314	8.63	<2	<2	213	0.6	<3	<3	63
REP 1889619	QC		<2	<3	<2																
1889623	Rock	4.59	18	<3	14	3	3091	<3	8	<0.3	48	266	191	18.21	<2	<2	73	0.9	<3	<3	35
REP 1889623	QC		23	<3	8																
1889633	Rock	2.96	17	<3	12	1	1230	<3	6	<0.3	11	387	183	25.17	<2	<2	5	0.8	<3	<3	4
REP 1889633	QC		11	<3	13																
1889640	Rock	1.23	6	7	7	4	91	5	47	1.3	72	22	271	2.94	6	<2	26	1.5	<3	<3	58
REP 1889640	QC					4	91	5	47	1.4	72	22	271	2.93	5	<2	26	1.5	<3	<3	59
Core Reject Duplicates																					
1889603	Rock	3.64	7	6	13	2	573	<3	13	<0.3	13	18	1245	14.23	11	<2	135	<0.5	<3	<3	43
DUP 1889603	QC		7	<3	13	2	562	<3	13	<0.3	12	18	1214	14.08	11	<2	126	<0.5	<3	<3	43
1889637	Rock	1.48	18	<3	3	2	390	<3	10	<0.3	11	18	194	14.09	8	<2	88	0.8	<3	<3	29
DUP 1889637	QC		18	<3	4	1	431	<3	10	<0.3	11	19	209	15.15	8	<2	94	0.5	<3	<3	31
Reference Materials																					
STD CDN-PGMS-19	Standard		210	106	469																
STD CDN-PGMS-19	Standard		273	122	487																
STD CDN-PGMS-23	Standard		524	489	2071																
STD CDN-PGMS-19	Standard		244	118	491																
STD DS11	Standard					12	140	131	327	1.8	73	12	963	2.94	40	7	59	2.3	7	12	46
STD DS11	Standard					13	141	129	329	1.7	73	13	977	2.98	44	8	60	2.4	7	13	47
STD OREAS45EA	Standard					2	653	13	28	0.7	349	49	388	20.00	9	11	3	0.7	<3	<3	288
STD OREAS45EA	Standard					2	668	11	30	0.6	362	51	397	21.09	11	12	3	<0.5	<3	<3	293
STD CDN-PGMS-23 Expected			496	456	2032																
STD OREAS45EA Expected						1.6	709	14.3	31.4	0.26	381	52	400	23.51	10	10.7	3.5				303



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Project: Catalyst
Report Date: September 05, 2017

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QUALITY CONTROL REPORT

WHI17000412.1

Method	AQ300	AQ300	AQ300	AQ300	AQ300	AQ300	AQ300	AQ300	AQ300	AQ300	AQ300	AQ300	AQ300	AQ300	AQ300	AQ300	AQ300
Analyte	Ca	P	La	Cr	Mg	Ba	Ti	B	Al	Na	K	W	S	Hg	Tl	Ga	Sc
Unit	%	%	ppm	ppm	%	ppm	%	ppm	%	%	%	ppm	%	ppm	ppm	ppm	ppm
MDL	0.01	0.001	1	1	0.01	1	0.001	20	0.01	0.01	0.01	2	0.05	1	5	5	5
Pulp Duplicates																	
1889602	Rock	8.05	0.040	3	35	1.49	16	0.052	<20	1.70	0.08	0.11	<2	2.83	<1	<5	<5
REP 1889602	QC																
1889614	Rock	2.96	0.047	4	61	1.26	137	0.245	<20	1.98	0.05	1.08	<2	3.10	<1	<5	<5
REP 1889614	QC	3.00	0.047	4	58	1.27	135	0.245	<20	1.98	0.05	1.08	<2	3.13	<1	<5	<5
1889619	Rock	1.46	0.050	3	61	2.84	20	0.075	<20	3.81	0.06	0.08	<2	1.35	<1	<5	<5
REP 1889619	QC																
1889623	Rock	0.74	0.030	3	20	0.53	8	0.074	<20	1.50	0.21	0.09	<2	>10	<1	<5	<5
REP 1889623	QC																
1889633	Rock	0.28	0.014	4	3	0.55	<1	0.023	<20	0.45	0.02	<0.01	<2	>10	<1	<5	<5
REP 1889633	QC																
1889640	Rock	2.88	0.078	4	111	1.05	12	0.162	<20	1.03	0.08	0.03	<2	1.04	<1	<5	<5
REP 1889640	QC	2.95	0.077	4	111	1.07	12	0.171	<20	1.04	0.08	0.03	<2	1.05	<1	<5	<5
Core Reject Duplicates																	
1889603	Rock	8.61	0.021	2	17	0.81	14	0.056	<20	1.09	0.07	0.09	<2	2.62	<1	<5	<5
DUP 1889603	QC	8.35	0.020	2	17	0.81	13	0.054	<20	1.08	0.07	0.09	<2	2.60	<1	<5	<5
1889637	Rock	10.00	0.021	3	13	1.12	3	0.070	<20	0.99	0.02	0.03	<2	9.02	<1	<5	<5
DUP 1889637	QC	9.97	0.023	3	12	1.23	4	0.077	<20	1.10	0.03	0.04	<2	9.32	<1	<5	<5
Reference Materials																	
STD CDN-PGMS-19	Standard																
STD CDN-PGMS-19	Standard																
STD CDN-PGMS-23	Standard																
STD CDN-PGMS-19	Standard																
STD DS11	Standard	0.98	0.066	16	58	0.82	409	0.083	<20	1.07	0.07	0.37	2	0.25	<1	<5	<5
STD DS11	Standard	0.99	0.067	16	59	0.82	416	0.087	<20	1.09	0.07	0.38	2	0.25	<1	<5	<5
STD OREAS45EA	Standard	0.03	0.028	8	892	0.09	138	0.094	<20	3.14	0.02	0.05	<2	<0.05	<1	<5	10
STD OREAS45EA	Standard	0.03	0.028	8	912	0.09	139	0.097	<20	3.27	0.02	0.05	<2	<0.05	<1	<5	9
STD CDN-PGMS-23 Expected																	
STD OREAS45EA Expected		0.036	0.029	7.06	849	0.095	148	0.0984		3.13	0.02	0.053		0.036			12.4



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Project: Catalyst
Report Date: September 05, 2017

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QUALITY CONTROL REPORT

WHI17000412.1

	WGHT	FA330	FA330	FA330	AQ300	AQ300	AQ300	AQ300	AQ300	AQ300	AQ300	AQ300	AQ300	AQ300	AQ300	AQ300	AQ300	AQ300	AQ300	AQ300	AQ300
	Wgt	Au	Pt	Pd	Mo	Cu	Pb	Zn	Ag	Ni	Co	Mn	Fe	As	Th	Sr	Cd	Sb	Bi	V	
	kg	ppb	ppb	ppb	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	%	ppm	ppm	ppm	ppm	ppm	ppm	ppm	
	0.01	2	3	2	1	1	3	1	0.3	1	1	2	0.01	2	2	1	0.5	3	3	1	
STD DS11 Expected					13.9	156	138	345	1.71	81.9	14.2	1055	3.2082	42.8	7.65	67.3	2.37	7.2	12.2	50	
STD CDN-PGMS-19 Expected		230	108	476																	
BLK	Blank	<2	<3	<2																	
BLK	Blank	<2	7	<2																	
BLK	Blank	<2	<3	<2																	
BLK	Blank				<1	<1	<3	<1	<0.3	<1	<1	<2	<0.01	<2	<2	<1	<0.5	<3	<3	<1	
BLK	Blank				<1	<1	<3	<1	<0.3	<1	<1	<2	<0.01	<2	<2	<1	<0.5	<3	<3	<1	
BLK	Blank	<2	<3	3																	
Prep Wash																					
ROCK-WHI	Prep Blank	<2	4	<2	<1	3	<3	31	<0.3	<1	3	486	1.61	<2	2	18	<0.5	<3	<3	20	
ROCK-WHI	Prep Blank	<2	<3	<2	<1	3	<3	29	<0.3	<1	3	493	1.61	<2	3	18	<0.5	<3	<3	21	



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QUALITY CONTROL REPORT

WHI17000412.1

		AQ300	AQ300	AQ300	AQ300	AQ300	AQ300	AQ300	AQ300	AQ300	AQ300	AQ300	AQ300	AQ300	AQ300	AQ300	AQ300	
		Ca	P	La	Cr	Mg	Ba	Ti	B	Al	Na	K	W	S	Hg	Tl	Ga	Sc
		%	%	ppm	ppm	%	ppm	%	ppm	%	%	%	ppm	%	ppm	ppm	ppm	ppm
		0.01	0.001	1	1	0.01	1	0.001	20	0.01	0.01	0.01	2	0.05	1	5	5	5
STD DS11 Expected		1.063	0.0701	18.6	61.5	0.85	417	0.0976	6	1.129	0.0694	0.4	2.9	0.2835	0.3	4.9	4.7	3.1
STD CDN-PGMS-19 Expected																		
BLK	Blank																	
BLK	Blank																	
BLK	Blank																	
BLK	Blank	<0.01	<0.001	<1	<1	<0.01	<1	<0.001	<20	<0.01	<0.01	<0.01	<2	<0.05	<1	<5	<5	<5
BLK	Blank	<0.01	<0.001	<1	<1	<0.01	<1	<0.001	<20	<0.01	<0.01	<0.01	<2	<0.05	<1	<5	<5	<5
BLK	Blank																	
Prep Wash																		
ROCK-WHI	Prep Blank	0.51	0.036	5	2	0.43	65	0.074	<20	0.79	0.07	0.09	<2	0.14	<1	<5	<5	<5
ROCK-WHI	Prep Blank	0.49	0.037	5	2	0.45	57	0.073	<20	0.81	0.08	0.08	<2	0.12	<1	<5	<5	<5



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Submitted By: James Rogers
Receiving Lab: Canada-Whitehorse
Received: August 07, 2017
Report Date: September 25, 2017
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CERTIFICATE OF ANALYSIS

WHI17000524.1

CLIENT JOB INFORMATION

Project: Catalyst
Shipment ID:
P.O. Number
Number of Samples: 56

SAMPLE DISPOSAL

PICKUP-PLP Client to Pickup Pulps
PICKUP-RJT Client to Pickup Rejects

Bureau Veritas does not accept responsibility for samples left at the laboratory after 90 days without prior written instructions for sample storage or return.

Invoice To: Longford Exploration Services Ltd.
6970 Napier Street
Burnaby British Columbia V5B 2C4
Canada

CC:

SAMPLE PREPARATION AND ANALYTICAL PROCEDURES

Procedure Code	Number of Samples	Code Description	Test Wgt (g)	Report Status	Lab
PRP70-250	49	Crush, split and pulverize 250 g rock to 200 mesh			WHI
FA330	49	Fire assay fusion Au Pt Pd by ICP-ES	30	Completed	VAN
EN002	49	Environmental disposal charge-Fire assay lead waste			VAN
AQ300	49	1:1:1 Aqua Regia digestion ICP-ES analysis	0.5	Completed	VAN
SHP01	49	Per sample shipping charges for branch shipments			VAN
MA370	2	4-Acid Digestion ICP-ES Finish	0.5	Completed	VAN

ADDITIONAL COMMENTS



This report supersedes all previous preliminary and final reports with this file number dated prior to the date on this certificate. Signature indicates final approval; preliminary reports are unsigned and should be used for reference only. All results are considered the confidential property of the client. Bureau Veritas assumes the liabilities for actual cost of analysis only. Results apply to samples as submitted.
*** asterisk indicates that an analytical result could not be provided due to unusually high levels of interference from other elements.



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Project: Catalyst
Report Date: September 25, 2017

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CERTIFICATE OF ANALYSIS

WHI17000524.1

Method	WGHT	FA330	FA330	FA330	AQ300	AQ300	AQ300	AQ300	AQ300	AQ300	AQ300	AQ300	AQ300	AQ300	AQ300	AQ300	AQ300	AQ300	AQ300	AQ300	AQ300
Analyte	Wgt	Au	Pt	Pd	Mo	Cu	Pb	Zn	Ag	Ni	Co	Mn	Fe	As	Th	Sr	Cd	Sb	Bi	V	
Unit	kg	ppb	ppb	ppb	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	%	ppm	ppm	ppm	ppm	ppm	ppm	ppm	
MDL	0.01	2	3	2	1	1	3	1	0.3	1	1	2	0.01	2	2	1	0.5	3	3	1	
143306	Rock	1.74	325	5	5	>10000	4	49	3.1	29	103	385	>40	3	<2	11	3.8	<3	<3	37	
143307	Rock	0.86	8	14	15	<1	310	4	51	<0.3	37	24	297	7.60	<2	<2	76	<0.5	<3	<3	179
143308	Rock	0.91	3	10	25	<1	127	6	42	<0.3	545	61	1154	4.91	47	<2	61	0.8	<3	<3	93
143309	Rock	0.95	6	12	16	<1	134	<3	52	<0.3	45	24	391	4.03	2	<2	55	0.6	<3	<3	132
143310	Rock	1.10	8	9	12	<1	42	<3	41	<0.3	70	35	763	4.68	<2	<2	76	0.6	<3	<3	190
143311	Rock	1.26	3	4	4	<1	95	<3	70	<0.3	38	25	1440	4.88	4	2	26	0.6	<3	<3	171
143312	Rock	0.89	6	22	17	<1	65	<3	40	<0.3	1024	87	812	5.93	<2	<2	60	0.6	<3	<3	21
143313	Rock	1.04	5	7	5	<1	61	<3	27	<0.3	25	26	473	3.19	<2	<2	113	<0.5	<3	<3	78
143314	Rock	0.91	7	6	6	1	12	11	19	<0.3	25	5	1343	3.07	6	<2	301	<0.5	<3	<3	8
143315	Rock	1.33	7	11	21	<1	568	<3	48	<0.3	71	34	682	6.37	2	<2	27	<0.5	<3	<3	273
143316	Rock	2.62	5	7	15	<1	4493	<3	24	0.9	38	20	380	4.03	2	<2	19	0.6	<3	<3	190
143317	Rock	1.03	4	4	9	<1	>10000	<3	15	1.2	21	12	246	2.99	4	<2	16	0.5	<3	<3	145
143318	Rock	1.26	6	7	9	<1	151	<3	9	<0.3	8	12	212	2.58	<2	<2	45	<0.5	<3	<3	55
143319	Rock	0.96	7	3	19	<1	145	<3	44	<0.3	77	30	492	4.44	6	<2	76	<0.5	<3	<3	106
143320	Rock	1.05	5	3	6	<1	292	<3	49	0.6	22	26	381	6.06	5	<2	11	<0.5	<3	<3	469
143321	Rock	0.69	<2	3	3	<1	46	<3	28	<0.3	82	30	724	3.72	5	<2	47	0.6	<3	<3	71
116901	Rock	0.51	3	8	35	<1	82	<3	23	<0.3	76	23	297	3.64	<2	<2	66	<0.5	<3	<3	110
116902	Rock	1.63	14	13	20	<1	347	<3	48	0.3	50	25	266	4.42	<2	<2	95	<0.5	<3	<3	162
116903	Rock	0.87	<2	3	4	<1	8	<3	<1	<0.3	2	1	546	0.48	<2	2	78	<0.5	<3	<3	10
116904	Rock	0.99	8	17	26	<1	133	<3	43	<0.3	29	18	364	3.98	<2	<2	99	<0.5	<3	<3	158
116905	Rock	0.85	19	7	13	<1	487	<3	44	0.4	39	22	376	4.64	<2	<2	49	0.6	<3	<3	180
116906	Rock	0.11	5	10	9	<1	31	<3	21	<0.3	124	20	326	2.52	<2	<2	37	<0.5	<3	<3	87
116907	Rock	2.18	10	6	8	<1	355	<3	24	<0.3	49	25	284	3.67	<2	<2	299	0.6	<3	<3	127
116908	Rock	0.74	4	12	14	<1	12	<3	35	<0.3	58	29	458	4.73	<2	<2	21	0.6	<3	<3	173
116910	Rock	1.48	8	14	25	<1	192	<3	48	<0.3	1078	92	817	6.35	<2	<2	51	<0.5	<3	<3	29
116918	Rock	1.64	<2	3	4	<1	28	<3	28	<0.3	43	19	260	2.77	12	<2	127	<0.5	<3	<3	95
116920	Rock	1.56	3	16	16	<1	102	<3	33	<0.3	56	23	331	3.49	<2	<2	119	<0.5	<3	<3	114
116922	Rock	0.73	5	5	12	<1	98	<3	48	<0.3	1228	100	767	6.66	2	<2	34	<0.5	<3	<3	31
116923	Rock	2.26	6	6	19	<1	124	<3	50	<0.3	980	85	786	6.15	<2	<2	64	<0.5	<3	<3	34
116924	Rock	1.09	6	<3	17	<1	114	<3	52	<0.3	1597	117	979	7.69	<2	<2	22	<0.5	<3	<3	36

This report supersedes all previous preliminary and final reports with this file number dated prior to the date on this certificate. Signature indicates final approval; preliminary reports are unsigned and should be used for reference only.



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Project: Catalyst
Report Date: September 25, 2017

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CERTIFICATE OF ANALYSIS

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Method	AQ300	AQ300	AQ300	AQ300	AQ300	AQ300	AQ300	AQ300	AQ300	AQ300	AQ300	AQ300	AQ300	AQ300	AQ300	AQ300	AQ300	MA370
Analyte	Ca	P	La	Cr	Mg	Ba	Ti	B	Al	Na	K	W	S	Hg	Tl	Ga	Sc	Cu
Unit	%	%	ppm	ppm	%	ppm	%	ppm	%	%	%	ppm	%	ppm	ppm	ppm	ppm	%
MDL	0.01	0.001	1	1	0.01	1	0.001	20	0.01	0.01	0.01	2	0.05	1	5	5	5	0.001
143306	Rock	1.68	0.004	4	7	0.41	4	0.025	<20	0.53	0.02	0.01	7	0.09	<1	<5	<5	2.399
143307	Rock	1.72	0.050	2	94	0.88	42	0.351	<20	2.42	0.35	0.08	<2	0.06	<1	<5	<5	<5
143308	Rock	8.12	0.034	5	838	4.87	51	0.125	<20	2.84	0.02	0.12	<2	<0.05	<1	<5	<5	11
143309	Rock	2.03	0.043	4	36	1.75	35	0.165	<20	3.45	0.39	0.13	<2	<0.05	<1	<5	<5	5
143310	Rock	3.76	0.051	2	95	3.27	13	0.329	<20	3.42	0.03	0.03	<2	<0.05	<1	<5	<5	18
143311	Rock	2.09	0.094	6	22	2.88	23	0.328	<20	3.07	0.07	0.04	<2	<0.05	<1	<5	<5	14
143312	Rock	1.02	0.027	4	189	12.23	62	0.057	20	2.24	0.19	0.15	<2	<0.05	<1	<5	<5	<5
143313	Rock	2.57	0.060	2	38	1.15	10	0.177	<20	1.58	0.09	0.04	<2	1.20	<1	<5	<5	<5
143314	Rock	28.32	0.012	12	5	2.23	270	0.001	<20	0.31	0.01	0.04	<2	1.07	<1	<5	<5	<5
143315	Rock	5.27	0.062	3	85	3.65	5	0.332	32	5.06	0.03	<0.01	<2	<0.05	<1	<5	<5	26
143316	Rock	8.30	0.048	2	15	1.00	7	0.226	41	5.80	<0.01	<0.01	<2	<0.05	<1	<5	16	13
143317	Rock	7.61	0.044	2	10	0.53	6	0.187	38	4.94	0.01	<0.01	3	<0.05	<1	<5	14	11 1.477
143318	Rock	1.25	0.084	5	2	0.57	24	0.138	<20	1.56	0.13	0.10	<2	0.92	<1	<5	<5	<5
143319	Rock	2.04	0.033	2	13	2.12	27	0.112	27	4.08	0.45	0.10	<2	<0.05	<1	<5	<5	<5
143320	Rock	3.05	0.104	6	1	1.30	12	0.299	1708	2.39	0.06	0.01	<2	<0.05	<1	<5	<5	<5
143321	Rock	2.75	0.046	3	89	3.11	20	0.040	<20	3.15	0.13	0.14	<2	<0.05	<1	<5	<5	10
116901	Rock	1.37	0.061	2	150	1.95	23	0.267	26	2.49	0.17	0.13	<2	0.25	<1	<5	<5	<5
116902	Rock	1.13	0.063	3	77	2.20	35	0.241	<20	2.41	0.18	0.28	<2	0.05	<1	<5	<5	<5
116903	Rock	22.56	0.004	1	4	9.54	5	0.012	<20	0.31	<0.01	0.01	<2	<0.05	<1	<5	<5	<5
116904	Rock	1.89	0.060	3	25	1.14	9	0.211	<20	2.60	0.34	0.10	<2	0.12	<1	<5	<5	6
116905	Rock	1.70	0.053	3	30	1.28	15	0.276	<20	1.98	0.38	0.12	<2	0.14	<1	<5	<5	7
116906	Rock	2.22	0.041	2	363	2.73	64	0.118	<20	3.10	0.11	0.15	<2	0.06	<1	<5	<5	6
116907	Rock	2.28	0.069	3	58	2.00	37	0.199	<20	4.05	0.42	0.19	<2	0.44	<1	<5	<5	6
116908	Rock	3.21	0.050	2	41	2.85	11	0.258	<20	4.20	0.04	0.09	<2	<0.05	<1	<5	<5	14
116910	Rock	0.93	0.032	5	211	11.12	70	0.068	<20	2.53	0.21	0.18	<2	0.13	<1	<5	<5	<5
116918	Rock	1.41	0.077	4	55	1.14	254	0.162	<20	2.59	0.20	0.28	<2	0.51	<1	<5	<5	<5
116920	Rock	4.06	0.046	1	51	0.97	33	0.298	<20	3.90	0.53	0.13	<2	0.71	<1	<5	<5	6
116922	Rock	0.86	0.022	4	247	14.72	86	0.059	31	2.07	0.11	0.12	<2	0.10	<1	<5	<5	<5
116923	Rock	1.22	0.029	5	114	10.93	87	0.072	<20	2.59	0.27	0.18	<2	0.06	<1	<5	<5	<5
116924	Rock	0.61	0.019	4	263	17.98	38	0.052	35	1.58	0.05	0.09	<2	0.14	<1	<5	<5	6



BUREAU VERITAS MINERAL LABORATORIES
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Project: Catalyst
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CERTIFICATE OF ANALYSIS

WHI17000524.1

Method	WGHT	FA330	FA330	FA330	AQ300	AQ300	AQ300	AQ300	AQ300	AQ300	AQ300	AQ300	AQ300	AQ300	AQ300	AQ300	AQ300	AQ300	AQ300	AQ300	AQ300	AQ300
Analyte	Wgt	Au	Pt	Pd	Mo	Cu	Pb	Zn	Ag	Ni	Co	Mn	Fe	As	Th	Sr	Cd	Sb	Bi	V		
Unit	kg	ppb	ppb	ppb	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	%	ppm	ppm	ppm	ppm	ppm	ppm	ppm		
MDL	0.01	2	3	2	1	1	3	1	0.3	1	1	2	0.01	2	2	1	0.5	3	3	1		
116934	Rock	1.03	<2	8	13	<1	83	<3	24	<0.3	55	21	384	2.66	<2	<2	408	<0.5	<3	<3	132	
116935	Rock	1.30	<2	4	9	<1	6198	<3	2	1.4	4	<1	97	0.70	10	<2	14	0.6	<3	<3	85	
116936	Rock	1.08	10	3	<2	<1	24	<3	21	<0.3	2	13	330	3.58	<2	<2	102	<0.5	<3	<3	97	
116937	Rock	0.86	<2	6	7	<1	55	<3	26	<0.3	221	37	169	2.54	14	<2	282	<0.5	<3	<3	58	
116938	Rock	1.44	<2	<3	4	1	87	<3	23	<0.3	41	25	292	2.79	<2	<2	125	<0.5	<3	<3	86	
116939	Rock	1.09	<2	<3	8	1	190	<3	30	<0.3	146	34	476	3.48	<2	<2	84	<0.5	<3	<3	71	
116940	Rock	1.11	<2	10	9	<1	36	8	108	<0.3	31	7	185	3.56	11	<2	27	<0.5	<3	<3	94	
116941	Rock	1.73	3	<3	5	2	40	8	137	0.6	45	10	379	4.81	23	<2	21	<0.5	<3	<3	95	
116942	Rock	1.76	3	7	10	<1	115	<3	74	0.3	85	33	944	6.23	3	<2	43	<0.5	<3	<3	200	
116943	Rock	0.84	2	<3	15	<1	103	<3	59	<0.3	65	32	1078	4.81	<2	<2	105	<0.5	<3	<3	183	
116944	Rock	1.23	3	6	15	<1	82	<3	44	<0.3	94	34	780	4.70	2	<2	65	<0.5	<3	<3	129	
116945	Rock	1.53	4	9	10	<1	89	<3	44	<0.3	109	31	487	4.29	10	<2	33	<0.5	<3	<3	103	
1189644	Rock	L.N.R.	L.N.R.	L.N.R.	L.N.R.	L.N.R.	L.N.R.	L.N.R.	L.N.R.	L.N.R.	L.N.R.	L.N.R.	L.N.R.	L.N.R.	L.N.R.	L.N.R.	L.N.R.	L.N.R.	L.N.R.	L.N.R.	L.N.R.	
1189645	Rock	L.N.R.	L.N.R.	L.N.R.	L.N.R.	L.N.R.	L.N.R.	L.N.R.	L.N.R.	L.N.R.	L.N.R.	L.N.R.	L.N.R.	L.N.R.	L.N.R.	L.N.R.	L.N.R.	L.N.R.	L.N.R.	L.N.R.	L.N.R.	
1189646	Rock	L.N.R.	L.N.R.	L.N.R.	L.N.R.	L.N.R.	L.N.R.	L.N.R.	L.N.R.	L.N.R.	L.N.R.	L.N.R.	L.N.R.	L.N.R.	L.N.R.	L.N.R.	L.N.R.	L.N.R.	L.N.R.	L.N.R.	L.N.R.	
1189647	Rock	L.N.R.	L.N.R.	L.N.R.	L.N.R.	L.N.R.	L.N.R.	L.N.R.	L.N.R.	L.N.R.	L.N.R.	L.N.R.	L.N.R.	L.N.R.	L.N.R.	L.N.R.	L.N.R.	L.N.R.	L.N.R.	L.N.R.	L.N.R.	
1189648	Rock	L.N.R.	L.N.R.	L.N.R.	L.N.R.	L.N.R.	L.N.R.	L.N.R.	L.N.R.	L.N.R.	L.N.R.	L.N.R.	L.N.R.	L.N.R.	L.N.R.	L.N.R.	L.N.R.	L.N.R.	L.N.R.	L.N.R.	L.N.R.	
1189649	Rock	L.N.R.	L.N.R.	L.N.R.	L.N.R.	L.N.R.	L.N.R.	L.N.R.	L.N.R.	L.N.R.	L.N.R.	L.N.R.	L.N.R.	L.N.R.	L.N.R.	L.N.R.	L.N.R.	L.N.R.	L.N.R.	L.N.R.	L.N.R.	
1189650	Rock	L.N.R.	L.N.R.	L.N.R.	L.N.R.	L.N.R.	L.N.R.	L.N.R.	L.N.R.	L.N.R.	L.N.R.	L.N.R.	L.N.R.	L.N.R.	L.N.R.	L.N.R.	L.N.R.	L.N.R.	L.N.R.	L.N.R.	L.N.R.	
1889644	Rock	0.64	8	7	15	<1	297	<3	38	<0.3	41	25	188	5.66	<2	<2	309	<0.5	<3	<3	231	
1889645	Rock	0.81	<2	4	12	<1	2	<3	15	<0.3	73	10	291	2.59	<2	<2	763	<0.5	<3	<3	76	
1889646	Rock	0.46	<2	5	7	<1	18	<3	12	<0.3	53	11	298	2.21	<2	<2	616	<0.5	<3	<3	70	
1889647	Rock	0.56	9	8	16	1	3497	10	9	0.5	27	352	570	>40	4	<2	4	4.4	<3	<3	6	
1889648	Rock	1.03	9	<3	17	3	143	<3	30	<0.3	41	25	235	4.53	<2	<2	108	<0.5	<3	<3	158	
1889649	Rock	1.25	22	10	18	<1	417	<3	41	0.4	42	23	266	4.36	<2	<2	103	<0.5	<3	<3	160	
1889650	Rock	1.14	6	10	20	<1	281	<3	26	<0.3	54	28	269	10.31	<2	<2	57	<0.5	<3	<3	174	



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CERTIFICATE OF ANALYSIS

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Method	AQ300	AQ300	AQ300	AQ300	AQ300	AQ300	AQ300	AQ300	AQ300	AQ300	AQ300	AQ300	AQ300	AQ300	AQ300	AQ300	AQ300	MA370
Analyte	Ca	P	La	Cr	Mg	Ba	Ti	B	Al	Na	K	W	S	Hg	Tl	Ga	Sc	Cu
Unit	%	%	ppm	ppm	%	ppm	%	ppm	%	%	%	ppm	%	ppm	ppm	ppm	ppm	%
MDL	0.01	0.001	1	1	0.01	1	0.001	20	0.01	0.01	0.01	2	0.05	1	5	5	5	0.001
116934	Rock	3.73	0.052	2	47	1.85	2	0.278	<20	3.16	0.04	<0.01	<2	<0.05	<1	<5	<5	5
116935	Rock	8.33	0.006	<1	5	0.12	2	0.038	<20	5.34	<0.01	<0.01	<2	<0.05	<1	<5	22	<5
116936	Rock	1.81	0.095	4	1	0.83	63	0.169	<20	2.63	0.18	0.15	<2	0.86	<1	<5	<5	<5
116937	Rock	2.56	0.042	1	152	2.11	100	0.115	<20	5.08	0.22	0.30	<2	0.54	<1	<5	7	<5
116938	Rock	2.09	0.055	3	84	1.31	184	0.205	<20	3.04	0.24	0.13	<2	0.35	<1	<5	5	<5
116939	Rock	2.85	0.034	2	261	2.21	92	0.148	<20	2.32	0.14	0.11	<2	1.20	<1	<5	5	<5
116940	Rock	0.29	0.066	9	48	1.59	19	0.105	<20	1.93	0.08	0.10	<2	0.21	<1	<5	7	8
116941	Rock	0.43	0.027	7	45	1.63	334	0.160	<20	1.84	0.04	0.12	<2	1.56	2	<5	6	7
116942	Rock	3.69	0.217	7	154	3.10	505	0.429	<20	3.22	0.12	0.06	<2	0.26	<1	<5	10	19
116943	Rock	2.31	0.032	3	122	2.27	3398	0.192	<20	2.00	0.05	0.02	<2	0.12	<1	<5	9	21
116944	Rock	4.16	0.027	2	53	1.99	84	0.046	<20	4.23	0.38	0.17	<2	<0.05	<1	<5	7	13
116945	Rock	1.73	0.033	3	18	2.43	44	0.095	22	3.39	0.20	0.14	<2	<0.05	<1	<5	6	<5
1189644	Rock	L.N.R.	L.N.R.	L.N.R.	L.N.R.	L.N.R.	L.N.R.	L.N.R.	L.N.R.	L.N.R.	L.N.R.	L.N.R.	L.N.R.	L.N.R.	L.N.R.	L.N.R.	L.N.R.	L.N.R.
1189645	Rock	L.N.R.	L.N.R.	L.N.R.	L.N.R.	L.N.R.	L.N.R.	L.N.R.	L.N.R.	L.N.R.	L.N.R.	L.N.R.	L.N.R.	L.N.R.	L.N.R.	L.N.R.	L.N.R.	L.N.R.
1189646	Rock	L.N.R.	L.N.R.	L.N.R.	L.N.R.	L.N.R.	L.N.R.	L.N.R.	L.N.R.	L.N.R.	L.N.R.	L.N.R.	L.N.R.	L.N.R.	L.N.R.	L.N.R.	L.N.R.	L.N.R.
1189647	Rock	L.N.R.	L.N.R.	L.N.R.	L.N.R.	L.N.R.	L.N.R.	L.N.R.	L.N.R.	L.N.R.	L.N.R.	L.N.R.	L.N.R.	L.N.R.	L.N.R.	L.N.R.	L.N.R.	L.N.R.
1189648	Rock	L.N.R.	L.N.R.	L.N.R.	L.N.R.	L.N.R.	L.N.R.	L.N.R.	L.N.R.	L.N.R.	L.N.R.	L.N.R.	L.N.R.	L.N.R.	L.N.R.	L.N.R.	L.N.R.	L.N.R.
1189649	Rock	L.N.R.	L.N.R.	L.N.R.	L.N.R.	L.N.R.	L.N.R.	L.N.R.	L.N.R.	L.N.R.	L.N.R.	L.N.R.	L.N.R.	L.N.R.	L.N.R.	L.N.R.	L.N.R.	L.N.R.
1189650	Rock	L.N.R.	L.N.R.	L.N.R.	L.N.R.	L.N.R.	L.N.R.	L.N.R.	L.N.R.	L.N.R.	L.N.R.	L.N.R.	L.N.R.	L.N.R.	L.N.R.	L.N.R.	L.N.R.	L.N.R.
1889644	Rock	2.45	0.067	4	54	2.59	67	0.184	<20	5.27	0.62	0.36	<2	0.12	<1	<5	12	<5
1889645	Rock	2.66	0.035	1	186	1.79	23	0.133	<20	4.62	0.48	0.09	<2	<0.05	<1	<5	7	<5
1889646	Rock	2.81	0.041	1	142	1.43	29	0.121	<20	4.50	0.61	0.08	<2	0.11	<1	<5	7	<5
1889647	Rock	2.05	0.007	1	<1	0.16	4	0.010	<20	0.22	<0.01	<0.01	<2	>10	<1	21	24	<5
1889648	Rock	1.05	0.069	2	47	1.67	11	0.271	<20	1.99	0.14	0.12	<2	0.93	<1	<5	<5	<5
1889649	Rock	1.07	0.069	2	50	1.78	9	0.264	<20	2.07	0.15	0.10	<2	0.21	<1	<5	<5	<5
1889650	Rock	1.32	0.054	1	102	1.37	17	0.427	<20	1.82	0.11	0.15	<2	0.35	<1	<5	5	<5



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Method	WGHT	FA330	FA330	FA330	AQ300	AQ300	AQ300	AQ300	AQ300	AQ300	AQ300	AQ300	AQ300	AQ300	AQ300	AQ300	AQ300	AQ300	AQ300	AQ300	AQ300
Analyte	Wgt	Au	Pt	Pd	Mo	Cu	Pb	Zn	Ag	Ni	Co	Mn	Fe	As	Th	Sr	Cd	Sb	Bi	V	
Unit	kg	ppb	ppb	ppb	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	%	ppm	ppm	ppm	ppm	ppm	ppm	ppm	
MDL	0.01	2	3	2	1	1	3	1	0.3	1	1	2	0.01	2	2	1	0.5	3	3	1	
Pulp Duplicates																					
143306	Rock	1.74	325	5	5	4	>10000	4	49	3.1	29	103	385	>40	3	<2	11	3.8	<3	<3	37
REP 143306	QC																				
143315	Rock	1.33	7	11	21	<1	568	<3	48	<0.3	71	34	682	6.37	2	<2	27	<0.5	<3	<3	273
REP 143315	QC		6	7	19																
116904	Rock	0.99	8	17	26	<1	133	<3	43	<0.3	29	18	364	3.98	<2	<2	99	<0.5	<3	<3	158
REP 116904	QC					<1	130	<3	43	<0.3	29	18	362	3.92	<2	<2	98	<0.5	<3	<3	157
116934	Rock	1.03	<2	8	13	<1	83	<3	24	<0.3	55	21	384	2.66	<2	<2	408	<0.5	<3	<3	132
REP 116934	QC		2	7	13																
116944	Rock	1.23	3	6	15	<1	82	<3	44	<0.3	94	34	780	4.70	2	<2	65	<0.5	<3	<3	129
REP 116944	QC		4	10	16																
116945	Rock	1.53	4	9	10	<1	89	<3	44	<0.3	109	31	487	4.29	10	<2	33	<0.5	<3	<3	103
REP 116945	QC					<1	90	<3	44	<0.3	110	31	495	4.33	9	<2	34	<0.5	<3	<3	103
Core Reject Duplicates																					
116936	Rock	1.08	10	3	<2	<1	24	<3	21	<0.3	2	13	330	3.58	<2	<2	102	<0.5	<3	<3	97
DUP 116936	QC		10	4	7	<1	24	<3	22	<0.3	2	13	337	3.62	<2	<2	99	<0.5	<3	<3	99
Reference Materials																					
STD CDN-ME-14	Standard																				
STD CDN-ME-9	Standard																				
STD CDN-PGMS-19	Standard		242	74	436																
STD CDN-PGMS-23	Standard		526	449	2190																
STD CDN-PGMS-19	Standard		223	81	424																
STD CDN-PGMS-19	Standard		231	108	480																
STD CDN-PGMS-23	Standard		447	437	1952																
STD DS11	Standard					13	149	144	334	1.8	81	13	1054	3.21	45	7	66	2.1	8	8	50
STD DS11	Standard					13	146	139	347	1.7	78	13	1028	3.14	41	9	62	2.2	6	11	48
STD OREAS45EA	Standard					2	709	12	31	0.3	402	55	419	25.42	13	8	4	<0.5	<3	<3	312
STD OREAS45EA	Standard					2	685	13	30	0.5	364	52	406	20.89	11	11	3	0.7	<3	<3	300
STD OREAS45EA Expected						1.6	709	14.3	31.4	0.26	381	52	400	23.51	10	10.7	3.5				303



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Method	AQ300	AQ300	AQ300	AQ300	AQ300	AQ300	AQ300	AQ300	AQ300	AQ300	AQ300	AQ300	AQ300	AQ300	AQ300	AQ300	AQ300	MA370	
Analyte	Ca	P	La	Cr	Mg	Ba	Ti	B	Al	Na	K	W	S	Hg	Tl	Ga	Sc	Cu	
Unit	%	%	ppm	ppm	%	ppm	%	ppm	%	%	%	ppm	%	ppm	ppm	ppm	ppm	%	
MDL	0.01	0.001	1	1	0.01	1	0.001	20	0.01	0.01	0.01	2	0.05	1	5	5	5	0.001	
Pulp Duplicates																			
143306	Rock	1.68	0.004	4	7	0.41	4	0.025	<20	0.53	0.02	0.01	7	0.09	<1	<5	<5	<5	2.399
REP 143306	QC																		2.414
143315	Rock	5.27	0.062	3	85	3.65	5	0.332	32	5.06	0.03	<0.01	<2	<0.05	<1	<5	<5	26	
REP 143315	QC																		
116904	Rock	1.89	0.060	3	25	1.14	9	0.211	<20	2.60	0.34	0.10	<2	0.12	<1	<5	<5	6	
REP 116904	QC	1.88	0.060	3	24	1.13	9	0.208	<20	2.58	0.34	0.10	<2	0.12	<1	<5	<5	6	
116934	Rock	3.73	0.052	2	47	1.85	2	0.278	<20	3.16	0.04	<0.01	<2	<0.05	<1	<5	<5	5	
REP 116934	QC																		
116944	Rock	4.16	0.027	2	53	1.99	84	0.046	<20	4.23	0.38	0.17	<2	<0.05	<1	<5	7	13	
REP 116944	QC																		
116945	Rock	1.73	0.033	3	18	2.43	44	0.095	22	3.39	0.20	0.14	<2	<0.05	<1	<5	6	<5	
REP 116945	QC	1.77	0.033	3	18	2.44	44	0.097	23	3.41	0.21	0.14	<2	<0.05	<1	<5	7	<5	
Core Reject Duplicates																			
116936	Rock	1.81	0.095	4	1	0.83	63	0.169	<20	2.63	0.18	0.15	<2	0.86	<1	<5	<5	<5	
DUP 116936	QC	1.99	0.098	4	<1	0.84	58	0.166	<20	2.71	0.17	0.15	<2	0.88	<1	<5	<5	<5	
Reference Materials																			
STD CDN-ME-14	Standard																		1.267
STD CDN-ME-9	Standard																		0.677
STD CDN-PGMS-19	Standard																		
STD CDN-PGMS-23	Standard																		
STD CDN-PGMS-19	Standard																		
STD CDN-PGMS-19	Standard																		
STD CDN-PGMS-23	Standard																		
STD DS11	Standard	1.05	0.073	16	57	0.87	432	0.088	<20	1.14	0.07	0.40	4	0.26	<1	6	<5	<5	
STD DS11	Standard	1.05	0.069	17	60	0.87	431	0.087	<20	1.09	0.07	0.39	3	0.28	<1	<5	<5	<5	
STD OREAS45EA	Standard	0.03	0.031	7	899	0.09	145	0.101	<20	3.34	0.02	0.06	<2	<0.05	<1	12	9	85	
STD OREAS45EA	Standard	0.03	0.030	8	905	0.09	144	0.097	<20	3.22	0.02	0.05	<2	<0.05	<1	<5	10	83	
STD OREAS45EA Expected		0.036	0.029	7.06	849	0.095	148	0.0984		3.13	0.02	0.053		0.036			12.4	78	



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Project: Catalyst
Report Date: September 25, 2017

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	WGHT	FA330	FA330	FA330	AQ300	AQ300	AQ300	AQ300	AQ300	AQ300	AQ300	AQ300	AQ300	AQ300	AQ300	AQ300	AQ300	AQ300	AQ300	AQ300
	Wgt	Au	Pt	Pd	Mo	Cu	Pb	Zn	Ag	Ni	Co	Mn	Fe	As	Th	Sr	Cd	Sb	Bi	V
	kg	ppb	ppb	ppb	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	%	ppm	ppm	ppm	ppm	ppm	ppm	ppm
	0.01	2	3	2	1	1	3	1	0.3	1	1	2	0.01	2	2	1	0.5	3	3	1
STD DS11 Expected					13.9	156	138	345	1.71	81.9	14.2	1055	3.2082	42.8	7.65	67.3	2.37	7.2	12.2	50
STD CDN-PGMS-19 Expected		230	108	476																
STD CDN-PGMS-23 Expected		496	456	2032																
STD CDN-ME-14 Expected																				
STD CDN-ME-9 Expected																				
BLK	Blank				<1	<1	<3	<1	<0.3	<1	<1	<2	<0.01	<2	<2	<1	<0.5	<3	<3	<1
BLK	Blank				<1	<1	<3	<1	<0.3	<1	<1	<2	<0.01	<2	<2	<1	<0.5	<3	<3	<1
BLK	Blank	<2	<3	<2																
BLK	Blank	<2	4	<2																
BLK	Blank	<2	<3	5																
BLK	Blank	<2	<3	<2																
BLK	Blank	<2	<3	<2																
BLK	Blank	<2	<3	<2																
BLK	Blank	<2	<3	<2																
Prep Wash																				
ROCK-WHI	Prep Blank	2	<3	<2	<1	2	<3	31	<0.3	<1	3	509	1.65	<2	3	22	<0.5	<3	<3	20
ROCK-WHI	Prep Blank	3	3	3	<1	3	<3	35	<0.3	<1	3	549	1.77	<2	2	16	<0.5	<3	<3	20



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		AQ300	AQ300	AQ300	AQ300	AQ300	AQ300	AQ300	AQ300	AQ300	AQ300	AQ300	AQ300	AQ300	AQ300	AQ300	AQ300	MA370		
		Ca	P	La	Cr	Mg	Ba	Ti	B	Al	Na	K	W	S	Hg	Tl	Ga	Sc	Cu	
		%	%	ppm	ppm	%	ppm	%	ppm	%	%	%	ppm	%	ppm	ppm	ppm	ppm	%	
		0.01	0.001	1	1	0.01	1	0.001	20	0.01	0.01	0.01	2	0.05	1	5	5	5	0.001	
STD DS11 Expected		1.063	0.0701	18.6	61.5	0.85	417	0.0976	6	1.129	0.0694	0.4	2.9	0.2835	0.3	4.9	4.7	3.1		
STD CDN-PGMS-19 Expected																				
STD CDN-PGMS-23 Expected																				
STD CDN-ME-14 Expected																				1.221
STD CDN-ME-9 Expected																				0.654
BLK	Blank	<0.01	<0.001	<1	<1	<0.01	<1	<0.001	<20	<0.01	<0.01	<0.01	<2	<0.05	<1	<5	<5	<5		
BLK	Blank	<0.01	<0.001	<1	<1	<0.01	<1	<0.001	<20	<0.01	<0.01	<0.01	<2	<0.05	<1	<5	<5	<5		
BLK	Blank																			
BLK	Blank																			
BLK	Blank																			
BLK	Blank																			
BLK	Blank																			
BLK	Blank																			
BLK	Blank																			<0.001
Prep Wash																				
ROCK-WHI	Prep Blank	0.55	0.038	5	1	0.47	61	0.070	<20	0.87	0.08	0.10	<2	<0.05	<1	<5	<5	<5		
ROCK-WHI	Prep Blank	0.47	0.038	5	2	0.52	44	0.065	<20	0.86	0.07	0.09	<2	0.07	<1	<5	<5	<5		