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To: ANGLOGOLD ASHANTI MINNESOTA INC.  
6300 S. SYRACUSE WAY #500  
CENTENNIAL CO 80111  
USA

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Plus Appendix Pages  
Finalized Date: 17-JUN-2017  
Account: AAMICLSR

**CERTIFICATE VA17108888**

This report is for 58 Pulp samples submitted to our lab in Vancouver, BC, Canada on 31-MAY-2017.

The following have access to data associated with this certificate:

TREVOR BURR

PERTH DATA

ANDREW TYRELL

**SAMPLE PREPARATION**

ALS CODE	DESCRIPTION
WEI-21	Received Sample Weight
LOG-24	Pulp Login - Rcd w/o Barcode

**ANALYTICAL PROCEDURES**

ALS CODE	DESCRIPTION	INSTRUMENT
ME-MS61L	Super Trace Lowest DL 4A by ICP-MS	ICP-MS
ME-MS41L	Super Trace Lowest DL AR by ICP-MS	
C-IR07	Total Carbon (Leco)	LECO
Au-ICP21	Au 30g FA ICP-AES Finish	ICP-AES

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

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

Signature:

Colin Ramshaw, Vancouver Laboratory Manager



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# CERTIFICATE OF ANALYSIS VA17108888

Sample Description	Method Analyte Units LOR	WEI-21 Recvd Wt. kg	Au-ICP21 Au ppm	ME-MS61L Ag ppm	ME-MS61L Al %	ME-MS61L As ppm	ME-MS61L Ba ppm	ME-MS61L Be ppm	ME-MS61L Bi ppm	ME-MS61L Ca %	ME-MS61L Cd ppm	ME-MS61L Ce ppm	ME-MS61L Co ppm	ME-MS61L Cr ppm	ME-MS61L Cs ppm	ME-MS61L Cu ppm
		0.02	0.001	0.002	0.01	0.05	1	0.02	0.005	0.01	0.005	0.01	0.005	0.3	0.01	0.02
R863583		0.14	0.001	0.066	6.06	3.22	520	1.37	0.163	6.20	0.110	58.8	12.15	63.4	2.75	22.3
R863584		0.06	0.001	0.065	7.08	1.27	500	1.40	0.135	3.11	0.094	44.5	21.1	85.1	1.35	40.8
R863586		0.08	0.002	0.110	6.41	3.91	510	1.35	0.181	6.33	0.136	56.8	13.00	71.7	3.46	22.9
R863587		0.26	0.001	0.065	7.29	1.67	620	1.53	0.215	1.70	0.082	56.5	14.60	88.4	2.94	29.3
R863588		0.10	<0.001	0.066	7.17	1.29	620	1.61	0.121	2.07	0.089	48.6	12.45	74.9	1.70	24.5
R863589		0.08	0.031	0.057	6.93	1.68	600	1.67	0.122	2.01	0.090	48.8	12.70	70.2	1.58	24.3
R863591		0.08	<0.001	0.248	8.42	1.51	610	1.56	0.266	2.10	0.031	76.1	24.8	147.0	2.53	66.3
R863592		0.06	0.001	0.224	8.10	2.27	650	1.40	0.316	1.45	0.068	64.6	31.3	197.0	2.10	122.5
R863595		0.10	<0.001	0.063	5.96	4.06	510	1.35	0.151	5.63	0.131	55.2	11.95	65.6	2.66	22.0
R863596		0.04	<0.001	0.068	7.23	1.60	490	1.22	0.117	3.66	0.143	47.9	25.0	86.2	1.76	74.8
R863597		0.06	0.001	0.066	6.72	1.06	153	0.65	0.042	5.24	0.118	17.00	48.1	49.6	0.37	194.0
R863599		0.08	<0.001	0.056	6.83	0.93	560	1.53	0.127	2.32	0.098	48.9	12.20	66.2	1.30	27.4
R863600		0.06	0.003	0.063	7.15	1.38	390	1.29	0.097	4.71	0.165	36.9	27.2	77.8	0.92	109.0
R863602		0.10	<0.001	0.074	6.52	3.90	520	1.45	0.198	6.41	0.189	58.4	14.30	78.1	3.83	24.9
R863603		0.04	0.003	0.062	7.09	1.48	540	1.40	0.170	1.92	0.086	52.5	17.80	126.5	2.12	32.2
R863604		0.04	<0.001	0.077	7.29	1.49	580	1.50	0.194	1.97	0.125	54.2	19.55	134.0	2.34	39.6
R863605		0.10	0.002	0.066	6.98	1.44	410	0.98	0.097	2.63	0.392	29.3	36.4	113.0	2.57	77.9
R863606		0.06	<0.001	0.057	6.07	3.30	530	1.36	0.160	6.56	0.117	65.8	12.15	66.6	2.61	20.2
R863607		0.16	<0.001	0.050	5.74	2.28	490	1.23	0.115	5.07	0.090	52.5	8.87	51.7	1.81	15.80
R863608		0.06	<0.001	0.042	5.72	2.57	520	1.24	0.099	4.40	0.098	52.9	9.95	59.8	1.37	15.20
R863609		0.06	<0.001	0.041	5.43	2.14	460	1.07	0.092	4.61	0.082	43.7	7.14	43.5	1.13	12.25
R863610		0.02	<0.001	0.059	6.64	1.77	770	1.31	0.134	4.67	0.105	69.1	12.10	77.3	1.75	24.2
R863611		0.20	0.001	0.051	5.85	1.97	490	1.17	0.101	4.08	0.091	53.3	8.69	49.7	1.42	14.75
R863612		0.10	<0.001	0.073	7.48	3.43	640	1.48	0.228	3.54	0.104	71.9	17.35	93.8	3.95	33.4
R863613		0.08	<0.001	0.087	7.09	2.32	690	1.56	1.280	3.17	0.107	80.0	14.15	79.5	3.02	27.0
R863614		0.08	<0.001	0.072	7.09	4.08	580	1.54	0.240	4.95	0.147	67.4	16.65	89.3	4.32	31.3
R863615		0.04	<0.001	0.068	7.21	2.05	610	1.61	0.175	2.70	0.097	58.4	13.45	76.3	2.46	23.9
R863616		0.06	0.010	0.050	6.54	1.75	580	1.43	0.137	1.89	0.048	59.5	10.10	64.5	1.58	17.55
R863617		0.14	<0.001	0.051	6.52	2.00	600	1.68	0.103	2.02	0.057	50.0	8.63	105.0	1.14	23.6
R863618		0.06	<0.001	0.069	7.13	1.33	660	1.52	0.155	1.93	0.063	64.4	12.60	82.1	2.06	23.7
R863619		0.08	<0.001	0.056	6.62	1.06	580	1.45	0.134	2.05	0.065	55.5	11.60	65.5	1.53	22.2
R863620		0.18	<0.001	0.048	7.18	0.57	301	0.96	0.063	4.47	0.116	28.4	38.5	103.0	0.73	67.8
R863623		0.12	<0.001	0.048	6.93	1.47	570	1.77	0.135	1.96	0.063	65.1	9.98	58.3	1.44	21.7
R863624		0.06	<0.001	0.078	7.62	1.58	620	1.47	0.150	2.31	0.105	65.3	19.45	144.0	2.29	32.1
R863625		0.04	0.004	0.171	7.86	1.60	740	1.57	0.172	2.79	0.410	82.5	23.0	130.5	3.07	46.4
R863626		0.08	<0.001	0.046	8.10	0.89	650	1.30	0.194	2.84	0.075	59.0	13.85	81.1	1.73	25.1
R863627		0.02	0.004	0.068	7.09	2.93	590	1.31	0.158	4.14	0.154	73.0	18.65	131.0	1.97	37.5
R863628		0.08	0.002	0.050	8.28	1.10	620	1.33	0.107	2.82	0.066	62.9	17.80	89.7	1.74	27.5
R863629		0.08	<0.001	0.043	8.57	2.10	590	1.35	0.101	3.20	0.075	49.7	16.85	68.7	1.43	21.5
R863630		0.12	<0.001	0.076	6.65	4.21	550	1.40	0.216	6.06	0.150	62.8	13.75	76.5	3.63	26.3



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# CERTIFICATE OF ANALYSIS VA17108888

Sample Description	Method Analyte Units LOR	ME-MS61L	ME-MS61L	ME-MS61L	ME-MS61L	ME-MS61L	ME-MS61L	ME-MS61L	ME-MS61L	ME-MS61L	ME-MS61L	ME-MS61L	ME-MS61L	ME-MS61L	ME-MS61L	
		Fe	Ga	Ge	Hf	In	K	La	Li	Mg	Mn	Mo	Na	Nb	Ni	P
		%	ppm	ppm	ppm	ppm	%	ppm	ppm	%	ppm	ppm	%	ppm	ppm	%
		0.002	0.05	0.05	0.004	0.005	0.01	0.005	0.2	0.01	0.2	0.02	0.001	0.005	0.08	0.001
R863583		2.62	13.75	0.09	3.26	0.031	1.72	28.7	26.7	2.35	487	0.63	1.560	7.55	34.3	0.064
R863584		4.14	15.65	0.12	2.87	0.039	1.52	20.4	15.5	1.45	793	0.65	2.46	4.75	42.8	0.084
R863586		2.85	15.60	0.11	3.12	0.031	1.74	27.9	34.9	2.38	520	0.73	1.445	7.91	37.0	0.060
R863587		2.81	17.05	0.11	3.22	0.028	2.03	27.0	25.7	1.09	441	0.62	2.31	6.58	42.7	0.073
R863588		2.42	15.00	0.12	3.23	0.035	1.89	22.9	15.6	0.90	495	0.94	2.75	4.76	35.5	0.090
R863589		2.27	14.60	0.10	3.16	0.023	1.86	23.1	14.0	0.83	478	0.50	2.71	4.68	34.0	0.091
R863591		4.97	20.4	0.17	3.57	0.056	2.56	36.8	33.7	1.98	857	1.02	2.46	6.46	77.8	0.189
R863592		5.36	19.85	0.15	3.19	0.039	2.15	32.1	32.9	1.90	791	2.92	2.22	6.07	116.0	0.099
R863595		2.58	14.60	0.11	3.26	0.031	1.65	26.8	27.9	2.20	492	0.61	1.570	7.26	33.1	0.064
R863596		5.21	16.85	0.11	2.79	0.050	1.53	22.4	21.6	1.84	1070	1.24	2.24	5.80	48.5	0.078
R863597		9.54	17.45	0.12	1.095	0.087	0.45	7.35	11.9	2.59	1710	2.24	2.32	3.94	47.0	0.048
R863599		2.51	14.40	0.11	3.39	0.031	1.72	22.7	12.5	0.88	618	0.45	2.61	4.92	30.6	0.089
R863600		5.33	18.30	0.13	2.70	0.059	1.19	17.30	12.9	1.54	1125	1.45	2.30	4.82	44.2	0.078
R863602		3.04	16.05	0.11	3.11	0.034	1.78	29.1	38.0	2.40	555	0.80	1.320	8.43	39.9	0.059
R863603		3.16	15.80	0.11	3.37	0.035	1.67	25.3	18.0	1.37	592	0.52	2.40	5.30	58.3	0.098
R863604		3.48	16.85	0.13	3.15	0.030	1.77	25.8	20.5	1.46	633	0.75	2.45	5.37	64.7	0.095
R863605		6.66	16.95	0.12	2.16	0.058	1.90	14.40	21.1	2.86	1245	1.70	2.20	4.28	64.5	0.065
R863606		2.64	14.35	0.13	3.45	0.028	1.72	31.5	26.3	2.43	499	0.71	1.635	7.39	34.2	0.079
R863607		2.12	12.50	0.10	3.46	0.020	1.54	25.1	17.1	1.90	400	0.67	1.835	5.88	24.1	0.070
R863608		2.14	12.60	0.11	3.62	0.022	1.59	25.1	13.1	1.51	432	0.91	2.06	5.48	26.5	0.070
R863609		1.690	11.20	0.09	3.42	0.017	1.43	21.2	10.7	1.69	364	0.41	2.02	5.04	18.75	0.070
R863610		2.60	14.45	0.13	3.21	0.025	2.12	32.5	17.4	1.73	518	1.02	2.40	5.57	40.8	0.090
R863611		1.900	12.25	0.11	3.31	0.022	1.53	25.0	13.9	1.50	402	0.42	2.10	5.38	22.7	0.078
R863612		3.59	18.05	0.13	3.38	0.043	2.12	34.9	37.8	1.91	586	0.69	1.860	8.51	50.9	0.075
R863613		2.94	17.85	0.14	4.22	0.035	2.48	40.0	31.1	1.48	505	1.33	2.11	8.91	40.6	0.070
R863614		3.50	17.50	0.14	3.05	0.044	1.96	32.9	43.5	2.18	609	0.70	1.445	8.81	47.7	0.064
R863615		2.65	16.05	0.11	3.65	0.029	1.96	27.3	23.0	1.13	497	0.67	2.42	6.33	37.9	0.093
R863616		2.18	14.40	0.11	3.86	0.035	1.81	27.0	12.2	0.72	456	0.53	2.35	5.57	29.4	0.090
R863617		2.49	14.70	0.12	3.49	0.026	1.79	21.3	10.2	0.57	475	10.40	2.58	3.74	29.9	0.094
R863618		2.77	16.00	0.12	3.84	0.038	2.12	30.1	16.4	0.86	546	1.29	2.32	5.54	37.7	0.076
R863619		2.80	14.20	0.10	3.58	0.033	1.88	24.5	13.3	0.80	635	0.55	2.17	5.18	31.4	0.071
R863620		6.60	16.65	0.11	1.930	0.067	0.99	12.00	12.6	2.24	1745	0.97	2.15	3.66	75.1	0.054
R863623		1.950	15.25	0.11	4.10	0.029	1.84	29.5	12.4	0.69	397	0.58	2.71	4.89	28.5	0.104
R863624		4.00	17.80	0.11	3.49	0.039	1.90	30.3	20.2	1.24	796	2.39	2.11	5.73	68.8	0.082
R863625		4.55	19.10	0.13	3.85	0.054	2.17	38.0	33.3	1.67	915	1.96	2.47	6.44	73.5	0.089
R863626		3.03	18.35	0.12	2.66	0.039	1.79	25.7	17.7	0.93	641	2.18	2.72	4.78	37.1	0.079
R863627		3.82	16.10	0.13	4.41	0.039	1.59	34.7	21.1	1.63	791	5.91	2.17	6.37	50.0	0.098
R863628		3.65	19.90	0.13	2.91	0.046	1.72	28.5	19.2	1.17	774	1.27	2.20	5.73	44.3	0.082
R863629		3.67	21.2	0.13	2.11	0.032	1.64	20.7	19.7	1.24	823	1.21	2.66	4.56	34.9	0.074
R863630		3.02	16.15	0.12	3.19	0.041	1.82	30.1	36.2	2.37	560	0.71	1.450	7.70	41.1	0.063



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		Pb	Rb	Re	S	Sb	Sc	Se	Sn	Sr	Ta	Te	Th	Ti	U
		ppm	ppm	ppm	%	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	%	ppm
		0.01	0.02	0.002	0.01	0.02	0.01	0.2	0.02	0.02	0.01	0.04	0.004	0.001	0.01
R863583		11.55	70.7	<0.002	0.10	0.29	8.95	0.2	1.07	310	0.50	0.04	6.73	0.281	0.393
R863584		13.50	51.0	<0.002	0.14	0.12	17.05	0.3	0.80	389	0.33	<0.04	5.45	0.333	0.277
R863586		12.15	76.9	0.002	0.09	0.30	10.40	0.4	1.21	285	0.51	<0.04	7.52	0.282	0.434
R863587		14.30	82.5	<0.002	0.05	0.14	10.35	0.2	1.20	389	0.46	0.04	6.36	0.276	0.436
R863588		14.10	64.6	<0.002	0.13	0.11	8.98	0.4	0.77	477	0.32	0.04	6.34	0.248	0.337
R863589		14.60	62.6	<0.002	0.12	0.08	8.41	<0.2	0.74	467	0.33	<0.04	5.93	0.242	0.339
R863591		18.80	83.9	<0.002	0.03	0.20	16.20	0.3	1.25	359	0.47	0.08	7.32	0.369	0.444
R863592		22.2	71.7	0.002	0.25	0.28	16.75	1.8	1.19	303	0.44	0.09	6.15	0.391	0.389
R863595		11.55	69.3	0.002	0.10	0.32	9.71	0.4	1.08	304	0.49	0.05	6.71	0.275	0.375
R863596		10.65	57.7	<0.002	0.08	0.12	20.0	0.4	1.10	364	0.39	<0.04	5.57	0.463	0.297
R863597		2.14	14.05	0.002	0.17	0.10	46.0	0.6	0.88	150.0	0.23	0.04	1.020	0.715	0.075
R863599		12.95	56.3	<0.002	0.07	0.11	10.55	0.4	0.69	437	0.35	<0.04	6.66	0.289	0.303
R863600		8.97	40.1	<0.002	0.13	0.11	26.2	0.6	0.94	342	0.35	0.04	4.21	0.542	0.205
R863602		12.30	82.0	0.003	0.08	0.40	10.90	0.4	1.38	268	0.55	0.05	7.84	0.291	0.437
R863603		14.80	61.5	<0.002	0.11	0.13	11.25	0.2	0.84	391	0.35	<0.04	6.03	0.294	0.344
R863604		13.70	67.3	<0.002	0.12	0.15	12.60	0.5	0.96	399	0.36	0.04	6.89	0.297	0.370
R863605		6.36	63.1	0.002	0.13	0.11	30.9	0.2	0.81	238	0.27	<0.04	3.48	0.535	0.257
R863606		11.70	69.8	0.003	0.10	0.24	9.47	0.4	1.12	344	0.48	0.04	7.17	0.277	0.381
R863607		10.75	56.2	<0.002	0.05	0.19	7.59	<0.2	0.83	340	0.39	<0.04	5.72	0.236	0.304
R863608		11.55	54.4	<0.002	0.06	0.15	7.39	0.2	0.71	371	0.37	0.04	6.42	0.243	0.305
R863609		11.00	48.4	<0.002	0.07	0.15	6.43	0.3	1.13	351	0.37	<0.04	4.99	0.218	0.262
R863610		14.60	69.4	<0.002	0.09	0.12	8.29	0.2	0.83	518	0.42	<0.04	8.20	0.239	0.373
R863611		11.15	53.9	<0.002	0.07	0.16	7.19	0.2	0.81	377	0.36	<0.04	6.07	0.232	0.285
R863612		14.45	91.9	0.002	0.05	0.25	11.65	0.3	1.42	338	0.59	0.05	9.04	0.321	0.498
R863613		18.00	112.0	<0.002	0.06	0.18	9.74	0.4	1.37	354	0.49	0.06	15.95	0.275	0.647
R863614		13.80	91.7	<0.002	0.07	0.34	11.90	0.2	1.44	277	0.57	0.05	9.10	0.315	0.505
R863615		15.35	71.8	<0.002	0.07	0.17	9.27	0.2	1.13	423	0.42	<0.04	9.09	0.260	0.416
R863616		14.75	61.0	<0.002	0.06	0.10	8.19	0.3	0.74	417	0.83	<0.04	7.49	0.253	0.349
R863617		13.75	55.2	<0.002	0.06	0.21	7.31	0.6	1.71	459	0.29	<0.04	6.05	0.195	0.307
R863618		15.80	75.1	0.002	0.06	0.14	9.69	0.4	1.00	406	0.46	<0.04	8.08	0.276	0.427
R863619		13.85	63.0	<0.002	0.06	0.12	9.90	0.4	0.78	371	0.51	<0.04	6.70	0.266	0.343
R863620		6.60	30.7	<0.002	0.04	0.09	30.6	0.4	0.77	312	0.26	<0.04	2.83	0.491	0.178
R863623		15.70	59.9	<0.002	0.07	0.09	8.28	0.4	0.78	479	0.40	<0.04	7.57	0.232	0.334
R863624		14.55	75.8	<0.002	0.08	0.17	12.35	0.5	1.00	417	0.43	<0.04	7.43	0.311	0.401
R863625		15.00	80.7	<0.002	0.16	0.15	15.85	0.5	1.38	477	0.48	0.07	10.05	0.367	0.504
R863626		11.70	69.1	<0.002	0.07	0.15	9.18	0.6	0.94	527	0.35	<0.04	7.06	0.249	0.364
R863627		14.55	59.4	0.002	0.18	0.30	12.30	0.4	1.68	434	0.46	0.04	9.56	0.327	0.342
R863628		11.50	72.7	<0.002	0.06	0.15	11.60	0.5	0.77	421	0.46	<0.04	6.50	0.293	0.378
R863629		10.70	58.9	<0.002	0.08	0.17	11.75	0.6	0.80	502	0.33	<0.04	5.32	0.259	0.325
R863630		13.50	75.5	0.002	0.08	0.40	11.35	0.6	1.31	291	0.56	<0.04	8.01	0.300	0.469



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# CERTIFICATE OF ANALYSIS VA17108888

Sample Description	Method Analyte Units LOR	ME-MS61L	ME-MS61L	ME-MS61L	ME-MS61L	ME-MS61L	ME-MS41L	ME-MS41L	ME-MS41L	ME-MS41L	ME-MS41L	ME-MS41L	ME-MS41L	ME-MS41L	ME-MS41L	ME-MS41L
		V	W	Y	Zn	Zr	Au	Ag	Al	As	B	Ba	Be	Bi	Ca	Cd
		ppm 0.1	ppm 0.008	ppm 0.01	ppm 0.2	ppm 0.1	ppm 0.0002	ppm 0.001	% 0.01	ppm 0.01	ppm 10	ppm 0.5	ppm 0.01	ppm 0.001	% 0.01	ppm 0.001
R863583		73.7	0.626	13.25	58.0	115.0	0.0011	0.060	1.14	3.41	10	103.0	0.37	0.142	5.13	0.095
R863584		113.0	2.83	16.50	58.2	102.5	0.0007	0.062	1.31	1.05	<10	83.0	0.18	0.117	1.22	0.054
R863586		89.7	0.644	13.50	63.9	110.5	0.0013	0.064	1.29	3.35	10	105.5	0.46	0.169	5.22	0.122
R863587		74.0	0.542	12.35	65.3	113.5	0.0009	0.064	1.36	1.57	<10	131.5	0.31	0.164	0.54	0.056
R863588		58.7	0.681	12.40	45.8	115.5	0.0002	0.047	0.86	1.52	<10	104.5	0.15	0.097	0.44	0.053
R863589		55.3	0.464	12.25	48.6	118.0	0.0006	0.043	0.75	1.58	<10	92.0	0.16	0.092	0.41	0.044
R863591		124.5	2.86	16.60	115.5	126.0	0.0007	0.145	2.11	1.12	<10	44.4	0.40	0.191	1.03	0.026
R863592		132.0	2.08	16.20	104.5	120.5	0.0016	0.212	2.31	1.61	<10	37.3	0.27	0.251	0.54	0.059
R863595		76.0	0.647	13.30	56.1	113.0	0.0011	0.051	1.09	2.50	10	99.9	0.39	0.122	4.56	0.106
R863596		158.0	0.900	18.60	81.7	97.0	0.0008	0.062	1.70	1.07	<10	84.5	0.26	0.081	1.78	0.116
R863597		320	0.955	27.2	130.5	31.5	0.0020	0.064	2.31	0.89	<10	27.1	0.14	0.020	2.20	0.080
R863599		70.1	0.365	14.10	41.3	124.5	0.0373	0.038	0.73	0.75	<10	48.9	0.15	0.080	0.63	0.063
R863600		177.5	18.60	22.7	65.0	96.2	0.0012	0.062	1.26	0.64	<10	35.3	0.14	0.054	1.86	0.104
R863602		99.5	0.722	14.00	71.1	107.5	0.0010	0.062	1.40	2.91	10	127.5	0.48	0.159	5.33	0.170
R863603		75.2	0.535	13.50	60.4	119.0	0.0009	0.081	1.21	2.03	<10	93.1	0.25	0.138	0.52	0.066
R863604		82.7	0.975	13.45	68.1	111.0	0.0006	0.060	1.38	1.47	<10	118.0	0.31	0.149	0.52	0.105
R863605		215	3.75	21.2	85.4	75.1	0.0010	0.059	2.51	1.24	<10	124.0	0.21	0.067	0.94	0.334
R863606		74.9	0.669	13.95	57.0	123.0	0.0016	0.048	1.08	2.24	10	88.6	0.38	0.111	5.34	0.095
R863607		57.9	0.435	12.55	41.0	123.5	0.0004	0.034	0.76	2.08	10	69.3	0.23	0.076	3.77	0.074
R863608		53.6	1.645	12.10	35.8	134.0	0.0004	0.032	0.63	2.07	<10	60.3	0.19	0.068	3.15	0.067
R863609		43.8	0.308	11.60	28.2	127.0	0.0003	0.028	0.44	1.64	<10	29.3	0.15	0.056	3.26	0.056
R863610		59.0	0.441	12.40	46.2	112.5	0.0005	0.045	0.76	1.69	<10	73.6	0.23	0.113	3.12	0.072
R863611		48.1	0.363	12.25	35.1	118.5	0.0004	0.032	0.60	1.20	<10	45.8	0.22	0.072	2.73	0.058
R863612		93.3	0.926	14.35	81.1	118.5	0.0007	0.047	1.09	1.73	<10	96.3	0.29	0.134	1.39	0.071
R863613		70.9	4.90	12.80	68.4	145.5	0.0007	0.075	1.48	1.81	10	145.5	0.34	0.150	2.17	0.089
R863614		103.5	0.753	14.25	80.3	105.5	0.0014	0.072	1.80	3.54	10	165.0	0.56	0.202	4.07	0.145
R863615		67.7	0.539	13.40	54.8	131.0	0.0012	0.078	1.79	2.70	10	165.5	0.52	0.193	2.48	0.096
R863616		53.2	0.412	12.65	37.4	146.5	0.0003	0.046	0.71	0.73	<10	66.4	0.19	0.075	0.51	0.023
R863617		41.4	0.635	11.45	57.7	130.5	0.0005	0.040	0.48	1.28	<10	47.5	0.15	0.058	0.55	0.036
R863618		64.6	2.10	12.95	47.6	144.5	0.0009	0.044	1.02	0.82	<10	97.5	0.32	0.096	0.61	0.033
R863619		63.1	1.545	12.35	37.5	140.5	0.0007	0.051	0.84	0.76	<10	66.1	0.25	0.095	0.68	0.036
R863620		199.5	7.72	20.4	65.3	70.2	0.0022	0.046	1.50	0.34	<10	41.4	0.20	0.038	1.53	0.079
R863623		48.3	0.364	13.45	38.2	156.0	0.0003	0.029	0.67	1.08	<10	57.5	0.17	0.080	0.43	0.034
R863624		83.6	2.46	13.65	72.6	129.5	0.0007	0.061	1.20	1.18	<10	82.1	0.40	0.098	0.76	0.092
R863625		110.5	3.55	13.85	86.2	151.0	0.0009	0.121	1.55	1.01	<10	154.5	0.25	0.116	0.83	0.257
R863626		62.6	4.65	10.60	56.4	102.0	0.0005	0.041	1.31	0.96	<10	108.5	0.24	0.084	0.90	0.055
R863627		94.7	4.14	15.50	63.5	180.5	0.235	0.066	1.11	2.09	<10	140.0	0.26	0.104	2.30	0.127
R863628		80.1	3.34	12.95	67.6	108.0	0.0004	0.042	1.29	0.88	<10	87.1	0.32	0.065	1.10	0.044
R863629		80.3	11.60	9.74	61.3	72.0	0.0009	0.039	1.60	1.08	<10	90.2	0.28	0.057	1.09	0.052
R863630		95.3	0.682	13.75	66.5	117.5	0.0008	0.061	1.38	3.03	10	130.5	0.44	0.157	5.00	0.142



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# CERTIFICATE OF ANALYSIS VA17108888

Sample Description	Method Analyte Units LOR	ME-MS41L	ME-MS41L	ME-MS41L	ME-MS41L	ME-MS41L	ME-MS41L	ME-MS41L	ME-MS41L	ME-MS41L	ME-MS41L	ME-MS41L	ME-MS41L	ME-MS41L	ME-MS41L	ME-MS41L
		Ce	Co	Cr	Cs	Cu	Fe	Ga	Ge	Hf	Hg	In	K	La	Li	Mg
		ppm 0.003	ppm 0.001	ppm 0.01	ppm 0.005	ppm 0.01	% 0.001	ppm 0.004	ppm 0.005	ppm 0.002	ppm 0.004	ppm 0.005	% 0.01	ppm 0.002	ppm 0.1	% 0.01
R863583		53.9	9.78	44.2	1.580	23.5	1.920	4.89	0.080	0.408	0.009	0.020	0.27	25.6	17.2	2.06
R863584		40.7	15.05	59.4	0.952	45.2	2.65	5.55	0.101	0.228	<0.004	0.021	0.23	17.15	11.2	0.92
R863586		51.0	10.45	44.4	1.695	23.6	2.06	5.33	0.074	0.417	0.016	0.026	0.31	24.6	20.3	2.04
R863587		60.9	13.00	73.6	2.20	33.5	2.29	6.61	0.104	0.405	<0.004	0.022	0.41	28.9	20.6	0.90
R863588		48.3	9.82	51.9	1.230	26.6	1.680	4.17	0.085	0.262	<0.004	0.015	0.32	22.7	10.6	0.59
R863589		46.6	9.19	44.9	1.070	23.3	1.540	3.66	0.083	0.227	<0.004	0.012	0.27	21.5	8.9	0.52
R863591		66.8	20.3	142.0	1.165	59.2	4.10	11.55	0.199	0.344	0.004	0.031	0.15	38.0	28.0	1.68
R863592		61.6	26.5	199.0	0.936	121.5	4.82	11.75	0.214	0.225	<0.004	0.024	0.14	35.7	27.3	1.74
R863595		42.7	9.44	43.7	1.440	20.8	1.930	4.33	0.099	0.419	0.014	0.016	0.27	22.4	17.1	1.92
R863596		33.6	17.95	60.0	1.090	67.7	3.58	6.50	0.139	0.282	<0.004	0.014	0.25	16.20	15.4	1.29
R863597		7.49	32.1	46.3	0.307	193.0	5.65	8.37	0.190	0.163	0.005	0.018	0.09	3.42	10.0	1.43
R863599		36.8	8.19	38.6	0.677	25.6	1.570	3.01	0.088	0.221	<0.004	0.011	0.15	18.55	8.2	0.52
R863600		24.9	17.60	56.8	0.490	112.5	2.77	4.55	0.131	0.188	<0.004	0.012	0.10	12.25	8.3	0.84
R863602		46.1	11.05	49.0	1.785	24.1	2.21	5.25	0.104	0.500	0.014	0.015	0.34	24.7	20.7	2.00
R863603		43.6	14.50	95.5	1.460	33.7	2.37	5.28	0.120	0.266	0.004	0.013	0.36	23.1	13.5	0.97
R863604		42.3	15.40	103.0	1.690	37.2	2.72	6.06	0.133	0.281	<0.004	0.012	0.42	22.6	15.0	1.07
R863605		25.2	28.8	100.5	2.30	78.2	5.45	9.76	0.224	0.242	0.004	0.015	0.97	12.20	17.8	2.10
R863606		49.8	8.64	41.9	1.350	18.65	1.870	4.20	0.108	0.435	0.011	0.013	0.28	26.4	14.8	2.09
R863607		40.4	6.63	34.2	1.025	15.30	1.430	3.05	0.081	0.336	0.009	0.009	0.21	20.9	10.2	1.61
R863608		39.4	7.49	42.4	0.783	15.15	1.480	2.79	0.082	0.269	0.007	0.011	0.18	20.8	8.5	1.29
R863609		31.6	4.57	23.3	0.552	12.50	1.020	1.970	0.070	0.187	0.007	0.010	0.12	15.40	6.3	1.45
R863610		55.4	9.10	66.0	1.035	25.4	1.760	3.61	0.103	0.271	<0.004	0.012	0.26	29.4	12.7	1.38
R863611		38.9	5.83	29.5	0.829	14.85	1.230	2.66	0.083	0.256	0.004	0.009	0.16	18.95	8.9	1.27
R863612		51.6	11.00	56.6	1.490	25.5	2.01	4.67	0.103	0.367	0.007	0.013	0.32	26.9	15.3	0.89
R863613		76.0	11.95	69.3	2.15	27.7	2.52	6.28	0.130	0.638	0.009	0.018	0.47	42.5	23.5	1.32
R863614		57.8	13.95	65.0	2.45	31.4	2.75	6.90	0.123	0.568	0.014	0.024	0.46	30.8	26.4	1.87
R863615		64.4	14.35	74.1	2.63	33.0	2.84	7.17	0.148	0.559	0.010	0.024	0.50	34.1	25.6	1.61
R863616		42.4	7.22	41.8	0.935	16.10	1.550	3.21	0.093	0.287	<0.004	0.014	0.24	22.4	8.2	0.48
R863617		35.6	5.93	90.4	0.539	22.3	1.890	2.30	0.090	0.192	<0.004	<0.005	0.16	17.80	5.6	0.34
R863618		47.5	9.49	61.7	1.340	21.9	2.15	4.41	0.111	0.420	<0.004	0.012	0.33	25.2	11.2	0.63
R863619		43.0	8.36	44.9	0.917	21.2	2.03	3.58	0.108	0.385	0.004	0.011	0.22	22.2	8.2	0.51
R863620		23.1	21.5	59.8	0.435	66.6	3.23	5.19	0.155	0.218	<0.004	0.019	0.13	10.70	7.4	0.97
R863623		48.2	7.68	41.0	0.839	19.70	1.370	3.13	0.094	0.251	<0.004	0.011	0.21	25.7	7.6	0.46
R863624		52.9	14.05	108.5	1.545	28.0	2.89	5.28	0.131	0.385	<0.004	0.016	0.34	28.1	12.9	0.82
R863625		70.1	16.65	94.1	2.38	41.5	3.19	6.69	0.149	0.425	<0.004	0.023	0.57	36.7	24.4	1.12
R863626		48.2	10.90	66.5	1.110	24.8	2.29	5.02	0.100	0.308	<0.004	0.010	0.42	24.6	11.9	0.72
R863627		47.9	13.50	91.7	1.110	32.6	2.56	4.33	0.116	0.313	0.007	0.016	0.30	25.5	12.4	1.13
R863628		45.7	12.70	58.9	1.115	23.8	2.52	5.17	0.104	0.288	0.004	0.012	0.35	23.9	10.7	0.76
R863629		39.6	12.40	45.0	0.798	19.70	2.49	5.73	0.101	0.289	<0.004	0.011	0.40	19.65	11.6	0.86
R863630		48.0	10.95	48.6	1.810	24.0	2.22	5.28	0.104	0.484	0.014	0.023	0.34	25.3	19.5	2.05



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		Mn	Mo	Na	Nb	Ni	P	Pb	Pd	Pt	Rb	Re	S	Sb	Sc	Se
		ppm	ppm	%	ppm	ppm	%	ppm	ppm	ppm	ppm	ppm	%	ppm	ppm	ppm
		0.1	0.01	0.001	0.002	0.04	0.001	0.005	0.001	0.002	0.005	0.001	0.01	0.005	0.005	0.1
R863583		363	0.62	0.038	0.308	26.8	0.061	5.99	<0.001	0.002	24.1	0.001	0.08	0.110	4.55	0.3
R863584		417	0.76	0.058	0.113	33.1	0.078	7.59	<0.001	0.002	13.75	<0.001	0.13	0.041	7.95	0.2
R863586		399	0.84	0.040	0.228	28.5	0.055	6.94	0.001	<0.002	27.0	0.002	0.08	0.117	5.24	0.4
R863587		317	0.67	0.033	0.188	37.8	0.071	5.73	<0.001	0.002	32.7	<0.001	0.03	0.052	5.99	0.2
R863588		243	0.53	0.021	0.162	27.9	0.083	4.40	0.002	<0.002	18.85	<0.001	0.11	0.036	3.80	0.1
R863589		223	0.51	0.018	0.151	25.6	0.083	4.67	<0.001	<0.002	16.60	<0.001	0.11	0.047	3.28	0.1
R863591		657	0.76	0.028	0.093	67.4	0.162	11.25	0.001	0.003	8.64	<0.001	0.02	0.072	9.17	0.3
R863592		571	2.68	0.020	0.092	109.5	0.089	15.05	0.005	0.003	6.62	0.001	0.24	0.108	8.85	1.5
R863595		359	0.50	0.033	0.292	26.8	0.061	5.59	<0.001	0.003	21.6	0.001	0.09	0.115	4.39	0.3
R863596		635	0.93	0.032	0.172	35.7	0.069	3.75	0.001	0.003	15.15	0.001	0.07	0.048	6.98	0.3
R863597		951	2.03	0.079	0.185	37.1	0.045	0.844	0.010	0.007	3.98	0.002	0.16	0.048	8.46	0.7
R863599		265	0.40	0.019	0.203	21.1	0.082	3.02	0.001	0.002	9.72	<0.001	0.05	0.026	3.12	0.2
R863600		467	1.30	0.036	0.174	32.8	0.071	2.13	0.002	0.003	6.21	0.001	0.12	0.028	4.96	0.4
R863602		429	0.59	0.037	0.262	31.2	0.054	7.14	0.002	0.004	28.3	0.002	0.06	0.153	5.05	0.4
R863603		336	0.41	0.016	0.124	47.9	0.093	7.01	0.001	0.002	21.1	<0.001	0.10	0.061	4.82	0.5
R863604		393	0.65	0.021	0.120	51.6	0.091	6.02	0.003	0.002	23.3	<0.001	0.12	0.050	5.65	0.3
R863605		835	1.65	0.062	0.077	55.7	0.063	2.72	<0.001	0.002	35.5	0.002	0.13	0.046	7.83	0.6
R863606		347	0.49	0.038	0.308	24.5	0.070	5.45	0.001	0.003	20.9	0.001	0.08	0.104	4.14	0.4
R863607		240	0.48	0.028	0.342	18.95	0.068	3.97	<0.001	0.003	15.25	0.001	0.04	0.087	3.10	0.2
R863608		231	0.76	0.032	0.392	21.7	0.068	3.80	0.001	0.002	11.90	0.001	0.04	0.070	2.91	0.2
R863609		179.0	0.29	0.019	0.342	12.80	0.068	3.14	<0.001	0.002	7.82	<0.001	0.05	0.053	2.14	0.3
R863610		305	0.93	0.027	0.325	34.6	0.083	5.09	0.001	0.002	14.65	0.001	0.08	0.054	3.36	0.2
R863611		216	0.27	0.024	0.327	16.60	0.077	3.23	<0.001	0.002	11.60	<0.001	0.06	0.054	2.68	0.3
R863612		300	0.61	0.031	0.260	31.9	0.085	6.59	0.003	0.002	21.3	0.001	0.06	0.071	4.32	0.1
R863613		385	1.07	0.070	0.306	36.6	0.067	8.77	0.002	0.004	36.8	0.001	0.04	0.084	5.22	0.3
R863614		501	0.54	0.057	0.262	40.8	0.059	8.48	0.001	0.004	36.4	0.001	0.06	0.150	6.24	0.4
R863615		448	0.51	0.061	0.252	43.6	0.069	7.74	0.003	0.004	38.3	0.001	0.04	0.102	6.36	0.4
R863616		245	0.47	0.023	0.192	21.3	0.083	3.88	0.003	0.002	15.70	<0.001	0.06	0.033	3.15	0.1
R863617		248	8.98	0.020	0.297	22.9	0.087	2.89	<0.001	<0.002	8.36	0.001	0.06	0.124	2.17	0.1
R863618		361	0.88	0.037	0.197	28.6	0.069	5.08	0.001	0.002	22.7	<0.001	0.05	0.048	4.24	0.2
R863619		425	0.53	0.042	0.204	23.0	0.066	4.38	0.002	0.003	15.25	<0.001	0.06	0.036	3.89	<0.1
R863620		1090	0.90	0.190	0.108	40.8	0.050	1.935	<0.001	0.002	7.12	0.001	0.05	0.036	9.71	0.3
R863623		175.0	0.31	0.017	0.221	21.7	0.097	4.34	0.002	0.002	14.40	<0.001	0.06	0.019	2.79	0.1
R863624		544	1.85	0.039	0.185	51.1	0.077	6.36	0.001	0.003	28.8	<0.001	0.07	0.076	4.72	0.2
R863625		527	1.61	0.064	0.272	54.7	0.081	5.68	0.003	0.004	34.7	0.001	0.16	0.055	5.99	0.3
R863626		442	1.92	0.080	0.158	28.2	0.077	4.64	0.001	<0.002	29.1	0.001	0.06	0.042	3.56	0.2
R863627		423	4.99	0.053	0.301	35.8	0.094	6.57	0.001	0.003	19.70	0.001	0.18	0.140	3.78	0.4
R863628		540	0.92	0.065	0.138	29.8	0.080	5.24	0.002	0.002	29.4	<0.001	0.07	0.046	3.77	0.2
R863629		573	0.97	0.094	0.105	23.6	0.067	5.04	0.001	0.002	26.5	0.001	0.07	0.057	3.68	0.2
R863630		421	0.52	0.040	0.250	30.4	0.058	7.15	<0.001	0.003	27.7	0.001	0.08	0.145	4.93	0.5





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Account: AAMICLSR

## CERTIFICATE OF ANALYSIS VA17108888

Sample Description	Method Analyte Units LOR	ME-MS41L	ME-MS41L	ME-MS41L	ME-MS41L	ME-MS41L	ME-MS41L	ME-MS41L	ME-MS41L	ME-MS41L	ME-MS41L	ME-MS41L	ME-MS41L	ME-MS41L	C-IR07
		Sn	Sr	Ta	Te	Th	Ti	Ti	U	V	W	Y	Zn	Zr	C
		ppm	ppm	ppm	ppm	ppm	%	ppm	ppm	ppm	ppm	ppm	ppm	ppm	%
		0.01	0.01	0.005	0.01	0.002	0.001	0.002	0.005	0.1	0.001	0.003	0.1	0.01	0.01
R863583		0.51	58.3	<0.005	0.01	6.00	0.091	0.162	1.015	39.5	0.040	8.71	47.6	15.55	2.64
R863584		0.40	22.5	<0.005	0.02	4.36	0.111	0.090	0.676	64.0	2.04	8.81	40.9	7.39	0.28
R863586		0.53	61.3	<0.005	0.02	6.27	0.082	0.168	1.180	42.7	0.032	8.79	51.8	15.85	2.64
R863587		0.61	30.4	<0.005	0.02	6.29	0.117	0.185	1.035	48.3	0.096	8.24	57.5	13.35	0.15
R863588		0.33	19.45	<0.005	0.02	5.30	0.087	0.120	1.080	33.4	0.250	7.11	35.6	8.32	0.11
R863589		0.34	17.95	<0.005	0.02	5.08	0.075	0.106	0.872	29.2	0.101	6.74	32.8	7.27	0.11
R863591		0.62	29.7	<0.005	0.03	5.95	0.090	0.046	1.115	85.5	1.165	9.93	90.9	10.15	0.24
R863592		0.60	21.5	<0.005	0.04	5.08	0.088	0.045	0.696	92.8	0.700	9.82	79.6	7.32	0.12
R863595		0.45	45.4	<0.005	0.01	5.63	0.072	0.147	0.984	35.8	0.069	7.68	44.5	14.90	2.28
R863596		0.45	31.6	<0.005	<0.01	4.21	0.142	0.103	0.786	78.1	0.417	7.76	58.7	8.98	0.58
R863597		0.41	24.3	0.005	0.01	0.601	0.368	0.028	0.199	131.0	0.627	9.15	88.9	4.40	0.47
R863599		0.26	14.15	<0.005	0.01	5.46	0.060	0.067	0.749	30.2	0.118	6.26	26.0	7.21	0.19
R863600		0.31	16.20	<0.005	0.02	3.66	0.127	0.046	0.490	57.4	8.89	7.21	38.3	5.46	0.47
R863602		0.60	57.0	<0.005	0.02	6.69	0.074	0.172	1.335	44.0	0.055	8.42	54.3	18.05	2.65
R863603		0.34	15.05	<0.005	0.02	5.13	0.079	0.129	0.865	42.7	0.372	6.61	45.6	7.88	0.16
R863604		0.45	16.25	<0.005	0.03	4.96	0.095	0.145	0.844	48.3	0.221	6.76	52.2	8.54	0.16
R863605		0.45	20.4	<0.005	0.01	2.67	0.349	0.143	0.463	156.0	2.27	10.15	68.0	7.79	0.17
R863606		0.47	55.6	<0.005	0.01	6.07	0.075	0.140	1.050	34.2	0.115	7.80	40.2	15.15	2.57
R863607		0.32	36.3	<0.005	0.01	4.69	0.060	0.109	0.875	27.8	0.081	6.61	30.0	11.30	1.87
R863608		0.34	30.1	<0.005	0.01	5.17	0.061	0.097	0.879	28.1	0.941	6.16	24.5	8.87	1.46
R863609		0.31	24.2	<0.005	0.01	3.73	0.044	0.067	0.685	18.6	0.050	5.42	17.6	6.25	1.65
R863610		0.52	36.1	<0.005	0.01	6.72	0.072	0.113	1.310	31.0	0.129	6.49	31.7	8.63	1.48
R863611		0.29	27.1	<0.005	0.01	4.46	0.056	0.090	1.095	23.4	0.123	6.26	24.3	8.22	1.34
R863612		0.61	27.9	<0.005	0.02	7.16	0.077	0.141	1.185	37.0	0.135	7.88	43.3	12.35	1.12
R863613		0.75	39.8	<0.005	0.01	15.65	0.109	0.255	2.64	43.2	2.60	8.14	59.6	21.1	0.93
R863614		0.74	56.4	<0.005	0.03	8.21	0.099	0.220	1.425	53.5	0.073	9.62	66.9	20.4	1.95
R863615		0.76	46.7	<0.005	0.02	8.34	0.118	0.237	1.270	53.4	0.180	9.18	67.3	19.25	0.58
R863616		0.38	17.15	<0.005	0.01	5.84	0.063	0.099	0.852	28.4	0.110	6.41	26.2	8.95	0.18
R863617		1.30	15.70	<0.005	<0.01	4.96	0.046	0.060	0.737	19.3	0.419	5.84	44.7	6.11	0.18
R863618		0.51	23.5	<0.005	0.01	6.24	0.084	0.138	0.977	36.5	1.075	6.83	35.7	14.45	0.22
R863619		0.37	21.3	<0.005	0.01	5.92	0.074	0.103	1.205	33.5	0.848	6.73	26.2	13.05	0.28
R863620		0.38	28.1	<0.005	0.01	2.54	0.169	0.059	0.498	77.5	5.76	9.64	32.2	7.19	0.26
R863623		0.34	16.60	<0.005	0.01	6.25	0.058	0.088	1.595	25.2	0.102	7.16	28.3	7.56	0.06
R863624		0.48	34.5	<0.005	0.02	6.46	0.086	0.161	1.055	41.4	1.570	7.24	51.7	12.20	0.46
R863625		0.86	34.7	<0.005	0.02	9.28	0.156	0.242	1.220	57.0	2.30	7.11	62.8	12.90	0.24
R863626		0.55	43.7	<0.005	<0.01	5.79	0.082	0.153	0.844	32.9	3.01	5.68	45.8	9.00	0.27
R863627		1.18	40.8	<0.005	0.02	6.67	0.080	0.147	1.070	39.9	1.370	7.39	45.6	10.75	1.01
R863628		0.39	38.2	<0.005	<0.01	4.82	0.073	0.154	0.876	36.9	1.495	6.32	48.4	8.16	0.37
R863629		0.44	50.2	<0.005	<0.01	4.12	0.079	0.148	0.701	35.7	7.00	4.74	46.9	7.25	0.31
R863630		0.61	55.3	<0.005	0.02	6.74	0.076	0.179	1.180	42.2	0.069	8.60	52.3	17.50	2.51





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**CERTIFICATE OF ANALYSIS VA17108888**

Sample Description	Method Analyte Units LOR	WEI-21 Recvd Wt. kg	Au-ICP21 Au ppm	ME-MS61L Ag ppm	ME-MS61L Al %	ME-MS61L As ppm	ME-MS61L Ba ppm	ME-MS61L Be ppm	ME-MS61L Bi ppm	ME-MS61L Ca %	ME-MS61L Cd ppm	ME-MS61L Ce ppm	ME-MS61L Co ppm	ME-MS61L Cr ppm	ME-MS61L Cs ppm	ME-MS61L Cu ppm
		0.02	0.001	0.002	0.01	0.05	1	0.02	0.005	0.01	0.005	0.01	0.005	0.3	0.01	0.02
R863631		0.06	<0.001	0.055	7.65	1.37	620	1.67	0.165	2.04	0.083	60.1	11.90	59.1	1.95	22.8
R863632		0.04	0.001	0.069	7.44	1.44	540	1.44	0.134	2.83	0.081	54.9	25.2	83.2	1.86	55.2
R863634		0.06	<0.001	0.059	7.17	1.42	430	1.16	0.100	3.38	0.089	40.9	35.5	76.7	1.44	82.2
R863635		0.04	0.009	0.048	7.06	1.48	520	1.55	0.148	2.70	0.100	74.4	13.50	60.3	1.30	22.8
R863636		0.16	<0.001	0.032	6.15	0.82	187	0.66	0.050	7.10	0.068	30.3	37.2	38.0	0.92	46.2
R863637		0.12	<0.001	0.030	6.29	0.43	103	0.57	0.048	7.54	0.059	20.9	33.3	31.3	0.56	65.8
R863638		0.16	<0.001	0.053	6.73	0.41	56	0.67	0.024	4.99	0.075	19.70	48.0	32.3	0.13	164.5
R863639		0.18	<0.001	0.088	6.11	0.76	71	0.70	0.057	6.11	0.128	31.0	47.4	29.7	0.33	172.5
R863641		0.06	0.001	0.063	7.11	6.13	540	1.65	0.256	3.56	0.309	92.4	23.6	87.3	4.22	31.3
R863642		0.08	<0.001	0.084	6.61	4.25	570	1.51	0.228	6.34	0.155	69.4	14.60	75.4	3.59	29.1
R863643		0.22	0.001	0.069	7.53	1.47	670	1.62	0.177	2.08	0.072	68.5	13.00	74.6	2.51	26.9
R863644		0.10	<0.001	0.044	7.37	0.66	135	0.50	0.026	6.40	0.081	24.8	53.9	69.3	0.41	100.0
R863646		0.10	<0.001	0.084	6.88	4.31	550	1.56	0.232	6.22	0.160	65.2	14.80	81.5	4.12	27.7
R863647		0.24	<0.001	0.045	7.32	1.35	620	1.64	0.130	2.08	0.104	62.5	13.85	76.7	1.92	26.6
R863648		0.02	0.003	0.059	6.76	2.15	510	1.50	0.227	2.33	0.169	84.7	21.3	74.3	2.11	34.0
R863649		0.02	NSS	0.055	6.82	1.80	580	1.43	0.164	2.36	0.109	69.9	15.20	102.0	1.85	31.6
R863650		0.06	<0.001	0.068	7.26	1.31	580	1.54	0.190	2.02	0.103	70.4	13.00	65.0	1.77	24.8
R863651		0.08	0.005	0.057	7.33	0.89	720	1.54	0.118	3.49	0.065	96.7	21.4	80.8	1.20	47.0



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# CERTIFICATE OF ANALYSIS VA17108888

Sample Description	Method Analyte Units LOR	ME-MS61L Fe %	ME-MS61L Ga ppm	ME-MS61L Ge ppm	ME-MS61L Hf ppm	ME-MS61L In ppm	ME-MS61L K %	ME-MS61L La ppm	ME-MS61L Li ppm	ME-MS61L Mg %	ME-MS61L Mn ppm	ME-MS61L Mo ppm	ME-MS61L Na %	ME-MS61L Nb ppm	ME-MS61L Ni ppm	ME-MS61L P %
		0.002	0.05	0.05	0.004	0.005	0.01	0.005	0.2	0.01	0.2	0.02	0.001	0.005	0.08	0.001
R863631		2.31	16.85	0.12	4.04	0.034	2.00	26.5	16.4	0.83	452	0.57	2.68	5.26	32.0	0.089
R863632		4.25	18.05	0.13	3.43	0.053	1.70	23.3	19.1	1.43	762	2.06	2.46	5.57	43.3	0.083
R863634		5.94	18.25	0.11	2.73	0.070	1.32	17.30	17.9	1.91	1005	2.62	2.32	5.29	42.9	0.073
R863635		2.82	15.70	0.13	5.18	0.032	1.62	34.2	11.6	0.83	626	1.01	2.52	6.25	27.6	0.115
R863636		9.52	21.4	0.13	1.595	0.109	0.44	11.15	21.3	2.72	1460	5.54	1.395	5.99	34.7	0.073
R863637		9.48	21.4	0.09	1.510	0.117	0.31	7.77	12.9	2.62	1540	4.13	1.530	5.39	32.6	0.067
R863638		10.80	17.70	0.08	2.12	0.108	0.24	6.87	9.8	3.01	1575	1.92	2.10	5.91	34.1	0.068
R863639		9.87	20.3	0.09	1.835	0.092	0.21	12.50	14.5	2.58	1455	1.72	1.630	5.51	33.2	0.063
R863641		3.70	17.60	0.11	5.15	0.049	1.70	41.1	33.4	1.86	1385	0.75	1.415	10.35	67.1	0.086
R863642		2.95	16.75	0.13	3.81	0.042	1.83	33.2	34.7	2.51	528	0.64	1.550	8.07	43.3	0.066
R863643		2.71	17.00	0.13	4.04	0.037	2.12	31.6	20.3	1.04	483	0.84	2.54	6.05	38.5	0.096
R863644		9.19	17.50	0.10	2.24	0.077	0.42	9.41	11.8	4.13	1530	1.55	1.260	3.86	119.5	0.058
R863646		3.21	17.25	0.12	3.24	0.047	1.85	31.5	39.2	2.43	585	0.86	1.335	8.18	43.5	0.062
R863647		2.56	16.85	0.13	3.57	0.032	1.87	28.5	15.6	0.95	486	0.45	2.57	5.06	43.4	0.097
R863648		2.85	15.10	0.13	4.77	0.027	1.64	37.9	15.6	0.89	697	1.05	2.42	5.88	42.5	0.129
R863649		3.12	14.65	0.11	3.90	0.020	1.72	31.6	14.2	1.01	624	2.82	2.44	5.00	41.6	0.104
R863650		2.33	15.50	0.12	4.17	0.027	1.93	32.6	12.7	0.76	449	0.35	2.70	5.40	33.1	0.100
R863651		4.65	16.80	0.16	3.86	0.046	1.71	42.7	11.6	1.53	792	1.97	2.81	5.75	41.8	0.154



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# CERTIFICATE OF ANALYSIS VA17108888

Sample Description	Method Analyte Units LOR	ME-MS61L Pb ppm 0.01	ME-MS61L Rb ppm 0.02	ME-MS61L Re ppm 0.002	ME-MS61L S % 0.01	ME-MS61L Sb ppm 0.02	ME-MS61L Sc ppm 0.01	ME-MS61L Se ppm 0.2	ME-MS61L Sn ppm 0.02	ME-MS61L Sr ppm 0.02	ME-MS61L Ta ppm 0.01	ME-MS61L Te ppm 0.04	ME-MS61L Th ppm 0.004	ME-MS61L Ti % 0.001	ME-MS61L Tl ppm 0.004	ME-MS61L U ppm 0.01
R863631		16.05	69.2	<0.002	0.04	0.13	8.96	0.4	0.86	460	0.41	<0.04	7.07	0.247	0.389	1.68
R863632		12.70	60.9	0.002	0.07	0.17	16.60	0.6	1.13	394	0.40	<0.04	6.35	0.421	0.341	1.43
R863634		9.02	46.1	0.002	0.08	0.15	24.1	0.7	1.12	312	0.38	<0.04	4.24	0.591	0.263	1.05
R863635		14.95	52.0	<0.002	0.12	0.14	10.55	0.5	0.87	449	1.01	<0.04	10.60	0.322	0.305	1.95
R863636		2.72	15.20	0.006	0.09	0.11	36.6	0.6	1.12	139.5	0.38	<0.04	1.395	1.025	0.091	0.36
R863637		1.69	9.10	0.004	0.02	0.10	37.8	0.5	1.10	126.0	0.34	<0.04	0.722	1.040	0.056	0.23
R863638		1.40	4.98	0.003	0.16	0.09	38.9	1.0	1.18	55.2	0.37	<0.04	0.853	1.150	0.039	0.22
R863639		1.44	6.22	0.003	0.40	0.09	37.3	0.9	0.99	80.9	0.36	0.06	0.914	1.060	0.038	0.25
R863641		16.75	74.6	<0.002	<0.01	0.48	13.55	0.3	1.58	263	0.72	0.06	11.65	0.408	0.560	2.09
R863642		14.45	77.4	0.003	0.07	0.38	11.50	0.5	1.29	309	0.59	0.04	9.07	0.306	0.483	2.07
R863643		15.85	77.1	<0.002	0.03	0.14	10.45	0.3	1.01	466	0.47	<0.04	7.95	0.275	0.434	1.64
R863644		2.21	12.30	0.002	0.10	0.09	36.4	0.5	0.84	167.5	0.25	<0.04	1.125	0.633	0.068	0.35
R863646		14.00	79.9	0.002	0.08	0.38	12.15	0.6	1.41	275	0.59	0.04	8.69	0.306	0.490	2.18
R863647		14.80	69.5	<0.002	<0.01	0.11	10.25	0.2	0.84	470	0.37	<0.04	6.84	0.261	0.387	1.44
R863648		16.60	61.5	<0.002	0.01	0.12	10.60	0.5	1.02	453	0.47	<0.04	11.20	0.288	0.369	1.81
R863649		15.15	59.4	<0.002	<0.01	0.14	10.05	0.4	1.03	457	0.36	<0.04	10.70	0.285	0.359	1.55
R863650		16.80	67.6	<0.002	<0.01	0.10	9.09	1.3	0.79	457	0.41	<0.04	9.87	0.252	0.393	1.59
R863651		11.85	55.3	0.002	0.18	0.14	19.15	0.7	1.00	702	0.38	0.04	5.74	0.426	0.289	1.26



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# CERTIFICATE OF ANALYSIS VA17108888

Sample Description	Method Analyte Units LOR	ME-MS61L V ppm 0.1	ME-MS61L W ppm 0.008	ME-MS61L Y ppm 0.01	ME-MS61L Zn ppm 0.2	ME-MS61L Zr ppm 0.1	ME-MS41L Au ppm 0.0002	ME-MS41L Ag ppm 0.001	ME-MS41L Al % 0.01	ME-MS41L As ppm 0.01	ME-MS41L B ppm 10	ME-MS41L Ba ppm 0.5	ME-MS41L Be ppm 0.01	ME-MS41L Bi ppm 0.001	ME-MS41L Ca % 0.01	ME-MS41L Cd ppm 0.001
R863631		58.2	0.401	13.10	48.5	149.5	0.0004	0.039	0.84	0.91	<10	72.6	0.26	0.095	0.51	0.045
R863632		126.5	12.90	17.35	71.0	129.0	0.0005	0.048	1.30	0.98	<10	75.2	0.24	0.091	1.02	0.105
R863634		187.5	29.7	19.90	81.9	98.6	0.0007	0.054	1.63	1.00	<10	64.8	0.23	0.064	1.32	0.046
R863635		72.2	3.40	16.75	48.2	192.0	0.0048	0.035	0.67	1.17	<10	45.2	0.21	0.080	0.94	0.048
R863636		313	6.61	26.1	120.0	53.9	0.0009	0.032	3.25	0.60	<10	51.6	0.24	0.027	5.30	0.042
R863637		332	6.39	29.2	111.0	44.7	0.0008	0.023	2.45	0.23	<10	46.2	0.17	0.014	4.35	0.036
R863638		360	15.65	31.8	127.0	72.9	0.0005	0.051	2.10	0.34	<10	7.3	0.18	0.011	1.80	0.036
R863639		328	29.0	28.9	114.5	62.2	0.0012	0.085	2.73	0.75	<10	12.8	0.30	0.033	3.86	0.158
R863641		133.0	0.892	21.2	70.4	191.5	0.0011	0.032	1.50	4.46	10	123.5	0.63	0.173	2.51	0.255
R863642		88.9	0.659	14.40	69.6	138.0	0.0011	0.056	1.33	3.11	10	128.5	0.47	0.155	5.10	0.125
R863643		68.1	0.488	13.25	52.8	150.0	0.0010	0.050	1.06	1.21	<10	105.5	0.32	0.119	0.55	0.049
R863644		252	30.6	29.1	95.3	54.7	0.0008	0.037	2.52	0.48	<10	25.4	0.18	0.014	1.96	0.034
R863646		104.0	0.793	14.30	72.5	123.5	0.0010	0.065	1.45	3.32	10	135.0	0.56	0.167	5.01	0.138
R863647		66.9	0.594	13.45	54.4	134.0	0.0005	0.021	0.88	0.89	<10	80.0	0.27	0.073	0.39	0.069
R863648		66.6	0.733	16.35	46.5	183.0	0.0009	0.046	0.84	1.85	<10	92.3	0.24	0.153	0.65	0.103
R863649		69.5	1.140	14.25	48.1	154.5	0.0006	0.035	0.84	1.46	<10	79.2	0.27	0.106	0.71	0.086
R863650		56.2	0.300	13.80	41.6	159.5	0.0004	0.045	0.75	1.01	<10	66.0	0.18	0.107	0.37	0.078
R863651		132.5	1.700	22.7	66.2	143.5	0.0010	0.045	0.75	0.75	<10	54.4	0.23	0.066	0.90	0.033



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# CERTIFICATE OF ANALYSIS VA17108888

Sample Description	Method Analyte Units LOR	ME-MS41L Ce ppm 0.003	ME-MS41L Co ppm 0.001	ME-MS41L Cr ppm 0.01	ME-MS41L Cs ppm 0.005	ME-MS41L Cu ppm 0.01	ME-MS41L Fe % 0.001	ME-MS41L Ga ppm 0.004	ME-MS41L Ge ppm 0.005	ME-MS41L Hf ppm 0.002	ME-MS41L Hg ppm 0.004	ME-MS41L In ppm 0.005	ME-MS41L K % 0.01	ME-MS41L La ppm 0.002	ME-MS41L Li ppm 0.1	ME-MS41L Mg % 0.01
R863631		46.2	8.93	42.8	1.170	20.0	1.600	3.80	0.087	0.293	<0.004	0.012	0.25	24.3	10.2	0.55
R863632		39.1	17.95	56.2	1.115	47.7	2.73	5.44	0.119	0.301	<0.004	0.016	0.25	19.50	12.3	0.92
R863634		33.4	26.8	57.3	0.952	75.5	3.61	6.81	0.179	0.271	0.009	0.023	0.22	14.55	12.9	1.15
R863635		47.4	10.15	31.9	0.686	19.65	1.750	3.26	0.102	0.243	<0.004	0.010	0.15	22.9	7.0	0.49
R863636		20.3	31.6	35.1	0.814	44.2	7.99	15.20	0.297	0.219	<0.004	0.062	0.16	7.71	18.4	2.38
R863637		14.70	22.4	24.8	0.546	63.7	5.79	11.55	0.249	0.201	<0.004	0.048	0.14	5.50	11.5	1.69
R863638		17.95	29.1	20.2	0.088	164.0	4.96	7.63	0.234	0.145	<0.004	0.034	0.05	6.24	7.4	1.43
R863639		25.3	37.8	25.3	0.312	164.5	6.76	11.75	0.263	0.158	0.004	0.052	0.07	10.90	12.6	1.89
R863641		69.2	18.65	45.5	1.650	27.3	2.56	5.41	0.106	0.403	0.019	0.022	0.20	31.2	14.2	1.45
R863642		51.1	11.05	47.8	1.910	24.2	2.15	5.17	0.094	0.510	0.013	0.022	0.33	25.2	18.8	2.13
R863643		53.9	9.96	54.6	1.640	23.2	1.910	4.54	0.096	0.454	0.004	0.017	0.34	26.7	13.6	0.71
R863644		20.2	26.8	31.6	0.216	90.1	3.61	6.29	0.156	0.115	<0.004	0.019	0.08	7.88	8.1	1.52
R863646		49.6	11.50	49.6	1.980	24.0	2.32	5.41	0.104	0.585	0.017	0.020	0.36	24.6	20.2	2.01
R863647		44.7	9.60	50.3	1.235	22.0	1.680	3.97	0.091	0.340	<0.004	0.015	0.28	21.8	10.2	0.57
R863648		66.0	19.15	50.5	1.725	33.4	2.02	3.88	0.107	0.325	<0.004	0.011	0.27	29.8	11.0	0.57
R863649		52.6	12.20	74.0	1.360	31.2	2.21	4.00	0.118	0.266	<0.004	0.011	0.25	25.3	9.6	0.66
R863650		51.4	10.05	45.7	1.150	22.6	1.560	3.40	0.092	0.328	<0.004	0.011	0.23	24.9	8.3	0.46
R863651		63.8	12.95	44.2	0.723	42.7	2.65	3.90	0.145	0.398	<0.004	0.010	0.18	31.1	7.6	0.59



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# CERTIFICATE OF ANALYSIS VA17108888

Sample Description	Method Analyte Units LOR	ME-MS41L	ME-MS41L	ME-MS41L	ME-MS41L	ME-MS41L	ME-MS41L	ME-MS41L	ME-MS41L	ME-MS41L	ME-MS41L	ME-MS41L	ME-MS41L	ME-MS41L	ME-MS41L
		Mn	Mo	Na	Nb	Ni	P	Pb	Pd	Pt	Rb	Re	S	Sb	Sc
		ppm	ppm	%	ppm	ppm	%	ppm	ppm	ppm	ppm	ppm	%	ppm	ppm
		0.1	0.01	0.001	0.002	0.04	0.001	0.005	0.001	0.002	0.005	0.001	0.01	0.005	0.005
R863631		242	0.42	0.024	0.224	23.9	0.082	4.68	<0.001	0.003	18.75	<0.001	0.04	0.048	3.31
R863632		389	1.49	0.061	0.166	29.2	0.075	3.88	<0.001	0.002	17.05	0.001	0.07	0.058	5.97
R863634		458	2.21	0.098	0.088	30.6	0.067	2.91	<0.001	0.003	14.10	0.001	0.08	0.065	8.46
R863635		241	0.96	0.018	0.215	19.05	0.109	4.20	<0.001	0.002	10.90	<0.001	0.11	0.052	3.20
R863636		1000	4.24	0.064	0.131	29.7	0.066	0.966	<0.001	0.002	8.31	0.004	0.09	0.040	24.7
R863637		844	3.37	0.132	0.150	22.4	0.061	0.622	<0.001	0.002	6.18	0.005	0.03	0.042	16.55
R863638		494	1.72	0.255	0.075	20.3	0.065	0.491	<0.001	<0.002	1.345	0.003	0.17	0.036	13.10
R863639		731	1.49	0.129	0.102	25.5	0.058	0.541	<0.001	<0.002	3.53	0.003	0.39	0.036	21.5
R863641		1140	0.48	0.028	0.134	53.6	0.075	9.16	<0.001	0.003	22.1	<0.001	<0.01	0.187	4.85
R863642		378	0.52	0.034	0.288	31.7	0.060	6.27	<0.001	0.004	28.4	0.002	0.06	0.142	4.62
R863643		269	0.39	0.027	0.195	29.2	0.086	4.68	0.002	0.003	25.4	<0.001	0.03	0.044	3.84
R863644		495	1.28	0.233	0.055	58.9	0.051	0.798	<0.001	<0.002	3.56	0.001	0.09	0.028	7.68
R863646		446	0.57	0.034	0.240	33.2	0.055	7.18	<0.001	0.004	30.7	0.002	0.07	0.152	4.93
R863647		235	0.30	0.018	0.149	29.3	0.087	3.69	<0.001	0.002	21.5	<0.001	<0.01	0.039	3.25
R863648		371	0.95	0.023	0.251	35.6	0.128	6.12	<0.001	0.003	21.2	<0.001	0.01	0.061	3.27
R863649		276	2.77	0.019	0.207	33.2	0.099	5.27	0.001	0.002	18.60	0.001	<0.01	0.073	3.34
R863650		181.5	0.26	0.018	0.179	25.1	0.086	4.70	<0.001	0.002	16.20	<0.001	<0.01	0.034	3.10
R863651		278	0.82	0.037	0.228	24.6	0.140	2.73	0.006	0.003	12.85	0.001	0.17	0.031	3.72



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**CERTIFICATE OF ANALYSIS VA17108888**

Sample Description	Method Analyte Units LOR	ME-MS41L	ME-MS41L	ME-MS41L	ME-MS41L	ME-MS41L	ME-MS41L	ME-MS41L	ME-MS41L	ME-MS41L	ME-MS41L	ME-MS41L	ME-MS41L	C-IR07
		Sn	Sr	Ta	Te	Th	Ti	Tl	U	V	W	Y	Zn	Zr
		ppm	ppm	ppm	ppm	ppm	%	ppm	ppm	ppm	ppm	ppm	ppm	ppm
		0.01	0.01	0.005	0.01	0.002	0.001	0.002	0.005	0.1	0.001	0.003	0.1	0.01
R863631		0.40	19.05	<0.005	0.01	6.01	0.069	0.114	0.957	29.7	0.084	7.12	35.9	9.80
R863632		0.53	22.9	<0.005	0.01	4.92	0.120	0.111	0.799	64.0	13.50	8.54	46.7	9.36
R863634		0.66	22.8	<0.005	0.02	3.46	0.159	0.095	0.631	104.0	21.5	10.80	53.0	8.56
R863635		0.43	18.30	<0.005	0.02	6.63	0.067	0.080	1.040	36.5	3.00	8.52	29.7	7.56
R863636		0.74	40.0	0.006	0.01	0.971	0.399	0.053	0.191	244	4.48	16.80	101.0	6.69
R863637		0.60	39.0	0.006	<0.01	0.538	0.398	0.039	0.099	191.0	6.09	15.30	72.6	5.87
R863638		0.63	7.33	<0.005	0.01	0.662	0.253	0.016	0.099	156.5	9.84	14.70	62.8	4.03
R863639		0.65	20.1	0.006	0.03	0.702	0.306	0.024	0.126	219	17.20	18.45	81.1	4.14
R863641		0.71	31.1	<0.005	0.03	8.39	0.061	0.227	0.926	55.5	0.082	13.80	48.9	18.30
R863642		0.64	54.8	<0.005	0.02	6.45	0.087	0.175	1.095	44.2	0.061	8.99	52.2	18.45
R863643		0.57	23.8	<0.005	0.01	6.33	0.090	0.135	0.875	37.6	0.143	7.58	39.9	14.20
R863644		0.53	31.7	<0.005	0.01	0.856	0.175	0.017	0.219	85.7	17.95	11.85	39.1	3.41
R863646		0.76	58.5	<0.005	0.03	6.49	0.080	0.180	1.305	47.6	0.067	9.61	55.8	22.4
R863647		0.36	18.30	<0.005	0.01	4.88	0.072	0.123	0.766	32.7	0.253	6.62	36.8	10.75
R863648		0.60	29.6	<0.005	0.02	8.74	0.082	0.149	0.935	39.0	1.065	9.59	34.7	11.80
R863649		0.67	24.5	<0.005	0.02	6.74	0.076	0.127	0.776	39.4	0.440	7.88	36.1	8.84
R863650		0.41	13.65	<0.005	0.02	7.60	0.068	0.112	0.858	30.6	0.084	7.17	30.7	11.00
R863651		0.43	48.3	<0.005	0.03	3.72	0.120	0.069	0.581	60.5	0.929	9.28	29.1	11.90





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Finalized Date: 17-JUN-2017  
Account: AAMICLSR

**CERTIFICATE OF ANALYSIS VA17108888**

**CERTIFICATE COMMENTS**

**ANALYTICAL COMMENTS**

Applies to Method: NSS is non-sufficient sample.  
ALL METHODS

Applies to Method: Gold determinations by this method are semi-quantitative due to the small sample weight used (0.5g).  
ME-MS41L

**LABORATORY ADDRESSES**

Applies to Method: Processed at ALS Vancouver located at 2103 Dollarton Hwy, North Vancouver, BC, Canada.  
Au-ICP21 C-IR07 LOG-24  
ME-MS61L WEI-21

ME-MS41L