ALS Canada Ltd.

2103 Dollarton Hwy
North Vancouver BC V7H 0A7
Phone: +1 (604) 984 0221 Fax: +1 (604) 984 0218
www.alsglobal.com/geochemistry

To: **AVALON ADVANCED MATERIALS INC.**
130 ADELAIDE ST. W, SUITE 1901
TORONTO ON M5H 3P5

Finalized Date: 5-SEP-2017
Account: OPG

QC CERTIFICATE TB17167119

Project: 0518

This report is for 42 Vegetation samples submitted to our lab in Thunder Bay, ON, Canada on 15-AUG-2017.

The following have access to data associated with this certificate:

CINDY HU CHRIS WILDMAN	BILL MERCER	VOLKER MOELLER

SAMPLE PREPARATION

ALS CODE	DESCRIPTION
WEI-21	Received Sample Weight
LOG-21	Sample logging - ClientBarCode
DRY-22	Drying - Maximum Temp 60C
VEG-MILL01	Maceration of dry plant material

ANALYTICAL PROCEDURES

ALS CODE	DESCRIPTION
ME-VEG41	Vegetation - HNO3/HCl ICPAES-ICPMS

To: **AVALON ADVANCED MATERIALS INC.**
ATTN: BILL MERCER
130 ADELAIDE ST. W, SUITE 1901
TORONTO ON M5H 3P5

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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130 ADELAIDE ST. W, SUITE 1901
TORONTO ON M5H 3P5

Finalized Date: 5-SEP-2017
Account: OPG

Project: 0518

QC CERTIFICATE OF ANALYSIS TB17167119

Sample Description	Method / Analyte / Units / LOR	ME-VEG41 Au ppm 0.0002	ME-VEG41 Ag ppm 0.001	ME-VEG41 Al % 0.01	ME-VEG41 As ppm 0.01	ME-VEG41 B ppm 1	ME-VEG41 Ba ppm 0.1	ME-VEG41 Be ppm 0.01	ME-VEG41 Bi ppm 0.001	ME-VEG41 Ca % 0.01	ME-VEG41 Cd ppm 0.001	ME-VEG41 Ce ppm 0.003	ME-VEG41 Co ppm 0.002	ME-VEG41 Cr ppm 0.01	ME-VEG41 Cs ppm 0.005	ME-VEG41 Cu ppm 0.01
STANDARDS																
NIST 1515		0.0003	0.003	0.01	0.07	25	43.1	0.02	0.003	1.38	0.013	2.74	0.077	0.12	<0.005	5.27
Target Range - Lower Bound		<0.0002	0.004	<0.01	0.02	23	41.6	<0.01	0.002	1.37	0.010	2.72	0.075	0.10	<0.005	5.07
Upper Bound		0.0011	0.008	0.05	0.06	31	56.5	0.04	0.006	1.69	0.016	3.34	0.097	0.16	0.013	6.21
NIST 1575a		0.0003	0.012	0.05	0.02	8	5.2	0.01	0.001	0.24	0.212	0.070	0.059	0.20	0.258	2.95
Target Range - Lower Bound		<0.0002	0.009	0.04	0.02	8	5.0	<0.01	<0.001	0.22	0.209	0.060	0.053	0.17	0.250	2.51
Upper Bound		0.0008	0.015	0.08	0.06	13	7.0	0.03	0.004	0.29	0.257	0.080	0.069	0.23	0.316	3.09
VEG-2		0.0008	0.008	0.11	1.29	15	7.3	0.06	0.018	1.63	0.032	4.12	1.565	8.65	0.094	7.27
Target Range - Lower Bound		0.0026	0.008	0.11	1.19	13	6.7	0.04	0.017	1.59	0.032	3.94	1.510	8.50	0.094	6.97
Upper Bound		0.0037	0.013	0.16	1.47	19	9.3	0.08	0.023	1.96	0.042	4.83	1.850	10.40	0.125	8.55
BLANKS																
BLANK		<0.0002	<0.001	<0.01	0.34	<1	0.1	<0.01	<0.001	<0.01	<0.001	0.003	0.030	0.03	<0.005	<0.01
BLANK		<0.0002	<0.001	<0.01	0.21	<1	<0.1	<0.01	<0.001	<0.01	0.001	<0.003	0.016	0.03	<0.005	0.01
Target Range - Lower Bound		<0.0002	<0.001	<0.01	<0.01	<1	<0.1	<0.01	<0.001	<0.01	<0.001	<0.003	<0.002	<0.01	<0.005	<0.01
Upper Bound		0.0004	0.002	0.02	0.02	2	0.2	0.02	0.002	0.02	0.002	0.006	0.004	0.02	0.010	0.02
DUPLICATES																
V671453		0.0002	0.016	0.01	0.02	9	56.5	<0.01	0.006	0.53	0.023	0.153	0.151	0.38	0.920	2.21
DUP		0.0002	0.017	0.01	0.02	9	58.7	<0.01	0.006	0.54	0.026	0.165	0.159	0.39	0.998	2.23
Target Range - Lower Bound		<0.0002	0.015	<0.01	<0.01	8	53.2	<0.01	0.005	0.50	0.022	0.148	0.145	0.36	0.906	2.10
Upper Bound		0.0004	0.018	0.02	0.03	10	62.0	0.02	0.007	0.57	0.027	0.170	0.165	0.41	1.010	2.34
V671473		<0.0002	0.028	0.01	0.01	16	54.5	0.01	0.002	0.70	0.015	0.082	0.048	0.19	0.185	1.96
DUP		<0.0002	0.024	<0.01	0.02	13	47.9	<0.01	0.001	0.64	0.013	0.073	0.040	0.19	0.168	1.75
Target Range - Lower Bound		<0.0002	0.024	<0.01	<0.01	13	47.3	<0.01	<0.001	0.63	0.012	0.071	0.040	0.17	0.163	1.75
Upper Bound		0.0004	0.028	0.02	0.02	16	55.1	0.02	0.002	0.71	0.016	0.084	0.048	0.21	0.190	1.96
V671488		<0.0002	0.002	0.01	0.16	16	41.8	0.03	0.017	0.47	0.033	0.092	1.110	0.21	2.65	5.26
DUP		<0.0002	0.002	0.01	0.01	20	47.4	0.04	0.024	0.55	0.037	0.117	1.400	0.32	3.30	6.34
Target Range - Lower Bound		<0.0002	<0.001	<0.01	0.07	16	41.2	0.02	0.018	0.47	0.032	0.096	1.190	0.24	2.82	5.50
Upper Bound		0.0004	0.003	0.02	0.10	20	48.0	0.05	0.023	0.55	0.038	0.113	1.320	0.29	3.13	6.10

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To: **AVALON ADVANCED MATERIALS INC.**
130 ADELAIDE ST. W, SUITE 1901
TORONTO ON M5H 3P5

Finalized Date: 5-SEP-2017
Account: OPG

Project: 0518

QC CERTIFICATE OF ANALYSIS TB17167119

Sample Description	Method / Analyte / Units / LOR	ME-VEG41 Fe ppm 1	ME-VEG41 Ga ppm 0.004	ME-VEG41 Ge ppm 0.005	ME-VEG41 Hf ppm 0.002	ME-VEG41 Hg ppm 0.001	ME-VEG41 In ppm 0.005	ME-VEG41 K % 0.01	ME-VEG41 La ppm 0.002	ME-VEG41 Li ppm 0.1	ME-VEG41 Mg % 0.001	ME-VEG41 Mn ppm 0.1	ME-VEG41 Mo ppm 0.01	ME-VEG41 Na % 0.001	ME-VEG41 Nb ppm 0.002	ME-VEG41 Ni ppm 0.04
STANDARDS																
NIST 1515		62	0.041	0.010	0.004	0.037	<0.005	1.51	18.95	0.1	0.220	51.9	0.08	0.007	0.003	0.78
Target Range - Lower Bound		53	0.030	0.006	<0.002	0.036	<0.005	1.44	18.55	<0.1	0.233	48.5	0.07	0.053	<0.002	0.78
Upper Bound		67	0.050	0.028	0.006	0.052	0.015	1.78	22.7	0.3	0.287	59.5	0.11	0.067	0.006	1.04
NIST 1575a		43	0.011	<0.005	<0.002	0.039	<0.005	0.38	0.032	0.1	0.084	457	0.01	0.090	0.002	1.38
Target Range - Lower Bound		35	<0.004	<0.005	<0.002	0.033	<0.005	0.37	0.026	<0.1	0.080	439	<0.01	0.004	<0.002	1.28
Upper Bound		45	0.019	0.016	0.005	0.047	0.015	0.47	0.038	0.3	0.100	537	0.04	0.009	0.006	1.66
VEG-2		1990	0.426	0.015	0.033	0.042	<0.005	0.14	2.15	0.5	0.091	337	0.18	0.042	0.042	5.44
Target Range - Lower Bound		1880	0.416	0.209	0.032	0.036	<0.005	0.14	2.07	0.3	0.089	326	0.16	0.063	0.036	5.28
Upper Bound		2300	0.518	0.267	0.044	0.051	0.019	0.19	2.53	0.7	0.111	399	0.21	0.079	0.048	6.55
BLANKS																
BLANK		1	<0.004	<0.005	<0.002	0.002	<0.005	<0.01	0.003	<0.1	<0.001	<0.1	<0.01	0.011	<0.002	<0.04
BLANK		<1	<0.004	<0.005	<0.002	0.001	<0.005	<0.01	<0.002	<0.1	<0.001	<0.1	<0.01	0.038	<0.002	<0.04
Target Range - Lower Bound		<1	<0.004	<0.005	<0.002	<0.001	<0.005	<0.01	<0.002	<0.1	<0.001	<0.1	<0.01	<0.001	<0.002	<0.04
Upper Bound		2	0.008	0.010	0.004	0.002	0.010	0.02	0.004	0.2	0.002	0.2	0.02	0.002	0.004	0.08
DUPLICATES																
V671453		93	0.020	<0.005	0.002	0.025	<0.005	0.27	0.082	0.2	0.052	417	0.02	0.007	0.010	0.64
DUP		96	0.021	<0.005	0.002	0.026	<0.005	0.28	0.089	0.2	0.054	430	0.03	0.007	0.011	0.63
Target Range - Lower Bound		89	0.015	<0.005	<0.002	0.023	<0.005	0.25	0.079	<0.1	0.049	402	<0.01	0.006	0.008	0.56
Upper Bound		100	0.026	0.010	0.004	0.028	0.010	0.30	0.092	0.3	0.057	445	0.04	0.008	0.013	0.71
V671473		52	0.011	<0.005	<0.002	0.026	<0.005	0.25	0.041	0.1	0.066	444	0.01	0.011	0.007	0.25
DUP		49	0.010	<0.005	<0.002	0.020	<0.005	0.22	0.038	0.1	0.059	397	0.01	0.006	0.006	0.23
Target Range - Lower Bound		47	0.006	<0.005	<0.002	0.020	<0.005	0.21	0.036	<0.1	0.058	399	<0.01	0.007	0.004	0.19
Upper Bound		54	0.015	0.010	0.004	0.026	0.010	0.26	0.043	0.2	0.067	442	0.02	0.010	0.009	0.29
V671488		45	0.004	<0.005	<0.002	0.005	<0.005	0.33	0.073	<0.1	0.076	264	0.08	0.030	<0.002	3.59
DUP		54	0.004	<0.005	<0.002	0.005	<0.005	0.41	0.093	<0.1	0.093	316	0.10	0.039	<0.002	4.57
Target Range - Lower Bound		46	<0.004	<0.005	<0.002	0.004	<0.005	0.34	0.077	<0.1	0.079	275	0.08	0.032	<0.002	3.84
Upper Bound		53	0.008	0.010	0.004	0.006	0.010	0.40	0.089	0.2	0.090	305	0.10	0.037	0.004	4.32

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Finalized Date: 5-SEP-2017
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Project: 0518

QC CERTIFICATE OF ANALYSIS TB17167119

Sample Description	Method / Analyte / Units / LOR	ME-VEG41 P % 0.001	ME-VEG41 Pb ppm 0.01	ME-VEG41 Pd ppm 0.001	ME-VEG41 Pt ppm 0.001	ME-VEG41 Rb ppm 0.01	ME-VEG41 Re ppm 0.001	ME-VEG41 S % 0.01	ME-VEG41 Sb ppm 0.01	ME-VEG41 Sc ppm 0.01	ME-VEG41 Se ppm 0.005	ME-VEG41 Sn ppm 0.01	ME-VEG41 Sr ppm 0.02	ME-VEG41 Ta ppm 0.001	ME-VEG41 Te ppm 0.02	ME-VEG41 Th ppm 0.002
STANDARDS																
NIST 1515		0.149	0.33	<0.001	<0.001	8.95	<0.001	0.16	0.01	0.10	0.062	0.04	23.4	<0.001	<0.02	0.007
Target Range - Lower Bound		0.142	0.37	0.006	<0.001	8.54	<0.001	0.16	<0.01	<0.01	0.038	0.04	22.5	<0.001	<0.02	<0.002
Upper Bound		0.176	0.47	0.010	0.002	10.45	0.003	0.22	0.04	0.04	0.063	0.08	27.5	0.002	0.06	0.010
NIST 1575a		0.106	0.14	<0.001	<0.001	15.55	<0.001	0.11	0.01	0.13	0.107	0.02	6.24	0.001	<0.02	0.009
Target Range - Lower Bound		0.095	0.14	<0.001	<0.001	14.30	<0.001	0.08	<0.01	<0.01	0.084	0.02	5.83	<0.001	<0.02	0.005
Upper Bound		0.119	0.20	0.002	0.002	17.50	0.003	0.14	0.05	0.03	0.114	0.06	7.17	0.003	0.06	0.013
VEG-2		0.033	0.81	<0.001	<0.001	2.12	<0.001	0.08	0.02	0.61	0.191	0.05	97.8	0.001	<0.02	0.542
Target Range - Lower Bound		0.033	0.80	<0.001	<0.001	2.04	<0.001	0.08	<0.01	0.62	0.347	0.04	94.9	<0.001	<0.02	0.546
Upper Bound		0.043	1.01	0.005	0.003	2.52	0.002	0.13	0.06	0.79	0.435	0.09	116.0	0.004	0.06	0.672
BLANKS																
BLANK		<0.001	<0.01	<0.001	0.001	<0.01	<0.001	<0.01	<0.01	<0.01	<0.005	<0.01	0.29	<0.001	<0.02	<0.002
BLANK		<0.001	<0.01	<0.001	<0.001	<0.01	<0.001	<0.01	<0.01	<0.01	<0.005	<0.01	<0.02	<0.001	<0.02	<0.002
Target Range - Lower Bound		<0.001	<0.01	<0.001	<0.001	<0.01	<0.001	<0.01	<0.01	<0.01	<0.005	<0.01	<0.02	<0.001	<0.02	<0.002
Upper Bound		0.002	0.02	0.002	0.002	0.02	0.002	0.02	0.02	0.02	0.010	0.02	0.04	0.002	0.04	0.004
DUPLICATES																
V671453		0.065	0.20	<0.001	<0.001	12.90	<0.001	0.04	0.01	0.11	0.088	0.01	12.70	0.003	<0.02	0.017
DUP		0.067	0.22	<0.001	<0.001	13.25	<0.001	0.04	0.01	0.11	0.113	0.01	13.15	0.003	<0.02	0.018
Target Range - Lower Bound		0.062	0.19	<0.001	<0.001	12.40	<0.001	0.03	<0.01	0.09	0.090	<0.01	12.25	0.002	<0.02	0.015
Upper Bound		0.070	0.23	0.002	0.002	13.75	0.002	0.05	0.02	0.13	0.111	0.02	13.60	0.004	0.04	0.020
V671473		0.052	0.09	<0.001	<0.001	6.99	<0.001	0.04	0.01	0.13	0.036	0.01	14.45	0.004	<0.02	0.010
DUP		0.047	0.09	<0.001	<0.001	6.32	<0.001	0.03	0.01	0.12	0.027	0.01	12.80	0.004	<0.02	0.009
Target Range - Lower Bound		0.046	0.08	<0.001	<0.001	6.31	<0.001	0.02	<0.01	0.11	0.025	<0.01	12.90	0.003	<0.02	0.007
Upper Bound		0.053	0.10	0.002	0.002	7.00	0.002	0.05	0.02	0.14	0.038	0.02	14.35	0.005	0.04	0.012
V671488		0.065	0.31	<0.001	<0.001	52.3	<0.001	0.04	<0.01	0.06	0.014	0.01	14.55	0.001	<0.02	0.003
DUP		0.080	0.35	<0.001	0.001	65.1	<0.001	0.07	0.01	0.07	0.014	0.01	17.25	0.001	<0.02	0.003
Target Range - Lower Bound		0.068	0.30	<0.001	<0.001	55.8	<0.001	0.04	<0.01	0.05	0.008	<0.01	15.10	<0.001	<0.02	<0.002
Upper Bound		0.077	0.36	0.002	0.002	61.6	0.002	0.07	0.02	0.08	0.020	0.02	16.70	0.002	0.04	0.004

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QC CERTIFICATE OF ANALYSIS TB17167119

Sample Description	Method / Analyte / Units / LOR	ME-VEG41 Ti % 0.001	ME-VEG41 Tl ppm 0.002	ME-VEG41 U ppm 0.005	ME-VEG41 V ppm 0.05	ME-VEG41 W ppm 0.01	ME-VEG41 Y ppm 0.003	ME-VEG41 Zn ppm 0.1	ME-VEG41 Zr ppm 0.02
STANDARDS									
NIST 1515		<0.001	0.013	<0.005	0.15	<0.01	9.56	11.5	0.05
Target Range - Lower Bound		<0.001	0.005	<0.005	0.09	<0.01	9.31	11.2	0.03
Upper Bound		0.002	0.015	0.016	0.31	0.03	11.40	13.9	0.13
NIST 1575a		<0.001	0.018	<0.005	0.11	<0.01	0.026	36.0	0.04
Target Range - Lower Bound		<0.001	0.013	<0.005	<0.05	<0.01	0.018	34.1	<0.02
Upper Bound		0.003	0.025	0.015	0.21	0.03	0.032	41.9	0.10
VEG-2		0.002	0.014	0.148	4.79	0.05	1.350	19.9	0.99
Target Range - Lower Bound		<0.001	0.012	0.146	4.38	0.04	0.125	19.4	0.94
Upper Bound		0.004	0.023	0.189	5.47	0.09	0.160	24.0	1.32
BLANKS									
BLANK		<0.001	<0.002	<0.005	<0.05	<0.01	<0.003	0.2	<0.02
BLANK		<0.001	<0.002	<0.005	<0.05	<0.01	<0.003	<0.1	<0.02
Target Range - Lower Bound		<0.001	<0.002	<0.005	<0.05	<0.01	<0.003	<0.1	<0.02
Upper Bound		0.002	0.004	0.010	0.10	0.02	0.006	0.2	0.04
DUPLICATES									
V671453		<0.001	0.083	<0.005	0.19	0.28	0.040	37.8	0.06
DUP		<0.001	0.087	0.005	0.18	0.30	0.048	38.6	0.07
Target Range - Lower Bound		<0.001	0.077	<0.005	0.13	0.26	0.039	36.2	0.04
Upper Bound		0.002	0.093	0.010	0.24	0.32	0.049	40.2	0.09
V671473		<0.001	0.171	<0.005	0.13	0.15	0.025	63.5	0.04
DUP		<0.001	0.149	<0.005	0.10	0.14	0.020	56.0	0.04
Target Range - Lower Bound		<0.001	0.146	<0.005	0.06	0.12	0.018	56.7	<0.02
Upper Bound		0.002	0.174	0.010	0.17	0.17	0.027	62.8	0.06
V671488		<0.001	0.032	<0.005	0.06	0.03	0.017	33.6	0.02
DUP		<0.001	0.036	<0.005	0.07	0.03	0.026	37.6	0.02
Target Range - Lower Bound		<0.001	0.029	<0.005	<0.05	0.02	0.017	33.7	<0.02
Upper Bound		0.002	0.039	0.010	0.10	0.04	0.026	37.5	0.04

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Finalized Date: 5-SEP-2017
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QC CERTIFICATE OF ANALYSIS TB17167119

CERTIFICATE COMMENTS

LABORATORY ADDRESSES

Processed at ALS Thunder Bay located at 645 Norah Crescent, Thunder Bay, ON, Canada

Applies to Method: LOG-21 WEI-21

Processed at ALS Vancouver located at 2103 Dollarton Hwy, North Vancouver, BC, Canada.

Applies to Method: DRY-22 ME-VEG41 VEG-MILL01