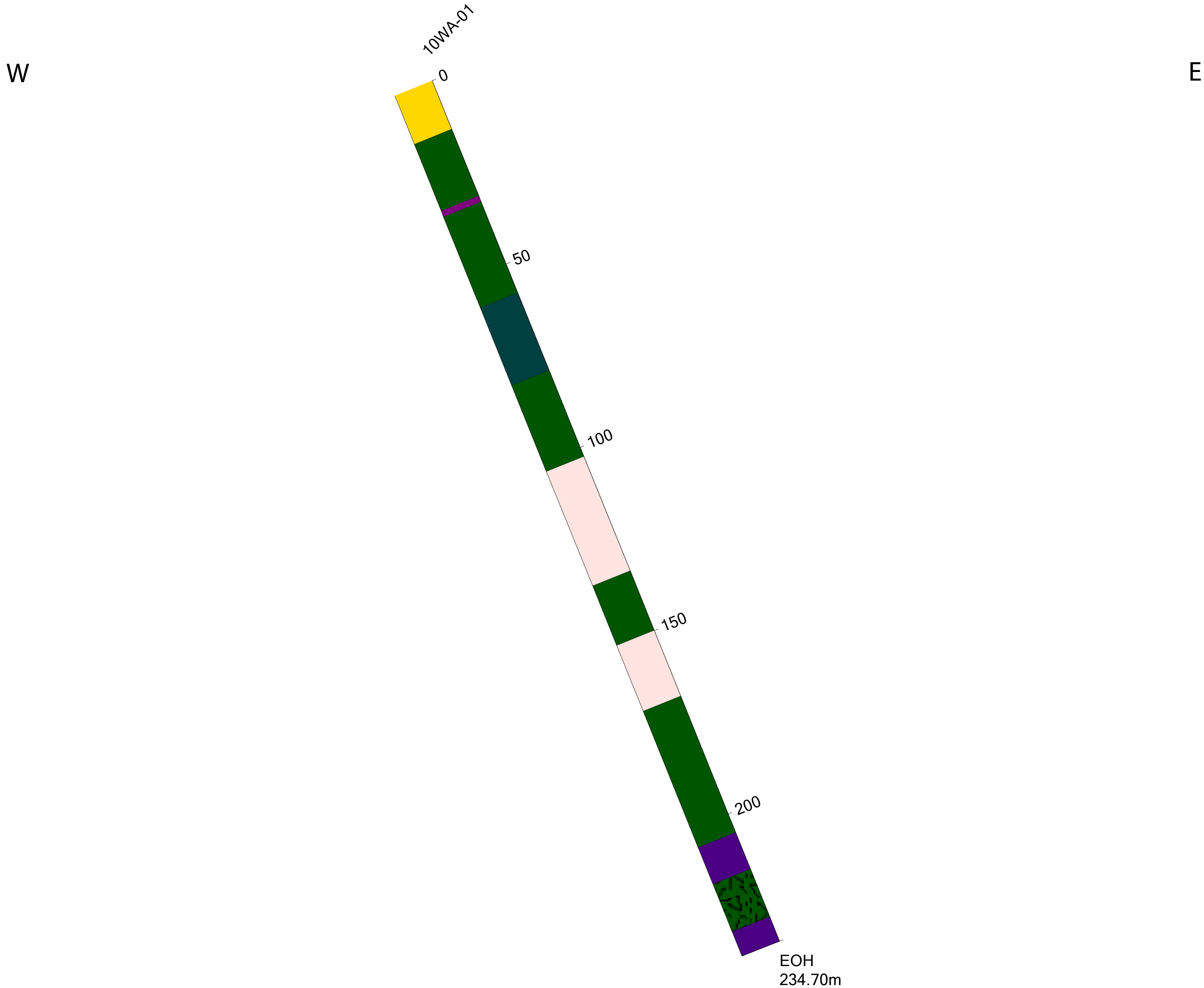
APPENDIX VI

Sections for Diamond Drill-Holes 10WA-01 to 11WA-20

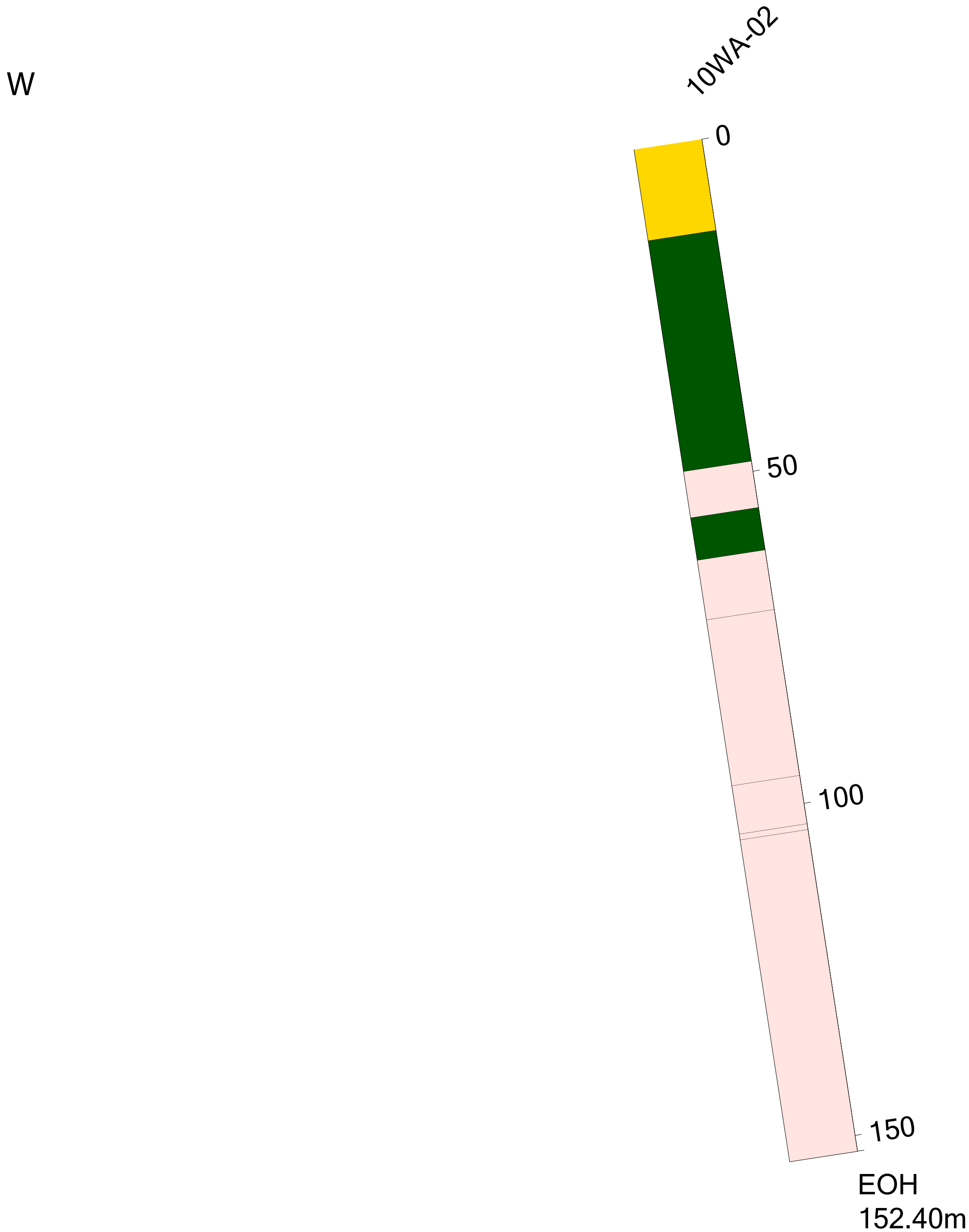
Legend

- Overburden
- Gabbro
- Pyroxenite
- Diabase
- Diorite
- Peridotite
- Melagabbro
- Granodiorite
- Olivine Gabbro
- Gabbronorite
- Gabbro - Gabbronorite
- Leucogabbro
- Leuconorite
- Norite
- Troctolite
- Massive sulfide
- Harzburgite
- Olivine Norite
- Hornblende Gabbro
- Granite
- Dacite
- Hornblende Norite
- Leucogabbronorite
- Olivine Leuconorite
- Olivine Gabbronorite
- Shear Zone
- Quartz Porphyry
- Rhyolite
- Felsic Volcanic
- Lapilli Tuff
- Mafic dike
- Tuff
- Volcanic
- Mafic volcanic
- Basalt
- Breccia
- Quartz vein
- Alteration zone

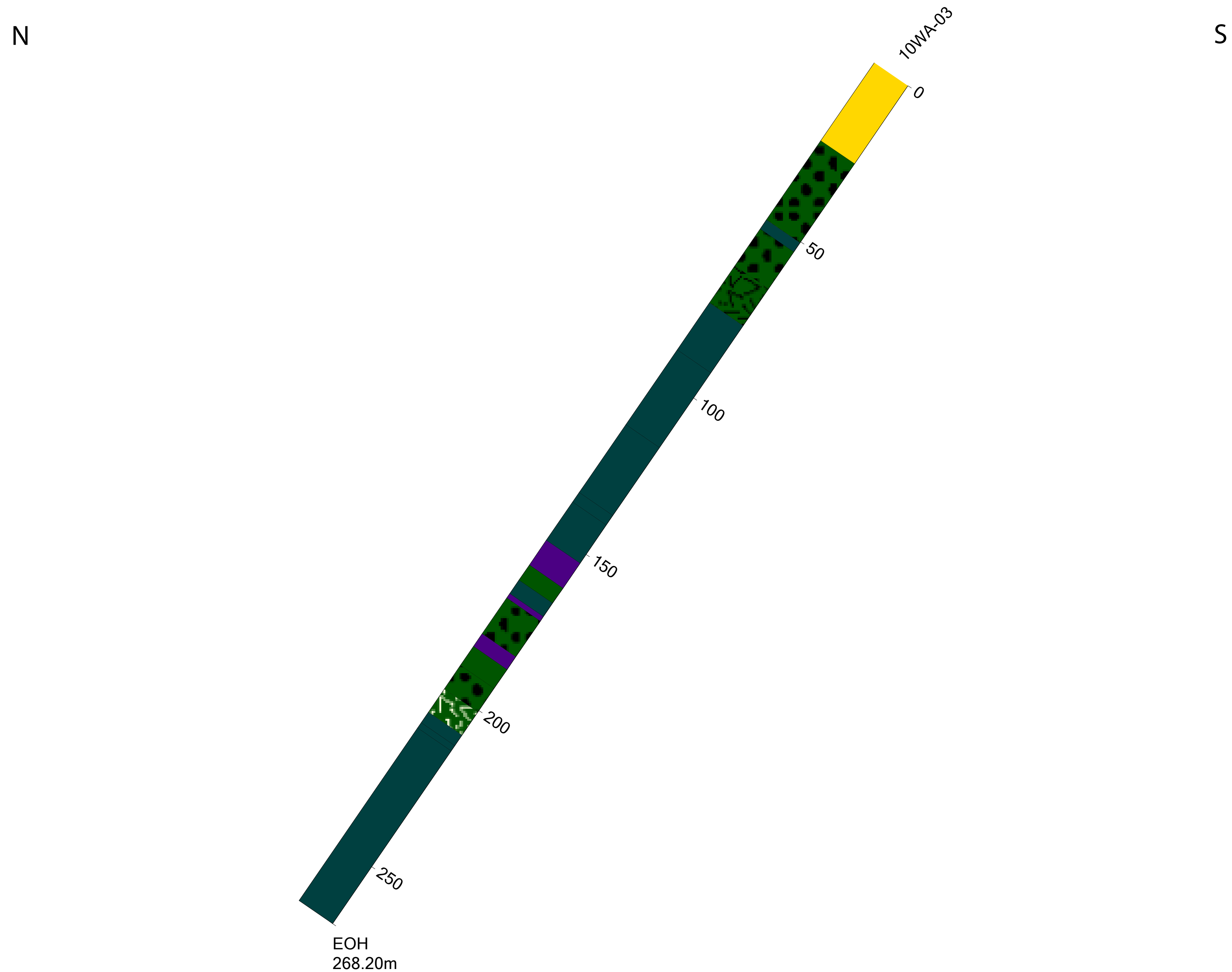
Drill Hole Section - 10WA-01
UTME: 5,728,911 UTMN: 527,657 Mining Claim: 4246979
Azimuth: 120   Dip at Collar: 65



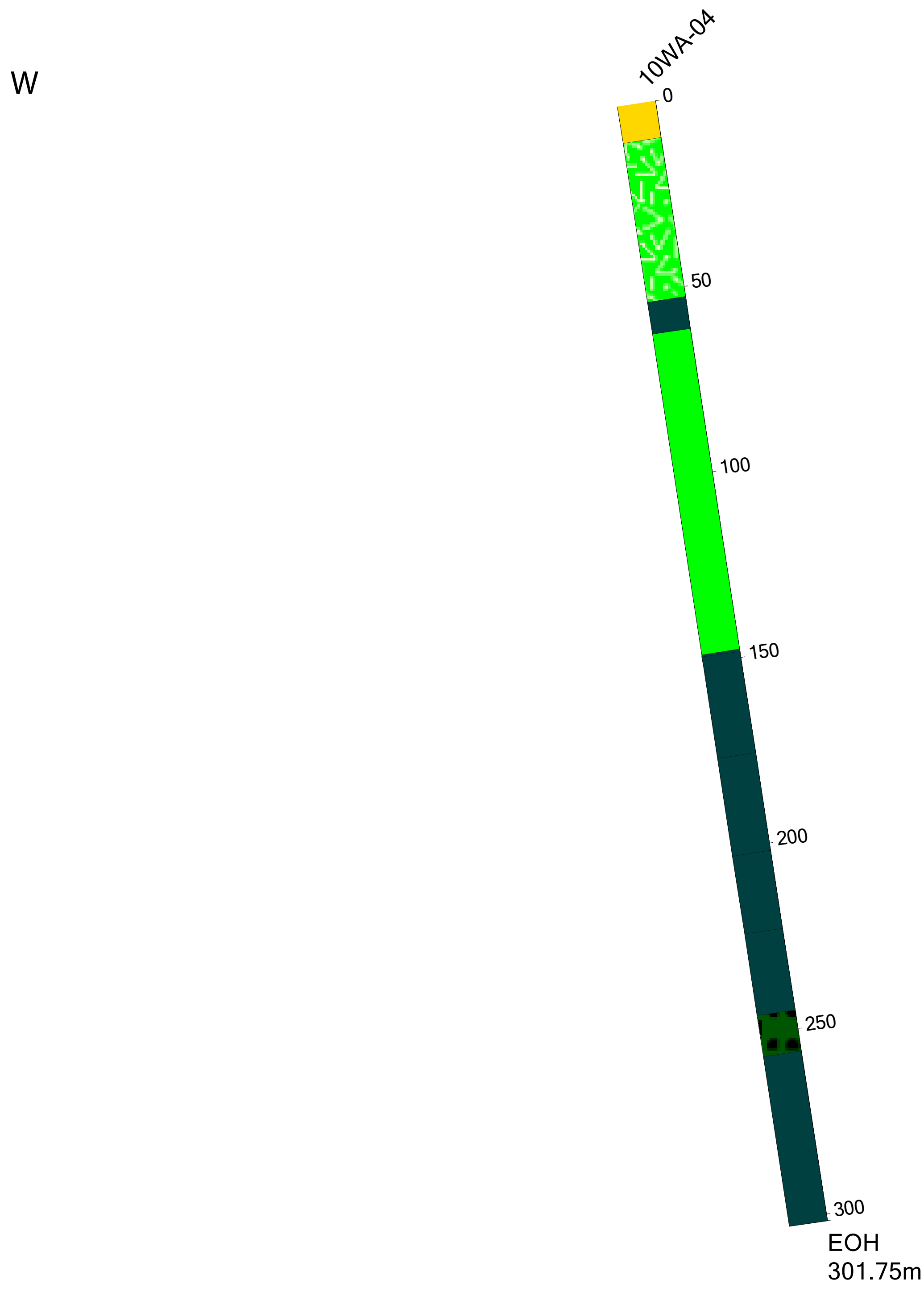
Drill Hole Section - 10WA-02
UTME: 5,734,539 UTMN: 531,967 Mining Claim: 4246980
Azimuth: 145 Dip at Collar: 75



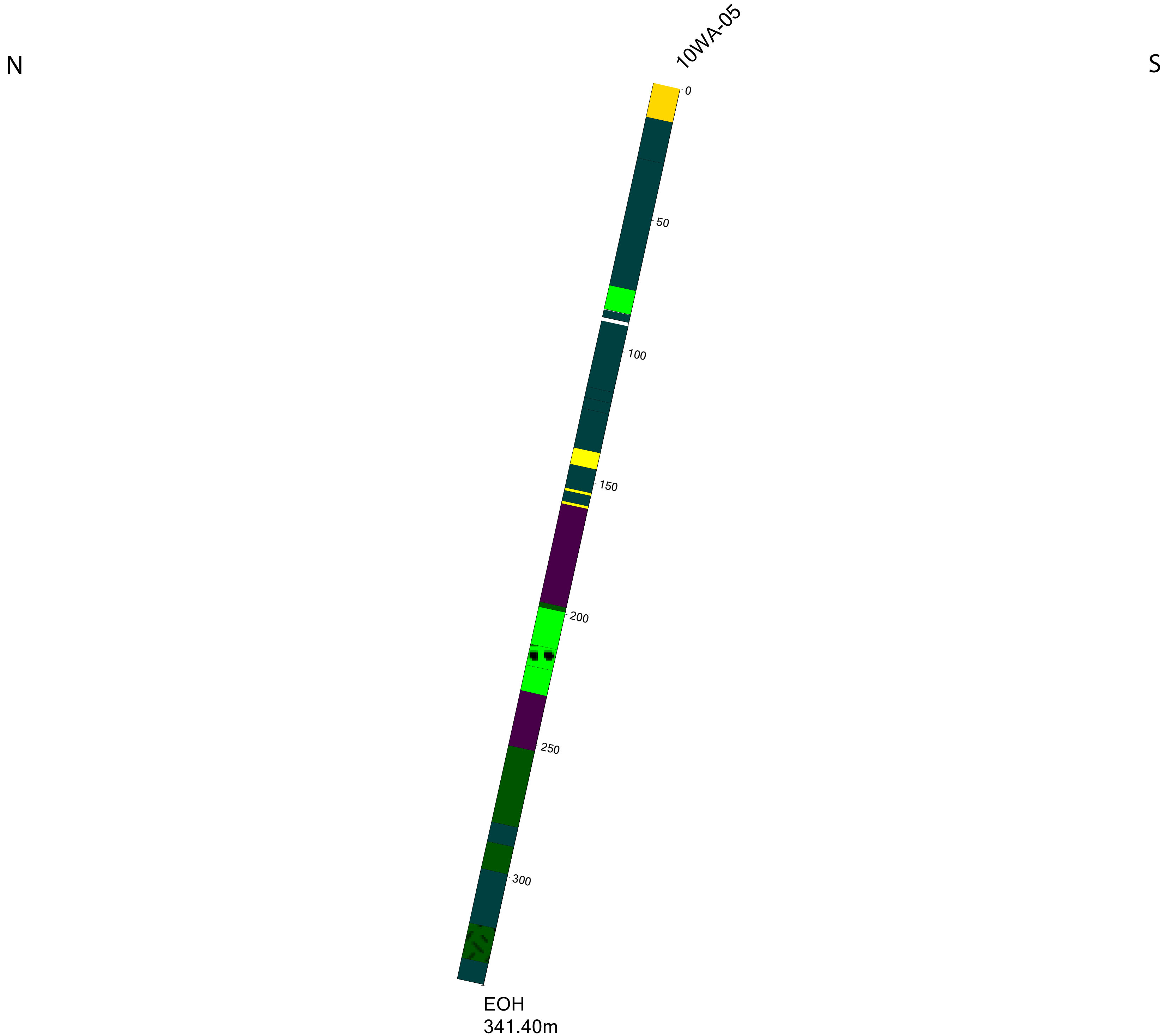
Drill Hole Section - 10WA-03
UTME: 5,34,265 UTMN: 527,705 Mining Claim: 4247104
Azimuth: 325 Dip at Collar: 50



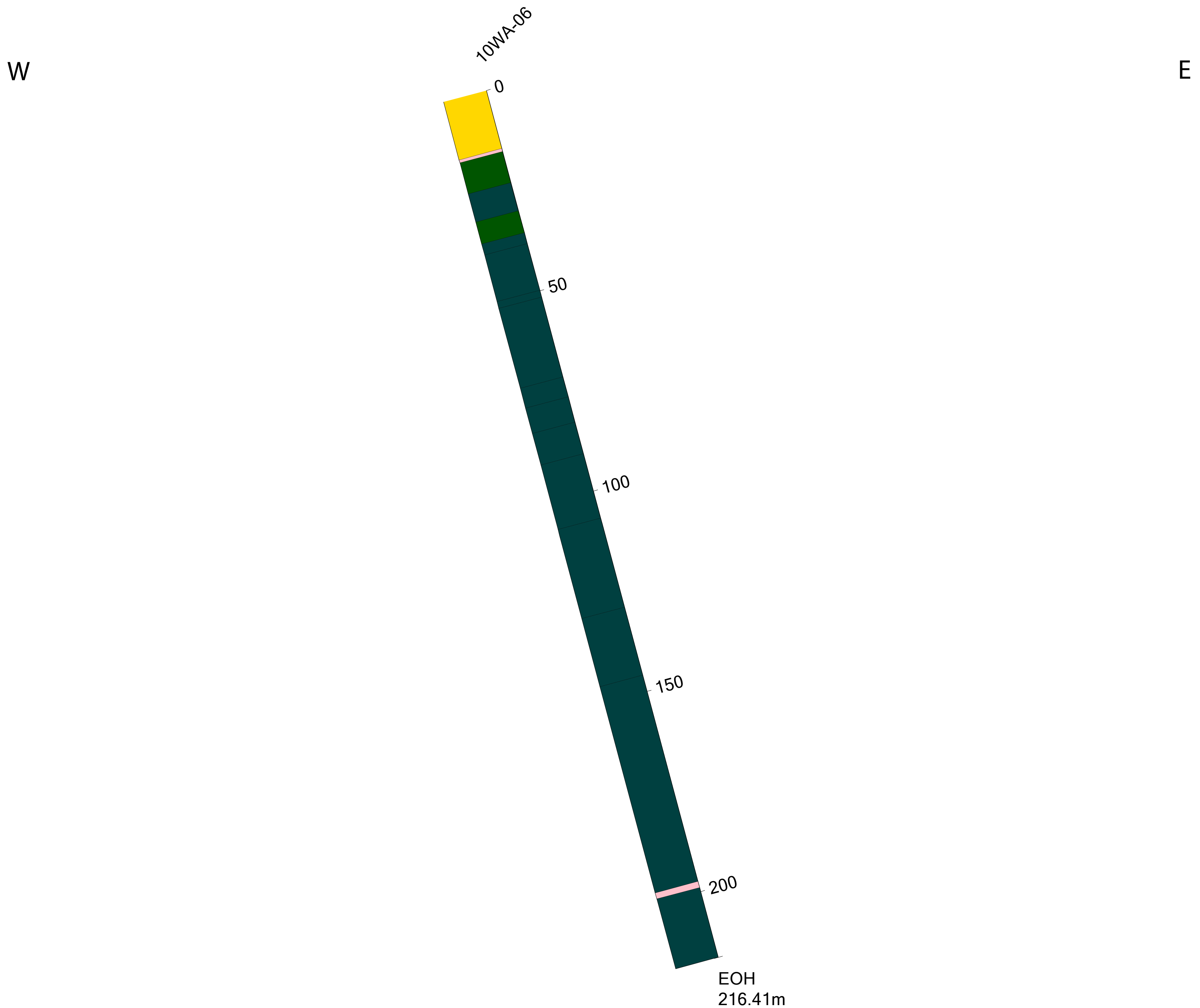
Drill Hole Section - 10WA-04
UTME: 5,733,240 UTMN: 525,860 Mining Claim: 4227102
Azimuth: 145 Dip at Collar: 75



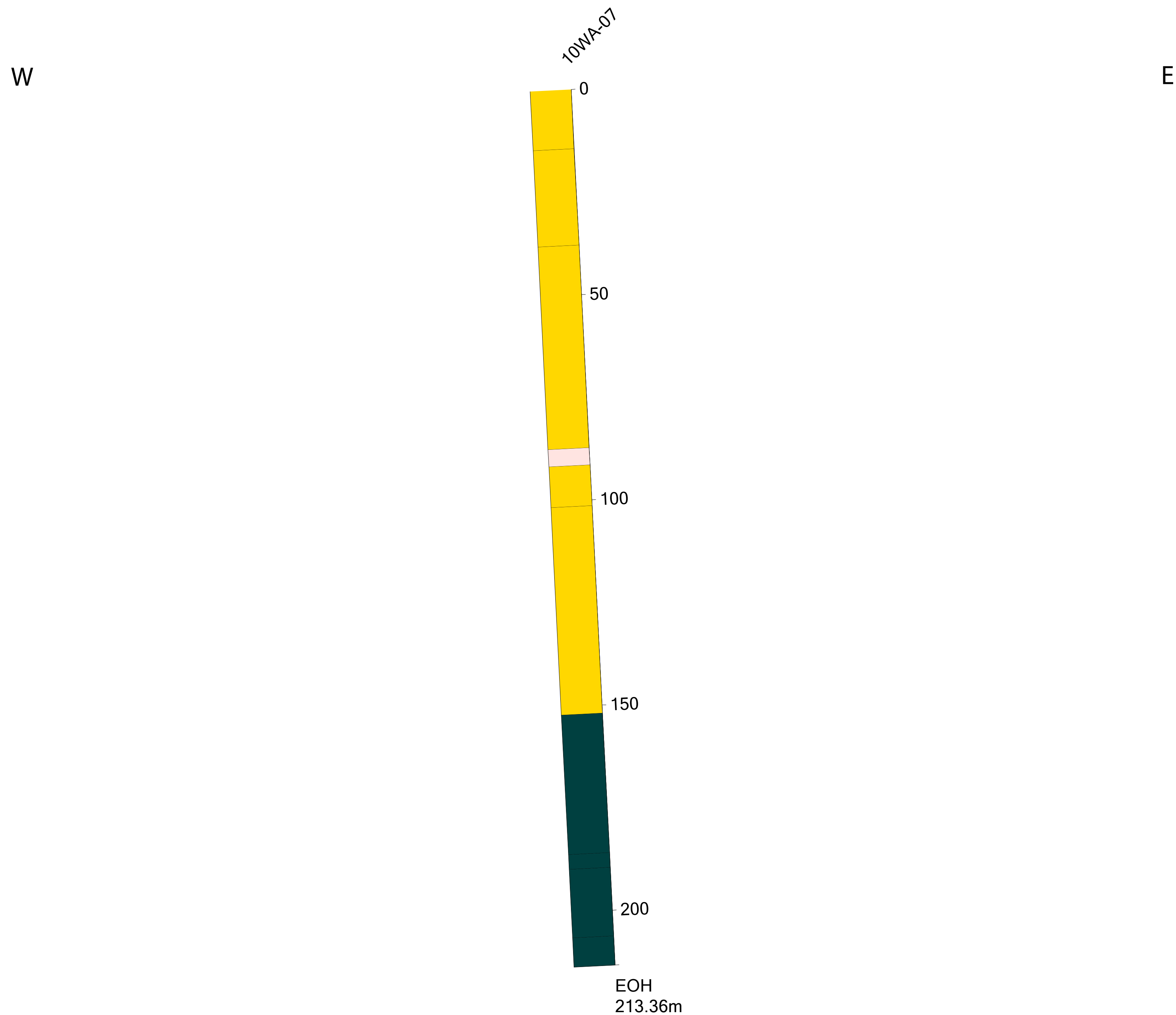
Drill Hole Section - 10WA-05
UTME: 5,733,240 UTMN: 525,860 Mining Claim: 4227102
Azimuth: 325 Dip at Collar: 75



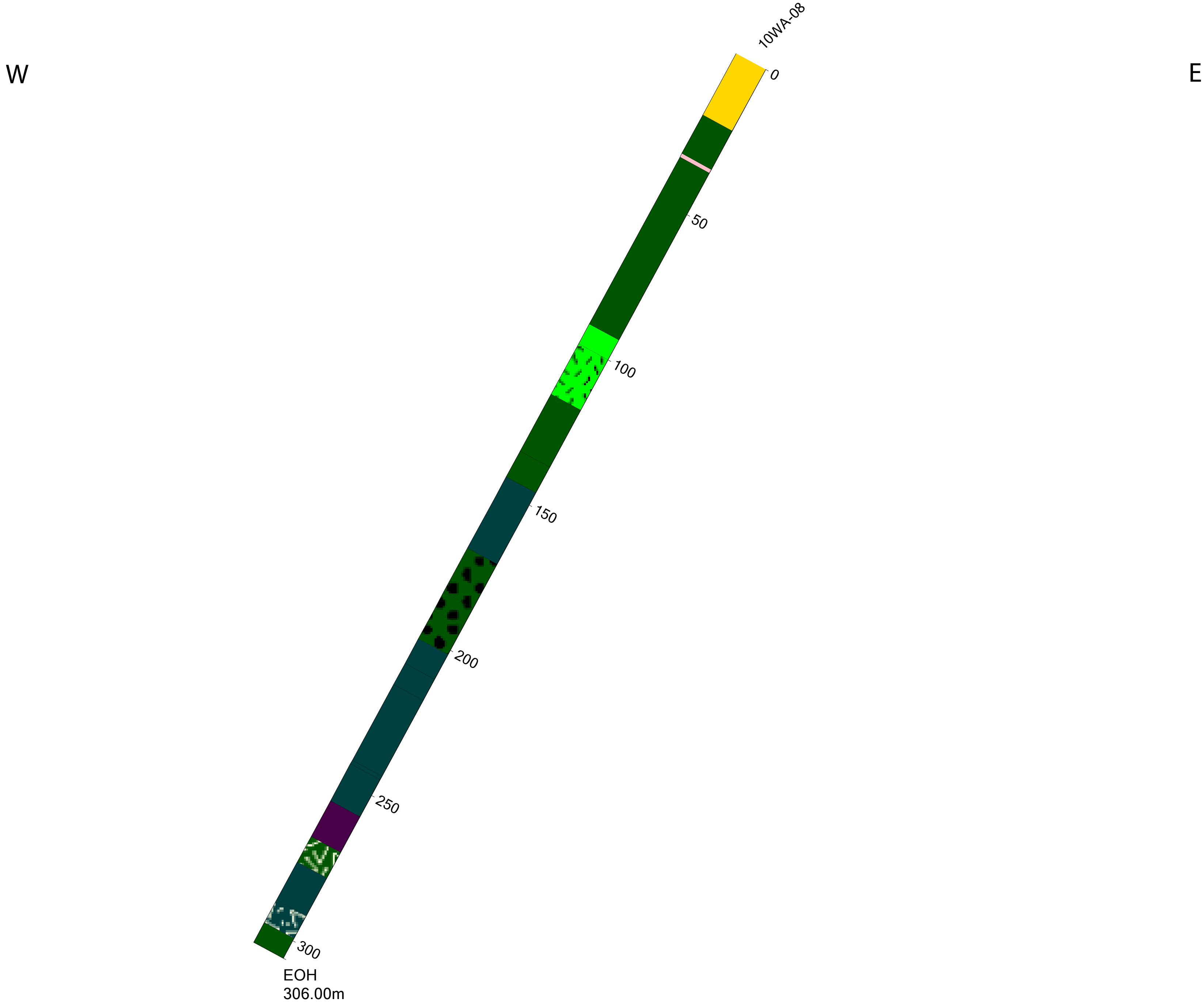
Drill Hole Section - 10WA-06
UTME: 5,733,145 UTMN: 525,735 Mining Claim: 4226953
Azimuth: 145   Dip at Collar: 65



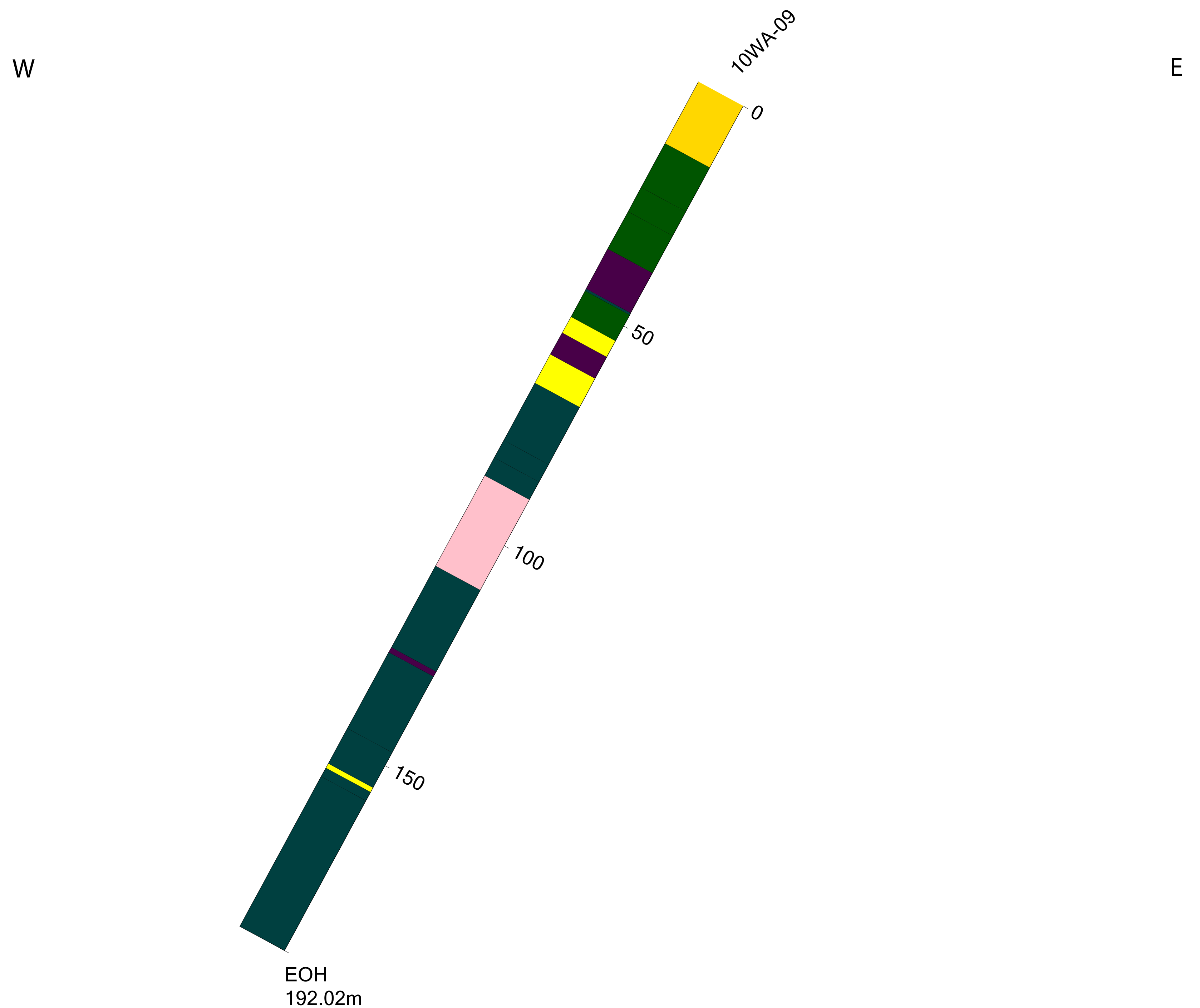
Drill Hole Section - 10WA-07
UTME: 5,732,415 UTMN: 525,355 Mining Claim: 4246978
Azimuth: 145   Dip at Collar: 85



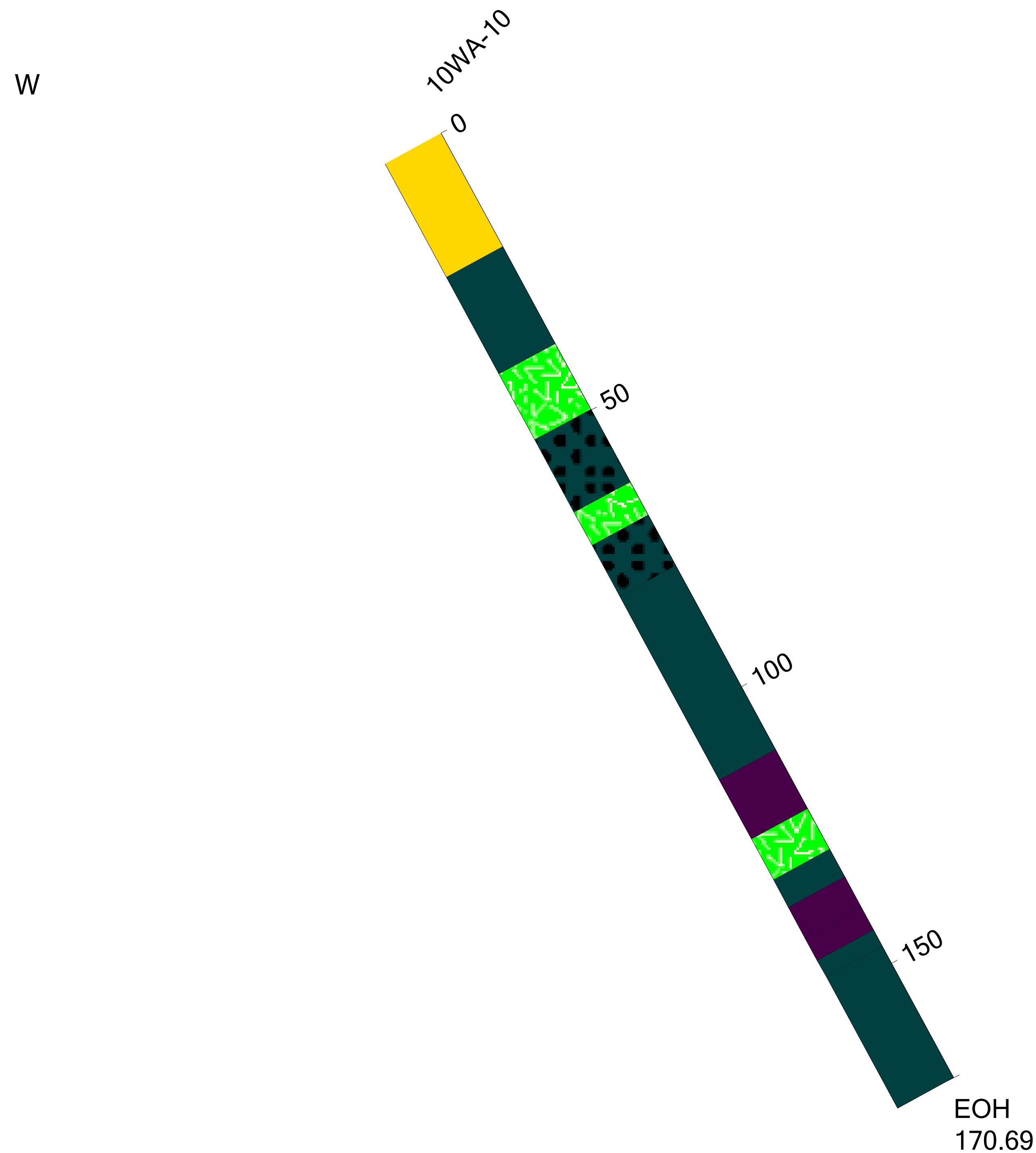
Drill Hole Section - 10WA-08
UTME: 5,733,062 UTMN: 525,978 Mining Claim: 4226953
Azimuth: 290 Dip at Collar: 60



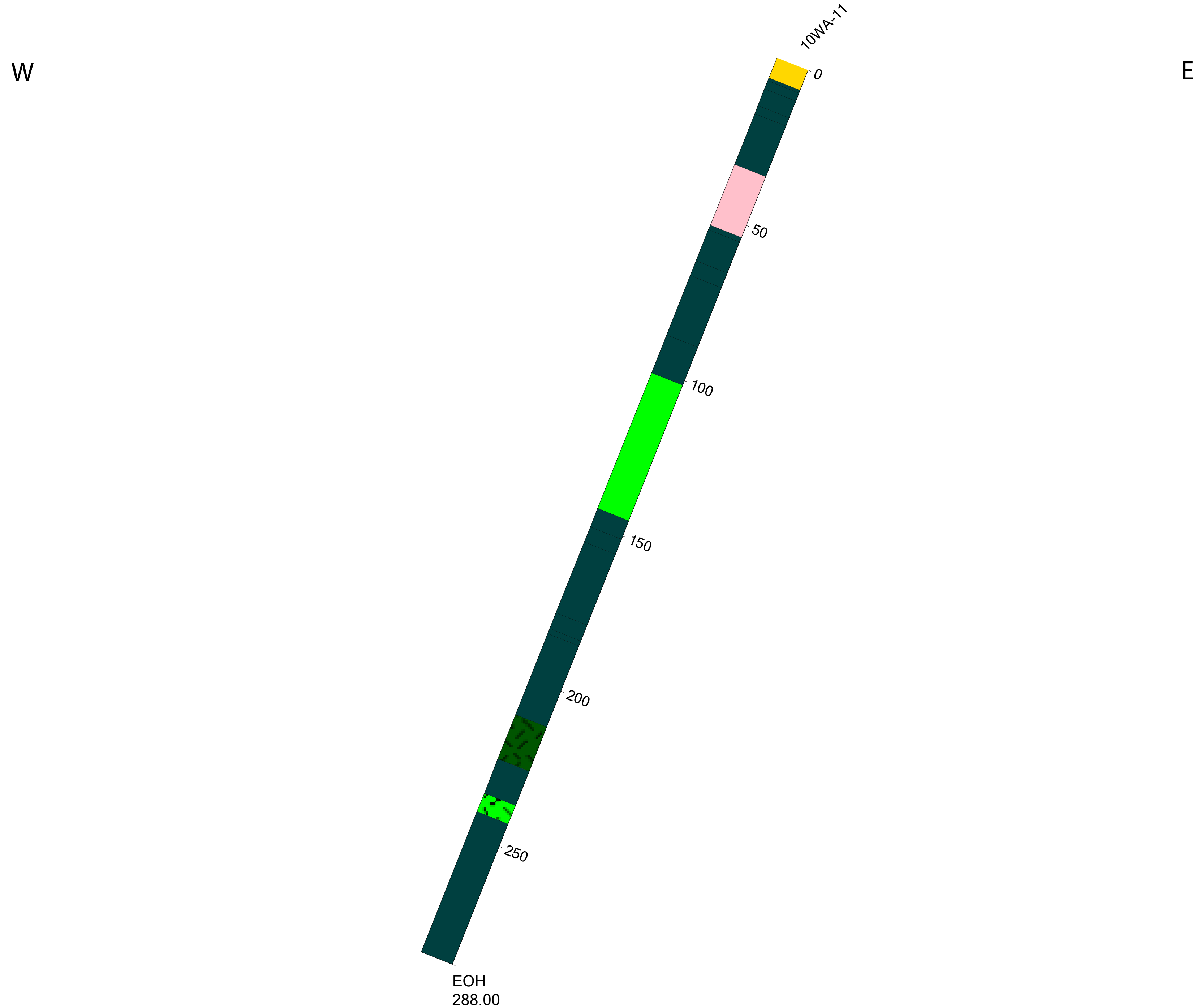
Drill Hole Section - 10WA-09
UTME: 5,733,141 UTMN: 525,761 Mining Claim: 4226953
Azimuth: 290   Dip at Collar: 60



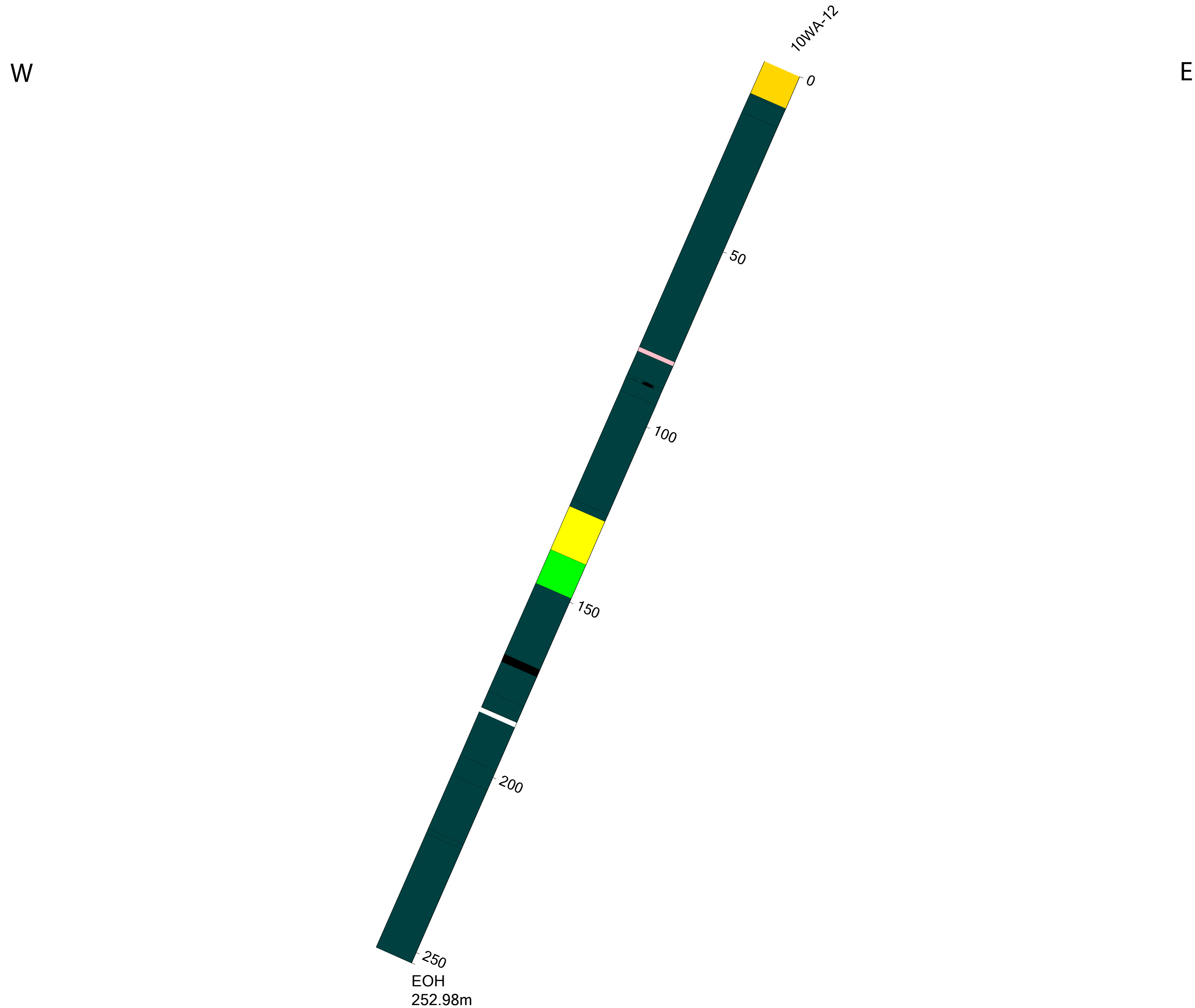
Drill Hole Section - 10WA-10
UTME: 5,733,129 UTMN: 525,800 Mining Claim: 4226953
Azimuth: 110   Dip at Collar: 60



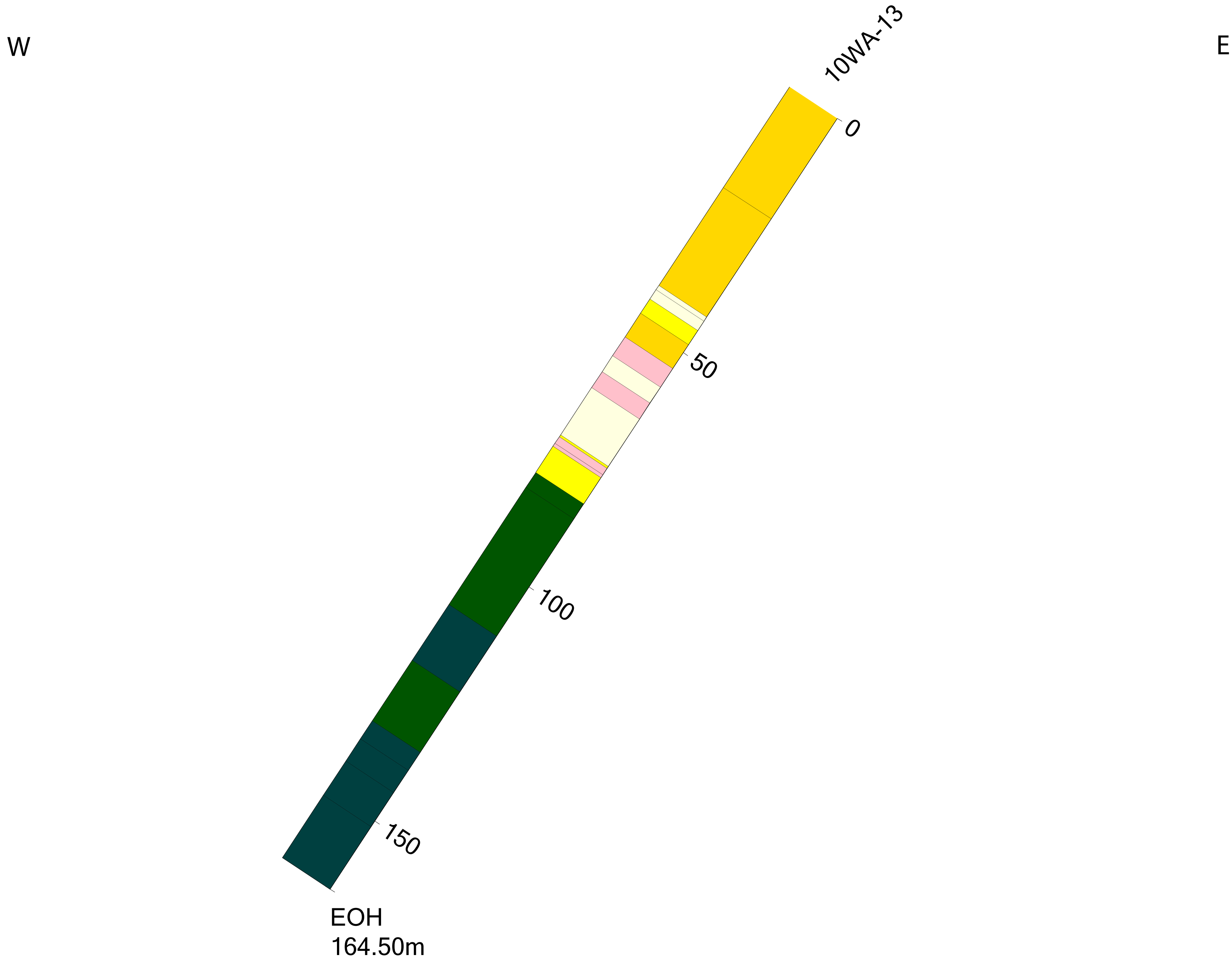
Drill Hole Section - 10WA-11
UTME: 5,733,287 UTMN: 525,948 Mining Claim: 4227102
Azimuth: 280   Dip at Collar: 68



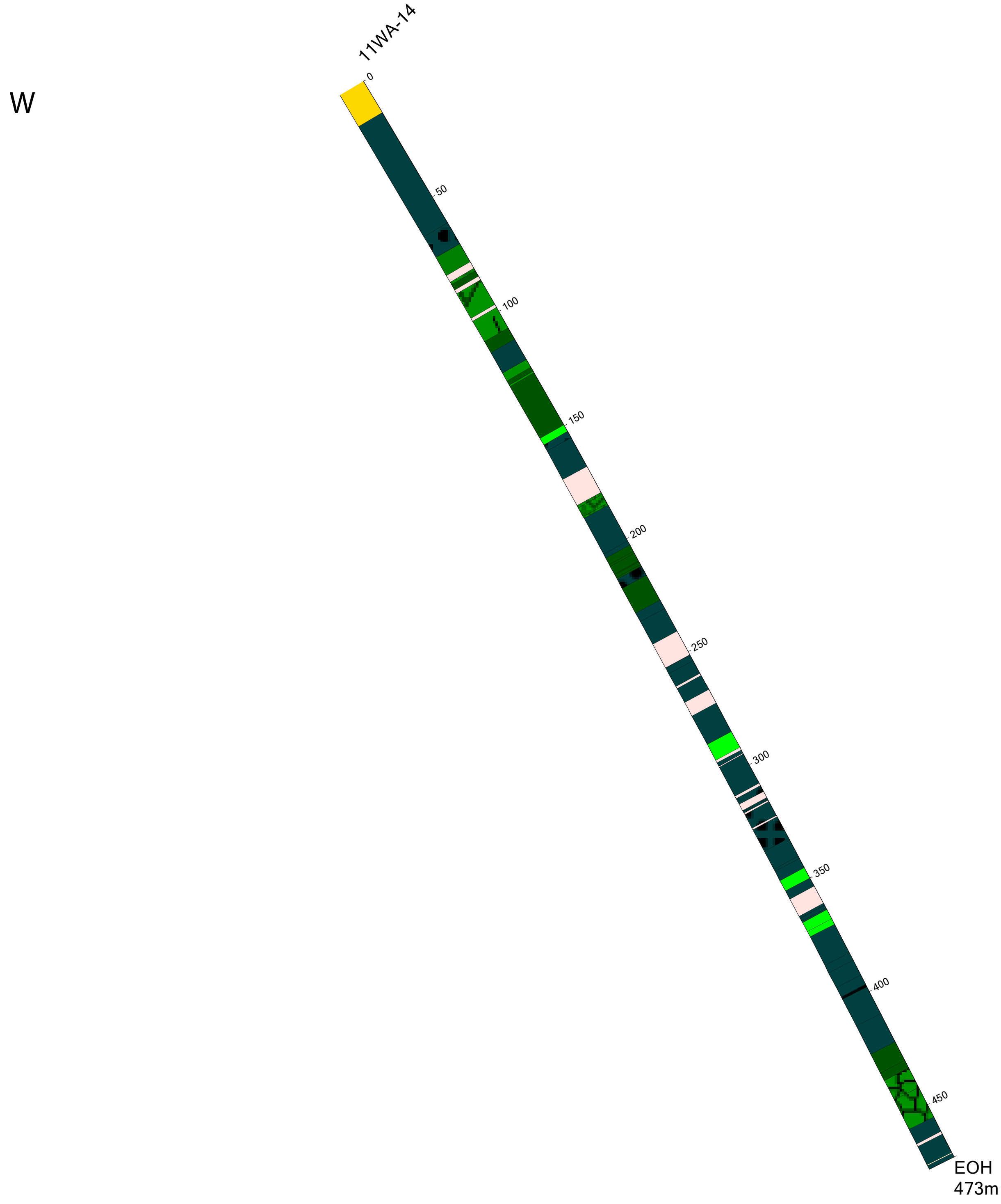
Drill Hole Section - 10WA-12
UTME: 5,733,172 UTMN: 525,896 Mining Claim: 4226953
Azimuth: 290 Dip at Collar: 65



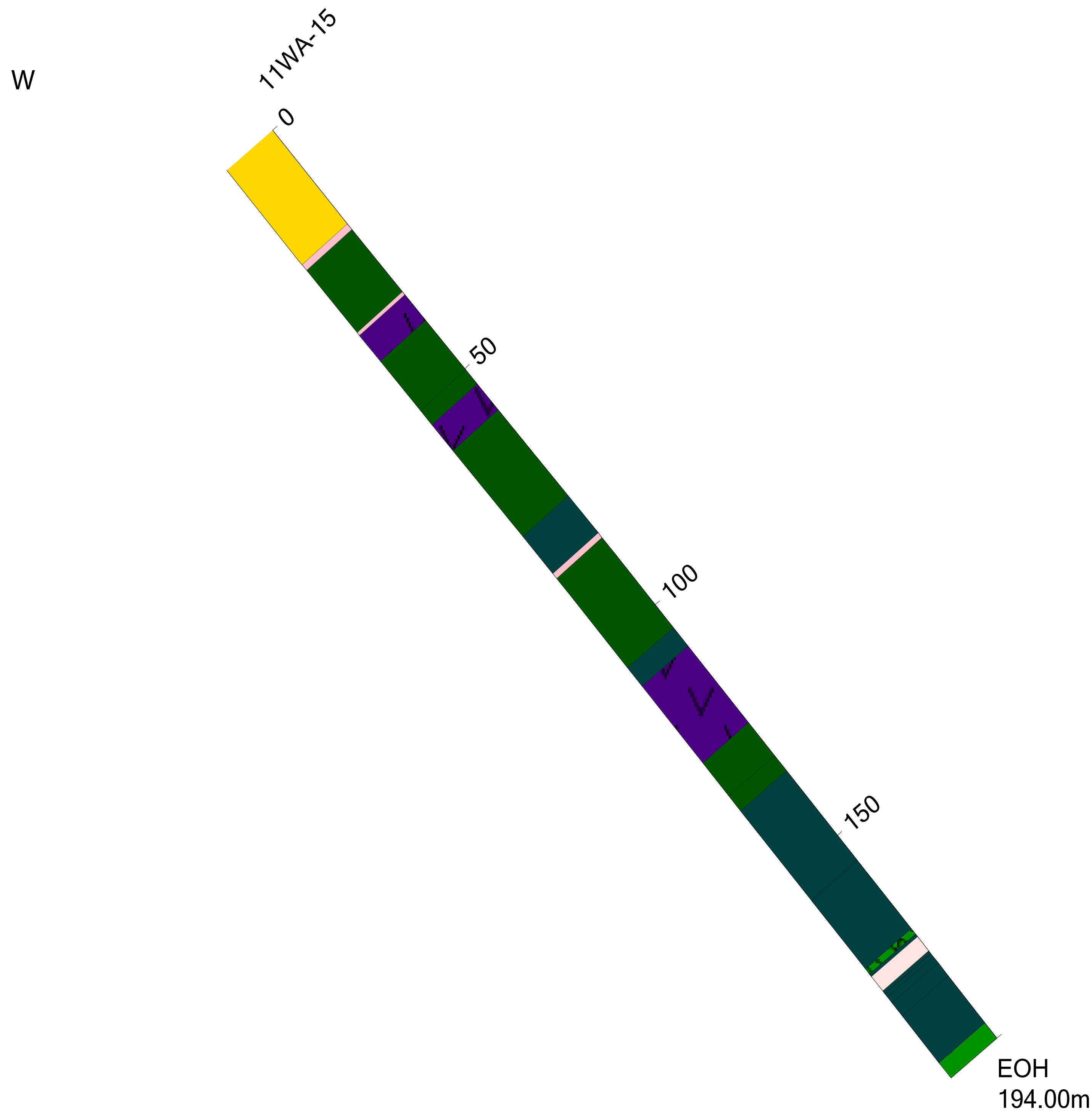
Drill Hole Section - 10WA-13
UTME: 5,732,393 UTMN: 525,408 Mining Claim: 4226954
Azimuth: 290   Dip at Collar: 55



Drill Hole Section - 11WA-14
UTME: 5,733,051 UTMN: 525,715 Mining Claim: 4226953
Azimuth: 107   Dip at Collar: 58



Drill Hole Section - 11WA-15
UTME: 5,732,968 UTMN: 525,551 Mining Claim: 4246978
Azimuth: 090 Dip at Collar: 50

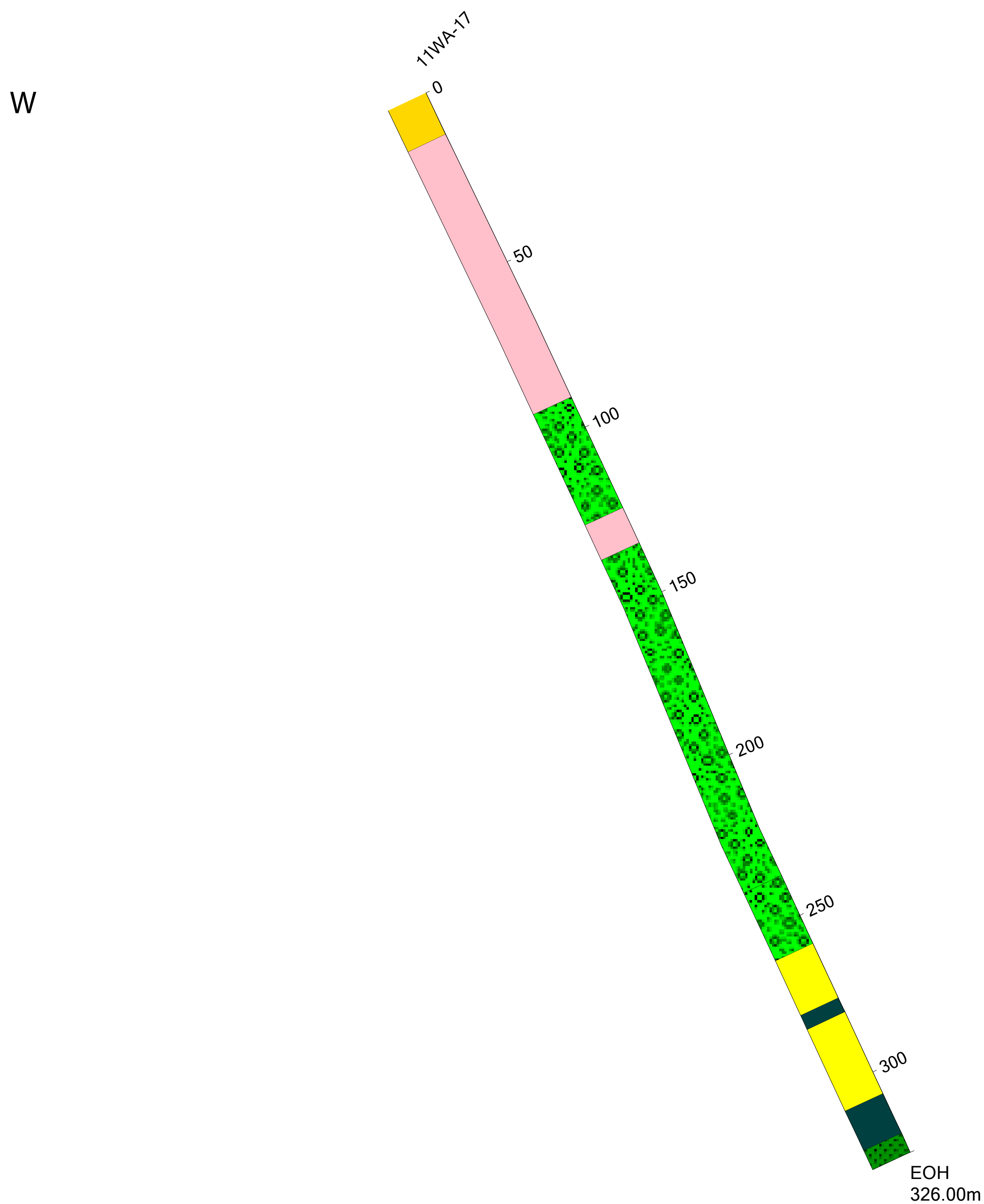


Drill Hole Section - 11WA-16

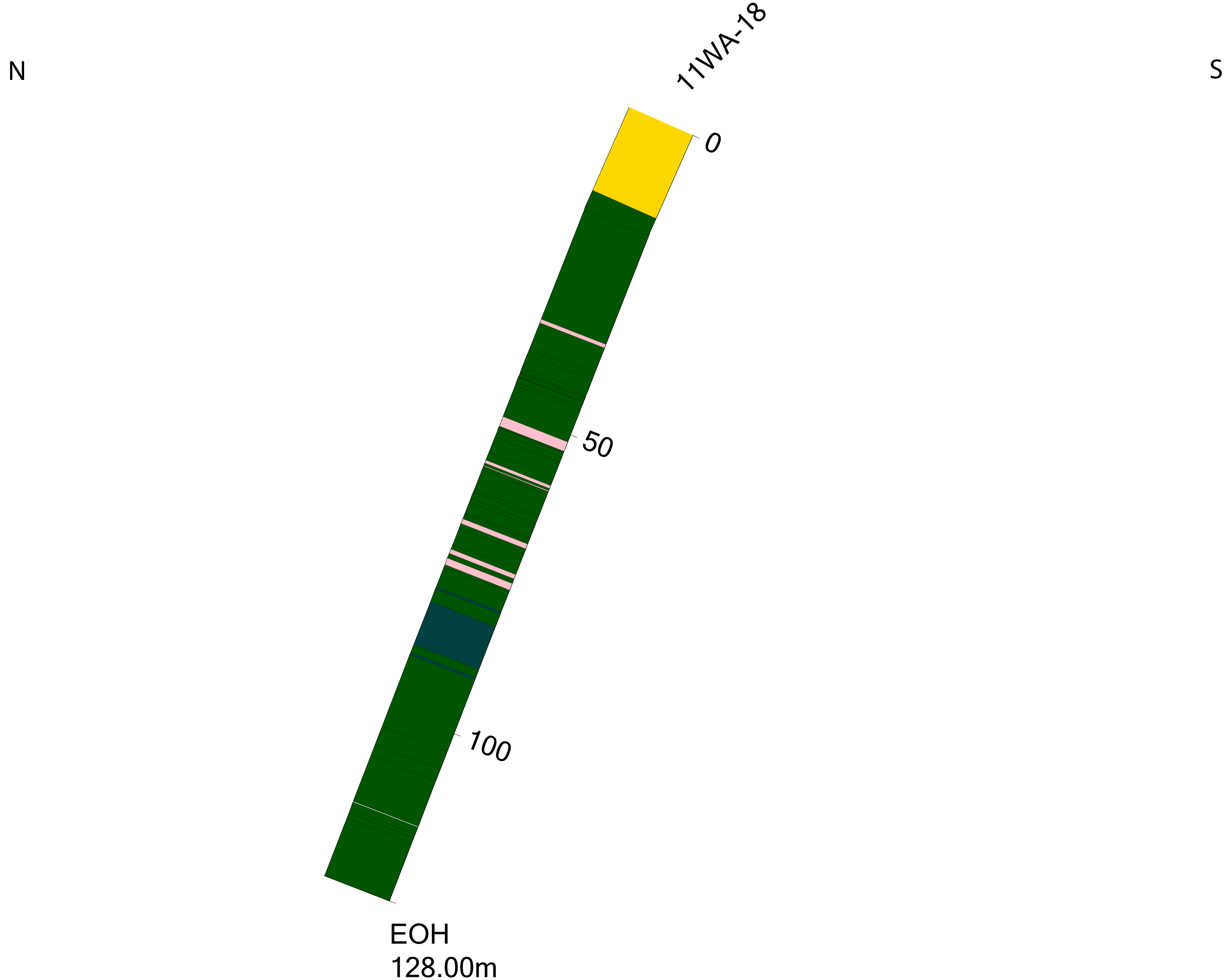
UTME: 5,728,075 UTMN: 524,924 Mining Claim: 4255002

Azimuth: 320   Dip at Collar: 60

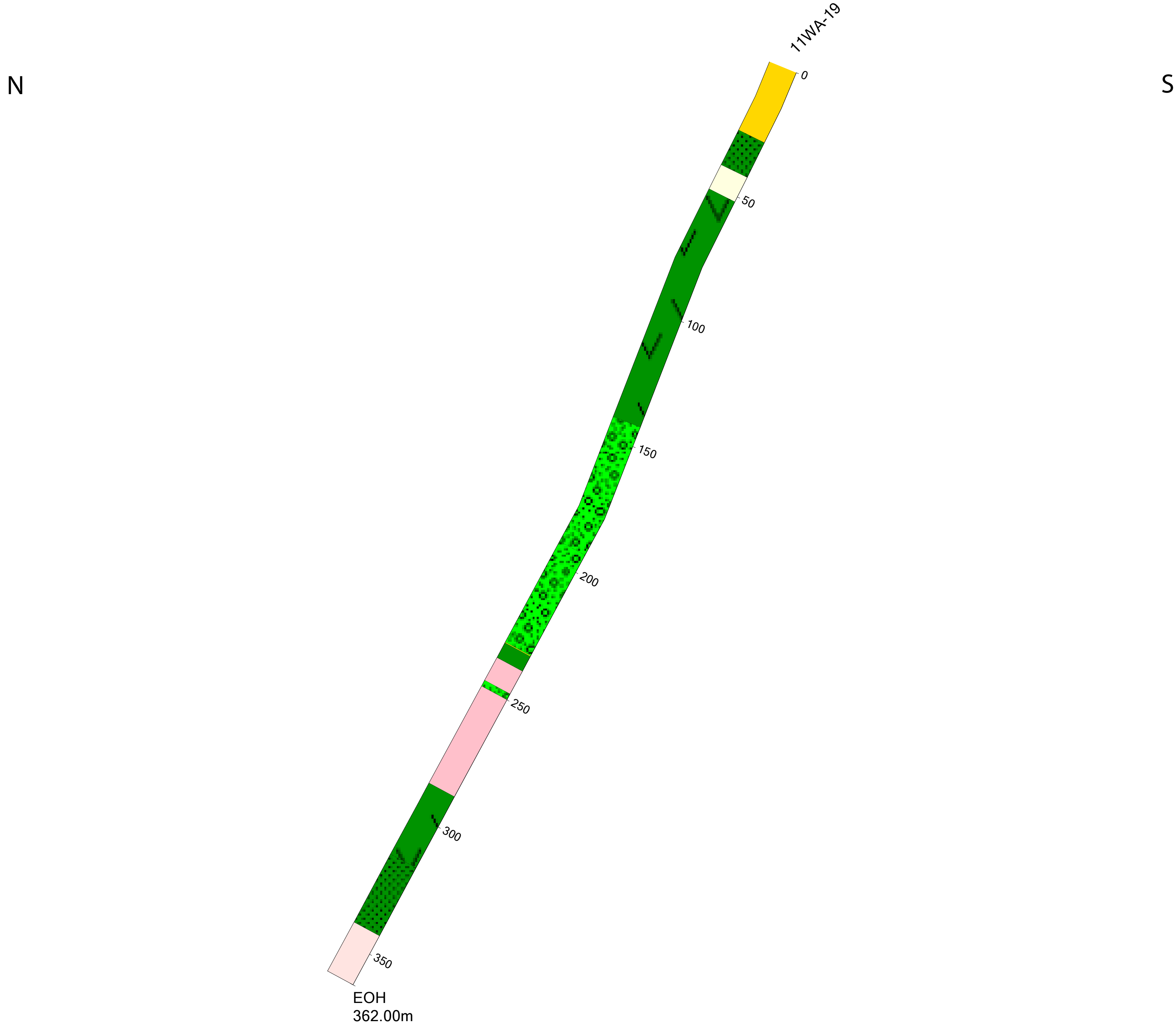
Drill Hole Section - 11WA-17
UTME: 5,728,075 UTMN: 524,845 Mining Claim: 4255002
Azimuth: 135   Dip at Collar: 56



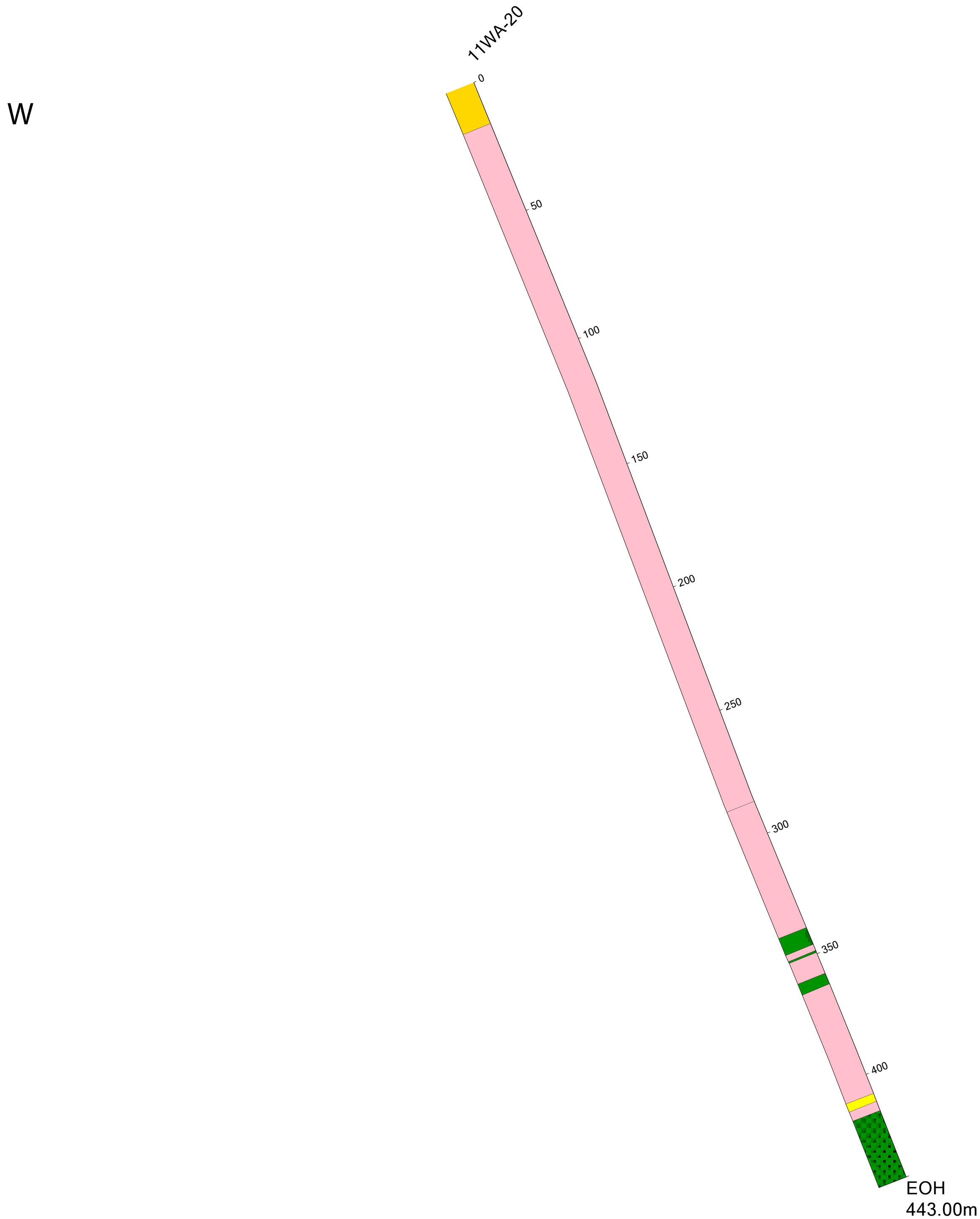
Drill Hole Section - 11WA-18
UTME: 5,728,932 UTMN: 527,838 Mining Claim: 4246979
Azimuth: 320   Dip at Collar: 60



Drill Hole Section - 11WA-19
UTME: 5,728,031 UTMN: 524,967 Mining Claim: 4255002
Azimuth: 315   Dip at Collar: 60



Drill Hole Section - 11WA-20
UTME: 5,728,369 UTMN: 524,897 Mining Claim: 4255002
Azimuth: 135   Dip at Collar: 60



APPENDIX VII

List of Assay Results with Location of Core Samples for Diamond Drill-Holes 10WA-01 to 11WA-20

Hole #	Sample #	From	To	Au	Pt	Pd	Ag	Al	As	Ba	Be	Bi	Ca	Cd
		m	m	ppm	ppm	ppm	ppm	%	ppm	ppm	ppm	ppm	%	ppm
10WA-01	392551	16	16.15	0.003	0.0005	<0.001	<0.5	8.97	60	80	<0.5	<2	7.54	<0.5
10WA-01	392552	16.15	16.92	0.004	0.0006	<0.001	<0.5	5.07	5	40	<0.5	<2	8.65	<0.5
10WA-01	392553	24.75	25.65	0.004	0.0008	<0.001	<0.5	6.93	50	50	<0.5	5	7.64	<0.5
10WA-01	392554	25.65	26.1	0.008	0.0015	0.001	<0.5	7.6	7	30	<0.5	<2	7.65	<0.5
10WA-01	392555	30.25	31.4	0.004	0.0013	<0.001	<0.5	8.1	9	30	<0.5	3	7.78	<0.5
10WA-01	392556	31.4	32.3	0.004	0.001	<0.001	<0.5	8.87	14	70	<0.5	4	8.34	<0.5
10WA-01	392557	32.3	33.15	0.014	0.003	0.002	1.9	2.13	<5	20	<0.5	<2	8.45	<0.5
10WA-01	392558	33.15	34	0.003	0.0014	<0.001	<0.5	9.23	10	50	<0.5	6	6.38	<0.5
10WA-01	392559	81	82	0.007	0.0005	<0.001	<0.5	8.44	7	70	<0.5	<2	7.04	<0.5
10WA-01	392560	82	83	0.01	<0.0005	<0.001	0.5	7.95	10	30	<0.5	<2	7.8	<0.5
10WA-01	392561	116	116.5	0.088	0.0032	0.003	1.9	8.8	5	110	<0.5	4	6.28	<0.5
10WA-01	392562	116.5	117.3	0.005	0.0038	0.003	<0.5	9.37	7	170	<0.5	2	6.15	<0.5
10WA-01	392563	117.3	117.8	0.03	0.0031	0.003	1.3	8.61	<5	70	<0.5	2	5.32	<0.5
10WA-01	392564	117.8	118.5	0.042	0.0016	0.002	2.3	9.26	7	50	<0.5	4	5.09	0.5
10WA-01	392565	118.9	120	0.01	0.0005	<0.001	<0.5	8.13	7	40	<0.5	2	5.36	<0.5
10WA-01	392566	120	121.75	0.004	0.0007	<0.001	<0.5	8.8	<5	40	<0.5	2	6.08	<0.5
10WA-01	392567	121.75	122.3	0.032	0.0018	0.002	1.5	9.58	7	70	<0.5	2	5.6	<0.5
10WA-01	392568	188	189	0.006	0.0021	<0.001	<0.5	9.25	11	30	<0.5	2	7.49	<0.5
10WA-01	392569	189	189.6	0.008	0.0029	0.001	<0.5	8.96	6	20	<0.5	<2	8.41	<0.5
10WA-01	392570	202	203	0.01	0.0013	0.001	<0.5	8.48	<5	20	<0.5	5	7.49	<0.5
10WA-01	392572	203	204.22	0.014	0.0015	0.001	<0.5	8.43	<5	30	<0.5	4	7.43	<0.5
10WA-01	392573	204.22	205.4	0.022	0.0026	0.004	1.2	9.03	5	20	<0.5	3	7.6	0.6
10WA-01	392574	205.4	206.26	0.016	0.0032	0.004	1	9.2	10	10	<0.5	3	6.27	<0.5
10WA-01	392575	206.26	206.95	0.009	0.0022	0.002	0.7	9.25	11	20	<0.5	2	6.91	0.8
10WA-01	392576	206.95	207.9	0.013	0.0028	0.004	0.9	9.41	7	20	<0.5	4	6.78	<0.5
10WA-01	392577	207.9	208.4	0.01	0.0025	0.003	<0.5	9.23	6	10	<0.5	3	6.55	<0.5
10WA-01	392578	208.4	208.9	0.009	0.0025	0.003	0.6	9.94	9	10	<0.5	7	7.51	<0.5
10WA-01	392579	208.9	210	0.009	0.0021	0.002	0.7	9.45	<5	20	<0.5	3	7.41	1
10WA-01	392580	211.65	213.15	0.004	0.0009	<0.001	<0.5	9.23	6	20	<0.5	3	8.03	0.6
10WA-01	392581	213.36	215	0.008	0.0015	<0.001	<0.5	8.54	6	20	<0.5	2	7.78	<0.5
10WA-01	392582	228	229.35	0.007	0.001	<0.001	<0.5	8.57	8	20	<0.5	4	7.8	0.5
10WA-01	392583	229.35	230.1	0.013	0.0021	0.001	<0.5	7.94	9	30	<0.5	2	7.2	<0.5
10WA-01	392584	231.3	233	0.008	0.0013	<0.001	<0.5	9.01	9	170	<0.5	2	6.92	0.6
10WA-01	392585	233	234.65	0.009	0.0016	0.001	<0.5	8.29	5	510	0.7	<2	4.74	<0.5
10WA-02	392586	27.34	28	0.014	0.0015	0.001	1.1	6.07	6	250	1.5	8	3.6	<0.5
10WA-02	392587	35.42	36.2	0.03	0.0011	<0.001	0.7	6.02	5	380	0.9	<2	3.23	<0.5
10WA-02	392588	36.57	37.68	0.011	0.001	0.001	0.7	5.79	7	270	1.2	<2	3.91	<0.5
10WA-02	392589	37.68	39	0.002	0.0007	<0.001	0.7	6.2	<5	240	1.9	<2	3.85	<0.5
10WA-02	392590	40.82	41.43	0.111	0.002	0.001	6.1	5.19	<5	180	1.2	537	3.19	<0.5
10WA-02	392591	41.43	42.7	0.005	<0.0005	<0.001	0.8	5.98	<5	270	1.4	<2	3.49	<0.5
10WA-02	392593	111	112	0.004	0.0006	0.001	<0.5	5.93	<5	310	1.3	<2	1.83	<0.5
10WA-02	392594	112	112.75	0.003	0.0005	<0.001	<0.5	6.79	5	330	1.1	5	1.77	<0.5
10WA-02	392595	112.75	114	0.03	0.0063	0.002	1.8	5.89	17	90	0.8	116	0.93	<0.5
10WA-02	392596	114	115	0.04	0.0054	0.001	1.6	5.64	16	50	1	97	0.78	<0.5
10WA-02	392597	115	116	0.044	0.0087	0.001	0.8	5.04	6	60	1	78	1.2	<0.5
10WA-02	392598	116	117.25	0.014	0.0075	0.001	1.1	6.62	<5	390	1.6	18	2.27	<0.5
10WA-02	392599	117.25	118.65	0.199	0.0038	0.001	1.4	6.13	13	70	1.4	66	1.4	<0.5
10WA-02	392600	118.65	120	0.075	0.0018	0.001	1	6.72	<5	340	1.2	37	1.69	<0.5
10WA-02	392601	120	121	0.011	<0.0005	<0.001	1.3	7.36	6	320	1.2	30	1.66	<0.5
10WA-02	392602	121	122.1	0.016	0.0006	<0.001	1.9	6.36	6	300	1.1	75	1.67	<0.5
10WA-03	392603	36	37	0.003	0.0007	<0.001	<0.5	9.72	5	40	<0.5	<2	6.09	<0.5
10WA-03	392604	49.3	50.3	0.004	0.0006	<0.001	0.6	7.32	5	20	<0.5	<2	7.11	<0.5
10WA-03	392605	50.3	51	0.003	0.0006	<0.001	0.6	7.91	<5	30	<0.5	<2	6.18	<0.5
10WA-03	392606	51	52	0.003	0.001	<0.001	0.6	7.99	9	30	<0.5	<2	6.56	<0.5
10WA-03	392607	52	53.3	0.003	0.0007	<0.001	0.6	7.16	6	30	<0.5	<2	7.32	<0.5
10WA-03	392608	53.3	54.3	0.003	<0.0005	<0.001	<0.5	7.81	<5	20	<0.5	<2	6.95	<0.5
10WA-03	392609	58	59	0.003	<0.0005	<0.001	0.5	7.85	7	20	<0.5	<2	7.44	<0.5

Hole #	Sample #	From	To	Au	Pt	Pd	Ag	Al	As	Ba	Be	Bi	Ca	Cd
		m	m	ppm	ppm	ppm	ppm	%	ppm	ppm	ppm	ppm	%	ppm
10WA-03	392610	64	65.1	0.003	<0.0005	<0.001	<0.5	7.95	<5	20	<0.5	<2	7.34	<0.5
10WA-03	392611	69	70	0.003	0.0005	<0.001	<0.5	10.15	5	30	<0.5	<2	6.05	<0.5
10WA-03	392612	80	81.85	0.004	<0.0005	<0.001	<0.5	9.6	<5	30	<0.5	<2	6.47	<0.5
10WA-03	392614	89.8	91.1	0.005	<0.0005	<0.001	<0.5	7.59	7	20	<0.5	<2	7.23	<0.5
10WA-03	392615	94	95	0.003	0.0005	<0.001	<0.5	9.35	8	20	<0.5	<2	6.79	<0.5
10WA-03	392616	95	96	0.003	<0.0005	<0.001	<0.5	8.51	7	30	<0.5	<2	7.17	<0.5
10WA-03	392617	129	130	0.004	0.0006	<0.001	0.5	9.92	10	120	<0.5	<2	6.13	<0.5
10WA-03	392618	130	131	0.004	<0.0005	<0.001	0.6	9.88	<5	30	<0.5	<2	6.16	<0.5
10WA-03	392619	131	132	0.004	<0.0005	<0.001	<0.5	9.68	7	30	<0.5	<2	6.29	<0.5
10WA-03	392620	132	133	0.003	<0.0005	<0.001	0.6	9.6	6	30	<0.5	<2	6.07	<0.5
10WA-03	392621	144	145	0.003	0.0005	<0.001	0.5	7.51	7	20	<0.5	<2	7.26	<0.5
10WA-03	392622	145	146	0.003	0.0005	<0.001	<0.5	7.49	<5	20	<0.5	<2	7.31	<0.5
10WA-03	392623	154.5	155.5	0.004	<0.0005	<0.001	<0.5	9.38	<5	30	<0.5	<2	7.03	<0.5
10WA-03	392624	155.5	156.5	0.003	<0.0005	<0.001	<0.5	9.54	<5	20	<0.5	<2	6.99	<0.5
10WA-03	392625	156.5	157.5	0.003	0.0005	<0.001	<0.5	7.44	<5	20	<0.5	<2	7.44	<0.5
10WA-03	392631	219	220	0.002	<0.0005	<0.001	<0.5	8.24	5	20	<0.5	<2	6.09	<0.5
10WA-03	392632	220	221	0.001	<0.0005	<0.001	<0.5	9.11	7	20	<0.5	<2	6.42	<0.5
10WA-03	392633	221	222	0.001	<0.0005	<0.001	<0.5	8.7	<5	20	<0.5	<2	6.37	<0.5
10WA-03	392635	238	239	0.001	<0.0005	0.001	<0.5	8.64	5	20	<0.5	<2	7.01	<0.5
10WA-03	392636	239	240	0.001	<0.0005	0.001	<0.5	9.08	<5	20	<0.5	<2	7.49	<0.5
10WA-03	392637	240	241	0.001	0.0009	0.001	<0.5	8.68	<5	20	<0.5	<2	7.41	<0.5
10WA-03	392638	250	251	0.001	0.0104	0.005	<0.5	8.69	10	20	<0.5	<2	7.36	<0.5
10WA-03	392639	251	252	0.001	<0.0005	<0.001	<0.5	8.81	<5	20	<0.5	<2	7.27	<0.5
10WA-04	392640	32.44	33.53	0.004	<0.0005	<0.001	<0.5	8.55	<5	30	<0.5	<2	6.81	<0.5
10WA-04	392641	33.53	34.56	0.021	0.0027	0.002	<0.5	8.88	<5	30	<0.5	<2	7.19	<0.5
10WA-04	392642	34.56	35.54	0.005	<0.0005	<0.001	<0.5	8.59	6	30	<0.5	<2	7.18	<0.5
10WA-04	392643	67.45	68.5	0.019	0.0034	<0.001	<0.5	9.15	9	40	<0.5	<2	6.53	<0.5
10WA-04	392644	68.5	69.37	0.002	<0.0005	<0.001	<0.5	7.83	6	50	<0.5	<2	5.92	<0.5
10WA-04	392645	87.75	88.75	0.005	0.0055	<0.001	<0.5	8.33	<5	20	<0.5	<2	7.03	<0.5
10WA-04	392646	88.75	89.67	0.006	0.0037	<0.001	<0.5	9.09	<5	30	<0.5	<2	7.31	<0.5
10WA-04	392647	89.67	90.67	0.006	0.0048	<0.001	<0.5	8.49	<5	20	<0.5	<2	6.98	<0.5
10WA-04	392648	103.63	104.32	0.006	0.005	<0.001	<0.5	8.47	<5	20	<0.5	<2	6.79	<0.5
10WA-04	392649	104.32	105.46	0.004	0.004	<0.001	<0.5	8.7	<5	20	<0.5	<2	6.96	<0.5
10WA-04	392650	105.46	106.5	0.004	0.0036	<0.001	<0.5	8.38	<5	20	<0.5	<2	6.94	<0.5
10WA-04	392651	222	223	0.003	0.0048	0.002	<0.5	7.9	8	70	<0.5	<2	5.53	<0.5
10WA-04	392652	223	224	0.006	0.0046	0.002	<0.5	8.34	<5	30	<0.5	<2	6.06	<0.5
10WA-04	392653	224	225	0.008	0.0076	0.001	<0.5	8.27	<5	30	<0.5	2	6.31	<0.5
10WA-05	392654	110.6	111.59	0.004	0.002	0.003	<0.5	9.52	<5	40	<0.5	<2	6.77	<0.5
10WA-05	392655	111.59	112.59	0.004	0.0028	0.002	<0.5	8.95	<5	40	<0.5	2	6.24	<0.5
10WA-05	392656	112.59	113.6	0.004	0.0063	0.007	<0.5	9.45	<5	40	<0.5	<2	6.92	<0.5
10WA-05	392657	113.6	114.58	0.004	0.0054	0.005	<0.5	9.63	<5	50	<0.5	<2	6.95	0.5
10WA-05	392658	114.58	115.29	0.008	0.0067	0.001	0.5	8.72	<5	50	<0.5	<2	6.49	<0.5
10WA-05	392659	115.29	116	0.01	0.0035	0.001	1.6	8.37	<5	70	<0.5	2	4.26	0.8
10WA-05	392661	116	117	0.025	0.0017	0.001	4.6	7.69	<5	100	<0.5	4	0.97	0.9
10WA-05	392662	117	117.9	0.026	0.001	<0.001	8.5	7.24	8	70	0.6	3	0.09	3
10WA-05	392663	117.9	118.8	0.014	0.0005	<0.001	22.4	6.44	7	80	0.5	<2	0.24	2.4
10WA-05	392664	118.8	119.68	0.01	0.001	<0.001	5	6.59	<5	40	0.5	5	0.17	1
10WA-05	392665	119.68	120.4	0.045	0.0018	0.001	4.1	6.68	<5	60	<0.5	3	0.16	1.3
10WA-05	392666	120.4	121.22	0.032	0.0024	0.001	6.7	8.35	5	140	<0.5	4	0.14	1.2
10WA-05	392667	121.22	122.08	0.021	0.0039	0.001	9.7	8.21	12	130	<0.5	<2	0.13	1.5
10WA-05	392668	122.08	122.86	0.172	0.0023	0.001	7.5	8.86	<5	170	<0.5	6	0.17	3.5
10WA-05	392669	122.86	123.86	0.021	0.0063	0.002	8.3	7.4	8	110	<0.5	8	0.2	12.2
10WA-05	392671	123.86	124.86	0.041	0.0031	0.001	14.6	7.18	<5	30	<0.5	5	0.29	3.3
10WA-05	392672	124.86	125.86	0.022	0.0054	0.002	9.2	6.02	5	20	<0.5	6	0.38	1.2
10WA-05	392673	125.86	126.86	0.065	0.0067	0.002	17.2	7.62	<5	40	<0.5	6	0.68	2.2
10WA-05	392674	126.86	127.86	0.12	0.006	0.002	15.6	7.58	6	30	<0.5	7	0.33	2.7
10WA-05	392675	127.86	128.86	0.013	0.0046	0.002	8	7.23	<5	40	<0.5	6	0.34	1.9

Hole #	Sample #	From	To	Au	Pt	Pd	Ag	Al	As	Ba	Be	Bi	Ca	Cd
		m	m	ppm	ppm	ppm	ppm	%	ppm	ppm	ppm	ppm	%	ppm
10WA-05	392676	128.86	129.86	0.016	0.0013	<0.001	17.4	8.23	<5	40	<0.5	5	0.26	1.9
10WA-05	392677	129.86	130.86	0.025	0.0022	0.001	16.7	7.67	<5	40	<0.5	5	0.38	1.8
10WA-05	392678	130.86	131.86	1.03	0.0021	0.001	28.1	7.5	14	50	<0.5	6	0.29	2.3
10WA-05	392679	131.86	132.8	0.029	0.0025	0.001	28.8	5.71	<5	30	<0.5	6	0.29	2.3
10WA-05	392681	132.8	133.8	0.028	0.0091	0.002	10.6	4.97	<5	30	<0.5	11	0.49	0.9
10WA-05	392682	133.8	134.8	0.022	0.0076	0.003	4.9	6.25	<5	40	<0.5	8	0.87	<0.5
10WA-05	392683	134.8	135.8	0.055	0.0091	0.003	12.7	5.1	<5	40	<0.5	10	2.25	0.8
10WA-05	392684	135.8	136.8	0.019	0.0103	0.001	7.1	6.56	<5	30	<0.5	2	1.77	0.6
10WA-05	392685	136.8	137.8	0.148	0.0094	0.002	18.3	5.38	<5	110	0.5	8	2.07	1
10WA-05	392686	137.8	138.78	0.032	0.0211	0.004	6.5	4.51	14	20	<0.5	8	1.83	0.5
10WA-05	392687	138.78	139.78	0.02	0.0022	0.001	5.1	6.54	14	20	0.6	<2	3.95	4.7
10WA-05	392688	139.78	140.78	0.016	0.0021	0.001	10.5	6.09	14	40	0.8	4	3.47	1.8
10WA-05	392689	140.78	141.45	0.017	0.0046	0.001	9.5	5.67	5	90	0.5	7	1.69	<0.5
10WA-05	392691	141.45	142.11	0.013	0.0091	0.003	3.1	5.28	16	40	<0.5	4	2.3	1.6
10WA-05	392692	142.11	142.77	0.013	0.0107	0.003	5.3	1.78	18	10	<0.5	7	0.51	6.2
10WA-05	392693	142.77	143.49	0.007	0.0019	0.001	3.7	8.54	10	50	<0.5	<2	5.98	0.9
10WA-05	392694	143.49	144.2	0.058	0.0016	0.001	2.6	8.48	18	50	0.5	3	6.62	1.7
10WA-05	392695	144.2	144.55	0.01	0.0071	0.002	7	2.58	33	<10	<0.5	5	2.02	4.6
10WA-05	392696	144.55	145.42	0.008	0.0011	0.001	2.2	8.17	13	40	<0.5	3	6.61	3.3
10WA-05	392697	145.42	146.4	0.003	0.0007	<0.001	1.2	9.06	14	40	<0.5	<2	6.65	1
10WA-05	392698	146.4	147.4	0.001	0.0006	<0.001	0.8	9.16	16	60	<0.5	<2	7.16	<0.5
10WA-05	392699	147.4	148.4	<0.001	<0.0005	<0.001	<0.5	9.06	19	60	<0.5	<2	7.43	<0.5
10WA-05	392701	148.4	149.4	0.001	<0.0005	0.001	<0.5	8.85	10	30	<0.5	<2	7.82	<0.5
10WA-05	392702	149.4	150.4	0.001	<0.0005	<0.001	0.7	8.7	7	40	<0.5	<2	7.6	<0.5
10WA-05	392703	150.4	151.4	0.001	<0.0005	<0.001	<0.5	8.89	10	40	<0.5	4	7.87	<0.5
10WA-05	392704	151.4	152.1	0.002	0.0005	<0.001	<0.5	8.59	11	50	<0.5	2	7.49	<0.5
10WA-05	392705	152.1	152.82	<0.001	<0.0005	<0.001	1.6	8.25	<5	60	<0.5	3	7.12	<0.5
10WA-05	392706	152.85	153.96	0.009	0.0095	0.003	4.8	3.44	<5	10	<0.5	7	1.62	4.2
10WA-05	392707	153.96	155.1	0.009	0.0091	0.003	6.2	2.29	14	10	<0.5	11	1.98	3.6
10WA-05	392708	155.1	156.19	0.002	0.0008	<0.001	3.6	8.44	5	50	<0.5	4	6.61	0.6
10WA-05	392709	156.19	157.19	0.003	0.0013	0.001	6.8	7.34	5	50	<0.5	5	6.64	<0.5
10WA-05	392711	157.19	158.19	0.002	0.0016	0.001	1.3	7.01	29	70	<0.5	2	6.81	1.7
10WA-05	392712	158.19	159.19	0.005	0.0008	<0.001	0.9	7.15	17	120	0.6	2	6.12	1.1
10WA-05	392713	159.19	159.65	0.026	0.0034	0.002	1.4	6.96	36	150	0.5	5	2.91	1
10WA-05	392714	159.65	160.65	0.116	0.0007	<0.001	0.8	5.77	16	110	<0.5	5	5.09	<0.5
10WA-05	392715	160.65	161.65	0.049	0.0008	<0.001	7.6	7.52	8	90	<0.5	2	2.43	0.5
10WA-05	392716	161.65	162.65	0.085	0.0016	0.001	16.3	7.37	9	70	<0.5	3	4.78	0.7
10WA-05	392717	162.65	163.65	0.012	0.0015	0.002	1.9	6.68	6	60	<0.5	3	4.97	0.6
10WA-05	392718	163.65	164.65	0.016	0.0023	0.003	3.2	6.21	<5	70	<0.5	5	3.36	0.9
10WA-05	392719	164.65	165.65	0.035	0.0021	0.003	3.7	4.71	6	30	<0.5	6	2.99	<0.5
10WA-05	392721	165.65	166.65	0.023	0.0023	0.003	4.3	4.42	<5	40	<0.5	3	3.18	<0.5
10WA-05	392722	166.65	167.65	0.023	0.0028	0.004	3	4.78	<5	20	<0.5	5	3.2	<0.5
10WA-05	392723	167.65	168.65	0.023	0.003	0.004	1.5	5.02	7	40	<0.5	2	3	<0.5
10WA-05	392724	168.65	169.65	0.007	0.0022	0.005	0.5	3.99	<5	30	<0.5	4	2.88	<0.5
10WA-05	392725	169.65	170.65	0.003	0.0016	0.004	<0.5	4.33	<5	50	<0.5	4	2.72	<0.5
10WA-05	392726	170.65	171.65	0.003	0.0022	0.005	<0.5	4.13	<5	80	<0.5	4	2.64	<0.5
10WA-05	392727	171.65	172.65	0.013	0.0022	0.005	0.9	2.27	<5	20	<0.5	4	2.16	<0.5
10WA-05	392728	172.65	173.65	0.051	0.0017	0.005	1.3	2.97	<5	70	0.5	5	2.71	<0.5
10WA-05	392729	173.65	174.65	0.001	0.0016	0.004	<0.5	3.79	<5	150	<0.5	5	2.16	<0.5
10WA-05	392731	188.4	189.5	0.051	0.0042	0.002	5.5	8.09	<5	160	<0.5	5	5.52	2.7
10WA-05	392732	189.5	190.5	0.042	0.0059	0.002	4.9	8.01	<5	180	<0.5	6	5.38	2.7
10WA-05	392733	190.5	191.5	0.058	0.004	0.001	10	8.58	<5	160	<0.5	7	6.37	5.6
10WA-05	392734	191.5	192.5	0.074	0.0026	0.001	9.1	9.24	<5	200	<0.5	5	6.91	4.9
10WA-05	392735	192.5	193.5	0.143	0.0021	0.001	14.3	9.29	<5	170	<0.5	7	6.57	6.2
10WA-05	392736	193.5	194.5	0.065	0.0022	0.001	10.5	9.22	7	170	<0.5	6	6.64	5
10WA-05	392737	194.5	195.5	0.111	0.0013	<0.001	12	8.32	<5	160	<0.5	7	5.3	5.6
10WA-05	392738	195.5	196.5	0.055	0.0012	<0.001	7.7	8.23	5	130	<0.5	7	5.14	4.6

Hole #	Sample #	From	To	Au	Pt	Pd	Ag	Al	As	Ba	Be	Bi	Ca	Cd
		m	m	ppm	ppm	ppm	ppm	%	ppm	ppm	ppm	ppm	%	ppm
10WA-05	392739	202	202.55	0.09	0.0008	<0.001	27.2	9.09	20	120	<0.5	10	4.94	14.6
10WA-05	392741	202.55	202.9	0.022	0.0018	0.001	12.3	8.07	6	90	<0.5	5	4.29	4.8
10WA-05	392742	202.9	203.6	0.066	0.0014	0.001	17.8	9.57	<5	100	<0.5	17	5.25	9
10WA-05	392743	203.6	204.66	0.147	0.002	0.001	13.1	7.39	10	20	<0.5	11	4.96	6.2
10WA-05	392744	204.66	205.3	0.309	0.0017	0.001	35.1	7.7	10	20	<0.5	15	5.63	11.2
10WA-05	392745	205.3	206.3	0.215	0.0011	<0.001	26.8	9.23	11	50	<0.5	10	6.17	11.8
10WA-05	392746	206.3	206.97	0.05	0.0007	<0.001	11.2	9.17	<5	90	<0.5	4	5.28	3.7
10WA-05	392747	206.97	208	0.125	0.0009	<0.001	13.7	8.6	9	90	<0.5	5	4.69	7.9
10WA-05	392748	208	208.7	0.147	0.0012	0.001	17.6	7.6	6	60	<0.5	11	4.52	10.2
10WA-05	392749	208.7	209.53	0.162	0.0008	<0.001	17.5	7.63	16	50	<0.5	10	5.03	11.8
10WA-05	392751	209.53	210.65	0.328	0.0023	<0.001	23.3	8.8	13	70	<0.5	13	5.54	16.1
10WA-05	392752	210.65	211.7	0.396	0.001	<0.001	19.9	9.08	13	100	<0.5	12	5.79	15.2
10WA-05	392753	211.7	212.8	0.492	0.0013	<0.001	22.6	9.15	18	120	<0.5	14	6.29	20.5
10WA-05	392754	212.8	213.6	0.195	0.0018	0.001	14.1	8.18	8	90	<0.5	7	4.5	11.2
10WA-05	392755	213.6	215	0.047	0.0008	<0.001	14.7	7.22	15	70	<0.5	3	5.39	5.5
10WA-05	392756	251.69	252.03	0.066	0.0144	0.007	13.3	4.93	<5	60	<0.5	3	1.1	38.6
10WA-05	392757	252.03	252.34	0.015	0.001	<0.001	5.6	7.04	9	150	<0.5	<2	4.6	2.9
10WA-05	392758	252.34	253	0.002	0.0005	<0.001	1	7.49	9	120	<0.5	<2	4.62	1.9
10WA-05	392759	259.22	260.16	0.078	0.0016	0.001	5.5	9.08	9	40	<0.5	<2	5.92	9.5
10WA-05	392761	260.16	260.46	0.041	0.0009	0.001	6.5	7.73	<5	30	<0.5	4	5.13	16.3
10WA-05	392762	260.46	260.93	0.079	0.0043	0.002	25.8	6.92	8	30	<0.5	3	3.31	10.3
10WA-05	392763	260.93	261.51	0.123	0.0065	0.003	19.8	6.75	<5	30	<0.5	4	3.12	7.5
10WA-05	392764	261.51	262.04	0.066	0.0066	0.002	23.1	7.55	<5	40	<0.5	4	3	6
10WA-05	392765	262.04	262.75	0.064	0.0011	0.001	20.4	8.11	12	50	<0.5	2	2.46	9.7
10WA-05	392766	262.75	263.75	0.002	0.0006	<0.001	2.3	8.35	<5	40	<0.5	<2	5.71	2.3
10WA-05	392767	264.9	265.4	0.059	0.006	0.002	14.6	7.35	25	40	<0.5	3	3.03	3.5
10WA-05	392768	268.44	268.72	0.115	0.0018	0.001	7.5	8.37	<5	40	<0.5	<2	5.87	2.6
10WA-05	392769	274.91	275.23	0.048	0.0014	0.001	7.7	8.36	13	80	<0.5	2	5.33	5.7
10WA-05	392770	276.54	276.89	0.073	0.0018	0.001	14	7.85	<5	30	<0.5	<2	4.92	4.3
10WA-05	392771	276.89	277.49	0.02	0.0017	0.001	9.7	8.1	<5	30	<0.5	<2	5.36	2.7
10WA-05	392772	277.49	278.11	0.15	0.0018	0.001	17.1	8.29	<5	20	<0.5	8	6.84	4.5
10WA-05	392773	278.11	278.73	0.066	0.0011	0.001	10.1	7.78	<5	50	<0.5	7	5.04	4.4
10WA-05	392774	278.73	279.03	0.064	0.0021	0.001	13.1	7.98	<5	40	<0.5	2	5.46	4.4
10WA-05	392775	279.03	279.5	0.026	0.002	0.001	4.5	8.24	5	20	<0.5	<2	6.78	3.8
10WA-05	392776	279.5	280.5	0.06	0.0009	0.001	6.6	8.82	<5	20	<0.5	3	6.8	4.2
10WA-05	392777	280.5	281	0.048	0.0009	0.001	6.5	8.61	<5	20	<0.5	<2	6.6	3.1
10WA-05	392778	281	281.3	0.085	0.0017	0.001	26.8	7.78	<5	50	<0.5	4	5.23	4.9
10WA-05	392779	284.93	285.95	0.048	0.0005	<0.001	9	9.16	<5	50	<0.5	3	6.44	7.6
10WA-05	392780	285.95	286.41	0.005	<0.0005	<0.001	1.7	9.33	<5	60	<0.5	<2	6.62	1.9
10WA-05	392781	286.41	287	0.02	<0.0005	<0.001	3.2	9.14	<5	50	<0.5	<2	6.46	1.6
10WA-05	392782	287	288	0.001	<0.0005	<0.001	0.9	9.46	<5	50	<0.5	<2	7.5	0.5
10WA-05	392783	288	288.62	<0.001	<0.0005	<0.001	0.6	9.92	<5	30	<0.5	<2	7.7	0.5
10WA-05	392784	288.62	289	0.017	<0.0005	<0.001	2.7	10.1	<5	30	<0.5	3	6.99	1
10WA-05	392785	291.17	291.66	0.023	0.0011	0.001	69.6	9.02	<5	40	<0.5	<2	4.35	4.1
10WA-05	392786	291.66	292.13	0.319	0.0013	0.001	89.7	7.95	<5	50	<0.5	<2	4.2	4.6
10WA-05	392787	292.13	292.7	0.022	<0.0005	<0.001	3.5	9.55	<5	100	<0.5	<2	6.46	1.7
10WA-05	392788	292.7	293	0.132	0.0005	<0.001	16.3	8.93	<5	50	<0.5	<2	5.89	5.4
10WA-05	392789	293	293.51	0.048	0.0007	<0.001	10.1	9.1	6	50	<0.5	<2	5.96	4.2
10WA-05	392791	293.51	294.1	0.079	0.0005	<0.001	13.2	8.83	<5	40	<0.5	4	6.04	5.2
10WA-05	392792	294.1	294.76	0.059	0.0007	<0.001	11	9.24	<5	50	<0.5	3	5.78	9.3
10WA-05	392793	294.76	295.34	0.039	0.0019	0.001	9.2	8.46	<5	50	<0.5	3	5.23	4.6
10WA-05	392794	295.34	296.39	0.139	0.0024	0.001	48.6	7.94	5	50	<0.5	3	4.74	24.3
10WA-05	392795	296.39	297.31	0.073	0.004	0.001	17.8	8.21	5	30	<0.5	5	5	16.2
10WA-05	392796	297.31	298.19	0.122	0.002	0.002	19.4	7.9	<5	50	<0.5	2	5.56	7.2
10WA-05	392797	298.19	299	0.052	0.0006	<0.001	5.6	9.88	5	70	<0.5	<2	6.04	2.3
10WA-05	392798	299	299.29	0.108	0.002	0.001	13.4	6.88	5	50	<0.5	3	4.9	2.4
10WA-05	392799	299.29	299.69	0.063	0.0018	0.001	8	5.94	<5	40	<0.5	<2	3.23	2.2

Hole #	Sample #	From	To	Au	Pt	Pd	Ag	Al	As	Ba	Be	Bi	Ca	Cd
		m	m	ppm	ppm	ppm	ppm	%	ppm	ppm	ppm	ppm	%	ppm
10WA-06	392801	49.87	50.84	0.064	0.001	0.001	0.8	3.59	<5	50	<0.5	<2	4.23	1.1
10WA-06	392802	50.84	51.9	0.002	0.0009	<0.001	1.4	5.03	5	70	<0.5	2	6.16	0.7
10WA-06	392803	51.9	52.91	<0.001	<0.0005	<0.001	<0.5	6.98	<5	90	<0.5	<2	5.78	0.6
10WA-06	392804	69	69.74	0.087	0.0014	<0.001	1.2	6.15	8	110	<0.5	<2	5.83	<0.5
10WA-06	392805	69.74	70.7	0.061	<0.0005	<0.001	<0.5	6.73	<5	90	<0.5	<2	5.79	<0.5
10WA-06	392806	70.7	71.5	0.004	<0.0005	<0.001	0.9	7.02	<5	60	<0.5	<2	6.36	<0.5
10WA-06	392807	82.82	83.17	0.007	<0.0005	<0.001	2.5	7.03	<5	60	<0.5	4	5.9	<0.5
10WA-06	392808	83.77	84.73	0.025	0.0007	<0.001	5.4	6.49	<5	60	<0.5	6	6.71	0.7
10WA-06	392809	84.73	85.75	0.024	0.0022	0.001	7.2	6.5	<5	40	<0.5	6	6.78	1.4
10WA-06	392810	85.75	86.79	0.043	0.0022	0.001	9.7	6.39	<5	40	<0.5	<2	6.42	1.6
10WA-06	392811	86.79	87.82	0.005	0.0005	<0.001	1.8	6.74	<5	40	<0.5	2	6.24	0.5
10WA-06	392812	87.82	88.78	0.002	<0.0005	<0.001	0.6	6.21	<5	50	<0.5	<2	6.06	0.5
10WA-06	392813	88.78	89.69	<0.001	<0.0005	<0.001	0.7	6.65	<5	170	<0.5	<2	6.38	<0.5
10WA-06	392814	89.69	90.69	0.039	<0.0005	<0.001	0.5	6.35	<5	100	<0.5	<2	6.53	<0.5
10WA-06	392815	101.11	102.17	0.012	0.0009	<0.001	6.7	6.8	<5	90	<0.5	4	5.52	0.7
10WA-06	392816	105.75	106.75	0.015	0.0006	<0.001	6.9	9.14	<5	70	0.5	7	5.68	1.2
10WA-06	392817	106.75	107.75	0.026	<0.0005	<0.001	7	8.9	<5	70	0.5	9	5.45	1
10WA-06	392818	107.75	108.75	0.01	0.0005	<0.001	0.7	8.66	<5	60	0.5	3	5.42	<0.5
10WA-06	392819	108.75	109.75	0.072	0.0035	0.001	6.6	7.21	<5	60	<0.5	<2	4.57	1.3
10WA-06	392821	109.75	110.75	0.021	0.0015	<0.001	8.3	9.25	<5	70	0.5	3	5.49	1.4
10WA-06	392822	110.75	111.75	0.041	0.0006	<0.001	5.1	9.3	5	90	0.5	4	5.37	1
10WA-06	392823	111.75	112.78	0.698	0.0016	0.001	10.4	8.61	10	120	0.6	14	3.47	0.8
10WA-06	392824	209.5	210.46	<0.001	<0.0005	<0.001	0.5	7.26	<5	40	<0.5	6	6.41	<0.5
10WA-06	392825	210.46	211.17	<0.001	<0.0005	<0.001	<0.5	7.56	<5	60	<0.5	<2	6.14	<0.5
10WA-06	392826	211.17	211.93	<0.001	<0.0005	<0.001	0.5	5.94	<5	50	<0.5	3	5.44	0.6
10WA-06	392827	211.93	212.84	<0.001	<0.0005	<0.001	0.8	6.87	12	50	<0.5	<2	6.19	<0.5
10WA-07	392828	36.95	37.9	0.003	<0.0005	<0.001	0.7	7.35	5	200	0.7	<2	4.21	<0.5
10WA-07	392829	37.9	38.9	0.017	0.001	<0.001	12.1	4.57	25	<10	<0.5	<2	2.94	5
10WA-07	392830	38.9	39.9	0.033	0.0044	0.002	12.2	5.02	37	<10	<0.5	<2	2.3	4.1
10WA-07	392831	39.9	40.9	0.033	0.0075	0.002	11	3.64	7	<10	<0.5	<2	2.05	94.2
10WA-07	392832	40.9	41.9	0.012	0.0066	0.002	9.1	3.96	10	<10	<0.5	<2	2.34	61.6
10WA-07	392833	41.9	42.9	0.054	0.0066	0.002	9.8	2.57	5	<10	<0.5	<2	1.61	91.7
10WA-07	392834	42.9	43.9	0.047	0.0126	0.004	7.6	5.05	15	<10	<0.5	<2	2.22	281
10WA-07	392835	43.9	44.9	0.126	0.0028	0.001	7.3	5.26	33	<10	<0.5	12	3.21	100.5
10WA-07	392836	44.9	45.9	0.141	0.0074	0.002	8.1	4.98	23	<10	0.5	<2	1.97	375
10WA-07	392837	45.9	46.9	0.195	0.003	0.001	11.6	7.4	10	<10	<0.5	5	3.32	115.5
10WA-07	392838	46.9	47.9	0.088	0.0036	0.001	3.7	6.79	35	<10	<0.5	<2	2.63	21.5
10WA-07	392839	47.9	48.9	0.036	0.0037	0.002	4.5	7.18	40	10	0.5	3	2.93	18.6
10WA-07	392841	48.9	49.52	0.03	0.0044	0.002	2.6	7.67	26	<10	0.6	6	3.25	126.5
10WA-07	392842	49.52	50.13	0.053	0.0026	0.001	3.4	6.82	33	<10	<0.5	7	1.31	19.9
10WA-07	392843	50.13	50.75	0.029	0.0074	0.002	8.8	4.29	17	<10	<0.5	3	2.86	465
10WA-07	392844	50.75	51.35	0.042	0.0104	0.004	9.1	4.2	25	90	<0.5	6	2.62	232
10WA-07	392845	51.35	52.21	0.259	0.0062	0.003	49.8	5.92	65	20	1	21	7.58	7.5
10WA-07	392846	52.21	53.2	0.043	0.0081	0.004	11.3	3.54	40	<10	0.8	9	9.63	22.3
10WA-07	392847	53.2	54.2	0.027	0.0099	0.003	16.1	1.52	27	<10	<0.5	<2	2.42	10.1
10WA-07	392848	54.2	54.95	0.017	0.0133	0.006	13.2	4.95	7	<10	0.7	6	4.1	99.7
10WA-07	392849	54.95	55.87	0.173	0.0068	0.003	26.7	5.38	35	<10	0.5	28	6.39	126.5
10WA-07	392850	55.87	56.79	0.024	0.0111	0.003	6.1	4.6	36	<10	0.7	8	3.56	149.5
10WA-07	392851	56.79	57.47	0.015	0.0006	<0.001	3.3	7.56	42	<10	0.7	3	11.75	7
10WA-07	392852	57.47	58.25	0.072	0.0012	0.001	29.8	6.48	24	<10	0.7	<2	12.55	10.9
10WA-07	392853	58.25	59	0.904	0.0169	0.003	63.8	4.04	20	<10	0.5	18	8.85	85.7
10WA-07	392854	59	59.78	0.255	0.007	0.002	58.3	4.78	87	<10	0.6	30	8.83	15.2
10WA-07	392855	59.78	60.65	0.391	0.0037	0.002	80.5	5.92	17	<10	0.5	79	7.85	62.7
10WA-07	392856	60.65	61.8	0.37	<0.0005	<0.001	15.5	7.66	39	80	0.6	9	7.63	0.7
10WA-07	392857	61.8	62.9	0.016	<0.0005	<0.001	8.4	7.24	38	50	0.9	6	11.7	2
10WA-07	392858	62.9	63.75	0.026	0.0057	0.002	12.7	1.9	23	<10	<0.5	8	5.22	0.9
10WA-07	392859	63.75	64.6	0.019	0.0116	0.004	24.6	1.39	47	10	<0.5	2	1.13	2.4

Hole #	Sample #	From	To	Au	Pt	Pd	Ag	Al	As	Ba	Be	Bi	Ca	Cd
		m	m	ppm	ppm	ppm	ppm	%	ppm	ppm	ppm	ppm	%	ppm
10WA-07	392861	64.6	65.6	0.599	0.0094	0.003	82.5	3.52	255	40	0.6	13	1.25	1.3
10WA-07	392862	65.6	66.5	0.275	0.0065	0.002	50.2	3.38	202	20	0.5	7	4.66	2.2
10WA-07	392863	66.5	67.3	0.026	0.0134	0.004	8.7	2.02	9	10	<0.5	2	2.19	0.6
10WA-07	392864	67.3	68.1	0.585	0.002	0.001	247	6.43	909	50	0.9	7	4.57	1.1
10WA-07	392865	68.1	69.1	0.022	0.0134	0.005	29.7	1.51	40	10	<0.5	7	1.02	2.9
10WA-07	392866	69.1	70.1	0.378	0.0131	0.005	55.5	2.22	132	20	<0.5	4	2.18	3.5
10WA-07	392867	70.1	71.1	0.276	0.0161	0.005	48.5	1.5	95	10	<0.5	7	2.28	2.4
10WA-07	392868	71.1	71.8	1.12	0.0053	0.002	536	5.51	2010	50	0.8	6	3.93	2.7
10WA-07	392869	71.8	72.75	0.026	0.0127	0.004	14.5	1.62	27	10	<0.5	<2	2.41	2.3
10WA-07	392870	72.75	73.7	0.948	0.0012	0.001	138	6.21	795	110	1	5	1.84	1
10WA-07	392871	73.7	74.65	0.069	0.0082	0.003	28.8	5.54	87	70	0.5	3	4.74	6.9
10WA-07	392872	74.65	75.6	0.263	0.01	0.003	25.2	4.93	16	20	<0.5	3	6.02	54.1
10WA-07	392873	75.6	76.55	0.073	0.0074	0.003	12.9	3.77	42	10	<0.5	12	6.67	43.1
10WA-07	392874	76.55	77.5	0.303	0.0045	0.003	29.5	5.88	28	10	0.9	10	9.7	2.9
10WA-07	392875	77.5	78.45	0.363	0.0088	0.003	23.6	4.19	23	50	0.7	7	4.1	52.5
10WA-07	392876	78.45	79.45	0.243	0.0056	0.002	24.6	6.13	30	<10	0.5	8	10.25	8.1
10WA-07	392877	79.45	80.45	0.022	0.0061	0.002	9.2	5.2	57	<10	0.6	4	8.37	13.2
10WA-07	392878	80.45	81.45	0.051	0.005	0.003	11.4	5.1	123	90	0.9	<2	5.3	5.9
10WA-07	392879	81.45	82.45	0.08	0.0115	0.003	16.1	3.68	5	20	<0.5	5	5.37	127
10WA-07	392881	82.45	83.5	0.119	0.0286	0.003	20.9	3.82	<5	50	0.5	8	3.95	179
10WA-07	392882	83.5	84.5	0.087	0.0037	0.001	28.4	5.29	21	150	1.1	5	2.66	50.6
10WA-07	392883	84.5	85.47	0.042	0.0062	0.002	16.2	4.36	26	110	0.7	6	2.74	40.1
10WA-07	392884	85.47	86.47	0.047	0.0062	0.002	10.8	4.05	18	70	0.6	4	2.7	2.8
10WA-07	392885	86.47	87.38	0.024	0.0019	0.001	6.8	5.14	6	110	0.7	<2	1.82	32.6
10WA-07	392886	87.38	88.39	0.005	0.0005	<0.001	1.7	4.96	20	120	0.5	4	1.87	<0.5
10WA-08	392887	30.31	30.74	<0.001	0.001	0.002	<0.5	6.31	7	440	0.5	<2	2.06	<0.5
10WA-08	392888	31.42	31.57	0.003	0.0008	0.002	<0.5	7.88	5	160	0.5	<2	4.43	<0.5
10WA-08	392889	32.86	32.97	<0.001	0.0009	0.002	<0.5	8.67	<5	90	0.5	3	5.85	0.5
10WA-08	392891	34.51	35.7	<0.001	<0.0005	0.002	<0.5	6.43	<5	590	0.6	<2	1.41	<0.5
10WA-09	392892	15	16	<0.001	0.0012	0.002	<0.5	6.73	6	30	<0.5	3	5.01	<0.5
10WA-09	392893	16	17	<0.001	0.0011	0.002	<0.5	6.33	<5	30	<0.5	2	4.26	<0.5
10WA-09	392894	17	18	<0.001	0.0008	0.002	<0.5	6.75	<5	40	<0.5	3	4.35	<0.5
10WA-09	392895	18	19	0.011	0.0006	0.002	<0.5	6.4	<5	170	<0.5	3	5.46	<0.5
10WA-09	392896	19	20	0.005	0.0006	0.002	<0.5	7.29	8	190	<0.5	2	5.15	<0.5
10WA-09	392897	20	21	0.202	<0.0005	0.002	<0.5	6.71	5	160	<0.5	4	5.4	<0.5
10WA-09	392898	21	22	0.073	0.0009	0.002	<0.5	6.34	<5	160	<0.5	5	5.99	0.6
10WA-09	392899	22	23	0.091	0.0012	0.002	0.7	6.15	<5	140	<0.5	6	5.52	0.5
10WA-09	392901	23	24	0.214	0.0013	0.003	<0.5	6.08	<5	130	<0.5	<2	5.4	0.6
10WA-09	392902	24	25	0.542	0.0009	0.002	1.3	7.22	5	290	0.7	3	6.72	1.1
10WA-09	392903	25	26	0.384	0.0015	0.003	0.5	3.95	5	140	0.5	2	5.89	0.8
10WA-09	392904	26	27	0.11	0.0005	<0.001	0.7	6.85	7	230	0.8	3	5.74	<0.5
10WA-09	392905	27	28	0.191	0.0006	<0.001	<0.5	7.02	<5	230	0.7	4	5.3	0.5
10WA-09	392906	28	29	0.572	<0.0005	<0.001	0.5	7.04	21	270	0.8	2	4.67	<0.5
10WA-09	392907	29	30	0.723	0.0015	0.002	<0.5	4.86	22	210	0.5	<2	3.91	<0.5
10WA-09	392908	30	31	0.355	0.0007	0.002	<0.5	7.89	<5	270	0.7	<2	4.4	<0.5
10WA-09	392909	31	32	0.007	<0.0005	0.002	<0.5	7.7	<5	190	0.6	<2	3.22	<0.5
10WA-09	392911	32	33	0.007	0.0013	0.002	<0.5	7.7	10	170	0.6	<2	3.88	<0.5
10WA-09	392912	33	34	0.047	0.0007	0.002	<0.5	7.58	5	160	0.6	<2	3.53	<0.5
10WA-09	392913	34	35	0.76	<0.0005	<0.001	1.7	8.56	<5	240	0.7	2	5.16	<0.5
10WA-09	392914	35	36	0.054	0.0011	0.002	<0.5	7.51	<5	180	0.6	2	5.31	0.6
10WA-09	392915	36	37	0.087	0.0008	0.002	<0.5	7.81	6	230	0.6	2	5.69	0.7
10WA-09	392916	37	38	0.02	0.0009	0.002	<0.5	7.96	<5	200	0.5	2	4.89	<0.5
10WA-09	392917	46	47	0.081	0.0006	0.001	<0.5	7.2	7	90	<0.5	4	4.95	<0.5
10WA-09	392918	47	48	0.003	0.0006	0.002	<0.5	7.4	<5	130	0.6	<2	3.71	0.5
10WA-09	392919	48	49	0.002	0.0008	0.002	0.7	7.35	<5	140	1	<2	1.42	0.5
10WA-09	392921	49	50	0.002	0.0007	0.002	1	7.18	7	60	0.9	<2	1.95	<0.5
10WA-09	392922	50	51	0.001	0.0006	0.002	1	7.23	<5	40	0.6	<2	2.11	<0.5

Hole #	Sample #	From	To	Au	Pt	Pd	Ag	Al	As	Ba	Be	Bi	Ca	Cd
		m	m	ppm	ppm	ppm	ppm	%	ppm	ppm	ppm	ppm	%	ppm
10WA-09	392923	51	52	0.001	<0.0005	0.001	0.8	7.11	<5	40	0.5	<2	1.96	<0.5
10WA-09	392924	52	53	<0.001	0.0009	0.002	<0.5	7.26	8	10	<0.5	<2	1.69	<0.5
10WA-09	392925	53	54	0.007	0.0006	0.002	1.6	6.29	21	10	0.6	<2	0.92	<0.5
10WA-09	392926	54	55	0.018	0.0021	0.002	1.6	4.72	13	<10	<0.5	<2	3.18	0.5
10WA-09	392927	55	56	0.024	0.0044	0.003	22.1	4.02	64	10	<0.5	2	0.67	0.7
10WA-09	392928	56	57	0.008	0.0008	0.002	2.2	5.81	15	80	0.5	<2	2.5	0.5
10WA-09	392929	57	58	0.001	0.0007	0.001	1.4	5.53	<5	100	0.6	<2	0.35	<0.5
10WA-09	392931	58	59	0.001	<0.0005	0.001	2.8	3.75	9	20	0.6	<2	1.24	<0.5
10WA-09	392932	59	60	0.001	0.001	0.002	1.9	3.24	<5	10	<0.5	<2	2.04	<0.5
10WA-09	392933	60	61	0.005	<0.0005	0.001	3	4.28	8	10	<0.5	<2	3.74	<0.5
10WA-09	392934	61	62	0.004	<0.0005	0.001	5.6	4.98	<5	30	<0.5	<2	2.69	<0.5
10WA-09	392935	62	63	0.042	0.0034	0.001	13.7	5.26	21	100	<0.5	<2	0.44	2.4
10WA-09	392936	63	64	0.029	0.0048	0.004	7.6	5.09	11	<10	<0.5	<2	1.48	3.2
10WA-09	392937	64	65	0.03	0.0049	0.004	7.8	4.73	7	<10	<0.5	2	1.1	5.6
10WA-09	392938	65	65.53	0.018	0.0103	0.003	5.6	4.02	23	<10	<0.5	<2	0.23	5.8
10WA-09	392939	66	67	0.021	0.0032	0.001	6.2	5.49	12	20	0.8	<2	0.48	5
10WA-09	392941	67	68	0.072	0.0047	0.002	2.9	4.98	96	<10	0.5	<2	2.76	4.9
10WA-09	392942	68	69	0.164	0.0026	0.003	5.4	6.31	38	10	<0.5	<2	1.79	2.3
10WA-09	392943	69	70	0.028	0.0013	0.002	3.4	7.73	14	90	<0.5	<2	0.15	1.7
10WA-09	392944	70	71	0.022	0.0014	0.002	7.1	6.33	12	80	<0.5	<2	0.08	0.9
10WA-09	392945	71	72	0.026	0.0135	0.002	7.2	7.25	19	80	<0.5	<2	0.11	0.5
10WA-09	392946	72	73	0.018	0.0018	0.002	9.9	7.23	16	90	<0.5	<2	0.12	1.5
10WA-09	392947	73	74	0.022	0.0008	0.002	8.2	6.9	32	80	0.5	<2	0.14	1.1
10WA-09	392948	74	75	0.014	0.0013	0.002	7.4	6.64	19	80	0.9	<2	0.15	1.5
10WA-09	392949	75	76	0.037	0.0014	0.002	10.2	5.85	29	70	0.6	<2	0.13	1.3
10WA-09	392951	76	77	0.02	0.0014	0.002	8.5	5.68	16	70	<0.5	<2	0.2	1
10WA-09	392952	77	78	0.013	0.0009	0.002	6.9	4.62	18	60	<0.5	<2	0.14	0.7
10WA-09	392953	78	79	0.048	0.0021	0.001	8.5	5.45	14	50	<0.5	<2	0.21	1
10WA-09	392954	79	80	0.038	0.0012	0.001	16.5	5.92	16	110	0.6	<2	0.13	3.2
10WA-09	392955	80	81	0.009	0.0022	0.001	4.5	6.99	6	170	1	<2	0.29	<0.5
10WA-09	392956	81	82	0.004	0.0016	0.001	1	7.11	8	70	0.5	<2	2.47	<0.5
10WA-09	392957	82	83	0.002	0.0005	<0.001	0.7	6.86	<5	50	0.5	<2	2.6	<0.5
10WA-09	392958	83	84	0.003	0.0008	0.001	1.8	7.26	<5	70	0.7	<2	2.98	<0.5
10WA-09	392959	91.68	92.02	0.003	0.0012	<0.001	0.5	5.02	6	60	0.6	<2	1.05	<0.5
10WA-09	392961	107.53	107.82	0.008	0.0015	0.002	0.7	7.49	<5	70	<0.5	<2	4.05	<0.5
10WA-09	392962	110.87	111.22	0.022	0.0019	0.001	6.9	2.22	<5	160	<0.5	<2	1.08	0.6
10WA-09	392963	122	122.33	0.068	0.0008	<0.001	3.9	7.23	<5	70	<0.5	<2	3.64	<0.5
10WA-09	392964	128.41	129.23	0.007	0.0008	<0.001	0.6	4.87	<5	60	1.1	<2	0.78	0.6
10WA-09	392965	141	142	0.009	0.0011	<0.001	1.4	7.02	<5	110	1.1	<2	1.94	<0.5
10WA-09	392966	142	143	0.002	0.0005	<0.001	<0.5	7.46	<5	110	0.6	<2	3.02	<0.5
10WA-09	392967	143	144	0.001	0.0005	<0.001	<0.5	6.51	5	130	0.9	<2	2.27	<0.5
10WA-09	392968	144	145	0.001	0.0015	0.001	<0.5	6.53	<5	130	0.8	<2	1.33	<0.5
10WA-09	392969	145	146	0.002	0.0008	<0.001	0.7	7.14	<5	130	0.5	<2	2.62	<0.5
10WA-09	392971	146	147	0.003	0.0014	0.001	1.2	6.98	<5	100	0.8	<2	1.81	<0.5
10WA-09	392972	147	148	0.006	0.0016	0.001	5.4	6.32	5	70	<0.5	<2	0.94	<0.5
10WA-09	392973	148	149	0.001	0.001	<0.001	0.8	7.67	<5	80	0.5	<2	2.55	<0.5
10WA-09	392974	149	150	0.003	0.0011	<0.001	1.9	7.98	7	160	0.6	<2	1.44	<0.5
10WA-09	392975	150	151	0.003	0.002	0.001	3.5	6.71	6	80	<0.5	<2	2.2	<0.5
10WA-09	392976	151	152	0.01	0.002	0.001	2.1	6.74	<5	90	0.5	<2	1.03	<0.5
10WA-09	392977	152	153	0.003	0.0009	<0.001	2.8	7.83	12	130	<0.5	<2	0.2	<0.5
10WA-09	392978	153	154	0.007	0.0021	0.001	2.8	8.64	8	180	<0.5	<2	0.36	0.5
10WA-09	392979	154	155	0.004	0.0025	0.001	2.4	6.82	15	160	0.6	<2	1.06	<0.5
10WA-09	392981	155	156	0.009	0.0058	0.002	3.2	5.11	33	80	<0.5	<2	0.58	<0.5
10WA-09	392982	156	157	0.003	0.0017	0.001	1.1	7.06	5	40	0.5	<2	3.25	<0.5
10WA-09	392983	157	158	0.004	0.0016	0.001	1.1	7.18	<5	80	0.6	<2	3.09	<0.5
10WA-09	392984	158	159	0.002	0.0007	<0.001	0.8	7.12	7	100	<0.5	<2	3.14	<0.5
10WA-09	392985	159	160	0.001	0.0014	0.001	<0.5	4.14	<5	60	<0.5	<2	0.14	<0.5

Hole #	Sample #	From	To	Au	Pt	Pd	Ag	Al	As	Ba	Be	Bi	Ca	Cd
		m	m	ppm	ppm	ppm	ppm	%	ppm	ppm	ppm	ppm	%	ppm
10WA-10	392986	28.53	29.13	0.029	0.0013	0.002	3.5	7.59	<5	40	<0.5	2	5.46	1.2
10WA-10	392987	29.45	29.66	0.009	0.0012	0.001	1.2	7.25	10	140	<0.5	<2	4.29	0.6
10WA-10	392988	30.24	30.48	0.083	0.001	0.002	5.6	7.08	6	90	<0.5	2	4.61	1.2
10WA-10	392989	32.23	32.67	0.007	0.0009	0.001	1.6	7.63	<5	130	<0.5	<2	4.71	0.8
10WA-10	392991	41.66	42	0.021	0.0017	0.002	2.4	8.21	10	40	<0.5	2	5.95	0.8
10WA-10	392992	75.26	76.24	0.007	0.0018	<0.001	1.4	9.01	6	50	<0.5	<2	6.91	<0.5
10WA-10	392993	76.24	77.25	0.007	0.002	<0.001	1	9.11	<5	60	<0.5	<2	6.63	<0.5
10WA-10	392994	77.25	78.24	0.008	0.0023	<0.001	1.5	9.64	<5	30	<0.5	<2	7.53	0.5
10WA-10	392995	78.24	79.25	0.009	0.0017	<0.001	2	9.21	<5	40	<0.5	<2	7.15	<0.5
10WA-10	392996	79.25	80.25	0.007	0.0025	0.001	0.6	9.13	9	40	<0.5	<2	7.18	<0.5
10WA-10	392997	80.25	81.25	0.008	0.0026	0.001	1.7	9.21	<5	40	<0.5	2	7.05	0.6
10WA-10	392998	81.25	82.25	0.008	0.0022	<0.001	1.4	9.67	<5	30	<0.5	5	7.16	<0.5
10WA-10	392999	82.25	83.25	0.006	0.0017	<0.001	<0.5	9.34	<5	50	<0.5	<2	6.87	<0.5
10WA-10	393101	86.69	87.67	0.027	0.0016	0.001	3.1	9.36	<5	40	<0.5	3	7.27	0.8
10WA-10	393102	90	91	0.016	0.0017	0.001	2.4	9.33	<5	50	<0.5	6	6.99	0.9
10WA-10	393103	91	92	0.008	0.0011	<0.001	0.8	8.85	<5	30	<0.5	2	7.09	0.6
10WA-10	393104	92	93	0.01	0.0017	0.001	1.9	8.9	<5	40	<0.5	2	6.98	0.8
10WA-10	393105	96.38	97.38	0.015	0.0007	<0.001	1.7	8.61	<5	20	<0.5	3	6.66	0.5
10WA-10	393106	97.38	98.38	0.007	0.0008	<0.001	1.5	8.51	<5	20	<0.5	2	6.8	1
10WA-10	393107	98.38	99.38	0.008	0.0009	<0.001	2	8.77	<5	20	<0.5	4	6.79	0.9
10WA-10	393108	99.38	100.38	0.004	0.0005	<0.001	1.3	8.84	<5	30	<0.5	2	6.71	<0.5
10WA-10	393109	100.38	101.38	0.015	0.0006	<0.001	5.1	8.41	<5	20	<0.5	7	6.56	0.5
10WA-10	393111	101.38	102.38	0.006	<0.0005	<0.001	1.3	8.65	<5	30	<0.5	4	6.85	0.5
10WA-10	393112	102.38	103	0.051	0.0005	<0.001	8.6	8.66	<5	20	<0.5	5	7.39	1.4
10WA-10	393113	105.16	105.64	0.015	<0.0005	<0.001	3.5	8.05	<5	230	0.7	4	4.35	0.7
10WA-10	393114	115	116	0.003	0.0017	0.002	0.8	5.32	<5	40	<0.5	3	3.8	0.5
10WA-10	393115	116	117	0.008	0.0027	0.004	1.4	4.84	<5	60	<0.5	7	3.18	0.8
10WA-10	393116	117	118	0.007	0.0022	0.003	3	4.04	<5	90	<0.5	9	2.32	1.3
10WA-10	393117	118	119.19	0.002	0.0029	0.004	1.5	3.84	6	50	<0.5	6	2.47	<0.5
10WA-10	393118	119.74	121	0.003	0.0042	0.006	0.9	3.93	<5	80	<0.5	2	2.3	0.8
10WA-10	393119	121	122	0.017	0.0193	0.013	2	4.29	<5	100	<0.5	3	3.06	1.7
10WA-10	393121	122	123	0.111	0.0031	0.004	16.2	8.05	<5	160	<0.5	2	4.84	9
10WA-10	393122	123	124	0.124	0.0016	0.001	40.8	8.38	<5	90	<0.5	3	5.78	16.5
10WA-10	393123	124	125	0.156	0.0013	0.001	31.2	7.28	<5	50	<0.5	4	5.64	15.9
10WA-10	393124	125	126	0.055	0.0015	0.001	12.6	7.46	<5	60	<0.5	2	5.61	7.7
10WA-10	393125	126	127	0.047	0.0005	<0.001	10.5	7.68	<5	110	<0.5	<2	5.56	7.6
10WA-10	393126	127	128	0.082	0.0005	<0.001	22.5	9.58	<5	70	<0.5	2	7.09	15.2
10WA-10	393127	128	129	0.103	0.0007	<0.001	18.7	8.38	<5	110	<0.5	5	5.9	17.7
10WA-10	393128	129	130	0.102	0.0046	0.002	18.8	7.6	<5	50	<0.5	3	6.17	9.1
10WA-10	393129	130	131	0.059	0.004	0.002	19.2	7.98	<5	60	<0.5	3	5.68	8
10WA-10	393131	131	131.64	0.094	0.0133	0.002	24.9	5.35	<5	100	<0.5	4	2.62	8.6
10WA-10	393132	132	133	0.039	0.0053	0.003	24.5	5.82	<5	70	<0.5	7	4.54	11.9
10WA-10	393133	133	134	0.09	0.0044	0.003	36.3	5.12	<5	100	<0.5	11	3.26	16.3
10WA-10	393134	134	135	0.04	0.0055	0.003	20.3	5.42	5	190	<0.5	5	2.76	9.2
10WA-10	393135	135	136	0.013	0.0087	0.009	1.7	4.29	<5	90	<0.5	3	2.97	1
10WA-10	393136	136	137	0.009	0.0082	0.01	0.9	3.49	5	30	<0.5	<2	2.65	0.8
10WA-10	393137	137	138	0.006	0.0073	0.007	<0.5	4.65	11	160	<0.5	<2	2.64	0.9
10WA-10	393138	138	139	0.007	0.0046	0.006	1.4	4.31	7	180	<0.5	4	3.32	1
10WA-10	393139	139	140	0.006	0.0102	0.01	0.9	4.49	7	140	<0.5	2	2.6	0.7
10WA-10	393141	140	141	0.058	0.0124	0.008	9.9	4.08	5	110	<0.5	5	2.49	0.8
10WA-10	393142	141	142	0.063	0.0093	0.007	17.2	4.23	<5	120	<0.5	7	2.33	1.4
10WA-10	393143	142	143	0.017	0.0251	0.015	2.1	4.8	6	100	<0.5	7	3.57	0.9
10WA-10	393144	143	144	0.108	0.0075	0.005	18.3	5.9	<5	110	<0.5	6	5.4	1.6
10WA-10	393145	144	145	0.024	0.0016	0.003	7.8	6.9	7	90	<0.5	<2	3.53	1.2
10WA-10	393146	145	146	0.005	0.001	<0.001	<0.5	4.93	6	50	<0.5	4	2.99	<0.5
10WA-10	393147	146	147.14	0.02	0.0015	0.001	2.3	2.97	5	60	<0.5	<2	1.82	<0.5
10WA-11	393148	103	103.37	0.001	0.0005	<0.001	<0.5	9.75	<5	20	<0.5	<2	7.95	<0.5

Hole #	Sample #	From	To	Au	Pt	Pd	Ag	Al	As	Ba	Be	Bi	Ca	Cd
		m	m	ppm	ppm	ppm	ppm	%	ppm	ppm	ppm	ppm	%	ppm
10WA-11	393149	111.22	112	0.002	<0.0005	<0.001	<0.5	8.83	<5	60	<0.5	<2	6.81	<0.5
10WA-11	393151	112	113.08	0.001	0.001	<0.001	<0.5	8.4	<5	40	<0.5	<2	6.69	<0.5
10WA-11	393152	197	198	0.007	0.0066	<0.001	<0.5	9.34	<5	10	<0.5	<2	6.45	<0.5
10WA-11	393153	198	199	0.012	0.0096	0.001	<0.5	8.96	<5	10	<0.5	<2	6.36	<0.5
10WA-11	393154	199	200	0.006	0.007	<0.001	<0.5	8.66	<5	10	<0.5	<2	6.28	<0.5
10WA-11	393155	200	201	0.001	0.0035	0.001	<0.5	9.64	<5	10	<0.5	<2	6.61	<0.5
10WA-12	393156	122	123	0.001	0.0022	0.001	0.5	9.29	<5	70	0.6	<2	5.17	<0.5
10WA-12	393157	123	124	0.001	0.0005	<0.001	1.2	8.04	<5	60	<0.5	3	3.99	<0.5
10WA-12	393158	124	125	0.002	0.0007	<0.001	0.8	8.87	<5	40	<0.5	<2	5.54	<0.5
10WA-12	393159	125	126	0.01	0.0056	0.002	3.5	6.5	7	50	<0.5	4	2.35	<0.5
10WA-12	393160	126	127	0.031	0.0128	0.005	4.4	3.47	<5	10	<0.5	7	2	<0.5
10WA-12	393161	127	128	0.014	0.0119	0.003	8.8	4.32	29	<10	<0.5	3	1.9	<0.5
10WA-12	393162	128	129	0.012	0.0125	0.004	4.7	3.46	22	<10	<0.5	6	1.72	<0.5
10WA-12	393163	129	130	0.065	0.0102	0.003	7.1	2.98	5	<10	<0.5	7	0.91	0.5
10WA-12	393164	130	131	0.021	0.008	0.003	6.5	3.14	14	<10	<0.5	5	0.44	<0.5
10WA-12	393165	131	132	0.016	0.0094	0.003	5	3.38	6	<10	<0.5	5	1.33	<0.5
10WA-12	393166	132	133	0.021	0.0111	0.004	7.9	1.92	14	<10	<0.5	7	0.06	<0.5
10WA-12	393167	133	134	0.018	0.0137	0.004	9.1	2.04	10	<10	<0.5	4	0.37	<0.5
10WA-12	393168	134	135	0.012	0.0057	0.002	10.2	3.43	17	<10	<0.5	8	0.14	14.5
10WA-12	393169	135	135.67	0.016	0.0066	0.002	12.5	2.77	8	<10	<0.5	9	0.02	85.6
10WA-12	393171	135.67	136.4	0.008	0.0167	0.004	14.9	0.82	<5	<10	<0.5	8	0.03	7
10WA-12	393172	136.4	137.07	0.027	0.0184	0.005	9.1	0.75	<5	<10	<0.5	8	0.25	4
10WA-12	393173	137.07	137.77	0.253	0.0093	0.004	141	2.59	7	<10	<0.5	12	0.31	5.9
10WA-12	393174	137.77	138.6	0.855	0.0153	0.004	469	3.39	21	<10	<0.5	15	0.02	0.8
10WA-12	393175	138.6	139.38	0.612	0.0117	0.004	170	2.39	10	<10	<0.5	13	0.08	7.7
10WA-12	393176	139.38	140.21	0.043	0.0007	<0.001	8.5	9.59	<5	50	<0.5	5	6.54	1.9
10WA-12	393177	140.21	141	0.024	0.0005	<0.001	6.7	9.65	<5	40	<0.5	5	6.46	2.3
10WA-12	393178	141	142	0.047	0.0005	<0.001	9.6	9.33	7	30	<0.5	8	6.48	3.1
10WA-12	393179	142	143	0.069	0.0007	0.001	16.7	8.98	<5	20	<0.5	14	7.11	4
10WA-12	393180	143	144	0.066	0.0006	<0.001	16.1	8.87	10	50	<0.5	21	7.69	5
10WA-12	393181	144	145	0.03	0.0005	<0.001	4.2	9.14	9	60	<0.5	6	6.63	1.4
10WA-12	393182	145	146	0.016	0.0006	<0.001	5.3	9.06	<5	90	<0.5	10	6.1	1.1
10WA-12	393183	146	147	0.012	0.0006	<0.001	3.6	9.1	<5	80	<0.5	9	6.4	1.1
10WA-12	393184	147	148	0.01	0.0005	<0.001	5.1	8.82	<5	170	<0.5	2	3.95	0.6
10WA-12	393189	170.1	171.4	0.001	0.0009	0.001	<0.5	7.66	5	130	0.8	<2	3.82	0.6
10WA-12	393191	171.4	172	0.03	0.0012	0.001	10.5	8.99	7	120	<0.5	5	5.92	2
10WA-12	393192	172	173	0.025	0.0013	<0.001	10.6	7.65	8	70	<0.5	11	5.57	1.8
10WA-12	393193	173	174	0.035	0.0013	<0.001	12.2	8.09	<5	60	<0.5	17	6.35	2
10WA-12	393194	174	174.8	0.044	0.0014	0.001	9.4	7.38	11	70	<0.5	5	5.29	2.2
10WA-12	393195	174.8	175.7	0.002	0.0017	0.001	<0.5	7.79	<5	80	<0.5	<2	6.01	<0.5
10WA-12	393196	175.7	176.3	0.003	0.0008	<0.001	<0.5	6.74	<5	100	0.5	<2	4.01	<0.5
10WA-12	393197	176.3	177.4	0.001	0.0009	<0.001	<0.5	7.74	<5	40	<0.5	<2	7.32	<0.5
10WA-12	393198	177.4	178	0.005	0.0017	0.001	5.3	8.27	<5	40	<0.5	8	7	<0.5
10WA-12	393199	178	179	0.009	0.0011	<0.001	8.9	8.12	6	50	<0.5	12	6.56	0.7
10WA-12	393200	179	179.9	0.007	0.0012	<0.001	6.2	8.24	<5	70	<0.5	7	6.88	0.8
10WA-12	393185	219.2	220	0.002	0.0008	<0.001	<0.5	6.01	16	80	<0.5	<2	2.14	<0.5
10WA-12	393186	220	220.8	0.002	0.0008	<0.001	<0.5	7.63	6	80	<0.5	<2	2.83	<0.5
10WA-12	393187	220.8	221.9	0.007	0.0011	<0.001	3.4	9.09	5	80	<0.5	8	4.43	0.8
10WA-12	393188	221.9	222.8	0.001	0.0007	<0.001	<0.5	9.65	<5	100	<0.5	<2	4.83	<0.5
10WA-13	393201	41.4	42.4	0.013	<0.0005	<0.001	2.7	6.88	9	60	0.7	<2	2.68	<0.5
10WA-13	393202	42.4	43.3	0.071	0.0029	0.001	11.4	6.55	27	130	<0.5	<2	2.98	<0.5
10WA-13	393203	43.3	44.2	0.116	0.0077	0.002	44	5.72	29	10	<0.5	3	6.41	<0.5
10WA-13	393204	44.2	45.3	0.03	0.0117	0.003	21.3	4.17	30	10	<0.5	<2	5.53	<0.5
10WA-13	393205	45.3	46.3	0.17	0.0121	0.003	14.7	2.79	34	<10	<0.5	<2	2.59	1
10WA-13	393206	46.3	47.2	0.059	0.023	0.004	8.3	2.5	62	<10	<0.5	<2	1.62	<0.5
10WA-13	393207	47.2	47.7	0.026	0.0067	0.002	4.5	3.72	37	<10	<0.5	<2	2.9	1.7
10WA-13	393208	47.7	48.3	0.012	0.0049	0.002	12.8	6.07	21	<10	0.5	<2	3.81	4.3

Hole #	Sample #	From	To	Au	Pt	Pd	Ag	Al	As	Ba	Be	Bi	Ca	Cd
		m	m	ppm	ppm	ppm	ppm	%	ppm	ppm	ppm	ppm	%	ppm
10WA-13	393209	48.3	49.3	0.002	0.0007	<0.001	1.2	7.27	6	150	0.8	<2	4.61	<0.5
10WA-13	393211	52.3	53.4	0.001	0.0013	0.001	0.5	7.61	6	210	0.8	<2	2.47	<0.5
10WA-13	393212	53.4	54.1	0.009	0.0042	0.001	15.7	5.27	120	170	0.8	<2	0.3	7.3
10WA-13	393213	54.1	55.1	0.031	0.0071	0.002	21.4	3.85	31	100	0.6	5	1.68	71.5
10WA-13	393214	55.1	56.2	0.057	0.0014	0.001	5.7	6.86	22	60	1	6	2.67	7.3
10WA-13	393215	56.2	56.8				4.8	5.76	58	20	<0.5	<2	0.55	425
10WA-13	393216	56.8	57.4	0.057	0.0017	0.001	3.9	3.95	25	80	0.9	<2	0.83	3.9
10WA-13	393217	57.4	57.8	0.129	0.001	<0.001	16.3	3.17	6	90	<0.5	9	0.04	1.9
10WA-13	393218	57.8	59.1	0.225	0.0016	<0.001	36.2	2.91	47	80	<0.5	21	0.07	4.1
10WA-13	393219	59.1	59.8	0.161	0.002	<0.001	19.4	1.77	14	80	<0.5	15	0.04	3.6
10WA-13	393220	59.8	60.2	0.545	0.0037	0.001	95	1.87	28	90	<0.5	24	0.06	14.9
10WA-13	393221	60.2	60.8	0.205	0.0013	<0.001	19.1	2.53	26	100	<0.5	6	0.14	2.6
10WA-13	393222	60.8	62	0.092	0.0009	<0.001	11.8	2.72	22	100	<0.5	<2	0.35	0.6
10WA-13	393223	62	63.1	0.704	0.0012	<0.001	29	3.02	35	130	<0.5	5	0.14	1
10WA-13	393224	63.1	64.2	0.349	0.0011	<0.001	19.8	3.08	9	150	<0.5	7	0.23	1.2
10WA-13	393225	64.2	65.1	0.309	0.002	0.001	34.7	2.59	45	120	<0.5	10	0.18	2.3
10WA-13	393226	65.1	65.7	0.068	0.0016	<0.001	10.9	2.47	18	60	<0.5	5	0.02	2.7
10WA-13	393227	65.7	66.7	1.56	0.0027	0.001	55.4	2.68	6	70	<0.5	16	0.02	31.1
10WA-13	393228	66.7	68.1	0.019	0.0005	<0.001	4.1	4.16	11	70	<0.5	<2	0.07	0.6
10WA-13	393229	68.1	69.6	0.022	<0.0005	<0.001	4.3	4.86	8	60	0.5	<2	0.03	<0.5
10WA-13	393231	69.6	71	0.032	<0.0005	<0.001	2	4.16	8	70	0.6	<2	0.09	<0.5
10WA-13	393232	71	71.5	0.111	0.0013	<0.001	22.8	6.34	8	140	0.8	9	0.05	1.3
10WA-13	393233	71.5	72.6	0.005	<0.0005	<0.001	1.2	5.2	<5	140	0.7	<2	0.03	<0.5
10WA-13	393234	72.6	73.7	0.013	<0.0005	<0.001	4.4	3.71	15	90	<0.5	<2	0.1	<0.5
10WA-13	393235	73.7	74.3	0.445	0.0017	0.001	31.5	3.57	26	90	<0.5	10	0.06	1.3
10WA-13	393236	74.3	74.7	0.02	0.0099	0.003	8.2	3.88	12	150	<0.5	9	0.1	134
10WA-13	393237	74.7	76.1	0.021	0.0006	<0.001	8.2	7.01	12	90	<0.5	<2	2.58	1.1
10WA-13	393238	76.1	76.7	0.397	0.0078	0.002	705	5.27	11	80	<0.5	<2	1.67	2.1
10WA-13	393239	76.7	77.4				13.8	2.05	69	<10	<0.5	14	2.19	8.4
10WA-13	393240	77.4	78	0.039	0.0006	<0.001	12.2	6.56	33	170	0.7	<2	3.4	1
10WA-13	393241	78	78.7	0.011	0.0082	0.002	10	2.18	15	<10	<0.5	4	4.64	<0.5
10WA-13	393242	78.7	79.3				109	5.04	27	100	0.6	<2	3.98	9.5
10WA-13	393243	79.3	80.1	0.014	0.0121	0.003	10.9	1.59	12	<10	<0.5	9	3.23	2.4
10WA-13	393244	80.1	80.8	0.072	0.0076	0.002	33.9	2.81	62	10	<0.5	19	6.2	6.6
10WA-13	393245	80.8	81.3				31.3	0.04	57	<10	<0.5	21	0.06	<0.5
10WA-13	393246	81.3	82.3	0.007	0.0142	0.004	8.3	0.78	18	<10	<0.5	10	0.64	0.5
10WA-13	393247	82.3	83.5	0.57	0.0037	0.001	43	7.57	12	280	0.7	15	5.02	10.1
10WA-13	393248	83.5	84.6	0.162	0.0027	0.001	23.2	8.05	29	500	1.1	13	1.65	0.7
10WA-13	393249	84.6	85.5	0.213	0.0011	<0.001	13.5	7.27	13	50	0.5	<2	3.06	0.5
10WA-13	393251	85.5	86.4	0.074	0.0011	0.001	12.1	7.13	9	90	0.5	2	2.4	2.4
10WA-13	393252	86.4	87.3	0.009	0.0006	<0.001	4.8	7.59	<5	130	<0.5	<2	3.18	0.6
10WA-13	393253	87.3	88.1	0.003	0.0006	<0.001	0.5	7.91	<5	90	0.5	<2	3.53	<0.5
11WA-14	393551	13.50	14.50	0.023	0.0008	0.001	<0.5	8.59	7	90	0.6	<2	0.38	<0.5
11WA-14	393552	29.58	30.57	0.013	0.0005	0.001	<0.5	6.98	5	90	0.5	<2	2.04	<0.5
11WA-14	393553	30.57	31.26	0.025	<0.0005	<0.001	1.8	8.93	<5	90	1	<2	1.14	9.5
11WA-14	393554	31.26	32.23	0.007	<0.0005	<0.001	<0.5	5.38	5	150	0.6	<2	0.18	<0.5
11WA-14	393555	32.23	33.33	0.008	<0.0005	<0.001	<0.5	6.77	6	110	0.6	<2	0.86	<0.5
11WA-14	393556	33.33	34.23	0.009	<0.0005	<0.001	<0.5	9.66	<5	150	1.3	<2	0.59	<0.5
11WA-14	393557	34.23	35.22	0.007	<0.0005	<0.001	<0.5	6.24	<5	70	0.6	<2	0.58	<0.5
11WA-14	393558	35.22	36.00	0.005	<0.0005	<0.001	<0.5	6.6	<5	170	0.5	<2	2.35	<0.5
11WA-14	393559	36.00	37.00	0.017	<0.0005	<0.001	<0.5	8.37	<5	100	0.5	2	0.48	<0.5
11WA-14	393560	49.00	50.00	0.062	<0.0005	<0.001	0.7	4.26	<5	50	0.5	<2	0.03	<0.5
11WA-14	393561	50.00	50.50	4.52	<0.0005	<0.001	7.8	4.85	<5	60	0.7	4	0.07	0.7
11WA-14	393562	50.50	51.50	0.365	0.0006	<0.001	3.1	4.33	<5	40	0.5	<2	0.03	1.3
11WA-14	393563	51.50	52.50	0.028	<0.0005	<0.001	0.5	4.03	7	50	0.5	<2	0.15	<0.5
11WA-14	393564	62.00	63.00	0.013	0.0005	<0.001	4.6	6.49	11	30	0.9	<2	6.3	0.7
11WA-14	393565	63.00	64.00	0.012	<0.0005	<0.001	5.2	6.39	9	40	0.9	<2	6.37	0.7

Hole #	Sample #	From	To	Au	Pt	Pd	Ag	Al	As	Ba	Be	Bi	Ca	Cd
		m	m	ppm	ppm	ppm	ppm	%	ppm	ppm	ppm	ppm	%	ppm
11WA-14	393566	64.00	65.00	0.001	<0.0005	<0.001	<0.5	6.48	5	50	0.9	<2	6.49	<0.5
11WA-14	393567	65.00	66.00	0.016	0.001	<0.001	1.4	6.6	<5	60	0.9	<2	6.12	<0.5
11WA-14	393568	66.40	67.42	0.007	<0.0005	<0.001	3.7	6.6	8	50	0.9	<2	6.27	<0.5
11WA-14	393569	67.42	68.42	0.01	<0.0005	<0.001	4.8	6.39	8	40	0.9	<2	6.41	0.6
11WA-14	393571	68.42	69.44	0.01	<0.0005	<0.001	4.5	6.35	7	40	0.9	<2	6.65	0.5
11WA-14	393572	69.44	70.45	0.007	<0.0005	<0.001	1.1	7.27	<5	70	1	<2	6.23	<0.5
11WA-14	393573	70.45	71.25	0.003	0.0013	0.001	<0.5	8.12	6	300	0.9	2	4.14	<0.5
11WA-14	393574	71.25	72.06	0.067	0.0006	<0.001	2.7	8.68	9	250	1.1	<2	4.57	<0.5
11WA-14	393575	72.06	73.02	0.003	<0.0005	<0.001	<0.5	9.38	5	110	0.5	2	6.25	<0.5
11WA-14	393576	78.37	79.26	0.294	0.0008	<0.001	29.3	9	5	310	0.9	<2	4.26	6.2
11WA-14	393577	79.26	80.17	0.1	0.0006	<0.001	17.9	10.2	<5	110	0.8	26	5.45	2.8
11WA-14	393578	80.17	81.16	0.09	0.002	0.002	11.9	10.3	16	180	1	<2	5.02	1.8
11WA-14	393579	81.16	82.00	0.105	0.0005	<0.001	2.2	7.92	16	250	0.8	2	4.93	0.7
11WA-14	393580	119.10	120.10	0.008	<0.0005	<0.001	2.1	6.92	11	110	1	<2	5.75	0.6
11WA-14	393581	120.10	121.06	0.024	0.0007	<0.001	5.4	6.6	7	100	0.9	<2	5.75	0.6
11WA-14	393582	124.50	125.50	0.026	0.0006	<0.001	5.5	9.25	6	130	0.8	3	5.17	<0.5
11WA-14	393583	131.00	132.09	0.009	0.0005	<0.001	3	3.71	<5	170	<0.5	4	0.34	0.6
11WA-14	393584	134.36	135.36	0.006	0.0005	<0.001	2.1	4.21	<5	230	<0.5	6	0.32	0.8
11WA-14	393585	135.36	136.36	0.005	<0.0005	<0.001	0.8	3.24	7	50	<0.5	6	0.21	0.5
11WA-14	393586	141.63	142.18	0.008	<0.0005	<0.001	<0.5	5.88	6	220	0.8	<2	2.14	<0.5
11WA-14	393587	142.18	143.21	0.017	0.0005	<0.001	0.5	6.56	8	150	0.6	<2	1.24	<0.5
11WA-14	393588	149.17	149.70	0.002	<0.0005	<0.001	<0.5	8.84	7	80	0.8	<2	6.36	<0.5
11WA-14	393589	149.70	150.64	0.002	<0.0005	<0.001	<0.5	8.26	<5	60	0.8	<2	5.89	<0.5
11WA-14	393591	150.64	151.63	0.001	<0.0005	<0.001	0.5	8.47	12	80	1	<2	6.19	<0.5
11WA-14	393592	187.00	187.70	0.011	0.0013	<0.001	<0.5	8.2	<5	130	0.6	<2	5.99	<0.5
11WA-14	393595	201.12	202.10	0.006	0.001	0.001	<0.5	4.55	<5	60	<0.5	2	3.31	<0.5
11WA-14	393596	202.10	203.10	0.003	0.001	0.002	<0.5	3.67	<5	50	<0.5	3	2.74	<0.5
11WA-14	393597	203.10	204.07	0.005	0.0013	<0.001	<0.5	9.35	<5	130	<0.5	<2	5.44	<0.5
11WA-14	393598	209.85	210.32	0.008	0.0011	<0.001	<0.5	8.14	5	180	0.5	3	4.06	<0.5
11WA-14	393599	283.77	284.56	0.004	0.0047	0.006	<0.5	9.65	<5	30	<0.5	<2	8.07	<0.5
11WA-14	393601	306.28	307.15	0.015	0.0215	0.003	0.6	9.56	<5	20	<0.5	4	7.17	<0.5
11WA-14	393602	307.15	308.00	0.011	0.0164	0.002	<0.5	9.58	<5	40	<0.5	<2	6.78	<0.5
11WA-14	393603	326.00	326.97	0.009	0.0113	0.001	<0.5	9.12	<5	120	<0.5	<2	6.55	<0.5
11WA-14	393604	332.00	332.95	0.001	0.0005	<0.001	<0.5	8.78	<5	140	<0.5	<2	5.69	<0.5
11WA-14	393605	332.95	333.85	0.001	<0.0005	<0.001	<0.5	9.2	<5	90	<0.5	<2	6.24	<0.5
11WA-14	393606	333.85	334.35	0.002	0.0015	0.014	<0.5	8.68	<5	70	<0.5	<2	7.13	<0.5
11WA-14	393607	334.35	334.85	0.004	0.0053	0.019	<0.5	8.51	<5	140	<0.5	<2	5.75	<0.5
11WA-14	393608	334.85	336.00	0.005	0.0081	0.038	<0.5	8.73	<5	120	<0.5	<2	5.82	<0.5
11WA-14	393609	336.00	337.00	0.003	0.0009	0.004	<0.5	9.56	<5	90	<0.5	<2	5.44	<0.5
11WA-14	393611	337.00	337.60	0.002	0.0035	0.028	<0.5	9.6	<5	40	<0.5	<2	8.21	<0.5
11WA-14	393612	337.60	338.30	0.001	0.002	0.005	<0.5	9.72	<5	90	<0.5	<2	6.76	<0.5
11WA-14	393613	338.30	338.80	0.005	0.0053	0.017	<0.5	9.94	<5	30	<0.5	<2	7.34	<0.5
11WA-14	393614	338.80	340.00	0.004	0.0044	0.013	<0.5	9.55	<5	100	<0.5	<2	6.52	<0.5
11WA-14	393615	340.00	341.00	0.003	0.0041	0.008	<0.5	10.25	<5	50	<0.5	<2	7.63	<0.5
11WA-14	393616	341.00	342.00	0.003	0.0036	0.005	<0.5	9.95	<5	90	<0.5	<2	7.21	<0.5
11WA-14	393617	342.00	343.00	0.003	0.0051	0.008	<0.5	10.45	<5	90	<0.5	<2	7.64	<0.5
11WA-14	393618	343.00	344.00	0.005	0.0063	0.009	<0.5	9.35	<5	60	<0.5	<2	6.83	<0.5
11WA-14	393619	344.00	345.00	0.003	0.0037	0.005	<0.5	9.74	<5	90	<0.5	<2	6.64	<0.5
11WA-14	393620	345.00	346.00	0.003	0.0113	0.072	<0.5	9.38	<5	60	<0.5	<2	6.37	<0.5
11WA-14	393621	346.00	346.70	0.003	0.0074	0.043	<0.5	6.62	<5	50	<0.5	<2	5.65	0.5
11WA-14	393622	346.70	347.25	0.007	0.0093	0.026	<0.5	9	<5	60	<0.5	<2	6.74	<0.5
11WA-14	393623	347.25	348.30	0.005	0.0096	0.054	<0.5	9.34	<5	30	<0.5	<2	7.08	<0.5
11WA-14	393624	348.30	349.00	0.002	0.0042	0.013	<0.5	7.93	<5	50	<0.5	<2	6.84	<0.5
11WA-14	393625	349.00	350.00	0.004	0.008	0.022	<0.5	8.75	<5	60	<0.5	<2	7.48	<0.5
11WA-14	393626	350.00	351.00	0.003	0.0063	0.013	<0.5	8.67	<5	70	<0.5	<2	7.36	<0.5
11WA-14	393627	351.00	352.00	0.002	0.0064	0.018	<0.5	8.49	<5	100	<0.5	<2	6.75	<0.5
11WA-14	393628	352.00	353.00	0.003	0.0065	0.019	<0.5	8.29	<5	110	<0.5	<2	6.49	<0.5

Hole #	Sample #	From	To	Au	Pt	Pd	Ag	Al	As	Ba	Be	Bi	Ca	Cd
		m	m	ppm	ppm	ppm	ppm	%	ppm	ppm	ppm	ppm	%	ppm
11WA-14	393629	360.00	361.20	0.001	0.0045	0.007	<0.5	7.79	<5	200	0.6	<2	4.43	<0.5
11WA-14	393631	361.20	362.30	0.002	0.0141	0.037	<0.5	9.11	<5	70	<0.5	<2	7.17	<0.5
11WA-14	393632	362.30	363.50	0.002	0.0306	0.084	<0.5	7.36	<5	100	<0.5	<2	5.2	<0.5
11WA-14	393633	363.50	364.00	0.001	0.0008	0.002	<0.5	9.53	<5	60	<0.5	<2	7.3	<0.5
11WA-14	393634	364.00	365.00	0.003	0.0019	0.002	<0.5	10.4	<5	30	<0.5	<2	7.93	<0.5
11WA-14	393635	365.00	366.00	0.003	0.0018	0.001	<0.5	10.9	<5	40	<0.5	<2	7.97	<0.5
11WA-14	393636	385.45	386.30	0.003	0.0019	0.001	<0.5	10.8	<5	30	<0.5	<2	8.05	<0.5
11WA-14	393637	386.30	387.00	0.003	0.0023	0.001	<0.5	9.76	<5	40	<0.5	<2	7.48	<0.5
11WA-14	393638	387.00	388.00	0.003	0.0025	0.001	<0.5	10.8	<5	30	<0.5	2	8.34	<0.5
11WA-14	393639	388.00	389.00	0.003	0.0025	0.001	<0.5	9.95	11	30	<0.5	<2	7.82	<0.5
11WA-14	393640	389.00	390.00	0.003	0.0025	0.001	<0.5	10.15	8	30	<0.5	<2	7.94	<0.5
11WA-14	393641	390.00	391.00	0.003	<0.0005	0.001	<0.5	10.5	5	30	<0.5	<2	8.03	<0.5
11WA-14	393642	434.90	436.00	0.008	0.0006	<0.001	<0.5	7.23	8	40	0.7	<2	2.75	<0.5
11WA-14	393643	436.00	437.00	0.01	0.0005	<0.001	<0.5	7.86	9	80	0.5	<2	4	<0.5
11WA-14	393644	437.00	438.00	0.001	0.0005	<0.001	<0.5	8.53	6	90	0.5	<2	4.02	<0.5
11WA-14	393645	438.00	439.00	<0.001	0.0007	<0.001	<0.5	8.37	8	70	1.1	<2	1.38	<0.5
11WA-14	393646	439.00	440.00	0.003	0.0006	<0.001	<0.5	9.28	5	80	1.1	<2	3.15	<0.5
11WA-14	393647	440.00	441.00	0.001	0.0005	<0.001	<0.5	8.77	13	210	0.6	<2	3.84	<0.5
11WA-14	393648	441.00	442.00	0.002	0.0005	<0.001	<0.5	8.34	5	150	0.8	<2	3.52	<0.5
11WA-14	393649	442.00	443.00	0.002	0.0006	<0.001	<0.5	9.08	<5	180	0.7	<2	4.38	<0.5
11WA-14	393651	443.00	444.00	0.015	0.0012	0.001	0.6	9.07	5	160	0.8	<2	3.97	<0.5
11WA-14	393652	444.00	445.00	0.002	0.0006	<0.001	<0.5	8.69	11	130	0.7	<2	4.3	<0.5
11WA-14	393653	445.00	446.00	0.001	0.0005	<0.001	<0.5	8.98	9	90	0.5	<2	5.35	<0.5
11WA-14	393654	446.00	447.00	<0.001	0.0005	<0.001	<0.5	8.52	9	130	0.6	<2	3.8	<0.5
11WA-14	393655	447.00	448.00	<0.001	0.0006	<0.001	<0.5	8.82	6	120	0.5	<2	4.57	<0.5
11WA-14	393656	448.00	449.00	0.001	0.0006	<0.001	<0.5	8.53	8	120	0.7	<2	4.27	<0.5
11WA-14	393657	449.00	450.00	<0.001	0.0007	<0.001	<0.5	8.77	6	110	0.7	<2	2.04	<0.5
11WA-14	393658	450.00	451.00	0.001	0.0006	<0.001	<0.5	9.44	7	110	0.7	<2	4.63	<0.5
11WA-14	393659	451.00	452.00	<0.001	0.0007	0.001	<0.5	9.35	6	110	0.6	<2	5.43	<0.5
11WA-14	393660	452.00	453.00	<0.001	0.0006	<0.001	<0.5	8.52	9	100	<0.5	<2	4.88	<0.5
11WA-14	393661	453.00	454.00	<0.001	0.0006	<0.001	<0.5	8.83	11	100	1.1	<2	4.05	<0.5
11WA-14	393662	454.00	455.00	0.001	<0.0005	<0.001	<0.5	8.68	6	150	0.6	<2	4.81	<0.5
11WA-14	393663	455.00	456.00	<0.001	0.0007	<0.001	<0.5	9.1	10	140	0.5	<2	5.69	<0.5
11WA-14	393664	456.00	457.00	<0.001	<0.0005	<0.001	<0.5	9.83	8	130	<0.5	<2	7.36	<0.5
11WA-15	393665	26.00	27.00	0.001	<0.0005	<0.001	<0.5	4.86	5	100	<0.5	<2	0.22	<0.5
11WA-15	393666	27.00	28.00	<0.001	<0.0005	<0.001	<0.5	4.41	8	120	<0.5	2	0.34	<0.5
11WA-15	393667	28.00	29.00	0.001	<0.0005	<0.001	<0.5	5.63	8	100	0.6	2	2.19	<0.5
11WA-15	393668	29.00	29.45	0.001	<0.0005	<0.001	<0.5	7.15	6	120	0.6	<2	2.96	<0.5
11WA-15	393669	29.45	29.95	0.068	0.0005	<0.001	12.9	7.38	10	80	<0.5	12	3.66	0.6
11WA-15	393671	29.95	31.00	0.002	<0.0005	<0.001	<0.5	7.11	8	150	0.6	<2	3.03	<0.5
11WA-15	393672	31.00	32.00	0.001	<0.0005	<0.001	<0.5	6.93	7	250	0.6	<2	1.72	<0.5
11WA-15	393673	32.00	33.00	0.002	0.0009	0.001	<0.5	7.14	<5	300	0.9	2	1.76	<0.5
11WA-15	393674	33.00	33.80	0.001	<0.0005	<0.001	<0.5	6.92	<5	220	0.7	<2	2.27	<0.5
11WA-15	393675	33.80	34.40	0.011	0.0005	<0.001	4.9	6.3	<5	270	0.8	<2	0.55	2.4
11WA-15	393676	34.40	35.00	0.003	<0.0005	<0.001	1	7.64	<5	130	0.6	<2	2.79	0.5
11WA-15	393677	35.00	35.60	0.001	0.0012	<0.001	0.5	5.62	<5	90	0.5	<2	1.96	<0.5
11WA-15	393678	35.60	36.20	0.012	<0.0005	<0.001	2.9	5.36	<5	90	<0.5	<2	1.14	0.9
11WA-15	393679	36.20	36.70	0.097	<0.0005	<0.001	8.8	6.59	<5	130	0.6	6	1.67	1.8
11WA-15	393680	36.70	37.40	0.056	<0.0005	<0.001	8.2	5.13	<5	10	<0.5	9	0.68	0.8
11WA-15	393681	37.40	38.00	0.007	<0.0005	<0.001	1.3	7.58	<5	110	0.6	2	4	0.6
11WA-15	393682	38.00	39.00	0.008	<0.0005	<0.001	1.2	7.04	<5	70	0.5	11	2.25	0.6
11WA-15	393683	39.00	40.00	0.01	<0.0005	<0.001	1.9	7.68	<5	90	0.8	24	1.96	0.9
11WA-15	393684	40.00	41.00	0.007	<0.0005	<0.001	1.4	6.88	<5	80	0.5	3	3.16	0.5
11WA-15	393685	41.00	42.00	0.009	<0.0005	<0.001	1	6.89	<5	60	0.6	12	2.61	<0.5
11WA-15	393686	42.00	43.00	0.003	<0.0005	<0.001	<0.5	4.9	<5	120	<0.5	<2	0.55	<0.5
11WA-15	393687	43.00	43.50	0.004	<0.0005	<0.001	<0.5	4.69	<5	110	0.6	<2	0.34	<0.5
11WA-15	393688	43.50	44.00	0.025	<0.0005	<0.001	4.4	6.61	<5	100	1	19	1.57	1

Hole #	Sample #	From	To	Au	Pt	Pd	Ag	Al	As	Ba	Be	Bi	Ca	Cd
		m	m	ppm	ppm	ppm	ppm	%	ppm	ppm	ppm	ppm	%	ppm
11WA-15	393689	44.00	45.00	0.006	<0.0005	<0.001	0.8	5.42	<5	100	0.7	3	1.82	<0.5
11WA-15	393691	45.00	46.00	0.004	<0.0005	<0.001	0.8	5.29	<5	120	1.3	6	0.67	<0.5
11WA-15	393692	46.00	47.00	0.005	<0.0005	<0.001	1.5	4.5	<5	80	0.6	3	0.22	<0.5
11WA-15	393693	47.00	48.00	0.004	<0.0005	<0.001	0.8	4.8	<5	80	<0.5	3	0.14	<0.5
11WA-15	393694	48.00	48.80	0.003	<0.0005	<0.001	0.8	3.86	<5	70	0.7	2	0.15	<0.5
11WA-15	393695	48.80	49.40	0.006	<0.0005	<0.001	2.9	4.78	<5	60	0.6	14	0.1	0.5
11WA-15	393696	49.40	50.00	0.005	<0.0005	<0.001	2.5	4.24	<5	30	0.6	3	0.08	<0.5
11WA-15	393697	50.00	51.00	0.004	<0.0005	<0.001	<0.5	6.26	<5	170	0.5	<2	1.85	<0.5
11WA-15	393698	51.00	52.00	0.004	<0.0005	<0.001	1.1	6.73	<5	220	0.8	<2	2.35	<0.5
11WA-15	393699	52.00	53.00	0.004	<0.0005	<0.001	<0.5	6.97	<5	330	0.7	<2	2.43	<0.5
11WA-15	393700	53.00	54.00	0.003	<0.0005	<0.001	0.5	4.58	<5	50	<0.5	2	1.37	<0.5
11WA-15	393701	54.00	55.00	0.004	<0.0005	<0.001	0.7	3.77	<5	10	<0.5	5	0.12	<0.5
11WA-15	393702	55.00	55.50	0.009	<0.0005	<0.001	3.7	4.42	<5	10	<0.5	16	0.33	<0.5
11WA-15	393703	55.50	56.00	0.005	<0.0005	<0.001	0.9	3.8	<5	10	<0.5	4	0.11	<0.5
11WA-15	393704	56.00	56.50	0.003	<0.0005	<0.001	1.5	4.3	<5	10	<0.5	5	0.1	<0.5
11WA-15	393705	56.50	57.00	0.005	<0.0005	<0.001	2.2	3.98	<5	10	<0.5	12	0.11	<0.5
11WA-15	393706	57.00	57.50	0.006	<0.0005	<0.001	3	4.53	<5	20	<0.5	8	0.07	<0.5
11WA-15	393707	57.50	58.00	0.003	<0.0005	<0.001	1.2	4.39	<5	20	<0.5	3	0.06	<0.5
11WA-15	393708	58.00	58.50	0.008	<0.0005	<0.001	5.8	4.21	<5	20	<0.5	10	0.3	<0.5
11WA-15	393709	58.50	59.00	0.003	<0.0005	<0.001	0.6	6.52	<5	190	0.7	<2	2.57	0.6
11WA-15	393711	59.00	60.00	0.005	<0.0005	0.001	1.1	6.89	10	130	0.5	<2	5.54	<0.5
11WA-15	393712	108.00	109.00	0.001			1	7.84	7	310	1	<2	6.95	<0.5
11WA-15	393713	109.00	110.00	0.002			0.5	6.51	11	130	0.9	<2	6.24	<0.5
11WA-15	393714	110.00	111.00	0.001			0.6	7.16	<5	140	1.1	<2	6.71	<0.5
11WA-15	393715	111.00	112.00	0.001			<0.5	7.42	<5	100	1	<2	6.54	<0.5
11WA-15	393716	167.00	168.00	0.001			<0.5	8.3	7	70	0.8	<2	6.78	<0.5
11WA-15	393717	168.00	169.00	0.002			0.8	7.88	6	60	0.8	<2	6.88	<0.5
11WA-15	393718	169.00	170.00	0.002			0.6	7.09	6	40	0.8	<2	6.6	<0.5
11WA-15	393719	170.00	171.00	0.005			<0.5	7.23	9	120	0.9	<2	4.61	<0.5
11WA-15	393720	171.00	172.00	0.005			1.3	6.62	17	70	0.8	<2	6.05	<0.5
11WA-15	393721	172.00	173.00	0.017			0.6	7.67	7	130	0.9	<2	3.96	<0.5
11WA-15	393722	173.00	174.00	0.001			<0.5	7.79	<5	230	1.1	<2	2.85	<0.5
11WA-15	393723	174.00	175.16	0.019			<0.5	7.88	9	130	0.8	<2	2.16	<0.5
11WA-15	393724	175.16	175.80	0.029			0.8	8.58	17	40	0.7	<2	6.99	<0.5
11WA-15	393725	175.80	176.45	0.077			1.2	7.7	<5	60	0.9	<2	5.74	<0.5
11WA-15	393726	180.48	181.40	0.001			<0.5	8.18	<5	50	0.8	<2	6.13	<0.5
11WA-15	393727	181.40	182.35	<0.001			1.1	7.69	5	40	0.9	<2	7.04	<0.5
11WA-15	393728	182.35	183.30	<0.001			0.7	7.57	<5	40	1	<2	7.3	<0.5
11WA-15	393729	183.30	184.25	<0.001			<0.5	7.25	<5	50	0.9	<2	6.96	<0.5
11WA-15	393731	184.25	185.20	<0.001			<0.5	7.31	<5	50	0.9	<2	5.64	<0.5
11WA-15	393732	185.20	186.15	<0.001			<0.5	7.35	<5	60	0.9	<2	6.9	<0.5
11WA-15	393733	186.15	187.10	<0.001			0.5	7.33	5	60	0.9	<2	7.15	<0.5
11WA-15	393734	187.10	188.05	<0.001			0.5	7.76	11	60	1	<2	7	<0.5
11WA-15	393735	188.05	188.95	<0.001			<0.5	7.15	7	60	0.9	<2	6.69	<0.5
11WA-15	393736	189.30	190.00	<0.001			<0.5	7.71	7	50	0.9	<2	6.78	<0.5
11WA-15	393737	190.00	190.73	<0.001			<0.5	7.6	6	40	0.9	<2	6	<0.5
11WA-16	393738	33.80	34.80	<0.001			<0.5	4.18	<5	10	<0.5	<2	2.14	<0.5
11WA-16	393739	34.80	35.80	0.001			<0.5	4.11	11	20	<0.5	<2	3.48	<0.5
11WA-16	393740	35.80	36.66	0.001			<0.5	3.73	<5	220	<0.5	<2	3.58	<0.5
11WA-16	393741	36.66	37.20	0.011			<0.5	5.64	8	290	0.9	<2	2.35	<0.5
11WA-16	393742	37.20	38.00	0.001			<0.5	3.82	<5	30	<0.5	<2	3.36	<0.5
11WA-16	393743	38.00	39.00	<0.001			<0.5	4.25	7	10	<0.5	<2	2.92	<0.5
11WA-16	393744	39.00	40.00	<0.001			<0.5	4.73	13	10	0.5	<2	3.91	<0.5
11WA-16	393745	156.00	157.00	0.011			2	5.39	<50	50	<10	<20	0.53	<10
11WA-16	393746	157.00	158.00	0.003			2	6.61	<50	110	<10	<20	0.79	<10
11WA-16	393747	158.00	159.00	0.019			18	6.55	<50	120	<10	<20	0.32	<10
11WA-16	393748	159.00	160.00	0.02			12	4.97	<50	60	<10	<20	0.06	<10

Hole #	Sample #	From	To	Au	Pt	Pd	Ag	Al	As	Ba	Be	Bi	Ca	Cd
		m	m	ppm	ppm	ppm	ppm	%	ppm	ppm	ppm	ppm	%	ppm
11WA-16	393749	160.00	161.00	0.038			19	6.12	<50	130	<10	<20	0.07	30
11WA-16	393751	161.00	162.00	0.073			38	2.55	<50	<50	<10	<20	<0.05	380
11WA-16	393752	162.00	163.00	0.09			62	1.84	<50	<50	<10	<20	<0.05	370
11WA-16	393753	163.00	163.75	0.825			194	2.49	<50	60	<10	<20	<0.05	110
11WA-16	393754	163.75	164.50	0.306			96	3.36	70	140	<10	<20	0.08	10
11WA-16	393755	164.50	165.50	0.162			194	4.3	<50	330	<10	<20	0.06	10
11WA-16	393756	165.50	167.50	0.178			64	4.55	<50	420	<10	<20	0.07	<10
11WA-16	393757	167.50	168.60	0.085			55	6.51	680	140	<10	50	0.05	10
11WA-16	393759	168.60	169.60	0.192			54	7.82	<50	60	<10	20	<0.05	20
11WA-16	393760	169.60	170.50	0.092			44	3	70	<50	<10	<20	<0.05	90
11WA-16	393761	170.50	171.50	0.276			48	2.01	70	<50	<10	30	0.05	50
11WA-16	393762	171.50	172.50	0.3			71	3.66	<50	<50	<10	20	<0.05	70
11WA-16	393763	172.50	173.10	0.237			97	5.6	<50	170	<10	<20	0.08	10
11WA-16	393764	173.10	174.10	0.151			34	6.83	<50	260	<10	<20	0.06	10
11WA-16	393765	174.10	175.10	0.034			8	5.7	<50	430	<10	<20	0.07	<10
11WA-16	393766	175.10	176.10	0.013			6	5.93	<50	660	<10	<20	0.07	<10
11WA-16	393767	176.10	177.10	0.005			2	6.98	<50	510	<10	<20	0.08	10
11WA-16	393768	177.10	178.05	0.022			20	5.31	<50	<50	<10	<20	0.1	30
11WA-16	393769	178.05	179.00	0.034			3	5.58	<50	90	<10	<20	2.06	<10
11WA-16	393771	179.00	180.00	0.039			5	6.57	<50	<50	<10	<20	0.09	<10
11WA-16	393772	180.00	181.10	0.061			11	5.85	<50	<50	<10	<20	0.76	<10
11WA-16	393773	181.10	182.20	0.002			2	4.34	<50	100	<10	<20	3.71	<10
11WA-16	393774	182.20	183.30	0.018			2	4.49	<50	80	<10	<20	3.43	<10
11WA-16	393775	183.30	184.40	0.002			1	3.22	<50	90	<10	<20	3.06	<10
11WA-16	393776	184.40	185.50	0.003			2	4.59	<50	180	<10	<20	2.11	<10
11WA-16	393777	185.50	186.50	0.016			6	5.26	<50	<50	<10	<20	0.08	40
11WA-16	393778	186.50	187.50	0.008			6	4.91	<50	<50	<10	<20	0.05	20
11WA-16	393779	187.50	188.50	0.012			3	4.99	<50	<50	<10	<20	<0.05	50
11WA-16	393780	188.50	189.50	0.011			2	5.53	<50	<50	<10	<20	0.06	30
11WA-16	393781	189.50	190.10	0.014			3	1.85	<50	<50	<10	<20	<0.05	470
11WA-16	393782	190.10	191.10	0.002			<1	5.63	<50	<50	<10	<20	<0.05	10
11WA-16	393783	191.10	192.00	0.003			<1	4.24	<50	<50	<10	<20	1.65	<10
11WA-16	393784	192.00	193.00	0.014			2	2.94	<50	<50	<10	<20	5.6	<10
11WA-16	393785	193.00	194.00	0.017			5	2.64	<50	<50	<10	20	5.58	30
11WA-16	393786	194.00	194.80	0.076			16	1.83	<50	<50	<10	<20	2.19	100
11WA-16	393787	194.80	195.70	0.071			8	3.87	<50	<50	<10	<20	<0.05	<10
11WA-16	393788	195.70	196.60	0.075			10	4.87	<50	<50	<10	<20	<0.05	<10
11WA-16	393789	196.60	197.40	0.069			10	4.43	<50	<50	<10	<20	<0.05	<10
11WA-16	393791	197.40	198.30	0.115			22	5.56	<50	<50	<10	<20	<0.05	<10
11WA-16	393792	198.30	199.20	0.442			23	4.39	<50	<50	<10	<20	<0.05	<10
11WA-16	393793	199.20	200.10	0.041			5	5.09	50	<50	<10	<20	0.05	<10
11WA-16	393794	200.10	201.00	0.002			<1	6.03	<50	410	<10	<20	0.07	<10
11WA-16	393795	201.00	202.00	<0.001			<0.5	5.51	<5	410	0.6	<2	0.09	<0.5
11WA-16	393796	202.00	203.00	<0.001			<0.5	5.77	8	310	0.7	<2	0.33	<0.5
11WA-17	393797	105.20	106.20	0.005			<0.5	7.1	<5	<10	<0.5	<2	0.3	<0.5
11WA-17	393798	106.20	107.20	0.008			<0.5	6	<5	<10	<0.5	<2	0.59	<0.5
11WA-17	393799	107.45	108.45	0.009			0.5	4.98	<5	<10	<0.5	<2	0.87	<0.5
11WA-17	393800	189.00	190.00	0.002			<0.5	4.31	<5	50	<0.5	<2	0.23	<0.5
11WA-17	393801	190.00	191.00	0.002			0.5	4.58	<5	60	<0.5	<2	0.29	<0.5
11WA-17	393802	191.00	192.00	<0.001			<0.5	4.53	<5	140	<0.5	<2	0.24	<0.5
11WA-17	393803	192.00	193.00	<0.001			<0.5	4.56	<5	170	<0.5	<2	0.3	<0.5
11WA-17	393804	193.00	194.00	<0.001			<0.5	4.27	<5	160	0.5	<2	0.43	<0.5
11WA-17	393805	194.00	195.00	0.064			<0.5	7.3	13	340	0.7	<2	2.55	<0.5
11WA-17	393806	195.00	196.00	0.017			8.3	4.57	<5	150	<0.5	<2	0.24	<0.5
11WA-17	393807	196.00	197.00	0.003			1.7	4.53	<5	150	<0.5	<2	0.31	<0.5
11WA-17	393808	219.00	220.00	0.003			2.3	6.5	<5	320	<0.5	<2	0.19	<0.5
11WA-17	393809	220.00	221.00	0.004			3.7	5.69	5	170	<0.5	<2	0.11	0.5

Hole #	Sample #	From	To	Au	Pt	Pd	Ag	Al	As	Ba	Be	Bi	Ca	Cd
		m	m	ppm	ppm	ppm	ppm	%	ppm	ppm	ppm	ppm	%	ppm
11WA-17	393811	221.00	222.00	0.003			3.3	5.36	<5	140	<0.5	<2	0.23	0.5
11WA-17	393812	222.00	223.00	0.035			49.9	5.43	<5	180	<0.5	<2	0.13	3.1
11WA-17	393813	223.00	224.00	0.003			3.2	7.29	<5	190	<0.5	<2	0.25	<0.5
11WA-17	393814	224.00	225.00	0.001			1.8	4.43	<5	120	<0.5	<2	0.05	<0.5
11WA-17	393815	225.00	226.00	0.008			7.3	4.69	<5	100	<0.5	<2	0.1	0.5
11WA-17	393816	226.00	227.00	0.003			3.2	4.94	<5	130	<0.5	<2	0.17	<0.5
11WA-17	393817	238.00	239.00	0.028			14.5	4.87	5	<10	<0.5	<2	0.81	0.6
11WA-17	393818	239.00	240.00	0.029			32.4	4.26	<5	<10	<0.5	<2	0.87	2.1
11WA-17	393819	240.00	241.00	0.017			6.6	5.19	<5	<10	<0.5	<2	0.24	<0.5
11WA-17	393820	241.00	242.00	0.008			1.8	6.93	<5	10	<0.5	<2	0.14	<0.5
11WA-17	393821	244.88	245.88	0.023			4	5.44	<50	120	<10	<20	1.51	<10
11WA-17	393822	245.88	246.88	0.002			1	6.24	<50	60	<10	<20	1.62	<10
11WA-17	393823	246.88	247.88	0.001			1	6.13	<50	<50	<10	<20	0.7	<10
11WA-17	393824	247.88	248.88	0.004			<1	6.41	<50	<50	<10	<20	0.22	<10
11WA-17	393825	248.88	249.86	0.009			3	6.22	<50	<50	<10	<20	0.58	<10
11WA-17	393826	249.80	250.90	0.051			11	5.24	<50	<50	<10	<20	0.82	<10
11WA-17	393827	250.90	251.82	0.004			2	6.21	<50	<50	<10	<20	0.09	<10
11WA-17	393828	251.82	252.90	0.005			1	5.63	<50	<50	<10	<20	0.32	<10
11WA-17	393829	252.90	253.80	0.005			1	6.51	<50	<50	<10	<20	0.57	<10
11WA-17	393831	253.86	254.86	0.006			1	6.09	<50	<50	<10	<20	0.3	<10
11WA-17	393832	254.86	255.86	0.018			5	6.09	<50	<50	<10	<20	0.16	<10
11WA-17	393833	255.86	256.86	0.035			10	5.33	<50	<50	<10	<20	0.11	<10
11WA-17	393834	256.86	257.86	0.019			6	5.06	<50	<50	<10	<20	1.06	<10
11WA-17	393835	257.86	258.85	0.027			13	5.22	<50	50	<10	<20	0.62	<10
11WA-17	393836	258.85	259.80	0.082			44	3.51	<50	<50	<10	<20	0.2	<10
11WA-17	393837	259.80	260.65	0.05			39	2.92	<50	<50	<10	20	0.16	<10
11WA-17	393838	260.65	261.45	0.067			35	2.52	<50	<50	<10	<20	0.36	<10
11WA-17	393839	261.45	262.40	0.04			25	2.87	<50	<50	<10	<20	0.09	<10
11WA-17	393840	262.40	263.35	0.019			9	5.66	<50	<50	<10	<20	0.09	<10
11WA-17	393841	263.35	264.46	0.01			4	5.77	<50	<50	<10	<20	0.11	<10
11WA-17	393842	264.46	265.00	0.003			3	5.31	<50	<50	<10	<20	0.06	<10
11WA-17	393843	265.00	266.45	0.019			7	5.59	<50	<50	<10	<20	0.06	<10
11WA-17	393844	266.45	267.40	0.004			1	6.06	<50	90	<10	<20	0.11	<10
11WA-17	393845	267.40	268.40	0.013			1	6.13	<50	210	<10	<20	0.08	<10
11WA-17	393846	268.40	269.43	0.012			4	6.08	<50	390	<10	<20	0.09	<10
11WA-17	393847	269.43	270.40	0.013			5	5.64	<50	50	<10	<20	0.27	<10
11WA-17	393848	270.40	271.40	0.016			1	6.07	<50	<50	<10	<20	0.17	<10
11WA-17	393849	271.40	272.40	0.018			6	7.65	<50	120	<10	<20	0.11	<10
11WA-17	393851	272.40	272.90	0.427			92	6.3	<50	240	<10	<20	0.1	110
11WA-17	393852	272.90	273.60	0.288			193	1.37	<50	<50	<10	<20	<0.05	630
11WA-17	393853	273.60	274.20	0.335			217	1.11	<50	<50	<10	<20	<0.05	300
11WA-17	393854	274.20	275.00	0.295			66	0.98	<50	<50	<10	<20	2.81	10
11WA-17	393855	275.00	275.50	0.293			150	0.97	<50	<50	<10	40	0.29	20
11WA-17	393856	275.50	276.00	0.365			202	0.36	<50	<50	<10	<20	0.34	370
11WA-17	393857	276.00	277.00	0.177			6	6.52	<50	50	<10	<20	1.62	<10
11WA-17	393858	277.00	278.20	0.012			<1	7.28	<50	<50	<10	<20	3.85	<10
11WA-17	393859	278.20	279.40	0.011			1	7.27	<50	<50	<10	<20	3.18	<10
11WA-17	393860	279.40	280.20	0.006			3	7.37	<50	70	<10	<20	0.79	<10
11WA-17	393861	280.60	281.25	0.164			76	6.57	<50	<50	<10	<20	0.21	10
11WA-17	393862	281.25	281.90	0.087			31	4.6	<50	<50	<10	<20	<0.05	20
11WA-17	393863	281.90	282.60	0.11			32	1.16	<50	<50	<10	<20	<0.05	380
11WA-17	393864	282.60	283.30	0.065			23	1.61	<50	<50	<10	<20	0.24	300
11WA-17	393865	283.30	284.00	1.39			161	3.04	<50	<50	<10	40	0.37	100
11WA-17	393866	284.00	284.75	0.116			46	5.32	<50	60	<10	<20	0.46	20
11WA-17	393867	284.75	285.50	0.461			76	5.56	<50	170	<10	<20	0.07	10
11WA-17	393868	285.50	286.10	0.039			3	6.12	<50	<50	<10	<20	0.08	<10
11WA-17	393869	286.10	287.00	0.037			1	7.17	<50	130	<10	<20	0.11	<10

Hole #	Sample #	From	To	Au	Pt	Pd	Ag	Al	As	Ba	Be	Bi	Ca	Cd
		m	m	ppm	ppm	ppm	ppm	%	ppm	ppm	ppm	ppm	%	ppm
11WA-17	393871	287.00	288.00	0.017			<1	7.2	<50	110	<10	<20	0.12	<10
11WA-17	393872	288.00	289.00	0.125			1	7.6	<50	70	<10	<20	0.14	<10
11WA-17	393873	289.00	290.00	0.019			<1	7.17	<50	120	<10	<20	0.15	<10
11WA-17	393874	315.90	316.80	<0.001			<0.5	7.35	<5	160	0.5	2	0.12	<0.5
11WA-17	393875	316.80	317.70	0.001			<0.5	6.7	<5	170	0.6	<2	0.14	<0.5
11WA-17	393876	317.70	318.60	0.003			<0.5	6.58	6	220	0.9	<2	0.23	<0.5
11WA-18	393877	15.75	16.75	0.002	0.0049	0.006	<0.5	5.83	<5	40	1	<2	7.3	<0.5
11WA-18	393878	16.75	17.80	0.001	<0.0005	<0.001	<0.5	5.89	<5	50	<0.5	<2	6.8	<0.5
11WA-18	393879	17.80	18.80	<0.001	<0.0005	<0.001	0.5	6.83	<5	50	<0.5	<2	7.39	<0.5
11WA-18	393880	28.00	29.00	0.025	<0.0005	<0.001	<0.5	6.18	5	30	<0.5	4	6.97	<0.5
11WA-18	393881	29.00	30.00	<0.001	<0.0005	<0.001	<0.5	6.24	<5	40	<0.5	2	6.87	<0.5
11WA-18	393882	47.86	48.77	<0.001	0.0047	0.021	<0.5	7.35	5	40	<0.5	2	7.08	<0.5
11WA-18	393883	48.77	49.70	0.001	0.0086	0.023	1	7.64	<5	40	0.6	<2	7.3	<0.5
11WA-18	393884	49.70	50.48	<0.001	0.0007	0.002	0.5	7.59	7	40	0.5	4	7.35	<0.5
11WA-18	393885	50.48	51.21	<0.001	0.0005	<0.001	0.5	7.36	15	50	0.7	<2	6.96	<0.5
11WA-18	393886	52.90	53.90	<0.001	<0.0005	0.001	0.5	6.55	9	50	0.9	2	7.4	<0.5
11WA-18	393887	53.90	54.90	<0.001	0.0005	0.001	0.5	7.63	7	50	0.9	<2	6.97	<0.5
11WA-18	393888	54.90	55.90	<0.001	<0.0005	<0.001	<0.5	5.97	<5	50	1.2	<2	7.08	<0.5
11WA-18	393891	63.90	64.90	<0.001	0.001	0.002	<0.5	6.9	6	40	0.7	<2	6.51	<0.5
11WA-18	393892	64.90	65.55	<0.001	<0.0005	0.001	<0.5	6.14	<5	50	1	<2	5.29	<0.5
11WA-18	393893	65.55	66.50	<0.001	0.0005	0.001	<0.5	8.18	<5	50	0.7	<2	7.25	<0.5
11WA-18	393894	76.05	76.47	<0.001	0.0005	0.001	0.5	8	14	40	0.5	5	6.15	<0.5
11WA-18	393895	76.47	77.30	<0.001	<0.0005	<0.001	<0.5	5.63	<5	40	1	<2	7.96	<0.5
11WA-18	393896	77.30	78.00	0.011	0.0035	0.004	<0.5	6.22	<5	30	1	<2	7.92	<0.5
11WA-18	393897	78.33	79.36	0.001	<0.0005	<0.001	<0.5	3.47	<5	30	1.4	<2	7.69	<0.5
11WA-18	393898	79.30	80.30	<0.001	<0.0005	<0.001	<0.5	4.04	5	30	1.6	<2	6.45	<0.5
11WA-18	393899	80.35	81.30	<0.001	<0.0005	<0.001	<0.5	2.83	6	20	2.2	<2	6.09	<0.5
11WA-18	393900	81.30	82.30	0.001	0.0008	<0.001	<0.5	3.25	11	20	1.6	<2	7.59	<0.5
11WA-18	393901	87.00	87.83	<0.001	<0.0005	<0.001	<0.5	6.47	<5	30	0.9	<2	7.27	<0.5
11WA-18	393902	87.83	88.60	<0.001	<0.0005	<0.001	<0.5	7.07	6	40	0.8	<2	7.07	<0.5
11WA-18	393903	88.60	89.35	<0.001	0.0006	0.001	0.6	6.83	<5	40	0.8	<2	7.48	<0.5
11WA-18	393904	89.35	90.25	<0.001	<0.0005	<0.001	0.6	5.9	14	60	1.1	<2	6.95	0.5
11WA-18	393905	90.25	91.10	<0.001	0.0005	<0.001	0.6	5.47	12	60	1.1	<2	5.8	0.8
11WA-18	393906	91.10	92.10	0.001	0.0007	0.001	0.6	8	19	40	0.6	<2	4.96	<0.5
11WA-18	393907	92.10	93.00	0.014	0.003	0.001	0.7	7.34	43	60	0.7	2	6	<0.5
11WA-18	393908	93.00	94.00	<0.001	<0.0005	<0.001	0.9	7.64	<5	110	0.6	<2	5.44	<0.5
11WA-18	393909	94.00	94.85	0.01	0.0044	0.007	1.2	7.87	26	90	0.5	4	5.74	<0.5
11WA-18	393911	94.85	95.80	0.001	0.0049	0.002	1	7.94	12	90	0.6	<2	5.22	<0.5
11WA-18	393912	95.80	96.60	0.004	0.0064	0.002	1.3	8.24	20	60	0.5	2	5.96	<0.5
11WA-18	393913	96.60	97.50	0.007	0.0021	0.003	2.9	8.84	<5	60	0.6	<2	5.92	<0.5
11WA-18	393914	97.50	98.50	0.004	0.0019	0.002	0.5	8.92	67	30	0.6	<2	7.08	<0.5
11WA-18	393915	106.00	107.00	0.005	0.0012	0.002	0.9	9.04	17	250	0.7	2	6.68	<0.5
11WA-18	393916	107.00	108.00	0.011	0.0019	0.001	1.2	8.89	14	140	0.7	<2	6.16	<0.5
11WA-18	393917	108.00	109.00	0.004	0.0013	0.001	0.6	9.34	46	60	0.6	<2	6.35	<0.5
11WA-18	393918	114.60	115.60	0.004	0.0013	0.001	<0.5	9.2	15	90	0.5	<2	5.77	<0.5
11WA-18	393919	115.60	116.60	0.02	0.0034	0.003	1.7	3.58	<5	170	0.6	<2	12.4	<0.5
11WA-18	393920	116.60	117.45	0.004	0.003	0.003	0.9	5.78	<5	390	0.8	<2	7.12	<0.5
11WA-18	393921	117.45	118.40	0.018	0.0031	0.005	1.5	5.5	11	180	0.9	2	5.9	<0.5
11WA-18	393922	118.40	119.40	0.021	0.0017	0.003	2	8.53	<5	200	0.6	<2	4.98	<0.5
11WA-18	393923	119.40	120.40	0.03	0.001	0.001	2	5.07	6	160	<0.5	<2	8.96	<0.5
11WA-18	393924	120.40	121.40	0.003	0.0011	0.001	0.5	7.88	<5	610	0.8	<2	3.6	<0.5
11WA-19	393925	42.40	43.00	<0.001			<0.5	8.45	6	60	1.6	<2	5.04	<0.5
11WA-19	393926	147.80	148.30	0.012			1.2	8.17	6	80	0.8	<2	5.74	0.6
11WA-19	393927	159.00	160.00	0.008			1.1	7.91	5	30	0.5	2	5.49	<0.5
11WA-19	393928	160.00	161.00	0.005			0.6	7.95	<5	50	0.5	<2	5.42	<0.5
11WA-19	393929	161.00	162.00	0.006			1.4	7.81	5	60	0.6	3	5.18	<0.5
11WA-19	393931	231.64	232.64	<0.001			<0.5	7.39	<5	100	0.8	<2	0.23	<0.5

Hole #	Sample #	From	To	Au	Pt	Pd	Ag	Al	As	Ba	Be	Bi	Ca	Cd
		m	m	ppm	ppm	ppm	ppm	%	ppm	ppm	ppm	ppm	%	ppm
11WA-19	393932	232.64	233.10	0.003			4	2.99	<5	20	<0.5	4	0.82	<0.5
11WA-19	393933	233.10	234.10	0.002			1.8	6.19	<5	110	1.3	<2	0.72	<0.5
11WA-19	393934	234.10	235.10	0.003			0.8	5.2	<5	130	0.7	2	0.39	<0.5
11WA-19	393935	235.10	236.00	0.002			1.1	6.96	<5	200	1.7	<2	0.84	<0.5
11WA-19	393936	236.00	237.00	0.004			1.3	4.92	<5	200	1.3	<2	0.64	<0.5
11WA-19	393937	240.00	241.00	0.005			0.9	6.59	<5	220	0.7	2	0.4	11
11WA-19	393938	241.00	242.00	0.002			0.8	4.61	<5	60	<0.5	<2	0.05	8.4
11WA-19	393939	242.00	243.00	0.004			0.6	6.1	<5	370	<0.5	<2	0.27	13.6
11WA-19	393940	243.00	244.00	0.003			0.5	6.27	<5	320	0.7	<2	0.81	7.1
11WA-19	393941	244.00	245.00	0.004			0.9	4.91	<5	110	0.6	2	0.95	22.6
11WA-19	393942	245.00	246.00	0.01			2.6	6.88	<5	250	0.9	<2	1.34	10.1
11WA-19	393943	253.00	254.00	0.057			2.9	6.58	<5	280	1.7	<2	1.09	<0.5
11WA-19	393944	254.00	255.00	0.012			1	5.44	<5	260	1.4	<2	0.48	<0.5
11WA-19	393945	259.00	260.00	0.086			7.5	6.09	6	60	<0.5	<2	0.13	0.5
11WA-19	393946	260.00	261.00	0.067			4.6	5.58	13	20	<0.5	<2	0.12	<0.5
11WA-19	393947	265.00	266.00	0.141			25.5	7.35	6	170	0.5	85	0.09	0.6
11WA-19	393948	266.00	267.00	0.057			8.1	7.02	<5	130	<0.5	19	0.07	0.5
11WA-19	393949	274.60	275.60	<0.001			0.6	6.34	<5	350	0.6	2	0.27	<0.5
11WA-19	393951	275.60	276.60	0.004			1	5.81	5	280	0.5	<2	0.25	<0.5
11WA-19	393952	276.60	277.60	0.006			0.6	6.01	<5	290	<0.5	<2	0.19	<0.5
11WA-19	393953	277.60	278.60	0.01			0.6	6.16	5	280	<0.5	2	0.12	<0.5
11WA-19	393954	278.60	279.60	0.007			0.7	6.3	<5	300	<0.5	3	0.11	<0.5
11WA-19	393955	279.60	280.60	0.006			0.7	5.34	<5	210	<0.5	<2	0.14	<0.5
11WA-19	393956	280.60	281.60	0.002			0.5	6.17	<5	380	1	<2	0.44	<0.5
11WA-19	393957	286.28	287.25	0.087			4.4	7.49	<5	100	0.5	<2	1.77	<0.5
11WA-19	393958	287.25	288.25	0.005			0.5	6.94	<5	110	<0.5	<2	1.33	<0.5
11WA-19	393959	296.90	297.90	0.001			<0.5	7.37	<5	430	0.6	<2	1.85	<0.5
11WA-19	393960	297.90	298.90	<0.001			0.5	6.83	<5	340	1	<2	0.76	<0.5
11WA-19	393961	298.90	299.90	<0.001			<0.5	6.15	<5	350	1.3	<2	1.26	<0.5
11WA-19	393962	299.90	300.90	<0.001			<0.5	6.2	<5	310	1.3	<2	1.37	<0.5
11WA-19	393963	300.90	301.90	<0.001			<0.5	6.84	<5	630	1.5	<2	2.56	<0.5
11WA-19	393964	301.90	302.90	<0.001			<0.5	7.2	6	580	1.5	<2	3.04	<0.5
11WA-19	393965	302.90	303.90	<0.001			0.8	5.7	<5	360	1	<2	6.89	<0.5
11WA-19	393966	303.90	304.80	<0.001			0.5	7.83	<5	530	1.3	<2	0.17	<0.5
11WA-19	393967	304.80	305.80	<0.001			0.5	7.27	<5	460	1	<2	1.66	<0.5
11WA-19	393968	308.50	309.25	0.021			4.9	6.78	<5	560	1.2	5	0.79	<0.5
11WA-19	393969	309.25	310.00	0.023			5	3.67	<5	280	0.6	3	1.85	<0.5
11WA-19	393971	317.50	318.50	0.009			1.2	4.55	<5	200	0.8	<2	0.31	<0.5
11WA-19	393972	318.50	319.50	0.021			2.4	4.74	7	80	0.5	<2	0.37	<0.5
11WA-19	393973	319.50	320.50	0.003			0.6	4.83	<5	210	0.7	<2	0.14	<0.5
11WA-19	393974	325.00	326.00	0.001			<0.5	5.77	9	310	1.1	<2	0.28	<0.5
11WA-19	393975	326.00	327.00	<0.001			<0.5	6.69	6	550	1.3	<2	0.18	<0.5
11WA-19	393976	327.00	328.00	<0.001			<0.5	5.05	11	110	<0.5	<2	0.09	<0.5
11WA-19	393977	328.00	329.00	0.001			<0.5	6.45	8	330	0.6	<2	0.11	<0.5
11WA-19	393978	329.00	330.00	<0.001			<0.5	5.17	<5	330	0.6	<2	0.18	<0.5
11WA-19	393979	330.00	331.00	<0.001			<0.5	5.38	5	310	0.6	<2	0.37	<0.5
11WA-19	393980	339.80	340.80	0.014			0.9	5.6	<5	510	<0.5	<2	0.51	<0.5
11WA-19	393981	340.80	341.80	0.018			1.2	5.09	<5	400	0.6	<2	0.43	<0.5
11WA-19	393982	341.80	342.80	0.044			1.9	5.31	<5	290	0.7	3	1.06	<0.5
11WA-20	393983	304.70	305.55	0.087			5	4.26	<5	120	<0.5	3	0.17	<0.5
11WA-20	393984	305.55	306.40	0.132			8.2	4.48	<5	50	<0.5	29	0.36	0.5
11WA-20	393985	316.90	317.65	0.02			2.1	3.84	<5	80	<0.5	3	0.05	<0.5
11WA-20	393986	317.65	318.35	0.062			4	3.58	<5	70	<0.5	7	0.1	<0.5
11WA-20	393987	335.00	336.00	0.003			0.9	4.08	<5	220	<0.5	15	0.04	<0.5
11WA-20	393988	336.00	337.00	0.002			0.7	4.18	<5	250	<0.5	3	0.05	<0.5
11WA-20	393989	337.00	338.00	0.003			<0.5	4.03	<5	210	<0.5	<2	0.14	<0.5
11WA-20	393991	338.00	339.00	0.028			5.2	4.98	<5	60	0.5	20	0.7	<0.5

Hole #	Sample #	From	To	Au	Pt	Pd	Ag	Al	As	Ba	Be	Bi	Ca	Cd
		m	m	ppm	ppm	ppm	ppm	%	ppm	ppm	ppm	ppm	%	ppm
11WA-20	393992	347.40	348.40	0.015			2.4	5.87	6	50	<0.5	<2	1.56	<0.5
11WA-20	393993	348.40	349.40	0.008			0.6	5.19	<5	120	<0.5	<2	1.63	<0.5
11WA-20	393994	349.40	350.40	0.037			8	6.96	9	100	1.1	<2	3.65	<0.5
11WA-20	393995	350.40	351.40	0.005			0.7	4.59	<5	190	0.5	<2	2.51	<0.5
11WA-20	393996	362.50	363.50	<0.001			0.6	5.64	<5	180	0.7	<2	0.77	<0.5
11WA-20	393997	363.50	364.55	0.008			3.3	4.9	<5	220	0.7	<2	0.34	0.5
11WA-20	393998	364.55	365.55	0.06			33.3	5.78	5	80	<0.5	<2	1.09	1.6
11WA-20	393999	365.55	366.55	0.134			79.6	4.39	<5	20	<0.5	<2	0.52	3.5
11WA-20	394000	366.55	367.55	0.061			29.9	4.26	<5	30	<0.5	<2	0.59	1.8
11WA-20	215901	367.55	368.55	0.026			8.1	5.07	5	10	<0.5	<2	0.32	0.5
11WA-20	215902	368.55	369.50	0.02			5.6	4.87	<5	30	<0.5	<2	0.55	<0.5
11WA-20	215903	369.50	370.50	0.001			0.7	4.02	<5	10	<0.5	<2	0.08	<0.5
11WA-20	215904	370.50	371.45	0.023			6.6	7.13	10	360	2.1	<2	1.52	1.2
11WA-20	215905	371.45	372.45	0.021			5	6.35	6	120	2.1	<2	2.21	1.2
11WA-20	215906	384.30	385.30	0.01			4.5	6.07	9	100	2.1	<2	1.02	1
11WA-20	215907	390.55	391.55	0.003			<0.5	5.33	<5	80	0.5	<2	1.29	<0.5
11WA-20	215908	391.55	392.60	0.002			0.5	5.17	5	200	0.8	<2	0.61	<0.5
11WA-20	215909	392.60	393.60	0.001			0.9	5.54	<5	200	1.3	<2	0.44	<0.5
11WA-20	215911	393.60	394.60	0.003			0.6	5.72	<5	110	2.1	<2	0.87	<0.5
11WA-20	215912	394.60	395.60	0.001			0.9	5.83	5	90	1.9	<2	0.83	<0.5
11WA-20	215913	395.60	396.60	0.002			0.6	5.63	<5	210	0.8	<2	0.25	<0.5
11WA-20	215914	396.60	397.60	0.002			0.9	5.89	<5	170	1.4	<2	0.56	<0.5
11WA-20	215915	397.60	398.60	0.003			1.4	5.68	<5	260	0.7	<2	0.25	<0.5
11WA-20	215916	398.60	399.60	0.004			1.4	5.95	<5	240	0.8	<2	0.3	<0.5
11WA-20	215917	399.60	400.20	0.001			1.3	5.81	<5	70	1	<2	0.56	0.6
11WA-20	215918	400.20	401.20	0.004			2.2	5.42	<5	120	1.9	<2	0.68	<0.5
11WA-20	215919	401.20	402.20	0.007			0.9	5.08	<5	260	0.6	<2	0.16	<0.5
11WA-20	215920	402.20	403.20	0.01			1.3	4.81	7	100	<0.5	<2	0.11	0.6
11WA-20	215921	403.20	404.00	0.044			5.2	4.79	<5	20	<0.5	<2	0.08	0.9
11WA-20	215922	404.00	405.00	0.018			2.3	4.39	<5	50	<0.5	<2	1.17	<0.5
11WA-20	215923	405.00	406.00	0.07			4.3	4.28	<5	60	0.5	<2	1.25	0.9
11WA-20	215924	406.00	407.00	0.013			2.1	4.45	<5	50	<0.5	<2	0.27	3.7
11WA-20	215925	407.00	408.00	0.009			1.4	4.48	<5	40	<0.5	<2	0.03	11.7
11WA-20	215926	408.00	409.00	0.027			7.7	4.31	<5	60	<0.5	2	0.03	143
11WA-20	215927	409.00	409.50	0.018			4.5	4.01	5	40	<0.5	4	0.02	166.5
11WA-20	215928	409.50	410.50	0.032			5.3	2.68	7	30	<0.5	5	0.03	229
11WA-20	215929	410.50	411.40	0.016			9.8	5.02	<5	110	0.9	3	0.34	38.9
11WA-20	215931	411.40	412.40	0.006			1.4	6.03	<5	210	<0.5	<2	0.63	7.1
11WA-20	215932	412.40	413.40	0.011			1.4	6.11	5	70	<0.5	<2	0.46	0.5
11WA-20	215933	413.40	414.40	0.015			2.6	5.95	<5	110	0.7	<2	0.12	0.8
11WA-20	215934	414.40	415.40	0.007			0.8	6.38	<5	80	0.7	<2	0.25	0.5
11WA-20	215935	415.40	416.40	0.003			<0.5	6.1	<5	340	0.7	<2	0.26	<0.5

Hole #	Sample #	Co	Cr	Cu	Fe	Ga	In	K	La	Mg	Mn	Mo	Na	Ni
		ppm	ppm	ppm	%	ppm	ppm	%	ppm	%	ppm	ppm	%	ppm
10WA-01	392551	58	28	86	11.35	20		0.37	<10	4.57	2390	<1	1.11	278
10WA-01	392552	60	72	320	13.5	20		0.3	<10	4.73	3070	<1	0.61	217
10WA-01	392553	63	120	141	11.8	20		0.3	<10	4.73	2480	<1	0.92	206
10WA-01	392554	36	86	140	12.15	20		0.17	<10	2.85	1770	<1	1.59	80
10WA-01	392555	30	192	86	7.47	20		0.15	<10	4.42	1635	<1	1.45	99
10WA-01	392556	24	137	11	6.55	20		0.37	10	3.56	1295	<1	1.46	80
10WA-01	392557	97	103	942	19.55	20		0.12	10	3.08	3140	<1	0.32	261
10WA-01	392558	21	76	3	5.93	20		0.19	<10	3.18	1310	<1	1.79	76
10WA-01	392559	53	28	136	11.45	20		0.37	<10	4.59	2190	<1	0.96	146
10WA-01	392560	56	42	179	11.8	20		0.29	<10	4.95	2320	<1	0.94	161
10WA-01	392561	56	152	1235	10.7	20		0.46	<10	5.05	2240	<1	1.03	132
10WA-01	392562	44	123	61	10.65	20		0.64	<10	4.85	2110	<1	1.24	84
10WA-01	392563	62	153	827	12.25	20		0.35	<10	5.43	2470	<1	1.02	93
10WA-01	392564	97	94	1165	10.25	20		0.21	<10	4.76	1685	<1	1.1	279
10WA-01	392565	52	47	320	8.67	20		0.13	<10	4.87	1735	<1	1.03	167
10WA-01	392566	47	61	105	8.11	20		0.18	<10	4.84	1750	<1	1.04	184
10WA-01	392567	62	77	998	9.16	20		0.25	<10	4.22	1975	<1	1.67	106
10WA-01	392568	34	123	34	5.66	20		0.06	<10	5.04	1220	<1	1.33	108
10WA-01	392569	44	148	101	6.09	10		0.06	<10	6	1370	<1	1.08	160
10WA-01	392570	37	52	60	5.68	10		0.02	<10	4.95	1370	<1	1.09	103
10WA-01	392572	36	48	93	5.64	20		0.07	<10	4.81	1295	<1	0.82	104
10WA-01	392573	118	212	1055	8.26	20		0.05	<10	4.94	1320	<1	0.63	351
10WA-01	392574	112	328	911	9.33	20		0.04	<10	5.93	1445	<1	0.66	329
10WA-01	392575	63	148	479	7.07	20		0.03	<10	4.83	1385	<1	0.83	168
10WA-01	392576	99	204	806	8.49	20		0.03	<10	5.51	1430	<1	0.81	261
10WA-01	392577	53	149	199	6.88	20		0.03	<10	5.27	1315	<1	0.83	128
10WA-01	392578	67	151	352	7.47	20		0.04	<10	5.76	1450	<1	0.86	166
10WA-01	392579	57	109	300	6.6	10		0.04	<10	5.26	1390	<1	1.04	180
10WA-01	392580	35	60	100	6.09	20		0.07	<10	5.47	1490	<1	1.11	106
10WA-01	392581	36	65	70	5.63	20		0.06	<10	5.09	1410	<1	1.2	113
10WA-01	392582	47	56	117	6.25	20		0.09	<10	5.45	1575	<1	1.06	144
10WA-01	392583	52	86	209	6.6	20		0.1	<10	5.65	1610	<1	1.06	181
10WA-01	392584	35	67	64	6.41	20		0.33	10	4.56	1590	<1	1.32	112
10WA-01	392585	25	86	60	5.88	20		0.96	20	2.8	1180	<1	1.86	77
10WA-02	392586	5	2	61	9.22	20		1.15	20	0.24	1915	4	2.33	4
10WA-02	392587	5	3	54	8.06	20		1.64	20	0.25	1620	1	2.49	2
10WA-02	392588	6	1	28	8.58	20		1.39	20	0.26	1930	<1	2.13	<1
10WA-02	392589	7	2	45	9.5	20		1.23	20	0.32	1965	1	1.93	1
10WA-02	392590	2	2	73	9.55	20		0.88	20	0.21	1260	4	2.55	<1
10WA-02	392591	6	4	23	8.96	20		1.32	20	0.31	1850	1	2.02	<1
10WA-02	392593	2	3	24	2.03	20		1.14	40	0.12	497	<1	3.46	2
10WA-02	392594	3	6	9	1.59	20		1.17	30	0.17	453	1	4.4	2
10WA-02	392595	26	7	5	10.1	10		0.84	20	0.15	243	11	3.69	13
10WA-02	392596	26	6	7	9.33	10		1.27	30	0.14	170	43	2.82	10
10WA-02	392597	15	7	12	8.92	10		1.25	30	0.23	260	85	2.13	9
10WA-02	392598	6	13	1	3.44	20		1.86	20	0.27	446	2	3.27	4
10WA-02	392599	16	6	2	9.45	20		1.61	20	0.18	272	3	2.87	6
10WA-02	392600	6	4	2	3.77	20		1.36	50	0.18	320	3	3.94	3
10WA-02	392601	6	3	4	3.45	20		1.28	60	0.16	316	2	4.9	2
10WA-02	392602	13	5	7	4.03	20		1.16	20	0.17	320	2	3.93	4
10WA-03	392603	32	3	22	10.95	20		0.11	<10	1.56	1660	<1	2.67	2
10WA-03	392604	35	17	86	13.3	20		0.06	<10	2.5	2050	<1	1.89	25
10WA-03	392605	49	12	99	14.25	20		0.07	<10	2.4	1925	<1	2.16	29
10WA-03	392606	50	18	90	13.2	20		0.07	<10	2.58	1735	<1	2.18	35
10WA-03	392607	44	20	107	12.15	20		0.07	<10	3.06	1915	<1	1.93	29
10WA-03	392608	35	19	95	12.9	20		0.05	<10	2.88	1770	<1	1.97	35
10WA-03	392609	32	22	85	10.9	20		0.06	<10	2.89	1570	<1	1.93	33

Hole #	Sample #	Co	Cr	Cu	Fe	Ga	In	K	La	Mg	Mn	Mo	Na	Ni
		ppm	ppm	ppm	%	ppm	ppm	%	ppm	%	ppm	ppm	%	ppm
10WA-03	392610	26	24	29	10.15	20		0.05	<10	3.08	1405	<1	1.94	7
10WA-03	392611	22	4	5	8.12	20		0.06	<10	1.45	843	<1	2.75	5
10WA-03	392612	40	5	5	7.99	20		0.05	<10	2	1070	<1	2.42	5
10WA-03	392614	50	19	111	9.7	20		0.05	<10	3.53	1510	<1	1.67	32
10WA-03	392615	41	6	34	8.65	20		0.07	<10	2.19	1140	<1	2.19	31
10WA-03	392616	43	28	79	8.56	20		0.07	<10	3.09	1370	<1	1.88	37
10WA-03	392617	40	3	9	9.58	20		0.07	<10	1.7	1340	<1	2.59	2
10WA-03	392618	37	4	12	9.3	20		0.06	<10	1.61	1285	<1	2.62	<1
10WA-03	392619	38	3	10	9.72	20		0.06	<10	1.76	1380	<1	2.54	<1
10WA-03	392620	41	3	19	9.84	20		0.05	<10	1.63	1345	<1	2.6	3
10WA-03	392621	35	22	56	11.25	20		0.05	<10	3.16	2200	<1	1.71	34
10WA-03	392622	26	24	52	10.65	20		0.05	<10	3.19	2160	<1	1.68	29
10WA-03	392623	26	6	33	9.94	20		0.05	<10	1.76	1485	<1	2.46	20
10WA-03	392624	27	8	39	10.5	20		0.04	<10	1.9	1555	<1	2.44	26
10WA-03	392625	34	23	73	12.75	20		0.03	<10	3.11	2170	<1	1.77	36
10WA-03	392631	55	2	32	9.79	20		0.04	<10	3.65	1190	<1	1.93	2
10WA-03	392632	48	1	27	8.95	20		0.03	<10	3.06	1060	<1	2.27	3
10WA-03	392633	47	<1	26	9.45	20		0.03	<10	3.69	1215	<1	2.1	4
10WA-03	392635	44	1	49	9.29	20		0.03	<10	3.18	1095	<1	2.03	2
10WA-03	392636	46	1	47	9.54	20		0.03	<10	3.25	1115	<1	2.1	9
10WA-03	392637	46	1	43	9.62	20		0.03	<10	3.27	1115	<1	2.01	6
10WA-03	392638	46	3	46	9.29	20		0.03	<10	3.3	1100	<1	1.99	7
10WA-03	392639	48	4	49	9.49	20		0.04	<10	3.31	1120	<1	2.03	5
10WA-04	392640	35	246	87	5.1	20		0.19	<10	5.45	979	<1	1.1	211
10WA-04	392641	33	265	137	4.73	10		0.09	<10	4.86	826	<1	1.1	208
10WA-04	392642	35	289	156	4.92	10		0.09	<10	5.05	860	<1	1.09	226
10WA-04	392643	32	258	59	4.93	10		0.54	<10	4.94	810	<1	1.11	162
10WA-04	392644	27	150	47	4.55	20		0.57	<10	3.61	746	<1	1.41	107
10WA-04	392645	33	286	101	4.2	10		0.07	<10	4.78	759	<1	0.97	198
10WA-04	392646	34	286	112	4.63	10		0.1	<10	5.27	846	<1	1.04	199
10WA-04	392647	35	313	110	4.57	10		0.08	<10	5.38	818	<1	0.98	212
10WA-04	392648	36	313	112	4.78	20		0.06	<10	5.58	859	<1	0.99	222
10WA-04	392649	35	324	112	4.77	10		0.05	<10	5.62	855	<1	1	221
10WA-04	392650	35	306	204	4.53	10		0.05	<10	5.28	829	<1	1	237
10WA-04	392651	29	306	81	4.05	10		1.58	<10	4.97	833	<1	0.65	114
10WA-04	392652	40	432	96	5.38	10		0.19	<10	6.83	978	<1	0.89	165
10WA-04	392653	41	412	122	5.2	10		0.14	<10	6.74	975	<1	0.94	178
10WA-05	392654	33	192	34	4.18	20		0.14	<10	4.97	737	1	1.24	178
10WA-05	392655	42	274	70	5.24	10		0.17	<10	6.51	883	<1	1.1	248
10WA-05	392656	38	295	114	4.36	20		0.18	<10	5.21	730	<1	1.05	225
10WA-05	392657	31	273	61	4.55	20		0.19	<10	4.74	799	<1	1.31	152
10WA-05	392658	36	473	139	4.68	20		0.17	10	6.04	849	<1	1.06	194
10WA-05	392659	22	314	114	5.9	20		0.36	10	5.25	802	1	1.11	103
10WA-05	392661	9	23	736	12.35	30		0.83	20	3.09	384	2	0.69	31
10WA-05	392662	8	2	361	8.45	30		0.57	30	5.15	301	1	0.08	7
10WA-05	392663	<1	4	196	5.02	20		0.61	30	3.01	252	1	0.1	3
10WA-05	392664	1	2	454	10.1	20		0.32	40	3.22	323	1	0.21	11
10WA-05	392665	4	1	767	16.1	20		0.47	30	2.4	321	3	0.37	21
10WA-05	392666	6	3	894	17.4	20		1.68	40	0.54	200	3	0.74	24
10WA-05	392667	9	9	943	18.15	30		1.87	50	0.18	69	2	0.92	25
10WA-05	392668	3	21	861	14.25	30		1.81	30	0.56	139	1	1.04	18
10WA-05	392669	9	13	819	21.7	20		1.07	20	1.01	215	1	0.69	30
10WA-05	392671	2	8	2030	23.7	30		0.27	20	2.9	378	<1	0.32	33
10WA-05	392672	2	4	1310	26.3	20		0.15	10	2.21	458	1	0.45	38
10WA-05	392673	2	5	1695	23.1	20		0.26	10	2.46	612	<1	0.65	33
10WA-05	392674	1	3	1530	19.7	30		0.29	20	3.39	664	1	0.38	27
10WA-05	392675	<1	7	803	15.6	30		0.25	<10	3.27	927	1	0.5	22

Hole #	Sample #	Co	Cr	Cu	Fe	Ga	In	K	La	Mg	Mn	Mo	Na	Ni
		ppm	ppm	ppm	%	ppm	ppm	%	ppm	%	ppm	ppm	%	ppm
10WA-05	392676	<1	9	926	14.2	30		0.38	10	3.49	1045	2	0.45	20
10WA-05	392677	<1	12	1125	16.15	30		0.32	10	3.27	961	1	0.44	24
10WA-05	392678	2	11	951	17.2	20		0.47	10	3.53	704	1	0.38	26
10WA-05	392679	1	12	1230	17.75	10		0.32	10	2.73	633	<1	0.28	28
10WA-05	392681	4	5	1055	25.9	10		0.29	10	3.47	717	1	0.24	37
10WA-05	392682	1	5	1050	28.6	20		0.23	10	3.72	578	<1	0.13	41
10WA-05	392683	5	1	2460	28.4	10		0.2	30	4.29	523	<1	0.19	38
10WA-05	392684	3	7	701	20.2	20		0.17	10	6.52	1110	<1	0.27	26
10WA-05	392685	1	<1	1795	22.5	20		0.47	10	8.05	962	1	0.16	31
10WA-05	392686	22	<1	1015	26.8	20		0.08	<10	7.12	665	1	0.1	36
10WA-05	392687	2	3	446	11.95	20	20	0.08	20	9.53	1070	<1	0.24	15
10WA-05	392688	2	2	681	9.86	20	10	0.18	20	10.85	1230	<1	0.31	13
10WA-05	392689	8	1	1160	16.05	30	20	0.38	10	11.4	1705	<1	0.17	21
10WA-05	392691	33	16	354	25.2	20	30	0.16	20	5.64	890	<1	0.31	27
10WA-05	392692	24	13	534	41.2	20	70	<0.01	<10	5	284	<1	0.01	24
10WA-05	392693	8	67	64	4.15	10	<10	0.17	10	5.56	1465	<1	2.14	39
10WA-05	392694	5	66	93	5.13	20	10	0.16	10	5.23	1360	<1	1.85	29
10WA-05	392695	45	14	716	32.4	20	50	0.01	10	6.57	561	<1	0.02	26
10WA-05	392696	4	99	146	6.73	20	10	0.18	20	4.53	1310	<1	1.23	16
10WA-05	392697	19	125	40	3.37	20	<10	0.16	10	4.48	938	<1	1.62	62
10WA-05	392698	24	134	16	2.91	20	10	0.35	20	5.19	906	<1	1.75	107
10WA-05	392699	18	145	29	2.82	20	<10	0.31	10	5.44	1035	<1	1.47	131
10WA-05	392701	29	165	52	4.47	20	10	0.22	10	5.6	958	<1	1.21	123
10WA-05	392702	34	134	318	4.91	20	<10	0.25	10	5.26	909	<1	1.17	174
10WA-05	392703	30	164	60	4.83	10	10	0.29	10	5.39	954	<1	1.24	137
10WA-05	392704	28	160	44	4.73	20	10	0.32	10	5.29	1035	<1	1.35	117
10WA-05	392705	25	151	37	4.75	10	<10	0.38	10	4.98	1110	<1	1.36	110
10WA-05	392706	4	13	1420	43.5	<10	70	0.01	10	2.98	475	<1	0.03	90
10WA-05	392707	10	26	1985	46.3	10	70	0.01	<10	2.85	541	<1	0.06	90
10WA-05	392708	26	290	137	5.67	10	<10	0.32	10	5.46	1135	<1	1.08	148
10WA-05	392709	20	216	1165	8.32	10	<10	0.55	10	4.49	1140	<1	1.22	128
10WA-05	392711	36	138	100	8.55	10	<10	0.7	10	4.39	1020	<1	1.03	93
10WA-05	392712	29	73	88	6.88	20	<10	1.06	20	4.23	1120	<1	1.06	61
10WA-05	392713	18	18	235	14.1	20	10	1.64	10	4.22	660	<1	0.78	32
10WA-05	392714	17	18	128	5.31	10	<10	0.91	10	4.73	1085	<1	1.02	30
10WA-05	392715	13	63	834	5.33	20	<10	0.99	20	6.75	614	1	0.28	74
10WA-05	392716	50	309	1365	5.99	10	10	0.34	10	6.09	764	<1	1.13	505
10WA-05	392717	70	333	956	7.36	10	10	0.28	10	8.59	1170	<1	0.72	632
10WA-05	392718	74	445	1165	8.21	10	<10	0.34	10	8.94	1360	<1	0.91	694
10WA-05	392719	104	459	2850	9	10	10	0.2	10	10.85	1265	<1	0.44	1220
10WA-05	392721	93	434	2390	9.13	<10	<10	0.13	10	10.5	1395	<1	0.29	1140
10WA-05	392722	125	481	2150	9.73	10	<10	0.09	10	11.2	1285	<1	0.21	1450
10WA-05	392723	88	621	1070	9.39	10	30	0.2	10	10.35	1245	<1	0.4	873
10WA-05	392724	93	736	395	8.68	<10	<10	0.11	10	11.75	1105	<1	0.23	1190
10WA-05	392725	96	859	126	9.12	10	<10	0.31	10	12.1	1375	<1	0.35	1210
10WA-05	392726	78	719	135	9.05	10	<10	0.38	10	11.7	1860	<1	0.44	757
10WA-05	392727	125	1120	594	10.4	<10	<10	0.09	10	14.8	1365	<1	0.2	1710
10WA-05	392728	127	714	1235	8.91	<10	<10	0.34	10	12.35	1340	<1	0.3	2420
10WA-05	392729	84	688	72	10.25	10	<10	0.7	10	12.65	1685	<1	0.19	1020
10WA-05	392731	44	320	2140	6.71	10	<10	0.84	10	6.52	913	<1	1.02	410
10WA-05	392732	41	279	1870	5.75	10	10	0.92	10	5.87	846	<1	0.98	388
10WA-05	392733	28	284	2590	4.17	10	<10	0.77	10	3.84	628	<1	1.24	272
10WA-05	392734	39	268	1810	4.78	10	<10	0.96	10	4.16	613	<1	0.87	318
10WA-05	392735	51	250	2360	5.46	10	<10	0.91	10	4.72	638	<1	0.86	421
10WA-05	392736	38	260	2290	5.11	10	<10	0.87	10	4.48	674	<1	1	266
10WA-05	392737	44	224	1450	5.34	10	<10	0.8	10	5.58	659	<1	0.88	361
10WA-05	392738	48	293	1110	5.29	10	<10	0.72	10	6.48	821	<1	0.94	457

Hole #	Sample #	Co	Cr	Cu	Fe	Ga	In	K	La	Mg	Mn	Mo	Na	Ni
		ppm	ppm	ppm	%	ppm	ppm	%	ppm	%	ppm	ppm	%	ppm
10WA-05	392739	10	299	2750	4.17	20	<10	1.08	20	5.48	781	<1	1.22	86
10WA-05	392741	20	254	1220	10	20	<10	0.9	10	4.74	656	1	0.98	271
10WA-05	392742	9	232	951	4.65	20	<10	1.03	20	5.08	708	<1	1.27	121
10WA-05	392743	34	306	734	10.6	20	10	0.37	20	5.61	924	<1	1.15	152
10WA-05	392744	33	273	1135	10.35	10	10	0.37	20	5.33	837	1	1.01	119
10WA-05	392745	9	213	879	5.62	20	10	0.68	20	4.9	822	<1	1.37	103
10WA-05	392746	11	223	521	4.09	20	<10	1	10	4.62	757	<1	1.49	97
10WA-05	392747	18	271	741	5.39	20	10	1.13	10	5.26	860	<1	1.29	146
10WA-05	392748	36	321	677	6.4	10	10	0.66	10	7.66	1050	<1	0.87	237
10WA-05	392749	37	300	535	5.77	10	10	0.54	10	7.11	978	<1	0.99	316
10WA-05	392751	20	274	427	5.52	10	10	0.67	20	7.29	1150	<1	1.18	138
10WA-05	392752	12	217	454	5.63	10	10	0.92	20	5.75	909	<1	1.72	70
10WA-05	392753	15	183	503	5.02	20	10	0.82	10	4.33	891	<1	1.81	87
10WA-05	392754	22	270	552	6.77	10	10	0.6	20	6.66	1235	<1	1.95	143
10WA-05	392755	58	337	279	6.74	10	30	0.39	10	7.98	1105	<1	0.8	540
10WA-05	392756	27	256	1005	34.9	20	50	0.49	10	3.24	636	<1	0.55	591
10WA-05	392757	9	288	268	11	20	10	0.94	10	7.21	1535	<1	0.85	138
10WA-05	392758	29	352	27	5.99	10	10	0.93	10	7.77	1250	<1	0.95	233
10WA-05	392759	14	163	209	7.03	10	10	0.35	10	4.52	997	<1	1.43	273
10WA-05	392761	34	221	211	8.8	20	10	0.31	10	5.47	1225	<1	1.2	315
10WA-05	392762	68	326	4570	17.6	20	30	0.31	<10	5.21	1155	<1	1.09	851
10WA-05	392763	198	269	2080	18.7	20	30	0.26	<10	4.89	1045	<1	1.08	767
10WA-05	392764	178	285	816	16.1	20	50	0.37	<10	5.07	1145	<1	1.17	655
10WA-05	392765	57	253	639	11.8	20	10	0.47	<10	4.82	1185	<1	1.51	421
10WA-05	392766	11	193	8	4.33	20	10	0.38	10	4.74	732	<1	1.85	225
10WA-05	392767	157	308	666	16.15	10	20	0.35	<10	4.83	973	<1	1.14	600
10WA-05	392768	108	254	926	10.4	20	10	0.35	10	4	824	<1	1.21	340
10WA-05	392769	54	245	533	7.78	20	10	0.6	<10	3.13	844	<1	1.41	254
10WA-05	392770	74	353	1435	12.15	20	10	0.27	10	4.29	866	<1	1.01	391
10WA-05	392771	98	299	821	14.7	20	10	0.25	<10	3.94	761	<1	1.03	568
10WA-05	392772	93	258	2160	12.4	10	10	0.13	10	2.98	608	<1	0.88	488
10WA-05	392773	92	286	1120	13.5	10	20	0.4	<10	4.87	744	<1	0.91	526
10WA-05	392774	151	292	1870	14.8	10	50	0.37	<10	3.69	661	<1	0.9	591
10WA-05	392775	63	320	511	10.85	20	10	0.14	<10	3.57	818	<1	0.96	420
10WA-05	392776	75	293	887	12	20	10	0.1	10	4.09	759	<1	0.87	462
10WA-05	392777	96	247	846	15.05	20	20	0.14	10	3.87	603	<1	0.86	657
10WA-05	392778	85	322	2890	13.9	10	10	0.31	<10	4.37	973	<1	1.01	476
10WA-05	392779	44	259	922	8.61	10	<10	0.26	<10	4.57	881	<1	1.26	211
10WA-05	392780	31	338	116	5.66	10	<10	0.23	<10	5.08	800	<1	1.31	163
10WA-05	392781	59	315	281	6.78	10	<10	0.21	<10	5.25	793	<1	1.24	272
10WA-05	392782	37	303	34	4.36	20	<10	0.16	<10	4.19	624	<1	1.39	246
10WA-05	392783	33	373	6	4.41	20	<10	0.09	<10	4.43	674	<1	1.23	177
10WA-05	392784	46	364	267	6.68	10	<10	0.12	<10	5.86	857	<1	1.18	223
10WA-05	392785	61	194	831	11.35	10	<10	0.19	<10	5.51	964	<1	1.41	352
10WA-05	392786	103	247	11050	13.8	10	<10	0.32	<10	5.34	943	<1	1.11	456
10WA-05	392787	19	240	278	4.82	10	<10	0.34	<10	4.79	762	<1	1.43	184
10WA-05	392788	32	238	1720	7.32	10	<10	0.24	<10	5.72	1000	<1	1.23	165
10WA-05	392789	34	219	1110	7.12	10	<10	0.29	<10	5.13	878	<1	1.27	176
10WA-05	392791	48	226	1520	9.46	10	<10	0.2	<10	5.5	1035	<1	1.07	285
10WA-05	392792	46	205	1200	8.77	10	<10	0.24	<10	5.29	1210	<1	1.36	282
10WA-05	392793	89	205	785	15.5	<10	10	0.29	<10	4.99	1115	<1	0.89	651
10WA-05	392794	147	170	5810	14.6	10	<10	0.29	<10	3.34	741	<1	1.48	568
10WA-05	392795	110	187	1885	15.85	10	<10	0.19	<10	4.86	854	<1	1.13	673
10WA-05	392796	80	204	2250	14.5	10	<10	0.17	<10	3.66	904	<1	1.25	614
10WA-05	392797	31	220	506	6.19	20	<10	0.11	<10	5.37	1085	<1	1.85	285
10WA-05	392798	266	125	1510	16.5	10	<10	0.19	<10	5.64	1585	<1	0.84	513
10WA-05	392799	86	158	924	14.2	10	<10	0.08	<10	8.54	1945	<1	1.07	235

Hole #	Sample #	Co	Cr	Cu	Fe	Ga	In	K	La	Mg	Mn	Mo	Na	Ni
		ppm	ppm	ppm	%	ppm	ppm	%	ppm	%	ppm	ppm	%	ppm
10WA-06	392801	37	3	270	14.4	<10	<10	0.4	60	4.48	2290	2	1.11	1
10WA-06	392802	36	1	107	12.45	10	<10	0.45	60	4.38	1965	2	1.13	<1
10WA-06	392803	27	1	38	8.53	20	<10	0.52	40	3.53	1605	1	1.35	<1
10WA-06	392804	29	2	1160	10.45	10	<10	0.74	10	2.07	2430	<1	2.54	<1
10WA-06	392805	34	1	131	11.8	10	<10	0.35	10	2.12	1725	1	1.72	1
10WA-06	392806	40	2	295	12.65	10	<10	0.26	10	2.14	1690	<1	1.48	4
10WA-06	392807	34	1	2080	14.7	10	<10	0.18	10	2.37	2360	1	1.59	4
10WA-06	392808	37	1	5900	16.05	10	<10	0.19	10	2.28	2650	<1	1.66	12
10WA-06	392809	37	1	9700	16.5	10	<10	0.14	10	2.19	2490	<1	1.53	7
10WA-06	392810	37	1	12000	15.75	10	<10	0.11	10	2	2380	<1	1.45	13
10WA-06	392811	34	2	1140	14.85	10	<10	0.14	20	2.02	2310	<1	1.48	<1
10WA-06	392812	28	2	454	16.5	10	<10	0.14	10	2	2620	<1	1.22	1
10WA-06	392813	27	18	266	12.1	10	<10	0.6	10	2.19	1890	<1	1.32	17
10WA-06	392814	29	12	334	14.4	10	<10	0.33	10	2.37	2270	1	1.18	10
10WA-06	392815	35	7	5210	15.25	10	<10	0.51	20	1.67	2660	2	1.54	17
10WA-06	392816	14	2	7080	13.6	10	<10	0.19	10	0.83	1990	1	2.53	9
10WA-06	392817	15	2	7520	13.05	20	10	0.27	10	0.79	1975	1	2.5	9
10WA-06	392818	14	14	548	11.45	10	10	0.25	<10	1.25	1755	1	2.32	5
10WA-06	392819	96	3	6250	13.6	10	10	0.21	10	0.74	1355	1	2.06	37
10WA-06	392821	13	4	8750	10.65	20	10	0.24	10	0.79	1400	<1	2.6	10
10WA-06	392822	17	3	3920	9.93	20	10	0.38	10	0.92	1315	<1	2.69	4
10WA-06	392823	52	1	9280	10.9	20	<10	0.78	10	1.17	1050	1	2.84	12
10WA-06	392824	30	2	246	15.65	10	<10	0.11	10	1.93	2280	1	1.9	<1
10WA-06	392825	31	2	143	12.75	10	20	0.18	10	1.85	1850	<1	1.95	<1
10WA-06	392826	45	1	90	14.75	10	10	0.18	10	3	2270	<1	1.48	3
10WA-06	392827	47	2	96	14.5	10	10	0.19	10	2.68	2080	<1	1.75	4
10WA-07	392828	8	8	94	3.97	10	<10	0.72	20	1.35	1120	<1	2.61	4
10WA-07	392829	5	<1	1705	23.9	20	10	0.02	30	5.73	1160	<1	0.05	2
10WA-07	392830	28	<1	1990	22.6	20	20	<0.01	40	5.86	1095	1	<0.01	<1
10WA-07	392831	5	<1	1515	31	20	20	<0.01	10	4.35	934	<1	<0.01	3
10WA-07	392832	7	1	999	32.1	10	10	<0.01	10	5.47	969	<1	<0.01	<1
10WA-07	392833	1	<1	1795	34.2	<10	10	<0.01	20	4.62	866	<1	<0.01	3
10WA-07	392834	2	<1	597	19.8	10	10	<0.01	20	5.73	1415	<1	<0.01	<1
10WA-07	392835	3	<1	85	16.5	20	10	<0.01	50	8.11	1475	<1	<0.01	<1
10WA-07	392836	3	<1	109	12.95	10	<10	<0.01	40	7.38	1770	<1	0.01	<1
10WA-07	392837	4	<1	71	9.83	30	10	<0.01	50	8.76	1710	<1	<0.01	<1
10WA-07	392838	12	<1	115	16.05	10	10	<0.01	60	9.08	1440	1	<0.01	<1
10WA-07	392839	10	1	637	18.3	20	10	0.01	50	8.57	1220	2	0.01	5
10WA-07	392841	5	1	62	15.35	20	10	0.01	20	9.2	1450	1	0.01	3
10WA-07	392842	<1	1	65	17.55	20	10	<0.01	30	10.55	1330	<1	<0.01	2
10WA-07	392843	4	2	624	17.4	20	10	0.01	30	4.88	1405	1	0.02	4
10WA-07	392844	4	2	643	23.9	10	30	0.56	60	3.9	895	3	0.08	4
10WA-07	392845	<1	5	1285	11.6	20	10	0.04	30	2.91	1675	1	0.29	2
10WA-07	392846	2	1	593	16.45	10	10	0.01	20	5.34	2110	2	0.01	5
10WA-07	392847	13	<1	1990	38.7	<10	60	<0.01	<10	5.56	381	<1	<0.01	2
10WA-07	392848	<1	<1	1870	29.7	10	30	<0.01	10	5.56	555	<1	0.01	7
10WA-07	392849	5	3	1050	23.8	20	40	<0.01	20	4.5	2630	2	0.01	4
10WA-07	392850	11	2	389	24.9	10	40	<0.01	10	6.53	822	1	0.01	5
10WA-07	392851	<1	12	48	5.38	10	0	0.01	20	1.29	2060	2	0.03	3
10WA-07	392852	1	9	3630	8.9	10	10	0.01	20	1.71	2500	7	0.02	2
10WA-07	392853	<1	6	7630	21.6	10	30	0.01	40	1.85	2760	1	0.04	4
10WA-07	392854	1	6	4930	19.4	10	20	0.01	30	2.83	1655	1	0.05	3
10WA-07	392855	<1	5	4250	16.85	20	20	0.01	20	3.47	1280	1	0.04	5
10WA-07	392856	2	17	1595	4.14	20	0	0.28	20	1.26	821	<1	0.85	2
10WA-07	392857	<1	11	119	5.62	20	0	0.18	20	1.06	1625	2	0.86	3
10WA-07	392858	<1	1	1890	40.7	<10	70	<0.01	10	3.51	891	1	0.01	10
10WA-07	392859	16	1	2970	44.8	<10	70	0.02	<10	3.58	310	<1	0.01	6

Hole #	Sample #	Co	Cr	Cu	Fe	Ga	In	K	La	Mg	Mn	Mo	Na	Ni
		ppm	ppm	ppm	%	ppm	ppm	%	ppm	%	ppm	ppm	%	ppm
10WA-07	392861	<1	3	2510	31.6	10	30	0.33	10	0.52	244	1	0.88	6
10WA-07	392862	<1	3	1125	30	10	40	0.15	10	2.36	809	1	0.42	6
10WA-07	392863	<1	1	827	47.4	<10	90	<0.01	<10	3.49	391	1	0.01	8
10WA-07	392864	<1	11	1730	4.54	20	0	0.35	20	0.86	1130	<1	1.38	1
10WA-07	392865	19	<1	4180	45.3	<10	60	<0.01	<10	3.29	285	<1	0.01	4
10WA-07	392866	7	3	2630	38	10	40	0.03	<10	2.55	571	<1	0.16	3
10WA-07	392867	13	2	7330	42.2	<10	80	0.01	<10	1.61	414	<1	0.02	1
10WA-07	392868	<1	8	3460	17.6	10	10	0.36	20	0.69	840	1	1.23	2
10WA-07	392869	1	<1	2130	49.8	<10	80	0.01	<10	2.65	375	<1	0.01	9
10WA-07	392870	<1	9	179	1.88	20	0	0.86	20	0.34	395	<1	2.49	1
10WA-07	392871	7	6	2920	15.7	10	10	0.43	20	2	872	<1	0.8	4
10WA-07	392872	<1	3	1060	27.9	10	40	0.09	20	2.58	1145	<1	0.09	4
10WA-07	392873	5	5	1365	25.2	10	30	0.06	20	2.48	1610	1	0.04	3
10WA-07	392874	<1	8	3310	16.3	30	20	0.02	20	2.13	2300	1	0.03	1
10WA-07	392875	<1	3	2580	19.85	30	10	0.33	30	0.81	939	1	0.46	2
10WA-07	392876	<1	2	3010	17.05	30	10	0.01	20	4.15	4800	1	0.02	4
10WA-07	392877	<1	<1	1720	18.7	30	10	<0.01	10	6.49	1335	<1	<0.01	5
10WA-07	392878	1	5	966	11.1	20	10	0.56	30	2.11	980	1	0.88	4
10WA-07	392879	3	<1	1580	33.9	40	40	0.07	30	1.98	1035	1	0.06	4
10WA-07	392881	<1	2	1285	22.1	30	20	0.34	20	1.57	958	1	0.36	4
10WA-07	392882	1	8	1835	8.13	20	<10	0.82	30	0.94	570	<1	0.8	2
10WA-07	392883	5	3	1005	18.9	20	10	0.65	20	1.64	690	<1	0.54	4
10WA-07	392884	4	5	799	13.8	20	<10	0.46	20	2.56	800	1	0.66	4
10WA-07	392885	1	7	335	4.08	20	<10	0.88	20	1.45	617	1	1.1	1
10WA-07	392886	3	8	23	2.42	10	<10	0.81	20	1.01	534	1	1.58	3
10WA-08	392887	7	4	34	1.96	10		2.01	10	0.58	269	<1	3.02	2
10WA-08	392888	45	69	317	7.31	10		0.97	<10	3.46	1105	<1	1.77	18
10WA-08	392889	30	4	68	7.17	20		0.39	10	2.3	1020	<1	1.95	2
10WA-08	392891	6	9	16	1.43	10		4.04	10	0.43	191	<1	1.55	5
10WA-09	392892	41	1	58	10.3	20		0.26	<10	2.89	1335	<1	1.35	1
10WA-09	392893	41	1	63	10.15	20		0.54	10	3.36	1345	1	1.75	3
10WA-09	392894	35	<1	31	10.2	20		0.36	10	2.58	1655	<1	2.37	1
10WA-09	392895	32	<1	42	9.83	20		0.81	10	2.49	1605	<1	2.1	2
10WA-09	392896	34	<1	33	8.52	20		1.21	10	2.82	1440	<1	1.78	2
10WA-09	392897	41	<1	87	9.7	20		1.24	10	2.48	1515	<1	1.79	1
10WA-09	392898	34	<1	83	10.45	20		1.2	10	2.98	1540	<1	1.39	3
10WA-09	392899	38	<1	59	10.8	20		1.08	10	2.86	1565	<1	1.33	3
10WA-09	392901	37	1	93	10.2	20		1.31	10	2.9	1570	<1	1.25	4
10WA-09	392902	52	3	417	7.31	20		2.84	10	2.76	1975	1	0.73	18
10WA-09	392903	81	11	137	4.21	10		1.37	10	3.28	670	<1	0.25	9
10WA-09	392904	36	72	101	8.68	20		2.31	10	3.18	1655	<1	0.45	50
10WA-09	392905	21	81	46	7.43	20		2.49	10	2.6	1525	<1	0.91	49
10WA-09	392906	32	58	74	8.77	20		2.71	10	3.03	1005	<1	0.28	51
10WA-09	392907	30	5	21	4.66	20		1.74	10	2.54	425	<1	0.1	19
10WA-09	392908	14	4	32	5.19	20		2.66	10	2.15	1180	<1	1.52	11
10WA-09	392909	11	1	12	3.81	20		2.4	10	1.04	804	<1	2.04	2
10WA-09	392911	12	2	28	4.36	20		2.4	10	1.3	906	<1	2.11	1
10WA-09	392912	16	2	21	4.59	20		2.14	10	1.15	936	<1	2.16	3
10WA-09	392913	30	5	114	7.51	20		2.34	10	2.08	1595	<1	2.39	6
10WA-09	392914	21	4	37	8.56	20		1.64	10	2.26	1680	<1	1.87	5
10WA-09	392915	25	4	58	7.44	20		1.95	10	2.33	1820	<1	2.2	7
10WA-09	392916	27	4	68	8.91	20		1.4	10	2.16	1410	<1	1.81	5
10WA-09	392917	23	2	64	12.15	20		0.37	20	1.7	1795	1	1.58	4
10WA-09	392918	19	36	82	6.38	20		0.84	20	2.73	746	1	1.85	27
10WA-09	392919	6	10	91	3.74	20		0.95	20	2.85	236	2	2.21	7
10WA-09	392921	12	7	138	6.03	30		0.44	20	6.57	568	3	1.24	12
10WA-09	392922	4	8	87	4.43	30		0.54	30	7.45	505	2	0.92	6

Hole #	Sample #	Co	Cr	Cu	Fe	Ga	In	K	La	Mg	Mn	Mo	Na	Ni
		ppm	ppm	ppm	%	ppm	ppm	%	ppm	%	ppm	ppm	%	ppm
10WA-09	392923	12	3	100	4.58	20		0.73	20	5.91	512	<1	1.17	8
10WA-09	392924	16	5	31	5.44	20		0.2	20	5.11	550	<1	1.21	15
10WA-09	392925	45	1	116	8.05	20		0.33	20	8.3	474	2	0.36	7
10WA-09	392926	28	<1	94	12.4	20		0.05	20	12.2	719	<1	0.01	11
10WA-09	392927	83	3	2050	18.6	10		0.12	30	5.62	329	5	0.03	38
10WA-09	392928	20	<1	144	7.63	20		0.88	20	13.15	728	<1	0.21	5
10WA-09	392929	7	1	50	2.74	20		0.57	10	6.72	382	1	0.28	2
10WA-09	392931	2	4	34	2.78	10		0.14	20	4.64	395	1	0.21	<1
10WA-09	392932	2	21	32	2.72	10		0.13	10	3.01	477	<1	0.21	<1
10WA-09	392933	3	6	39	4.26	10		0.16	10	4.31	755	<1	0.16	<1
10WA-09	392934	<1	5	14	3.95	10		0.35	20	3.63	584	<1	0.17	1
10WA-09	392935	7	6	233	18.4	10		0.79	10	4.22	561	<1	0.15	11
10WA-09	392936	7	<1	370	24.8	10		0.03	20	4.96	728	<1	0.01	13
10WA-09	392937	13	<1	413	29.7	10		0.01	20	4.75	676	<1	<0.01	13
10WA-09	392938	9	2	336	34.7	<10		0.01	10	4.53	447	<1	<0.01	18
10WA-09	392939	5	5	178	14.55	20		0.53	30	6.94	614	<1	0.17	5
10WA-09	392941	25	1	200	19.75	10		<0.01	30	8.48	620	1	0.01	8
10WA-09	392942	17	10	45	11.8	20		0.28	20	8.03	902	1	0.3	11
10WA-09	392943	4	14	120	7.82	20		1.82	10	2.97	265	<1	0.55	9
10WA-09	392944	4	10	145	7.78	10		1.74	20	1.65	122	<1	0.25	9
10WA-09	392945	16	14	187	10.6	20		1.97	20	1.71	145	<1	0.31	9
10WA-09	392946	3	16	242	10.25	10		2.17	20	1.17	94	<1	0.5	10
10WA-09	392947	14	14	156	8.11	20		1.63	10	2.15	180	<1	0.43	9
10WA-09	392948	10	12	105	7.83	20		1.52	20	2.27	130	<1	0.34	11
10WA-09	392949	14	12	75	8.17	10		1.27	10	2.1	188	<1	0.26	9
10WA-09	392951	9	15	96	7.5	10		1.14	10	1.48	111	<1	0.56	10
10WA-09	392952	3	8	57	4.21	10		0.88	10	1.51	123	<1	0.29	6
10WA-09	392953	6	5	88	7.51	10		0.84	30	2.06	153	<1	0.44	5
10WA-09	392954	10	12	75	6.27	20		1.33	10	1.57	154	<1	0.48	10
10WA-09	392955	17	18	172	8.95	20		1.65	20	1.6	132	<1	1.08	20
10WA-09	392956	20	7	69	6.91	20		0.55	10	2.65	681	<1	1.15	16
10WA-09	392957	18	6	24	5.21	20		0.24	10	2.32	586	<1	2.02	16
10WA-09	392958	19	24	123	6.12	20		0.29	10	1.96	635	<1	2.23	35
10WA-09	392959	18	3	96	8.61	10		0.3	10	2.22	1260	<1	0.68	4
10WA-09	392961	62	113	874	10.35	20		0.25	10	3.84	1225	<1	1.82	117
10WA-09	392962	22	5	8290	9.73	10		0.79	70	2.83	1625	<1	0.31	11
10WA-09	392963	29	23	4580	10.05	20		0.29	10	3.33	1645	<1	1.43	46
10WA-09	392964	9	2	693	9.87	10		0.28	20	7.68	612	2	0.47	1
10WA-09	392965	16	15	206	8.83	20		0.55	20	2.22	778	<1	1.3	24
10WA-09	392966	20	13	28	6.08	20		0.37	10	2.12	850	<1	1.8	21
10WA-09	392967	17	11	18	5.25	20		0.5	10	2.06	928	<1	1.47	16
10WA-09	392968	17	17	13	7.28	20		0.57	10	2.81	1245	<1	0.92	21
10WA-09	392969	18	32	40	6.94	20		0.4	10	2.47	1320	<1	1.14	35
10WA-09	392971	12	15	58	7.38	20		0.37	10	2.76	856	<1	1.14	19
10WA-09	392972	13	5	67	8.67	20		0.5	20	2.53	561	<1	0.85	9
10WA-09	392973	13	4	16	6.35	20		0.38	10	2.77	887	<1	1.7	8
10WA-09	392974	19	20	120	11.05	20		0.69	10	2.82	755	<1	1.17	19
10WA-09	392975	19	7	66	7.83	10		0.41	20	2.12	602	<1	1.4	10
10WA-09	392976	17	12	112	12	10		0.51	10	2.06	478	<1	0.88	15
10WA-09	392977	7	6	97	9.63	20		0.73	30	1.96	220	2	0.33	10
10WA-09	392978	25	19	103	11.7	20		1.15	10	2.97	374	<1	0.5	9
10WA-09	392979	17	10	76	9.5	20		0.77	20	1.71	383	<1	1.12	9
10WA-09	392981	22	2	130	20.1	10		0.51	10	2	377	<1	0.39	14
10WA-09	392982	15	4	26	6.94	20		0.22	10	1.98	830	<1	1.72	9
10WA-09	392983	19	4	40	7.73	20		0.41	10	2.5	760	<1	1.58	9
10WA-09	392984	13	10	56	5.76	20		0.68	10	2.44	958	<1	1.82	12
10WA-09	392985	14	7	7	7.07	10		0.29	<10	2.59	1390	<1	0.13	2

Hole #	Sample #	Co	Cr	Cu	Fe	Ga	In	K	La	Mg	Mn	Mo	Na	Ni
		ppm	ppm	ppm	%	ppm	ppm	%	ppm	%	ppm	ppm	%	ppm
10WA-10	392986	65	223	3410	6.92	10		0.22	<10	7.56	1035	<1	0.94	536
10WA-10	392987	47	134	802	5.26	10		1.16	<10	5.47	737	<1	1.34	340
10WA-10	392988	72	190	4700	6.7	10		0.59	<10	5.81	985	<1	1.14	514
10WA-10	392989	45	166	1595	5.09	10		1.05	<10	4.92	741	<1	1.28	331
10WA-10	392991	67	257	1360	6.72	10		0.28	<10	7.42	963	<1	0.85	475
10WA-10	392992	37	252	1805	4.51	10		0.26	<10	4.53	691	<1	1.16	185
10WA-10	392993	36	234	976	4.6	10		0.28	<10	4.36	682	<1	1.37	168
10WA-10	392994	37	290	1980	4.52	20		0.1	<10	4.46	683	<1	1.13	186
10WA-10	392995	39	305	2210	4.72	10		0.16	<10	4.82	725	<1	1.13	230
10WA-10	392996	37	275	409	4.72	10		0.14	<10	4.9	739	<1	1.13	215
10WA-10	392997	33	273	2530	4.4	20		0.14	<10	4.25	664	<1	1.27	210
10WA-10	392998	37	302	2200	4.89	20		0.13	<10	4.84	753	<1	1.07	228
10WA-10	392999	29	274	593	4.27	20		0.31	<10	4.45	703	<1	1.2	192
10WA-10	393101	28	301	4050	4.89	20		0.14	<10	4.38	750	<1	1.14	144
10WA-10	393102	34	286	2450	4.79	20		0.31	<10	4.86	743	<1	1.11	187
10WA-10	393103	28	335	756	4.28	20		0.14	<10	4.51	775	<1	1.13	131
10WA-10	393104	27	321	1820	4.25	20		0.26	<10	4.31	761	<1	1.15	107
10WA-10	393105	36	366	1235	4.96	20		0.13	<10	5.36	891	<1	1.05	135
10WA-10	393106	34	388	1800	5.01	10		0.09	<10	5.59	934	<1	1.02	165
10WA-10	393107	35	400	2520	5.1	20		0.1	<10	5.65	913	<1	1.02	172
10WA-10	393108	32	393	1555	5.1	10		0.14	<10	5.68	915	<1	1.04	148
10WA-10	393109	42	438	4590	5.62	20		0.1	<10	5.94	988	<1	1.02	147
10WA-10	393111	32	429	1080	5.1	20		0.13	<10	5.78	920	<1	1.04	91
10WA-10	393112	44	510	5620	5.71	10		0.14	<10	5.61	908	<1	0.93	219
10WA-10	393113	32	501	2150	5.46	20		1.17	<10	4.38	663	<1	1.84	254
10WA-10	393114	69	408	633	8.09	10		0.24	<10	10.7	1215	<1	0.46	585
10WA-10	393115	84	510	2740	9.12	10		0.39	<10	11.75	1120	28	0.62	1030
10WA-10	393116	98	625	5350	9.34	10		0.62	10	12.05	1265	<1	0.65	1860
10WA-10	393117	95	1010	1945	9.99	10		0.27	10	14.1	1395	<1	0.51	1370
10WA-10	393118	92	789	214	9.87	10		0.39	10	12.65	1325	<1	0.56	1130
10WA-10	393119	106	876	301	10.65	10		1.02	<10	12.75	1135	<1	0.34	1200
10WA-10	393121	44	208	1530	5.14	10		0.86	10	3.4	485	<1	1.44	429
10WA-10	393122	44	226	2710	4.89	20		0.48	<10	3.25	492	<1	1.32	350
10WA-10	393123	54	295	829	6.26	10		0.34	<10	6.38	780	<1	0.72	628
10WA-10	393124	43	267	418	6.35	10		0.43	<10	7.46	863	<1	0.68	681
10WA-10	393125	28	263	283	4.11	20		0.8	<10	5.79	986	<1	1.13	403
10WA-10	393126	27	288	1315	4.16	20		0.43	<10	4.93	850	<1	1.07	192
10WA-10	393127	30	281	1435	4.84	20		0.67	<10	4.24	747	<1	1.29	224
10WA-10	393128	155	232	3370	14.1	10		0.28	<10	4.44	585	<1	0.72	1090
10WA-10	393129	87	208	4240	12.05	10		0.25	10	3.91	645	<1	1.41	859
10WA-10	393131	146	200	5770	19.3	10		0.42	<10	2.87	409	1	0.88	1590
10WA-10	393132	168	249	5960	19.2	10		0.5	<10	3.49	704	<1	0.95	1460
10WA-10	393133	248	322	9090	23.9	20		0.66	<10	4.91	1005	3	0.77	1970
10WA-10	393134	57	431	5830	10.05	20		1.01	10	6.74	1010	1	1.06	555
10WA-10	393135	110	832	232	10	20		0.47	10	12.2	1225	<1	0.49	1220
10WA-10	393136	121	934	229	11.2	10		0.13	<10	13.8	1405	1	0.27	1370
10WA-10	393137	98	725	99	9.06	10		0.75	10	10.85	1190	1	0.57	1110
10WA-10	393138	93	905	53	8.87	10		1.24	10	11.7	1085	<1	0.37	1110
10WA-10	393139	102	797	49	9.24	10		0.77	10	12.7	1100	<1	0.4	1150
10WA-10	393141	203	694	2240	16.85	10		0.67	10	9.39	825	2	0.5	1850
10WA-10	393142	199	666	4580	17.1	10		0.87	10	7.6	1050	4	0.75	1750
10WA-10	393143	97	938	406	9.79	10		0.68	10	11.65	1400	1	0.51	1020
10WA-10	393144	68	666	5730	10	20		0.79	10	7.11	1295	<1	1.14	564
10WA-10	393145	59	451	2770	9.32	10		0.66	10	6.61	1335	1	1.3	355
10WA-10	393146	58	214	182	10.65	10		0.39	<10	9.22	1950	1	0.71	200
10WA-10	393147	130	263	954	14.6	10		0.4	10	10.6	2400	1	0.54	517
10WA-11	393148	35	131	132	5.35	20		0.12	<10	4.63	903	<1	1.36	198

Hole #	Sample #	Co	Cr	Cu	Fe	Ga	In	K	La	Mg	Mn	Mo	Na	Ni
		ppm	ppm	ppm	%	ppm	ppm	%	ppm	%	ppm	ppm	%	ppm
10WA-11	393149	28	131	119	4.7	20		0.32	<10	4.26	817	<1	1.45	153
10WA-11	393151	32	125	66	4.6	20		0.21	<10	4	840	<1	1.47	156
10WA-11	393152	42	335	199	5.44	10		0.11	<10	6.39	913	<1	0.91	321
10WA-11	393153	55	395	678	5.93	10		0.1	<10	6.94	990	<1	0.84	679
10WA-11	393154	42	352	178	4.68	10		0.09	<10	5.56	811	<1	0.8	303
10WA-11	393155	37	311	66	5.1	10		0.09	<10	6.1	892	<1	0.96	215
10WA-12	393156	31	146	88	6.09	20		0.21	10	3.31	1030	<1	1.86	129
10WA-12	393157	24	337	16	5.25	20		0.76	10	4.78	997	<1	1.44	130
10WA-12	393158	33	358	28	5.31	20		0.25	<10	5.35	1125	<1	1.48	141
10WA-12	393159	32	24	870	23.5	20		0.59	20	3.91	2360	1	0.62	72
10WA-12	393160	36	<1	1055	32.3	10		0.3	10	3.34	991	<1	0.12	90
10WA-12	393161	43	2	1845	26.4	10		0.01	10	5.55	646	1	0.01	74
10WA-12	393162	2	3	1420	26.2	<10		0.01	30	4.41	650	1	0.02	86
10WA-12	393163	<1	9	2140	31.8	10		<0.01	20	5.23	652	<1	0.01	95
10WA-12	393164	<1	5	1605	27.2	10		<0.01	20	6.65	359	<1	0.01	85
10WA-12	393165	<1	4	1405	25.7	10		<0.01	10	6.74	262	<1	0.01	90
10WA-12	393166	40	3	1810	33.5	10		<0.01	<10	5.46	123	<1	<0.01	97
10WA-12	393167	<1	<1	1800	36.7	10		0.01	<10	4.43	202	<1	0.01	121
10WA-12	393168	<1	<1	1665	33.7	10		<0.01	<10	8.11	98	<1	<0.01	93
10WA-12	393169	<1	<1	1985	31	10		<0.01	<10	7.98	135	<1	<0.01	89
10WA-12	393171	36	<1	1500	43.4	<10		<0.01	<10	2.07	118	<1	<0.01	97
10WA-12	393172	57	<1	1430	42.4	<10		0.01	<10	1.29	191	<1	<0.01	91
10WA-12	393173	3	<1	10650	39.3	10		<0.01	<10	5.27	59	<1	<0.01	111
10WA-12	393174	<1	<1	35600	36	10		<0.01	<10	6.06	33	<1	<0.01	104
10WA-12	393175	14	<1	12250	39.8	10		<0.01	<10	4.89	135	<1	<0.01	110
10WA-12	393176	24	358	4730	5.29	20		0.3	<10	5.75	1045	<1	1.2	101
10WA-12	393177	26	400	4580	5.74	20		0.3	<10	6.08	944	<1	1.17	96
10WA-12	393178	28	424	5530	5.8	20		0.27	<10	6.18	928	<1	1.16	96
10WA-12	393179	32	536	9660	6.08	10		0.21	<10	5.5	852	<1	1.09	114
10WA-12	393180	38	685	9440	6.72	20		0.24	<10	6.16	877	<1	1.16	142
10WA-12	393181	32	415	3630	5.05	10		0.32	<10	5.69	961	<1	1.23	153
10WA-12	393182	31	405	2430	5.03	10		0.52	<10	5.74	936	<1	1.27	118
10WA-12	393183	32	397	2960	5.08	20		0.52	<10	5.66	910	<1	1.25	126
10WA-12	393184	22	366	1260	4.95	10		1.05	10	5.47	875	<1	1.5	91
10WA-12	393189	20	101	143	3.73	20	<10	0.86	10	2.12	471	3	2.48	85
10WA-12	393191	50	13	13500	13.4	20	<10	0.73	<10	2.58	1125	7	1.55	74
10WA-12	393192	64	8	15450	12.5	20	<10	0.37	<10	2.78	1135	6	1.32	87
10WA-12	393193	65	6	16100	11.35	20	<10	0.35	<10	3.26	1180	6	1.51	95
10WA-12	393194	64	8	9870	8.88	20	<10	0.37	<10	2.89	957	4	2.07	100
10WA-12	393195	51	16	497	10.2	20	<10	0.4	<10	3.27	1105	5	1.55	84
10WA-12	393196	32	19	619	6.53	20	<10	0.42	30	1.78	709	4	1.84	53
10WA-12	393197	51	36	185	9.33	20	<10	0.18	<10	3.38	1090	4	1.48	82
10WA-12	393198	62	36	7440	11.45	20	<10	0.2	<10	3.7	1185	6	1.45	95
10WA-12	393199	78	36	12600	12.65	20	<10	0.28	<10	3.41	1170	6	1.37	117
10WA-12	393200	69	42	8200	11.1	20	<10	0.35	<10	3.54	1155	6	1.48	107
10WA-12	393185	26	23	172	9.31	20	<10	0.56	10	3.87	1310	4	0.55	33
10WA-12	393186	25	21	574	8.57	20	<10	0.39	<10	3.13	1090	4	1.43	33
10WA-12	393187	51	15	5330	11.75	30	<10	0.35	10	2.17	1310	7	1.91	38
10WA-12	393188	35	9	563	9.12	30	<10	0.43	10	2.1	1220	5	2	13
10WA-13	393201	6	21	348	6.99	20	<10	0.55	20	3.31	1190	4	0.9	11
10WA-13	393202	3	1	1065	15.8	20	<10	1.24	60	2.04	547	8	0.56	6
10WA-13	393203	4	<1	4830	20.6	20	<10	0.1	60	2.68	662	8	0.08	8
10WA-13	393204	1	<1	2660	31	10	10	0.03	30	2.91	623	11	0.04	12
10WA-13	393205	6	<1	1040	34.4	10	<10	<0.01	<10	4.58	621	11	<0.01	11
10WA-13	393206	42	<1	397	37.3	10	<10	<0.01	<10	3.19	625	12	<0.01	9
10WA-13	393207	8	<1	372	36.4	20	<10	<0.01	<10	3.85	735	12	<0.01	7
10WA-13	393208	<1	<1	1615	24.4	20	10	0.02	10	5.58	788	10	<0.01	7

Hole #	Sample #	Co	Cr	Cu	Fe	Ga	In	K	La	Mg	Mn	Mo	Na	Ni
		ppm	ppm	ppm	%	ppm	ppm	%	ppm	%	ppm	ppm	%	ppm
10WA-13	393209	1	9	95	3.22	20	<10	0.55	20	0.86	542	3	1.79	4
10WA-13	393211	7	11	110	3.93	20	<10	0.84	10	0.91	595	3	2.64	6
10WA-13	393212	<1	3	7320	17.3	20	<10	1.02	30	2.58	1115	6	0.24	6
10WA-13	393213	5	3	3020	21.8	20	10	0.41	20	1.66	1020	<1	0.42	<1
10WA-13	393214	5	13	478	8.51	20	<10	0.43	30	1.93	1085	<1	0.95	3
10WA-13	393215	10	1	97	16.65	40	<10	0.19	50	6.32	1295	8	0.05	<1
10WA-13	393216	8	11	562	3.48	10	<10	0.94	10	1.15	212	<1	0.77	6
10WA-13	393217	5	6	3180	2.35	10	<10	0.98	10	0.91	200	<1	0.11	<1
10WA-13	393218	7	5	9850	3.16	10	<10	0.85	20	1.01	223	1	0.12	<1
10WA-13	393219	8	8	7290	1.68	10	<10	0.84	10	0.52	103	<1	0.09	1
10WA-13	393220	13	7	29700	5.41	10	<10	0.54	10	0.65	133	<1	0.17	<1
10WA-13	393221	5	10	4280	2.09	10	<10	0.74	10	0.98	140	<1	0.17	<1
10WA-13	393222	2	7	682	1.08	10	<10	0.85	10	0.69	123	2	0.55	<1
10WA-13	393223	8	10	2880	1.75	10	<10	0.97	20	0.68	86	<1	0.45	<1
10WA-13	393224	6	8	2870	1.72	10	<10	0.98	20	0.87	108	1	0.36	<1
10WA-13	393225	28	10	11550	4.27	10	<10	0.75	20	1	165	1	0.08	<1
10WA-13	393226	7	13	3590	2.27	10	<10	0.72	20	0.86	169	<1	0.09	<1
10WA-13	393227	12	13	20900	5.01	10	<10	0.72	20	0.97	196	1	0.09	4
10WA-13	393228	5	7	1630	3.53	20	<10	0.78	20	2.63	371	<1	0.17	<1
10WA-13	393229	3	4	806	3.73	20	<10	0.93	30	2.96	398	<1	0.14	<1
10WA-13	393231	4	5	782	2.62	<10	<10	1.21	20	1.64	241	<1	0.17	<1
10WA-13	393232	3	4	8270	4.26	20	10	1.45	30	2.55	338	<1	0.35	<1
10WA-13	393233	2	8	182	2.62	20	<10	1.16	20	2.11	308	1	0.37	<1
10WA-13	393234	3	10	847	3.24	10	<10	0.71	20	1.98	354	<1	0.23	<1
10WA-13	393235	2	6	3420	6.96	10	10	0.61	10	2.1	676	<1	0.11	<1
10WA-13	393236	1	2	792	36.1	20	10	1.18	20	0.74	385	<1	0.26	6
10WA-13	393237	7	18	491	5.64	20	<10	0.38	20	1.92	942	<1	1.5	12
10WA-13	393238	1	11	18850	21.2	20	<10	0.48	20	1.47	1005	<1	1.01	1
10WA-13	393239	36	2	2040	38.2	20	10	0.01	<10	2.74	760	<1	0.04	2
10WA-13	393240	3	10	402	4.24	30	<10	0.64	20	1.18	887	<1	1.5	5
10WA-13	393241	7	<1	1700	36	20	20	<0.01	<10	3.37	631	<1	0.01	4
10WA-13	393242	<1	5	22400	14.15	20	<10	0.27	20	0.99	1200	<1	1.01	3
10WA-13	393243	17	<1	2120	38.4	20	<10	<0.01	<10	2.33	285	<1	0.01	<1
10WA-13	393244	2	3	4480	30.7	20	10	<0.01	10	2.8	1345	<1	0.01	<1
10WA-13	393245	16	<1	5910	>50	20	20	<0.01	<10	0.61	206	<1	<0.01	<1
10WA-13	393246	<1	<1	1170	>50	20	30	<0.01	<10	1.42	136	<1	<0.01	8
10WA-13	393247	<1	1	5360	15.3	30	10	0.98	50	1.02	415	1	0.64	2
10WA-13	393248	6	7	1480	12.25	40	<10	1.45	20	1.84	382	1	2.15	3
10WA-13	393249	8	13	1020	6.92	20	<10	0.36	10	2.29	1085	2	2	18
10WA-13	393251	18	25	1265	8.39	20	<10	0.49	10	2.65	1370	<1	2.09	33
10WA-13	393252	20	27	574	6.02	20	<10	0.47	10	2.79	1065	<1	1.98	34
10WA-13	393253	18	19	124	6.39	20	<10	0.33	10	2.42	1240	<1	1.79	29
11WA-14	393551	7	3	259	7.86	30	<10	1.18	30	7.47	848	1	0.3	7
11WA-14	393552	8	11	70	5.08	20	<10	0.52	30	2.26	679	1	1.66	10
11WA-14	393553	8	<1	716	6.86	40	<10	0.62	130	9.26	1185	1	0.56	<1
11WA-14	393554	5	3	118	3	20	<10	0.87	20	3.09	385	<1	0.27	2
11WA-14	393555	9	7	71	3.46	20	<10	0.87	30	3.41	503	1	0.74	8
11WA-14	393556	3	<1	19	3.38	30	<10	1.22	30	8.38	654	3	0.44	1
11WA-14	393557	2	2	52	2.22	20	<10	0.56	30	4.94	424	2	0.39	<1
11WA-14	393558	7	7	29	3.77	20	<10	0.51	30	1.41	664	2	1.76	8
11WA-14	393559	5	2	240	5.59	30	<10	0.67	30	9.6	728	3	0.28	1
11WA-14	393560	4	4	782	2.72	10	<10	0.62	30	2.42	560	1	0.16	<1
11WA-14	393561	15	4	4700	4.03	20	<10	0.7	30	3	700	3	0.23	1
11WA-14	393562	10	3	1815	3.24	20	<10	0.55	20	2.99	646	1	0.15	<1
11WA-14	393563	4	5	530	2.47	10	<10	0.67	10	2.12	434	<1	0.21	<1
11WA-14	393564	34	2	6060	14.45	20	<10	0.14	20	2.09	2150	<1	1.18	5
11WA-14	393565	37	3	6840	14.7	20	<10	0.15	20	2.23	2390	<1	1.27	11

Hole #	Sample #	Co	Cr	Cu	Fe	Ga	In	K	La	Mg	Mn	Mo	Na	Ni
		ppm	ppm	ppm	%	ppm	ppm	%	ppm	%	ppm	ppm	%	ppm
11WA-14	393566	36	2	247	13.95	20	<10	0.18	20	2.24	2460	<1	1.53	1
11WA-14	393567	33	1	2100	13.95	20	<10	0.18	20	2.3	2510	<1	1.6	2
11WA-14	393568	32	<1	4700	14.8	20	<10	0.17	20	2.29	2610	<1	1.47	7
11WA-14	393569	34	<1	6710	15.1	20	<10	0.16	10	2.39	2790	<1	1.35	6
11WA-14	393571	39	2	6310	15.95	20	<10	0.2	20	2.35	2880	<1	1.19	8
11WA-14	393572	30	14	1005	14.55	20	<10	0.29	10	2.09	2390	<1	1.64	7
11WA-14	393573	20	71	110	5.23	20	<10	1.05	30	1.83	740	<1	2.95	37
11WA-14	393574	23	16	2480	8.9	20	<10	0.84	20	1.4	1100	<1	2.8	15
11WA-14	393575	37	109	243	7.12	20	<10	0.35	<10	3.79	1370	<1	2.76	71
11WA-14	393576	25	11	12750	7.53	20	<10	1.9	<10	0.98	1045	<1	3.12	27
11WA-14	393577	30	4	15650	9.25	30	<10	0.41	<10	0.83	845	<1	2.96	37
11WA-14	393578	24	6	11300	8.63	30	<10	0.72	10	0.76	824	<1	3.1	25
11WA-14	393579	19	48	1175	5.92	20	<10	1.8	10	1.56	1595	<1	2.25	23
11WA-14	393580	49	1	2300	13.65	20	<10	0.58	10	2.65	1985	<1	1.83	5
11WA-14	393581	49	1	5470	14.05	20	<10	0.46	10	2.44	1765	<1	1.67	13
11WA-14	393582	31	14	8910	12	20	<10	0.61	10	1.35	1530	<1	2.24	32
11WA-14	393583	25	6	3560	8.28	20	<10	1.61	<10	2.98	853	<1	0.34	2
11WA-14	393584	17	8	3880	9.38	20	<10	2.18	<10	4.65	1415	<1	0.33	<1
11WA-14	393585	17	6	2020	9.2	10	<10	0.39	<10	4.07	1415	<1	0.1	<1
11WA-14	393586	12	10	322	6.65	20	<10	0.93	30	1.52	937	2	1.49	4
11WA-14	393587	27	24	516	10	20	<10	0.94	10	4.67	1465	<1	0.36	34
11WA-14	393588	46	6	263	13.55	30	<10	0.51	20	2.89	1690	1	0.81	1
11WA-14	393589	44	6	519	13	30	<10	0.3	20	3.24	1965	<1	1.08	5
11WA-14	393591	38	3	150	10.55	20	<10	0.31	10	2.63	1460	<1	1.83	3
11WA-14	393592	37	57	72	7.1	20	<10	0.85	10	2.52	817	<1	1.79	44
11WA-14	393595	36	137	352	4.61	10	<10	0.31	<10	3.38	685	<1	0.79	166
11WA-14	393596	43	102	48	4.34	<10	<10	0.38	<10	3.84	592	<1	0.51	223
11WA-14	393597	32	264	97	4.06	20	<10	0.76	10	4.42	732	<1	2	175
11WA-14	393598	35	201	429	7.15	20	<10	1.19	10	4.89	1090	<1	1.45	102
11WA-14	393599	35	197	154	3.64	20	<10	0.09	<10	3.86	587	<1	1.02	241
11WA-14	393601	41	450	188	5.17	20	<10	0.13	<10	6.45	918	<1	1.05	184
11WA-14	393602	37	427	178	5.19	10	<10	0.26	10	6.48	970	<1	1.09	180
11WA-14	393603	34	352	164	5.07	20	<10	0.82	10	5.92	934	1	1.08	157
11WA-14	393604	19	56	9	3.39	20	<10	0.66	10	3.17	487	<1	2.41	72
11WA-14	393605	21	52	25	3.9	20	<10	0.41	10	3.01	553	<1	2.46	76
11WA-14	393606	31	86	242	5.27	20	<10	0.28	10	4.07	835	<1	1.95	196
11WA-14	393607	34	87	214	5.62	20	<10	0.53	10	4.01	773	<1	1.98	198
11WA-14	393608	48	79	232	5.51	10	<10	0.64	10	5.2	745	<1	1.61	395
11WA-14	393609	21	43	137	3.76	20	<10	0.35	10	3.23	483	<1	3.1	95
11WA-14	393611	47	240	157	5.32	10	<10	0.16	10	6.04	831	<1	1.09	418
11WA-14	393612	36	198	35	4.72	10	<10	0.57	10	5.36	726	<1	1.05	222
11WA-14	393613	47	342	216	5.69	20	<10	0.11	10	6.45	933	<1	0.99	390
11WA-14	393614	38	267	139	5.25	10	10	0.46	10	5.43	824	<1	1.31	264
11WA-14	393615	44	188	83	4.88	10	10	0.21	10	5.57	714	<1	0.99	295
11WA-14	393616	35	264	62	4.49	20	<10	0.37	10	4.99	708	<1	1.18	218
11WA-14	393617	39	357	122	5.55	20	10	0.43	10	5.57	913	<1	1.33	239
11WA-14	393618	38	345	206	4.94	10	<10	0.26	10	5.21	804	<1	1.14	268
11WA-14	393619	40	280	55	5.06	20	<10	0.33	10	5.66	784	<1	1.21	223
11WA-14	393620	49	805	86	5.98	20	<10	0.32	10	6.85	869	<1	1.25	495
11WA-14	393621	72	1040	106	9.3	10	<10	0.29	10	9.23	1370	1	1.07	699
11WA-14	393622	56	496	386	7.18	20	<10	0.19	10	6.64	1095	<1	1.4	580
11WA-14	393623	66	776	234	7.43	20	<10	0.07	10	7.6	1015	<1	1.14	698
11WA-14	393624	57	475	160	8.08	10	<10	0.25	10	6.76	1235	<1	1.34	392
11WA-14	393625	44	359	188	6.49	10	<10	0.25	10	5.53	1040	<1	1.48	282
11WA-14	393626	43	372	105	6.18	10	<10	0.31	10	5.3	979	<1	1.54	243
11WA-14	393627	41	304	64	6.01	10	<10	0.44	10	4.81	987	<1	1.73	248
11WA-14	393628	35	242	58	5.65	10	<10	0.43	10	4.28	981	<1	1.8	186

Hole #	Sample #	Co	Cr	Cu	Fe	Ga	In	K	La	Mg	Mn	Mo	Na	Ni
		ppm	ppm	ppm	%	ppm	ppm	%	ppm	%	ppm	ppm	%	ppm
11WA-14	393629	18	111	37	5.13	20	<10	0.46	10	1.67	816	1	2.72	46
11WA-14	393631	36	440	110	5.86	20	<10	0.3	10	4.21	958	<1	1.83	185
11WA-14	393632	55	1960	87	7.6	10	<10	0.78	10	7.63	1175	<1	1.03	518
11WA-14	393633	19	66	23	3.62	20	<10	0.17	10	2.98	515	<1	2.53	85
11WA-14	393634	27	120	46	4.11	20	<10	0.11	10	3.86	630	<1	1.57	188
11WA-14	393635	28	111	70	4.02	20	<10	0.11	10	3.65	591	<1	1.35	250
11WA-14	393636	32	79	94	4	20	10	0.07	<10	3.78	525	<1	1.06	272
11WA-14	393637	33	94	107	4.04	20	<10	0.15	10	4.1	558	<1	0.98	290
11WA-14	393638	31	241	122	4.33	10	<10	0.11	<10	4.88	681	<1	1.19	231
11WA-14	393639	31	232	91	3.98	10	<10	0.06	<10	4.31	628	<1	1.12	222
11WA-14	393640	31	227	95	4.06	10	<10	0.05	<10	4.32	646	<1	1.21	222
11WA-14	393641	31	243	105	4.27	10	<10	0.06	<10	4.53	684	<1	1.22	231
11WA-14	393642	16	15	65	10.4	20	<10	0.15	20	9.23	1425	<1	0.37	23
11WA-14	393643	25	49	116	7.76	20	<10	0.22	20	4.44	1565	<1	1.1	37
11WA-14	393644	27	69	53	8.46	20	<10	0.3	10	4.25	1555	<1	1.2	56
11WA-14	393645	28	37	26	9.55	20	<10	0.32	10	5.98	1600	<1	0.46	58
11WA-14	393646	31	66	140	9.14	20	<10	0.26	10	5.71	1700	<1	0.98	75
11WA-14	393647	27	62	113	8.77	20	<10	0.6	10	4.66	1660	<1	1.18	54
11WA-14	393648	24	68	81	8.26	20	<10	0.44	10	4.7	1565	<1	1.11	56
11WA-14	393649	27	88	166	8.29	20	<10	0.49	10	3.75	1410	<1	1.27	63
11WA-14	393651	42	85	762	11.25	20	<10	0.3	10	3.87	1490	1	1.46	81
11WA-14	393652	27	61	131	9.15	20	<10	0.27	10	3.54	1750	<1	1.42	47
11WA-14	393653	32	72	125	8.46	20	<10	0.19	10	3.67	1645	<1	1.15	57
11WA-14	393654	23	39	71	8.33	20	<10	0.29	10	3.25	1575	<1	1.53	42
11WA-14	393655	26	58	98	8.08	10	<10	0.23	10	3.32	1595	<1	1.54	48
11WA-14	393656	21	47	58	8.81	10	<10	0.33	20	5.23	1795	<1	0.99	39
11WA-14	393657	27	34	116	7.46	20	<10	0.42	10	5.8	1075	<1	0.84	54
11WA-14	393658	30	53	108	9.8	20	<10	0.27	10	4.49	1920	<1	1.68	54
11WA-14	393659	29	65	107	7.97	20	<10	0.22	10	3.66	1520	<1	1.55	51
11WA-14	393660	25	70	58	7.71	20	<10	0.14	10	3.29	1590	<1	1.49	59
11WA-14	393661	30	51	33	9.44	20	<10	0.21	10	4.17	1830	<1	1.36	49
11WA-14	393662	28	35	63	7.41	20	<10	0.19	10	3.36	1515	<1	2.09	63
11WA-14	393663	28	99	56	6.44	20	<10	0.27	10	3.69	1285	<1	1.73	107
11WA-14	393664	33	166	91	5.25	10	<10	0.34	10	4.86	954	<1	1.26	181
11WA-15	393665	11	4	2	7.21	10	<10	0.68	30	2.16	856	<1	0.15	1
11WA-15	393666	11	6	4	6.77	10	<10	0.68	30	1.92	847	<1	0.24	1
11WA-15	393667	20	28	122	7.41	20	<10	0.51	10	2.56	1295	<1	0.32	38
11WA-15	393668	16	17	1045	7.15	10	<10	0.59	10	2.72	1440	<1	1.19	21
11WA-15	393669	23	2	15650	11.35	20	<10	0.49	20	1.72	1595	<1	1.28	5
11WA-15	393671	13	11	197	7.33	10	<10	0.68	30	2.21	1390	<1	1.54	11
11WA-15	393672	10	9	107	6.01	20	<10	0.97	20	2.09	974	<1	1.42	10
11WA-15	393673	16	14	128	7.68	20	<10	1.2	20	2.97	1355	<1	1.41	19
11WA-15	393674	14	11	106	5.98	20	<10	0.89	20	1.55	972	1	1.94	15
11WA-15	393675	25	17	4150	6.27	10	<10	1.6	20	1.52	299	2	1.45	19
11WA-15	393676	24	<1	646	6.81	20	<10	0.51	20	1.95	870	<1	2.37	9
11WA-15	393677	17	1	397	7.39	20	<10	0.54	10	2.13	923	<1	1.23	4
11WA-15	393678	9	1	2110	5.72	20	<10	0.61	20	1.88	822	<1	1.41	1
11WA-15	393679	14	1	9260	7.13	20	<10	1.11	20	1.48	949	1	1.58	1
11WA-15	393680	18	1	10900	10.4	20	<10	0.09	10	4.03	1245	1	0.18	1
11WA-15	393681	31	3	1465	9.65	20	<10	0.67	10	3.36	2650	<1	1.19	23
11WA-15	393682	24	5	1300	9.45	20	<10	0.53	20	3.38	1785	1	0.99	16
11WA-15	393683	23	2	1885	10.85	20	<10	0.58	10	3.86	2410	3	0.98	19
11WA-15	393684	21	<1	1730	9.85	20	<10	0.37	20	2.33	1775	<1	1.29	1
11WA-15	393685	29	4	1180	10.55	20	<10	0.29	10	3.89	2540	<1	0.8	19
11WA-15	393686	13	1	423	7.41	10	<10	0.59	20	3.17	1375	<1	0.38	<1
11WA-15	393687	11	2	78	6.93	10	<10	0.42	20	2.78	1320	<1	0.32	<1
11WA-15	393688	23	3	6360	8.86	20	<10	0.54	20	3.02	1595	1	1.01	7

Hole #	Sample #	Co	Cr	Cu	Fe	Ga	In	K	La	Mg	Mn	Mo	Na	Ni
		ppm	ppm	ppm	%	ppm	ppm	%	ppm	%	ppm	ppm	%	ppm
11WA-15	393689	15	3	929	6.76	20	<10	0.42	20	2.18	1495	1	1.03	6
11WA-15	393691	8	3	1105	5.39	20	<10	0.65	20	2.07	905	1	0.82	2
11WA-15	393692	11	1	2450	5.96	10	<10	0.53	10	2.56	838	<1	0.21	<1
11WA-15	393693	11	3	1185	7.39	10	<10	0.55	10	3.48	1260	<1	0.2	<1
11WA-15	393694	9	2	1240	6.22	10	<10	0.3	10	2.7	1080	<1	0.17	<1
11WA-15	393695	11	3	6370	7.69	10	<10	0.27	10	3.32	1320	<1	0.14	<1
11WA-15	393696	14	3	4660	8.68	20	<10	0.22	10	3.67	1510	<1	0.13	<1
11WA-15	393697	14	13	420	6.72	20	<10	0.46	20	2.18	1150	<1	1.63	11
11WA-15	393698	16	6	1040	6.07	20	<10	0.57	20	1.53	986	<1	2.08	11
11WA-15	393699	14	13	163	5.83	20	<10	0.8	20	1.72	1070	<1	1.92	16
11WA-15	393700	18	3	1250	8.28	10	<10	0.22	10	2.54	1435	<1	0.48	2
11WA-15	393701	10	3	1385	6.79	10	<10	0.09	10	2.49	1185	<1	0.14	<1
11WA-15	393702	16	1	7180	9.12	20	<10	0.04	10	3.36	1075	<1	0.06	<1
11WA-15	393703	13	1	1655	7.34	10	<10	0.09	10	2.8	1140	<1	0.1	<1
11WA-15	393704	14	2	2490	8.59	20	<10	0.06	10	3.33	1440	<1	0.12	<1
11WA-15	393705	12	1	4310	7.82	10	<10	0.06	10	3.16	1345	<1	0.11	<1
11WA-15	393706	14	2	6430	9.43	20	<10	0.12	10	4.08	1675	<1	0.11	<1
11WA-15	393707	12	1	2940	8.98	20	<10	0.15	10	3.86	1625	<1	0.11	<1
11WA-15	393708	12	<1	9810	9.61	20	<10	0.32	10	3.59	1155	<1	0.05	<1
11WA-15	393709	18	<1	1125	7.45	20	<10	0.75	40	1.44	1225	1	1.85	1
11WA-15	393711	33	5	272	12.7	20	10	0.45	10	2.51	2130	<1	1.27	2
11WA-15	393712	50	<1	82	13.1	20	<10	0.24	20	2.82	1845	<1	1.71	13
11WA-15	393713	38	<1	72	10.75	20	<10	0.3	10	2.74	1640	2	1.98	2
11WA-15	393714	42	<1	70	11.2	10	<10	0.44	20	2.8	1960	<1	1.6	1
11WA-15	393715	37	<1	73	11.2	20	<10	0.3	20	2.44	1965	<1	1.72	<1
11WA-15	393716	56	22	106	11.35	20	<10	0.26	<10	3.1	1410	<1	1.84	81
11WA-15	393717	61	9	116	12.75	20	<10	0.14	<10	3.24	1485	<1	1.61	97
11WA-15	393718	58	2	135	11.55	20	<10	0.21	<10	2.95	1720	<1	1.39	86
11WA-15	393719	30	15	25	7.02	20	<10	0.49	10	1.75	1250	<1	2.84	39
11WA-15	393720	46	1	76	9.01	20	<10	0.3	10	2.41	1245	<1	1.95	50
11WA-15	393721	26	12	53	6.63	20	<10	0.71	20	1.97	979	<1	2.68	27
11WA-15	393722	18	22	13	4.7	20	<10	0.74	10	1.32	675	<1	3.01	24
11WA-15	393723	13	16	188	4.27	20	<10	0.89	10	1.27	527	<1	3.89	20
11WA-15	393724	41	58	130	9.37	20	<10	0.3	<10	4.04	1400	<1	2.31	135
11WA-15	393725	58	4	361	10.8	20	<10	0.5	<10	3.76	1735	<1	1.57	52
11WA-15	393726	55	6	75	11.65	20	<10	0.11	<10	3.72	1615	<1	1.86	26
11WA-15	393727	55	<1	72	12.4	20	<10	0.1	<10	3.44	1540	<1	1.74	21
11WA-15	393728	57	<1	85	13	20	<10	0.17	<10	3.31	1575	<1	1.69	20
11WA-15	393729	59	<1	183	12.9	20	<10	0.18	<10	3.42	1655	<1	1.63	11
11WA-15	393731	60	<1	257	13.3	20	10	0.2	<10	3.77	1945	<1	1.57	17
11WA-15	393732	58	2	113	12.45	20	<10	0.3	<10	3.46	1600	<1	1.67	5
11WA-15	393733	56	3	75	12.15	20	10	0.27	<10	3.41	1600	<1	1.65	6
11WA-15	393734	55	5	73	12.45	20	10	0.23	<10	3.16	1570	<1	1.78	12
11WA-15	393735	57	<1	79	12.45	20	<10	0.22	<10	3.17	1600	<1	1.64	12
11WA-15	393736	54	<1	73	11.55	20	<10	0.28	<10	2.89	1500	<1	1.65	5
11WA-15	393737	63	<1	99	12.7	20	10	0.22	<10	3.74	1755	<1	1.17	8
11WA-16	393738	78	1660	4	8.37	10	10	0.04	10	14.75	996	<1	0.04	953
11WA-16	393739	78	1570	62	8.82	10	20	0.16	10	13.35	1825	<1	0.1	848
11WA-16	393740	76	1680	39	8.31	10	10	1.77	10	12.05	1715	<1	0.12	759
11WA-16	393741	53	499	827	5.73	10	<10	2.52	10	8.61	935	2	0.31	453
11WA-16	393742	76	1580	84	8.28	10	<10	0.23	10	13.2	1545	<1	0.09	876
11WA-16	393743	79	1650	34	8.93	10	<10	0.07	10	13.35	1120	<1	0.11	905
11WA-16	393744	75	1460	18	8.58	10	<10	0.06	10	12.8	1175	<1	0.18	818
11WA-16	393745	10	10	740	6.01	<50		0.5	<50	5.42	550	<10	0.39	20
11WA-16	393746	10	20	560	5.37	<50		0.7	<50	5.4	520	<10	0.72	10
11WA-16	393747	10	10	4110	8.73	<50		0.7	<50	5.95	510	<10	0.31	20
11WA-16	393748	10	<10	2950	10.75	<50		0.4	<50	5.64	430	<10	<0.05	10

Hole #	Sample #	Co	Cr	Cu	Fe	Ga	In	K	La	Mg	Mn	Mo	Na	Ni
		ppm	ppm	ppm	%	ppm	ppm	%	ppm	%	ppm	ppm	%	ppm
11WA-16	393749	20	<10	3490	11.2	<50		0.8	<50	6.17	440	<10	0.06	10
11WA-16	393751	140	<10	7330	22.4	<50		0.1	<50	3.38	350	<10	<0.05	<10
11WA-16	393752	100	<10	13050	20.3	<50		<0.1	<50	2.26	310	<10	<0.05	10
11WA-16	393753	40	10	36900	13.7	<50		0.3	<50	2.1	230	<10	<0.05	<10
11WA-16	393754	120	<10	19200	25.2	<50		0.7	<50	3.15	260	<10	0.05	20
11WA-16	393755	10	<10	40300	15.05	<50		1.6	<50	2.04	130	<10	0.1	10
11WA-16	393756	30	<10	10700	14.45	<50		2	<50	1.5	80	<10	0.12	<10
11WA-16	393757	30	<10	8020	12.3	<50		0.8	<50	7.93	330	<10	0.06	20
11WA-16	393759	10	40	9850	13.1	<50		0.5	<50	11.15	450	<10	0.05	30
11WA-16	393760	180	<10	9930	33.4	<50		0.1	<50	5.62	200	<10	<0.05	20
11WA-16	393761	170	<10	9670	26.9	<50		0.1	<50	7.96	160	<10	<0.05	20
11WA-16	393762	100	<10	17650	25.1	<50		0.1	<50	5.15	270	<10	<0.05	10
11WA-16	393763	10	<10	21500	11.5	<50		0.9	<50	5.78	330	<10	0.06	<10
11WA-16	393764	30	<10	5990	8.87	<50		1.3	<50	8.73	570	<10	0.08	<10
11WA-16	393765	10	<10	1680	5.99	<50		1.6	<50	4.17	260	<10	0.09	<10
11WA-16	393766	10	<10	1540	6.13	<50		2.4	<50	2.43	180	<10	0.11	<10
11WA-16	393767	10	<10	760	7.81	<50		1.7	<50	5.66	520	<10	0.1	<10
11WA-16	393768	30	<10	9470	25.1	<50		0.5	<50	7.05	540	<10	0.06	10
11WA-16	393769	<10	<10	780	5.79	<50		1.1	<50	4.19	480	<10	1.39	20
11WA-16	393771	30	<10	810	9.15	<50		0.2	60	8.43	580	<10	<0.05	<10
11WA-16	393772	40	<10	1530	12.8	<50		0.4	<50	5.89	510	<10	0.48	20
11WA-16	393773	10	<10	170	4.47	<50		1	<50	2.32	600	<10	2.25	20
11WA-16	393774	<10	<10	390	4.38	<50		0.7	<50	2.51	480	<10	2.34	<10
11WA-16	393775	10	<10	210	4.22	<50		0.7	<50	1.6	450	<10	2.16	<10
11WA-16	393776	<10	<10	510	6.26	<50		0.8	<50	2.75	370	<10	1.46	<10
11WA-16	393777	20	<10	1780	19.3	<50		0.1	<50	6.71	450	<10	<0.05	<10
11WA-16	393778	20	<10	870	23.4	<50		0.3	<50	6.91	410	<10	<0.05	<10
11WA-16	393779	30	<10	1230	16.8	<50		0.3	<50	8.21	420	<10	<0.05	<10
11WA-16	393780	20	<10	680	19.3	<50		0.1	<50	7.85	470	<10	<0.05	<10
11WA-16	393781	30	<10	640	19.65	<50		0.1	<50	6.09	240	<10	<0.05	<10
11WA-16	393782	10	<10	10	15.3	<50		<0.1	<50	11.9	410	<10	<0.05	<10
11WA-16	393783	20	<10	10	16.1	<50		<0.1	<50	11.7	820	<10	<0.05	<10
11WA-16	393784	20	<10	700	22.2	<50		<0.1	<50	8.8	1920	<10	<0.05	20
11WA-16	393785	10	<10	90	21.4	<50		<0.1	<50	8.93	2870	<10	<0.05	<10
11WA-16	393786	70	<10	4890	27.2	<50		<0.1	<50	6.33	1180	<10	<0.05	<10
11WA-16	393787	20	<10	1610	11.55	<50		<0.1	<50	13.25	280	<10	<0.05	<10
11WA-16	393788	20	<10	1310	13.05	<50		<0.1	<50	9.22	270	<10	0.05	<10
11WA-16	393789	20	<10	1950	12.2	<50		0.1	<50	9.62	260	<10	0.05	<10
11WA-16	393791	30	<10	3110	11.25	<50		0.1	<50	9.23	340	<10	0.05	<10
11WA-16	393792	30	<10	2880	13.4	<50		0.2	<50	8.34	270	<10	<0.05	<10
11WA-16	393793	50	<10	870	11.95	<50		0.5	<50	6.62	310	<10	<0.05	<10
11WA-16	393794	<10	<10	10	3.91	<50		1.3	<50	3.44	270	<10	0.08	<10
11WA-16	393795	4	4	2	2.94	20	<10	1.61	20	2.81	212	7	0.22	2
11WA-16	393796	5	1	1	2.99	20	<10	1.44	30	3.42	264	2	0.47	<1
11WA-17	393797	9	2	454	6.21	20	10	0.07	20	11.4	464	1	0.01	<1
11WA-17	393798	8	1	720	5.42	20	10	0.04	20	9.87	559	<1	0.01	<1
11WA-17	393799	6	1	868	4.64	20	10	0.03	30	8.51	571	1	0.01	2
11WA-17	393800	13	1	294	6.6	20	10	0.49	20	3.52	597	<1	0.11	<1
11WA-17	393801	19	1	255	6.58	20	10	0.53	20	3.56	608	1	0.23	1
11WA-17	393802	13	2	73	5.76	20	<10	0.79	20	3.4	566	<1	0.22	1
11WA-17	393803	9	2	17	4.59	10	10	1.17	20	2.94	425	1	0.66	2
11WA-17	393804	5	1	19	3.8	10	<10	1.25	20	2.38	346	<1	1.01	2
11WA-17	393805	11	19	13	2.65	20	<10	1.4	10	0.91	370	<1	2.69	21
11WA-17	393806	25	1	3540	6.56	20	10	1.26	20	3.65	536	1	0.36	3
11WA-17	393807	15	2	577	4.96	20	10	1.19	20	3.12	448	<1	0.72	1
11WA-17	393808	15	1	1110	10.2	30	<10	1.96	60	6.03	1135	4	0.78	<1
11WA-17	393809	13	1	1150	8.07	20	<10	1.03	60	4.81	859	1	0.34	1

Hole #	Sample #	Co	Cr	Cu	Fe	Ga	In	K	La	Mg	Mn	Mo	Na	Ni
		ppm	ppm	ppm	%	ppm	ppm	%	ppm	%	ppm	ppm	%	ppm
11WA-17	393811	11	2	1005	7.52	20	<10	0.89	50	4.55	883	<1	0.22	<1
11WA-17	393812	18	<1	15000	10.9	30	<10	1.19	40	5.55	1060	1	0.08	1
11WA-17	393813	12	<1	998	10.05	30	10	1.19	50	6.62	1370	3	0.04	<1
11WA-17	393814	6	1	549	5.98	20	10	0.69	30	3.81	728	<1	0.03	<1
11WA-17	393815	13	2	2110	6.89	20	<10	0.65	40	4.37	756	<1	0.04	<1
11WA-17	393816	9	1	702	6.46	20	<10	0.81	30	4.27	727	<1	0.22	<1
11WA-17	393817	28	2	2720	10.6	20	<10	0.02	20	9.22	1005	<1	0.01	6
11WA-17	393818	22	2	10650	10.45	20	10	0.01	20	11.65	996	<1	0.02	6
11WA-17	393819	11	2	1570	6.87	20	<10	0.02	30	9.09	790	1	0.01	4
11WA-17	393820	<1	7	488	7.05	20	<10	0.06	20	9.59	816	<1	0.01	13
11WA-17	393821	10	10	1150	7.13	<50		1.3	<50	7.58	1290	<10	0.09	<10
11WA-17	393822	20	10	520	8.47	<50		0.9	<50	9.51	1220	<10	0.06	<10
11WA-17	393823	10	10	270	7.14	<50		0.5	<50	8.36	820	<10	<0.05	<10
11WA-17	393824	10	10	540	7.06	<50		0.3	<50	8.32	650	<10	<0.05	<10
11WA-17	393825	10	10	1310	7.66	<50		<0.1	<50	9.39	730	<10	<0.05	<10
11WA-17	393826	10	<10	3990	8.21	<50		<0.1	<50	10.35	850	<10	0.05	<10
11WA-17	393827	10	10	900	7.5	<50		0.2	<50	8.54	600	<10	<0.05	<10
11WA-17	393828	10	<10	700	7.05	<50		0.2	<50	8.16	600	<10	<0.05	<10
11WA-17	393829	10	<10	570	7.17	<50		0.2	<50	9.51	730	<10	<0.05	<10
11WA-17	393831	10	<10	510	7.29	<50		0.1	<50	11.75	680	<10	0.05	<10
11WA-17	393832	20	<10	2110	7.79	<50		0.1	<50	8.86	610	<10	<0.05	<10
11WA-17	393833	40	<10	5220	7.95	<50		0.1	<50	6.95	510	<10	<0.05	<10
11WA-17	393834	20	<10	2450	7.15	<50		0.1	<50	9.5	680	<10	0.06	<10
11WA-17	393835	10	<10	5330	8.49	<50		0.2	<50	5.23	610	<10	0.06	<10
11WA-17	393836	60	<10	17550	19	<50		0.5	<50	4.56	390	<10	<0.05	<10
11WA-17	393837	100	<10	15350	20.7	<50		0.4	<50	4.21	370	<10	<0.05	<10
11WA-17	393838	30	<10	14300	19.55	<50		0.3	<50	3.19	480	<10	<0.05	10
11WA-17	393839	30	<10	11600	16.75	<50		0.2	<50	3.41	410	<10	<0.05	<10
11WA-17	393840	30	10	4010	9.4	<50		0.4	<50	6.31	590	<10	0.05	<10
11WA-17	393841	20	10	1810	8.98	<50		0.3	<50	6.62	560	<10	<0.05	<10
11WA-17	393842	10	10	770	6.53	<50		0.2	<50	6.2	490	<10	<0.05	<10
11WA-17	393843	30	<10	2730	14.6	<50		0.1	<50	6.42	530	<10	<0.05	<10
11WA-17	393844	20	10	540	6.47	<50		0.2	<50	6.29	600	<10	0.06	10
11WA-17	393845	20	<10	1070	7.14	<50		0.6	<50	5.68	540	<10	0.07	10
11WA-17	393846	20	<10	1740	6.83	<50		1.1	<50	4.13	460	<10	0.09	10
11WA-17	393847	30	<10	1950	11.35	<50		0.3	<50	6.05	760	<10	<0.05	10
11WA-17	393848	30	<10	1520	9.64	<50		0.2	<50	5.78	820	<10	0.05	10
11WA-17	393849	20	<10	3130	7.61	<50		1.2	<50	6.17	550	<10	0.08	20
11WA-17	393851	90	<10	34800	13.65	<50		0.7	<50	5.33	570	<10	0.09	<10
11WA-17	393852	200	<10	69500	25.9	<50		0.1	<50	1.49	340	<10	<0.05	20
11WA-17	393853	290	<10	90900	34	<50		<0.1	<50	1.95	210	<10	<0.05	30
11WA-17	393854	980	<10	23600	32.8	<50		0.1	<50	3.27	1530	<10	<0.05	20
11WA-17	393855	490	<10	56900	38.6	<50		<0.1	<50	3.95	510	<10	<0.05	40
11WA-17	393856	380	<10	73000	25.7	<50		<0.1	<50	3.63	470	<10	<0.05	10
11WA-17	393857	30	100	2040	6.94	<50		2	<50	4.81	890	<10	0.08	60
11WA-17	393858	20	120	290	8.27	<50		1.1	<50	4.94	1360	<10	0.89	80
11WA-17	393859	20	120	100	7.51	<50		0.9	<50	5.6	1080	<10	0.95	80
11WA-17	393860	30	130	330	7.78	<50		1.5	<50	7.22	620	<10	0.2	70
11WA-17	393861	50	<10	24500	13.6	<50		1	<50	5.7	600	<10	0.07	<10
11WA-17	393862	30	<10	11900	31.4	<50		<0.1	<50	6.06	580	<10	0.08	50
11WA-17	393863	370	<10	11900	32.6	<50		<0.1	<50	1.78	240	<10	<0.05	30
11WA-17	393864	120	<10	10000	34.5	<50		<0.1	<50	2.81	530	<10	<0.05	30
11WA-17	393865	90	<10	82500	28.2	<50		0.1	<50	4.3	370	<10	<0.05	30
11WA-17	393866	120	<10	19000	16.85	<50		0.2	<50	5.98	570	<10	0.05	10
11WA-17	393867	20	<10	33500	10.45	<50		0.6	<50	5.18	390	<10	0.07	<10
11WA-17	393868	10	20	1610	5.88	<50		0.5	<50	6.11	510	<10	0.05	10
11WA-17	393869	10	30	530	6.02	<50		0.9	<50	6.29	560	<10	0.06	30

Hole #	Sample #	Co	Cr	Cu	Fe	Ga	In	K	La	Mg	Mn	Mo	Na	Ni
		ppm	ppm	ppm	%	ppm	ppm	%	ppm	%	ppm	ppm	%	ppm
11WA-17	393871	20	30	480	5.48	<50		1.5	<50	5.6	520	<10	0.05	30
11WA-17	393872	30	10	960	5.76	<50		2.4	<50	5.77	360	<10	0.15	20
11WA-17	393873	20	30	220	5.85	<50		1.2	<50	5.86	510	<10	0.15	40
11WA-17	393874	47	6	9	9.15	20	<10	0.8	20	4.84	568	3	0.07	14
11WA-17	393875	47	3	3400	9.23	20	10	0.88	20	4.52	546	1	0.12	14
11WA-17	393876	41	3	457	7.85	20	10	1.28	20	3.93	439	1	0.28	11
11WA-18	393877	62	657	623	7.54	10	<10	0.37	20	7.45	1160	<1	1.87	305
11WA-18	393878	60	9	127	14.65	10	<10	0.2	<10	3.64	1965	<1	1.28	63
11WA-18	393879	56	27	127	13.5	10	<10	0.23	<10	3.85	1860	<1	1.67	64
11WA-18	393880	54	8	117	13.95	10	<10	0.21	<10	3.57	1970	<1	1.62	53
11WA-18	393881	60	5	137	14.15	10	<10	0.26	<10	3.58	2110	<1	1.52	55
11WA-18	393882	65	66	346	12.3	10	<10	0.24	<10	3.57	1960	<1	1.43	169
11WA-18	393883	67	62	298	11.95	20	<10	0.2	10	3.59	1975	1	1.59	196
11WA-18	393884	47	58	103	10.75	20	<10	0.21	10	3.55	1900	<1	1.59	80
11WA-18	393885	42	50	78	10.6	20	<10	0.23	10	3.3	1835	1	1.65	60
11WA-18	393886	53	11	91	13.85	20	<10	0.25	10	2.99	2160	<1	1.6	32
11WA-18	393887	46	31	70	12.15	20	<10	0.26	10	3	1965	<1	1.92	24
11WA-18	393888	57	8	113	14.9	10	10	0.28	10	3.2	2390	1	1.43	37
11WA-18	393891	55	92	98	13.45	10	<10	0.19	<10	3.55	2070	<1	1.63	98
11WA-18	393892	48	21	72	13.7	20	<10	0.24	10	3.33	2460	2	1.95	38
11WA-18	393893	47	55	94	11.65	20	<10	0.24	10	3.23	1890	1	1.95	55
11WA-18	393894	73	39	447	12.55	20	<10	0.15	10	3.82	2110	1	1.76	89
11WA-18	393895	62	32	170	15.75	10	<10	0.19	10	3.31	2300	1	1.31	43
11WA-18	393896	57	27	107	15.25	10	<10	0.19	10	3.42	2300	1	1.43	31
11WA-18	393897	82	35	305	19.15	10	<10	0.11	10	3.85	2630	1	0.86	70
11WA-18	393898	81	34	239	20.2	10	10	0.11	10	3.52	2550	1	0.98	65
11WA-18	393899	90	59	158	25.9	10	20	0.09	<10	3.04	2550	2	0.57	53
11WA-18	393900	96	46	614	21.3	10	10	0.09	10	3.02	2370	1	0.73	99
11WA-18	393901	52	69	166	13.7	20	<10	0.14	10	2.94	2100	1	1.52	35
11WA-18	393902	48	69	84	13.65	10	10	0.16	10	3.12	2190	1	1.68	26
11WA-18	393903	55	87	156	14.45	20	<10	0.12	10	3.17	2190	<1	1.54	96
11WA-18	393904	57	26	98	16.65	20	<10	0.18	10	2.99	2380	1	1.28	34
11WA-18	393905	71	91	328	18.15	10	<10	0.22	10	3.72	3320	<1	1.06	99
11WA-18	393906	56	140	362	11.3	20	<10	0.12	10	4.42	1730	1	1.25	121
11WA-18	393907	71	137	407	12.3	20	<10	0.18	10	4.07	2060	1	1.18	351
11WA-18	393908	63	141	638	13.9	10	<10	0.27	10	4.25	2270	<1	1.05	378
11WA-18	393909	124	164	802	14.2	10	<10	0.25	10	3.71	1730	2	1.15	772
11WA-18	393911	63	147	657	9.94	20	<10	0.2	10	3.57	1570	1	1.47	388
11WA-18	393912	78	142	1145	11.6	20	20	0.19	10	4.2	1935	<1	1.14	503
11WA-18	393913	82	92	2050	10.3	20	20	0.14	10	3.1	1460	1	1.73	669
11WA-18	393914	41	181	168	8.32	20	<10	0.13	10	4.43	2180	<1	1.29	165
11WA-18	393915	49	133	380	9.37	20	<10	0.59	10	3.69	1820	<1	1.51	107
11WA-18	393916	35	57	325	8.41	20	<10	0.35	10	3.97	1930	<1	1.34	103
11WA-18	393917	41	176	212	6.83	20	<10	0.12	10	3.83	1580	<1	1.47	148
11WA-18	393918	38	201	189	8.94	20	<10	0.24	10	4.15	2020	3	1.5	173
11WA-18	393919	58	174	1455	10.75	10	<10	0.54	40	3.42	3100	2	0.27	260
11WA-18	393920	70	172	506	14.8	20	<10	1.14	10	4.27	2980	1	0.51	324
11WA-18	393921	72	144	1145	15	10	<10	0.65	10	3.72	2920	2	0.64	328
11WA-18	393922	60	171	963	10.5	20	<10	0.57	10	3.35	1735	1	1.5	274
11WA-18	393923	43	156	787	8.85	10	<10	0.47	10	3.61	2840	209	0.33	143
11WA-18	393924	35	218	120	9	20	<10	1.37	10	3.23	1480	1	2.18	151
11WA-19	393925	34	153	13	6.28	10	<10	0.29	10	3.56	1830	2	4.18	118
11WA-19	393926	27	107	731	5.42	20	<10	0.37	20	3.51	2020	<1	3.18	109
11WA-19	393927	31	79	569	8	20	<10	0.21	20	3.21	1595	<1	2.36	96
11WA-19	393928	34	96	400	7.87	20	<10	0.24	20	3.38	1565	2	2.42	92
11WA-19	393929	35	98	530	7.41	20	<10	0.29	20	3.53	1545	1	2.36	92
11WA-19	393931	7	32	52	7.77	20	<10	0.62	30	6.54	791	1	0.12	32

Hole #	Sample #	Co	Cr	Cu	Fe	Ga	In	K	La	Mg	Mn	Mo	Na	Ni
		ppm	ppm	ppm	%	ppm	ppm	%	ppm	%	ppm	ppm	%	ppm
11WA-19	393932	60	1	3530	30.7	10	10	0.19	20	2.97	939	4	0.01	22
11WA-19	393933	1	2	967	9.79	20	10	1.1	30	4.77	752	3	0.61	4
11WA-19	393934	13	2	639	11.6	20	<10	1.01	30	3.78	567	4	0.4	7
11WA-19	393935	<1	2	593	10.45	30	<10	1.95	40	5.47	845	2	1.04	3
11WA-19	393936	4	3	950	5.84	10	<10	1.32	40	2.21	315	2	0.8	7
11WA-19	393937	7	2	367	8.22	20	<10	1.98	50	4.87	677	2	0.53	6
11WA-19	393938	10	2	426	7.54	20	<10	0.5	30	4.28	622	2	0.06	3
11WA-19	393939	8	2	288	5.81	20	<10	1.67	30	2.89	458	2	0.48	5
11WA-19	393940	6	5	210	5.42	20	<10	1.73	30	2.67	472	2	0.91	14
11WA-19	393941	10	4	506	5.94	20	<10	0.92	20	1.99	390	1	1.19	5
11WA-19	393942	8	2	1965	11.55	20	<10	2.84	30	4.54	1050	1	0.8	4
11WA-19	393943	7	9	620	4.32	20	<10	1.86	30	2.42	295	2	1.12	15
11WA-19	393944	7	4	109	3.85	20	<10	1.54	40	2.5	289	2	0.45	6
11WA-19	393945	14	3	1300	8.15	20	<10	1.51	10	8.02	513	2	0.03	9
11WA-19	393946	22	3	1075	8.26	20	<10	0.56	20	6.76	514	1	0.02	9
11WA-19	393947	23	4	440	6.97	20	<10	1.59	40	6.66	532	2	0.07	10
11WA-19	393948	23	4	667	6.66	20	<10	0.89	50	6.65	535	2	0.05	10
11WA-19	393949	4	6	65	3.96	20	<10	1.87	30	3.31	389	4	0.15	9
11WA-19	393951	10	6	205	4.73	20	<10	1.46	30	3.27	383	4	0.11	10
11WA-19	393952	14	5	152	4.84	20	<10	1.54	30	3.36	361	2	0.09	8
11WA-19	393953	15	4	143	5.28	20	<10	1.6	30	3.79	368	2	0.12	9
11WA-19	393954	18	4	170	5.63	20	<10	1.5	40	3.69	365	3	0.08	10
11WA-19	393955	11	4	278	5.27	20	<10	1.04	30	3.52	366	3	0.07	10
11WA-19	393956	6	3	78	3.89	20	<10	1.92	30	2.8	346	2	0.33	6
11WA-19	393957	19	4	936	10.6	20	<10	0.97	40	6.84	1360	2	0.39	10
11WA-19	393958	15	3	66	9.64	20	<10	1.13	30	6.77	1175	3	0.14	7
11WA-19	393959	13	4	188	8.59	30	<10	2.15	40	2.95	1235	2	0.11	6
11WA-19	393960	15	3	328	7	20	<10	1.54	30	2.4	601	2	0.68	7
11WA-19	393961	7	4	122	3.71	20	<10	1.78	80	1.11	381	2	1.31	4
11WA-19	393962	3	4	34	2.8	20	<10	1.55	40	1.19	415	2	1.5	2
11WA-19	393963	3	4	71	3.3	20	<10	3.05	30	2.09	930	4	0.37	4
11WA-19	393964	9	5	240	4.69	20	<10	2.68	20	3.34	1125	2	0.15	5
11WA-19	393965	16	3	400	7.12	20	<10	1.66	20	5.68	1895	3	0.1	6
11WA-19	393966	13	5	442	6.43	30	<10	2.31	20	3.72	331	1	0.12	4
11WA-19	393967	7	4	358	5.54	30	<10	2.08	20	4.34	730	2	0.11	4
11WA-19	393968	8	5	2320	3.23	20	<10	2.66	40	1.46	376	2	0.21	3
11WA-19	393969	4	3	1720	2.24	10	<10	1.46	20	1.07	565	1	0.12	<1
11WA-19	393971	13	4	763	6.34	10	<10	0.81	20	3.1	374	1	0.15	3
11WA-19	393972	8	4	1270	6.43	10	<10	0.45	20	4.26	496	<1	0.06	3
11WA-19	393973	9	4	393	5.5	20	<10	0.87	10	3.62	345	1	0.1	3
11WA-19	393974	21	5	268	7.39	20	<10	1.34	20	3.48	319	1	0.21	6
11WA-19	393975	21	5	196	5.78	20	<10	2.11	20	2.69	237	1	0.19	14
11WA-19	393976	27	3	263	8.73	20	<10	0.64	10	4.51	376	3	0.02	2
11WA-19	393977	21	3	134	8.07	20	<10	1.18	20	4.54	382	3	0.09	7
11WA-19	393978	7	5	88	4.92	20	<10	1.31	20	3.1	317	1	0.07	5
11WA-19	393979	11	3	160	5.5	20	<10	1.35	30	3.25	364	1	0.12	3
11WA-19	393980	7	4	604	3.7	20	<10	2.52	20	0.87	344	2	0.2	5
11WA-19	393981	9	9	696	4.06	20	<10	1.87	20	1	300	1	0.56	4
11WA-19	393982	7	6	1490	3.69	20	<10	1.44	20	0.8	298	1	1.28	3
11WA-20	393983	12	3	1495	6.49	20	<10	0.9	30	3.28	440	3	0.11	2
11WA-20	393984	13	3	1940	7.1	20	<10	0.36	40	3.55	556	2	0.06	<1
11WA-20	393985	11	5	586	5.79	20	<10	0.54	30	3	430	2	0.04	<1
11WA-20	393986	11	4	1230	5.28	10	<10	0.36	30	2.47	403	2	0.08	<1
11WA-20	393987	6	5	34	3.79	20	<10	1	20	1.74	290	1	0.07	<1
11WA-20	393988	6	4	52	3.92	20	<10	1.1	20	1.78	281	1	0.12	<1
11WA-20	393989	6	5	50	3.82	10	<10	0.93	20	1.9	293	<1	0.2	<1
11WA-20	393991	12	3	1010	6.95	20	<10	0.4	30	3.39	589	1	0.44	<1

Hole #	Sample #	Co	Cr	Cu	Fe	Ga	In	K	La	Mg	Mn	Mo	Na	Ni
		ppm	ppm	ppm	%	ppm	ppm	%	ppm	%	ppm	ppm	%	ppm
11WA-20	393992	13	<1	1085	7.83	20	<10	0.5	30	6.46	1150	1	0.01	8
11WA-20	393993	3	1	71	5.27	20	<10	0.52	30	4.45	747	1	0.29	5
11WA-20	393994	22	54	2030	9.03	20	<10	1.02	20	4.79	921	<1	0.58	33
11WA-20	393995	7	2	215	4.57	20	<10	1.07	20	3.75	792	1	0.25	1
11WA-20	393996	6	2	17	4.8	20	<10	0.69	20	3.22	555	<1	0.88	2
11WA-20	393997	12	3	496	4.11	20	<10	0.77	20	2.88	432	1	0.55	1
11WA-20	393998	22	1	3920	9.29	30	<10	0.98	20	9.1	1160	<1	0.02	<1
11WA-20	393999	33	1	10050	9.19	20	<10	0.25	20	6.67	764	1	0.01	3
11WA-20	394000	11	1	5300	6.53	10	<10	0.17	40	6.08	778	2	0.01	6
11WA-20	215901	26	1	1010	8.01	20	<10	0.14	30	7.75	765	3	0.01	4
11WA-20	215902	7	1	716	6.11	20	<10	0.34	30	6.26	852	2	0.01	2
11WA-20	215903	<1	2	45	4.84	10	<10	0.15	20	4.5	582	<1	0.01	3
11WA-20	215904	11	6	799	5.88	20	<10	2.13	20	3.17	713	<1	1.68	24
11WA-20	215905	2	7	466	2.14	10	<10	0.86	30	0.84	669	<1	3.23	5
11WA-20	215906	9	5	281	1.97	10	<10	0.56	30	0.85	371	<1	3.5	4
11WA-20	215907	14	3	80	5.78	20	<10	1.3	10	7.32	1170	1	0.03	9
11WA-20	215908	7	4	98	5.54	20	<10	2.84	20	6.01	711	1	0.17	15
11WA-20	215909	11	3	129	4.63	20	<10	1.47	30	4.18	461	1	0.58	10
11WA-20	215911	1	7	96	3.17	20	<10	0.86	30	2.36	334	1	2.02	7
11WA-20	215912	6	5	140	3.77	20	<10	0.72	30	2.4	354	<1	2.03	7
11WA-20	215913	15	4	108	5.17	20	<10	1.23	20	4.01	466	1	0.36	8
11WA-20	215914	11	4	244	5.41	20	<10	1.5	30	3.85	454	1	0.9	8
11WA-20	215915	17	8	293	5.85	20	<10	1.61	10	3.56	437	1	0.59	14
11WA-20	215916	27	7	394	7.65	20	<10	1.61	10	4.15	519	2	0.62	17
11WA-20	215917	3	4	235	2.93	10	<10	0.51	40	1.55	248	<1	2.79	6
11WA-20	215918	10	8	490	5.33	10	<10	0.8	20	2.16	306	1	1.52	14
11WA-20	215919	15	2	105	4.89	20	<10	1.18	40	2.98	378	1	0.35	6
11WA-20	215920	14	3	270	6.62	10	<10	0.57	20	4.03	552	1	0.13	5
11WA-20	215921	6	3	2890	7.41	20	<10	0.28	20	5.03	679	<1	0.02	5
11WA-20	215922	7	4	521	7.55	10	<10	0.86	10	7.59	1160	<1	0.02	5
11WA-20	215923	5	8	756	8.11	10	<10	1.12	10	7.4	2390	<1	0.02	7
11WA-20	215924	9	3	618	8.46	10	<10	0.9	10	5.76	910	<1	0.01	6
11WA-20	215925	4	3	516	7.23	10	<10	0.8	10	6.35	587	1	0.02	4
11WA-20	215926	18	1	3140	17.2	10	<10	0.74	20	3	397	<1	0.06	12
11WA-20	215927	27	1	1630	23.3	10	<10	1.15	10	1.75	251	<1	0.09	18
11WA-20	215928	64	<1	948	31.4	<10	<10	0.72	10	1.34	245	<1	0.08	25
11WA-20	215929	2	4	3490	23	10	<10	1.49	20	2.86	525	3	0.64	15
11WA-20	215931	11	16	511	13.15	20	<10	2.44	20	5.31	1290	1	0.03	5
11WA-20	215932	15	5	233	10.4	20	<10	0.85	30	6.07	997	1	0.02	4
11WA-20	215933	10	7	147	7.85	20	<10	1.04	20	5.05	758	1	0.29	6
11WA-20	215934	7	8	66	7.49	20	<10	0.89	20	5.61	777	1	0.31	7
11WA-20	215935	<1	4	16	4.65	20	<10	1.47	20	3.28	457	1	0.44	5

Hole #	Sample #	P	Pb	S	Sb	Sc	Sr	Th	Ti	Tl	U	V	W	Zn	Zr
		ppm	ppm	%	ppm	ppm	ppm	ppm	%	ppm	ppm	ppm	ppm	ppm	ppm
10WA-01	392551	120	2	0.2	<5	37	106	<20	1.13	<10	<10	880	<10		222
10WA-01	392552	4920	<2	0.82	6	56	37	<20	2.38	<10	<10	897	<10		204
10WA-01	392553	1530	3	0.35	5	51	71	<20	1.25	<10	<10	611	<10		218
10WA-01	392554	6600	3	0.33	6	48	191	<20	1.83	<10	10	288	<10		138
10WA-01	392555	340	<2	0.18	<5	46	143	<20	0.72	<10	10	189	<10		161
10WA-01	392556	380	<2	0.2	<5	27	192	<20	0.34	<10	10	135	<10		146
10WA-01	392557	>10000	17	2.5	10	63	61	<20	3.66	<10	<10	476	<10		122
10WA-01	392558	670	2	0.01	<5	24	204	<20	0.3	<10	10	85	<10		145
10WA-01	392559	240	<2	0.23	<5	40	133	<20	0.98	<10	10	741	<10		246
10WA-01	392560	120	<2	0.23	<5	46	110	<20	0.98	<10	10	776	<10		249
10WA-01	392561	210	<2	0.35	<5	35	105	<20	0.76	<10	<10	377	<10		313
10WA-01	392562	230	<2	0.08	<5	29	125	<20	0.64	<10	10	284	<10		279
10WA-01	392563	250	<2	0.34	<5	36	57	<20	1	<10	<10	338	<10		339
10WA-01	392564	150	<2	0.97	<5	21	139	<20	0.39	<10	10	202	<10		295
10WA-01	392565	280	<2	0.23	<5	12	129	<20	0.34	<10	<10	178	<10		275
10WA-01	392566	430	<2	0.18	<5	23	139	<20	0.35	<10	10	209	<10		254
10WA-01	392567	260	<2	0.63	<5	29	173	<20	0.66	<10	10	279	<10		266
10WA-01	392568	140	<2	0.02	<5	26	198	<20	0.2	<10	10	115	<10		148
10WA-01	392569	320	2	0.13	<5	33	189	<20	0.22	<10	10	130	<10		166
10WA-01	392570	180	<2	0.07	<5	32	128	<20	0.19	<10	10	109	<10		146
10WA-01	392572	160	<2	0.08	<5	32	131	<20	0.19	<10	<10	112	<10		148
10WA-01	392573	160	2	1.22	<5	28	214	<20	0.35	<10	<10	157	<10		160
10WA-01	392574	120	<2	1.14	<5	24	176	<20	0.41	<10	<10	179	<10		192
10WA-01	392575	190	<2	0.57	<5	18	200	<20	0.29	<10	10	138	<10		223
10WA-01	392576	130	<2	1.15	<5	21	176	<20	0.3	<10	10	147	<10		180
10WA-01	392577	100	<2	0.42	<5	16	186	<20	0.18	<10	10	104	<10		167
10WA-01	392578	110	2	0.7	<5	25	202	<20	0.21	<10	<10	117	<10		159
10WA-01	392579	100	3	0.53	<5	29	179	<20	0.19	<10	10	115	<10		225
10WA-01	392580	90	3	0.16	<5	34	180	<20	0.2	<10	10	121	<10		156
10WA-01	392581	140	2	0.1	<5	30	160	<20	0.2	<10	10	124	<10		148
10WA-01	392582	170	4	0.14	<5	29	191	<20	0.25	<10	10	135	<10		225
10WA-01	392583	170	3	0.27	<5	33	152	<20	0.23	<10	10	124	<10		233
10WA-01	392584	480	5	0.1	<5	30	206	<20	0.32	<10	10	137	<10		207
10WA-01	392585	870	5	0.13	<5	17	229	<20	0.42	<10	10	111	<10		178
10WA-02	392586	1170	12	0.82	7	27	144	<20	0.49	<10	<10	2	<10		220
10WA-02	392587	1270	8	0.67	<5	27	137	<20	0.49	<10	<10	1	<10		194
10WA-02	392588	1300	6	0.35	<5	27	91	<20	0.5	<10	<10	1	<10		185
10WA-02	392589	1480	9	0.24	<5	31	149	<20	0.57	<10	<10	1	<10		185
10WA-02	392590	1030	38	3.45	<5	20	117	<20	0.41	<10	10	5	<10		108
10WA-02	392591	1410	4	0.24	<5	29	148	<20	0.55	<10	<10	1	<10		199
10WA-02	392593	80	5	0.44	<5	3	99	<20	0.1	<10	<10	10	<10		54
10WA-02	392594	160	4	0.77	<5	6	70	<20	0.08	<10	<10	23	10		42
10WA-02	392595	230	11	11.35	6	4	53	<20	0.08	<10	<10	18	10		17
10WA-02	392596	290	6	10.85	7	3	59	<20	0.1	<10	<10	17	10		8
10WA-02	392597	470	9	8.88	<5	7	62	<20	0.15	<10	10	22	40		12
10WA-02	392598	420	3	2.85	<5	8	114	<20	0.24	<10	<10	23	40		30
10WA-02	392599	390	10	11.3	6	5	92	<20	0.13	<10	<10	20	20		14
10WA-02	392600	370	7	3.74	5	5	94	<20	0.15	<10	<10	20	20		18
10WA-02	392601	120	6	3.46	<5	4	98	20	0.08	<10	<10	16	10		21
10WA-02	392602	240	12	3.79	<5	4	74	<20	0.11	<10	<10	16	10		25
10WA-03	392603	2850	<2	0.07	<5	15	324	<20	0.93	<10	<10	36	<10		122
10WA-03	392604	1880	<2	0.19	<5	55	233	<20	1.59	<10	<10	218	<10		147
10WA-03	392605	7270	<2	0.19	<5	22	268	<20	1.58	<10	<10	190	<10		161
10WA-03	392606	5340	<2	0.15	<5	29	266	<20	1.61	<10	<10	282	<10		148
10WA-03	392607	2440	<2	0.17	<5	53	232	<20	1.21	<10	<10	202	<10		133
10WA-03	392608	690	<2	0.14	<5	49	246	<20	1.44	<10	<10	298	<10		129
10WA-03	392609	1510	3	0.12	<5	52	245	<20	1.11	<10	<10	258	<10		103

Hole #	Sample #	P	Pb	S	Sb	Sc	Sr	Th	Ti	Tl	U	V	W	Zn	Zr
		ppm	ppm	%	ppm	ppm	ppm	ppm	%	ppm	ppm	ppm	ppm	ppm	ppm
10WA-03	392610	230	<2	0.04	<5	45	262	<20	1.16	<10	<10	50	<10		98
10WA-03	392611	2250	<2	0.01	<5	5	355	<20	0.96	<10	<10	29	<10		92
10WA-03	392612	3500	<2	0.01	<5	13	314	<20	1.07	<10	<10	41	<10		115
10WA-03	392614	550	<2	0.14	<5	36	229	<20	1.1	<10	<10	271	<10		130
10WA-03	392615	1970	2	0.04	<5	19	295	<20	1.06	<10	<10	307	<10		122
10WA-03	392616	470	<2	0.1	<5	32	260	<20	0.79	<10	<10	253	<10		119
10WA-03	392617	2490	<2	0.02	<5	12	340	<20	0.89	<10	<10	23	<10		104
10WA-03	392618	2480	<2	0.02	<5	11	342	<20	0.89	<10	<10	26	<10		100
10WA-03	392619	2740	<2	0.02	<5	14	334	<20	0.95	<10	<10	32	<10		106
10WA-03	392620	2780	<2	0.03	<5	9	337	<20	0.92	<10	<10	45	<10		106
10WA-03	392621	2650	2	0.14	<5	47	233	<20	1.19	<10	<10	256	<10		126
10WA-03	392622	2550	<2	0.14	<5	49	230	<20	1.04	<10	<10	209	<10		117
10WA-03	392623	2570	<2	0.09	<5	23	314	<20	1.23	<10	<10	254	<10		112
10WA-03	392624	2760	<2	0.1	<5	22	311	<20	1.23	<10	<10	254	<10		112
10WA-03	392625	3340	<2	0.19	<5	47	227	<20	1.15	<10	<10	230	<10		121
10WA-03	392631	70	<2	0.1	<5	27	251	<20	2.08	<10	<10	238	<10		83
10WA-03	392632	70	<2	0.09	<5	21	299	<20	1.9	<10	<10	204	<10		77
10WA-03	392633	50	<2	0.09	<5	29	270	<20	2.05	<10	<10	234	<10		81
10WA-03	392635	70	3	0.12	<5	34	261	<20	2.09	<10	<10	309	<10		75
10WA-03	392636	60	<2	0.14	<5	37	271	<20	2.22	<10	<10	359	<10		78
10WA-03	392637	70	<2	0.13	<5	39	258	<20	2.17	10	<10	365	<10		78
10WA-03	392638	60	<2	0.14	<5	40	253	<20	2.23	<10	<10	411	<10		74
10WA-03	392639	50	<2	0.15	<5	38	259	<20	2.26	10	<10	424	<10		78
10WA-04	392640	130	2	0.04	<5	12	180	<20	0.18	<10	<10	79	<10		62
10WA-04	392641	150	2	0.06	<5	13	183	<20	0.19	<10	<10	79	<10		54
10WA-04	392642	150	<2	0.07	<5	12	183	<20	0.22	<10	<10	88	<10		56
10WA-04	392643	270	<2	0.11	<5	14	159	<20	0.22	<10	<10	78	<10		63
10WA-04	392644	170	3	0.05	<5	13	172	<20	0.23	<10	<10	72	<10		60
10WA-04	392645	120	<2	0.05	<5	10	176	<20	0.15	<10	<10	66	<10		49
10WA-04	392646	90	<2	0.04	<5	12	182	<20	0.15	<10	<10	72	<10		52
10WA-04	392647	110	2	0.04	<5	11	175	<20	0.15	<10	<10	71	<10		52
10WA-04	392648	120	2	0.04	<5	11	175	<20	0.16	<10	<10	71	<10		55
10WA-04	392649	100	<2	0.04	<5	12	177	<20	0.15	<10	<10	70	<10		54
10WA-04	392650	100	3	0.06	<5	11	177	<20	0.14	<10	<10	69	<10		53
10WA-04	392651	60	2	0.02	<5	12	96	<20	0.08	<10	<10	56	<10		46
10WA-04	392652	90	3	0.04	<5	15	140	<20	0.12	<10	<10	71	<10		60
10WA-04	392653	80	<2	0.04	<5	14	149	<20	0.12	<10	<10	69	<10		55
10WA-05	392654	140	9	0.02	<5	13	176	<20	0.21	<10	<10	73	<10		57
10WA-05	392655	110	8	0.03	<5	15	163	<20	0.16	<10	<10	74	<10		61
10WA-05	392656	50	23	0.06	<5	11	173	<20	0.09	<10	<10	53	<10		82
10WA-05	392657	140	77	0.06	<5	12	187	<20	0.14	<10	<10	60	<10		83
10WA-05	392658	60	72	0.08	<5	16	151	<20	0.11	<10	<10	59	<10		73
10WA-05	392659	170	180	1.36	<5	16	113	<20	0.13	<10	<10	58	<10		224
10WA-05	392661	80	80	6.51	<5	7	50	<20	0.06	<10	<10	23	<10		270
10WA-05	392662	60	62	4.98	<5	7	10	<20	0.1	<10	<10	4	<10		613
10WA-05	392663	70	466	2.76	<5	4	13	<20	0.07	<10	<10	2	<10		389
10WA-05	392664	60	61	5.01	<5	3	18	<20	0.04	<10	<10	2	<10		151
10WA-05	392665	40	78	8.48	<5	2	19	<20	0.02	<10	<10	2	<10		162
10WA-05	392666	70	216	8.69	<5	6	32	<20	0.06	<10	<10	27	<10		141
10WA-05	392667	70	266	9.09	<5	10	38	<20	0.08	<10	<10	48	<10		131
10WA-05	392668	50	325	7.15	<5	16	45	<20	0.12	<10	<10	117	<10		243
10WA-05	392669	30	483	14.3	<5	13	37	<20	0.08	<10	<10	83	<10		789
10WA-05	392671	30	259	17.3	<5	10	29	<20	0.08	<10	<10	37	<10		492
10WA-05	392672	20	203	18.55	<5	8	35	<20	0.05	<10	<10	38	<10		83
10WA-05	392673	40	390	15.45	<5	6	41	<20	0.07	<10	<10	31	<10		138
10WA-05	392674	70	477	13.75	<5	7	23	<20	0.07	<10	<10	22	<10		285
10WA-05	392675	30	412	9.11	<5	9	36	<20	0.1	<10	<10	68	<10		197

Hole #	Sample #	P	Pb	S	Sb	Sc	Sr	Th	Ti	Tl	U	V	W	Zn	Zr
		ppm	ppm	%	ppm	ppm	ppm	ppm	%	ppm	ppm	ppm	ppm	ppm	ppm
10WA-05	392676	30	492	8.48	<5	11	24	<20	0.12	10	<10	79	<10		123
10WA-05	392677	30	290	9.21	<5	9	26	<20	0.09	10	<10	78	<10		110
10WA-05	392678	40	287	12.15	<5	13	22	<20	0.12	<10	<10	69	<10		180
10WA-05	392679	30	376	12.6	<5	11	19	<20	0.11	<10	<10	46	<10		157
10WA-05	392681	150	175	18.6	<5	10	17	<20	0.11	<10	<10	47	<10		140
10WA-05	392682	10	89	20.4	<5	10	17	<20	0.1	<10	<10	39	<10		1790
10WA-05	392683	70	97	20.5	<5	9	29	<20	0.09	<10	<10	27	<10		1070
10WA-05	392684	50	114	14.4	<5	11	22	<20	0.13	<10	<10	49	<10		2080
10WA-05	392685	70	198	15.35	<5	8	20	<20	0.1	10	<10	15	<10		3180
10WA-05	392686	20	123	20.8	<5	7	15	<20	0.09	<10	<10	15	<10		2530
10WA-05	392687	120	493	7.13	<5	10	32	<20	0.23	<10	10	30	<10	189	2470
10WA-05	392688	60	280	5.19	<5	8	19	<20	0.22	<10	10	32	<10	179	2810
10WA-05	392689	50	158	9.89	5	6	13	<20	0.12	10	10	19	<10	228	5000
10WA-05	392691	90	74	21.1	<5	6	31	<20	0.08	<10	10	38	<10	124	1770
10WA-05	392692	10	28	30.9	12	2	4	<20	0.04	<10	20	25	<10	55	634
10WA-05	392693	150	227	0.85	<5	16	141	<20	0.16	<10	10	77	<10	21	336
10WA-05	392694	360	186	1.9	<5	18	152	<20	0.17	<10	10	85	<10	28	752
10WA-05	392695	20	18	>50	5	6	10	<20	0.12	<10	20	31	<10	44	1310
10WA-05	392696	50	405	3.58	<5	12	169	<20	0.11	<10	10	33	<10	48	1015
10WA-05	392697	40	169	0.95	<5	17	149	<20	0.1	<10	10	38	<10	30	559
10WA-05	392698	220	130	0.29	<5	22	150	<20	0.22	<10	10	79	<10	56	474
10WA-05	392699	200	92	0.17	<5	24	149	<20	0.23	<10	10	91	<10	46	567
10WA-05	392701	170	27	0.14	<5	27	178	<20	0.24	<10	10	96	<10	24	239
10WA-05	392702	250	28	0.3	<5	26	180	<20	0.28	<10	20	96	<10	23	192
10WA-05	392703	160	14	0.2	<5	27	170	<20	0.24	<10	10	101	<10	18	160
10WA-05	392704	160	20	0.17	<5	25	162	<20	0.26	<10	10	108	<10	20	160
10WA-05	392705	140	65	0.15	<5	25	158	<20	0.24	<10	10	98	<10	22	226
10WA-05	392706	20	33	27.8	<5	4	24	<20	0.11	<10	<10	31	<10	93	3090
10WA-05	392707	90	28	27.9	<5	4	28	<20	0.09	<10	<10	53	<10	37	2200
10WA-05	392708	150	43	0.18	<5	25	140	<20	0.23	<10	<10	96	<10	15	236
10WA-05	392709	180	100	2.8	<5	24	111	<20	0.14	<10	<10	101	<10	19	253
10WA-05	392711	110	38	5.23	<5	24	110	<20	0.16	<10	<10	81	<10	20	686
10WA-05	392712	310	62	1.73	<5	18	129	<20	0.35	<10	<10	117	<10	101	528
10WA-05	392713	110	55	9.35	<5	14	116	<20	0.23	<10	<10	100	<10	143	2480
10WA-05	392714	190	73	1.17	<5	14	99	<20	0.24	<10	<10	83	<10	52	148
10WA-05	392715	60	80	0.51	<5	8	43	<20	0.09	<10	<10	16	<10	93	300
10WA-05	392716	80	53	0.52	<5	11	119	<20	0.11	<10	<10	49	<10	23	186
10WA-05	392717	130	63	0.26	<5	11	118	<20	0.15	<10	<10	64	<10	33	148
10WA-05	392718	250	179	0.34	<5	10	113	<20	0.15	<10	<10	61	<10	54	209
10WA-05	392719	140	33	0.99	<5	19	56	<20	0.16	<10	<10	71	<10	25	139
10WA-05	392721	140	29	0.63	<5	17	58	<20	0.16	<10	<10	64	<10	32	139
10WA-05	392722	120	18	0.53	<5	16	39	<20	0.19	<10	<10	72	<10	24	128
10WA-05	392723	150	14	0.28	<5	13	64	<20	0.19	<10	<10	72	<10	41	129
10WA-05	392724	80	10	0.21	<5	11	35	<20	0.21	<10	<10	80	<10	32	158
10WA-05	392725	320	5	0.1	<5	14	46	<20	0.22	<10	<10	91	<10	40	173
10WA-05	392726	220	18	0.05	<5	17	52	<20	0.25	<10	<10	85	<10	167	197
10WA-05	392727	90	13	0.33	<5	19	38	<20	0.23	<10	<10	103	<10	20	140
10WA-05	392728	110	19	0.62	<5	16	28	<20	0.23	<10	<10	78	<10	110	88
10WA-05	392729	110	18	0.17	<5	14	21	<20	0.29	<10	<10	72	<10	110	124
10WA-05	392731	240	256	0.75	<5	7	230	<20	0.11	<10	<10	42	<10	31	221
10WA-05	392732	50	235	0.5	<5	5	239	<20	0.08	<10	<10	30	<10	24	242
10WA-05	392733	60	1060	0.54	<5	4	269	<20	0.08	<10	<10	26	<10	19	233
10WA-05	392734	40	640	0.86	<5	5	297	<20	0.06	<10	<10	22	<10	17	195
10WA-05	392735	60	668	1.16	<5	5	309	<20	0.07	<10	<10	25	<10	26	212
10WA-05	392736	30	645	0.88	<5	5	280	<20	0.06	<10	<10	24	<10	18	199
10WA-05	392737	60	743	0.83	<5	4	247	<20	0.07	<10	<10	21	<10	32	310
10WA-05	392738	60	489	0.55	<5	5	234	<20	0.1	<10	<10	29	<10	24	404

Hole #	Sample #	P	Pb	S	Sb	Sc	Sr	Th	Ti	Tl	U	V	W	Zn	Zr
		ppm	ppm	%	ppm	ppm	ppm	ppm	%	ppm	ppm	ppm	ppm	ppm	ppm
10WA-05	392739	80	932	1.16	<5	6	242	<20	0.09	<10	<10	23	<10	50	353
10WA-05	392741	40	504	5.58	<5	4	127	<20	0.06	<10	<10	19	<10	24	396
10WA-05	392742	80	1295	1.41	<5	5	207	<20	0.08	<10	10	23	<10	39	528
10WA-05	392743	60	903	6.04	7	6	133	<20	0.08	<10	10	26	<10	26	714
10WA-05	392744	60	1510	5.59	<5	7	145	<20	0.08	<10	10	23	<10	23	713
10WA-05	392745	50	1445	2.51	<5	8	211	<20	0.08	<10	10	20	<10	28	747
10WA-05	392746	50	515	1.25	<5	5	181	<20	0.08	<10	10	17	<10	31	318
10WA-05	392747	50	879	2.11	<5	6	164	<20	0.08	<10	10	19	<10	28	779
10WA-05	392748	60	944	1.42	5	11	144	<20	0.1	<10	10	37	<10	29	1095
10WA-05	392749	80	1200	1.14	5	8	162	<20	0.1	<10	10	40	<10	22	1180
10WA-05	392751	70	2000	2.13	5	13	193	<20	0.1	<10	20	38	<10	40	1470
10WA-05	392752	50	2630	2.75	<5	11	165	<20	0.09	<10	10	33	<10	48	1130
10WA-05	392753	60	3720	2.6	8	6	284	<20	0.08	<10	20	30	<10	29	1530
10WA-05	392754	110	1545	2.62	<5	13	167	<20	0.15	<10	10	61	<10	37	1125
10WA-05	392755	80	693	0.37	<5	9	278	<20	0.12	<10	10	48	<10	23	635
10WA-05	392756	30	167	21.7	6	7	55	<20	0.07	<10	10	36	<10	103	17250
10WA-05	392757	50	261	4.41	<5	14	89	<20	0.12	<10	10	55	<10	9	1275
10WA-05	392758	70	109	0.32	<5	7	95	<20	0.11	<10	10	51	<10	11	1310
10WA-05	392759	20	121	2.79	<5	14	178	<20	0.08	<10	10	42	<10	12	1545
10WA-05	392761	40	111	3.48	<5	10	140	<20	0.1	<10	10	46	<10	10	2100
10WA-05	392762	30	76	9.39	<5	16	93	<20	0.1	<10	20	49	<10	7	1335
10WA-05	392763	20	58	13	<5	11	113	<20	0.07	<10	10	38	<10	<5	1125
10WA-05	392764	30	73	10.5	<5	10	124	<20	0.08	<10	10	37	<10	5	977
10WA-05	392765	50	82	5.67	<5	9	134	<20	0.09	<10	10	34	<10	8	1570
10WA-05	392766	60	60	0.06	<5	9	175	<20	0.09	<10	20	33	<10	12	586
10WA-05	392767	70	36	10.85	<5	10	117	<20	0.09	<10	10	37	<10	9	796
10WA-05	392768	70	95	5.45	<5	10	186	<20	0.12	<10	10	48	<10	10	225
10WA-05	392769	50	64	3.76	<5	6	193	<20	0.09	<10	20	42	<10	5	454
10WA-05	392770	40	31	4.86	<5	12	166	<20	0.11	<10	10	50	<10	8	341
10WA-05	392771	40	34	7.15	<5	9	157	<20	0.08	<10	20	35	<10	6	240
10WA-05	392772	40	88	6.19	<5	8	206	<20	0.09	<10	10	40	<10	6	269
10WA-05	392773	30	129	6.91	<5	8	160	<20	0.08	<10	20	36	<10	6	287
10WA-05	392774	40	89	7.66	<5	8	192	<20	0.08	<10	10	35	<10	7	310
10WA-05	392775	40	55	5.64	<5	9	189	<20	0.09	<10	20	42	<10	6	296
10WA-05	392776	30	76	6.4	<5	12	184	<20	0.09	<10	10	43	<10	6	339
10WA-05	392777	40	116	8.34	<5	9	182	<20	0.09	<10	20	35	<10	7	244
10WA-05	392778	30	83	7.32	<5	11	165	<20	0.09	<10	10	41	<10	7	351
10WA-05	392779	70	18	2.93	<5	8	195	<20	0.12	<10	20	45	<10	14	273
10WA-05	392780	60	7	0.77	<5	8	196	<20	0.14	<10	10	56	<10	12	136
10WA-05	392781	70	6	1.5	<5	8	198	<20	0.14	<10	20	51	<10	12	118
10WA-05	392782	60	4	0.09	<5	6	246	<20	0.12	<10	20	53	<10	9	59
10WA-05	392783	50	<2	0.02	<5	8	230	<20	0.13	<10	10	62	<10	7	55
10WA-05	392784	60	<2	1.23	<5	11	204	<20	0.16	<10	20	73	<10	8	91
10WA-05	392785	40	45	4.85	<5	8	141	<20	0.08	<10	20	33	<10	8	456
10WA-05	392786	30	27	6.89	<5	9	157	<20	0.07	<10	10	32	10	7	483
10WA-05	392787	70	35	0.3	<5	7	208	<20	0.11	<10	20	46	10	13	285
10WA-05	392788	70	85	1.91	<5	10	181	<20	0.12	<10	10	45	<10	12	736
10WA-05	392789	70	118	2.16	<5	7	201	<20	0.11	<10	10	33	<10	9	741
10WA-05	392791	160	239	4.02	<5	9	185	<20	0.12	<10	10	42	<10	7	983
10WA-05	392792	120	525	3.78	<5	8	190	<20	0.11	<10	10	33	<10	12	1320
10WA-05	392793	50	307	8.14	<5	6	162	<20	0.07	<10	10	25	<10	12	1090
10WA-05	392794	40	260	8.48	<5	5	195	<20	0.06	<10	20	16	<10	9	1215
10WA-05	392795	80	390	8.16	<5	6	158	<20	0.08	<10	10	20	<10	14	875
10WA-05	392796	40	692	8.23	<5	4	178	<20	0.05	<10	20	18	<10	7	1290
10WA-05	392797	130	189	0.69	<5	8	202	<20	0.09	<10	20	39	<10	12	585
10WA-05	392798	110	181	8.48	<5	19	129	<20	0.13	<10	20	70	10	13	1520
10WA-05	392799	110	17	3.32	<5	30	109	<20	0.17	<10	10	105	<10	11	506

Hole #	Sample #	P	Pb	S	Sb	Sc	Sr	Th	Ti	Tl	U	V	W	Zn	Zr
		ppm	ppm	%	ppm	ppm	ppm	ppm	%	ppm	ppm	ppm	ppm	ppm	ppm
10WA-06	392801	>10000	8	2.55	6	25	91	<20	1.14	<10	<10	59	<10	86	280
10WA-06	392802	>10000	14	1.11	5	34	120	<20	2.44	<10	<10	132	<10	40	277
10WA-06	392803	5590	17	0.1	7	31	121	<20	2.16	<10	<10	133	<10	61	249
10WA-06	392804	3320	8	1.52	<5	32	183	<20	1.47	<10	20	84	20	25	92
10WA-06	392805	3750	10	0.33	7	34	256	<20	1.64	<10	20	89	<10	27	138
10WA-06	392806	3670	5	0.28	7	34	207	<20	1.66	<10	20	100	<10	25	151
10WA-06	392807	5470	6	0.47	8	37	230	<20	1.76	<10	10	72	<10	22	182
10WA-06	392808	6100	10	0.98	7	45	244	<20	1.84	<10	10	53	<10	24	195
10WA-06	392809	6100	22	1.39	9	45	249	<20	1.83	<10	10	60	<10	21	214
10WA-06	392810	5660	24	1.46	7	45	232	<20	1.71	<10	10	52	<10	19	203
10WA-06	392811	6030	5	0.33	6	39	243	<20	1.72	<10	10	50	<10	27	188
10WA-06	392812	5400	2	0.24	8	42	234	<20	1.65	<10	10	40	<10	16	217
10WA-06	392813	4400	2	0.2	6	38	168	<20	1.35	<10	10	76	<10	26	151
10WA-06	392814	5580	4	0.27	8	49	194	<20	1.7	<10	<10	77	<10	22	209
10WA-06	392815	7260	29	1.03	<5	27	210	<20	1.86	<10	<10	42	<10	15	181
10WA-06	392816	1930	19	0.9	<5	31	305	<20	1.12	<10	<10	27	<10	7	197
10WA-06	392817	1810	20	0.99	<5	33	289	<20	0.96	<10	<10	13	<10	8	154
10WA-06	392818	1720	13	0.23	<5	32	264	<20	1.02	<10	<10	31	<10	8	120
10WA-06	392819	1580	203	5.03	<5	28	248	<20	0.71	<10	<10	11	<10	5	117
10WA-06	392821	1530	18	1.07	<5	22	315	<20	0.81	<10	<10	12	10	7	109
10WA-06	392822	1740	20	0.69	<5	12	323	<20	0.67	<10	<10	21	10	5	141
10WA-06	392823	2170	16	3.16	<5	11	305	<20	0.46	<10	<10	12	<10	12	152
10WA-06	392824	5070	5	0.19	<5	36	246	<20	1.61	<10	<10	70	<10	12	189
10WA-06	392825	2630	5	0.15	<5	33	254	<20	1.46	<10	<10	122	<10	16	158
10WA-06	392826	3500	5	0.15	<5	39	185	<20	1.65	<10	<10	164	<10	21	182
10WA-06	392827	5140	6	0.25	<5	35	213	<20	1.98	<10	<10	190	<10	21	169
10WA-07	392828	770	74	0.13	10	9	183	<20	0.38	<10	<10	58	<10	172	96
10WA-07	392829	90	79	18.3	5	3	14	<20	0.14	20	<10	9	10	233	4590
10WA-07	392830	90	141	19.3	15	3	8	<20	0.14	20	<10	2	10	244	4210
10WA-07	392831	<10	49	24.4	15	6	<1	<20	0.15	10	<10	10	20	100	48500
10WA-07	392832	<10	49	23.3	<5	6	<1	<20	0.21	<10	<10	17	20	97	24700
10WA-07	392833	70	39	23.7	10	4	1	<20	0.07	10	<10	4	10	101	42600
10WA-07	392834	70	41	21.9	6	4	6	<20	0.11	20	<10	2	10	157	127500
10WA-07	392835	60	685	13.2	6	4	6	<20	0.14	<10	<10	3	<10	197	40500
10WA-07	392836	70	355	17.6	<5	3	6	<20	0.11	<10	<10	4	10	95	157000
10WA-07	392837	80	647	11.2	13	4	12	<20	0.17	10	<10	1	20	216	54200
10WA-07	392838	150	63	12.85	5	4	17	<20	0.17	<10	<10	3	<10	339	9110
10WA-07	392839	50	67	15.45	9	5	21	<20	0.15	<10	<10	2	<10	358	7700
10WA-07	392841	10	52	14.55	5	6	15	<20	0.15	<10	<10	2	10	255	50400
10WA-07	392842	20	194	10.7	8	5	6	<20	0.15	<10	<10	2	<10	390	8700
10WA-07	392843	20	55	23	6	5	21	<20	0.15	<10	<10	5	<10	119	188000
10WA-07	392844	50	182	23.9	7	6	35	<20	0.18	10	<10	12	<10	131	101000
10WA-07	392845	130	1670	6.86	31	8	121	<20	0.23	<10	<10	13	<10	105	3450
10WA-07	392846	410	630	13.5	15	5	40	<20	0.08	<10	<10	4	<10	83	9730
10WA-07	392847	<10	305	27.6	13	1	3	<20	0.03	<10	<10	2	<10	77	4820
10WA-07	392848	<10	46	21	13	5	11	<20	0.1	<10	<10	6	10	98	46000
10WA-07	392849	140	1410	20.2	10	4	16	<20	0.12	<10	<10	6	<10	140	52500
10WA-07	392850	60	49	24	7	4	10	<20	0.1	<10	<10	6	<10	146	63300
10WA-07	392851	610	650	0.39	29	7	181	<20	0.26	<10	<10	33	<10	143	3060
10WA-07	392852	530	146	3.54	13	5	144	<20	0.21	<10	<10	28	<10	104	4530
10WA-07	392853	270	826	14.9	12	4	99	<20	0.1	<10	<10	6	10	87	38000
10WA-07	392854	100	2070	13.85	15	4	109	<20	0.11	<10	<10	5	<10	95	6480
10WA-07	392855	100	3110	12.3	8	5	123	<20	0.13	<10	<10	30	10	140	28000
10WA-07	392856	710	649	0.3	13	7	201	<20	0.3	<10	<10	41	<10	136	309
10WA-07	392857	610	451	0.39	11	7	147	<20	0.26	<10	<10	33	<10	141	913
10WA-07	392858	50	43	24.9	10	2	7	<20	0.06	<10	<10	6	<10	56	800
10WA-07	392859	<10	74	33.7	<5	2	4	<20	0.03	<10	<10	1	<10	42	1690

Hole #	Sample #	P	Pb	S	Sb	Sc	Sr	Th	Ti	Tl	U	V	W	Zn	Zr
		ppm	ppm	%	ppm	ppm	ppm	ppm	%	ppm	ppm	ppm	ppm	ppm	ppm
10WA-07	392861	150	2640	20.9	67	2	63	<20	0.05	<10	<10	2	<10	84	546
10WA-07	392862	40	1550	18.6	38	4	49	<20	0.07	<10	<10	4	<10	100	1190
10WA-07	392863	<10	78	30.2	7	2	4	<20	0.04	<10	<10	2	<10	51	839
10WA-07	392864	230	4040	2.56	199	4	129	<20	0.11	10	<10	7	<10	167	353
10WA-07	392865	<10	65	31.2	<5	2	1	<20	0.04	<10	<10	2	<10	43	2070
10WA-07	392866	40	801	28.1	42	2	22	<20	0.05	<10	<10	3	<10	79	2030
10WA-07	392867	30	167	32.2	17	2	15	<20	0.04	<10	<10	2	<10	43	1390
10WA-07	392868	130	4950	12	475	2	98	<20	0.08	30	<10	3	<10	142	975
10WA-07	392869	<10	65	29.7	16	2	5	<20	0.04	<10	<10	1	<10	38	1410
10WA-07	392870	160	3380	1.03	219	2	120	<20	0.08	20	10	7	<10	175	250
10WA-07	392871	60	436	12.6	16	5	69	<20	0.1	<10	<10	7	<10	181	3050
10WA-07	392872	90	411	19.25	9	6	57	<20	0.12	<10	<10	9	10	180	23300
10WA-07	392873	110	345	19.85	10	4	64	<20	0.11	<10	<10	12	<10	107	18250
10WA-07	392874	130	561	7.15	10	6	94	<20	0.19	<10	<10	14	<10	164	1300
10WA-07	392875	160	653	15.15	13	3	66	<20	0.11	<10	<10	7	10	111	22100
10WA-07	392876	70	468	8.94	22	5	27	<20	0.13	<10	<10	13	<10	179	3800
10WA-07	392877	30	9	9.26	18	4	3	<20	0.11	<10	<10	16	<10	157	5470
10WA-07	392878	240	525	5.7	7	4	66	<20	0.09	<10	<10	6	<10	221	2560
10WA-07	392879	170	301	25.3	6	5	65	<20	0.14	<10	<10	26	20	123	47200
10WA-07	392881	50	627	19.25	11	5	60	<20	0.13	<10	<10	19	20	114	70200
10WA-07	392882	120	1320	4.91	12	4	63	<20	0.1	<10	<10	4	<10	183	20800
10WA-07	392883	150	366	15.4	10	5	61	<20	0.12	<10	<10	8	<10	116	16800
10WA-07	392884	140	492	11.65	11	5	46	<20	0.09	<10	<10	4	<10	121	1250
10WA-07	392885	120	737	1.77	6	6	59	<20	0.12	<10	<10	2	<10	168	12200
10WA-07	392886	110	148	0.2	<5	6	62	<20	0.14	<10	<10	3	<10	159	166
10WA-08	392887	160	2	0.02	<5	5	108	20	0.27	<10	<10	58	<10		21
10WA-08	392888	260	4	0.49	<5	16	169	<20	0.59	<10	<10	165	<10		113
10WA-08	392889	470	4	0.08	<5	27	233	<20	1.37	<10	<10	276	<10		137
10WA-08	392891	130	6	0.01	<5	4	54	20	0.18	<10	10	46	<10		23
10WA-09	392892	950	6	0.15	<5	35	202	<20	1.66	<10	<10	262	<10		155
10WA-09	392893	1470	6	0.33	<5	35	97	<20	1.72	<10	<10	229	<10		150
10WA-09	392894	1250	5	0.13	<5	34	126	<20	1.57	<10	<10	220	<10		154
10WA-09	392895	1080	4	0.18	<5	36	112	<20	1.62	<10	<10	246	<10		130
10WA-09	392896	3470	6	0.16	<5	29	117	<20	0.83	<10	<10	114	<10		141
10WA-09	392897	970	4	0.43	<5	34	137	<20	1.41	<10	<10	205	20		127
10WA-09	392898	1670	7	0.38	<5	39	127	<20	1.68	<10	<10	253	<10		156
10WA-09	392899	1720	8	0.36	<5	39	121	<20	1.65	<10	<10	261	<10		171
10WA-09	392901	1700	6	0.68	<5	39	122	<20	1.5	<10	<10	229	10		153
10WA-09	392902	1810	42	2.83	<5	37	133	<20	1.22	<10	<10	202	110		248
10WA-09	392903	680	21	1.66	<5	20	66	<20	0.66	<10	<10	128	80		185
10WA-09	392904	1180	23	1.44	<5	35	111	<20	1.18	<10	<10	280	110		141
10WA-09	392905	1210	7	0.86	<5	37	118	<20	1.31	<10	<10	286	210		107
10WA-09	392906	1090	10	3.3	<5	31	86	<20	1.11	<10	<10	241	190		51
10WA-09	392907	670	7	2.2	<5	18	44	<20	0.56	<10	<10	113	120		36
10WA-09	392908	1390	5	0.73	<5	22	107	<20	0.83	<10	<10	106	120		81
10WA-09	392909	1350	6	0.05	<5	16	125	<20	0.69	<10	<10	56	10		28
10WA-09	392911	1690	5	0.11	<5	18	144	<20	0.56	<10	<10	47	10		31
10WA-09	392912	1280	4	0.38	<5	18	144	<20	0.68	<10	<10	59	10		34
10WA-09	392913	1630	7	2.21	<5	31	157	<20	1.22	<10	<10	127	110		40
10WA-09	392914	1320	6	0.85	<5	30	139	<20	0.97	10	<10	96	30		94
10WA-09	392915	1570	4	0.86	<5	30	138	<20	1.1	<10	<10	100	110		75
10WA-09	392916	1760	9	1.17	<5	28	108	<20	1.11	<10	<10	113	70		114
10WA-09	392917	2900	17	0.97	<5	41	218	<20	1.24	<10	<10	62	10		122
10WA-09	392918	650	20	1.28	<5	19	147	<20	0.59	<10	<10	139	<10		126
10WA-09	392919	120	29	1.52	<5	6	103	<20	0.11	<10	<10	35	<10		93
10WA-09	392921	150	17	2.19	<5	8	91	<20	0.2	<10	<10	45	<10		157
10WA-09	392922	120	19	1.05	<5	14	59	<20	0.17	<10	<10	25	<10		164

Hole #	Sample #	P	Pb	S	Sb	Sc	Sr	Th	Ti	Tl	U	V	W	Zn	Zr
		ppm	ppm	%	ppm	ppm	ppm	ppm	%	ppm	ppm	ppm	ppm	ppm	ppm
10WA-09	392923	200	22	1.15	<5	13	62	<20	0.23	<10	<10	77	<10		139
10WA-09	392924	420	25	1.13	<5	17	58	<20	0.19	<10	<10	156	<10		145
10WA-09	392925	500	11	5.43	<5	9	17	<20	0.13	<10	<10	20	<10		149
10WA-09	392926	160	12	11.5	<5	3	13	<20	0.06	<10	<10	2	<10		590
10WA-09	392927	1710	63	19.85	<5	6	4	<20	0.07	<10	<10	9	<10		392
10WA-09	392928	440	20	4.61	<5	5	20	<20	0.1	<10	<10	5	<10		611
10WA-09	392929	30	38	0.75	<5	6	13	<20	0.08	<10	<10	8	<10		188
10WA-09	392931	20	115	1.01	<5	3	15	<20	0.07	<10	<10	1	<10		152
10WA-09	392932	30	95	0.71	<5	3	19	<20	0.07	<10	<10	2	<10		173
10WA-09	392933	80	89	0.82	<5	6	27	<20	0.11	<10	<10	10	<10		218
10WA-09	392934	90	152	0.87	<5	5	25	<20	0.08	<10	<10	6	<10		223
10WA-09	392935	170	47	15.3	<5	4	9	<20	0.1	<10	<10	60	<10		3830
10WA-09	392936	70	32	19.6	<5	5	13	<20	0.12	<10	<10	6	<10		4470
10WA-09	392937	50	32	21.7	<5	4	7	<20	0.15	<10	<10	3	<10		5020
10WA-09	392938	40	6	31.6	<5	5	4	<20	0.11	<10	<10	5	<10		4010
10WA-09	392939	200	40	12.2	<5	5	18	<20	0.16	<10	<10	19	<10		5410
10WA-09	392941	70	40	17	<5	6	11	<20	0.15	<10	<10	4	<10		3080
10WA-09	392942	200	213	8.75	<5	7	22	<20	0.25	<10	<10	79	<10		1040
10WA-09	392943	100	138	4.1	<5	12	22	<20	0.15	10	<10	86	<10		659
10WA-09	392944	160	42	3.74	<5	10	18	<20	0.08	<10	<10	62	<10		295
10WA-09	392945	330	59	6.11	<5	12	25	<20	0.07	10	<10	74	<10		130
10WA-09	392946	320	111	5.09	<5	13	32	<20	0.08	10	<10	80	<10		282
10WA-09	392947	420	108	5.69	<5	13	32	<20	0.08	10	<10	75	<10		327
10WA-09	392948	370	91	5.27	<5	12	30	<20	0.09	10	<10	74	<10		436
10WA-09	392949	390	111	5.52	<5	12	19	<20	0.06	<10	<10	64	<10		360
10WA-09	392951	420	65	5.04	<5	12	21	<20	0.07	10	<10	74	<10		263
10WA-09	392952	430	74	2.32	<5	10	16	<20	0.08	10	<10	37	<10		162
10WA-09	392953	510	68	5.79	<5	9	22	<20	0.07	<10	<10	21	<10		277
10WA-09	392954	350	59	4.4	<5	10	23	<20	0.06	10	<10	57	<10		764
10WA-09	392955	310	34	4.89	<5	11	41	<20	0.07	<10	<10	96	<10		190
10WA-09	392956	450	23	1.81	<5	19	63	<20	0.4	<10	<10	151	<10		164
10WA-09	392957	450	16	0.5	<5	15	97	<20	0.47	<10	<10	133	<10		112
10WA-09	392958	730	<2	0.38	<5	14	129	<20	0.4	<10	<10	125	<10		95
10WA-09	392959	120	<2	0.62	<5	15	61	<20	0.39	<10	<10	30	<10		104
10WA-09	392961	540	<2	1.77	<5	29	172	<20	0.47	<10	<10	147	<10		117
10WA-09	392962	3540	7	1.07	<5	15	25	40	0.5	<10	<10	17	<10		133
10WA-09	392963	300	<2	0.45	<5	25	132	<20	0.73	<10	<10	207	<10		119
10WA-09	392964	150	<2	3.63	<5	7	30	<20	0.06	<10	<10	2	<10		214
10WA-09	392965	270	3	2.6	<5	12	91	<20	0.25	<10	<10	81	<10		170
10WA-09	392966	330	6	0.37	<5	15	128	<20	0.44	<10	<10	108	<10		114
10WA-09	392967	240	14	0.21	<5	15	102	<20	0.37	<10	<10	76	<10		124
10WA-09	392968	340	8	0.32	<5	18	60	<20	0.48	<10	<10	110	<10		112
10WA-09	392969	420	11	0.43	<5	17	94	<20	0.43	<10	<10	119	<10		91
10WA-09	392971	370	10	1.83	<5	15	76	<20	0.39	<10	<10	110	<10		101
10WA-09	392972	170	14	5.38	<5	10	50	<20	0.15	<10	<10	58	<10		112
10WA-09	392973	530	15	0.99	<5	18	78	<20	0.56	<10	<10	172	<10		135
10WA-09	392974	390	13	4.09	<5	16	54	<20	0.44	<10	<10	153	<10		134
10WA-09	392975	470	29	4.25	<5	15	63	<20	0.36	<10	<10	150	<10		112
10WA-09	392976	220	16	5.32	<5	10	54	<20	0.18	<10	<10	110	<10		127
10WA-09	392977	70	11	4.47	<5	8	35	<20	0.04	<10	<10	21	<10		145
10WA-09	392978	160	11	6.21	<5	15	50	<20	0.11	<10	<10	133	<10		221
10WA-09	392979	350	27	5.3	<5	14	60	<20	0.15	<10	<10	114	<10		226
10WA-09	392981	50	17	19.85	<5	4	22	<20	0.13	<10	<10	13	<10		171
10WA-09	392982	430	38	2.64	<5	16	92	<20	0.5	<10	<10	193	<10		173
10WA-09	392983	470	23	2.79	<5	14	86	<20	0.44	<10	<10	138	<10		164
10WA-09	392984	360	16	1.22	<5	16	98	<20	0.45	<10	<10	145	<10		146
10WA-09	392985	180	4	0.05	<5	8	3	<20	0.2	<10	<10	13	<10		65

Hole #	Sample #	P	Pb	S	Sb	Sc	Sr	Th	Ti	Tl	U	V	W	Zn	Zr
		ppm	ppm	%	ppm	ppm	ppm	ppm	%	ppm	ppm	ppm	ppm	ppm	ppm
10WA-10	392986	180	15	0.53	<5	15	166	<20	0.24	<10	<10	91	<10		79
10WA-10	392987	90	22	0.14	<5	7	149	<20	0.14	<10	<10	41	<10		87
10WA-10	392988	170	22	0.93	<5	9	163	<20	0.14	<10	<10	53	<10		114
10WA-10	392989	230	48	0.25	<5	7	182	<20	0.13	<10	<10	41	<10		64
10WA-10	392991	70	44	0.35	<5	9	228	<20	0.12	<10	<10	49	<10		78
10WA-10	392992	70	12	0.23	<5	7	242	<20	0.1	<10	<10	42	<10		54
10WA-10	392993	150	6	0.13	<5	7	236	<20	0.13	<10	<10	48	<10		57
10WA-10	392994	70	9	0.25	<5	8	249	<20	0.11	<10	<10	46	<10		49
10WA-10	392995	70	12	0.28	<5	8	229	<20	0.12	<10	<10	51	<10		57
10WA-10	392996	70	7	0.06	<5	7	231	<20	0.11	<10	<10	47	<10		54
10WA-10	392997	60	10	0.32	<5	8	225	<20	0.1	<10	<10	46	<10		57
10WA-10	392998	70	10	0.26	<5	9	230	<20	0.11	<10	<10	48	<10		57
10WA-10	392999	60	12	0.09	<5	9	221	<20	0.11	<10	<10	52	<10		59
10WA-10	393101	210	26	0.51	<5	10	222	<20	0.13	<10	<10	55	<10		115
10WA-10	393102	70	27	0.33	<5	9	225	<20	0.11	<10	<10	48	<10		70
10WA-10	393103	60	22	0.12	<5	10	219	<20	0.12	<10	<10	58	<10		65
10WA-10	393104	60	35	0.24	<5	10	217	<20	0.11	<10	<10	55	<10		78
10WA-10	393105	70	34	0.23	<5	12	204	<20	0.13	<10	<10	66	<10		61
10WA-10	393106	60	33	0.25	<5	13	208	<20	0.13	<10	<10	67	<10		64
10WA-10	393107	60	71	0.32	<5	13	207	<20	0.13	<10	<10	66	<10		71
10WA-10	393108	80	52	0.19	<5	14	201	<20	0.14	<10	<10	66	<10		73
10WA-10	393109	90	91	0.52	<5	13	199	<20	0.15	<10	<10	72	<10		70
10WA-10	393111	100	59	0.15	<5	15	203	<20	0.16	<10	<10	77	<10		66
10WA-10	393112	100	57	0.76	<5	19	188	<20	0.18	<10	<10	92	<10		67
10WA-10	393113	140	219	0.27	<5	19	137	20	0.2	<10	10	82	<10		104
10WA-10	393114	210	30	0.09	<5	16	100	<20	0.2	<10	<10	66	<10		149
10WA-10	393115	140	50	0.33	<5	9	100	<20	0.14	<10	<10	51	<10		151
10WA-10	393116	160	140	0.62	<5	10	65	<20	0.17	<10	<10	54	<10		153
10WA-10	393117	150	88	0.23	<5	11	73	<20	0.2	<10	<10	74	<10		138
10WA-10	393118	180	102	0.04	<5	11	72	<20	0.17	<10	<10	68	<10		128
10WA-10	393119	240	115	0.19	<5	13	50	<20	0.23	<10	<10	96	<10		195
10WA-10	393121	50	515	1.06	<5	4	159	<20	0.09	<10	<10	24	<10		305
10WA-10	393122	30	961	1.21	<5	4	186	<20	0.07	<10	<10	25	<10		472
10WA-10	393123	40	1225	0.63	<5	4	164	<20	0.08	<10	<10	38	<10		471
10WA-10	393124	50	533	0.36	<5	5	180	<20	0.08	<10	<10	39	<10		847
10WA-10	393125	70	537	0.27	<5	4	178	<20	0.08	<10	<10	28	<10		1605
10WA-10	393126	50	802	0.85	<5	4	206	<20	0.07	<10	<10	26	<10		1725
10WA-10	393127	60	891	1.16	<5	5	172	<20	0.07	<10	<10	24	<10		1320
10WA-10	393128	50	313	6.11	<5	7	145	<20	0.1	<10	<10	32	<10		957
10WA-10	393129	110	131	4.42	<5	11	156	<20	0.12	<10	<10	39	<10		722
10WA-10	393131	30	67	8.61	<5	7	83	<20	0.09	<10	<10	33	<10		380
10WA-10	393132	50	71	7.14	<5	12	109	<20	0.1	<10	<10	43	<10		647
10WA-10	393133	140	37	9.73	9	8	80	<20	0.26	<10	<10	109	<10		2300
10WA-10	393134	120	37	2.68	<5	8	85	<20	0.18	<10	<10	58	<10		1005
10WA-10	393135	160	15	0.18	8	13	67	<20	0.19	<10	<10	71	<10		201
10WA-10	393136	170	13	0.18	<5	15	60	<20	0.19	<10	<10	75	<10		162
10WA-10	393137	270	17	0.13	5	15	72	<20	0.22	<10	<10	75	<10		186
10WA-10	393138	200	11	0.15	<5	11	46	<20	0.22	<10	<10	72	<10		255
10WA-10	393139	180	5	0.06	<5	12	41	<20	0.21	<10	<10	75	<10		232
10WA-10	393141	210	9	6.09	<5	9	56	<20	0.19	<10	<10	80	<10		252
10WA-10	393142	220	4	7.25	<5	11	62	<20	0.17	<10	<10	73	<10		323
10WA-10	393143	260	6	0.64	<5	14	55	<20	0.22	<10	<10	85	<10		264
10WA-10	393144	210	8	2.1	<5	19	99	<20	0.22	<10	<10	101	<10		276
10WA-10	393145	300	10	1.88	<5	20	121	<20	0.22	<10	<10	96	<10		257
10WA-10	393146	260	<2	0.34	<5	34	85	<20	0.41	<10	<10	189	<10		193
10WA-10	393147	380	<2	1.94	<5	35	49	<20	0.32	<10	<10	153	<10		232
10WA-11	393148	180	4	0.1	<5	21	202	<20	0.22	<10	<10	100	<10		54

Hole #	Sample #	P	Pb	S	Sb	Sc	Sr	Th	Ti	Tl	U	V	W	Zn	Zr
		ppm	ppm	%	ppm	ppm	ppm	ppm	%	ppm	ppm	ppm	ppm	ppm	ppm
10WA-11	393149	160	3	0.08	<5	20	183	<20	0.21	<10	<10	97	<10		48
10WA-11	393151	160	2	0.07	<5	19	196	<20	0.22	<10	<10	95	<10		54
10WA-11	393152	120	3	0.11	<5	16	162	<20	0.14	<10	<10	75	<10		56
10WA-11	393153	150	<2	0.34	<5	18	166	<20	0.21	<10	<10	89	<10		63
10WA-11	393154	120	2	0.07	<5	15	162	<20	0.17	<10	<10	78	<10		57
10WA-11	393155	100	4	0.03	<5	16	173	<20	0.15	<10	<10	74	<10		56
10WA-12	393156	500	23	0.3	<5	16	198	<20	0.35	<10	<10	106	<10		124
10WA-12	393157	130	66	0.24	<5	14	120	<20	0.14	<10	<10	51	<10		113
10WA-12	393158	200	58	0.2	<5	17	157	<20	0.2	<10	<10	72	<10		104
10WA-12	393159	100	79	18.75	<5	9	44	<20	0.13	10	<10	22	<10		740
10WA-12	393160	20	59	25.3	<5	5	13	<20	0.1	10	<10	3	<10		1275
10WA-12	393161	60	49	21.9	<5	7	9	<20	0.17	10	<10	21	<10		3360
10WA-12	393162	70	31	21.7	<5	11	7	<20	0.36	10	<10	40	<10		2820
10WA-12	393163	30	23	20.1	<5	9	5	<20	0.27	10	<10	33	<10		2350
10WA-12	393164	20	25	19.4	<5	10	6	<20	0.29	10	<10	28	<10		1745
10WA-12	393165	10	20	21.1	<5	13	4	<20	0.36	10	<10	26	<10		1665
10WA-12	393166	<10	44	26	<5	4	3	<20	0.1	10	<10	8	<10		643
10WA-12	393167	<10	85	28.8	<5	3	3	<20	0.05	10	<10	3	<10		580
10WA-12	393168	<10	191	21.3	<5	3	3	<20	0.08	<10	<10	2	<10		1445
10WA-12	393169	<10	154	22.2	<5	4	2	<20	0.09	<10	<10	1	<10		6560
10WA-12	393171	<10	205	35.3	<5	1	4	<20	0.02	<10	<10	3	<10		855
10WA-12	393172	<10	70	38.3	<5	1	5	<20	0.01	10	<10	2	<10		624
10WA-12	393173	<10	42	28.3	<5	2	2	<20	0.05	10	<10	3	<10		805
10WA-12	393174	<10	142	24.7	<5	5	2	<20	0.05	10	<10	3	<10		187
10WA-12	393175	<10	53	30	<5	4	2	<20	0.07	10	<10	5	<10		1150
10WA-12	393176	80	105	0.88	<5	16	199	<20	0.15	<10	<10	61	<10		205
10WA-12	393177	100	183	0.74	<5	17	205	<20	0.15	10	<10	66	<10		188
10WA-12	393178	90	330	0.97	<5	18	196	<20	0.15	<10	<10	72	<10		215
10WA-12	393179	70	437	1.65	<5	21	190	<20	0.16	<10	<10	87	<10		224
10WA-12	393180	100	277	1.74	<5	24	173	<20	0.21	<10	<10	112	<10		259
10WA-12	393181	90	67	0.5	6	13	190	<20	0.14	<10	<10	64	<10		170
10WA-12	393182	90	60	0.35	<5	14	181	<20	0.14	<10	<10	63	<10		163
10WA-12	393183	90	61	0.42	5	12	188	<20	0.15	<10	<10	63	<10		181
10WA-12	393184	80	26	0.22	<5	13	132	<20	0.13	<10	<10	51	<10		138
10WA-12	393189	100	18	0.03	<5	8	150	<20	0.18	<10	10	82	<10	41	73
10WA-12	393191	110	33	1.59	<5	23	264	<20	1.46	<10	<10	937	<10	12	148
10WA-12	393192	100	31	1.49	<5	27	226	<20	1.41	<10	<10	823	<10	10	139
10WA-12	393193	110	29	1.9	<5	31	234	<20	1.02	<10	<10	595	<10	12	135
10WA-12	393194	100	17	1.2	<5	25	137	<20	0.88	<10	10	454	10	23	183
10WA-12	393195	100	22	0.19	<5	31	190	<20	1.08	<10	<10	613	<10	22	108
10WA-12	393196	60	18	0.16	<5	18	164	<20	0.7	<10	<10	388	<10	39	74
10WA-12	393197	60	18	0.29	<5	33	171	<20	0.97	<10	<10	559	<10	11	89
10WA-12	393198	70	26	0.87	<5	35	222	<20	1.16	<10	<10	672	<10	14	93
10WA-12	393199	50	26	1.48	<5	32	244	<20	1.28	<10	<10	758	<10	9	89
10WA-12	393200	60	17	1.05	<5	34	255	<20	1.07	<10	<10	617	<10	13	98
10WA-12	393185	100	7	0.18	<5	22	51	<20	0.26	<10	<10	114	<10	34	137
10WA-12	393186	160	12	0.24	<5	16	147	<20	0.39	<10	<10	143	<10	34	110
10WA-12	393187	1130	17	0.76	<5	16	217	<20	1.63	10	<10	389	<10	38	101
10WA-12	393188	780	17	0.12	<5	11	235	<20	1.13	<10	<10	236	<10	29	114
10WA-13	393201	270	76	1.27	<5	14	82	<20	0.34	10	<10	78	<10	134	249
10WA-13	393202	140	81	9.45	<5	9	75	<20	0.24	10	<10	50	<10	316	250
10WA-13	393203	250	206	14.85	<5	8	87	<20	0.22	<10	<10	41	<10	251	237
10WA-13	393204	130	57	21.7	<5	4	41	<20	0.12	10	<10	13	<10	215	303
10WA-13	393205	<10	140	26.9	<5	3	3	<20	0.07	<10	<10	4	<10	125	2420
10WA-13	393206	<10	193	31.6	<5	2	4	<20	0.06	<10	<10	8	<10	109	1895
10WA-13	393207	<10	43	17.75	<5	4	7	<20	0.11	<10	<10	16	<10	98	2620
10WA-13	393208	10	25	17	<5	6	26	<20	0.24	<10	<10	27	<10	164	7670

Hole #	Sample #	P	Pb	S	Sb	Sc	Sr	Th	Ti	Tl	U	V	W	Zn	Zr
		ppm	ppm	%	ppm	ppm	ppm	ppm	%	ppm	ppm	ppm	ppm	ppm	ppm
10WA-13	393209	660	64	0.46	<5	7	136	<20	0.28	<10	<10	37	<10	165	138
10WA-13	393211	720	32	0.12	<5	7	182	<20	0.31	10	<10	42	<10	179	99
10WA-13	393212	180	60	6.92	<5	6	16	<20	0.15	<10	<10	15	<10	159	3050
10WA-13	393213	170	138	18.4	20	4	55	<20	0.1	10	<10	11	<10	92	37100
10WA-13	393214	190	337	4.02	16	10	124	<20	0.21	10	<10	34	<10	126	3190
10WA-13	393215	240	30	17.35	44	3	12	<20	0.1	10	<10	7	<10	243	130000
10WA-13	393216	110	258	1.41	6	6	47	<20	0.16	10	<10	36	<10	141	2170
10WA-13	393217	30	137	0.56	<5	3	4	<20	0.05	10	<10	1	<10	166	550
10WA-13	393218	60	141	1.25	9	4	5	<20	0.06	<10	<10	2	<10	125	794
10WA-13	393219	30	176	0.66	<5	2	5	<20	0.05	<10	<10	<1	<10	107	1090
10WA-13	393220	30	578	3.58	8	3	4	<20	0.04	<10	<10	1	<10	76	3490
10WA-13	393221	30	565	0.58	<5	3	9	<20	0.05	10	<10	1	<10	73	620
10WA-13	393222	40	1100	0.13	10	3	20	<20	0.04	<10	<10	1	<10	75	135
10WA-13	393223	50	1860	0.87	10	4	14	<20	0.04	<10	<10	1	<10	125	223
10WA-13	393224	40	1440	0.54	7	3	12	<20	0.04	<10	<10	1	<10	132	194
10WA-13	393225	30	430	2.78	<5	3	4	<20	0.04	10	<10	1	<10	101	490
10WA-13	393226	20	196	0.71	<5	3	3	<20	0.05	<10	<10	1	<10	105	737
10WA-13	393227	40	155	3.54	<5	4	4	<20	0.05	10	<10	2	<10	98	9140
10WA-13	393228	80	58	0.49	6	4	3	<20	0.07	10	<10	1	<10	186	290
10WA-13	393229	130	29	0.58	6	5	4	<20	0.11	10	<10	1	<10	211	176
10WA-13	393231	90	25	0.5	5	5	6	<20	0.12	10	<10	1	<10	227	102
10WA-13	393232	120	187	1.58	6	6	8	<20	0.12	10	<10	1	<10	345	231
10WA-13	393233	100	41	0.15	8	5	7	<20	0.12	10	<10	1	<10	264	92
10WA-13	393234	80	110	0.77	5	4	4	<20	0.07	10	<10	1	<10	154	112
10WA-13	393235	40	390	2.4	6	5	2	<20	0.06	10	<10	2	<10	135	555
10WA-13	393236	20	81	29.1	14	2	16	<20	0.03	20	<10	7	<10	186	46600
10WA-13	393237	230	424	1.47	<5	14	98	<20	0.29	10	<10	61	<10	83	709
10WA-13	393238	130	369	14.9	9	20	68	<20	0.26	10	<10	53	<10	125	1225
10WA-13	393239	10	203	30.8	19	2	14	<20	0.05	20	<10	10	<10	67	5300
10WA-13	393240	130	682	1.62	11	9	114	<20	0.22	20	<10	41	<10	93	504
10WA-13	393241	<10	<2	25.2	6	3	14	<20	0.06	10	10	8	<10	95	1045
10WA-13	393242	130	403	7.39	9	5	95	20	0.12	10	<10	13	10	104	5360
10WA-13	393243	<10	<2	34.2	18	2	3	<20	0.04	10	10	9	<10	53	2570
10WA-13	393244	190	339	20.1	17	2	32	<20	0.06	10	10	8	<10	71	4280
10WA-13	393245	<10	41	38.3	10	<1	2	<20	<0.01	20	10	5	<10	5	547
10WA-13	393246	<10	5	32.8	12	1	2	<20	0.03	20	<10	7	<10	27	1770
10WA-13	393247	130	501	8.73	7	3	65	<20	0.09	20	<10	8	<10	503	5610
10WA-13	393248	140	944	7.94	15	10	92	<20	0.11	10	<10	34	<10	401	856
10WA-13	393249	470	736	3.77	5	15	101	<20	0.25	<10	<10	107	<10	108	370
10WA-13	393251	390	406	2.3	<5	18	125	<20	0.34	10	<10	87	<10	78	1380
10WA-13	393252	320	139	0.37	<5	17	138	<20	0.37	10	<10	119	<10	64	245
10WA-13	393253	290	65	0.1	<5	18	148	<20	0.39	10	<10	135	<10	62	169
11WA-14	393551	90	20	2.53	<5	6	22	<20	0.13	<10	<10	8	<10	1155	453
11WA-14	393552	90	66	0.96	<5	9	114	<20	0.27	<10	10	54	<10	255	189
11WA-14	393553	160	26	0.84	<5	5	43	20	0.15	<10	<10	2	10	13300	497
11WA-14	393554	30	24	0.12	<5	6	19	<20	0.09	<10	<10	4	<10	253	227
11WA-14	393555	70	39	0.55	<5	9	37	<20	0.16	<10	<10	35	<10	153	199
11WA-14	393556	120	31	1.45	<5	7	46	<20	0.14	<10	<10	4	<10	325	511
11WA-14	393557	70	33	0.42	<5	6	24	<20	0.09	<10	<10	2	<10	182	268
11WA-14	393558	140	46	0.15	<5	9	92	<20	0.21	<10	10	39	<10	96	140
11WA-14	393559	70	15	2.86	<5	6	13	<20	0.09	<10	<10	6	<10	406	415
11WA-14	393560	50	11	0.14	<5	8	5	<20	0.09	<10	<10	2	<10	197	129
11WA-14	393561	60	15	0.88	<5	6	6	<20	0.08	<10	<10	2	<10	254	136
11WA-14	393562	60	14	0.37	<5	5	4	<20	0.07	<10	<10	2	<10	330	111
11WA-14	393563	100	14	0.23	<5	4	9	<20	0.11	<10	<10	2	<10	141	101
11WA-14	393564	5790	58	0.72	<5	36	241	30	1.68	<10	<10	51	<10	174	19
11WA-14	393565	5730	38	0.83	<5	39	232	30	1.7	<10	<10	61	<10	213	23

Hole #	Sample #	P	Pb	S	Sb	Sc	Sr	Th	Ti	Tl	U	V	W	Zn	Zr
		ppm	ppm	%	ppm	ppm	ppm	ppm	%	ppm	ppm	ppm	ppm	ppm	ppm
11WA-14	393566	5580	14	0.17	<5	40	238	30	1.78	<10	<10	69	<10	235	30
11WA-14	393567	6290	27	0.35	<5	40	207	30	1.8	<10	<10	69	<10	252	34
11WA-14	393568	5850	46	0.67	<5	43	203	30	1.78	<10	<10	66	<10	240	27
11WA-14	393569	6290	27	0.84	<5	44	214	30	1.77	<10	<10	66	<10	210	15
11WA-14	393571	6760	22	0.79	<5	46	185	30	1.72	<10	<10	73	<10	210	17
11WA-14	393572	5420	15	0.28	<5	46	169	30	1.51	<10	<10	95	<10	159	19
11WA-14	393573	430	7	0.02	<5	19	162	30	0.45	<10	<10	159	<10	67	63
11WA-14	393574	2540	13	0.53	<5	26	224	20	0.99	<10	<10	67	<10	145	32
11WA-14	393575	530	11	0.15	<5	30	249	<20	0.6	<10	<10	237	<10	90	16
11WA-14	393576	580	16	2.29	<5	5	191	<20	0.76	<10	<10	223	30	403	23
11WA-14	393577	1350	49	1.97	<5	5	338	<20	0.79	<10	<10	24	<10	126	<5
11WA-14	393578	1170	33	1.24	<5	7	318	20	0.84	<10	<10	21	<10	167	14
11WA-14	393579	570	4	1	<5	17	130	<20	0.44	<10	<10	111	40	135	42
11WA-14	393580	5330	8	0.41	<5	36	207	30	1.95	<10	<10	107	<10	224	14
11WA-14	393581	5180	20	0.88	<5	34	202	30	1.76	<10	<10	116	<10	169	22
11WA-14	393582	2520	22	1.27	<5	27	298	20	0.96	<10	<10	36	<10	66	13
11WA-14	393583	20	14	0.9	<5	9	13	<20	0.21	<10	<10	27	<10	185	31
11WA-14	393584	30	11	0.5	<5	8	12	<20	0.22	<10	<10	32	<10	212	21
11WA-14	393585	30	18	0.46	<5	9	4	<20	0.18	<10	<10	38	<10	157	26
11WA-14	393586	1640	658	0.1	<5	18	91	20	0.5	<10	<10	31	<10	74	116
11WA-14	393587	80	279	0.37	<5	23	57	<20	0.29	<10	<10	118	<10	184	60
11WA-14	393588	5980	10	0.17	<5	18	155	30	1.73	<10	<10	169	<10	655	71
11WA-14	393589	5200	8	0.25	<5	22	239	30	1.43	<10	<10	106	<10	232	46
11WA-14	393591	4160	14	0.16	<5	28	257	30	1.62	<10	<10	122	<10	126	41
11WA-14	393592	170	<2	0.12	<5	23	180	20	0.67	<10	<10	335	<10	81	23
11WA-14	393595	130	2	0.25	<5	13	87	<20	0.19	<10	<10	80	<10	51	18
11WA-14	393596	80	2	0.04	<5	8	58	<20	0.15	<10	<10	72	<10	50	18
11WA-14	393597	60	10	0.03	<5	10	233	<20	0.09	<10	<10	41	<10	48	24
11WA-14	393598	50	7	0.32	<5	18	132	<20	0.18	<10	<10	97	<10	139	24
11WA-14	393599	60	7	0.05	<5	7	190	<20	0.08	<10	<10	38	<10	39	8
11WA-14	393601	70	<2	0.06	<5	16	159	<20	0.13	<10	<10	72	<10	57	14
11WA-14	393602	90	6	0.06	<5	18	154	<20	0.13	<10	<10	70	<10	66	19
11WA-14	393603	60	4	0.04	<5	16	147	<20	0.13	<10	<10	63	<10	60	17
11WA-14	393604	50	4	<0.01	<5	13	201	<20	0.12	<10	<10	51	<10	34	27
11WA-14	393605	180	4	0.02	<5	17	227	<20	0.2	<10	<10	65	<10	41	27
11WA-14	393606	260	2	0.08	<5	27	200	<20	0.3	<10	<10	107	<10	61	36
11WA-14	393607	430	3	0.12	<5	18	196	<20	0.29	<10	<10	78	<10	66	61
11WA-14	393608	250	4	0.14	<5	14	170	<20	0.17	<10	<10	46	<10	59	49
11WA-14	393609	70	4	0.03	<5	14	256	<20	0.11	<10	<10	47	<10	21	16
11WA-14	393611	90	6	0.11	<5	20	177	<20	0.14	<10	<10	73	<10	60	17
11WA-14	393612	100	2	0.02	<5	12	155	<20	0.12	<10	<10	52	<10	60	15
11WA-14	393613	120	4	0.15	<5	16	172	<20	0.15	<10	<10	65	<10	66	16
11WA-14	393614	190	3	0.06	<5	14	170	<20	0.17	<10	<10	62	<10	64	41
11WA-14	393615	110	3	0.04	<5	8	184	<20	0.11	<10	<10	39	<10	56	16
11WA-14	393616	140	4	0.03	<5	10	185	<20	0.14	<10	<10	49	<10	57	45
11WA-14	393617	220	3	0.08	<5	14	201	<20	0.25	<10	<10	78	<10	66	28
11WA-14	393618	150	5	0.11	<5	14	160	<20	0.18	<10	<10	69	<10	62	20
11WA-14	393619	220	6	0.07	<5	14	184	<20	0.22	<10	<10	68	<10	57	28
11WA-14	393620	290	2	0.08	<5	14	166	<20	0.32	<10	<10	87	<10	77	43
11WA-14	393621	440	3	0.1	<5	22	140	<20	0.53	<10	<10	154	<10	97	39
11WA-14	393622	400	4	0.22	<5	20	182	<20	0.46	<10	<10	126	<10	83	47
11WA-14	393623	280	<2	0.16	<5	14	187	<20	0.33	<10	<10	96	<10	79	34
11WA-14	393624	430	3	0.11	<5	26	167	<20	0.51	<10	<10	155	<10	93	59
11WA-14	393625	350	2	0.1	<5	27	162	<20	0.43	<10	<10	140	<10	72	49
11WA-14	393626	290	3	0.06	<5	23	158	<20	0.37	<10	<10	122	<10	68	52
11WA-14	393627	320	3	0.05	<5	22	163	<20	0.36	<10	<10	113	<10	75	64
11WA-14	393628	330	5	0.05	<5	21	158	<20	0.39	<10	<10	117	<10	69	53

Hole #	Sample #	P	Pb	S	Sb	Sc	Sr	Th	Ti	Tl	U	V	W	Zn	Zr
		ppm	ppm	%	ppm	ppm	ppm	ppm	%	ppm	ppm	ppm	ppm	ppm	ppm
11WA-14	393629	670	5	0.04	<5	16	174	<20	0.48	<10	<10	82	<10	77	137
11WA-14	393631	350	5	0.11	<5	22	176	<20	0.41	<10	<10	131	<10	71	50
11WA-14	393632	490	3	0.09	5	22	117	<20	0.51	<10	<10	123	<10	122	63
11WA-14	393633	140	4	0.02	<5	18	238	<20	0.21	<10	<10	98	<10	30	24
11WA-14	393634	130	2	0.03	<5	13	222	<20	0.18	<10	<10	69	<10	40	17
11WA-14	393635	120	3	0.04	<5	10	217	<20	0.15	<10	<10	54	<10	41	20
11WA-14	393636	110	2	0.04	<5	6	205	<20	0.11	<10	<10	37	<10	39	27
11WA-14	393637	100	3	0.04	<5	6	206	<20	0.11	<10	<10	36	<10	39	26
11WA-14	393638	120	2	0.04	<5	10	202	<20	0.13	<10	<10	61	<10	48	17
11WA-14	393639	100	<2	0.04	<5	9	198	<20	0.13	<10	<10	59	<10	43	15
11WA-14	393640	130	2	0.04	<5	9	206	<20	0.15	<10	10	59	<10	41	17
11WA-14	393641	130	2	0.05	<5	10	211	<20	0.16	<10	10	63	<10	45	22
11WA-14	393642	110	7	0.1	<5	13	38	<20	0.36	<10	<10	91	10	748	192
11WA-14	393643	330	5	0.23	<5	20	100	<20	0.41	<10	<10	120	10	351	49
11WA-14	393644	350	4	0.13	<5	22	130	<20	0.51	<10	<10	162	<10	176	28
11WA-14	393645	370	4	0.06	<5	22	48	<20	0.55	<10	<10	170	<10	153	22
11WA-14	393646	190	4	0.31	<5	24	107	<20	0.45	<10	<10	136	<10	170	33
11WA-14	393647	490	4	0.23	<5	21	123	<20	0.52	<10	<10	151	<10	244	65
11WA-14	393648	530	5	0.19	<5	21	109	<20	0.44	<10	<10	117	10	147	52
11WA-14	393649	380	4	0.41	<5	22	147	<20	0.43	<10	<10	126	10	215	47
11WA-14	393651	390	4	1.49	<5	25	145	<20	0.57	<10	10	168	<10	212	65
11WA-14	393652	250	2	0.19	<5	24	162	<20	0.56	<10	10	167	<10	174	44
11WA-14	393653	340	2	0.19	<5	24	178	<20	0.55	<10	10	172	<10	153	32
11WA-14	393654	290	4	0.12	<5	22	146	<20	0.52	<10	10	161	<10	161	47
11WA-14	393655	220	4	0.17	<5	23	168	<20	0.5	<10	10	150	<10	166	49
11WA-14	393656	310	6	0.09	<5	23	120	<20	0.45	<10	<10	117	<10	169	160
11WA-14	393657	520	3	0.19	<5	23	73	<20	0.55	<10	<10	163	<10	132	69
11WA-14	393658	280	5	0.19	<5	26	174	<20	0.56	<10	10	175	<10	210	78
11WA-14	393659	350	3	0.2	<5	24	180	<20	0.52	<10	10	163	<10	165	43
11WA-14	393660	370	5	0.1	<5	21	168	<20	0.51	<10	10	145	<10	143	40
11WA-14	393661	410	3	0.06	<5	24	128	<20	0.7	<10	10	182	<10	166	57
11WA-14	393662	470	3	0.06	<5	22	216	<20	0.49	<10	10	170	<10	134	33
11WA-14	393663	540	4	0.04	<5	19	197	<20	0.31	<10	10	115	<10	105	25
11WA-14	393664	90	4	0.05	<5	18	179	<20	0.19	<10	<10	76	<10	65	18
11WA-15	393665	340	4	<0.01	<5	8	7	<20	0.22	<10	<10	12	<10	61	101
11WA-15	393666	470	5	<0.01	<5	7	12	<20	0.22	<10	<10	16	<10	59	104
11WA-15	393667	370	4	0.02	<5	13	81	<20	0.43	<10	<10	78	<10	99	76
11WA-15	393668	610	10	0.13	<5	16	136	<20	0.57	<10	<10	82	<10	138	74
11WA-15	393669	2490	15	2.09	<5	23	140	<20	1.07	<10	<10	127	<10	161	66
11WA-15	393671	350	9	0.08	<5	15	138	<20	0.44	<10	10	61	<10	137	106
11WA-15	393672	250	11	0.04	<5	13	99	<20	0.34	<10	10	58	<10	108	103
11WA-15	393673	270	13	0.11	<5	18	96	<20	0.44	<10	<10	96	<10	189	84
11WA-15	393674	230	52	0.2	<5	14	133	<20	0.37	<10	<10	73	<10	125	101
11WA-15	393675	200	142	3.71	<5	10	54	<20	0.17	<10	<10	83	<10	554	145
11WA-15	393676	500	34	0.41	<5	18	121	<20	0.61	<10	<10	193	<10	175	59
11WA-15	393677	280	13	0.29	<5	13	74	<20	0.4	<10	<10	95	<10	173	76
11WA-15	393678	150	20	0.33	<5	9	75	<20	0.21	<10	<10	10	<10	174	75
11WA-15	393679	890	11	1.71	<5	14	92	<20	0.48	<10	<10	10	<10	170	78
11WA-15	393680	310	5	1.21	<5	11	15	<20	0.26	<10	<10	38	<10	258	75
11WA-15	393681	670	8	0.25	<5	25	105	<20	0.88	<10	<10	278	<10	248	37
11WA-15	393682	450	7	0.3	<5	20	72	<20	0.63	<10	<10	154	<10	301	73
11WA-15	393683	760	7	0.29	<5	25	92	<20	0.9	<10	<10	216	<10	293	54
11WA-15	393684	2470	8	0.23	<5	18	135	<20	0.87	<10	<10	45	<10	172	48
11WA-15	393685	420	4	0.19	<5	23	103	<20	0.74	<10	<10	211	<10	256	53
11WA-15	393686	270	4	0.05	<5	8	16	<20	0.22	<10	<10	10	<10	143	120
11WA-15	393687	120	3	0.02	<5	7	12	<20	0.2	<10	<10	6	<10	122	132
11WA-15	393688	310	11	0.91	<5	18	65	<20	0.54	<10	<10	153	<10	316	136

Hole #	Sample #	P	Pb	S	Sb	Sc	Sr	Th	Ti	Tl	U	V	W	Zn	Zr
		ppm	ppm	%	ppm	ppm	ppm	ppm	%	ppm	ppm	ppm	ppm	ppm	ppm
11WA-15	393689	250	7	0.18	<5	13	65	<20	0.37	<10	<10	92	<10	124	118
11WA-15	393691	40	7	0.14	<5	9	49	<20	0.18	<10	<10	16	<10	74	134
11WA-15	393692	80	5	0.28	<5	6	9	<20	0.17	<10	<10	7	<10	83	108
11WA-15	393693	120	4	0.14	<5	7	6	<20	0.18	<10	<10	7	<10	78	121
11WA-15	393694	50	3	0.14	<5	7	7	<20	0.18	<10	<10	11	<10	71	70
11WA-15	393695	80	2	0.83	<5	8	6	<20	0.16	<10	<10	11	<10	88	59
11WA-15	393696	50	5	1	<5	8	5	<20	0.19	<10	<10	14	<10	92	58
11WA-15	393697	190	10	0.22	<5	13	96	<20	0.32	<10	<10	51	<10	108	89
11WA-15	393698	160	9	0.47	<5	13	131	<20	0.35	<10	<10	57	<10	106	125
11WA-15	393699	210	13	0.16	<5	15	127	<20	0.36	<10	<10	72	<10	108	113
11WA-15	393700	490	3	0.25	<5	18	45	<20	0.64	<10	<10	61	<10	79	57
11WA-15	393701	20	<2	0.2	<5	6	3	<20	0.17	<10	<10	8	<10	53	70
11WA-15	393702	20	<2	0.98	<5	6	4	<20	0.1	<10	<10	9	<10	68	37
11WA-15	393703	10	<2	0.32	<5	8	4	<20	0.18	<10	<10	13	<10	50	59
11WA-15	393704	20	<2	0.37	<5	8	3	<20	0.22	<10	<10	20	<10	165	56
11WA-15	393705	20	<2	0.67	<5	8	3	<20	0.19	<10	<10	15	<10	77	61
11WA-15	393706	80	2	0.94	<5	9	3	<20	0.17	<10	<10	18	<10	116	51
11WA-15	393707	60	<2	0.39	<5	8	2	<20	0.19	<10	<10	16	<10	83	58
11WA-15	393708	50	3	1.06	<5	7	4	<20	0.12	<10	<10	13	<10	68	48
11WA-15	393709	1250	10	0.17	<5	17	110	20	0.64	<10	<10	59	<10	109	83
11WA-15	393711	2740	6	0.17	<5	43	189	<20	1.78	<10	<10	149	<10	159	45
11WA-15	393712	2410	8	0.2	<5	39	317	30	1.83	<10	<10	349	<10	155	25
11WA-15	393713	2530	4	0.25	<5	32	158	20	1.57	<10	<10	219	40	204	56
11WA-15	393714	5260	7	0.2	<5	37	242	30	2.11	<10	<10	233	<10	146	52
11WA-15	393715	5960	6	0.32	<5	34	235	30	1.88	<10	<10	170	<10	133	26
11WA-15	393716	810	4	0.3	<5	35	262	20	1.34	<10	<10	527	<10	121	19
11WA-15	393717	1000	3	0.23	<5	37	236	20	1.62	<10	<10	625	<10	139	19
11WA-15	393718	770	5	0.31	<5	35	172	20	1.45	<10	<10	596	<10	125	14
11WA-15	393719	540	2	0.18	<5	20	109	20	0.85	<10	<10	299	<10	82	53
11WA-15	393720	540	11	0.64	<5	28	125	20	1.09	<10	<10	426	<10	128	33
11WA-15	393721	750	2	0.25	<5	16	117	20	0.66	<10	<10	191	<10	92	88
11WA-15	393722	780	4	0.03	<5	9	179	<20	0.45	<10	<10	88	<10	79	129
11WA-15	393723	700	4	0.22	<5	9	84	<20	0.42	<10	<10	92	10	71	111
11WA-15	393724	390	9	0.84	<5	33	74	<20	0.6	<10	<10	212	10	132	46
11WA-15	393725	550	12	1.71	<5	36	87	20	1.43	<10	<10	410	10	141	21
11WA-15	393726	1120	3	0.19	<5	31	239	20	1.54	<10	<10	369	<10	138	17
11WA-15	393727	450	2	0.19	<5	40	224	30	1.9	<10	<10	488	<10	140	27
11WA-15	393728	1030	6	0.19	<5	41	221	30	2.07	<10	<10	517	<10	145	24
11WA-15	393729	720	7	0.2	<5	42	207	30	1.82	<10	<10	499	<10	149	24
11WA-15	393731	1390	3	0.24	<5	40	187	30	1.99	<10	<10	518	<10	173	21
11WA-15	393732	620	4	0.2	<5	45	205	30	1.93	<10	<10	447	<10	144	33
11WA-15	393733	620	11	0.19	<5	42	218	30	1.99	<10	<10	419	<10	139	39
11WA-15	393734	780	6	0.21	<5	39	229	30	2.03	<10	<10	419	<10	139	43
11WA-15	393735	720	6	0.2	<5	39	216	20	1.78	<10	<10	420	<10	139	35
11WA-15	393736	930	6	0.16	<5	38	238	30	2.08	<10	<10	290	<10	121	28
11WA-15	393737	750	2	0.19	<5	37	220	30	2.13	<10	<10	264	<10	129	31
11WA-16	393738	300	5	0.03	5	14	15	<20	0.33	<10	<10	101	<10	240	38
11WA-16	393739	300	6	0.01	<5	15	15	<20	0.34	<10	<10	100	<10	329	38
11WA-16	393740	290	5	0.02	6	14	23	<20	0.31	<10	<10	108	<10	317	38
11WA-16	393741	2320	12	0.09	6	16	53	<20	0.38	<10	<10	109	<10	191	119
11WA-16	393742	270	8	0.01	<5	14	18	<20	0.33	<10	<10	99	<10	321	35
11WA-16	393743	330	7	<0.01	5	15	15	<20	0.34	<10	<10	101	<10	295	36
11WA-16	393744	310	6	<0.01	<5	14	15	<20	0.35	<10	<10	99	<10	285	43
11WA-16	393745	250	70	1.32	<50	10	30	<50	0.09	<50	<50	30	<50	490	250
11WA-16	393746	350	70	0.88	<50	10	50	<50	0.15	<50	<50	60	<50	400	250
11WA-16	393747	280	70	2.53	<50	10	30	<50	0.09	<50	<50	40	<50	460	260
11WA-16	393748	200	40	3.76	<50	10	<10	<50	0.05	<50	<50	10	<50	440	240

Hole #	Sample #	P	Pb	S	Sb	Sc	Sr	Th	Ti	Tl	U	V	W	Zn	Zr
		ppm	ppm	%	ppm	ppm	ppm	ppm	%	ppm	ppm	ppm	ppm	ppm	ppm
11WA-16	393749	290	30	4.73	<50	10	<10	<50	0.08	<50	<50	40	<50	9790	260
11WA-16	393751	70	20	>10.0	<50	<10	<10	<50	<0.05	<50	<50	10	<50	152500	90
11WA-16	393752	110	20	>10.0	<50	<10	<10	<50	<0.05	<50	<50	10	<50	142500	70
11WA-16	393753	50	20	>10.0	<50	10	10	<50	<0.05	<50	<50	10	120	43800	130
11WA-16	393754	350	20	>10.0	<50	<10	10	<50	<0.05	<50	<50	20	<50	5100	140
11WA-16	393755	270	20	8.59	<50	10	20	<50	0.07	<50	<50	30	<50	2210	230
11WA-16	393756	360	30	7.49	<50	10	10	<50	0.08	<50	<50	30	<50	830	260
11WA-16	393757	260	40	6.39	<50	10	10	<50	0.1	<50	<50	40	<50	2510	380
11WA-16	393759	100	30	5.21	<50	10	10	<50	0.06	<50	<50	30	<50	6630	470
11WA-16	393760	100	20	>10.0	<50	<10	<10	<50	<0.05	<50	<50	10	<50	34200	160
11WA-16	393761	190	20	>10.0	<50	<10	<10	<50	<0.05	<50	<50	10	<50	20000	90
11WA-16	393762	160	<20	>10.0	<50	10	<10	<50	<0.05	<50	<50	10	<50	27900	180
11WA-16	393763	380	20	5.75	<50	10	10	<50	0.1	<50	<50	40	<50	5280	270
11WA-16	393764	340	20	4.37	<50	10	10	<50	0.16	<50	<50	50	<50	3260	390
11WA-16	393765	340	20	3.11	<50	10	20	<50	0.17	<50	<50	40	<50	820	340
11WA-16	393766	300	20	3.54	<50	10	20	<50	0.14	<50	<50	40	<50	420	370
11WA-16	393767	330	20	2.34	<50	10	10	<50	0.2	<50	<50	50	<50	2340	420
11WA-16	393768	120	20	>10.0	<50	10	<10	<50	0.08	<50	<50	40	<50	12550	250
11WA-16	393769	400	100	1.08	<50	10	70	<50	0.16	<50	<50	90	<50	580	140
11WA-16	393771	320	30	2.91	<50	10	<10	<50	0.1	<50	<50	60	<50	840	210
11WA-16	393772	330	60	5.58	<50	10	30	<50	0.1	<50	<50	60	<50	1060	220
11WA-16	393773	420	170	0.44	<50	10	100	<50	0.28	<50	<50	110	<50	450	100
11WA-16	393774	1120	190	0.62	<50	10	110	<50	0.32	<50	<50	30	<50	1810	220
11WA-16	393775	1260	150	0.61	<50	10	90	<50	0.36	<50	<50	10	<50	350	170
11WA-16	393776	1810	110	1.56	<50	10	70	<50	0.2	<50	<50	10	<50	1060	200
11WA-16	393777	210	20	9.53	<50	10	<10	<50	0.06	<50	<50	20	<50	14100	260
11WA-16	393778	200	20	>10.0	<50	10	<10	<50	0.06	<50	<50	20	<50	7850	250
11WA-16	393779	180	30	>10.0	<50	10	<10	<50	0.07	<50	<50	20	<50	20700	250
11WA-16	393780	250	<20	>10.0	<50	10	<10	<50	0.08	<50	<50	30	<50	10550	270
11WA-16	393781	180	<20	>10.0	<50	<10	<10	<50	<0.05	<50	<50	10	<50	18900	80
11WA-16	393782	170	<20	9.26	<50	10	<10	<50	0.05	<50	<50	20	<50	3440	230
11WA-16	393783	160	<20	>10.0	<50	10	10	<50	0.12	<50	<50	20	<50	1070	170
11WA-16	393784	<50	40	>10.0	<50	<10	20	<50	0.08	<50	<50	20	<50	1200	100
11WA-16	393785	<50	100	>10.0	<50	<10	40	<50	0.11	<50	<50	20	<50	12100	100
11WA-16	393786	50	30	>10.0	<50	<10	10	<50	0.06	<50	<50	20	90	36800	60
11WA-16	393787	90	<20	5.68	<50	10	<10	<50	<0.05	<50	<50	20	<50	1100	180
11WA-16	393788	150	<20	7.82	<50	10	<10	<50	0.06	<50	<50	20	<50	600	230
11WA-16	393789	140	<20	7.43	<50	10	<10	<50	<0.05	<50	<50	20	<50	700	190
11WA-16	393791	150	<20	5.75	<50	10	<10	<50	0.05	<50	<50	20	<50	860	260
11WA-16	393792	140	<20	9.37	<50	10	<10	<50	0.05	<50	<50	20	<50	780	200
11WA-16	393793	170	<20	7.53	<50	10	<10	<50	0.08	<50	<50	30	<50	520	180
11WA-16	393794	<50	<20	0.11	<50	10	10	<50	0.1	<50	<50	10	<50	270	330
11WA-16	393795	40	9	0.01	<5	6	14	<20	0.1	<10	<10	2	<10	196	332
11WA-16	393796	50	9	0.01	<5	6	24	<20	0.1	<10	<10	3	<10	193	337
11WA-17	393797	130	<2	0.06	<5	7	2	<20	0.05	<10	<10	5	<10	131	419
11WA-17	393798	110	<2	0.06	<5	6	5	<20	0.04	<10	<10	6	<10	110	360
11WA-17	393799	190	3	0.08	<5	6	6	<20	0.03	<10	<10	8	<10	99	271
11WA-17	393800	260	6	0.14	<5	5	7	<20	0.15	<10	<10	5	<10	150	217
11WA-17	393801	420	14	0.33	<5	6	15	<20	0.19	<10	<10	5	<10	150	217
11WA-17	393802	260	16	0.12	<5	6	14	<20	0.15	<10	<10	3	<10	141	242
11WA-17	393803	80	21	0.05	<5	6	34	<20	0.13	<10	<10	2	<10	115	263
11WA-17	393804	80	24	0.01	<5	5	50	<20	0.12	<10	<10	1	<10	95	248
11WA-17	393805	400	<2	0.36	<5	7	269	<20	0.09	<10	10	57	<10	44	46
11WA-17	393806	160	16	0.92	<5	6	19	<20	0.13	<10	<10	3	<10	178	236
11WA-17	393807	130	16	0.29	<5	6	37	<20	0.13	<10	<10	2	<10	127	247
11WA-17	393808	100	16	0.14	<5	5	32	<20	0.24	<10	<10	5	<10	528	464
11WA-17	393809	100	13	0.19	<5	6	16	<20	0.15	<10	<10	3	<10	394	366

Hole #	Sample #	P	Pb	S	Sb	Sc	Sr	Th	Ti	Tl	U	V	W	Zn	Zr
		ppm	ppm	%	ppm	ppm	ppm	ppm	%	ppm	ppm	ppm	ppm	ppm	ppm
11WA-17	393811	100	15	0.13	<5	6	12	<20	0.14	<10	<10	3	<10	380	305
11WA-17	393812	260	21	1.46	5	4	5	<20	0.19	<10	<10	7	<10	934	319
11WA-17	393813	70	9	0.14	<5	7	6	<20	0.19	<10	<10	4	<10	576	403
11WA-17	393814	40	14	0.07	<5	4	3	<20	0.11	<10	<10	1	<10	326	249
11WA-17	393815	200	15	0.32	<5	5	4	<20	0.11	<10	<10	2	<10	401	260
11WA-17	393816	70	20	0.1	<5	5	15	<20	0.13	<10	<10	4	<10	346	306
11WA-17	393817	410	10	2.43	<5	8	5	<20	0.24	<10	<10	41	<10	560	198
11WA-17	393818	470	8	2.69	5	8	5	<20	0.2	<10	<10	35	30	1120	175
11WA-17	393819	250	10	0.88	6	9	2	<20	0.17	<10	<10	40	<10	561	200
11WA-17	393820	610	5	0.1	5	16	2	<20	0.2	<10	<10	96	<10	597	195
11WA-17	393821	370	<20	0.53	<50	10	10	<50	0.19	<50	<50	60	<50	490	200
11WA-17	393822	470	<20	1.21	<50	10	10	<50	0.16	<50	<50	70	<50	480	220
11WA-17	393823	460	<20	0.42	<50	10	<10	<50	0.15	<50	<50	70	<50	420	190
11WA-17	393824	370	<20	0.39	<50	10	<10	<50	0.14	<50	<50	70	<50	470	180
11WA-17	393825	330	<20	0.8	<50	10	<10	<50	0.08	<50	<50	60	<50	500	200
11WA-17	393826	340	<20	1.6	<50	10	<10	<50	<0.05	<50	<50	50	<50	650	190
11WA-17	393827	400	<20	0.88	<50	10	<10	<50	0.1	<50	<50	60	<50	470	220
11WA-17	393828	320	<20	0.85	<50	10	<10	<50	0.09	<50	<50	50	<50	360	220
11WA-17	393829	350	<20	0.49	<50	10	10	<50	0.1	<50	<50	40	<50	400	270
11WA-17	393831	320	<20	0.39	<50	10	<10	<50	0.06	<50	<50	30	<50	480	260
11WA-17	393832	300	<20	1.49	<50	10	<10	<50	0.09	<50	<50	30	<50	590	260
11WA-17	393833	260	<20	2.87	<50	10	<10	<50	0.06	<50	<50	30	<50	660	240
11WA-17	393834	220	<20	1.45	<50	10	10	<50	0.05	<50	<50	30	<50	530	230
11WA-17	393835	270	<20	2.64	<50	10	<10	<50	0.08	<50	<50	40	<50	610	210
11WA-17	393836	300	<20	>10.0	<50	10	<10	<50	0.06	<50	<50	20	<50	1080	130
11WA-17	393837	240	<20	>10.0	<50	<10	<10	<50	0.05	<50	<50	20	<50	1130	110
11WA-17	393838	180	<20	>10.0	<50	<10	<10	<50	<0.05	<50	<50	20	<50	800	90
11WA-17	393839	240	<20	8.2	<50	<10	<10	<50	0.07	<50	<50	20	<50	730	110
11WA-17	393840	390	<20	3.07	<50	10	<10	<50	0.14	<50	<50	70	<50	580	170
11WA-17	393841	460	<20	3.35	<50	10	<10	<50	0.14	<50	<50	70	<50	480	180
11WA-17	393842	250	<20	1.23	<50	10	<10	<50	0.11	<50	<50	50	<50	380	200
11WA-17	393843	250	<20	6.2	<50	10	<10	<50	0.08	<50	<50	50	<50	410	230
11WA-17	393844	470	<20	0.81	<50	10	10	<50	0.21	<50	<50	80	<50	460	220
11WA-17	393845	360	<20	2.15	<50	10	10	<50	0.18	<50	<50	70	<50	410	260
11WA-17	393846	380	<20	2.13	<50	10	10	<50	0.18	<50	<50	70	<50	900	260
11WA-17	393847	300	<20	3.12	<50	10	<10	<50	0.15	<50	<50	40	<50	570	280
11WA-17	393848	350	<20	1.62	<50	10	<10	<50	0.27	<50	<50	60	<50	560	260
11WA-17	393849	410	<20	1.28	<50	10	10	<50	0.26	<50	<50	110	<50	260	180
11WA-17	393851	440	<20	8.58	<50	10	10	<50	0.11	<50	<50	70	110	44100	180
11WA-17	393852	<50	<20	>10.0	<50	<10	<10	<50	<0.05	<50	<50	<10	<50	253000	60
11WA-17	393853	<50	<20	>10.0	<50	<10	<10	<50	<0.05	<50	<50	<10	<50	118500	50
11WA-17	393854	<50	<20	>10.0	<50	<10	10	<50	<0.05	<50	<50	<10	<50	4380	40
11WA-17	393855	<50	<20	>10.0	<50	<10	<10	<50	<0.05	<50	<50	<10	<50	8160	30
11WA-17	393856	<50	<20	>10.0	<50	<10	<10	<50	<0.05	<50	<50	<10	<50	155500	20
11WA-17	393857	670	<20	1.06	<50	20	30	<50	0.54	<50	<50	140	<50	720	120
11WA-17	393858	580	30	0.46	<50	20	70	<50	0.55	<50	<50	170	<50	930	80
11WA-17	393859	640	40	0.42	<50	20	90	<50	0.6	<50	<50	170	<50	500	90
11WA-17	393860	650	30	0.66	<50	20	30	<50	0.6	<50	<50	170	<50	400	90
11WA-17	393861	840	<20	6.31	<50	10	10	<50	0.19	<50	<50	30	<50	3000	250
11WA-17	393862	60	<20	>10.0	<50	10	<10	<50	0.05	<50	<50	20	<50	9940	200
11WA-17	393863	60	<20	>10.0	<50	<10	<10	<50	<0.05	<50	<50	<10	<50	175000	60
11WA-17	393864	<50	<20	>10.0	<50	<10	<10	<50	<0.05	<50	<50	<10	<50	140000	70
11WA-17	393865	100	<20	>10.0	<50	10	<10	<50	<0.05	<50	<50	10	110	42500	120
11WA-17	393866	180	20	>10.0	<50	10	10	<50	0.09	<50	<50	30	<50	5820	160
11WA-17	393867	300	40	5.19	<50	10	<10	<50	0.11	<50	<50	30	<50	4820	280
11WA-17	393868	320	20	0.66	<50	10	<10	<50	0.17	<50	<50	70	<50	490	180
11WA-17	393869	410	<20	0.48	<50	20	10	<50	0.19	<50	<50	90	<50	480	190

Hole #	Sample #	P	Pb	S	Sb	Sc	Sr	Th	Ti	Tl	U	V	W	Zn	Zr
		ppm	ppm	%	ppm	ppm	ppm	ppm	%	ppm	ppm	ppm	ppm	ppm	ppm
11WA-17	393871	420	<20	0.34	<50	20	10	<50	0.19	<50	<50	100	<50	430	190
11WA-17	393872	450	<20	1.18	<50	20	10	<50	0.26	<50	<50	130	<50	220	130
11WA-17	393873	420	<20	0.36	<50	10	10	<50	0.19	<50	<50	90	<50	430	190
11WA-17	393874	540	<2	0.03	<5	19	9	<20	0.56	<10	<10	190	<10	143	180
11WA-17	393875	570	<2	0.31	5	14	12	<20	0.52	<10	<10	189	<10	132	184
11WA-17	393876	570	<2	0.08	<5	17	23	<20	0.5	<10	<10	170	<10	98	169
11WA-18	393877	1760	4	0.42	<5	19	211	<20	0.5	10	<10	117	<10	159	129
11WA-18	393878	120	3	0.35	<5	54	293	<20	2.8	30	<10	508	<10	126	8
11WA-18	393879	190	<2	0.35	<5	50	307	<20	2.11	20	<10	414	<10	138	11
11WA-18	393880	570	<2	0.27	<5	52	169	<20	2.52	10	<10	387	<10	177	27
11WA-18	393881	560	2	0.3	<5	52	182	<20	2.95	20	<10	371	<10	187	22
11WA-18	393882	1350	7	0.89	<5	42	169	<20	1.09	10	<10	219	<10	120	6
11WA-18	393883	1440	10	0.69	<5	43	192	20	1.05	<10	<10	214	<10	137	16
11WA-18	393884	1380	6	0.25	<5	44	182	<20	0.93	<10	<10	203	<10	147	18
11WA-18	393885	1090	7	0.16	<5	42	172	<20	0.94	<10	<10	215	<10	165	23
11WA-18	393886	8680	6	0.24	<5	38	189	30	1.97	<10	<10	308	<10	196	21
11WA-18	393887	5570	11	0.17	6	36	200	30	1.74	<10	<10	237	<10	184	19
11WA-18	393888	>10000	7	0.26	<5	38	171	40	2.87	<10	<10	391	<10	205	21
11WA-18	393891	780	7	0.24	7	40	152	20	1.62	<10	<10	490	<10	188	14
11WA-18	393892	1010	21	0.18	<5	38	131	20	1.43	<10	<10	215	<10	216	55
11WA-18	393893	2060	14	0.22	6	39	216	20	1.33	<10	<10	302	<10	183	15
11WA-18	393894	3090	<2	1	7	30	191	<20	0.7	<10	<10	151	<10	130	13
11WA-18	393895	>10000	7	0.45	7	44	157	40	2.69	<10	<10	402	<10	203	18
11WA-18	393896	9700	5	0.28	<5	46	169	40	2.37	<10	<10	373	<10	198	19
11WA-18	393897	>10000	8	0.75	<5	63	92	50	3.67	<10	<10	486	<10	253	27
11WA-18	393898	>10000	6	0.64	5	44	117	60	4.06	<10	<10	513	<10	258	25
11WA-18	393899	8270	8	0.43	14	54	76	80	5.93	<10	<10	992	<10	333	23
11WA-18	393900	>10000	9	1.29	<5	51	104	60	4.44	<10	<10	674	<10	273	18
11WA-18	393901	6870	8	0.39	6	44	184	30	2.13	<10	<10	267	<10	168	21
11WA-18	393902	5100	5	0.24	<5	45	194	20	1.73	<10	<10	254	<10	178	23
11WA-18	393903	5940	10	0.44	<5	47	190	30	1.93	<10	<10	270	<10	189	20
11WA-18	393904	5090	8	0.28	7	51	141	40	2.7	<10	<10	331	<10	288	10
11WA-18	393905	3060	9	0.94	7	43	94	40	2.69	<10	<10	300	<10	359	14
11WA-18	393906	1110	9	0.99	5	26	170	<20	0.64	<10	<10	157	<10	307	22
11WA-18	393907	2830	7	1.24	5	31	159	20	1.09	<10	<10	185	<10	313	10
11WA-18	393908	2530	6	1.48	6	29	127	<20	1.02	<10	<10	208	<10	354	11
11WA-18	393909	1100	7	3.16	<5	28	163	<20	0.51	<10	<10	126	<10	246	16
11WA-18	393911	730	14	1.6	<5	22	169	<20	0.36	<10	<10	93	<10	240	21
11WA-18	393912	760	7	1.89	<5	25	151	<20	0.44	<10	<10	121	<10	284	12
11WA-18	393913	560	18	2.7	<5	18	221	<20	0.31	<10	<10	102	<10	241	11
11WA-18	393914	730	14	0.29	5	26	206	<20	0.6	<10	<10	141	<10	307	7
11WA-18	393915	280	12	0.78	5	30	219	<20	0.55	<10	<10	253	<10	369	14
11WA-18	393916	620	7	0.4	5	23	199	<20	0.69	<10	<10	325	<10	399	18
11WA-18	393917	320	5	0.42	5	21	218	<20	0.3	<10	<10	140	<10	350	7
11WA-18	393918	560	10	0.35	6	18	200	<20	0.31	<10	<10	138	<10	456	6
11WA-18	393919	>10000	5	1.33	<5	47	57	20	0.9	<10	<10	108	<10	360	39
11WA-18	393920	2170	11	1.21	6	37	21	<20	0.88	<10	<10	135	<10	474	24
11WA-18	393921	1130	5	1.38	5	41	23	<20	1.11	<10	<10	149	<10	447	27
11WA-18	393922	440	2	1.15	6	25	182	<20	0.37	<10	<10	134	<10	389	11
11WA-18	393923	1100	3	0.58	<5	42	86	<20	0.59	<10	<10	113	10	388	35
11WA-18	393924	580	<2	0.25	6	23	187	<20	0.51	<10	<10	151	<10	339	17
11WA-19	393925	1610	11	<0.01	<5	20	438	<20	0.99	<10	10	151	<10	153	102
11WA-19	393926	650	19	0.1	<5	24	416	<20	0.6	<10	<10	148	<10	168	90
11WA-19	393927	740	97	0.08	5	27	198	<20	0.75	<10	<10	211	<10	259	101
11WA-19	393928	630	81	0.06	<5	27	198	<20	0.6	<10	<10	183	<10	243	89
11WA-19	393929	560	75	0.11	<5	25	200	<20	0.53	<10	<10	162	<10	262	91
11WA-19	393931	530	14	0.11	<5	19	11	<20	0.15	<10	<10	115	<10	728	191

Hole #	Sample #	P	Pb	S	Sb	Sc	Sr	Th	Ti	Tl	U	V	W	Zn	Zr
		ppm	ppm	%	ppm	ppm	ppm	ppm	%	ppm	ppm	ppm	ppm	ppm	ppm
11WA-19	393932	40	16	22	<5	5	7	<20	0.04	<10	<10	9	<10	371	137
11WA-19	393933	160	45	1.72	<5	7	40	<20	0.16	<10	<10	10	<10	591	272
11WA-19	393934	130	36	4.18	<5	7	27	<20	0.13	<10	<10	8	<10	665	222
11WA-19	393935	170	62	1.56	<5	6	61	<20	0.24	10	<10	18	<10	861	488
11WA-19	393936	60	54	1.87	<5	7	45	<20	0.12	<10	<10	10	<10	408	277
11WA-19	393937	100	41	1.23	<5	8	37	<20	0.2	10	<10	22	<10	5150	294
11WA-19	393938	20	27	1.22	<5	4	6	<20	0.1	<10	<10	6	<10	3840	166
11WA-19	393939	30	36	1.05	<5	6	37	<20	0.15	<10	<10	8	<10	5490	223
11WA-19	393940	170	64	0.68	<5	9	65	<20	0.2	<10	<10	38	<10	3330	207
11WA-19	393941	50	72	1.94	<5	5	72	<20	0.13	<10	<10	7	<10	8810	158
11WA-19	393942	660	63	2.13	<5	11	48	<20	0.33	10	<10	26	<10	5490	251
11WA-19	393943	280	59	1.58	<5	13	74	<20	0.18	<10	<10	65	<10	369	199
11WA-19	393944	240	36	1.27	<5	8	29	<20	0.12	<10	<10	20	<10	267	270
11WA-19	393945	540	8	3.77	<5	13	3	<20	0.14	<10	<10	48	<10	625	221
11WA-19	393946	360	12	4.23	<5	12	3	<20	0.09	<10	<10	43	<10	529	213
11WA-19	393947	300	121	2.14	<5	14	9	<20	0.2	<10	<10	58	<10	432	350
11WA-19	393948	270	81	1.79	<5	14	8	<20	0.18	<10	<10	55	<10	414	342
11WA-19	393949	270	10	0.15	<5	11	18	<20	0.18	<10	<10	50	<10	186	346
11WA-19	393951	340	13	0.89	<5	12	14	<20	0.16	<10	<10	51	<10	178	265
11WA-19	393952	410	11	0.98	<5	13	12	<20	0.18	<10	<10	55	<10	177	255
11WA-19	393953	400	9	1.04	<5	13	13	<20	0.2	<10	<10	57	<10	196	273
11WA-19	393954	380	15	1.37	<5	14	12	<20	0.19	<10	<10	61	<10	201	266
11WA-19	393955	330	12	0.8	<5	11	9	<20	0.14	<10	<10	45	<10	195	240
11WA-19	393956	290	15	0.19	<5	11	25	<20	0.17	<10	<10	39	<10	146	333
11WA-19	393957	370	12	0.47	<5	14	32	<20	0.37	<10	<10	60	<10	304	329
11WA-19	393958	370	3	0.01	<5	13	14	<20	0.28	<10	<10	44	<10	282	289
11WA-19	393959	270	10	0.38	<5	13	24	<20	0.32	<10	<10	45	<10	139	317
11WA-19	393960	210	9	0.68	<5	9	35	<20	0.22	<10	<10	25	<10	122	287
11WA-19	393961	890	9	0.32	<5	6	60	20	0.13	<10	<10	13	<10	54	218
11WA-19	393962	90	12	0.07	<5	6	60	<20	0.12	<10	<10	3	<10	55	221
11WA-19	393963	190	7	0.16	<5	10	41	<20	0.18	<10	<10	30	<10	49	305
11WA-19	393964	320	10	0.59	<5	12	35	<20	0.17	<10	<10	47	<10	79	311
11WA-19	393965	250	13	1.26	<5	9	62	<20	0.12	<10	<10	42	<10	104	245
11WA-19	393966	430	9	0.88	<5	14	15	<20	0.2	<10	<10	72	<10	129	365
11WA-19	393967	340	9	0.38	<5	12	24	<20	0.19	<10	<10	50	<10	126	360
11WA-19	393968	140	8	0.42	<5	8	28	<20	0.21	<10	<10	16	<10	88	411
11WA-19	393969	60	6	0.28	<5	4	20	<20	0.09	<10	<10	3	<10	50	210
11WA-19	393971	250	4	0.98	<5	9	11	<20	0.13	<10	<10	24	<10	127	144
11WA-19	393972	220	2	0.56	<5	8	6	<20	0.13	<10	<10	27	<10	174	146
11WA-19	393973	220	4	0.62	<5	9	6	<20	0.13	<10	<10	24	<10	128	127
11WA-19	393974	320	6	3.24	<5	12	13	<20	0.16	<10	<10	43	<10	118	164
11WA-19	393975	240	6	2.33	<5	13	14	<20	0.15	<10	<10	55	<10	92	233
11WA-19	393976	270	5	3.68	<5	9	3	<20	0.11	<10	<10	32	<10	149	169
11WA-19	393977	230	5	2.67	<5	10	8	<20	0.14	<10	<10	38	<10	150	270
11WA-19	393978	210	2	0.44	<5	11	7	<20	0.14	<10	<10	32	<10	109	178
11WA-19	393979	230	4	0.59	<5	12	11	<20	0.15	<10	<10	29	<10	119	196
11WA-19	393980	220	3	0.09	<5	7	12	<20	0.2	<10	<10	30	<10	82	236
11WA-19	393981	210	4	0.13	<5	6	21	<20	0.15	<10	<10	16	<10	87	251
11WA-19	393982	300	6	0.29	<5	6	45	<20	0.15	<10	<10	8	<10	98	242
11WA-20	393983	150	71	0.18	<5	5	6	<20	0.14	<10	<10	3	<10	115	213
11WA-20	393984	310	79	0.25	<5	5	5	<20	0.14	<10	<10	3	<10	129	213
11WA-20	393985	50	30	0.07	<5	4	3	<20	0.11	<10	<10	1	<10	109	220
11WA-20	393986	80	42	0.16	<5	4	5	<20	0.1	<10	<10	1	<10	97	205
11WA-20	393987	60	21	<0.01	<5	5	9	<20	0.11	<10	<10	2	<10	85	213
11WA-20	393988	40	21	0.01	<5	5	10	<20	0.11	<10	<10	1	<10	89	248
11WA-20	393989	50	27	0.02	<5	5	13	<20	0.1	<10	<10	1	<10	93	238
11WA-20	393991	70	36	0.14	<5	5	22	<20	0.12	<10	<10	2	<10	165	282

Hole #	Sample #	P	Pb	S	Sb	Sc	Sr	Th	Ti	Tl	U	V	W	Zn	Zr
		ppm	ppm	%	ppm	ppm	ppm	ppm	%	ppm	ppm	ppm	ppm	ppm	ppm
11WA-20	393992	110	32	0.36	<5	7	9	<20	0.09	<10	<10	14	<10	284	343
11WA-20	393993	50	29	0.09	<5	7	25	<20	0.07	<10	<10	12	<10	194	317
11WA-20	393994	750	500	0.84	26	16	37	<20	0.48	<10	<10	110	<10	228	176
11WA-20	393995	50	33	0.2	<5	5	25	<20	0.09	<10	<10	3	<10	171	256
11WA-20	393996	70	103	0.01	<5	6	67	<20	0.11	<10	<10	5	<10	280	338
11WA-20	393997	100	203	0.15	<5	5	44	<20	0.07	<10	<10	2	<10	269	286
11WA-20	393998	260	27	1.45	<5	6	6	<20	0.14	<10	<10	3	<10	608	326
11WA-20	393999	140	47	3.23	<5	5	4	<20	0.1	<10	<10	2	<10	756	252
11WA-20	394000	80	37	1.3	<5	4	6	<20	0.11	<10	<10	2	<10	506	240
11WA-20	215901	40	30	2.29	<5	5	3	<20	0.12	<10	<10	2	<10	416	301
11WA-20	215902	40	25	0.56	<5	5	4	<20	0.12	<10	<10	2	<10	380	291
11WA-20	215903	50	23	0.03	<5	4	1	<20	0.09	<10	<10	2	<10	298	235
11WA-20	215904	340	618	0.73	<5	14	110	<20	0.32	<10	<10	90	<10	469	170
11WA-20	215905	470	554	0.12	<5	8	150	<20	0.29	<10	<10	16	<10	209	247
11WA-20	215906	190	533	0.14	<5	5	129	<20	0.2	<10	<10	10	<10	249	256
11WA-20	215907	260	16	0.15	<5	9	6	<20	0.16	<10	<10	40	<10	484	229
11WA-20	215908	170	20	0.31	<5	9	12	<20	0.22	10	<10	38	<10	480	245
11WA-20	215909	210	53	0.54	<5	9	32	<20	0.18	<10	<10	41	<10	372	268
11WA-20	215911	210	118	0.24	<5	7	71	<20	0.13	<10	<10	26	<10	266	237
11WA-20	215912	180	105	0.58	<5	7	70	<20	0.14	<10	<10	21	<10	291	227
11WA-20	215913	270	33	1.03	<5	10	21	<20	0.19	<10	<10	42	<10	405	264
11WA-20	215914	260	52	0.9	<5	10	48	<20	0.2	<10	<10	42	<10	409	291
11WA-20	215915	350	28	1.73	<5	10	26	<20	0.22	<10	<10	57	<10	427	243
11WA-20	215916	350	31	2.81	<5	11	28	<20	0.23	<10	<10	69	<10	507	286
11WA-20	215917	210	121	0.52	<5	7	55	<20	0.08	<10	<10	18	<10	283	264
11WA-20	215918	220	59	1.59	<5	8	65	<20	0.09	<10	<10	35	<10	314	229
11WA-20	215919	60	26	1.65	<5	6	24	<20	0.1	<10	<10	16	<10	325	304
11WA-20	215920	210	20	2.29	<5	7	10	<20	0.1	<10	<10	24	<10	649	248
11WA-20	215921	200	18	1.26	<5	7	3	<20	0.11	<10	<10	23	<10	1010	160
11WA-20	215922	160	9	1.01	<5	7	6	<20	0.15	<10	<10	19	<10	717	95
11WA-20	215923	160	11	0.62	<5	7	6	<20	0.15	<10	<10	20	<10	952	98
11WA-20	215924	110	14	1.61	<5	7	3	<20	0.15	<10	<10	20	<10	1830	101
11WA-20	215925	120	20	1.43	<5	7	2	<20	0.15	<10	<10	19	<10	4890	105
11WA-20	215926	100	43	9.64	<5	6	9	<20	0.06	<10	<10	13	20	59000	181
11WA-20	215927	80	62	17.8	<5	5	13	<20	0.06	<10	<10	11	30	73800	159
11WA-20	215928	40	32	26.6	<5	3	10	<20	0.04	<10	<10	9	30	105500	106
11WA-20	215929	130	68	9.43	<5	8	36	<20	0.2	10	<10	35	<10	19550	205
11WA-20	215931	290	15	2.19	<5	11	6	<20	0.29	10	<10	58	<10	3800	220
11WA-20	215932	270	19	1.47	<5	10	5	<20	0.26	<10	<10	41	<10	906	276
11WA-20	215933	240	43	0.67	<5	9	12	<20	0.23	<10	<10	46	<10	942	245
11WA-20	215934	340	24	0.2	<5	11	20	<20	0.16	<10	<10	56	<10	761	272
11WA-20	215935	360	21	0.05	<5	9	29	<20	0.13	10	<10	19	<10	508	320

APPENDIX VIII

List of Whole Rock Geochemistry Results with Location of Core Samples for Diamond Drill-Holes 10WA-01 to 11WA-20

ME-XRF06

Sample	From	To	Rock type	SiO2	Al2O3	Fe2O3	CaO	MgO	Na2O	K2O	Cr2O3	TiO2	MnO	P2O5	SrO	BaO	LOI	Total
	(m)	(m)		%	%	%	%	%	%	%	%	%	%	%	%	%	%	%
			DL	*0.01*	*0.01*	*0.01*	*0.01*	*0.01*	*0.01*	*0.01*	*0.01*	*0.01*	*0.01*	*0.00*	*0.01*	*0.01*	*0.01*	
10WA-01B	180.85	181.15	hb-gabbro	48.88	18.25	7.62	11.70	8.67	1.81	0.09	0.04	0.40	0.15	0.05	0.02	0.01	2.09	99.78
10WA-02A	22.60	22.90	diorite (hb-bt)	61.55	12.51	14.00	5.37	0.47	3.04	1.25	*ND*	0.94	0.27	0.27	0.02	0.02	0.17	99.89
10WA-03A	33.53	33.83	troctolite	46.07	19.17	16.86	8.95	3.10	3.66	0.10	*ND*	1.70	0.25	0.69	0.03	*ND*	(0.73)	99.85
10WA-03B	52.00	52.50	peg gabbro	45.07	11.51	21.18	10.72	7.11	2.30	0.10	0.01	1.83	0.33	0.74	0.02	*ND*	(0.97)	99.95
10WA-03E	125.50	126.00	mt-gabbro	46.80	22.30	13.00	9.00	2.62	4.15	0.09	*ND*	1.44	0.15	0.33	0.05	0.01	(0.12)	99.82
10WA-03G	172.50	173.00	ol-gabbro	44.50	15.25	18.90	10.33	5.55	2.76	0.06	0.01	2.92	0.24	0.32	0.02	0.01	(0.93)	99.94
10WA-03J	299.00	299.50	gabbronorite	45.06	16.42	14.93	10.40	6.07	2.65	0.06	0.01	4.01	0.17	0.02	0.03	0.02	(0.04)	99.82
10WA-04A	35.54	36.07	hb-leuconorite	48.51	23.02	5.84	12.01	6.84	1.78	0.18	0.05	0.34	0.09	0.04	0.03	*ND*	0.77	99.50
10WA-04C	95.33	95.71	hb-norite	49.51	17.77	8.29	10.02	12.02	1.26	0.10	0.09	0.33	0.14	0.04	0.02	0.01	0.27	99.86
10WA-04D	253.06	253.42	troctolite	43.72	21.05	9.09	10.48	13.08	1.11	0.17	0.01	0.10	0.11	0.02	0.02	0.01	0.95	99.91
10WA-05A	153.76	154.25	MS	4.46	2.41	73.40	1.14	4.04	0.14	0.02	*ND*	0.07	0.02	0.01	*ND*	*ND*	12.85	98.57
10WA-05B	171.45	172.65	harzburgite	46.10	5.00	16.65	2.77	24.64	0.26	0.16	0.25	0.49	0.18	0.03	0.01	*ND*	3.30	99.83
10WA-05C	221.62	222.06	norite (hb)	49.01	23.25	4.57	11.66	6.58	1.81	0.98	0.06	0.22	0.08	0.03	0.02	*ND*	1.66	99.92
10WA-05D	295.38	295.83	SMS (act)	34.68	13.27	24.70	5.49	10.76	0.87	0.27	0.06	0.16	0.15	0.02	0.01	0.01	7.80	98.25
10WA-05E	322.54	322.93	hb-gabbro	52.51	16.68	6.37	9.59	8.60	2.16	0.81	0.06	0.49	0.11	0.05	0.03	*ND*	2.34	99.79
10WA-05F	241.85	242.30	harzburgite	42.25	6.42	14.25	3.72	26.14	0.43	0.21	0.21	0.54	0.16	0.06	0.01	*ND*	5.65	100.05
10WA-05G	79.80	80.00	ol-leuconorite	45.36	19.57	9.70	9.85	13.22	1.21	0.08	0.02	0.17	0.13	0.03	0.02	*ND*	0.50	99.86
10WA-05H	99.98	100.18	hb-gabbro (cum)	50.65	23.63	4.52	12.14	5.56	2.13	0.23	0.03	0.16	0.07	0.03	0.02	*ND*	0.86	100.05
10WA-05I	175.69	175.91	harzburgite	43.97	8.01	13.40	4.38	23.36	0.56	0.15	0.19	0.27	0.14	0.04	0.01	*ND*	4.81	99.28
10WA-05J	179.71	180.00	peridotite	44.89	7.89	13.60	3.59	22.43	0.39	0.86	0.20	0.32	0.13	0.04	0.01	*ND*	5.12	99.47
10WA-05K	197.65	197.85	hb-norite	48.97	16.68	8.41	6.21	11.24	2.28	0.48	0.08	0.26	0.12	0.03	0.02	*ND*	4.48	99.26
10WA-05L	217.18	218.08	ol-norite	44.44	17.99	10.29	9.69	14.23	1.07	0.21	0.09	0.22	0.14	0.02	0.02	*ND*	1.64	100.05
10WA-05M	245.26	245.49	peridotite	41.17	6.83	16.09	4.23	23.28	0.08	0.04	0.19	0.42	0.12	0.04	*ND*	*ND*	5.64	98.11
10WA-05N	250.55	250.74	peridotite	41.26	7.98	13.94	4.23	24.63	0.13	0.06	0.25	0.43	0.13	0.04	*ND*	*ND*	5.98	99.05
10WA-07A	28.50	28.75	volc. fp-porphyry	67.13	15.50	4.76	4.30	1.49	3.94	1.00	*ND*	0.64	0.07	0.16	0.03	0.02	0.79	99.84
10WA-07B	212.28	212.64	hb-gabbronorite (act)	46.54	10.88	19.50	6.24	10.12	0.97	0.39	0.01	2.83	0.26	0.03	0.01	*ND*	2.20	99.98
10WA-08A	73.53	74.04	hb-gabbro (cum)	49.00	17.72	7.74	9.38	11.05	1.10	0.16	0.05	0.24	0.12	0.03	0.02	*ND*	3.19	99.79
10WA-08B	108.60	109.10	hb-leuconorite	49.76	19.64	7.04	10.40	10.30	1.51	0.14	0.08	0.38	0.12	0.04	0.02	*ND*	0.51	99.95
10WA-08C	189.25	189.72	leuco troctolite	45.00	21.22	9.14	11.16	11.67	1.39	0.06	0.12	0.23	0.12	0.02	0.02	*ND*	(0.19)	99.96
10WA-08D	264.63	265.00	lherzolite	41.09	7.92	16.67	5.17	23.41	0.71	0.11	0.23	0.43	0.20	0.04	0.01	*ND*	3.97	99.95
10WA-09A	65.53	66.00	SMS (chl)	14.73	9.89	44.80	1.00	9.10	0.20	0.13	*ND*	0.30	0.07	0.03	*ND*	*ND*	18.65	98.89
10WA-09B	148.68	149.18	SMS (chl)	34.23	17.92	26.57	1.01	5.64	1.15	1.09	0.01	1.49	0.10	0.05	*ND*	0.03	9.67	98.96

ME-XRF06

Sample	From	To	Rock type	SiO_2	Al_2O_3	Fe_2O_3	CaO	MgO	Na_2O	K_2O	Cr_2O_3	TiO_2	MnO	P_2O_5	SrO	BaO	LOI	Total
	(m)	(m)		%	%	%	%	%	%	%	%	%	%	%	%	%	%	%
			DL	*0.01*	*0.01*	*0.01*	*0.01*	*0.01*	*0.01*	*0.01*	*0.01*	*0.01*	*0.01*	*0.00*	*0.01*	*0.01*	*0.01*	
10WA-10A	64.03	64.67	ol-leuconorite	43.87	16.31	11.52	8.62	15.92	1.11	0.09	0.05	0.22	0.15	0.03	0.02	*ND*	1.97	99.87
10WA-10B	104.41	104.89	gabbronorite	49.54	16.84	7.80	11.74	10.84	1.30	0.12	0.15	0.44	0.14	0.03	0.03	*ND*	0.35	99.32
10WA-10C	119.19	119.73	lherzolite	40.08	5.92	15.65	3.64	25.86	0.66	0.17	0.25	0.48	0.18	0.05	*ND*	*ND*	5.77	98.71
10WA-10D	131.64	132.00	SMS-gabbronorite	30.65	12.53	34.47	6.20	6.67	0.78	0.47	0.06	0.10	0.14	0.02	0.01	*ND*	6.30	98.39
10WA-11A	128.73	129.00	hb-leuconorite	50.26	19.10	7.93	10.52	9.13	1.66	0.16	0.04	0.45	0.13	0.04	0.02	0.01	0.68	100.10
10WA-11B	221.28	221.60	hb-gabbro	52.16	17.32	6.79	8.94	10.05	1.35	0.47	0.08	0.22	0.12	0.03	0.01	*ND*	2.35	99.88
10WA-11C	236.79	237.08	hb-norite	49.61	19.55	6.99	10.00	10.00	1.51	0.38	0.07	0.28	0.11	0.04	0.03	*ND*	1.25	99.80
10WA-11D	283.73	284.00	hb-gabbro (cum)	42.93	18.30	9.49	10.10	13.11	0.84	0.44	0.07	0.25	0.13	0.02	0.02	*ND*	4.27	99.97
11WA-14A	66.00	66.40	Gabbro with cpy	46.00	13.20	21.02	6.96	3.84	2.20	0.20	<0.01	2.76	0.37	1.34	0.02	<0.01	0.30	98.21
11WA-14B	218.57	218.78	Gabbro	53.85	18.47	5.53	8.84	6.39	2.66	0.56	0.05	0.23	0.08	0.01	0.02	0.01	2.19	98.90
11WA-14D	347.25	347.60	Gabbro/Gabbronorite	45.37	20.16	8.66	11.02	11.80	1.45	0.08	0.03	0.53	0.10	0.04	0.02	*ND*	0.19	99.47
11WA-14G	406.10	406.40	Gabbronorite	50.00	19.30	7.58	10.15	10.97	1.29	0.10	0.08	0.25	0.12	0.02	0.02	*ND*	0.12	99.99
11WA-14I	464.70	465.00	Gabbronorite	49.64	17.88	8.65	9.82	9.67	1.35	0.23	0.04	0.30	0.14	0.02	0.02	*ND*	0.40	98.16
11WA-15A	81.05	81.35	Gabbronorite,cpx oiks	46.36	14.99	17.61	9.53	4.71	2.59	0.35	0.01	3.33	0.24	0.54	0.03	0.01	(0.29)	100.00
11WA-15C	188.95	189.30	Gabbronorite varitxtr	46.03	14.53	17.42	10.21	5.13	2.24	0.28	0.01	3.17	0.21	0.31	0.02	0.01	(0.01)	99.57
11WA-16A	44.80	45.10	UM flow/intr. am-por.	43.01	9.05	12.79	4.70	21.39	0.31	0.19	0.31	0.66	0.16	0.07	*ND*	*ND*	5.82	98.44
11WA-16B	121.82	122.18	Mafic volc. (am pheno)	57.74	14.78	9.76	0.22	9.43	0.12	1.66	0.01	1.13	0.09	0.13	*ND*	0.02	4.98	100.05
11WA-16C	133.14	133.55	Breccia, qz-rich frags	73.00	11.11	3.96	0.06	6.49	0.11	1.40	*ND*	0.29	0.04	0.03	*ND*	0.02	3.53	100.05
11WA-16D	213.35	213.59	Qz-eyed Rhyolite	68.97	12.08	5.31	*ND*	6.19	0.08	1.77	*ND*	0.26	0.03	0.00	*ND*	0.03	3.70	98.42
11WA-17A	107.20	107.45	Breccia,qz-rich frags	52.95	10.49	8.00	1.04	19.48	0.05	0.04	*ND*	0.25	0.08	0.03	*ND*	*ND*	7.55	99.96
11WA-17B	320.64	321.00	Qz-eyed Rhyolite	60.21	12.58	11.43	0.15	7.75	0.06	1.15	*ND*	0.90	0.07	0.10	*ND*	0.01	4.47	98.88
11WA-18A	30.30	30.70	Pegmatitic Gabbro	42.96	11.75	21.12	9.85	5.72	1.82	0.25	0.01	5.01	0.27	0.08	0.02	0.01	0.30	99.16
11WA-18B	44.14	44.40	CG Gabbro	46.15	13.39	17.23	10.56	6.13	1.87	0.27	0.01	2.08	0.24	0.22	0.02	0.01	0.71	98.89
11WA-18C	78.00	78.33	Pegmatitic Gabbro	43.00	12.90	22.00	9.74	5.80	2.05	0.13	0.01	3.71	0.30	0.80	0.02	0.02	(0.38)	100.10
11WA-19A	67.45	67.75	UM flow/intrusion	41.67	7.31	12.84	4.33	25.48	0.36	0.08	0.38	0.45	0.17	0.04	*ND*	*ND*	5.02	98.12
11WA-19B	210.93	211.20	Mafic volc. (am phen)	58.06	13.91	11.84	0.66	6.77	0.76	1.56	*ND*	1.02	0.11	0.17	*ND*	0.03	3.73	98.61
11WA-19C	269.20	269.93	Felsic breccia	71.05	12.83	4.20	0.20	4.92	0.14	2.47	*ND*	0.57	0.03	0.08	*ND*	0.04	3.28	99.81
11WA-19D	289.75	290.00	QFP dike	75.35	12.21	3.09	1.90	0.25	4.31	0.47	*ND*	0.19	0.02	0.01	0.02	0.01	0.68	98.51

	PGM-MS23			S-IR08	ME-MS81																
Sample	**Au**	**Pt**	**Pd**	**S**	**Ag**	**Ba**	**Ce**	**Co**	**Cr**	**Cs**	**Cu**	**Dy**	**Er**	**Eu**	**Ga**	**Gd**	**Hf**	**Ho**	**La**	**Lu**	**Mo**
	ppm	ppm	ppm	%	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm
	0.001	*0.005*	*0.001*	*0.01*	*1*	*0.5*	*0.5*	*0.5*	*10*	*0.01*	*5*	*0.05*	*0.03*	*0.03*	*0.1*	*0.05*	*0.2*	*0.01*	*0.5*	*0.01*	*2*
10WA-01B	0.002	0.002	*ND*	0.02	*ND*	29.2	7.3	36.4	260	0.15	29	1.61	0.92	0.48	16.9	1.29	0.6	0.32	3.5	0.15	*ND*
10WA-02A	0.002	<0.0005	*ND*	0.05	*ND*	271.0	63.3	4.2	10	1.52	22	10.65	7.04	2.62	24.9	9.68	18.5	2.39	27.2	1.22	2
10WA-03A	0.002	<0.0005	*ND*	0.06	*ND*	40.1	13.9	32.9	10	0.03	29	2.15	1.01	1.86	25.7	2.89	0.3	0.39	5.7	0.11	*ND*
10WA-03B	0.001	0.001	*ND*	0.18	*ND*	29.8	16.4	53.9	40	0.01	105	3.59	1.91	1.65	17.1	4.06	0.6	0.70	6.2	0.19	*ND*
10WA-03E	0.001	<0.0005	*ND*	0.01	*ND*	38.4	7.6	34.1	10	0.01	6	1.05	0.50	1.47	27.6	1.41	0.3	0.19	3.4	0.05	*ND*
10WA-03G	0.001	<0.0005	*ND*	0.19	*ND*	21.6	4.3	32.9	40	*ND*	43	1.17	0.55	0.95	19.5	1.34	0.4	0.21	1.9	0.07	*ND*
10WA-03J	0.001	<0.0005	*ND*	0.14	*ND*	18.8	2.0	54.1	10	0.05	40	0.74	0.47	0.55	19.8	0.61	0.5	0.16	1.2	0.06	*ND*
10WA-04A	0.008	0.001	*ND*	0.08	*ND*	36.7	6.6	27.4	310	0.12	190	0.87	0.56	0.44	18.8	0.89	0.8	0.18	3.4	0.08	*ND*
10WA-04C	0.004	0.005	*ND*	0.04	*ND*	22.0	5.2	43.2	560	0.03	64	0.92	0.59	0.34	14.2	0.86	0.7	0.19	2.5	0.09	*ND*
10WA-04D	0.004	0.003	0.006	0.03	*ND*	26.1	2.7	76.2	30	0.13	56	0.25	0.15	0.26	15.1	0.27	0.6	0.06	1.6	0.03	*ND*
10WA-05A	0.006	0.003	0.002	33.80	1	3.4	3.2	0.7	10	*ND*	188	0.57	0.37	0.07	5.6	0.45	1.4	0.13	1.9	0.08	*ND*
10WA-05B	0.005	0.002	0.005	0.15	*ND*	29.9	8.3	130.5	1670	0.95	212	1.47	0.98	0.22	7.3	1.18	1.3	0.29	4.1	0.14	*ND*
10WA-05C	0.007	0.002	0.001	0.09	*ND*	96.7	6.7	26.7	400	0.68	187	0.82	0.52	0.41	18.0	0.83	0.8	0.17	3.3	0.08	*ND*
10WA-05D	0.219	0.001	0.001	10.70	11	36.4	5.9	309.0	430	0.30	3740	0.41	0.29	0.35	11.7	0.41	0.5	0.10	3.1	0.04	*ND*
10WA-05E	0.004	<0.0005	*ND*	0.09	*ND*	106.5	21.6	33.4	330	0.37	111	4.11	2.46	0.54	16.2	3.51	1.5	0.86	8.7	0.31	*ND*
10WA-05F	0.003	0.002	0.006	0.05	*ND*	24.8	6.2	120.0	1430	0.89	117	1.18	0.69	0.34	7.3	1.08	1.1	0.24	2.9	0.11	*ND*
10WA-05G	0.002	0.002	0.002	0.08	*ND*	19.6	3.2	67.9	130	0.07	96	0.44	0.30	0.29	13.3	0.39	0.4	0.10	1.8	0.05	*ND*
10WA-05H	0.001	0.001	0.001	0.02	*ND*	50.7	8.6	22.1	210	0.16	108	1.01	0.64	0.44	15.8	0.97	0.9	0.20	3.9	0.09	*ND*
10WA-05I	0.003	0.002	0.005	0.08	*ND*	22.8	9.7	121.0	1240	0.51	61	1.21	0.66	0.33	7.2	1.28	1.2	0.22	4.6	0.09	*ND*
10WA-05J	0.001	0.003	0.006	0.14	*ND*	110.5	10.0	125.5	1310	1.54	164	1.27	0.71	0.24	8.3	1.36	1.6	0.22	4.7	0.09	*ND*
10WA-05K	0.068	0.001	*ND*	0.69	5	63.9	41.5	36.0	530	0.64	653	5.71	3.78	1.71	15.8	5.32	3.4	1.12	20.3	0.52	*ND*
10WA-05L	0.004	0.001	*ND*	0.05	*ND*	20.8	2.7	69.3	570	0.41	164	0.54	0.35	0.34	12.4	0.49	0.4	0.10	1.3	0.05	*ND*
10WA-05M	0.011	0.013	0.013	0.28	5	4.0	4.1	123.0	1190	0.06	851	0.79	0.48	0.14	6.1	0.72	0.8	0.15	1.9	0.07	*ND*
10WA-05N	*ND*	0.002	0.004	0.04	*ND*	14.0	5.5	109.5	1640	0.07	28	0.88	0.51	0.20	7.5	0.92	0.8	0.16	2.7	0.08	*ND*
10WA-07A	0.002	<0.0005	*ND*	0.02	*ND*	260.0	39.9	9.7	20	0.70	16	2.67	1.54	1.01	20.3	3.37	4.7	0.53	19.9	0.21	*ND*
10WA-07B	0.002	0.001	*ND*	0.29	*ND*	41.8	4.8	81.5	30	0.32	148	1.31	0.87	0.52	15.4	1.09	1.3	0.29	2.2	0.15	*ND*
10WA-08A	0.001	<0.0005	*ND*	0.05	*ND*	23.1	3.7	43.0	330	0.28	120	0.61	0.44	0.30	13.8	0.57	0.5	0.12	1.8	0.07	*ND*
10WA-08B	0.006	0.014	*ND*	0.05	*ND*	26.6	6.4	39.2	540	0.14	88	0.98	0.69	0.39	14.5	0.98	0.8	0.21	2.8	0.09	*ND*
10WA-08C	0.001	0.001	*ND*	0.03	*ND*	16.0	2.5	56.9	800	0.03	54	0.40	0.25	0.33	14.7	0.40	0.2	0.07	1.3	0.04	*ND*
10WA-08D	0.001	0.003	0.005	0.05	*ND*	22.4	5.0	122.0	1570	0.10	71	0.82	0.53	0.30	7.6	0.82	0.7	0.16	2.4	0.07	*ND*
10WA-09A	0.011	0.004	0.001	26.40	1	12.9	48.3	7.0	*ND0*	0.17	146	5.45	3.46	0.99	8.1	5.44	5.5	1.17	30.6	0.63	2
10WA-09B	0.006	0.008	0.002	12.25	2	243.0	30.6	27.7	30	1.01	204	2.58	1.44	1.12	23.7	3.20	5.1	0.51	14.9	0.20	2

	PGM-MS23			S-IR08	ME-MS81																
Sample	**Au**	**Pt**	**Pd**	**S**	**Ag**	**Ba**	**Ce**	**Co**	**Cr**	**Cs**	**Cu**	**Dy**	**Er**	**Eu**	**Ga**	**Gd**	**Hf**	**Ho**	**La**	**Lu**	**Mo**
	ppm	ppm	ppm	%	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm
	0.001	*0.005*	*0.001*	*0.01*	*1*	*0.5*	*0.5*	*0.5*	*10*	*0.01*	*5*	*0.05*	*0.03*	*0.03*	*0.1*	*0.05*	*0.2*	*0.01*	*0.5*	*0.01*	*2*
10WA-10A	0.004	0.003	*ND*	0.24	*ND*	19.2	4.0	78.7	340	0.09	198	0.60	0.34	0.28	11.4	0.59	0.4	0.12	1.9	0.05	*ND*
10WA-10B	0.004	0.002	*ND*	0.09	*ND*	20.3	4.4	31.5	990	0.08	240	1.04	0.62	0.39	12.8	0.98	0.6	0.22	1.9	0.08	*ND*
10WA-10C	0.004	0.003	0.007	0.17	1	24.4	12.0	98.8	1480	0.19	1190	1.71	0.95	0.36	6.0	1.77	1.2	0.34	5.4	0.12	*ND*
10WA-10D	0.020	0.017	0.006	14.05	17	43.0	5.2	112.5	290	0.25	5360	0.34	0.16	0.24	8.4	0.36	0.2	0.03	3.0	*ND*	3
10WA-11A	0.001	<0.0005	*ND*	0.09	*ND*	35.2	8.3	38.4	230	0.21	109	1.64	0.98	0.50	15.4	1.48	0.7	0.35	3.7	0.15	*ND*
10WA-11B	0.010	0.009	*ND*	0.07	*ND*	60.4	9.1	34.7	480	0.61	114	0.71	0.46	0.25	12.2	0.70	0.9	0.16	4.5	0.07	*ND*
10WA-11C	0.004	0.001	*ND*	0.06	*ND*	55.6	8.9	37.3	420	0.45	142	1.66	1.00	0.35	13.7	1.46	0.5	0.35	4.0	0.13	*ND*
10WA-11D	0.002	0.001	*ND*	0.05	*ND*	55.3	3.0	63.9	470	0.57	59	0.45	0.27	0.26	12.2	0.45	0.3	0.09	1.5	0.03	*ND*
11WA-14A	0.024	<0.0005	<0.001	1.34	4	53.4	75.7	47.3	10	0.20	7900	12.15	6.05	3.08	20.5	13.80	1.6	2.30	30.6	0.72	3
11WA-14B	0.002	0.001	*ND*	0.03	*ND*	108.5	16.4	24.8	320	0.32	93	1.26	0.82	0.53	15.5	1.08	1.4	0.29	8.5	0.13	*ND*
11WA-14D	*ND*	0.002	0.004	0.05	*ND*	24.8	7.0	55.1	160	0.03	59	1.32	0.77	0.56	14.9	1.31	0.9	0.26	2.8	0.10	*ND*
11WA-14G	0.006	0.004	*ND*	0.04	*ND*	21.7	4.3	36.0	450	0.04	95	0.73	0.53	0.37	14.6	0.65	0.6	0.16	2.0	0.08	*ND*
11WA-14I	*ND*	0.001	*ND*	0.04	*ND*	46.0	6.8	38.1	220	0.18	78	1.04	0.70	0.44	15.4	0.89	1.0	0.23	3.2	0.11	*ND*
11WA-15A	*ND*	0.001	0.001	0.15	*ND*	63.3	24.5	43.6	*ND0*	0.26	46	4.15	2.20	1.74	19.9	4.58	1.5	0.83	9.7	0.27	*ND*
11WA-15C	0.001	0.001	*ND*	0.16	*ND*	52.8	25.5	46.3	*ND0*	0.11	59	5.18	2.83	1.43	19.9	5.03	1.6	0.99	9.9	0.32	*ND*
11WA-16A	*ND*	0.003	0.001	0.01	*ND*	15.3	11.3	74.4	1730	0.13	*ND*	1.85	1.02	0.53	10.7	1.80	1.6	0.36	3.9	0.13	*ND*
11WA-16B	0.003	<0.0005	*ND*	0.01	*ND*	186.0	43.2	16.3	20	1.18	*ND*	4.74	2.98	1.24	20.5	4.84	4.8	0.94	19.5	0.42	*ND*
11WA-16C	*ND*	0.001	*ND*	0.02	*ND*	194.5	60.6	7.3	10	0.26	6	6.64	4.11	1.20	14.2	5.97	7.5	1.35	28.4	0.61	2
11WA-16D	*ND*	<0.0005	*ND*	0.01	*ND*	332.0	67.5	5.7	*ND0*	0.46	*ND*	9.19	5.59	1.02	19.5	8.07	11.3	1.89	31.7	0.87	3
11WA-17A	0.026	<0.0005	*ND*	0.23	1	2.4	47.4	11.6	*ND0*	0.10	2040	8.86	5.75	1.08	17.6	6.05	8.7	1.90	22.4	0.87	*ND*
11WA-17B	*ND*	0.001	*ND*	0.01	*ND*	193.5	35.4	50.5	*ND0*	0.83	31	4.22	2.52	1.38	18.6	4.08	4.7	0.87	18.5	0.39	*ND*
11WA-18A	0.001	<0.0005	*ND*	0.30	*ND*	39.9	8.7	66.6	40	0.09	110	2.44	1.33	0.80	19.3	2.25	2.6	0.49	3.7	0.19	*ND*
11WA-18B	*ND*	<0.0005	*ND*	0.18	*ND*	38.3	5.7	57.7	50	0.07	76	2.03	1.11	0.82	18.1	1.99	0.8	0.44	2.3	0.18	*ND*
11WA-18C	*ND*	<0.0005	*ND*	0.23	*ND*	25.3	8.5	59.8	50	0.28	74	2.78	1.41	1.13	19.7	2.92	1.1	0.56	3.2	0.19	*ND*
11WA-19A	*ND*	0.002	0.001	0.01	*ND*	5.2	8.9	120.5	2820	0.07	*ND*	1.13	0.59	0.32	8.3	1.09	1.0	0.22	3.8	0.09	*ND*
11WA-19B	0.022	<0.0005	*ND*	0.01	*ND*	249.0	36.8	35.4	10	1.71	*ND*	4.69	2.91	1.18	20.4	4.45	5.1	0.98	16.9	0.46	*ND*
11WA-19C	0.002	<0.0005	*ND*	0.15	*ND*	378.0	89.3	2.7	20	0.45	92	7.64	4.27	1.53	20.0	8.26	9.3	1.49	41.5	0.67	2
11WA-19D	*ND*	<0.0005	*ND*	0.08	*ND*	212.0	97.1	3.8	10	0.20	41	8.10	4.91	1.64	19.0	7.93	9.3	1.67	46.5	0.77	*ND*

ME-MS81

Sample	Nb	Nd	Ni	Pb	Pr	Rb	Sm	Sn	Sr	Ta	Tb	Th	Tl	Tm	U	V	W	Y	Yb	Zn	Zr
	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm
	0.2	*0.1*	*5*	*5*	*0.03*	*0.2*	*0.03*	*1*	*0.1*	*0.1*	*0.01*	*0.05*	*0.5*	*0.01*	*0.05*	*5*	*1*	*0.5*	*0.03*	*5*	*2*
10WA-01B	1.0	4.5	123	*ND*	1.00	1.2	1.37	1	155.0	0.1	0.24	0.05	*ND*	0.15	*ND*	102	1	8.1	0.92	144	17
10WA-02A	17.0	37.8	5	6	8.55	24.3	9.86	4	127.5	1.1	1.71	4.87	*ND*	1.11	1.48	*ND*	1	62.1	7.20	235	889
10WA-03A	1.3	11.3	11	*ND*	2.22	0.8	2.90	*ND*	280.0	0.1	0.43	0.16	*ND*	0.13	0.05	33	*ND*	10.6	0.67	131	9
10WA-03B	1.7	14.3	47	*ND*	2.70	0.9	4.29	*ND*	166.5	0.1	0.64	0.18	*ND*	0.22	0.06	175	*ND*	17.6	1.27	150	19
10WA-03E	0.8	5.6	9	*ND*	1.18	0.5	1.35	*ND*	325.0	*ND*	0.20	0.07	*ND*	0.07	*ND*	29	*ND*	5.0	0.35	95	12
10WA-03G	0.7	4.1	39	*ND*	0.71	0.3	1.33	*ND*	198.0	0.1	0.21	*ND*	*ND*	0.09	*ND*	350	*ND*	5.4	0.39	112	11
10WA-03J	1.5	1.6	14	*ND*	0.33	0.7	0.60	*ND*	222.0	0.1	0.12	0.09	*ND*	0.07	*ND*	337	*ND*	4.1	0.43	103	18
10WA-04A	1.5	3.6	210	*ND*	0.85	3.6	0.97	*ND*	192.5	0.1	0.15	0.42	*ND*	0.09	0.13	66	*ND*	4.9	0.52	47	29
10WA-04C	1.2	3.2	250	*ND*	0.72	1.8	0.80	*ND*	137.0	0.1	0.15	0.24	*ND*	0.10	0.07	73	1	5.2	0.58	62	25
10WA-04D	0.4	1.3	507	*ND*	0.34	4.0	0.29	*ND*	159.5	*ND*	0.05	0.45	*ND*	0.04	0.12	14	*ND*	1.6	0.17	58	24
10WA-05A	0.6	2.2	*ND*	*ND*	0.52	0.5	0.51	*ND*	2.9	*ND*	0.11	1.08	*ND*	0.09	0.30	*ND*	*ND*	3.9	0.42	2320	60
10WA-05B	2.0	4.6	1130	21	1.02	6.7	1.14	1	40.0	0.1	0.21	1.14	*ND*	0.15	0.27	89	*ND*	7.9	0.86	172	49
10WA-05C	0.9	3.3	295	29	0.83	35.3	0.78	*ND*	217.0	0.1	0.13	0.93	*ND*	0.09	0.31	37	1	4.8	0.54	43	28
10WA-05D	0.6	2.6	638	342	0.68	12.3	0.47	3	81.3	*ND*	0.07	0.21	*ND*	0.05	0.09	18	*ND*	2.5	0.30	2100	20
10WA-05E	3.8	13.2	163	5	3.08	31.7	3.56	2	175.5	0.3	0.68	2.60	*ND*	0.37	0.91	99	1	23.7	2.14	61	41
10WA-05F	1.7	3.9	1440	15	0.85	5.7	0.97	1	53.0	0.1	0.20	0.38	*ND*	0.11	0.12	59	*ND*	7.3	0.64	112	46
10WA-05G	0.9	1.7	539	*ND*	0.42	1.9	0.43	*ND*	171.0	0.1	0.07	0.24	*ND*	0.04	0.05	36	*ND*	2.6	0.32	62	16
10WA-05H	1.7	4.0	119	5	1.04	5.3	0.95	*ND*	207.0	0.1	0.15	1.04	*ND*	0.08	0.27	43	*ND*	5.5	0.59	35	31
10WA-05I	2.4	5.0	1300	32	1.20	3.5	1.11	*ND*	82.9	0.2	0.19	0.84	*ND*	0.08	0.20	40	*ND*	6.3	0.65	93	41
10WA-05J	3.2	5.3	1445	31	1.27	36.7	1.24	1	44.4	0.2	0.21	1.50	*ND*	0.10	0.49	56	*ND*	6.6	0.67	355	63
10WA-05K	6.9	21.0	272	451	5.08	20.7	4.79	1	150.0	0.5	0.87	3.05	*ND*	0.51	1.00	37	*ND*	31.7	3.64	532	122
10WA-05L	0.5	1.6	620	173	0.36	6.0	0.39	*ND*	165.0	*ND*	0.08	0.11	*ND*	0.04	*ND*	54	*ND*	2.9	0.32	71	15
10WA-05M	1.1	2.5	1575	5	0.54	0.7	0.63	*ND*	7.8	0.1	0.13	0.20	*ND*	0.08	0.05	72	*ND*	4.2	0.52	87	29
10WA-05N	1.3	3.0	1340	5	0.74	1.7	0.75	*ND*	9.8	0.1	0.13	0.36	*ND*	0.07	0.09	44	*ND*	4.5	0.51	100	31
10WA-07A	8.0	17.5	16	10	4.70	23.5	3.53	1	197.0	0.7	0.48	3.02	*ND*	0.24	0.77	47	*ND*	14.8	1.35	76	185
10WA-07B	4.2	3.1	39	*ND*	0.66	9.6	0.84	1	64.3	0.3	0.18	0.22	*ND*	0.15	0.07	293	*ND*	7.2	0.96	155	45
10WA-08A	0.8	2.0	226	*ND*	0.48	3.8	0.53	*ND*	136.0	0.1	0.09	0.33	*ND*	0.06	0.11	63	*ND*	3.7	0.44	62	19
10WA-08B	1.4	3.7	229	*ND*	0.85	2.6	0.86	*ND*	163.5	0.2	0.14	0.26	*ND*	0.08	0.06	77	1	5.8	0.66	56	29
10WA-08C	0.4	1.4	419	*ND*	0.32	0.7	0.34	*ND*	186.5	*ND*	0.06	0.08	*ND*	0.03	*ND*	54	*ND*	2.2	0.26	61	9
10WA-08D	1.0	2.9	1365	*ND*	0.66	2.1	0.73	*ND*	78.6	0.1	0.13	0.38	*ND*	0.08	0.10	78	*ND*	4.5	0.51	127	24
10WA-09A	6.4	23.2	*ND*	25	6.04	7.1	4.75	2	8.5	0.3	0.94	6.19	*ND*	0.51	1.59	*ND*	1	32.3	3.62	2710	231
10WA-09B	13.8	15.9	27	15	3.95	25.3	3.16	2	48.2	0.9	0.50	2.10	0.7	0.18	0.48	165	2	14.3	1.27	130	204

ME-MS81

Sample	Nb	Nd	Ni	Pb	Pr	Rb	Sm	Sn	Sr	Ta	Tb	Th	Tl	Tm	U	V	W	Y	Yb	Zn	Zr
	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm
	0.2	*0.1*	*5*	*5*	*0.03*	*0.2*	*0.03*	*1*	*0.1*	*0.1*	*0.01*	*0.05*	*0.5*	*0.01*	*0.05*	*5*	*1*	*0.5*	*0.03*	*5*	*2*
10WA-10A	0.8	2.4	509	*ND*	0.53	1.5	0.55	*ND*	170.0	0.1	0.09	0.20	*ND*	0.04	0.05	36	*ND*	3.2	0.36	108	18
10WA-10B	1.0	3.0	87	15	0.66	2.8	0.84	*ND*	171.0	*ND*	0.17	0.20	*ND*	0.08	*ND*	94	*ND*	5.6	0.60	60	24
10WA-10C	3.1	6.9	1430	149	1.62	5.0	1.63	1	54.9	0.2	0.29	1.56	*ND*	0.13	0.40	58	*ND*	8.9	0.81	105	51
10WA-10D	0.4	2.1	806	56	0.53	12.4	0.36	2	104.5	*ND*	0.03	0.19	*ND*	*ND*	0.07	11	*ND*	1.9	0.17	673	13
10WA-11A	1.2	5.3	186	*ND*	1.17	3.2	1.29	*ND*	182.0	0.1	0.27	0.44	*ND*	0.13	0.12	74	*ND*	9.1	0.92	67	24
10WA-11B	1.7	3.7	128	*ND*	1.04	16.3	0.60	*ND*	126.0	0.2	0.11	2.15	*ND*	0.05	0.57	50	*ND*	4.2	0.49	48	30
10WA-11C	1.5	5.0	193	5	1.22	11.8	1.36	1	161.0	0.1	0.27	1.34	*ND*	0.13	0.39	42	*ND*	9.5	0.93	55	17
10WA-11D	0.5	1.6	434	*ND*	0.37	14.6	0.34	*ND*	139.5	*ND*	0.07	0.47	*ND*	0.03	0.12	36	*ND*	2.5	0.29	64	10
11WA-14A	32.7	48.4	14	65	10.55	4.7	11.55	1	197.0	2.2	2.12	0.74	<0.5	0.79	0.31	84	1	65.4	4.48	300	50
11WA-14B	2.3	6.3	146	*ND*	1.89	18.2	1.27	1	202.0	0.2	0.22	3.52	*ND*	0.14	0.89	45	1	7.6	0.90	47	40
11WA-14D	2.0	4.8	377	*ND*	1.08	1.5	1.22	*ND*	187.5	0.1	0.24	0.21	*ND*	0.11	0.06	59	1	6.9	0.68	59	31
11WA-14G	1.0	2.5	208	*ND*	0.60	1.9	0.66	*ND*	164.0	0.1	0.12	0.22	*ND*	0.08	0.05	59	1	4.3	0.52	53	19
11WA-14I	1.6	3.7	180	*ND*	0.91	5.7	0.90	*ND*	168.5	0.1	0.16	0.50	*ND*	0.10	0.13	78	1	6.0	0.70	66	36
11WA-15A	8.6	17.0	5	*ND*	3.71	7.6	4.23	1	234.0	0.5	0.81	1.24	*ND*	0.34	0.34	167	1	21.2	1.79	147	50
11WA-15C	8.4	17.9	8	*ND*	4.02	4.8	4.77	2	219.0	0.6	0.97	0.97	*ND*	0.41	0.40	320	1	25.8	2.20	138	49
11WA-16A	5.3	7.6	750	5	1.71	4.4	1.88	8	9.1	0.3	0.34	1.11	*ND*	0.17	0.21	74	1	9.7	0.90	308	56
11WA-16B	8.9	23.8	14	5	5.84	42.0	5.45	2	8.5	0.6	0.86	3.19	0.5	0.49	0.88	179	1	26.8	2.64	241	188
11WA-16C	13.9	30.0	13	9	7.90	20.2	6.42	2	10.1	1.0	1.15	7.46	*ND*	0.71	1.73	26	1	37.2	4.04	178	277
11WA-16D	19.3	31.6	*ND*	12	8.35	47.9	6.82	3	7.7	1.5	1.41	8.96	*ND*	0.92	2.45	*ND*	3	59.3	5.46	133	359
11WA-17A	13.4	21.9	*ND*	*ND*	5.76	2.3	4.80	2	5.9	1.0	1.22	4.90	*ND*	0.93	2.51	10	2	56.8	5.38	117	301
11WA-17B	7.7	17.0	13	*ND*	4.37	34.7	3.79	4	8.1	0.6	0.69	2.79	*ND*	0.40	0.90	204	1	26.3	2.52	149	156
11WA-18A	4.8	6.0	81	5	1.29	3.8	1.79	1	157.5	0.3	0.40	0.67	*ND*	0.23	0.09	524	*ND*	13.7	1.32	206	100
11WA-18B	1.3	4.7	57	5	0.93	3.8	1.57	*ND*	144.5	*ND*	0.34	0.15	*ND*	0.21	*ND*	341	2	12.0	1.13	175	33
11WA-18C	2.0	7.4	34	*ND*	1.41	5.0	2.41	*ND*	158.5	0.1	0.52	0.15	*ND*	0.29	0.07	404	3	15.0	1.26	196	37
11WA-19A	2.9	4.9	1140	*ND*	1.19	1.5	1.16	5	8.5	0.1	0.19	0.46	*ND*	0.10	0.16	15	2	6.5	0.63	314	39
11WA-19B	8.5	19.0	13	11	4.71	62.2	4.18	3	34.9	0.6	0.73	3.94	0.8	0.47	1.04	171	1	30.3	2.86	350	179
11WA-19C	15.2	42.8	11	16	11.00	61.4	8.86	5	14.8	1.1	1.29	9.30	*ND*	0.69	2.01	57	4	45.0	4.17	317	320
11WA-19D	18.4	42.4	*ND*	51	11.70	14.5	8.40	2	161.0	1.5	1.33	12.85	*ND*	0.80	3.44	*ND*	1	50.5	4.90	36	280

APPENDIX IX

Certificates of Analysis for Assay and Whole Rock Geochemistry by ALS Minerals

ALS Chemex

EXCELLENCE IN ANALYTICAL CHEMISTRY

ALS Canada Ltd.

2103 Dollarton Hwy
North Vancouver BC V7H 0A7
Phone: 604 984 0221 Fax: 604 984 0218 www.alschemex.com

To: NORTHERN SHIELD RESOURCES INC.
440 – 55 METCALFE STREET
OTTAWA ON K1P 6L5

Finalized Date: 14-APR-2010
Account: NORSHI

CERTIFICATE TM10039912

Project: WABASSI

P.O. No.:

This report is for 33 Drill Core samples submitted to our lab in Timmins, ON, Canada on 5-APR-2010.

The following have access to data associated with this certificate:

IAN BLISS	CHRISTINE VAILLANCOURT	

SAMPLE PREPARATION

ALS CODE	DESCRIPTION
WEI-21	Received Sample Weight
LOG-22	Sample login - Rcd w/o BarCode
LOG-24	Pulp Login - Rcd w/o Barcode
CRU-31	Fine crushing - 70% <2mm
CRU-QC	Crushing QC Test
PUL-QC	Pulverizing QC Test
SPL-21	Split sample - riffle splitter
PUL-31	Pulverize split to 85% <75 um

ANALYTICAL PROCEDURES

ALS CODE	DESCRIPTION	INSTRUMENT
PGM-MS23	Pt, Pd, Au 30g FA ICP-MS	ICP-MS
Au-AA25	Ore Grade Au 30g FA AA finish	AAS
PGM-ICP27	Ore grade Pt, Pd and Au by ICP	ICP-AES
ME-ICP61	33 element four acid ICP-AES	ICP-AES

To: NORTHERN SHIELD RESOURCES INC.
ATTN: CHRISTINE VAILLANCOURT
440 – 55 METCALFE STREET
OTTAWA ON K1P 6L5

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.

Signature:

Colin Ramshaw, Vancouver Laboratory Manager

ALS Chemex
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To: NORTHERN SHIELD RESOURCES INC.
440 – 55 METCALFE STREET
OTTAWA ON K1P 6L5

Finalized Date: 14-APR-2010
Account: NORSHI

Project: WABASSI

CERTIFICATE OF ANALYSIS TM10039912

Sample Description	Method / Analyte / Units / LOR	WEI-21 Recvd Wt. kg 0.02	ME-ICP61 Ag ppm 0.5	ME-ICP61 Al % 0.01	ME-ICP61 As ppm 5	ME-ICP61 Ba ppm 10	ME-ICP61 Be ppm 0.5	ME-ICP61 Bi ppm 2	ME-ICP61 Ca % 0.01	ME-ICP61 Cd ppm 0.5	ME-ICP61 Co ppm 1	ME-ICP61 Cr ppm 1	ME-ICP61 Cu ppm 1	ME-ICP61 Fe % 0.01	ME-ICP61 Ga ppm 10	ME-ICP61 K % 0.01
392654		1.27	<0.5	9.52	<5	40	<0.5	<2	6.77	<0.5	33	192	34	4.18	20	0.14
392655		1.20	<0.5	8.95	<5	40	<0.5	2	6.24	<0.5	42	274	70	5.24	10	0.17
392656		1.28	<0.5	9.45	<5	40	<0.5	<2	6.92	<0.5	38	295	114	4.36	20	0.18
392657		1.26	<0.5	9.63	<5	50	<0.5	<2	6.95	0.5	31	273	61	4.55	20	0.19
392658		0.74	0.5	8.72	<5	50	<0.5	<2	6.49	<0.5	36	473	139	4.68	20	0.17
392659		0.83	1.6	8.37	<5	70	<0.5	2	4.26	0.8	22	314	114	5.90	20	0.36
392660		0.05	1.8	7.89	30	320	0.5	8	7.11	0.8	59	134	4390	7.79	20	0.54
392661		1.30	4.6	7.69	<5	100	<0.5	4	0.97	0.9	9	23	736	12.35	30	0.83
392662		1.16	8.5	7.24	8	70	0.6	3	0.09	3.0	8	2	361	8.45	30	0.57
392663		1.05	22.4	6.44	7	80	0.5	<2	0.24	2.4	<1	4	196	5.02	20	0.61
392664		1.04	5.0	6.59	<5	40	0.5	5	0.17	1.0	1	2	454	10.10	20	0.32
392665		0.96	4.1	6.68	<5	60	<0.5	3	0.16	1.3	4	1	767	16.10	20	0.47
392666		1.10	6.7	8.35	5	140	<0.5	4	0.14	1.2	6	3	894	17.40	20	1.68
392667		1.17	9.7	8.21	12	130	<0.5	<2	0.13	1.5	9	9	943	18.15	30	1.87
392668		1.05	7.5	8.86	<5	170	<0.5	6	0.17	3.5	3	21	861	14.25	30	1.81
392669		1.53	8.3	7.40	8	110	<0.5	8	0.20	12.2	9	13	819	21.7	20	1.07
392670		0.05	<0.5	0.38	<5	20	<0.5	<2	0.02	<0.5	1	4	5	0.07	<10	0.15
392671		1.54	14.6	7.18	<5	30	<0.5	5	0.29	3.3	2	8	2030	23.7	30	0.27
392672		1.52	9.2	6.02	5	20	<0.5	6	0.38	1.2	2	4	1310	26.3	20	0.15
392673		1.53	17.2	7.62	<5	40	<0.5	6	0.68	2.2	2	5	1695	23.1	20	0.26
392674		1.50	15.6	7.58	6	30	<0.5	7	0.33	2.7	1	3	1530	19.70	30	0.29
392675		1.42	8.0	7.23	<5	40	<0.5	6	0.34	1.9	<1	7	803	15.60	30	0.25
392676		1.42	17.4	8.23	<5	40	<0.5	5	0.26	1.9	<1	9	926	14.20	30	0.38
392677		1.45	16.7	7.67	<5	40	<0.5	5	0.38	1.8	<1	12	1125	16.15	30	0.32
392678		1.25	28.1	7.50	14	50	<0.5	6	0.29	2.3	2	11	951	17.20	20	0.47
392679		1.43	28.8	5.71	<5	30	<0.5	6	0.29	2.3	1	12	1230	17.75	10	0.32
392680		0.05	2.1	7.92	33	330	0.5	6	7.21	0.8	59	134	4420	7.96	20	0.55
392681		1.57	10.6	4.97	<5	30	<0.5	11	0.49	0.9	4	5	1055	25.9	10	0.29
392682		1.62	4.9	6.25	<5	40	<0.5	8	0.87	<0.5	1	5	1050	28.6	20	0.23
392683		1.61	12.7	5.10	<5	40	<0.5	10	2.25	0.8	5	1	2460	28.4	10	0.20
392684		1.45	7.1	6.56	<5	30	<0.5	2	1.77	0.6	3	7	701	20.2	20	0.17
392685		1.48	18.3	5.38	<5	110	0.5	8	2.07	1.0	1	<1	1795	22.5	20	0.47
392686		1.40	6.5	4.51	14	20	<0.5	8	1.83	0.5	22	<1	1015	26.8	20	0.08

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To: NORTHERN SHIELD RESOURCES INC.
440 – 55 METCALFE STREET
OTTAWA ON K1P 6L5

Finalized Date: 14-APR-2010
Account: NORSHI

Project: WABASSI

CERTIFICATE OF ANALYSIS TM10039912

Method	ME-ICP61	ME-ICP61	ME-ICP61	ME-ICP61	ME-ICP61	ME-ICP61	ME-ICP61	ME-ICP61	ME-ICP61	ME-ICP61	ME-ICP61	ME-ICP61	ME-ICP61	ME-ICP61	ME-ICP61
Analyte	La	Mg	Mn	Mo	Na	Ni	P	Pb	S	Sb	Sc	Sr	Th	Ti	Tl
Units	ppm	%	ppm	ppm	%	ppm	ppm	ppm	%	ppm	ppm	ppm	ppm	%	ppm
Sample Description / LOR	10	0.01	5	1	0.01	1	10	2	0.01	5	1	1	20	0.01	10
392654	<10	4.97	737	1	1.24	178	140	9	0.02	<5	13	176	<20	0.21	<10
392655	<10	6.51	883	<1	1.10	248	110	8	0.03	<5	15	163	<20	0.16	<10
392656	<10	5.21	730	<1	1.05	225	50	23	0.06	<5	11	173	<20	0.09	<10
392657	<10	4.74	799	<1	1.31	152	140	77	0.06	<5	12	187	<20	0.14	<10
392658	10	6.04	849	<1	1.06	194	60	72	0.08	<5	16	151	<20	0.11	<10
392659	10	5.25	802	1	1.11	103	170	180	1.36	<5	16	113	<20	0.13	<10
392660	20	3.44	1205	1	1.64	293	1780	19	0.86	<5	25	598	<20	0.47	<10
392661	20	3.09	384	2	0.69	31	80	80	6.51	<5	7	50	<20	0.06	<10
392662	30	5.15	301	1	0.08	7	60	62	4.98	<5	7	10	<20	0.10	<10
392663	30	3.01	252	1	0.10	3	70	466	2.76	<5	4	13	<20	0.07	<10
392664	40	3.22	323	1	0.21	11	60	61	5.01	<5	3	18	<20	0.04	<10
392665	30	2.40	321	3	0.37	21	40	78	8.48	<5	2	19	<20	0.02	<10
392666	40	0.54	200	3	0.74	24	70	216	8.69	<5	6	32	<20	0.06	<10
392667	50	0.18	69	2	0.92	25	70	266	9.09	<5	10	38	<20	0.08	<10
392668	30	0.56	139	1	1.04	18	50	325	7.15	<5	16	45	<20	0.12	<10
392669	20	1.01	215	1	0.69	30	30	483	>10.0	<5	13	37	<20	0.08	<10
392670	20	0.01	8	<1	0.01	<1	40	<2	0.03	<5	<1	4	<20	0.02	<10
392671	20	2.90	378	<1	0.32	33	30	259	>10.0	<5	10	29	<20	0.08	<10
392672	10	2.21	458	1	0.45	38	20	203	>10.0	<5	8	35	<20	0.05	<10
392673	10	2.46	612	<1	0.65	33	40	390	>10.0	<5	6	41	<20	0.07	<10
392674	20	3.39	664	1	0.38	27	70	477	>10.0	<5	7	23	<20	0.07	<10
392675	<10	3.27	927	1	0.50	22	30	412	9.11	<5	9	36	<20	0.10	<10
392676	10	3.49	1045	2	0.45	20	30	492	8.48	<5	11	24	<20	0.12	10
392677	10	3.27	961	1	0.44	24	30	290	9.21	<5	9	26	<20	0.09	10
392678	10	3.53	704	1	0.38	26	40	287	>10.0	<5	13	22	<20	0.12	<10
392679	10	2.73	633	<1	0.28	28	30	376	>10.0	<5	11	19	<20	0.11	<10
392680	20	3.50	1225	1	1.67	288	1830	20	0.89	<5	26	604	<20	0.48	<10
392681	10	3.47	717	1	0.24	37	150	175	>10.0	<5	10	17	<20	0.11	<10
392682	10	3.72	578	<1	0.13	41	10	89	>10.0	<5	10	17	<20	0.10	<10
392683	30	4.29	523	<1	0.19	38	70	97	>10.0	<5	9	29	<20	0.09	<10
392684	10	6.52	1110	<1	0.27	26	50	114	>10.0	<5	11	22	<20	0.13	<10
392685	10	8.05	962	1	0.16	31	70	198	>10.0	<5	8	20	<20	0.10	10
392686	<10	7.12	665	1	0.10	36	20	123	>10.0	<5	7	15	<20	0.09	<10

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To: NORTHERN SHIELD RESOURCES INC.
440 – 55 METCALFE STREET
OTTAWA ON K1P 6L5

Finalized Date: 14-APR-2010
Account: NORSHI

Project: WABASSI

CERTIFICATE OF ANALYSIS TM10039912

Sample Description	ME-ICP61	ME-ICP61	ME-ICP61	ME-ICP61	PGM-MS23	PGM-MS23	PGM-MS23	Au-AA25	PGM-ICP27	PGM-ICP27	PGM-ICP27
Method / Analyte / Units / LOR	U ppm 10	V ppm 1	W ppm 10	Zn ppm 2	Au ppm 0.001	Pt ppm 0.0005	Pd ppm 0.001	Au ppm 0.01	Au ppm 0.03	Pt ppm 0.03	Pd ppm 0.03
392654	<10	73	<10	57	0.004	0.0020	0.003				
392655	<10	74	<10	61	0.004	0.0028	0.002				
392656	<10	53	<10	82	0.004	0.0063	0.007				
392657	<10	60	<10	83	0.004	0.0054	0.005				
392658	<10	59	<10	73	0.008	0.0067	0.001				
392659	<10	58	<10	224	0.010	0.0035	0.001				
392660	<10	229	<10	130	0.129	0.327	>1.00		0.16	0.36	1.40
392661	<10	23	<10	270	0.025	0.0017	0.001				
392662	<10	4	<10	613	0.026	0.0010	<0.001				
392663	<10	2	<10	389	0.014	0.0005	<0.001				
392664	<10	2	<10	151	0.010	0.0010	<0.001				
392665	<10	2	<10	162	0.045	0.0018	0.001				
392666	<10	27	<10	141	0.032	0.0024	0.001				
392667	<10	48	<10	131	0.021	0.0039	0.001				
392668	<10	117	<10	243	0.172	0.0023	0.001				
392669	<10	83	<10	789	0.021	0.0063	0.002				
392670	<10	2	<10	3	0.001	<0.0005	<0.001				
392671	<10	37	<10	492	0.041	0.0031	0.001				
392672	<10	38	<10	83	0.022	0.0054	0.002				
392673	<10	31	<10	138	0.065	0.0067	0.002				
392674	<10	22	<10	285	0.120	0.0060	0.002				
392675	<10	68	<10	197	0.013	0.0046	0.002				
392676	<10	79	<10	123	0.016	0.0013	<0.001				
392677	<10	78	<10	110	0.025	0.0022	0.001				
392678	<10	69	<10	180	>1.00	0.0021	0.001	1.03			
392679	<10	46	<10	157	0.029	0.0025	0.001				
392680	<10	233	<10	128	0.191	0.432	>1.00		0.16	0.51	1.39
392681	<10	47	<10	140	0.028	0.0091	0.002				
392682	<10	39	<10	1790	0.022	0.0076	0.003				
392683	<10	27	<10	1070	0.055	0.0091	0.003				
392684	<10	49	<10	2080	0.019	0.0103	0.001				
392685	<10	15	<10	3180	0.148	0.0094	0.002				
392686	<10	15	<10	2530	0.032	0.0211	0.004				

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To: NORTHERN SHIELD RESOURCES INC.
440 – 55 METCALFE STREET
OTTAWA ON K1P 6L5

Finalized Date: 22-APR-2010
Account: NORSHI

CERTIFICATE TM10039913

Project: WABASSI
P.O. No.:
This report is for 98 Drill Core samples submitted to our lab in Timmins, ON, Canada on 5-APR-2010.
The following have access to data associated with this certificate:

IAN BLISS	CHRISTINE VAILLANCOURT	

SAMPLE PREPARATION

ALS CODE	DESCRIPTION
WEI-21	Received Sample Weight
LOG-22	Sample login - Rcd w/o BarCode
LOG-24	Pulp Login - Rcd w/o Barcode
CRU-31	Fine crushing - 70% <2mm
CRU-QC	Crushing QC Test
PUL-QC	Pulverizing QC Test
SPL-21	Split sample - riffle splitter
PUL-31	Pulverize split to 85% <75 um

ANALYTICAL PROCEDURES

ALS CODE	DESCRIPTION	INSTRUMENT
PGM-MS23	Pt, Pd, Au 30g FA ICP-MS	ICP-MS
PGM-ICP27	Ore grade Pt, Pd and Au by ICP	ICP-AES
ME-ICP61	33 element four acid ICP-AES	ICP-AES

To: NORTHERN SHIELD RESOURCES INC.
ATTN: CHRISTINE VAILLANCOURT
440 – 55 METCALFE STREET
OTTAWA ON K1P 6L5

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.

Signature:
Colin Ramshaw, Vancouver Laboratory Manager

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To: NORTHERN SHIELD RESOURCES INC.
440 – 55 METCALFE STREET
OTTAWA ON K1P 6L5

Finalized Date: 22-APR-2010
Account: NORSHI

Project: WABASSI

CERTIFICATE OF ANALYSIS TM10039913

Sample Description	Method / Analyte / Units / LOR	WEI-21 Recvd Wt. kg 0.02	ME-ICP61 Ag ppm 0.5	ME-ICP61 Al % 0.01	ME-ICP61 As ppm 5	ME-ICP61 Ba ppm 10	ME-ICP61 Be ppm 0.5	ME-ICP61 Bi ppm 2	ME-ICP61 Ca % 0.01	ME-ICP61 Cd ppm 0.5	ME-ICP61 Co ppm 1	ME-ICP61 Cr ppm 1	ME-ICP61 Cu ppm 1	ME-ICP61 Fe % 0.01	ME-ICP61 Ga ppm 10	ME-ICP61 K % 0.01
392551		0.52	<0.5	8.97	60	80	<0.5	<2	7.54	<0.5	58	28	86	11.35	20	0.37
392552		0.27	<0.5	5.07	5	40	<0.5	<2	8.65	<0.5	60	72	320	13.50	20	0.30
392553		0.88	<0.5	6.93	50	50	<0.5	5	7.64	<0.5	63	120	141	11.80	20	0.30
392554		0.55	<0.5	7.60	7	30	<0.5	<2	7.65	<0.5	36	86	140	12.15	20	0.17
392555		1.56	<0.5	8.10	9	30	<0.5	3	7.78	<0.5	30	192	86	7.47	20	0.15
392556		1.88	<0.5	8.87	14	70	<0.5	4	8.34	<0.5	24	137	11	6.55	20	0.37
392557		1.94	1.9	2.13	<5	20	<0.5	<2	8.45	<0.5	97	103	942	19.55	20	0.12
392558		0.83	<0.5	9.23	10	50	<0.5	6	6.38	<0.5	21	76	3	5.93	20	0.19
392559		1.40	<0.5	8.44	7	70	<0.5	<2	7.04	<0.5	53	28	136	11.45	20	0.37
392560		1.41	0.5	7.95	10	30	<0.5	<2	7.80	<0.5	56	42	179	11.80	20	0.29
392561		0.69	1.9	8.80	5	110	<0.5	4	6.28	<0.5	56	152	1235	10.70	20	0.46
392562		1.21	<0.5	9.37	7	170	<0.5	2	6.15	<0.5	44	123	61	10.65	20	0.64
392563		0.64	1.3	8.61	<5	70	<0.5	2	5.32	<0.5	62	153	827	12.25	20	0.35
392564		0.95	2.3	9.26	7	50	<0.5	4	5.09	0.5	97	94	1165	10.25	20	0.21
392565		1.51	<0.5	8.13	7	40	<0.5	2	5.36	<0.5	52	47	320	8.67	20	0.13
392566		2.22	<0.5	8.80	<5	40	<0.5	2	6.08	<0.5	47	61	105	8.11	20	0.18
392567		0.74	1.5	9.58	7	70	<0.5	2	5.60	<0.5	62	77	998	9.16	20	0.25
392568		1.29	<0.5	9.25	11	30	<0.5	2	7.49	<0.5	34	123	34	5.66	20	0.06
392569		0.86	<0.5	8.96	6	20	<0.5	<2	8.41	<0.5	44	148	101	6.09	10	0.06
392570		1.37	<0.5	8.48	<5	20	<0.5	5	7.49	<0.5	37	52	60	5.68	10	0.02
392571		0.05	<0.5	0.39	<5	20	<0.5	<2	0.04	<0.5	<1	4	2	0.05	<10	0.15
392572		1.50	<0.5	8.43	<5	30	<0.5	4	7.43	<0.5	36	48	93	5.64	20	0.07
392573		1.66	1.2	9.03	5	20	<0.5	3	7.60	0.6	118	212	1055	8.26	20	0.05
392574		1.05	1.0	9.20	10	10	<0.5	3	6.27	<0.5	112	328	911	9.33	20	0.04
392575		0.89	0.7	9.25	11	20	<0.5	2	6.91	0.8	63	148	479	7.07	20	0.03
392576		1.35	0.9	9.41	7	20	<0.5	4	6.78	<0.5	99	204	806	8.49	20	0.03
392577		0.67	<0.5	9.23	6	10	<0.5	3	6.55	<0.5	53	149	199	6.88	20	0.03
392578		0.70	0.6	9.94	9	10	<0.5	7	7.51	<0.5	67	151	352	7.47	20	0.04
392579		1.55	0.7	9.45	<5	20	<0.5	3	7.41	1.0	57	109	300	6.60	10	0.04
392580		1.99	<0.5	9.23	6	20	<0.5	3	8.03	0.6	35	60	100	6.09	20	0.07
392581		2.19	<0.5	8.54	6	20	<0.5	2	7.78	<0.5	36	65	70	5.63	20	0.06
392582		1.78	<0.5	8.57	8	20	<0.5	4	7.80	0.5	47	56	117	6.25	20	0.09
392583		1.03	<0.5	7.94	9	30	<0.5	2	7.20	<0.5	52	86	209	6.60	20	0.10
392584		2.30	<0.5	9.01	9	170	<0.5	2	6.92	0.6	35	67	64	6.41	20	0.33
392585		1.94	<0.5	8.29	5	510	0.7	<2	4.74	<0.5	25	86	60	5.88	20	0.96
392586		0.77	1.1	6.07	6	250	1.5	8	3.60	<0.5	5	2	61	9.22	20	1.15
392587		1.02	0.7	6.02	5	380	0.9	<2	3.23	<0.5	5	3	54	8.06	20	1.64
392588		1.83	0.7	5.79	7	270	1.2	<2	3.91	<0.5	6	1	28	8.58	20	1.39
392589		1.78	0.7	6.20	<5	240	1.9	<2	3.85	<0.5	7	2	45	9.50	20	1.23
392590		0.65	6.1	5.19	<5	180	1.2	537	3.19	<0.5	2	2	73	9.55	20	0.88

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To: NORTHERN SHIELD RESOURCES INC.
440 – 55 METCALFE STREET
OTTAWA ON K1P 6L5

Finalized Date: 22-APR-2010
Account: NORSHI

Project: WABASSI

CERTIFICATE OF ANALYSIS TM10039913

Sample Description	Method / Analyte / Units / LOR	ME-ICP61 La ppm 10	ME-ICP61 Mg % 0.01	ME-ICP61 Mn ppm 5	ME-ICP61 Mo ppm 1	ME-ICP61 Na % 0.01	ME-ICP61 Ni ppm 1	ME-ICP61 P ppm 10	ME-ICP61 Pb ppm 2	ME-ICP61 S % 0.01	ME-ICP61 Sb ppm 5	ME-ICP61 Sc ppm 1	ME-ICP61 Sr ppm 1	ME-ICP61 Th ppm 20	ME-ICP61 Ti % 0.01	ME-ICP61 Tl ppm 10
392551		<10	4.57	2390	<1	1.11	278	120	2	0.20	<5	37	106	<20	1.13	<10
392552		<10	4.73	3070	<1	0.61	217	4920	<2	0.82	6	56	37	<20	2.38	<10
392553		<10	4.73	2480	<1	0.92	206	1530	3	0.35	5	51	71	<20	1.25	<10
392554		<10	2.85	1770	<1	1.59	80	6600	3	0.33	6	48	191	<20	1.83	<10
392555		<10	4.42	1635	<1	1.45	99	340	<2	0.18	<5	46	143	<20	0.72	<10
392556		10	3.56	1295	<1	1.46	80	380	<2	0.20	<5	27	192	<20	0.34	<10
392557		10	3.08	3140	<1	0.32	261	>10000	17	2.50	10	63	61	<20	3.66	<10
392558		<10	3.18	1310	<1	1.79	76	670	2	0.01	<5	24	204	<20	0.30	<10
392559		<10	4.59	2190	<1	0.96	146	240	<2	0.23	<5	40	133	<20	0.98	<10
392560		<10	4.95	2320	<1	0.94	161	120	<2	0.23	<5	46	110	<20	0.98	<10
392561		<10	5.05	2240	<1	1.03	132	210	<2	0.35	<5	35	105	<20	0.76	<10
392562		<10	4.85	2110	<1	1.24	84	230	<2	0.08	<5	29	125	<20	0.64	<10
392563		<10	5.43	2470	<1	1.02	93	250	<2	0.34	<5	36	57	<20	1.00	<10
392564		<10	4.76	1685	<1	1.10	279	150	<2	0.97	<5	21	139	<20	0.39	<10
392565		<10	4.87	1735	<1	1.03	167	280	<2	0.23	<5	12	129	<20	0.34	<10
392566		<10	4.84	1750	<1	1.04	184	430	<2	0.18	<5	23	139	<20	0.35	<10
392567		<10	4.22	1975	<1	1.67	106	260	<2	0.63	<5	29	173	<20	0.66	<10
392568		<10	5.04	1220	<1	1.33	108	140	<2	0.02	<5	26	198	<20	0.20	<10
392569		<10	6.00	1370	<1	1.08	160	320	2	0.13	<5	33	189	<20	0.22	<10
392570		<10	4.95	1370	<1	1.09	103	180	<2	0.07	<5	32	128	<20	0.19	<10
392571		20	0.02	8	1	0.01	1	40	<2	0.01	<5	<1	7	<20	0.02	<10
392572		<10	4.81	1295	<1	0.82	104	160	<2	0.08	<5	32	131	<20	0.19	<10
392573		<10	4.94	1320	<1	0.63	351	160	2	1.22	<5	28	214	<20	0.35	<10
392574		<10	5.93	1445	<1	0.66	329	120	<2	1.14	<5	24	176	<20	0.41	<10
392575		<10	4.83	1385	<1	0.83	168	190	<2	0.57	<5	18	200	<20	0.29	<10
392576		<10	5.51	1430	<1	0.81	261	130	<2	1.15	<5	21	176	<20	0.30	<10
392577		<10	5.27	1315	<1	0.83	128	100	<2	0.42	<5	16	186	<20	0.18	<10
392578		<10	5.76	1450	<1	0.86	166	110	2	0.70	<5	25	202	<20	0.21	<10
392579		<10	5.26	1390	<1	1.04	180	100	3	0.53	<5	29	179	<20	0.19	<10
392580		<10	5.47	1490	<1	1.11	106	90	3	0.16	<5	34	180	<20	0.20	<10
392581		<10	5.09	1410	<1	1.20	113	140	2	0.10	<5	30	160	<20	0.20	<10
392582		<10	5.45	1575	<1	1.06	144	170	4	0.14	<5	29	191	<20	0.25	<10
392583		<10	5.65	1610	<1	1.06	181	170	3	0.27	<5	33	152	<20	0.23	<10
392584		10	4.56	1590	<1	1.32	112	480	5	0.10	<5	30	206	<20	0.32	<10
392585		20	2.80	1180	<1	1.86	77	870	5	0.13	<5	17	229	<20	0.42	<10
392586		20	0.24	1915	4	2.33	4	1170	12	0.82	7	27	144	<20	0.49	<10
392587		20	0.25	1620	1	2.49	2	1270	8	0.67	<5	27	137	<20	0.49	<10
392588		20	0.26	1930	<1	2.13	<1	1300	6	0.35	<5	27	91	<20	0.50	<10
392589		20	0.32	1965	1	1.93	1	1480	9	0.24	<5	31	149	<20	0.57	<10
392590		20	0.21	1260	4	2.55	<1	1030	38	3.45	<5	20	117	<20	0.41	<10

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440 – 55 METCALFE STREET
OTTAWA ON K1P 6L5

Finalized Date: 22-APR-2010
Account: NORSHI

Project: WABASSI

CERTIFICATE OF ANALYSIS TM10039913

Sample Description	Method / Analyte / Units / LOR	ME-ICP61 U ppm 10	ME-ICP61 V ppm 1	ME-ICP61 W ppm 10	ME-ICP61 Zn ppm 2	PGM-MS23 Au ppm 0.001	PGM-MS23 Pt ppm 0.0005	PGM-MS23 Pd ppm 0.001	PGM-ICP27 Au ppm 0.03	PGM-ICP27 Pt ppm 0.03	PGM-ICP27 Pd ppm 0.03
392551		<10	880	<10	222	0.003	0.0005	<0.001			
392552		<10	897	<10	204	0.004	0.0006	<0.001			
392553		<10	611	<10	218	0.004	0.0008	<0.001			
392554		10	288	<10	138	0.008	0.0015	0.001			
392555		10	189	<10	161	0.004	0.0013	<0.001			
392556		10	135	<10	146	0.004	0.0010	<0.001			
392557		<10	476	<10	122	0.014	0.0030	0.002			
392558		10	85	<10	145	0.003	0.0014	<0.001			
392559		10	741	<10	246	0.007	0.0005	<0.001			
392560		10	776	<10	249	0.010	<0.0005	<0.001			
392561		<10	377	<10	313	0.088	0.0032	0.003			
392562		10	284	<10	279	0.005	0.0038	0.003			
392563		<10	338	<10	339	0.030	0.0031	0.003			
392564		10	202	<10	295	0.042	0.0016	0.002			
392565		<10	178	<10	275	0.010	0.0005	<0.001			
392566		10	209	<10	254	0.004	0.0007	<0.001			
392567		10	279	<10	266	0.032	0.0018	0.002			
392568		10	115	<10	148	0.006	0.0021	<0.001			
392569		10	130	<10	166	0.008	0.0029	0.001			
392570		10	109	<10	146	0.010	0.0013	0.001			
392571		<10	2	<10	<2	0.006	0.0007	<0.001			
392572		<10	112	<10	148	0.014	0.0015	0.001			
392573		<10	157	<10	160	0.022	0.0026	0.004			
392574		<10	179	<10	192	0.016	0.0032	0.004			
392575		10	138	<10	223	0.009	0.0022	0.002			
392576		10	147	<10	180	0.013	0.0028	0.004			
392577		10	104	<10	167	0.010	0.0025	0.003			
392578		<10	117	<10	159	0.009	0.0025	0.003			
392579		10	115	<10	225	0.009	0.0021	0.002			
392580		10	121	<10	156	0.004	0.0009	<0.001			
392581		10	124	<10	148	0.008	0.0015	<0.001			
392582		10	135	<10	225	0.007	0.0010	<0.001			
392583		10	124	<10	233	0.013	0.0021	0.001			
392584		10	137	<10	207	0.008	0.0013	<0.001			
392585		10	111	<10	178	0.009	0.0016	0.001			
392586		<10	2	<10	220	0.014	0.0015	0.001			
392587		<10	1	<10	194	0.030	0.0011	<0.001			
392588		<10	1	<10	185	0.011	0.0010	0.001			
392589		<10	1	<10	185	0.002	0.0007	<0.001			
392590		10	5	<10	108	0.111	0.0020	0.001			

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To: NORTHERN SHIELD RESOURCES INC.
440 – 55 METCALFE STREET
OTTAWA ON K1P 6L5

Finalized Date: 22-APR-2010
Account: NORSHI

Project: WABASSI

CERTIFICATE OF ANALYSIS TM10039913

Sample Description	Method / Analyte / Units / LOR	WEI-21 Recvd Wt. kg 0.02	ME-ICP61 Ag ppm 0.5	ME-ICP61 Al % 0.01	ME-ICP61 As ppm 5	ME-ICP61 Ba ppm 10	ME-ICP61 Be ppm 0.5	ME-ICP61 Bi ppm 2	ME-ICP61 Ca % 0.01	ME-ICP61 Cd ppm 0.5	ME-ICP61 Co ppm 1	ME-ICP61 Cr ppm 1	ME-ICP61 Cu ppm 1	ME-ICP61 Fe % 0.01	ME-ICP61 Ga ppm 10	ME-ICP61 K % 0.01
392591		1.73	0.8	5.98	<5	270	1.4	<2	3.49	<0.5	6	4	23	8.96	20	1.32
392592		0.05	1.8	7.81	34	310	0.5	<2	6.92	<0.5	58	127	4270	7.88	20	0.55
392593		1.27	<0.5	5.93	<5	310	1.3	<2	1.83	<0.5	2	3	24	2.03	20	1.14
392594		0.91	<0.5	6.79	5	330	1.1	5	1.77	<0.5	3	6	9	1.59	20	1.17
392595		1.58	1.8	5.89	17	90	0.8	116	0.93	<0.5	26	7	5	10.10	10	0.84
392596		1.52	1.6	5.64	16	50	1.0	97	0.78	<0.5	26	6	7	9.33	10	1.27
392597		1.42	0.8	5.04	6	60	1.0	78	1.20	<0.5	15	7	12	8.92	10	1.25
392598		1.47	1.1	6.62	<5	390	1.6	18	2.27	<0.5	6	13	1	3.44	20	1.86
392599		1.90	1.4	6.13	13	70	1.4	66	1.40	<0.5	16	6	2	9.45	20	1.61
392600		1.63	1.0	6.72	<5	340	1.2	37	1.69	<0.5	6	4	2	3.77	20	1.36
392601		1.29	1.3	7.36	6	320	1.2	30	1.66	<0.5	6	3	4	3.45	20	1.28
392602		1.33	1.9	6.36	6	300	1.1	75	1.67	<0.5	13	5	7	4.03	20	1.16
392603		1.46	<0.5	9.72	5	40	<0.5	<2	6.09	<0.5	32	3	22	10.95	20	0.11
392604		1.18	0.6	7.32	5	20	<0.5	<2	7.11	<0.5	35	17	86	13.30	20	0.06
392605		1.04	0.6	7.91	<5	30	<0.5	<2	6.18	<0.5	49	12	99	14.25	20	0.07
392606		1.26	0.6	7.99	9	30	<0.5	<2	6.56	<0.5	50	18	90	13.20	20	0.07
392607		1.69	0.6	7.16	6	30	<0.5	<2	7.32	<0.5	44	20	107	12.15	20	0.07
392608		1.32	<0.5	7.81	<5	20	<0.5	<2	6.95	<0.5	35	19	95	12.90	20	0.05
392609		1.37	0.5	7.85	7	20	<0.5	<2	7.44	<0.5	32	22	85	10.90	20	0.06
392610		1.42	<0.5	7.95	<5	20	<0.5	<2	7.34	<0.5	26	24	29	10.15	20	0.05
392611		1.37	<0.5	10.15	5	30	<0.5	<2	6.05	<0.5	22	4	5	8.12	20	0.06
392612		2.49	<0.5	9.60	<5	30	<0.5	<2	6.47	<0.5	40	5	5	7.99	20	0.05
392613		0.05	<0.5	0.38	5	20	<0.5	<2	0.03	<0.5	<1	3	2	0.06	<10	0.15
392614		1.95	<0.5	7.59	7	20	<0.5	<2	7.23	<0.5	50	19	111	9.70	20	0.05
392615		1.33	<0.5	9.35	8	20	<0.5	<2	6.79	<0.5	41	6	34	8.65	20	0.07
392616		1.37	<0.5	8.51	7	30	<0.5	<2	7.17	<0.5	43	28	79	8.56	20	0.07
392617		1.31	0.5	9.92	10	120	<0.5	<2	6.13	<0.5	40	3	9	9.58	20	0.07
392618		1.27	0.6	9.88	<5	30	<0.5	<2	6.16	<0.5	37	4	12	9.30	20	0.06
392619		1.43	<0.5	9.68	7	30	<0.5	<2	6.29	<0.5	38	3	10	9.72	20	0.06
392620		1.39	0.6	9.60	6	30	<0.5	<2	6.07	<0.5	41	3	19	9.84	20	0.05
392621		1.49	0.5	7.51	7	20	<0.5	<2	7.26	<0.5	35	22	56	11.25	20	0.05
392622		1.37	<0.5	7.49	<5	20	<0.5	<2	7.31	<0.5	26	24	52	10.65	20	0.05
392623		1.48	<0.5	9.38	<5	30	<0.5	<2	7.03	<0.5	26	6	33	9.94	20	0.05
392624		1.43	<0.5	9.54	<5	20	<0.5	<2	6.99	<0.5	27	8	39	10.50	20	0.04
392625		1.48	<0.5	7.44	<5	20	<0.5	<2	7.44	<0.5	34	23	73	12.75	20	0.03
392631		1.33	<0.5	8.24	5	20	<0.5	<2	6.09	<0.5	55	2	32	9.79	20	0.04
392632		1.39	<0.5	9.11	7	20	<0.5	<2	6.42	<0.5	48	1	27	8.95	20	0.03
392633		0.44	<0.5	8.70	<5	20	<0.5	<2	6.37	<0.5	47	<1	26	9.45	20	0.03
392634		0.05	1.9	8.23	16	330	0.6	<2	7.27	<0.5	58	131	4620	8.29	20	0.58
392635		2.14	<0.5	8.64	5	20	<0.5	<2	7.01	<0.5	44	1	49	9.29	20	0.03

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To: NORTHERN SHIELD RESOURCES INC.
440 – 55 METCALFE STREET
OTTAWA ON K1P 6L5

Finalized Date: 22-APR-2010
Account: NORSHI

Project: WABASSI

CERTIFICATE OF ANALYSIS TM10039913

Sample Description	Method / Analyte / Units / LOR	ME-ICP61 La ppm 10	ME-ICP61 Mg % 0.01	ME-ICP61 Mn ppm 5	ME-ICP61 Mo ppm 1	ME-ICP61 Na % 0.01	ME-ICP61 Ni ppm 1	ME-ICP61 P ppm 10	ME-ICP61 Pb ppm 2	ME-ICP61 S % 0.01	ME-ICP61 Sb ppm 5	ME-ICP61 Sc ppm 1	ME-ICP61 Sr ppm 1	ME-ICP61 Th ppm 20	ME-ICP61 Ti % 0.01	ME-ICP61 Tl ppm 10
392591		20	0.31	1850	1	2.02	<1	1410	4	0.24	<5	29	148	<20	0.55	<10
392592		20	3.50	1175	<1	1.69	284	1750	18	0.82	<5	24	587	<20	0.47	<10
392593		40	0.12	497	<1	3.46	2	80	5	0.44	<5	3	99	<20	0.10	<10
392594		30	0.17	453	1	4.40	2	160	4	0.77	<5	6	70	<20	0.08	<10
392595		20	0.15	243	11	3.69	13	230	11	>10.0	6	4	53	<20	0.08	<10
392596		30	0.14	170	43	2.82	10	290	6	>10.0	7	3	59	<20	0.10	<10
392597		30	0.23	260	85	2.13	9	470	9	8.88	<5	7	62	<20	0.15	<10
392598		20	0.27	446	2	3.27	4	420	3	2.85	<5	8	114	<20	0.24	<10
392599		20	0.18	272	3	2.87	6	390	10	>10.0	6	5	92	<20	0.13	<10
392600		50	0.18	320	3	3.94	3	370	7	3.74	5	5	94	<20	0.15	<10
392601		60	0.16	316	2	4.90	2	120	6	3.46	<5	4	98	20	0.08	<10
392602		20	0.17	320	2	3.93	4	240	12	3.79	<5	4	74	<20	0.11	<10
392603		<10	1.56	1660	<1	2.67	2	2850	<2	0.07	<5	15	324	<20	0.93	<10
392604		<10	2.50	2050	<1	1.89	25	1880	<2	0.19	<5	55	233	<20	1.59	<10
392605		<10	2.40	1925	<1	2.16	29	7270	<2	0.19	<5	22	268	<20	1.58	<10
392606		<10	2.58	1735	<1	2.18	35	5340	<2	0.15	<5	29	266	<20	1.61	<10
392607		<10	3.06	1915	<1	1.93	29	2440	<2	0.17	<5	53	232	<20	1.21	<10
392608		<10	2.88	1770	<1	1.97	35	690	<2	0.14	<5	49	246	<20	1.44	<10
392609		<10	2.89	1570	<1	1.93	33	1510	3	0.12	<5	52	245	<20	1.11	<10
392610		<10	3.08	1405	<1	1.94	7	230	<2	0.04	<5	45	262	<20	1.16	<10
392611		<10	1.45	843	<1	2.75	5	2250	<2	0.01	<5	5	355	<20	0.96	<10
392612		<10	2.00	1070	<1	2.42	5	3500	<2	0.01	<5	13	314	<20	1.07	<10
392613		20	0.01	5	1	0.01	2	40	<2	0.03	<5	<1	4	<20	0.02	<10
392614		<10	3.53	1510	<1	1.67	32	550	<2	0.14	<5	36	229	<20	1.10	<10
392615		<10	2.19	1140	<1	2.19	31	1970	2	0.04	<5	19	295	<20	1.06	<10
392616		<10	3.09	1370	<1	1.88	37	470	<2	0.10	<5	32	260	<20	0.79	<10
392617		<10	1.70	1340	<1	2.59	2	2490	<2	0.02	<5	12	340	<20	0.89	<10
392618		<10	1.61	1285	<1	2.62	<1	2480	<2	0.02	<5	11	342	<20	0.89	<10
392619		<10	1.76	1380	<1	2.54	<1	2740	<2	0.02	<5	14	334	<20	0.95	<10
392620		<10	1.63	1345	<1	2.60	3	2780	<2	0.03	<5	9	337	<20	0.92	<10
392621		<10	3.16	2200	<1	1.71	34	2650	2	0.14	<5	47	233	<20	1.19	<10
392622		<10	3.19	2160	<1	1.68	29	2550	<2	0.14	<5	49	230	<20	1.04	<10
392623		<10	1.76	1485	<1	2.46	20	2570	<2	0.09	<5	23	314	<20	1.23	<10
392624		<10	1.90	1555	<1	2.44	26	2760	<2	0.10	<5	22	311	<20	1.23	<10
392625		<10	3.11	2170	<1	1.77	36	3340	<2	0.19	<5	47	227	<20	1.15	<10
392631		<10	3.65	1190	<1	1.93	2	70	<2	0.10	<5	27	251	<20	2.08	<10
392632		<10	3.06	1060	<1	2.27	3	70	<2	0.09	<5	21	299	<20	1.90	<10
392633		<10	3.69	1215	<1	2.10	4	50	<2	0.09	<5	29	270	<20	2.05	<10
392634		20	3.64	1225	1	1.73	279	1870	17	0.79	<5	25	628	<20	0.50	<10
392635		<10	3.18	1095	<1	2.03	2	70	3	0.12	<5	34	261	<20	2.09	<10

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To: NORTHERN SHIELD RESOURCES INC.
440 – 55 METCALFE STREET
OTTAWA ON K1P 6L5

Finalized Date: 22-APR-2010
Account: NORSHI

Project: WABASSI

CERTIFICATE OF ANALYSIS TM10039913

Sample Description / Method / Analyte / Units / LOR	ME-ICP61 U ppm 10	ME-ICP61 V ppm 1	ME-ICP61 W ppm 10	ME-ICP61 Zn ppm 2	PGM-MS23 Au ppm 0.001	PGM-MS23 Pt ppm 0.0005	PGM-MS23 Pd ppm 0.001	PGM-ICP27 Au ppm 0.03	PGM-ICP27 Pt ppm 0.03	PGM-ICP27 Pd ppm 0.03
392591	<10	1	<10	199	0.005	<0.0005	<0.001			
392592	10	224	<10	125	0.187	0.383	>1.00	0.15	0.43	1.30
392593	<10	10	<10	54	0.004	0.0006	0.001			
392594	<10	23	10	42	0.003	0.0005	<0.001			
392595	<10	18	10	17	0.030	0.0063	0.002			
392596	<10	17	10	8	0.040	0.0054	0.001			
392597	10	22	40	12	0.044	0.0087	0.001			
392598	<10	23	40	30	0.014	0.0075	0.001			
392599	<10	20	20	14	0.199	0.0038	0.001			
392600	<10	20	20	18	0.075	0.0018	0.001			
392601	<10	16	10	21	0.011	<0.0005	<0.001			
392602	<10	16	10	25	0.016	0.0006	<0.001			
392603	<10	36	<10	122	0.003	0.0007	<0.001			
392604	<10	218	<10	147	0.004	0.0006	<0.001			
392605	<10	190	<10	161	0.003	0.0006	<0.001			
392606	<10	282	<10	148	0.003	0.0010	<0.001			
392607	<10	202	<10	133	0.003	0.0007	<0.001			
392608	<10	298	<10	129	0.003	<0.0005	<0.001			
392609	<10	258	<10	103	0.003	<0.0005	<0.001			
392610	<10	50	<10	98	0.003	<0.0005	<0.001			
392611	<10	29	<10	92	0.003	0.0005	<0.001			
392612	<10	41	<10	115	0.004	<0.0005	<0.001			
392613	<10	2	<10	<2	0.003	<0.0005	<0.001			
392614	<10	271	<10	130	0.005	<0.0005	<0.001			
392615	<10	307	<10	122	0.003	0.0005	<0.001			
392616	<10	253	<10	119	0.003	<0.0005	<0.001			
392617	<10	23	<10	104	0.004	0.0006	<0.001			
392618	<10	26	<10	100	0.004	<0.0005	<0.001			
392619	<10	32	<10	106	0.004	<0.0005	<0.001			
392620	<10	45	<10	106	0.003	<0.0005	<0.001			
392621	<10	256	<10	126	0.003	0.0005	<0.001			
392622	<10	209	<10	117	0.003	0.0005	<0.001			
392623	<10	254	<10	112	0.004	<0.0005	<0.001			
392624	<10	254	<10	112	0.003	<0.0005	<0.001			
392625	<10	230	<10	121	0.003	0.0005	<0.001			
392631	<10	238	<10	83	0.002	<0.0005	<0.001			
392632	<10	204	<10	77	0.001	<0.0005	<0.001			
392633	<10	234	<10	81	0.001	<0.0005	<0.001			
392634	<10	238	<10	136	0.162	0.401	>1.00	0.21	0.39	1.59
392635	<10	309	<10	75	0.001	<0.0005	0.001			

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To: NORTHERN SHIELD RESOURCES INC.
440 – 55 METCALFE STREET
OTTAWA ON K1P 6L5

Finalized Date: 22-APR-2010
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CERTIFICATE OF ANALYSIS TM10039913

Sample Description	Method / Analyte / Units / LOR	WEI-21 Recvd Wt. kg 0.02	ME-ICP61 Ag ppm 0.5	ME-ICP61 Al % 0.01	ME-ICP61 As ppm 5	ME-ICP61 Ba ppm 10	ME-ICP61 Be ppm 0.5	ME-ICP61 Bi ppm 2	ME-ICP61 Ca % 0.01	ME-ICP61 Cd ppm 0.5	ME-ICP61 Co ppm 1	ME-ICP61 Cr ppm 1	ME-ICP61 Cu ppm 1	ME-ICP61 Fe % 0.01	ME-ICP61 Ga ppm 10	ME-ICP61 K % 0.01
392636		1.50	<0.5	9.08	<5	20	<0.5	<2	7.49	<0.5	46	1	47	9.54	20	0.03
392637		1.38	<0.5	8.68	<5	20	<0.5	<2	7.41	<0.5	46	1	43	9.62	20	0.03
392638		1.39	<0.5	8.69	10	20	<0.5	<2	7.36	<0.5	46	3	46	9.29	20	0.03
392639		1.41	<0.5	8.81	<5	20	<0.5	<2	7.27	<0.5	48	4	49	9.49	20	0.04
392640		1.39	<0.5	8.55	<5	30	<0.5	<2	6.81	<0.5	35	246	87	5.10	20	0.19
392641		1.52	<0.5	8.88	<5	30	<0.5	<2	7.19	<0.5	33	265	137	4.73	10	0.09
392642		1.06	<0.5	8.59	6	30	<0.5	<2	7.18	<0.5	35	289	156	4.92	10	0.09
392643		1.29	<0.5	9.15	9	40	<0.5	<2	6.53	<0.5	32	258	59	4.93	10	0.54
392644		1.07	<0.5	7.83	6	50	<0.5	<2	5.92	<0.5	27	150	47	4.55	20	0.57
392645		1.25	<0.5	8.33	<5	20	<0.5	<2	7.03	<0.5	33	286	101	4.20	10	0.07
392646		1.19	<0.5	9.09	<5	30	<0.5	<2	7.31	<0.5	34	286	112	4.63	10	0.10
392647		1.25	<0.5	8.49	<5	20	<0.5	<2	6.98	<0.5	35	313	110	4.57	10	0.08
392648		1.25	<0.5	8.47	<5	20	<0.5	<2	6.79	<0.5	36	313	112	4.78	20	0.06
392649		1.32	<0.5	8.70	<5	20	<0.5	<2	6.96	<0.5	35	324	112	4.77	10	0.05
392650		1.35	<0.5	8.38	<5	20	<0.5	<2	6.94	<0.5	35	306	204	4.53	10	0.05
392651		1.19	<0.5	7.90	8	70	<0.5	<2	5.53	<0.5	29	306	81	4.05	10	1.58
392652		1.24	<0.5	8.34	<5	30	<0.5	<2	6.06	<0.5	40	432	96	5.38	10	0.19
392653		1.19	<0.5	8.27	<5	30	<0.5	2	6.31	<0.5	41	412	122	5.20	10	0.14

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To: NORTHERN SHIELD RESOURCES INC.
440 – 55 METCALFE STREET
OTTAWA ON K1P 6L5

Finalized Date: 22-APR-2010
Account: NORSHI

Project: WABASSI

CERTIFICATE OF ANALYSIS TM10039913

Sample Description	Method / Analyte / Units / LOR	ME-ICP61 La ppm 10	ME-ICP61 Mg % 0.01	ME-ICP61 Mn ppm 5	ME-ICP61 Mo ppm 1	ME-ICP61 Na % 0.01	ME-ICP61 Ni ppm 1	ME-ICP61 P ppm 10	ME-ICP61 Pb ppm 2	ME-ICP61 S % 0.01	ME-ICP61 Sb ppm 5	ME-ICP61 Sc ppm 1	ME-ICP61 Sr ppm 1	ME-ICP61 Th ppm 20	ME-ICP61 Ti % 0.01	ME-ICP61 Tl ppm 10
392636		<10	3.25	1115	<1	2.10	9	60	<2	0.14	<5	37	271	<20	2.22	<10
392637		<10	3.27	1115	<1	2.01	6	70	<2	0.13	<5	39	258	<20	2.17	10
392638		<10	3.30	1100	<1	1.99	7	60	<2	0.14	<5	40	253	<20	2.23	<10
392639		<10	3.31	1120	<1	2.03	5	50	<2	0.15	<5	38	259	<20	2.26	10
392640		<10	5.45	979	<1	1.10	211	130	2	0.04	<5	12	180	<20	0.18	<10
392641		<10	4.86	826	<1	1.10	208	150	2	0.06	<5	13	183	<20	0.19	<10
392642		<10	5.05	860	<1	1.09	226	150	<2	0.07	<5	12	183	<20	0.22	<10
392643		<10	4.94	810	<1	1.11	162	270	<2	0.11	<5	14	159	<20	0.22	<10
392644		<10	3.61	746	<1	1.41	107	170	3	0.05	<5	13	172	<20	0.23	<10
392645		<10	4.78	759	<1	0.97	198	120	<2	0.05	<5	10	176	<20	0.15	<10
392646		<10	5.27	846	<1	1.04	199	90	<2	0.04	<5	12	182	<20	0.15	<10
392647		<10	5.38	818	<1	0.98	212	110	2	0.04	<5	11	175	<20	0.15	<10
392648		<10	5.58	859	<1	0.99	222	120	2	0.04	<5	11	175	<20	0.16	<10
392649		<10	5.62	855	<1	1.00	221	100	<2	0.04	<5	12	177	<20	0.15	<10
392650		<10	5.28	829	<1	1.00	237	100	3	0.06	<5	11	177	<20	0.14	<10
392651		<10	4.97	833	<1	0.65	114	60	2	0.02	<5	12	96	<20	0.08	<10
392652		<10	6.83	978	<1	0.89	165	90	3	0.04	<5	15	140	<20	0.12	<10
392653		<10	6.74	975	<1	0.94	178	80	<2	0.04	<5	14	149	<20	0.12	<10

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To: NORTHERN SHIELD RESOURCES INC.
440 – 55 METCALFE STREET
OTTAWA ON K1P 6L5

Finalized Date: 22-APR-2010
Account: NORSHI

Project: WABASSI

CERTIFICATE OF ANALYSIS TM10039913

Sample Description	Method	ME-ICP61	ME-ICP61	ME-ICP61	ME-ICP61	PGM-MS23	PGM-MS23	PGM-MS23	PGM-ICP27	PGM-ICP27	PGM-ICP27
	Analyte	U	V	W	Zn	Au	Pt	Pd	Au	Pt	Pd
	Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm
	LOR	10	1	10	2	0.001	0.0005	0.001	0.03	0.03	0.03
392636		<10	359	<10	78	0.001	<0.0005	0.001			
392637		<10	365	<10	78	0.001	0.0009	0.001			
392638		<10	411	<10	74	0.001	0.0104	0.005			
392639		<10	424	<10	78	0.001	<0.0005	<0.001			
392640		<10	79	<10	62	0.004	<0.0005	<0.001			
392641		<10	79	<10	54	0.021	0.0027	0.002			
392642		<10	88	<10	56	0.005	<0.0005	<0.001			
392643		<10	78	<10	63	0.019	0.0034	<0.001			
392644		<10	72	<10	60	0.002	<0.0005	<0.001			
392645		<10	66	<10	49	0.005	0.0055	<0.001			
392646		<10	72	<10	52	0.006	0.0037	<0.001			
392647		<10	71	<10	52	0.006	0.0048	<0.001			
392648		<10	71	<10	55	0.006	0.0050	<0.001			
392649		<10	70	<10	54	0.004	0.0040	<0.001			
392650		<10	69	<10	53	0.004	0.0036	<0.001			
392651		<10	56	<10	46	0.003	0.0048	0.002			
392652		<10	71	<10	60	0.006	0.0046	0.002			
392653		<10	69	<10	55	0.008	0.0076	0.001			

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To: NORTHERN SHIELD RESOURCES INC.
440 – 55 METCALFE STREET
OTTAWA ON K1P 6L5

Finalized Date: 21-APR-2010
Account: NORSHI

CERTIFICATE TM10042719

Project: WABASSI
P.O. No.:
This report is for 48 Drill Core samples submitted to our lab in Timmins, ON, Canada on 9-APR-2010.

The following have access to data associated with this certificate:

IAN BLISS	CHRISTINE VAILLANCOURT	

SAMPLE PREPARATION

ALS CODE	DESCRIPTION
WEI-21	Received Sample Weight
LOG-22	Sample login - Rcd w/o BarCode
CRU-31	Fine crushing - 70% <2mm
CRU-QC	Crushing QC Test
PUL-QC	Pulverizing QC Test
SPL-21	Split sample - riffle splitter
PUL-31	Pulverize split to 85% <75 um
LOG-24	Pulp Login - Rcd w/o Barcode

ANALYTICAL PROCEDURES

ALS CODE	DESCRIPTION	INSTRUMENT
PGM-ICP27	Ore grade Pt, Pd and Au by ICP	ICP-AES
ME-ICP61	33 element four acid ICP-AES	ICP-AES
Ag-OG62	Ore Grade Ag - Four Acid	VARIABLE
ME-OG62	Ore Grade Elements - Four Acid	ICP-AES
Zn-OG62	Ore Grade Zn - Four Acid	VARIABLE
PGM-MS23	Pt, Pd, Au 30g FA ICP-MS	ICP-MS
Au-AA25	Ore Grade Au 30g FA AA finish	AAS

To: NORTHERN SHIELD RESOURCES INC.
ATTN: CHRISTINE VAILLANCOURT
440 – 55 METCALFE STREET
OTTAWA ON K1P 6L5

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.

Signature:
Colin Ramshaw, Vancouver Laboratory Manager

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Finalized Date: 21-APR-2010
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Project: WABASSI

CERTIFICATE OF ANALYSIS TM10042719

Sample Description	Method	WEI-21	PGM-MS23	PGM-MS23	PGM-MS23	Au-AA25	PGM-ICP27	PGM-ICP27	PGM-ICP27	ME-ICP61	ME-ICP61	ME-ICP61	ME-ICP61	ME-ICP61	ME-ICP61	ME-ICP61
	Analyte	Recvd Wt.	Au	Pt	Pd	Au	Au	Pt	Pd	Ag	Al	As	Ba	Be	Bi	Ca
	Units	kg	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	%	ppm	ppm	ppm	ppm	%
	LOR	0.02	0.001	0.0005	0.001	0.01	0.03	0.03	0.03	0.5	0.01	5	10	0.5	2	0.01
392839		1.44	0.036	0.0037	0.002					4.5	7.18	40	10	0.5	3	2.93
392840		0.05	0.188	0.431	>1.00		0.16	0.44	1.32	2.4	8.64	42	340	0.6	3	7.16
392841		0.96	0.030	0.0044	0.002					2.6	7.67	26	<10	0.6	6	3.25
392842		0.97	0.053	0.0026	0.001					3.4	6.82	33	<10	<0.5	7	1.31
392843		1.06	0.029	0.0074	0.002					8.8	4.29	17	<10	<0.5	3	2.86
392844		1.05	0.042	0.0104	0.004					9.1	4.20	25	90	<0.5	6	2.62
392845		1.25	0.259	0.0062	0.003					49.8	5.92	65	20	1.0	21	7.58
392846		1.57	0.043	0.0081	0.004					11.3	3.54	40	<10	0.8	9	9.63
392847		1.81	0.027	0.0099	0.003					16.1	1.52	27	<10	<0.5	<2	2.42
392848		1.43	0.017	0.0133	0.006					13.2	4.95	7	<10	0.7	6	4.10
392849		1.58	0.173	0.0068	0.003					26.7	5.38	35	<10	0.5	28	6.39
392850		1.32	0.024	0.0111	0.003					6.1	4.60	36	<10	0.7	8	3.56
392851		1.08	0.015	0.0006	<0.001					3.3	7.56	42	<10	0.7	3	11.75
392852		1.17	0.072	0.0012	0.001					29.8	6.48	24	<10	0.7	<2	12.55
392853		1.26	0.904	0.0169	0.003					63.8	4.04	20	<10	0.5	18	8.85
392854		1.28	0.255	0.0070	0.002					58.3	4.78	87	<10	0.6	30	8.83
392855		1.31	0.391	0.0037	0.002					80.5	5.92	17	<10	0.5	79	7.85
392856		0.88	0.370	<0.0005	<0.001					15.5	7.66	39	80	0.6	9	7.63
392857		1.76	0.016	<0.0005	<0.001					8.4	7.24	38	50	0.9	6	11.70
392858		1.33	0.026	0.0057	0.002					12.7	1.90	23	<10	<0.5	8	5.22
392859		1.68	0.019	0.0116	0.004					24.6	1.39	47	10	<0.5	2	1.13
392860		0.05	0.002	<0.0005	<0.001					<0.5	0.40	<5	20	<0.5	<2	0.03
392861		1.58	0.599	0.0094	0.003					82.5	3.52	255	40	0.6	13	1.25
392862		1.46	0.275	0.0065	0.002					50.2	3.38	202	20	0.5	7	4.66
392863		1.37	0.026	0.0134	0.004					8.7	2.02	9	10	<0.5	2	2.19
392864		1.10	0.585	0.0020	0.001					>100	6.43	909	50	0.9	7	4.57
392865		1.94	0.022	0.0134	0.005					29.7	1.51	40	10	<0.5	7	1.02
392866		1.76	0.378	0.0131	0.005					55.5	2.22	132	20	<0.5	4	2.18
392867		1.93	0.276	0.0161	0.005					48.5	1.50	95	10	<0.5	7	2.28
392868		1.04	>1.00	0.0053	0.002	1.12				>100	5.51	2010	50	0.8	6	3.93
392869		1.75	0.026	0.0127	0.004					14.5	1.62	27	10	<0.5	<2	2.41
392870		1.21	0.948	0.0012	0.001					>100	6.21	795	110	1.0	5	1.84
392871		1.48	0.069	0.0082	0.003					28.8	5.54	87	70	0.5	3	4.74
392872		1.60	0.263	0.0100	0.003					25.2	4.93	16	20	<0.5	3	6.02
392873		1.81	0.073	0.0074	0.003					12.9	3.77	42	10	<0.5	12	6.67
392874		1.27	0.303	0.0045	0.003					29.5	5.88	28	10	0.9	10	9.70
392875		1.47	0.363	0.0088	0.003					23.6	4.19	23	50	0.7	7	4.10
392876		1.66	0.243	0.0056	0.002					24.6	6.13	30	<10	0.5	8	10.25
392877		1.68	0.022	0.0061	0.002					9.2	5.20	57	<10	0.6	4	8.37
392878		1.55	0.051	0.0050	0.003					11.4	5.10	123	90	0.9	<2	5.30

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

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To: NORTHERN SHIELD RESOURCES INC.
440 – 55 METCALFE STREET
OTTAWA ON K1P 6L5

Finalized Date: 21-APR-2010
Account: NORSHI

Project: WABASSI

CERTIFICATE OF ANALYSIS TM10042719

Sample Description	Method	ME-ICP61	ME-ICP61	ME-ICP61	ME-ICP61	ME-ICP61	ME-ICP61	ME-ICP61	ME-ICP61	ME-ICP61	ME-ICP61	ME-ICP61	ME-ICP61	ME-ICP61	ME-ICP61	ME-ICP61
	Analyte	Cd	Co	Cr	Cu	Fe	Ga	K	La	Mg	Mn	Mo	Na	Ni	P	Pb
	Units	ppm	ppm	ppm	ppm	%	ppm	%	ppm	%	ppm	ppm	%	ppm	ppm	ppm
	LOR	0.5	1	1	1	0.01	10	0.01	10	0.01	5	1	0.01	1	10	2
392839		18.6	10	1	637	18.30	20	0.01	50	8.57	1220	2	0.01	5	50	67
392840		<0.5	62	136	4720	8.03	10	0.57	30	3.72	1250	1	1.74	291	1910	29
392841		126.5	5	1	62	15.35	20	0.01	20	9.20	1450	1	0.01	3	10	52
392842		19.9	<1	1	65	17.55	20	<0.01	30	10.55	1330	<1	<0.01	2	20	194
392843		465	4	2	624	17.40	20	0.01	30	4.88	1405	1	0.02	4	20	55
392844		232	4	2	643	23.9	10	0.56	60	3.90	895	3	0.08	4	50	182
392845		7.5	<1	5	1285	11.60	20	0.04	30	2.91	1675	1	0.29	2	130	1670
392846		22.3	2	1	593	16.45	10	0.01	20	5.34	2110	2	0.01	5	410	630
392847		10.1	13	<1	1990	38.7	<10	<0.01	<10	5.56	381	<1	<0.01	2	<10	305
392848		99.7	<1	<1	1870	29.7	10	<0.01	10	5.56	555	<1	0.01	7	<10	46
392849		126.5	5	3	1050	23.8	20	<0.01	20	4.50	2630	2	0.01	4	140	1410
392850		149.5	11	2	389	24.9	10	<0.01	10	6.53	822	1	0.01	5	60	49
392851		7.0	<1	12	48	5.38	10	0.01	20	1.29	2060	2	0.03	3	610	650
392852		10.9	1	9	3630	8.90	10	0.01	20	1.71	2500	7	0.02	2	530	146
392853		85.7	<1	6	7630	21.6	10	0.01	40	1.85	2760	1	0.04	4	270	826
392854		15.2	1	6	4930	19.40	10	0.01	30	2.83	1655	1	0.05	3	100	2070
392855		62.7	<1	5	4250	16.85	20	0.01	20	3.47	1280	1	0.04	5	100	3110
392856		0.7	2	17	1595	4.14	20	0.28	20	1.26	821	<1	0.85	2	710	649
392857		2.0	<1	11	119	5.62	20	0.18	20	1.06	1625	2	0.86	3	610	451
392858		0.9	<1	1	1890	40.7	<10	<0.01	10	3.51	891	1	0.01	10	50	43
392859		2.4	16	1	2970	44.8	<10	0.02	<10	3.58	310	<1	0.01	6	<10	74
392860		<0.5	<1	3	4	0.10	<10	0.15	20	0.02	6	1	0.01	<1	30	4
392861		1.3	<1	3	2510	31.6	10	0.33	10	0.52	244	1	0.88	6	150	2640
392862		2.2	<1	3	1125	30.0	10	0.15	10	2.36	809	1	0.42	6	40	1550
392863		0.6	<1	1	827	47.4	<10	<0.01	<10	3.49	391	1	0.01	8	<10	78
392864		1.1	<1	11	1730	4.54	20	0.35	20	0.86	1130	<1	1.38	1	230	4040
392865		2.9	19	<1	4180	45.3	<10	<0.01	<10	3.29	285	<1	0.01	4	<10	65
392866		3.5	7	3	2630	38.0	10	0.03	<10	2.55	571	<1	0.16	3	40	801
392867		2.4	13	2	7330	42.2	<10	0.01	<10	1.61	414	<1	0.02	1	30	167
392868		2.7	<1	8	3460	17.60	10	0.36	20	0.69	840	1	1.23	2	130	4950
392869		2.3	1	<1	2130	49.8	<10	0.01	<10	2.65	375	<1	0.01	9	<10	65
392870		1.0	<1	9	179	1.88	20	0.86	20	0.34	395	<1	2.49	1	160	3380
392871		6.9	7	6	2920	15.70	10	0.43	20	2.00	872	<1	0.80	4	60	436
392872		54.1	<1	3	1060	27.9	10	0.09	20	2.58	1145	<1	0.09	4	90	411
392873		43.1	5	5	1365	25.2	10	0.06	20	2.48	1610	1	0.04	3	110	345
392874		2.9	<1	8	3310	16.30	30	0.02	20	2.13	2300	1	0.03	1	130	561
392875		52.5	<1	3	2580	19.85	30	0.33	30	0.81	939	1	0.46	2	160	653
392876		8.1	<1	2	3010	17.05	30	0.01	20	4.15	4800	1	0.02	4	70	468
392877		13.2	<1	<1	1720	18.70	30	<0.01	10	6.49	1335	<1	<0.01	5	30	9
392878		5.9	1	5	966	11.10	20	0.56	30	2.11	980	1	0.88	4	240	525

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Sample Description	Method	ME-ICP61	ME-ICP61	ME-ICP61	ME-ICP61	ME-ICP61	ME-ICP61	ME-ICP61	ME-ICP61	ME-ICP61	ME-ICP61	ME-ICP61	Ag-OG62	Zn-OG62
	Analyte	S	Sb	Sc	Sr	Th	Ti	Tl	U	V	W	Zn	Ag	Zn
	Units	%	ppm	ppm	ppm	ppm	%	ppm	ppm	ppm	ppm	ppm	ppm	%
	LOR	0.01	5	1	1	20	0.01	10	10	1	10	2	1	0.001
392839		>10.0	9	5	21	<20	0.15	<10	<10	2	<10	7700		
392840		0.96	<5	26	638	<20	0.49	<10	<10	231	<10	149		
392841		>10.0	5	6	15	<20	0.15	<10	<10	2	10	>10000		5.04
392842		>10.0	8	5	6	<20	0.15	<10	<10	2	<10	8700		
392843		>10.0	6	5	21	<20	0.15	<10	<10	5	<10	>10000		18.80
392844		>10.0	7	6	35	<20	0.18	10	<10	12	<10	>10000		10.10
392845		6.86	31	8	121	<20	0.23	<10	<10	13	<10	3450		
392846		>10.0	15	5	40	<20	0.08	<10	<10	4	<10	9730		
392847		>10.0	13	1	3	<20	0.03	<10	<10	2	<10	4820		
392848		>10.0	13	5	11	<20	0.10	<10	<10	6	10	>10000		4.60
392849		>10.0	10	4	16	<20	0.12	<10	<10	6	<10	>10000		5.25
392850		>10.0	7	4	10	<20	0.10	<10	<10	6	<10	>10000		6.33
392851		0.39	29	7	181	<20	0.26	<10	<10	33	<10	3060		
392852		3.54	13	5	144	<20	0.21	<10	<10	28	<10	4530		
392853		>10.0	12	4	99	<20	0.10	<10	<10	6	10	>10000		3.80
392854		>10.0	15	4	109	<20	0.11	<10	<10	5	<10	6480		
392855		>10.0	8	5	123	<20	0.13	<10	<10	30	10	>10000		2.80
392856		0.30	13	7	201	<20	0.30	<10	<10	41	<10	309		
392857		0.39	11	7	147	<20	0.26	<10	<10	33	<10	913		
392858		>10.0	10	2	7	<20	0.06	<10	<10	6	<10	800		
392859		>10.0	<5	2	4	<20	0.03	<10	<10	1	<10	1690		
392860		0.03	<5	<1	4	<20	0.02	<10	<10	2	<10	6		
392861		>10.0	67	2	63	<20	0.05	<10	<10	2	<10	546		
392862		>10.0	38	4	49	<20	0.07	<10	<10	4	<10	1190		
392863		>10.0	7	2	4	<20	0.04	<10	<10	2	<10	839		
392864		2.56	199	4	129	<20	0.11	10	<10	7	<10	353	247	
392865		>10.0	<5	2	1	<20	0.04	<10	<10	2	<10	2070		
392866		>10.0	42	2	22	<20	0.05	<10	<10	3	<10	2030		
392867		>10.0	17	2	15	<20	0.04	<10	<10	2	<10	1390		
392868		>10.0	475	2	98	<20	0.08	30	<10	3	<10	975	536	
392869		>10.0	16	2	5	<20	0.04	<10	<10	1	<10	1410		
392870		1.03	219	2	120	<20	0.08	20	10	7	<10	250	138	
392871		>10.0	16	5	69	<20	0.10	<10	<10	7	<10	3050		
392872		>10.0	9	6	57	<20	0.12	<10	<10	9	10	>10000		2.33
392873		>10.0	10	4	64	<20	0.11	<10	<10	12	<10	>10000		1.825
392874		7.15	10	6	94	<20	0.19	<10	<10	14	<10	1300		
392875		>10.0	13	3	66	<20	0.11	<10	<10	7	10	>10000		2.21
392876		8.94	22	5	27	<20	0.13	<10	<10	13	<10	3800		
392877		9.26	18	4	3	<20	0.11	<10	<10	16	<10	5470		
392878		5.70	7	4	66	<20	0.09	<10	<10	6	<10	2560		

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

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To: NORTHERN SHIELD RESOURCES INC.
440 – 55 METCALFE STREET
OTTAWA ON K1P 6L5

Finalized Date: 21-APR-2010
Account: NORSHI

Project: WABASSI

CERTIFICATE OF ANALYSIS TM10042719

Sample Description	Method	WEI-21	PGM-MS23	PGM-MS23	PGM-MS23	Au-AA25	PGM-ICP27	PGM-ICP27	PGM-ICP27	ME-ICP61	ME-ICP61	ME-ICP61	ME-ICP61	ME-ICP61	ME-ICP61	ME-ICP61
	Analyte	Recvd Wt.	Au	Pt	Pd	Au	Au	Pt	Pd	Ag	Al	As	Ba	Be	Bi	Ca
	Units	kg	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	%	ppm	ppm	ppm	ppm	%
	LOR	0.02	0.001	0.0005	0.001	0.01	0.03	0.03	0.03	0.5	0.01	5	10	0.5	2	0.01
392879		1.74	0.080	0.0115	0.003					16.1	3.68	5	20	<0.5	5	5.37
392880		0.05	0.272	0.490	>1.00		NSS	NSS	NSS	2.1	8.15	29	320	0.5	4	7.07
392881		1.72	0.119	0.0286	0.003					20.9	3.82	<5	50	0.5	8	3.95
392882		1.33	0.087	0.0037	0.001					28.4	5.29	21	150	1.1	5	2.66
392883		1.56	0.042	0.0062	0.002					16.2	4.36	26	110	0.7	6	2.74
392884		1.39	0.047	0.0062	0.002					10.8	4.05	18	70	0.6	4	2.70
392885		1.11	0.024	0.0019	0.001					6.8	5.14	6	110	0.7	<2	1.82
392886		1.17	0.005	0.0005	<0.001					1.7	4.96	20	120	0.5	4	1.87

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CERTIFICATE OF ANALYSIS TM10042719

Sample Description	Method / Analyte / Units / LOR	ME-ICP61 Cd ppm 0.5	ME-ICP61 Co ppm 1	ME-ICP61 Cr ppm 1	ME-ICP61 Cu ppm 1	ME-ICP61 Fe % 0.01	ME-ICP61 Ga ppm 10	ME-ICP61 K % 0.01	ME-ICP61 La ppm 10	ME-ICP61 Mg % 0.01	ME-ICP61 Mn ppm 5	ME-ICP61 Mo ppm 1	ME-ICP61 Na % 0.01	ME-ICP61 Ni ppm 1	ME-ICP61 P ppm 10	ME-ICP61 Pb ppm 2
392879		127.0	3	<1	1580	33.9	40	0.07	30	1.98	1035	1	0.06	4	170	301
392880		0.7	58	133	4540	7.86	20	0.55	30	3.47	1220	<1	1.67	278	1870	19
392881		179.0	<1	2	1285	22.1	30	0.34	20	1.57	958	1	0.36	4	50	627
392882		50.6	1	8	1835	8.13	20	0.82	30	0.94	570	<1	0.80	2	120	1320
392883		40.1	5	3	1005	18.90	20	0.65	20	1.64	690	<1	0.54	4	150	366
392884		2.8	4	5	799	13.80	20	0.46	20	2.56	800	1	0.66	4	140	492
392885		32.6	1	7	335	4.08	20	0.88	20	1.45	617	1	1.10	1	120	737
392886		<0.5	3	8	23	2.42	10	0.81	20	1.01	534	1	1.58	3	110	148

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440 – 55 METCALFE STREET
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Finalized Date: 21-APR-2010
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Project: WABASSI

CERTIFICATE OF ANALYSIS TM10042719

Sample Description / Method / Analyte / Units / LOR	ME-ICP61 S % 0.01	ME-ICP61 Sb ppm 5	ME-ICP61 Sc ppm 1	ME-ICP61 Sr ppm 1	ME-ICP61 Th ppm 20	ME-ICP61 Ti % 0.01	ME-ICP61 Tl ppm 10	ME-ICP61 U ppm 10	ME-ICP61 V ppm 1	ME-ICP61 W ppm 10	ME-ICP61 Zn ppm 2	Ag-OG62 Ag ppm 1	Zn-OG62 Zn % 0.001
392879	>10.0	6	5	65	<20	0.14	<10	<10	26	20	>10000		4.72
392880	0.88	<5	25	619	<20	0.48	<10	<10	228	<10	178		
392881	>10.0	11	5	60	<20	0.13	<10	<10	19	20	>10000		7.02
392882	4.91	12	4	63	<20	0.10	<10	<10	4	<10	>10000		2.08
392883	>10.0	10	5	61	<20	0.12	<10	<10	8	<10	>10000		1.680
392884	>10.0	11	5	46	<20	0.09	<10	<10	4	<10	1250		
392885	1.77	6	6	59	<20	0.12	<10	<10	2	<10	>10000		1.220
392886	0.20	<5	6	62	<20	0.14	<10	<10	3	<10	166		

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To: NORTHERN SHIELD RESOURCES INC.
440 – 55 METCALFE STREET
OTTAWA ON K1P 6L5

Finalized Date: 21-APR-2010
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Project: WABASSI

CERTIFICATE OF ANALYSIS TM10042719

Method	CERTIFICATE COMMENTS
ALL METHODS	NSS is non-sufficient sample.

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To: NORTHERN SHIELD RESOURCES INC.
440 – 55 METCALFE STREET
OTTAWA ON K1P 6L5

Finalized Date: 26-APR-2010
Account: NORSHI

CERTIFICATE TM10042740

Project: WABASSI
P.O. No.:
This report is for 152 Drill Core samples submitted to our lab in Timmins, ON, Canada on 9-APR-2010.
The following have access to data associated with this certificate:

IAN BLISS	CHRISTINE VAILLANCOURT	

SAMPLE PREPARATION

ALS CODE	DESCRIPTION
WEI-21	Received Sample Weight
LOG-22	Sample login - Rcd w/o BarCode
LOG-24	Pulp Login - Rcd w/o Barcode
CRU-31	Fine crushing - 70% <2mm
CRU-QC	Crushing QC Test
PUL-QC	Pulverizing QC Test
SPL-21	Split sample - riffle splitter
PUL-31	Pulverize split to 85% <75 um

ANALYTICAL PROCEDURES

ALS CODE	DESCRIPTION	INSTRUMENT
PGM-ICP27	Ore grade Pt, Pd and Au by ICP	ICP-AES
ME-ICP61	33 element four acid ICP-AES	ICP-AES
ME-OG62	Ore Grade Elements - Four Acid	ICP-AES
Cu-OG62	Ore Grade Cu - Four Acid	VARIABLE
Zn-OG62	Ore Grade Zn - Four Acid	VARIABLE
PGM-MS23	Pt, Pd, Au 30g FA ICP-MS	ICP-MS

To: NORTHERN SHIELD RESOURCES INC.
ATTN: CHRISTINE VAILLANCOURT
440 – 55 METCALFE STREET
OTTAWA ON K1P 6L5

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.

Signature:
Colin Ramshaw, Vancouver Laboratory Manager

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440 – 55 METCALFE STREET
OTTAWA ON K1P 6L5

Finalized Date: 26-APR-2010
Account: NORSHI

Project: WABASSI

CERTIFICATE OF ANALYSIS TM10042740

Sample Description	Method / Analyte / Units / LOR	WEI-21	PGM-MS23	PGM-MS23	PGM-MS23	PGM-ICP27	PGM-ICP27	PGM-ICP27	ME-ICP61	ME-ICP61	ME-ICP61	ME-ICP61	ME-ICP61	ME-ICP61	ME-ICP61	ME-ICP61
	Analyte	Recvd Wt.	Au	Pt	Pd	Au	Pt	Pd	Ag	Al	As	Ba	Be	Bi	Ca	Cd
	Units	kg	ppm	ppm	ppm	ppm	ppm	ppm	ppm	%	ppm	ppm	ppm	ppm	%	ppm
	LOR	0.02	0.001	0.0005	0.001	0.03	0.03	0.03	0.5	0.01	5	10	0.5	2	0.01	0.5
392687		1.34	0.020	0.0022	0.001				5.1	6.54	14	20	0.6	<2	3.95	4.7
392688		1.25	0.016	0.0021	0.001				10.5	6.09	14	40	0.8	4	3.47	1.8
392689		1.00	0.017	0.0046	0.001				9.5	5.67	5	90	0.5	7	1.69	<0.5
392690		0.04	0.002	0.0005	<0.001				<0.5	0.39	<5	10	<0.5	<2	0.03	<0.5
392691		1.04	0.013	0.0091	0.003				3.1	5.28	16	40	<0.5	4	2.30	1.6
392692		1.17	0.013	0.0107	0.003				5.3	1.78	18	10	<0.5	7	0.51	6.2
392693		0.65	0.007	0.0019	0.001				3.7	8.54	10	50	<0.5	<2	5.98	0.9
392694		0.93	0.058	0.0016	0.001				2.6	8.48	18	50	0.5	3	6.62	1.7
392695		0.74	0.010	0.0071	0.002				7.0	2.58	33	<10	<0.5	5	2.02	4.6
392696		1.10	0.008	0.0011	0.001				2.2	8.17	13	40	<0.5	3	6.61	3.3
392697		1.28	0.003	0.0007	<0.001				1.2	9.06	14	40	<0.5	<2	6.65	1.0
392698		1.36	0.001	0.0006	<0.001				0.8	9.16	16	60	<0.5	<2	7.16	<0.5
392699		1.37	<0.001	<0.0005	<0.001				<0.5	9.06	19	60	<0.5	<2	7.43	<0.5
392700		0.05	0.232	0.487	>1.00	0.13	0.33	1.36	2.0	8.22	31	310	0.5	3	7.33	0.7
392701		1.33	0.001	<0.0005	0.001				<0.5	8.85	10	30	<0.5	<2	7.82	<0.5
392702		1.34	0.001	<0.0005	<0.001				0.7	8.70	7	40	<0.5	<2	7.60	<0.5
392703		1.36	0.001	<0.0005	<0.001				<0.5	8.89	10	40	<0.5	4	7.87	<0.5
392704		0.68	0.002	0.0005	<0.001				<0.5	8.59	11	50	<0.5	2	7.49	<0.5
392705		0.96	<0.001	<0.0005	<0.001				1.6	8.25	<5	60	<0.5	3	7.12	<0.5
392706		1.69	0.009	0.0095	0.003				4.8	3.44	<5	10	<0.5	7	1.62	4.2
392707		1.43	0.009	0.0091	0.003				6.2	2.29	14	10	<0.5	11	1.98	3.6
392708		1.77	0.002	0.0008	<0.001				3.6	8.44	5	50	<0.5	4	6.61	0.6
392709		1.35	0.003	0.0013	0.001				6.8	7.34	5	50	<0.5	5	6.64	<0.5
392710		0.05	<0.001	<0.0005	<0.001				<0.5	0.39	<5	20	<0.5	2	0.03	<0.5
392711		1.40	0.002	0.0016	0.001				1.3	7.01	29	70	<0.5	2	6.81	1.7
392712		1.34	0.005	0.0008	<0.001				0.9	7.15	17	120	0.6	2	6.12	1.1
392713		0.72	0.026	0.0034	0.002				1.4	6.96	36	150	0.5	5	2.91	1.0
392714		1.22	0.116	0.0007	<0.001				0.8	5.77	16	110	<0.5	5	5.09	<0.5
392715		0.98	0.049	0.0008	<0.001				7.6	7.52	8	90	<0.5	2	2.43	0.5
392716		1.26	0.085	0.0016	0.001				16.3	7.37	9	70	<0.5	3	4.78	0.7
392717		1.40	0.012	0.0015	0.002				1.9	6.68	6	60	<0.5	3	4.97	0.6
392718		1.25	0.016	0.0023	0.003				3.2	6.21	<5	70	<0.5	5	3.36	0.9
392719		1.41	0.035	0.0021	0.003				3.7	4.71	6	30	<0.5	6	2.99	<0.5
392720		0.05	0.170	0.360	>1.00	0.31	0.45	1.48	2.1	8.57	31	340	0.5	2	7.48	0.5
392721		1.40	0.023	0.0023	0.003				4.3	4.42	<5	40	<0.5	3	3.18	<0.5
392722		1.32	0.023	0.0028	0.004				3.0	4.78	<5	20	<0.5	5	3.20	<0.5
392723		1.41	0.023	0.0030	0.004				1.5	5.02	7	40	<0.5	2	3.00	<0.5
392724		1.43	0.007	0.0022	0.005				0.5	3.99	<5	30	<0.5	4	2.88	<0.5
392725		1.34	0.003	0.0016	0.004				<0.5	4.33	<5	50	<0.5	4	2.72	<0.5
392726		1.06	0.003	0.0022	0.005				<0.5	4.13	<5	80	<0.5	4	2.64	<0.5

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440 – 55 METCALFE STREET
OTTAWA ON K1P 6L5

Finalized Date: 26-APR-2010
Account: NORSHI

Project: WABASSI

CERTIFICATE OF ANALYSIS TM10042740

Sample Description	Method	ME-ICP61	ME-ICP61	ME-ICP61	ME-ICP61	ME-ICP61	ME-ICP61	ME-ICP61	ME-ICP61	ME-ICP61	ME-ICP61	ME-ICP61	ME-ICP61	ME-ICP61	ME-ICP61	ME-ICP61
	Analyte	Co	Cr	Cu	Fe	Ga	K	La	Mg	Mn	Mo	Na	Ni	P	Pb	S
	Units	ppm	ppm	ppm	%	ppm	%	ppm	%	ppm	ppm	%	ppm	ppm	ppm	%
	LOR	1	1	1	0.01	10	0.01	10	0.01	5	1	0.01	1	10	2	0.01
392687		2	3	446	11.95	20	0.08	20	9.53	1070	<1	0.24	15	120	493	7.13
392688		2	2	681	9.86	20	0.18	20	10.85	1230	<1	0.31	13	60	280	5.19
392689		8	1	1160	16.05	30	0.38	10	11.40	1705	<1	0.17	21	50	158	9.89
392690		<1	2	2	0.06	<10	0.15	20	0.03	5	<1	0.01	<1	40	<2	0.03
392691		33	16	354	25.2	20	0.16	20	5.64	890	<1	0.31	27	90	74	>10.0
392692		24	13	534	41.2	20	<0.01	<10	5.00	284	<1	0.01	24	10	28	>10.0
392693		8	67	64	4.15	10	0.17	10	5.56	1465	<1	2.14	39	150	227	0.85
392694		5	66	93	5.13	20	0.16	10	5.23	1360	<1	1.85	29	360	186	1.90
392695		45	14	716	32.4	20	0.01	10	6.57	561	<1	0.02	26	20	18	>10.0
392696		4	99	146	6.73	20	0.18	20	4.53	1310	<1	1.23	16	50	405	3.58
392697		19	125	40	3.37	20	0.16	10	4.48	938	<1	1.62	62	40	169	0.95
392698		24	134	16	2.91	20	0.35	20	5.19	906	<1	1.75	107	220	130	0.29
392699		18	145	29	2.82	20	0.31	10	5.44	1035	<1	1.47	131	200	92	0.17
392700		60	137	4640	8.12	20	0.58	30	3.62	1230	<1	1.75	294	1860	12	0.92
392701		29	165	52	4.47	20	0.22	10	5.60	958	<1	1.21	123	170	27	0.14
392702		34	134	318	4.91	20	0.25	10	5.26	909	<1	1.17	174	250	28	0.30
392703		30	164	60	4.83	10	0.29	10	5.39	954	<1	1.24	137	160	14	0.20
392704		28	160	44	4.73	20	0.32	10	5.29	1035	<1	1.35	117	160	20	0.17
392705		25	151	37	4.75	10	0.38	10	4.98	1110	<1	1.36	110	140	65	0.15
392706		4	13	1420	43.5	<10	0.01	10	2.98	475	<1	0.03	90	20	33	>10.0
392707		10	26	1985	46.3	10	0.01	<10	2.85	541	<1	0.06	90	90	28	>10.0
392708		26	290	137	5.67	10	0.32	10	5.46	1135	<1	1.08	148	150	43	0.18
392709		20	216	1165	8.32	10	0.55	10	4.49	1140	<1	1.22	128	180	100	2.80
392710		<1	7	3	0.05	<10	0.14	20	0.02	6	<1	0.01	1	40	<2	0.02
392711		36	138	100	8.55	10	0.70	10	4.39	1020	<1	1.03	93	110	38	5.23
392712		29	73	88	6.88	20	1.06	20	4.23	1120	<1	1.06	61	310	62	1.73
392713		18	18	235	14.10	20	1.64	10	4.22	660	<1	0.78	32	110	55	9.35
392714		17	18	128	5.31	10	0.91	10	4.73	1085	<1	1.02	30	190	73	1.17
392715		13	63	834	5.33	20	0.99	20	6.75	614	1	0.28	74	60	80	0.51
392716		50	309	1365	5.99	10	0.34	10	6.09	764	<1	1.13	505	80	53	0.52
392717		70	333	956	7.36	10	0.28	10	8.59	1170	<1	0.72	632	130	63	0.26
392718		74	445	1165	8.21	10	0.34	10	8.94	1360	<1	0.91	694	250	179	0.34
392719		104	459	2850	9.00	10	0.20	10	10.85	1265	<1	0.44	1220	140	33	0.99
392720		62	135	4690	8.33	10	0.58	30	3.75	1275	<1	1.78	314	1970	19	0.93
392721		93	434	2390	9.13	<10	0.13	10	10.50	1395	<1	0.29	1140	140	29	0.63
392722		125	481	2150	9.73	10	0.09	10	11.20	1285	<1	0.21	1450	120	18	0.53
392723		88	621	1070	9.39	10	0.20	10	10.35	1245	<1	0.40	873	150	14	0.28
392724		93	736	395	8.68	<10	0.11	10	11.75	1105	<1	0.23	1190	80	10	0.21
392725		96	859	126	9.12	10	0.31	10	12.10	1375	<1	0.35	1210	320	5	0.10
392726		78	719	135	9.05	10	0.38	10	11.70	1860	<1	0.44	757	220	18	0.05

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To: NORTHERN SHIELD RESOURCES INC.
440 – 55 METCALFE STREET
OTTAWA ON K1P 6L5

Finalized Date: 26-APR-2010
Account: NORSHI

Project: WABASSI

CERTIFICATE OF ANALYSIS TM10042740

Sample Description	Method / Analyte / Units / LOR	ME-ICP61	ME-ICP61	ME-ICP61	ME-ICP61	ME-ICP61	ME-ICP61	ME-ICP61	ME-ICP61	ME-ICP61	ME-ICP61	Cu-OG62	Zn-OG62
	Analyte	Sb	Sc	Sr	Th	Ti	Tl	U	V	W	Zn	Cu	Zn
	Units	ppm	ppm	ppm	ppm	%	ppm	ppm	ppm	ppm	ppm	%	%
	LOR	5	1	1	20	0.01	10	10	1	10	2	0.001	0.001
392687		<5	10	32	<20	0.23	<10	10	30	<10	2470		
392688		<5	8	19	<20	0.22	<10	10	32	<10	2810		
392689		5	6	13	<20	0.12	10	10	19	<10	5000		
392690		<5	<1	2	<20	0.02	<10	<10	1	<10	5		
392691		<5	6	31	<20	0.08	<10	10	38	<10	1770		
392692		12	2	4	<20	0.04	<10	20	25	<10	634		
392693		<5	16	141	<20	0.16	<10	10	77	<10	336		
392694		<5	18	152	<20	0.17	<10	10	85	<10	752		
392695		5	6	10	<20	0.12	<10	20	31	<10	1310		
392696		<5	12	169	<20	0.11	<10	10	33	<10	1015		
392697		<5	17	149	<20	0.10	<10	10	38	<10	559		
392698		<5	22	150	<20	0.22	<10	10	79	<10	474		
392699		<5	24	149	<20	0.23	<10	10	91	<10	567		
392700		<5	26	621	<20	0.50	<10	10	236	<10	132		
392701		<5	27	178	<20	0.24	<10	10	96	<10	239		
392702		<5	26	180	<20	0.28	<10	20	96	<10	192		
392703		<5	27	170	<20	0.24	<10	10	101	<10	160		
392704		<5	25	162	<20	0.26	<10	10	108	<10	160		
392705		<5	25	158	<20	0.24	<10	10	98	<10	226		
392706		<5	4	24	<20	0.11	<10	<10	31	<10	3090		
392707		<5	4	28	<20	0.09	<10	<10	53	<10	2200		
392708		<5	25	140	<20	0.23	<10	<10	96	<10	236		
392709		<5	24	111	<20	0.14	<10	<10	101	<10	253		
392710		<5	<1	5	<20	0.02	<10	<10	2	<10	<2		
392711		<5	24	110	<20	0.16	<10	<10	81	<10	686		
392712		<5	18	129	<20	0.35	<10	<10	117	<10	528		
392713		<5	14	116	<20	0.23	<10	<10	100	<10	2480		
392714		<5	14	99	<20	0.24	<10	<10	83	<10	148		
392715		<5	8	43	<20	0.09	<10	<10	16	<10	300		
392716		<5	11	119	<20	0.11	<10	<10	49	<10	186		
392717		<5	11	118	<20	0.15	<10	<10	64	<10	148		
392718		<5	10	113	<20	0.15	<10	<10	61	<10	209		
392719		<5	19	56	<20	0.16	<10	<10	71	<10	139		
392720		<5	26	652	<20	0.50	<10	<10	236	<10	128		
392721		<5	17	58	<20	0.16	<10	<10	64	<10	139		
392722		<5	16	39	<20	0.19	<10	<10	72	<10	128		
392723		<5	13	64	<20	0.19	<10	<10	72	<10	129		
392724		<5	11	35	<20	0.21	<10	<10	80	<10	158		
392725		<5	14	46	<20	0.22	<10	<10	91	<10	173		
392726		<5	17	52	<20	0.25	<10	<10	85	<10	197		

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To: NORTHERN SHIELD RESOURCES INC.
440 – 55 METCALFE STREET
OTTAWA ON K1P 6L5

Finalized Date: 26-APR-2010
Account: NORSHI

Project: WABASSI

CERTIFICATE OF ANALYSIS TM10042740

Sample Description	Method / Analyte / Units / LOR	WEI-21 Recvd Wt. kg 0.02	PGM-MS23 Au ppm 0.001	PGM-MS23 Pt ppm 0.0005	PGM-MS23 Pd ppm 0.001	PGM-ICP27 Au ppm 0.03	PGM-ICP27 Pt ppm 0.03	PGM-ICP27 Pd ppm 0.03	ME-ICP61 Ag ppm 0.5	ME-ICP61 Al % 0.01	ME-ICP61 As ppm 5	ME-ICP61 Ba ppm 10	ME-ICP61 Be ppm 0.5	ME-ICP61 Bi ppm 2	ME-ICP61 Ca % 0.01	ME-ICP61 Cd ppm 0.5
392727		1.16	0.013	0.0022	0.005				0.9	2.27	<5	20	<0.5	4	2.16	<0.5
392728		1.39	0.051	0.0017	0.005				1.3	2.97	<5	70	0.5	5	2.71	<0.5
392729		1.65	0.001	0.0016	0.004				<0.5	3.79	<5	150	<0.5	5	2.16	<0.5
392730		0.05	<0.001	<0.0005	<0.001				<0.5	0.39	<5	20	<0.5	<2	0.03	<0.5
392731		1.25	0.051	0.0042	0.002				5.5	8.09	<5	160	<0.5	5	5.52	2.7
392732		1.43	0.042	0.0059	0.002				4.9	8.01	<5	180	<0.5	6	5.38	2.7
392733		1.30	0.058	0.0040	0.001				10.0	8.58	<5	160	<0.5	7	6.37	5.6
392734		1.24	0.074	0.0026	0.001				9.1	9.24	<5	200	<0.5	5	6.91	4.9
392735		1.42	0.143	0.0021	0.001				14.3	9.29	<5	170	<0.5	7	6.57	6.2
392736		1.38	0.065	0.0022	0.001				10.5	9.22	7	170	<0.5	6	6.64	5.0
392737		1.43	0.111	0.0013	<0.001				12.0	8.32	<5	160	<0.5	7	5.30	5.6
392738		1.48	0.055	0.0012	<0.001				7.7	8.23	5	130	<0.5	7	5.14	4.6
392739		0.71	0.090	0.0008	<0.001				27.2	9.09	20	120	<0.5	10	4.94	14.6
392740		0.05	0.150	0.471	>1.00	0.13	0.42	1.34	1.8	8.44	41	340	0.5	6	7.36	0.8
392741		0.56	0.022	0.0018	0.001				12.3	8.07	6	90	<0.5	5	4.29	4.8
392742		0.97	0.066	0.0014	0.001				17.8	9.57	<5	100	<0.5	17	5.25	9.0
392743		1.51	0.147	0.0020	0.001				13.1	7.39	10	20	<0.5	11	4.96	6.2
392744		0.97	0.309	0.0017	0.001				35.1	7.70	10	20	<0.5	15	5.63	11.2
392745		1.36	0.215	0.0011	<0.001				26.8	9.23	11	50	<0.5	10	6.17	11.8
392746		0.93	0.050	0.0007	<0.001				11.2	9.17	<5	90	<0.5	4	5.28	3.7
392747		1.24	0.125	0.0009	<0.001				13.7	8.60	9	90	<0.5	5	4.69	7.9
392748		0.99	0.147	0.0012	0.001				17.6	7.60	6	60	<0.5	11	4.52	10.2
392749		1.18	0.162	0.0008	<0.001				17.5	7.63	16	50	<0.5	10	5.03	11.8
392750		Not Recvd														
392751		1.41	0.328	0.0023	<0.001				23.3	8.80	13	70	<0.5	13	5.54	16.1
392752		1.41	0.396	0.0010	<0.001				19.9	9.08	13	100	<0.5	12	5.79	15.2
392753		1.58	0.492	0.0013	<0.001				22.6	9.15	18	120	<0.5	14	6.29	20.5
392754		1.11	0.195	0.0018	0.001				14.1	8.18	8	90	<0.5	7	4.50	11.2
392755		2.04	0.047	0.0008	<0.001				14.7	7.22	15	70	<0.5	3	5.39	5.5
392756		0.59	0.066	0.0144	0.007				13.3	4.93	<5	60	<0.5	3	1.10	38.6
392757		0.41	0.015	0.0010	<0.001				5.6	7.04	9	150	<0.5	<2	4.60	2.9
392758		0.99	0.002	0.0005	<0.001				1.0	7.49	9	120	<0.5	<2	4.62	1.9
392759		1.29	0.078	0.0016	0.001				5.5	9.08	9	40	<0.5	<2	5.92	9.5
392760		0.05	0.139	0.347	>1.00	0.19	0.41	1.38	1.9	8.49	38	330	0.6	2	7.55	<0.5
392761		0.42	0.041	0.0009	0.001				6.5	7.73	<5	30	<0.5	4	5.13	16.3
392762		0.74	0.079	0.0043	0.002				25.8	6.92	8	30	<0.5	3	3.31	10.3
392763		0.87	0.123	0.0065	0.003				19.8	6.75	<5	30	<0.5	4	3.12	7.5
392764		0.75	0.066	0.0066	0.002				23.1	7.55	<5	40	<0.5	4	3.00	6.0
392765		1.01	0.064	0.0011	0.001				20.4	8.11	12	50	<0.5	2	2.46	9.7
392766		1.31	0.002	0.0006	<0.001				2.3	8.35	<5	40	<0.5	<2	5.71	2.3

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To: NORTHERN SHIELD RESOURCES INC.
440 – 55 METCALFE STREET
OTTAWA ON K1P 6L5

Finalized Date: 26-APR-2010
Account: NORSHI

Project: WABASSI

CERTIFICATE OF ANALYSIS TM10042740

Sample Description	ME-ICP61	ME-ICP61	ME-ICP61	ME-ICP61	ME-ICP61	ME-ICP61	ME-ICP61	ME-ICP61	ME-ICP61	ME-ICP61	ME-ICP61	ME-ICP61	ME-ICP61	ME-ICP61	ME-ICP61
Method / Analyte	Co	Cr	Cu	Fe	Ga	K	La	Mg	Mn	Mo	Na	Ni	P	Pb	S
Units	ppm	ppm	ppm	%	ppm	%	ppm	%	ppm	ppm	%	ppm	ppm	ppm	%
LOR	1	1	1	0.01	10	0.01	10	0.01	5	1	0.01	1	10	2	0.01
392727	125	1120	594	10.40	<10	0.09	10	14.80	1365	<1	0.20	1710	90	13	0.33
392728	127	714	1235	8.91	<10	0.34	10	12.35	1340	<1	0.30	2420	110	19	0.62
392729	84	688	72	10.25	10	0.70	10	12.65	1685	<1	0.19	1020	110	18	0.17
392730	1	6	2	0.05	<10	0.15	20	0.05	9	<1	0.01	3	40	<2	0.01
392731	44	320	2140	6.71	10	0.84	10	6.52	913	<1	1.02	410	240	256	0.75
392732	41	279	1870	5.75	10	0.92	10	5.87	846	<1	0.98	388	50	235	0.50
392733	28	284	2590	4.17	10	0.77	10	3.84	628	<1	1.24	272	60	1060	0.54
392734	39	268	1810	4.78	10	0.96	10	4.16	613	<1	0.87	318	40	640	0.86
392735	51	250	2360	5.46	10	0.91	10	4.72	638	<1	0.86	421	60	668	1.16
392736	38	260	2290	5.11	10	0.87	10	4.48	674	<1	1.00	266	30	645	0.88
392737	44	224	1450	5.34	10	0.80	10	5.58	659	<1	0.88	361	60	743	0.83
392738	48	293	1110	5.29	10	0.72	10	6.48	821	<1	0.94	457	60	489	0.55
392739	10	299	2750	4.17	20	1.08	20	5.48	781	<1	1.22	86	80	932	1.16
392740	63	134	4660	8.23	10	0.58	30	3.65	1260	<1	1.75	312	1880	18	0.92
392741	20	254	1220	10.00	20	0.90	10	4.74	656	1	0.98	271	40	504	5.58
392742	9	232	951	4.65	20	1.03	20	5.08	708	<1	1.27	121	80	1295	1.41
392743	34	306	734	10.60	20	0.37	20	5.61	924	<1	1.15	152	60	903	6.04
392744	33	273	1135	10.35	10	0.37	20	5.33	837	1	1.01	119	60	1510	5.59
392745	9	213	879	5.62	20	0.68	20	4.90	822	<1	1.37	103	50	1445	2.51
392746	11	223	521	4.09	20	1.00	10	4.62	757	<1	1.49	97	50	515	1.25
392747	18	271	741	5.39	20	1.13	10	5.26	860	<1	1.29	146	50	879	2.11
392748	36	321	677	6.40	10	0.66	10	7.66	1050	<1	0.87	237	60	944	1.42
392749	37	300	535	5.77	10	0.54	10	7.11	978	<1	0.99	316	80	1200	1.14
392750															
392751	20	274	427	5.52	10	0.67	20	7.29	1150	<1	1.18	138	70	2000	2.13
392752	12	217	454	5.63	10	0.92	20	5.75	909	<1	1.72	70	50	2630	2.75
392753	15	183	503	5.02	20	0.82	10	4.33	891	<1	1.81	87	60	3720	2.60
392754	22	270	552	6.77	10	0.60	20	6.66	1235	<1	1.95	143	110	1545	2.62
392755	58	337	279	6.74	10	0.39	10	7.98	1105	<1	0.80	540	80	693	0.37
392756	27	256	1005	34.9	20	0.49	10	3.24	636	<1	0.55	591	30	167	>10.0
392757	9	288	268	11.00	20	0.94	10	7.21	1535	<1	0.85	138	50	261	4.41
392758	29	352	27	5.99	10	0.93	10	7.77	1250	<1	0.95	233	70	109	0.32
392759	14	163	209	7.03	10	0.35	10	4.52	997	<1	1.43	273	20	121	2.79
392760	61	137	4690	8.58	20	0.59	30	3.73	1275	<1	1.80	300	1930	18	0.92
392761	34	221	211	8.80	20	0.31	10	5.47	1225	<1	1.20	315	40	111	3.48
392762	68	326	4570	17.60	20	0.31	<10	5.21	1155	<1	1.09	851	30	76	9.39
392763	198	269	2080	18.70	20	0.26	<10	4.89	1045	<1	1.08	767	20	58	>10.0
392764	178	285	816	16.10	20	0.37	<10	5.07	1145	<1	1.17	655	30	73	>10.0
392765	57	253	639	11.80	20	0.47	<10	4.82	1185	<1	1.51	421	50	82	5.67
392766	11	193	8	4.33	20	0.38	10	4.74	732	<1	1.85	225	60	60	0.06

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CERTIFICATE OF ANALYSIS TM10042740

Sample Description	Method / Analyte / Units / LOR	ME-ICP61 Sb ppm 5	ME-ICP61 Sc ppm 1	ME-ICP61 Sr ppm 1	ME-ICP61 Th ppm 20	ME-ICP61 Ti % 0.01	ME-ICP61 Tl ppm 10	ME-ICP61 U ppm 10	ME-ICP61 V ppm 1	ME-ICP61 W ppm 10	ME-ICP61 Zn ppm 2	Cu-OG62 Cu % 0.001	Zn-OG62 Zn % 0.001
392727		<5	19	38	<20	0.23	<10	<10	103	<10	140		
392728		<5	16	28	<20	0.23	<10	<10	78	<10	88		
392729		<5	14	21	<20	0.29	<10	<10	72	<10	124		
392730		<5	<1	5	<20	0.02	<10	<10	1	<10	<2		
392731		<5	7	230	<20	0.11	<10	<10	42	<10	221		
392732		<5	5	239	<20	0.08	<10	<10	30	<10	242		
392733		<5	4	269	<20	0.08	<10	<10	26	<10	233		
392734		<5	5	297	<20	0.06	<10	<10	22	<10	195		
392735		<5	5	309	<20	0.07	<10	<10	25	<10	212		
392736		<5	5	280	<20	0.06	<10	<10	24	<10	199		
392737		<5	4	247	<20	0.07	<10	<10	21	<10	310		
392738		<5	5	234	<20	0.10	<10	<10	29	<10	404		
392739		<5	6	242	<20	0.09	<10	<10	23	<10	353		
392740		<5	25	638	<20	0.50	<10	<10	241	<10	132		
392741		<5	4	127	<20	0.06	<10	<10	19	<10	396		
392742		<5	5	207	<20	0.08	<10	10	23	<10	528		
392743		7	6	133	<20	0.08	<10	10	26	<10	714		
392744		<5	7	145	<20	0.08	<10	10	23	<10	713		
392745		<5	8	211	<20	0.08	<10	10	20	<10	747		
392746		<5	5	181	<20	0.08	<10	10	17	<10	318		
392747		<5	6	164	<20	0.08	<10	10	19	<10	779		
392748		5	11	144	<20	0.10	<10	10	37	<10	1095		
392749		5	8	162	<20	0.10	<10	10	40	<10	1180		
392750													
392751		5	13	193	<20	0.10	<10	20	38	<10	1470		
392752		<5	11	165	<20	0.09	<10	10	33	<10	1130		
392753		8	6	284	<20	0.08	<10	20	30	<10	1530		
392754		<5	13	167	<20	0.15	<10	10	61	<10	1125		
392755		<5	9	278	<20	0.12	<10	10	48	<10	635		
392756		6	7	55	<20	0.07	<10	10	36	<10	>10000		1.725
392757		<5	14	89	<20	0.12	<10	10	55	<10	1275		
392758		<5	7	95	<20	0.11	<10	10	51	<10	1310		
392759		<5	14	178	<20	0.08	<10	10	42	<10	1545		
392760		<5	27	646	<20	0.52	<10	10	244	<10	133		
392761		<5	10	140	<20	0.10	<10	10	46	<10	2100		
392762		<5	16	93	<20	0.10	<10	20	49	<10	1335		
392763		<5	11	113	<20	0.07	<10	10	38	<10	1125		
392764		<5	10	124	<20	0.08	<10	10	37	<10	977		
392765		<5	9	134	<20	0.09	<10	10	34	<10	1570		
392766		<5	9	175	<20	0.09	<10	20	33	<10	586		

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To: NORTHERN SHIELD RESOURCES INC.
440 – 55 METCALFE STREET
OTTAWA ON K1P 6L5

Finalized Date: 26-APR-2010
Account: NORSHI

Project: WABASSI

CERTIFICATE OF ANALYSIS TM10042740

Method / Analyte / Units / LOR	WEI-21	PGM-MS23	PGM-MS23	PGM-MS23	PGM-ICP27	PGM-ICP27	PGM-ICP27	ME-ICP61	ME-ICP61	ME-ICP61	ME-ICP61	ME-ICP61	ME-ICP61	ME-ICP61	ME-ICP61
Analyte	Recvd Wt.	Au	Pt	Pd	Au	Pt	Pd	Ag	Al	As	Ba	Be	Bi	Ca	Cd
Units	kg	ppm	ppm	ppm	ppm	ppm	ppm	ppm	%	ppm	ppm	ppm	ppm	%	ppm
Sample Description / LOR	0.02	0.001	0.0005	0.001	0.03	0.03	0.03	0.5	0.01	5	10	0.5	2	0.01	0.5
392767	0.71	0.059	0.0060	0.002				14.6	7.35	25	40	<0.5	3	3.03	3.5
392768	0.43	0.115	0.0018	0.001				7.5	8.37	<5	40	<0.5	<2	5.87	2.6
392769	0.43	0.048	0.0014	0.001				7.7	8.36	13	80	<0.5	2	5.33	5.7
392770	0.51	0.073	0.0018	0.001				14.0	7.85	<5	30	<0.5	<2	4.92	4.3
392771	0.83	0.020	0.0017	0.001				9.7	8.10	<5	30	<0.5	<2	5.36	2.7
392772	0.94	0.150	0.0018	0.001				17.1	8.29	<5	20	<0.5	8	6.84	4.5
392773	0.92	0.066	0.0011	0.001				10.1	7.78	<5	50	<0.5	7	5.04	4.4
392774	0.47	0.064	0.0021	0.001				13.1	7.98	<5	40	<0.5	2	5.46	4.4
392775	0.63	0.026	0.0020	0.001				4.5	8.24	5	20	<0.5	<2	6.78	3.8
392776	1.48	0.060	0.0009	0.001				6.6	8.82	<5	20	<0.5	3	6.80	4.2
392777	0.76	0.048	0.0009	0.001				6.5	8.61	<5	20	<0.5	<2	6.60	3.1
392778	0.43	0.085	0.0017	0.001				26.8	7.78	<5	50	<0.5	4	5.23	4.9
392779	1.10	0.048	0.0005	<0.001				9.0	9.16	<5	50	<0.5	3	6.44	7.6
392780	0.66	0.005	<0.0005	<0.001				1.7	9.33	<5	60	<0.5	<2	6.62	1.9
392781	0.73	0.020	<0.0005	<0.001				3.2	9.14	<5	50	<0.5	<2	6.46	1.6
392782	1.47	0.001	<0.0005	<0.001				0.9	9.46	<5	50	<0.5	<2	7.50	0.5
392783	0.79	<0.001	<0.0005	<0.001				0.6	9.92	<5	30	<0.5	<2	7.70	0.5
392784	0.51	0.017	<0.0005	<0.001				2.7	10.10	<5	30	<0.5	3	6.99	1.0
392785	0.69	0.023	0.0011	0.001				69.6	9.02	<5	40	<0.5	<2	4.35	4.1
392786	0.67	0.319	0.0013	0.001				89.7	7.95	<5	50	<0.5	<2	4.20	4.6
392787	0.86	0.022	<0.0005	<0.001				3.5	9.55	<5	100	<0.5	<2	6.46	1.7
392788	0.43	0.132	0.0005	<0.001				16.3	8.93	<5	50	<0.5	<2	5.89	5.4
392789	0.72	0.048	0.0007	<0.001				10.1	9.10	6	50	<0.5	<2	5.96	4.2
392790	0.04	<0.001	<0.0005	<0.001				<0.5	0.43	<5	20	<0.5	<2	0.04	<0.5
392791	0.86	0.079	0.0005	<0.001				13.2	8.83	<5	40	<0.5	4	6.04	5.2
392792	0.94	0.059	0.0007	<0.001				11.0	9.24	<5	50	<0.5	3	5.78	9.3
392793	0.85	0.039	0.0019	0.001				9.2	8.46	<5	50	<0.5	3	5.23	4.6
392794	0.84	0.139	0.0024	0.001				48.6	7.94	5	50	<0.5	3	4.74	24.3
392795	1.38	0.073	0.0040	0.001				17.8	8.21	5	30	<0.5	5	5.00	16.2
392796	1.12	0.122	0.0020	0.002				19.4	7.90	<5	50	<0.5	2	5.56	7.2
392797	1.19	0.052	0.0006	<0.001				5.6	9.88	5	70	<0.5	<2	6.04	2.3
392798	0.46	0.108	0.0020	0.001				13.4	6.88	5	50	<0.5	3	4.90	2.4
392799	0.64	0.063	0.0018	0.001				8.0	5.94	<5	40	<0.5	<2	3.23	2.2
392800	0.04	0.192	0.452	>1.00	0.13	0.48	1.31	2.6	8.51	35	360	0.6	<2	7.55	0.7
392801	1.39	0.064	0.0010	0.001				0.8	3.59	<5	50	<0.5	<2	4.23	1.1
392802	1.41	0.002	0.0009	<0.001				1.4	5.03	5	70	<0.5	2	6.16	0.7
392803	1.37	<0.001	<0.0005	<0.001				<0.5	6.98	<5	90	<0.5	<2	5.78	0.6
392804	0.98	0.087	0.0014	<0.001				1.2	6.15	8	110	<0.5	<2	5.83	<0.5
392805	1.08	0.061	<0.0005	<0.001				<0.5	6.73	<5	90	<0.5	<2	5.79	<0.5
392806	1.11	0.004	<0.0005	<0.001				0.9	7.02	<5	60	<0.5	<2	6.36	<0.5

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To: NORTHERN SHIELD RESOURCES INC.
440 – 55 METCALFE STREET
OTTAWA ON K1P 6L5

Finalized Date: 26-APR-2010
Account: NORSHI

Project: WABASSI

CERTIFICATE OF ANALYSIS TM10042740

Sample Description / Method / Analyte / Units / LOR	ME-ICP61 Co ppm 1	ME-ICP61 Cr ppm 1	ME-ICP61 Cu ppm 1	ME-ICP61 Fe % 0.01	ME-ICP61 Ga ppm 10	ME-ICP61 K % 0.01	ME-ICP61 La ppm 10	ME-ICP61 Mg % 0.01	ME-ICP61 Mn ppm 5	ME-ICP61 Mo ppm 1	ME-ICP61 Na % 0.01	ME-ICP61 Ni ppm 1	ME-ICP61 P ppm 10	ME-ICP61 Pb ppm 2	ME-ICP61 S % 0.01
392767	157	308	666	16.15	10	0.35	<10	4.83	973	<1	1.14	600	70	36	>10.0
392768	108	254	926	10.40	20	0.35	10	4.00	824	<1	1.21	340	70	95	5.45
392769	54	245	533	7.78	20	0.60	<10	3.13	844	<1	1.41	254	50	64	3.76
392770	74	353	1435	12.15	20	0.27	10	4.29	866	<1	1.01	391	40	31	4.86
392771	98	299	821	14.70	20	0.25	<10	3.94	761	<1	1.03	568	40	34	7.15
392772	93	258	2160	12.40	10	0.13	10	2.98	608	<1	0.88	488	40	88	6.19
392773	92	286	1120	13.50	10	0.40	<10	4.87	744	<1	0.91	526	30	129	6.91
392774	151	292	1870	14.80	10	0.37	<10	3.69	661	<1	0.90	591	40	89	7.66
392775	63	320	511	10.85	20	0.14	<10	3.57	818	<1	0.96	420	40	55	5.64
392776	75	293	887	12.00	20	0.10	10	4.09	759	<1	0.87	462	30	76	6.40
392777	96	247	846	15.05	20	0.14	10	3.87	603	<1	0.86	657	40	116	8.34
392778	85	322	2890	13.90	10	0.31	<10	4.37	973	<1	1.01	476	30	83	7.32
392779	44	259	922	8.61	10	0.26	<10	4.57	881	<1	1.26	211	70	18	2.93
392780	31	338	116	5.66	10	0.23	<10	5.08	800	<1	1.31	163	60	7	0.77
392781	59	315	281	6.78	10	0.21	<10	5.25	793	<1	1.24	272	70	6	1.50
392782	37	303	34	4.36	20	0.16	<10	4.19	624	<1	1.39	246	60	4	0.09
392783	33	373	6	4.41	20	0.09	<10	4.43	674	<1	1.23	177	50	<2	0.02
392784	46	364	267	6.68	10	0.12	<10	5.86	857	<1	1.18	223	60	<2	1.23
392785	61	194	831	11.35	10	0.19	<10	5.51	964	<1	1.41	352	40	45	4.85
392786	103	247	>10000	13.80	10	0.32	<10	5.34	943	<1	1.11	456	30	27	6.89
392787	19	240	278	4.82	10	0.34	<10	4.79	762	<1	1.43	184	70	35	0.30
392788	32	238	1720	7.32	10	0.24	<10	5.72	1000	<1	1.23	165	70	85	1.91
392789	34	219	1110	7.12	10	0.29	<10	5.13	878	<1	1.27	176	70	118	2.16
392790	<1	4	7	0.06	<10	0.16	20	0.03	8	<1	0.01	<1	40	<2	0.02
392791	48	226	1520	9.46	10	0.20	<10	5.50	1035	<1	1.07	285	160	239	4.02
392792	46	205	1200	8.77	10	0.24	<10	5.29	1210	<1	1.36	282	120	525	3.78
392793	89	205	785	15.50	<10	0.29	<10	4.99	1115	<1	0.89	651	50	307	8.14
392794	147	170	5810	14.60	10	0.29	<10	3.34	741	<1	1.48	568	40	260	8.48
392795	110	187	1885	15.85	10	0.19	<10	4.86	854	<1	1.13	673	80	390	8.16
392796	80	204	2250	14.50	10	0.17	<10	3.66	904	<1	1.25	614	40	692	8.23
392797	31	220	506	6.19	20	0.11	<10	5.37	1085	<1	1.85	285	130	189	0.69
392798	266	125	1510	16.50	10	0.19	<10	5.64	1585	<1	0.84	513	110	181	8.48
392799	86	158	924	14.20	10	0.08	<10	8.54	1945	<1	1.07	235	110	17	3.32
392800	68	139	4810	9.09	10	0.62	20	3.88	1325	<1	1.82	316	1990	21	0.95
392801	37	3	270	14.40	<10	0.40	60	4.48	2290	2	1.11	1	>10000	8	2.55
392802	36	1	107	12.45	10	0.45	60	4.38	1965	2	1.13	<1	>10000	14	1.11
392803	27	1	38	8.53	20	0.52	40	3.53	1605	1	1.35	<1	5590	17	0.10
392804	29	2	1160	10.45	10	0.74	10	2.07	2430	<1	2.54	<1	3320	8	1.52
392805	34	1	131	11.80	10	0.35	10	2.12	1725	1	1.72	1	3750	10	0.33
392806	40	2	295	12.65	10	0.26	10	2.14	1690	<1	1.48	4	3670	5	0.28

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440 – 55 METCALFE STREET
OTTAWA ON K1P 6L5

Finalized Date: 26-APR-2010
Account: NORSHI

Project: WABASSI

CERTIFICATE OF ANALYSIS TM10042740

Sample Description	Method / Analyte / Units / LOR	ME-ICP61 Sb ppm 5	ME-ICP61 Sc ppm 1	ME-ICP61 Sr ppm 1	ME-ICP61 Th ppm 20	ME-ICP61 Ti % 0.01	ME-ICP61 Tl ppm 10	ME-ICP61 U ppm 10	ME-ICP61 V ppm 1	ME-ICP61 W ppm 10	ME-ICP61 Zn ppm 2	Cu-OG62 Cu % 0.001	Zn-OG62 Zn % 0.001
392767		<5	10	117	<20	0.09	<10	10	37	<10	796		
392768		<5	10	186	<20	0.12	<10	10	48	<10	225		
392769		<5	6	193	<20	0.09	<10	20	42	<10	454		
392770		<5	12	166	<20	0.11	<10	10	50	<10	341		
392771		<5	9	157	<20	0.08	<10	20	35	<10	240		
392772		<5	8	206	<20	0.09	<10	10	40	<10	269		
392773		<5	8	160	<20	0.08	<10	20	36	<10	287		
392774		<5	8	192	<20	0.08	<10	10	35	<10	310		
392775		<5	9	189	<20	0.09	<10	20	42	<10	296		
392776		<5	12	184	<20	0.09	<10	10	43	<10	339		
392777		<5	9	182	<20	0.09	<10	20	35	<10	244		
392778		<5	11	165	<20	0.09	<10	10	41	<10	351		
392779		<5	8	195	<20	0.12	<10	20	45	<10	273		
392780		<5	8	196	<20	0.14	<10	10	56	<10	136		
392781		<5	8	198	<20	0.14	<10	20	51	<10	118		
392782		<5	6	246	<20	0.12	<10	20	53	<10	59		
392783		<5	8	230	<20	0.13	<10	10	62	<10	55		
392784		<5	11	204	<20	0.16	<10	20	73	<10	91		
392785		<5	8	141	<20	0.08	<10	20	33	<10	456		
392786		<5	9	157	<20	0.07	<10	10	32	10	483	1.105	
392787		<5	7	208	<20	0.11	<10	20	46	10	285		
392788		<5	10	181	<20	0.12	<10	10	45	<10	736		
392789		<5	7	201	<20	0.11	<10	10	33	<10	741		
392790		<5	<1	5	<20	0.02	<10	<10	2	<10	<2		
392791		<5	9	185	<20	0.12	<10	10	42	<10	983		
392792		<5	8	190	<20	0.11	<10	10	33	<10	1320		
392793		<5	6	162	<20	0.07	<10	10	25	<10	1090		
392794		<5	5	195	<20	0.06	<10	20	16	<10	1215		
392795		<5	6	158	<20	0.08	<10	10	20	<10	875		
392796		<5	4	178	<20	0.05	<10	20	18	<10	1290		
392797		<5	8	202	<20	0.09	<10	20	39	<10	585		
392798		<5	19	129	<20	0.13	<10	20	70	10	1520		
392799		<5	30	109	<20	0.17	<10	10	105	<10	506		
392800		<5	26	661	<20	0.54	<10	20	256	10	138		
392801		6	25	91	<20	1.14	<10	<10	59	<10	280		
392802		5	34	120	<20	2.44	<10	<10	132	<10	277		
392803		7	31	121	<20	2.16	<10	<10	133	<10	249		
392804		<5	32	183	<20	1.47	<10	20	84	20	92		
392805		7	34	256	<20	1.64	<10	20	89	<10	138		
392806		7	34	207	<20	1.66	<10	20	100	<10	151		

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CERTIFICATE OF ANALYSIS TM10042740

Sample Description	Method / Analyte / Units / LOR	WEI-21 Recvd Wt. kg 0.02	PGM-MS23 Au ppm 0.001	PGM-MS23 Pt ppm 0.0005	PGM-MS23 Pd ppm 0.001	PGM-ICP27 Au ppm 0.03	PGM-ICP27 Pt ppm 0.03	PGM-ICP27 Pd ppm 0.03	ME-ICP61 Ag ppm 0.5	ME-ICP61 Al % 0.01	ME-ICP61 As ppm 5	ME-ICP61 Ba ppm 10	ME-ICP61 Be ppm 0.5	ME-ICP61 Bi ppm 2	ME-ICP61 Ca % 0.01	ME-ICP61 Cd ppm 0.5
392807		1.38	0.007	<0.0005	<0.001				2.5	7.03	<5	60	<0.5	4	5.90	<0.5
392808		1.42	0.025	0.0007	<0.001				5.4	6.49	<5	60	<0.5	6	6.71	0.7
392809		1.47	0.024	0.0022	0.001				7.2	6.50	<5	40	<0.5	6	6.78	1.4
392810		1.51	0.043	0.0022	0.001				9.7	6.39	<5	40	<0.5	<2	6.42	1.6
392811		1.34	0.005	0.0005	<0.001				1.8	6.74	<5	40	<0.5	2	6.24	0.5
392812		1.44	0.002	<0.0005	<0.001				0.6	6.21	<5	50	<0.5	<2	6.06	0.5
392813		1.28	<0.001	<0.0005	<0.001				0.7	6.65	<5	170	<0.5	<2	6.38	<0.5
392814		1.49	0.039	<0.0005	<0.001				0.5	6.35	<5	100	<0.5	<2	6.53	<0.5
392815		1.60	0.012	0.0009	<0.001				6.7	6.80	<5	90	<0.5	4	5.52	0.7
392816		1.48	0.015	0.0006	<0.001				6.9	9.14	<5	70	0.5	7	5.68	1.2
392817		1.55	0.026	<0.0005	<0.001				7.0	8.90	<5	70	0.5	9	5.45	1.0
392818		1.39	0.010	0.0005	<0.001				0.7	8.66	<5	60	0.5	3	5.42	<0.5
392819		1.12	0.072	0.0035	0.001				6.6	7.21	<5	60	<0.5	<2	4.57	1.3
392820		0.04	<0.001	<0.0005	<0.001				<0.5	0.40	<5	20	<0.5	<2	0.03	<0.5
392821		1.43	0.021	0.0015	<0.001				8.3	9.25	<5	70	0.5	3	5.49	1.4
392822		1.39	0.041	0.0006	<0.001				5.1	9.30	5	90	0.5	4	5.37	1.0
392823		1.22	0.698	0.0016	0.001				10.4	8.61	10	120	0.6	14	3.47	0.8
392824		1.29	<0.001	<0.0005	<0.001				0.5	7.26	<5	40	<0.5	6	6.41	<0.5
392825		1.03	<0.001	<0.0005	<0.001				<0.5	7.56	<5	60	<0.5	<2	6.14	<0.5
392826		1.25	<0.001	<0.0005	<0.001				0.5	5.94	<5	50	<0.5	3	5.44	0.6
392827		1.35	<0.001	<0.0005	<0.001				0.8	6.87	12	50	<0.5	<2	6.19	<0.5
392828		1.29	0.003	<0.0005	<0.001				0.7	7.35	5	200	0.7	<2	4.21	<0.5
392829		1.68	0.017	0.0010	<0.001				12.1	4.57	25	<10	<0.5	<2	2.94	5.0
392830		1.62	0.033	0.0044	0.002				12.2	5.02	37	<10	<0.5	<2	2.30	4.1
392831		1.73	0.033	0.0075	0.002				11.0	3.64	7	<10	<0.5	<2	2.05	94.2
392832		1.76	0.012	0.0066	0.002				9.1	3.96	10	<10	<0.5	<2	2.34	61.6
392833		1.86	0.054	0.0066	0.002				9.8	2.57	5	<10	<0.5	<2	1.61	91.7
392834		1.63	0.047	0.0126	0.004				7.6	5.05	15	<10	<0.5	<2	2.22	281
392835		1.75	0.126	0.0028	0.001				7.3	5.26	33	<10	<0.5	12	3.21	100.5
392836		1.12	0.141	0.0074	0.002				8.1	4.98	23	<10	0.5	<2	1.97	375
392837		1.33	0.195	0.0030	0.001				11.6	7.40	10	<10	<0.5	5	3.32	115.5
392838		1.71	0.088	0.0036	0.001				3.7	6.79	35	<10	<0.5	<2	2.63	21.5

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To: NORTHERN SHIELD RESOURCES INC.
440 – 55 METCALFE STREET
OTTAWA ON K1P 6L5

Finalized Date: 26-APR-2010
Account: NORSHI

Project: WABASSI

CERTIFICATE OF ANALYSIS TM10042740

Sample Description	Method / Analyte / Units / LOR	ME-ICP61 Co ppm 1	ME-ICP61 Cr ppm 1	ME-ICP61 Cu ppm 1	ME-ICP61 Fe % 0.01	ME-ICP61 Ga ppm 10	ME-ICP61 K % 0.01	ME-ICP61 La ppm 10	ME-ICP61 Mg % 0.01	ME-ICP61 Mn ppm 5	ME-ICP61 Mo ppm 1	ME-ICP61 Na % 0.01	ME-ICP61 Ni ppm 1	ME-ICP61 P ppm 10	ME-ICP61 Pb ppm 2	ME-ICP61 S % 0.01
392807		34	1	2080	14.70	10	0.18	10	2.37	2360	1	1.59	4	5470	6	0.47
392808		37	1	5900	16.05	10	0.19	10	2.28	2650	<1	1.66	12	6100	10	0.98
392809		37	1	9700	16.50	10	0.14	10	2.19	2490	<1	1.53	7	6100	22	1.39
392810		37	1	>10000	15.75	10	0.11	10	2.00	2380	<1	1.45	13	5660	24	1.46
392811		34	2	1140	14.85	10	0.14	20	2.02	2310	<1	1.48	<1	6030	5	0.33
392812		28	2	454	16.50	10	0.14	10	2.00	2620	<1	1.22	1	5400	2	0.24
392813		27	18	266	12.10	10	0.60	10	2.19	1890	<1	1.32	17	4400	2	0.20
392814		29	12	334	14.40	10	0.33	10	2.37	2270	1	1.18	10	5580	4	0.27
392815		35	7	5210	15.25	10	0.51	20	1.67	2660	2	1.54	17	7260	29	1.03
392816		14	2	7080	13.60	10	0.19	10	0.83	1990	1	2.53	9	1930	19	0.90
392817		15	2	7520	13.05	20	0.27	10	0.79	1975	1	2.50	9	1810	20	0.99
392818		14	14	548	11.45	10	0.25	<10	1.25	1755	1	2.32	5	1720	13	0.23
392819		96	3	6250	13.60	10	0.21	10	0.74	1355	1	2.06	37	1580	203	5.03
392820		<1	3	3	0.03	<10	0.16	20	0.02	7	1	0.01	1	40	3	0.01
392821		13	4	8750	10.65	20	0.24	10	0.79	1400	<1	2.60	10	1530	18	1.07
392822		17	3	3920	9.93	20	0.38	10	0.92	1315	<1	2.69	4	1740	20	0.69
392823		52	1	9280	10.90	20	0.78	10	1.17	1050	1	2.84	12	2170	16	3.16
392824		30	2	246	15.65	10	0.11	10	1.93	2280	1	1.90	<1	5070	5	0.19
392825		31	2	143	12.75	10	0.18	10	1.85	1850	<1	1.95	<1	2630	5	0.15
392826		45	1	90	14.75	10	0.18	10	3.00	2270	<1	1.48	3	3500	5	0.15
392827		47	2	96	14.50	10	0.19	10	2.68	2080	<1	1.75	4	5140	6	0.25
392828		8	8	94	3.97	10	0.72	20	1.35	1120	<1	2.61	4	770	74	0.13
392829		5	<1	1705	23.9	20	0.02	30	5.73	1160	<1	0.05	2	90	79	>10.0
392830		28	<1	1990	22.6	20	<0.01	40	5.86	1095	1	<0.01	<1	90	141	>10.0
392831		5	<1	1515	31.0	20	<0.01	10	4.35	934	<1	<0.01	3	<10	49	>10.0
392832		7	1	999	32.1	10	<0.01	10	5.47	969	<1	<0.01	<1	<10	49	>10.0
392833		1	<1	1795	34.2	<10	<0.01	20	4.62	866	<1	<0.01	3	70	39	>10.0
392834		2	<1	597	19.80	10	<0.01	20	5.73	1415	<1	<0.01	<1	70	41	>10.0
392835		3	<1	85	16.50	20	<0.01	50	8.11	1475	<1	<0.01	<1	60	685	>10.0
392836		3	<1	109	12.95	10	<0.01	40	7.38	1770	<1	0.01	<1	70	355	>10.0
392837		4	<1	71	9.83	30	<0.01	50	8.76	1710	<1	<0.01	<1	80	647	>10.0
392838		12	<1	115	16.05	10	<0.01	60	9.08	1440	1	<0.01	<1	150	63	>10.0

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To: NORTHERN SHIELD RESOURCES INC.
440 – 55 METCALFE STREET
OTTAWA ON K1P 6L5

Finalized Date: 26-APR-2010
Account: NORSHI

Project: WABASSI

CERTIFICATE OF ANALYSIS TM10042740

Sample Description / Method	ME-ICP61	ME-ICP61	ME-ICP61	ME-ICP61	ME-ICP61	ME-ICP61	ME-ICP61	ME-ICP61	ME-ICP61	ME-ICP61	Cu-OG62	Zn-OG62
Analyte	Sb	Sc	Sr	Th	Ti	Tl	U	V	W	Zn	Cu	Zn
Units	ppm	ppm	ppm	ppm	%	ppm	ppm	ppm	ppm	ppm	%	%
LOR	5	1	1	20	0.01	10	10	1	10	2	0.001	0.001
392807	8	37	230	<20	1.76	<10	10	72	<10	182		
392808	7	45	244	<20	1.84	<10	10	53	<10	195		
392809	9	45	249	<20	1.83	<10	10	60	<10	214		
392810	7	45	232	<20	1.71	<10	10	52	<10	203	1.200	
392811	6	39	243	<20	1.72	<10	10	50	<10	188		
392812	8	42	234	<20	1.65	<10	10	40	<10	217		
392813	6	38	168	<20	1.35	<10	10	76	<10	151		
392814	8	49	194	<20	1.70	<10	<10	77	<10	209		
392815	<5	27	210	<20	1.86	<10	<10	42	<10	181		
392816	<5	31	305	<20	1.12	<10	<10	27	<10	197		
392817	<5	33	289	<20	0.96	<10	<10	13	<10	154		
392818	<5	32	264	<20	1.02	<10	<10	31	<10	120		
392819	<5	28	248	<20	0.71	<10	<10	11	<10	117		
392820	<5	1	4	<20	0.02	<10	<10	2	<10	4		
392821	<5	22	315	<20	0.81	<10	<10	12	10	109		
392822	<5	12	323	<20	0.67	<10	<10	21	10	141		
392823	<5	11	305	<20	0.46	<10	<10	12	<10	152		
392824	<5	36	246	<20	1.61	<10	<10	70	<10	189		
392825	<5	33	254	<20	1.46	<10	<10	122	<10	158		
392826	<5	39	185	<20	1.65	<10	<10	164	<10	182		
392827	<5	35	213	<20	1.98	<10	<10	190	<10	169		
392828	10	9	183	<20	0.38	<10	<10	58	<10	96		
392829	5	3	14	<20	0.14	20	<10	9	10	4590		
392830	15	3	8	<20	0.14	20	<10	2	10	4210		
392831	15	6	<1	<20	0.15	10	<10	10	20	>10000		4.85
392832	<5	6	<1	<20	0.21	<10	<10	17	20	>10000		2.47
392833	10	4	1	<20	0.07	10	<10	4	10	>10000		4.26
392834	6	4	6	<20	0.11	20	<10	2	10	>10000		12.75
392835	6	4	6	<20	0.14	<10	<10	3	<10	>10000		4.05
392836	<5	3	6	<20	0.11	<10	<10	4	10	>10000		15.70
392837	13	4	12	<20	0.17	10	<10	1	20	>10000		5.42
392838	5	4	17	<20	0.17	<10	<10	3	<10	9110		

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To: NORTHERN SHIELD RESOURCES INC.
440 – 55 METCALFE STREET
OTTAWA ON K1P 6L5

Finalized Date: 25-APR-2010
Account: NORSHI

CERTIFICATE TM10045034

Project: WABASSI
P.O. No.:
This report is for 18 Drill Core samples submitted to our lab in Timmins, ON, Canada on 15-APR-2010.
The following have access to data associated with this certificate:

IAN BLISS	CHRISTINE VAILLANCOURT	

SAMPLE PREPARATION

ALS CODE	DESCRIPTION
WEI-21	Received Sample Weight
LOG-22	Sample login - Rcd w/o BarCode
CRU-QC	Crushing QC Test
CRU-31	Fine crushing - 70% <2mm
SPL-21	Split sample - riffle splitter
PUL-31	Pulverize split to 85% <75 um

ANALYTICAL PROCEDURES

ALS CODE	DESCRIPTION	INSTRUMENT
ME-XRF06	Whole Rock Package - XRF	XRF
OA-GRA06	LOI for ME-XRF06	WST-SIM
ME-MS81	38 element fusion ICP-MS	ICP-MS
S-IR08	Total Sulphur (Leco)	LECO
PGM-MS23	Pt, Pd, Au 30g FA ICP-MS	ICP-MS

To: NORTHERN SHIELD RESOURCES INC.
ATTN: CHRISTINE VAILLANCOURT
440 – 55 METCALFE STREET
OTTAWA ON K1P 6L5

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.

Signature:
Colin Ramshaw, Vancouver Laboratory Manager

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To: NORTHERN SHIELD RESOURCES INC.
440 – 55 METCALFE STREET
OTTAWA ON K1P 6L5

Finalized Date: 25-APR-2010
Account: NORSHI

Project: WABASSI

CERTIFICATE OF ANALYSIS TM10045034

Method	WEI-21	PGM-MS23	PGM-MS23	PGM-MS23	ME-XRF06	ME-XRF06	ME-XRF06	ME-XRF06	ME-XRF06	ME-XRF06	ME-XRF06	ME-XRF06	ME-XRF06	ME-XRF06	ME-XRF06
Analyte	Recvd Wt.	Au	Pt	Pd	SiO2	Al2O3	Fe2O3	CaO	MgO	Na2O	K2O	Cr2O3	TiO2	MnO	P2O5
Units	kg	ppm	ppm	ppm	%	%	%	%	%	%	%	%	%	%	%
Sample Description / LOR	0.02	0.001	0.0005	0.001	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.001
10WA-01-B	0.84	0.002	0.0015	<0.001	48.88	18.25	7.62	11.70	8.67	1.81	0.09	0.04	0.40	0.15	0.049
10WA-02-A	0.58	0.002	<0.0005	<0.001	61.55	12.51	14.00	5.37	0.47	3.04	1.25	<0.01	0.94	0.27	0.270
10WA-03-A	0.79	0.002	<0.0005	<0.001	46.07	19.17	16.86	8.95	3.10	3.66	0.10	<0.01	1.70	0.25	0.685
10WA-03-B	0.53	0.001	0.0005	<0.001	45.07	11.51	21.18	10.72	7.11	2.30	0.10	0.01	1.83	0.33	0.738
10WA-03-E	1.23	0.001	<0.0005	<0.001	46.80	22.30	13.00	9.00	2.62	4.15	0.09	<0.01	1.44	0.15	0.332
10WA-03-G	1.10	0.001	<0.0005	<0.001	44.50	15.25	18.90	10.33	5.55	2.76	0.06	0.01	2.92	0.24	0.315
10WA-03-J	0.98	0.001	<0.0005	<0.001	45.06	16.42	14.93	10.40	6.07	2.65	0.06	0.01	4.01	0.17	0.024
10WA-04-A	0.63	0.008	0.0007	<0.001	48.51	23.02	5.84	12.01	6.84	1.78	0.18	0.05	0.34	0.09	0.042
10WA-04-C	0.33	0.004	0.0045	<0.001	49.51	17.77	8.29	10.02	12.02	1.26	0.10	0.09	0.33	0.14	0.039
10WA-04-D	0.41	0.004	0.0031	0.006	43.72	21.05	9.09	10.48	13.08	1.11	0.17	0.01	0.10	0.11	0.020
10WA-05-A	0.89	0.006	0.0034	0.002	4.46	2.41	73.40	1.14	4.04	0.14	0.02	<0.01	0.07	0.02	0.013
10WA-05-B	0.48	0.005	0.0020	0.005	46.10	5.00	16.65	2.77	24.64	0.26	0.16	0.25	0.49	0.18	0.033
10WA-05-C	0.51	0.007	0.0021	0.001	49.01	23.25	4.57	11.66	6.58	1.81	0.98	0.06	0.22	0.08	0.025
10WA-05-D	0.58	0.219	0.0012	0.001	34.68	13.27	24.70	5.49	10.76	0.87	0.27	0.06	0.16	0.15	0.023
10WA-05-E	0.48	0.004	<0.0005	<0.001	52.51	16.68	6.37	9.59	8.60	2.16	0.81	0.06	0.49	0.11	0.045
10WA-05-F	0.50	0.003	0.0019	0.006	42.25	6.42	14.25	3.72	26.14	0.43	0.21	0.21	0.54	0.16	0.056
10WA-07-A	0.45	0.002	0.0005	<0.001	46.54	10.88	19.50	6.24	10.12	0.97	0.39	0.01	2.83	0.26	0.031
10WA-07-B	0.28	0.002	<0.0005	<0.001	67.13	15.50	4.76	4.30	1.49	3.94	1.00	<0.01	0.64	0.07	0.159

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To: NORTHERN SHIELD RESOURCES INC.
440 – 55 METCALFE STREET
OTTAWA ON K1P 6L5

Finalized Date: 25-APR-2010
Account: NORSHI

Project: WABASSI

CERTIFICATE OF ANALYSIS TM10045034

Sample Description / Method	ME-XRF06	ME-XRF06	ME-XRF06	ME-XRF06	ME-MS81	ME-MS81	ME-MS81	ME-MS81	ME-MS81	ME-MS81	ME-MS81	ME-MS81	ME-MS81	ME-MS81	ME-MS81
Analyte	SrO	BaO	LOI	Total	Ag	Ba	Ce	Co	Cr	Cs	Cu	Dy	Er	Eu	Ga
Units	%	%	%	%	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm
LOR	0.01	0.01	0.01	0.01	1	0.5	0.5	0.5	10	0.01	5	0.05	0.03	0.03	0.1
10WA-01-B	0.02	0.01	2.09	99.78	<1	29.2	7.3	36.4	260	0.15	29	1.61	0.92	0.48	16.9
10WA-02-A	0.02	0.02	0.17	99.89	<1	271	63.3	4.2	10	1.52	22	10.65	7.04	2.62	24.9
10WA-03-A	0.03	<0.01	-0.73	99.85	<1	40.1	13.9	32.9	10	0.03	29	2.15	1.01	1.86	25.7
10WA-03-B	0.02	<0.01	-0.97	99.95	<1	29.8	16.4	53.9	40	0.01	105	3.59	1.91	1.65	17.1
10WA-03-E	0.05	0.01	-0.12	99.82	<1	38.4	7.6	34.1	10	0.01	6	1.05	0.50	1.47	27.6
10WA-03-G	0.02	0.01	-0.93	99.94	<1	21.6	4.3	32.9	40	<0.01	43	1.17	0.55	0.95	19.5
10WA-03-J	0.03	0.02	-0.04	99.82	<1	18.8	2.0	54.1	10	0.05	40	0.74	0.47	0.55	19.8
10WA-04-A	0.03	<0.01	0.77	99.50	<1	36.7	6.6	27.4	310	0.12	190	0.87	0.56	0.44	18.8
10WA-04-C	0.02	0.01	0.27	99.86	<1	22.0	5.2	43.2	560	0.03	64	0.92	0.59	0.34	14.2
10WA-04-D	0.02	0.01	0.95	99.91	<1	26.1	2.7	76.2	30	0.13	56	0.25	0.15	0.26	15.1
10WA-05-A	<0.01	<0.01	12.85	98.57	1	3.4	3.2	0.7	10	<0.01	188	0.57	0.37	0.07	5.6
10WA-05-B	0.01	<0.01	3.30	99.83	<1	29.9	8.3	130.5	1670	0.95	212	1.47	0.98	0.22	7.3
10WA-05-C	0.02	<0.01	1.66	99.92	<1	96.7	6.7	26.7	400	0.68	187	0.82	0.52	0.41	18.0
10WA-05-D	0.01	0.01	7.80	98.25	11	36.4	5.9	309	430	0.30	3740	0.41	0.29	0.35	11.7
10WA-05-E	0.03	<0.01	2.34	99.79	<1	106.5	21.6	33.4	330	0.37	111	4.11	2.46	0.54	16.2
10WA-05-F	0.01	<0.01	5.65	100.05	<1	24.8	6.2	120.0	1430	0.89	117	1.18	0.69	0.34	7.3
10WA-07-A	0.01	<0.01	2.20	99.98	<1	41.8	4.8	81.5	30	0.32	148	1.31	0.87	0.52	15.4
10WA-07-B	0.03	0.02	0.79	99.84	<1	260	39.9	9.7	20	0.70	16	2.67	1.54	1.01	20.3

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To: NORTHERN SHIELD RESOURCES INC.
440 – 55 METCALFE STREET
OTTAWA ON K1P 6L5

Finalized Date: 25-APR-2010
Account: NORSHI

Project: WABASSI

CERTIFICATE OF ANALYSIS TM10045034

Sample Description (Method / Analyte / Units / LOR)	ME-MS81 Gd ppm 0.05	ME-MS81 Hf ppm 0.2	ME-MS81 Ho ppm 0.01	ME-MS81 La ppm 0.5	ME-MS81 Lu ppm 0.01	ME-MS81 Mo ppm 2	ME-MS81 Nb ppm 0.2	ME-MS81 Nd ppm 0.1	ME-MS81 Ni ppm 5	ME-MS81 Pb ppm 5	ME-MS81 Pr ppm 0.03	ME-MS81 Rb ppm 0.2	ME-MS81 Sm ppm 0.03	ME-MS81 Sn ppm 1	ME-MS81 Sr ppm 0.1
10WA-01-B	1.29	0.6	0.32	3.5	0.15	<2	1.0	4.5	123	<5	1.00	1.2	1.37	1	155.0
10WA-02-A	9.68	18.5	2.39	27.2	1.22	2	17.0	37.8	5	6	8.55	24.3	9.86	4	127.5
10WA-03-A	2.89	0.3	0.39	5.7	0.11	<2	1.3	11.3	11	<5	2.22	0.8	2.90	<1	280
10WA-03-B	4.06	0.6	0.70	6.2	0.19	<2	1.7	14.3	47	<5	2.70	0.9	4.29	<1	166.5
10WA-03-E	1.41	0.3	0.19	3.4	0.05	<2	0.8	5.6	9	<5	1.18	0.5	1.35	<1	325
10WA-03-G	1.34	0.4	0.21	1.9	0.07	<2	0.7	4.1	39	<5	0.71	0.3	1.33	<1	198.0
10WA-03-J	0.61	0.5	0.16	1.2	0.06	<2	1.5	1.6	14	<5	0.33	0.7	0.60	<1	222
10WA-04-A	0.89	0.8	0.18	3.4	0.08	<2	1.5	3.6	210	<5	0.85	3.6	0.97	<1	192.5
10WA-04-C	0.86	0.7	0.19	2.5	0.09	<2	1.2	3.2	250	<5	0.72	1.8	0.80	<1	137.0
10WA-04-D	0.27	0.6	0.06	1.6	0.03	<2	0.4	1.3	507	<5	0.34	4.0	0.29	<1	159.5
10WA-05-A	0.45	1.4	0.13	1.9	0.08	<2	0.6	2.2	<5	<5	0.52	0.5	0.51	<1	2.9
10WA-05-B	1.18	1.3	0.29	4.1	0.14	<2	2.0	4.6	1130	21	1.02	6.7	1.14	1	40.0
10WA-05-C	0.83	0.8	0.17	3.3	0.08	<2	0.9	3.3	295	29	0.83	35.3	0.78	<1	217
10WA-05-D	0.41	0.5	0.10	3.1	0.04	<2	0.6	2.6	638	342	0.68	12.3	0.47	3	81.3
10WA-05-E	3.51	1.5	0.66	8.7	0.31	<2	3.8	13.2	163	5	3.08	31.7	3.56	2	175.5
10WA-05-F	1.08	1.1	0.24	2.9	0.11	<2	1.7	3.9	1440	15	0.85	5.7	0.97	1	53.0
10WA-07-A	1.09	1.3	0.29	2.2	0.15	<2	4.2	3.1	39	<5	0.66	9.6	0.84	1	64.3
10WA-07-B	3.37	4.7	0.53	19.9	0.21	<2	8.0	17.5	16	10	4.70	23.5	3.53	1	197.0

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To: NORTHERN SHIELD RESOURCES INC.
440 – 55 METCALFE STREET
OTTAWA ON K1P 6L5

Finalized Date: 25-APR-2010
Account: NORSHI

Project: WABASSI

CERTIFICATE OF ANALYSIS TM10045034

Sample Description	Method / Analyte / Units / LOR	ME-MS81 Ta ppm 0.1	ME-MS81 Tb ppm 0.01	ME-MS81 Th ppm 0.05	ME-MS81 Tl ppm 0.5	ME-MS81 Tm ppm 0.01	ME-MS81 U ppm 0.05	ME-MS81 V ppm 5	ME-MS81 W ppm 1	ME-MS81 Y ppm 0.5	ME-MS81 Yb ppm 0.03	ME-MS81 Zn ppm 5	ME-MS81 Zr ppm 2	S-IR08 S % 0.01
10WA-01-B		0.1	0.24	0.05	<0.5	0.15	<0.05	102	1	8.1	0.92	144	17	0.02
10WA-02-A		1.1	1.71	4.87	<0.5	1.11	1.48	<5	1	62.1	7.20	235	889	0.05
10WA-03-A		0.1	0.43	0.16	<0.5	0.13	0.05	33	<1	10.6	0.67	131	9	0.06
10WA-03-B		0.1	0.64	0.18	<0.5	0.22	0.06	175	<1	17.6	1.27	150	19	0.18
10WA-03-E		<0.1	0.20	0.07	<0.5	0.07	<0.05	29	<1	5.0	0.35	95	12	0.01
10WA-03-G		0.1	0.21	<0.05	<0.5	0.09	<0.05	350	<1	5.4	0.39	112	11	0.19
10WA-03-J		0.1	0.12	0.09	<0.5	0.07	<0.05	337	<1	4.1	0.43	103	18	0.14
10WA-04-A		0.1	0.15	0.42	<0.5	0.09	0.13	66	<1	4.9	0.52	47	29	0.08
10WA-04-C		0.1	0.15	0.24	<0.5	0.10	0.07	73	1	5.2	0.58	62	25	0.04
10WA-04-D		<0.1	0.05	0.45	<0.5	0.04	0.12	14	<1	1.6	0.17	58	24	0.03
10WA-05-A		<0.1	0.11	1.08	<0.5	0.09	0.30	<5	<1	3.9	0.42	2320	60	33.8
10WA-05-B		0.1	0.21	1.14	<0.5	0.15	0.27	89	<1	7.9	0.86	172	49	0.15
10WA-05-C		0.1	0.13	0.93	<0.5	0.09	0.31	37	1	4.8	0.54	43	28	0.09
10WA-05-D		<0.1	0.07	0.21	<0.5	0.05	0.09	18	<1	2.5	0.30	2100	20	10.70
10WA-05-E		0.3	0.68	2.60	<0.5	0.37	0.91	99	1	23.7	2.14	61	41	0.09
10WA-05-F		0.1	0.20	0.38	<0.5	0.11	0.12	59	<1	7.3	0.64	112	46	0.05
10WA-07-A		0.3	0.18	0.22	<0.5	0.15	0.07	293	<1	7.2	0.96	155	45	0.29
10WA-07-B		0.7	0.48	3.02	<0.5	0.24	0.77	47	<1	14.8	1.35	76	185	0.02

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To: NORTHERN SHIELD RESOURCES INC.
440 – 55 METCALFE STREET
OTTAWA ON K1P 6L5

Finalized Date: 27-MAY-2010
Account: NORSHI

CERTIFICATE TM10056828

Project: WABASSI
P.O. No.:
This report is for 78 Drill Core samples submitted to our lab in Timmins, ON, Canada on 5-MAY-2010.

The following have access to data associated with this certificate:

IAN BLISS	CHRISTINE VAILLANCOURT	

SAMPLE PREPARATION

ALS CODE	DESCRIPTION
WEI-21	Received Sample Weight
LOG-22	Sample login - Rcd w/o BarCode
LOG-24	Pulp Login - Rcd w/o Barcode
CRU-31	Fine crushing - 70% <2mm
CRU-QC	Crushing QC Test
PUL-QC	Pulverizing QC Test
SPL-21	Split sample - riffle splitter
PUL-31	Pulverize split to 85% <75 um

ANALYTICAL PROCEDURES

ALS CODE	DESCRIPTION	INSTRUMENT
PGM-ICP27	Ore grade Pt, Pd and Au by ICP	ICP-AES
ME-ICP61	33 element four acid ICP-AES	ICP-AES
S-IR08	Total Sulphur (Leco)	LECO
PGM-MS23	Pt, Pd, Au 30g FA ICP-MS	ICP-MS
Au-AA25	Ore Grade Au 30g FA AA finish	AAS

To: NORTHERN SHIELD RESOURCES INC.
ATTN: CHRISTINE VAILLANCOURT
440 – 55 METCALFE STREET
OTTAWA ON K1P 6L5

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.

Signature:
Colin Ramshaw, Vancouver Laboratory Manager

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Finalized Date: 27-MAY-2010
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Project: WABASSI

CERTIFICATE OF ANALYSIS TM10056828

Sample Description	WEI-21	PGM-MS23	PGM-MS23	PGM-MS23	Au-AA25	PGM-ICP27	PGM-ICP27	PGM-ICP27	ME-ICP61	ME-ICP61	ME-ICP61	ME-ICP61	ME-ICP61	ME-ICP61	ME-ICP61
Method / Analyte / Units / LOR	Recvd Wt.	Au	Pt	Pd	Au	Au	Pt	Pd	Ag	Al	As	Ba	Be	Bi	Ca
	kg	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	%	ppm	ppm	ppm	ppm	%
	0.02	0.001	0.0005	0.001	0.01	0.03	0.03	0.03	0.5	0.01	5	10	0.5	2	0.01
392887	0.57	<0.001	0.0010	0.002					<0.5	6.31	7	440	0.5	<2	2.06
392888	0.17	0.003	0.0008	0.002					<0.5	7.88	5	160	0.5	<2	4.43
392889	0.11	<0.001	0.0009	0.002					<0.5	8.67	<5	90	0.5	3	5.85
392890	0.05	<0.001	<0.0005	0.002					<0.5	0.39	<5	20	<0.5	<2	0.03
392891	1.18	<0.001	<0.0005	0.002					<0.5	6.43	<5	590	0.6	<2	1.41
392892	1.41	<0.001	0.0012	0.002					<0.5	6.73	6	30	<0.5	3	5.01
392893	1.37	<0.001	0.0011	0.002					<0.5	6.33	<5	30	<0.5	2	4.26
392894	1.39	<0.001	0.0008	0.002					<0.5	6.75	<5	40	<0.5	3	4.35
392895	1.25	0.011	0.0006	0.002					<0.5	6.40	<5	170	<0.5	3	5.46
392896	1.38	0.005	0.0006	0.002					<0.5	7.29	8	190	<0.5	2	5.15
392897	1.26	0.202	<0.0005	0.002					<0.5	6.71	5	160	<0.5	4	5.40
392898	1.18	0.073	0.0009	0.002					<0.5	6.34	<5	160	<0.5	5	5.99
392899	0.76	0.091	0.0012	0.002					0.7	6.15	<5	140	<0.5	6	5.52
392900	0.05	0.147	0.405	>1.00		0.22	0.37	1.38	2.0	8.38	23	320	0.6	4	6.99
392901	1.42	0.214	0.0013	0.003					<0.5	6.08	<5	130	<0.5	<2	5.40
392902	1.52	0.542	0.0009	0.002					1.3	7.22	5	290	0.7	3	6.72
392903	0.79	0.384	0.0015	0.003					0.5	3.95	5	140	0.5	2	5.89
392904	1.14	0.110	0.0005	<0.001					0.7	6.85	7	230	0.8	3	5.74
392905	1.50	0.191	0.0006	<0.001					<0.5	7.02	<5	230	0.7	4	5.30
392906	1.41	0.572	<0.0005	<0.001					0.5	7.04	21	270	0.8	2	4.67
392907	0.95	0.723	0.0015	0.002					<0.5	4.86	22	210	0.5	<2	3.91
392908	0.96	0.355	0.0007	0.002					<0.5	7.89	<5	270	0.7	<2	4.40
392909	1.05	0.007	<0.0005	0.002					<0.5	7.70	<5	190	0.6	<2	3.22
392910	0.05	0.002	<0.0005	0.002					<0.5	0.41	<5	20	<0.5	<2	0.03
392911	1.34	0.007	0.0013	0.002					<0.5	7.70	10	170	0.6	<2	3.88
392912	1.26	0.047	0.0007	0.002					<0.5	7.58	5	160	0.6	<2	3.53
392913	1.34	>1.00	<0.0005	<0.001	0.76				1.7	8.56	<5	240	0.7	2	5.16
392914	1.27	0.054	0.0011	0.002					<0.5	7.51	<5	180	0.6	2	5.31
392915	1.00	0.087	0.0008	0.002					<0.5	7.81	6	230	0.6	2	5.69
392916	1.25	0.020	0.0009	0.002					<0.5	7.96	<5	200	0.5	2	4.89
392917	1.35	0.081	0.0006	0.001					<0.5	7.20	7	90	<0.5	4	4.95
392918	1.09	0.003	0.0006	0.002					<0.5	7.40	<5	130	0.6	<2	3.71
392919	1.20	0.002	0.0008	0.002					0.7	7.35	<5	140	1.0	<2	1.42
392920	0.05	0.150	0.381	>1.00		0.17	0.38	1.33	1.9	8.35	22	330	0.6	2	7.08
392921	1.41	0.002	0.0007	0.002					1.0	7.18	7	60	0.9	<2	1.95
392922	0.93	0.001	0.0006	0.002					1.0	7.23	<5	40	0.6	<2	2.11
392923	1.28	0.001	<0.0005	0.001					0.8	7.11	<5	40	0.5	<2	1.96
392924	1.28	<0.001	0.0009	0.002					<0.5	7.26	8	10	<0.5	<2	1.69
392925	1.21	0.007	0.0006	0.002					1.6	6.29	21	10	0.6	<2	0.92
392926	1.28	0.024	0.0044	0.003					22.1	4.02	64	10	<0.5	2	0.67

Comments: Additional Au-AA25 check result for sample 392913 is 0.73 ppm.

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To: NORTHERN SHIELD RESOURCES INC.
440 – 55 METCALFE STREET
OTTAWA ON K1P 6L5

Finalized Date: 27-MAY-2010
Account: NORSHI

Project: WABASSI

CERTIFICATE OF ANALYSIS TM10056828

Sample Description	Method / Analyte / Units / LOR	ME-ICP61 Cd ppm 0.5	ME-ICP61 Co ppm 1	ME-ICP61 Cr ppm 1	ME-ICP61 Cu ppm 1	ME-ICP61 Fe % 0.01	ME-ICP61 Ga ppm 10	ME-ICP61 K % 0.01	ME-ICP61 La ppm 10	ME-ICP61 Mg % 0.01	ME-ICP61 Mn ppm 5	ME-ICP61 Mo ppm 1	ME-ICP61 Na % 0.01	ME-ICP61 Ni ppm 1	ME-ICP61 P ppm 10	ME-ICP61 Pb ppm 2
392887		<0.5	7	4	34	1.96	10	2.01	10	0.58	269	<1	3.02	2	160	2
392888		<0.5	45	69	317	7.31	10	0.97	<10	3.46	1105	<1	1.77	18	260	4
392889		0.5	30	4	68	7.17	20	0.39	10	2.30	1020	<1	1.95	2	470	4
392890		<0.5	<1	3	3	0.04	<10	0.15	20	0.02	7	<1	0.01	<1	40	2
392891		<0.5	6	9	16	1.43	10	4.04	10	0.43	191	<1	1.55	5	130	6
392892		<0.5	41	1	58	10.30	20	0.26	<10	2.89	1335	<1	1.35	1	950	6
392893		<0.5	41	1	63	10.15	20	0.54	10	3.36	1345	1	1.75	3	1470	6
392894		<0.5	35	<1	31	10.20	20	0.36	10	2.58	1655	<1	2.37	1	1250	5
392895		<0.5	32	<1	42	9.83	20	0.81	10	2.49	1605	<1	2.10	2	1080	4
392896		<0.5	34	<1	33	8.52	20	1.21	10	2.82	1440	<1	1.78	2	3470	6
392897		<0.5	41	<1	87	9.70	20	1.24	10	2.48	1515	<1	1.79	1	970	4
392898		0.6	34	<1	83	10.45	20	1.20	10	2.98	1540	<1	1.39	3	1670	7
392899		0.5	38	<1	59	10.80	20	1.08	10	2.86	1565	<1	1.33	3	1720	8
392900		0.6	62	129	4520	8.02	20	0.57	20	3.63	1245	<1	1.71	288	1800	16
392901		0.6	37	1	93	10.20	20	1.31	10	2.90	1570	<1	1.25	4	1700	6
392902		1.1	52	3	417	7.31	20	2.84	10	2.76	1975	1	0.73	18	1810	42
392903		0.8	81	11	137	4.21	10	1.37	10	3.28	670	<1	0.25	9	680	21
392904		<0.5	36	72	101	8.68	20	2.31	10	3.18	1655	<1	0.45	50	1180	23
392905		0.5	21	81	46	7.43	20	2.49	10	2.60	1525	<1	0.91	49	1210	7
392906		<0.5	32	58	74	8.77	20	2.71	10	3.03	1005	<1	0.28	51	1090	10
392907		<0.5	30	5	21	4.66	20	1.74	10	2.54	425	<1	0.10	19	670	7
392908		<0.5	14	4	32	5.19	20	2.66	10	2.15	1180	<1	1.52	11	1390	5
392909		<0.5	11	1	12	3.81	20	2.40	10	1.04	804	<1	2.04	2	1350	6
392910		<0.5	<1	3	4	0.04	<10	0.16	20	0.02	8	<1	0.01	<1	40	<2
392911		<0.5	12	2	28	4.36	20	2.40	10	1.30	906	<1	2.11	1	1690	5
392912		<0.5	16	2	21	4.59	20	2.14	10	1.15	936	<1	2.16	3	1280	4
392913		<0.5	30	5	114	7.51	20	2.34	10	2.08	1595	<1	2.39	6	1630	7
392914		0.6	21	4	37	8.56	20	1.64	10	2.26	1680	<1	1.87	5	1320	6
392915		0.7	25	4	58	7.44	20	1.95	10	2.33	1820	<1	2.20	7	1570	4
392916		<0.5	27	4	68	8.91	20	1.40	10	2.16	1410	<1	1.81	5	1760	9
392917		<0.5	23	2	64	12.15	20	0.37	20	1.70	1795	1	1.58	4	2900	17
392918		0.5	19	36	82	6.38	20	0.84	20	2.73	746	1	1.85	27	650	20
392919		0.5	6	10	91	3.74	20	0.95	20	2.85	236	2	2.21	7	120	29
392920		0.5	62	132	4550	8.07	20	0.58	20	3.65	1250	<1	1.73	288	1850	17
392921		<0.5	12	7	138	6.03	30	0.44	20	6.57	568	3	1.24	12	150	17
392922		<0.5	4	8	87	4.43	30	0.54	30	7.45	505	2	0.92	6	120	19
392923		<0.5	12	3	100	4.58	20	0.73	20	5.91	512	<1	1.17	8	200	22
392924		<0.5	16	5	31	5.44	20	0.20	20	5.11	550	<1	1.21	15	420	25
392925		<0.5	45	1	116	8.05	20	0.33	20	8.30	474	2	0.36	7	500	11
392926		0.7	83	3	2050	18.60	10	0.12	30	5.62	329	5	0.03	38	1710	63

Comments: Additional Au-AA25 check result for sample 392913 is 0.73 ppm.

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Account: NORSHI

Project: WABASSI

CERTIFICATE OF ANALYSIS TM10056828

Sample Description	Method / Analyte / Units / LOR	ME-ICP61	ME-ICP61	ME-ICP61	ME-ICP61	ME-ICP61	ME-ICP61	ME-ICP61	ME-ICP61	ME-ICP61	ME-ICP61	ME-ICP61	S-IR08
	Analyte	S	Sb	Sc	Sr	Th	Ti	Tl	U	V	W	Zn	S
	Units	%	ppm	ppm	ppm	ppm	%	ppm	ppm	ppm	ppm	ppm	%
	LOR	0.01	5	1	1	20	0.01	10	10	1	10	2	0.01
392887		0.02	<5	5	108	20	0.27	<10	<10	58	<10	21	
392888		0.49	<5	16	169	<20	0.59	<10	<10	165	<10	113	
392889		0.08	<5	27	233	<20	1.37	<10	<10	276	<10	137	
392890		0.01	<5	1	4	<20	0.02	<10	<10	3	<10	3	
392891		0.01	<5	4	54	20	0.18	<10	10	46	<10	23	
392892		0.15	<5	35	202	<20	1.66	<10	<10	262	<10	155	
392893		0.33	<5	35	97	<20	1.72	<10	<10	229	<10	150	
392894		0.13	<5	34	126	<20	1.57	<10	<10	220	<10	154	
392895		0.18	<5	36	112	<20	1.62	<10	<10	246	<10	130	
392896		0.16	<5	29	117	<20	0.83	<10	<10	114	<10	141	
392897		0.43	<5	34	137	<20	1.41	<10	<10	205	20	127	
392898		0.38	<5	39	127	<20	1.68	<10	<10	253	<10	156	
392899		0.36	<5	39	121	<20	1.65	<10	<10	261	<10	171	
392900		0.74	<5	26	615	<20	0.49	<10	<10	236	<10	127	
392901		0.68	<5	39	122	<20	1.50	<10	<10	229	10	153	
392902		2.83	<5	37	133	<20	1.22	<10	<10	202	110	248	
392903		1.66	<5	20	66	<20	0.66	<10	<10	128	80	185	
392904		1.44	<5	35	111	<20	1.18	<10	<10	280	110	141	
392905		0.86	<5	37	118	<20	1.31	<10	<10	286	210	107	
392906		3.30	<5	31	86	<20	1.11	<10	<10	241	190	51	
392907		2.20	<5	18	44	<20	0.56	<10	<10	113	120	36	
392908		0.73	<5	22	107	<20	0.83	<10	<10	106	120	81	
392909		0.05	<5	16	125	<20	0.69	<10	<10	56	10	28	
392910		0.01	<5	1	5	<20	0.02	<10	<10	2	<10	<2	
392911		0.11	<5	18	144	<20	0.56	<10	<10	47	10	31	
392912		0.38	<5	18	144	<20	0.68	<10	<10	59	10	34	
392913		2.21	<5	31	157	<20	1.22	<10	<10	127	110	40	
392914		0.85	<5	30	139	<20	0.97	10	<10	96	30	94	
392915		0.88	<5	30	138	<20	1.10	<10	<10	100	110	75	
392916		1.17	<5	28	108	<20	1.11	<10	<10	113	70	114	
392917		0.97	<5	41	218	<20	1.24	<10	<10	62	10	122	
392918		1.28	<5	19	147	<20	0.59	<10	<10	139	<10	126	
392919		1.52	<5	6	103	<20	0.11	<10	<10	35	<10	93	
392920		0.78	<5	26	618	<20	0.49	<10	<10	233	<10	130	
392921		2.19	<5	8	91	<20	0.20	<10	<10	45	<10	157	
392922		1.05	<5	14	59	<20	0.17	<10	<10	25	<10	164	
392923		1.15	<5	13	62	<20	0.23	<10	<10	77	<10	139	
392924		1.13	<5	17	58	<20	0.19	<10	<10	156	<10	145	
392925		5.43	<5	9	17	<20	0.13	<10	<10	20	<10	149	
392926		>10.0	<5	6	4	<20	0.07	<10	<10	9	<10	392	19.85

Comments: Additional Au-AA25 check result for sample 392913 is 0.73 ppm.

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To: NORTHERN SHIELD RESOURCES INC.
440 – 55 METCALFE STREET
OTTAWA ON K1P 6L5

Finalized Date: 27-MAY-2010
Account: NORSHI

Project: WABASSI

CERTIFICATE OF ANALYSIS TM10056828

Method	WEI-21	PGM-MS23	PGM-MS23	PGM-MS23	Au-AA25	PGM-ICP27	PGM-ICP27	PGM-ICP27	ME-ICP61	ME-ICP61	ME-ICP61	ME-ICP61	ME-ICP61	ME-ICP61	ME-ICP61
Analyte	Recvd Wt.	Au	Pt	Pd	Au	Au	Pt	Pd	Ag	Al	As	Ba	Be	Bi	Ca
Units	kg	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	%	ppm	ppm	ppm	ppm	%
Sample Description / LOR	0.02	0.001	0.0005	0.001	0.01	0.03	0.03	0.03	0.5	0.01	5	10	0.5	2	0.01
392927	1.40	0.018	0.0021	0.002					1.6	4.72	13	<10	<0.5	<2	3.18
392928	1.19	0.008	0.0008	0.002					2.2	5.81	15	80	0.5	<2	2.50
392929	1.13	0.001	0.0007	0.001					1.4	5.53	<5	100	0.6	<2	0.35
392930	0.05	<0.001	<0.0005	0.001					<0.5	0.38	<5	10	<0.5	<2	0.02
392931	1.26	0.001	<0.0005	0.001					2.8	3.75	9	20	0.6	<2	1.24
392932	1.22	0.001	0.0010	0.002					1.9	3.24	<5	10	<0.5	<2	2.04
392933	1.25	0.005	<0.0005	0.001					3.0	4.28	8	10	<0.5	<2	3.74
392934	1.29	0.004	<0.0005	0.001					5.6	4.98	<5	30	<0.5	<2	2.69
392935	1.44	0.042	0.0034	0.001					13.7	5.26	21	100	<0.5	<2	0.44
392936	1.37	0.029	0.0048	0.004					7.6	5.09	11	<10	<0.5	<2	1.48
392937	1.64	0.030	0.0049	0.004					7.8	4.73	7	<10	<0.5	2	1.10
392938	0.81	0.018	0.0103	0.003					5.6	4.02	23	<10	<0.5	<2	0.23
392939	1.78	0.021	0.0032	0.001					6.2	5.49	12	20	0.8	<2	0.48
392940	0.05	0.151	0.530	>1.00		0.16	0.41	1.35	2.0	8.08	28	320	0.5	<2	7.18
392941	1.38	0.072	0.0047	0.002					2.9	4.98	96	<10	0.5	<2	2.76
392942	1.29	0.164	0.0026	0.003					5.4	6.31	38	10	<0.5	<2	1.79
392943	1.24	0.028	0.0013	0.002					3.4	7.73	14	90	<0.5	<2	0.15
392944	1.28	0.022	0.0014	0.002					7.1	6.33	12	80	<0.5	<2	0.08
392945	1.34	0.026	0.0135	0.002					7.2	7.25	19	80	<0.5	<2	0.11
392946	1.33	0.018	0.0018	0.002					9.9	7.23	16	90	<0.5	<2	0.12
392947	1.33	0.022	0.0008	0.002					8.2	6.90	32	80	0.5	<2	0.14
392948	1.32	0.014	0.0013	0.002					7.4	6.64	19	80	0.9	<2	0.15
392949	1.14	0.037	0.0014	0.002					10.2	5.85	29	70	0.6	<2	0.13
392950	0.05	<0.001	<0.0005	0.002					<0.5	0.38	<5	10	<0.5	<2	0.02
392951	1.32	0.020	0.0014	0.002					8.5	5.68	16	70	<0.5	<2	0.20
392952	1.19	0.013	0.0009	0.002					6.9	4.62	18	60	<0.5	<2	0.14
392953	1.31	0.048	0.0021	0.001					8.5	5.45	14	50	<0.5	<2	0.21
392954	1.55	0.038	0.0012	0.001					16.5	5.92	16	110	0.6	<2	0.13
392955	1.33	0.009	0.0022	0.001					4.5	6.99	6	170	1.0	<2	0.29
392956	1.19	0.004	0.0016	0.001					1.0	7.11	8	70	0.5	<2	2.47
392957	1.26	0.002	0.0005	<0.001					0.7	6.86	<5	50	0.5	<2	2.60
392958	1.24	0.003	0.0008	0.001					1.8	7.26	<5	70	0.7	<2	2.98
392959	0.42	0.003	0.0012	<0.001					0.5	5.02	6	60	0.6	<2	1.05
392960	0.04	0.145	0.354	>1.00		0.15	0.53	1.18	2.1	7.76	28	310	0.5	<2	6.99
392961	0.35	0.008	0.0015	0.002					0.7	7.49	<5	70	<0.5	<2	4.05
392962	0.47	0.022	0.0019	0.001					6.9	2.22	<5	160	<0.5	<2	1.08
392963	0.44	0.068	0.0008	<0.001					3.9	7.23	<5	70	<0.5	<2	3.64
392964	1.10	0.007	0.0008	<0.001					0.6	4.87	<5	60	1.1	<2	0.78

Comments: Additional Au-AA25 check result for sample 392913 is 0.73 ppm.

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To: NORTHERN SHIELD RESOURCES INC.
440 – 55 METCALFE STREET
OTTAWA ON K1P 6L5

Finalized Date: 27-MAY-2010
Account: NORSHI

Project: WABASSI

CERTIFICATE OF ANALYSIS TM10056828

Sample Description	Method / Analyte / Units / LOR	ME-ICP61 Cd ppm 0.5	ME-ICP61 Co ppm 1	ME-ICP61 Cr ppm 1	ME-ICP61 Cu ppm 1	ME-ICP61 Fe % 0.01	ME-ICP61 Ga ppm 10	ME-ICP61 K % 0.01	ME-ICP61 La ppm 10	ME-ICP61 Mg % 0.01	ME-ICP61 Mn ppm 5	ME-ICP61 Mo ppm 1	ME-ICP61 Na % 0.01	ME-ICP61 Ni ppm 1	ME-ICP61 P ppm 10	ME-ICP61 Pb ppm 2
392927		0.5	28	<1	94	12.40	20	0.05	20	12.20	719	<1	0.01	11	160	12
392928		0.5	20	<1	144	7.63	20	0.88	20	13.15	728	<1	0.21	5	440	20
392929		<0.5	7	1	50	2.74	20	0.57	10	6.72	382	1	0.28	2	30	38
392930		<0.5	<1	3	6	0.04	<10	0.15	20	0.02	5	<1	0.01	<1	40	3
392931		<0.5	2	4	34	2.78	10	0.14	20	4.64	395	1	0.21	<1	20	115
392932		<0.5	2	21	32	2.72	10	0.13	10	3.01	477	<1	0.21	<1	30	95
392933		<0.5	3	6	39	4.26	10	0.16	10	4.31	755	<1	0.16	<1	80	89
392934		<0.5	<1	5	14	3.95	10	0.35	20	3.63	584	<1	0.17	1	90	152
392935		2.4	7	6	233	18.40	10	0.79	10	4.22	561	<1	0.15	11	170	47
392936		3.2	7	<1	370	24.8	10	0.03	20	4.96	728	<1	0.01	13	70	32
392937		5.6	13	<1	413	29.7	10	0.01	20	4.75	676	<1	<0.01	13	50	32
392938		5.8	9	2	336	34.7	<10	0.01	10	4.53	447	<1	<0.01	18	40	6
392939		5.0	5	5	178	14.55	20	0.53	30	6.94	614	<1	0.17	5	200	40
392940		0.6	61	131	4510	7.98	10	0.58	20	3.55	1225	<1	1.70	280	1860	18
392941		4.9	25	1	200	19.75	10	<0.01	30	8.48	620	1	0.01	8	70	40
392942		2.3	17	10	45	11.80	20	0.28	20	8.03	902	1	0.30	11	200	213
392943		1.7	4	14	120	7.82	20	1.82	10	2.97	265	<1	0.55	9	100	138
392944		0.9	4	10	145	7.78	10	1.74	20	1.65	122	<1	0.25	9	160	42
392945		0.5	16	14	187	10.60	20	1.97	20	1.71	145	<1	0.31	9	330	59
392946		1.5	3	16	242	10.25	10	2.17	20	1.17	94	<1	0.50	10	320	111
392947		1.1	14	14	156	8.11	20	1.63	10	2.15	180	<1	0.43	9	420	108
392948		1.5	10	12	105	7.83	20	1.52	20	2.27	130	<1	0.34	11	370	91
392949		1.3	14	12	75	8.17	10	1.27	10	2.10	188	<1	0.26	9	390	111
392950		<0.5	<1	3	<1	0.05	<10	0.15	20	0.02	5	<1	0.01	<1	40	<2
392951		1.0	9	15	96	7.50	10	1.14	10	1.48	111	<1	0.56	10	420	65
392952		0.7	3	8	57	4.21	10	0.88	10	1.51	123	<1	0.29	6	430	74
392953		1.0	6	5	88	7.51	10	0.84	30	2.06	153	<1	0.44	5	510	68
392954		3.2	10	12	75	6.27	20	1.33	10	1.57	154	<1	0.48	10	350	59
392955		<0.5	17	18	172	8.95	20	1.65	20	1.60	132	<1	1.08	20	310	34
392956		<0.5	20	7	69	6.91	20	0.55	10	2.65	681	<1	1.15	16	450	23
392957		<0.5	18	6	24	5.21	20	0.24	10	2.32	586	<1	2.02	16	450	16
392958		<0.5	19	24	123	6.12	20	0.29	10	1.96	635	<1	2.23	35	730	<2
392959		<0.5	18	3	96	8.61	10	0.30	10	2.22	1260	<1	0.68	4	120	<2
392960		0.5	60	129	4300	7.71	10	0.56	20	3.42	1185	<1	1.63	268	1780	17
392961		<0.5	62	113	874	10.35	20	0.25	10	3.84	1225	<1	1.82	117	540	<2
392962		0.6	22	5	8290	9.73	10	0.79	70	2.83	1625	<1	0.31	11	3540	7
392963		<0.5	29	23	4580	10.05	20	0.29	10	3.33	1645	<1	1.43	46	300	<2
392964		0.6	9	2	693	9.87	10	0.28	20	7.68	612	2	0.47	1	150	<2

Comments: Additional Au-AA25 check result for sample 392913 is 0.73 ppm.

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Finalized Date: 27-MAY-2010
Account: NORSHI

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CERTIFICATE OF ANALYSIS TM10056828

Sample Description	Method / Analyte / Units / LOR	ME-ICP61 S % 0.01	ME-ICP61 Sb ppm 5	ME-ICP61 Sc ppm 1	ME-ICP61 Sr ppm 1	ME-ICP61 Th ppm 20	ME-ICP61 Ti % 0.01	ME-ICP61 Tl ppm 10	ME-ICP61 U ppm 10	ME-ICP61 V ppm 1	ME-ICP61 W ppm 10	ME-ICP61 Zn ppm 2	S-IR08 S % 0.01
392927		>10.0	<5	3	13	<20	0.06	<10	<10	2	<10	590	11.50
392928		4.61	<5	5	20	<20	0.10	<10	<10	5	<10	611	
392929		0.75	<5	6	13	<20	0.08	<10	<10	8	<10	188	
392930		0.01	<5	<1	4	<20	0.02	<10	<10	1	<10	<2	
392931		1.01	<5	3	15	<20	0.07	<10	<10	1	<10	152	
392932		0.71	<5	3	19	<20	0.07	<10	<10	2	<10	173	
392933		0.82	<5	6	27	<20	0.11	<10	<10	10	<10	218	
392934		0.87	<5	5	25	<20	0.08	<10	<10	6	<10	223	
392935		>10.0	<5	4	9	<20	0.10	<10	<10	60	<10	3830	15.30
392936		>10.0	<5	5	13	<20	0.12	<10	<10	6	<10	4470	19.60
392937		>10.0	<5	4	7	<20	0.15	<10	<10	3	<10	5020	21.7
392938		>10.0	<5	5	4	<20	0.11	<10	<10	5	<10	4010	31.6
392939		>10.0	<5	5	18	<20	0.16	<10	<10	19	<10	5410	12.20
392940		0.83	<5	24	616	<20	0.49	<10	<10	235	<10	138	
392941		>10.0	<5	6	11	<20	0.15	<10	<10	4	<10	3080	17.00
392942		8.75	<5	7	22	<20	0.25	<10	<10	79	<10	1040	
392943		4.10	<5	12	22	<20	0.15	10	<10	86	<10	659	
392944		3.74	<5	10	18	<20	0.08	<10	<10	62	<10	295	
392945		6.11	<5	12	25	<20	0.07	10	<10	74	<10	130	
392946		5.09	<5	13	32	<20	0.08	10	<10	80	<10	282	
392947		5.69	<5	13	32	<20	0.08	10	<10	75	<10	327	
392948		5.27	<5	12	30	<20	0.09	10	<10	74	<10	436	
392949		5.52	<5	12	19	<20	0.06	<10	<10	64	<10	360	
392950		0.02	<5	<1	3	<20	0.02	<10	<10	2	<10	<2	
392951		5.04	<5	12	21	<20	0.07	10	<10	74	<10	263	
392952		2.32	<5	10	16	<20	0.08	10	<10	37	<10	162	
392953		5.79	<5	9	22	<20	0.07	<10	<10	21	<10	277	
392954		4.40	<5	10	23	<20	0.06	10	<10	57	<10	764	
392955		4.89	<5	11	41	<20	0.07	<10	<10	96	<10	190	
392956		1.81	<5	19	63	<20	0.40	<10	<10	151	<10	164	
392957		0.50	<5	15	97	<20	0.47	<10	<10	133	<10	112	
392958		0.38	<5	14	129	<20	0.40	<10	<10	125	<10	95	
392959		0.62	<5	15	61	<20	0.39	<10	<10	30	<10	104	
392960		0.76	<5	23	589	<20	0.49	<10	<10	228	<10	121	
392961		1.77	<5	29	172	<20	0.47	<10	<10	147	<10	117	
392962		1.07	<5	15	25	40	0.50	<10	<10	17	<10	133	
392963		0.45	<5	25	132	<20	0.73	<10	<10	207	<10	119	
392964		3.63	<5	7	30	<20	0.06	<10	<10	2	<10	214	

Comments: Additional Au-AA25 check result for sample 392913 is 0.73 ppm.

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440 – 55 METCALFE STREET
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Finalized Date: 27-MAY-2010
Account: NORSHI

CERTIFICATE TM10056829

Project: WABASSI
P.O. No.:
This report is for 83 Drill Core samples submitted to our lab in Timmins, ON, Canada on 6-MAY-2010.
The following have access to data associated with this certificate:

IAN BLISS	CHRISTINE VAILLANCOURT	

SAMPLE PREPARATION

ALS CODE	DESCRIPTION
WEI-21	Received Sample Weight
LOG-22	Sample login - Rcd w/o BarCode
CRU-31	Fine crushing - 70% <2mm
CRU-QC	Crushing QC Test
PUL-QC	Pulverizing QC Test
SPL-21	Split sample - riffle splitter
PUL-31	Pulverize split to 85% <75 um
LOG-24	Pulp Login - Rcd w/o Barcode

ANALYTICAL PROCEDURES

ALS CODE	DESCRIPTION	INSTRUMENT
PGM-ICP27	Ore grade Pt, Pd and Au by ICP	ICP-AES
ME-ICP61	33 element four acid ICP-AES	ICP-AES
S-IR08	Total Sulphur (Leco)	LECO
PGM-MS23	Pt, Pd, Au 30g FA ICP-MS	ICP-MS

To: NORTHERN SHIELD RESOURCES INC.
ATTN: CHRISTINE VAILLANCOURT
440 – 55 METCALFE STREET
OTTAWA ON K1P 6L5

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.

Signature:
Colin Ramshaw, Vancouver Laboratory Manager

ALS Chemex
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To: NORTHERN SHIELD RESOURCES INC.
440 – 55 METCALFE STREET
OTTAWA ON K1P 6L5

Finalized Date: 27-MAY-2010
Account: NORSHI

Project: WABASSI

CERTIFICATE OF ANALYSIS TM10056829

Sample Description	Method / Analyte / Units / LOR	WEI-21 Recvd Wt. kg 0.02	PGM-MS23 Au ppm 0.001	PGM-MS23 Pt ppm 0.0005	PGM-MS23 Pd ppm 0.001	PGM-ICP27 Au ppm 0.03	PGM-ICP27 Pt ppm 0.03	PGM-ICP27 Pd ppm 0.03	ME-ICP61 Ag ppm 0.5	ME-ICP61 Al % 0.01	ME-ICP61 As ppm 5	ME-ICP61 Ba ppm 10	ME-ICP61 Be ppm 0.5	ME-ICP61 Bi ppm 2	ME-ICP61 Ca % 0.01	ME-ICP61 Cd ppm 0.5
392965		1.49	0.009	0.0011	<0.001				1.4	7.02	<5	110	1.1	<2	1.94	<0.5
392966		1.35	0.002	0.0005	<0.001				<0.5	7.46	<5	110	0.6	<2	3.02	<0.5
392967		1.50	0.001	0.0005	<0.001				<0.5	6.51	5	130	0.9	<2	2.27	<0.5
392968		1.62	0.001	0.0015	0.001				<0.5	6.53	<5	130	0.8	<2	1.33	<0.5
392969		1.50	0.002	0.0008	<0.001				0.7	7.14	<5	130	0.5	<2	2.62	<0.5
392970		0.24	0.001	<0.0005	<0.001				<0.5	0.39	<5	20	<0.5	<2	0.03	<0.5
392971		1.20	0.003	0.0014	0.001				1.2	6.98	<5	100	0.8	<2	1.81	<0.5
392972		1.57	0.006	0.0016	0.001				5.4	6.32	5	70	<0.5	<2	0.94	<0.5
392973		0.78	0.001	0.0010	<0.001				0.8	7.67	<5	80	0.5	<2	2.55	<0.5
392974		1.17	0.003	0.0011	<0.001				1.9	7.98	7	160	0.6	<2	1.44	<0.5
392975		1.06	0.003	0.0020	0.001				3.5	6.71	6	80	<0.5	<2	2.20	<0.5
392976		1.26	0.010	0.0020	0.001				2.1	6.74	<5	90	0.5	<2	1.03	<0.5
392977		1.42	0.003	0.0009	<0.001				2.8	7.83	12	130	<0.5	<2	0.20	<0.5
392978		1.38	0.007	0.0021	0.001				2.8	8.64	8	180	<0.5	<2	0.36	0.5
392979		1.31	0.004	0.0025	0.001				2.4	6.82	15	160	0.6	<2	1.06	<0.5
392980		0.05	0.130	0.393	>1.00	0.14	0.55	1.19	2.3	7.96	23	310	0.5	<2	7.11	0.6
392981		1.38	0.009	0.0058	0.002				3.2	5.11	33	80	<0.5	<2	0.58	<0.5
392982		1.35	0.003	0.0017	0.001				1.1	7.06	5	40	0.5	<2	3.25	<0.5
392983		1.29	0.004	0.0016	0.001				1.1	7.18	<5	80	0.6	<2	3.09	<0.5
392984		1.21	0.002	0.0007	<0.001				0.8	7.12	7	100	<0.5	<2	3.14	<0.5
392985		1.23	0.001	0.0014	0.001				<0.5	4.14	<5	60	<0.5	<2	0.14	<0.5
392986		0.77	0.029	0.0013	0.002				3.5	7.59	<5	40	<0.5	2	5.46	1.2
392987		0.25	0.009	0.0012	0.001				1.2	7.25	10	140	<0.5	<2	4.29	0.6
392988		0.30	0.083	0.0010	0.002				5.6	7.08	6	90	<0.5	2	4.61	1.2
392989		0.53	0.007	0.0009	0.001				1.6	7.63	<5	130	<0.5	<2	4.71	0.8
392990		0.05	0.006	0.0008	<0.001				<0.5	0.40	<5	20	<0.5	2	0.03	<0.5
392991		0.50	0.021	0.0017	0.002				2.4	8.21	10	40	<0.5	2	5.95	0.8
392992		1.23	0.007	0.0018	<0.001				1.4	9.01	6	50	<0.5	<2	6.91	<0.5
392993		1.31	0.007	0.0020	<0.001				1.0	9.11	<5	60	<0.5	<2	6.63	<0.5
392994		1.33	0.008	0.0023	<0.001				1.5	9.64	<5	30	<0.5	<2	7.53	0.5
392995		1.15	0.009	0.0017	<0.001				2.0	9.21	<5	40	<0.5	<2	7.15	<0.5
392996		1.20	0.007	0.0025	0.001				0.6	9.13	9	40	<0.5	<2	7.18	<0.5
392997		1.16	0.008	0.0026	0.001				1.7	9.21	<5	40	<0.5	2	7.05	0.6
392998		1.24	0.008	0.0022	<0.001				1.4	9.67	<5	30	<0.5	5	7.16	<0.5
392999		1.21	0.006	0.0017	<0.001				<0.5	9.34	<5	50	<0.5	<2	6.87	<0.5
393000		0.04	0.204	0.345	>1.00	0.19	0.38	1.35	2.0	8.37	26	330	0.6	5	7.41	0.5
393101		1.28	0.027	0.0016	0.001				3.1	9.36	<5	40	<0.5	3	7.27	0.8
393102		1.17	0.016	0.0017	0.001				2.4	9.33	<5	50	<0.5	6	6.99	0.9
393103		1.24	0.008	0.0011	<0.001				0.8	8.85	<5	30	<0.5	2	7.09	0.6
393104		1.13	0.010	0.0017	0.001				1.9	8.90	<5	40	<0.5	2	6.98	0.8

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To: NORTHERN SHIELD RESOURCES INC.
440 – 55 METCALFE STREET
OTTAWA ON K1P 6L5

Finalized Date: 27-MAY-2010
Account: NORSHI

Project: WABASSI

CERTIFICATE OF ANALYSIS TM10056829

Sample Description	Method / Analyte / Units / LOR	ME-ICP61 Co ppm 1	ME-ICP61 Cr ppm 1	ME-ICP61 Cu ppm 1	ME-ICP61 Fe % 0.01	ME-ICP61 Ga ppm 10	ME-ICP61 K % 0.01	ME-ICP61 La ppm 10	ME-ICP61 Mg % 0.01	ME-ICP61 Mn ppm 5	ME-ICP61 Mo ppm 1	ME-ICP61 Na % 0.01	ME-ICP61 Ni ppm 1	ME-ICP61 P ppm 10	ME-ICP61 Pb ppm 2	ME-ICP61 S % 0.01
392965		16	15	206	8.83	20	0.55	20	2.22	778	<1	1.30	24	270	3	2.60
392966		20	13	28	6.08	20	0.37	10	2.12	850	<1	1.80	21	330	6	0.37
392967		17	11	18	5.25	20	0.50	10	2.06	928	<1	1.47	16	240	14	0.21
392968		17	17	13	7.28	20	0.57	10	2.81	1245	<1	0.92	21	340	8	0.32
392969		18	32	40	6.94	20	0.40	10	2.47	1320	<1	1.14	35	420	11	0.43
392970		<1	3	2	0.04	<10	0.15	20	0.02	6	1	0.01	<1	40	<2	0.01
392971		12	15	58	7.38	20	0.37	10	2.76	856	<1	1.14	19	370	10	1.83
392972		13	5	67	8.67	20	0.50	20	2.53	561	<1	0.85	9	170	14	5.38
392973		13	4	16	6.35	20	0.38	10	2.77	887	<1	1.70	8	530	15	0.99
392974		19	20	120	11.05	20	0.69	10	2.82	755	<1	1.17	19	390	13	4.09
392975		19	7	66	7.83	10	0.41	20	2.12	602	<1	1.40	10	470	29	4.25
392976		17	12	112	12.00	10	0.51	10	2.06	478	<1	0.88	15	220	16	5.32
392977		7	6	97	9.63	20	0.73	30	1.96	220	2	0.33	10	70	11	4.47
392978		25	19	103	11.70	20	1.15	10	2.97	374	<1	0.50	9	160	11	6.21
392979		17	10	76	9.50	20	0.77	20	1.71	383	<1	1.12	9	350	27	5.30
392980		60	133	4420	7.89	10	0.57	20	3.51	1215	<1	1.69	283	1810	13	0.79
392981		22	2	130	20.1	10	0.51	10	2.00	377	<1	0.39	14	50	17	>10.0
392982		15	4	26	6.94	20	0.22	10	1.98	830	<1	1.72	9	430	38	2.64
392983		19	4	40	7.73	20	0.41	10	2.50	760	<1	1.58	9	470	23	2.79
392984		13	10	56	5.76	20	0.68	10	2.44	958	<1	1.82	12	360	16	1.22
392985		14	7	7	7.07	10	0.29	<10	2.59	1390	<1	0.13	2	180	4	0.05
392986		65	223	3410	6.92	10	0.22	<10	7.56	1035	<1	0.94	536	180	15	0.53
392987		47	134	802	5.26	10	1.16	<10	5.47	737	<1	1.34	340	90	22	0.14
392988		72	190	4700	6.70	10	0.59	<10	5.81	985	<1	1.14	514	170	22	0.93
392989		45	166	1595	5.09	10	1.05	<10	4.92	741	<1	1.28	331	230	48	0.25
392990		<1	3	5	0.05	<10	0.15	20	0.02	5	1	0.01	<1	40	<2	0.01
392991		67	257	1360	6.72	10	0.28	<10	7.42	963	<1	0.85	475	70	44	0.35
392992		37	252	1805	4.51	10	0.26	<10	4.53	691	<1	1.16	185	70	12	0.23
392993		36	234	976	4.60	10	0.28	<10	4.36	682	<1	1.37	168	150	6	0.13
392994		37	290	1980	4.52	20	0.10	<10	4.46	683	<1	1.13	186	70	9	0.25
392995		39	305	2210	4.72	10	0.16	<10	4.82	725	<1	1.13	230	70	12	0.28
392996		37	275	409	4.72	10	0.14	<10	4.90	739	<1	1.13	215	70	7	0.06
392997		33	273	2530	4.40	20	0.14	<10	4.25	664	<1	1.27	210	60	10	0.32
392998		37	302	2200	4.89	20	0.13	<10	4.84	753	<1	1.07	228	70	10	0.26
392999		29	274	593	4.27	20	0.31	<10	4.45	703	<1	1.20	192	60	12	0.09
393000		61	143	4700	8.50	20	0.60	20	3.66	1305	<1	1.77	299	1920	19	0.81
393101		28	301	4050	4.89	20	0.14	<10	4.38	750	<1	1.14	144	210	26	0.51
393102		34	286	2450	4.79	20	0.31	<10	4.86	743	<1	1.11	187	70	27	0.33
393103		28	335	756	4.28	20	0.14	<10	4.51	775	<1	1.13	131	60	22	0.12
393104		27	321	1820	4.25	20	0.26	<10	4.31	761	<1	1.15	107	60	35	0.24

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To: NORTHERN SHIELD RESOURCES INC.
440 – 55 METCALFE STREET
OTTAWA ON K1P 6L5

Finalized Date: 27-MAY-2010
Account: NORSHI

Project: WABASSI

CERTIFICATE OF ANALYSIS TM10056829

Sample Description	Method	ME-ICP61	ME-ICP61	ME-ICP61	ME-ICP61	ME-ICP61	ME-ICP61	ME-ICP61	ME-ICP61	ME-ICP61	ME-ICP61	S-IR08
	Analyte	Sb	Sc	Sr	Th	Ti	Tl	U	V	W	Zn	S
	Units	ppm	ppm	ppm	ppm	%	ppm	ppm	ppm	ppm	ppm	%
	LOR	5	1	1	20	0.01	10	10	1	10	2	0.01
392965		<5	12	91	<20	0.25	<10	<10	81	<10	170	
392966		<5	15	128	<20	0.44	<10	<10	108	<10	114	
392967		<5	15	102	<20	0.37	<10	<10	76	<10	124	
392968		<5	18	60	<20	0.48	<10	<10	110	<10	112	
392969		<5	17	94	<20	0.43	<10	<10	119	<10	91	
392970		<5	<1	5	<20	0.02	<10	<10	2	<10	<2	
392971		<5	15	76	<20	0.39	<10	<10	110	<10	101	
392972		<5	10	50	<20	0.15	<10	<10	58	<10	112	
392973		<5	18	78	<20	0.56	<10	<10	172	<10	135	
392974		<5	16	54	<20	0.44	<10	<10	153	<10	134	
392975		<5	15	63	<20	0.36	<10	<10	150	<10	112	
392976		<5	10	54	<20	0.18	<10	<10	110	<10	127	
392977		<5	8	35	<20	0.04	<10	<10	21	<10	145	
392978		<5	15	50	<20	0.11	<10	<10	133	<10	221	
392979		<5	14	60	<20	0.15	<10	<10	114	<10	226	
392980		<5	24	608	<20	0.49	<10	<10	233	<10	125	
392981		<5	4	22	<20	0.13	<10	<10	13	<10	171	19.85
392982		<5	16	92	<20	0.50	<10	<10	193	<10	173	
392983		<5	14	86	<20	0.44	<10	<10	138	<10	164	
392984		<5	16	98	<20	0.45	<10	<10	145	<10	146	
392985		<5	8	3	<20	0.20	<10	<10	13	<10	65	
392986		<5	15	166	<20	0.24	<10	<10	91	<10	79	
392987		<5	7	149	<20	0.14	<10	<10	41	<10	87	
392988		<5	9	163	<20	0.14	<10	<10	53	<10	114	
392989		<5	7	182	<20	0.13	<10	<10	41	<10	64	
392990		<5	<1	5	<20	0.02	<10	<10	2	<10	<2	
392991		<5	9	228	<20	0.12	<10	<10	49	<10	78	
392992		<5	7	242	<20	0.10	<10	<10	42	<10	54	
392993		<5	7	236	<20	0.13	<10	<10	48	<10	57	
392994		<5	8	249	<20	0.11	<10	<10	46	<10	49	
392995		<5	8	229	<20	0.12	<10	<10	51	<10	57	
392996		<5	7	231	<20	0.11	<10	<10	47	<10	54	
392997		<5	8	225	<20	0.10	<10	<10	46	<10	57	
392998		<5	9	230	<20	0.11	<10	<10	48	<10	57	
392999		<5	9	221	<20	0.11	<10	<10	52	<10	59	
393000		<5	25	623	<20	0.52	<10	<10	245	<10	134	
393101		<5	10	222	<20	0.13	<10	<10	55	<10	115	
393102		<5	9	225	<20	0.11	<10	<10	48	<10	70	
393103		<5	10	219	<20	0.12	<10	<10	58	<10	65	
393104		<5	10	217	<20	0.11	<10	<10	55	<10	78	

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CERTIFICATE OF ANALYSIS TM10056829

Sample Description	Method Analyte Units LOR	WEI-21 Recvd Wt. kg 0.02	PGM-MS23 Au ppm 0.001	PGM-MS23 Pt ppm 0.0005	PGM-MS23 Pd ppm 0.001	PGM-ICP27 Au ppm 0.03	PGM-ICP27 Pt ppm 0.03	PGM-ICP27 Pd ppm 0.03	ME-ICP61 Ag ppm 0.5	ME-ICP61 Al % 0.01	ME-ICP61 As ppm 5	ME-ICP61 Ba ppm 10	ME-ICP61 Be ppm 0.5	ME-ICP61 Bi ppm 2	ME-ICP61 Ca % 0.01	ME-ICP61 Cd ppm 0.5
393105		1.16	0.015	0.0007	<0.001				1.7	8.61	<5	20	<0.5	3	6.66	0.5
393106		1.24	0.007	0.0008	<0.001				1.5	8.51	<5	20	<0.5	2	6.80	1.0
393107		1.16	0.008	0.0009	<0.001				2.0	8.77	<5	20	<0.5	4	6.79	0.9
393108		1.10	0.004	0.0005	<0.001				1.3	8.84	<5	30	<0.5	2	6.71	<0.5
393109		1.22	0.015	0.0006	<0.001				5.1	8.41	<5	20	<0.5	7	6.56	0.5
393110		0.04	0.001	<0.0005	<0.001				<0.5	0.40	<5	20	<0.5	<2	0.04	<0.5
393111		1.29	0.006	<0.0005	<0.001				1.3	8.65	<5	30	<0.5	4	6.85	0.5
393112		0.73	0.051	0.0005	<0.001				8.6	8.66	<5	20	<0.5	5	7.39	1.4
393113		0.51	0.015	<0.0005	<0.001				3.5	8.05	<5	230	0.7	4	4.35	0.7
393114		1.13	0.003	0.0017	0.002				0.8	5.32	<5	40	<0.5	3	3.80	0.5
393115		1.19	0.008	0.0027	0.004				1.4	4.84	<5	60	<0.5	7	3.18	0.8
393116		1.37	0.007	0.0022	0.003				3.0	4.04	<5	90	<0.5	9	2.32	1.3
393117		1.58	0.002	0.0029	0.004				1.5	3.84	6	50	<0.5	6	2.47	<0.5
393118		1.07	0.003	0.0042	0.006				0.9	3.93	<5	80	<0.5	2	2.30	0.8
393119		1.82	0.017	0.0193	0.013				2.0	4.29	<5	100	<0.5	3	3.06	1.7
393120		0.04	0.173	0.395	>1.00	0.15	0.36	1.20	2.1	8.13	16	320	0.6	5	7.16	0.6
393121		1.25	0.111	0.0031	0.004				16.2	8.05	<5	160	<0.5	2	4.84	9.0
393122		1.34	0.124	0.0016	0.001				40.8	8.38	<5	90	<0.5	3	5.78	16.5
393123		1.26	0.156	0.0013	0.001				31.2	7.28	<5	50	<0.5	4	5.64	15.9
393124		1.41	0.055	0.0015	0.001				12.6	7.46	<5	60	<0.5	2	5.61	7.7
393125		1.24	0.047	0.0005	<0.001				10.5	7.68	<5	110	<0.5	<2	5.56	7.6
393126		1.02	0.082	0.0005	<0.001				22.5	9.58	<5	70	<0.5	2	7.09	15.2
393127		1.32	0.103	0.0007	<0.001				18.7	8.38	<5	110	<0.5	5	5.90	17.7
393128		1.52	0.102	0.0046	0.002				18.8	7.60	<5	50	<0.5	3	6.17	9.1
393129		1.35	0.059	0.0040	0.002				19.2	7.98	<5	60	<0.5	3	5.68	8.0
393130		0.03	0.001	<0.0005	<0.001				<0.5	0.39	<5	20	<0.5	<2	0.03	<0.5
393131		0.68	0.094	0.0133	0.002				24.9	5.35	<5	100	<0.5	4	2.62	8.6
393132		1.36	0.039	0.0053	0.003				24.5	5.82	<5	70	<0.5	7	4.54	11.9
393133		1.42	0.090	0.0044	0.003				36.3	5.12	<5	100	<0.5	11	3.26	16.3
393134		1.15	0.040	0.0055	0.003				20.3	5.42	5	190	<0.5	5	2.76	9.2
393135		1.20	0.013	0.0087	0.009				1.7	4.29	<5	90	<0.5	3	2.97	1.0
393136		1.01	0.009	0.0082	0.010				0.9	3.49	5	30	<0.5	<2	2.65	0.8
393137		1.12	0.006	0.0073	0.007				<0.5	4.65	11	160	<0.5	<2	2.64	0.9
393138		0.94	0.007	0.0046	0.006				1.4	4.31	7	180	<0.5	4	3.32	1.0
393139		1.33	0.006	0.0102	0.010				0.9	4.49	7	140	<0.5	2	2.60	0.7
393140		0.04	0.198	0.429	>1.00	0.24	0.37	1.20	2.3	8.45	21	330	0.6	<2	7.22	0.9
393141		1.39	0.058	0.0124	0.008				9.9	4.08	5	110	<0.5	5	2.49	0.8
393142		1.60	0.063	0.0093	0.007				17.2	4.23	<5	120	<0.5	7	2.33	1.4
393143		1.36	0.017	0.0251	0.015				2.1	4.80	6	100	<0.5	7	3.57	0.9
393144		1.10	0.108	0.0075	0.005				18.3	5.90	<5	110	<0.5	6	5.40	1.6

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To: NORTHERN SHIELD RESOURCES INC.
440 – 55 METCALFE STREET
OTTAWA ON K1P 6L5

Finalized Date: 27-MAY-2010
Account: NORSHI

Project: WABASSI

CERTIFICATE OF ANALYSIS TM10056829

Sample Description	Method / Analyte / Units / LOR	ME-ICP61 Co ppm 1	ME-ICP61 Cr ppm 1	ME-ICP61 Cu ppm 1	ME-ICP61 Fe % 0.01	ME-ICP61 Ga ppm 10	ME-ICP61 K % 0.01	ME-ICP61 La ppm 10	ME-ICP61 Mg % 0.01	ME-ICP61 Mn ppm 5	ME-ICP61 Mo ppm 1	ME-ICP61 Na % 0.01	ME-ICP61 Ni ppm 1	ME-ICP61 P ppm 10	ME-ICP61 Pb ppm 2	ME-ICP61 S % 0.01
393105		36	366	1235	4.96	20	0.13	<10	5.36	891	<1	1.05	135	70	34	0.23
393106		34	388	1800	5.01	10	0.09	<10	5.59	934	<1	1.02	165	60	33	0.25
393107		35	400	2520	5.10	20	0.10	<10	5.65	913	<1	1.02	172	60	71	0.32
393108		32	393	1555	5.10	10	0.14	<10	5.68	915	<1	1.04	148	80	52	0.19
393109		42	438	4590	5.62	20	0.10	<10	5.94	988	<1	1.02	147	90	91	0.52
393110		<1	5	16	0.05	<10	0.16	20	0.03	8	<1	0.01	<1	40	<2	0.01
393111		32	429	1080	5.10	20	0.13	<10	5.78	920	<1	1.04	91	100	59	0.15
393112		44	510	5620	5.71	10	0.14	<10	5.61	908	<1	0.93	219	100	57	0.76
393113		32	501	2150	5.46	20	1.17	<10	4.38	663	<1	1.84	254	140	219	0.27
393114		69	408	633	8.09	10	0.24	<10	10.70	1215	<1	0.46	585	210	30	0.09
393115		84	510	2740	9.12	10	0.39	<10	11.75	1120	28	0.62	1030	140	50	0.33
393116		98	625	5350	9.34	10	0.62	10	12.05	1265	<1	0.65	1860	160	140	0.62
393117		95	1010	1945	9.99	10	0.27	10	14.10	1395	<1	0.51	1370	150	88	0.23
393118		92	789	214	9.87	10	0.39	10	12.65	1325	<1	0.56	1130	180	102	0.04
393119		106	876	301	10.65	10	1.02	<10	12.75	1135	<1	0.34	1200	240	115	0.19
393120		59	134	4650	8.19	20	0.58	20	3.56	1260	<1	1.71	292	1860	16	0.79
393121		44	208	1530	5.14	10	0.86	10	3.40	485	<1	1.44	429	50	515	1.06
393122		44	226	2710	4.89	20	0.48	<10	3.25	492	<1	1.32	350	30	961	1.21
393123		54	295	829	6.26	10	0.34	<10	6.38	780	<1	0.72	628	40	1225	0.63
393124		43	267	418	6.35	10	0.43	<10	7.46	863	<1	0.68	681	50	533	0.36
393125		28	263	283	4.11	20	0.80	<10	5.79	986	<1	1.13	403	70	537	0.27
393126		27	288	1315	4.16	20	0.43	<10	4.93	850	<1	1.07	192	50	802	0.85
393127		30	281	1435	4.84	20	0.67	<10	4.24	747	<1	1.29	224	60	891	1.16
393128		155	232	3370	14.10	10	0.28	<10	4.44	585	<1	0.72	1090	50	313	6.11
393129		87	208	4240	12.05	10	0.25	10	3.91	645	<1	1.41	859	110	131	4.42
393130		<1	2	12	0.06	<10	0.15	20	0.02	6	<1	0.01	<1	40	<2	0.02
393131		146	200	5770	19.30	10	0.42	<10	2.87	409	1	0.88	1590	30	67	8.61
393132		168	249	5960	19.20	10	0.50	<10	3.49	704	<1	0.95	1460	50	71	7.14
393133		248	322	9090	23.9	20	0.66	<10	4.91	1005	3	0.77	1970	140	37	9.73
393134		57	431	5830	10.05	20	1.01	10	6.74	1010	1	1.06	555	120	37	2.68
393135		110	832	232	10.00	20	0.47	10	12.20	1225	<1	0.49	1220	160	15	0.18
393136		121	934	229	11.20	10	0.13	<10	13.80	1405	1	0.27	1370	170	13	0.18
393137		98	725	99	9.06	10	0.75	10	10.85	1190	1	0.57	1110	270	17	0.13
393138		93	905	53	8.87	10	1.24	10	11.70	1085	<1	0.37	1110	200	11	0.15
393139		102	797	49	9.24	10	0.77	10	12.70	1100	<1	0.40	1150	180	5	0.06
393140		63	149	4650	8.04	20	0.60	20	3.59	1245	1	1.73	318	1910	14	0.83
393141		203	694	2240	16.85	10	0.67	10	9.39	825	2	0.50	1850	210	9	6.09
393142		199	666	4580	17.10	10	0.87	10	7.60	1050	4	0.75	1750	220	4	7.25
393143		97	938	406	9.79	10	0.68	10	11.65	1400	1	0.51	1020	260	6	0.64
393144		68	666	5730	10.00	20	0.79	10	7.11	1295	<1	1.14	564	210	8	2.10

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To: NORTHERN SHIELD RESOURCES INC.
440 – 55 METCALFE STREET
OTTAWA ON K1P 6L5

Finalized Date: 27-MAY-2010
Account: NORSHI

Project: WABASSI

CERTIFICATE OF ANALYSIS TM10056829

Sample Description	Method / Analyte / Units / LOR	ME-ICP61 Sb ppm 5	ME-ICP61 Sc ppm 1	ME-ICP61 Sr ppm 1	ME-ICP61 Th ppm 20	ME-ICP61 Ti % 0.01	ME-ICP61 Tl ppm 10	ME-ICP61 U ppm 10	ME-ICP61 V ppm 1	ME-ICP61 W ppm 10	ME-ICP61 Zn ppm 2	S-IR08 S % 0.01
393105		<5	12	204	<20	0.13	<10	<10	66	<10	61	
393106		<5	13	208	<20	0.13	<10	<10	67	<10	64	
393107		<5	13	207	<20	0.13	<10	<10	66	<10	71	
393108		<5	14	201	<20	0.14	<10	<10	66	<10	73	
393109		<5	13	199	<20	0.15	<10	<10	72	<10	70	
393110		<5	<1	4	<20	0.02	<10	<10	2	<10	<2	
393111		<5	15	203	<20	0.16	<10	<10	77	<10	66	
393112		<5	19	188	<20	0.18	<10	<10	92	<10	67	
393113		<5	19	137	20	0.20	<10	10	82	<10	104	
393114		<5	16	100	<20	0.20	<10	<10	66	<10	149	
393115		<5	9	100	<20	0.14	<10	<10	51	<10	151	
393116		<5	10	65	<20	0.17	<10	<10	54	<10	153	
393117		<5	11	73	<20	0.20	<10	<10	74	<10	138	
393118		<5	11	72	<20	0.17	<10	<10	68	<10	128	
393119		<5	13	50	<20	0.23	<10	<10	96	<10	195	
393120		<5	24	604	<20	0.49	<10	<10	237	<10	129	
393121		<5	4	159	<20	0.09	<10	<10	24	<10	305	
393122		<5	4	186	<20	0.07	<10	<10	25	<10	472	
393123		<5	4	164	<20	0.08	<10	<10	38	<10	471	
393124		<5	5	180	<20	0.08	<10	<10	39	<10	847	
393125		<5	4	178	<20	0.08	<10	<10	28	<10	1605	
393126		<5	4	206	<20	0.07	<10	<10	26	<10	1725	
393127		<5	5	172	<20	0.07	<10	<10	24	<10	1320	
393128		<5	7	145	<20	0.10	<10	<10	32	<10	957	
393129		<5	11	156	<20	0.12	<10	<10	39	<10	722	
393130		<5	<1	5	<20	0.02	<10	<10	2	<10	<2	
393131		<5	7	83	<20	0.09	<10	<10	33	<10	380	
393132		<5	12	109	<20	0.10	<10	<10	43	<10	647	
393133		9	8	80	<20	0.26	<10	<10	109	<10	2300	
393134		<5	8	85	<20	0.18	<10	<10	58	<10	1005	
393135		8	13	67	<20	0.19	<10	<10	71	<10	201	
393136		<5	15	60	<20	0.19	<10	<10	75	<10	162	
393137		5	15	72	<20	0.22	<10	<10	75	<10	186	
393138		<5	11	46	<20	0.22	<10	<10	72	<10	255	
393139		<5	12	41	<20	0.21	<10	<10	75	<10	232	
393140		<5	25	614	<20	0.51	<10	<10	241	<10	143	
393141		<5	9	56	<20	0.19	<10	<10	80	<10	252	
393142		<5	11	62	<20	0.17	<10	<10	73	<10	323	
393143		<5	14	55	<20	0.22	<10	<10	85	<10	264	
393144		<5	19	99	<20	0.22	<10	<10	101	<10	276	

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To: NORTHERN SHIELD RESOURCES INC.
440 – 55 METCALFE STREET
OTTAWA ON K1P 6L5

Finalized Date: 27-MAY-2010
Account: NORSHI

Project: WABASSI

CERTIFICATE OF ANALYSIS TM10056829

Sample Description	Method / Analyte / Units / LOR	WEI-21 Recvd Wt. kg 0.02	PGM-MS23 Au ppm 0.001	PGM-MS23 Pt ppm 0.0005	PGM-MS23 Pd ppm 0.001	PGM-ICP27 Au ppm 0.03	PGM-ICP27 Pt ppm 0.03	PGM-ICP27 Pd ppm 0.03	ME-ICP61 Ag ppm 0.5	ME-ICP61 Al % 0.01	ME-ICP61 As ppm 5	ME-ICP61 Ba ppm 10	ME-ICP61 Be ppm 0.5	ME-ICP61 Bi ppm 2	ME-ICP61 Ca % 0.01	ME-ICP61 Cd ppm 0.5
393145		1.19	0.024	0.0016	0.003				7.8	6.90	7	90	<0.5	<2	3.53	1.2
393146		1.36	0.005	0.0010	<0.001				<0.5	4.93	6	50	<0.5	4	2.99	<0.5
393147		1.65	0.020	0.0015	0.001				2.3	2.97	5	60	<0.5	<2	1.82	<0.5

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Finalized Date: 27-MAY-2010
Account: NORSHI

Project: WABASSI

CERTIFICATE OF ANALYSIS TM10056829

Sample Description	Method / Analyte / Units / LOR	ME-ICP61 Co ppm 1	ME-ICP61 Cr ppm 1	ME-ICP61 Cu ppm 1	ME-ICP61 Fe % 0.01	ME-ICP61 Ga ppm 10	ME-ICP61 K % 0.01	ME-ICP61 La ppm 10	ME-ICP61 Mg % 0.01	ME-ICP61 Mn ppm 5	ME-ICP61 Mo ppm 1	ME-ICP61 Na % 0.01	ME-ICP61 Ni ppm 1	ME-ICP61 P ppm 10	ME-ICP61 Pb ppm 2	ME-ICP61 S % 0.01
393145		59	451	2770	9.32	10	0.66	10	6.61	1335	1	1.30	355	300	10	1.88
393146		58	214	182	10.65	10	0.39	<10	9.22	1950	1	0.71	200	260	<2	0.34
393147		130	263	954	14.60	10	0.40	10	10.60	2400	1	0.54	517	380	<2	1.94

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OTTAWA ON K1P 6L5

Finalized Date: 27-MAY-2010
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CERTIFICATE OF ANALYSIS TM10056829

Sample Description	Method	ME-ICP61	ME-ICP61	ME-ICP61	ME-ICP61	ME-ICP61	ME-ICP61	ME-ICP61	ME-ICP61	ME-ICP61	ME-ICP61	S-IR08
	Analyte	Sb	Sc	Sr	Th	Ti	Tl	U	V	W	Zn	S
	Units	ppm	ppm	ppm	ppm	%	ppm	ppm	ppm	ppm	ppm	%
	LOR	5	1	1	20	0.01	10	10	1	10	2	0.01
393145		<5	20	121	<20	0.22	<10	<10	96	<10	257	
393146		<5	34	85	<20	0.41	<10	<10	189	<10	193	
393147		<5	35	49	<20	0.32	<10	<10	153	<10	232	

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To: NORTHERN SHIELD RESOURCES INC.
440 – 55 METCALFE STREET
OTTAWA ON K1P 6L5

Finalized Date: 14-MAY-2010
Account: NORSHI

CERTIFICATE TM10056945

Project: WABASSI
P.O. No.:
This report is for 3 Drill Core samples submitted to our lab in Timmins, ON, Canada on 7-MAY-2010.
The following have access to data associated with this certificate:

IAN BLISS	CHRISTINE VAILLANCOURT	

SAMPLE PREPARATION

ALS CODE	DESCRIPTION
FND-02	Find Sample for Addn Analysis

ANALYTICAL PROCEDURES

ALS CODE	DESCRIPTION	INSTRUMENT
S-IR08	Total Sulphur (Leco)	LECO

To: NORTHERN SHIELD RESOURCES INC.
ATTN: CHRISTINE VAILLANCOURT
440 – 55 METCALFE STREET
OTTAWA ON K1P 6L5

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.

Signature:
Colin Ramshaw, Vancouver Laboratory Manager

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To: NORTHERN SHIELD RESOURCES INC.
440 – 55 METCALFE STREET
OTTAWA ON K1P 6L5

Finalized Date: 14-MAY-2010
Account: NORSHI

Project: WABASSI

CERTIFICATE OF ANALYSIS TM10056945

Sample Description	Method Analyte Units LOR	S-IR08 S % 0.01
392595		11.35
392596		10.85
392599		11.30

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To: NORTHERN SHIELD RESOURCES INC.
440 – 55 METCALFE STREET
OTTAWA ON K1P 6L5

Finalized Date: 14-MAY-2010
Account: NORSHI

CERTIFICATE TM10056947

Project: WABASSI
P.O. No.:
This report is for 13 Drill Core samples submitted to our lab in Timmins, ON, Canada on 7-MAY-2010.
The following have access to data associated with this certificate:

IAN BLISS	CHRISTINE VAILLANCOURT	

SAMPLE PREPARATION

ALS CODE	DESCRIPTION
FND-02	Find Sample for Addn Analysis

ANALYTICAL PROCEDURES

ALS CODE	DESCRIPTION	INSTRUMENT
S-IR08	Total Sulphur (Leco)	LECO

To: NORTHERN SHIELD RESOURCES INC.
ATTN: CHRISTINE VAILLANCOURT
440 – 55 METCALFE STREET
OTTAWA ON K1P 6L5

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.

Signature:
Colin Ramshaw, Vancouver Laboratory Manager

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To: NORTHERN SHIELD RESOURCES INC.
440 – 55 METCALFE STREET
OTTAWA ON K1P 6L5

Finalized Date: 14-MAY-2010
Account: NORSHI

Project: WABASSI

CERTIFICATE OF ANALYSIS TM10056947

Sample Description	Method Analyte Units LOR	S-IR08 S % 0.01
392669		14.30
392671		17.30
392672		18.55
392673		15.45
392674		13.75
392678		12.15
392679		12.60
392681		18.60
392682		20.4
392683		20.5
392684		14.40
392685		15.35
392686		20.8

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To: NORTHERN SHIELD RESOURCES INC.
440 – 55 METCALFE STREET
OTTAWA ON K1P 6L5

Finalized Date: 18-MAY-2010
Account: NORSHI

CERTIFICATE TM10056948

Project: WABASSI
P.O. No.:
This report is for 19 Drill Core samples submitted to our lab in Timmins, ON, Canada on 7-MAY-2010.
The following have access to data associated with this certificate:

IAN BLISS	CHRISTINE VAILLANCOURT	

SAMPLE PREPARATION

ALS CODE	DESCRIPTION
FND-02	Find Sample for Addn Analysis

ANALYTICAL PROCEDURES

ALS CODE	DESCRIPTION	INSTRUMENT
S-IR08	Total Sulphur (Leco)	LECO

To: NORTHERN SHIELD RESOURCES INC.
ATTN: CHRISTINE VAILLANCOURT
440 – 55 METCALFE STREET
OTTAWA ON K1P 6L5

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.

Signature:
Colin Ramshaw, Vancouver Laboratory Manager

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Finalized Date: 18-MAY-2010
Account: NORSHI

Project: WABASSI

CERTIFICATE OF ANALYSIS TM10056948

Sample Description	Method Analyte Units LOR	S-IR08 S % 0.01
392691		21.1
392692		30.9
392695		>50
392706		27.8
392707		27.9
392756		21.7
392763		13.00
392764		10.50
392767		10.85
392829		18.30
392830		19.30
392831		24.4
392832		23.3
392833		23.7
392834		21.9
392835		13.20
392836		17.60
392837		11.20
392838		12.85

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To: NORTHERN SHIELD RESOURCES INC.
440 – 55 METCALFE STREET
OTTAWA ON K1P 6L5

Finalized Date: 18-MAY-2010
Account: NORSHI

CERTIFICATE TM10058123

Project: WABASSI
P.O. No.:
This report is for 31 Drill Core samples submitted to our lab in Timmins, ON, Canada on 7-MAY-2010.
The following have access to data associated with this certificate:

IAN BLISS	CHRISTINE VAILLANCOURT	

SAMPLE PREPARATION

ALS CODE	DESCRIPTION
FND-02	Find Sample for Addn Analysis

ANALYTICAL PROCEDURES

ALS CODE	DESCRIPTION	INSTRUMENT
S-IR08	Total Sulphur (Leco)	LECO

To: NORTHERN SHIELD RESOURCES INC.
ATTN: CHRISTINE VAILLANCOURT
440 – 55 METCALFE STREET
OTTAWA ON K1P 6L5

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.

Signature:
Colin Ramshaw, Vancouver Laboratory Manager

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To: NORTHERN SHIELD RESOURCES INC.
440 – 55 METCALFE STREET
OTTAWA ON K1P 6L5

Finalized Date: 18-MAY-2010
Account: NORSHI

Project: WABASSI

CERTIFICATE OF ANALYSIS TM10058123

Sample Description	Method / Analyte / Units / LOR	S-IR08 / S / % / 0.01
392839		15.45
392841		14.55
392842		10.70
392843		23.0
392844		23.9
392846		13.50
392847		27.6
392848		21.0
392849		20.2
392850		24.0
392853		14.90
392854		13.85
392855		12.30
392858		24.9
392859		33.7
392861		20.9
392862		18.60
392863		30.2
392865		31.2
392866		28.1
392867		32.2
392868		12.00
392869		29.7
392871		12.60
392872		19.25
392873		19.85
392875		15.15
392879		25.3
392881		19.25
392883		15.40
392884		11.65

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To: NORTHERN SHIELD RESOURCES INC.
440 – 55 METCALFE STREET
OTTAWA ON K1P 6L5

Finalized Date: 27-MAY-2010
Account: NORSHI

CERTIFICATE TM10061092

Project: WABASSI
P.O. No.:
This report is for 37 Drill Core samples submitted to our lab in Timmins, ON, Canada on 14-MAY-2010.
The following have access to data associated with this certificate:

IAN BLISS	CHRISTINE VAILLANCOURT	

SAMPLE PREPARATION

ALS CODE	DESCRIPTION
WEI-21	Received Sample Weight
LOG-22	Sample login - Rcd w/o BarCode
CRU-31	Fine crushing - 70% <2mm
CRU-QC	Crushing QC Test
PUL-QC	Pulverizing QC Test
SPL-21	Split sample - riffle splitter
PUL-31	Pulverize split to 85% <75 um
LOG-24	Pulp Login - Rcd w/o Barcode

ANALYTICAL PROCEDURES

ALS CODE	DESCRIPTION	INSTRUMENT
PGM-ICP27	Ore grade Pt, Pd and Au by ICP	ICP-AES
ME-ICP61	33 element four acid ICP-AES	ICP-AES
ME-OG62	Ore Grade Elements - Four Acid	ICP-AES
Ag-OG62	Ore Grade Ag - Four Acid	VARIABLE
Cu-OG62	Ore Grade Cu - Four Acid	VARIABLE
S-IR08	Total Sulphur (Leco)	LECO
PGM-MS23	Pt, Pd, Au 30g FA ICP-MS	ICP-MS

To: NORTHERN SHIELD RESOURCES INC.
ATTN: CHRISTINE VAILLANCOURT
440 – 55 METCALFE STREET
OTTAWA ON K1P 6L5

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.

Signature:
Colin Ramshaw, Vancouver Laboratory Manager

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To: NORTHERN SHIELD RESOURCES INC.
440 – 55 METCALFE STREET
OTTAWA ON K1P 6L5

Finalized Date: 27-MAY-2010
Account: NORSHI

Project: WABASSI

CERTIFICATE OF ANALYSIS TM10061092

Sample Description	WEI-21	PGM-MS23	PGM-MS23	PGM-MS23	PGM-ICP27	PGM-ICP27	PGM-ICP27	ME-ICP61	ME-ICP61	ME-ICP61	ME-ICP61	ME-ICP61	ME-ICP61	ME-ICP61	ME-ICP61
Method Analyte	Recvd Wt.	Au	Pt	Pd	Au	Pt	Pd	Ag	Al	As	Ba	Be	Bi	Ca	Cd
Units	kg	ppm	ppm	ppm	ppm	ppm	ppm	ppm	%	ppm	ppm	ppm	ppm	%	ppm
LOR	0.02	0.001	0.0005	0.001	0.03	0.03	0.03	0.5	0.01	5	10	0.5	2	0.01	0.5
393148	0.47	0.001	0.0005	<0.001				<0.5	9.75	<5	20	<0.5	<2	7.95	<0.5
393149	0.94	0.002	<0.0005	<0.001				<0.5	8.83	<5	60	<0.5	<2	6.81	<0.5
393150	Not Recvd														
393151	1.38	0.001	0.0010	<0.001				<0.5	8.40	<5	40	<0.5	<2	6.69	<0.5
393152	1.36	0.007	0.0066	<0.001				<0.5	9.34	<5	10	<0.5	<2	6.45	<0.5
393153	1.24	0.012	0.0096	0.001				<0.5	8.96	<5	10	<0.5	<2	6.36	<0.5
393154	1.35	0.006	0.0070	<0.001				<0.5	8.66	<5	10	<0.5	<2	6.28	<0.5
393155	1.38	0.001	0.0035	0.001				<0.5	9.64	<5	10	<0.5	<2	6.61	<0.5
393156	1.16	0.001	0.0022	0.001				0.5	9.29	<5	70	0.6	<2	5.17	<0.5
393157	1.12	0.001	0.0005	<0.001				1.2	8.04	<5	60	<0.5	3	3.99	<0.5
393158	1.16	0.002	0.0007	<0.001				0.8	8.87	<5	40	<0.5	<2	5.54	<0.5
393159	1.35	0.010	0.0056	0.002				3.5	6.50	7	50	<0.5	4	2.35	<0.5
393160	1.54	0.031	0.0128	0.005				4.4	3.47	<5	10	<0.5	7	2.00	<0.5
393161	1.50	0.014	0.0119	0.003				8.8	4.32	29	<10	<0.5	3	1.90	<0.5
393162	1.48	0.012	0.0125	0.004				4.7	3.46	22	<10	<0.5	6	1.72	<0.5
393163	1.40	0.065	0.0102	0.003				7.1	2.98	5	<10	<0.5	7	0.91	0.5
393164	1.40	0.021	0.0080	0.003				6.5	3.14	14	<10	<0.5	5	0.44	<0.5
393165	1.37	0.016	0.0094	0.003				5.0	3.38	6	<10	<0.5	5	1.33	<0.5
393166	1.45	0.021	0.0111	0.004				7.9	1.92	14	<10	<0.5	7	0.06	<0.5
393167	1.45	0.018	0.0137	0.004				9.1	2.04	10	<10	<0.5	4	0.37	<0.5
393168	1.34	0.012	0.0057	0.002				10.2	3.43	17	<10	<0.5	8	0.14	14.5
393169	1.11	0.016	0.0066	0.002				12.5	2.77	8	<10	<0.5	9	0.02	85.6
393170	0.03	0.130	0.440	>1.00	0.15	0.32	1.34	2.4	8.40	29	320	0.6	4	7.24	0.6
393171	0.93	0.008	0.0167	0.004				14.9	0.82	<5	<10	<0.5	8	0.03	7.0
393172	1.25	0.027	0.0184	0.005				9.1	0.75	<5	<10	<0.5	8	0.25	4.0
393173	1.11	0.253	0.0093	0.004				>100	2.59	7	<10	<0.5	12	0.31	5.9
393174	1.19	0.855	0.0153	0.004				>100	3.39	21	<10	<0.5	15	0.02	0.8
393175	1.27	0.612	0.0117	0.004				>100	2.39	10	<10	<0.5	13	0.08	7.7
393176	1.07	0.043	0.0007	<0.001				8.5	9.59	<5	50	<0.5	5	6.54	1.9
393177	0.99	0.024	0.0005	<0.001				6.7	9.65	<5	40	<0.5	5	6.46	2.3
393178	1.31	0.047	0.0005	<0.001				9.6	9.33	7	30	<0.5	8	6.48	3.1
393179	1.34	0.069	0.0007	0.001				16.7	8.98	<5	20	<0.5	14	7.11	4.0
393180	1.06	0.066	0.0006	<0.001				16.1	8.87	10	50	<0.5	21	7.69	5.0
393181	1.27	0.030	0.0005	<0.001				4.2	9.14	9	60	<0.5	6	6.63	1.4
393182	1.23	0.016	0.0006	<0.001				5.3	9.06	<5	90	<0.5	10	6.10	1.1
393183	1.23	0.012	0.0006	<0.001				3.6	9.10	<5	80	<0.5	9	6.40	1.1
393184	0.93	0.010	0.0005	<0.001				5.1	8.82	<5	170	<0.5	2	3.95	0.6

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To: NORTHERN SHIELD RESOURCES INC.
440 – 55 METCALFE STREET
OTTAWA ON K1P 6L5

Finalized Date: 27-MAY-2010
Account: NORSHI

Project: WABASSI

CERTIFICATE OF ANALYSIS TM10061092

Sample Description	Method / Analyte / Units / LOR	ME-ICP61 Co ppm 1	ME-ICP61 Cr ppm 1	ME-ICP61 Cu ppm 1	ME-ICP61 Fe % 0.01	ME-ICP61 Ga ppm 10	ME-ICP61 K % 0.01	ME-ICP61 La ppm 10	ME-ICP61 Mg % 0.01	ME-ICP61 Mn ppm 5	ME-ICP61 Mo ppm 1	ME-ICP61 Na % 0.01	ME-ICP61 Ni ppm 1	ME-ICP61 P ppm 10	ME-ICP61 Pb ppm 2	ME-ICP61 S % 0.01
393148		35	131	132	5.35	20	0.12	<10	4.63	903	<1	1.36	198	180	4	0.10
393149		28	131	119	4.70	20	0.32	<10	4.26	817	<1	1.45	153	160	3	0.08
393150																
393151		32	125	66	4.60	20	0.21	<10	4.00	840	<1	1.47	156	160	2	0.07
393152		42	335	199	5.44	10	0.11	<10	6.39	913	<1	0.91	321	120	3	0.11
393153		55	395	678	5.93	10	0.10	<10	6.94	990	<1	0.84	679	150	<2	0.34
393154		42	352	178	4.68	10	0.09	<10	5.56	811	<1	0.80	303	120	2	0.07
393155		37	311	66	5.10	10	0.09	<10	6.10	892	<1	0.96	215	100	4	0.03
393156		31	146	88	6.09	20	0.21	10	3.31	1030	<1	1.86	129	500	23	0.30
393157		24	337	16	5.25	20	0.76	10	4.78	997	<1	1.44	130	130	66	0.24
393158		33	358	28	5.31	20	0.25	<10	5.35	1125	<1	1.48	141	200	58	0.20
393159		32	24	870	23.5	20	0.59	20	3.91	2360	1	0.62	72	100	79	>10.0
393160		36	<1	1055	32.3	10	0.30	10	3.34	991	<1	0.12	90	20	59	>10.0
393161		43	2	1845	26.4	10	0.01	10	5.55	646	1	0.01	74	60	49	>10.0
393162		2	3	1420	26.2	<10	0.01	30	4.41	650	1	0.02	86	70	31	>10.0
393163		<1	9	2140	31.8	10	<0.01	20	5.23	652	<1	0.01	95	30	23	>10.0
393164		<1	5	1605	27.2	10	<0.01	20	6.65	359	<1	0.01	85	20	25	>10.0
393165		<1	4	1405	25.7	10	<0.01	10	6.74	262	<1	0.01	90	10	20	>10.0
393166		40	3	1810	33.5	10	<0.01	<10	5.46	123	<1	<0.01	97	<10	44	>10.0
393167		<1	<1	1800	36.7	10	0.01	<10	4.43	202	<1	0.01	121	<10	85	>10.0
393168		<1	<1	1665	33.7	10	<0.01	<10	8.11	98	<1	<0.01	93	<10	191	>10.0
393169		<1	<1	1985	31.0	10	<0.01	<10	7.98	135	<1	<0.01	89	<10	154	>10.0
393170		60	134	4790	8.31	20	0.57	20	3.69	1290	1	1.73	294	1930	18	0.94
393171		36	<1	1500	43.4	<10	<0.01	<10	2.07	118	<1	<0.01	97	<10	205	>10.0
393172		57	<1	1430	42.4	<10	0.01	<10	1.29	191	<1	<0.01	91	<10	70	>10.0
393173		3	<1	>10000	39.3	10	<0.01	<10	5.27	59	<1	<0.01	111	<10	42	>10.0
393174		<1	<1	>10000	36.0	10	<0.01	<10	6.06	33	<1	<0.01	104	<10	142	>10.0
393175		14	<1	>10000	39.8	10	<0.01	<10	4.89	135	<1	<0.01	110	<10	53	>10.0
393176		24	358	4730	5.29	20	0.30	<10	5.75	1045	<1	1.20	101	80	105	0.88
393177		26	400	4580	5.74	20	0.30	<10	6.08	944	<1	1.17	96	100	183	0.74
393178		28	424	5530	5.80	20	0.27	<10	6.18	928	<1	1.16	96	90	330	0.97
393179		32	536	>10000	6.08	10	0.21	<10	5.50	852	<1	1.09	114	70	437	1.65
393180		38	685	9440	6.72	20	0.24	<10	6.16	877	<1	1.16	142	100	277	1.74
393181		32	415	3630	5.05	10	0.32	<10	5.69	961	<1	1.23	153	90	67	0.50
393182		31	405	2430	5.03	10	0.52	<10	5.74	936	<1	1.27	118	90	60	0.35
393183		32	397	2960	5.08	20	0.52	<10	5.66	910	<1	1.25	126	90	61	0.42
393184		22	366	1260	4.95	10	1.05	10	5.47	875	<1	1.50	91	80	26	0.22

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To: NORTHERN SHIELD RESOURCES INC.
440 – 55 METCALFE STREET
OTTAWA ON K1P 6L5

Finalized Date: 27-MAY-2010
Account: NORSHI

Project: WABASSI

CERTIFICATE OF ANALYSIS TM10061092

Sample Description	Method / Analyte / Units / LOR	ME-ICP61 Sb ppm 5	ME-ICP61 Sc ppm 1	ME-ICP61 Sr ppm 1	ME-ICP61 Th ppm 20	ME-ICP61 Ti % 0.01	ME-ICP61 Tl ppm 10	ME-ICP61 U ppm 10	ME-ICP61 V ppm 1	ME-ICP61 W ppm 10	ME-ICP61 Zn ppm 2	Ag-OG62 Ag ppm 1	Cu-OG62 Cu % 0.001	S-IR08 S % 0.01
393148		<5	21	202	<20	0.22	<10	<10	100	<10	54			
393149		<5	20	183	<20	0.21	<10	<10	97	<10	48			
393150														
393151		<5	19	196	<20	0.22	<10	<10	95	<10	54			
393152		<5	16	162	<20	0.14	<10	<10	75	<10	56			
393153		<5	18	166	<20	0.21	<10	<10	89	<10	63			
393154		<5	15	162	<20	0.17	<10	<10	78	<10	57			
393155		<5	16	173	<20	0.15	<10	<10	74	<10	56			
393156		<5	16	198	<20	0.35	<10	<10	106	<10	124			
393157		<5	14	120	<20	0.14	<10	<10	51	<10	113			
393158		<5	17	157	<20	0.20	<10	<10	72	<10	104			
393159		<5	9	44	<20	0.13	10	<10	22	<10	740			18.75
393160		<5	5	13	<20	0.10	10	<10	3	<10	1275			25.3
393161		<5	7	9	<20	0.17	10	<10	21	<10	3360			21.9
393162		<5	11	7	<20	0.36	10	<10	40	<10	2820			21.7
393163		<5	9	5	<20	0.27	10	<10	33	<10	2350			20.1
393164		<5	10	6	<20	0.29	10	<10	28	<10	1745			19.40
393165		<5	13	4	<20	0.36	10	<10	26	<10	1665			21.1
393166		<5	4	3	<20	0.10	10	<10	8	<10	643			26.0
393167		<5	3	3	<20	0.05	10	<10	3	<10	580			28.8
393168		<5	3	3	<20	0.08	<10	<10	2	<10	1445			21.3
393169		<5	4	2	<20	0.09	<10	<10	1	<10	6560			22.2
393170		<5	25	638	<20	0.49	<10	<10	236	<10	163			
393171		<5	1	4	<20	0.02	<10	<10	3	<10	855			35.3
393172		<5	1	5	<20	0.01	10	<10	2	<10	624			38.3
393173		<5	2	2	<20	0.05	10	<10	3	<10	805	141	1.065	28.3
393174		<5	5	2	<20	0.05	10	<10	3	<10	187	469	3.56	24.7
393175		<5	4	2	<20	0.07	10	<10	5	<10	1150	170	1.225	30.0
393176		<5	16	199	<20	0.15	<10	<10	61	<10	205			
393177		<5	17	205	<20	0.15	10	<10	66	<10	188			
393178		<5	18	196	<20	0.15	<10	<10	72	<10	215			
393179		<5	21	190	<20	0.16	<10	<10	87	<10	224		0.966	
393180		<5	24	173	<20	0.21	<10	<10	112	<10	259			
393181		6	13	190	<20	0.14	<10	<10	64	<10	170			
393182		<5	14	181	<20	0.14	<10	<10	63	<10	163			
393183		5	12	188	<20	0.15	<10	<10	63	<10	181			
393184		<5	13	132	<20	0.13	<10	<10	51	<10	138			

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To: NORTHERN SHIELD RESOURCES INC.
440 – 55 METCALFE STREET
OTTAWA ON K1P 6L5

Finalized Date: 27-MAY-2010
Account: NORSHI

CERTIFICATE TM10061093

Project: WABASSI
P.O. No.:
This report is for 22 Drill Core samples submitted to our lab in Timmins, ON, Canada on 14-MAY-2010.

The following have access to data associated with this certificate:

IAN BLISS	CHRISTINE VAILLANCOURT	

SAMPLE PREPARATION

ALS CODE	DESCRIPTION
WEI-21	Received Sample Weight
LOG-22	Sample login - Rcd w/o BarCode
CRU-31	Fine crushing - 70% <2mm
PUL-QC	Pulverizing QC Test
SPL-21	Split sample - riffle splitter
PUL-31	Pulverize split to 85% <75 um

ANALYTICAL PROCEDURES

ALS CODE	DESCRIPTION	INSTRUMENT
S-IR08	Total Sulphur (Leco)	LECO
ME-MS81	38 element fusion ICP-MS	ICP-MS
ME-XRF06	Whole Rock Package - XRF	XRF
OA-GRA06	LOI for ME-XRF06	WST-SIM
PGM-MS23	Pt, Pd, Au 30g FA ICP-MS	ICP-MS

To: NORTHERN SHIELD RESOURCES INC.
ATTN: CHRISTINE VAILLANCOURT
440 – 55 METCALFE STREET
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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.

Signature:
Colin Ramshaw, Vancouver Laboratory Manager

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To: NORTHERN SHIELD RESOURCES INC.
440 – 55 METCALFE STREET
OTTAWA ON K1P 6L5

Finalized Date: 27-MAY-2010
Account: NORSHI

Project: WABASSI

CERTIFICATE OF ANALYSIS TM10061093

Sample Description	Method / Analyte / Units / LOR	WEI-21 Recvd Wt. kg 0.02	PGM-MS23 Au ppm 0.001	PGM-MS23 Pt ppm 0.0005	PGM-MS23 Pd ppm 0.001	S-IR08 S % 0.01	ME-MS81 Ag ppm 1	ME-MS81 Ba ppm 0.5	ME-MS81 Ce ppm 0.5	ME-MS81 Co ppm 0.5	ME-MS81 Cr ppm 10	ME-MS81 Cs ppm 0.01	ME-MS81 Cu ppm 5	ME-MS81 Dy ppm 0.05	ME-MS81 Er ppm 0.03	ME-MS81 Eu ppm 0.03
10WA-05G		0.19	0.002	0.0024	0.002	0.08	<1	19.6	3.2	67.9	130	0.07	96	0.44	0.30	0.29
10WA-05H		0.21	0.001	0.0012	0.001	0.02	<1	50.7	8.6	22.1	210	0.16	108	1.01	0.64	0.44
10WA-05I		0.23	0.003	0.0023	0.005	0.08	<1	22.8	9.7	121.0	1240	0.51	61	1.21	0.66	0.33
10WA-05J		0.28	0.001	0.0030	0.006	0.14	<1	110.5	10.0	125.5	1310	1.54	164	1.27	0.71	0.24
10WA-05K		0.26	0.068	0.0006	<0.001	0.69	5	63.9	41.5	36.0	530	0.64	653	5.71	3.78	1.71
10WA-05L		0.23	0.004	0.0009	<0.001	0.05	<1	20.8	2.7	69.3	570	0.41	164	0.54	0.35	0.34
10WA-05M		0.19	0.011	0.0130	0.013	0.28	5	4.0	4.1	123.0	1190	0.06	851	0.79	0.48	0.14
10WA-05N		0.24	<0.001	0.0023	0.004	0.04	<1	14.0	5.5	109.5	1640	0.07	28	0.88	0.51	0.20
10WA-08A		0.62	0.001	<0.0005	<0.001	0.05	<1	23.1	3.7	43.0	330	0.28	120	0.61	0.44	0.30
10WA-08B		0.59	0.006	0.0142	<0.001	0.05	<1	26.6	6.4	39.2	540	0.14	88	0.98	0.69	0.39
10WA-08C		0.57	0.001	0.0007	<0.001	0.03	<1	16.0	2.5	56.9	800	0.03	54	0.40	0.25	0.33
10WA-08D		0.51	0.001	0.0025	0.005	0.05	<1	22.4	5.0	122.0	1570	0.10	71	0.82	0.53	0.30
10WA-09A		0.72	0.011	0.0044	0.001	26.4	1	12.9	48.3	7.0	<10	0.17	146	5.45	3.46	0.99
10WA-09B		0.41	0.006	0.0080	0.002	12.25	2	243	30.6	27.7	30	1.01	204	2.58	1.44	1.12
10WA-010A		0.77	0.004	0.0031	<0.001	0.24	<1	19.2	4.0	78.7	340	0.09	198	0.60	0.34	0.28
10WA-010B		0.63	0.004	0.0020	<0.001	0.09	<1	20.3	4.4	31.5	990	0.08	240	1.04	0.62	0.39
10WA-010C		0.59	0.004	0.0033	0.007	0.17	1	24.4	12.0	98.8	1480	0.19	1190	1.71	0.95	0.36
10WA-010D		0.45	0.020	0.0165	0.006	14.05	17	43.0	5.2	112.5	290	0.25	5360	0.34	0.16	0.24
10WA-011A		0.30	0.001	<0.0005	<0.001	0.09	<1	35.2	8.3	38.4	230	0.21	109	1.64	0.98	0.50
10WA-011B		0.37	0.010	0.0088	<0.001	0.07	<1	60.4	9.1	34.7	480	0.61	114	0.71	0.46	0.25
10WA-011C		0.33	0.004	0.0008	<0.001	0.06	<1	55.6	8.9	37.3	420	0.45	142	1.66	1.00	0.35
10WA-011D		0.31	0.002	0.0006	<0.001	0.05	<1	55.3	3.0	63.9	470	0.57	59	0.45	0.27	0.26

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To: NORTHERN SHIELD RESOURCES INC.
440 – 55 METCALFE STREET
OTTAWA ON K1P 6L5

Finalized Date: 27-MAY-2010
Account: NORSHI

Project: WABASSI

CERTIFICATE OF ANALYSIS TM10061093

Sample Description	Method / Analyte / Units / LOR	ME-MS81	ME-MS81	ME-MS81	ME-MS81	ME-MS81	ME-MS81	ME-MS81	ME-MS81	ME-MS81	ME-MS81	ME-MS81	ME-MS81	ME-MS81	ME-MS81	ME-MS81
	Analyte	Ga	Gd	Hf	Ho	La	Lu	Mo	Nb	Nd	Ni	Pb	Pr	Rb	Sm	Sn
	Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm
	LOR	0.1	0.05	0.2	0.01	0.5	0.01	2	0.2	0.1	5	5	0.03	0.2	0.03	1
10WA-05G		13.3	0.39	0.4	0.10	1.8	0.05	<2	0.9	1.7	539	<5	0.42	1.9	0.43	<1
10WA-05H		15.8	0.97	0.9	0.20	3.9	0.09	<2	1.7	4.0	119	5	1.04	5.3	0.95	<1
10WA-05I		7.2	1.28	1.2	0.22	4.6	0.09	<2	2.4	5.0	1300	32	1.20	3.5	1.11	<1
10WA-05J		8.3	1.36	1.6	0.22	4.7	0.09	<2	3.2	5.3	1445	31	1.27	36.7	1.24	1
10WA-05K		15.8	5.32	3.4	1.12	20.3	0.52	<2	6.9	21.0	272	451	5.08	20.7	4.79	1
10WA-05L		12.4	0.49	0.4	0.10	1.3	0.05	<2	0.5	1.6	620	173	0.36	6.0	0.39	<1
10WA-05M		6.1	0.72	0.8	0.15	1.9	0.07	<2	1.1	2.5	1575	5	0.54	0.7	0.63	<1
10WA-05N		7.5	0.92	0.8	0.16	2.7	0.08	<2	1.3	3.0	1340	5	0.74	1.7	0.75	<1
10WA-08A		13.8	0.57	0.5	0.12	1.8	0.07	<2	0.8	2.0	226	<5	0.48	3.8	0.53	<1
10WA-08B		14.5	0.98	0.8	0.21	2.8	0.09	<2	1.4	3.7	229	<5	0.85	2.6	0.86	<1
10WA-08C		14.7	0.40	0.2	0.07	1.3	0.04	<2	0.4	1.4	419	<5	0.32	0.7	0.34	<1
10WA-08D		7.6	0.82	0.7	0.16	2.4	0.07	<2	1.0	2.9	1365	<5	0.66	2.1	0.73	<1
10WA-09A		8.1	5.44	5.5	1.17	30.6	0.63	2	6.4	23.2	<5	25	6.04	7.1	4.75	2
10WA-09B		23.7	3.20	5.1	0.51	14.9	0.20	2	13.8	15.9	27	15	3.95	25.3	3.16	2
10WA-010A		11.4	0.59	0.4	0.12	1.9	0.05	<2	0.8	2.4	509	<5	0.53	1.5	0.55	<1
10WA-010B		12.8	0.98	0.6	0.22	1.9	0.08	<2	1.0	3.0	87	15	0.66	2.8	0.84	<1
10WA-010C		6.0	1.77	1.2	0.34	5.4	0.12	<2	3.1	6.9	1430	149	1.62	5.0	1.63	1
10WA-010D		8.4	0.36	0.2	0.03	3.0	<0.01	3	0.4	2.1	806	56	0.53	12.4	0.36	2
10WA-011A		15.4	1.48	0.7	0.35	3.7	0.15	<2	1.2	5.3	186	<5	1.17	3.2	1.29	<1
10WA-011B		12.2	0.70	0.9	0.16	4.5	0.07	<2	1.7	3.7	128	<5	1.04	16.3	0.60	<1
10WA-011C		13.7	1.46	0.5	0.35	4.0	0.13	<2	1.5	5.0	193	5	1.22	11.8	1.36	1
10WA-011D		12.2	0.45	0.3	0.09	1.5	0.03	<2	0.5	1.6	434	<5	0.37	14.6	0.34	<1

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To: NORTHERN SHIELD RESOURCES INC.
440 – 55 METCALFE STREET
OTTAWA ON K1P 6L5

Finalized Date: 27-MAY-2010
Account: NORSHI

Project: WABASSI

CERTIFICATE OF ANALYSIS TM10061093

Sample Description	Method Analyte Units LOR	ME-MS81 Sr ppm 0.1	ME-MS81 Ta ppm 0.1	ME-MS81 Tb ppm 0.01	ME-MS81 Th ppm 0.05	ME-MS81 Tl ppm 0.5	ME-MS81 Tm ppm 0.01	ME-MS81 U ppm 0.05	ME-MS81 V ppm 5	ME-MS81 W ppm 1	ME-MS81 Y ppm 0.5	ME-MS81 Yb ppm 0.03	ME-MS81 Zn ppm 5	ME-MS81 Zr ppm 2	ME-XRF06 SiO2 % 0.01	ME-XRF06 Al2O3 % 0.01
10WA-05G		171.0	0.1	0.07	0.24	<0.5	0.04	0.05	36	<1	2.6	0.32	62	16	45.36	19.57
10WA-05H		207	0.1	0.15	1.04	<0.5	0.08	0.27	43	<1	5.5	0.59	35	31	50.65	23.63
10WA-05I		82.9	0.2	0.19	0.84	<0.5	0.08	0.20	40	<1	6.3	0.65	93	41	43.97	8.01
10WA-05J		44.4	0.2	0.21	1.50	<0.5	0.10	0.49	56	<1	6.6	0.67	355	63	44.89	7.89
10WA-05K		150.0	0.5	0.87	3.05	<0.5	0.51	1.00	37	<1	31.7	3.64	532	122	48.97	16.68
10WA-05L		165.0	<0.1	0.08	0.11	<0.5	0.04	<0.05	54	<1	2.9	0.32	71	15	44.44	17.99
10WA-05M		7.8	0.1	0.13	0.20	<0.5	0.08	0.05	72	<1	4.2	0.52	87	29	41.17	6.83
10WA-05N		9.8	0.1	0.13	0.36	<0.5	0.07	0.09	44	<1	4.5	0.51	100	31	41.26	7.98
10WA-08A		136.0	0.1	0.09	0.33	<0.5	0.06	0.11	63	<1	3.7	0.44	62	19	49.00	17.72
10WA-08B		163.5	0.2	0.14	0.26	<0.5	0.08	0.06	77	1	5.8	0.66	56	29	49.76	19.64
10WA-08C		186.5	<0.1	0.06	0.08	<0.5	0.03	<0.05	54	<1	2.2	0.26	61	9	45.00	21.22
10WA-08D		78.6	0.1	0.13	0.38	<0.5	0.08	0.10	78	<1	4.5	0.51	127	24	41.09	7.92
10WA-09A		8.5	0.3	0.94	6.19	<0.5	0.51	1.59	<5	1	32.3	3.62	2710	231	14.73	9.89
10WA-09B		48.2	0.9	0.50	2.10	0.7	0.18	0.48	165	2	14.3	1.27	130	204	34.23	17.92
10WA-010A		170.0	0.1	0.09	0.20	<0.5	0.04	0.05	36	<1	3.2	0.36	108	18	43.87	16.31
10WA-010B		171.0	<0.1	0.17	0.20	<0.5	0.08	<0.05	94	<1	5.6	0.60	60	24	49.54	16.84
10WA-010C		54.9	0.2	0.29	1.56	<0.5	0.13	0.40	58	<1	8.9	0.81	105	51	40.08	5.92
10WA-010D		104.5	<0.1	0.03	0.19	<0.5	<0.01	0.07	11	<1	1.9	0.17	673	13	30.65	12.53
10WA-011A		182.0	0.1	0.27	0.44	<0.5	0.13	0.12	74	<1	9.1	0.92	67	24	50.26	19.10
10WA-011B		126.0	0.2	0.11	2.15	<0.5	0.05	0.57	50	<1	4.2	0.49	48	30	52.16	17.32
10WA-011C		161.0	0.1	0.27	1.34	<0.5	0.13	0.39	42	<1	9.5	0.93	55	17	49.61	19.55
10WA-011D		139.5	<0.1	0.07	0.47	<0.5	0.03	0.12	36	<1	2.5	0.29	64	10	42.93	18.30

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To: NORTHERN SHIELD RESOURCES INC.
440 – 55 METCALFE STREET
OTTAWA ON K1P 6L5

Finalized Date: 27-MAY-2010
Account: NORSHI

Project: WABASSI

CERTIFICATE OF ANALYSIS TM10061093

Sample Description	Method	ME-XRF06	ME-XRF06	ME-XRF06	ME-XRF06	ME-XRF06	ME-XRF06	ME-XRF06	ME-XRF06	ME-XRF06	ME-XRF06	ME-XRF06	ME-XRF06	ME-XRF06
	Analyte	Fe2O3	CaO	MgO	Na2O	K2O	Cr2O3	TiO2	MnO	P2O5	SrO	BaO	LOI	Total
	Units	%	%	%	%	%	%	%	%	%	%	%	%	%
	LOR	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.001	0.01	0.01	0.01	0.01
10WA-05G		9.70	9.85	13.22	1.21	0.08	0.02	0.17	0.13	0.028	0.02	<0.01	0.50	99.86
10WA-05H		4.52	12.14	5.56	2.13	0.23	0.03	0.16	0.07	0.026	0.02	<0.01	0.86	100.05
10WA-05I		13.40	4.38	23.36	0.56	0.15	0.19	0.27	0.14	0.035	0.01	<0.01	4.81	99.28
10WA-05J		13.60	3.59	22.43	0.39	0.86	0.20	0.32	0.13	0.043	0.01	<0.01	5.12	99.47
10WA-05K		8.41	6.21	11.24	2.28	0.48	0.08	0.26	0.12	0.031	0.02	<0.01	4.48	99.26
10WA-05L		10.29	9.69	14.23	1.07	0.21	0.09	0.22	0.14	0.024	0.02	<0.01	1.64	100.05
10WA-05M		16.09	4.23	23.28	0.08	0.04	0.19	0.42	0.12	0.036	<0.01	<0.01	5.64	98.11
10WA-05N		13.94	4.23	24.63	0.13	0.06	0.25	0.43	0.13	0.044	<0.01	<0.01	5.98	99.05
10WA-08A		7.74	9.38	11.05	1.10	0.16	0.05	0.24	0.12	0.028	0.02	<0.01	3.19	99.79
10WA-08B		7.04	10.40	10.30	1.51	0.14	0.08	0.38	0.12	0.042	0.02	<0.01	0.51	99.95
10WA-08C		9.14	11.16	11.67	1.39	0.06	0.12	0.23	0.12	0.024	0.02	<0.01	-0.19	99.96
10WA-08D		16.67	5.17	23.41	0.71	0.11	0.23	0.43	0.20	0.035	0.01	<0.01	3.97	99.95
10WA-09A		44.80	1.00	9.10	0.20	0.13	<0.01	0.30	0.07	0.026	<0.01	<0.01	18.65	98.89
10WA-09B		26.57	1.01	5.64	1.15	1.09	0.01	1.49	0.10	0.052	<0.01	0.03	9.67	98.96
10WA-010A		11.52	8.62	15.92	1.11	0.09	0.05	0.22	0.15	0.032	0.02	<0.01	1.97	99.87
10WA-010B		7.80	11.74	10.84	1.30	0.12	0.15	0.44	0.14	0.032	0.03	<0.01	0.35	99.32
10WA-010C		15.65	3.64	25.86	0.66	0.17	0.25	0.48	0.18	0.054	<0.01	<0.01	5.77	98.71
10WA-010D		34.47	6.20	6.67	0.78	0.47	0.06	0.10	0.14	0.016	0.01	<0.01	6.30	98.39
10WA-011A		7.93	10.52	9.13	1.66	0.16	0.04	0.45	0.13	0.035	0.02	0.01	0.68	100.10
10WA-011B		6.79	8.94	10.05	1.35	0.47	0.08	0.22	0.12	0.026	0.01	<0.01	2.35	99.88
10WA-011C		6.99	10.00	10.00	1.51	0.38	0.07	0.28	0.11	0.037	0.03	<0.01	1.25	99.80
10WA-011D		9.49	10.10	13.11	0.84	0.44	0.07	0.25	0.13	0.022	0.02	<0.01	4.27	99.97

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To: NORTHERN SHIELD RESOURCES INC.
440 – 55 METCALFE STREET
OTTAWA ON K1P 6L5

Finalized Date: 4-JUN-2010
Account: NORSHI

CERTIFICATE TM10061933

Project: WABASSI
P.O. No.:
This report is for 69 Drill Core samples submitted to our lab in Timmins, ON, Canada on 14-MAY-2010.

The following have access to data associated with this certificate:

IAN BLISS	CHRISTINE VAILLANCOURT	

SAMPLE PREPARATION

ALS CODE	DESCRIPTION
WEI-21	Received Sample Weight
LOG-22	Sample login - Rcd w/o BarCode
CRU-31	Fine crushing - 70% <2mm
CRU-QC	Crushing QC Test
PUL-QC	Pulverizing QC Test
SPL-21	Split sample - riffle splitter
PUL-31	Pulverize split to 85% <75 um
LOG-24	Pulp Login - Rcd w/o Barcode

ANALYTICAL PROCEDURES

ALS CODE	DESCRIPTION	INSTRUMENT
Au-AA25	Ore Grade Au 30g FA AA finish	AAS
PGM-ICP27	Ore grade Pt, Pd and Au by ICP	ICP-AES
ME-ICP61	33 element four acid ICP-AES	ICP-AES
ME-OG62	Ore Grade Elements - Four Acid	ICP-AES
Ag-OG62	Ore Grade Ag - Four Acid	VARIABLE
Cu-OG62	Ore Grade Cu - Four Acid	VARIABLE
Zn-OG62	Ore Grade Zn - Four Acid	VARIABLE
S-IR08	Total Sulphur (Leco)	LECO
PGM-MS23	Pt, Pd, Au 30g FA ICP-MS	ICP-MS

To: NORTHERN SHIELD RESOURCES INC.
ATTN: CHRISTINE VAILLANCOURT
440 – 55 METCALFE STREET
OTTAWA ON K1P 6L5

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.

Signature:
Colin Ramshaw, Vancouver Laboratory Manager

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To: NORTHERN SHIELD RESOURCES INC.
440 – 55 METCALFE STREET
OTTAWA ON K1P 6L5

Finalized Date: 4-JUN-2010
Account: NORSHI

Project: WABASSI

CERTIFICATE OF ANALYSIS TM10061933

Sample Description	Method	WEI-21	PGM-MS23	PGM-MS23	PGM-MS23	Au-AA25	PGM-ICP27	PGM-ICP27	PGM-ICP27	ME-ICP61	ME-ICP61	ME-ICP61	ME-ICP61	ME-ICP61	ME-ICP61	ME-ICP61
	Analyte	Recvd Wt.	Au	Pt	Pd	Au	Au	Pt	Pd	Ag	Al	As	Ba	Be	Bi	Ca
	Units	kg	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	%	ppm	ppm	ppm	ppm	%
	LOR	0.02	0.001	0.0005	0.001	0.01	0.03	0.03	0.03	0.5	0.01	5	10	0.5	2	0.01
393185		1.16	0.002	0.0008	<0.001					<0.5	6.01	16	80	<0.5	<2	2.14
393186		1.06	0.002	0.0008	<0.001					<0.5	7.63	6	80	<0.5	<2	2.83
393187		1.53	0.007	0.0011	<0.001					3.4	9.09	5	80	<0.5	8	4.43
393188		1.13	0.001	0.0007	<0.001					<0.5	9.65	<5	100	<0.5	<2	4.83
393189		1.73	0.001	0.0009	0.001					<0.5	7.66	5	130	0.8	<2	3.82
393190		0.05	<0.001	<0.0005	<0.001					<0.5	0.40	<5	20	<0.5	<2	0.03
393191		0.81	0.030	0.0012	0.001					10.5	8.99	7	120	<0.5	5	5.92
393192		1.30	0.025	0.0013	<0.001					10.6	7.65	8	70	<0.5	11	5.57
393193		1.50	0.035	0.0013	<0.001					12.2	8.09	<5	60	<0.5	17	6.35
393194		1.06	0.044	0.0014	0.001					9.4	7.38	11	70	<0.5	5	5.29
393195		1.33	0.002	0.0017	0.001					<0.5	7.79	<5	80	<0.5	<2	6.01
393196		0.99	0.003	0.0008	<0.001					<0.5	6.74	<5	100	0.5	<2	4.01
393197		1.27	0.001	0.0009	<0.001					<0.5	7.74	<5	40	<0.5	<2	7.32
393198		0.95	0.005	0.0017	0.001					5.3	8.27	<5	40	<0.5	8	7.00
393199		1.36	0.009	0.0011	<0.001					8.9	8.12	6	50	<0.5	12	6.56
393200		1.12	0.007	0.0012	<0.001					6.2	8.24	<5	70	<0.5	7	6.88
393201		1.46	0.013	<0.0005	<0.001					2.7	6.88	9	60	0.7	<2	2.68
393202		1.33	0.071	0.0029	0.001					11.4	6.55	27	130	<0.5	<2	2.98
393203		1.35	0.116	0.0077	0.002					44.0	5.72	29	10	<0.5	3	6.41
393204		1.79	0.030	0.0117	0.003					21.3	4.17	30	10	<0.5	<2	5.53
393205		1.91	0.170	0.0121	0.003					14.7	2.79	34	<10	<0.5	<2	2.59
393206		1.63	0.059	0.0230	0.004					8.3	2.50	62	<10	<0.5	<2	1.62
393207		0.99	0.026	0.0067	0.002					4.5	3.72	37	<10	<0.5	<2	2.90
393208		0.85	0.012	0.0049	0.002					12.8	6.07	21	<10	0.5	<2	3.81
393209		1.35	0.002	0.0007	<0.001					1.2	7.27	6	150	0.8	<2	4.61
393210		0.05	0.158	0.630	>1.00		0.17	0.41	1.38	1.8	8.06	28	310	0.6	<2	7.17
393211		1.23	0.001	0.0013	0.001					0.5	7.61	6	210	0.8	<2	2.47
393212		0.95	0.009	0.0042	0.001					15.7	5.27	120	170	0.8	<2	0.30
393213		1.54	0.031	0.0071	0.002					21.4	3.85	31	100	0.6	5	1.68
393214		1.45	0.057	0.0014	0.001					5.7	6.86	22	60	1.0	6	2.67
393215		0.97	0.245	0.0086	0.003					4.8	5.76	58	20	<0.5	<2	0.55
393216		0.75	0.057	0.0017	0.001					3.9	3.95	25	80	0.9	<2	0.83
393217		0.42	0.129	0.0010	<0.001					16.3	3.17	6	90	<0.5	9	0.04
393218		1.77	0.225	0.0016	<0.001					36.2	2.91	47	80	<0.5	21	0.07
393219		0.79	0.161	0.0020	<0.001					19.4	1.77	14	80	<0.5	15	0.04
393220		0.46	0.545	0.0037	0.001					>100	1.87	28	90	<0.5	24	0.06
393221		0.64	0.205	0.0013	<0.001					19.1	2.53	26	100	<0.5	6	0.14
393222		1.52	0.092	0.0009	<0.001					11.8	2.72	22	100	<0.5	<2	0.35
393223		1.42	0.704	0.0012	<0.001					29.0	3.02	35	130	<0.5	5	0.14
393224		1.30	0.349	0.0011	<0.001					19.8	3.08	9	150	<0.5	7	0.23

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To: NORTHERN SHIELD RESOURCES INC.
440 – 55 METCALFE STREET
OTTAWA ON K1P 6L5

Finalized Date: 4-JUN-2010
Account: NORSHI

Project: WABASSI

CERTIFICATE OF ANALYSIS TM10061933

Sample Description	Method / Analyte / Units / LOR	ME-ICP61 Cd ppm 0.5	ME-ICP61 Co ppm 1	ME-ICP61 Cr ppm 1	ME-ICP61 Cu ppm 1	ME-ICP61 Fe % 0.01	ME-ICP61 Ga ppm 10	ME-ICP61 K % 0.01	ME-ICP61 La ppm 10	ME-ICP61 Mg % 0.01	ME-ICP61 Mn ppm 5	ME-ICP61 Mo ppm 1	ME-ICP61 Na % 0.01	ME-ICP61 Ni ppm 1	ME-ICP61 P ppm 10	ME-ICP61 Pb ppm 2
393185		<0.5	26	23	172	9.31	20	0.56	10	3.87	1310	4	0.55	33	100	7
393186		<0.5	25	21	574	8.57	20	0.39	<10	3.13	1090	4	1.43	33	160	12
393187		0.8	51	15	5330	11.75	30	0.35	10	2.17	1310	7	1.91	38	1130	17
393188		<0.5	35	9	563	9.12	30	0.43	10	2.10	1220	5	2.00	13	780	17
393189		0.6	20	101	143	3.73	20	0.86	10	2.12	471	3	2.48	85	100	18
393190		<0.5	<1	3	2	0.04	<10	0.16	20	0.02	6	<1	0.01	<1	40	<2
393191		2.0	50	13	>10000	13.40	20	0.73	<10	2.58	1125	7	1.55	74	110	33
393192		1.8	64	8	>10000	12.50	20	0.37	<10	2.78	1135	6	1.32	87	100	31
393193		2.0	65	6	>10000	11.35	20	0.35	<10	3.26	1180	6	1.51	95	110	29
393194		2.2	64	8	>10000	8.88	20	0.37	<10	2.89	957	4	2.07	100	100	17
393195		<0.5	51	16	497	10.20	20	0.40	<10	3.27	1105	5	1.55	84	100	22
393196		<0.5	32	19	619	6.53	20	0.42	30	1.78	709	4	1.84	53	60	18
393197		<0.5	51	36	185	9.33	20	0.18	<10	3.38	1090	4	1.48	82	60	18
393198		<0.5	62	36	7440	11.45	20	0.20	<10	3.70	1185	6	1.45	95	70	26
393199		0.7	78	36	>10000	12.65	20	0.28	<10	3.41	1170	6	1.37	117	50	26
393200		0.8	69	42	8200	11.10	20	0.35	<10	3.54	1155	6	1.48	107	60	17
393201		<0.5	6	21	348	6.99	20	0.55	20	3.31	1190	4	0.90	11	270	76
393202		<0.5	3	1	1065	15.80	20	1.24	60	2.04	547	8	0.56	6	140	81
393203		<0.5	4	<1	4830	20.6	20	0.10	60	2.68	662	8	0.08	8	250	206
393204		<0.5	1	<1	2660	31.0	10	0.03	30	2.91	623	11	0.04	12	130	57
393205		1.0	6	<1	1040	34.4	10	<0.01	<10	4.58	621	11	<0.01	11	<10	140
393206		<0.5	42	<1	397	37.3	10	<0.01	<10	3.19	625	12	<0.01	9	<10	193
393207		1.7	8	<1	372	36.4	20	<0.01	<10	3.85	735	12	<0.01	7	<10	43
393208		4.3	<1	<1	1615	24.4	20	0.02	10	5.58	788	10	<0.01	7	10	25
393209		<0.5	1	9	95	3.22	20	0.55	20	0.86	542	3	1.79	4	660	64
393210		0.7	61	138	4670	8.12	20	0.55	20	3.47	1265	5	1.64	290	1870	24
393211		<0.5	7	11	110	3.93	20	0.84	10	0.91	595	3	2.64	6	720	32
393212		7.3	<1	3	7320	17.30	20	1.02	30	2.58	1115	6	0.24	6	180	60
393213		71.5	5	3	3020	21.8	20	0.41	20	1.66	1020	<1	0.42	<1	170	138
393214		7.3	5	13	478	8.51	20	0.43	30	1.93	1085	<1	0.95	3	190	337
393215		425	10	1	97	16.65	40	0.19	50	6.32	1295	8	0.05	<1	240	30
393216		3.9	8	11	562	3.48	10	0.94	10	1.15	212	<1	0.77	6	110	258
393217		1.9	5	6	3180	2.35	10	0.98	10	0.91	200	<1	0.11	<1	30	137
393218		4.1	7	5	9850	3.16	10	0.85	20	1.01	223	1	0.12	<1	60	141
393219		3.6	8	8	7290	1.68	10	0.84	10	0.52	103	<1	0.09	1	30	176
393220		14.9	13	7	>10000	5.41	10	0.54	10	0.65	133	<1	0.17	<1	30	578
393221		2.6	5	10	4280	2.09	10	0.74	10	0.98	140	<1	0.17	<1	30	565
393222		0.6	2	7	682	1.08	10	0.85	10	0.69	123	2	0.55	<1	40	1100
393223		1.0	8	10	2880	1.75	10	0.97	20	0.68	86	<1	0.45	<1	50	1860
393224		1.2	6	8	2870	1.72	10	0.98	20	0.87	108	1	0.36	<1	40	1440

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To: NORTHERN SHIELD RESOURCES INC.
440 – 55 METCALFE STREET
OTTAWA ON K1P 6L5

Finalized Date: 4-JUN-2010
Account: NORSHI

Project: WABASSI

CERTIFICATE OF ANALYSIS TM10061933

Sample Description / Method / Analyte / Units / LOR	ME-ICP61 S % 0.01	ME-ICP61 Sb ppm 5	ME-ICP61 Sc ppm 1	ME-ICP61 Sr ppm 1	ME-ICP61 Th ppm 20	ME-ICP61 Ti % 0.01	ME-ICP61 Tl ppm 10	ME-ICP61 U ppm 10	ME-ICP61 V ppm 1	ME-ICP61 W ppm 10	ME-ICP61 Zn ppm 2	Ag-OG62 Ag ppm 1	Cu-OG62 Cu % 0.001	Zn-OG62 Zn % 0.001	S-IR08 S % 0.01
393185	0.18	<5	22	51	<20	0.26	<10	<10	114	<10	137				
393186	0.24	<5	16	147	<20	0.39	<10	<10	143	<10	110				
393187	0.76	<5	16	217	<20	1.63	10	<10	389	<10	101				
393188	0.12	<5	11	235	<20	1.13	<10	<10	236	<10	114				
393189	0.03	<5	8	150	<20	0.18	<10	10	82	<10	73				
393190	0.01	<5	<1	5	<20	0.02	<10	<10	2	<10	<2				
393191	1.59	<5	23	264	<20	1.46	<10	<10	937	<10	148		1.350		
393192	1.49	<5	27	226	<20	1.41	<10	<10	823	<10	139		1.545		
393193	1.90	<5	31	234	<20	1.02	<10	<10	595	<10	135		1.610		
393194	1.20	<5	25	137	<20	0.88	<10	10	454	10	183		0.987		
393195	0.19	<5	31	190	<20	1.08	<10	<10	613	<10	108				
393196	0.16	<5	18	164	<20	0.70	<10	<10	388	<10	74				
393197	0.29	<5	33	171	<20	0.97	<10	<10	559	<10	89				
393198	0.87	<5	35	222	<20	1.16	<10	<10	672	<10	93				
393199	1.48	<5	32	244	<20	1.28	<10	<10	758	<10	89		1.260		
393200	1.05	<5	34	255	<20	1.07	<10	<10	617	<10	98				
393201	1.27	<5	14	82	<20	0.34	10	<10	78	<10	249				
393202	9.45	<5	9	75	<20	0.24	10	<10	50	<10	250				
393203	>10.0	<5	8	87	<20	0.22	<10	<10	41	<10	237				14.85
393204	>10.0	<5	4	41	<20	0.12	10	<10	13	<10	303				21.7
393205	>10.0	<5	3	3	<20	0.07	<10	<10	4	<10	2420				26.9
393206	>10.0	<5	2	4	<20	0.06	<10	<10	8	<10	1895				31.6
393207	>10.0	<5	4	7	<20	0.11	<10	<10	16	<10	2620				17.75
393208	>10.0	<5	6	26	<20	0.24	<10	<10	27	<10	7670				17.00
393209	0.46	<5	7	136	<20	0.28	<10	<10	37	<10	138				
393210	0.85	<5	24	608	<20	0.49	<10	<10	234	<10	134				
393211	0.12	<5	7	182	<20	0.31	10	<10	42	<10	99				
393212	6.92	<5	6	16	<20	0.15	<10	<10	15	<10	3050				
393213	>10.0	20	4	55	<20	0.10	10	<10	11	<10	>10000			3.71	18.40
393214	4.02	16	10	124	<20	0.21	10	<10	34	<10	3190				
393215	>10.0	44	3	12	<20	0.10	10	<10	7	<10	>10000			13.00	17.35
393216	1.41	6	6	47	<20	0.16	10	<10	36	<10	2170				
393217	0.56	<5	3	4	<20	0.05	10	<10	1	<10	550				
393218	1.25	9	4	5	<20	0.06	<10	<10	2	<10	794				
393219	0.66	<5	2	5	<20	0.05	<10	<10	<1	<10	1090				
393220	3.58	8	3	4	<20	0.04	<10	<10	1	<10	3490	95	2.97		
393221	0.58	<5	3	9	<20	0.05	10	<10	1	<10	620				
393222	0.13	10	3	20	<20	0.04	<10	<10	1	<10	135				
393223	0.87	10	4	14	<20	0.04	<10	<10	1	<10	223				
393224	0.54	7	3	12	<20	0.04	<10	<10	1	<10	194				

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To: NORTHERN SHIELD RESOURCES INC.
440 – 55 METCALFE STREET
OTTAWA ON K1P 6L5

Finalized Date: 4-JUN-2010
Account: NORSHI

Project: WABASSI

CERTIFICATE OF ANALYSIS TM10061933

Method	WEI-21	PGM-MS23	PGM-MS23	PGM-MS23	Au-AA25	PGM-ICP27	PGM-ICP27	PGM-ICP27	ME-ICP61	ME-ICP61	ME-ICP61	ME-ICP61	ME-ICP61	ME-ICP61	ME-ICP61
Analyte	Recvd Wt.	Au	Pt	Pd	Au	Au	Pt	Pd	Ag	Al	As	Ba	Be	Bi	Ca
Units	kg	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	%	ppm	ppm	ppm	ppm	%
Sample Description / LOR	0.02	0.001	0.0005	0.001	0.01	0.03	0.03	0.03	0.5	0.01	5	10	0.5	2	0.01
393225	1.05	0.309	0.0020	0.001					34.7	2.59	45	120	<0.5	10	0.18
393226	0.77	0.068	0.0016	<0.001					10.9	2.47	18	60	<0.5	5	0.02
393227	1.46	>1.00	0.0027	0.001	1.56				55.4	2.68	6	70	<0.5	16	0.02
393228	1.81	0.019	0.0005	<0.001					4.1	4.16	11	70	<0.5	<2	0.07
393229	1.96	0.022	<0.0005	<0.001					4.3	4.86	8	60	0.5	<2	0.03
393230	0.04	0.001	<0.0005	<0.001					<0.5	0.38	<5	20	<0.5	<2	0.02
393231	1.70	0.032	<0.0005	<0.001					2.0	4.16	8	70	0.6	<2	0.09
393232	0.63	0.111	0.0013	<0.001					22.8	6.34	8	140	0.8	9	0.05
393233	1.32	0.005	<0.0005	<0.001					1.2	5.20	<5	140	0.7	<2	0.03
393234	1.29	0.013	<0.0005	<0.001					4.4	3.71	15	90	<0.5	<2	0.10
393235	0.73	0.445	0.0017	0.001					31.5	3.57	26	90	<0.5	10	0.06
393236	0.65	0.020	0.0099	0.003					8.2	3.88	12	150	<0.5	9	0.10
393237	1.79	0.021	0.0006	<0.001					8.2	7.01	12	90	<0.5	<2	2.58
393238	0.88	0.397	0.0078	0.002					>100	5.27	11	80	<0.5	<2	1.67
393239	1.42	0.018	0.0129	0.003					13.8	2.05	69	<10	<0.5	14	2.19
393240	0.64	0.039	0.0006	<0.001					12.2	6.56	33	170	0.7	<2	3.40
393241	1.17	0.011	0.0082	0.002					10.0	2.18	15	<10	<0.5	4	4.64
393242	0.80	0.118	0.0052	0.002					>100	5.04	27	100	0.6	<2	3.98
393243	1.53	0.014	0.0121	0.003					10.9	1.59	12	<10	<0.5	9	3.23
393244	1.55	0.072	0.0076	0.002					33.9	2.81	62	10	<0.5	19	6.20
393245	1.14	0.025	0.0113	0.003					31.3	0.04	57	<10	<0.5	21	0.06
393246	1.50	0.007	0.0142	0.004					8.3	0.78	18	<10	<0.5	10	0.64
393247	1.82	0.570	0.0037	0.001					43.0	7.57	12	280	0.7	15	5.02
393248	1.43	0.162	0.0027	0.001					23.2	8.05	29	500	1.1	13	1.65
393249	1.05	0.213	0.0011	<0.001					13.5	7.27	13	50	0.5	<2	3.06
393250	0.05	0.176	0.484	>1.00		0.13	0.52	1.22	2.4	8.50	31	320	0.6	3	7.33
393251	1.10	0.074	0.0011	0.001					12.1	7.13	9	90	0.5	2	2.40
393252	1.17	0.009	0.0006	<0.001					4.8	7.59	<5	130	<0.5	<2	3.18
393253	1.09	0.003	0.0006	<0.001					0.5	7.91	<5	90	0.5	<2	3.53

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OTTAWA ON K1P 6L5

Finalized Date: 4-JUN-2010
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CERTIFICATE OF ANALYSIS TM10061933

Sample Description	Method / Analyte / Units / LOR	ME-ICP61 Cd ppm 0.5	ME-ICP61 Co ppm 1	ME-ICP61 Cr ppm 1	ME-ICP61 Cu ppm 1	ME-ICP61 Fe % 0.01	ME-ICP61 Ga ppm 10	ME-ICP61 K % 0.01	ME-ICP61 La ppm 10	ME-ICP61 Mg % 0.01	ME-ICP61 Mn ppm 5	ME-ICP61 Mo ppm 1	ME-ICP61 Na % 0.01	ME-ICP61 Ni ppm 1	ME-ICP61 P ppm 10	ME-ICP61 Pb ppm 2
393225		2.3	28	10	>10000	4.27	10	0.75	20	1.00	165	1	0.08	<1	30	430
393226		2.7	7	13	3590	2.27	10	0.72	20	0.86	169	<1	0.09	<1	20	196
393227		31.1	12	13	>10000	5.01	10	0.72	20	0.97	196	1	0.09	4	40	155
393228		0.6	5	7	1630	3.53	20	0.78	20	2.63	371	<1	0.17	<1	80	58
393229		<0.5	3	4	806	3.73	20	0.93	30	2.96	398	<1	0.14	<1	130	29
393230		<0.5	<1	3	6	0.03	<10	0.14	20	0.01	<5	<1	0.01	<1	40	<2
393231		<0.5	4	5	782	2.62	<10	1.21	20	1.64	241	<1	0.17	<1	90	25
393232		1.3	3	4	8270	4.26	20	1.45	30	2.55	338	<1	0.35	<1	120	187
393233		<0.5	2	8	182	2.62	20	1.16	20	2.11	308	1	0.37	<1	100	41
393234		<0.5	3	10	847	3.24	10	0.71	20	1.98	354	<1	0.23	<1	80	110
393235		1.3	2	6	3420	6.96	10	0.61	10	2.10	676	<1	0.11	<1	40	390
393236		134.0	1	2	792	36.1	20	1.18	20	0.74	385	<1	0.26	6	20	81
393237		1.1	7	18	491	5.64	20	0.38	20	1.92	942	<1	1.50	12	230	424
393238		2.1	1	11	>10000	21.2	20	0.48	20	1.47	1005	<1	1.01	1	130	369
393239		8.4	36	2	2040	38.2	20	0.01	<10	2.74	760	<1	0.04	2	10	203
393240		1.0	3	10	402	4.24	30	0.64	20	1.18	887	<1	1.50	5	130	682
393241		<0.5	7	<1	1700	36.0	20	<0.01	<10	3.37	631	<1	0.01	4	<10	<2
393242		9.5	<1	5	>10000	14.15	20	0.27	20	0.99	1200	<1	1.01	3	130	403
393243		2.4	17	<1	2120	38.4	20	<0.01	<10	2.33	285	<1	0.01	<1	<10	<2
393244		6.6	2	3	4480	30.7	20	<0.01	10	2.80	1345	<1	0.01	<1	190	339
393245		<0.5	16	<1	5910	>50	20	<0.01	<10	0.61	206	<1	<0.01	<1	<10	41
393246		0.5	<1	<1	1170	>50	20	<0.01	<10	1.42	136	<1	<0.01	8	<10	5
393247		10.1	<1	1	5360	15.30	30	0.98	50	1.02	415	1	0.64	2	130	501
393248		0.7	6	7	1480	12.25	40	1.45	20	1.84	382	1	2.15	3	140	944
393249		0.5	8	13	1020	6.92	20	0.36	10	2.29	1085	2	2.00	18	470	736
393250		0.5	63	138	4860	8.42	20	0.58	20	3.75	1315	<1	1.74	304	1930	22
393251		2.4	18	25	1265	8.39	20	0.49	10	2.65	1370	<1	2.09	33	390	406
393252		0.6	20	27	574	6.02	20	0.47	10	2.79	1065	<1	1.98	34	320	139
393253		<0.5	18	19	124	6.39	20	0.33	10	2.42	1240	<1	1.79	29	290	65

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To: NORTHERN SHIELD RESOURCES INC.
440 – 55 METCALFE STREET
OTTAWA ON K1P 6L5

Finalized Date: 4-JUN-2010
Account: NORSHI

Project: WABASSI

CERTIFICATE OF ANALYSIS TM10061933

Sample Description	Method	ME-ICP61	ME-ICP61	ME-ICP61	ME-ICP61	ME-ICP61	ME-ICP61	ME-ICP61	ME-ICP61	ME-ICP61	ME-ICP61	ME-ICP61	Ag-OG62	Cu-OG62	Zn-OG62	S-IR08
	Analyte	S	Sb	Sc	Sr	Th	Ti	Tl	U	V	W	Zn	Ag	Cu	Zn	S
	Units	%	ppm	ppm	ppm	ppm	%	ppm	ppm	ppm	ppm	ppm	ppm	%	%	%
	LOR	0.01	5	1	1	20	0.01	10	10	1	10	2	1	0.001	0.001	0.01
393225		2.78	<5	3	4	<20	0.04	10	<10	1	<10	490		1.155		
393226		0.71	<5	3	3	<20	0.05	<10	<10	1	<10	737				
393227		3.54	<5	4	4	<20	0.05	10	<10	2	<10	9140		2.09		
393228		0.49	6	4	3	<20	0.07	10	<10	1	<10	290				
393229		0.58	6	5	4	<20	0.11	10	<10	1	<10	176				
393230		0.01	<5	<1	3	<20	0.02	<10	<10	2	<10	<2				
393231		0.50	5	5	6	<20	0.12	10	<10	1	<10	102				
393232		1.58	6	6	8	<20	0.12	10	<10	1	<10	231				
393233		0.15	8	5	7	<20	0.12	10	<10	1	<10	92				
393234		0.77	5	4	4	<20	0.07	10	<10	1	<10	112				
393235		2.40	6	5	2	<20	0.06	10	<10	2	<10	555				
393236		>10.0	14	2	16	<20	0.03	20	<10	7	<10	>10000			4.66	29.1
393237		1.47	<5	14	98	<20	0.29	10	<10	61	<10	709				
393238		>10.0	9	20	68	<20	0.26	10	<10	53	<10	1225	705	1.885		14.90
393239		>10.0	19	2	14	<20	0.05	20	<10	10	<10	5300				30.8
393240		1.62	11	9	114	<20	0.22	20	<10	41	<10	504				
393241		>10.0	6	3	14	<20	0.06	10	10	8	<10	1045				25.2
393242		7.39	9	5	95	20	0.12	10	<10	13	10	5360	109	2.24		
393243		>10.0	18	2	3	<20	0.04	10	10	9	<10	2570				34.2
393244		>10.0	17	2	32	<20	0.06	10	10	8	<10	4280				20.1
393245		>10.0	10	<1	2	<20	<0.01	20	10	5	<10	547				38.3
393246		>10.0	12	1	2	<20	0.03	20	<10	7	<10	1770				32.8
393247		8.73	7	3	65	<20	0.09	20	<10	8	<10	5610				
393248		7.94	15	10	92	<20	0.11	10	<10	34	<10	856				
393249		3.77	5	15	101	<20	0.25	<10	<10	107	<10	370				
393250		0.95	<5	25	634	<20	0.50	<10	<10	240	<10	136				
393251		2.30	<5	18	125	<20	0.34	10	<10	87	<10	1380				
393252		0.37	<5	17	138	<20	0.37	10	<10	119	<10	245				
393253		0.10	<5	18	148	<20	0.39	10	<10	135	<10	169				

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To: NORTHERN SHIELD RESOURCES INC.
440 – 55 METCALFE STREET
OTTAWA ON K1P 6L5

Finalized Date: 15-JUL-2010
This copy reported on 16-JUL-2010
Account: NORSHI

CERTIFICATE TM10089337

Project: WABASSI
P.O. No.:
This report is for 15 Drill Core samples submitted to our lab in Timmins, ON, Canada on 5-JUL-2010.
The following have access to data associated with this certificate:

IAN BLISS	CHRISTINE VAILLANCOURT	

SAMPLE PREPARATION

ALS CODE	DESCRIPTION
WEI-21	Received Sample Weight
LOG-22	Sample login - Rcd w/o BarCode
CRU-31	Fine crushing - 70% <2mm
CRU-QC	Crushing QC Test
PUL-QC	Pulverizing QC Test
SPL-21	Split sample - riffle splitter
PUL-31	Pulverize split to 85% <75 um

ANALYTICAL PROCEDURES

ALS CODE	DESCRIPTION	INSTRUMENT
ME-ICP61	33 element four acid ICP-AES	ICP-AES
PGM-MS23	Pt, Pd, Au 30g FA ICP-MS	ICP-MS

To: NORTHERN SHIELD RESOURCES INC.
ATTN: CHRISTINE VAILLANCOURT
440 – 55 METCALFE STREET
OTTAWA ON K1P 6L5

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.

Signature:
Colin Ramshaw, Vancouver Laboratory Manager

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To: NORTHERN SHIELD RESOURCES INC.
440 – 55 METCALFE STREET
OTTAWA ON K1P 6L5

Finalized Date: 15-JUL-2010
Account: NORSHI

Project: WABASSI

CERTIFICATE OF ANALYSIS TM10089337

Sample Description	Method / Analyte / Units / LOR	WEI-21 Recvd Wt. kg 0.02	PGM-MS23 Au ppm 0.001	PGM-MS23 Pt ppm 0.0005	PGM-MS23 Pd ppm 0.001	ME-ICP61 Ag ppm 0.5	ME-ICP61 Al % 0.01	ME-ICP61 As ppm 5	ME-ICP61 Ba ppm 10	ME-ICP61 Be ppm 0.5	ME-ICP61 Bi ppm 2	ME-ICP61 Ca % 0.01	ME-ICP61 Cd ppm 0.5	ME-ICP61 Co ppm 1	ME-ICP61 Cr ppm 1	ME-ICP61 Cu ppm 1
393301		0.40	0.002	<0.0005	<0.001	<0.5	7.70	10	20	<0.5	2	7.00	<0.5	45	282	132
393302		1.31	0.002	0.0014	0.001	<0.5	7.54	<5	40	<0.5	<2	6.12	<0.5	40	449	144
393303		1.18	0.003	0.0008	<0.001	<0.5	8.25	<5	40	<0.5	<2	6.18	<0.5	42	496	128
393304		0.85	0.001	0.0005	<0.001	<0.5	8.47	<5	50	<0.5	3	6.47	<0.5	55	122	59
393305		0.66	0.001	0.0005	<0.001	<0.5	9.20	<5	30	<0.5	2	7.18	<0.5	62	143	436
393306		1.33	0.002	<0.0005	<0.001	<0.5	8.87	<5	50	<0.5	2	7.57	<0.5	47	115	97
393307		1.20	0.003	0.0006	0.001	<0.5	9.14	<5	40	<0.5	<2	7.15	<0.5	63	178	187
393308		1.28	0.001	0.0028	0.004	<0.5	3.47	<5	30	<0.5	<2	3.38	0.6	122	862	67
393309		0.73	0.002	0.0035	0.004	<0.5	4.50	<5	30	<0.5	<2	3.85	<0.5	112	608	49
393310		1.14	0.025	<0.0005	<0.001	1.3	3.22	<5	30	<0.5	8	0.71	<0.5	9	15	2430
393311		0.59	0.019	0.0010	0.001	2.4	6.81	<5	50	<0.5	4	4.43	0.6	93	250	2880
393312		0.55	0.004	0.0108	0.009	<0.5	3.37	9	350	0.6	<2	6.66	<0.5	55	969	79
393313		0.46	0.001	0.0015	0.001	<0.5	8.09	8	540	1.6	2	3.98	<0.5	24	101	62
393314		0.69	0.251	0.0008	0.001	1.0	7.66	<5	30	<0.5	<2	7.56	1.0	51	111	1790
393315		0.55	0.004	0.0015	0.001	<0.5	8.74	<5	30	<0.5	<2	7.81	<0.5	43	197	175

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To: NORTHERN SHIELD RESOURCES INC.
440 – 55 METCALFE STREET
OTTAWA ON K1P 6L5

Finalized Date: 15-JUL-2010
Account: NORSHI

Project: WABASSI

CERTIFICATE OF ANALYSIS TM10089337

Sample Description	Method Analyte Units LOR	ME-ICP61 Fe % 0.01	ME-ICP61 Ga ppm 10	ME-ICP61 In ppm 10	ME-ICP61 K % 0.01	ME-ICP61 La ppm 10	ME-ICP61 Mg % 0.01	ME-ICP61 Mn ppm 5	ME-ICP61 Mo ppm 1	ME-ICP61 Na % 0.01	ME-ICP61 Ni ppm 1	ME-ICP61 P ppm 10	ME-ICP61 Pb ppm 2	ME-ICP61 S % 0.01	ME-ICP61 Sb ppm 5	ME-ICP61 Sc ppm 1
393301		5.26	10	<10	0.09	10	6.12	1080	<1	0.74	222	110	2	0.05	<5	16
393302		4.79	10	<10	0.19	10	5.67	964	<1	1.27	206	130	2	0.05	<5	12
393303		5.07	10	10	0.13	10	6.51	981	<1	1.07	204	110	<2	0.05	<5	16
393304		4.99	10	10	0.31	10	5.31	788	<1	0.91	424	90	5	0.03	<5	5
393305		5.06	10	<10	0.18	10	5.09	773	<1	0.93	732	90	2	0.27	<5	7
393306		3.99	10	10	0.11	10	3.88	669	<1	1.04	378	80	5	0.05	<5	4
393307		5.33	10	<10	0.13	10	5.63	825	<1	0.90	549	70	<2	0.11	<5	5
393308		9.56	10	<10	0.19	10	13.95	1285	<1	0.13	1340	140	7	0.09	<5	16
393309		9.08	10	<10	0.15	10	12.15	1250	<1	0.48	1230	160	4	0.05	<5	14
393310		2.98	10	10	0.35	10	2.38	243	<1	0.04	10	30	<2	0.25	<5	6
393311		8.35	10	<10	0.34	10	9.28	1185	<1	0.66	669	80	35	0.44	<5	11
393312		7.00	<10	<10	1.19	10	10.55	1285	<1	0.50	198	530	5	0.02	<5	29
393313		4.25	20	<10	1.93	40	2.15	666	1	2.78	74	1420	14	0.01	<5	12
393314		9.67	20	20	0.20	10	3.31	1860	<1	1.49	60	380	4	0.32	<5	28
393315		8.26	20	<10	0.20	<10	4.61	1535	<1	1.56	90	280	2	0.19	<5	41

CERTIFICATE OF ANALYSIS TM10089337

Sample Description	Method / Analyte / Units / LOR	ME-ICP61 Sr ppm 1	ME-ICP61 Th ppm 20	ME-ICP61 Ti % 0.01	ME-ICP61 Tl ppm 10	ME-ICP61 U ppm 10	ME-ICP61 V ppm 1	ME-ICP61 W ppm 10	ME-ICP61 Zn ppm 2	ME-ICP61 Zr ppm 5
393301		141	<20	0.17	<10	<10	96	<10	63	12
393302		156	<20	0.13	<10	<10	69	<10	62	9
393303		147	<20	0.14	<10	<10	74	<10	66	10
393304		184	<20	0.08	<10	<10	33	<10	53	10
393305		195	<20	0.11	<10	<10	45	<10	52	10
393306		214	<20	0.09	<10	<10	34	<10	46	8
393307		209	<20	0.09	<10	<10	37	<10	58	8
393308		21	<20	0.19	<10	<10	91	<10	317	19
393309		77	<20	0.17	<10	<10	75	<10	88	27
393310		9	<20	0.05	<10	<10	4	<10	38	39
393311		153	<20	0.12	<10	<10	46	<10	93	16
393312		114	<20	0.18	<10	<10	118	<10	70	34
393313		618	<20	0.46	<10	<10	99	<10	68	145
393314		152	<20	0.70	<10	<10	342	<10	154	16
393315		165	<20	0.56	<10	10	277	<10	104	13

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To: NORTHERN SHIELD RESOURCES INC.
440 – 55 METCALFE STREET
OTTAWA ON K1P 6L5

Finalized Date: 7- APR- 2011
Account: NORSHI

CERTIFICATE TM11040669

Project: WABASSI
P.O. No.:
This report is for 161 Drill Core samples submitted to our lab in Timmins, ON, Canada on 14- MAR- 2011.

The following have access to data associated with this certificate:

IAN BLISS	CHRISTINE VAILLANCOURT	

SAMPLE PREPARATION

ALS CODE	DESCRIPTION
WEI- 21	Received Sample Weight
LOG- 22	Sample login - Rcd w/o BarCode
CRU- 31	Fine crushing - 70% <2mm
CRU- QC	Crushing QC Test
PUL- QC	Pulverizing QC Test
SPL- 21	Split sample - riffle splitter
PUL- 31	Pulverize split to 85% <75 um
LOG- 24	Pulp Login - Rcd w/o Barcode

ANALYTICAL PROCEDURES

ALS CODE	DESCRIPTION	INSTRUMENT
Au- AA25	Ore Grade Au 30g FA AA finish	AAS
PGM- ICP27	Ore grade Pt, Pd and Au by ICP	ICP- AES
ME- ICP61	33 element four acid ICP- AES	ICP- AES
ME- OG62	Ore Grade Elements - Four Acid	ICP- AES
Cu- OG62	Ore Grade Cu - Four Acid	VARIABLE
Zn- OG62	Ore Grade Zn - Four Acid	VARIABLE
PGM- MS23	Pt, Pd, Au 30g FA ICP- MS	ICP- MS

To: NORTHERN SHIELD RESOURCES INC.
ATTN: CHRISTINE VAILLANCOURT
440 – 55 METCALFE STREET
OTTAWA ON K1P 6L5

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.

Signature:
Colin Ramshaw, Vancouver Laboratory Manager

ALS Minerals

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To: NORTHERN SHIELD RESOURCES INC.
440 - 55 METCALFE STREET
OTTAWA ON K1P 6L5

Finalized Date: 7- APR- 2011
Account: NORSHI

Project: WABASSI

CERTIFICATE OF ANALYSIS TM11040669

Sample Description	Method / Analyte / Units / LOR	WEI- 21 Recvd Wt. kg 0.02	PGM- MS23 Au ppm 0.001	PGM- MS23 Pt ppm 0.0005	PGM- MS23 Pd ppm 0.001	Au- AA25 Au ppm 0.01	PGM- ICP27 Au ppm 0.03	PGM- ICP27 Pt ppm 0.03	PGM- ICP27 Pd ppm 0.03	ME- ICP61 Ag ppm 0.5	ME- ICP61 Al % 0.01	ME- ICP61 As ppm 5	ME- ICP61 Ba ppm 10	ME- ICP61 Be ppm 0.5	ME- ICP61 Bi ppm 2	ME- ICP61 Ca % 0.01
393551		1.39	0.023	0.0008	0.001					<0.5	8.59	7	90	0.6	<2	0.38
393552		1.51	0.013	0.0005	0.001					<0.5	6.98	5	90	0.5	<2	2.04
393553		1.06	0.025	<0.0005	<0.001					1.8	8.93	<5	90	1.0	<2	1.14
393554		1.42	0.007	<0.0005	<0.001					<0.5	5.38	5	150	0.6	<2	0.18
393555		1.72	0.008	<0.0005	<0.001					<0.5	6.77	6	110	0.6	<2	0.86
393556		1.49	0.009	<0.0005	<0.001					<0.5	9.66	<5	150	1.3	<2	0.59
393557		1.51	0.007	<0.0005	<0.001					<0.5	6.24	<5	70	0.6	<2	0.58
393558		1.15	0.005	<0.0005	<0.001					<0.5	6.60	<5	170	0.5	<2	2.35
393559		0.97	0.017	<0.0005	<0.001					<0.5	8.37	<5	100	0.5	2	0.48
393560		1.56	0.062	<0.0005	<0.001					0.7	4.26	<5	50	0.5	<2	0.03
393561		0.75	>1.00	<0.0005	<0.001	4.52				7.8	4.85	<5	60	0.7	4	0.07
393562		1.50	0.365	0.0006	<0.001					3.1	4.33	<5	40	0.5	<2	0.03
393563		1.54	0.028	<0.0005	<0.001					0.5	4.03	7	50	0.5	<2	0.15
393564		1.73	0.013	0.0005	<0.001					4.6	6.49	11	30	0.9	<2	6.30
393565		1.73	0.012	<0.0005	<0.001					5.2	6.39	9	40	0.9	<2	6.37
393566		1.74	0.001	<0.0005	<0.001					<0.5	6.48	5	50	0.9	<2	6.49
393567		1.82	0.016	0.0010	<0.001					1.4	6.60	<5	60	0.9	<2	6.12
393568		1.97	0.007	<0.0005	<0.001					3.7	6.60	8	50	0.9	<2	6.27
393569		1.76	0.010	<0.0005	<0.001					4.8	6.39	8	40	0.9	<2	6.41
393570		0.05	<0.001	<0.0005	<0.001					<0.5	0.39	5	20	<0.5	4	0.03
393571		1.72	0.010	<0.0005	<0.001					4.5	6.35	7	40	0.9	<2	6.65
393572		1.70	0.007	<0.0005	<0.001					1.1	7.27	<5	70	1.0	<2	6.23
393573		1.29	0.003	0.0013	0.001					<0.5	8.12	6	300	0.9	2	4.14
393574		1.21	0.067	0.0006	<0.001					2.7	8.68	9	250	1.1	<2	4.57
393575		1.61	0.003	<0.0005	<0.001					<0.5	9.38	5	110	0.5	2	6.25
393576		1.40	0.294	0.0008	<0.001					29.3	9.00	5	310	0.9	<2	4.26
393577		1.42	0.100	0.0006	<0.001					17.9	10.20	<5	110	0.8	26	5.45
393578		1.58	0.090	0.0020	0.002					11.9	10.30	16	180	1.0	<2	5.02
393579		1.26	0.105	0.0005	<0.001					2.2	7.92	16	250	0.8	2	4.93
393580		1.64	0.008	<0.0005	<0.001					2.1	6.92	11	110	1.0	<2	5.75
393581		1.82	0.024	0.0007	<0.001					5.4	6.60	7	100	0.9	<2	5.75
393582		1.51	0.026	0.0006	<0.001					5.5	9.25	6	130	0.8	3	5.17
393583		1.68	0.009	0.0005	<0.001					3.0	3.71	<5	170	<0.5	4	0.34
393584		1.65	0.006	0.0005	<0.001					2.1	4.21	<5	230	<0.5	6	0.32
393585		1.58	0.005	<0.0005	<0.001					0.8	3.24	7	50	<0.5	6	0.21
393586		0.85	0.008	<0.0005	<0.001					<0.5	5.88	6	220	0.8	<2	2.14
393587		1.65	0.017	0.0005	<0.001					0.5	6.56	8	150	0.6	<2	1.24
393588		1.06	0.002	<0.0005	<0.001					<0.5	8.84	7	80	0.8	<2	6.36
393589		1.47	0.002	<0.0005	<0.001					<0.5	8.26	<5	60	0.8	<2	5.89
393590		Not Recvd														

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To: NORTHERN SHIELD RESOURCES INC.
440 - 55 METCALFE STREET
OTTAWA ON K1P 6L5

Finalized Date: 7- APR- 2011
Account: NORSHI

Project: WABASSI

CERTIFICATE OF ANALYSIS TM11040669

Sample Description	Method	ME-ICP61	ME-ICP61	ME-ICP61	ME-ICP61	ME-ICP61	ME-ICP61	ME-ICP61	ME-ICP61	ME-ICP61	ME-ICP61	ME-ICP61	ME-ICP61	ME-ICP61	ME-ICP61	ME-ICP61
	Analyte	Cd	Co	Cr	Cu	Fe	Ga	In	K	La	Mg	Mn	Mo	Na	Ni	P
	Units	ppm	ppm	ppm	ppm	%	ppm	ppm	%	ppm	%	ppm	ppm	%	ppm	ppm
	LOR	0.5	1	1	1	0.01	10	10	0.01	10	0.01	5	1	0.01	1	10
393551		<0.5	7	3	259	7.86	30	<10	1.18	30	7.47	848	1	0.30	7	90
393552		<0.5	8	11	70	5.08	20	<10	0.52	30	2.26	679	1	1.66	10	90
393553		9.5	8	<1	716	6.86	40	<10	0.62	130	9.26	1185	1	0.56	<1	160
393554		<0.5	5	3	118	3.00	20	<10	0.87	20	3.09	385	<1	0.27	2	30
393555		<0.5	9	7	71	3.46	20	<10	0.87	30	3.41	503	1	0.74	8	70
393556		<0.5	3	<1	19	3.38	30	<10	1.22	30	8.38	654	3	0.44	1	120
393557		<0.5	2	2	52	2.22	20	<10	0.56	30	4.94	424	2	0.39	<1	70
393558		<0.5	7	7	29	3.77	20	<10	0.51	30	1.41	664	2	1.76	8	140
393559		<0.5	5	2	240	5.59	30	<10	0.67	30	9.60	728	3	0.28	1	70
393560		<0.5	4	4	782	2.72	10	<10	0.62	30	2.42	560	1	0.16	<1	50
393561		0.7	15	4	4700	4.03	20	<10	0.70	30	3.00	700	3	0.23	1	60
393562		1.3	10	3	1815	3.24	20	<10	0.55	20	2.99	646	1	0.15	<1	60
393563		<0.5	4	5	530	2.47	10	<10	0.67	10	2.12	434	<1	0.21	<1	100
393564		0.7	34	2	6060	14.45	20	<10	0.14	20	2.09	2150	<1	1.18	5	5790
393565		0.7	37	3	6840	14.70	20	<10	0.15	20	2.23	2390	<1	1.27	11	5730
393566		<0.5	36	2	247	13.95	20	<10	0.18	20	2.24	2460	<1	1.53	1	5580
393567		<0.5	33	1	2100	13.95	20	<10	0.18	20	2.30	2510	<1	1.60	2	6290
393568		<0.5	32	<1	4700	14.80	20	<10	0.17	20	2.29	2610	<1	1.47	7	5850
393569		0.6	34	<1	6710	15.10	20	<10	0.16	10	2.39	2790	<1	1.35	6	6290
393570		<0.5	<1	3	10	0.05	<10	<10	0.16	20	0.02	9	<1	0.01	<1	50
393571		0.5	39	2	6310	15.95	20	<10	0.20	20	2.35	2880	<1	1.19	8	6760
393572		<0.5	30	14	1005	14.55	20	<10	0.29	10	2.09	2390	<1	1.64	7	5420
393573		<0.5	20	71	110	5.23	20	<10	1.05	30	1.83	740	<1	2.95	37	430
393574		<0.5	23	16	2480	8.90	20	<10	0.84	20	1.40	1100	<1	2.80	15	2540
393575		<0.5	37	109	243	7.12	20	<10	0.35	<10	3.79	1370	<1	2.76	71	530
393576		6.2	25	11	>10000	7.53	20	<10	1.90	<10	0.98	1045	<1	3.12	27	580
393577		2.8	30	4	>10000	9.25	30	<10	0.41	<10	0.83	845	<1	2.96	37	1350
393578		1.8	24	6	>10000	8.63	30	<10	0.72	10	0.76	824	<1	3.10	25	1170
393579		0.7	19	48	1175	5.92	20	<10	1.80	10	1.56	1595	<1	2.25	23	570
393580		0.6	49	1	2300	13.65	20	<10	0.58	10	2.65	1985	<1	1.83	5	5330
393581		0.6	49	1	5470	14.05	20	<10	0.46	10	2.44	1765	<1	1.67	13	5180
393582		<0.5	31	14	8910	12.00	20	<10	0.61	10	1.35	1530	<1	2.24	32	2520
393583		0.6	25	6	3560	8.28	20	<10	1.61	<10	2.98	853	<1	0.34	2	20
393584		0.8	17	8	3880	9.38	20	<10	2.18	<10	4.65	1415	<1	0.33	<1	30
393585		0.5	17	6	2020	9.20	10	<10	0.39	<10	4.07	1415	<1	0.10	<1	30
393586		<0.5	12	10	322	6.65	20	<10	0.93	30	1.52	937	2	1.49	4	1640
393587		<0.5	27	24	516	10.00	20	<10	0.94	10	4.67	1465	<1	0.36	34	80
393588		<0.5	46	6	263	13.55	30	<10	0.51	20	2.89	1690	1	0.81	1	5980
393589		<0.5	44	6	519	13.00	30	<10	0.30	20	3.24	1965	<1	1.08	5	5200
393590																

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440 - 55 METCALFE STREET
OTTAWA ON K1P 6L5

Finalized Date: 7- APR- 2011
Account: NORSHI

Project: WABASSI

CERTIFICATE OF ANALYSIS TM11040669

Sample Description	Method	ME-ICP61	ME-ICP61	ME-ICP61	ME-ICP61	ME-ICP61	ME-ICP61	ME-ICP61	ME-ICP61	ME-ICP61	ME-ICP61	ME-ICP61	ME-ICP61	ME-ICP61	Cu-OG62	Zn-OG62
	Analyte	Pb	S	Sb	Sc	Sr	Th	Ti	Tl	U	V	W	Zn	Zr	Cu	Zn
	Units	ppm	%	ppm	ppm	ppm	ppm	%	ppm	ppm	ppm	ppm	ppm	ppm	%	%
	LOR	2	0.01	5	1	1	20	0.01	10	10	1	10	2	5	0.001	0.001
393551		20	2.53	<5	6	22	<20	0.13	<10	<10	8	<10	1155	453		
393552		66	0.96	<5	9	114	<20	0.27	<10	10	54	<10	255	189		
393553		26	0.84	<5	5	43	20	0.15	<10	<10	2	10	>10000	497		1.330
393554		24	0.12	<5	6	19	<20	0.09	<10	<10	4	<10	253	227		
393555		39	0.55	<5	9	37	<20	0.16	<10	<10	35	<10	153	199		
393556		31	1.45	<5	7	46	<20	0.14	<10	<10	4	<10	325	511		
393557		33	0.42	<5	6	24	<20	0.09	<10	<10	2	<10	182	268		
393558		46	0.15	<5	9	92	<20	0.21	<10	10	39	<10	96	140		
393559		15	2.86	<5	6	13	<20	0.09	<10	<10	6	<10	406	415		
393560		11	0.14	<5	8	5	<20	0.09	<10	<10	2	<10	197	129		
393561		15	0.88	<5	6	6	<20	0.08	<10	<10	2	<10	254	136		
393562		14	0.37	<5	5	4	<20	0.07	<10	<10	2	<10	330	111		
393563		14	0.23	<5	4	9	<20	0.11	<10	<10	2	<10	141	101		
393564		58	0.72	<5	36	241	30	1.68	<10	<10	51	<10	174	19		
393565		38	0.83	<5	39	232	30	1.70	<10	<10	61	<10	213	23		
393566		14	0.17	<5	40	238	30	1.78	<10	<10	69	<10	235	30		
393567		27	0.35	<5	40	207	30	1.80	<10	<10	69	<10	252	34		
393568		46	0.67	<5	43	203	30	1.78	<10	<10	66	<10	240	27		
393569		27	0.84	<5	44	214	30	1.77	<10	<10	66	<10	210	15		
393570		<2	0.01	<5	<1	4	<20	0.02	<10	<10	2	<10	<2	69		
393571		22	0.79	<5	46	185	30	1.72	<10	<10	73	<10	210	17		
393572		15	0.28	<5	46	169	30	1.51	<10	<10	95	<10	159	19		
393573		7	0.02	<5	19	162	30	0.45	<10	<10	159	<10	67	63		
393574		13	0.53	<5	26	224	20	0.99	<10	<10	67	<10	145	32		
393575		11	0.15	<5	30	249	<20	0.60	<10	<10	237	<10	90	16		
393576		16	2.29	<5	5	191	<20	0.76	<10	<10	223	30	403	23	1.275	
393577		49	1.97	<5	5	338	<20	0.79	<10	<10	24	<10	126	<5	1.565	
393578		33	1.24	<5	7	318	20	0.84	<10	<10	21	<10	167	14	1.130	
393579		4	1.00	<5	17	130	<20	0.44	<10	<10	111	40	135	42		
393580		8	0.41	<5	36	207	30	1.95	<10	<10	107	<10	224	14		
393581		20	0.88	<5	34	202	30	1.76	<10	<10	116	<10	169	22		
393582		22	1.27	<5	27	298	20	0.96	<10	<10	36	<10	66	13		
393583		14	0.90	<5	9	13	<20	0.21	<10	<10	27	<10	185	31		
393584		11	0.50	<5	8	12	<20	0.22	<10	<10	32	<10	212	21		
393585		18	0.46	<5	9	4	<20	0.18	<10	<10	38	<10	157	26		
393586		658	0.10	<5	18	91	20	0.50	<10	<10	31	<10	74	116		
393587		279	0.37	<5	23	57	<20	0.29	<10	<10	118	<10	184	60		
393588		10	0.17	<5	18	155	30	1.73	<10	<10	169	<10	655	71		
393589		8	0.25	<5	22	239	30	1.43	<10	<10	106	<10	232	46		
393590																

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To: NORTHERN SHIELD RESOURCES INC.
440 - 55 METCALFE STREET
OTTAWA ON K1P 6L5

Finalized Date: 7- APR- 2011
Account: NORSHI

Project: WABASSI

CERTIFICATE OF ANALYSIS TM11040669

Sample Description	WEI-21	PGM-MS23	PGM-MS23	PGM-MS23	Au-AA25	PGM-ICP27	PGM-ICP27	PGM-ICP27	ME-ICP61	ME-ICP61	ME-ICP61	ME-ICP61	ME-ICP61	ME-ICP61	ME-ICP61
Method / Analyte	Recvd Wt.	Au	Pt	Pd	Au	Au	Pt	Pd	Ag	Al	As	Ba	Be	Bi	Ca
Units	kg	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	%	ppm	ppm	ppm	ppm	%
LOR	0.02	0.001	0.0005	0.001	0.01	0.03	0.03	0.03	0.5	0.01	5	10	0.5	2	0.01
393591	1.64	0.001	<0.0005	<0.001					0.5	8.47	12	80	1.0	<2	6.19
393592	1.07	0.011	0.0013	<0.001					<0.5	8.20	<5	130	0.6	<2	5.99
393593	Not Recvd														
393594	Not Recvd														
393595	1.55	0.006	0.0010	0.001					<0.5	4.55	<5	60	<0.5	2	3.31
393596	1.61	0.003	0.0010	0.002					<0.5	3.67	<5	50	<0.5	3	2.74
393597	1.44	0.005	0.0013	<0.001					<0.5	9.35	<5	130	<0.5	<2	5.44
393598	0.70	0.008	0.0011	<0.001					<0.5	8.14	5	180	0.5	3	4.06
393599	1.26	0.004	0.0047	0.006					<0.5	9.65	<5	30	<0.5	<2	8.07
393600	0.04	0.127	0.461	>1.00		0.15	0.40	1.44	3.0	8.36	43	340	0.8	<2	7.72
393601	1.45	0.015	0.0215	0.003					0.6	9.56	<5	20	<0.5	4	7.17
393602	1.35	0.011	0.0164	0.002					<0.5	9.58	<5	40	<0.5	<2	6.78
393603	1.44	0.009	0.0113	0.001					<0.5	9.12	<5	120	<0.5	<2	6.55
393604	1.41	0.001	0.0005	<0.001					<0.5	8.78	<5	140	<0.5	<2	5.69
393605	1.49	0.001	<0.0005	<0.001					<0.5	9.20	<5	90	<0.5	<2	6.24
393606	0.79	0.002	0.0015	0.014					<0.5	8.68	<5	70	<0.5	<2	7.13
393607	0.77	0.004	0.0053	0.019					<0.5	8.51	<5	140	<0.5	<2	5.75
393608	1.95	0.005	0.0081	0.038					<0.5	8.73	<5	120	<0.5	<2	5.82
393609	1.52	0.003	0.0009	0.004					<0.5	9.56	<5	90	<0.5	<2	5.44
393610	0.04	0.001	<0.0005	<0.001					<0.5	0.40	<5	20	<0.5	<2	0.03
393611	0.96	0.002	0.0035	0.028					<0.5	9.60	<5	40	<0.5	<2	8.21
393612	1.10	0.001	0.0020	0.005					<0.5	9.72	<5	90	<0.5	<2	6.76
393613	0.77	0.005	0.0053	0.017					<0.5	9.94	<5	30	<0.5	<2	7.34
393614	1.87	0.004	0.0044	0.013					<0.5	9.55	<5	100	<0.5	<2	6.52
393615	1.56	0.003	0.0041	0.008					<0.5	10.25	<5	50	<0.5	<2	7.63
393616	1.56	0.003	0.0036	0.005					<0.5	9.95	<5	90	<0.5	<2	7.21
393617	1.66	0.003	0.0051	0.008					<0.5	10.45	<5	90	<0.5	<2	7.64
393618	1.53	0.005	0.0063	0.009					<0.5	9.35	<5	60	<0.5	<2	6.83
393619	1.60	0.003	0.0037	0.005					<0.5	9.74	<5	90	<0.5	<2	6.64
393620	1.63	0.003	0.0113	0.072					<0.5	9.38	<5	60	<0.5	<2	6.37
393621	1.23	0.003	0.0074	0.043					<0.5	6.62	<5	50	<0.5	<2	5.65
393622	0.90	0.007	0.0093	0.026					<0.5	9.00	<5	60	<0.5	<2	6.74
393623	1.20	0.005	0.0096	0.054					<0.5	9.34	<5	30	<0.5	<2	7.08
393624	1.14	0.002	0.0042	0.013					<0.5	7.93	<5	50	<0.5	<2	6.84
393625	1.66	0.004	0.0080	0.022					<0.5	8.75	<5	60	<0.5	<2	7.48
393626	1.26	0.003	0.0063	0.013					<0.5	8.67	<5	70	<0.5	<2	7.36
393627	1.52	0.002	0.0064	0.018					<0.5	8.49	<5	100	<0.5	<2	6.75
393628	1.57	0.003	0.0065	0.019					<0.5	8.29	<5	110	<0.5	<2	6.49
393629	1.83	0.001	0.0045	0.007					<0.5	7.79	<5	200	0.6	<2	4.43
393630	0.04	0.155	0.459	>1.00		0.17	0.35	1.31	2.1	8.17	30	330	0.6	<2	7.42

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CERTIFICATE OF ANALYSIS TM11040669

Sample Description	Method / Analyte / Units / LOR	ME-ICP61 Cd ppm 0.5	ME-ICP61 Co ppm 1	ME-ICP61 Cr ppm 1	ME-ICP61 Cu ppm 1	ME-ICP61 Fe % 0.01	ME-ICP61 Ga ppm 10	ME-ICP61 In ppm 10	ME-ICP61 K % 0.01	ME-ICP61 La ppm 10	ME-ICP61 Mg % 0.01	ME-ICP61 Mn ppm 5	ME-ICP61 Mo ppm 1	ME-ICP61 Na % 0.01	ME-ICP61 Ni ppm 1	ME-ICP61 P ppm 10
393591		<0.5	38	3	150	10.55	20	<10	0.31	10	2.63	1460	<1	1.83	3	4160
393592		<0.5	37	57	72	7.10	20	<10	0.85	10	2.52	817	<1	1.79	44	170
393593																
393594																
393595		<0.5	36	137	352	4.61	10	<10	0.31	<10	3.38	685	<1	0.79	166	130
393596		<0.5	43	102	48	4.34	<10	<10	0.38	<10	3.84	592	<1	0.51	223	80
393597		<0.5	32	264	97	4.06	20	<10	0.76	10	4.42	732	<1	2.00	175	60
393598		<0.5	35	201	429	7.15	20	<10	1.19	10	4.89	1090	<1	1.45	102	50
393599		<0.5	35	197	154	3.64	20	<10	0.09	<10	3.86	587	<1	1.02	241	60
393600		0.6	67	149	4790	8.94	20	<10	0.59	20	3.77	1315	<1	1.81	311	1970
393601		<0.5	41	450	188	5.17	20	<10	0.13	<10	6.45	918	<1	1.05	184	70
393602		<0.5	37	427	178	5.19	10	<10	0.26	10	6.48	970	<1	1.09	180	90
393603		<0.5	34	352	164	5.07	20	<10	0.82	10	5.92	934	1	1.08	157	60
393604		<0.5	19	56	9	3.39	20	<10	0.66	10	3.17	487	<1	2.41	72	50
393605		<0.5	21	52	25	3.90	20	<10	0.41	10	3.01	553	<1	2.46	76	180
393606		<0.5	31	86	242	5.27	20	<10	0.28	10	4.07	835	<1	1.95	196	260
393607		<0.5	34	87	214	5.62	20	<10	0.53	10	4.01	773	<1	1.98	198	430
393608		<0.5	48	79	232	5.51	10	<10	0.64	10	5.20	745	<1	1.61	395	250
393609		<0.5	21	43	137	3.76	20	<10	0.35	10	3.23	483	<1	3.10	95	70
393610		<0.5	<1	6	2	0.04	<10	<10	0.16	20	<0.01	10	<1	0.04	<1	40
393611		<0.5	47	240	157	5.32	10	<10	0.16	10	6.04	831	<1	1.09	418	90
393612		<0.5	36	198	35	4.72	10	<10	0.57	10	5.36	726	<1	1.05	222	100
393613		<0.5	47	342	216	5.69	20	<10	0.11	10	6.45	933	<1	0.99	390	120
393614		<0.5	38	267	139	5.25	10	10	0.46	10	5.43	824	<1	1.31	264	190
393615		<0.5	44	188	83	4.88	10	10	0.21	10	5.57	714	<1	0.99	295	110
393616		<0.5	35	264	62	4.49	20	<10	0.37	10	4.99	708	<1	1.18	218	140
393617		<0.5	39	357	122	5.55	20	10	0.43	10	5.57	913	<1	1.33	239	220
393618		<0.5	38	345	206	4.94	10	<10	0.26	10	5.21	804	<1	1.14	268	150
393619		<0.5	40	280	55	5.06	20	<10	0.33	10	5.66	784	<1	1.21	223	220
393620		<0.5	49	805	86	5.98	20	<10	0.32	10	6.85	869	<1	1.25	495	290
393621		0.5	72	1040	106	9.30	10	<10	0.29	10	9.23	1370	1	1.07	699	440
393622		<0.5	56	496	386	7.18	20	<10	0.19	10	6.64	1095	<1	1.40	580	400
393623		<0.5	66	776	234	7.43	20	<10	0.07	10	7.60	1015	<1	1.14	698	280
393624		<0.5	57	475	160	8.08	10	<10	0.25	10	6.76	1235	<1	1.34	392	430
393625		<0.5	44	359	188	6.49	10	<10	0.25	10	5.53	1040	<1	1.48	282	350
393626		<0.5	43	372	105	6.18	10	<10	0.31	10	5.30	979	<1	1.54	243	290
393627		<0.5	41	304	64	6.01	10	<10	0.44	10	4.81	987	<1	1.73	248	320
393628		<0.5	35	242	58	5.65	10	<10	0.43	10	4.28	981	<1	1.80	186	330
393629		<0.5	18	111	37	5.13	20	<10	0.46	10	1.67	816	1	2.72	46	670
393630		0.6	61	127	4570	8.42	20	<10	0.59	30	3.58	1275	1	1.73	290	1830

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To: NORTHERN SHIELD RESOURCES INC.
440 - 55 METCALFE STREET
OTTAWA ON K1P 6L5

Finalized Date: 7- APR- 2011
Account: NORSHI

Project: WABASSI

CERTIFICATE OF ANALYSIS TM11040669

Sample Description	ME-ICP61	ME-ICP61	ME-ICP61	ME-ICP61	ME-ICP61	ME-ICP61	ME-ICP61	ME-ICP61	ME-ICP61	ME-ICP61	ME-ICP61	ME-ICP61	ME-ICP61	Cu-OG62	Zn-OG62
Analyte	Pb	S	Sb	Sc	Sr	Th	Ti	Tl	U	V	W	Zn	Zr	Cu	Zn
Units	ppm	%	ppm	ppm	ppm	ppm	%	ppm	ppm	ppm	ppm	ppm	ppm	%	%
LOR	2	0.01	5	1	1	20	0.01	10	10	1	10	2	5	0.001	0.001
393591	14	0.16	<5	28	257	30	1.62	<10	<10	122	<10	126	41		
393592	<2	0.12	<5	23	180	20	0.67	<10	<10	335	<10	81	23		
393593															
393594															
393595	2	0.25	<5	13	87	<20	0.19	<10	<10	80	<10	51	18		
393596	2	0.04	<5	8	58	<20	0.15	<10	<10	72	<10	50	18		
393597	10	0.03	<5	10	233	<20	0.09	<10	<10	41	<10	48	24		
393598	7	0.32	<5	18	132	<20	0.18	<10	<10	97	<10	139	24		
393599	7	0.05	<5	7	190	<20	0.08	<10	<10	38	<10	39	8		
393600	22	0.93	<5	26	626	20	0.53	<10	<10	257	<10	144	52		
393601	<2	0.06	<5	16	159	<20	0.13	<10	<10	72	<10	57	14		
393602	6	0.06	<5	18	154	<20	0.13	<10	<10	70	<10	66	19		
393603	4	0.04	<5	16	147	<20	0.13	<10	<10	63	<10	60	17		
393604	4	<0.01	<5	13	201	<20	0.12	<10	<10	51	<10	34	27		
393605	4	0.02	<5	17	227	<20	0.20	<10	<10	65	<10	41	27		
393606	2	0.08	<5	27	200	<20	0.30	<10	<10	107	<10	61	36		
393607	3	0.12	<5	18	196	<20	0.29	<10	<10	78	<10	66	61		
393608	4	0.14	<5	14	170	<20	0.17	<10	<10	46	<10	59	49		
393609	4	0.03	<5	14	256	<20	0.11	<10	<10	47	<10	21	16		
393610	2	0.01	<5	1	5	<20	0.02	<10	<10	2	<10	<2	63		
393611	6	0.11	<5	20	177	<20	0.14	<10	<10	73	<10	60	17		
393612	2	0.02	<5	12	155	<20	0.12	<10	<10	52	<10	60	15		
393613	4	0.15	<5	16	172	<20	0.15	<10	<10	65	<10	66	16		
393614	3	0.06	<5	14	170	<20	0.17	<10	<10	62	<10	64	41		
393615	3	0.04	<5	8	184	<20	0.11	<10	<10	39	<10	56	16		
393616	4	0.03	<5	10	185	<20	0.14	<10	<10	49	<10	57	45		
393617	3	0.08	<5	14	201	<20	0.25	<10	<10	78	<10	66	28		
393618	5	0.11	<5	14	160	<20	0.18	<10	<10	69	<10	62	20		
393619	6	0.07	<5	14	184	<20	0.22	<10	<10	68	<10	57	28		
393620	2	0.08	<5	14	166	<20	0.32	<10	<10	87	<10	77	43		
393621	3	0.10	<5	22	140	<20	0.53	<10	<10	154	<10	97	39		
393622	4	0.22	<5	20	182	<20	0.46	<10	<10	126	<10	83	47		
393623	<2	0.16	<5	14	187	<20	0.33	<10	<10	96	<10	79	34		
393624	3	0.11	<5	26	167	<20	0.51	<10	<10	155	<10	93	59		
393625	2	0.10	<5	27	162	<20	0.43	<10	<10	140	<10	72	49		
393626	3	0.06	<5	23	158	<20	0.37	<10	<10	122	<10	68	52		
393627	3	0.05	<5	22	163	<20	0.36	<10	<10	113	<10	75	64		
393628	5	0.05	<5	21	158	<20	0.39	<10	<10	117	<10	69	53		
393629	5	0.04	<5	16	174	<20	0.48	<10	<10	82	<10	77	137		
393630	17	0.90	<5	25	618	<20	0.49	<10	<10	241	<10	135	49		

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440 - 55 METCALFE STREET
OTTAWA ON K1P 6L5

Finalized Date: 7- APR- 2011
Account: NORSHI

Project: WABASSI

CERTIFICATE OF ANALYSIS TM11040669

Sample Description / Method	WEI- 21	PGM- MS23	PGM- MS23	PGM- MS23	Au- AA25	PGM- ICP27	PGM- ICP27	PGM- ICP27	ME- ICP61	ME- ICP61	ME- ICP61	ME- ICP61	ME- ICP61	ME- ICP61	ME- ICP61
Analyte	Recvd Wt.	Au	Pt	Pd	Au	Au	Pt	Pd	Ag	Al	As	Ba	Be	Bi	Ca
Units	kg	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	%	ppm	ppm	ppm	ppm	%
LOR	0.02	0.001	0.0005	0.001	0.01	0.03	0.03	0.03	0.5	0.01	5	10	0.5	2	0.01
393631	1.74	0.002	0.0141	0.037					<0.5	9.11	<5	70	<0.5	<2	7.17
393632	2.03	0.002	0.0306	0.084					<0.5	7.36	<5	100	<0.5	<2	5.20
393633	0.89	0.001	0.0008	0.002					<0.5	9.53	<5	60	<0.5	<2	7.30
393634	1.42	0.003	0.0019	0.002					<0.5	10.40	<5	30	<0.5	<2	7.93
393635	1.64	0.003	0.0018	0.001					<0.5	10.90	<5	40	<0.5	<2	7.97
393636	1.36	0.003	0.0019	0.001					<0.5	10.80	<5	30	<0.5	<2	8.05
393637	1.06	0.003	0.0023	0.001					<0.5	9.76	<5	40	<0.5	<2	7.48
393638	1.54	0.003	0.0025	0.001					<0.5	10.80	<5	30	<0.5	2	8.34
393639	1.54	0.003	0.0025	0.001					<0.5	9.95	11	30	<0.5	<2	7.82
393640	1.62	0.003	0.0025	0.001					<0.5	10.15	8	30	<0.5	<2	7.94
393641	1.60	0.003	<0.0005	0.001					<0.5	10.50	5	30	<0.5	<2	8.03
393642	1.90	0.008	0.0006	<0.001					<0.5	7.23	8	40	0.7	<2	2.75
393643	1.51	0.010	0.0005	<0.001					<0.5	7.86	9	80	0.5	<2	4.00
393644	1.60	0.001	0.0005	<0.001					<0.5	8.53	6	90	0.5	<2	4.02
393645	1.61	<0.001	0.0007	<0.001					<0.5	8.37	8	70	1.1	<2	1.38
393646	1.56	0.003	0.0006	<0.001					<0.5	9.28	5	80	1.1	<2	3.15
393647	1.56	0.001	0.0005	<0.001					<0.5	8.77	13	210	0.6	<2	3.84
393648	1.56	0.002	0.0005	<0.001					<0.5	8.34	5	150	0.8	<2	3.52
393649	1.60	0.002	0.0006	<0.001					<0.5	9.08	<5	180	0.7	<2	4.38
393650	0.04	<0.001	<0.0005	<0.001					<0.5	0.41	<5	20	<0.5	<2	0.03
393651	1.59	0.015	0.0012	0.001					0.6	9.07	5	160	0.8	<2	3.97
393652	1.68	0.002	0.0006	<0.001					<0.5	8.69	11	130	0.7	<2	4.30
393653	1.65	0.001	0.0005	<0.001					<0.5	8.98	9	90	0.5	<2	5.35
393654	1.66	<0.001	0.0005	<0.001					<0.5	8.52	9	130	0.6	<2	3.80
393655	1.62	<0.001	0.0006	<0.001					<0.5	8.82	6	120	0.5	<2	4.57
393656	1.68	0.001	0.0006	<0.001					<0.5	8.53	8	120	0.7	<2	4.27
393657	1.57	<0.001	0.0007	<0.001					<0.5	8.77	6	110	0.7	<2	2.04
393658	1.62	0.001	0.0006	<0.001					<0.5	9.44	7	110	0.7	<2	4.63
393659	1.69	<0.001	0.0007	0.001					<0.5	9.35	6	110	0.6	<2	5.43
393660	1.64	<0.001	0.0006	<0.001					<0.5	8.52	9	100	<0.5	<2	4.88
393661	1.74	<0.001	0.0006	<0.001					<0.5	8.83	11	100	1.1	<2	4.05
393662	1.60	0.001	<0.0005	<0.001					<0.5	8.68	6	150	0.6	<2	4.81
393663	1.59	<0.001	0.0007	<0.001					<0.5	9.10	10	140	0.5	<2	5.69
393664	1.70	<0.001	<0.0005	<0.001					<0.5	9.83	8	130	<0.5	<2	7.36
393665	1.58	0.001	<0.0005	<0.001					<0.5	4.86	5	100	<0.5	<2	0.22
393666	1.64	<0.001	<0.0005	<0.001					<0.5	4.41	8	120	<0.5	2	0.34
393667	1.60	0.001	<0.0005	<0.001					<0.5	5.63	8	100	0.6	2	2.19
393668	0.71	0.001	<0.0005	<0.001					<0.5	7.15	6	120	0.6	<2	2.96
393669	0.86	0.068	0.0005	<0.001					12.9	7.38	10	80	<0.5	12	3.66
393670	0.04	0.157	0.466	>1.00		0.16	0.35	1.09	2.5	8.60	32	340	0.6	<2	7.55

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440 - 55 METCALFE STREET
OTTAWA ON K1P 6L5

Finalized Date: 7- APR- 2011
Account: NORSHI

Project: WABASSI

CERTIFICATE OF ANALYSIS TM11040669

Sample Description	Method	ME-ICP61	ME-ICP61	ME-ICP61	ME-ICP61	ME-ICP61	ME-ICP61	ME-ICP61	ME-ICP61	ME-ICP61	ME-ICP61	ME-ICP61	ME-ICP61	ME-ICP61	ME-ICP61	ME-ICP61
	Analyte	Cd	Co	Cr	Cu	Fe	Ga	In	K	La	Mg	Mn	Mo	Na	Ni	P
	Units	ppm	ppm	ppm	ppm	%	ppm	ppm	%	ppm	%	ppm	ppm	%	ppm	ppm
	LOR	0.5	1	1	1	0.01	10	10	0.01	10	0.01	5	1	0.01	1	10
393631		<0.5	36	440	110	5.86	20	<10	0.30	10	4.21	958	<1	1.83	185	350
393632		<0.5	55	1960	87	7.60	10	<10	0.78	10	7.63	1175	<1	1.03	518	490
393633		<0.5	19	66	23	3.62	20	<10	0.17	10	2.98	515	<1	2.53	85	140
393634		<0.5	27	120	46	4.11	20	<10	0.11	10	3.86	630	<1	1.57	188	130
393635		<0.5	28	111	70	4.02	20	<10	0.11	10	3.65	591	<1	1.35	250	120
393636		<0.5	32	79	94	4.00	20	10	0.07	<10	3.78	525	<1	1.06	272	110
393637		<0.5	33	94	107	4.04	20	<10	0.15	10	4.10	558	<1	0.98	290	100
393638		<0.5	31	241	122	4.33	10	<10	0.11	<10	4.88	681	<1	1.19	231	120
393639		<0.5	31	232	91	3.98	10	<10	0.06	<10	4.31	628	<1	1.12	222	100
393640		<0.5	31	227	95	4.06	10	<10	0.05	<10	4.32	646	<1	1.21	222	130
393641		<0.5	31	243	105	4.27	10	<10	0.06	<10	4.53	684	<1	1.22	231	130
393642		<0.5	16	15	65	10.40	20	<10	0.15	20	9.23	1425	<1	0.37	23	110
393643		<0.5	25	49	116	7.76	20	<10	0.22	20	4.44	1565	<1	1.10	37	330
393644		<0.5	27	69	53	8.46	20	<10	0.30	10	4.25	1555	<1	1.20	56	350
393645		<0.5	28	37	26	9.55	20	<10	0.32	10	5.98	1600	<1	0.46	58	370
393646		<0.5	31	66	140	9.14	20	<10	0.26	10	5.71	1700	<1	0.98	75	190
393647		<0.5	27	62	113	8.77	20	<10	0.60	10	4.66	1660	<1	1.18	54	490
393648		<0.5	24	68	81	8.26	20	<10	0.44	10	4.70	1565	<1	1.11	56	530
393649		<0.5	27	88	166	8.29	20	<10	0.49	10	3.75	1410	<1	1.27	63	380
393650		<0.5	1	4	3	0.08	<10	<10	0.17	20	0.02	10	<1	0.01	8	50
393651		<0.5	42	85	762	11.25	20	<10	0.30	10	3.87	1490	1	1.46	81	390
393652		<0.5	27	61	131	9.15	20	<10	0.27	10	3.54	1750	<1	1.42	47	250
393653		<0.5	32	72	125	8.46	20	<10	0.19	10	3.67	1645	<1	1.15	57	340
393654		<0.5	23	39	71	8.33	20	<10	0.29	10	3.25	1575	<1	1.53	42	290
393655		<0.5	26	58	98	8.08	10	<10	0.23	10	3.32	1595	<1	1.54	48	220
393656		<0.5	21	47	58	8.81	10	<10	0.33	20	5.23	1795	<1	0.99	39	310
393657		<0.5	27	34	116	7.46	20	<10	0.42	10	5.80	1075	<1	0.84	54	520
393658		<0.5	30	53	108	9.80	20	<10	0.27	10	4.49	1920	<1	1.68	54	280
393659		<0.5	29	65	107	7.97	20	<10	0.22	10	3.66	1520	<1	1.55	51	350
393660		<0.5	25	70	58	7.71	20	<10	0.14	10	3.29	1590	<1	1.49	59	370
393661		<0.5	30	51	33	9.44	20	<10	0.21	10	4.17	1830	<1	1.36	49	410
393662		<0.5	28	35	63	7.41	20	<10	0.19	10	3.36	1515	<1	2.09	63	470
393663		<0.5	28	99	56	6.44	20	<10	0.27	10	3.69	1285	<1	1.73	107	540
393664		<0.5	33	166	91	5.25	10	<10	0.34	10	4.86	954	<1	1.26	181	90
393665		<0.5	11	4	2	7.21	10	<10	0.68	30	2.16	856	<1	0.15	1	340
393666		<0.5	11	6	4	6.77	10	<10	0.68	30	1.92	847	<1	0.24	1	470
393667		<0.5	20	28	122	7.41	20	<10	0.51	10	2.56	1295	<1	0.32	38	370
393668		<0.5	16	17	1045	7.15	10	<10	0.59	10	2.72	1440	<1	1.19	21	610
393669		0.6	23	2	>10000	11.35	20	<10	0.49	20	1.72	1595	<1	1.28	5	2490
393670		<0.5	62	139	4790	8.50	10	<10	0.60	20	3.70	1320	<1	1.79	303	1900

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CERTIFICATE OF ANALYSIS TM11040669

Sample Description	Method / Analyte / Units / LOR	ME-ICP61 Pb ppm 2	ME-ICP61 S % 0.01	ME-ICP61 Sb ppm 5	ME-ICP61 Sc ppm 1	ME-ICP61 Sr ppm 1	ME-ICP61 Th ppm 20	ME-ICP61 Ti % 0.01	ME-ICP61 Tl ppm 10	ME-ICP61 U ppm 10	ME-ICP61 V ppm 1	ME-ICP61 W ppm 10	ME-ICP61 Zn ppm 2	ME-ICP61 Zr ppm 5	Cu-OG62 Cu % 0.001	Zn-OG62 Zn % 0.001
393631		5	0.11	<5	22	176	<20	0.41	<10	<10	131	<10	71	50		
393632		3	0.09	5	22	117	<20	0.51	<10	<10	123	<10	122	63		
393633		4	0.02	<5	18	238	<20	0.21	<10	<10	98	<10	30	24		
393634		2	0.03	<5	13	222	<20	0.18	<10	<10	69	<10	40	17		
393635		3	0.04	<5	10	217	<20	0.15	<10	<10	54	<10	41	20		
393636		2	0.04	<5	6	205	<20	0.11	<10	<10	37	<10	39	27		
393637		3	0.04	<5	6	206	<20	0.11	<10	<10	36	<10	39	26		
393638		2	0.04	<5	10	202	<20	0.13	<10	<10	61	<10	48	17		
393639		<2	0.04	<5	9	198	<20	0.13	<10	<10	59	<10	43	15		
393640		2	0.04	<5	9	206	<20	0.15	<10	10	59	<10	41	17		
393641		2	0.05	<5	10	211	<20	0.16	<10	10	63	<10	45	22		
393642		7	0.10	<5	13	38	<20	0.36	<10	<10	91	10	748	192		
393643		5	0.23	<5	20	100	<20	0.41	<10	<10	120	10	351	49		
393644		4	0.13	<5	22	130	<20	0.51	<10	<10	162	<10	176	28		
393645		4	0.06	<5	22	48	<20	0.55	<10	<10	170	<10	153	22		
393646		4	0.31	<5	24	107	<20	0.45	<10	<10	136	<10	170	33		
393647		4	0.23	<5	21	123	<20	0.52	<10	<10	151	<10	244	65		
393648		5	0.19	<5	21	109	<20	0.44	<10	<10	117	10	147	52		
393649		4	0.41	<5	22	147	<20	0.43	<10	<10	126	10	215	47		
393650		<2	0.02	<5	<1	5	<20	0.02	<10	<10	2	<10	<2	67		
393651		4	1.49	<5	25	145	<20	0.57	<10	10	168	<10	212	65		
393652		2	0.19	<5	24	162	<20	0.56	<10	10	167	<10	174	44		
393653		2	0.19	<5	24	178	<20	0.55	<10	10	172	<10	153	32		
393654		4	0.12	<5	22	146	<20	0.52	<10	10	161	<10	161	47		
393655		4	0.17	<5	23	168	<20	0.50	<10	10	150	<10	166	49		
393656		6	0.09	<5	23	120	<20	0.45	<10	<10	117	<10	169	160		
393657		3	0.19	<5	23	73	<20	0.55	<10	<10	163	<10	132	69		
393658		5	0.19	<5	26	174	<20	0.56	<10	10	175	<10	210	78		
393659		3	0.20	<5	24	180	<20	0.52	<10	10	163	<10	165	43		
393660		5	0.10	<5	21	168	<20	0.51	<10	10	145	<10	143	40		
393661		3	0.06	<5	24	128	<20	0.70	<10	10	182	<10	166	57		
393662		3	0.06	<5	22	216	<20	0.49	<10	10	170	<10	134	33		
393663		4	0.04	<5	19	197	<20	0.31	<10	10	115	<10	105	25		
393664		4	0.05	<5	18	179	<20	0.19	<10	<10	76	<10	65	18		
393665		4	<0.01	<5	8	7	<20	0.22	<10	<10	12	<10	61	101		
393666		5	<0.01	<5	7	12	<20	0.22	<10	<10	16	<10	59	104		
393667		4	0.02	<5	13	81	<20	0.43	<10	<10	78	<10	99	76		
393668		10	0.13	<5	16	136	<20	0.57	<10	<10	82	<10	138	74		
393669		15	2.09	<5	23	140	<20	1.07	<10	<10	127	<10	161	66	1.565	
393670		19	0.94	<5	26	644	<20	0.51	<10	<10	243	<10	136	52		

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To: NORTHERN SHIELD RESOURCES INC.
440 - 55 METCALFE STREET
OTTAWA ON K1P 6L5

Finalized Date: 7- APR- 2011
Account: NORSHI

Project: WABASSI

CERTIFICATE OF ANALYSIS TM11040669

Sample Description	Method	WEI-21	PGM-MS23	PGM-MS23	PGM-MS23	Au-AA25	PGM-ICP27	PGM-ICP27	PGM-ICP27	ME-ICP61	ME-ICP61	ME-ICP61	ME-ICP61	ME-ICP61	ME-ICP61	ME-ICP61
	Analyte	Recvd Wt.	Au	Pt	Pd	Au	Au	Pt	Pd	Ag	Al	As	Ba	Be	Bi	Ca
	Units	kg	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	%	ppm	ppm	ppm	ppm	%
	LOR	0.02	0.001	0.0005	0.001	0.01	0.03	0.03	0.03	0.5	0.01	5	10	0.5	2	0.01
393671		1.66	0.002	<0.0005	<0.001					<0.5	7.11	8	150	0.6	<2	3.03
393672		1.37	0.001	<0.0005	<0.001					<0.5	6.93	7	250	0.6	<2	1.72
393673		1.61	0.002	0.0009	0.001					<0.5	7.14	<5	300	0.9	2	1.76
393674		1.13	0.001	<0.0005	<0.001					<0.5	6.92	<5	220	0.7	<2	2.27
393675		1.00	0.011	0.0005	<0.001					4.9	6.30	<5	270	0.8	<2	0.55
393676		0.96	0.003	<0.0005	<0.001					1.0	7.64	<5	130	0.6	<2	2.79
393677		0.87	0.001	0.0012	<0.001					0.5	5.62	<5	90	0.5	<2	1.96
393678		0.88	0.012	<0.0005	<0.001					2.9	5.36	<5	90	<0.5	<2	1.14
393679		0.92	0.097	<0.0005	<0.001					8.8	6.59	<5	130	0.6	6	1.67
393680		0.89	0.056	<0.0005	<0.001					8.2	5.13	<5	10	<0.5	9	0.68
393681		0.96	0.007	<0.0005	<0.001					1.3	7.58	<5	110	0.6	2	4.00
393682		1.48	0.008	<0.0005	<0.001					1.2	7.04	<5	70	0.5	11	2.25
393683		1.58	0.010	<0.0005	<0.001					1.9	7.68	<5	90	0.8	24	1.96
393684		1.52	0.007	<0.0005	<0.001					1.4	6.88	<5	80	0.5	3	3.16
393685		1.62	0.009	<0.0005	<0.001					1.0	6.89	<5	60	0.6	12	2.61
393686		1.52	0.003	<0.0005	<0.001					<0.5	4.90	<5	120	<0.5	<2	0.55
393687		0.79	0.004	<0.0005	<0.001					<0.5	4.69	<5	110	0.6	<2	0.34
393688		0.84	0.025	<0.0005	<0.001					4.4	6.61	<5	100	1.0	19	1.57
393689		1.62	0.006	<0.0005	<0.001					0.8	5.42	<5	100	0.7	3	1.82
393690		0.04	0.003	<0.0005	<0.001					0.5	0.38	<5	20	<0.5	<2	0.02
393691		1.54	0.004	<0.0005	<0.001					0.8	5.29	<5	120	1.3	6	0.67
393692		1.67	0.005	<0.0005	<0.001					1.5	4.50	<5	80	0.6	3	0.22
393693		1.58	0.004	<0.0005	<0.001					0.8	4.80	<5	80	<0.5	3	0.14
393694		1.14	0.003	<0.0005	<0.001					0.8	3.86	<5	70	0.7	2	0.15
393695		0.94	0.006	<0.0005	<0.001					2.9	4.78	<5	60	0.6	14	0.10
393696		1.00	0.005	<0.0005	<0.001					2.5	4.24	<5	30	0.6	3	0.08
393697		1.59	0.004	<0.0005	<0.001					<0.5	6.26	<5	170	0.5	<2	1.85
393698		1.58	0.004	<0.0005	<0.001					1.1	6.73	<5	220	0.8	<2	2.35
393699		1.40	0.004	<0.0005	<0.001					<0.5	6.97	<5	330	0.7	<2	2.43
393700		1.68	0.003	<0.0005	<0.001					0.5	4.58	<5	50	<0.5	2	1.37
393701		1.55	0.004	<0.0005	<0.001					0.7	3.77	<5	10	<0.5	5	0.12
393702		0.74	0.009	<0.0005	<0.001					3.7	4.42	<5	10	<0.5	16	0.33
393703		0.72	0.005	<0.0005	<0.001					0.9	3.80	<5	10	<0.5	4	0.11
393704		0.80	0.003	<0.0005	<0.001					1.5	4.30	<5	10	<0.5	5	0.10
393705		0.76	0.005	<0.0005	<0.001					2.2	3.98	<5	10	<0.5	12	0.11
393706		0.78	0.006	<0.0005	<0.001					3.0	4.53	<5	20	<0.5	8	0.07
393707		0.82	0.003	<0.0005	<0.001					1.2	4.39	<5	20	<0.5	3	0.06
393708		0.70	0.008	<0.0005	<0.001					5.8	4.21	<5	20	<0.5	10	0.30
393709		0.86	0.003	<0.0005	<0.001					0.6	6.52	<5	190	0.7	<2	2.57
393710		0.04	0.208	0.444	>1.00		0.16	0.35	1.31	3.0	8.53	35	350	0.6	<2	7.61

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To: NORTHERN SHIELD RESOURCES INC.
440 - 55 METCALFE STREET
OTTAWA ON K1P 6L5

Finalized Date: 7- APR- 2011
Account: NORSHI

Project: WABASSI

CERTIFICATE OF ANALYSIS TM11040669

Sample Description	Method / Analyte / Units / LOR	ME-ICP61 Cd ppm 0.5	ME-ICP61 Co ppm 1	ME-ICP61 Cr ppm 1	ME-ICP61 Cu ppm 1	ME-ICP61 Fe % 0.01	ME-ICP61 Ga ppm 10	ME-ICP61 In ppm 10	ME-ICP61 K % 0.01	ME-ICP61 La ppm 10	ME-ICP61 Mg % 0.01	ME-ICP61 Mn ppm 5	ME-ICP61 Mo ppm 1	ME-ICP61 Na % 0.01	ME-ICP61 Ni ppm 1	ME-ICP61 P ppm 10
393671		<0.5	13	11	197	7.33	10	<10	0.68	30	2.21	1390	<1	1.54	11	350
393672		<0.5	10	9	107	6.01	20	<10	0.97	20	2.09	974	<1	1.42	10	250
393673		<0.5	16	14	128	7.68	20	<10	1.20	20	2.97	1355	<1	1.41	19	270
393674		<0.5	14	11	106	5.98	20	<10	0.89	20	1.55	972	1	1.94	15	230
393675		2.4	25	17	4150	6.27	10	<10	1.60	20	1.52	299	2	1.45	19	200
393676		0.5	24	<1	646	6.81	20	<10	0.51	20	1.95	870	<1	2.37	9	500
393677		<0.5	17	1	397	7.39	20	<10	0.54	10	2.13	923	<1	1.23	4	280
393678		0.9	9	1	2110	5.72	20	<10	0.61	20	1.88	822	<1	1.41	1	150
393679		1.8	14	1	9260	7.13	20	<10	1.11	20	1.48	949	1	1.58	1	890
393680		0.8	18	1	>10000	10.40	20	<10	0.09	10	4.03	1245	1	0.18	1	310
393681		0.6	31	3	1465	9.65	20	<10	0.67	10	3.36	2650	<1	1.19	23	670
393682		0.6	24	5	1300	9.45	20	<10	0.53	20	3.38	1785	1	0.99	16	450
393683		0.9	23	2	1885	10.85	20	<10	0.58	10	3.86	2410	3	0.98	19	760
393684		0.5	21	<1	1730	9.85	20	<10	0.37	20	2.33	1775	<1	1.29	1	2470
393685		<0.5	29	4	1180	10.55	20	<10	0.29	10	3.89	2540	<1	0.80	19	420
393686		<0.5	13	1	423	7.41	10	<10	0.59	20	3.17	1375	<1	0.38	<1	270
393687		<0.5	11	2	78	6.93	10	<10	0.42	20	2.78	1320	<1	0.32	<1	120
393688		1.0	23	3	6360	8.86	20	<10	0.54	20	3.02	1595	1	1.01	7	310
393689		<0.5	15	3	929	6.76	20	<10	0.42	20	2.18	1495	1	1.03	6	250
393690		<0.5	<1	<1	5	0.05	<10	<10	0.15	20	<0.01	7	<1	0.01	<1	40
393691		<0.5	8	3	1105	5.39	20	<10	0.65	20	2.07	905	1	0.82	2	40
393692		<0.5	11	1	2450	5.96	10	<10	0.53	10	2.56	838	<1	0.21	<1	80
393693		<0.5	11	3	1185	7.39	10	<10	0.55	10	3.48	1260	<1	0.20	<1	120
393694		<0.5	9	2	1240	6.22	10	<10	0.30	10	2.70	1080	<1	0.17	<1	50
393695		0.5	11	3	6370	7.69	10	<10	0.27	10	3.32	1320	<1	0.14	<1	80
393696		<0.5	14	3	4660	8.68	20	<10	0.22	10	3.67	1510	<1	0.13	<1	50
393697		<0.5	14	13	420	6.72	20	<10	0.46	20	2.18	1150	<1	1.63	11	190
393698		<0.5	16	6	1040	6.07	20	<10	0.57	20	1.53	986	<1	2.08	11	160
393699		<0.5	14	13	163	5.83	20	<10	0.80	20	1.72	1070	<1	1.92	16	210
393700		<0.5	18	3	1250	8.28	10	<10	0.22	10	2.54	1435	<1	0.48	2	490
393701		<0.5	10	3	1385	6.79	10	<10	0.09	10	2.49	1185	<1	0.14	<1	20
393702		<0.5	16	1	7180	9.12	20	<10	0.04	10	3.36	1075	<1	0.06	<1	20
393703		<0.5	13	1	1655	7.34	10	<10	0.09	10	2.80	1140	<1	0.10	<1	10
393704		<0.5	14	2	2490	8.59	20	<10	0.06	10	3.33	1440	<1	0.12	<1	20
393705		<0.5	12	1	4310	7.82	10	<10	0.06	10	3.16	1345	<1	0.11	<1	20
393706		<0.5	14	2	6430	9.43	20	<10	0.12	10	4.08	1675	<1	0.11	<1	80
393707		<0.5	12	1	2940	8.98	20	<10	0.15	10	3.86	1625	<1	0.11	<1	60
393708		<0.5	12	<1	9810	9.61	20	<10	0.32	10	3.59	1155	<1	0.05	<1	50
393709		0.6	18	<1	1125	7.45	20	<10	0.75	40	1.44	1225	1	1.85	1	1250
393710		0.5	64	140	4770	8.61	20	20	0.63	20	3.72	1330	<1	1.85	309	1910

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CERTIFICATE OF ANALYSIS TM11040669

Sample Description	Method / Analyte / Units / LOR	ME-ICP61 Pb ppm 2	ME-ICP61 S % 0.01	ME-ICP61 Sb ppm 5	ME-ICP61 Sc ppm 1	ME-ICP61 Sr ppm 1	ME-ICP61 Th ppm 20	ME-ICP61 Ti % 0.01	ME-ICP61 Tl ppm 10	ME-ICP61 U ppm 10	ME-ICP61 V ppm 1	ME-ICP61 W ppm 10	ME-ICP61 Zn ppm 2	ME-ICP61 Zr ppm 5	Cu-OG62 Cu % 0.001	Zn-OG62 Zn % 0.001
393671		9	0.08	<5	15	138	<20	0.44	<10	10	61	<10	137	106		
393672		11	0.04	<5	13	99	<20	0.34	<10	10	58	<10	108	103		
393673		13	0.11	<5	18	96	<20	0.44	<10	<10	96	<10	189	84		
393674		52	0.20	<5	14	133	<20	0.37	<10	<10	73	<10	125	101		
393675		142	3.71	<5	10	54	<20	0.17	<10	<10	83	<10	554	145		
393676		34	0.41	<5	18	121	<20	0.61	<10	<10	193	<10	175	59		
393677		13	0.29	<5	13	74	<20	0.40	<10	<10	95	<10	173	76		
393678		20	0.33	<5	9	75	<20	0.21	<10	<10	10	<10	174	75		
393679		11	1.71	<5	14	92	<20	0.48	<10	<10	10	<10	170	78		
393680		5	1.21	<5	11	15	<20	0.26	<10	<10	38	<10	258	75	1.090	
393681		8	0.25	<5	25	105	<20	0.88	<10	<10	278	<10	248	37		
393682		7	0.30	<5	20	72	<20	0.63	<10	<10	154	<10	301	73		
393683		7	0.29	<5	25	92	<20	0.90	<10	<10	216	<10	293	54		
393684		8	0.23	<5	18	135	<20	0.87	<10	<10	45	<10	172	48		
393685		4	0.19	<5	23	103	<20	0.74	<10	<10	211	<10	256	53		
393686		4	0.05	<5	8	16	<20	0.22	<10	<10	10	<10	143	120		
393687		3	0.02	<5	7	12	<20	0.20	<10	<10	6	<10	122	132		
393688		11	0.91	<5	18	65	<20	0.54	<10	<10	153	<10	316	136		
393689		7	0.18	<5	13	65	<20	0.37	<10	<10	92	<10	124	118		
393690		2	0.01	<5	1	5	<20	0.02	<10	<10	2	<10	<2	64		
393691		7	0.14	<5	9	49	<20	0.18	<10	<10	16	<10	74	134		
393692		5	0.28	<5	6	9	<20	0.17	<10	<10	7	<10	83	108		
393693		4	0.14	<5	7	6	<20	0.18	<10	<10	7	<10	78	121		
393694		3	0.14	<5	7	7	<20	0.18	<10	<10	11	<10	71	70		
393695		2	0.83	<5	8	6	<20	0.16	<10	<10	11	<10	88	59		
393696		5	1.00	<5	8	5	<20	0.19	<10	<10	14	<10	92	58		
393697		10	0.22	<5	13	96	<20	0.32	<10	<10	51	<10	108	89		
393698		9	0.47	<5	13	131	<20	0.35	<10	<10	57	<10	106	125		
393699		13	0.16	<5	15	127	<20	0.36	<10	<10	72	<10	108	113		
393700		3	0.25	<5	18	45	<20	0.64	<10	<10	61	<10	79	57		
393701		<2	0.20	<5	6	3	<20	0.17	<10	<10	8	<10	53	70		
393702		<2	0.98	<5	6	4	<20	0.10	<10	<10	9	<10	68	37		
393703		<2	0.32	<5	8	4	<20	0.18	<10	<10	13	<10	50	59		
393704		<2	0.37	<5	8	3	<20	0.22	<10	<10	20	<10	165	56		
393705		<2	0.67	<5	8	3	<20	0.19	<10	<10	15	<10	77	61		
393706		2	0.94	<5	9	3	<20	0.17	<10	<10	18	<10	116	51		
393707		<2	0.39	<5	8	2	<20	0.19	<10	<10	16	<10	83	58		
393708		3	1.06	<5	7	4	<20	0.12	<10	<10	13	<10	68	48		
393709		10	0.17	<5	17	110	20	0.64	<10	<10	59	<10	109	83		
393710		21	0.96	<5	26	647	<20	0.53	<10	<10	252	<10	138	49		

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North Vancouver BC V7H 0A7
Phone: 604 984 0221 Fax: 604 984 0218 www.alsglobal.com

To: NORTHERN SHIELD RESOURCES INC.
440 - 55 METCALFE STREET
OTTAWA ON K1P 6L5

Finalized Date: 7- APR- 2011
Account: NORSHI

Project: WABASSI

CERTIFICATE OF ANALYSIS TM11040669

Sample Description	Method	WEI- 21	PGM- MS23	PGM- MS23	PGM- MS23	Au- AA25	PGM- ICP27	PGM- ICP27	PGM- ICP27	ME- ICP61	ME- ICP61	ME- ICP61	ME- ICP61	ME- ICP61	ME- ICP61	ME- ICP61
	Analyte	Recvd Wt.	Au	Pt	Pd	Au	Au	Pt	Pd	Ag	Al	As	Ba	Be	Bi	Ca
	Units	kg	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	%	ppm	ppm	ppm	ppm	%
	LOR	0.02	0.001	0.0005	0.001	0.01	0.03	0.03	0.03	0.5	0.01	5	10	0.5	2	0.01
393711		1.64	0.005	<0.0005	0.001					1.1	6.89	10	130	0.5	<2	5.54

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CERTIFICATE OF ANALYSIS TM11040669

Sample Description	Method / Analyte / Units / LOR	ME- ICP61 Cd ppm 0.5	ME- ICP61 Co ppm 1	ME- ICP61 Cr ppm 1	ME- ICP61 Cu ppm 1	ME- ICP61 Fe % 0.01	ME- ICP61 Ga ppm 10	ME- ICP61 In ppm 10	ME- ICP61 K % 0.01	ME- ICP61 La ppm 10	ME- ICP61 Mg % 0.01	ME- ICP61 Mn ppm 5	ME- ICP61 Mo ppm 1	ME- ICP61 Na % 0.01	ME- ICP61 Ni ppm 1	ME- ICP61 P ppm 10
393711		<0.5	33	5	272	12.70	20	10	0.45	10	2.51	2130	<1	1.27	2	2740

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CERTIFICATE OF ANALYSIS TM11040669

Sample Description	Method	ME- ICP61	ME- ICP61	ME- ICP61	ME- ICP61	ME- ICP61	ME- ICP61	ME- ICP61	ME- ICP61	ME- ICP61	ME- ICP61	ME- ICP61	ME- ICP61	ME- ICP61	Cu- OG62	Zn- OG62
	Analyte	Pb	S	Sb	Sc	Sr	Th	Ti	Tl	U	V	W	Zn	Zr	Cu	Zn
	Units	ppm	%	ppm	ppm	ppm	ppm	%	ppm	ppm	ppm	ppm	ppm	ppm	%	%
	LOR	2	0.01	5	1	1	20	0.01	10	10	1	10	2	5	0.001	0.001
393711		6	0.17	<5	43	189	<20	1.78	<10	<10	149	<10	159	45		

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OTTAWA ON K1P 6L5

Finalized Date: 10- APR- 2011
Account: NORSHI

CERTIFICATE TM11049370

Project: WABASSI
P.O. No.:
This report is for 103 Drill Core samples submitted to our lab in Timmins, ON, Canada on 28- MAR- 2011.
The following have access to data associated with this certificate:

IAN BLISS	CHRISTINE VAILLANCOURT	

SAMPLE PREPARATION

ALS CODE	DESCRIPTION
WEI- 21	Received Sample Weight
LOG- 22	Sample login - Rcd w/o BarCode
LOG- 24	Pulp Login - Rcd w/o Barcode
CRU- QC	Crushing QC Test
PUL- QC	Pulverizing QC Test
CRU- 31	Fine crushing - 70% <2mm
SPL- 21	Split sample - riffle splitter
PUL- 31	Pulverize split to 85% <75 um

ANALYTICAL PROCEDURES

ALS CODE	DESCRIPTION	INSTRUMENT
Zn- OG62	Ore Grade Zn - Four Acid	VARIABLE
Au- ICP21	Au 30g FA ICP- AES Finish	ICP- AES
ME- ICP61a	High Grade Four Acid ICP- AES	ICP- AES
Ag- OG62	Ore Grade Ag - Four Acid	VARIABLE
ME- OG62	Ore Grade Elements - Four Acid	ICP- AES

To: NORTHERN SHIELD RESOURCES INC.
ATTN: CHRISTINE VAILLANCOURT
440 - 55 METCALFE STREET
OTTAWA ON K1P 6L5

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.

Signature:
Colin Ramshaw, Vancouver Laboratory Manager

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Finalized Date: 10- APR- 2011
Account: NORSHI

Project: WABASSI

CERTIFICATE OF ANALYSIS TM11049370

Sample Description	Method Analyte Units LOR	WEI- 21 Recvd Wt. kg 0.02	ME- ICP61a Ag ppm 1	ME- ICP61a Al % 0.05	ME- ICP61a As ppm 50	ME- ICP61a Ba ppm 50	ME- ICP61a Be ppm 10	ME- ICP61a Bi ppm 20	ME- ICP61a Ca % 0.05	ME- ICP61a Cd ppm 10	ME- ICP61a Co ppm 10	ME- ICP61a Cr ppm 10	ME- ICP61a Cu ppm 10	ME- ICP61a Fe % 0.05	ME- ICP61a Ga ppm 50	ME- ICP61a K % 0.1
393745		1.71	2	5.39	<50	50	<10	<20	0.53	<10	10	10	740	6.01	<50	0.5
393746		1.63	2	6.61	<50	110	<10	<20	0.79	<10	10	20	560	5.37	<50	0.7
393747		2.42	18	6.55	<50	120	<10	<20	0.32	<10	10	10	4110	8.73	<50	0.7
393748		0.80	12	4.97	<50	60	<10	<20	0.06	<10	10	<10	2950	10.75	<50	0.4
393749		1.66	19	6.12	<50	130	<10	<20	0.07	30	20	<10	3490	11.20	<50	0.8
393750		0.03	2	7.52	<50	330	<10	<20	7.11	<10	70	130	4440	8.29	<50	0.5
393751		2.06	38	2.55	<50	<50	<10	<20	<0.05	380	140	<10	7330	22.4	<50	0.1
393752		2.03	62	1.84	<50	<50	<10	<20	<0.05	370	100	<10	13050	20.3	<50	<0.1
393753		1.38	>200	2.49	<50	60	<10	<20	<0.05	110	40	10	36900	13.70	<50	0.3
393754		1.45	96	3.36	70	140	<10	<20	0.08	10	120	<10	19200	25.2	<50	0.7
393755		1.78	194	4.30	<50	330	<10	<20	0.06	10	10	<10	40300	15.05	<50	1.6
393756		1.70	64	4.55	<50	420	<10	<20	0.07	<10	30	<10	10700	14.45	<50	2.0
393757 - 393758		1.74	55	6.51	680	140	<10	50	0.05	10	30	<10	8020	12.30	<50	0.8
393758		Destroyed														
393759		1.79	54	7.82	<50	60	<10	20	<0.05	20	10	40	9850	13.10	<50	0.5
393760		1.84	44	3.00	70	<50	<10	<20	<0.05	90	180	<10	9930	33.4	<50	0.1
393761		1.85	48	2.01	70	<50	<10	30	0.05	50	170	<10	9670	26.9	<50	0.1
393762		1.88	71	3.66	<50	<50	<10	20	<0.05	70	100	<10	17650	25.1	<50	0.1
393763		0.97	97	5.60	<50	170	<10	<20	0.08	10	10	<10	21500	11.50	<50	0.9
393764		1.69	34	6.83	<50	260	<10	<20	0.06	10	30	<10	5990	8.87	<50	1.3
393765		1.69	8	5.70	<50	430	<10	<20	0.07	<10	10	<10	1680	5.99	<50	1.6
393766		1.51	6	5.93	<50	660	<10	<20	0.07	<10	10	<10	1540	6.13	<50	2.4
393767		1.70	2	6.98	<50	510	<10	<20	0.08	10	10	<10	760	7.81	<50	1.7
393768		1.76	20	5.31	<50	<50	<10	<20	0.10	30	30	<10	9470	25.1	<50	0.5
393769		2.52	3	5.58	<50	90	<10	<20	2.06	<10	<10	<10	780	5.79	<50	1.1
393770		0.02	1	0.39	<50	<50	<10	<20	<0.05	<10	<10	<10	10	<0.05	<50	0.3
393771		0.76	5	6.57	<50	<50	<10	<20	0.09	<10	30	<10	810	9.15	<50	0.2
393772		1.91	11	5.85	<50	<50	<10	<20	0.76	<10	40	<10	1530	12.80	<50	0.4
393773		1.79	2	4.34	<50	100	<10	<20	3.71	<10	10	<10	170	4.47	<50	1.0
393774		1.82	2	4.49	<50	80	<10	<20	3.43	<10	<10	<10	390	4.38	<50	0.7
393775		1.69	1	3.22	<50	90	<10	<20	3.06	<10	10	<10	210	4.22	<50	0.7
393776		1.73	2	4.59	<50	180	<10	<20	2.11	<10	<10	<10	510	6.26	<50	0.8
393777		1.79	6	5.26	<50	<50	<10	<20	0.08	40	20	<10	1780	19.30	<50	0.1
393778		1.82	6	4.91	<50	<50	<10	<20	0.05	20	20	<10	870	23.4	<50	0.3
393779		1.74	3	4.99	<50	<50	<10	<20	<0.05	50	30	<10	1230	16.80	<50	0.3
393780		1.89	2	5.53	<50	<50	<10	<20	0.06	30	20	<10	680	19.30	<50	0.1
393781		1.21	3	1.85	<50	<50	<10	<20	<0.05	470	30	<10	640	19.65	<50	0.1
393782		1.82	<1	5.63	<50	<50	<10	<20	<0.05	10	10	<10	10	15.30	<50	<0.1
393783		1.66	<1	4.24	<50	<50	<10	<20	1.65	<10	20	<10	10	16.10	<50	<0.1
393784		1.92	2	2.94	<50	<50	<10	<20	5.60	<10	20	<10	700	22.2	<50	<0.1

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440 - 55 METCALFE STREET
OTTAWA ON K1P 6L5

Finalized Date: 10- APR- 2011
Account: NORSHI

Project: WABASSI

CERTIFICATE OF ANALYSIS TM11049370

Sample Description	Method	ME-ICP61a	ME-ICP61a	ME-ICP61a	ME-ICP61a	ME-ICP61a	ME-ICP61a	ME-ICP61a	ME-ICP61a	ME-ICP61a	ME-ICP61a	ME-ICP61a	ME-ICP61a	ME-ICP61a	ME-ICP61a	ME-ICP61a
	Analyte	La	Mg	Mn	Mo	Na	Ni	P	Pb	S	Sb	Sc	Sr	Th	Ti	Tl
	Units	ppm	%	ppm	ppm	%	ppm	ppm	ppm	%	ppm	ppm	ppm	ppm	%	ppm
	LOR	50	0.05	10	10	0.05	10	50	20	0.05	50	10	10	50	0.05	50
393745		<50	5.42	550	<10	0.39	20	250	70	1.32	<50	10	30	<50	0.09	<50
393746		<50	5.40	520	<10	0.72	10	350	70	0.88	<50	10	50	<50	0.15	<50
393747		<50	5.95	510	<10	0.31	20	280	70	2.53	<50	10	30	<50	0.09	<50
393748		<50	5.64	430	<10	<0.05	10	200	40	3.76	<50	10	<10	<50	0.05	<50
393749		<50	6.17	440	<10	0.06	10	290	30	4.73	<50	10	<10	<50	0.08	<50
393750		<50	3.28	1310	<10	1.63	290	1770	30	0.85	<50	20	580	<50	0.48	<50
393751		<50	3.38	350	<10	<0.05	<10	70	20	>10.0	<50	<10	<10	<50	<0.05	<50
393752		<50	2.26	310	<10	<0.05	10	110	20	>10.0	<50	<10	<10	<50	<0.05	<50
393753		<50	2.10	230	<10	<0.05	<10	50	20	>10.0	<50	10	10	<50	<0.05	<50
393754		<50	3.15	260	<10	0.05	20	350	20	>10.0	<50	<10	10	<50	<0.05	<50
393755		<50	2.04	130	<10	0.10	10	270	20	8.59	<50	10	20	<50	0.07	<50
393756		<50	1.50	80	<10	0.12	<10	360	30	7.49	<50	10	10	<50	0.08	<50
393757 - 393758		<50	7.93	330	<10	0.06	20	260	40	6.39	<50	10	10	<50	0.10	<50
393758																
393759		<50	11.15	450	<10	0.05	30	100	30	5.21	<50	10	10	<50	0.06	<50
393760		<50	5.62	200	<10	<0.05	20	100	20	>10.0	<50	<10	<10	<50	<0.05	<50
393761		<50	7.96	160	<10	<0.05	20	190	20	>10.0	<50	<10	<10	<50	<0.05	<50
393762		<50	5.15	270	<10	<0.05	10	160	<20	>10.0	<50	10	<10	<50	<0.05	<50
393763		<50	5.78	330	<10	0.06	<10	380	20	5.75	<50	10	10	<50	0.10	<50
393764		<50	8.73	570	<10	0.08	<10	340	20	4.37	<50	10	10	<50	0.16	<50
393765		<50	4.17	260	<10	0.09	<10	340	20	3.11	<50	10	20	<50	0.17	<50
393766		<50	2.43	180	<10	0.11	<10	300	20	3.54	<50	10	20	<50	0.14	<50
393767		<50	5.66	520	<10	0.10	<10	330	20	2.34	<50	10	10	<50	0.20	<50
393768		<50	7.05	540	<10	0.06	10	120	20	>10.0	<50	10	<10	<50	0.08	<50
393769		<50	4.19	480	<10	1.39	20	400	100	1.08	<50	10	70	<50	0.16	<50
393770		<50	0.08	<10	<10	<0.05	<10	<50	<20	<0.05	<50	<10	10	<50	<0.05	<50
393771		60	8.43	580	<10	<0.05	<10	320	30	2.91	<50	10	<10	<50	0.10	<50
393772		<50	5.89	510	<10	0.48	20	330	60	5.58	<50	10	30	<50	0.10	<50
393773		<50	2.32	600	<10	2.25	20	420	170	0.44	<50	10	100	<50	0.28	<50
393774		<50	2.51	480	<10	2.34	<10	1120	190	0.62	<50	10	110	<50	0.32	<50
393775		<50	1.60	450	<10	2.16	<10	1260	150	0.61	<50	10	90	<50	0.36	<50
393776		<50	2.75	370	<10	1.46	<10	1810	110	1.56	<50	10	70	<50	0.20	<50
393777		<50	6.71	450	<10	<0.05	<10	210	20	9.53	<50	10	<10	<50	0.06	<50
393778		<50	6.91	410	<10	<0.05	<10	200	20	>10.0	<50	10	<10	<50	0.06	<50
393779		<50	8.21	420	<10	<0.05	<10	180	30	>10.0	<50	10	<10	<50	0.07	<50
393780		<50	7.85	470	<10	<0.05	<10	250	<20	>10.0	<50	10	<10	<50	0.08	<50
393781		<50	6.09	240	<10	<0.05	<10	180	<20	>10.0	<50	<10	<10	<50	<0.05	<50
393782		<50	11.90	410	<10	<0.05	<10	170	<20	9.26	<50	10	<10	<50	0.05	<50
393783		<50	11.70	820	<10	<0.05	<10	160	<20	>10.0	<50	10	10	<50	0.12	<50
393784		<50	8.80	1920	<10	<0.05	20	<50	40	>10.0	<50	<10	20	<50	0.08	<50

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CERTIFICATE OF ANALYSIS TM11049370

Sample Description	Method / Analyte / Units / LOR	ME-ICP61a U ppm 50	ME-ICP61a V ppm 10	ME-ICP61a W ppm 50	ME-ICP61a Zn ppm 20	Ag-OG62 Ag ppm 1	Zn-OG62 Zn % 0.001	Au-ICP21 Au ppm 0.001
393745		<50	30	<50	490			0.011
393746		<50	60	<50	400			0.003
393747		<50	40	<50	460			0.019
393748		<50	10	<50	440			0.020
393749		<50	40	<50	9790			0.038
393750		<50	240	<50	150			0.172
393751		<50	10	<50	>100000		15.25	0.073
393752		<50	10	<50	>100000		14.25	0.090
393753		<50	10	120	43800	194		0.825
393754		<50	20	<50	5100			0.306
393755		<50	30	<50	2210			0.162
393756		<50	30	<50	830			0.178
393757 - 393758		<50	40	<50	2510			0.085
393758								
393759		<50	30	<50	6630			0.192
393760		<50	10	<50	34200			0.092
393761		<50	10	<50	20000			0.276
393762		<50	10	<50	27900			0.300
393763		<50	40	<50	5280			0.237
393764		<50	50	<50	3260			0.151
393765		<50	40	<50	820			0.034
393766		<50	40	<50	420			0.013
393767		<50	50	<50	2340			0.005
393768		<50	40	<50	12550			0.022
393769		<50	90	<50	580			0.034
393770		<50	<10	<50	<20			<0.001
393771		<50	60	<50	840			0.039
393772		<50	60	<50	1060			0.061
393773		<50	110	<50	450			0.002
393774		<50	30	<50	1810			0.018
393775		<50	10	<50	350			0.002
393776		<50	10	<50	1060			0.003
393777		<50	20	<50	14100			0.016
393778		<50	20	<50	7850			0.008
393779		<50	20	<50	20700			0.012
393780		<50	30	<50	10550			0.011
393781		<50	10	<50	>100000		18.90	0.014
393782		<50	20	<50	3440			0.002
393783		<50	20	<50	1070			0.003
393784		<50	20	<50	1200			0.014

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CERTIFICATE OF ANALYSIS TM11049370

Sample Description	Method / Analyte / Units / LOR	WEI-21 Recvd Wt. kg 0.02	ME-ICP61a Ag ppm 1	ME-ICP61a Al % 0.05	ME-ICP61a As ppm 50	ME-ICP61a Ba ppm 50	ME-ICP61a Be ppm 10	ME-ICP61a Bi ppm 20	ME-ICP61a Ca % 0.05	ME-ICP61a Cd ppm 10	ME-ICP61a Co ppm 10	ME-ICP61a Cr ppm 10	ME-ICP61a Cu ppm 10	ME-ICP61a Fe % 0.05	ME-ICP61a Ga ppm 50	ME-ICP61a K % 0.1
393785		1.98	5	2.64	<50	<50	<10	20	5.58	30	10	<10	90	21.4	<50	<0.1
393786		1.79	16	1.83	<50	<50	<10	<20	2.19	100	70	<10	4890	27.2	<50	<0.1
393787		1.44	8	3.87	<50	<50	<10	<20	<0.05	<10	20	<10	1610	11.55	<50	<0.1
393788		1.59	10	4.87	<50	<50	<10	<20	<0.05	<10	20	<10	1310	13.05	<50	<0.1
393789		1.26	10	4.43	<50	<50	<10	<20	<0.05	<10	20	<10	1950	12.20	<50	0.1
393790		0.04	3	7.94	50	360	<10	<20	7.82	<10	70	140	4700	9.26	<50	0.6
393791		1.50	22	5.56	<50	<50	<10	<20	<0.05	<10	30	<10	3110	11.25	<50	0.1
393792		1.79	23	4.39	<50	<50	<10	<20	<0.05	<10	30	<10	2880	13.40	<50	0.2
393793		1.58	5	5.09	50	<50	<10	<20	0.05	<10	50	<10	870	11.95	<50	0.5
393794		1.33	<1	6.03	<50	410	<10	<20	0.07	<10	<10	<10	10	3.91	<50	1.3
393821		1.56	4	5.44	<50	120	<10	<20	1.51	<10	10	10	1150	7.13	<50	1.3
393822		1.53	1	6.24	<50	60	<10	<20	1.62	<10	20	10	520	8.47	<50	0.9
393823		1.51	1	6.13	<50	<50	<10	<20	0.70	<10	10	10	270	7.14	<50	0.5
393824		1.62	<1	6.41	<50	<50	<10	<20	0.22	<10	10	10	540	7.06	<50	0.3
393825		1.58	3	6.22	<50	<50	<10	<20	0.58	<10	10	10	1310	7.66	<50	<0.1
393826		1.70	11	5.24	<50	<50	<10	<20	0.82	<10	10	<10	3990	8.21	<50	<0.1
393827		1.48	2	6.21	<50	<50	<10	<20	0.09	<10	10	10	900	7.50	<50	0.2
393828		1.75	1	5.63	<50	<50	<10	<20	0.32	<10	10	<10	700	7.05	<50	0.2
393829		1.52	1	6.51	<50	<50	<10	<20	0.57	<10	10	<10	570	7.17	<50	0.2
393830		0.04	2	7.46	<50	350	<10	<20	7.54	<10	70	130	4580	8.90	<50	0.6
393831		1.58	1	6.09	<50	<50	<10	<20	0.30	<10	10	<10	510	7.29	<50	0.1
393832		1.73	5	6.09	<50	<50	<10	<20	0.16	<10	20	<10	2110	7.79	<50	0.1
393833		1.27	10	5.33	<50	<50	<10	<20	0.11	<10	40	<10	5220	7.95	<50	0.1
393834		1.85	6	5.06	<50	<50	<10	<20	1.06	<10	20	<10	2450	7.15	<50	0.1
393835		1.42	13	5.22	<50	50	<10	<20	0.62	<10	10	<10	5330	8.49	<50	0.2
393836		1.77	44	3.51	<50	<50	<10	<20	0.20	<10	60	<10	17550	19.00	<50	0.5
393837		1.57	39	2.92	<50	<50	<10	20	0.16	<10	100	<10	15350	20.7	<50	0.4
393838		1.47	35	2.52	<50	<50	<10	<20	0.36	<10	30	<10	14300	19.55	<50	0.3
393839		1.84	25	2.87	<50	<50	<10	<20	0.09	<10	30	<10	11600	16.75	<50	0.2
393840		1.59	9	5.66	<50	<50	<10	<20	0.09	<10	30	10	4010	9.40	<50	0.4
393841		1.71	4	5.77	<50	<50	<10	<20	0.11	<10	20	10	1810	8.98	<50	0.3
393842		1.61	3	5.31	<50	<50	<10	<20	0.06	<10	10	10	770	6.53	<50	0.2
393843		1.81	7	5.59	<50	<50	<10	<20	0.06	<10	30	<10	2730	14.60	<50	0.1
393844		1.48	1	6.06	<50	90	<10	<20	0.11	<10	20	10	540	6.47	<50	0.2
393845		1.56	1	6.13	<50	210	<10	<20	0.08	<10	20	<10	1070	7.14	<50	0.6
393846		1.60	4	6.08	<50	390	<10	<20	0.09	<10	20	<10	1740	6.83	<50	1.1
393847		1.55	5	5.64	<50	50	<10	<20	0.27	<10	30	<10	1950	11.35	<50	0.3
393848		1.66	1	6.07	<50	<50	<10	<20	0.17	<10	30	<10	1520	9.64	<50	0.2
393849		1.29	6	7.65	<50	120	<10	<20	0.11	<10	20	<10	3130	7.61	<50	1.2
393850		0.05	<1	0.41	<50	<50	<10	<20	<0.05	<10	<10	<10	10	0.06	<50	0.2

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To: NORTHERN SHIELD RESOURCES INC.
440 - 55 METCALFE STREET
OTTAWA ON K1P 6L5

Finalized Date: 10- APR- 2011
Account: NORSHI

Project: WABASSI

CERTIFICATE OF ANALYSIS TM11049370

Sample Description	Method Analyte Units LOR	ME-ICP61a La ppm 50	ME-ICP61a Mg % 0.05	ME-ICP61a Mn ppm 10	ME-ICP61a Mo ppm 10	ME-ICP61a Na % 0.05	ME-ICP61a Ni ppm 10	ME-ICP61a P ppm 50	ME-ICP61a Pb ppm 20	ME-ICP61a S % 0.05	ME-ICP61a Sb ppm 50	ME-ICP61a Sc ppm 10	ME-ICP61a Sr ppm 10	ME-ICP61a Th ppm 50	ME-ICP61a Ti % 0.05	ME-ICP61a Tl ppm 50
393785		<50	8.93	2870	<10	<0.05	<10	<50	100	>10.0	<50	<10	40	<50	0.11	<50
393786		<50	6.33	1180	<10	<0.05	<10	50	30	>10.0	<50	<10	10	<50	0.06	<50
393787		<50	13.25	280	<10	<0.05	<10	90	<20	5.68	<50	10	<10	<50	<0.05	<50
393788		<50	9.22	270	<10	0.05	<10	150	<20	7.82	<50	10	<10	<50	0.06	<50
393789		<50	9.62	260	<10	0.05	<10	140	<20	7.43	<50	10	<10	<50	<0.05	<50
393790		<50	3.52	1390	<10	1.79	310	1900	<20	0.94	<50	20	610	<50	0.50	<50
393791		<50	9.23	340	<10	0.05	<10	150	<20	5.75	<50	10	<10	<50	0.05	<50
393792		<50	8.34	270	<10	<0.05	<10	140	<20	9.37	<50	10	<10	<50	0.05	<50
393793		<50	6.62	310	<10	<0.05	<10	170	<20	7.53	<50	10	<10	<50	0.08	<50
393794		<50	3.44	270	<10	0.08	<10	<50	<20	0.11	<50	10	10	<50	0.10	<50
393821		<50	7.58	1290	<10	0.09	<10	370	<20	0.53	<50	10	10	<50	0.19	<50
393822		<50	9.51	1220	<10	0.06	<10	470	<20	1.21	<50	10	10	<50	0.16	<50
393823		<50	8.36	820	<10	<0.05	<10	460	<20	0.42	<50	10	<10	<50	0.15	<50
393824		<50	8.32	650	<10	<0.05	<10	370	<20	0.39	<50	10	<10	<50	0.14	<50
393825		<50	9.39	730	<10	<0.05	<10	330	<20	0.80	<50	10	<10	<50	0.08	<50
393826		<50	10.35	850	<10	0.05	<10	340	<20	1.60	<50	10	<10	<50	<0.05	<50
393827		<50	8.54	600	<10	<0.05	<10	400	<20	0.88	<50	10	<10	<50	0.10	<50
393828		<50	8.16	600	<10	<0.05	<10	320	<20	0.85	<50	10	<10	<50	0.09	<50
393829		<50	9.51	730	<10	<0.05	<10	350	<20	0.49	<50	10	10	<50	0.10	<50
393830		<50	3.35	1340	<10	1.73	300	1820	<20	0.88	<50	20	590	<50	0.48	<50
393831		<50	11.75	680	<10	0.05	<10	320	<20	0.39	<50	10	<10	<50	0.06	<50
393832		<50	8.86	610	<10	<0.05	<10	300	<20	1.49	<50	10	<10	<50	0.09	<50
393833		<50	6.95	510	<10	<0.05	<10	260	<20	2.87	<50	10	<10	<50	0.06	<50
393834		<50	9.50	680	<10	0.06	<10	220	<20	1.45	<50	10	10	<50	0.05	<50
393835		<50	5.23	610	<10	0.06	<10	270	<20	2.64	<50	10	<10	<50	0.08	<50
393836		<50	4.56	390	<10	<0.05	<10	300	<20	>10.0	<50	10	<10	<50	0.06	<50
393837		<50	4.21	370	<10	<0.05	<10	240	<20	>10.0	<50	<10	<10	<50	0.05	<50
393838		<50	3.19	480	<10	<0.05	10	180	<20	>10.0	<50	<10	<10	<50	<0.05	<50
393839		<50	3.41	410	<10	<0.05	<10	240	<20	8.20	<50	<10	<10	<50	0.07	<50
393840		<50	6.31	590	<10	0.05	<10	390	<20	3.07	<50	10	<10	<50	0.14	<50
393841		<50	6.62	560	<10	<0.05	<10	460	<20	3.35	<50	10	<10	<50	0.14	<50
393842		<50	6.20	490	<10	<0.05	<10	250	<20	1.23	<50	10	<10	<50	0.11	<50
393843		<50	6.42	530	<10	<0.05	<10	250	<20	6.20	<50	10	<10	<50	0.08	<50
393844		<50	6.29	600	<10	0.06	10	470	<20	0.81	<50	10	10	<50	0.21	<50
393845		<50	5.68	540	<10	0.07	10	360	<20	2.15	<50	10	10	<50	0.18	<50
393846		<50	4.13	460	<10	0.09	10	380	<20	2.13	<50	10	10	<50	0.18	<50
393847		<50	6.05	760	<10	<0.05	10	300	<20	3.12	<50	10	<10	<50	0.15	<50
393848		<50	5.78	820	<10	0.05	10	350	<20	1.62	<50	10	<10	<50	0.27	<50
393849		<50	6.17	550	<10	0.08	20	410	<20	1.28	<50	10	10	<50	0.26	<50
393850		<50	<0.05	<10	<10	<0.05	<10	50	<20	<0.05	<50	<10	<10	<50	<0.05	<50

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To: NORTHERN SHIELD RESOURCES INC.
440 - 55 METCALFE STREET
OTTAWA ON K1P 6L5

Finalized Date: 10- APR- 2011
Account: NORSHI

Project: WABASSI

CERTIFICATE OF ANALYSIS TM11049370

Sample Description	Method Analyte Units LOR	ME-ICP61a U ppm 50	ME-ICP61a V ppm 10	ME-ICP61a W ppm 50	ME-ICP61a Zn ppm 20	Ag-OG62 Ag ppm 1	Zn-OG62 Zn % 0.001	Au-ICP21 Au ppm 0.001
393785		<50	20	<50	12100			0.017
393786		<50	20	90	36800			0.076
393787		<50	20	<50	1100			0.071
393788		<50	20	<50	600			0.075
393789		<50	20	<50	700			0.069
393790		<50	260	<50	130			0.165
393791		<50	20	<50	860			0.115
393792		<50	20	<50	780			0.442
393793		<50	30	<50	520			0.041
393794		<50	10	<50	270			0.002
393821		<50	60	<50	490			0.023
393822		<50	70	<50	480			0.002
393823		<50	70	<50	420			0.001
393824		<50	70	<50	470			0.004
393825		<50	60	<50	500			0.009
393826		<50	50	<50	650			0.051
393827		<50	60	<50	470			0.004
393828		<50	50	<50	360			0.005
393829		<50	40	<50	400			0.005
393830		<50	250	<50	130			0.209
393831		<50	30	<50	480			0.006
393832		<50	30	<50	590			0.018
393833		<50	30	<50	660			0.035
393834		<50	30	<50	530			0.019
393835		<50	40	<50	610			0.027
393836		<50	20	<50	1080			0.082
393837		<50	20	<50	1130			0.050
393838		<50	20	<50	800			0.067
393839		<50	20	<50	730			0.040
393840		<50	70	<50	580			0.019
393841		<50	70	<50	480			0.010
393842		<50	50	<50	380			0.003
393843		<50	50	<50	410			0.019
393844		<50	80	<50	460			0.004
393845		<50	70	<50	410			0.013
393846		<50	70	<50	900			0.012
393847		<50	40	<50	570			0.013
393848		<50	60	<50	560			0.016
393849		<50	110	<50	260			0.018
393850		<50	<10	<50	<20			0.001

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To: NORTHERN SHIELD RESOURCES INC.
440 - 55 METCALFE STREET
OTTAWA ON K1P 6L5

Finalized Date: 10- APR- 2011
Account: NORSHI

Project: WABASSI

CERTIFICATE OF ANALYSIS TM11049370

Sample Description	Method	WEI-21	ME-ICP61a	ME-ICP61a	ME-ICP61a	ME-ICP61a	ME-ICP61a	ME-ICP61a	ME-ICP61a	ME-ICP61a	ME-ICP61a	ME-ICP61a	ME-ICP61a	ME-ICP61a	ME-ICP61a	ME-ICP61a
	Analyte	Recvd Wt.	Ag	Al	As	Ba	Be	Bi	Ca	Cd	Co	Cr	Cu	Fe	Ga	K
	Units	kg	ppm	%	ppm	ppm	ppm	ppm	%	ppm	ppm	ppm	ppm	%	ppm	%
	LOR	0.02	1	0.05	50	50	10	20	0.05	10	10	10	10	0.05	50	0.1
393851		0.87	92	6.30	<50	240	<10	<20	0.10	110	90	<10	34800	13.65	<50	0.7
393852		1.57	193	1.37	<50	<50	<10	<20	<0.05	630	200	<10	69500	25.9	<50	0.1
393853		1.39	>200	1.11	<50	<50	<10	<20	<0.05	300	290	<10	90900	34.0	<50	<0.1
393854		1.81	66	0.98	<50	<50	<10	<20	2.81	10	980	<10	23600	32.8	<50	0.1
393855		1.06	150	0.97	<50	<50	<10	40	0.29	20	490	<10	56900	38.6	<50	<0.1
393856		1.17	>200	0.36	<50	<50	<10	<20	0.34	370	380	<10	73000	25.7	<50	<0.1
393857		1.59	6	6.52	<50	50	<10	<20	1.62	<10	30	100	2040	6.94	<50	2.0
393858		1.96	<1	7.28	<50	<50	<10	<20	3.85	<10	20	120	290	8.27	<50	1.1
393859		2.05	1	7.27	<50	<50	<10	<20	3.18	<10	20	120	100	7.51	<50	0.9
393860		2.04	3	7.37	<50	70	<10	<20	0.79	<10	30	130	330	7.78	<50	1.5
393861		1.19	76	6.57	<50	<50	<10	<20	0.21	10	50	<10	24500	13.60	<50	1.0
393862		1.31	31	4.60	<50	<50	<10	<20	<0.05	20	30	<10	11900	31.4	<50	<0.1
393863		1.74	32	1.16	<50	<50	<10	<20	<0.05	380	370	<10	11900	32.6	<50	<0.1
393864		1.57	23	1.61	<50	<50	<10	<20	0.24	300	120	<10	10000	34.5	<50	<0.1
393865		1.55	161	3.04	<50	<50	<10	40	0.37	100	90	<10	82500	28.2	<50	0.1
393866		1.33	46	5.32	<50	60	<10	<20	0.46	20	120	<10	19000	16.85	<50	0.2
393867		1.33	76	5.56	<50	170	<10	<20	0.07	10	20	<10	33500	10.45	<50	0.6
393868		0.99	3	6.12	<50	<50	<10	<20	0.08	<10	10	20	1610	5.88	<50	0.5
393869		1.49	1	7.17	<50	130	<10	<20	0.11	<10	10	30	530	6.02	<50	0.9
393870		0.05	<1	0.40	<50	<50	<10	<20	<0.05	<10	<10	<10	10	0.06	<50	0.2
393871		1.58	<1	7.20	<50	110	<10	<20	0.12	<10	20	30	480	5.48	<50	1.5
393872		1.56	1	7.60	<50	70	<10	<20	0.14	<10	30	10	960	5.76	<50	2.4
393873		1.69	<1	7.17	<50	120	<10	<20	0.15	<10	20	30	220	5.85	<50	1.2

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CERTIFICATE OF ANALYSIS TM11049370

Sample Description	Method Analyte Units LOR	ME-ICP61a La ppm 50	ME-ICP61a Mg % 0.05	ME-ICP61a Mn ppm 10	ME-ICP61a Mo ppm 10	ME-ICP61a Na % 0.05	ME-ICP61a Ni ppm 10	ME-ICP61a P ppm 50	ME-ICP61a Pb ppm 20	ME-ICP61a S % 0.05	ME-ICP61a Sb ppm 50	ME-ICP61a Sc ppm 10	ME-ICP61a Sr ppm 10	ME-ICP61a Th ppm 50	ME-ICP61a Ti % 0.05	ME-ICP61a Tl ppm 50
393851		<50	5.33	570	<10	0.09	<10	440	<20	8.58	<50	10	10	<50	0.11	<50
393852		<50	1.49	340	<10	<0.05	20	<50	<20	>10.0	<50	<10	<10	<50	<0.05	<50
393853		<50	1.95	210	<10	<0.05	30	<50	<20	>10.0	<50	<10	<10	<50	<0.05	<50
393854		<50	3.27	1530	<10	<0.05	20	<50	<20	>10.0	<50	<10	10	<50	<0.05	<50
393855		<50	3.95	510	<10	<0.05	40	<50	<20	>10.0	<50	<10	<10	<50	<0.05	<50
393856		<50	3.63	470	<10	<0.05	10	<50	<20	>10.0	<50	<10	<10	<50	<0.05	<50
393857		<50	4.81	890	<10	0.08	60	670	<20	1.06	<50	20	30	<50	0.54	<50
393858		<50	4.94	1360	<10	0.89	80	580	30	0.46	<50	20	70	<50	0.55	<50
393859		<50	5.60	1080	<10	0.95	80	640	40	0.42	<50	20	90	<50	0.60	<50
393860		<50	7.22	620	<10	0.20	70	650	30	0.66	<50	20	30	<50	0.60	<50
393861		<50	5.70	600	<10	0.07	<10	840	<20	6.31	<50	10	10	<50	0.19	<50
393862		<50	6.06	580	<10	0.08	50	60	<20	>10.0	<50	10	<10	<50	0.05	<50
393863		<50	1.78	240	<10	<0.05	30	60	<20	>10.0	<50	<10	<10	<50	<0.05	<50
393864		<50	2.81	530	<10	<0.05	30	<50	<20	>10.0	<50	<10	<10	<50	<0.05	<50
393865		<50	4.30	370	<10	<0.05	30	100	<20	>10.0	<50	10	<10	<50	<0.05	<50
393866		<50	5.98	570	<10	0.05	10	180	20	>10.0	<50	10	10	<50	0.09	<50
393867		<50	5.18	390	<10	0.07	<10	300	40	5.19	<50	10	<10	<50	0.11	<50
393868		<50	6.11	510	<10	0.05	10	320	20	0.66	<50	10	<10	<50	0.17	<50
393869		<50	6.29	560	<10	0.06	30	410	<20	0.48	<50	20	10	<50	0.19	<50
393870		<50	<0.05	<10	<10	<0.05	<10	<50	<20	<0.05	<50	<10	10	<50	<0.05	<50
393871		<50	5.60	520	<10	0.05	30	420	<20	0.34	<50	20	10	<50	0.19	<50
393872		<50	5.77	360	<10	0.15	20	450	<20	1.18	<50	20	10	<50	0.26	<50
393873		<50	5.86	510	<10	0.15	40	420	<20	0.36	<50	10	10	<50	0.19	<50

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To: NORTHERN SHIELD RESOURCES INC.
440 – 55 METCALFE STREET
OTTAWA ON K1P 6L5

Finalized Date: 10- APR- 2011
Account: NORSHI

Project: WABASSI

CERTIFICATE OF ANALYSIS TM11049370

Sample Description	Method / Analyte / Units / LOR	ME-ICP61a U ppm 50	ME-ICP61a V ppm 10	ME-ICP61a W ppm 50	ME-ICP61a Zn ppm 20	Ag-OG62 Ag ppm 1	Zn-OG62 Zn % 0.001	Au-ICP21 Au ppm 0.001
393851		<50	70	110	44100			0.427
393852		<50	<10	<50	>100000		25.3	0.288
393853		<50	<10	<50	>100000	217	11.85	0.335
393854		<50	<10	<50	4380			0.295
393855		<50	<10	<50	8160			0.293
393856		<50	<10	<50	>100000	202	15.55	0.365
393857		<50	140	<50	720			0.177
393858		<50	170	<50	930			0.012
393859		<50	170	<50	500			0.011
393860		<50	170	<50	400			0.006
393861		<50	30	<50	3000			0.164
393862		<50	20	<50	9940			0.087
393863		<50	<10	<50	>100000		17.50	0.110
393864		<50	<10	<50	>100000		14.00	0.065
393865		<50	10	110	42500			1.390
393866		<50	30	<50	5820			0.116
393867		<50	30	<50	4820			0.461
393868		<50	70	<50	490			0.039
393869		<50	90	<50	480			0.037
393870		<50	<10	<50	<20			<0.001
393871		<50	100	<50	430			0.017
393872		<50	130	<50	220			0.125
393873		<50	90	<50	430			0.019

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To: NORTHERN SHIELD RESOURCES INC.
440 – 55 METCALFE STREET
OTTAWA ON K1P 6L5

Finalized Date: 2- MAY- 2011
Account: NORSHI

CERTIFICATE TM11051298

Project: WABASSI
P.O. No.:
This report is for 62 Drill Core samples submitted to our lab in Timmins, ON, Canada on 28- MAR- 2011.

The following have access to data associated with this certificate:

IAN BLISS	CHRISTINE VAILLANCOURT	

SAMPLE PREPARATION

ALS CODE	DESCRIPTION
WEI- 21	Received Sample Weight
LOG- 22	Sample login - Rcd w/o BarCode
CRU- 31	Fine crushing - 70% <2mm
CRU- QC	Crushing QC Test
PUL- QC	Pulverizing QC Test
SPL- 21	Split sample - riffle splitter
PUL- 31	Pulverize split to 85% <75 um
LOG- 24	Pulp Login - Rcd w/o Barcode

ANALYTICAL PROCEDURES

ALS CODE	DESCRIPTION	INSTRUMENT
ME- ICP61	33 element four acid ICP- AES	ICP- AES
ME- OG62	Ore Grade Elements - Four Acid	ICP- AES
Cu- OG62	Ore Grade Cu - Four Acid	VARIABLE
Au- ICP21	Au 30g FA ICP- AES Finish	ICP- AES

To: NORTHERN SHIELD RESOURCES INC.
ATTN: CHRISTINE VAILLANCOURT
440 – 55 METCALFE STREET
OTTAWA ON K1P 6L5

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.

Signature:
Colin Ramshaw, Vancouver Laboratory Manager

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ALS Minerals

To: NORTHERN SHIELD RESOURCES INC.
440 – 55 METCALFE STREET
OTTAWA ON K1P 6L5

Finalized Date: 2- MAY- 2011
Account: NORSHI

Project: WABASSI

CERTIFICATE OF ANALYSIS TM11051298

Sample Description	Method / Analyte / Units / LOR	WEI-21 Recvd Wt. kg 0.02	ME-ICP61 Ag ppm 0.5	ME-ICP61 Al % 0.01	ME-ICP61 As ppm 5	ME-ICP61 Ba ppm 10	ME-ICP61 Be ppm 0.5	ME-ICP61 Bi ppm 2	ME-ICP61 Ca % 0.01	ME-ICP61 Cd ppm 0.5	ME-ICP61 Co ppm 1	ME-ICP61 Cr ppm 1	ME-ICP61 Cu ppm 1	ME-ICP61 Fe % 0.01	ME-ICP61 Ga ppm 10	ME-ICP61 In ppm 10
393712		1.85	1.0	7.84	7	310	1.0	<2	6.95	<0.5	50	<1	82	13.10	20	<10
393713		1.64	0.5	6.51	11	130	0.9	<2	6.24	<0.5	38	<1	72	10.75	20	<10
393714		1.76	0.6	7.16	<5	140	1.1	<2	6.71	<0.5	42	<1	70	11.20	10	<10
393715		1.58	<0.5	7.42	<5	100	1.0	<2	6.54	<0.5	37	<1	73	11.20	20	<10
393716		1.99	<0.5	8.30	7	70	0.8	<2	6.78	<0.5	56	22	106	11.35	20	<10
393717		1.88	0.8	7.88	6	60	0.8	<2	6.88	<0.5	61	9	116	12.75	20	<10
393718		1.71	0.6	7.09	6	40	0.8	<2	6.60	<0.5	58	2	135	11.55	20	<10
393719		1.60	<0.5	7.23	9	120	0.9	<2	4.61	<0.5	30	15	25	7.02	20	<10
393720		1.64	1.3	6.62	17	70	0.8	<2	6.05	<0.5	46	1	76	9.01	20	<10
393721		1.64	0.6	7.67	7	130	0.9	<2	3.96	<0.5	26	12	53	6.63	20	<10
393722		1.58	<0.5	7.79	<5	230	1.1	<2	2.85	<0.5	18	22	13	4.70	20	<10
393723		1.80	<0.5	7.88	9	130	0.8	<2	2.16	<0.5	13	16	188	4.27	20	<10
393724		0.97	0.8	8.58	17	40	0.7	<2	6.99	<0.5	41	58	130	9.37	20	<10
393725		1.23	1.2	7.70	<5	60	0.9	<2	5.74	<0.5	58	4	361	10.80	20	<10
393726		1.65	<0.5	8.18	<5	50	0.8	<2	6.13	<0.5	55	6	75	11.65	20	<10
393727		1.79	1.1	7.69	5	40	0.9	<2	7.04	<0.5	55	<1	72	12.40	20	<10
393728		1.77	0.7	7.57	<5	40	1.0	<2	7.30	<0.5	57	<1	85	13.00	20	<10
393729		1.55	<0.5	7.25	<5	50	0.9	<2	6.96	<0.5	59	<1	183	12.90	20	<10
393730		0.02	<0.5	0.41	<5	20	<0.5	2	0.02	<0.5	<1	3	1	0.03	<10	<10
393731		1.85	<0.5	7.31	<5	50	0.9	<2	5.64	<0.5	60	<1	257	13.30	20	10
393732		1.68	<0.5	7.35	<5	60	0.9	<2	6.90	<0.5	58	2	113	12.45	20	<10
393733		1.74	0.5	7.33	5	60	0.9	<2	7.15	<0.5	56	3	75	12.15	20	10
393734		1.67	0.5	7.76	11	60	1.0	<2	7.00	<0.5	55	5	73	12.45	20	10
393735		1.60	<0.5	7.15	7	60	0.9	<2	6.69	<0.5	57	<1	79	12.45	20	<10
393736		1.31	<0.5	7.71	7	50	0.9	<2	6.78	<0.5	54	<1	73	11.55	20	<10
393737		1.39	<0.5	7.60	6	40	0.9	<2	6.00	<0.5	63	<1	99	12.70	20	10
393738		1.67	<0.5	4.18	<5	10	<0.5	<2	2.14	<0.5	78	1660	4	8.37	10	10
393739		1.68	<0.5	4.11	11	20	<0.5	<2	3.48	<0.5	78	1570	62	8.82	10	20
393740		1.23	<0.5	3.73	<5	220	<0.5	<2	3.58	<0.5	76	1680	39	8.31	10	10
393741		0.68	<0.5	5.64	8	290	0.9	<2	2.35	<0.5	53	499	827	5.73	10	<10
393742		1.18	<0.5	3.82	<5	30	<0.5	<2	3.36	<0.5	76	1580	84	8.28	10	<10
393743		1.23	<0.5	4.25	7	10	<0.5	<2	2.92	<0.5	79	1650	34	8.93	10	<10
393744		1.63	<0.5	4.73	13	10	0.5	<2	3.91	<0.5	75	1460	18	8.58	10	<10
393795		1.61	<0.5	5.51	<5	410	0.6	<2	0.09	<0.5	4	4	2	2.94	20	<10
393796		1.53	<0.5	5.77	8	310	0.7	<2	0.33	<0.5	5	1	1	2.99	20	<10
393797		1.59	<0.5	7.10	<5	<10	<0.5	<2	0.30	<0.5	9	2	454	6.21	20	10
393798		1.66	<0.5	6.00	<5	<10	<0.5	<2	0.59	<0.5	8	1	720	5.42	20	10
393799		1.58	0.5	4.98	<5	<10	<0.5	<2	0.87	<0.5	6	1	868	4.64	20	10
393800		2.15	<0.5	4.31	<5	50	<0.5	<2	0.23	<0.5	13	1	294	6.60	20	10
393801		1.13	0.5	4.58	<5	60	<0.5	<2	0.29	<0.5	19	1	255	6.58	20	10

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To: NORTHERN SHIELD RESOURCES INC.
440 - 55 METCALFE STREET
OTTAWA ON K1P 6L5

Finalized Date: 2- MAY- 2011
Account: NORSHI

Project: WABASSI

CERTIFICATE OF ANALYSIS TM11051298

Sample Description	Method Analyte Units LOR	ME-ICP61 K % 0.01	ME-ICP61 La ppm 10	ME-ICP61 Mg % 0.01	ME-ICP61 Mn ppm 5	ME-ICP61 Mo ppm 1	ME-ICP61 Na % 0.01	ME-ICP61 Ni ppm 1	ME-ICP61 P ppm 10	ME-ICP61 Pb ppm 2	ME-ICP61 S % 0.01	ME-ICP61 Sb ppm 5	ME-ICP61 Sc ppm 1	ME-ICP61 Sr ppm 1	ME-ICP61 Th ppm 20	ME-ICP61 Ti % 0.01
393712		0.24	20	2.82	1845	<1	1.71	13	2410	8	0.20	<5	39	317	30	1.83
393713		0.30	10	2.74	1640	2	1.98	2	2530	4	0.25	<5	32	158	20	1.57
393714		0.44	20	2.80	1960	<1	1.60	1	5260	7	0.20	<5	37	242	30	2.11
393715		0.30	20	2.44	1965	<1	1.72	<1	5960	6	0.32	<5	34	235	30	1.88
393716		0.26	<10	3.10	1410	<1	1.84	81	810	4	0.30	<5	35	262	20	1.34
393717		0.14	<10	3.24	1485	<1	1.61	97	1000	3	0.23	<5	37	236	20	1.62
393718		0.21	<10	2.95	1720	<1	1.39	86	770	5	0.31	<5	35	172	20	1.45
393719		0.49	10	1.75	1250	<1	2.84	39	540	2	0.18	<5	20	109	20	0.85
393720		0.30	10	2.41	1245	<1	1.95	50	540	11	0.64	<5	28	125	20	1.09
393721		0.71	20	1.97	979	<1	2.68	27	750	2	0.25	<5	16	117	20	0.66
393722		0.74	10	1.32	675	<1	3.01	24	780	4	0.03	<5	9	179	<20	0.45
393723		0.89	10	1.27	527	<1	3.89	20	700	4	0.22	<5	9	84	<20	0.42
393724		0.30	<10	4.04	1400	<1	2.31	135	390	9	0.84	<5	33	74	<20	0.60
393725		0.50	<10	3.76	1735	<1	1.57	52	550	12	1.71	<5	36	87	20	1.43
393726		0.11	<10	3.72	1615	<1	1.86	26	1120	3	0.19	<5	31	239	20	1.54
393727		0.10	<10	3.44	1540	<1	1.74	21	450	2	0.19	<5	40	224	30	1.90
393728		0.17	<10	3.31	1575	<1	1.69	20	1030	6	0.19	<5	41	221	30	2.07
393729		0.18	<10	3.42	1655	<1	1.63	11	720	7	0.20	<5	42	207	30	1.82
393730		0.16	20	0.01	5	<1	0.01	1	40	4	0.01	<5	<1	5	<20	0.02
393731		0.20	<10	3.77	1945	<1	1.57	17	1390	3	0.24	<5	40	187	30	1.99
393732		0.30	<10	3.46	1600	<1	1.67	5	620	4	0.20	<5	45	205	30	1.93
393733		0.27	<10	3.41	1600	<1	1.65	6	620	11	0.19	<5	42	218	30	1.99
393734		0.23	<10	3.16	1570	<1	1.78	12	780	6	0.21	<5	39	229	30	2.03
393735		0.22	<10	3.17	1600	<1	1.64	12	720	6	0.20	<5	39	216	20	1.78
393736		0.28	<10	2.89	1500	<1	1.65	5	930	6	0.16	<5	38	238	30	2.08
393737		0.22	<10	3.74	1755	<1	1.17	8	750	2	0.19	<5	37	220	30	2.13
393738		0.04	10	14.75	996	<1	0.04	953	300	5	0.03	5	14	15	<20	0.33
393739		0.16	10	13.35	1825	<1	0.10	848	300	6	0.01	<5	15	15	<20	0.34
393740		1.77	10	12.05	1715	<1	0.12	759	290	5	0.02	6	14	23	<20	0.31
393741		2.52	10	8.61	935	2	0.31	453	2320	12	0.09	6	16	53	<20	0.38
393742		0.23	10	13.20	1545	<1	0.09	876	270	8	0.01	<5	14	18	<20	0.33
393743		0.07	10	13.35	1120	<1	0.11	905	330	7	<0.01	5	15	15	<20	0.34
393744		0.06	10	12.80	1175	<1	0.18	818	310	6	<0.01	<5	14	15	<20	0.35
393795		1.61	20	2.81	212	7	0.22	2	40	9	0.01	<5	6	14	<20	0.10
393796		1.44	30	3.42	264	2	0.47	<1	50	9	0.01	<5	6	24	<20	0.10
393797		0.07	20	11.40	464	1	0.01	<1	130	<2	0.06	<5	7	2	<20	0.05
393798		0.04	20	9.87	559	<1	0.01	<1	110	<2	0.06	<5	6	5	<20	0.04
393799		0.03	30	8.51	571	1	0.01	2	190	3	0.08	<5	6	6	<20	0.03
393800		0.49	20	3.52	597	<1	0.11	<1	260	6	0.14	<5	5	7	<20	0.15
393801		0.53	20	3.56	608	1	0.23	1	420	14	0.33	<5	6	15	<20	0.19

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To: NORTHERN SHIELD RESOURCES INC.
440 – 55 METCALFE STREET
OTTAWA ON K1P 6L5

Finalized Date: 2- MAY- 2011
Account: NORSHI

Project: WABASSI

CERTIFICATE OF ANALYSIS TM11051298

Sample Description	Method	ME-ICP61	ME-ICP61	ME-ICP61	ME-ICP61	ME-ICP61	ME-ICP61	Cu-OG62	Au-ICP21
	Analyte	Ti	U	V	W	Zn	Zr	Cu	Au
	Units	ppm	ppm	ppm	ppm	ppm	ppm	%	ppm
	LOR	10	10	1	10	2	5	0.001	0.001
393712		<10	<10	349	<10	155	25		0.001
393713		<10	<10	219	40	204	56		0.002
393714		<10	<10	233	<10	146	52		0.001
393715		<10	<10	170	<10	133	26		0.001
393716		<10	<10	527	<10	121	19		0.001
393717		<10	<10	625	<10	139	19		0.002
393718		<10	<10	596	<10	125	14		0.002
393719		<10	<10	299	<10	82	53		0.005
393720		<10	<10	426	<10	128	33		0.005
393721		<10	<10	191	<10	92	88		0.017
393722		<10	<10	88	<10	79	129		0.001
393723		<10	<10	92	10	71	111		0.019
393724		<10	<10	212	10	132	46		0.029
393725		<10	<10	410	10	141	21		0.077
393726		<10	<10	369	<10	138	17		0.001
393727		<10	<10	488	<10	140	27		<0.001
393728		<10	<10	517	<10	145	24		<0.001
393729		<10	<10	499	<10	149	24		<0.001
393730		<10	<10	2	<10	2	63		<0.001
393731		<10	<10	518	<10	173	21		<0.001
393732		<10	<10	447	<10	144	33		<0.001
393733		<10	<10	419	<10	139	39		<0.001
393734		<10	<10	419	<10	139	43		<0.001
393735		<10	<10	420	<10	139	35		<0.001
393736		<10	<10	290	<10	121	28		<0.001
393737		<10	<10	264	<10	129	31		<0.001
393738		<10	<10	101	<10	240	38		<0.001
393739		<10	<10	100	<10	329	38		0.001
393740		<10	<10	108	<10	317	38		0.001
393741		<10	<10	109	<10	191	119		0.011
393742		<10	<10	99	<10	321	35		0.001
393743		<10	<10	101	<10	295	36		<0.001
393744		<10	<10	99	<10	285	43		<0.001
393795		<10	<10	2	<10	196	332		<0.001
393796		<10	<10	3	<10	193	337		<0.001
393797		<10	<10	5	<10	131	419		0.005
393798		<10	<10	6	<10	110	360		0.008
393799		<10	<10	8	<10	99	271		0.009
393800		<10	<10	5	<10	150	217		0.002
393801		<10	<10	5	<10	150	217		0.002

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To: NORTHERN SHIELD RESOURCES INC.
440 – 55 METCALFE STREET
OTTAWA ON K1P 6L5

Finalized Date: 2- MAY- 2011
Account: NORSHI

Project: WABASSI

CERTIFICATE OF ANALYSIS TM11051298

Sample Description	Method	WEI- 21	ME- ICP61	ME- ICP61	ME- ICP61	ME- ICP61	ME- ICP61	ME- ICP61	ME- ICP61	ME- ICP61	ME- ICP61	ME- ICP61	ME- ICP61	ME- ICP61	ME- ICP61	ME- ICP61
	Analyte	Recvd Wt.	Ag	Al	As	Ba	Be	Bi	Ca	Cd	Co	Cr	Cu	Fe	Ga	In
	Units	kg	ppm	%	ppm	ppm	ppm	ppm	%	ppm	ppm	ppm	ppm	%	ppm	ppm
	LOR	0.02	0.5	0.01	5	10	0.5	2	0.01	0.5	1	1	1	0.01	10	10
393802		1.92	<0.5	4.53	<5	140	<0.5	<2	0.24	<0.5	13	2	73	5.76	20	<10
393803		1.47	<0.5	4.56	<5	170	<0.5	<2	0.30	<0.5	9	2	17	4.59	10	10
393804		1.61	<0.5	4.27	<5	160	0.5	<2	0.43	<0.5	5	1	19	3.80	10	<10
393805		1.71	<0.5	7.30	13	340	0.7	<2	2.55	<0.5	11	19	13	2.65	20	<10
393806		1.75	8.3	4.57	<5	150	<0.5	<2	0.24	<0.5	25	1	3540	6.56	20	10
393807		1.66	1.7	4.53	<5	150	<0.5	<2	0.31	<0.5	15	2	577	4.96	20	10
393808		1.60	2.3	6.50	<5	320	<0.5	<2	0.19	<0.5	15	1	1110	10.20	30	<10
393809		1.60	3.7	5.69	5	170	<0.5	<2	0.11	0.5	13	1	1150	8.07	20	<10
393810		0.04	<0.5	0.40	<5	20	<0.5	<2	0.02	<0.5	<1	3	3	0.05	<10	<10
393811		1.69	3.3	5.36	<5	140	<0.5	<2	0.23	0.5	11	2	1005	7.52	20	<10
393812		1.63	49.9	5.43	<5	180	<0.5	<2	0.13	3.1	18	<1	>10000	10.90	30	<10
393813		1.60	3.2	7.29	<5	190	<0.5	<2	0.25	<0.5	12	<1	998	10.05	30	10
393814		1.73	1.8	4.43	<5	120	<0.5	<2	0.05	<0.5	6	1	549	5.98	20	10
393815		1.62	7.3	4.69	<5	100	<0.5	<2	0.10	0.5	13	2	2110	6.89	20	<10
393816		1.65	3.2	4.94	<5	130	<0.5	<2	0.17	<0.5	9	1	702	6.46	20	<10
393817		1.62	14.5	4.87	5	<10	<0.5	<2	0.81	0.6	28	2	2720	10.60	20	<10
393818		1.59	32.4	4.26	<5	<10	<0.5	<2	0.87	2.1	22	2	>10000	10.45	20	10
393819		1.67	6.6	5.19	<5	<10	<0.5	<2	0.24	<0.5	11	2	1570	6.87	20	<10
393820		1.53	1.8	6.93	<5	10	<0.5	<2	0.14	<0.5	<1	7	488	7.05	20	<10
393874		1.34	<0.5	7.35	<5	160	0.5	2	0.12	<0.5	47	6	9	9.15	20	<10
393875		1.39	<0.5	6.70	<5	170	0.6	<2	0.14	<0.5	47	3	3400	9.23	20	10
393876		1.44	<0.5	6.58	6	220	0.9	<2	0.23	<0.5	41	3	457	7.85	20	10

ALS Canada Ltd.
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Phone: 604 984 0221 Fax: 604 984 0218 www.alsglobal.com

To: NORTHERN SHIELD RESOURCES INC.
440 - 55 METCALFE STREET
OTTAWA ON K1P 6L5

Finalized Date: 2- MAY- 2011
Account: NORSHI

Project: WABASSI

CERTIFICATE OF ANALYSIS TM11051298

Sample Description	Method Analyte Units LOR	ME- ICP61 K % 0.01	ME- ICP61 La ppm 10	ME- ICP61 Mg % 0.01	ME- ICP61 Mn ppm 5	ME- ICP61 Mo ppm 1	ME- ICP61 Na % 0.01	ME- ICP61 Ni ppm 1	ME- ICP61 P ppm 10	ME- ICP61 Pb ppm 2	ME- ICP61 S % 0.01	ME- ICP61 Sb ppm 5	ME- ICP61 Sc ppm 1	ME- ICP61 Sr ppm 1	ME- ICP61 Th ppm 20	ME- ICP61 Ti % 0.01
393802		0.79	20	3.40	566	<1	0.22	1	260	16	0.12	<5	6	14	<20	0.15
393803		1.17	20	2.94	425	1	0.66	2	80	21	0.05	<5	6	34	<20	0.13
393804		1.25	20	2.38	346	<1	1.01	2	80	24	0.01	<5	5	50	<20	0.12
393805		1.40	10	0.91	370	<1	2.69	21	400	<2	0.36	<5	7	269	<20	0.09
393806		1.26	20	3.65	536	1	0.36	3	160	16	0.92	<5	6	19	<20	0.13
393807		1.19	20	3.12	448	<1	0.72	1	130	16	0.29	<5	6	37	<20	0.13
393808		1.96	60	6.03	1135	4	0.78	<1	100	16	0.14	<5	5	32	<20	0.24
393809		1.03	60	4.81	859	1	0.34	1	100	13	0.19	<5	6	16	<20	0.15
393810		0.16	20	0.02	6	<1	0.01	<1	40	<2	0.01	<5	<1	5	<20	0.02
393811		0.89	50	4.55	883	<1	0.22	<1	100	15	0.13	<5	6	12	<20	0.14
393812		1.19	40	5.55	1060	1	0.08	1	260	21	1.46	5	4	5	<20	0.19
393813		1.19	50	6.62	1370	3	0.04	<1	70	9	0.14	<5	7	6	<20	0.19
393814		0.69	30	3.81	728	<1	0.03	<1	40	14	0.07	<5	4	3	<20	0.11
393815		0.65	40	4.37	756	<1	0.04	<1	200	15	0.32	<5	5	4	<20	0.11
393816		0.81	30	4.27	727	<1	0.22	<1	70	20	0.10	<5	5	15	<20	0.13
393817		0.02	20	9.22	1005	<1	0.01	6	410	10	2.43	<5	8	5	<20	0.24
393818		0.01	20	11.65	996	<1	0.02	6	470	8	2.69	5	8	5	<20	0.20
393819		0.02	30	9.09	790	1	0.01	4	250	10	0.88	6	9	2	<20	0.17
393820		0.06	20	9.59	816	<1	0.01	13	610	5	0.10	5	16	2	<20	0.20
393874		0.80	20	4.84	568	3	0.07	14	540	<2	0.03	<5	19	9	<20	0.56
393875		0.88	20	4.52	546	1	0.12	14	570	<2	0.31	5	14	12	<20	0.52
393876		1.28	20	3.93	439	1	0.28	11	570	<2	0.08	<5	17	23	<20	0.50

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To: NORTHERN SHIELD RESOURCES INC.
440 - 55 METCALFE STREET
OTTAWA ON K1P 6L5

Finalized Date: 2- MAY- 2011
Account: NORSHI

Project: WABASSI

CERTIFICATE OF ANALYSIS TM11051298

Sample Description	Method Analyte Units LOR	ME-ICP61 Ti ppm 10	ME-ICP61 U ppm 10	ME-ICP61 V ppm 1	ME-ICP61 W ppm 10	ME-ICP61 Zn ppm 2	ME-ICP61 Zr ppm 5	Cu-OG62 Cu % 0.001	Au-ICP21 Au ppm 0.001
393802		<10	<10	3	<10	141	242		<0.001
393803		<10	<10	2	<10	115	263		<0.001
393804		<10	<10	1	<10	95	248		<0.001
393805		<10	10	57	<10	44	46		0.064
393806		<10	<10	3	<10	178	236		0.017
393807		<10	<10	2	<10	127	247		0.003
393808		<10	<10	5	<10	528	464		0.003
393809		<10	<10	3	<10	394	366		0.004
393810		<10	<10	1	<10	<2	79		<0.001
393811		<10	<10	3	<10	380	305		0.003
393812		<10	<10	7	<10	934	319	1.500	0.035
393813		<10	<10	4	<10	576	403		0.003
393814		<10	<10	1	<10	326	249		0.001
393815		<10	<10	2	<10	401	260		0.008
393816		<10	<10	4	<10	346	306		0.003
393817		<10	<10	41	<10	560	198		0.028
393818		<10	<10	35	30	1120	175	1.065	0.029
393819		<10	<10	40	<10	561	200		0.017
393820		<10	<10	96	<10	597	195		0.008
393874		<10	<10	190	<10	143	180		<0.001
393875		<10	<10	189	<10	132	184		0.001
393876		<10	<10	170	<10	98	169		0.003

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To: NORTHERN SHIELD RESOURCES INC.
440 - 55 METCALFE STREET
OTTAWA ON K1P 6L5

Finalized Date: 24- APR- 2011
Account: NORSHI

CERTIFICATE TM11053402

Project: WABASSI
P.O. No.:
This report is for 48 Drill Core samples submitted to our lab in Timmins, ON, Canada on 31- MAR- 2011.
The following have access to data associated with this certificate:

IAN BLISS	CHRISTINE VAILLANCOURT	

SAMPLE PREPARATION

ALS CODE	DESCRIPTION
WEI- 21	Received Sample Weight
LOG- 22	Sample login - Rcd w/o BarCode
CRU- 31	Fine crushing - 70% <2mm
CRU- QC	Crushing QC Test
PUL- QC	Pulverizing QC Test
SPL- 21	Split sample - riffle splitter
PUL- 31	Pulverize split to 85% <75 um
LOG- 24	Pulp Login - Rcd w/o Barcode

ANALYTICAL PROCEDURES

ALS CODE	DESCRIPTION	INSTRUMENT
ME- ICP61	33 element four acid ICP- AES	ICP- AES
PGM- MS23	Pt, Pd, Au 30g FA ICP- MS	ICP- MS

To: NORTHERN SHIELD RESOURCES INC.
ATTN: CHRISTINE VAILLANCOURT
440 - 55 METCALFE STREET
OTTAWA ON K1P 6L5

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.

Signature:
Colin Ramshaw, Vancouver Laboratory Manager

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ALS Minerals

To: NORTHERN SHIELD RESOURCES INC.
440 - 55 METCALFE STREET
OTTAWA ON K1P 6L5

Finalized Date: 24- APR- 2011
Account: NORSHI

Project: WABASSI

CERTIFICATE OF ANALYSIS TM11053402

Sample Description	Method	WEI-21	PGM-MS23	PGM-MS23	PGM-MS23	ME-ICP61	ME-ICP61	ME-ICP61	ME-ICP61	ME-ICP61	ME-ICP61	ME-ICP61	ME-ICP61	ME-ICP61	ME-ICP61	ME-ICP61
	Analyte	Recvd Wt.	Au	Pt	Pd	Ag	Al	As	Ba	Be	Bi	Ca	Cd	Co	Cr	Cu
	Units	kg	ppm	ppm	ppm	ppm	%	ppm	ppm	ppm	ppm	%	ppm	ppm	ppm	ppm
	LOR	0.02	0.001	0.0005	0.001	0.5	0.01	5	10	0.5	2	0.01	0.5	1	1	1
393877		1.58	0.002	0.0049	0.006	<0.5	5.83	<5	40	1.0	<2	7.30	<0.5	62	657	623
393878		1.96	0.001	<0.0005	<0.001	<0.5	5.89	<5	50	<0.5	<2	6.80	<0.5	60	9	127
393879		1.75	<0.001	<0.0005	<0.001	0.5	6.83	<5	50	<0.5	<2	7.39	<0.5	56	27	127
393880		1.90	0.025	<0.0005	<0.001	<0.5	6.18	5	30	<0.5	4	6.97	<0.5	54	8	117
393881		1.92	<0.001	<0.0005	<0.001	<0.5	6.24	<5	40	<0.5	2	6.87	<0.5	60	5	137
393882		1.72	<0.001	0.0047	0.021	<0.5	7.35	5	40	<0.5	2	7.08	<0.5	65	66	346
393883		1.64	0.001	0.0086	0.023	1.0	7.64	<5	40	0.6	<2	7.30	<0.5	67	62	298
393884		1.49	<0.001	0.0007	0.002	0.5	7.59	7	40	0.5	4	7.35	<0.5	47	58	103
393885		1.43	<0.001	0.0005	<0.001	0.5	7.36	15	50	0.7	<2	6.96	<0.5	42	50	78
393886		1.95	<0.001	<0.0005	0.001	0.5	6.55	9	50	0.9	2	7.40	<0.5	53	11	91
393887		1.91	<0.001	0.0005	0.001	0.5	7.63	7	50	0.9	<2	6.97	<0.5	46	31	70
393888		1.99	<0.001	<0.0005	<0.001	<0.5	5.97	<5	50	1.2	<2	7.08	<0.5	57	8	113
393889		Not Recvd														
393890		0.05	0.084	0.196	0.705	2.8	8.34	40	340	0.7	<2	7.42	<0.5	62	141	4570
393891		2.14	<0.001	0.0010	0.002	<0.5	6.90	6	40	0.7	<2	6.51	<0.5	55	92	98
393892		1.20	<0.001	<0.0005	0.001	<0.5	6.14	<5	50	1.0	<2	5.29	<0.5	48	21	72
393893		1.93	<0.001	0.0005	0.001	<0.5	8.18	<5	50	0.7	<2	7.25	<0.5	47	55	94
393894		0.82	<0.001	0.0005	0.001	0.5	8.00	14	40	0.5	5	6.15	<0.5	73	39	447
393895		1.65	<0.001	<0.0005	<0.001	<0.5	5.63	<5	40	1.0	<2	7.96	<0.5	62	32	170
393896		1.36	0.011	0.0035	0.004	<0.5	6.22	<5	30	1.0	<2	7.92	<0.5	57	27	107
393897		2.20	0.001	<0.0005	<0.001	<0.5	3.47	<5	30	1.4	<2	7.69	<0.5	82	35	305
393898		1.98	<0.001	<0.0005	<0.001	<0.5	4.04	5	30	1.6	<2	6.45	<0.5	81	34	239
393899		1.88	<0.001	<0.0005	<0.001	<0.5	2.83	6	20	2.2	<2	6.09	<0.5	90	59	158
393900		1.94	0.001	0.0008	<0.001	<0.5	3.25	11	20	1.6	<2	7.59	<0.5	96	46	614
393901		1.51	<0.001	<0.0005	<0.001	<0.5	6.47	<5	30	0.9	<2	7.27	<0.5	52	69	166
393902		1.28	<0.001	<0.0005	<0.001	<0.5	7.07	6	40	0.8	<2	7.07	<0.5	48	69	84
393903		1.28	<0.001	0.0006	0.001	0.6	6.83	<5	40	0.8	<2	7.48	<0.5	55	87	156
393904		2.03	<0.001	<0.0005	<0.001	0.6	5.90	14	60	1.1	<2	6.95	0.5	57	26	98
393905		1.53	<0.001	0.0005	<0.001	0.6	5.47	12	60	1.1	<2	5.80	0.8	71	91	328
393906		1.66	0.001	0.0007	0.001	0.6	8.00	19	40	0.6	<2	4.96	<0.5	56	140	362
393907		1.65	0.014	0.0030	0.001	0.7	7.34	43	60	0.7	2	6.00	<0.5	71	137	407
393908		1.61	<0.001	<0.0005	<0.001	0.9	7.64	<5	110	0.6	<2	5.44	<0.5	63	141	638
393909		1.65	0.010	0.0044	0.007	1.2	7.87	26	90	0.5	4	5.74	<0.5	124	164	802
393910		0.05	<0.001	<0.0005	<0.001	<0.5	0.39	<5	20	<0.5	<2	0.03	<0.5	1	3	2
393911		1.72	0.001	0.0049	0.002	1.0	7.94	12	90	0.6	<2	5.22	<0.5	63	147	657
393912		1.36	0.004	0.0064	0.002	1.3	8.24	20	60	0.5	2	5.96	<0.5	78	142	1145
393913		1.51	0.007	0.0021	0.003	2.9	8.84	<5	60	0.6	<2	5.92	<0.5	82	92	2050
393914		1.71	0.004	0.0019	0.002	0.5	8.92	67	30	0.6	<2	7.08	<0.5	41	181	168
393915		1.82	0.005	0.0012	0.002	0.9	9.04	17	250	0.7	2	6.68	<0.5	49	133	380
393916		1.68	0.011	0.0019	0.001	1.2	8.89	14	140	0.7	<2	6.16	<0.5	35	57	325

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440 - 55 METCALFE STREET
OTTAWA ON K1P 6L5

Finalized Date: 24- APR- 2011
Account: NORSHI

Project: WABASSI

CERTIFICATE OF ANALYSIS TM11053402

Sample Description	Method Analyte Units LOR	ME- ICP61 Fe % 0.01	ME- ICP61 Ca ppm 10	ME- ICP61 In ppm 10	ME- ICP61 K % 0.01	ME- ICP61 La ppm 10	ME- ICP61 Mg % 0.01	ME- ICP61 Mn ppm 5	ME- ICP61 Mo ppm 1	ME- ICP61 Na % 0.01	ME- ICP61 Ni ppm 1	ME- ICP61 P ppm 10	ME- ICP61 Pb ppm 2	ME- ICP61 S % 0.01	ME- ICP61 Sb ppm 5	ME- ICP61 Sc ppm 1
393877		7.54	10	<10	0.37	20	7.45	1160	<1	1.87	305	1760	4	0.42	<5	19
393878		14.65	10	<10	0.20	<10	3.64	1965	<1	1.28	63	120	3	0.35	<5	54
393879		13.50	10	<10	0.23	<10	3.85	1860	<1	1.67	64	190	<2	0.35	<5	50
393880		13.95	10	<10	0.21	<10	3.57	1970	<1	1.62	53	570	<2	0.27	<5	52
393881		14.15	10	<10	0.26	<10	3.58	2110	<1	1.52	55	560	2	0.30	<5	52
393882		12.30	10	<10	0.24	<10	3.57	1960	<1	1.43	169	1350	7	0.89	<5	42
393883		11.95	20	<10	0.20	10	3.59	1975	1	1.59	196	1440	10	0.69	<5	43
393884		10.75	20	<10	0.21	10	3.55	1900	<1	1.59	80	1380	6	0.25	<5	44
393885		10.60	20	<10	0.23	10	3.30	1835	1	1.65	60	1090	7	0.16	<5	42
393886		13.85	20	<10	0.25	10	2.99	2160	<1	1.60	32	8680	6	0.24	<5	38
393887		12.15	20	<10	0.26	10	3.00	1965	<1	1.92	24	5570	11	0.17	6	36
393888		14.90	10	10	0.28	10	3.20	2390	1	1.43	37	>10000	7	0.26	<5	38
393889																
393890		8.40	10	<10	0.60	30	3.65	1260	<1	1.77	296	1880	22	0.89	<5	26
393891		13.45	10	<10	0.19	<10	3.55	2070	<1	1.63	98	780	7	0.24	7	40
393892		13.70	20	<10	0.24	10	3.33	2460	2	1.95	38	1010	21	0.18	<5	38
393893		11.65	20	<10	0.24	10	3.23	1890	1	1.95	55	2060	14	0.22	6	39
393894		12.55	20	<10	0.15	10	3.82	2110	1	1.76	89	3090	<2	1.00	7	30
393895		15.75	10	<10	0.19	10	3.31	2300	1	1.31	43	>10000	7	0.45	7	44
393896		15.25	10	<10	0.19	10	3.42	2300	1	1.43	31	9700	5	0.28	<5	46
393897		19.15	10	<10	0.11	10	3.85	2630	1	0.86	70	>10000	8	0.75	<5	63
393898		20.2	10	10	0.11	10	3.52	2550	1	0.98	65	>10000	6	0.64	5	44
393899		25.9	10	20	0.09	<10	3.04	2550	2	0.57	53	8270	8	0.43	14	54
393900		21.3	10	10	0.09	10	3.02	2370	1	0.73	99	>10000	9	1.29	<5	51
393901		13.70	20	<10	0.14	10	2.94	2100	1	1.52	35	6870	8	0.39	6	44
393902		13.65	10	10	0.16	10	3.12	2190	1	1.68	26	5100	5	0.24	<5	45
393903		14.45	20	<10	0.12	10	3.17	2190	<1	1.54	96	5940	10	0.44	<5	47
393904		16.65	20	<10	0.18	10	2.99	2380	1	1.28	34	5090	8	0.28	7	51
393905		18.15	10	<10	0.22	10	3.72	3320	<1	1.06	99	3060	9	0.94	7	43
393906		11.30	20	<10	0.12	10	4.42	1730	1	1.25	121	1110	9	0.99	5	26
393907		12.30	20	<10	0.18	10	4.07	2060	1	1.18	351	2830	7	1.24	5	31
393908		13.90	10	<10	0.27	10	4.25	2270	<1	1.05	378	2530	6	1.48	6	29
393909		14.20	10	<10	0.25	10	3.71	1730	2	1.15	772	1100	7	3.16	<5	28
393910		0.05	<10	<10	0.15	20	0.02	8	<1	0.01	<1	40	2	0.01	<5	1
393911		9.94	20	<10	0.20	10	3.57	1570	1	1.47	388	730	14	1.60	<5	22
393912		11.60	20	20	0.19	10	4.20	1935	<1	1.14	503	760	7	1.89	<5	25
393913		10.30	20	20	0.14	10	3.10	1460	1	1.73	669	560	18	2.70	<5	18
393914		8.32	20	<10	0.13	10	4.43	2180	<1	1.29	165	730	14	0.29	5	26
393915		9.37	20	<10	0.59	10	3.69	1820	<1	1.51	107	280	12	0.78	5	30
393916		8.41	20	<10	0.35	10	3.97	1930	<1	1.34	103	620	7	0.40	5	23

ALS Minerals

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To: NORTHERN SHIELD RESOURCES INC.
440 - 55 METCALFE STREET
OTTAWA ON K1P 6L5

Finalized Date: 24- APR- 2011
Account: NORSHI

Project: WABASSI

CERTIFICATE OF ANALYSIS TM11053402

Sample Description	Method / Analyte / Units / LOR	ME- ICP61 Sr ppm 1	ME- ICP61 Th ppm 20	ME- ICP61 Ti % 0.01	ME- ICP61 Tl ppm 10	ME- ICP61 U ppm 10	ME- ICP61 V ppm 1	ME- ICP61 W ppm 10	ME- ICP61 Zn ppm 2	ME- ICP61 Zr ppm 5
393877		211	<20	0.50	10	<10	117	<10	159	129
393878		293	<20	2.80	30	<10	508	<10	126	8
393879		307	<20	2.11	20	<10	414	<10	138	11
393880		169	<20	2.52	10	<10	387	<10	177	27
393881		182	<20	2.95	20	<10	371	<10	187	22
393882		169	<20	1.09	10	<10	219	<10	120	6
393883		192	20	1.05	<10	<10	214	<10	137	16
393884		182	<20	0.93	<10	<10	203	<10	147	18
393885		172	<20	0.94	<10	<10	215	<10	165	23
393886		189	30	1.97	<10	<10	308	<10	196	21
393887		200	30	1.74	<10	<10	237	<10	184	19
393888		171	40	2.87	<10	<10	391	<10	205	21
393889										
393890		622	<20	0.50	<10	<10	237	<10	134	50
393891		152	20	1.62	<10	<10	490	<10	188	14
393892		131	20	1.43	<10	<10	215	<10	216	55
393893		216	20	1.33	<10	<10	302	<10	183	15
393894		191	<20	0.70	<10	<10	151	<10	130	13
393895		157	40	2.69	<10	<10	402	<10	203	18
393896		169	40	2.37	<10	<10	373	<10	198	19
393897		92	50	3.67	<10	<10	486	<10	253	27
393898		117	60	4.06	<10	<10	513	<10	258	25
393899		76	80	5.93	<10	<10	992	<10	333	23
393900		104	60	4.44	<10	<10	674	<10	273	18
393901		184	30	2.13	<10	<10	267	<10	168	21
393902		194	20	1.73	<10	<10	254	<10	178	23
393903		190	30	1.93	<10	<10	270	<10	189	20
393904		141	40	2.70	<10	<10	331	<10	288	10
393905		94	40	2.69	<10	<10	300	<10	359	14
393906		170	<20	0.64	<10	<10	157	<10	307	22
393907		159	20	1.09	<10	<10	185	<10	313	10
393908		127	<20	1.02	<10	<10	208	<10	354	11
393909		163	<20	0.51	<10	<10	126	<10	246	16
393910		4	<20	0.02	<10	<10	2	<10	<2	64
393911		169	<20	0.36	<10	<10	93	<10	240	21
393912		151	<20	0.44	<10	<10	121	<10	284	12
393913		221	<20	0.31	<10	<10	102	<10	241	11
393914		206	<20	0.60	<10	<10	141	<10	307	7
393915		219	<20	0.55	<10	<10	253	<10	369	14
393916		199	<20	0.69	<10	<10	325	<10	399	18

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To: NORTHERN SHIELD RESOURCES INC.
440 - 55 METCALFE STREET
OTTAWA ON K1P 6L5

Finalized Date: 24- APR- 2011
Account: NORSHI

Project: WABASSI

CERTIFICATE OF ANALYSIS TM11053402

Sample Description	Method	WEI- 21	PGM- MS23	PGM- MS23	PGM- MS23	ME- ICP61	ME- ICP61	ME- ICP61	ME- ICP61	ME- ICP61	ME- ICP61	ME- ICP61	ME- ICP61	ME- ICP61	ME- ICP61	ME- ICP61
	Analyte	Recvd Wt.	Au	Pt	Pd	Ag	Al	As	Ba	Be	Bi	Ca	Cd	Co	Cr	Cu
	Units	kg	ppm	ppm	ppm	ppm	%	ppm	ppm	ppm	ppm	%	ppm	ppm	ppm	ppm
	LOR	0.02	0.001	0.0005	0.001	0.5	0.01	5	10	0.5	2	0.01	0.5	1	1	1
393917		1.66	0.004	0.0013	0.001	0.6	9.34	46	60	0.6	<2	6.35	<0.5	41	176	212
393918		1.68	0.004	0.0013	0.001	<0.5	9.20	15	90	0.5	<2	5.77	<0.5	38	201	189
393919		1.70	0.020	0.0034	0.003	1.7	3.58	<5	170	0.6	<2	12.40	<0.5	58	174	1455
393920		1.58	0.004	0.0030	0.003	0.9	5.78	<5	390	0.8	<2	7.12	<0.5	70	172	506
393921		1.74	0.018	0.0031	0.005	1.5	5.50	11	180	0.9	2	5.90	<0.5	72	144	1145
393922		1.65	0.021	0.0017	0.003	2.0	8.53	<5	200	0.6	<2	4.98	<0.5	60	171	963
393923		1.57	0.030	0.0010	0.001	2.0	5.07	6	160	<0.5	<2	8.96	<0.5	43	156	787
393924		1.60	0.003	0.0011	0.001	0.5	7.88	<5	610	0.8	<2	3.60	<0.5	35	218	120

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CERTIFICATE OF ANALYSIS TM11053402

Sample Description	Method / Analyte / Units / LOR	ME-ICP61 Fe % 0.01	ME-ICP61 Ga ppm 10	ME-ICP61 In ppm 10	ME-ICP61 K % 0.01	ME-ICP61 La ppm 10	ME-ICP61 Mg % 0.01	ME-ICP61 Mn ppm 5	ME-ICP61 Mo ppm 1	ME-ICP61 Na % 0.01	ME-ICP61 Ni ppm 1	ME-ICP61 P ppm 10	ME-ICP61 Pb ppm 2	ME-ICP61 S % 0.01	ME-ICP61 Sb ppm 5	ME-ICP61 Sc ppm 1
393917		6.83	20	<10	0.12	10	3.83	1580	<1	1.47	148	320	5	0.42	5	21
393918		8.94	20	<10	0.24	10	4.15	2020	3	1.50	173	560	10	0.35	6	18
393919		10.75	10	<10	0.54	40	3.42	3100	2	0.27	260	>10000	5	1.33	<5	47
393920		14.80	20	<10	1.14	10	4.27	2980	1	0.51	324	2170	11	1.21	6	37
393921		15.00	10	<10	0.65	10	3.72	2920	2	0.64	328	1130	5	1.38	5	41
393922		10.50	20	<10	0.57	10	3.35	1735	1	1.50	274	440	2	1.15	6	25
393923		8.85	10	<10	0.47	10	3.61	2840	209	0.33	143	1100	3	0.58	<5	42
393924		9.00	20	<10	1.37	10	3.23	1480	1	2.18	151	580	<2	0.25	6	23

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OTTAWA ON K1P 6L5

Finalized Date: 24- APR- 2011
Account: NORSHI

Project: WABASSI

CERTIFICATE OF ANALYSIS TM11053402

Sample Description	Method / Analyte / Units / LOR	ME-ICP61 Sr ppm 1	ME-ICP61 Th ppm 20	ME-ICP61 Ti % 0.01	ME-ICP61 Tl ppm 10	ME-ICP61 U ppm 10	ME-ICP61 V ppm 1	ME-ICP61 W ppm 10	ME-ICP61 Zn ppm 2	ME-ICP61 Zr ppm 5
393917		218	<20	0.30	<10	<10	140	<10	350	7
393918		200	<20	0.31	<10	<10	138	<10	456	6
393919		57	20	0.90	<10	<10	108	<10	360	39
393920		21	<20	0.88	<10	<10	135	<10	474	24
393921		23	<20	1.11	<10	<10	149	<10	447	27
393922		182	<20	0.37	<10	<10	134	<10	389	11
393923		86	<20	0.59	<10	<10	113	10	388	35
393924		187	<20	0.51	<10	<10	151	<10	339	17

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To: NORTHERN SHIELD RESOURCES INC.
440 - 55 METCALFE STREET
OTTAWA ON K1P 6L5

Finalized Date: 12- MAY- 2011
Account: NORSHI

CERTIFICATE TM11065602

Project: WABASSI
P.O. No.:
This report is for 111 Drill Core samples submitted to our lab in Timmins, ON, Canada on 18- APR- 2011.
The following have access to data associated with this certificate:

IAN BLISS	CHRISTINE VAILLANCOURT	

SAMPLE PREPARATION

ALS CODE	DESCRIPTION
WEI- 21	Received Sample Weight
LOG- 22	Sample login - Rcd w/o BarCode
CRU- 31	Fine crushing - 70% <2mm
CRU- QC	Crushing QC Test
PUL- QC	Pulverizing QC Test
SPL- 21	Split sample - riffle splitter
PUL- 31	Pulverize split to 85% <75 um
LOG- 24	Pulp Login - Rcd w/o Barcode

ANALYTICAL PROCEDURES

ALS CODE	DESCRIPTION	INSTRUMENT
ME- ICP61	33 element four acid ICP- AES	ICP- AES
ME- OG62	Ore Grade Elements - Four Acid	ICP- AES
Cu- OG62	Ore Grade Cu - Four Acid	VARIABLE
Zn- OG62	Ore Grade Zn - Four Acid	VARIABLE
S- IR08	Total Sulphur (Leco)	LECO
Au- ICP21	Au 30g FA ICP- AES Finish	ICP- AES

To: NORTHERN SHIELD RESOURCES INC.
ATTN: CHRISTINE VAILLANCOURT
440 - 55 METCALFE STREET
OTTAWA ON K1P 6L5

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.

Signature:
Colin Ramshaw, Vancouver Laboratory Manager

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440 - 55 METCALFE STREET
OTTAWA ON K1P 6L5

Finalized Date: 12- MAY- 2011
Account: NORSHI

Project: WABASSI

CERTIFICATE OF ANALYSIS TM11065602

Sample Description	Method / Analyte / Units / LOR	WEI- 21	ME- ICP61	ME- ICP61	ME- ICP61	ME- ICP61	ME- ICP61	ME- ICP61	ME- ICP61	ME- ICP61	ME- ICP61	ME- ICP61	ME- ICP61	ME- ICP61	ME- ICP61	ME- ICP61
	Analyte	Recvd Wt.	Ag	Al	As	Ba	Be	Bi	Ca	Cd	Co	Cr	Cu	Fe	Ga	In
	Units	kg	ppm	%	ppm	ppm	ppm	ppm	%	ppm	ppm	ppm	ppm	%	ppm	ppm
	LOR	0.02	0.5	0.01	5	10	0.5	2	0.01	0.5	1	1	1	0.01	10	10
393925		0.99	<0.5	8.45	6	60	1.6	<2	5.04	<0.5	34	153	13	6.28	10	<10
393926		0.80	1.2	8.17	6	80	0.8	<2	5.74	0.6	27	107	731	5.42	20	<10
393927		1.54	1.1	7.91	5	30	0.5	2	5.49	<0.5	31	79	569	8.00	20	<10
393928		1.71	0.6	7.95	<5	50	0.5	<2	5.42	<0.5	34	96	400	7.87	20	<10
393929		1.63	1.4	7.81	5	60	0.6	3	5.18	<0.5	35	98	530	7.41	20	<10
393930		0.05	<0.5	0.37	<5	20	<0.5	<2	0.03	<0.5	1	3	2	0.04	<10	<10
393931		1.60	<0.5	7.39	<5	100	0.8	<2	0.23	<0.5	7	32	52	7.77	20	<10
393932		1.02	4.0	2.99	<5	20	<0.5	4	0.82	<0.5	60	1	3530	30.7	10	10
393933		1.61	1.8	6.19	<5	110	1.3	<2	0.72	<0.5	1	2	967	9.79	20	10
393934		1.59	0.8	5.20	<5	130	0.7	2	0.39	<0.5	13	2	639	11.60	20	<10
393935		1.41	1.1	6.96	<5	200	1.7	<2	0.84	<0.5	<1	2	593	10.45	30	<10
393936		1.61	1.3	4.92	<5	200	1.3	<2	0.64	<0.5	4	3	950	5.84	10	<10
393937		1.61	0.9	6.59	<5	220	0.7	2	0.40	11.0	7	2	367	8.22	20	<10
393938		1.72	0.8	4.61	<5	60	<0.5	<2	0.05	8.4	10	2	426	7.54	20	<10
393939		1.59	0.6	6.10	<5	370	<0.5	<2	0.27	13.6	8	2	288	5.81	20	<10
393940		1.62	0.5	6.27	<5	320	0.7	<2	0.81	7.1	6	5	210	5.42	20	<10
393941		1.61	0.9	4.91	<5	110	0.6	2	0.95	22.6	10	4	506	5.94	20	<10
393942		1.62	2.6	6.88	<5	250	0.9	<2	1.34	10.1	8	2	1965	11.55	20	<10
393943		1.62	2.9	6.58	<5	280	1.7	<2	1.09	<0.5	7	9	620	4.32	20	<10
393944		1.56	1.0	5.44	<5	260	1.4	<2	0.48	<0.5	7	4	109	3.85	20	<10
393945		1.55	7.5	6.09	6	60	<0.5	<2	0.13	0.5	14	3	1300	8.15	20	<10
393946		1.60	4.6	5.58	13	20	<0.5	<2	0.12	<0.5	22	3	1075	8.26	20	<10
393947		1.52	25.5	7.35	6	170	0.5	85	0.09	0.6	23	4	440	6.97	20	<10
393948		1.57	8.1	7.02	<5	130	<0.5	19	0.07	0.5	23	4	667	6.66	20	<10
393949		1.52	0.6	6.34	<5	350	0.6	2	0.27	<0.5	4	6	65	3.96	20	<10
393950		0.05	2.0	8.42	29	340	0.6	<2	7.54	0.6	61	135	4660	8.67	20	<10
393951		1.58	1.0	5.81	5	280	0.5	<2	0.25	<0.5	10	6	205	4.73	20	<10
393952		1.51	0.6	6.01	<5	290	<0.5	<2	0.19	<0.5	14	5	152	4.84	20	<10
393953		1.45	0.6	6.16	5	280	<0.5	2	0.12	<0.5	15	4	143	5.28	20	<10
393954		1.64	0.7	6.30	<5	300	<0.5	3	0.11	<0.5	18	4	170	5.63	20	<10
393955		1.57	0.7	5.34	<5	210	<0.5	<2	0.14	<0.5	11	4	278	5.27	20	<10
393956		1.63	0.5	6.17	<5	380	1.0	<2	0.44	<0.5	6	3	78	3.89	20	<10
393957		1.59	4.4	7.49	<5	100	0.5	<2	1.77	<0.5	19	4	936	10.60	20	<10
393958		1.59	0.5	6.94	<5	110	<0.5	<2	1.33	<0.5	15	3	66	9.64	20	<10
393959		1.63	<0.5	7.37	<5	430	0.6	<2	1.85	<0.5	13	4	188	8.59	30	<10
393960		1.66	0.5	6.83	<5	340	1.0	<2	0.76	<0.5	15	3	328	7.00	20	<10
393961		1.56	<0.5	6.15	<5	350	1.3	<2	1.26	<0.5	7	4	122	3.71	20	<10
393962		1.52	<0.5	6.20	<5	310	1.3	<2	1.37	<0.5	3	4	34	2.80	20	<10
393963		1.56	<0.5	6.84	<5	630	1.5	<2	2.56	<0.5	3	4	71	3.30	20	<10
393964		1.64	<0.5	7.20	6	580	1.5	<2	3.04	<0.5	9	5	240	4.69	20	<10

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440 - 55 METCALFE STREET
OTTAWA ON K1P 6L5

Finalized Date: 12- MAY- 2011
Account: NORSHI

Project: WABASSI

CERTIFICATE OF ANALYSIS TM11065602

Sample Description	Method / Analyte / Units / LOR	ME-ICP61 K % 0.01	ME-ICP61 La ppm 10	ME-ICP61 Mg % 0.01	ME-ICP61 Mn ppm 5	ME-ICP61 Mo ppm 1	ME-ICP61 Na % 0.01	ME-ICP61 Ni ppm 1	ME-ICP61 P ppm 10	ME-ICP61 Pb ppm 2	ME-ICP61 S % 0.01	ME-ICP61 Sb ppm 5	ME-ICP61 Sc ppm 1	ME-ICP61 Sr ppm 1	ME-ICP61 Th ppm 20	ME-ICP61 Ti % 0.01
393925		0.29	10	3.56	1830	2	4.18	118	1610	11	<0.01	<5	20	438	<20	0.99
393926		0.37	20	3.51	2020	<1	3.18	109	650	19	0.10	<5	24	416	<20	0.60
393927		0.21	20	3.21	1595	<1	2.36	96	740	97	0.08	5	27	198	<20	0.75
393928		0.24	20	3.38	1565	2	2.42	92	630	81	0.06	<5	27	198	<20	0.60
393929		0.29	20	3.53	1545	1	2.36	92	560	75	0.11	<5	25	200	<20	0.53
393930		0.15	30	0.01	6	1	0.01	3	40	2	0.01	<5	1	5	<20	0.02
393931		0.62	30	6.54	791	1	0.12	32	530	14	0.11	<5	19	11	<20	0.15
393932		0.19	20	2.97	939	4	0.01	22	40	16	>10.0	<5	5	7	<20	0.04
393933		1.10	30	4.77	752	3	0.61	4	160	45	1.72	<5	7	40	<20	0.16
393934		1.01	30	3.78	567	4	0.40	7	130	36	4.18	<5	7	27	<20	0.13
393935		1.95	40	5.47	845	2	1.04	3	170	62	1.56	<5	6	61	<20	0.24
393936		1.32	40	2.21	315	2	0.80	7	60	54	1.87	<5	7	45	<20	0.12
393937		1.98	50	4.87	677	2	0.53	6	100	41	1.23	<5	8	37	<20	0.20
393938		0.50	30	4.28	622	2	0.06	3	20	27	1.22	<5	4	6	<20	0.10
393939		1.67	30	2.89	458	2	0.48	5	30	36	1.05	<5	6	37	<20	0.15
393940		1.73	30	2.67	472	2	0.91	14	170	64	0.68	<5	9	65	<20	0.20
393941		0.92	20	1.99	390	1	1.19	5	50	72	1.94	<5	5	72	<20	0.13
393942		2.84	30	4.54	1050	1	0.80	4	660	63	2.13	<5	11	48	<20	0.33
393943		1.86	30	2.42	295	2	1.12	15	280	59	1.58	<5	13	74	<20	0.18
393944		1.54	40	2.50	289	2	0.45	6	240	36	1.27	<5	8	29	<20	0.12
393945		1.51	10	8.02	513	2	0.03	9	540	8	3.77	<5	13	3	<20	0.14
393946		0.56	20	6.76	514	1	0.02	9	360	12	4.23	<5	12	3	<20	0.09
393947		1.59	40	6.66	532	2	0.07	10	300	121	2.14	<5	14	9	<20	0.20
393948		0.89	50	6.65	535	2	0.05	10	270	81	1.79	<5	14	8	<20	0.18
393949		1.87	30	3.31	389	4	0.15	9	270	10	0.15	<5	11	18	<20	0.18
393950		0.59	30	3.66	1305	1	1.78	285	1820	18	1.03	<5	27	633	<20	0.50
393951		1.46	30	3.27	383	4	0.11	10	340	13	0.89	<5	12	14	<20	0.16
393952		1.54	30	3.36	361	2	0.09	8	410	11	0.98	<5	13	12	<20	0.18
393953		1.60	30	3.79	368	2	0.12	9	400	9	1.04	<5	13	13	<20	0.20
393954		1.50	40	3.69	365	3	0.08	10	380	15	1.37	<5	14	12	<20	0.19
393955		1.04	30	3.52	366	3	0.07	10	330	12	0.80	<5	11	9	<20	0.14
393956		1.92	30	2.80	346	2	0.33	6	290	15	0.19	<5	11	25	<20	0.17
393957		0.97	40	6.84	1360	2	0.39	10	370	12	0.47	<5	14	32	<20	0.37
393958		1.13	30	6.77	1175	3	0.14	7	370	3	0.01	<5	13	14	<20	0.28
393959		2.15	40	2.95	1235	2	0.11	6	270	10	0.38	<5	13	24	<20	0.32
393960		1.54	30	2.40	601	2	0.68	7	210	9	0.68	<5	9	35	<20	0.22
393961		1.78	80	1.11	381	2	1.31	4	890	9	0.32	<5	6	60	20	0.13
393962		1.55	40	1.19	415	2	1.50	2	90	12	0.07	<5	6	60	<20	0.12
393963		3.05	30	2.09	930	4	0.37	4	190	7	0.16	<5	10	41	<20	0.18
393964		2.68	20	3.34	1125	2	0.15	5	320	10	0.59	<5	12	35	<20	0.17

ALS Minerals

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To: NORTHERN SHIELD RESOURCES INC.
440 - 55 METCALFE STREET
OTTAWA ON K1P 6L5

Finalized Date: 12- MAY- 2011
Account: NORSHI

Project: WABASSI

CERTIFICATE OF ANALYSIS TM11065602

Sample Description	Method	ME- ICP61	ME- ICP61	ME- ICP61	ME- ICP61	ME- ICP61	ME- ICP61	Cu- OG62	Zn- OG62	S- IR08	Au- ICP21
	Analyte	Ti	U	V	W	Zn	Zr	Cu	Zn	S	Au
	Units	ppm	ppm	ppm	ppm	ppm	ppm	%	%	%	ppm
	LOR	10	10	1	10	2	5	0.001	0.001	0.01	0.001
393925		<10	10	151	<10	153	102				<0.001
393926		<10	<10	148	<10	168	90				0.012
393927		<10	<10	211	<10	259	101				0.008
393928		<10	<10	183	<10	243	89				0.005
393929		<10	<10	162	<10	262	91				0.006
393930		<10	<10	1	<10	3	57				<0.001
393931		<10	<10	115	<10	728	191				<0.001
393932		<10	<10	9	<10	371	137			22.0	0.003
393933		<10	<10	10	<10	591	272				0.002
393934		<10	<10	8	<10	665	222				0.003
393935		10	<10	18	<10	861	488				0.002
393936		<10	<10	10	<10	408	277				0.004
393937		10	<10	22	<10	5150	294				0.005
393938		<10	<10	6	<10	3840	166				0.002
393939		<10	<10	8	<10	5490	223				0.004
393940		<10	<10	38	<10	3330	207				0.003
393941		<10	<10	7	<10	8810	158				0.004
393942		10	<10	26	<10	5490	251				0.010
393943		<10	<10	65	<10	369	199				0.057
393944		<10	<10	20	<10	267	270				0.012
393945		<10	<10	48	<10	625	221				0.086
393946		<10	<10	43	<10	529	213				0.067
393947		<10	<10	58	<10	432	350				0.141
393948		<10	<10	55	<10	414	342				0.057
393949		<10	<10	50	<10	186	346				<0.001
393950		<10	<10	242	<10	139	51				0.162
393951		<10	<10	51	<10	178	265				0.004
393952		<10	<10	55	<10	177	255				0.006
393953		<10	<10	57	<10	196	273				0.010
393954		<10	<10	61	<10	201	266				0.007
393955		<10	<10	45	<10	195	240				0.006
393956		<10	<10	39	<10	146	333				0.002
393957		<10	<10	60	<10	304	329				0.087
393958		<10	<10	44	<10	282	289				0.005
393959		<10	<10	45	<10	139	317				0.001
393960		<10	<10	25	<10	122	287				<0.001
393961		<10	<10	13	<10	54	218				<0.001
393962		<10	<10	3	<10	55	221				<0.001
393963		<10	<10	30	<10	49	305				<0.001
393964		<10	<10	47	<10	79	311				<0.001

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440 – 55 METCALFE STREET
OTTAWA ON K1P 6L5

Finalized Date: 12- MAY- 2011
Account: NORSHI

Project: WABASSI

CERTIFICATE OF ANALYSIS TM11065602

Sample Description	Method	WEI- 21	ME- ICP61	ME- ICP61	ME- ICP61	ME- ICP61	ME- ICP61	ME- ICP61	ME- ICP61	ME- ICP61	ME- ICP61	ME- ICP61	ME- ICP61	ME- ICP61	ME- ICP61	ME- ICP61
	Analyte	Recvd Wt.	Ag	Al	As	Ba	Be	Bi	Ca	Cd	Co	Cr	Cu	Fe	Ga	In
	Units	kg	ppm	%	ppm	ppm	ppm	ppm	%	ppm	ppm	ppm	ppm	%	ppm	ppm
	LOR	0.02	0.5	0.01	5	10	0.5	2	0.01	0.5	1	1	1	0.01	10	10
393965		1.65	0.8	5.70	<5	360	1.0	<2	6.89	<0.5	16	3	400	7.12	20	<10
393966		1.42	0.5	7.83	<5	530	1.3	<2	0.17	<0.5	13	5	442	6.43	30	<10
393967		1.56	0.5	7.27	<5	460	1.0	<2	1.66	<0.5	7	4	358	5.54	30	<10
393968		1.17	4.9	6.78	<5	560	1.2	5	0.79	<0.5	8	5	2320	3.23	20	<10
393969		1.21	5.0	3.67	<5	280	0.6	3	1.85	<0.5	4	3	1720	2.24	10	<10
393970		0.05	<0.5	0.38	<5	20	<0.5	<2	0.02	<0.5	<1	4	3	0.06	<10	<10
393971		1.58	1.2	4.55	<5	200	0.8	<2	0.31	<0.5	13	4	763	6.34	10	<10
393972		1.57	2.4	4.74	7	80	0.5	<2	0.37	<0.5	8	4	1270	6.43	10	<10
393973		1.59	0.6	4.83	<5	210	0.7	<2	0.14	<0.5	9	4	393	5.50	20	<10
393974		1.64	<0.5	5.77	9	310	1.1	<2	0.28	<0.5	21	5	268	7.39	20	<10
393975		1.59	<0.5	6.69	6	550	1.3	<2	0.18	<0.5	21	5	196	5.78	20	<10
393976		1.64	<0.5	5.05	11	110	<0.5	<2	0.09	<0.5	27	3	263	8.73	20	<10
393977		1.63	<0.5	6.45	8	330	0.6	<2	0.11	<0.5	21	3	134	8.07	20	<10
393978		1.51	<0.5	5.17	<5	330	0.6	<2	0.18	<0.5	7	5	88	4.92	20	<10
393979		1.53	<0.5	5.38	5	310	0.6	<2	0.37	<0.5	11	3	160	5.50	20	<10
393980		1.58	0.9	5.60	<5	510	<0.5	<2	0.51	<0.5	7	4	604	3.70	20	<10
393981		1.54	1.2	5.09	<5	400	0.6	<2	0.43	<0.5	9	9	696	4.06	20	<10
393982		1.57	1.9	5.31	<5	290	0.7	3	1.06	<0.5	7	6	1490	3.69	20	<10
393983		1.34	5.0	4.26	<5	120	<0.5	3	0.17	<0.5	12	3	1495	6.49	20	<10
393984		1.36	8.2	4.48	<5	50	<0.5	29	0.36	0.5	13	3	1940	7.10	20	<10
393985		1.17	2.1	3.84	<5	80	<0.5	3	0.05	<0.5	11	5	586	5.79	20	<10
393986		1.10	4.0	3.58	<5	70	<0.5	7	0.10	<0.5	11	4	1230	5.28	10	<10
393987		1.57	0.9	4.08	<5	220	<0.5	15	0.04	<0.5	6	5	34	3.79	20	<10
393988		1.59	0.7	4.18	<5	250	<0.5	3	0.05	<0.5	6	4	52	3.92	20	<10
393989		1.60	<0.5	4.03	<5	210	<0.5	<2	0.14	<0.5	6	5	50	3.82	10	<10
393990		0.05	2.0	8.49	30	340	0.6	<2	7.55	0.6	64	130	4730	8.63	20	<10
393991		1.62	5.2	4.98	<5	60	0.5	20	0.70	<0.5	12	3	1010	6.95	20	<10
393992		1.64	2.4	5.87	6	50	<0.5	<2	1.56	<0.5	13	<1	1085	7.83	20	<10
393993		1.62	0.6	5.19	<5	120	<0.5	<2	1.63	<0.5	3	1	71	5.27	20	<10
393994		1.53	8.0	6.96	9	100	1.1	<2	3.65	<0.5	22	54	2030	9.03	20	<10
393995		1.58	0.7	4.59	<5	190	0.5	<2	2.51	<0.5	7	2	215	4.57	20	<10
393996		1.51	0.6	5.64	<5	180	0.7	<2	0.77	<0.5	6	2	17	4.80	20	<10
393997		1.61	3.3	4.90	<5	220	0.7	<2	0.34	0.5	12	3	496	4.11	20	<10
393998		1.65	33.3	5.78	5	80	<0.5	<2	1.09	1.6	22	1	3920	9.29	30	<10
393999		1.57	79.6	4.39	<5	20	<0.5	<2	0.52	3.5	33	1	>10000	9.19	20	<10
394000		1.55	29.9	4.26	<5	30	<0.5	<2	0.59	1.8	11	1	5300	6.53	10	<10
215901		1.59	8.1	5.07	5	10	<0.5	<2	0.32	0.5	26	1	1010	8.01	20	<10
215902		1.49	5.6	4.87	<5	30	<0.5	<2	0.55	<0.5	7	1	716	6.11	20	<10
215903		1.54	0.7	4.02	<5	10	<0.5	<2	0.08	<0.5	<1	2	45	4.84	10	<10
215904		1.50	6.6	7.13	10	360	2.1	<2	1.52	1.2	11	6	799	5.88	20	<10

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440 - 55 METCALFE STREET
OTTAWA ON K1P 6L5

Finalized Date: 12- MAY- 2011
Account: NORSHI

Project: WABASSI

CERTIFICATE OF ANALYSIS TM11065602

Sample Description	Method	ME-ICP61	ME-ICP61	ME-ICP61	ME-ICP61	ME-ICP61	ME-ICP61	ME-ICP61	ME-ICP61	ME-ICP61	ME-ICP61	ME-ICP61	ME-ICP61	ME-ICP61	ME-ICP61	ME-ICP61
	Analyte	K	La	Mg	Mn	Mo	Na	Ni	P	Pb	S	Sb	Sc	Sr	Th	Ti
	Units	%	ppm	%	ppm	ppm	%	ppm	ppm	ppm	%	ppm	ppm	ppm	ppm	%
	LOR	0.01	10	0.01	5	1	0.01	1	10	2	0.01	5	1	1	20	0.01
393965		1.66	20	5.68	1895	3	0.10	6	250	13	1.26	<5	9	62	<20	0.12
393966		2.31	20	3.72	331	1	0.12	4	430	9	0.88	<5	14	15	<20	0.20
393967		2.08	20	4.34	730	2	0.11	4	340	9	0.38	<5	12	24	<20	0.19
393968		2.66	40	1.46	376	2	0.21	3	140	8	0.42	<5	8	28	<20	0.21
393969		1.46	20	1.07	565	1	0.12	<1	60	6	0.28	<5	4	20	<20	0.09
393970		0.15	20	0.01	7	1	0.01	1	40	2	0.01	<5	<1	4	<20	0.02
393971		0.81	20	3.10	374	1	0.15	3	250	4	0.98	<5	9	11	<20	0.13
393972		0.45	20	4.26	496	<1	0.06	3	220	2	0.56	<5	8	6	<20	0.13
393973		0.87	10	3.62	345	1	0.10	3	220	4	0.62	<5	9	6	<20	0.13
393974		1.34	20	3.48	319	1	0.21	6	320	6	3.24	<5	12	13	<20	0.16
393975		2.11	20	2.69	237	1	0.19	14	240	6	2.33	<5	13	14	<20	0.15
393976		0.64	10	4.51	376	3	0.02	2	270	5	3.68	<5	9	3	<20	0.11
393977		1.18	20	4.54	382	3	0.09	7	230	5	2.67	<5	10	8	<20	0.14
393978		1.31	20	3.10	317	1	0.07	5	210	2	0.44	<5	11	7	<20	0.14
393979		1.35	30	3.25	364	1	0.12	3	230	4	0.59	<5	12	11	<20	0.15
393980		2.52	20	0.87	344	2	0.20	5	220	3	0.09	<5	7	12	<20	0.20
393981		1.87	20	1.00	300	1	0.56	4	210	4	0.13	<5	6	21	<20	0.15
393982		1.44	20	0.80	298	1	1.28	3	300	6	0.29	<5	6	45	<20	0.15
393983		0.90	30	3.28	440	3	0.11	2	150	71	0.18	<5	5	6	<20	0.14
393984		0.36	40	3.55	556	2	0.06	<1	310	79	0.25	<5	5	5	<20	0.14
393985		0.54	30	3.00	430	2	0.04	<1	50	30	0.07	<5	4	3	<20	0.11
393986		0.36	30	2.47	403	2	0.08	<1	80	42	0.16	<5	4	5	<20	0.10
393987		1.00	20	1.74	290	1	0.07	<1	60	21	<0.01	<5	5	9	<20	0.11
393988		1.10	20	1.78	281	1	0.12	<1	40	21	0.01	<5	5	10	<20	0.11
393989		0.93	20	1.90	293	<1	0.20	<1	50	27	0.02	<5	5	13	<20	0.10
393990		0.59	20	3.68	1320	1	1.77	302	1880	19	0.99	<5	26	640	<20	0.50
393991		0.40	30	3.39	589	1	0.44	<1	70	36	0.14	<5	5	22	<20	0.12
393992		0.50	30	6.46	1150	1	0.01	8	110	32	0.36	<5	7	9	<20	0.09
393993		0.52	30	4.45	747	1	0.29	5	50	29	0.09	<5	7	25	<20	0.07
393994		1.02	20	4.79	921	<1	0.58	33	750	500	0.84	26	16	37	<20	0.48
393995		1.07	20	3.75	792	1	0.25	1	50	33	0.20	<5	5	25	<20	0.09
393996		0.69	20	3.22	555	<1	0.88	2	70	103	0.01	<5	6	67	<20	0.11
393997		0.77	20	2.88	432	1	0.55	1	100	203	0.15	<5	5	44	<20	0.07
393998		0.98	20	9.10	1160	<1	0.02	<1	260	27	1.45	<5	6	6	<20	0.14
393999		0.25	20	6.67	764	1	0.01	3	140	47	3.23	<5	5	4	<20	0.10
394000		0.17	40	6.08	778	2	0.01	6	80	37	1.30	<5	4	6	<20	0.11
215901		0.14	30	7.75	765	3	0.01	4	40	30	2.29	<5	5	3	<20	0.12
215902		0.34	30	6.26	852	2	0.01	2	40	25	0.56	<5	5	4	<20	0.12
215903		0.15	20	4.50	582	<1	0.01	3	50	23	0.03	<5	4	1	<20	0.09
215904		2.13	20	3.17	713	<1	1.68	24	340	618	0.73	<5	14	110	<20	0.32

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Sample Description	Method	ME- ICP61	ME- ICP61	ME- ICP61	ME- ICP61	ME- ICP61	ME- ICP61	Cu- OG62	Zn- OG62	S- IR08	Au- ICP21
	Analyte	Ti	U	V	W	Zn	Zr	Cu	Zn	S	Au
	Units	ppm	ppm	ppm	ppm	ppm	ppm	%	%	%	ppm
	LOR	10	10	1	10	2	5	0.001	0.001	0.01	0.001
393965		<10	<10	42	<10	104	245				<0.001
393966		<10	<10	72	<10	129	365				<0.001
393967		<10	<10	50	<10	126	360				<0.001
393968		<10	<10	16	<10	88	411				0.021
393969		<10	<10	3	<10	50	210				0.023
393970		<10	<10	2	<10	<2	64				<0.001
393971		<10	<10	24	<10	127	144				0.009
393972		<10	<10	27	<10	174	146				0.021
393973		<10	<10	24	<10	128	127				0.003
393974		<10	<10	43	<10	118	164				0.001
393975		<10	<10	55	<10	92	233				<0.001
393976		<10	<10	32	<10	149	169				<0.001
393977		<10	<10	38	<10	150	270				0.001
393978		<10	<10	32	<10	109	178				<0.001
393979		<10	<10	29	<10	119	196				<0.001
393980		<10	<10	30	<10	82	236				0.014
393981		<10	<10	16	<10	87	251				0.018
393982		<10	<10	8	<10	98	242				0.044
393983		<10	<10	3	<10	115	213				0.087
393984		<10	<10	3	<10	129	213				0.132
393985		<10	<10	1	<10	109	220				0.020
393986		<10	<10	1	<10	97	205				0.062
393987		<10	<10	2	<10	85	213				0.003
393988		<10	<10	1	<10	89	248				0.002
393989		<10	<10	1	<10	93	238				0.003
393990		<10	<10	241	<10	135	51				0.119
393991		<10	<10	2	<10	165	282				0.028
393992		<10	<10	14	<10	284	343				0.015
393993		<10	<10	12	<10	194	317				0.008
393994		<10	<10	110	<10	228	176				0.037
393995		<10	<10	3	<10	171	256				0.005
393996		<10	<10	5	<10	280	338				<0.001
393997		<10	<10	2	<10	269	286				0.008
393998		<10	<10	3	<10	608	326				0.060
393999		<10	<10	2	<10	756	252	1.005			0.134
394000		<10	<10	2	<10	506	240				0.061
215901		<10	<10	2	<10	416	301				0.026
215902		<10	<10	2	<10	380	291				0.020
215903		<10	<10	2	<10	298	235				0.001
215904		<10	<10	90	<10	469	170				0.023

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ALS Minerals

To: NORTHERN SHIELD RESOURCES INC.
440 – 55 METCALFE STREET
OTTAWA ON K1P 6L5

Finalized Date: 12- MAY- 2011
Account: NORSHI

Project: WABASSI

CERTIFICATE OF ANALYSIS TM11065602

Sample Description	Method	WEI-21	ME-ICP61	ME-ICP61	ME-ICP61	ME-ICP61	ME-ICP61	ME-ICP61	ME-ICP61	ME-ICP61	ME-ICP61	ME-ICP61	ME-ICP61	ME-ICP61	ME-ICP61	ME-ICP61
	Analyte	Recvd Wt.	Ag	Al	As	Ba	Be	Bi	Ca	Cd	Co	Cr	Cu	Fe	Ga	In
	Units	kg	ppm	%	ppm	ppm	ppm	ppm	%	ppm	ppm	ppm	ppm	%	ppm	ppm
	LOR	0.02	0.5	0.01	5	10	0.5	2	0.01	0.5	1	1	1	0.01	10	10
215905		1.48	5.0	6.35	6	120	2.1	<2	2.21	1.2	2	7	466	2.14	10	<10
215906		1.51	4.5	6.07	9	100	2.1	<2	1.02	1.0	9	5	281	1.97	10	<10
215907		1.62	<0.5	5.33	<5	80	0.5	<2	1.29	<0.5	14	3	80	5.78	20	<10
215908		1.65	0.5	5.17	5	200	0.8	<2	0.61	<0.5	7	4	98	5.54	20	<10
215909		1.61	0.9	5.54	<5	200	1.3	<2	0.44	<0.5	11	3	129	4.63	20	<10
215910		0.05	<0.5	0.39	<5	20	<0.5	<2	0.02	<0.5	<1	3	3	0.05	<10	<10
215911		1.58	0.6	5.72	<5	110	2.1	<2	0.87	<0.5	1	7	96	3.17	20	<10
215912		1.56	0.9	5.83	5	90	1.9	<2	0.83	<0.5	6	5	140	3.77	20	<10
215913		1.49	0.6	5.63	<5	210	0.8	<2	0.25	<0.5	15	4	108	5.17	20	<10
215914		1.59	0.9	5.89	<5	170	1.4	<2	0.56	<0.5	11	4	244	5.41	20	<10
215915		1.61	1.4	5.68	<5	260	0.7	<2	0.25	<0.5	17	8	293	5.85	20	<10
215916		1.68	1.4	5.95	<5	240	0.8	<2	0.30	<0.5	27	7	394	7.65	20	<10
215917		0.82	1.3	5.81	<5	70	1.0	<2	0.56	0.6	3	4	235	2.93	10	<10
215918		1.59	2.2	5.42	<5	120	1.9	<2	0.68	<0.5	10	8	490	5.33	10	<10
215919		1.58	0.9	5.08	<5	260	0.6	<2	0.16	<0.5	15	2	105	4.89	20	<10
215920		1.53	1.3	4.81	7	100	<0.5	<2	0.11	0.6	14	3	270	6.62	10	<10
215921		1.30	5.2	4.79	<5	20	<0.5	<2	0.08	0.9	6	3	2890	7.41	20	<10
215922		1.60	2.3	4.39	<5	50	<0.5	<2	1.17	<0.5	7	4	521	7.55	10	<10
215923		1.57	4.3	4.28	<5	60	0.5	<2	1.25	0.9	5	8	756	8.11	10	<10
215924		1.57	2.1	4.45	<5	50	<0.5	<2	0.27	3.7	9	3	618	8.46	10	<10
215925		1.53	1.4	4.48	<5	40	<0.5	<2	0.03	11.7	4	3	516	7.23	10	<10
215926		1.75	7.7	4.31	<5	60	<0.5	2	0.03	143.0	18	1	3140	17.20	10	<10
215927		0.96	4.5	4.01	5	40	<0.5	4	0.02	166.5	27	1	1630	23.3	10	<10
215928		2.07	5.3	2.68	7	30	<0.5	5	0.03	229	64	<1	948	31.4	<10	<10
215929		1.63	9.8	5.02	<5	110	0.9	3	0.34	38.9	2	4	3490	23.0	10	<10
215930		0.05	<0.5	0.38	<5	20	<0.5	<2	0.02	<0.5	<1	3	14	0.09	<10	<10
215931		1.61	1.4	6.03	<5	210	<0.5	<2	0.63	7.1	11	16	511	13.15	20	<10
215932		1.58	1.4	6.11	5	70	<0.5	<2	0.46	0.5	15	5	233	10.40	20	<10
215933		1.45	2.6	5.95	<5	110	0.7	<2	0.12	0.8	10	7	147	7.85	20	<10
215934		1.46	0.8	6.38	<5	80	0.7	<2	0.25	0.5	7	8	66	7.49	20	<10
215935		1.49	<0.5	6.10	<5	340	0.7	<2	0.26	<0.5	<1	4	16	4.65	20	<10

ALS Minerals

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To: NORTHERN SHIELD RESOURCES INC.
440 - 55 METCALFE STREET
OTTAWA ON K1P 6L5

Finalized Date: 12- MAY- 2011
Account: NORSHI

Project: WABASSI

CERTIFICATE OF ANALYSIS TM11065602

Sample Description	Method Analyte Units LOR	ME- ICP61 K % 0.01	ME- ICP61 La ppm 10	ME- ICP61 Mg % 0.01	ME- ICP61 Mn ppm 5	ME- ICP61 Mo ppm 1	ME- ICP61 Na % 0.01	ME- ICP61 Ni ppm 1	ME- ICP61 P ppm 10	ME- ICP61 Pb ppm 2	ME- ICP61 S % 0.01	ME- ICP61 Sb ppm 5	ME- ICP61 Sc ppm 1	ME- ICP61 Sr ppm 1	ME- ICP61 Th ppm 20	ME- ICP61 Ti % 0.01
215905		0.86	30	0.84	669	<1	3.23	5	470	554	0.12	<5	8	150	<20	0.29
215906		0.56	30	0.85	371	<1	3.50	4	190	533	0.14	<5	5	129	<20	0.20
215907		1.30	10	7.32	1170	1	0.03	9	260	16	0.15	<5	9	6	<20	0.16
215908		2.84	20	6.01	711	1	0.17	15	170	20	0.31	<5	9	12	<20	0.22
215909		1.47	30	4.18	461	1	0.58	10	210	53	0.54	<5	9	32	<20	0.18
215910		0.16	20	0.02	5	<1	0.01	3	40	<2	0.01	<5	<1	5	<20	0.02
215911		0.86	30	2.36	334	1	2.02	7	210	118	0.24	<5	7	71	<20	0.13
215912		0.72	30	2.40	354	<1	2.03	7	180	105	0.58	<5	7	70	<20	0.14
215913		1.23	20	4.01	466	1	0.36	8	270	33	1.03	<5	10	21	<20	0.19
215914		1.50	30	3.85	454	1	0.90	8	260	52	0.90	<5	10	48	<20	0.20
215915		1.61	10	3.56	437	1	0.59	14	350	28	1.73	<5	10	26	<20	0.22
215916		1.61	10	4.15	519	2	0.62	17	350	31	2.81	<5	11	28	<20	0.23
215917		0.51	40	1.55	248	<1	2.79	6	210	121	0.52	<5	7	55	<20	0.08
215918		0.80	20	2.16	306	1	1.52	14	220	59	1.59	<5	8	65	<20	0.09
215919		1.18	40	2.98	378	1	0.35	6	60	26	1.65	<5	6	24	<20	0.10
215920		0.57	20	4.03	552	1	0.13	5	210	20	2.29	<5	7	10	<20	0.10
215921		0.28	20	5.03	679	<1	0.02	5	200	18	1.26	<5	7	3	<20	0.11
215922		0.86	10	7.59	1160	<1	0.02	5	160	9	1.01	<5	7	6	<20	0.15
215923		1.12	10	7.40	2390	<1	0.02	7	160	11	0.62	<5	7	6	<20	0.15
215924		0.90	10	5.76	910	<1	0.01	6	110	14	1.61	<5	7	3	<20	0.15
215925		0.80	10	6.35	587	1	0.02	4	120	20	1.43	<5	7	2	<20	0.15
215926		0.74	20	3.00	397	<1	0.06	12	100	43	9.64	<5	6	9	<20	0.06
215927		1.15	10	1.75	251	<1	0.09	18	80	62	>10.0	<5	5	13	<20	0.06
215928		0.72	10	1.34	245	<1	0.08	25	40	32	>10.0	<5	3	10	<20	0.04
215929		1.49	20	2.86	525	3	0.64	15	130	68	9.43	<5	8	36	<20	0.20
215930		0.15	20	0.02	5	<1	0.01	2	30	<2	0.04	<5	<1	5	<20	0.02
215931		2.44	20	5.31	1290	1	0.03	5	290	15	2.19	<5	11	6	<20	0.29
215932		0.85	30	6.07	997	1	0.02	4	270	19	1.47	<5	10	5	<20	0.26
215933		1.04	20	5.05	758	1	0.29	6	240	43	0.67	<5	9	12	<20	0.23
215934		0.89	20	5.61	777	1	0.31	7	340	24	0.20	<5	11	20	<20	0.16
215935		1.47	20	3.28	457	1	0.44	5	360	21	0.05	<5	9	29	<20	0.13

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To: NORTHERN SHIELD RESOURCES INC.
440 - 55 METCALFE STREET
OTTAWA ON K1P 6L5

Finalized Date: 12- MAY- 2011
Account: NORSHI

Project: WABASSI

CERTIFICATE OF ANALYSIS TM11065602

Sample Description / Method / Analyte / Units / LOR	ME-ICP61 Ti ppm 10	ME-ICP61 U ppm 10	ME-ICP61 V ppm 1	ME-ICP61 W ppm 10	ME-ICP61 Zn ppm 2	ME-ICP61 Zr ppm 5	Cu-OG62 Cu % 0.001	Zn-OG62 Zn % 0.001	S-IR08 S % 0.01	Au-ICP21 Au ppm 0.001
215905	<10	<10	16	<10	209	247				0.021
215906	<10	<10	10	<10	249	256				0.010
215907	<10	<10	40	<10	484	229				0.003
215908	10	<10	38	<10	480	245				0.002
215909	<10	<10	41	<10	372	268				0.001
215910	<10	<10	2	<10	3	64				<0.001
215911	<10	<10	26	<10	266	237				0.003
215912	<10	<10	21	<10	291	227				0.001
215913	<10	<10	42	<10	405	264				0.002
215914	<10	<10	42	<10	409	291				0.002
215915	<10	<10	57	<10	427	243				0.003
215916	<10	<10	69	<10	507	286				0.004
215917	<10	<10	18	<10	283	264				0.001
215918	<10	<10	35	<10	314	229				0.004
215919	<10	<10	16	<10	325	304				0.007
215920	<10	<10	24	<10	649	248				0.010
215921	<10	<10	23	<10	1010	160				0.044
215922	<10	<10	19	<10	717	95				0.018
215923	<10	<10	20	<10	952	98				0.070
215924	<10	<10	20	<10	1830	101				0.013
215925	<10	<10	19	<10	4890	105				0.009
215926	<10	<10	13	20	>10000	181		5.90		0.027
215927	<10	<10	11	30	>10000	159		7.38	17.80	0.018
215928	<10	<10	9	30	>10000	106		10.55	26.6	0.032
215929	10	<10	35	<10	>10000	205		1.955		0.016
215930	<10	<10	2	<10	101	64				0.001
215931	10	<10	58	<10	3800	220				0.006
215932	<10	<10	41	<10	906	276				0.011
215933	<10	<10	46	<10	942	245				0.015
215934	<10	<10	56	<10	761	272				0.007
215935	10	<10	19	<10	508	320				0.003

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To: NORTHERN SHIELD RESOURCES INC.
440 - 55 METCALFE STREET
OTTAWA ON K1P 6L5

Finalized Date: 24- MAY- 2011
Account: NORSHI

CERTIFICATE TM11069845

Project: WABASSI
P.O. No.:
This report is for 20 Drill Core samples submitted to our lab in Timmins, ON, Canada on 27- APR- 2011.
The following have access to data associated with this certificate:

IAN BLISS	CHRISTINE VAILLANCOURT	

SAMPLE PREPARATION

ALS CODE	DESCRIPTION
WEI- 21	Received Sample Weight
LOG- 22	Sample login - Rcd w/o BarCode
CRU- 31	Fine crushing - 70% <2mm
PUL- QC	Pulverizing QC Test
SPL- 21	Split sample - riffle splitter
PUL- 31	Pulverize split to 85% <75 um

ANALYTICAL PROCEDURES

ALS CODE	DESCRIPTION	INSTRUMENT
S- IR08	Total Sulphur (Leco)	LECO
ME- MS81	38 element fusion ICP- MS	ICP- MS
ME- XRF06	Whole Rock Package - XRF	XRF
OA- GRA06	LOI for ME- XRF06	WST- SIM
PGM- MS23	Pt, Pd, Au 30g FA ICP- MS	ICP- MS

To: NORTHERN SHIELD RESOURCES INC.
ATTN: CHRISTINE VAILLANCOURT
440 - 55 METCALFE STREET
OTTAWA ON K1P 6L5

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.

Signature:
Colin Ramshaw, Vancouver Laboratory Manager

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To: NORTHERN SHIELD RESOURCES INC.
440 - 55 METCALFE STREET
OTTAWA ON K1P 6L5

Finalized Date: 24- MAY- 2011
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Project: WABASSI

CERTIFICATE OF ANALYSIS TM11069845

Sample Description	Method Analyte Units LOR	WEI- 21 Recvd Wt. kg 0.02	PGM- MS23 Au ppm 0.001	PGM- MS23 Pt ppm 0.0005	PGM- MS23 Pd ppm 0.001	S- IR08 S % 0.01	ME- MS81 Ag ppm 1	ME- MS81 Ba ppm 0.5	ME- MS81 Ce ppm 0.5	ME- MS81 Co ppm 0.5	ME- MS81 Cr ppm 10	ME- MS81 Cs ppm 0.01	ME- MS81 Cu ppm 5	ME- MS81 Dy ppm 0.05	ME- MS81 Er ppm 0.03	ME- MS81 Eu ppm 0.03
11WA- 14A		0.68	0.003	0.0007	0.001	0.26	1	15.8	39.5	8.4	10	0.05	1780	4.27	2.05	1.13
11WA- 14B		0.29	0.002	0.0005	<0.001	0.03	<1	108.5	16.4	24.8	320	0.32	93	1.26	0.82	0.53
11WA- 14D		0.51	<0.001	0.0020	0.004	0.05	<1	24.8	7.0	55.1	160	0.03	59	1.32	0.77	0.56
11WA- 14G		0.48	0.006	0.0041	<0.001	0.04	<1	21.7	4.3	36.0	450	0.04	95	0.73	0.53	0.37
11WA- 14I		0.42	<0.001	0.0005	<0.001	0.04	<1	46.0	6.8	38.1	220	0.18	78	1.04	0.70	0.44
11WA- 15A		0.46	<0.001	0.0006	0.001	0.15	<1	63.3	24.5	43.6	<10	0.26	46	4.15	2.20	1.74
11WA- 15C		0.56	0.001	0.0005	<0.001	0.16	<1	52.8	25.5	46.3	<10	0.11	59	5.18	2.83	1.43
11WA- 16A		0.46	<0.001	0.0029	0.001	0.01	<1	15.3	11.3	74.4	1730	0.13	<5	1.85	1.02	0.53
11WA- 16B		0.48	0.003	<0.0005	<0.001	0.01	<1	186.0	43.2	16.3	20	1.18	<5	4.74	2.98	1.24
11WA- 16C		0.54	<0.001	0.0005	<0.001	0.02	<1	194.5	60.6	7.3	10	0.26	6	6.64	4.11	1.20
11WA- 16D		0.30	<0.001	<0.0005	<0.001	0.01	<1	332	67.5	5.7	<10	0.46	<5	9.19	5.59	1.02
11WA- 17A		0.37	0.026	<0.0005	<0.001	0.23	1	2.4	47.4	11.6	<10	0.10	2040	8.86	5.75	1.08
11WA- 17B		0.52	<0.001	0.0005	<0.001	0.01	<1	193.5	35.4	50.5	<10	0.83	31	4.22	2.52	1.38
11WA- 18A		0.64	0.001	<0.0005	<0.001	0.30	<1	39.9	8.7	66.6	40	0.09	110	2.44	1.33	0.80
11WA- 18B		0.40	<0.001	<0.0005	<0.001	0.18	<1	38.3	5.7	57.7	50	0.07	76	2.03	1.11	0.82
11WA- 18C		0.59	<0.001	<0.0005	<0.001	0.23	<1	25.3	8.5	59.8	50	0.28	74	2.78	1.41	1.13
11WA- 19A		0.50	<0.001	0.0024	0.001	0.01	<1	5.2	8.9	120.5	2820	0.07	<5	1.13	0.59	0.32
11WA- 19B		0.37	0.022	<0.0005	<0.001	0.01	<1	249	36.8	35.4	10	1.71	<5	4.69	2.91	1.18
11WA- 19C		0.45	0.002	<0.0005	<0.001	0.15	<1	378	89.3	2.7	20	0.45	92	7.64	4.27	1.53
11WA- 19D		0.31	<0.001	<0.0005	<0.001	0.08	<1	212	97.1	3.8	10	0.20	41	8.10	4.91	1.64

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440 - 55 METCALFE STREET
OTTAWA ON K1P 6L5

Finalized Date: 24- MAY- 2011
Account: NORSHI

Project: WABASSI

CERTIFICATE OF ANALYSIS TM11069845

Sample Description	Method / Analyte / Units / LOR	ME- MS81 Ga ppm 0.1	ME- MS81 Gd ppm 0.05	ME- MS81 Hf ppm 0.2	ME- MS81 Ho ppm 0.01	ME- MS81 La ppm 0.5	ME- MS81 Lu ppm 0.01	ME- MS81 Mo ppm 2	ME- MS81 Nb ppm 0.2	ME- MS81 Nd ppm 0.1	ME- MS81 Ni ppm 5	ME- MS81 Pb ppm 5	ME- MS81 Pr ppm 0.03	ME- MS81 Rb ppm 0.2	ME- MS81 Sm ppm 0.03	ME- MS81 Sn ppm 1
11WA- 14A		4.3	4.71	1.5	0.77	16.4	0.21	<2	8.9	23.6	<5	14	5.64	1.7	5.05	<1
11WA- 14B		15.5	1.08	1.4	0.29	8.5	0.13	<2	2.3	6.3	146	<5	1.89	18.2	1.27	1
11WA- 14D		14.9	1.31	0.9	0.26	2.8	0.10	<2	2.0	4.8	377	<5	1.08	1.5	1.22	<1
11WA- 14G		14.6	0.65	0.6	0.16	2.0	0.08	<2	1.0	2.5	208	<5	0.60	1.9	0.66	<1
11WA- 14I		15.4	0.89	1.0	0.23	3.2	0.11	<2	1.6	3.7	180	<5	0.91	5.7	0.90	<1
11WA- 15A		19.9	4.58	1.5	0.83	9.7	0.27	<2	8.6	17.0	5	<5	3.71	7.6	4.23	1
11WA- 15C		19.9	5.03	1.6	0.99	9.9	0.32	<2	8.4	17.9	8	<5	4.02	4.8	4.77	2
11WA- 16A		10.7	1.80	1.6	0.36	3.9	0.13	<2	5.3	7.6	750	5	1.71	4.4	1.88	8
11WA- 16B		20.5	4.84	4.8	0.94	19.5	0.42	<2	8.9	23.8	14	5	5.84	42.0	5.45	2
11WA- 16C		14.2	5.97	7.5	1.35	28.4	0.61	2	13.9	30.0	13	9	7.90	20.2	6.42	2
11WA- 16D		19.5	8.07	11.3	1.89	31.7	0.87	3	19.3	31.6	<5	12	8.35	47.9	6.82	3
11WA- 17A		17.6	6.05	8.7	1.90	22.4	0.87	<2	13.4	21.9	<5	<5	5.76	2.3	4.80	2
11WA- 17B		18.6	4.08	4.7	0.87	18.5	0.39	<2	7.7	17.0	13	<5	4.37	34.7	3.79	4
11WA- 18A		19.3	2.25	2.6	0.49	3.7	0.19	<2	4.8	6.0	81	5	1.29	3.8	1.79	1
11WA- 18B		18.1	1.99	0.8	0.44	2.3	0.18	<2	1.3	4.7	57	5	0.93	3.8	1.57	<1
11WA- 18C		19.7	2.92	1.1	0.56	3.2	0.19	<2	2.0	7.4	34	<5	1.41	5.0	2.41	<1
11WA- 19A		8.3	1.09	1.0	0.22	3.8	0.09	<2	2.9	4.9	1140	<5	1.19	1.5	1.16	5
11WA- 19B		20.4	4.45	5.1	0.98	16.9	0.46	<2	8.5	19.0	13	11	4.71	62.2	4.18	3
11WA- 19C		20.0	8.26	9.3	1.49	41.5	0.67	2	15.2	42.8	11	16	11.00	61.4	8.86	5
11WA- 19D		19.0	7.93	9.3	1.67	46.5	0.77	<2	18.4	42.4	<5	51	11.70	14.5	8.40	2

ALS Minerals

ALS Canada Ltd.
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To: NORTHERN SHIELD RESOURCES INC.
440 - 55 METCALFE STREET
OTTAWA ON K1P 6L5

Finalized Date: 24- MAY- 2011
Account: NORSHI

Project: WABASSI

CERTIFICATE OF ANALYSIS TM11069845

Sample Description	Method / Analyte / Units / LOR	ME- MS81 Sr ppm 0.1	ME- MS81 Ta ppm 0.1	ME- MS81 Tb ppm 0.01	ME- MS81 Th ppm 0.05	ME- MS81 Tl ppm 0.5	ME- MS81 Tm ppm 0.01	ME- MS81 U ppm 0.05	ME- MS81 V ppm 5	ME- MS81 W ppm 1	ME- MS81 Y ppm 0.5	ME- MS81 Yb ppm 0.03	ME- MS81 Zn ppm 5	ME- MS81 Zr ppm 2	ME- XRF06 SiO2 % 0.01	ME- XRF06 Al2O3 % 0.01
11WA- 14A		41.8	0.6	0.83	1.38	<0.5	0.29	0.21	17	1	20.8	1.44	71	56	85.78	3.26
11WA- 14B		202	0.2	0.22	3.52	<0.5	0.14	0.89	45	1	7.6	0.90	47	40	53.85	18.47
11WA- 14D		187.5	0.1	0.24	0.21	<0.5	0.11	0.06	59	1	6.9	0.68	59	31	45.37	20.16
11WA- 14G		164.0	0.1	0.12	0.22	<0.5	0.08	0.05	59	1	4.3	0.52	53	19	50.00	19.30
11WA- 14I		168.5	0.1	0.16	0.50	<0.5	0.10	0.13	78	1	6.0	0.70	66	36	49.64	17.88
11WA- 15A		234	0.5	0.81	1.24	<0.5	0.34	0.34	167	1	21.2	1.79	147	50	46.36	14.99
11WA- 15C		219	0.6	0.97	0.97	<0.5	0.41	0.40	320	1	25.8	2.20	138	49	46.03	14.53
11WA- 16A		9.1	0.3	0.34	1.11	<0.5	0.17	0.21	74	1	9.7	0.90	308	56	43.01	9.05
11WA- 16B		8.5	0.6	0.86	3.19	0.5	0.49	0.88	179	1	26.8	2.64	241	188	57.74	14.78
11WA- 16C		10.1	1.0	1.15	7.46	<0.5	0.71	1.73	26	1	37.2	4.04	178	277	73.00	11.11
11WA- 16D		7.7	1.5	1.41	8.96	<0.5	0.92	2.45	<5	3	59.3	5.46	133	359	68.97	12.08
11WA- 17A		5.9	1.0	1.22	4.90	<0.5	0.93	2.51	10	2	56.8	5.38	117	301	52.95	10.49
11WA- 17B		8.1	0.6	0.69	2.79	<0.5	0.40	0.90	204	1	26.3	2.52	149	156	60.21	12.58
11WA- 18A		157.5	0.3	0.40	0.67	<0.5	0.23	0.09	524	<1	13.7	1.32	206	100	42.96	11.75
11WA- 18B		144.5	<0.1	0.34	0.15	<0.5	0.21	<0.05	341	2	12.0	1.13	175	33	46.15	13.39
11WA- 18C		158.5	0.1	0.52	0.15	<0.5	0.29	0.07	404	3	15.0	1.26	196	37	43.00	12.90
11WA- 19A		8.5	0.1	0.19	0.46	<0.5	0.10	0.16	15	2	6.5	0.63	314	39	41.67	7.31
11WA- 19B		34.9	0.6	0.73	3.94	0.8	0.47	1.04	171	1	30.3	2.86	350	179	58.06	13.91
11WA- 19C		14.8	1.1	1.29	9.30	<0.5	0.69	2.01	57	4	45.0	4.17	317	320	71.05	12.83
11WA- 19D		161.0	1.5	1.33	12.85	<0.5	0.80	3.44	<5	1	50.5	4.90	36	280	75.35	12.21

ALS Canada Ltd.
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Phone: 604 984 0221 Fax: 604 984 0218 www.alsglobal.com

To: NORTHERN SHIELD RESOURCES INC.
440 - 55 METCALFE STREET
OTTAWA ON K1P 6L5

Finalized Date: 24- MAY- 2011
Account: NORSHI

Project: WABASSI

CERTIFICATE OF ANALYSIS TM11069845

Sample Description	Method / Analyte / Units / LOR	ME- XRF06 Fe2O3 % 0.01	ME- XRF06 CaO % 0.01	ME- XRF06 MgO % 0.01	ME- XRF06 Na2O % 0.01	ME- XRF06 K2O % 0.01	ME- XRF06 Cr2O3 % 0.01	ME- XRF06 TiO2 % 0.01	ME- XRF06 MnO % 0.01	ME- XRF06 P2O5 % 0.001	ME- XRF06 SrO % 0.01	ME- XRF06 BaO % 0.01	ME- XRF06 LOI % 0.01	ME- XRF06 Total % 0.01
11WA- 14A		5.16	1.69	0.95	0.48	0.07	<0.01	0.69	0.08	0.373	<0.01	<0.01	0.16	98.69
11WA- 14B		5.53	8.84	6.39	2.66	0.56	0.05	0.23	0.08	0.010	0.02	0.01	2.19	98.90
11WA- 14D		8.66	11.02	11.80	1.45	0.08	0.03	0.53	0.10	0.044	0.02	<0.01	0.19	99.47
11WA- 14G		7.58	10.15	10.97	1.29	0.10	0.08	0.25	0.12	0.016	0.02	<0.01	0.12	99.99
11WA- 14I		8.65	9.82	9.67	1.35	0.23	0.04	0.30	0.14	0.021	0.02	<0.01	0.40	98.16
11WA- 15A		17.61	9.53	4.71	2.59	0.35	0.01	3.33	0.24	0.539	0.03	0.01	-0.29	100.00
11WA- 15C		17.42	10.21	5.13	2.24	0.28	0.01	3.17	0.21	0.310	0.02	0.01	-0.01	99.57
11WA- 16A		12.79	4.70	21.39	0.31	0.19	0.31	0.66	0.16	0.065	<0.01	<0.01	5.82	98.44
11WA- 16B		9.76	0.22	9.43	0.12	1.66	0.01	1.13	0.09	0.132	<0.01	0.02	4.98	100.05
11WA- 16C		3.96	0.06	6.49	0.11	1.40	<0.01	0.29	0.04	0.033	<0.01	0.02	3.53	100.05
11WA- 16D		5.31	<0.01	6.19	0.08	1.77	<0.01	0.26	0.03	0.004	<0.01	0.03	3.70	98.42
11WA- 17A		8.00	1.04	19.48	0.05	0.04	<0.01	0.25	0.08	0.032	<0.01	<0.01	7.55	99.96
11WA- 17B		11.43	0.15	7.75	0.06	1.15	<0.01	0.90	0.07	0.101	<0.01	0.01	4.47	98.88
11WA- 18A		21.12	9.85	5.72	1.82	0.25	0.01	5.01	0.27	0.080	0.02	0.01	0.30	99.16
11WA- 18B		17.23	10.56	6.13	1.87	0.27	0.01	2.08	0.24	0.223	0.02	0.01	0.71	98.89
11WA- 18C		22.00	9.74	5.80	2.05	0.13	0.01	3.71	0.30	0.800	0.02	0.02	-0.38	100.10
11WA- 19A		12.84	4.33	25.48	0.36	0.08	0.38	0.45	0.17	0.042	<0.01	<0.01	5.02	98.12
11WA- 19B		11.84	0.66	6.77	0.76	1.56	<0.01	1.02	0.11	0.168	<0.01	0.03	3.73	98.61
11WA- 19C		4.20	0.20	4.92	0.14	2.47	<0.01	0.57	0.03	0.083	<0.01	0.04	3.28	99.81
11WA- 19D		3.09	1.90	0.25	4.31	0.47	<0.01	0.19	0.02	0.014	0.02	0.01	0.68	98.51

ALS Canada Ltd.
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To: NORTHERN SHIELD RESOURCES INC.
440 - 55 METCALFE STREET
OTTAWA ON K1P 6L5

Finalized Date: 23- MAY- 2011
Account: NORSHI

CERTIFICATE TM11081954

Project: WABASSI
P.O. No.:
This report is for 25 Drill Core samples submitted to our lab in Timmins, ON, Canada on 11- MAY- 2011.
The following have access to data associated with this certificate:

IAN BLISS	CHRISTINE VAILLANCOURT	

SAMPLE PREPARATION

ALS CODE	DESCRIPTION
FND- 02	Find Sample for Addn Analysis

ANALYTICAL PROCEDURES

ALS CODE	DESCRIPTION	INSTRUMENT
PGM- MS23	Pt, Pd, Au 30g FA ICP- MS	ICP- MS

To: NORTHERN SHIELD RESOURCES INC.
ATTN: CHRISTINE VAILLANCOURT
440 - 55 METCALFE STREET
OTTAWA ON K1P 6L5

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.

Signature:
Colin Ramshaw, Vancouver Laboratory Manager

ALS Canada Ltd.
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Phone: 604 984 0221 Fax: 604 984 0218 www.alsglobal.com

To: NORTHERN SHIELD RESOURCES INC.
440 - 55 METCALFE STREET
OTTAWA ON K1P 6L5

Finalized Date: 23- MAY- 2011
Account: NORSHI

Project: WABASSI

CERTIFICATE OF ANALYSIS TM11081954

Sample Description	Method / Analyte / Units / LOR	PGM- MS23 Au ppm 0.001	PGM- MS23 Pt ppm 0.0005	PGM- MS23 Pd ppm 0.001
393712		0.002	<0.0005	<0.001
393713		0.004	<0.0005	<0.001
393714		0.002	<0.0005	<0.001
393715		0.002	<0.0005	<0.001
393716		0.002	0.0005	<0.001
393717		0.002	<0.0005	<0.001
393718		0.003	<0.0005	<0.001
393719		0.008	<0.0005	<0.001
393720		0.005	<0.0005	<0.001
393721		0.015	<0.0005	<0.001
393722		0.002	<0.0005	<0.001
393723		0.033	<0.0005	<0.001
393724		0.030	<0.0005	<0.001
393725		0.084	<0.0005	<0.001
393726		0.002	<0.0005	<0.001
393727		0.001	<0.0005	<0.001
393728		0.001	<0.0005	<0.001
393729		0.001	<0.0005	<0.001
393731		0.002	<0.0005	<0.001
393732		0.002	<0.0005	<0.001
393733		0.002	<0.0005	<0.001
393734		0.002	<0.0005	<0.001
393735		0.002	<0.0005	<0.001
393736		0.001	<0.0005	<0.001
393737		0.001	<0.0005	<0.001

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To: NORTHERN SHIELD RESOURCES INC.
440 - 55 METCALFE STREET
OTTAWA ON K1P 6L5

Finalized Date: 26- AUG- 2011
Account: NORSHI

CERTIFICATE TM11133828

Project: WABASSI
P.O. No.:
This report is for 44 Drill Core samples submitted to our lab in Timmins, ON, Canada on 14- JUL- 2011.
The following have access to data associated with this certificate:

IAN BLISS	CHRISTINE VAILLANCOURT	

SAMPLE PREPARATION

ALS CODE	DESCRIPTION
WEI- 21	Received Sample Weight
LOG- 22	Sample login - Rcd w/o BarCode
CRU- 31	Fine crushing - 70% <2mm
PUL- QC	Pulverizing QC Test
SPL- 21	Split sample - riffle splitter
PUL- 31	Pulverize split to 85% <75 um

ANALYTICAL PROCEDURES

ALS CODE	DESCRIPTION	INSTRUMENT
ME- ICP06	Whole Rock Package - ICP- AES	ICP- AES
C- IR07	Total Carbon (Leco)	LECO
S- IR08	Total Sulphur (Leco)	LECO
ME- MS81	38 element fusion ICP- MS	ICP- MS
ME- MS42	Up to 34 elements by ICP- MS	ICP- MS
OA- GRA05	Loss on Ignition at 1000C	WST- SEQ
TOT- ICP06	Total Calculation for ICP06	ICP- AES
ME- 4ACD81	Base Metals by 4- acid dig.	ICP- AES
Ag- OG62	Ore Grade Ag - Four Acid	VARIABLE
ME- OG62	Ore Grade Elements - Four Acid	ICP- AES
Cu- OG62	Ore Grade Cu - Four Acid	VARIABLE
Zn- OG62	Ore Grade Zn - Four Acid	VARIABLE
Au- ICP21	Au 30g FA ICP- AES Finish	ICP- AES

To: NORTHERN SHIELD RESOURCES INC.
ATTN: CHRISTINE VAILLANCOURT
440 - 55 METCALFE STREET
OTTAWA ON K1P 6L5

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.

Signature:
Colin Ramshaw, Vancouver Laboratory Manager

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To: NORTHERN SHIELD RESOURCES INC.
440 - 55 METCALFE STREET
OTTAWA ON K1P 6L5

Finalized Date: 26- AUG- 2011
Account: NORSHI

Project: WABASSI

CERTIFICATE OF ANALYSIS TM11133828

Sample Description	Method	WEI- 21	ME- ICP06	ME- ICP06	ME- ICP06	ME- ICP06	ME- ICP06	ME- ICP06	ME- ICP06	ME- ICP06	ME- ICP06	ME- ICP06	ME- ICP06	ME- ICP06	ME- ICP06	C- IR07
	Analyte	Recvd Wt.	SiO2	Al2O3	Fe2O3	CaO	MgO	Na2O	K2O	Cr2O3	TiO2	MnO	P2O5	SrO	BaO	C
	Units	kg	%	%	%	%	%	%	%	%	%	%	%	%	%	%
	LOR	0.02	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01
10WA- 07C		0.12	66.0	15.05	4.23	6.73	1.38	3.21	0.68	<0.01	0.53	0.08	0.14	0.02	0.02	0.18
10WA- 07D		0.18	37.9	10.20	14.05	32.3	2.00	0.01	<0.01	<0.01	0.32	0.45	0.12	<0.01	<0.01	0.50
10WA- 07E		0.11	75.1	10.05	4.40	2.73	2.04	2.34	0.49	<0.01	0.23	0.06	<0.01	0.01	0.01	0.27
10WA- 07F		0.23	72.2	8.74	11.10	0.17	4.99	0.18	0.28	<0.01	0.45	0.24	0.01	<0.01	0.01	0.06
10WA- 07G		0.21	69.6	10.25	10.50	0.10	4.94	0.10	0.20	<0.01	0.48	0.22	0.05	<0.01	<0.01	0.11
10WA- 07H		0.32	67.1	10.95	12.75	1.75	4.53	0.66	0.29	<0.01	0.42	0.18	0.01	0.01	<0.01	0.21
10WA- 07I		0.38	65.5	12.30	9.32	2.57	4.33	1.71	0.84	<0.01	0.28	0.13	0.02	0.01	0.01	0.03
10WA- 07J		0.28	49.5	16.05	13.15	6.32	5.73	1.88	0.71	0.01	0.72	0.20	0.06	0.02	0.01	0.74
10WA- 07K		0.21	57.6	15.40	11.20	5.56	5.94	2.06	0.47	0.02	0.66	0.19	0.07	0.02	0.02	0.09
10WA- 07L		0.18	63.6	10.70	11.35	0.51	6.78	0.68	0.18	<0.01	0.41	0.14	0.02	<0.01	<0.01	0.02
10WA- 07M		0.26	50.8	17.75	15.30	6.08	4.61	2.89	0.51	<0.01	2.03	0.18	0.03	0.03	0.01	0.07
10WA- 07N		0.21	58.4	15.65	8.70	6.75	3.76	3.36	0.62	0.01	0.88	0.12	0.18	0.03	0.02	0.02
11WA- 16E		0.21	57.4	15.50	6.67	5.29	4.94	5.78	0.25	<0.01	0.96	0.22	0.12	0.05	<0.01	0.29
11WA- 16F		0.31	43.3	16.05	11.65	3.36	11.70	1.24	1.13	0.03	1.28	0.18	0.18	0.01	0.01	0.83
11WA- 16G		0.30	60.3	15.60	10.80	2.65	3.03	3.13	1.11	<0.01	0.68	0.06	0.11	0.02	0.01	0.18
11WA- 16H		0.32	55.3	14.75	14.80	0.28	6.90	0.36	1.57	<0.01	1.13	0.11	0.14	<0.01	0.04	0.02
11WA- 16I		0.30	68.3	11.35	4.73	0.07	7.68	0.10	1.10	<0.01	0.35	0.05	0.03	<0.01	0.01	0.01
11WA- 16J		0.19	57.6	15.75	5.97	0.82	8.68	0.81	1.77	<0.01	0.49	0.06	0.05	0.01	0.04	0.09
11WA- 16K		0.16	56.1	16.65	10.75	0.13	3.79	0.19	3.84	<0.01	0.64	0.02	0.08	<0.01	0.10	0.02
11WA- 16L		0.15	15.35	5.10	31.1	4.39	15.00	0.01	<0.01	<0.01	0.20	0.31	<0.01	<0.01	<0.01	3.51
11WA- 16M		0.29	72.9	11.05	4.12	0.41	5.78	0.97	1.94	<0.01	0.24	0.03	<0.01	<0.01	0.03	0.09
11WA- 17C		0.20	34.7	26.5	9.43	0.27	11.55	0.17	5.07	<0.01	1.59	0.05	0.20	<0.01	0.08	0.03
11WA- 17D		0.25	46.1	14.75	11.25	3.21	11.90	0.02	1.49	0.02	1.32	0.10	0.24	<0.01	<0.01	0.78
11WA- 17E		0.29	76.6	8.86	4.81	0.07	3.02	0.14	1.95	<0.01	0.23	0.03	0.01	<0.01	0.03	0.02
11WA- 17F		0.27	76.4	6.10	6.26	0.95	4.93	0.21	1.34	<0.01	0.16	0.06	0.01	<0.01	0.01	0.23
11WA- 17G		0.26	52.5	8.73	11.60	1.50	15.20	0.02	0.02	<0.01	0.43	0.16	0.08	<0.01	<0.01	0.69
11WA- 17H		0.14	61.8	3.96	20.7	0.25	4.63	0.01	0.26	<0.01	0.16	0.05	<0.01	<0.01	<0.01	0.18
11WA- 17I		0.12	51.1	15.75	12.10	5.96	6.85	2.40	0.74	0.02	1.11	0.17	0.16	0.02	0.01	0.25
11WA- 17J		0.16	48.3	8.08	15.60	0.07	8.64	0.03	0.02	0.05	0.27	0.05	0.06	<0.01	<0.01	0.02
11WA- 17K		0.28	62.7	12.15	6.00	0.05	7.50	0.12	1.31	0.01	0.29	0.05	<0.01	<0.01	0.03	0.01
11WA- 19E		0.21	39.3	6.86	12.75	4.30	24.5	0.02	0.01	0.40	0.37	0.23	<0.01	<0.01	<0.01	1.30
11WA- 19F		0.24	45.5	7.67	11.70	2.89	23.7	0.17	0.04	0.40	0.45	0.19	<0.01	<0.01	<0.01	0.01
11WA- 19G		0.34	43.3	8.79	13.30	4.00	24.3	0.31	0.04	0.38	0.44	0.14	0.04	<0.01	<0.01	0.03
11WA- 19H		0.41	40.1	11.90	11.80	2.15	18.20	0.17	7.35	<0.01	0.53	0.05	0.03	<0.01	0.08	0.03
11WA- 19I		0.18	43.6	8.36	13.30	5.67	21.9	0.25	0.08	0.35	0.60	0.19	0.09	<0.01	<0.01	0.07
11WA- 19J		0.23	44.4	14.65	10.90	7.78	5.96	3.34	1.08	0.02	1.13	0.21	0.17	0.04	0.02	2.00
11WA- 20A		0.50	58.2	14.60	10.15	5.89	2.43	3.80	1.20	<0.01	1.34	0.17	0.22	0.02	0.03	0.09
11WA- 20B		0.17	72.7	12.70	4.76	2.23	0.44	4.38	1.96	<0.01	0.39	0.07	0.06	0.01	0.05	0.02
11WA- 20C		0.18	74.4	8.08	6.66	0.04	4.18	0.09	1.11	<0.01	0.19	0.04	0.01	<0.01	0.02	0.02
11WA- 20D		0.13	47.0	16.00	14.70	6.24	6.73	2.85	0.15	0.03	1.07	0.18	0.13	0.02	<0.01	0.54

Comments: Samples with high base metal will have low whole rock totals. Low whole rock total confirmed by re- analysis.

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To: NORTHERN SHIELD RESOURCES INC.
440 - 55 METCALFE STREET
OTTAWA ON K1P 6L5

Finalized Date: 26- AUG- 2011
Account: NORSHI

Project: WABASSI

CERTIFICATE OF ANALYSIS TM11133828

Sample Description	Method / Analyte / Units / LOR	S-IR08 S % 0.01	ME-MS81 Ba ppm 0.5	ME-MS81 Ce ppm 0.5	ME-MS81 Cr ppm 10	ME-MS81 Cs ppm 0.01	ME-MS81 Dy ppm 0.05	ME-MS81 Er ppm 0.03	ME-MS81 Eu ppm 0.03	ME-MS81 Ga ppm 0.1	ME-MS81 Gd ppm 0.05	ME-MS81 Hf ppm 0.2	ME-MS81 Ho ppm 0.01	ME-MS81 La ppm 0.5	ME-MS81 Lu ppm 0.01	ME-MS81 Nb ppm 0.2
10WA- 07C		0.21	185.0	39.1	30	0.25	2.52	1.38	1.16	16.6	3.03	4.3	0.50	19.5	0.22	8.7
10WA- 07D		0.16	2.5	2.8	10	0.03	2.08	1.40	0.75	10.5	2.41	2.6	0.45	1.2	0.20	5.1
10WA- 07E		0.21	68.6	53.6	10	0.35	4.37	2.71	1.64	14.3	4.96	7.8	0.91	26.3	0.45	8.8
10WA- 07F		<0.01	54.1	10.1	10	0.19	1.61	1.23	0.14	10.1	1.29	2.9	0.37	4.7	0.23	6.0
10WA- 07G		<0.01	30.3	18.5	10	0.14	1.90	1.40	0.21	15.3	1.81	3.7	0.44	8.9	0.29	7.2
10WA- 07H		1.19	38.9	23.5	20	0.32	2.75	2.18	0.83	17.2	2.32	8.9	0.64	12.0	0.46	5.1
10WA- 07I		2.09	122.5	42.8	30	0.41	3.43	2.28	1.23	17.5	3.91	7.0	0.73	21.7	0.43	5.7
10WA- 07J		0.98	73.5	25.2	50	0.31	2.20	1.46	1.64	20.8	2.52	3.9	0.47	13.5	0.28	6.4
10WA- 07K		0.21	151.0	30.5	100	0.47	3.13	2.04	1.21	18.4	3.19	3.2	0.67	15.2	0.38	6.7
10WA- 07L		0.64	39.2	6.0	10	0.18	1.34	1.17	0.14	16.6	0.96	4.1	0.33	3.0	0.25	5.2
10WA- 07M		0.13	141.5	18.2	10	0.42	2.08	1.56	1.64	24.3	1.83	2.2	0.50	9.4	0.32	16.1
10WA- 07N		0.04	168.0	38.5	100	0.42	3.60	2.09	1.25	18.0	4.06	4.1	0.73	17.5	0.30	9.8
11WA- 16E		0.01	43.6	36.5	20	0.32	2.96	1.68	1.28	10.7	3.85	4.9	0.57	17.5	0.31	10.2
11WA- 16F		<0.01	128.0	22.7	210	2.00	1.79	0.98	0.77	18.7	2.23	3.2	0.33	10.5	0.15	9.0
11WA- 16G		0.05	79.2	39.9	10	0.36	3.91	2.21	2.08	17.4	4.30	4.0	0.78	20.1	0.32	8.1
11WA- 16H		<0.01	356	20.5	<10	0.67	4.78	3.07	0.86	20.7	3.90	4.2	1.03	9.3	0.46	9.2
11WA- 16I		<0.01	134.5	63.2	<10	0.28	7.03	4.28	1.12	15.4	6.69	7.4	1.46	29.8	0.65	15.1
11WA- 16J		0.29	356	75.8	<10	0.91	8.70	5.44	1.80	22.0	8.75	10.0	1.84	36.4	0.86	19.9
11WA- 16K		5.39	1005	114.5	10	0.35	10.90	6.16	1.88	25.3	12.65	11.3	2.12	54.1	0.96	23.4
11WA- 16L		13.75	8.4	4.0	<10	0.03	3.20	2.19	0.25	10.2	2.55	3.1	0.71	1.5	0.38	4.5
11WA- 16M		0.01	332	55.2	<10	1.65	6.98	4.27	1.06	17.4	6.78	8.8	1.43	26.0	0.66	17.0
11WA- 17C		0.03	751	101.0	<10	1.17	8.59	5.28	1.47	35.4	9.26	9.8	1.81	47.8	0.80	20.3
11WA- 17D		0.02	13.6	34.4	150	1.37	4.17	2.27	1.35	19.0	5.13	3.0	0.82	15.4	0.31	8.7
11WA- 17E		<0.01	290	55.7	10	0.99	5.97	4.09	0.64	15.9	5.21	6.9	1.30	25.4	0.66	13.5
11WA- 17F		0.04	130.5	44.4	10	2.94	4.97	3.20	0.73	11.9	4.71	4.8	1.07	20.6	0.52	12.1
11WA- 17G		1.30	2.1	53.3	<10	0.16	5.40	3.14	0.83	16.2	5.79	5.1	1.09	23.8	0.48	10.0
11WA- 17H		8.75	16.7	24.9	10	0.66	3.08	1.71	0.41	11.3	3.07	2.3	0.60	11.9	0.24	4.6
11WA- 17I		0.31	48.8	22.1	170	1.96	3.56	2.31	1.49	20.8	3.71	2.6	0.79	9.7	0.33	5.4
11WA- 17J		7.50	1.3	32.2	10	0.06	4.85	3.43	0.56	15.8	4.45	5.7	1.04	15.0	0.52	9.4
11WA- 17K		0.06	277	32.3	10	0.23	7.31	4.70	0.79	20.0	5.78	8.7	1.48	14.7	0.69	16.7
11WA- 19E		0.04	1.8	2.5	2510	0.02	0.62	0.45	0.13	8.4	0.55	0.9	0.14	1.3	0.09	2.5
11WA- 19F		0.01	3.4	4.6	3170	0.06	1.20	0.75	0.25	10.6	1.19	0.9	0.23	1.6	0.11	3.6
11WA- 19G		<0.01	2.4	7.3	2960	0.07	1.44	0.81	0.29	9.4	1.57	0.9	0.27	2.8	0.11	3.3
11WA- 19H		<0.01	740	540	30	10.75	6.29	2.19	5.08	14.7	15.80	2.7	0.90	248	0.22	4.8
11WA- 19I		<0.01	5.4	14.0	2250	0.08	2.09	1.27	0.71	10.0	2.45	1.2	0.45	5.2	0.16	4.6
11WA- 19J		0.01	194.0	21.2	150	1.32	3.06	2.02	1.12	20.0	3.14	2.2	0.68	10.0	0.29	4.9
11WA- 20A		0.01	252	79.5	10	0.39	7.59	4.76	1.61	21.7	8.57	6.8	1.67	30.3	0.63	11.2
11WA- 20B		<0.01	439	80.4	10	0.43	7.20	4.78	1.40	19.0	7.71	9.0	1.62	38.4	0.71	15.5
11WA- 20C		0.01	197.5	57.0	10	0.74	7.85	4.78	0.83	17.5	7.03	7.5	1.55	25.8	0.66	13.9
11WA- 20D		0.04	17.3	18.0	170	0.16	1.93	1.29	0.99	19.3	2.18	2.4	0.43	8.8	0.21	4.7

Comments: Samples with high base metal will have low whole rock totals. Low whole rock total confirmed by re- analysis.

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To: NORTHERN SHIELD RESOURCES INC.
440 - 55 METCALFE STREET
OTTAWA ON K1P 6L5

Finalized Date: 26- AUG- 2011
Account: NORSHI

Project: WABASSI

CERTIFICATE OF ANALYSIS TM11133828

Sample Description	Method / Analyte / Units / LOR	ME- MS81 Nd ppm 0.1	ME- MS81 Pr ppm 0.03	ME- MS81 Rb ppm 0.2	ME- MS81 Sm ppm 0.03	ME- MS81 Sn ppm 1	ME- MS81 Sr ppm 0.1	ME- MS81 Ta ppm 0.1	ME- MS81 Tb ppm 0.01	ME- MS81 Th ppm 0.05	ME- MS81 Tl ppm 0.5	ME- MS81 Tm ppm 0.01	ME- MS81 U ppm 0.05	ME- MS81 V ppm 5	ME- MS81 W ppm 1	ME- MS81 Y ppm 0.5
10WA- 07C		16.8	4.30	17.8	3.18	2	199.0	0.7	0.46	3.10	<0.5	0.21	0.97	48	1	15.4
10WA- 07D		4.0	0.53	0.3	2.03	6	5.1	0.4	0.36	0.91	<0.5	0.21	0.35	30	2	14.7
10WA- 07E		24.3	5.97	14.3	4.85	1	106.0	0.5	0.75	6.14	0.7	0.42	0.79	5	1	27.0
10WA- 07F		4.7	1.15	8.5	0.98	<1	4.7	0.4	0.23	1.76	<0.5	0.21	0.57	16	1	10.3
10WA- 07G		8.5	2.08	9.6	1.63	1	2.8	0.5	0.30	2.31	<0.5	0.24	0.41	23	1	12.4
10WA- 07H		10.4	2.63	10.5	2.11	1	50.0	0.3	0.41	2.46	<0.5	0.38	0.95	43	1	18.6
10WA- 07I		18.7	4.74	28.1	3.71	1	87.2	0.5	0.58	4.78	<0.5	0.35	1.07	40	1	21.9
10WA- 07J		11.7	2.81	13.3	2.36	1	169.5	0.5	0.36	0.93	<0.5	0.24	0.30	156	1	13.9
10WA- 07K		13.9	3.40	14.2	2.99	1	160.5	0.5	0.50	2.64	<0.5	0.33	0.71	145	1	20.2
10WA- 07L		3.1	0.70	5.9	0.72	1	33.7	0.4	0.17	0.95	<0.5	0.20	0.26	28	1	9.7
10WA- 07M		7.9	1.98	14.5	1.61	1	207	1.0	0.31	0.74	<0.5	0.27	0.27	447	1	14.4
10WA- 07N		18.7	4.46	17.0	3.88	1	226	0.6	0.61	1.98	<0.5	0.31	0.48	143	1	21.7
11WA- 16E		17.8	4.32	4.8	3.93	4	421	0.8	0.55	3.89	<0.5	0.27	1.02	81	1	17.2
11WA- 16F		11.1	2.70	38.5	2.34	16	96.3	0.5	0.33	2.67	<0.5	0.14	0.85	184	1	10.3
11WA- 16G		18.3	4.48	27.1	4.00	1	184.0	0.7	0.66	4.28	<0.5	0.33	1.12	138	1	23.5
11WA- 16H		11.1	2.54	31.7	2.74	4	21.1	0.7	0.71	3.19	<0.5	0.46	0.79	248	2	30.8
11WA- 16I		29.2	7.20	22.9	6.10	3	9.1	1.1	1.11	7.55	<0.5	0.67	1.83	13	1	43.2
11WA- 16J		35.0	8.74	39.9	7.64	7	49.3	1.5	1.44	9.60	<0.5	0.85	2.30	16	2	55.6
11WA- 16K		54.2	13.35	68.3	12.20	11	24.5	1.7	1.94	12.35	1.1	0.96	3.22	56	7	62.7
11WA- 16L		3.8	0.67	0.7	1.53	1	12.6	0.4	0.49	1.72	<0.5	0.35	0.55	7	1	22.2
11WA- 16M		26.2	6.47	63.9	6.01	3	27.6	1.3	1.13	8.48	<0.5	0.66	1.93	<5	2	45.1
11WA- 17C		47.7	11.75	112.0	9.64	5	29.3	1.6	1.45	9.56	<0.5	0.80	2.12	174	5	55.1
11WA- 17D		20.1	4.46	62.0	4.70	2	29.3	0.5	0.74	1.01	<0.5	0.31	0.36	232	1	25.0
11WA- 17E		26.6	6.58	60.4	5.36	3	11.9	1.0	0.94	6.09	<0.5	0.64	2.08	<5	1	38.0
11WA- 17F		20.7	5.16	66.6	4.30	3	13.6	0.8	0.77	4.41	<0.5	0.50	1.40	5	1	32.1
11WA- 17G		26.2	6.38	1.4	5.60	1	7.2	0.8	0.90	4.60	<0.5	0.48	1.06	47	1	31.6
11WA- 17H		12.0	2.93	14.2	2.67	6	1.6	0.3	0.53	2.32	<0.5	0.24	0.64	15	2	17.6
11WA- 17I		13.2	2.84	19.6	3.33	17	140.5	0.4	0.54	1.57	<0.5	0.35	0.49	197	2	22.1
11WA- 17J		16.2	4.24	1.0	3.82	19	2.0	0.7	0.73	4.87	<0.5	0.47	1.66	14	9	35.0
11WA- 17K		16.6	4.27	19.4	4.44	3	9.6	1.3	1.02	7.84	<0.5	0.68	2.25	27	2	48.8
11WA- 19E		1.6	0.34	0.4	0.43	2	13.8	0.2	0.09	0.50	<0.5	0.08	0.15	12	1	4.2
11WA- 19F		3.7	0.78	1.0	1.08	4	4.2	0.2	0.19	0.86	<0.5	0.10	0.18	50	1	7.5
11WA- 19G		5.3	1.16	0.5	1.44	5	6.8	0.1	0.23	0.57	<0.5	0.11	0.19	62	1	8.3
11WA- 19H		238	67.9	340	32.2	18	8.9	0.3	1.41	3.91	<0.5	0.27	1.03	149	2	25.4
11WA- 19I		10.1	2.03	1.8	2.42	15	11.7	0.2	0.33	0.85	<0.5	0.18	0.29	53	1	11.7
11WA- 19J		12.4	2.79	35.5	2.90	9	296	0.3	0.46	1.18	<0.5	0.31	0.41	195	1	18.7
11WA- 20A		43.2	10.25	31.1	9.13	4	182.0	0.8	1.20	4.54	<0.5	0.72	1.13	216	2	45.8
11WA- 20B		38.4	9.48	52.1	8.07	2	117.5	1.2	1.14	10.10	<0.5	0.75	2.85	9	2	45.9
11WA- 20C		29.2	7.63	32.9	6.56	2	6.9	1.1	1.11	6.69	<0.5	0.65	1.56	<5	2	50.7
11WA- 20D		9.3	2.13	1.1	2.05	4	130.0	0.3	0.31	1.30	<0.5	0.21	0.38	202	2	12.5

Comments: Samples with high base metal will have low whole rock totals. Low whole rock total confirmed by re- analysis.

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To: NORTHERN SHIELD RESOURCES INC.
440 - 55 METCALFE STREET
OTTAWA ON K1P 6L5

Finalized Date: 26- AUG- 2011
Account: NORSHI

Project: WABASSI

CERTIFICATE OF ANALYSIS TM11133828

Sample Description	Method / Analyte / Units / LOR	ME- MS81 Yb ppm 0.03	ME- MS81 Zr ppm 2	ME- MS42 As ppm 0.1	ME- MS42 Bi ppm 0.01	ME- MS42 Hg ppm 0.005	ME- MS42 Sb ppm 0.05	ME- MS42 Se ppm 0.2	ME- MS42 Te ppm 0.01	OA- GRA05 LOI % 0.01	TOT- ICP06 Total % 0.01	ME- 4ACD81 Ag ppm 0.5	ME- 4ACD81 Cd ppm 0.5	ME- 4ACD81 Co ppm 1	ME- 4ACD81 Cu ppm 1	ME- 4ACD81 Mo ppm 1
10WA- 07C		1.37	184	10.2	0.22	0.014	5.09	0.4	0.01	2.00	100.0	3.5	<0.5	5	26	1
10WA- 07D		1.42	115	51.5	0.11	0.047	0.88	0.3	0.01	2.10	99.5	1.6	3.1	<1	50	2
10WA- 07E		2.78	314	5.1	2.72	<0.005	0.59	0.3	0.01	2.30	99.8	3.5	<0.5	3	29	2
10WA- 07F		1.45	114	0.3	0.53	<0.005	0.06	0.2	<0.01	1.10	99.5	<0.5	0.9	11	12	<1
10WA- 07G		1.66	150	0.3	0.19	0.005	<0.05	0.2	<0.01	2.00	98.4	<0.5	<0.5	12	2	<1
10WA- 07H		2.61	372	1.9	0.65	0.005	0.10	0.5	0.02	2.30	101.0	1.3	<0.5	29	784	<1
10WA- 07I		2.52	286	1.2	0.46	0.062	0.14	6.5	0.03	1.88	98.9	3.2	14.1	14	652	<1
10WA- 07J		1.70	164	1.8	1.15	0.033	0.13	8.0	0.03	4.10	98.5	17.0	1.8	24	3280	<1
10WA- 07K		2.26	129	1.2	0.29	<0.005	0.09	0.8	0.02	1.69	101.0	<0.5	<0.5	26	168	<1
10WA- 07L		1.47	175	1.4	2.29	0.016	0.07	14.5	0.04	4.80	99.2	7.9	1.3	13	4750	<1
10WA- 07M		2.00	86	0.5	0.20	0.006	<0.05	0.4	<0.01	1.49	101.5	<0.5	<0.5	41	104	<1
10WA- 07N		1.91	173	0.1	0.05	0.007	<0.05	0.5	0.01	0.80	99.3	<0.5	<0.5	23	53	<1
11WA- 16E		1.90	200	3.4	0.19	0.006	0.23	0.9	0.01	1.79	99.0	<0.5	<0.5	26	238	<1
11WA- 16F		0.94	131	0.8	0.19	0.005	0.11	0.3	0.01	8.39	98.5	<0.5	<0.5	42	6	<1
11WA- 16G		2.11	168	1.0	0.08	0.005	0.21	0.7	0.04	3.07	100.5	0.6	<0.5	15	379	<1
11WA- 16H		2.96	168	0.5	0.01	<0.005	0.25	0.2	<0.01	4.84	100.0	<0.5	<0.5	28	2	<1
11WA- 16I		4.06	297	0.2	0.03	0.005	0.31	0.2	<0.01	4.89	98.7	<0.5	<0.5	7	3	<1
11WA- 16J		5.43	391	1.3	0.50	0.006	0.88	5.1	0.01	5.96	98.0	<0.5	<0.5	1	124	<1
11WA- 16K		6.18	441	21.5	4.66	0.015	1.42	19.9	0.02	6.59	98.9	6.4	2.5	16	2190	4
11WA- 16L		2.38	133	13.3	3.26	0.184	0.87	110.0	0.03	19.30	90.8	2.4	59.1	<1	248	<1
11WA- 16M		4.25	347	0.2	0.03	<0.005	0.20	0.6	<0.01	3.79	101.5	<0.5	<0.5	2	4	<1
11WA- 17C		5.20	390	<0.1	0.02	<0.005	0.07	0.5	<0.01	8.59	98.2	<0.5	<0.5	12	2	2
11WA- 17D		2.06	122	0.7	0.07	<0.005	0.14	0.3	<0.01	9.40	99.8	<0.5	<0.5	33	1	<1
11WA- 17E		4.04	274	0.3	0.05	<0.005	0.18	0.3	0.01	2.50	98.3	<0.5	<0.5	4	2	1
11WA- 17F		3.19	186	0.6	0.19	<0.005	0.22	0.7	0.02	2.90	99.3	<0.5	<0.5	4	233	<1
11WA- 17G		3.08	197	2.4	1.26	0.006	0.92	19.2	0.05	7.28	97.5	5.3	<0.5	13	630	<1
11WA- 17H		1.58	88	3.7	9.17	0.016	1.06	43.5	0.08	5.92	97.7	50.0	3.6	21	>10000	<1
11WA- 17I		2.23	101	1.6	1.94	0.007	0.66	1.5	0.01	4.09	100.5	<0.5	<0.5	15	69	<1
11WA- 17J		3.35	204	16.5	9.46	0.034	1.93	14.9	0.05	6.98	88.2	>100	7.7	22	>10000	4
11WA- 17K		4.72	311	0.4	0.09	<0.005	0.07	0.4	<0.01	4.70	94.9	<0.5	<0.5	9	29	1
11WA- 19E		0.49	30	<0.1	0.10	<0.005	0.23	0.2	<0.01	10.75	99.5	0.5	<0.5	72	309	<1
11WA- 19F		0.73	34	8.8	0.02	<0.005	0.58	<0.2	<0.01	6.00	98.7	<0.5	<0.5	67	25	<1
11WA- 19G		0.77	33	0.4	0.04	<0.005	0.86	<0.2	<0.01	5.80	101.0	<0.5	<0.5	75	11	<1
11WA- 19H		1.60	101	0.5	0.10	<0.005	2.86	0.5	<0.01	1.70	94.1	<0.5	<0.5	139	1	<1
11WA- 19I		1.19	38	1.6	0.06	<0.005	0.20	0.2	<0.01	6.06	100.5	<0.5	<0.5	69	23	<1
11WA- 19J		1.89	81	0.2	0.07	<0.005	0.09	0.4	0.02	9.09	98.8	<0.5	<0.5	32	130	<1
11WA- 20A		4.35	281	0.3	0.03	<0.005	0.06	0.6	<0.01	0.70	98.8	<0.5	<0.5	16	24	<1
11WA- 20B		4.59	347	0.9	0.05	<0.005	0.11	0.5	<0.01	0.89	100.5	<0.5	<0.5	3	10	<1
11WA- 20C		4.52	289	0.2	0.47	<0.005	0.45	0.3	0.01	2.69	97.5	<0.5	<0.5	6	14	<1
11WA- 20D		1.35	87	0.9	4.56	<0.005	2.40	0.9	0.01	4.50	99.6	8.8	<0.5	28	674	<1

Comments: Samples with high base metal will have low whole rock totals. Low whole rock total confirmed by re- analysis.

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440 - 55 METCALFE STREET
OTTAWA ON K1P 6L5

Finalized Date: 26- AUG- 2011
Account: NORSHI

Project: WABASSI

CERTIFICATE OF ANALYSIS TM11133828

Sample Description	Method / Analyte / Units / LOR	ME- 4ACD81 Ni ppm 1	ME- 4ACD81 Pb ppm 2	ME- 4ACD81 Zn ppm 2	Ag- OG62 Ag ppm 1	Cu- OG62 Cu % 0.001	Zn- OG62 Zn % 0.001	Au- ICP21 Au ppm 0.001
10WA- 07C		5	360	144				0.001
10WA- 07D		<1	11	1685				0.004
10WA- 07E		1	182	191				0.001
10WA- 07F		6	16	163				<0.001
10WA- 07G		3	<2	128				<0.001
10WA- 07H		12	9	289				0.012
10WA- 07I		15	71	3830				0.076
10WA- 07J		55	50	1415				0.033
10WA- 07K		55	17	287				0.004
10WA- 07L		7	10	331				0.007
10WA- 07M		9	9	315				0.001
10WA- 07N		54	<2	99				0.001
11WA- 16E		98	36	162				0.002
11WA- 16F		217	33	313				<0.001
11WA- 16G		32	24	94				0.006
11WA- 16H		13	<2	208				0.003
11WA- 16I		8	8	270				<0.001
11WA- 16J		3	57	532				<0.001
11WA- 16K		5	40	1190				0.011
11WA- 16L		<1	28	>10000			2.42	0.018
11WA- 16M		3	5	198				<0.001
11WA- 17C		18	<2	165				<0.001
11WA- 17D		137	5	112				<0.001
11WA- 17E		<1	16	79				<0.001
11WA- 17F		<1	21	106				<0.001
11WA- 17G		<1	10	465				0.006
11WA- 17H		3	13	885		1.530		0.161
11WA- 17I		80	78	651				0.002
11WA- 17J		11	67	3040	122	5.22		0.397
11WA- 17K		20	<2	325				<0.001
11WA- 19E		913	6	252				<0.001
11WA- 19F		835	2	340				<0.001
11WA- 19G		893	2	166				0.002
11WA- 19H		1090	2	307				0.001
11WA- 19I		864	2	326				<0.001
11WA- 19J		101	21	163				0.005
11WA- 20A		4	4	84				<0.001
11WA- 20B		1	7	51				<0.001
11WA- 20C		<1	23	73				0.001
11WA- 20D		86	1485	513				0.003

Comments: Samples with high base metal will have low whole rock totals. Low whole rock total confirmed by re- analysis.

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OTTAWA ON K1P 6L5

Finalized Date: 26- AUG- 2011
Account: NORSHI

Project: WABASSI

CERTIFICATE OF ANALYSIS TM11133828

Sample Description	Method	WEI- 21	ME- ICP06	ME- ICP06	ME- ICP06	ME- ICP06	ME- ICP06	ME- ICP06	ME- ICP06	ME- ICP06	ME- ICP06	ME- ICP06	ME- ICP06	ME- ICP06	ME- ICP06	C- IR07
	Analyte	Recvd Wt.	SiO2	Al2O3	Fe2O3	CaO	MgO	Na2O	K2O	Cr2O3	TiO2	MnO	P2O5	SrO	BaO	C
	Units	kg	%	%	%	%	%	%	%	%	%	%	%	%	%	%
	LOR	0.02	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01
11WA- 20E		0.21	51.4	11.80	10.50	0.42	14.20	0.16	6.73	<0.01	0.60	0.09	0.10	<0.01	0.04	0.16
11WA- 20F		0.16	73.5	11.95	3.41	0.82	2.06	4.68	0.53	<0.01	0.30	0.03	0.02	0.01	0.01	0.03
11WA- 20G		0.17	40.0	8.67	31.0	0.70	3.68	1.12	0.83	<0.01	0.26	0.06	0.02	0.01	0.01	0.03
11WA- 20H		0.16	75.0	9.97	4.82	0.12	4.09	0.17	1.81	<0.01	0.39	0.04	0.08	<0.01	0.04	0.01

Comments: Samples with high base metal will have low whole rock totals. Low whole rock total confirmed by re- analysis.

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CERTIFICATE OF ANALYSIS TM11133828

Sample Description	Method Analyte Units LOR	S-IR08 S % 0.01	ME-MS81 Ba ppm 0.5	ME-MS81 Ce ppm 0.5	ME-MS81 Cr ppm 10	ME-MS81 Cs ppm 0.01	ME-MS81 Dy ppm 0.05	ME-MS81 Er ppm 0.03	ME-MS81 Eu ppm 0.03	ME-MS81 Ga ppm 0.1	ME-MS81 Gd ppm 0.05	ME-MS81 Hf ppm 0.2	ME-MS81 Ho ppm 0.01	ME-MS81 La ppm 0.5	ME-MS81 Lu ppm 0.01	ME-MS81 Nb ppm 0.2
11WA-20E		<0.01	354	47.5	10	13.05	7.51	4.97	0.71	22.3	6.62	6.9	1.52	21.6	0.74	36.6
11WA-20F		0.40	66.4	87.3	10	0.54	5.39	3.34	1.24	14.4	6.67	8.9	1.17	41.4	0.43	9.6
11WA-20G		13.20	86.0	54.7	<10	1.06	5.60	3.28	2.16	17.4	6.04	5.5	1.14	27.5	0.50	9.7
11WA-20H		0.01	363	18.9	<10	0.51	5.46	4.22	0.48	15.3	3.90	7.6	1.34	9.4	0.62	12.5

Comments: Samples with high base metal will have low whole rock totals. Low whole rock total confirmed by re-analysis.

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CERTIFICATE OF ANALYSIS TM11133828

Sample Description	Method / Analyte / Units / LOR	ME- MS81 Nd ppm 0.1	ME- MS81 Pr ppm 0.03	ME- MS81 Rb ppm 0.2	ME- MS81 Sm ppm 0.03	ME- MS81 Sn ppm 1	ME- MS81 Sr ppm 0.1	ME- MS81 Ta ppm 0.1	ME- MS81 Tb ppm 0.01	ME- MS81 Th ppm 0.05	ME- MS81 Tl ppm 0.5	ME- MS81 Tm ppm 0.01	ME- MS81 U ppm 0.05	ME- MS81 V ppm 5	ME- MS81 W ppm 1	ME- MS81 Y ppm 0.5
11WA- 20E		24.7	6.27	365	5.84	6	2.5	1.5	1.08	5.02	1.9	0.73	1.33	68	1	49.9
11WA- 20F		41.0	10.00	18.7	7.69	3	64.8	1.1	0.85	14.30	<0.5	0.49	1.41	13	2	31.9
11WA- 20G		26.2	6.37	40.1	5.95	4	48.8	0.8	0.90	5.17	0.5	0.53	1.58	17	7	32.3
11WA- 20H		9.3	2.22	38.0	2.39	6	11.8	1.0	0.73	5.98	0.7	0.66	2.24	12	3	39.6

Comments: Samples with high base metal will have low whole rock totals. Low whole rock total confirmed by re- analysis.

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Project: WABASSI

CERTIFICATE OF ANALYSIS TM11133828

Sample Description	Method / Analyte / Units / LOR	ME- MS81 Yb ppm 0.03	ME- MS81 Zr ppm 2	ME- MS42 As ppm 0.1	ME- MS42 Bi ppm 0.01	ME- MS42 Hg ppm 0.005	ME- MS42 Sb ppm 0.05	ME- MS42 Se ppm 0.2	ME- MS42 Te ppm 0.01	OA- GRA05 LOI % 0.01	TOT- ICP06 Total % 0.01	ME- 4ACD81 Ag ppm 0.5	ME- 4ACD81 Cd ppm 0.5	ME- 4ACD81 Co ppm 1	ME- 4ACD81 Cu ppm 1	ME- 4ACD81 Mo ppm 1
11WA- 20E		5.16	258	0.2	0.03	<0.005	0.32	0.4	0.01	2.40	98.4	<0.5	<0.5	8	17	5
11WA- 20F		3.03	318	1.4	0.31	<0.005	0.67	2.2	0.01	1.60	98.9	0.9	<0.5	5	211	<1
11WA- 20G		3.32	206	2.9	3.61	0.095	0.31	79.6	0.30	6.80	93.2	10.5	36.7	7	3430	2
11WA- 20H		4.12	289	0.1	0.06	<0.005	0.10	0.2	<0.01	2.79	99.3	0.5	<0.5	2	178	<1

Comments: Samples with high base metal will have low whole rock totals. Low whole rock total confirmed by re- analysis.

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Project: WABASSI

CERTIFICATE OF ANALYSIS TM11133828

Sample Description	Method / Analyte / Units / LOR	ME- 4ACD81 Ni ppm 1	ME- 4ACD81 Pb ppm 2	ME- 4ACD81 Zn ppm 2	Ag- OG62 Ag ppm 1	Cu- OG62 Cu % 0.001	Zn- OG62 Zn % 0.001	Au- ICP21 Au ppm 0.001
11WA- 20E		12	16	597				<0.001
11WA- 20F		28	126	269				0.001
11WA- 20G		11	94	>10000			1.955	0.011
11WA- 20H		2	9	362				<0.001

Comments: Samples with high base metal will have low whole rock totals. Low whole rock total confirmed by re- analysis.

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Finalized Date: 15- AUG- 2011
Account: NORSHI

CERTIFICATE TM11138462

Project: WABASSI
P.O. No.:
This report is for 1 Drill Core sample submitted to our lab in Timmins, ON, Canada on 21- JUL- 2011.

The following have access to data associated with this certificate:

IAN BLISS	CHRISTINE VAILLANCOURT	

SAMPLE PREPARATION

ALS CODE	DESCRIPTION
WEI- 21	Received Sample Weight
LOG- 22	Sample login - Rcd w/o BarCode
CRU- 31	Fine crushing - 70% <2mm
SPL- 21	Split sample - riffle splitter
PUL- QC	Pulverizing QC Test
PUL- 31	Pulverize split to 85% <75 um

ANALYTICAL PROCEDURES

ALS CODE	DESCRIPTION	INSTRUMENT
S- IR08	Total Sulphur (Leco)	LECO
ME- XRF06	Whole Rock Package - XRF	XRF
OA- GRA06	LOI for ME- XRF06	WST- SIM
ME- MS81	38 element fusion ICP- MS	ICP- MS
PGM- MS23	Pt, Pd, Au 30g FA ICP- MS	ICP- MS

To: NORTHERN SHIELD RESOURCES INC.
ATTN: CHRISTINE VAILLANCOURT
440 - 55 METCALFE STREET
OTTAWA ON K1P 6L5

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.

Signature:
Colin Ramshaw, Vancouver Laboratory Manager

ALS Minerals

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440 - 55 METCALFE STREET
OTTAWA ON K1P 6L5

Finalized Date: 15- AUG- 2011
Account: NORSHI

Project: WABASSI

CERTIFICATE OF ANALYSIS TM11138462

Sample Description	Method	WEI- 21	PGM- MS23	PGM- MS23	PGM- MS23	S- IR08	ME- XRF06	ME- XRF06	ME- XRF06	ME- XRF06	ME- XRF06	ME- XRF06	ME- XRF06	ME- XRF06	ME- XRF06	ME- XRF06
	Analyte	Recvd Wt.	Au	Pt	Pd	S	SiO2	Al2O3	Fe2O3	CaO	MgO	Na2O	K2O	Cr2O3	TiO2	MnO
	Units	kg	ppm	ppm	ppm	%	%	%	%	%	%	%	%	%	%	%
	LOR	0.02	0.001	0.0005	0.001	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01
11WA- 14A		0.29	0.024	<0.0005	<0.001	1.34	46.00	13.20	21.02	6.96	3.84	2.20	0.20	<0.01	2.76	0.37

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OTTAWA ON K1P 6L5

Finalized Date: 15- AUG- 2011
Account: NORSHI

Project: WABASSI

CERTIFICATE OF ANALYSIS TM11138462

Sample Description	Method / Analyte / Units / LOR	ME- XRF06 P2O5 % 0.001	ME- XRF06 SrO % 0.01	ME- XRF06 BaO % 0.01	ME- XRF06 LOI % 0.01	ME- XRF06 Total % 0.01	ME- MS81 Ba ppm 0.5	ME- MS81 Ce ppm 0.5	ME- MS81 Co ppm 0.5	ME- MS81 Cr ppm 10	ME- MS81 Cs ppm 0.01	ME- MS81 Dy ppm 0.05	ME- MS81 Er ppm 0.03	ME- MS81 Eu ppm 0.03	ME- MS81 Ga ppm 0.1	ME- MS81 Gd ppm 0.05
11WA- 14A		1.340	0.02	<0.01	0.30	98.21	53.4	75.7	47.3	10	0.20	12.15	6.05	3.08	20.5	13.80

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Project: WABASSI

CERTIFICATE OF ANALYSIS TM11138462

Sample Description	Method Analyte Units LOR	ME- MS81 Hf ppm 0.2	ME- MS81 Ho ppm 0.01	ME- MS81 La ppm 0.5	ME- MS81 Lu ppm 0.01	ME- MS81 Mo ppm 2	ME- MS81 Nb ppm 0.2	ME- MS81 Nd ppm 0.1	ME- MS81 Pr ppm 0.03	ME- MS81 Rb ppm 0.2	ME- MS81 Sm ppm 0.03	ME- MS81 Sn ppm 1	ME- MS81 Sr ppm 0.1	ME- MS81 Ta ppm 0.1	ME- MS81 Tb ppm 0.01	ME- MS81 Th ppm 0.05
11WA- 14A		1.6	2.30	30.6	0.72	3	32.7	48.4	10.55	4.7	11.55	1	197.0	2.2	2.12	0.74

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Account: NORSHI

Project: WABASSI

CERTIFICATE OF ANALYSIS TM11138462

Sample Description	Method / Analyte / Units / LOR	ME- MS81 Tl ppm 0.5	ME- MS81 Tm ppm 0.01	ME- MS81 U ppm 0.05	ME- MS81 V ppm 5	ME- MS81 W ppm 1	ME- MS81 Y ppm 0.5	ME- MS81 Yb ppm 0.03	ME- MS81 Zr ppm 2
11WA- 14A		<0.5	0.79	0.31	84	1	65.4	4.48	50

APPENDIX X

GSM-19 v7.0 Instruction Manual

GSM-19 *v7.0*
Instruction Manual

Manual Release 7.4
Apr 2007

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TABLE OF CONTENTS

1. INTRODUCTION AND TUTORIAL

The GSM-19 is a portable high-sensitivity **Overhauser effect*** magnetometer/gradiometer designed for hand-held, towed or base station use. Applications include geophysical, geotechnical, or archaeological exploration, long term magnetic field monitoring at Magnetic Observatories, volcanological and seismic research, etc.

Figure 1: Sensor and GPS antenna. Use a full section staff (56cm) between sensor and antenna to avoid magnetic interference.

The GSM-19 is a secondary standard for measurement of the Earth's magnetic field with 0.01 nT resolution, and 0.2 nT absolute accuracy over its full temperature range. Some of the system features include:

- Microprocessor control with large memory storage capabilities (up to 32 Mbytes).
- Synchronization of and held and base station units with automatic corrections for diurnal variations of magnetic field.
- Access to results in serial form (RS-232-C interface) for collection by data acquisition systems, terminals or computers.
- On-line Real Time Transmission (RTT) and post-operation transfers.
- Gradiometer mode with strict control of measuring intervals and concurrent measurement of two magnetic fields. The result is a high quality reading, independent of diurnal variations of magnetic field.
- Option VLF sensor for combined magnetometer/gradiometer-VLF measurement.

The GSM-19 Series of magnetometers includes several models, each with different features and options. In addition, each mode and option can be used in different ways resulting in a variety of combinations. The purpose of this manual is to introduce the most important modes, features and options. After understanding these, it is easier to see how they combine with the others.

If your system has a feature that is not described here, please contact us. As well, we welcome suggestions about ways in which we can enhance this manual based on your experiences.

Overhauser Effect (An exclusive feature of GEM Systems Magnetometers)

In contrast to a standard proton magnetometer sensor that uses a proton-rich liquid, an Overhauser Effect sensor has a free radical added. This free radical ensures the presence of free, unbound electrons that couple with protons, producing a two-spin system. A strong RF magnetic field is used to disturb the electron-proton coupling. By saturating free electron resonance lines, the polarization of protons in the sensor liquid is greatly increased. The Overhauser effect offers a more powerful method of proton polarization than standard DC polarization (i.e. stronger signals are achieved from smaller sensors, and with less power.)

1.1 USING WALKING MODE WITH GPS

Welcome to the v7.0 Tutorial for GEM magnetometers (and gradiometers) using Walking Mode with GPS. This guide provides you with the basic information required to get started. You may also want to supplement your review of this tutorial by referring to the rest of the manual.

1.1.1 Getting Started

Gettting started is easy; simply requiring turning on the magnetometer and then accessing the main Survey menu.

1. Start by turning the mag on (B-power button). You are in the Main menu.

2. Select A-Survey. You are now in the Survey menu.

3. Press C-Change to set the survey mode. You may see, for example, that A-mobile (discontinuous survey), B-base, and C-walk (nearly continuous survey) modes are available to you.

4. Select the survey mode option (C-walk). This resets the file number as well. **Note that re-setting the survey mode is the only way to create a new file. You must do this after each survey so that you can continue with following lines or survey blocks (i.e. depending on the way you run your surveys).**

1.1.2 Setting the Positioning System

GEM's GPS functionality is based on waypoints and includes three **waypoint options**:

- Automatic Grid Setup. Specify the endpoints for the start and end of the first survey line and the system automatically creates 500 survey lines parallel to the defined line.

- Programmable Waypoints. Define waypoints on the keyboard. This can be challenging to do except for the shortest of files. Generally not recommended.

- RS-232 Waypoints Transfer. Define a waypoint file on your PC and upload it using the RS-232 capabilities on the magnetometer / gradiometer.

You can use this functionality with one of four **positioning options**:

- UTM. Universal Transverse Mercator.

- Lat / Long. Latitude and Longitude (i.e. Easting and Northing)

- Local Grid. Reformatted grid with local coordinates for easier manipulation of survey positions (i.e. you can set your local grid so you do not have to use large numbers such as those generated in UTM coordinates).

- Rotated Grid. Grid rotated through a specific angle as defined by the first two waypoints on the starting line.

If you turn GPS off, you only have standard X-Y and LINE / STATION formats available to you. The X-Y system uses a Cartesian coordinate system whereas LINE / STATION uses line and station numbers that are both annotated with directional information (ex. N, S, E, W and more).

Both systems are valid; the X-Y system may be somewhat easier to deal with as numbers do not require later manipulation; LINE-STATION positions are annotated as described above and may require that you remove the annotations later in the post-processing stage (which requires more work).

This section describes how to use the Automatic Grid waypoint option with the UTM positioning option.

5. Select the position option. You have four options available, including UTM, Lat / Long, Local Grid and Rotated Grid.

6. Select C-change. The system displays the select positioning system screen. Use C-change to toggle to the positioning option that you want to use. In this case, select UTM.

7. Press F-ok. The system displays the select picket marking screen. This is the screen enables you to annotate UTM values in the magnetometer's output file at designated locations.

   What happens with Walking mode is that you can mark pickets at designated stations (i.e. UTM values are added to the file when you press F during the survey). For example, if you are walking along the grid and reach a picket that you want to identify with specific UTM locations, you would then press F at the picket location. These values are added to the file.

8. If you want to change the marking system, press C. The system shows the next possible option. For now, choose the XY option and press F-ok when finished. The system displays the X-Y detailed positioning screen.

9. Start by setting the position. Here, we use x=0, y=0 as the start of our grid; you can use any values that are appropriate for your project.

10. The increment value controls the data acquisiton locations **along the line**. If your plan for the survey grid is to run vertical lines at 1m spacings, move the cursor to the increment values, select C-clear and then E-enter until increments are set to set x=0, y=1. When finished, select E-Enter. Alternately, iIf your plan is to run horizontal lines, set x=1, y=0, for instance, for the increment.

11. The EOL increment controls the **line spacing**. For example, if you are using vertical lines and lines spaced at 2m, set x=2, y=0. Or, if you are using horizontal lines spaced at 3m, set x=0, y=3.

12. Press F-ok. The system returns you to the Survey menu.

1.1.3 Changing Time, Filename and Cycling

The time parameter controls the clock settings, and therefore, the time stamps that are placed in the final output file. It is also required for performing base station corrections. Filename controls the designated name of the file and is generally some specific value that is appropriate for the project at hand (ex. 05survey.m or other value). The cycling controls the rate at which the magnetometer (or gradiometer) samples.

13. In the Survey menu, move the cursor to the time item and select it using C-change. Select C-change and enter a new time in wyymmddhhmmss format. For a description of this format, see the corresponding information in the User Guide.

14. Move the cursor to the file item and select it using C-change. Type a new filename and use the E-enter key to save the name. Note that the first two letters and the extension cannot be altered; these are reserved for system defaults.

15. Move the cursor to the cycling item and select it using C-change. The system toggles the cycling settings as shown on the display. For walking mode, you should see settings such as, “0.5 sec, 1.0 sec, 2.0 sec, etc.”

1.1.4 Setting the Tuning, AC Filter and Display Mode

With an advanced magnetometer, there will be some sort of “tune initialize” function that is responsible for finding the precession signal (ex. similar to a radio station), and a second “auto-tune” function that tracks the precession signal as it changes in amplitude.
With GEM, there are 4 possible states of the two controls, as follows:

Tune initialize	Autotune	Use When
Y	Y	Average magnetic field value at the survey location is not known or alternately, as a default for maximizing signal-to-noise ratios.
Y	N	Magnetometer is running automatically (ex. as a base station) and there is some magnetic noise in the vicinity, for example, from vehicles nearby. The magnetometer may lose its signal when these extreme noise events occur; however, it will recover gracefully as it will use the “tune initialize” value for readings that follow.
N	Y	For fastest readings; reading time is minimized as the system will not scan over the entire frequency range (i.e. disabled). In addition, it is recommended for areas with very high gradients; the magnetometer may saturate at these points but will recover gracefully once the magnetometer passes by anomalous zones. Another possible use is with a base station where the unit is stationary and the base unit does not have to handle large

		deviations in values such as would be encountered in a moving survey.
N	N	For use with a base station (i.e. where the unit is stationary and not affected by large survey-related jumps in the magnetic field).

AC Filtering controls whether 50 Hz or 60 Hz filters are added for suppression of noise from powerlines. The final value discussed in this section is the Display Mode which is used to control the appearance of the data onscreen while the survey is being performed.

16. Move the cursor to the tuning menu item and select C-change. The system displays the tune initialize screen. Set the value to yes by pressing the C-change button.

17. Then press F-ok to exit. The system displays the autotune screen. Set the value to yes by pressing the C-change button. The system returns to the Survey menu.

18. Move the cursor to the AC filter item and select C-change. The system changes between three values: no, 50 Hz and 60 Hz. Select the one that you want to use.

19. Move the cursor to the display mode item and select C-change. The system shows the display-mode screen and the current setting (either text or graph). If you:

    - Select text and F-ok, the system automatically returns you to the Survey menu after your selection.

    - Select graph and F-ok, the system adds a second value: field nT. This means that the field value will also be displayed. You can use the C-change button to select from other labeling options such as coordinates, field nT & coordinates or no text.

      When you press F-ok again, the system displays the clear graph screen. For continuous plotting of values, leave this value set to no.

      When you press F-ok again, the system displays the vertical scale screen. Use the C and D keys, and the A- and B+ keys to change the base line position and the vertical scale of the graph, respectively.

1.1.5 Working with the GPS Functionality

The GPS functionality is accessed with the Main survey screen and specifically, the F-GPS control. Once you have turned the GPS functionality on, you will see a GPS screen with the following four values:

- A-initialize. Manual initializing of GPS. Normally GPS is initialized when you start the survey; however, if you experience a situation in which the GPS is not responding, you may want to try to manually initialize the GPS.

- B-navigation. This is the main access point for the **waypoint options** – Automatic, Programmable and RS-232, as well as lane guidance for controlling the width of acceptable deviation (i.e. wander) from the grid lines.

- C-synch-to-UTC. Manual synchronization of GPS. Normally GPS is synchronized when you start the survey; however, this functionality is intended for synchronization of non-GPS magnetometers and gradiometers. The way you use this is to first synchronize the rover (assuming this is the GPS unit) and then connect the rover to the base magnetometer and synchronize the times using standard synchronization cables and functionality.

- D-test. This is a very useful display menu that shows you what the GPS system is seeing when you have it turned on. Parameters include Lat / Long, UTM, number of satellites, strength in decibels and other values.

20. From the Survey menu, press F-GPS. The system displays the GPS screen.

21. Press C-change to set the GPS to Yes. Press F-ok. The system displays the Navigation menu. You can choose to initialize values, or more commonly, to set the Navigation options.

22. Select B-navigation. The system displays the lane guidance and grid setup screen. You have the option of changing the setting from no to yes as required. Generally, you want to have lane guidance active, so use C-change to set the value to yes, and then press F-ok. The system displays the grid setup screen.

23. In this example, choose the A-automatic grid setup option. This creates a grid of 500 parallel lines (as defined by the starting and ending waypoints of the starting line). The system displays the lane width screen.

24. Use the C-change control to set the lane width (i.e. tolerance value for navigating along the lines) to the appropriate value, say, 25m.

25. Press F-ok. The system displays the start point screen. Enter the starting Easting and Northing of the first waypoint (i.e. for the line you want to use as your starting line).

26. After you enter your first two points, you will see local grid origin (x and y) values. You can choose to set these to local values so that the eastings and northings map to a local grid you are using. In this case, we will assume the default values (i.e. 0) and continue.

27. After you enter the local grid (y) value, the system displays the end point screen. Similarly to the starting point screen, complete all values as required and press F-ok. The system displays the line screen.

28. The line screen offers the opportunity to add a unique line number for each line of the survey. This will be recorded in the output file along with a "/line" notation – a standard

notation used by software programs, such as Encom, Geosoft and Intrepid. This was a key upgrade in version 7 (i.e. to enable seamless data transfer from GEM output ASCII files to destination programs).

29. Select C-change and enter a value, say 10, for this parameter. The system displays the line spacing item. You can use this control to define how far apart you would like your lines defined.

30. Press F-ok. The system displays a “please wait” message while it generates the grid. This can take up to a minute to generate so please be patient! When finished, the system displays the lane width screen. This is the first step in a process of verifying that the lines created are consistent with the values you want.

31. Press F-ok in the lane width screen. The system displays the waypoint review screen with the first waypoint identifier (1). Press F-ok again. The system displays the second waypoint identifier (2). Press F-ok again. The system displays the waypoint 0001 screen.

32. Use the waypoint screen to confirm that the easting and northing values are the ones you intended to use. At this point, you can either continue to check values or press E-end to exit from this screen and return to the GPS screen. You are now ready to survey.

1.1.6 Starting a Reading, Surveying and Stopping Recording

In this section, we quickly review the steps involved in actually acquiring data in walking mode. We start with the basic steps and then move to more advanced concepts such as positioning systems and how to use the X-Y positioning system.

33. From the Survey menu, press A-start. The system displays a “please wait” message while it initializes the GPS. The system then displays the start survey screen. This screen has controls for advancing the waypoint (currently you see distances to your second waypoint).

34. We recommend that you use the A- control to decrement the waypoint from 2 to 1. You can then use the navigation arrow and distance fields on the screen to navigate to waypoint 1 where you will start your survey.

35. When you arrive at waypoint 1, use the B+ control to increment the waypoint to waypoint 2. Then press F-start survey. The system synchronizes to UTC time.

    Note: This can take up to fifteen minutes when you are first using the magnetometer in a new part of the world. Please be patient. If there is no action within this period, you can try to re-initialize using the re-initialize function as described in the Working with GPS Functionality section of this tutorial.

36. On proper initialization, the system displays the stop / walk screen after you press F-start survey. Select C-walk. The system displays the line / picket / display screen.

Note: The system is actively recording measurements actively at this time so you must be walking.

37. When finished your line, press A. This stops data acquisition.

38. Now, use the navigation functionality to move from waypoint 2 to waypoint 3. When you have arrived at waypoint 3, use the B+ control to increment the waypoint to waypoint 4 which is your next destination. Press F-start survey and continue taking measurements as described here.

39. When finished all lines, press 1 and C keys at the same time. The system returns you to the main menu and closes your file so that it is protected.

1.1.7 Dumping Data to a Personal Computer

When dumping data, it is essential that your transmission settings are the same on the magnetometer / gradiometer as on the Personal Computer. You can check and change baud rates, etc. by selecting C-info from the Main screen followed by B-RS232.

40. Initiate dumping by selecting the 1-Send command from the Main Menu. The system displays the file screen.

41. Use C-change-number to change the identifier of the file you want to dump; if you need to see which files are in the mag, use the C-info / C-file-review function first. When finished, press F-ok. The system displays the select SEND format screen.

42. Select from D-default or F-Custom. Values you can use include X, Y, time, nT, nT/m, corrected nT (cor-nT), signal quality (SQ), elevation (new for version 7), satellites (sat), picket-x and picket-y. Custom allows you to arrange these in any order you would like; default provides a preset listing of values in GEM format.

43. When ready to send data, press A-send. The system downloads the data.

44. Options A and E give you the choice to select A-all or F-field values only. Select the data you want to send. The system automatically displays an “ending now 1C-stop”message when finished.

1.1.8 Considerations for Using RS-232 Waypoint Uploading

If you want to use the magnetometer’s guidance features, one way to do so is to load a series of waypoints from a Personal Computer.

Please note that you installed a demonstration version of GEMLinkW 3.0 software for downloading, diurnal corrections and other functions. With this version, there is a limitation in terms of transferring waypoints to magnetometers (i.e. the system does not support a second decimal place ... centimetre positions).

The solution for this issue is to copy the executable file, GEMLinkW.exe, directly from the CD to the folder that contains the installed GEMLinkW software. This file is typically stored in C:\Program Files\GEMLinkW 3.0\ .

To load waypoints:

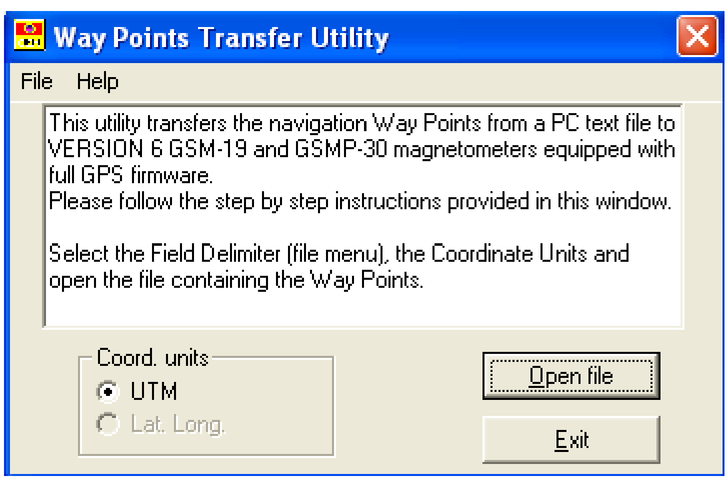
1. Create an ASCII file with two columns of Easting and Northing data (only UTM format supported) that includes 2 decimal places (but NO decimal point). The following shows such a file. The last two digits are centimetres. If your original file is in metres, for example, you will have to add two zeros at the end of each number to transfer the file correctly.

   62891912 485690556
   62898934 485692178
   62899600 485689000
   62892700 485687200

   Note: When creating files for waypoints transfer, it is important to make sure that there are no empty headers or strings (characters) at the beginning or end of the file, or extra spaces at the end of strings within the file.

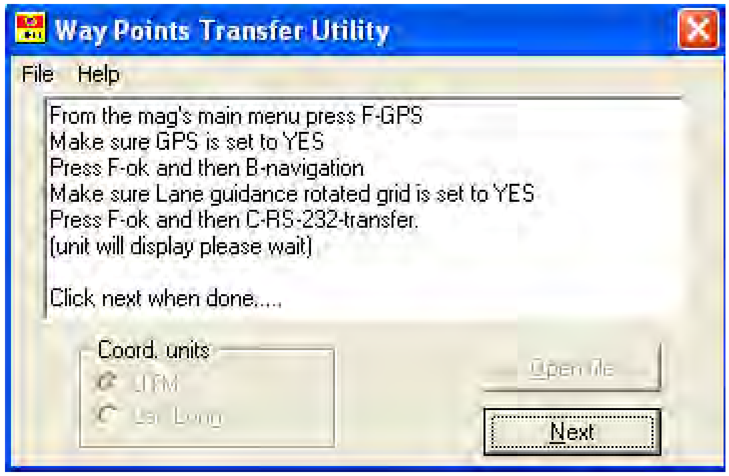
2. Set the communication parameters on the console (C-info / RS-232 menu) and then on the magnetometer. They must be exactly the same for the upload to work. Note that you may have to set your Personal Computer's communication port to 3, 4 or 5 depending on your system's configuration.

3. Open GEMLinkW and select the Tools | RS-232 Transfer | Transfer GPS waypoints | PC to console option. The system displays the Waypoints Transfer Utility screen.

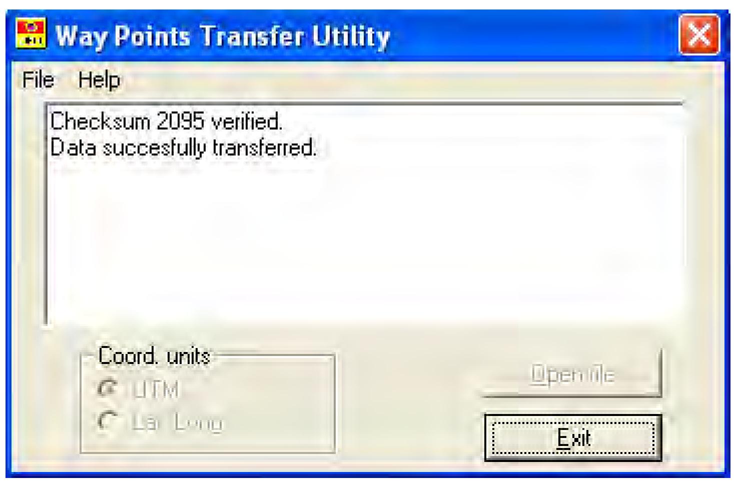


4. Select the Open file button and then locate your waypoint file. Press Ok. The system displays a message similar to the following, "The current active serial port is COM5. Make sure the RS232 port of the mag is connected to it."

5. Press the Next button and follow the instructions on the screen for setting up the magnetometer to receive waypoints.



6. Then press Next. The system transfers the data and displays a message when transfer is complete.



2. THEORETICAL DESCRIPTION

The magnetic field measuring process consists of the following steps:

a) **Polarization.** A strong RF current is passed through the sensor creating polarization of a proton rich fluid in the sensor.

In the case of the GSM-19 fast sampling family, polarization can be concurrent with other intervals of measurement. Keeping the RF on all the time increases the maximum data-sampling rate to 5 Hz.

b) **Deflection.** A short pulse deflects the proton magnetization into the plane of precession.

c) **Pause.** The pause allows the electrical transients to die off, leaving a slowly decaying proton precession signal above the noise level.

d) **Counting.** The proton precession frequency is measured and converted into magnetic field units.

e) **Storage.** The results are stored in memory together with date, time, and coordinates of measurement. In base station mode, only the time and total field are stored.

3. EARTH'S MAGNETIC FIELD

The nominal distribution of the Earth's magnetic field is shown in Figure A1 in Appendix A and the separation of equatorial and polar regions is shown in Figure A2. In polar regions the inclination of the magnetic field vector is approximately vertical, whereas in equatorial regions it is horizontal.

In general, the sensor axis must be approximately at right angles to the magnetic field to obtain the best signal. For this purpose, the sensor must be kept oriented in a magnetic East-West direction in equatorial regions.

NOTE:

Omnidirectional sensors (i.e. do not need to be oriented) can be purchased as an option from GEM Systems.

Initially, the tuning of the instrument should agree with the nominal or expected value of the magnetic field for the particular region (see Figure A1 in Appendix A). You can set this tuning automatically or use the *tune initialize* feature provided for this purpose. After each reading the instrument tunes itself automatically.

If large changes in magnetic field are encountered between successive readings, you see a warning and you may have to repeat the reading to obtain an accurate result.

Local ferromagnetic objects (such as screws, pocketknives, wristwatches, tools etc.) may impair the quality of measurement or, in drastic cases, obscure the proton precession signal by creating excessive gradients.

NOTE:

For best results, you should keep ferromagnetic objects away from the sensor.

In normal applications, the magnetometer console does not produce appreciable effects on measurements provided that the sensor is installed on the staff and kept at least at arm's length from the operator and the console.

4. INSTRUMENT DESCRIPTION

Before starting, you should be aware of some general terminology that applies to GEM's magnetometers and gradiometers. ROVER and BASE station modes are terms that describe the operating characteristics of instruments whereas SLOW and FAST reading rates describe the cycling characteristics of instruments. Specifically,

- ROVER mode refers to instruments that physically move throughout the survey. GEM delivers instruments that operate in mobile (i.e. magnetometer), gradiometer, walking magnetometer and walking gradiometer modes.

- BASE station mode describes stationary units used for diurnal correction.

- SLOW cycling rates describe instruments that cycle from 3 seconds to 1 hour.

- FAST reading rates describe instruments that cycle from 0.5 seconds to 1 hour (i.e. include all SLOW reading rates).

By default, all GSM-19 series magnetometers / gradiometers have a mobile and base station mode, and cycle at a slow reading rate. However, if you purchase additional options such as walking mode or walking gradiometer rover mode, your instrument is automatically upgraded to a fast cycling rate.

Please keep this terminology in mind when reading the next two sections and other parts of the manual that describe the various operating modes and options.

4.1 STANDARD SYSTEM COMPONENTS

The following images show the standard components that are shipped with a GSM-19 system.

Figure 2. GSM-19 Case with Sectional Staff rods. Assemble these rods if you are planning to conduct a "Mobile" survey (i.e. one with discrete stations as opposed to a "walking" or continuous survey).

Figure 3: Standard magnetometer components include a sensor, console, radio frequency cable, download cable, shoulder harness, sensor mounting rod, and RS-232 cable. Also included here are a GPS and GPS support rod. For a complete list of parts, consult your packing slip. It may show, for example, that you have an additional sensor and radio frequency cable (i.e. for a gradiometer configuration).

The following list summarizes the STANDARD parts that are shipped with a GSM-19 system:

- 1 sensor for magnetometer and 2 for gradiometer. Sensors are dual-coils designed to reduce noise and improve gradient tolerance. Coils are electrostatically shielded and contain a special proton rich liquid in a sealed Pyrex bottle Radio Frequency (RF) resonator. The liquid does not need to be refilled.

- 1 coaxial sensor cable per channel, typically RG-58/U and 206 cm long. (Up to 100m long cable is available optionally. Over 20m, we recommend a triaxial cable - Belden 9222).
- Fast reading magnetometers have two sensor cables – one for RF polarization and a microphone cable for the signal.
- Console with all electronic circuits. It has 16 key keyboard, graphic display (64 x 240 pixel, or 8 x 30 characters), sensor and power / input / output connectors. The keyboard also serves as an ON-OFF switch.

- 6-pin console connector for RS-232, external power, battery charging or external trigger. Optional dual analog output is available on a 3-pin connector.

- Sealed connectors (i.e. keyboard and front panel mounting screws are sealed so that the instrument can operate under rainy conditions).

- Charger with 2 levels of charging (full and trickle) that switch automatically from one to another. Input is 110 - 250V, 50 / 60 Hz.

- All-metal console housing for excellent electromagnetic interference (EMI) protection.

- Aluminum staff with 4 strong tubing sections (plastic staff optional). This construction allows for a selection of sensor elevations above ground during surveys. For best precision the full staff length should be used. Recommended sensor separation in gradiometer mode is one staff section (56cm), although two or more sections are sometimes used for maximum sensitivity.

4.2 ASSEMBLING THE INSTRUMENT

The GSM-19 is very simple to assemble. The following picture shows the sensors in Gradiometer or Walkgrad configuration mounted on a back pack

Figure 4: Gradiometer and Backpack Assembly

4.2.1 General Assembly Instructions

When assembling the instrument, start by:

1. Installing the sensor on top of the 4th section of the staff, far from any metallic or magnetic object.

2. Plug the sensor cable(s) into the side of the console.

3. Check the magnetometer power. Typically, power is supplied via a 12 volt built-in rechargeable battery.

4. If you are using an external power supply (250mA or 3W of power), connect it to pins E (-) and F (+) of the 6-pin connector at the bottom end of the console. Pins B and C are used for RS-232C communications. Pin A is reserved for external trigger. A spliced 6 pin (to RS-232C and external battery) cable is optionally supplied with the instrument. Pin D is reserved for charging the internal battery.

5. If you are using fast sensors (optional), make sure that there are two short cables (sub cables) with 2 BNC connectors. Connect first the extension cables and then connect both cables to the GSM-19 console-BNC and 4 pin connector. The lower set of connectors on the unit's display and in this manual is referred to as [lower], while the upper set is referred to as [upper].

6. If you are using slow sensors (optional), make sure that you have one short cable with a BNC connector. First connect the extension cable and then connect 4 pin connector to the GSM-19 console. Again, the lower 4-pin connector on the display is referred to as the [lower] and upper 4 pin connector is referred to as [upper].

7. If you are using the VLF unit (optional), connect the VLF cable (plastic connector) to VLF sensor and the metal shell connector to the mag.

8. If you are using the backpack accessory (optional), install the sensors in the unit for hands free operation. Refer to picture on the previous page for a general overview of the backpack assembly.

9. If you are using the GPS sensor (optional), refer to Figure 1 to see how the unit is configured. Make sure that you connect the antenna cable to the BNC connector marked with a yellow tag on the right hand side of the console.

4.2.2 Using the Charger

The charger supplied with the magnetometer is of wide input voltage range 100 - 250 VAC 50/60 Hz. The “fast charging” indicator of the battery charger will light when battery charging is in progress, and charging should be allowed to proceed until the indicator goes off.

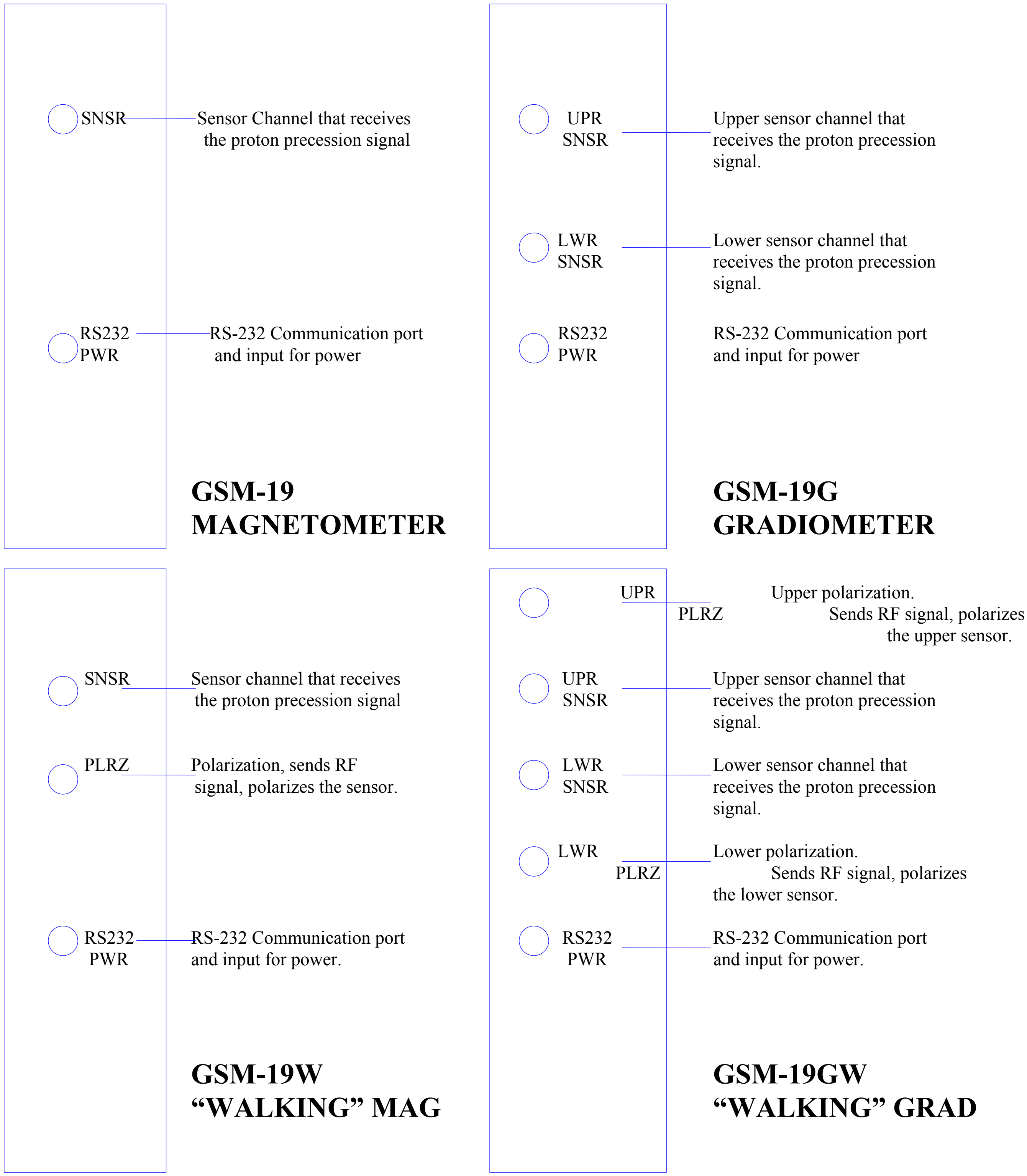
4.2.3 Using the 6-Pin Connector

The 6-pin connector can be used for different purposes:

- To connect the charger.
- For time synchronization and for diurnal correction - use 6-pin to 6-pin cable connected from console to console.
- For RS-323 data transfer, either in Real time Transmission or after the survey.
- For external triggering.
- For upgrading internal software.
- For any combinations of the above with proper cable (contact GEM systems for available options).

Figure 5. Operator with console, sensor and GPS.

4.3 DESCRIPTION OF CONNECTORS



4.3.1 Pinout of a 6-Pin Female Connector

A - external trigger.

B - RS-232-C to mag.

C - RS-232-C from mag.

D - (+) of 12V lead acid battery charger.

E - Ground, (common).

F – external battery + 11V to 15V.

NOTES:

External power applied to pin F does not charge the internal battery.

Voltage in excess of 15 volts in pin F may trigger an internal protection and blow the internal fuse. Fuses cannot be reset and must be replaced.

4.3.2 Pinout of a 4-Pin Female Connector

A - signal input.

B - Ground.

C - not used.

D - not used.

4.3.3 Pinout on BNC Female Connector (Fast or Walking modes):

Center pin - RF output.

Body - Ground.

4.3.4 External Trigger Options

Those survey modes that require your intervention to take a reading, such as Mobile, slow Gradiometer or slow modes combined with VLF, could also be triggered by external control pulses sent to the 6-pin connector.

Auto-cycling modes, such as Base, Walk Mag or Walk Grad do not respond to external trigger commands.

External trigger can be accomplished in three different ways:

1. Using external relay or switch between pins A - E:

- Keep A-E open for most of the time.
- Shorting A - E for 10ms - 50ms is recognized as a trigger.

2. Using external voltage on pin A with E as ground:

- Keep A at 5V to 12V most of the time.
- Voltage falling to 0V for 10ms - 50ms is recognized as a trigger.

3. Using RS-232 to GSM-19 at pin B and pin E as signal GND:

- A Carriage return byte is recognized as a trigger command.

NOTE:

Real Time Transmission must be enabled for this trigger mode to operate properly.

For those external trigger modes involving pin A as an input, you can check the status of pin A from the unit's screen. From main menu, press **D-test** and then **E-ext-trigger.** The screen shows **Pin A floating** for the high-level conditions, and **Pin A GNDed** for the ground (GND) level.

NOTE:

Pin A is actually never floating. It is tied to +5v by internal pull-up resistors.

5. OPERATING INSTRUCTIONS

This section is intended to give you a basic overview of the keyboard, menus and processes required to set up and operate the magnetometer in the field.

5.1 KEYBOARD DESCRIPTION

The keyboard consists of 16 alphanumerical keys. The function of the keys is described below:

5.1.1 Power On

1. Press the button labeled "**B**" on the console to turn the GSM-19 on.

2. If during power up, you hold the **power** button **B** for about 2 seconds, the following screen is displayed:

SCREEN 1

```
 Gem Systems GSM-19GW  1234567
52 West Beaver Creek Road #14
 Richmond Hill, Ontario L4B 1L9
                Canada
 tel 905-764-8008              fax  764-2949
    www.gemsys.on.ca
    info@gemsys.on.ca                     bytes
v7.0 10 II 2007
    16277738
```

Screen 1 displays the company address, telephone, fax, e-mail and website. The bottom line displays the software version/date and the total storage capacity of the unit in bytes.

You can access the same information screen by pressing **C-info** and then **3-info** from the main menu screen.

Once the power button is released, the unit proceeds to the **Main Menu**. Options and their functions are explained later in section 5.2.

5.1.2 Power Off

To switch the unit off, press the **O** and **F** keys simultaneously at any time, in any menu.

5.2 MAIN MENU

To position the magnetometer in the **Main Menu**, press the **1** and **C** keys simultaneously – at any time.

All of the valid options and their functions are displayed on the screen in the form of a letter / digit followed by a dash and then a brief description of its function.

The 13.2V on the bottom right corner of the screen shows the battery voltage.

SCREEN 2

```
A-survey  B-diurn.cor
                                   F-GPS
C-info  OF-off  D-test
                                15  II  00
E-time-synch  1-send               TU
                                01:04:15
45-erase  2-enter text
                                  13.2V
```

From the **Main Menu**, you can press the following to go to the menus shown on the right:

A **Survey Menu** (see section 5.3)

B **Diurnal correction** (see section 5.9)

C **Info Menu** (see section 5.4.5)

D **Test** (see section 9)

E **Time Synchronization** (see section 5.8)

1 **Data Transfer** (see section 6.2)

F **GPS option** (see Appendix D)

45 **Data Erasing** (see section 8)

2 **Text Mode** (see section 5.3.10)

5.3 SURVEY MENU

The Survey Menu is the main menu you use for acquiring data. To access the **Survey Menu,** make sure you are in the **Main Menu** and press **A.**

The active option on the survey menu is the one highlighted with reverse video. Pressing **B** moves the highlighted marker backward, and **F** moves it forward. Once the desired option is highlighted, press **C-change** to change its settings.

SCREEN 3

```
survey mode  position time file
cycle time tuning AC filter
display mode text ID

      connect sensor now
029127 readings left
mobile
A-start                 C-change ←  BF  →
```

In the **Survey Menu**, you can press the following to initiate the actions shown on the right:

F move forward or

B move backwards through the parameters

C change settings of the highlighted parameter

A start the survey at any time

5.3.1 Setting the Survey Mode

In the **Survey Menu**, highlight **survey mode** and press **C-change**. The survey modes that are applicable for the unit are displayed.

> **NOTE:**
>
> *The available survey modes of your unit may differ from the ones shown here depending on its model, its software, and its hardware.*

SCREEN 4

```
A – mobile      B – base
          C – grad
D – walkmag    E – walkgrad
```

and select:

A mobile

B base (station)

C grad

D walkmag

E walkgrad

After a survey mode has been selected, the settings that apply to that mode is displayed. For example, if the **mobile survey mode** is selected, you see:

SCREEN 5

```
survey mode  position time file
cycle time tuning AC filter
display mode text ID

     connect sensor now
029123 readings left
mobile
A-start                C-change ←  BF  →
```

If the **base survey mode** is selected, you see:

SCREEN 6

```
survey mode  datum time file
cycle time tuning AC filter
display mode text ID

      connect sensor now
089123 readings left
base
A-start              C-change ←  BF  →
```

CAUTION:

Before taking a reading, check to make sure all cables and sensor(s) are connected. This maximizes the lifespan of your system and protects internal RF circuits from water damage, overheating, etc.

The active survey mode and the number of readings that could be taken in that mode until the memory is full are also indicated on the screen.

NOTE:

The mobile menu does not have a setting for the DATUM, and the base does not have a setting for POSITION.

5.3.2 Setting the Positioning System

From the Survey Menu scroll with B or F to highlight position.

SCREEN 7

```
survey mode  position  time file
cycle time tuning AC filter
display mode text ID

00100N   0000125E

A-start              C-change   BF  →
←
```

When position is highlighted, the unit displays the current position settings.

To select the positioning system or make changes to the coordinate numbers, press **C-change**.

The selection of the positioning system can be made only once per file and only before the first reading of the file is taken. Positioning systems cannot be combined. Once a reading is taken, the current system remains for the rest of the file. By default, the system used in the last file is the active one. If you need to change it, do so now before taking any readings.

The Selection for **X / Y coordinates** looks like:

SCREEN 8

```
select positioning system
XY
each:
       -9999999      to  +9999999
or     -9999999.99   to  +9999999.99

F-ok  C-change
```

or for the **Line / Station grid system**

SCREEN 9

```
select positioning system
LINE 0 to 99999

STATION         0      to  9999999
               or  0.00  to     99999.99
each with  NN  NE  E  SE  S  SW  S  NW
F-ok  C-change
```

C-change toggles between the above two screens. Press **F-ok** to select one.

NOTE:

If your unit is equipped with built-in GPS and GPS is active, you have more options for the positioning system. See Appendix D for more details.

If you select X/Y system, the next screen is:

SCREEN 10

x= 0		y= 0	
position			
x= 0		y= 0	
increment			
x= 0		y= 0	
EOL increment			
E-next	C-clear	D-backsp.	F-ok

- **Position** Current coordinates. These are the X/Y coordinates of the first reading.
- **Increment** Increase in each direction that is added to present position after each reading.
- **EOL** End Of Line increment (i.e. added to the present X and Y if you press **EOL** -see section 5.4.4)

A list of available commands is shown on the bottom line:

E moves cursor to next number.

C erases the number at cursor position.

D cursor jumps to the end of the number - if you just want to modify last digit.

F leaves this screen.

If you press **C-clear** or **D-backsp**, the bottom line changes to display new commands:

SCREEN 11

x= 0			y= 0	
position				
x= 0			y= 0	
increment				
x= 10			y= 0	
EOL increment				
0-9	A-dp	B- +	D-backsp.	E-enter

0-9	digits can be entered.
A-dp	places decimal point, after that only 2 more digits are allowed.
B-+	toggles sign.
D-backsp	backspace. Erases last digit (or decimal point) entered.
E-enter	press if number is correct.

If you selected **Line-Station** positioning system, two screens are displayed: one for the Line and the other for the Station settings.

SCREEN 12

```
LINE 00100 N                        F-OK
change A-number  B-coordinates

EOL INCREMENT  +00100
change C-sign  D-number

LINE INCREMENT  +00000
change E-sign 0-number
```

A changes line number.

B changes line cardinals. (N,NE,E,SE,S,SW,W,NW)

C changes EOL increment sign.

D changes EOL increment.

E changes line increment sign.

0 changes line increment.

NOTE:

The EOL increment only affects the Line number (see section 5.4.4).

SCREEN 13

STATION 012345.50 E change A-number B-coordinates STATION INCREMENT +00012.25 change C-sign D-number F-OK

A changes station number.

B changes station cardinals. (N,NE,E,SE,S,SW,W,NW)

C changes station increment sign.

D changes station increment.

When you press **A - number, D - number** or **0 - number** the following screen is displayed:

SCREEN 14

E - enter C - clear

Here you can enter the required number, using **0-9** digits and **A** as a decimal point. Then use **C-clear** to make corrections or **E-enter** to store.

When you press **B-coordinates**, the following screen is displayed:

SCREEN 15

enter NESW

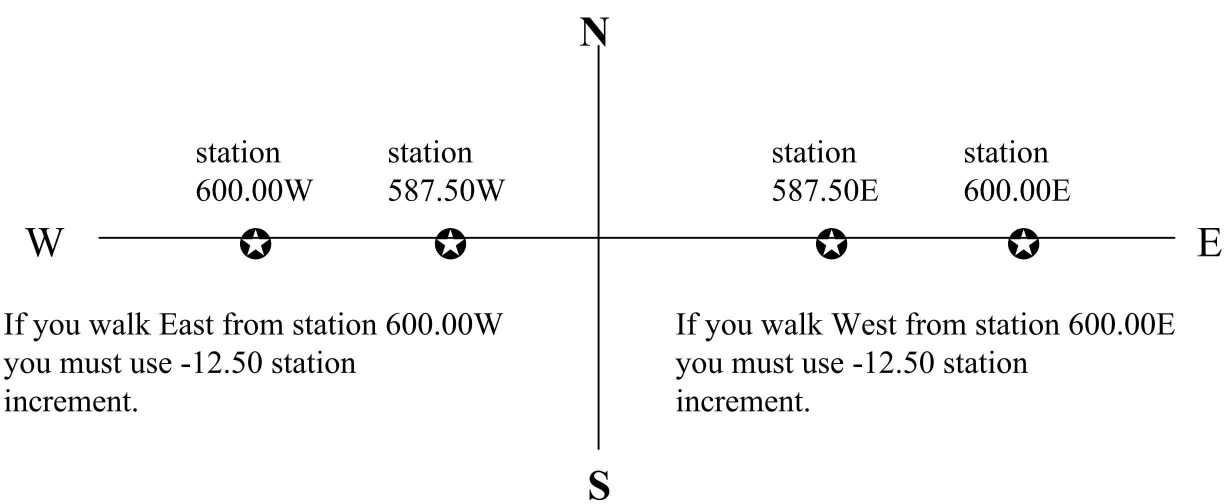
Use the **blue letters** on the keyboard to select the desired cardinal point.

NOTES:

For a standard survey do not use LINE INCREMENT (set it to 0). You can use LINE INCREMENT if you are surveying a base line or tie-line. Otherwise you would be walking diagonally on your grid.

If you are planning to use station interpolation for walk files (see section 6.2.3), keep in mind the number of readings and the distance between pickets by managing the cycling time and the station increment. If you have too many readings and small station increments, some interpolated stations have repeated values.

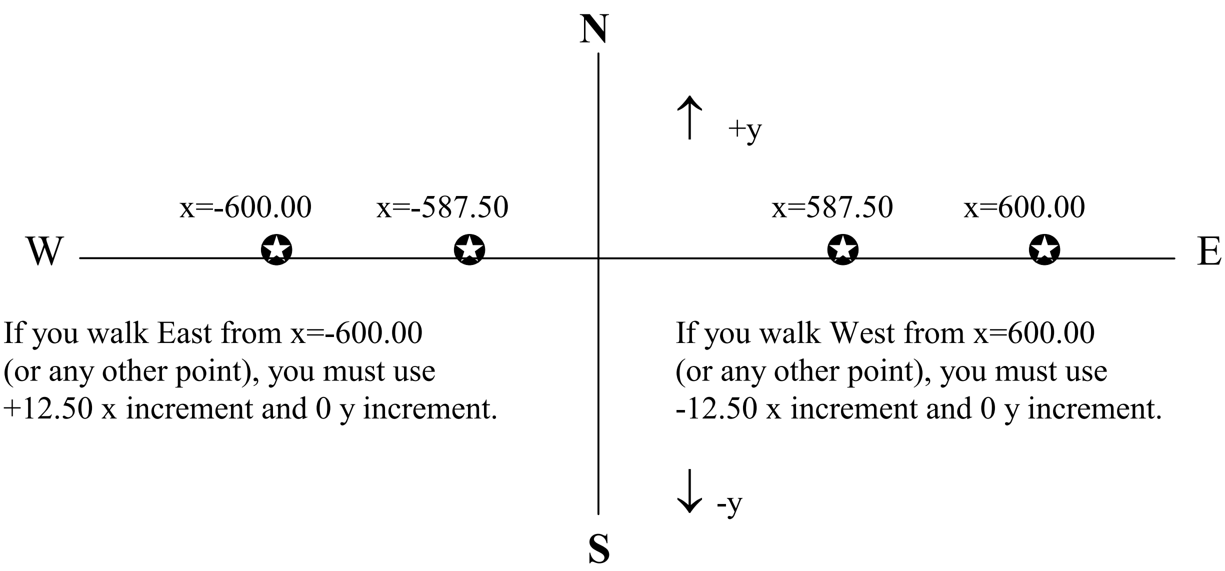
5.3.3 Understanding the Line / Station Positioning System



In both cases, when you pass through station 0.00, the GSM-19 automatically changes E to W or W to E and the sign of the station increment.

The station increment is used in a mathematically correct way and is related to the direction in which you are walking. As per the above diagram the same applies to N or S stations.

5.3.4 Understanding the X / Y Positioning System



For clarity, in the above diagram **x**-axis is aligned EW, and **y**-axis NS but they could also represent any other grid.

The x increment is used in a mathematically correct way and also indicates the direction in which you are walking.

Similar rules apply for walking in y direction.

- Walking north or east requires a positive increment regardless of where you stand.
- Walking south or west requires a negative increment.

The x increment must be zero if you walk along y lines.

NOTE:

All the numbers shown above are just examples, the range of numbers which can be used are:

Line	0 to 99999
Station	0 to 9999999 or 0.00 to 99999.99
x y	-9999999 to +9999999 or -9999999.99 to +9999999.99

The same limits apply for the increments, but selections must be done in such a way that after the increments are added the numbers are still within range.

5.3.5 Setting the Time

In the **Survey Menu**, press **F** to highlight **time**

SCREEN 16

```
survey mode position  time  file
cycle time tuning AC filter
display mode text ID
13  V  96MO15:05:04.0
this time has been set by keyboard
A-start                 C-change   BF   →
←
```

time running

The line that has "this time has been set by keyboard" can also have other values as follows:

- has been set by GPS.
- has been set by default.
- has been set by cable synch.
- has been set by remote.

To change the time, press **C-change** and the following screen is displayed:

SCREEN 17

```
wyymmddhhmmss

c-clear
```

Now enter the date and time. In case of a typing error, press **C**.

- w - weekday, 1 - Monday, 7 - Sunday
- yy - year
- mm - month
- dd - day
- hh - hours in 24h system
- mm - minutes
- ss - seconds

When all of the digits are entered the unit displays the following screen:

SCREEN 18

F-start-clock

Press **F** when you intend to start the time.

NOTE:

Units equipped with GPS overwrite this time with UTC when GPS is enabled.

5.3.6 Setting the File Name

In the **Survey Menu,** press **F** to highlight file

SCREEN 19

survey mode position time file cycle time tuning AC filter display mode text ID 01survey.m A-start	C-change ← BF →

C **change** enables you to change the 6 letter file name - but only before the first reading of the file.

- Use the red letters on the keyboard to name the file. If the required letter is second or third, press the corresponding button twice or three times. Use the:

F button after each letter to move the cursor to the next position and

B button as a backspace.

You can store up to 50 files in the mag. File names have a format similar to 01survey.m, where you can only change the 6 letters between the first number and the period (i.e. the file extension is fixed). The prefix numbering (ex. 01 to 50) and the file extension are automatically assigned. The file extensions are **.m** for mobile and **.b** for base (see section 6.1 for more file extensions).

5.3.7 Setting the Cycle Time

In the **Survey Menu**, press **F** to highlight **cycle time**.

SCREEN 20

```
survey mode position time file
cycle time    tuning AC filter
display mode text ID

0004.0 sec cycle time
A-start            C -   D +   ←  BF  →
```

C - and
D + enable you to decrement or increment the **Cycle time**

There are four groups of survey modes with different limits in cycle time:

Cycle Time	Survey Mode
1. 3.0 sec. - 10.0 sec.	Mobile gradiometer, mobile + vlf, gradiometer vlf.
2. 3.0 sec. - 3600.0 sec.	Base Station.
3. 0.5 sec. - 2.0 sec.	Walk modes.
4. 0.2 sec. - 2.0 sec.	Fast & marine modes.

The cycling time for each of these groups is saved and after changing the survey mode the last used cycle time is restored in each of the survey modes.

The definition of cycle time is different for different survey modes:

- In mobile, gradiometer, mobile + vlf or gradiometer + vlf modes, the GSM-19 does not cycle automatically. You must press a button to take each reading.

  The cycle time in these modes represents the maximum waiting time to match the seconds and fraction of seconds to those of a base station unit cycling at the same rate. This ensures that there is a reading on the base station taken precisely at the same time, and that interpolation of the base unit readings is not required during diurnal corrections (see section 5.9).

  When the unit is set to **immediate start**, lines 6 & 7 of the LCD show **immediate start (correction with interpolation)**. This means that once in survey mode, pressing any button starts a reading immediately. Because there is no waiting time, the time stamps of the readings of the mobile unit may not match the time stamps of the readings of the base station. During diurnal correction the base readings are linearly interpolated to the time of the mobile unit.

- Base, walk, fast and marine modes are auto cycling modes. The cycle time is the time between consecutive readings.

For more precise diurnal correction, press **D+** or **C-** to select the same cycle rate as the base unit.

NOTE:

To perform diurnal corrections, the time of the mobile and the base MUST also be synchronized. See Time Synchronization in section 5.8.

5.3.8 Tuning the Magnetometer

In the **Survey Menu**, press **F** to highlight **tuning**.

SCREEN 21

```
survey    mode    position    time    file
cycle time    tuning        AC filter
display mode   text   ID

initialize  N       auto-tune Y056

A-start          C-change      ←  BF  →
```

C-change lets you change all three parameters as follows:

1. Tuning initialize.
2. Auto tune.
3. Tuning number in μT.

If you press **C-change**, you see the following:

SCREEN 22

tune initialize yes F-ok C-change

C - change toggles between **yes** and **no**

- If you select **tune initialize yes**, the unit automatically scans through its range for the initial tuning setting. This scan is performed only once and before a reading is taken (when entering the survey mode from this screen). Once tuning is initialized, the value of the tuning parameter depends on the auto-tune setting.

  NOTE

  The automatic scanning process may fail in noisy or high magnetic gradient areas. In these cases you may use manual tuning by setting tune initialize to NO.

- If you select **tune initialize no**, you must manually set the field range in screen 24.

To store your selection and access the next tuning parameter, press **F-ok**.

SCREEN 23

auto-tune yes F-ok C-change

C-change toggles between yes and no.

- **auto-tune yes** allows the unit to follow changes in the magnetic field with jumps of a maximum of +-2.5 µT per reading in the survey area.

- **auto-tune no** permanently holds tuning at the initial value. If **tune initialize** was set to YES, the tuning value obtained during the automatic scan is set for the survey. If **tune initialize** is set to NO, the unit retains the tuning value displayed on the next screen

To store your selection press **F-ok**. If you selected **tune initialize no** at screen 22, the following screen is displayed.

SCREEN 24

```
           57
tuning 19-131 microT

F-ok  C-change-number
```

Enter the first two digits of expected magnetic field (first 3 if above 100 kgamma) for initial tuning.

5.3.9 Using the AC-Filter

In the **Survey Menu**, press **F** to highlight **AC filter**.

SCREEN 25

```
survey mode   position   time   file
cycle time   tuning   AC filter
display mode   text   ID

60Hz

A-start            C-change ← BF →
```

C-change toggles between 60Hz, 50Hz and No.

If you select **No**, the reading is defined as the longest measurement possible, however, the other two settings are recommended because of possible AC interference.

NOTE:

It must be mentioned here that the AC filter is not a DSP (digital signal processor) implemented in software or a hardware filter. It simply shortens the measuring time to match a specific numbers of 1/60 or 1/50 seconds periods to minimize the interference of power lines.

GEM Systems magnetometers output real measured values with no extra filtering, averaging, or signal manipulation of any kind. State-of-the-art measuring algorithms and system design -- from the sensors to the electronics ensure the quality of the results. In the few cases when averaging of the readings is required, you have full control over the process.

5.3.10 Setting the Display Mode

In the **Survey Menu**, press **F** to highlight **Display Mode**.

SCREEN 26

```
survey mode position time file
cycle time tuning AC filter
display mode  text ID

graph

A-start              C-change ←  BF  →
```

C-change toggles between the **text** or **graph** selections.

If you select **text,** all of the graphs are disabled and the following screen is displayed:

SCREEN 27

```
text

display-mode

F-ok  C-change
```

If **graph** is selected, the following is displayed.

SCREEN 28

graph no text display-mode F-ok C-change

C-change toggles line 2 between no text; field n;, coordinates; andfield nT & coordinates.

no text	only a graph of the magnetic field is displayed during survey with no other text.
field nT	the graph along with the magnetic field readout in big digits in upper left display corner is displayed.
Coordinates	line and station (or X/Y) is displayed in small characters in top right corner.
field nT & and coordinates	both field and coordinates numbers are shown.

NOTE:

Gradiometer modes have more options in this screen to accommodate the selection of gradient graph or readouts.

Press **F** after you have made your selection. The following screen is displayed.

SCREEN 29

yes
clear graph
F-ok C-change

C - toggles between **yes** and **no**.

Once programmed, this feature is always active at the start of a survey until you disable it. It can only be changed in this screen at the end of the set up menus. This feature has no effect on the display when you go from the survey menu back to the survey.

Yes Always starts the survey with an empty screen. The graph starts from the left side, and the offset is set to 00.

No Displays the last graph from memory and starts adding the new readings at the end of it.

After you have made your selection, press **F.** The following screen is displayed.

SCREEN 30

D ↑	vertical scale 160nT	
C ↓		**A- B+ F**

Use **A-** or **B+** to select the vertical scale and **D** or **C** to adjust the vertical offset by one dot of the LCD (keep pressed for fast, continuous action).

Only a short, rounded indication of the vertical scale appears on the 1st line of the screen. The actual values are the ones shown in the following table. The vertical units are nT (i.e. full scale from top to bottom of the screen).

The horizontal range is always 240 dots and each dot represents a reading.

Real Range	LCD Short Form
0.64nT	0.64nT
1.28nT	1.28nT
2.56nT	2.56nT
5.12nT	5nT
10.24nT	10nT
20.48nT	20nT
40.96nT	40nT
81.92nT	80nT
163.84nT	160nT
327.68nT	300nT
655.36nT	650nT
1310.72nT	1300nT
2621.44nT	2600nT
5242.88nT	5000nT

Table 1: Vertical Graph Display Ranges

5.3.11 Entering Text

In the **Survey Menu**, press **F** to highlight **Text**.

SCREEN 31

```
survey mode    position    time    file
cycle time     tuning      AC filter
display mode   text        ID


A-start        C change        ←  BF  →
```

C-change allows an entry of a text with comments or observations pertinent to the survey. More text or comments can be added later as the survey progresses (see section 5.4.1).

Each file may have its own text (including base mode).

You can recover the text later using SEND (dumping data) in a separate file or you can access it chronologically with the data.

5.3.12 Changing the Magnetometer ID Number

In the **Survey Menu**, press **F** to highlight **ID**.

SCREEN 32

```
survey mode position time file
cycle time tuning AC filter
display mode text  ID

123456789

A-start              C- change ←  BF  →
```

C-change allows a change of **ID** number of this unit –value is shown in the headers of the files when using SEND. A maximum of 9 digits is allowed.

This setting has no effect on the readings or the survey mode itself. It could be used to identify the operator or any other additional information pertinent to the current file or unit.

5.4 WORKING WITH MOBILE MODE (ALL MODELS)

As described in the instrument description section in Chapter 4, GEM's ROVER modes include mobile, gradiometer, walking and walking gradiometer. This section describes the mobile mode that (along with the BASE STATION mode) is a standard feature of all GSM-19 series units.

5.4.1 Performing a Reading

Mobile mode is a standard mode and is always included in every GSM-19 configuration.

CAUTION:

Before taking a reading, check to make sure all cables and sensor(s) are connected. This maximizes the lifespan of your system and protects internal RF circuits from water damage, overheating, etc.

With **MOBILE** survey mode selected, press **A-start** from anywhere in the **Survey Menu**.

SCREEN 33

```
survey mode  position time file
cycle time tuning AC filter
display mode text ID

      connect sensor now
029127 readings left
mobile
A-start              C-change ←  BF  →
```

- If tune initialize is selected (see section 5.3.7), the unit displays **Please wait** while scanning through its range for the initial tuning value.
- If **text** is selected in **Display Mode** (see section 5.3.9) the following screen is displayed:

SCREEN 34

```


A - menu     1 - repeat (same position)
             other keys - read
   L 100 N                  S 200 E
```

To take a reading, press any other key (with the exception of **A** which returns you to the menu).

- If you need to repeat a reading, press **1**. This repeats the reading for the current Line and Station (or X/Y) without position increments (see section 5.4.2).

NOTE:

Readings are stored in memory as they are taken with no further user intervention.

After the reading is performed, the following screen is displayed:

SCREEN 35

```
56,789.34 nT       12.34 nT                    99

 A - menu     1 - repeat (same position)
              other keys - read
    L 100 N                    S 200 E
```

where the:

- first number (56,789.34) is Total Magnetic field in nT
- second (12.34) is the difference with the previous reading also in nT
- third (99) is the signal quality (see 5.4.8)
- last line is displaying line and station numbers (or X/Y coordinates)

If **graph** is selected in **Display Mode** the screen corresponds to your choice of:

- graph only (no text)
- graph and field nT
- graph, field and coordinates
- (see 5.3.9 Setting the Display Mode)

To **Stop Reading** or **Exit** the **Reading Menu**, **press A**. The following screen is displayed:

SCREEN 36

A-position   B-enter text 4-graph vertical scale C-tune 5-display-mode E-EOL F-ok   0-noise 1-info

The following menu gives you access to some of the parameters in the set up menus.

- **A-position** - Will take you to the position coordinates setup screen. NOTE that from this menu you can only change the coordinates but you cannot change the system (see section 5.3.2).
- **B-enter text** - Allows you to type messages or comments which can later be recovered with SEND.
- **4-graph** - Is active only if graph mode is selected. It allows to change the graph's scale and offset (see section 5.3.8)
- **C-tune** - Leads you to the tuning setup screens (see section 5.3.6). NOTE that the tune initialize process is not repeated when returning to survey (even when set to YES).
- **5-display-mode** - Guides you through the selection of Display Mode (see section 5.3.8).
- **E-EOL** - Performs **End Of Line** function - line number is incremented, direction is reversed (see section 5.4.4).
- **F-ok** - Takes you back to survey.
- **0-noise** - Will display noise from sensor - value of 100 or less is normal (see section 5.4.3).
- **1-info** - Is very useful in providing information about last reading like s/n (signal/noise ratio) and measurement time in ms. It also shows the number of readings which can be taken before the memory is full (see section 5.4.5).

5.4.2 Repeating a Reading

To repeat a reading, make sure that you are in the **Reading Menu** and press **1- repeat**. The following screen is displayed.

SCREEN 37

```
56,789.34 nT      12.34 nT                 99



 A - menu     1 - repeat (same position)
              other keys - read
    L 100 N                   S 200
```

The new reading has the coordinates of the current position (either Line and Station numbers or X/Y coordinates).

You can take as many repeated readings as needed (i.e. without incrementing the position) by pressing **1- repeat (same position)**. ALL repeat readings are automatically stored with the same coordinates and the actual time of the reading. When you dump or transfer the file using SEND, all the readings and the repeats are sent with their correct time stamp and coordinates.

NOTE:

On units equipped with GPS, it is not possible to take repeat readings when GPS is active. The coordinates are taken from the GPS module each time a reading is taken.

5.4.3 Monitoring the Noise

From the **Reading Menu**, press **A-menu**. The following screen is displayed.

SCREEN 38

```
A-position    B-enter text
4-graph  vertical scale
C-tune
5-display-mode
E-EOL  F-OK  0-noise

1-info
```

Then press **0- noise**

SCREEN 39

```
lower 99



F-ok
```

- **lower** indicates this is the noise level of the lower channel. The noise level is useful, for example, to evaluate the effect of nearby power lines on a survey. The level is internally set to 100 and any value over this indicates a high noise level. If high noise levels are encountered, you may want to adjust the survey grid location or perform the survey while anticipating that some individual readings may be noisier than desired.

- Alternatively, gradiometer units that are equipped with two channels, may display **upper** if the upper channel is the active one, or both upper and lower when in gradiometer mode. In any case, if there is no external electromagnetic disturbance the number displayed is 100 or less.

To return to reading mode press **F** twice.

5.4.4 Using the End of Line (EOL) Function

From the **Reading Menu,** press **A-menu**. The following screen is displayed.

SCREEN 40

```
A-position    B-enter text
4-graph  vertical scale
C-tune
5-display-mode
E-EOL  F-OK  0-noise

1-info
```

press **E-**EOL

EOL is a very useful feature. One button, (**E)**, is all that is required to continue a survey with minimum user intervention.

The way the EOL operates depends on the positioning system in use.

a) EOL with Line / Station system

- Line Coordinate: The Line Number is incremented by the current Line Increment.
- Station Coordinate: The Station Number remains the same but the Station Increment reverses sign.

With this simple process the operator is ready to walk to the next line of the grid and start taking the readings moving in the opposite direction he or she walked the previous one.

However, if the next line starts at a different station number, you may press **A-** or **B+** to change the current station number backward or forward by the pre-set station increment.

SCREEN 41

```
A- B +    F-ok


L00100N       S0000225E
```

b) EOL with X / Y coordinates

- **X** and **Y** coordinates both increment by their respective EOL increment
- **X** and **Y** increments both reverse sign

If you need to make further adjustments, you may press **A-** or **B+** to change the current X **and** Y coordinates backward or forward by their respective increments.

NOTE:

To walk along X lines set Y increment and X EOL increment both to zero.

To walk along Y lines set X increment and Y EOL increment both to zero.

5.4.5 Displaying System Information

From the **Reading Menu,** press **A-menu.** The following screen is displayed.

SCREEN 42

```
A-position    B-enter text
4-graph  vertical scale
C-tune
5-display-mode
E-EOL  F-OK  0-noise
1-info
```

Then press **1-info.** The following screen is displayed.

SCREEN 43

```
up 2840zc 1200ms 2600 1600
lo  2780zc 1200ms 2500 1600



                                  F
```

This screen is providing the following information:

- Up - Upper channel (if installed)
- Lo - Lower channel
- 2840zc - # of zero crossings taken (used for measurement calculation)
- 1200ms - Signal measurement time in milliseconds
- 2600 & 1600 - First and last signal measurement amplitudes (S/N)

5.4.5 Evaluating Signal Quality

Each mode, which includes the magnetic field measurement, has a signal quality indicator that is displayed in text. It is stored in memory, and it can be recovered using the SEND or File Review functions. It is a number presented in the form xy, where x and y are between 0 and 9.

- X is associated with measurement time and is a sort of gradient indicator.
- 9 means max measurement time was accomplished.
- 0 means measurement was too short.

	0	1	2	3	4	5	6	7	8	9
>=1s	<100 ms	<200 ms	<300 ms	<400 ms	<500 ms	<600 ms	<700 ms	<800 ms	<900 ms	>=900ms
0.5s	<50ms	<100 ms	<150 ms	<200 ms	<250 ms	<300 ms	<350 ms	<400 ms	<450 ms	>=450ms
0.2s	<35ms	<40ms	<60ms	<75ms	<90ms	<115 ms	<130 ms	<145 ms	<158 ms	>=158ms
0.1s	<34ms	38ms	<42ms	<46ms	<50ms	<54ms	<58ms	62ms	<66ms	>=66ms

Table 2: Definition of X

The numbers in the table represent the measurement time. The value of X is obtained differently depending on the cycling rate and the accomplished measuring time.

- Y represents the area under signal amplitude coincident with the time of measurement.
- 9 means optimal conditions.
- 0 means unacceptable reading.
- x=0 causes y=0 but not vice versa.

5.5 WORKING WITH GRADIOMETER MODE (19G & 19GW)

The gradiometer option is available in GSM-19G and GSM-19WG (Walking Gradiometer) units, and therefore this section refers only to these units.

Both units enable you to measure the magnetic field gradient between two sensors. These systems measure and store the gradient between the sensors in nT/m as well as the magnetic field reading in nT obtained by the lower sensor. The difference is that the Walking Gradiometer records data continuously for linear interpolation and referencing of ground positions following the survey.

5.5.1 Performing a Reading

After the initial start-up procedures (refer to section 5.3), select the Survey mode from the **Survey Menu** as follows:

SCREEN 44

```
survey mode  position   time   file
cycle time   tuning   AC filter
display   mode   text   ID
connect   sensor  now
029876 readings left
mobile
A-start    C-change              BF  →
←
```

Press **C-change**. The following screen is displayed.

SCREEN 45

```
A - mobile     B - base

C - grad
```

Select **C-grad.** The following screen is displayed. This screen enables you to define settings for the gradiometer mode.

SCREEN 46

```
survey mode   position   time   file
cycle   time   tuning   AC filter
display   mode   text   ID   sensors
   connect   sensors  now
029127  readings  left
grad
A-start      C-change          ←  BF  →
```

5.5.2 Specifying Gradiometer Sensor Spacing

Press **F** to highlight **sensors**. The following screen is displayed.

SCREEN 47

```
survey  mode   position   time   file
cycle time   tuning   AC filter
display mode   text   ID   sensors

56 cm apart

A-start      C - change        ←  BF  →
```

NOTE:

This screen is available only with the gradiometer models.

C-change allows you to set the distance between sensors. The change is allowed only once per file before the first reading is taken.

Grad displayed is in nT/m and is obtained as

$$\textbf{Gradient (nT/m)} = \frac{\textbf{FIELD lower channel (nT) - FIELD upper channel (nT)}}{\textbf{Distance between sensors (m)}}$$

If just the difference of the two fields is required, enter 100cm as the distance between the sensors.

5.5.3 Selecting the Display Mode

Press **F** to highlight **display mode**. The following screen is displayed.

SCREEN 48

```
survey mode    position    time    file
cycle time     tuning        AC filter
display mode        text     ID    sensors

graph

A-start   C-change             ←  BF  →
```

Use **C-change** to switch to the text or graph modes. In graph mode, you can plot either the Total field (from the lower sensor) or the Gradient.

SCREEN 49

```
graph   field
display  mode

F - ok   C - change
```

C - change toggles between **field** and **grad**. Press **F-ok** to select one. The following screen is displayed.

SCREEN 50

```
graph   field
no text
display  mode

F - ok   C - change
```

Use **C-change** to select the text labels you want to add to the graph. The options are:

- no text
- field nT
- coordinates
- field nT and coordinates
- grad nT/m
- grad nT/m and coordinates

5.5.4 Selecting Magnetometer Channels

Normally when a GSM-19G gradiometer is used in a single channel mode (i.e. for magnetic readings only), the lower sensor is used to take the readings but it is also possible to use the upper channel for this purpose.

To change the channel, access the **Main Menu** and press **C-info**. The following screen is displayed.

SCREEN 51

```
F - time    B - RS232     D - dir
C - review    1 - erase - file
A - remote    0 - datum
                                E-channel
2 - buzzer                         3-info
```

Press **E** – **channel**. The following screen is displayed.

SCREEN 52

```
lower



F - ok      C - change
```

C-change toggles between lower and upper (channel). **Press F-ok** to store your selection.

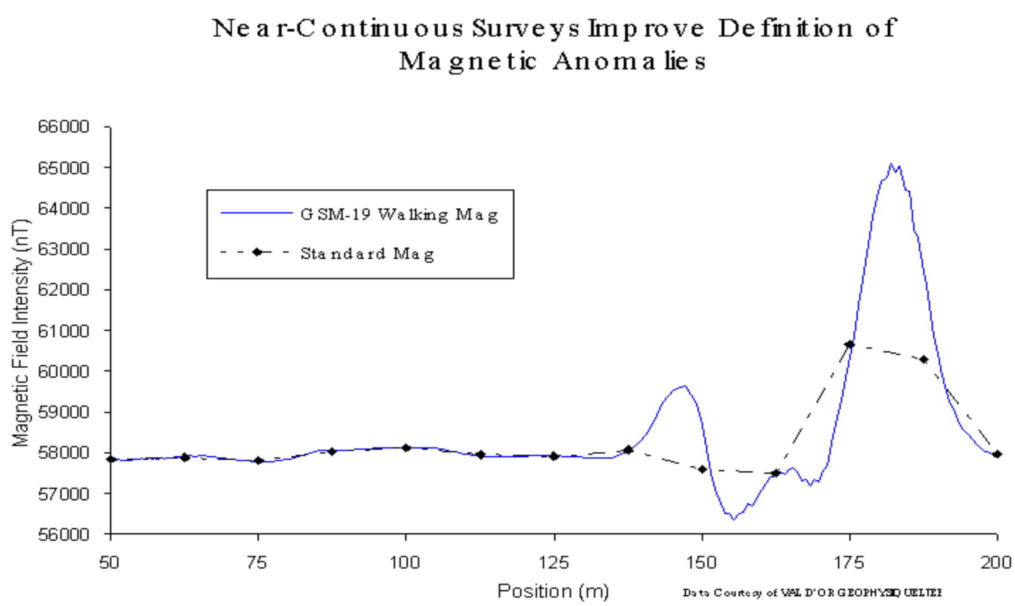
NOTE:

This is NOT a permanent selection. Even when the upper channel is selected for single channel modes, the unit defaults to the lower channel after a grad mode is used.

5.6 WORKING WITH WALKING MODES (19W, 19WG & 19GFW)

GEM's unique "Walking" Magnetometer/Gradiometer enables acquisition of nearly continuous data on survey lines. Thanks to the Overhauser effect enhancement exclusive of GEM Systems, sampling rates that could otherwise be obtained only with optically pumped systems, can be achieved with excellent results.

Similar to an airborne survey in principle, data is recorded at discrete time intervals (normally up to 2 and optionally up to 5 readings per second) as the instrument travels along the line. At each survey picket the operator presses the designated key. The "Walking Mag" records the coordinates of the picket and automatically assigns linearly interpolated coordinates to all intervening readings (see section 6.2.3).



NOTE:

When a Walking Mag or Grad is used with GPS coordinates, the system does not perform interpolation at pickets; instead it uses the actual GPS position at each designated time (as specified through the survey cycle time).

5.6.1 Performing a Reading

After the initial start-up procedures (refer to section 5.3), select the survey mode from the **Survey Menu** as follows:

SCREEN 53

```
survey mode  position   time   file
cycle time    tuning    AC filter
display    mode    text    ID
     connect  sensor  now
029127  readings  left
mobile
A-start          C-change     ←  BF  →
```

Press **C-change**. The following screen is displayed.

SCREEN 54

```
A - mobile     B - base

C - grad

D - walkmag    E - walkgrad
```

In this screen you have the choice of selecting the Survey Mode

D - for walkmag mode (available on GSM-19W units)

E - for walkgrad mode (available on GSM-19GW units)

Both walkmag and walkgrad are auto-cycling modes. The unit takes readings at the pre-set rate without your intervention and as he/she walks along the lines.

To set the rate, highlight **cycle time** from the survey menu and use **C-** or **B+** to increase or decrease the current setting. The available rates are:

0.5sec. (2 readings/second or 2Hz)

1.0sec. (1 reading/second or 1Hz)

2.0 sec. (1 reading/2seconds or 0.5 Hz)

NOTE:

Some units, normally the models GSM-19F fastmag or GSM-19GFW fastgrad, are equipped with 0.2 sec (5Hz).

Press **A-start** when ready to start the survey. After tune initialize (if enabled) the following screen is displayed.

SCREEN 55

A-stop C-walk

To **start** reading, press **C-walk.** The magnetometer starts cycling at the pre-set rate.

If in graph mode, the last graph in the memory may or may not be displayed here depending on how the **clear graph** setting has been programmed (see section 5.3.8). In any case, press **C-walk** again to start reading.

As you walk the lines, press **F** at the designated pickets to insert position labels between the data lines of the file.

NOTES:

- *Keep the **F** key pressed for a few seconds to be sure the picket has been marked. A black rectangle shows at the bottom of the screen to indicate the command was accepted. The beeper sounds briefly if it is enabled.*
- *If GPS is enabled this command is not available. Each reading is stored with its coordinates.*

To **stop** taking readings, press **A** and hold it until the display is blank. When **A** is released the following screen is displayed.

SCREEN 56

```
A - position        B - enter text
4 - graph   vertical  scale
C - tune
5 - display  mode
E - EOL       F - ok     0 - noise
1 - info
```

Please look for the descriptions of these options in section 5.4.1

GSM-19GW units combine the functionality of the GRADIOMETER with the WALKMAG to provide the WALKGRAD mode.

The operation of the unit in this survey mode is similar to what is has been described in this section. A new parameter, **sensors**, is shown in the survey menu and it is used to set the distance between the sensors. For details, refer to section 5.5.2 on "Setting the Gradiometer Sensor Spacing".

5.7 WORKING WITH BASE STATION MODE (ALL MODELS)

The base station mode is a standard mode in all GSM-19 units. This section provides general information about accessing the base station functionality. You should also be aware of the unique programmable base station option that was added in Version 6. This capability enables scheduling in three ways. Details are provided in Appendix I.

5.7.1 Performing a Reading

From the **Main Menu** press **A-survey** to access the **Survey Menu** and then, with **survey mode** highlighted, press **C-change**. The following screen is displayed.

SCREEN 61

```
A - mobile     B - base
C - grad
D - walkmag   E - walkgrad
```

NOTE:

Your modes may differ depending on your model, its software, and its hardware.

Press B to select **Base Station**. The unit returns to **Survey Menu**. The following screen is displayed.

SCREEN 62

```
survey mode  datum time file
cycle time tuning AC filter
display mode text ID

    connect sensor now
089123 readings left
base
A-start              C-change ←  BF  →
```

Press F to highlight datum and then **C-change** to change its value. The following screen is displayed.

SCREEN 63

```
56000.00
datum

F - ok                  C - change number
```

The number that appears on the screen is the one that was set by the last user. You can change it by pressing **C** and set the desired number.

NOTE:

The Datum represents the offset or shift imposed to the Diurnal Corrected (see next section 5.9).

It has no influence on the readings or the survey itself. It is only used with the SEND command when dumping or transferring files that have been subject to Diurnal Correction.

Its value is normally the expected magnetic field of the area and it could be set after the survey or before dumping the data. Moreover, a file could be transferred several times, each time with a different datum to obtain different offsets on the corrected data.

After setting display mode, cycling rate and the other parameters as it has been explained before for the mobile mode (see sections 5.3.3 to 5.3.9), press **A-start** to start the base file.

5.7.2 Stopping a Base Station Reading

The only way of stopping a Base survey is by pressing **1 C** to force the return to main menu. If the base is re-started, a new file is created.

NOTE:

*Optionally, v6.0 GEM Systems magnetometers may be equipped with a **Programmable Base Station** feature. The programmable base allows you to enter and store up to 30 base station survey programs or schedules that determine the date and time to start and stop the base. The schedules can be entered using the keypad or transferred from a file on a PC using GEMLinkW.*

5.8 SYNCHRONIZING ROVER AND BASE STATION UNITS (ALL MODELS)

If you intend to use two or more GSM-19s (for example, a Rover unit such as a GSM-19 in mobile, gradiometer, walking or walking gradiometer mode and a Base Station unit) in the survey to later perform diurnal correction, you must synchronize their times.

5.8.1 Setting the Time on the First Magnetometer

First, you have to set the right time on one of the mags. (Refer to 5.3.3 Setting Time) and then transfer it to the other units using the synchronization cable and the procedure described below.

IMPORTANT NOTES:

Units equipped with built-in GPS overwrites the local time with UTC when GPS is active.

- *If ALL units are equipped with GPS they all automatically synchronize to UTC and the GPS timing controls their cycling. This is the optimum synchronization and in this case there is no need to transfer the time from one unit to another.*

- *If only ONE unit is equipped with GPS, you should synchronize that unit to UTC (see Appendix D) and then use the synchronization cable to transfer the UTC time to the other.*

- *Also note that in this case, the cycling of one unit is synchronized to GPS time every reading taken. The other unit runs on its internal timer with no further GPS synchronization. Therefore, there may be a time discrepancy between the two units. This time discrepancy only becomes significant after very long surveys or in the case of unattended base stations without GPS.*

- *If none of the units is equipped with GPS, set the time manually in one of them and use the synch cable to transfer the time to the other. In this case, both units run on their respective internal timers.*

5.8.2 Transferring the Time

To transfer the time, from the **Main Menu** press **E-time-synch** on EACH unit. The following screen is displayed.

SCREEN 57

connect cable & press C

Connect the 6-pin to 6-pin cable between the two units.

NOTE:

The same cable is used for diurnal correction. This is why sometimes it is called Reduction Cable and sometimes Synch cable. Please contact GEM Systems if you need to order one.

Press **C**. The following screen is displayed.

SCREEN 58

A-source B-destination enter destination first

First press **B-destination** on the unit with the **incorrect** time, and **then** press **A-source** on the unit with the **correct** time. After the synchronization, the destination unit displays screen 59, while the source unit displays screen 60.

SCREEN 59	SCREEN 60
04 II 95sa12:02:21.3 C or 1C synch done =+-1ms	04 II 95sa12:02:21.3 C or 1C

You is able to check the time by pressing the **C** button on both mags simultaneously. This "freezes" the time on the display for an easier comparison but the internal timer continues running.

Press **1 C** to return to main menu. After the aforementioned steps, time synchronization can be inspected again at any time and on both mags. To do so from the Main Menu press **C-info** and then press **F-time**. Press and hold the **F** key simultaneously on both units to freeze the time display.

5.9 APPLYING DIURNAL CORRECTIONS

Diurnal corrected data is obtained by combining the readings of a Mobile unit with the readings of a Base Station unit. The diurnal correction is obtained from the following equation

corrected field = mobile field - base field + datum

The Datum is just a positive shift of the corrected data. It is normally set to the average or expected magnetic field of the area, but it could also be set to any other positive value or to zero

Since the Base is a stationary unit, its changes of the magnetic field are only caused by diurnal variations. The readings of the Mobile unit however, are influenced by the diurnal and also by the local variations of the field encountered during the survey (anomalies). The Diurnal Correction removes the diurnal variations from the Mobile data so the anomalies can be better appreciated.

The reference or criteria to combine the Mobile and Base readings is the time stamp of the readings.

- If the time of the readings of the mobile unit exactly match the time of the readings of the Base unit, the Diurnal Correction is performed directly according to the equation above.

- If the times do not match, the magnetic field from the Base unit is obtained by linearly interpolating the field of the two Base readings that are closest in time to the Mobile reading.

The best way of obtaining diurnal corrected data is by using a Base Station and a Mobile unit.

An alternative method involves using only one unit and a special type of readings called Tie Point Reading. The Tie Point method is not as effective since it implies interpolating readings with a large time interval and it is very seldom used. It was a standard feature on previous models but has not been implemented in our version 6 magnetometers. If you are interested in using Tie Point Corrections with a version 5 or earlier magnetometer, please refer to our web site that has a technical note on this subject.

When using two units, the Diurnal Correction can be performed unit to unit by sharing the contents of their memory, or File-to-File after dumping the files to a PC and using GEMLinkW's Diurnal correction Utility.

5.9.1 Mag-to-Mag Diurnal Correction

When performing Diurnal Correction by connecting two units, the Base readings are transferred to the Mobile file and stored in it. This permanently modifies the original Mobile file and memory.

NOTE:

Because the flash memory chips cannot be overwritten, DO NOT perform a second diurnal correction on a file that has been already corrected or the file may be corrupted.

After a Mobile file has been merged with a Base file, the corrected data is available for file review either in text or graph mode (see section VII) or data transfer (see section 6.2.2).

The actual correction is not performed during the transfer but while dumping or reviewing a Mobile file that has been merged with the base readings. This allows you to perform many corrections or files review, all with different values of Datum if needed. To change the Datum before dumping or reviewing the file press **C-info** from the **Main menu** and then **0-datum**.

NOTE:

You require a reduction cable (6-pin to 6-pin cable) to connect the two units.

NOTE:

The same cable is used for time synchronization. This is why sometimes it is called Reduction Cable and sometimes Synch cable. Please contact GEM Systems if you need to order one.

IF YOU HAVE VERSION 6 AND VERSION 5 UNITS

1. Turn both units on.
2. Connect reduction cable.
3. Make sure the base unit is in its **main menu**.
4. From **main menu** press **B-diurn.cor** on the mobile/grad/walk/walkgrad unit. If there is more than one file in memory, select the relevant one and press **F-ok**. If the mobile is the version 6 unit it displays

SCREEN 64

connect cable and set base mag to main menu F

5. Press **F**
6. The software automatically searches the base for the file with the correct date and time and transfers its data.
7. Press **1C** to return to the main menu.

Version 5 and version 6 magnetometers are fully compatible for unit to unit diurnal correction whether they are used as Base or Mobile. Older units however, may not be fully compatible with the version 6 magnetometers but you can always perform file-to-file correction using GEMLinkW.

NOTE:

When units older than version 5 are in use, it is advised to use File-to-File correction.

This is because (in the event of incompatible file formats) the original mobile file may be damaged when combined with the base file.

5.9.2 File-to-File Diurnal Correction (GEMLinkW Utility)

If you have GEMLinkW installed in your computer, you may use its Diurnal Correction Utility to combine the Base and Mobile files after you saved them on a disk. Please refer to the help files provided with GEMLinkW for more information.

NOTE:

GEMLinkW is normally shipped with the new units in a CD-ROM. It is also available from GEM Systems Web Site at www.gemsys.on.ca from the support pages.

The latest version of GEMLinkW is 3.0. It includes more and better tools than the previous versions. A summary of the latest upgrades can be found at:

www.gemsys.ca/Quantum/Technology/GEMLinkW%20Updates%20Profile%20Plotting.htm

6. DATA ORGANIZATION AND TRANSFER

A new file is created automatically in the following cases:

1. You select a new survey mode and take at least one reading.

2. The current file runs into a new day (midnight crossing)

3. You stop and re-start a base unit.

6.1 FILES AND DIRECTORIES

You can store up to 50 files in the mag. File names have a format similar to 01survey.m, where you can only change the 6 letters between the first number and the period. The unit automatically assigns Numbers 01 to 50, and the file extension. File extensions include the following:

.m	mobile	
.b	base	
.g	gradiometer	
.fmh	fast mag hip chain	
.fma	fast mag auto cycle	
.fgh	fast grad hip chain	
.fga	fast grad auto cycle	
.vX	vlf only .	X represents the number of VLF stations used (1 to 3)
.mvX	mobile+vlf.	X represents the number of VLF stations used (1 to 3)
.gv X	gradiometer+vlf.	X represents the number of VLF stations used (1 to 3)
.wm	walkmag	
.wg	walkgrad	
.wmv	walkmag+vlf	
.wgv	walkgrad+vlf	

The GSM-19 has a directory function you can use to show all the files in the mag.

- To access this function, press **C-info** in the **Main Menu** and then press **D-dir.** The file names are displayed on the left, and the number of readings in this file on the right.

- Press **F** quickly to view the next files.

- If you press and **hold F**, you see the file number followed by the date and the time of the first reading of the file.

6.2 DATA TRANSFER

Data transfer is enabled via RS-232 downloading from the magnetometer to computer. This section describes how to access this functionality and set download parameters such as baud rates.

6.2.1 Setting the RS-232 format

Before transferring data, you have to set the **RS-232** format. Once set, the RS-232 format is saved in the memory.

From the **Main Menu**, press **C-info**

SCREEN 65

```
F-time   B-RS232    D-dir

C-review

A-remote   0-datum
                              E-channel

2-buzzer                        3-info
```

Press **B-RS-232** to access the RS-232 setting for the SEND (data dump) function

SCREEN 66

```
RS-232        115200 bps    [send]

8  data bits
1  stop bit
no parity

                         F-ok    C-change
```

- Press **F-ok** if selection is correct
- Press **C-change** if you need to change the transfer rate

SCREEN 67

```
50   110   300     600   1200   24000  48000
9600    14400    19200    28800    38400
57600        152000

A-select                          ←   BF   →
```

Scroll backward with **B** or forward with **F** and highlight the desired transmission rate (keep pressed for a continuous scroll).

Press **A-select** to save your option. The unit returns to screen 66.

Pressing **F-ok** leads you to the selection of RS-232 parameters for Real-time Transmission (RTT). When RTT is enabled, the unit outputs the readings (tagged with their time stamp) to the RS-232 6 pin connector in real time as they are taken.

SCREEN 68

```
   real  time   RS-232     transmission
                 yes

       F-ok     C-change
```

C-change toggles between yes and no.

- If you do not intend to use the RTT function, select **no** and press **F-ok** to return to the **Info Menu.** Then press **1C** to return to **main menu**.
- Otherwise select **yes** and press **F-ok** . The **RTT** setting screen is displayed.

SCREEN 69

19200	28800	38400	57600	115200
A-select		←	BF	→

Press **A-select** to save your option. If finished press **F-ok** to return to the **Info Menu**, and then press **1C** to return to **main menu**.

IMPORTANT NOTES:

The data bits, stop bits and parity are not programmable for either SEND or RTT but the default values are displayed for your reference.

You MUST set the receiving device to these parameters
8 data bits
1 stop bit
no parity

The slowest transmission rate for RTT is 19200 bps

If RTT is not enabled, the external triggering of the unit by the RS-232 line may not work properly or at all since the transmission rate is not initialized (see end of section 4.3)

6.2.2 Transferring the Data

For proper data transfer, you **MUST** match the RS-232 settings of the magnetometer and those of the receiving device (PC, data logger, etc).

Remember that you can program the transmission rate for SEND and RTT on the unit. However, the data bits, stop bits and parity are not programmable for either SEND or RTT, but the default values are displayed on the setting screens for your reference.

NOTES

You MUST set the receiving device to these parameters
8 data bits
1 stop bit
no parity

You will need an RS-232 cable (6-pin to 9-pinD cable). Please contact GEM Systems to order one.

To start the transfer:

1. Connect the 9-pinD connector to an available serial port on the receiving device, and the 6pin connector to the unit.

2. Then, from the **Main Menu** press **1-Send** to dump or transfer the data. The system displays Screen 70.

SCREEN 70

```
        2
file


F-ok    C-change-number
```

- If there is only a single file in the memory, the system automatically shows screen 71.

- If there is more that one file in the memory, you are prompted to select the file you want to transfer. If the file number shown in the screen (ex. 2 above) is not the file you want to transfer, select C-change-number. The system displays a file entry screen. Enter the file number and then select E-Enter. The system then returns to Screen 70 where you now select F-ok. The system displays Screen 71.

SCREEN 71

```
        Select SEND format

           D-Default
           F-Custom
```

Screen 71 is new functionality developed for Version 7. This screen allows you to either select a default file format or your own format. See Appendix H for a description of data values for each format.

When you select D-Default, the system automatically starts sending data. When you select F-Custom, the system displays Screen 72.

SCREEN 72

SEND format is:
X Y elevation nT nT/m sq cor-nT sat time picket-x picket-y *
A-send C-Change

1. To alter the order of data values, position the cursor on the field that you want to change and press C. The system scrolls through a series of values.

2. Choose the one that you want and either move to the next field or select A-send to start transmitting the data.

7. RECALLING DATA

The GSM-19 series of magnetometers / gradiometers enables you to recall or review data in text mode and graphical mode. This system describes these processes.

7.1 SELECTING A FILE TO REVIEW

From the **Main Menu,** press **C-info.** The system displays the following screen:

SCREEN 73

```
F-time    B-RS232     D-dir

C-file-review

A-remote   0-datum
                           E-channel

2-buzzer                      3-info
```

Press **C- file**-review

SCREEN 74

```
          11
file

F-ok     C-change-number
```

Select the file you want to review (by pressing **C-change** and entering the file number) and press **F-ok**. The system displays the following screen:

SCREEN 75

```
text

display-mode

F-ok  C-change
```

C-change toggles between **text** and **graph**.

In either case the next screen after pressing **F-ok** you are prompted to set the review increment.

SCREEN 76

```
          1
incr

F-ok  C-change
```

The increment is used in different way depending on the mode:

a) in text mode, the value represents the number (1 to 999) of readings to jump while scrolling through the data.

b) in graph mode, the value is the number (1 to 180) of ½ screens (120 dots) to increment

The next step depends on the survey and display mode you are reviewing:

- text mode (Section 7.2) or
- graph mode (Section 7.3)

7.2 DATA RECALL IN TEXT MODE

To recall data in text mode, start from Screen 75 above. Then set the increment using the screen below:

SCREEN 77

```
          1
incr

F-ok  C-change
```

Press **F** after your selection. The following screen is displayed.

SCREEN 78

```
 056789.34         000000.0
11:22:33.4
27  IX  96

00100N   0000125E     A- B+ C     99
```

- On line 1: the value to the left is the uncorrected field and the value to the right is the corrected field
- On line 2: time of the reading [hh:mm:ss.s]
- On line 3: date of the reading [day, month, year]
- On line 4: left - Line # and Station #

A- displays an older reading (current − increment)

B+ displays a newer reading (current + increment)

C displays the change of increment screens

99 represents the signal quality factor

Base files are reviewed in a similar way but the corrected field and the position labels are not displayed:

SCREEN 79

```
  056789.34
27  IX  96      11:22:33.4


                              B+ C     99
```

NOTE:

Depending on the survey mode, some files (like mobile and slow grad) are reviewed from the last reading to the first. Some others (like base and walk modes) are reviewed from the first to the last.

7.3 DATA RECALL IN GRAPH MODE

After selecting graph mode, you are prompted to set the increment (or the scroll jump) to use while reviewing along the graph. Allowed increment values are 1 to 180. An increment of 1 represents 120 points of the graph (equals half a screen).

For example, with an increment of 1, the left half of the graph becomes the right half, and new data is plotted on the left side. You is displaying half of the data already viewed on the right side of the screen.

With an increment of 2, the last point at the left of the graph becomes the first point at the right and a full new screen is plotted.

To recall data in text mode, start from Screen 75 above. Toggle to graph mode and then set the increment using the screen below:

SCREEN 80

```
              1
incr


F-ok  C-change
```

Press **C-change** to set the increment and **F-ok** when ready

On survey modes other than base, you are prompted to select the value to graph. Depending on the mode the options may be:

- uncorrected field (normally lower channel)
- corrected field (data available only after Mag-to-Mag diurnal correction)
- grad (for grad or walkgrad modes)

SCREEN 81

uncorrected field
F - ok   C - change

C-change toggles between the options. When you are finished making your selection, press **F**. The following screen is displayed.

SCREEN 82

000100N   000575E
....
uncorrected field
00100N   0000125E   A- B+ C

The upper right corner shows the coordinates of the right most readings. The bottom left corner shows the coordinates of the left most readings.

A- scrolls the graph backward

B+ scrolls the graph forward

C displays the following graph setting screen

To change the graph's settings, press **C.** The following screen is displayed:

SCREEN 83

D ↑ vertical scale   20 nT
....
C ↓   A-   B+   F

Here you have the following options:

A- reduces the vertical scale

B+ increases the vertical scale

C moves the graph down (keep pressed for continuous action)

D moves the graph up (keep pressed for continuous action)

F returns you to graph review

When reviewing base files:

The upper left corner shows the time (hhmmss) of the left most reading

The upper right corner shows the time of the rightmost reading

A- scrolls the graph backward

B+ **s**crolls the graph forward

Although base readings are always uncorrected, the label 'uncorrected field' may be shown.

SCREEN 84

```
123456                          125634

.....................................

uncorrected field
                              A- B+ C
```

Press **C** to change the graph's settings

SCREEN 85

```
D ↑ vertical scale        20 nT

........................

C ↓                          A-  B+   F
```

Here you have the following options:

A- reduces the vertical scale

B+ increases the vertical scale

C moves the graph down

D moves the graph up

F returns you to the graph review screen

8. ERASING MEMORY

GSM-19 version 6 magnetometers are equipped with flash memory chips. Flash memory cannot be partially erased. The technology requires that the memory chips must be erased all at once.

For this reason, it is not possible to remove single files from the memory. To erase one file you must erase them all.

When flash memory is erased, all the information is overwritten with "blanks". Once erased, the data CANNOT be recovered.

IMPORTANT NOTE:

Use this function only if you want to clear the entire memory, since all of the files is erased.

As a security feature, to prevent accidental data loss, you must press two buttons simultaneously to access the erase menu and to later confirm whether to erase the memory or not.

8.1 STARTING THE ERASING PROCESS

From the **Main Menu**, press **4** and **5** simultaneously.

SCREEN 86

```
erase  data ?



er - erase     n - NO
```

- If you choose to **NOT ERASE,** press **n-NO** (button 6). The system returns to the main menu.
- To **erase** data, simultaneously press the **e** and **r** (**3** and **7**) buttons. The unit displays the percentage of memory erased as the process progresses.

SCREEN 87

please wait
010% of memory erased

Press **F** when 100% of the memory has been cleared

NOTE:

Units with 32MB of memory take several minutes to erase all memory.

9. TESTING YOUR SYSTEM

The test function checks various parameters. Definitions and actions are as follows:

- **A-memory** is a test of the RAM. Afterward, press **F** to return to the test menu.
- **B-keys** lets you test each key on the keyboard. Afterward, press **1C** to return to main menu.
- **C-display** tests all dots on the LCD by drawing different patterns. Press **F** to advance and inspect the drawing to detect LCD problems. Afterward, the unit returns to the test menu.
- **D-rom** is a test of the ROM (i.e. where the firmware resides). During this test the checksum of the existing data in the ROM is compared to the checksum stored in EPROM.
- **F-buzzer** sounds the internal buzzer intermittently provided it is enabled. Press **F** to return to test menu.

9.1 STARTING THE TESTING PROCESS (ROM EXAMPLE)

From the **Main Menu, p**ress **D – test**. The system displays the following screen:

SCREEN 88

```
  A - memory    B - keys
  C - display   D - rom
E-ext-trigger    F-buzzer


   v6.0  9  IV  2002
```

Press **D – rom**. The system performs the test and displays a screen similar to the following:

SCREEN 89

```

  00B8C6E1 = 00B8C6E1

                         F
```

The numbers on both sides of the equal sign should be the same. The number on the left side is the checksum stored in the EPROM, and the number on the right side is the calculated checksum. The checksum shown here is just an example. Each unit has its own checksum number.

10. UPGRADING INTERNAL SOFTWARE (FIRMWARE)

One of the new features in v6.0 is the ability to upgrade your magnetometer's internal software (i.e. firmware) from a PC using the 6-pin connector for the RS-232 port and the file transfer cables.

10.1 USING THE GEMLINKW UPGRADE UTILITY

The Upgrade utility of GEMLinkW provides all the functionality required to upload the new software to the unit and guides you to the process with step by step instructions. For your reference, the screens below illustrate the messages that the unit displays during the software upgrade process.

NOTES:

To avoid hardware/software incompatibility, the source software files are released as required and normally named as the serial number of the unit with extension '.bin'.

If you need to upgrade or want to check whether new functionality is available for your system through upgrades, please contact GEM Systems at support@gemsys.on.ca and include "Upgrade" in the title of your message.

For upgrades, we provide a file containing the source code and GEMLinkW (or other upgrade package provided by GEM Systems).

10.2 ACCESSING THE UPGRADE MODE

To access the upgrade mode, the unit must be in the **test menu**. When the transmission begins, the unit displays the following:

SCREEN 90

```
software upgrade in progress
please do not touch keyboard
receiving 524288 bytes
```

Later, more messages is added to this screen as a progress report but the process is automatic and once started it does not require user's intervention.

SCREEN 91

```
software upgrade in progress
please do not touch keyboard
524288 bytes received 07183A4A
```

SCREEN 92

```
software upgrade in progress
please do not touch keyboard
524288 bytes received 07183A4A
erasing flash
```

SCREEN 93

```
software upgrade in progress
please do not touch keyboard
524288 bytes received 07183A4A
flash erased, verified
```

SCREEN 94

```
software upgrade in progress
please do not touch keyboard
524288 bytes received 07183A4A
flash erased, verified
reprogramming flash
```

SCREEN 95

```


524288 bytes received 07183A4A
flash erased, verified
flash reprogrammed

  press 1C to reboot
```

Press **1C** to reboot with the new software and go to the main menu.

11. STORING YOUR MAGNETOMETER (IMPORTANT!)

The unit goes to **shelf-off mode automatically after 24 hours** of being turned off (**0F** command).

To minimize power consumption from the battery when the unit is not in service, the shelf-off function switches OFF the main power and also powers down the internal oscillator that normally maintains time. Date and Time *have to be programmed again* the next time you use the unit.

NOTE that date and time can only be maintained within 24 hours after the unit is switched off.

If the unit is stored for very long time in addition to the automatic shelf-off function, the internal battery should be periodically recharged (see below).

12. CHARGING THE BATTERY (IMPORTANT!)

The internal battery is 12V lead acid 2.0 Ah battery. To maximize its lifespan, you MUST maintain it in the following manner:

- **Do not allow the battery to fully discharge** since this may cause internal leakage or shorts.
- Even if an external battery is used, charge the internal battery frequently.
- Always keep it charged (charger is automatic so overcharging is not possible). Additionally, the shelf-off function is triggered automatically after 24 hours of having the unit switched off by pressing **OF**.
- If the unit is used daily, always charge it overnight.
- **Battery MUST NOT be charged below 0°C or above 40°C**

If the unit is left "on" for a long period of time and the battery voltage drops to 8.5V, it automatically switches off. 24 hours later the automatic shelf-off is triggered.

NOTE:

Batteries are NOT included in the normal warranty provided by GEM as their lifespan is determined by the way in which they are normally maintained.

13. MAINTAINING YOUR SYSTEM (IMPORTANT!)

Except for exchanging sensors or sensor cables, the instrument is generally not field-serviceable. Numerous self-test possibilities and warnings make the diagnostics reasonably easy though.

The sensor should be kept clean and free of ferromagnetic particles, dust, etc.

The liquid of the Overhauser sensors is sealed in a pyrex bottle. Refilling is neither possible nor needed.

14. WARRANTY (IMPORTANT!)

ALL GEM Systems magnetometers **excluding batteries** are guaranteed for replacement of defective parts and correction of defective labor for two years from shipping date. Shipping costs are not covered.

IMPORTANT NOTE:

Any unauthorized opening of the sensor or console without written consent of GEM Systems, Inc. will void the warranty.

APPENDIX A: GLOBAL MAGNETIC MAPS

Official International Geophysical Reference Field (IGRF) maps of the total magnetic field and its inclination are shown in Figures A1 and A2.

Refer to map A1 to estimate the total magnetic field of your survey area.

On map A2, areas with inclination more than +/- 45^0 are considered " polar" areas, while those with less than +- 45^0 inclination are "equatorial" areas -- although some parts of "equatorial" areas lay far away from geographic equator (i.e. almost all of South America and most of Africa).

A.1 UNDERSTANDING THE DIFFERENT SENSOR ORIENTATIONS

A.1.1 Overhauser Sensor

In equatorial regions, the magnetic field direction should be considered horizontal and pointing north to south. Here, the GSM-19 (Overhauser) sensor axis must be oriented horizontally in an east-west direction. In regions north of the +45° line, or south of the -45° line, the sensor may be oriented in any horizontal direction.

NOTE:

Omnidirectional sensors are available for carefree operation. Please ask your GEM representative for more information.

A.1.2 Standard Proton Sensor

GSM-19T (standard proton magnetometer) sensor is constructed differently. It has an "orientation line" engraved at its side. In polar regions this line must be vertical and in equatorial regions it is to be horizontal. Alternatively the orientation line can be kept vertical and the sensor in principally North-South orientation for the whole Earth.

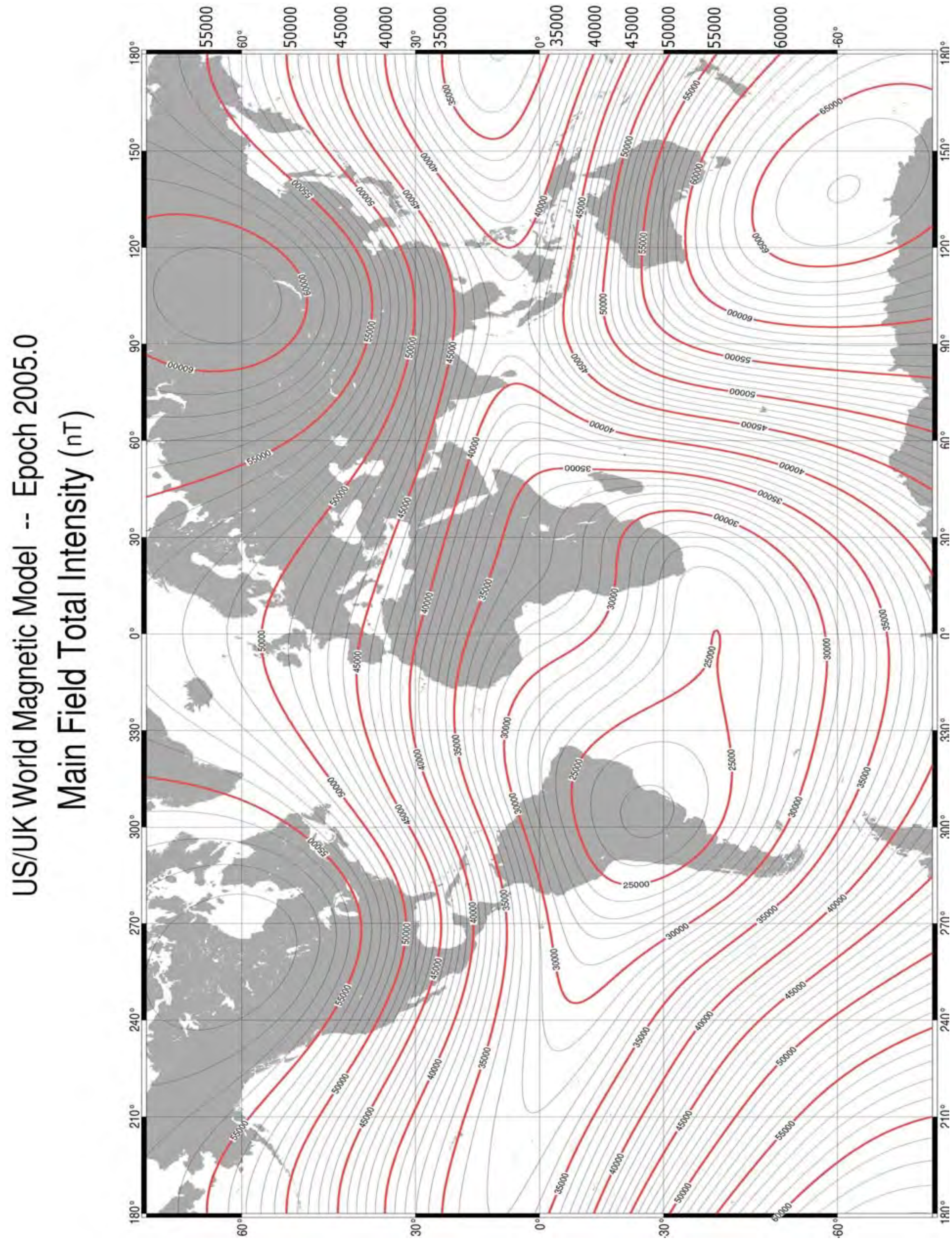


Figure A1: Magnetic Field Intensity

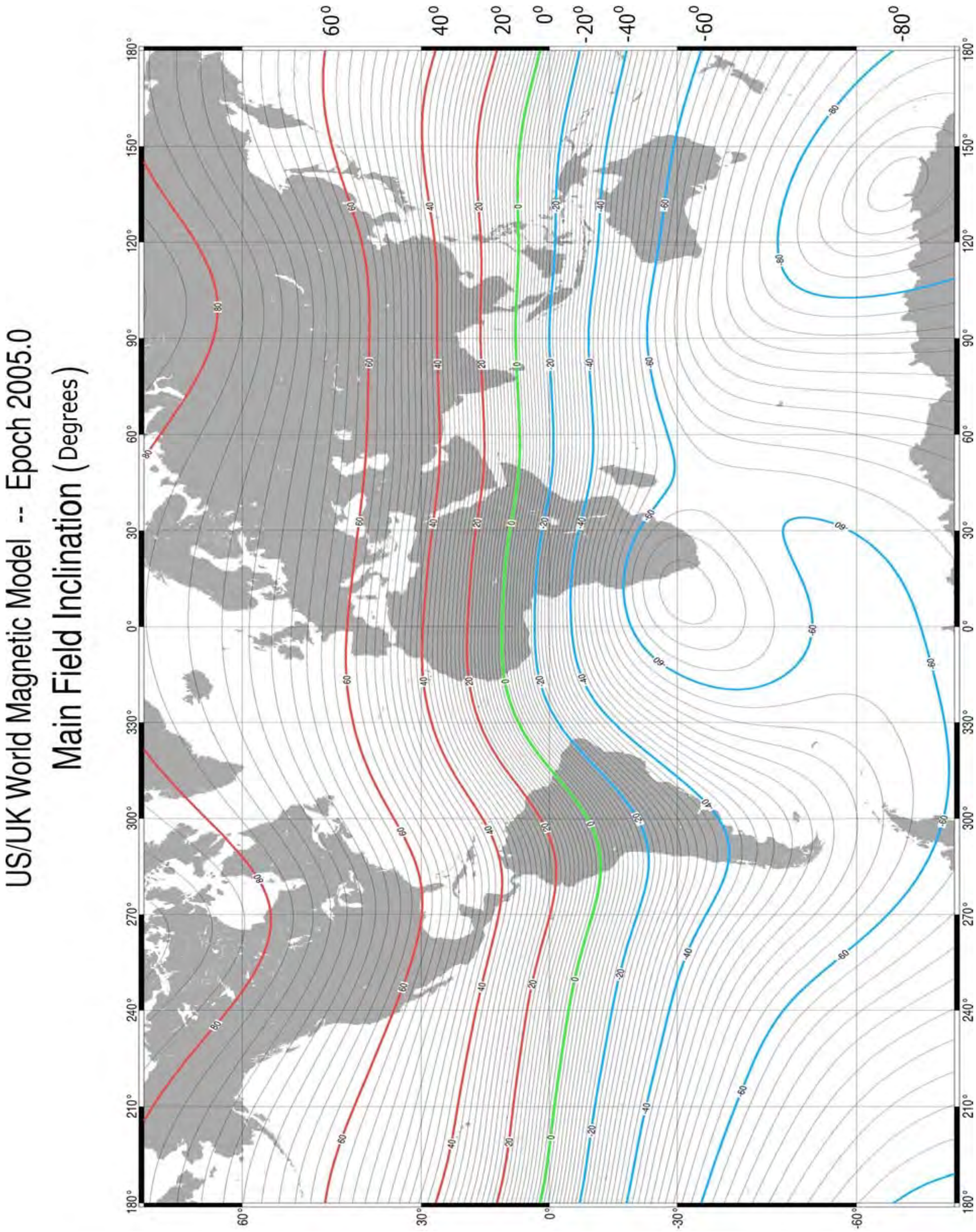


Figure A2: Magnetic Field Inclination

APPENDIX B: RAW DATA FILES TRANSMITTED BY RS-232-C

Data is sent via the unit's serial link to a printer or a host computer in a standard ASCII format. The data comes as a stream of unlabelled numbers that varies with the survey mode that was employed. Slow modes have a more extensive header, including column identifiers. Each case is described below.

B.1 MOBILE MODE

Data taken in mobile mode is sent through the Rs-232 port as follows:

time	line	station	field (nT)	corrected field (nT)	
122136.0	00000N	0000100E	57034.56	56977.87	99
122142.0	00000N	0000125E	57034.67	56977.84	99

Column 1:Time, as hhmmss.s(12h 21m 36.0s in row 1)

Column 2: Line number and direction

Column 3: Station number and direction

Column 4: Raw (unreduced data (nT)

Column 5: Reduced magnetic field data (nT)

Column 6: Signal Quality

B.2 BASE MODE

Base station data transmission is similar to that of mobile data, except for the exclusion of line and station numbers. The transmission appears as follows:

time	field/nT	
125010.0	57756.28	99
125020.0	57756.12	99

Column 1: Time, as hhmmss.s

Column 2: Unreduced magnetic field data (nT)

Column 3: Signal Quality

B.3 VLF OPTION

If you select **A-all** from the **Send Menu** (i.e. to transfer all VLF data), the format is as follows:

141645.0 0000N 0000100E 57137.66 57001.37 000N 21.4 006.0 000.9 071 -026 005.6
24.0 -013.4 001.1 -000 090 012.1 23.4 -027.7 -003.1 -004 066 000.5

141645.0	Time, as hhmmss.s
0000N	Line number and direction
0000100E	Station number and direction
57137.66	Uncorrected magnetic field (nT)
57001.37	Corrected magnetic field (nT)
000N	Slope (degrees)
21.4	First VLF station frequency
006.0	ip - vertical in phase component (%)
000.9	op - vertical out of phase component (%)
071	x - horizontal amplitude
-026	y - horizontal amplitude
005.6	VLF total field strength (pT)
24.0	Second VLF station frequency
-013.4	ip (%)
001.1	op (%)
-000	x amplitude
090	y amplitude
012.1	VLF total field strength (pT)

The next six numbers represent the same values for the third VLF station.

It is also possible to send only the magnetic field readings without any VLF readings. Enabling the F-field option in the send menu does this. The resulting data appears as follows.

time	line	station	field (nT)	corrected field (nT)
141545.0	00000N	0000100E	57138.04	57001.42
141606.0	00000N	0000125E	57137.88	57001.33

Column 1: Time as hhmmss.s

Column 2: Line number and direction

Column 3: Station number and direction

Column 4: Uncorrected magnetic field (nT)

Column 5: Reduced magnetic field (nT)

B.4 WALKING MAG OPTION

Data obtained with the Walking unit option can be sent in a variety of formats.

If you select **A-a11** from the **Send Menu**, the format is as follows:

0000N	000100E	
101302.0	057070.42	057015.16
101308.0	057069.93	057014.57

Row 1: Line number/direction and station number/direction

Row 2, Column 1: Time, as hhmmss.s

Row 2, Column 2: Uncorrected magnetic field (nT)

Row 2, Column 3: Reduced magnetic field (nT)

NOTE:

The text in row 1 only appears chronologically when a position label for a picket was stored.

If you select **D-station-interpolation**, station numbers are linearly interpolated as follows:

0075N	001937.0E	060326.34
0075N	001937.3E	060326.72
0075N	001937.5E	060326.92

Column 1: Line number and direction

Column 2: Interpolated Station number and direction

Column 3: Uncorrected magnetic field (nT)

NOTES:

The station number always has an extra digit added to the end for the interpolation. If you are planning to use station interpolation for walk files, keep in mind the number of readings and the distance between pickets by managing the cycling time and the station increment. If you have too many readings and small station increments, some interpolated stations have repeated values.

B.5 GRADIOMETER OPTION

Data obtained with the gradiometer option is sent as follows.

time	line	station	field nT	grad nT/m	corrected field nT
111403.0	00600N	0000100E	57241.40	-001.24	057228.30
111421.0	00600N	0000125E	57241.37	-001.27	057228.28

Column 1: Time, as hhmmss.s

Column 2: Line number and direction

Column 3: Station number and direction

Column 4: Unreduced magnetic field

Column 5: Magnetic field gradient (nT/m) and sign

Column 6: Reduced magnetic field (nT)

APPENDIX C: VLF SURVEY OPTION

The VLF option to the GSM-19 Series is available on its own or in conjunction any model of magnetometer or gradiometer. When installed in conjunction with magnetometer modes, the VLF mode can be used alone or combined with mag modes.

GENERAL NOTES:

Base Station modes cannot be combined with VLF.

When combined with walk modes, the VLF reading is not taken while walking. Instead, when F is pressed to mark a station label, the unit interrupts the cycling, take the VLF reading, and then prompts you to reassume the magnetometer cycle.

The walkVLF option is yet to be implemented in version 6 mags.

OPERATION NOTE***

The following instructions are regarding the VLF option only . It is assumed that the operator knows how to operate the GSM-19 magnetometer. If not, please refer to GSM-19 Manual for more detailed operation description.

C1. ACCESSING THE VLF FUNCTIONALITY

Press B - to turn power on and display the **Main Menu**

Press A - Survey to access the **Survey Menu**

Press C - to change the **Survey Mode**

Depending on the available survey modes, a screen similar to the following one is displayed:

SCREEN C1

```
A-mobile   B-base

D-vlf      E-mobile+vlf
```

Press **D** or **E,** or the command to the VLF survey mode you want to use.

C2. SELECTING VLF STATIONS

The VLF unit may be tuned to up to 3 VLF stations simultaneously and store the readings from each during the survey.

On the next screen, enter how many VLF stations you want to use

SCREEN C2

# of VLF stations?

Enter **1, 2** or **3.** The stations used in the last survey (if any) is displayed

SCREEN C3

17.1	19.6	24.0
F-ok C-change-number		

Press **F-ok** to accept or **C-change-number** select different stations.

To select different stations, scrolling with **B** and **F** highlight the frequency in kHz from the list of the available VLF stations and press **A-select-station** to save your option

SCREEN C4

15.1	16.0	16.4	17.1	17.4	18.6	19.0
19.6	21.4	22.3	23.4	24.0	24.8	28.5
A-select station				←	BF	→

Repeat the process until the frequency for all the stations have been entered.

The next table shows the VLF stations available in the GSM-19.

Location	Designation	Frequency (kHz)	Power (kW)
Bordeaux, France	FUO	15.1	500
Rugby, UK	GBR	16.0	750
Hegeland, Norway	JXN	16.4	350
Moscow, Russia	UMS	17.1	1000
Yosamai, Japan	NDT	17.4	500
portable transmitter		18.6	
Criggeon, UK		19.0	
Oxford, UK	GBZ	19.6	550
Annapolis, USA	NSS	21.4	400
NW Cape, Australia	NWC	22.3	1000
Lualualei, Hawaii	NPM	23.4	600
Cutler, USA	NAA	24.0	1000
Seattle, USA	NLK	24.8	125
Aguada, Puerto Rico	NAU	28.5	100

The US NAVY shuts down its VLF station for maintenance purposes according to the following schedule. Please note that this schedule is provided as complementary information and GEM Systems has no control over any changes that may have been implemented.

	US NAVY VLF STATIONS MAINTENANCE SCHEDULE
NDT (17.4KHz)	2300 TO 0900 UT FIRST THURSDAY-FRIDAY OF MONTH 2300 TO 0700 UT ALL OTHER THURSDAY-FRIDAY
NAA (24.0KHz	1200 TO 2000 UT / TESTING 2000 TO 2200 EACH MONDAY. IF HOLIDAY FALLS ON MONDAY, TESTING WILL BE PERFORMED ON PRECEDING FRIDAY.
NSS (21.4KHz)	1200 TO 2000 UT / TESTING 2000 TO 2200 UT EACH TUESDAY.
NWC (22.3KHz)	0000 TO 0800 UT EACH MONDAY.
NPM (23.4KHz)	1800 TO 0400 UT LAST WEDNESDAY-THURSDAY OF MONTH 1800 TO 0200 UT ALL OTHER WEDNESDAY-THURSDAY
NLK (24.8KHz)	1600 TO 2400 UT EACH THURSDAY DURING DAYLIGHT SAVING TIME, 1500 TO 2300 UT EACH THURSDAY

Once the frequency for all the stations has been entered, the selected values are displayed.

Press **F-ok** to continue or **C-change number** again to make more changes. On the next screen you can enter the terrain slope and its direction which is stored with the VLF data.

SCREEN C5

```
  0000N

slope/elevation  0-8191

B-change-NESW

F-ok C-change-number
```

If you are satisfied with your selection, press **F-ok**. This leads you to the **Survey Menu** corresponding to the current survey mode.

SCREEN C6

```
survey mode  position    time    file
cycle time    tuning      AC  filter
               text   ID
     connect sensor now
018127 readings left
mobile + vlf
A-start               C-change ←  BF  →
```

From the survey menu you can adjust the parameters in the usual way. Common parameters, such as position, file name or time, apply to both, the magnetic and the VLF surveys.

NOTE:

VLF readings are taken after the magnetic readings. Remember that when combined with walk modes, the VLF readings are not taken while walking. Instead, when F is pressed to mark a station label, the unit interrupts the cycling, takes the VLF reading, and then prompts you to reassume the cycle

C3. STARTING A READING

Press **A-start** to start the survey. The VLF readings are presented as on the following screen

SCREEN C7

```
24.0 kHz                              005.6 pT
i-022.1%   o+014.2%     p 053       v 024

A-menu      1-repeat (same position)
L00100N   S00112.50E
```

Each Station will have 6 Values displayed:

Frequency in kHz.

b: Field strength in pT

i: In-phase component as a percentage of the field strength

o: Out-of-phase component as a percentage of the field strength

p: Horizontal component - coil axis parallel to the operator's direction, arbitrary scale

v: Horizontal component - coil axis at the right angle to the operator's direction, arbitrary scale

The last line displays the position coordinates in the form of the current positioning system.

When conducting the survey with the VLF option on the GSM-19, the quality of the incoming signal can be effectively determined by the **field strength** shown in the upper right corner of the screen. This value is directly proportional to the strength of the incoming signal. A field strength reading above 5pT yields excellent quality results. Below this level, the readings still give useful results, although of lesser quality. A field strength reading of less than 0.5pT indicates a VLF signal so weak, the results are not useable.

To conduct a useful survey of an area, you should tune into a station with the highest possible total electromagnetic field reading.

To determine the field strength of the stations you can use the **Scan** option.

The **Scan** option gives you a general view of the available VLF spectrum. The entire VLF range is scanned and all stations of sufficient strength are displayed along with their signal strength in pT (or mgamma).

To access the **Scan** option from the **Reading Menu**, press **A-menu**

SCREEN C8

A-position B-enter text 3-vlf C-tune D-delete E-EOL f-OK 0-noise 1-info

Press **3-vlf** and then **C-scan** on the following screen.

SCREEN C9

B-slope C-scan D-enter - vlf - stations F-ok

Other options are:

B- to manually enter a terrain slope to be stored with vlf data.

C- to scan all VLF stations and display field strength for each.

D- to change frequencies of VLF stations.

F- exits to survey mode.

The VLF Survey Mode also has a correction for the tilt level of the VLF sensor for up to 10^o from the horizontal plane. When the VLF sensor is tilted more than 10^o, the computation process stops and the following message appears on the display (until the tile is corrected):

SCREEN C10

```
24.0 kHz  Tilt ?        14  15  ← V



A-menu    1-repeat (same position)
 L 00100N    S 00112.50 E
```

14 deviation of the sensor from the vertical in the X direction in degrees

15 deviation in the Y direction

←, →, Λ, V show the direction the sensor should be rotated to correct the tilt

C4. SIGN CONVENTIONS FOR IN-PHASE (IP) AND OUT-OF-PHASE (OP)

Measured components are vertical in- and out-of-phase relative to the total horizontal field. Rising magnetic field in the direction the operator is facing is considered positive, while decreasing magnetic field is considered negative.

1. If station has coordinates N NE E SE and the station increment is positive, signs for **IP** and **op** are not changed.

2. If station has coordinates N NE E SE and station increment is negative signs for IP and op are inverted.

3. If station has coordinates S SW W NW and the station increment is positive, signs for IP and op are inverted.

4. If station has coordinates S SW W NW and the station increment is negative, signs for IP and op are not changed.

APPENDIX D: GPS (GLOBAL POSITIONING SYSTEM) OPTION

At GEM, we address our customer requests for GPS and its higher resolution derivative, Differential GPS (DGPS) through both built-in and external GPS options. Built-in GPS offers many advantages because it minimizes weight and removes bulky components that can be damaged through normal survey procedures.

IMPORTANT NOTES:

The GPS antenna must be connected to the BNC connector MARKED WITH YELLOW located on the RIGHT HAND SIDE of the console. Do NOT connect the GPS antenna into the BNC connector for the sensor RF on the left-hand side. The antenna will be damaged beyond repair.

The GPS antenna MUST be mounted a minimum of one full section staff (56cm) apart from the sensors to avoid magnetic interference.

D.1 SETTING UP THE GPS

To access the **GPS menu**, press **F-GPS f**rom the **Main Menu**

SCREEN D1

```
A-survey  B-diurn.cor
                                  F-GPS
C-info  OF-off  D-test              no
                              15  II  00
E-time-synch  1-send                TU
                                00:56:56
45-erase  2-enter text
                                  13.2V
```

Press **C-change** to toggle **GPS** on or off

SCREEN D2

```


             GPS  yes

         0 bytes
A-send-raw-data          F-ok    C-change
```

NOTE

A-send-raw-data *and the number of bytes is only visible on mags equipped with DGPS post-processing option.*

Press **F-ok** after making your choice.

- If **GPS no** is selected, the software automatically returns to the **Main Menu.**
- If **GPS yes** is selected, the unit displays the **GPS menu**.

SCREEN D3
GPS menu

A-initialize-GPS	B-navigation
C-synch-to-UTC	D-test
E-post-processing no	
	F

NOTE

E-post-processing *is only visible on units equipped with DGPS post-processing option.*

B-navigation *is only visible on units equipped with lane guidance and waypoints navigation options*

Select **A-initialize-GPS** to initialize the GPS module and start GPS lock.

SCREEN D4

please wait for pps

The message “please wait for pps” , where pps represents **P**ulse **P**er **S**econd, is displayed until GPS lock occurs. Then the display returns to the GPS menu.

NOTES:

The message "please wait for pps" may not be visible with some GPS boards (i.e. AllSTAR with WAAS). Instead, you will notice that there may be a because the magnetometer will wait for a minimum of 3 satellites before synchronizing time.

The time to achieve GPS lock may vary due to sky visibility, weather conditions, and it is also affected by the satellite parameters stored in the GPS module during the previous surveys. Turning off the GPS in Canada and back on in Europe increases the time to lock since new satellites must be tracked. The PPS signal is generated when enough satellites are "in view" to produce a good GPS solution.

The GPS initialize command has been added to the GPS menu only for convenience. Before starting (or re-starting) a survey with the GPS enabled, the GPS module is automatically initialized. The survey does not proceed until achieving lock condition. Normally, there is no need to manually initialize the GPS.

D2. SYNCHRONIZING GPS TIME

Select **C-synch-to-UTC** to manually synchronize the internal timer to UTC (Universal Time Coordinate) or GMT (Greenwich Meridian Time). After detecting PPS, the unit shows:

SCREEN D5

Synchronizing to UTC Coordinated Universal Time

Now the internal clock is synchronized to GPS UTC time

NOTE:

The synchronize to UTC command has been added to the GPS menu only for convenience. Before starting (or re-starting) a survey with the GPS enabled, the unit automatically synchronizes to UTC. The survey does not proceed until achieving lock condition and synchronizing the time.

With GPS enabled, the internal timer is always overwritten. It is not possible to run a GPS survey with other than UTC.

Normally, there is no need to manually synchronize the time, unless you need to transfer UTC to other units.

D3. DISPLAYING CURRENT GPS INFORMATION

Select **D-test** to display current GPS information as described below

SCREEN D6

```
                                    094   00007
24   04   02         21:37:38       UTC 122
  0629231          4857210        0000174
00008      -00008
00008       00000                 0001    0002
0000031          0000152
5   FFFFF5CA    F1FFFFFE              0.00%
043.8566413    -0.793920040      08
```

NOTE:

If post-processing was enabled in the GPS menu, the unit begins storing DGPS binary data when entering this test menu.

Line 1 094 represents the length of the GPS data in bytes. It is obtained by comparing the PPS and internal TCXO. **A value of 7 is normal**.

Line 2 Displays date and time in UTC

Line 3 0629231 4857210 0000174 represent UTM Easting, Northing and altitude in meters

Line 4 00008 -00008 are the position coordinates in the Local Grid.

Line 5 00008 00000 are the position coordinates in the Rotated Grid.

0001 0002 are the current starting and ending waypoints

Line 6 0000031 are intermediate calculation numbers and 0000152 is the distance (in meters) along the current line (wp1 - wp2 direction in this example) from current location to the ending waypoint (wp2 in this example)

Line 7 displays the addresses of the memory locations used to store DGPS binary data and the percentage of memory used to that purpose.

Line 8 043.8566413 -079.3920040 are Latitude and Longitude in decimal degrees. 08 is the number of satellites in view.

D4. SETTING UP NAVIGATION OPTIONS

Select B-setup to access the GPS aided navigation menu.

SCREEN D7

Lane guidance & grid setup no F-ok C-change

Press **C-change** to enable or disable this option. This option enables you to enter up to 1000 waypoints in one of 3 ways (automatically, from keyboard, or from computer and uploading).

SCREEN D8

A-automatic-grid-setup B-programmable-waypoints C-RS-232-waypoints-transfer

The characteristics of these navigation modes are explained in the sections that follow.

D.4.1 Automatic Grid Setup (Line-to-Line Navigation)

With the A-automatic-grid-setup option, you can **generate a rectangular grid with parallel lines separated by a specified increment** (for example, 100m). You must define the START and END points (in UTM only) for the first line and the line increment.

If you enter a positive value for the increment, the lines are added in a counter-clockwise direction. In the diagram that follows, a negative value has been used to increment lines below the initial line.

The system generates a grid with 500 lines (i.e. 1000 waypoints). **With waypoints, you can**:

a) use as many of the waypoints as required

b) skip waypoints, for example, where obstacles are in the way

c) stop the survey and re-start at another waypoint.

If you have the **lane guidance option selected**, you are automatically guided to the next waypoint when you reach the end of the line. Alternately, you can stop taking readings at a particular point on the line, move to the next line and resume your survey at any desired location on the line.

In addition to the automatic grid generation and lane guidance features, the coordinates in this navigation mode can be referenced to a Local Grid or to a Rotated Grid.

The **Local Grid** takes as its origin the START point but with arbitrary coordinates assigned by you. The orientation of its axes remains parallel to NS and WE directions the same as the UTM coordinates.

The **Rotated Grid** uses the same origin and arbitrary coordinates as the Local Grid, but the axes are rotated so the Y-axis takes the direction of the line.

The following picture shows how the different systems relate to each other.

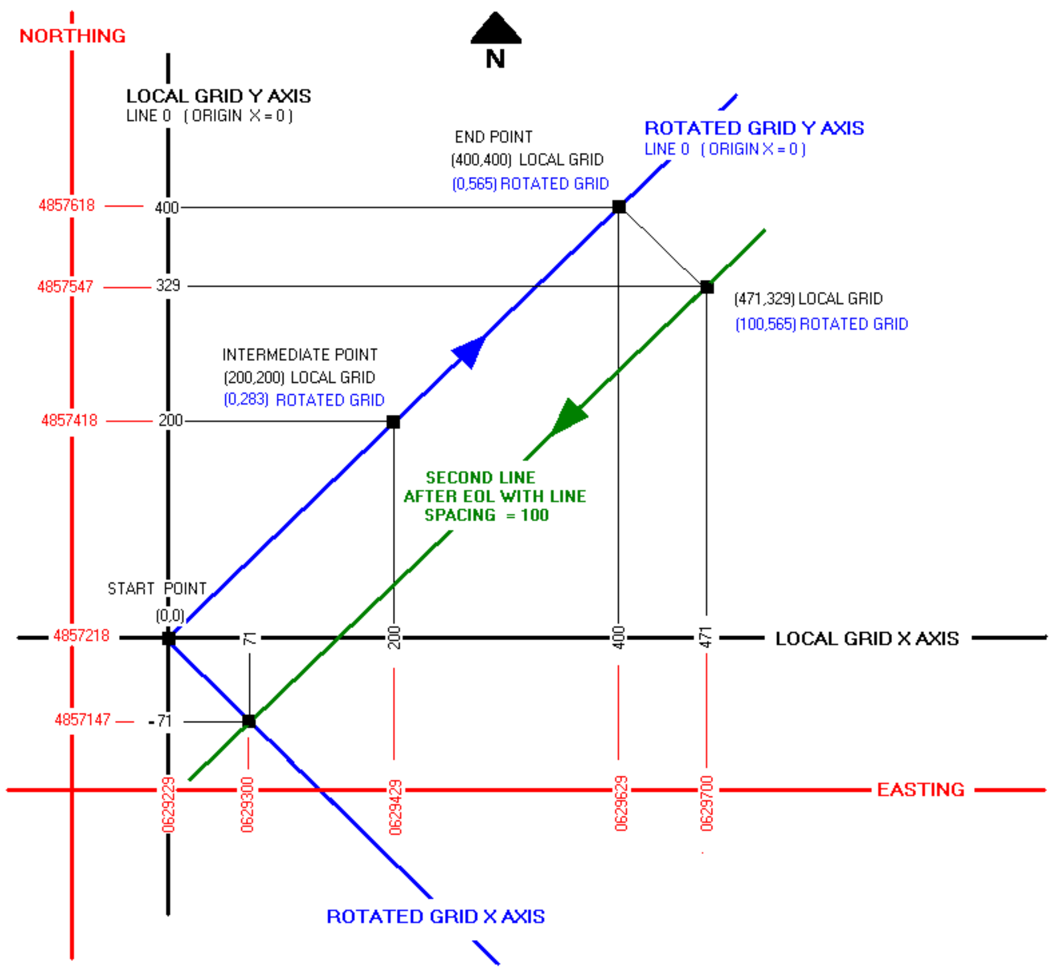


Figure D 1 Automatic Grid (UTM, Local Grid, and Rotated Grid)

Using the Rotated Grid allows you to have an arbitrary origin that you define, and the coordinates always in reference to axes parallel to the grid. In short, your grid determines the map and not the NS direction.

The Local Grid is a scaled down, local version of the UTM system, and it is based on your own arbitrary origin. It allows you to use smaller numbers or at least relevant to your origin or your grid.

To set the automatic grid first define the width of the lane

SCREEN D9

```
        lane width  +-05m


F-ok        C-change
```

The available lane widths are **2, 5, 10, 20, 25, 50** units. Press **C-change** to toggle between these values and **F-ok** to accept.

To define the grid, enter all the parameters sequentially as they are requested using **F-ok** to accept or **C-change** to change, the digit keys **0 to 9** for the numbers, **A** for the decimal point and **D** as backspace for corrections.

SCREEN D10

```
0629229
UTM Easting start point
4857218
UTM Northing start point
00000 x local grid origin
00000 y local grid origin

F-ok    C-change
```

SCREEN D11

0629629 UTM Easting end point 4857618 UTM Northing end point   F-ok C-change

SCREEN D12

00000 line 100 line spacing   F-ok C-change

The line number would have to be set to the same value of the Y coordinate of the origin in order to conform to your grid origin setting. This number will default even if you change it.

You must choose an appropriate line spacing and enter it. After the last value is entered the unit returns to the GPS menu.

To proceed with the survey, press **F**. The unit returns to the main menu. Set the survey mode, cycling rate, and the other survey parameters in the usual way.

NOTE that the options for the positioning system are not the same as the previous Line and Station or XY. Options that were added in v6.0 include:

- UTM
- Latitude Longitude
- Local Grid
- Rotated Grid

The data is stored with UTC time as the time stamp and the position in the units of the selected system.

D.4.2 Programmable Waypoints (Point-to-Point Navigation)

By selecting **B-programmable-waypoints** the survey can be planned almost Point-by-Point. Up to 1000 survey waypoints can be stored in memory and the unit guides you to each one of those points.

While walking from waypoint to waypoint, the lane guidance feature keeps you within a lane of pre-defined width using arrows (< - or - >) to indicate left or right. When within the lane, the display shows horizontal bars (- -). In addition, the distance (in meters) to the next waypoint is displayed.

In contrast to the automatic grid, Programmable Waypoints is a **Point-to-Point** navigation mode.

NOTES:

The coordinate of the waypoints can ONLY be entered in UTM

The points are retrieved from memory in ascending numeric order. If the survey starts at WP1, you are guided to WP2. Then from WP2 to WP3 and so on.

When the indication of the distance to the waypoint is zero meters and the arrows are not displayed, you reached destination.

At this point, you should exit the reading mode using **A-menu**, and then use the command

E-next-point.

The next point command is used and works as the EOL command. It basically switches the destination point as the origin point, and retrieves the next consecutive waypoint from memory.

The next figure shows these concepts:

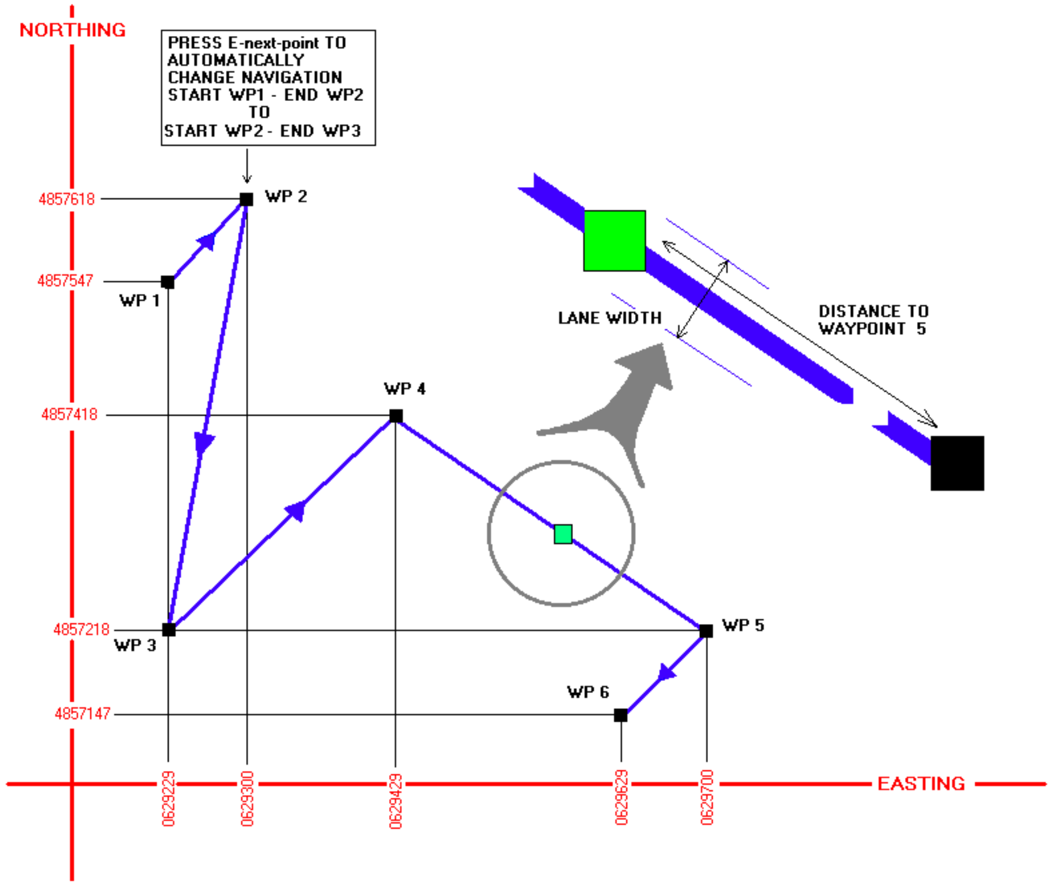


Figure D 2 Waypoint Navigation

New Navigation Feature

In August / September of 2002, the navigation display was enhanced through the addition of a large directional arrow on the face of the LCD unit. This feature is designed to assist you in staying precisely on track during your survey. To see how this new feature looks and works, turn on your unit and access the navigation option.

The first step to program the waypoints is defining the width of the lane

SCREEN D13

```
        lane width  +-05m

F-ok     C-change
```

The available lane widths are 2, 5, 10, 20, 25, 50 meters. Press **C-change** to toggle between these values and **F-ok** to accept.

To define the grid, enter all the parameters sequentially as they are requested using **F-ok** to accept or **C-change** to change, the digit keys **0 to 9** for the numbers, **A** for the decimal point and **D** as backspace for corrections.

SCREEN D14

```
00001   start waypoint



F-ok     C-change
```

SCREEN D15

```
00001   start waypoint
00002    end waypoint


F-ok     C-change
```

SCREEN D16

0629229 UTM Easting
waypoint 0001
F-ok C-change

SCREEN D17

0629229 UTM Easting
4857547 UTM Northing
waypoint 0001
F-ok C-change E-end

The process is the same for waypoint 2 and the rest.

When the Northing for the last waypoint you want to program is entered you may press **E-end** to return to the GPS menu.

D.4.3 RS-232 Waypoint Transfer (Point-to-Point Navigation)

This is not a navigation mode. It is actually a tool to program the waypoints.

If the survey involves several waypoints, programming them one by one using the unit's keypad may become quite a task. Instead, you may use the RS-232 port to transfer the waypoint from a file on your PC.

> **NOTE:**
>
> *To transfer the waypoints you MUST have GEMLinkW 2.4 or newer installed on your PC and use the Transfer GPS waypoint utility. GEMLinkW is freely available from GEM Systems web site.*

The text files may be created using GEMlinkW in editing mode, or with any other word processor capable of saving as plain ASCII text.

Spreadsheet programs such as Microsoft Excel can also be used provided the files are saved as text (space, comma, TAB , or colon separated) and not as worksheets or workbooks.

The files must have two columns; one for each UTM coordinate of the waypoints. GEMLinkW expects SPACE as the default delimiter between fields (or columns) but a different one can also be selected.

The magnetometer consoles can store up to 1000 waypoints. Therefore, the files should have 1000 (or less) lines or rows. However, if the file is larger only the first 1000 lines is transferred. A CR (carriage return) or CRLF (carriage return/Line feed) determines the end of each line. Lines terminated only with LF cannot be used since they are treated as a single line.

A general description of the file format follows:

```
Easting WPoint1       Separator   Northing WPoint1          CRLF
Easting WPoint2       Separator   Northing WPoint2          CRLF
Easting WPoint3       Separator   Northing WPoint3          CRLF
 |          |           |               |
 |          |           |               |
Easting WPoint1000    Separator   Northing WPoint1000  CRLF
```

NOTE:

The coordinates of the waypoints may be entered as UTM

The following is an example of valid UTM coordinates to program WP1 to WP5 with SPACE as field delimiter between columns. WP6 to WP1000 have their UTM coordinates set to zero

```
629260 4857196
629268 4857195
629271 4857194
629361 4857193
629262 4857192
```

After creating the text file on the PC, open GEMLinkW, access the Transfer GPS waypoint utility, and just follow the step-by-step instructions provided.

NOTE:

It is advised to use GEMLinkW version 2.4 or higher (as of this release of the manual, the current version is 3.0). The instructions here correspond to the 2.4 software release. If any of the steps don't match the options or screens available from your unit, it is either because your unit does not support the waypoint feature or you have an older software version. Please contact GEM Systems for assistance.

D.5 SURVEYING WITH GPS NAVIGATION

IMPORTANT NOTES:

The GPS antenna must be connected to the BNC connector MARKED WITH YELLOW located on the RIGHT HAND SIDE of the console. Do NOT connect the GPS antenna into the BNC connector for the sensor RF on the left-hand side. The antenna will be damaged beyond repair.

The GPS antenna MUST be mounted a minimum of one full section staff (56cm) apart from the sensors to avoid magnetic interference.

Make sure GPS is enabled (GPS yes)

When the GPS is enabled, the positioning system is selected as usual but the options are different. Press **A** for survey and using the **F** control to toggle the cursor right to **Position**, press **C** to change. The following sequence is an example:

From the **Main Menu**, press **A-survey**. The following screen is displayed:

SCREEN D18

A-survey B-diurn.cor	
	F-GPS
C-info OF-off D-test	yes
	15 II 00
E-time-synch 1-send	TU
	00:56:56
45-erase 2-enter text	
	13.2V

The unit checks for GPS lock

SCREEN D19

please wait for pps

Select survey mode

SCREEN D20

A-mobile B-Base C-grad
D-walkmag E-walkgrad

To select the position system, highlight position scrolling the cursor with B or F. The current position is displayed in the selected system.

SCREEN D21

survey mode position time file
cycle time tuning AC filter
display mode text ID
0000268 0001 0002
629229 4857218 07 - >

A-start C-change BF →
←

Where

0000268 - is the distance (in meters) along the current line (wp1 - wp2 direction in this example) from current location to the ending waypoint (wp2 in this example)

0001 0002 - are the current waypoints.

629229 4857218 are the current coordinates

07 - is the number of satellites in view

- > are the lane guidance indicators

If GPS lock is lost while in the survey menu the screen displays

SCREEN D22

```
survey mode  position  time file
cycle time tuning AC filter
display mode text ID
                    0000268  0001  0002
no GPS

A-start             C-change    BF  →
←
```

Press **C-change** to change the positioning system

SCREEN D23

```
survey mode  position  time file
cycle time tuning AC filter
display mode text ID
                    0000268  0001  0002
629229   4857218

A-start             C-change    BF  →
←
```

SCREEN D24

```
select position system
rotated grid



F-ok   C-change
```

The options are Local Grid, Rotated Grid, UTM or Lat-Long.

NOTE:

When using programmable waypoints, the Local and Rotated Grid options may not be displayed.

If they are displayed however, remember that the waypoints are entered in UTM and therefore, Local or Rotated systems are not coherent with the planned route.

Other survey parameters may be adjusted as normal. When ready, press **A-start** to start the survey and take magnetic readings.

The unit will:

1. Check GPS lock and initialize GPS if necessary.
2. Synchronize internal clock to UTC time (time is overwritten)
3. Perform tune-initialize for magnetic readings (if tune initialize is enabled)
4. Display the reading menu. The GPS information is displayed along with the magnetic data. For example, in the Mobile mode, you see:

SCREEN D25

```
48101.65nT      0.01                  99



 A - menu    other keys – read      12.2
                   0000268  0001  0002
629229   4857218            07  - >
```

Where

0000268- is the distance (in meters) along the current line (wp1 - wp2 direction in this example) from current location to the ending waypoint (wp2 in this example)

0001 0002- are the current waypoints.

629229 4857218 are the current coordinates

07 - is the number of satellites in view

- > are the lane guidance indicators

NOTE:

When GPS is enabled it is not possible to take repeat readings. Each reading is taken with its UTC time and its coordinates.

If GPS lock is lost during the survey the unit displays:

SCREEN D26

```
48101.65nT      0.01                99



 A - menu    other keys – read      12.2
                  0000268  0001  0002
No GPS
```

NOTES:

Automatic Grid Setup (line to line navigation) does not display distance to the destination point.

Other survey modes display the navigation data in a similar fashion.

D.6 DGPS POST PROCESSING

Units equipped with GPS and post-processing option, are capable of storing the binary GPS information required for the purpose.

When the magnetometer is in reading mode, the required messages from the GPS module are stored in binary format at the end of the memory block

NOTES:

Since the DGPS information is stored at the end of the memory block, it is recommended to erase the entire memory before a survey involving DGPS storing to delete any data from previous surveys.

Two DGPS files are required to perform GPS post-processing. One from a base GPS station (which could also be the mag base station) and another from the mobile unit.

*To enable or disable post-processing, from the **GPS menu press E-post-processing** and conduct the survey in the usual manner.*

SCREEN D27
GPS menu

A-initialize-GPS	B-navigation
C-synch-to-UTC	D-test
E-post-processing no	
	F

At the beginning of each survey (or when re-starting a survey from the main menu), a warning is momentarily displayed if post-processing is disabled. If you DO want to store DGPS data, press **1C** and enable post-processing from the **GPS** menu. Otherwise, continue with the current settings when the warning message disappears.

SCREEN D28

```
! GPS WARNING !

storing for post-processing
disabled
```

After the survey the DGPS binary data can be transferred to a PC using **A-send-raw-data**

SCREEN D29

```
GPS  yes

8544455 bytes
A-send-raw-data          F-ok    C-change
```

SCREEN D30

A-PC-transfer
B-binary-transfer
8544455 bytes

1. **B-binary-transfer** sends the DGPS data in hexadecimal format and NOT in the normal ASCII. The receiving device, whether a PC or data logger, must be capable of receiving and capturing binary data. While this worked well with 2 or 3 MB files, the Windows environment proved to be unreliable for larger files. DGPS binary files may be much larger than 2 or 3 MB and in those cases, part of the data was lost during the transfer even at low transmission rates.
   The PC transfer method is highly advised.

2. **PC-transfer.** GEMLinkW's Receive DGPS Binary Utility has been designed to safely transfer the DGPS binary data from the memory of GEM Systems' magnetometers equipped with on-board GPS and with post-processing option, to a file on the PC. Once initiated, the process automatically checks for data integrity. Checksums of the transmitted and received data and size of the files in bytes are available from the unit and the PC to confirm proper data transfer. Step by step instructions are provided with the utility.

   NOTE:

   For this method GEMLinkW 2.4 or higher is required.

APPENDIX E: GSM-19 V6 dIdD MAGNETOMETER

dIdD is a vector magnetometer, offering a completely integrated design for continuous monitoring of the ***Inclination*** and ***Declination***, and total field intensity of the Earth's magnetic field.

This system employs a mutually orthogonal coil setup that -- through a simple measurement methodology -- offers superior stability in comparison with fluxgate magnetometer instruments used for similar applications.

Please refer to the dIdD Instruction Manual. This is separately supplied with the dIdD system.

APPENDIX F: GSM-19T PROTON PRECESSION SYSTEM

The GSM-19T is a portable **standard** (without Overhauser enhancement) proton magnetometer/gradiometer designed for hand-held or base station use for geophysical, geotechnical or archaeological exploration, long term magnetic field monitoring at Magnetic Observatories, volcanological and seismic research, etc. The GSM-19T is a secondary for measurement of the Earth's magnetic field, having 0.2nT resolution, and 1nT absolute accuracy over its full temperature range.

The GSM-19T is a microprocessor based instruments with storing capabilities. Large memory storage is available (up to 2Mbytes for version 5 and up to 32Mbytes for version 6 units). Synchronized operation between hand held and base station units is possible, and the corrections for diurnal variations of magnetic field are done automatically. The results of measurements are made available in serial form (RS-232-C interface) for collection by data acquisition systems, terminals or computers. Both on-line and post-operation transfer are possible.

The measurement of two magnetic fields for determination of gradient is done concurrently with strict control of measuring intervals. The result is a high quality gradient reading, independent of diurnal variations of magnetic field.

Optionally the addition of a VLF sensor for combined magnetometer/gradiometer-VLF measurement is available.

F.1 MAGNETIC FIELD MEASUREMENT PROCESS

The magnetic field measuring process consist of the following steps:

- Polarization: A strong DC (opposed to the RF polarization used on Overhauser enhanced units) current is passed through the sensor creating polarization of a proton-rich fluid in the sensor
- Pause: The pause allows the electrical transient to die off, leaving a slowly decaying proton precession signal above the noise level.
- Counting: The proton precession frequency is measured and converted into magnetic field units.
- Storage: The result are stored in memory together with date, time and coordinates of measurements. In base station mode, only the time and total field are stored.

Both series, GSM-19 and GSM-19T are used and operated in the same fashion. The main difference between these models is the addition of an electron-rich fluid in the sensor and additional circuits to achieve the Overhauser affect in the GSM-19 system.

*** See Appendix A of this User's Manual for proton sensor orientation requirements.**

APPENDIX H: GSM-19 MAG / GRAD SPECIFICATIONS

Resolution:	0.01nT (gamma), magnetic field and gradient.
Accuracy:	0.2nT over operating range.
Range:	20,000 to 120,000nT.
Gradient Tolerance:	Over 10, 000nT/m
Operating Interval:	3 seconds minimum, faster optional. Readings initiated from keyboard, external trigger, or carriage return via RS-232C.
Input / Output:	6 pin weatherproof connector, RS-232C, and (optional) analog output.
Power Requirements:	12V, 200mA peak (during polarization), 30mA standby. 300mA peak in gradiometer mode.
Power Source:	Internal 12V, 2.6Ah sealed lead-acid battery standard, others optional. An External 12V power source can also be used.
Battery Charger:	**Input:** 110 VAC, 60Hz. Optional 110 / 220 VAC, 50 / 60Hz.
	Output: dual level charging.
Operating Ranges:	Temperature: - 40^{o}C to +60^{o}C.
	Battery Voltage: **10.0V minimum to 15V maximum.**
	Humidity: **up to 90% relative, non condensing.**
Storage Temperature:	-50^{o}C to +65^{o}C.
Display:	LCD: 240 X 64 pixels, OR 8 X 30 characters. Built in heater for operation below -20^{o}C.
Dimensions:	**Console:** 223 x 69 x 240mm.
	Sensor Staff: 4 x 450mm sections.
	Sensor: 170 x 71mm dia.
	Weight: console 2.1kg, Staff 0.9kg, Sensors 1.1kg each.

VLF

Frequency Range:	15 - 30.0 kHz
Parameters Measured:	Vertical in-phase and out-of-phase components as percentage of total field. 2 relative components of horizontal field. Absolute amplitude of total field.
Resolution:	0.1%.
Number of Stations:	Up to 3 at a time.
Storage:	Automatic with: time, coordinates, magnetic field / gradient, slope, EM field, frequency, in- and out-of-phase vertical, and both horizontal components for each selected station.
Terrain Slope Range:	0^{o} - 90^{o} (entered manually).
Sensor Dimensions:	140 x 150 x 90 mm. (5.5 x 6 x 3 inches).
Sensor Weight:	1.0 kg (2.2 lb.).

APPENDIX I: PROGRAMMABLE BASE OPTION

The programmable base feature allows full control over the base surveys. It is particularly useful for remote or unattended base stations.

By programming or scheduling the base, you can determine when the surveys begin and end hours, days or years in advance. This result in a more efficient use of batteries or other available power sources, and also avoids storing in memory hours or days-worth of unwanted data. Because a new file is created every time a base survey starts, each schedule has its own file.

I.1 SETTING UP THE PROGRAMMABLE BASE STATION OPTION

From the **Main Menu**, press **A-survey** to access the **Survey Menu** and then, with **survey mode** highlighted, press **C-change**.

> **NOTE:**
>
> *If GPS synchronization is required make sure the GPS is enabled.*

SCREEN G1

```
A - mobile      B - base
C - grad
D - walkmag   E - walkgrad
```

> **NOTE:**
>
> *The available survey modes of your unit may differ from the ones shown here depending on its model, its software, and its hardware.*

Press B to select **Base Station**. The unit returns to **Survey Menu** with the following screen:

SCREEN G2

```
survey mode  datum time file
cycle time tuning AC filter
display mode text ID

     connect sensor now
089123 readings left
base
A-start                    C-change ←  BF  →
```

1. From the survey menu, select cycling rate, tuning, time and other parameters in the normal way.

2. Connect the sensor(s) and, if required, the GPS antenna.

3. Press **A-start** to proceed.

   NOTE:

   If tune initialize is set to YES, it is activated at this point. Make sure the sensors are connected to the unit. Otherwise, tune initialization fails and this affects all the scheduled base surveys.

Programmable bases can be operated in three different modes:

- Immediate
- Daily
- Programmable

The screen for the base mode used in the last survey is displayed. Press **E-new-mode** to change the base mode

SCREEN G3

```
base start
A-immediate
B-daily
C-programmable      D-RS-232
```

I.2 USING THE IMMEDIATE SCHEDULING FEATURE

The Immediate scheduling feature lets you start the base station instantly following the initial setup. Select A-immediate. The following screen is displayed.

SCREEN G4

```
        base will start immediately

A-start                      E-new-mode
```

The immediate mode is the normal manual base mode. Pressing **A-start** starts the survey and you must press **1C** to stop it.

I.3 USING THE DAILY SCHEDULING FEATURE

The Daily Base scheduling feature lets you run the base station every day by starting and stopping at designated times.

SCREEN G5

```
        base start
        A-immediate
        B-daily
        C-programmable      D-RS-232
```

Select B-daily

SCREEN G6

```
        base will run every day

          from 07:00  to 19:00

A-start     C-change     E-new-mode
```

NOTES:

The start and stop times used in the last survey is displayed.

If in the last survey the unit was used in the programmable mode, the start and stop times displayed is those of the first program in memory.

Press **C-change** to enter different start and stop times

SCREEN G7

base will run every day
from □ to

Enter the time as hh:mm in 24 hrs format. If an invalid number for hours or minutes is entered the unit displays

SCREEN G8

.base will run every day	
from 66:00 to 19:00	
illegal entry	F

Pressing **F** returns both times to 00:00. To enter the correct time, start the process again.

When the last digit has been entered the unit returns to screen G6 and displaying the new program. Press **A-start** to start the base.

If the start time has already passed, the unit starts immediately. Otherwise it displays:

SCREEN G9

```
050916
waiting for program
07:00  to  19:00
```

- Where 050916 is the current time in hhmmss.
- When the start time is reached, the survey begins.

NOTE:

The start time indicates the beginning of the survey and NOT the time of the first reading. Depending on the selected cycling rate the time of the first reading of the file is delayed. Furthermore, to preserve the battery the GPS module is turned off while waiting for a program start. If GPS is enabled, the unit turns on GPS and waits for GPS lock and UTC synchronization. This imposes a further delay on the time required for the first reading.

At the stop time, the unit stops cycling, turns off GPS if enabled, closes the current file and waits for the start time the next day.

The daily survey loop can only be stopped by pressing **1C** either while taking readings or while waiting for the start time.

I.4 USING THE FLEXIBLE SCHEDULING FEATURE

The flexible scheduling feature lets you store up to 30 schedules each with date and time for the start and the date and time to stop the surveys.

SCREEN G10

```
.base start
 A-immediate
 B-daily
 C-programmable      D-RS-232
```

Select **C-programmable.** A screen similar to the following is displayed.

SCREEN G11

	----start----		----stop----	
p#	yymmdd	hh:mm	yymmdd	hh:mm
01	020503	07:00	020504	23:00
02	000000	00:00	000000	00:00
03	000000	00:00	000000	00:00
04	000000	00:00	000000	00:00
05	000000	00:00	000000	00:00
A-start		C-change		E-new-mode

NOTES:

The schedules used in the previous programmed surveys is displayed.

If the last survey the unit was used in daily base mode, the hours and minutes of the first program is those of the daily program, but the dates is the last ones stored in memory.

Press **C-change** to enter different schedules.

SCREEN G12

	----start----		----stop----	
p#	yymmdd	hh:mm	yymmdd	hh:mm
01□	020503	07:00	020504	23:00
02	000000	00:00	000000	00:00
03	000000	00:00	000000	00:00
04	000000	00:00	000000	00:00
05	000000	00:00	000000	00:00
C-change	A-move	D-delete	<BF>	E

A solid black square indicates the first program.

B scrolls through the programs backward

F scrolls forward

D-delete deletes the program marked with the black square and moves the programs below it up one step in the list.

A-move places a copy of the marked program at the current program number and moves the marked program on step down. NOTE that this overwrites program number 30.

C-change deletes the marked program and allows the input of a new one. Illegal entries for date and time is rejected and the process must be re-started.

E (for Enter) stores the changes.

Once all the programs have been entered, press **A-start** to begin the survey. The unit searches through the programs until it finds the first to run. If the start time of the program has already passed, the unit starts immediately. Otherwise, it displays:

SCREEN G13

```
050916
waiting for program 01
020503  07:00         020504   23:00
```

Where

050916 is the current time in hhmmss.

020503 07:00 are start date and time of the program

020504 23:00 are stop date and time of the program

When the start time is reached, the survey begins.

NOTE:

The start time indicates the beginning of the survey and NOT the time of the first reading. Depending on the selected cycling rate the time of the first reading of the file is delayed. Furthermore, to preserve the battery the GPS module is turned off while waiting for a program start. If GPS is enabled, the unit turns on GPS and waits for GPS lock and UTC synchronization. This further delays the time required for the first reading.

At the stop time, the unit stops cycling, turns off GPS if enabled and closes the current file. If another valid program is stored, the unit waits for its start time. When all the programs are completed, the unit displays a "**press 1C**" message.

I.5 TRANSFERRING SCHEDULES FROM YOUR PC TO YOUR GSM-19

By selecting D-RS-232 the base schedules can be transferred to the unit from a PC file. This is not a different base survey mode. It is actually a tool to enter the base schedules. If you need to enter several base programs, it may be easier to type them into a text file on a PC and then transfer the file to the unit using the RS-232 port.

> **NOTE:**
>
> *To transfer the base schedules you MUST have GEMLinkW 2.4 or newer installed on your PC and use the programmable Base utility. GEMLinkW is freely available from GEM Systems web site.*

The text files may be created using GEMlinkW in editing mode, or with any other word processor capable of saving as plain ASCII text. Spreadsheet programs such as Microsoft Excel can also be used provided the files are saved as text (space, comma, TAB , or colon separated) and not as worksheets or workbooks.

The magnetometer consoles can store up to 30 programs or schedules. Therefore, the files should have 30 (or less) lines or rows. However, if the file is larger only the first 30 lines is transferred. The end of each line is determined by a CR (carriage return) or CRLF (carriage return / line feed). Lines terminated only with LF cannot be used since they are treated as a single line.

A general, condensed description of the file format may be written as follows:

Start date and time		Stop date and time	
YYMMDDhmm prog 1	Separator	YYMMDDhhmm prog 1	CRLF
YYMMDDhhmm prog 2	Separator	YYMMDDhhmm prog 2	CRLF
| |	|	|	
| |	|	|	
YYMMDDhhmm prog 30	Separator	YYMMDDhhmm prog 30	CRLF

For example if you are using SPACE as field separator, and want to automatically start the base on May 20 2002 at 11:30 AM and stop it on May 25 2002 at midnight, you should enter the line as:

0205201130 0205252359 (file is 1min short) or

0205201130 0205260000

After creating the text file on the PC, just follow the step-by-step instructions provided by GEMLinkW's Programmable Base utility.

APPENDIX J: VERSION 7.0 ADDITIONS

Version 7 changes provide additional data values (including "line" information for compatibility with Geosoft , Encom and other similar earth science software packages) and output flexibility.

This section should be read in combination with Section 6.2.2 which describes data transfer.

J1. DATA VALUES

New data values available for the first time include line numbers (preceding data blocks), elevation, satellites (number of), picket-x and picket-y. Following is a definition of each new value:

- Line numbers – standard numbers (ex. line 100) that can be added to the front of data records. This enables both easier direct import into software packages and easier manual manipulation of files as it is easier to detect where different blocks of data start and end.

- Elevation – elevation (height above sea level) values derived from GPS.

- Satellites – number of satellites visible (for GPS or DGPS corrections) for each reading. This value can give a measure of survey positioning quality.

- Picket-x – an "X" positioning value that is assigned to a specific reading location. This value can be used for geo-referencing maps to specific pickets or in re-establishing positions on the ground for drilling or other follow up.

- Picket-y – a "Y" positioning value that is assigned to a specific reading location. This value can be used for geo-referencing maps to specific pickets or in re-establishing positions on the ground for drilling or other follow up.

J2. PROGRAMMABLE OUTPUT

Now when you use the Send function (1-Send in the Main menu) to transfer data from the magnetometer console to a computer, you see two options – Default and Custom.

Default values change according to the survey mode (ex. Base, Mobile, Grade, Walkmag, Walkgrad). For example, if you are working with a Walkgrad with GPS, selecting Default sends values in the following order:

- X (UTM, Lat/Long, X, Line)
- Y (UTM, Lat/Long, Y, Station)
- Elevation (m)
- Mag in nT
- Grad in nT/m
- Signal Quality (sq)

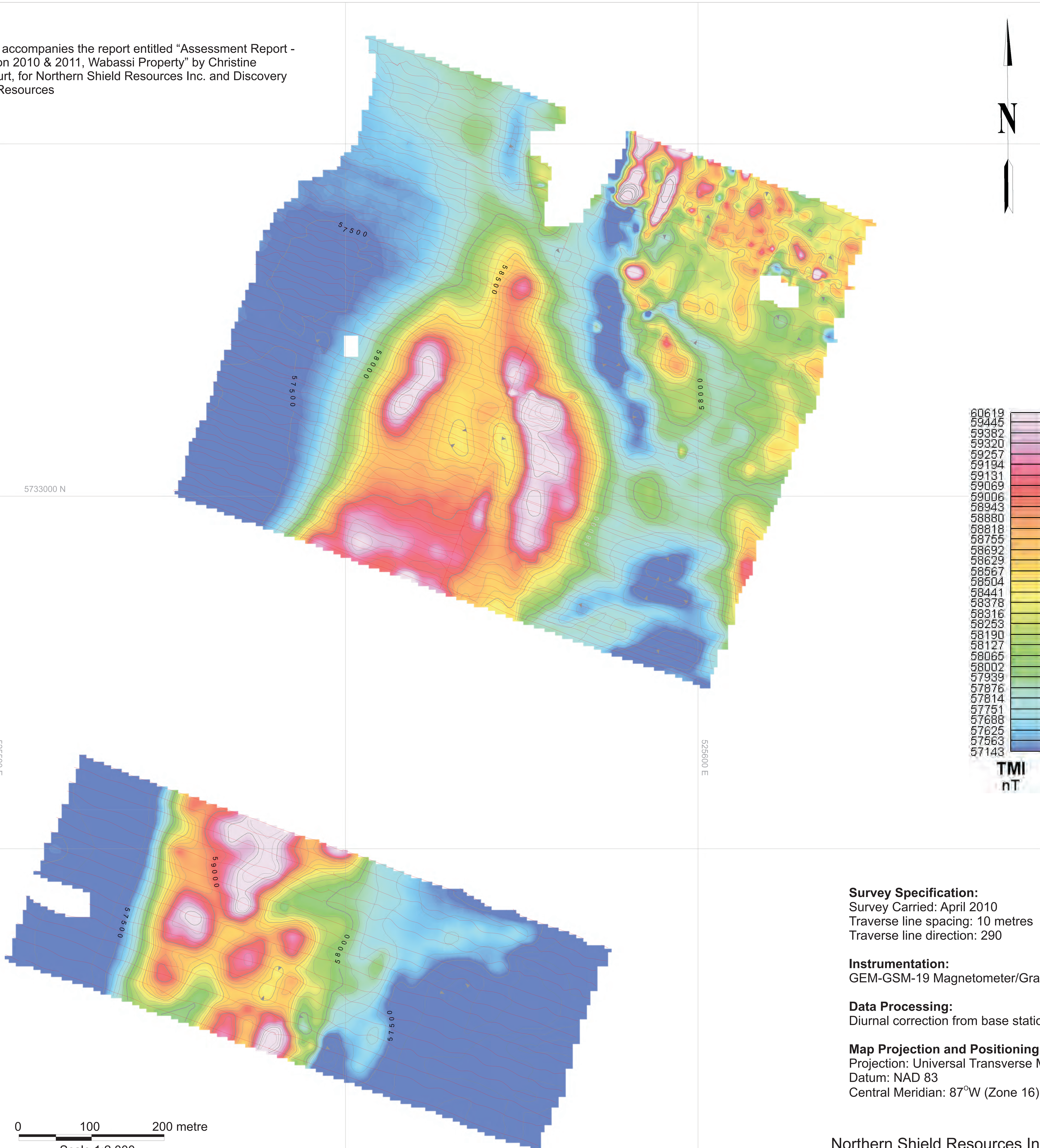
- Corrected Mag (cor-nT)
- Satellite (sat)
- Time (time)
- Picket-x (picket-x)
- Picket-y (picket-y)

Selecting Custom provides you with the option of changing the Default order to any ordering of values you would like as well of duplication of values, if required for any reason.

APPENDIX XI

Ground Magnetic Survey, Wabassi Property, Grid 2, with Traverses

This map accompanies the report entitled "Assessment Report - Exploration 2010 & 2011, Wabassi Property" by Christine Vaillancourt, for Northern Shield Resources Inc. and Discovery Harbour Resources



Survey Specification:
Survey Carried: April 2010
Traverse line spacing: 10 metres
Traverse line direction: 290

Instrumentation:
GEM-GSM-19 Magnetometer/Gradiometer

Data Processing:
Diurnal correction from base station

Map Projection and Positioning:
Projection: Universal Transverse Mercator
Datum: NAD 83
Central Meridian: 87°W (Zone 16)

Northern Shield Resources Inc. &
Discovery Harbour Resources
Wabassi Property, Northern Ontario

Ground Magnetic Survey

Grid 2, Wabassi Property,
with Traverses

APPENDIX XII

G-856 Memory-Mag Proton Precession Magnetometer, Operation Manual

G-856AX Memory-Mag™
Proton Precession
Magnetometer

P/N 18101-02 Rev. E

Operation Manual

GEOMETRICS, INC.
2190 Fortune Drive, San Jose, CA 95131
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Web: www.geometrics.com

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Table of Contents

Table of Figures

List of Tables

Introduction

This manual provides operating instructions for Geometrics G-856AX portable proton-precession magnetometer. It includes step-by-step instructions on magnetometer set-up, survey usage, measurement data retrieval, and maintenance.

What is a total field magnetometer?

A total magnetometer is an instrument that measures the scalar intensity of the local magnetic field. The G-856AX relies upon the proton-precession measurement technique. This technique makes use of an induction coil to create a strong magnetic field around a hydrogen-rich fluid such as Kerosene. This causes the hydrogen protons to align or polarize their spin axis with the newly applied magnetic field. When the current producing the polarizing field is interrupted, the protons begin to align themselves with Earth's magnetic field but in doing so will momentairly precess abou the earth's field at a specific frequency that is proportional to the ambient magnetic field intensity. This precession generates a small magnetic field that induces an alternating voltage in the induction coil that was previously used to generate the polarization field. The relationship between the precession frequency of the induced voltage and the strength of Earth's magnetic field is called the proton gyromagnetic ratio and is equal to 0.042576 hertz per nanotesla (Hz/nT).

Magnetometer applications

Most rocks contain some magnetite, hematite or other magnetic material and will produce disturbances in the local magnetic field. Because of this, most soils and many man made objects that contain iron or nickel have magnetic properties detectable by a sensitive magnetometer because they create local or regional anomalies in the Earth's main field. Anomalies are revealed by systematic measurement of the variation in magnetic field strength with position.

Interpretation of magnetometer readings allows the surveyor to make inferences about what exists beneath the Earth's surface. Based on experience with the survey area, the surveyor might interpret the measurements to indicate to location of a pipeline, fired pottery or bricks, a piece of ordnance, a particular mineral, or geologic structure. The interpretation of magnetic survey results is sometimes a difficult task, made even more complex by constant changes in the earth's overall magnetic field, the size and distance of objects from the magnetometer, the amount of magnetic material the object contains, as well as the magnetic susceptibility of the object and the host material. On the other hand, in many applications, simple interpretations of anomalous magnetic fields will lead to a straight forward understanding of the source of the anomaly.

The proton precession magnetometer is one of the principal instruments for magnetic surveys because it combines high accuracy and ease of use. The Applications Manual for Portable Magnetometers, supplied with this instrument and available for download from our website includes general information on the use of magnetometers. It should be studied as a companion to this manual which deals specifically with the G-856AX Memory Mag™.

Terms used in this manual

The magnetic field intensity at the surface of the Earth has an average value of about 50,000 nano-Tesla (nT). Historically, one nT is sometimes referred to as a gamma or "γ". Throughout this manual we will always express field intensity in nT.

The terms "sampling", "cycling", and "reading" all refer to the magnetometer's measurement of the field intensity. Note that these terms do not necessarily refer to both measurement and internal storage of the measurement value.

The G-856AX

Depending on its particular configuration, the G-856AX can be a portable, man-carried magnetometer, a gradiometer measuring the field with two sensors, or a "base station" magnetometer. As a hand-carried instrument, it features simple, push button operation and a built-in digital memory that stores over 5000 single sensor measurements or 2500 gradiometer readings. This relieves the user of the need to physically write down the data in the field, eliminates transcription errors and most importantly, allows the use of computers to automatically record and process the data from the magnetic survey. Software Programs are available from Geometrics to help the user process and interpret survey data. These programs include MagMap2000 and MagPick and are available for download from our website: www.geometrics.com.

The G-856AX can also record data automatically at regular intervals, so it can be left unattended to monitor diurnal changes in the earth's magnetic field. These readings (up to 12,500) are collected at a base station and used to correct simultaneous field measurements for high accuracy surveys. Measurement data from the G-856AX may also be fed directly into an external computer. The time-of-day generated by the magnetometer's internal clock is recorded with each reading taken in either mode.

All operations are controlled from keys imbedded in a weatherproof membrane that comprises the magnetometer console's front panel. The key sequences for the various magnetometer operations have been carefully designed to provide simple yet flexible operation.

A single connector is used for the sensor signal input and data output. The output format is in the universal RS-232 protocol that is accepted by most modern computers. Interface software for downloading, profiling and gridding/contouring of data is provided by Geometrics MagMap2000 software. A serial to USB converter is available for use with computers that are not equipped with a serial port.

Physically, the G-856AX is compact and lightweight. It is weather proof and operates over a wide temperature range. Depending on the model version, it is powered either by nine (9) D-cell batteries or, more commonly, by an internal rechargeable lead acid gel cell battery.

Unlike other proton-precession magnetometers, the G-856AX has an internal programming switch allows modification of the magnetometer's cycle times to ensure that it will work properly anywhere in the world.

Above all, the G-856AX is a high-precision magnetometer, the result of many years experience in the manufacture of similar instruments. The operation of the instrument is controlled by a microprocessor and the control program may be changed at any time for product improvement or other considerations. In that event, you may find variations between this manual and the operation of your actual instrument operation. Such variations will have no adverse effect and should be recognizable as you familiarize yourself with operation.

Magnetometer Set-up

The standard G-856AX system is used as a mobile instrument for measurement of the magnetic field intensity sequentially at discrete locations. With the appropriate accessories the standard system can be configured for measurement of the differential magnetic field (gradient) over the survey area or the magnetometer can be set up to record the temporal changes in the magnetic field intensity at a fixed point to acquire base station measurements.

Sensor fluids

The sensor contains coils of insulated wire and for optimum operation these coils must be submerged in a hydrogen-rich fluid. The following section provides information about this fluid and the correct procedure for filling the sensor with fluid.

It is important that you DO NOT operate the sensor for an extended period without fluid as this can damage the sensor. The sensor should be filled so that the fluid level is about 1cm below the fill port. There is a fill port tube inside the sensor that provides for an air gap when the sensor is filled. Correct fluid level can be checked approximately by shaking the sensor and judging the fluid level by the degree of sloshing. A more accurate level check requires removal of the sensor's fill plug and visual inspection of the contents. If the sensor is empty or needs filling proceed as follows:

A. Place the sensor on a flat, level surface.
B. Remove the blue cap plug on the sensor. Observe that the fill-port is a threaded tube extending into the sensor vessel. This design provides a 1cm air gap that allows for thermal expansion of the sensor fluid.
C. Fill with acceptable sensor fluid to within 1 cm. from the top. Acceptable fluids for proton-precession magnetometers include:
   - Shell SOL-71 (Shell Oil Co. product).
   - Charcoal Lighter Fluid (Kingsford, Wizard, etc.)
   - n-Decane (chemical supply houses, oil refineries)
   - ISOPAR-1 (Exxon Oil Co. product)
   - Odorless Mineral Spirits (also known as Naptha)
   - Kerosene
D. Pour only clear fluid into the sensor. If fluid is dirty use a paper coffee filter or fine screen to eliminate particles.
E. Slowly pour fluid into sensor until it is full. The sensor is full when the fluid just reaches the bottom of the fill-port as described above.
F. Place Teflon™ tape around the fill plug then screw it into the fill-port and tighten. Note: the fill plug and fill-port have tapered threads designed to form a tight seal. Tighten the plug just enough to prevent leakage - over tightening may crack or damage the sensor housing.
G. Sensor is now ready for use.

The different sensor fluids listed above will provide slightly different signal amplitudes but their use will ensure that the magnetometer measures the magnetic field strength correctly and that the sensor will not be damaged interaction with the fluid. *Geometrics does not recommend the use of gasoline (petrol) as a sensor fluid. Experience as shown that local formulation of gasoline may include additives that can damage the sensor. Do not put any solvent containing acetone or toluene into the sensor: these will dissolve the sensor body.*

Standard System Assembly

As shown in Figure 1 the standard G-856AX comes packed in a durable plastic carrying case, with compartments for its accessories. It contains:

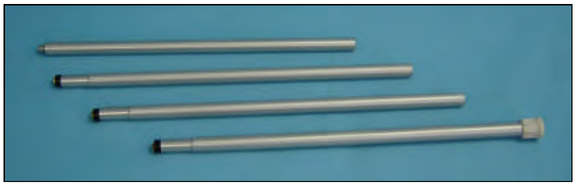
- G-856AX console
- Sensor
- Sensor signal cable
- Aluminum staff (four (4) mating sections)
- Console chest harness
- Two (2) rechargeable lead acid battery packs and charger (or D-cell alkaline batteries, nine (9) required)
- G-856 Operator's Manual (on CD)
- Application Manual for Portable Magnetometers (on CD)
- MagMap2000 Software and Manual (on CD)
- RS232 Data Output Cable

If the magnetometer is new it was shipped without sensor fluid. Before the magnetometer will operate correctly the sensor must be filled with the appropriate fluid. See the preceding section for a list of appropriate sensor fluids.

Figure 1. G-856 proton-precession magnetometer.

Assembly of the magnetometer is quite simple. Proceed as follows referring to Figure 2 through Figure 8.

1) Assemble the staff by inserting each section into the next twisting them until they are locked. As shown in Figure 2a, there are four staff sections. The section with the rubber tip is the bottom section and the section with the treaded end is the top section. Figure 2 b shows the cam-lock end of the staff section. This end is inserted into the open end of the matching section. Twisting the jointed sections by ¼ turn will lock them together.

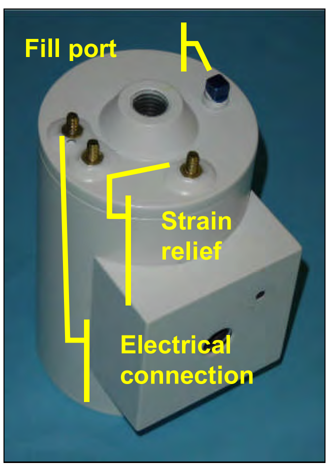


a

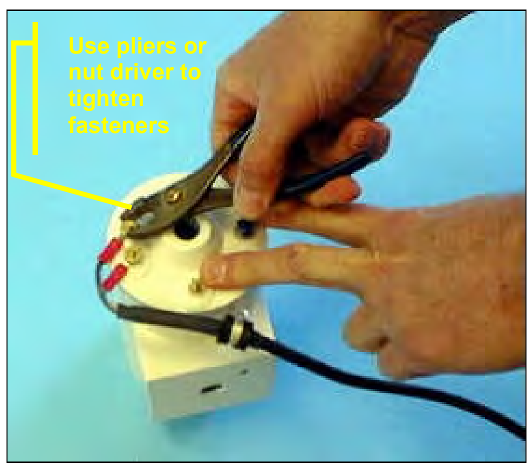
b

Figure 2. Sensor staff sections.

2) Verify that the sensor contains fluid. You may shake the sensor to determine if contains fluid. A sloshing sound indicates proper filling. Some air space above the fluid needed for thermal expansion - see instructions on sensor fluids in this section for details. Figure 3 shows the location of the sensor fluid fill port and the mounting points of the sensor cable. Any tools used for adding fluid, tightening fasteners or the port plug should either be non-magnetic or have a clean, rust free hard-chromed finish.



a



b

Figure 3. Sensor preparation.

Note: Geometrics recommends using non-magnetic tools for this task and it is important to use the original brass nuts and washers supplied with the instrument as substitutes could be contaminated with ferrous material.

3) Mount the sensor on the threaded staff section. As shown in Figure 4a and b, there are two ways the sensor can be mounted, either vertically, on its end or

horizontally on its side. For now, mount it vertically as shown in Figure 4 a.

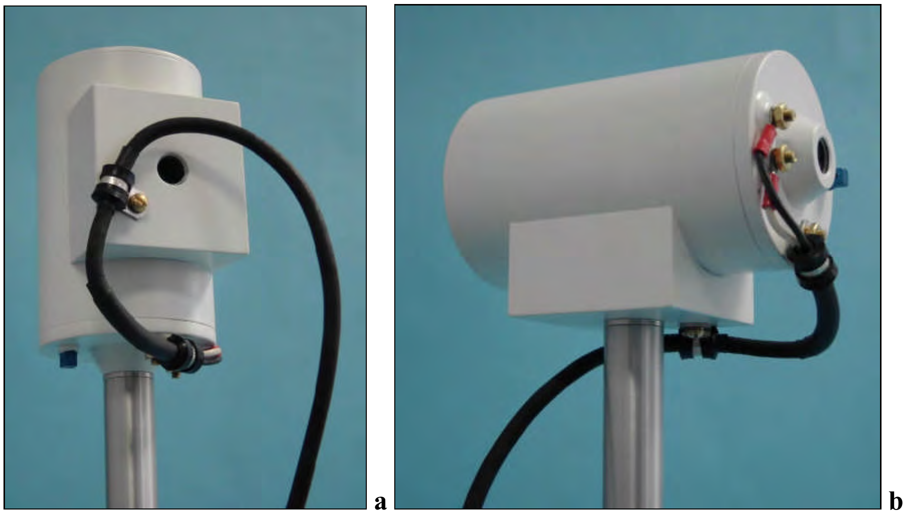


Figure 4. Staff / sensor assembly.

4) Remove the console cover by flipping the plastic tabs on its sides outward and sliding the cover completely off as shown in Figure 5 \a and b. Depending on the G-856AX version either a) Install fresh D-cell alkaline batteries or b) connect the internal rechargeable gel-cell battery. Gel-cell batteries are held in place with Velcro straps as shown in Figure 5c. Reinstall the cover before proceeding.

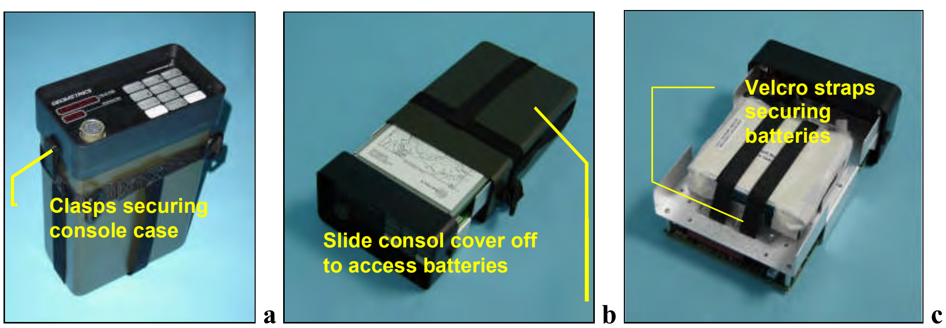
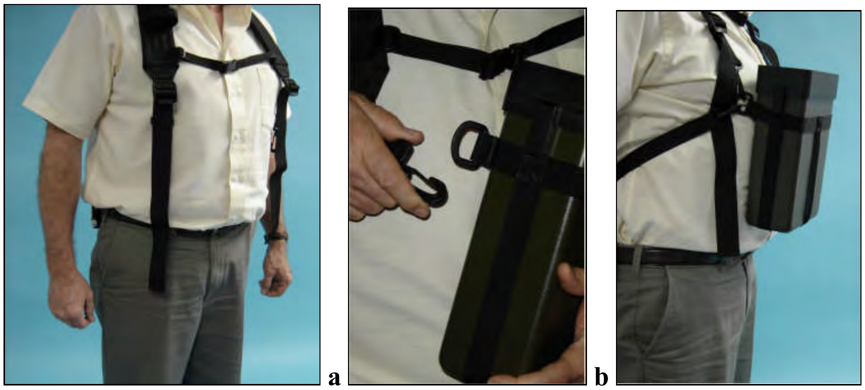


Figure 5. Console battery compartment.

5) The magnetometer is shipped with the signal cable attached to the sensor. If this cable is not connected to the sensor connect it as shown in Figure 3b. The sensor cable terminals are secured to the studs with brass washers and brass nuts. Do not substitute other hardware for these parts unless then completely non-ferrous. Tighten the terminal nuts finger-tight and then tighten an additional 1/8th turn (between 18 in-lb and 24 in-lb). Connect the signal cable to the magnetometer.

6) Put the console harness on as shown in Figure 6a. Hold the console to your chest

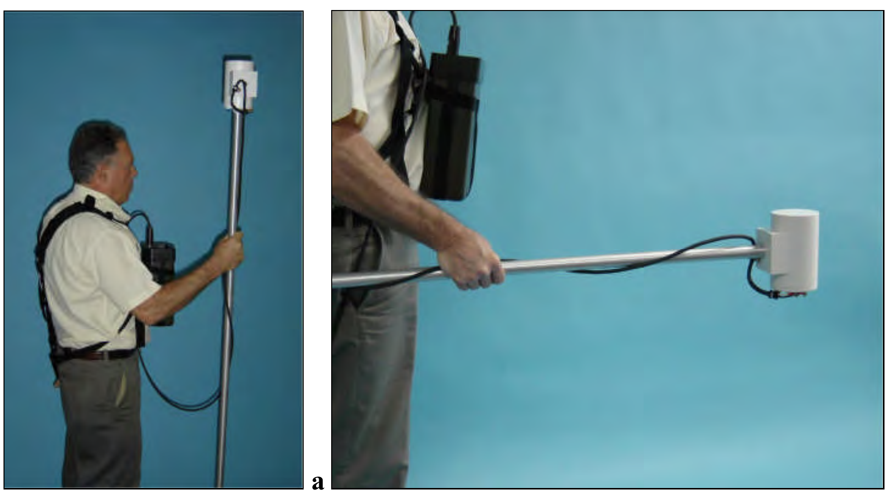
and clip the shoulder strap to the D-ring on the console holster as shown in Figure 6b. Do the same with the waist strap and then repeat this procedure on the other side of the holster. Adjust the harness so that the console is centered on your torso as shown in Figure 6c.



a b c

Figure 6. G-856 Shoulder harness.

7) Raise the sensor staff assembly to a vertical position and hold it steady for 3-4 seconds before taking a reading. Figure 7a shows the completed assemble ready for measurement. Figure 7b shows an alternate method for carrying the staff with the sensor with its central axis vertical. This method uses the saddle mount as the attachment point for the staff and will require a non-magnetic counter weight (available from the factory).



a b

Figure 7. Assembled magnetometer.

8) Verify that the console is powered and properly connected to the sensor by momentarily depressing the **READ** key. The position of this key is shown in Figure 8. The displays will light, turn off, then light again for 5 seconds. If the

displays did not light, check battery power or the Troubleshooting section in this manual.

Comment [jj1]:

Figure 8. Location of 'Read' key on magnetometer console.

Gradiometer Assembly

G-856AX gradiometer operation requires an optional set of accessories. These items are shown in Figure 9 and include:

- Gradiometer sensor
- Lower staff adapter
- Upper staff adapter
- Gradiometer sensor cable
- Gradiometer Switch
- Velcro attachment pack

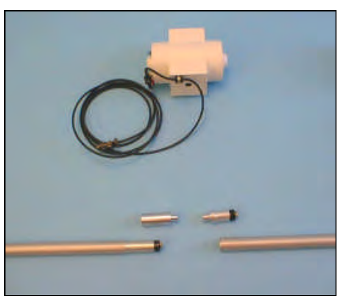
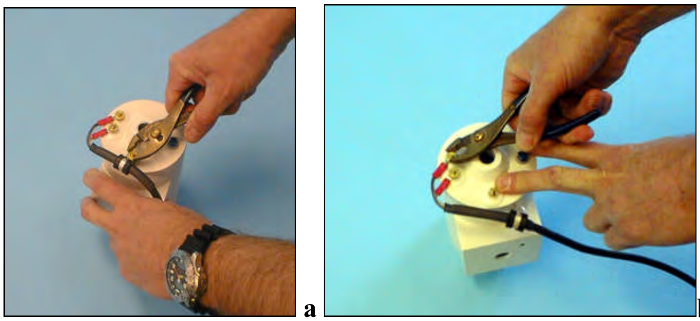


Figure 9. Gradiometer components.

Proceed with gradiometer assembly as follows:

1) Start by removing the standard (single sensor) cable from the top sensor. This will require removal of the sensor clamp and brass stud nuts as shown in Figure 10a and b.



a b

Figure 10 Removing standard sensor cable from top sensor.

Note: Geometrics recommends using non-magnetic tools for this task and it is important to use the original brass nuts and washers supplied with the instrument as substitutes could be contaminated with ferrous material.

2) Attach one of the thinner gradiometer sensor cables to the top sensor as shown in Figure 11 using the stud nuts washers and clamp that secured the standard cable.

Figure 11. Top sensor with gradiometer cable attached.

3) As shown in Figure 12, attach the other gradiometer sensor cable to the bottom sensor in the same manner used on the top sensor.

Figure 12. Bottom sensor with gradiometer cable attached.

4) Next, connect the threaded staff adaptors parts to the top of one staff section and the bottom of another staff section as shown in Figure 13 a. The bottom sensor is configured with opposing mounting points and the adaptors should be screwed into one set of these mounting points as shown in Figure 13 b.


a

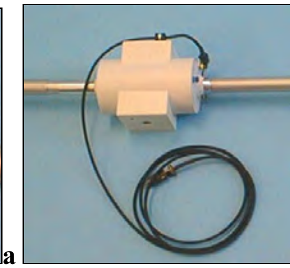
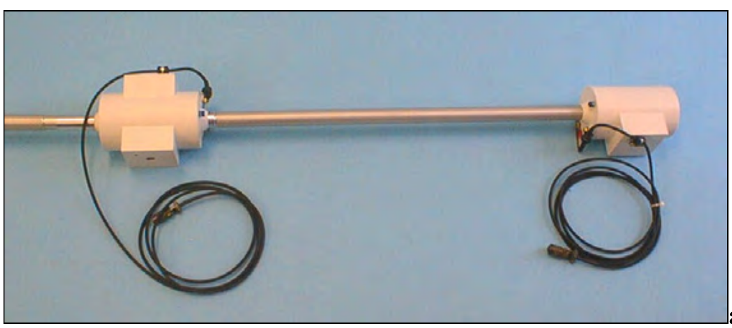

b

Figure 13. Connection of threaded staff adaptors.

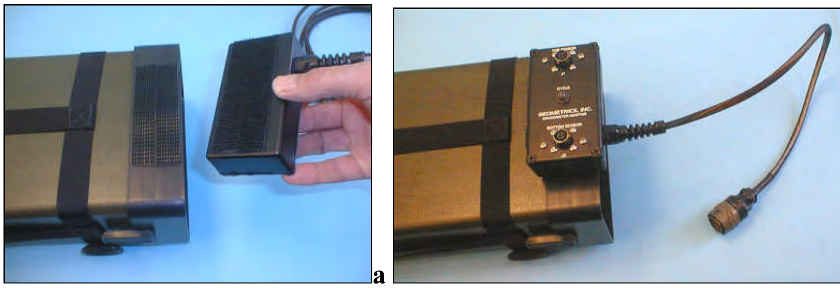
5) The separation between gradiometer sensors is determined by the lengths and number of the staff sections linking the sensors. The minimum separation will always include one of the threaded adaptors and the top (threaded) staff section as shown in Figure 14 a. Typical sensor separation will be two staff sections (4ft.). Note that Figure 14a shows only one staff section separating the sensors. Normally, two staff sections will support the bottom sensor so that the top sensor is at 8 ft and the lower sensor at 4 ft. An alternative configuration is shown in Figure 14b where three staff sections support the lower sensor. With any gradiometer configuration it is best to hold the staff at arms length when measuring the gradient. This will prevent the lower sensor from coming too close to the console and better isolate it from the magnetic effects of the system circuitry and batteries.


a


b

Figure 14. Completed gradiometer staff.

6) The sensor cables may now be connected to the Remote Start Switch box, and the Remote Start Switch may be connected to the G-856AX front panel connector. As shown in Figure 15, attach the Velcro strip to the top of the G-856AX black front panel bezel. Mount the Remote Start box to this mating Velcro strip.



a b

Figure 15. Attach the gradiometer switch box.

Base-station Assembly

The effects of the diurnal variation of the Earth's magnetic field can be removed from survey measurements if measurements were made during the survey with a base-station magnetometer. This magnetometer operates in a fixed location while the survey magnetometer is used to acquire magnetic field measurements over the survey area.

In order to provide a useful base-station reference, the base-station magnetometer sensor should be positioned at least 1 m above the ground surface and well away from moving magnetic objects or structures that will generate a strong magnetic gradient. The sensor should also be mounted on a stable structure in order to minimize wind-induced motion of the sensor. Geometrics provides a base-station kit that can be used with the G-856AX staff sections to construct a stable base-station tripod.

The tripod kit includes a tripod base and two (2) leg tips. The tripod assembly is shown in Figure 16 with sensor attached. Here, the bottom staff section and the two middle staff sections have been inserted into the three inclined holes on the underside of the tripod base. Leg tips have also be slipped on the ends of the two middle staff sections. Attach the sensor to the top staff section before inserting this piece into the tripod base. The top staff section is inserted into to central hole on the top of the tripod base so that it slides past the internal O-ring and rests on the bottom of the hole. The O-ring will prevent the sensor from rotating under the influence of the wind.

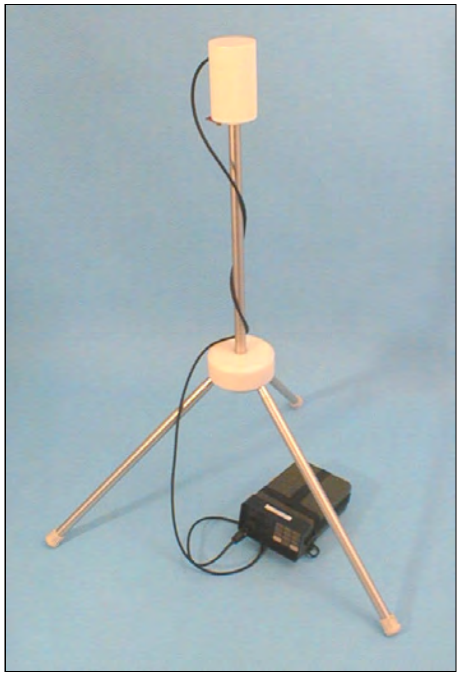


Figure 16. Base-station setup up using tripod kit and G-856AX staff section.

Sensor orientation

The G-856AX sensor may be mounted on the sensor staff in either of two orientations: 1) vertically, so that the cylindrical axis of the sensor is parallel to the sensor staff or 2) horizontally so that the sensor axis is perpendicular to the sensor staff. This is accomplished by screwing the sensor staff into either of the threaded receptacles in the standard sensor body. These receptacles are shown in Figure 17 a. End mounting is shown Figure 17 b and saddle mounting in Figure 17 c. These alternative modes of mounting the sensor allow the G-856AX to be configured for use anywhere in the world. Horizontal and vertical mounting is also accommodated on the gradiometer sensor.

When making a measurement, the correct sensor orientation will be determined by the Earth's magnetic field inclination in the survey area. In regions were the magnetic inclination is greater than +/-40° the sensor should be end-mounted if the measurement is made with the sensor staff held vertically. That is, the sensor should be mounted so that its cylindrical axis is vertical. Note that in this configuration the sensor has a North arrow on its top surface. This arrow should be directed toward magnetic north when taking a measurement. Aligning the sensor this way will place the axis of the sensor's internal coils perpendicular to the Earth's field and produce optimum signal.

When surveying in regions when the Earth's field is inclined at less than +/-40° the sensor should be mounted with its cylindrical axis horizontal as shown in Figure 18c.

This will orient the sensor coils for maximum signal when the magnetic field has low inclination.

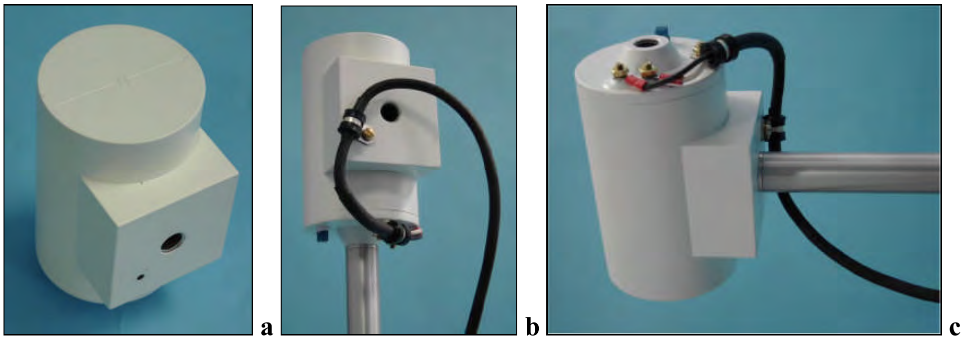


Figure 17. Alternate orientation for G-856AX sensor mount.

The G-856AX staff can be positioned horizontally or vertically when taking a measurement. If the staff is held vertically then the sensor should be attached as show in Figure 18. If, on the other hand, the staff is held horizontally during measurement, the mounting points should be reversed. That is, the sensor should be attached at the saddle mount in regions of high inclination and end mounted in low inclination regions.

Figure 18 is a map showing worldwide variation of the magnetic inclination. When used in the green-shaded regions shown in Figure 20, the sensor's cylindrical axis should be oriented vertically. Outside of this green region the sensor should be mounted so that is cylindrical axis is horizontal.

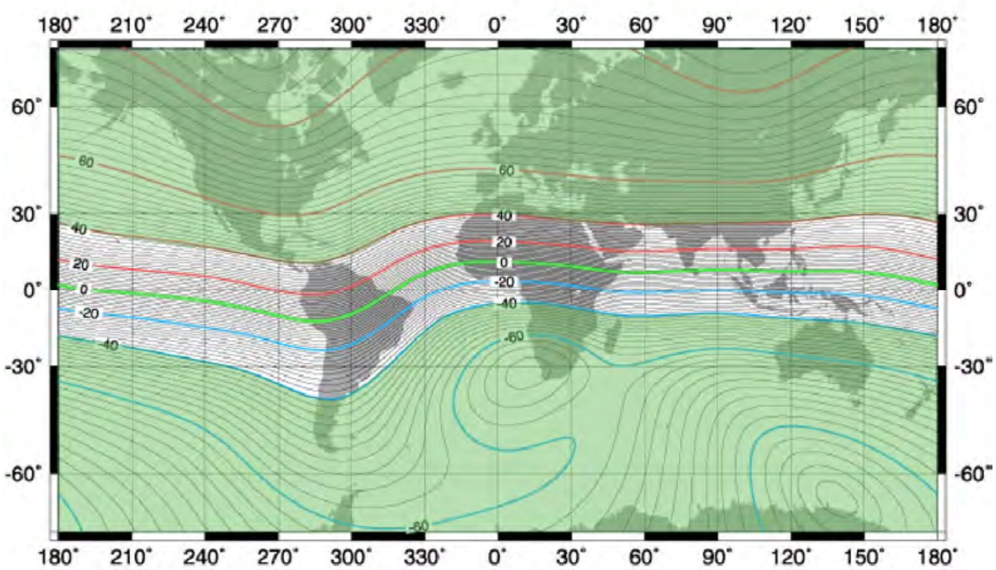


Figure 18. Magnetic Inclination of the Earth's field.

Console Set-up

Console controls and display

The console is controlled from a 12-key keypad located on its top surface and shares this space with the LED display and sensor connector as shown in Figure 19. Each control key has one or more functions and all but two of the keys are also used for numeric input.

Figure 19. G-856AX console display and keypad.

Note that the keys are labeled according to their function and numeric input value. The functions of the keys are summarized as follows:

- ***RECALL*** - Accesses the console memory. Also decrements memory location displayed.
- ***STORE*** - Stores measurement in memory
- ***READ*** - Makes a measurement of the magnetic field.
- ***FIELD*** - Used during memory recall to recover the field reading after TIME has been depressed.
- ***TIME*** - Accesses the real time clock. Also displays the time at which readings were taken.
- ***TUNE*** - Displays and/or sets the magnetometer tuning. Provides display of the signal strength received from last reading.
- ***OUTPUT*** - Begins automatic output of stored data to external device.
- ***AUTO*** - Starts and stops automatic recording. Sets interval for automatic recording.
- ***ERASE*** - Erases a reading, the last group of readings, or the whole data memory. (Must depress twice to erase all data).
- ***CLEAR*** - Clears a keystroke or keystroke sequence.
- ***SHIFT*** - Accesses the key's numeric value instead of its function.
- ***ENTER*** - Designates the end of a key sequence and transfers command to console's processor. Also increments memory location displayed during recall operations (see RECALL).

The display functions are as follow:

- ***FIELD/TIME*** - Displays the magnetic field or the time
- ***STATION/DAY*** - Displays the station number, also the Julian Day, or the line number. Also displays signal strength, tuning and battery voltage.

System checkout

The G-856AX can be quickly checked for proper operation. This checout should be done out of doors some distance away from buildings, power lines, vehicles, or other structures that will generate significant magnetic fields. Use the following procedure to verify that the magnetometer is operating correctly.

1) Assemble the staff sections as described above in Magnetometer Setup.
2) Make sure that the sensor is filled with fluid. You can shake the sensor to determine if it is adequately filled.
3) Mount the sensor on the staff or tripod.
4) Open the console case by releasing the plastic snaps on it sides and slide the cover off of the console. Verify that the batteries are correctly oriented (D-cells) or that they are connected (rechargeable Gel-cells). Reinstall the console cover.
5) Attach the sensor signal cable to the console's connector.
6) Depress the ***READ*** key. The displays should light, turn off, then light again for 5 seconds showing the measured magnetic field strength. If the displays did not light or if the indicated field strength appears to be incorrect see the Troubleshooting section in this manual.

Operating procedures

The G-856 is quite simple to operate. Most of the controls will not be used during the course of a normal survey. The following is a detailed description of the operating procedure associated with each key function.

1 - Clearing a Key sequence

To clearing a keystroke or keystroke sequence depress:

CLEAR

When you depress ***CLEAR*** the displays will go blank and any keystroke(s) you have entered will be erased.

2 - Setting the internal clock

To set the magnetometer's internal clock to the Julian date and time press:

AUTO, ***TIME***, ***SHIFT***

Then press: ‘day’, ‘day’, ‘day’,
and then press ‘hour’ , ‘hour’ , ‘minute’, ‘minute’, ***ENTER***.

The Julian date is the number of days since the beginning of the year. For example, the Julian date for February 10 is 41. To enter the date and time corresponding to 10:35AM on February 10 you would key ***AUTO***, ***TIME***, ***SHIFT***, ‘0’,’4’,’1’,’1’,’0’,’3’,’5’, ***ENTER.***

There are a number of features related to the internal clock, and they are discussed at several places in this manual. It is especially important to set the clock properly when diurnal corrections will be applied to your survey measurements because the survey and the base station magnetometer clocks must be synchronized with each other for the correction to be effective. The console’s date and time setting will be used in post-acquisition processing with the MagMap2000 software. The recommended procedure for insuring correct internal clock synchronization is as follows:

- Check the clock to see if it needs setting. Do this by pressing ***TIME***. The hour, minutes, seconds will light in the FIELD/TIME display and you should see that the seconds are advancing. The Julian date will be indicated in the STATION/DAY display. Compare the magnetometer clock’s time to your watch, time standard, or your base station instrument and decide whether you need to reset the clock. Note that the display will automatically go blank 5 seconds after pressing ***TIME***.

- If you decide that you need to reset the clock, choose a time in the near future when you plan to start the G-856AX clock. Then proceed with the clock setting sequence (***AUTO, TIME, SHIFT***, ’day’, + ‘day’ + ‘day’ +’hour’ + ‘hour’ + ‘min.’ + ‘min.’). Now, wait for real time to match your clock setting. At the instant the display matches the real time standard press ***ENTER***. When you do this, the new setting will be entered and the display will go blank.

Note that G-856AX clock time does not change until you press ***ENTER***. If you make a mistake in the time entry sequence, just press CLEAR and you will see that the old time setting is still active.

Pressing ***ENTER*** just after the Julian Date is keyed in will change this number without resetting the clock. In Automatic Mode the magnetometer will increment this number every 24 hours as described below under Item 9 - Automatic reading set-up.

3 - Setting the Line Number Marker

If the magnetometer is not in Automatic Mode (collecting measurements as a base-station instrument) then it is in Survey Mode. In Survey Mode you are provided with a means of designating the current survey line with a line number that will be stored in console memory. Each measurement that you acquire in Survey Mode will be designated by its line and station number. (See Magnetic Surveying, in the Field Operation chapter for further details). When in Survey Mode, a three-digit number indicating the line number appears in the STATION/DAY display when the ***TIME*** key is depressed. When in

Automatic Mode, the three-digit number appearing when ***TIME*** is depressed is the Julian day of the year.

In Survey Mode both the current line number setting and the Julian day are recorded for each reading taken, although both are not available for viewing on the displays. Nevertheless, the G-856AX data file contains both of these items and the measurement value. That is, the line number, the time and Julian day, the field reading, and the station number are all retained in the console memory.

Be sure you are not in Automatic Mode when setting the line number.

To change the line number press:

TIME, ***SHIFT***, 'n','n','n', ***ENTER***

The display will go blank and the new line number (nnn) will be applied to the magnetic field reads that are subsequently stored. Press ***TIME*** to verify that the desired line number is currently in use The value line number will be shown in the STATION/DAY display.

4 – Manual Tuning of the Magnetometer

The magnetometer needs to be tuned in order to provide its amplifier circuits with the greatest signal strength and thereby provide the best sensitivity. The tuning procedure is a matter of matching the console's internal tuning frequency to the actual proton-precession frequency corresponding to the local magnetic field strength.

Usually, fairly accurate readings can be obtained if the magnetometer is tuned to be within 3,000 nT of the local magnetic field strength. The approximate magnetic field in your survey area can be obtained by examining the world magnetic map provided in Figure 20 and in the Appendix of this document. This world map is overlain with contour lines showing the regional variation of magnetic field strength with position. Simply find your position on the map and read the field strength on the nearest contour line.

At the beginning of a new survey we recommend that you check the magnetometer's tuning and, if necessary, adjust it to obtain maximum signal strength. Check the magnetometer's tuning by pressing and releasing the ***TUNE*** key. You will see something like the following:

51G	FIELD/TIME
1.7	STATION/DAY

After about one second this display will be succeeded with something like:

tunE	FIELD/TIME

560 STATION/DAY

Initially, the Field/Time displays 'SIG' indicating the signal strength in the STATION/DAY display. Signal strength is reported as a number ranging from 0.0 to a maximum of 9.9. The 'tunE' display that succeeds the signal strength display shows the current tuning in terms of magnetic field intensity with units of 100 nT. For example, if the display shows '560'then 56,000 nT tuning is indicated.

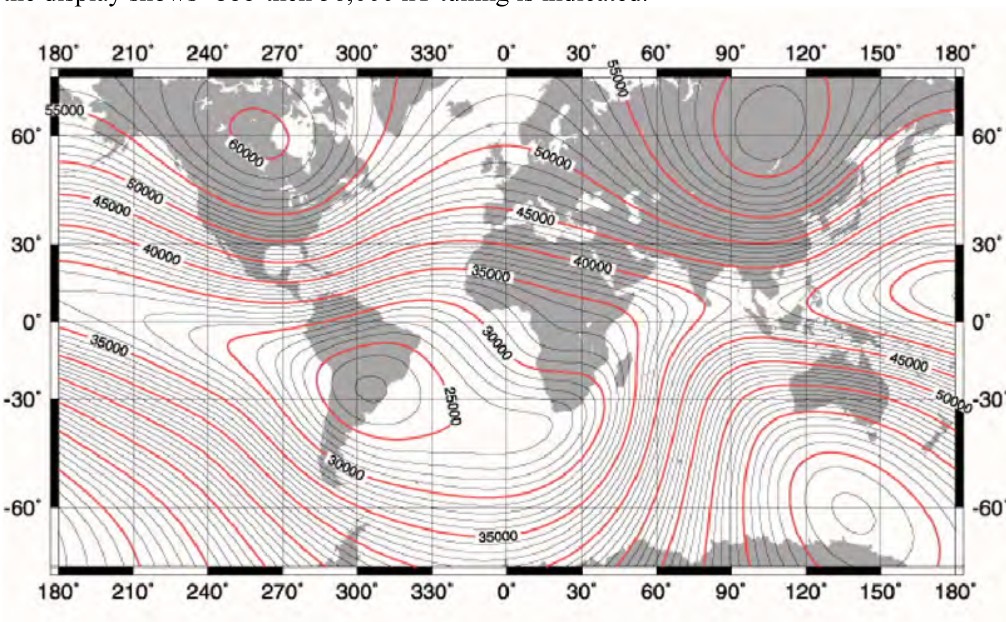


Figure 20. Magnetic Field Intensity Variation, (nT)

The objective in tuning the magnetometer is to adjust the magnetometer's tuning (as indicated under '***tunE***') to obtain a reasonable signal strength (as indicated under 'SIG') Approximate tuning will be adequate for most surveys but the G-856AX does allow you to tune the magnetometer very precisely - the magnetometer may be tuned to 3-digit resolution from 256 possible tune values ranging from 20,000 and 90,000 nT.

When attempting to tune the magnetometer you should be outdoors, away from power lines and large metal objects. Use the following procedure to tune the magnetometer:

1 Use the world magnetic map (Figure 20) to determine the approximate field strength for your location.
2 Press ***TUNE***, ***SHIFT***, 'n', 'n', 'n', ***ENTER*** where 'nn.n' is the regional field strength in µT (micro Tesla, the three most significant digits of the full reading in nT).
3 Press ***READ*** to take a reading and note of its value.
4 Press and hold ***TUNE*** and note the signal level (number between 0.0 and 9.9)

5 Determine if the present tuning is valid. A signal level lower than 3 may indicate poor tuning if the sensor is filled with one of the preferred fluids (e.g. Kerosene). If this is the case we recommend returning to step #2 above and adjusting the tune setting upward or downward by 500 nT.

Once you have obtained signal a strength indicating adequate tune, you can begin your survey. If you wish to increase the signal strength, you will want to be more precise in selecting the tuning value. You might want to take a reading and enter the first three digits of that reading for the tuning value. Some trial and error is usually required to realize the maximum signal strength possible. In general, maximum signal strength is obtained when the tuning value matches that of the field. Signal strength levels of 6 to 10 are typical and should provide consistent measurement results.

5 - Automatic tuning

The G-856AX can be set to tune itself automatically. When the automatic tuning function is activated, the tuning value is automatically updated after each field reading unless a high gradient is present. To activate the automatic tuning function press:

AUTO, ***TUNE***, ***ENTER***

As this key sequence is pressed, something similar to the following displays will appear:

Auto ***11***	FIELD/TIME STATION/DAY
A tunE ***oFF***	FIELD/TIME STATION/DAY

and automatic tuning will be turned on. ***Note: While the automatic tuning function is enabled, the instrument cannot be manually tuned***. The tuning value and signal level may be displayed but they cannot be changed and attempts to manually tune the instrument will produce the following display:

A tunE ***Err***	FIELD/TIME STATION/DAY

To deactivate the automatic tuning function press:

AUTO, ***TUNE***, ***CLEAR***

The following displays will appear:

Auto ***11***	FIELD/TIME STATION/DAY

A tunE	FIELD/TIME
on	STATION/DAY

To determine the instrument's tuning mode press:

AUTO, ***TUNE***

and observe the STATION/DAY display. It will indicate whether the Auto Tune function is on or off. For best performance, we recommend manual tuning of the G-856AX before taking the first reading in a survey area. After this, automatic tuning can be selected, and used with a better degree of confidence.

6 - Acquiring and storing a magnetic field reading

The ***READ*** and ***STORE*** keys are the only ones you will normally use while surveying. To measure the magnetic field, store it, and recall it from memory all that you need to do is press ***READ***, ***STORE***, and ***RECALL*** keys in sequence. You will observe something similar to the following:

1) When you depress ***READ***, the displays will light briefly showing the battery voltage. For example:

batt	FIELD/TIME
11.7	STATION/DAY

2) Then, the battery voltage will turn off after a short interval and the ***FIELD/TIME*** display will light with a 5 or 6 digit number. For example:

67584.2	FIELD/TIME

This is the magnetic field reading in nT.

3) As the magnetic field appears in the ***FIELD/TIME*** display, another number appears in the ***STATION/DAY*** display. For example:

0	STATION/DAY

This is the station number. Both displays will stay lit for about 5 seconds and then go out.

4) To store the reading in memory, depress ***STORE*** while the displays are still lit. If the displays go out before you depress ***STORE*** the reading will be lost and the **ERROR** message will come on. Otherwise the display will go out after you press ***STORE***.

The G-856AX can also be configured to store survey measurements automatically. In this mode you will only need to press ***READ*** in order for the console to read and store the measurement. To enable automatic storage press:

AUTO, ***STORE***, ***ENTER***

If you wish to revert to the standard manual store mode press:

AUTO, ***STORE***, ***CLEAR***

7 - Recalling measurements from memory

Magnetic field measurement values are stored sequentially in the consol memory. A good way to visualize the console memory is to think of the data as being in a "stack" of lines, where each line is made up of 2 parts; the first part being the FIELD READING and STATION NUMBER and the second part being the TIME and LINE NUMBER or JULIAN DAY. The line number will appear if the reading was taken in Survey Mode. You will see the Julian Day if the reading had been taken in Automatic Mode. An example of the console memory structure is show in Table 1 below.

Table 1. An example of the console memory stack.

field	station	time	line no.
67856.8	009	12.32.55	10
68645.5	008	12.32.30	10
68857.4	007	12.32.00	10
68682.9	006	12.32.54	10
68432.8	005	12.32.20	10
68845.7	004	12.31.59	10
68723.8	003	12.31.37	10
68245.6	002	12.31.02	10
68290.0	001	12.30.45	10

Console memory can be examined by pressing the ***RECALL*** key. When you do this the first half of the latest line in the memory stack will appear in the display. If the console memory contained the values shown in Table 1 then the console display would show the following:

67856.8	FIELD/TIME
009	STATION/DAY

If you press ***RECALL*** again, the memory decrements, and the next reading will be displayed:

68645.5	FIELD/TIME
008	STATION/DAY

Pressing ***RECALL*** will continue to decrement the memory and each reading in the sequence will be displayed. Pressing ENTER while the display is still lit will increment the memory. In a large stack of data, it is not necessary to keep depressing ***RECALL*** or ***ENTER*** until the desired reading is found. In cases where you wish to look at a particular reading (nn for example) you would press:

RECALL, ***SHIFT***, ***'n', 'n',*** ***ENTER***

This key sequence will display the magnetic field measured in the FIELD/TIME display and the station number "nn" in the STATION/DAY display.

You can view the other half of the memory line (the time and line number) by pressing the ***TIME*** key while the first half of the memory line is being displayed. For the example shown in Table 1, pressing:

RECALL, ***SHIFT***, ***'7',*** ***ENTER***

Will recall the first half of the data stored for station 7 and generate the following display:

68857.4	FIELD/TIME
007	STATION/DAY

While this field measurement and station number are displayed, pressing ***TIME***, will display the measurement's time and line number (or Julian Day, if the reading was taken in AUTO mode) as follows:

12.32.00	FIELD/TIME
010	STATION/DAY

While you are in the second half of the memory line, you can still decrement or increment by depressing ***RECALL*** or ***ENTER***. You can also view the field measurement and station number by pressing the ***FIELD*** key while the display is lit

Some other features of the RECALL function include:

- There are two different methods of recalling the most recent station. You can: a) attempt to recall a station number that is greater than the most recent one or: b) press the ***READ*** without subsequently storing the measurement. Pressing ***RECALL*** after applying either of these methods will display the most recent stored measurement.
- Pressing and holding the ***RECALL*** key (or the ***ENTER*** key when in recall mode) will automatically scroll the display backward (or forward) through memory. This is a convenient means of quickly reviewing the measured field values.

8 - Erasing magnetometer readings

The G-856AX will allow you to erase the last reading, the last group of readings, or the entire memory.

1. To erasing just the last reading press:

READ, ***RECALL***, ***ERASE***, ***ERASE***

In this key sequence, $\boxed{\textbf{\textit{READ}}}$ will position the memory pointer to the latest stored measurement and $\boxed{\textbf{\textit{RECALL}}}$ will recall it from memory. Pressing $\boxed{\textbf{\textit{ERASE}}}$ twice in succession while the displays are lit will erase the data for this last measurement record. This action will cause the displays to go blank indicating that the operation is complete. Note: $\boxed{\textbf{\textit{ERASE}}}$ must be depressed twice in order for the reading to be erased. This is a data protection feature. If $\boxed{\textbf{\textit{ERASE}}}$ is accidentally pressed, you can depress $\boxed{\textbf{\textit{CLEAR}}}$, or any other key, to abort the erase operation.

2. To erase the latest group of readings:

First determine the station number where you wish to begin the erasure. All data will be erased from that station number to the last reading stored in memory. This is done by pressing:

$\boxed{\textbf{\textit{RECALL}}}$, $\boxed{\textbf{\textit{SHIFT}}}$ *'n','n','n',* $\boxed{\textbf{\textit{ENTER,}}}$ $\boxed{\textbf{\textit{ERASE}}}$, $\boxed{\textbf{\textit{ERASE}}}$

Where *'n','n','n'*, is the station number.

3. To completely erase all of the readings press:

$\boxed{\textbf{\textit{RECALL}}}$, $\boxed{\textbf{\textit{SHIFT}}}$ '0', $\boxed{\textbf{\textit{ENTER}}}$, $\boxed{\textbf{\textit{ERASE}}}$, $\boxed{\textbf{\textit{ERASE}}}$

This key sequence positions the memory pointer at the first station at the beginning of data memory and deletes all subsequent readings.

9 - Automatic reading set-up

Auto Mode allows the magnetometer to take readings automatically at a specified time interval. When the magnetometer is set up for automatic reading it is usually stationary, operating at a fixed location as a base station. The purpose of base station operation is to record the local temporal changes in earth's magnetic field so that these can then be used to remove the diurnal variation of the local magnetic field from the survey magnetometer's readings. In this way, the spatial variation of the magnetic field strength can be measured with greater accuracy and confidence.

The G-856AX is able to store about 12,700 readings in the automatic mode as compared to the approximately 5700 readings it stores in survey mode. The reason for this difference is that the reading time is not stored for each automatic reading. This can be done because the reading interval is known and this feature conserves memory space. In automatic mode, the G-856AX magnetometer can record as much as one reading every minute for over 200 hours. When recording in automatic mode, the three-digit number appearing in the STATION/DAY display will increment at 24:00 hours (midnight). This number should be set to represent the Julian (numerical) Day of the year. Note that this feature is not present in survey mode. In survey mode, the three-digit number doesn't increment automatically because it is most often used as a line number designator.

Before setting the G-856AX for automatic reading as a base station instrument, make sure that console's internal clock is set correctly. Then, to select automatic model and the reading interval press:

AUTO*, *SHIFT* 'n','n','n', *ENTER

The value "nnn" is the number of seconds between automatic measurements. You can examine the current measurement data while the G-856AX is operating in automatic mode. To do this press ***RECALL*** and ***FIELD*** - or ***TIME*** - as desired. The Julian day will be displayed if ***TIME*** is selected. Alternatively you can simply press ***TIME*** and the field/time display will light showing the current console time and the Station/day display will show the line number.

To shut off Automatic Mode, press:

AUTO*, *CLEAR

The displays will go blank and Auto Mode will be shut off.

The absolute minimum time required to obtain and store a reading 3 seconds. In order to set the magnetometer to cycle at 3 seconds, the "Display off after 5 minutes" and "Short Count Gate" functions must be set on the console's internal DIP switches. (See Table 4 in the Appendix for additional information.) If the selected cycle time is less than 10 seconds then there will be a slight delayed action when commands are keyed. This is because the console processor will be busy taking readings and displaying the results. You may find that you will need to hold down the ***AUTO*** key and then hold down the ***CLEAR*** key for one complete cycle in order for the command to be accepted.

Pressing the ***OUTPUT***, ***READ***, or ***STORE*** keys, or attempting to change the sample interval while the G-856AX is recording automatically will produce an ERROR message but will not affect operation in any other way.

10 - Retrieving magnetic field readings

Data can either be retrieved manually or automatically. To begin automatic data retrieval start by connecting the RS-232 serial download cable to the console. Next, plug the cable's opposite end into the serial port of your MS Windows computer. If your computer is not equipped with a serial port then it will be necessary to obtain an adapter that will allow connection of the serial cable; e.g. a serial to USB adapter.

We recommend using Geometrics MagMap2000 program to retrieve and process the data stored in the G-856AX. If you have installed this software you should run it now. (See the MagMap2000 operation manual or the Data Retrieval chapter for installation and specific operating instructions.) When prompted by MagMap2000, or when your computer is ready to receive data from the G-856AX press:

OUTPUT, ***ENTER***

The information stored in the G-856AX memory, beginning with the first station number, will be automatically transmitted. The station number will flash so you can monitor the transfer process. If you need to stop the transfer process before it has completed press **CLEAR**. This will halt the data process but the data will remain in G-856AX memory until it is erased as described above.

You can also transfer just a portion of the stored data. To do this, press:

OUTPUT**, **SHIFT** 'n','n','n', **ENTER

The G-856AX will begin transmitting data from station number "nnn" to the last recorded measurement.

Field Operation

This section provides information about the G-856AX related to surveying technique and efficient operation in the field. It is recommended that the user become familiar with basic magnetometer operation as described in the preceding sections of this manual before attempting their first survey.

Sensor position and measurement repeatability

Measurement repeatability is important for verifying that the magnetometer is working correctly and that field conditions are have enough stability to insure that useful data can be collected. Repeatability is the demonstrated by obtaining the same measurement for several readings taken consecutively at the same position. The relationship between sensor position and repeatability is critical if a high degree of precision is required in this test. Repeatability will also be influenced by conditions at the measurement site. Conditions that are of particular concern include: high magnetic field gradients, large or rapid amplitude changes in the diurnal field, the presence of magnetic dust on the sensor and magnetic objects carried by the operator.

- HIGH GRADIENTS: In an area of l sq. meter where the magnetic field varies by less than 1 nT, you should expect less than 1 nT variation in repeatability. That is, changes in position by as much as 30 or 40 cm should not produce measurements that vary by as much as 1 nT. Under these conditions you might see changes of several tenths of an nT.

- RAPID DIURNAL CHANGES: Depending on solar and local thunderstorm activity, you might observe magnetic field charges even if the sensor is held perfectly still. A magnetometer like the G-856AX, with precision of 0.1 nT, will detect such temporal activity.

- MAGNETIC DUST: If dust or dirt has accumulated on the sensor it may be magnetically contaminated if this material is sufficiently magnetic. This material may noticeably affect the measurement results when the sensor is rotated. We recommend that the sensor and sensor cable be kept clean and dust free in order to provide the best survey results.

- OPERATOR CONTAMINATION: Steel-toed boots, a key ring, knife, pistol, GPS receiver or any other magnetic object carried by the survey operator can also become a source of errors in the magnetic data. In addition, if steel-clad batteries are installed in the instrument the console itself will almost certainly contribute to the magnetic field measured at the sensor. All articles carried by the operator should be considered suspect until they have been checked with the magnetometer. See the following section for the recommended magnetic screening procedure.

If the local gradient is very high the magnetometer will not be able to measure with its maximum precision. This is because the sensor signal collapses, or dies, before the count time of the measurement circuit has ended. The operator is alerted to this condition by a series of 5 quick beeps from the console and the operator will also observe that the measurement displayed is truncated: the magnetometer will not show the least significant digit on the display. Depending on the resolution you need, this may not be a problem. If high gradient is the cause, there is no need for 0.1 gamma resolution because the local magnetic field is changing very rapidly with position. A similar effect may be observed in very low fields. You can usually improve the signal strength by shortening the count time and/or lengthening the polarization time. (See the Appendix for information on the console's Internal Programming Switches for information on polarization time.)

Magnetic environment

Objects carried by the operator or that have been added to the magnetometer system can noticeably affect the total magnetic field measurement. Objects suspected to be magnetic should be checked in the following manner:

1. Mount the sensor on its staff, place the suspected article far away from the sensor, and take several measurements. Each measurement should repeat to ±1 nT.

2. Now place the suspected article fairly close to the sensor (about ½ meter) and again note the measurements.

3. Remove the article and again take several measurements.

4. If no diurnal shift is present then the first and third group of measurements will be within 1 nT of each other. You can assume that the test article is magnetic if the first group and the second group of readings varied by more than 1 nT.

The magnetometer will not operate reliably in areas that are near sources of strong radio frequency energy, where power lines and transformers are nearby, in most buildings, or near highly magnetic objects. The sensor should always be placed on the staff above the ground, or in the "backpack" if the console harness is so equipped. The sensor will NOT operate properly when placed directly on the ground.

Magnetic surveying

Standard operation

The typical survey geometry consists of a series of measurements equally spaced along a series of parallel lines. Usually the lines are positioned so as to form a rectangular area. This survey design insures that the measurement points (stations) will define a grid that samples the magnetic field strength at a uniform spatial density. An example of this survey geometry is shown in Figure 21.

The measurements acquired and stored in the G-856AX will be indexed according to a station number assigned by the magnetometer's processor. Station numbers are assigned sequentially as measurements are stored. If you use MagMap2000 to download and process the G-856AX measurements then there is some flexibility in the manner that you traverse the survey lines. That is, you can proceed in a bidirectional manner from one line to the next as shown in Figure 21. Alternatively, you can acquire measurements in a unidirectional fashion by always starting the next survey line at the same side of the survey area and visit each station while heading the same direction. As long as you proceed in a consistent fashion from one line to the next MagMap2000 will be able to locate the measurement points correctly.

For greatest measurement accuracy it is best to orient the sensor in the same direction at each station when acquiring the measurement. The same is true for the orientation of the operator: you should consistently position yourself in the same place, relative to the sensor, and face in the same direction. The technique will reduce the effects of any residual magnetization generated by the equipment or your personal effects.

As described in the Operating procedures section, the magnetic field is measured by simply pressing the ***READ*** key and is stored by pressing the ***STORE*** key. It is a good practice to try to remember the last several readings so that you can judge the validity of the current reading before storing it. If the current reading is in question do not press ***STORE*** – take another reading and store it if appears that its value is reasonable.

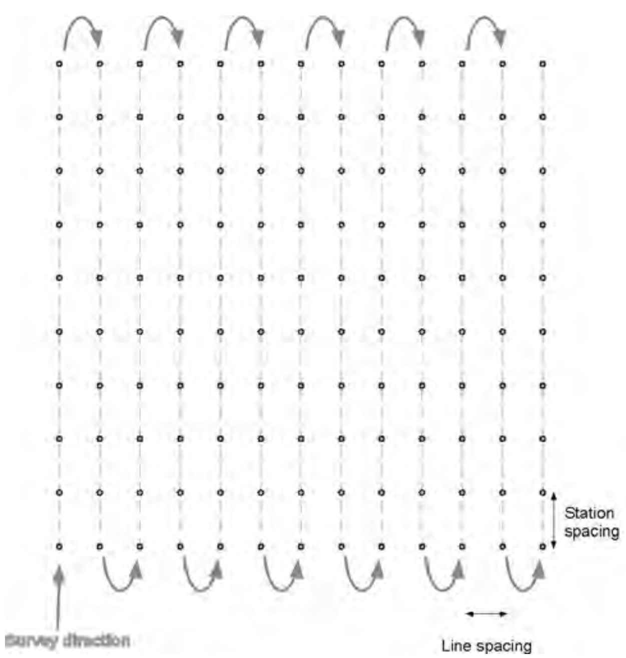


Figure 21, Typical survey layout.

Gradiometer operation

The survey layout and measurement accuracy considerations for a gradiometer survey are the same as for a standard, single sensor survey. The typical sensor separation between the two staff sections will be 4 ft. - comprising two staff sections. In this configuration the top sensor will be 8 ft above grade and the lower 4 ft above grade. This arrangement places the lower sensor closer to the operator and console than is the case with a standard single sensor survey. Because of this, we recommend that the gradiometer staff be held at a full arm's length when taking a measurement. This will position the lower sensor further from the console and operator and help to reduce their residual magnetic influence on the gradient measurement.

The G-856AX gradiometer operates in sequential mode. That is, a reading is first obtained from one sensor and then a reading is obtained from the other sensor. These two readings are separated by approximately three seconds and it is important to hold the gradiometer staff steady during measurement. Except in cases of local thunderstorm activity, there will be no temporal variation in the magnetic field that are detectable with the G-856AX over this three second delay period.

For gradiometer operation the G-856AX console should be configured for normal polarize, normal gate, 9600 Baud data transfer, and disable 3-read averaging by setting switches 1 through 4 to "off" and 6 through 8 to "on" on the G-856X CPU board. See Appendix section on Internal programming switches for details.

Base station operation

The typical location for a base station is near or within the survey area. The base station should be placed away from buildings, traffic, and power lines to provide the best results. Base station setup using Geometrics tripod is shown in Figure 16.

Base station recording is started by entering Automatic Mode. To do this press:

AUTO, **SHIFT** *'n', 'n', 'n'*, **ENTER**

To stop recording press:

AUTO, **CLEAR**

Data Retrieval

This chapter describes procedures for transferring data from the G-856AX console and describes the manual transcription of data if no PC computer is available. Before beginning retrieval of data, be sure to check that the console batteries have sufficient charge. Failure to do this could result in incorrect or incomplete data transfer. A simple test of the battery voltage can be performed by pressing ***READ*** when the sensor is not attached to the console. Under these conditions a voltage greater than or equal to 9.0 volts will indicate that there is adequate charge for trouble-free data transfer.

Computer connection and download

The G-856AX is designed to be used with personal computer running one of the MS Windows operating systems. Geometrics provides its MagMap2000 software to facilitate data download from the G-856AX and for processing the measurement results.

A serial download cable is included with the G-856AX. This cable is used to interconnect the magnetometer console's front panel connector with the serial port on a Windows PC. When you are ready to download data from the console connect the download cable to console's front panel connector and to the PC's serial port. (Note: some PC computers are not equipped with serial ports. If this is the case, you will need to connect an adapter – e.g. a USB-serial port converter)

We recommend that you use the MagMap2000 software supplied with the magnetometer to facilitate data retrieval and processing. To do so, under the MagMap2000 File menu item select "import G-856 data". A dialog box will appear that allows you to 1) select the computer's communication port that is connected to the magnetometer, 2) select the Baud rate, and 3) set the file name/directory for the data storage. When you have finished entering this information press the "DOWNLOAD NOW" button. Then on the G-856AX console press ***OUTPUT*** and ***ENTER***. MagMap2000 should display a dialog box that shows the progress of data transfer from the magnetometer console to your computer

MagMap2000 offers may advantages. These include data download, profile plotting, filtering, contouring plotting and the diurnal correction of survey measurements using base station data. The latest version of MagMap2000 can be downloaded free of charge from our website (www.geometrics.com). The complete operating manual for this program is included in the software as an Adobe PDF document. If necessary you can download the free Adobe Acrobat Reader from www.adobe.com.

The following is a brief description of data download and processing using MagMap2000:

1. Download the G-856AX data using a RS-232 interface at 9600 baud. This takes about 10 minutes if the memory is full of survey data (5700 readings) or about 20 minutes if the memory is full of base station data (12,500 readings). The same

download procedure is used for single sensor, dual sensor (gradiometer) or base station configurations.

2. Define the grid and interpolate all data. MagMap2000 allows the user to define the spacing between discrete readings and between survey lines. Then the program assigns a position to each reading creating a uniform grid. Positions are editable individually or by line.

3. Search the data for spikes or erroneous readings and remove them using the options provided under the Filter menu item.

4. If desired, flag anomalies in the profile data that may be associated with targets of interest (archeological, environmental, utility, ordnance, geological, etc.). These flags will appear on the position map thus showing there location on the survey grid.

5. If desired create maps of the data as 2-D or 3-D plots with multiple color or shaded relief contours. These features are accessed by right-clicking on the map or survey line and selecting the desired output from the menu that appears. The Flags discussed in item 4 above are also reproduced on the 2-D and 3-D map data plots.

6. Survey results can be exported as a file in ASCII (Text) format for processing or plotting using other analysis programs such as Geometrics MagPick program, Geosoft or Surfer.

Manual Transcription

If no computer is available for data retrieval it may be necessary to simply archive the data with pencil and paper. To manually retrieve data, find the first reading in the survey (often 000) that was listed in your field notes or by iteration (see section The G-856AX can also be configured to store survey measurements automatically. In this mode you will only need to press ***READ*** in order for the console to read and store the measurement. To enable automatic storage press:
AUTO, ***STORE***, ***ENTER***

If you wish to revert to the standard manual store mode press:

AUTO, ***STORE***, ***CLEAR***

7 - Recalling measurements from memory). After the first reading is found and data written down, depress ENTER to increment the magnetometer as many times as needed to see and hand record all the data. If you are retrieving data from a base station, you will be recording the data on the basis of measurement time rather than station number.

Maintenance

Instrument storage

When not in use, disconnect the sensor cable from the magnetometer console. We recommend storing all the components in the shipping case to help prevent magnetic contamination of the sensor or other system components. If the magnetometer system will be stored for a long period, remove the batteries to prevent electrolytic leakage or corrosion of the contacts. DO NOT REMOVE THE LITHIUM BATTERY. The lithium battery is soldered into the circuit board and will maintain data and system memory in the absence of the operating batteries. The recommended storage temperature for maximum battery life is 40°F (4°C). If you wish to store batteries for a long time, do so in a refrigerator. If batteries are stored in a refrigerator, wrapping the cells in a plastic bag will prevent condensation from collecting on them. After removing bagged batteries from refrigeration they should be allowed to warm up in the bag before being used.

Voltage indicator

After the ***READ*** key is pressed and before the magnetic field reading is displayed, a number indicating battery voltage appears in the FIELD/TIME display. The indicator will display BATT and a number showing the battery voltage. This number is the actual battery voltage present under load. That is, the battery voltage is measured during the polarize cycle of the magnetometer.

When operating from internal D-cell batteries, the maximum voltage will read around 13.5 Volts. Regardless of the battery type, when the indicated voltage reaches 8.2 Volts the magnetometer will stop polarizing. Under this condition the "Low Batt" message will be displayed and the batteries should be replaced or recharged.

If you continue to use batteries that have discharged below 8.2 Volts, the magnetometer may not respond to keyboard commands. Also, complete and accurate data retrieval cannot be assured if the batteries do not hold a sufficient charge. See the chapter on Data Retrieval for details.

If the G-856AX is powered from an external source the battery indicator may indicate a voltage higher than the 13.5 Volts. The maximum displayed voltage is 19.9 Volts and maximum recommended input voltage is 13.8 Volts.

Batteries

There are two kinds of batteries in the G-856AX. Basic operation is powered either by nine (9) internal D-cell batteries or by an internal rechargeable Gel-cell battery pack. A lithium battery that is soldered to one of the console's circuit boards powers the magnetometer's clock and internal memory. This lithium battery maintains clock and memory functions when the main batteries are disconnected or discharged.

At temperatures below 0° C, battery life decreases rapidly. At temperatures as low as minus 20°C operation may be limited to only 100 readings per set of batteries. At such low temperatures, a console that uses a rechargeable Gel-cell battery pack is preferable but, regardless of battery type, the console should be held close to the operator's person beneath the outer-most garment to take advantage of this insulation and the body heat of the operator.

D-cells batteries

When the magnetometer is used as a base station, alkaline D-cell batteries will work satisfactorily. Table 2 compares the expected number of readings expected for different battery types. Note that an optional external sensor power cable is available for base station use and it allows the user to connect the console to a 12v car battery. A typical fully charged car battery will last many days and this power configuration is often used when operating the G-856AX as a base station instrument.

When the G-856AX is used as a survey instrument, and is configured for operation from D-cells, we recommend using cardboard or plastic jacketed batteries. If steel jacketed batteries (carbon zinc or alkaline) are used in the console during survey operation a directional dependent shift of several nT may result and this will bias the measurement.

Table 2. Battery endurance comparison.

Battery Type	Brand Name	Number of Readings @25°C	Number of Readings @ 0°C	Jacket Type
Alkaline	Burgess, Eveready, Duracell	6000	4000	Steel
Standard Carbon-zinc (flashlight)	Burgess, Eveready, Ray-O-Vac.	1500	700	Cardboard
Premium Carbon-zinc	Eveready #1250	3000	1700	Cardboard
Internal Gel-cell	Power Sonic	Full Memory 12000	Full Memory 12000	Plastic

The values shown in Table 2 correspond to one reading every 30 seconds, using the 3-second cycle time setting (see Internal programming switches section in the Appendix). Faster sampling rates will yield less endurance, especially at lower temperatures. Photoflash and "Energizers" batteries are not designed for this type of application but may be used until other batteries are available. Battery capacity decreases rapidly below 0°C for most battery types but Photoflash and “Energizers” will recover when warmed above 0°C.

To remove and replace D-cells:

1. Unsnap the clasps and remove instrument cover.
2. Replace batteries to match the polarity markings on the battery holders.
3. Replace instrument cover. Be sure the cover is seated all the way down in the case before trying to close the clasps. Do not use the clasps to force the case into the case as this could cause breakage.

Gel-cell batteries

Their endurance and low magnetic signature make Gel-cell batteries the optimum choice for use with the G-856AX. The recommended procedure is to operate with the same Gel-cell battery set for the entire field day and place the partially discharged battery pack on charge at the end of the day. Overnight charging will insure that it is ready for use the next day. We recommend alternating operation between the two Gel-cell packs provided the magnetometer. In this way you are assured that you will always have two completely charged battery packs at the beginning of each workday.

Each battery pack should provide approximately 200 charge/discharge cycles with standard field use. Conditions that will reduce battery life include leaving the battery in a discharged state for long periods or exposure to below-freezing temperatures while in a deeply discharged state. Leaving them under charge for an extended period cannot damage the Gel-cell battery packs. When the system is not in use we recommend that its Gel-cell batteries be put on charge for at least 6 hours once every three months to preserve their service life.

Proceed as follows to change Gel-cell batteries:

1) Unsnap the side clasps and remove instrument cover.
2) Unplug the power connector from the battery pack. Do this by grasping each of the connector bodies and pull them apart.
3) Separate the Velcro band that secures the battery to the console chassis and remove the battery
4) Load the replacement battery in its slot and secure the Velcro band.
5) Reconnect the power connector.
6) Replace instrument cover taking care that the cover clears the Velcro bands and the power leads. Be sure the instrument is seated all the way down in the case before trying to close the side clasps. Do not use the clasps to force the unit into the case as this could cause breakage.

Lithium battery

In addition to the operating batteries, there is a AA-size lithium battery, called the "keep alive" battery, used to power the clock and preserve data memory when the operating batteries are removed. The lithium cell should be changed about every 6 to 10 years. It is soldered into and underneath the top circuit board. When the time has come to replace the lithium cell be sure all survey data in memory has been recorded elsewhere before the lithium battery is unsoldered from the circuit board. Use the following procedure for its replacement:

1. Unclip the console cover and slide it off the case.
2. Remove the operating batteries.
3. Remove the four screws holding the circuit boards together. As you separate the boards, unplug the interconnecting cables noting their positioning as you do so. Lay the top circuit board down so the battery can be easily removed.
4. Unsolder the battery wires and wipe any debris from the battery area. Then carefully remove the battery so as not to damage the circuit board.
5. Check the battery polarity and then thread the positive lead of the replacement battery through the hole marked positive on the circuit board.
6. Measure the current drain form the battery if possible. Drain should not exceed 30 micro Amps. If the drain exceeds 30 micro Amps, the console should be repaired before being placed back in service. **WARNING**: Shorting the lithium battery will blow an internal battery fuse and could result in over heating and possible explosion. *Be sure the battery lead wires do not meet*.
7. Thread the negative lead of the battery through the hole marked negative.
8. Turn the board over and solder the lead wires to the pads. Trim off any extra wire. Connection is made with wires running through the center of the board.
9. Replace the circuit boards, cables, screws and cover.
10. Install the operating batteries. The clock will have to be reset after the battery is in place.

Sensor Fluid

The sensor contains coils of insulated wire and for optimum operation these coils must be submerged in a proton-rich fluid. The following section provides information about this fluid and the correct procedure for filling the sensor with fluid.

It is important that you DO NOT operate the sensor for an extended period without fluid as this can damage the sensor. The sensor should be filled so that the fluid level is about 1cm below the fill port. Correct fluid level can be checked approximately by shaking the sensor and judging the fluid level by the degree of sloshing. A more accurate level check requires removal of the sensor's fill plug and visual inspection of the contents. If the sensor is empty or needs filling proceed as follows:

1. Place the sensor on a flat, level surface.
2. Remove the blue cap plug on the sensor. Observe that the fill-port is a threaded tube extending into the sensor vessel. This design provides a 1cm air gap that allows for thermal expansion of the sensor fluid.
3. Fill with acceptable sensor fluid to within 1 cm. from the top. Acceptable Fluids for Proton Magnetometers include:
   - Shell SOL-71 (Shell Oil Co. product) *Note:. This is the preferred fluid*.
   - Charcoal Lighter Fluid (Kingsford, Wizard, etc.)

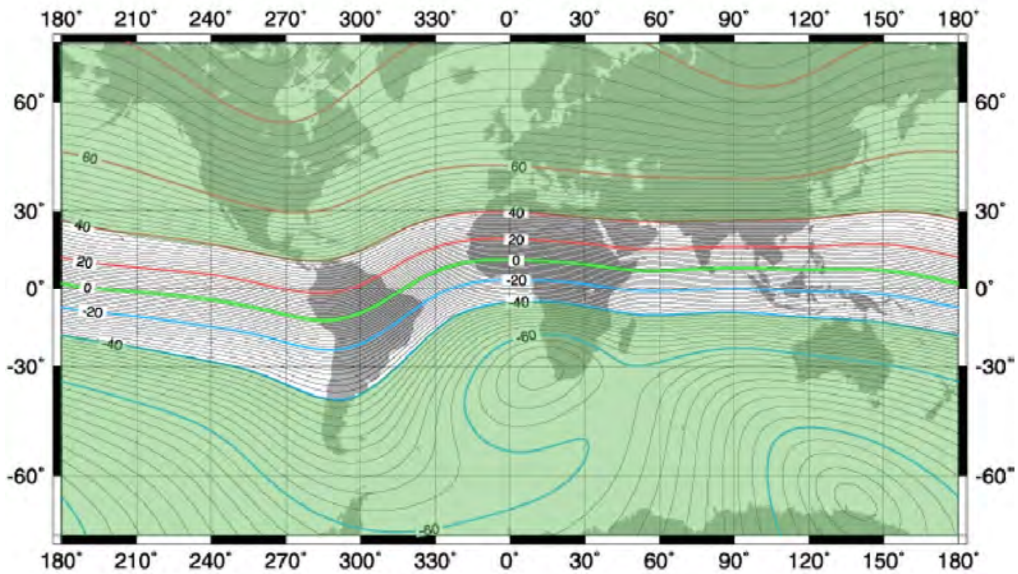
- n-Decane (chemical supply houses, oil refineries)
- ISOPAR-1 (Exxon Oil Co. product)
- Odorless Mineral Spirits (also known as Naptha)
- Kerosene

4. Pour only clear fluid into sensor. If fluid is dirty use a paper coffee filter or fine screen to eliminate particles.
5. Slowly pour fluid into sensor until it is full. The sensor is full when the fluid just reaches the bottom of the fill-port.
6. Place Teflon™ tape around the fill plug then screw it into the fill-port and tighten. Note: the fill plug and fill-port have tapered threads designed to form a tight seal. Tighten the plug just enough to prevent leakage - over tightening may damage the sensor housing.
7. Sensor is now ready for use.

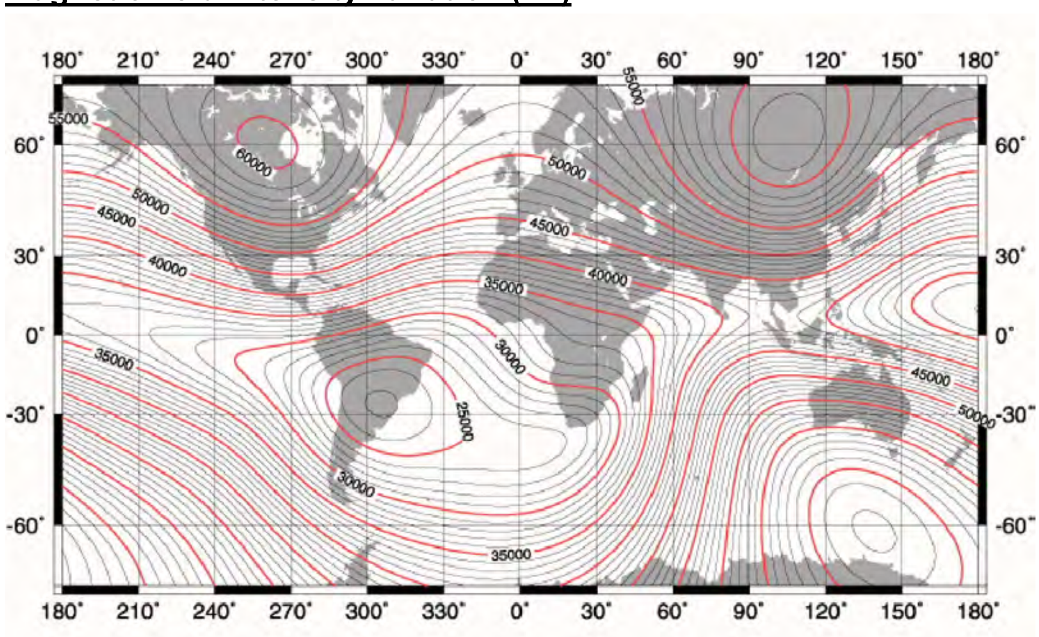
The different sensor fluids listed above will provide slightly different signal amplitudes but their use will ensure that the magnetometer measures the magnetic field strength correctly and that the sensor will not be damaged interaction with the fluid. *Geometrics does not recommend the use of gasoline (petrol) as a sensor fluid. Experience as shown that local formulation of gasoline may include additives that can damage the sensor. Do not put any solvent containing acetone or toluene into the sensor: these will dissolve the sensor body.*

Appendix

Magnetic field inclination (degrees)



Magnetic field intensity variation (nT)



Troubleshooting

Survey Difficulty	Probable Cause	Corrective Action
Low Signal Amplitude (Display indicates less than 4 volts)	1. Magnetometer out of tune.	1. Retune magnetometer.
	2. Very high gradients.	2. Move out of the area or try switching to a short count.
	3. Broken sensor cable.	3. Replace or fix cable.
	4. Loss of sensor fluid.	4. Fill sensor with Shell SOL-71 to about 1/2 cm from the top.
	5. Sensor coil axis parallel to field.	5. Align sensor North-.South or in the side-mount position.
Field display shows truncated digits (poor signal to noise ratio) and 5 beeps heard when reading taken	1. 50-60 Hz interference.	1. Move away from interference.
	2. Microphonic interference.	2. Avoid vibration mechanical shock to sensor while surveying.
	3. Broken sensor cable.	3. Replace or fix cable.
	4. High gradients.	4. See Erratic Readout.
	5. Generally weak signal.	5. Lengthen polarize time.
Erratic Readout	1. Magnetic storm or micropulsations.	1. Try later, especially at night.
	2. High geomagnetic gradient.	2. Hold sensor perfectly still. Try shortened count.
	3. Magnetic objects on operator.	3. Remove iron objects from pockets, belt, etc.
	4. Magnetic dirt on sensor.	4. Scrub or scrape magnetic particles off sensor.
	5. Review causes under "field display shows truncated digits.	
	6. Low battery voltage.	6. Replace batteries.
Displays do not light	1. Poor battery contact.	1. Check for loose batteries. Bend out contacts and clean.
	2. Low battery voltage	2. Remove batteries, then repress reset switch (SW2).
	3. Internal memory error.	3. Replace batteries.
No reading on STATION/DAY display	1. Inter-board cable not connected.	1. Check cable for proper connection.
Low Battery Voltage Indication	1. Low voltage.	1. Replace batteries.
Display reads "ERROR".	1. ***STORE*** depressed when no reading lit on the display.	1. Take new reading, press ***STORE*** before displays go out.
	2. ***FIELD*** depressed when depressing ***TIME*** did not precede it.	2. ***FIELD*** reading already displayed. The ***FIELD*** key is used to return to the first half of memory line. See Chapter 1, "Recalling from Memory".
	3. Incorrect or invalid key or key sequence depressed.	3. Consult Chapter 1. Depress key sequence again.
Display reads "data Err"	1. Internal memory error	1. Print out or transcribe all stored data, then depress ***ERASE***, ***ERASE***.

	2. Power removed while instrument was in operating mode.	2. Dump stored data into recording device, then press ***ERASE***, ***ERASE***.
	3. Power interrupt during ***AUTO*** cycle or ***OUTPUT***.	3. Remove batteries. Press the INTERNAL RESET button on CPU board. Install batteries. Set clock.
	4. Lithium battery malfunction.	4. Measure lithium battery voltage. If voltage is less than 3.2V, replace. (See page 30.)
	5. Control board malfunction.	5. Return board control board (P/N 16621) for repair.
Display reads FULL	1. Memory capacity is full of data.	1. Download or transcribe data and erase data to clear memory space.
Console will not tune	1. Poor signal-to-noise ratio. (See if display shows truncated digits.	Seek quieter location.
	2. Low battery voltage.	2. Replace batteries.
Error message when tuning	1. Disable Auto-tune function.	1. Operating procedures: Auto-tune.
Partial numeric Display	1. Control board malfunctioning.	1. Return Control board (P/N 16621) for repair.

RS-232 interface

The Electronic Industry Association (EIA) established a standard to specify voltage levels and protocol for interfacing data-terminal and data communications equipment that uses serial binary interchange. The latest revision to this standard has been in effect since 1969 and is referred to as RS-232C. While RS-232C specifies a very complex group of data lines and signal levels, most devices equipped with interfaces called "RS-232C" in fact offer a subset of the standard as their interface method. The G-856AX is one such device.

The download cable provided for data transfer from the G-856AX is terminated with a 9-pin female D-connector. This cable, (P/N 16492-01), is wired to connect directly to the 9-pin serial port of a MS Windows PC. The following table lists the functions assigned to each pin of the pins used on this cable.

Table 3. RS-232 cable connector pin assignment.

9-pin connector RS-232	G-856AX front panel connector	Function
2	**T**	Transmit Data - from the G-856AX
5	**D**	Signal Ground - Zero reference for interface
7	**G**	Clear To Send - When low, inhibits G-856AX output. Leave open if not used.

The RS-232C standard specifies voltage levels and protocol for the data lines as ±12V nominal, with voltages from 5V to 25V being acceptable. A logical "1" (mark, off or false state) is indicated when the voltage at the interface point is more negative than -3V;

a logical "0" (space, on or true state) is indicated when the voltage is more positive than +3V. RS-232 devices, including the G-856AX use 0 and +5 volts for these two logic levels ("TTL levels") instead of ±12V. Most devices designed to work with ±12V levels will operate correctly with TTL levels but there are exceptions. Many large mainframe computers and some minicomputers require data over long cables. If your external equipment requires full ±12V RS-232 levels, you will need to construct or purchase a TTL-to-bipolar interface driver.

Front panel connector pin assignment

Pin	Function	Remarks
A	Sensor	
B	Sensor	
C	Sensor shield	
D	Ground	Power and control ground
E	No connection	
F	Data accepted	Input from external device
G	Clear to send	
H	Battery positive	Connected to Internal Battery
J	Data 0	Serial BCD is no longer used
K	Data 1	Character
L	Data 2	Serial
M	Data 3	BCD out
N	Data valid	
P	End of data	
R	Instrument power	External Power in. Otherwise jumper to H
S	Synchronization	External read/store command
T	Transmit data	Part of RS-232
U	Receive data	

Output format

When attempting to transfer data from the G-856AX to a generic device, make sure that the baud rates of the magnetometer and device match and that G-856AX Txd line is connected to device's Rxd line. The G-856AX serial data format (RS-232) and BCD outputs are as follows:

a. Each transmitted character is in ASCII code and consists of:
   - 1 start bit (always logic "1")
   - 7 data bits (ASCII encoded)
   - 1 parity bit (always logic "0")
   - 2 stop bits (always logic "0")

b. Each line of data transmitted by the G-856AX consists of 29 ASCII characters. Listed in order, the data fields and their count is as follows:

   - Space or asterisk (*) - 1
   - Line number - 3

- Space - 1
- Julian day - 3
- Space - 1
- Time - 6
- Space - 1
- Station number - 4
- Space - 1
- Field - 6
- Carriage return, line feed - 2

c. After all data has been transferred by the G-856AX, a final character (ASCII EOT) is transmitted.

d. Transmission of data is initiated as follows:
- Press ***Output***, ***Enter***
- Optionally you can press ***Shift***, 'n', 'n', 'n', ***Enter***; to begin output from station number "nnn".

External Power

The G-856AX may be powered from an external source. It will be necessary to operate from external power if the internal batteries are not sufficient for some nonstandard application such as: extremely cold weather operation, extended use of the magnetometer's three-reading average capability, long-polarize operation, or as a long term base station. The instrument may be run safely from a suitable external supply as high as 18 volts for improved signal to noise ratio. Note that the external power supply can be a source of interference if it is not well regulated and this may reduce signal quality.

To operation from external power, connect the positive terminal of the external source to pin R, and the negative terminal to pin D (ground). Alternatively you can obtain an external power/signal/data cable from Geometrics (P/N 16652-05). If you plan to construct your own external power cable we recommend including a 1.5-2 Ampere fuse in the power input line.

External magnetometer control

Momentary connection of pin S (SYNC) to pin D (Ground) at the front panel connector will set the magnetometer to take a reading and store it automatically. This feature is provided so that an external device can be used to control operation of the magnetometer and, if desired, synchronized the readings with some other device. This feature can be used to connect two G-856AX magnetometers so that their readings will be made simultaneously. In a small-area survey (most commonly used in archaeological and some engineering applications) a long cable can be run from the survey instrument to the base station for more precise base station corrections. You could also interconnect two G-856AX magnetometers to create a portable gradiometer.

The external SYNC function can also be used to simplifying field operation. This would require the addition of a push-button switch wired between SYNC and Ground. Attaching the switch to the sensor staff will provide a convenient means of operating the magnetometer. This configuration will sacrifice the discretion of examining each datum before storing it, but will provide convenience. If an external switch is added to the magnetometer make sure that it is nonmagnetic.

The SYNC also has an output function. When the G-856AX starts a measurement cycle, either because ***READ*** was pressed or because the magnetometer is running in Automatic mode, SYNC is pulled low and held low until the end of polarize time, when it is released. If SYNC is pulled low externally, the measurement cycle is started. External SYNC may be momentary or many be held low indefinitely. If it is held low momentarily, polarization current will shut off at the normal time. If SYNC is sustained then the polarization current will flow until SYNC is released. In this manner two G-856AX instruments will be synchronized if their SYNC and ground pins are wired in parallel. Either instrument may provide the start command.

Internal programming switches

The G-856AX has a small programming switch located on the console's microprocessor circuit board. This switch is the 'dual in-line plastic' type and provides a set of eight individual switches as shown in Figure 22. Its settings allow the functional adjustment of the instrument to make it more noise insensitive, accurate, power efficient and better suited to your specific application.

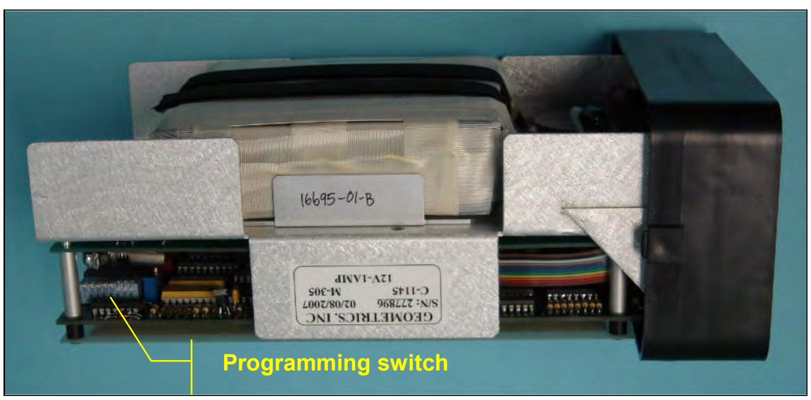


Figure 22. Location of console's internal programming switch.

To gain access to the programming switch, remove the instrument from its case just as you would to replace batteries. Look near the right rear corner on the top circuit board. You will find a rectangular switch with eight small levers. The switch is small and you will need a small pointed object like a pencil tip to change the switch settings. Notice that the switch position are labeled 1 through 8 and that the ON position is identified by a dot or labeled 'ON' depending on the switch model. Typically, switches 1 through 5 are off and switches 6 through 8 are on. The functions of these switches and the operation state associated with their settings are summarized in Table 4.

Table 4. Summary of programmable switch settings.

Switches	Function	Settings			State
1, 2	Polarize time	S1 OFF	S2 OFF		Normal
		S1 ON	S2 OFF		Long
		S1 ON	S2 ON		Short
		S1 ON	S2 ON		Short
3	Read time	S3 OFF			Normal –920 ms
		S3 ON			Short – 460 ms
4	3 Reading average	S4 OFF			Normal
		S4 ON			Average
5	Auto cycle display	S5 OFF			Normal
		S5 ON			Display shuts off
6, 7, 8	Baud rate selection	S6 OFF	S7 OFF	S8 OFF	110 baud
		S6 ON	S7 OFF	S8 OFF	150 baud
		S6 OFF	S7 ON	S8 OFF	300 baud
		S6 ON	S7 ON	S8 OFF	600 baud
		S6 OFF	S7 OFF	S8 ON	1200 baud
		S6 ON	S7 OFF	S8 ON	2400 baud
		S6 OFF	S7 ON	S8 ON	4800 baud
		S6 ON	S7 ON	S8 ON	9600 baud

Polarize and count time – Switches 1 through 4

There are two stages in the process of obtaining a magnetic field measurement using a proton-precession sensor. During the first stage (polarize cycle), a current is fed to the sensor coil. This coil is immersed in sensor fluid and the current flow generates a magnetic field in this fluid that causes the spin axes of the hydrogen atom's protons to align. When the polarizing current is removed the protons precess about the ambient magnetic field and this precession frequency is counted for a short period of time (count cycle). There are tradeoffs in the amount of time provided for the execution of each of these cycles.

The polarizing current should be left on long enough to completely align the proton's spin axes (to produce a good signal precession signal), but not so long that battery power is wasted or the measurement time becomes inconveniently long. The count cycle should be relatively brief: the amplitude of the precession signal decays rapidly and it is best to obtain readings by counting its frequency early when the signal is strongest. Selection of the best counting period will depend on the polarization current, the ambient magnetic field strength, and the ambient magnetic gradient. High polarization current and/or high ambient magnetic field strength will produce more precession signal but high magnetic field gradient will cause the signal to collapse more rapidly.

Switches 1 through 4 adjust the polarize time and affect the sensitivity, speed, and power consumption of the instrument. Switch 1, when ON, will extend the polarize time from under two seconds to almost three seconds. Setting this switch will provide stronger precession signal, but will lengthen the total cycle time and thereby shorten battery life.

When Switch 2 is ON the polarize cycle period will be less than one second. This will speed up the cycle time and increase battery life, but will result in a weaker precession signal and this can result in reduced measurement accuracy.

When Switch 3 is ON the count cycle will be brief. This will speed up the cycle slightly, and will help to obtain good data under conditions where the precession signal might decay very rapidly - in areas of high gradients and low ambient field strength. When Switch 3 is ON, the resolution of the magnetic field measurement is reduced to 0.2 nT rather than the normal 0.1 nT. This switch should be set ON if the instrument is giving erratic or noisy readings.

When Switch 4 is ON the instrument will automatically take three readings and compute their average. This setting will provide high sensitivity but at the cost of significantly increased cycle time and power consumption. This setting is seldom used except when the G-856AX is used as a base station magnetometer operating on external power.

Near the magnetic equator, the Earth's magnetic field is relatively weak and many proton-precession magnetometers do not operate well, especially those models optimized for higher latitudes. In these areas the precession signal may be small and decay beyond detectability before the end of the count period. The solution to this problem is to extend the polarization time (switch 1 ON) and shorten the count time (switch 3 ON) so that counting is finished before the signal disappears. If you are surveying in areas with low ambient field strength you may find that setting switch 3 ON is sufficient to obtain good data. Otherwise you may need to also set Switch 1 ON as well. At low magnetic inclination you will also need to rotate the sensor into the saddle mount position in order to properly align the sensor with the ambient magnetic field.

When surveying in areas with large magnetic field gradients the effect is similar to that observed near the magnetic equator: the signal collapses before the end of the count. You will know you are in an area of high gradients when the display drops the least significant digit and you hear 5 quick beeps. The solution is the same as that for the low field strength near the equator – set Switches 1 and 3 ON.

Setting Switch 2 and 3 ON provides faster cycle time, longer battery life, and less sensitivity. This combination is recommended when maximum accuracy is not as important as speed and battery endurance.

To obtain greater sensitivity, Switch 1 (long polarize) should be ON. Setting Switch 4 (3-reading average) can also be set ON to improve the signal to noise ratio. Because of the length of the total cycle time needed to perform 3-reading averaging, this setting is most applicable to base station recording. Increased power is needed for long polarization and/or the 3-reading average so it is best to use alkaline batteries, rechargeable batteries or external power when these functions are enabled.

SWITCH 5 - DISPLAY OFF AFTER 5 MINUTES AUTO CYCLE

If Switch 5 is turned ON, the display will blank if the keyboard is not exercised for five minutes. When you first set up the instrument, the display will light for five minutes to allow initial monitoring of the operation, but after you leave and those minutes have elapsed, the display will shut down to save power. If Switch 5 is OFF, the display will continue to light with each measurement cycle.

Switch 5 is applicable to the AUTO mode. On some occasions it will be desirable to have the measurements displayed as they automatically acquired. Such an occasion would be during surveys where the operator wishes to record automatically and also wants to monitor the data values. The AUTO mode is normally used for base station operation and here there is usually no reason to display the measurement values because the magnetometer is running unattended.

SWITCHES 6, 7, AND 8 (BAUD RATE)

Switches 6, 7 and 8 are used to set the baud rate. The RS-232 interface will output data at selected speeds (baud rate). Different types of devices can send and receive at different rates or combinations of rates. A mechanical Teletype with an RS-232 interface will receive at 110 baud. A standard telephone line with a modem will communicate at 300 baud or higher. Printers with RS-232 interfaces may handle 300 baud and higher. Computers can accommodate data transmission at 9600 baud and higher. The storage or printing device that you connect to the G-856AX will either have a specified baud rate or a selection of baud rates. You will want to use the fastest combination that is common to both the magnetometer and external device but the baud rate setting must be the same on both devices.

The data transfer rate in characters per second is approximately one/tenth the baud rate. A reading contains about 30 characters and includes FIELD, TIME, STATION NUMBER, DAY, LINE NUMBER, spaces, punctuation marks, carriage returns, line feed, and some null characters to allow time for a printer return to the start of a new line. This means that a single reading will require as much as three seconds to print on a slow telex machine, or as little as I/5 of a second to transfer to a computer.

Internal Reset switch

There is a small red and white push button reset switch in between the circuit boards on the left hand side of the instrument chassis. The location of this switch is shown in Figure 23. In the event that the magnetometer's processor is not responding it may be necessary to reset the G-856AX. Care should be taken when using this switch as all data in memory and all internal settings such as the Clock and Cycle times will be reset to default settings. Make sure you attempt to download the data prior to using this switch.

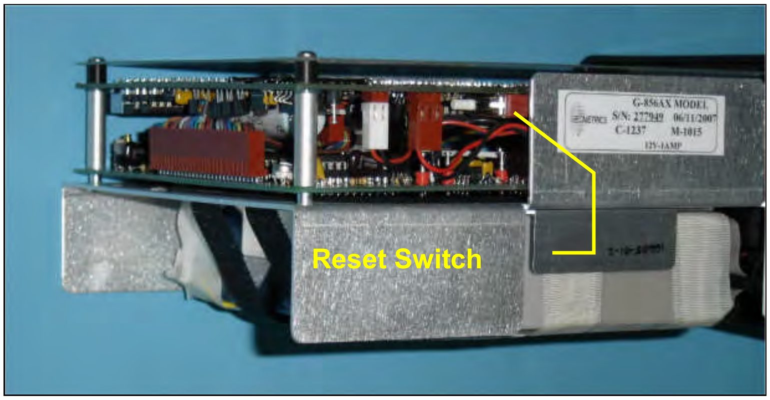


Figure 23. Internal reset switch.

Specifications

- Displays - Six digit display of magnetic field to resolution of 0.1 gamma or time to nearest second. Additional three-digit display of station, day of year, and line number.

- Resolution - Typically 0.1 gamma in average conditions. May degrade to lower resolution in weak fields, noisy conditions or high gradients.

- Absolute accuracy - One gamma, limited by remnant magnetism in sensor and crystal oscillator accuracy.

- Clock - Julian clock with stability of 5 seconds per month at room temperature and 5 seconds per day over the temperature range of -20 to +50 degrees Celsius.

- Tuning - Push button tuning from keyboard with current value displayed on request. Tuning range 20 to 90 μT.

- Gradient - Tolerates gradients to 1800 gammas/meter. When high Tolerance gradients truncate count interval, maintains partial reading to an accuracy consistent with data.

- Cycle Time - Complete field measurement in three seconds in normal operation. Internal switch selection for faster cycle (1.5 seconds) at reduced resolution or longer cycles for increased resolution.

- Manual Read - Takes reading on command. Will store data in memory on command.

- Memory - Stores more than 5700 readings in survey mode, keeping track of time, station number, line number day and magnetic field reading. In base station operation, computes for retrieval but does not store time of recording designated by sample interval, allowing storage of up to 12,000 readings.

- Output - Plays data out in standard RS-232 format at selectable baud rates. Also outputs data in real time byte parallel, character serial BCD for use with digital recorders.

- Inputs - Will accept an external sample command.

- Special - An internal switch allows:
    - adjustment of Functions polarization time and count time to improve performance in marginal areas or to improve resolution or speed operation
    - three count averaging
    - choice of lighted displays in auto mode.

- Physical -
    - Instrument console: 7 x 10 ½ x 3 ½ inches (18 x 27 x 9 cm), 6 LB (2.7 kg)
    - Sensor: 3 1/2 x 5 inches (9 x 13 cm), 4 LB (1.8 kg)
    - Staff: 1 inch x 8 feet (3cm x 2.5m), 2 LB (1kg)

- Environmental: Meets specifications from 1 to 40°C. Operates satisfactorily from -20 to 50°C.

- Power - Depending on version, operates from internal rechargeable Gel-cells or 9 D-cell flashlight batteries . May be operated from external power ranging from 12 to 18 volts external power. Power failure or replacement of batteries will not cause loss of data stored in memory.

- Standard system (P/N 16600-02) components:
    - Sensor (P/N 16076-01) and sensor cable (P/N 16134-01)
    - Console (P/N 16601-01)
    - Staff, one top section (P/N 16535-01), two middle sections (P/N 16536-01) and 1 bottom section (P/N 16537-01)
    - Carry harness (P/N 16002-02)
    - Two sets of rechargeable batteries (P/N 16697-01) and battery charger (P/N 16699-01)
    - Carrying case (P/N 16003-01)
    - Download cable (P/N 16492-01)
    - Hardcopy operation manual (P/N 18101-02)
    - Magnetometer CD (P/N 26648-01)

- Optional accessories:
    - Tripod kit for base-station operation (P/N 16708-02)
    - Gradiometer kit (P/N 166651-01)
    - Gradiometer carry/storage case (16003-01)

- D-cell battery console version (P/N 16600-02)
- 50' External power/data/sensor cable (P/N 16652-05)
- Low field base-station sensor (P/N 16194-01)
- Replacement lithium battery (P/N 40-202-005)
- Proton-precession magnetometer calibration tester (P/N 24840-01)

Warranty and service

Geometrics warrants the G-856AX be free of defects in material and workmanship for a period of one year. This warranty commences on the date of shipment. If the equipment fails due to manufacturing defects during the applicable warranty period, Geometrics, Inc. will repair or replace the defective item at its facility in California at no charge to the customer for parts and labor. The cost to ship the equipment to Geometrics, Inc.'s factory in San Jose, California and back to the customer's site is for the customer's account. Repairs might be done at a local service center, if available. Geometrics must be notified within 7 days of failure of the component for any warranty claim. Geometrics must establish to its satisfaction that failures have not been the result of abuse or improper use. The limited warranty stated herein is in lieu of all other warranties expressed or implied (including the implied warranties of merchantability and fitness for a particular purpose) and of all other obligations or liability on the part of Geometrics, and Geometrics neither assumes nor authorizes any person to assume for it any other liability. Geometrics shall not be liable for special, incidental or consequential damages of any nature (including, but not limited to lost revenue or profits) with respect to any merchandise or services sold, delivered or rendered hereunder. In the event of malfunction, Geometrics, at its own expense will repair or replace any material, equipment, work, or parts that prove defective or deficient under normal operating conditions.

In the event that warranty service or technical advice is required, contact Geometrics. No warranty service will be performed unless the customer secures authorization from Geometrics prior to returning equipment. If this instrument or any part of it is returned to the factory for any reason, please complete this form and include it with the instrument or part being returned.

Name: ____

Company: ____

Address: ____

____

City, State, Postal code, Country: ____

____

Telephone / email: ____

IMPORTANT

Please explain why this instrument or part is being returned; include a complete description of any malfunction (use additional paper if necessary).

SHIP TO: Geometrics Inc.
2190 Fortune Drive, San Jose, CA 95131
Phone: (408) 954-0522
Fax: (408) 954-0902

Declaration of Conformity

CE 03

San Jose, California, USA

DECLARATION OF CONFORMITY

We, Geometrics, Inc.
Geometrics Europe
2190 Fortune Drive
San Jose, CA 95131 USA
phone: (408) 954-0522
fax: (408) 954-0902

declare under our sole responsibility that our portable magnetometers, models G-856, and G-856G to which this declaration relates are in conformity with the following standards:

EN 55022: 1995, EN50082-2: 1995, ENV 50140: 1994, ENV 50141: 1994,
EN 61000-4-2: 1995, EN 61000-444: 1995

per the provision of the **Electromagnetic Compatibility Directive *89/336/EEC*** of May 1989 as Amended by ***92/31/EEC*** of 28 April 1992 and ***93/68-EEC, Article 5*** of 22 July 1993.

The Technical documentation required by Annex IV(3) of the Low Voltage Directive is maintained by Christopher Leech of Geometrics Europe (address below).

The authorized representative located within the Community is:

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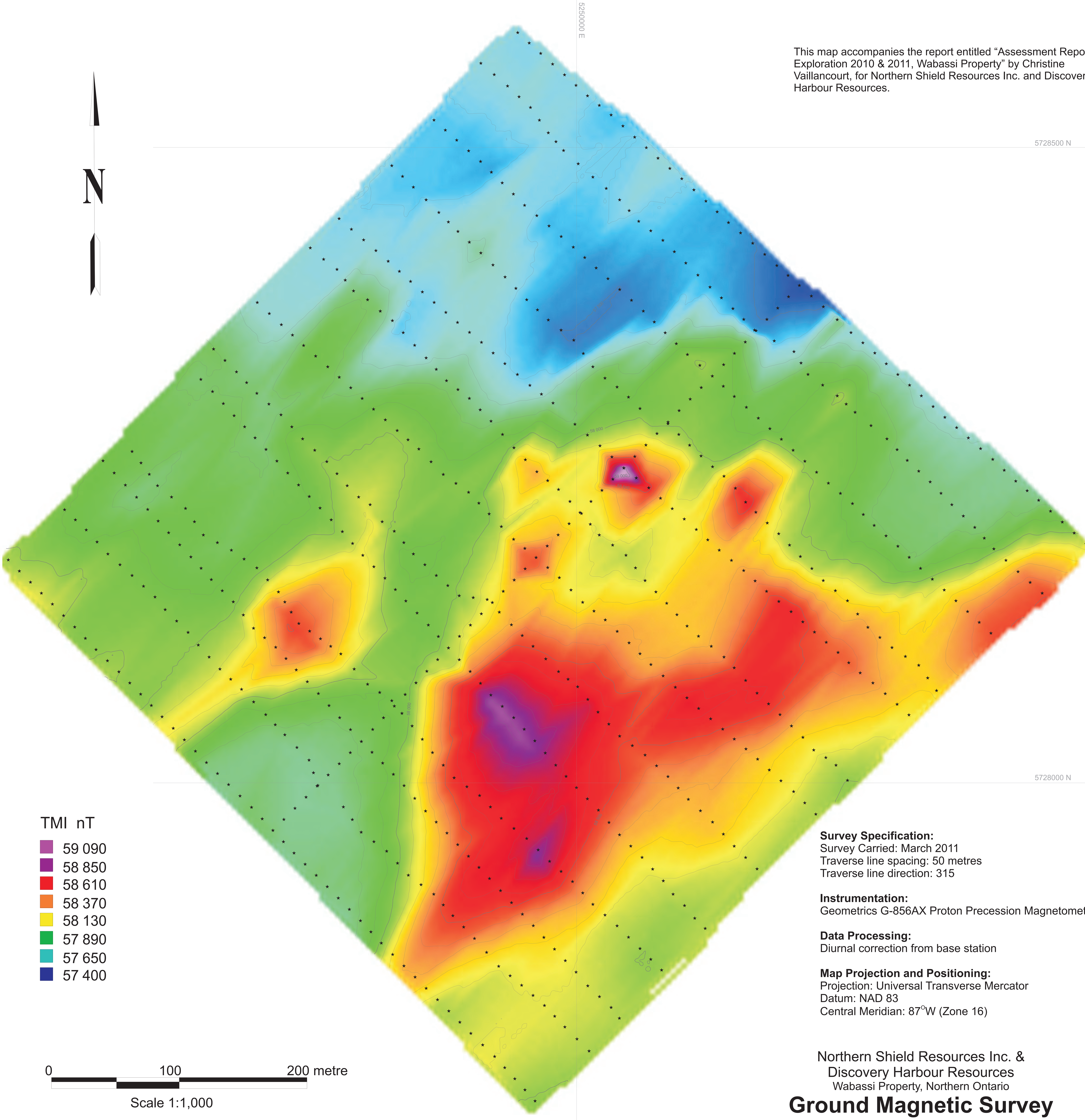
Mark Prouty, President
Geometrics, Inc.
San Jose, CA, USA

APPENDIX XIII

Ground Magnetic Survey, Wabassi Property, Grid 3, with Traverses

This map accompanies the report entitled "Assessment Report - Exploration 2010 & 2011, Wabassi Property" by Christine Vaillancourt, for Northern Shield Resources Inc. and Discovery Harbour Resources.



TMI nT

- 59 090
- 58 850
- 58 610
- 58 370
- 58 130
- 57 890
- 57 650
- 57 400

0 100 200 metre

Scale 1:1,000

Survey Specification:
Survey Carried: March 2011
Traverse line spacing: 50 metres
Traverse line direction: 315

Instrumentation:
Geometrics G-856AX Proton Precession Magnetometer

Data Processing:
Diurnal correction from base station

Map Projection and Positioning:
Projection: Universal Transverse Mercator
Datum: NAD 83
Central Meridian: 87°W (Zone 16)

Northern Shield Resources Inc. &
Discovery Harbour Resources
Wabassi Property, Northern Ontario

Ground Magnetic Survey

Wabassi Property, Grid 3,
with Traverses