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Tittel

Report from the re-sampling of 1984, Sørdalshøgda Diamond Drill Cores

Forfatter	Dato År	Bedrift (Oppdragsgiver og/eller oppdragstaker)
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Kommune	Fylke	Bergdistrikt	1: 50 000 kartblad	1: 250 000 kartblad
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Fagområde	Dokument type	Forekomster (forekomst, gruvefelt, undersøkelsesfelt)
Geokjemi		Sørdalshøgda
Råstoffgruppe	**Råstofftype**	
Malm/metall	Au	

Sammendrag, innholdsfortegnelse eller innholdsbeskrivelse

The drill cores from 1984 (Folldal Verk AS / AMOCO) has been resampled and analysed for gold in 2001. The resampling of core showed no new optimistic gold occurrences, but confirms the presence of anomalous gold on Sørdalshøgda.
Appendix 2b show a map over the Sørdalshøgda with geology, drillhole location, rock samples and stream sediment samples from the year 2000 field program by Crew Development Corp.

Report from re-sampling of 1984, Sørdalshøgda Diamond Drill Cores.

by
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2001

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Introduction

Location

The Sørdalshøgda area is located on Ringvassøya, an island 60 km NW of Tromsø. The island belongs to the Karlsøy commune in the western part of the Troms province, northern Norway. Sørdalshøgda lies close to the northeastern side of the island. The map in Appendix 2a shows an overview over the northeastern part of the island with the main service centre Hansnes and the Sørdalshøgda area with claim boundaries.

Access

Ringvassøya is accessible by plane to Tromsø and then by car from Tromsø airport through the sub sea tunnel between Kvaløya and Ringvassøya. The main service centre on the island is Hansnes at the northeastern coast of the island. Hansnes has the only overnight and dining place on the island, which makes a comfortable field camp. The drive from Tromsø airport to Hansnes takes about one hour.

The Sørdalshøgda area is accessible by a 10 min drive from Hansnes and then a 20-30 min walk from the main road along a dirt road/path up to the target area.

Short geological description

Ringvassøya consists of three main lithological units: I) the Precambrian gneiss complex, ii) Precambrian altered volcanic and sedimentary rocks (Ringvassøya greenstone belt) and iii) rocks belonging to the Caledonian Nappe (the Lyngsfjell Nappe). Characteristic for the geology on Ringvassøya is also the numerous dark dykes cutting through both the gneiss complex and the greenstone belt, but not the Lyngsfjell Nappe.

The Ringvassøya greenstone belt extends across the island from E(SE) towards W(NW). The greenstone belt consists of the Skogsfjordvatn Group and the Skogsfjord Group (Zwaan, 1989). According to Zwaan (1989) the Ringvassøya greenstone belt is allochton compared to the underlying older gneisses and according to Grogan & Zwaan (1997), these rocks are presumed thrusted in Early Proterozoic time. Traces of the greenstone belt may be found on the Rebbenes Island to the west and have also been traced by gravimetric measurements below the Caledonian nappes on Reinøya to the east (Chroston, 1974 and Gvein, 1983).

Age determination of the Ringvassøya greenstone belt carried out by Motuza et al. (in prep) on U/Pb in zircons resulted in ~2.84 Ga.

Exploration history

The Ringvassøya greenstone belt has been known for its gold occurrences since the early 1980`s, but there have been exploration activities for sulphide mineralizations on the island since around 1860.

In 1982 to 1985 two separate parties carried out gold exploration programs on several targets on Ringvassøya. One of these parties was Folldal Verk AS and AMOCO who held on of the most interesting areas, the Sørdalshøgda area. 10 diamond drill holes were drilled in 1984, totalling 755.5m.

As a result of the new exploration program carried out by Crew during august 2000 (Bliss, 2000), the drill cores from 1984 has been re-sampled and analysed for gold. in 2001

Analytical methods

Gold by fire assay (FA301)

Gold analyses on samples from Sørdalshøgda, have been performed by XRAL Laboratories, Canada by fire assay using 30 gram sample.
The sections for analyses was split by in half by NGU personnel on instruction by Crew geologists and sent to the lab. In the lab, the samples was first crushed to a coarse pulp and then split to 250 grams. Then the samples were ground using chromium steel mill to 90% - 200 mesh. The Au analysis by fire assay was carried out on a 30.0-gram sample.

31 element analysis by aqua regia ICP (ICP70)

In addition to the Au analysis, all samples were analysed for 31 elements using aqua regia ICP (ICP70).

Results of the re-sampling

88 samples for FA301 and ICP70 was this year taken from drill cores drilled at Sørdalshøgda in 1984, by Folldal Verk/AMOCO. The drill cores were re-sampled to check that all possible gold bearing zones were sampled and to verify 1984 assay results by Folldal/AMOCO. The drill core collar locations are shown in Appendix 1.

Appendix 2b shows a map over the Sørdalshøgda area with geology, drill hole locations, rock samples and stream sediment samples from the year 2000 field program by Crew Development Corporation. Appendix 2c shows more detailed, the area that was drilled in 1984.

Miscellaneous

Coordinate system

The location of the drill hole collars was in 1984 given in ED50 coordinate system while today it is common to work with the newer EUREF89 (WGS84) space. The difference of these two coordinate systems for the map sheet covering Sørdalshøgda (1534-I) is set to be like:

ED50 - north = EUREF – north +199m

ED50 - east = EUREF – east +55m

This is set for UTM zone 34 and the accuracy for the centre of the map sheet is set to +/- 1m.

Lost drill cores

Of the ten drill cores from Sørdalshøgda totalling 755.5 meters, some of the core boxes was missing. All of the missing boxes held the most interesting interval of the entire core length. Table 1 show the DDH no, Box no and interval of missing core.

Missing boxes could have been moved or emptied by the companies that carried out the drilling, or it has somehow "disappeared" during transport to NGU's core-shack at Løkken.

DDH no	Box no	From (m)	To (m)
Sør-4-84	4	30.3	39.2
Sør-8-84	1	0	10

Table 1: Missing boxes and intervals.

Earlier samples

From reports and from looking at the drill cores it is clear that the sampling reported by Cuttle (1984) has been limited to sections of sulfide bearing highly carbonate-banded rocks. Sections of larger quartz veins with disseminated sulfides and chlorite alteration have not been sampled. Assay results from the year 1984 program have been attached in appendix 3a.

This year's results

Seven samples from this year's program returned with values exceeding 100 ppb ranging from 103 to 2020 ppb Au. All seven samples were sampled in sections that returned anomalous in gold during Folldal/AMOCO sampling program in 1984 (Appendix 3a and 3b).

The anomalies in DDH no Sør-9-84 is located within an alternating felsic and mafic lapilli tuff. Sampled sections are mostly felsic with zones of garnet (almandine (Cuttle, 1984)) and some magnetite bands and disseminations. Some ankerite is present as spots and banding? The ICP results show high Zn (1.4 %) and As (2%) in sample no 399650 (Appendix 3b).

The anomalies in DDH no Sør-2-84 is located within a carbonate rich banded mafic volcanic rock, somewhat tuffaceous looking. The sections contain trace sphalerite with minor magnetite and sulfides (401362) to sulfides mixed with garnets, ankerite, quartz and magnetite (401363/4).

In addition to these seven samples, one section that were re-sampled showed only 22 ppb Au where 1984 assay results showed 717 ppb Au (Appendix 3b, sample no 399651).

All other samples were concentrated on areas that had not been sampled earlier. The assays do not exceed 33 ppb Au ranging from 5 to 33 ppb Au. The sampling was concentrated on three specific types of rocks: 1) As gold often is associated with quartz veins in archean greenstone belts, the emphasis of this years sampling program was, amongst others, on quartz veins, 2) gold may be associated with zones showing strong alteration but lacking real quartz veins, 3) contacts between a competent and a less competent rock. In addition, a fourth type was sampled: more felsic layers in a mafic volcanic rock. The assay results are shown in Appendix 3b.

Samples compared

Comparing the samples from 1984 and this year's samples, it clearly shows that the gold most probably is associated with sections of sulfide bearing highly carbonate-banded rocks. No 2001 samples taken outside this zone show higher gold values than 33 ppb. Samples taken where Folldal Verk / AMOCO sampled in 1984 give good reproducibility except from one samples returning no gold where he old sample show 717 ppb Au.
This years sampling (together with the old samples) show that DDH Sør-2-84 and DDH Sør-9-84 is anomalous in gold. In addition the old samples show that DDHs Sør-4-84, Sør-5-84 and Sør-10-84 ha anomalous Au content. As the most interesting sections of DDHs Sør-4-84 and Sør-8-84 were, missing these numbers were not possible to reproduce.

Conclusion

This years re-sampling of the 1984 Sørdalshøgda drill cores shows no new optimistic gold occurrences. However, the analyses confirm the presence of anomalous gold on Sørdalshøgda and that this gold is found in sulfide bearing highly carbonate-banded rocks. Before new drill holes are drilled further surface activities should be emphasised in the area.

References

1) Bliss, I., 2000:Ringvassoya Gold Reconnaissance, Target Evaluation and Prioritaization (part of the Norway Gold – 2000 series). Unpublished company report.
2) Chroston, P. N., 1974: Geological interpretation of gravity data between Tromsø and Øksfjor. NGU-312 pp 59-90.
3) Cuttle, J., 1984: Ringvassøy Project (N-82-3); Folldal Verk/AMOCO Internal Report. 22 pp + maps.
4) Gvein, Ø., 1983a: Feltrapport ad. Ringvassøy. 5 pp.
5) Gvein, Ø., 1983: Orientering om gullundersøkelser på Ringvassøy. BV 676.
6) Motuza, G., Belyatsky, B. & Savva, E., in prep: First Isotope Dating of the Ringvassøya Greenstone Belt. Report to the Geological Survey of Norway.
7) Zwaan, K. B., 1989: Berggrunnsgeologisk kartlegging av det prekambriske grønnsteinsbelte på Ringvassøya, Troms. NGU 89.101.

List of appendix

1) Table summarizing DDH-ID, Location, total length, azimuth and dip.
2) Maps:
    a. Overview over northeastern part of the island with Hansnes, the Sørdalshøgda area and claim boundaries.
    b. The Sørdalshøgda area geology with DDH locations, rock samples and sed samples.
    c. The Sørdalshøgda area DDH`s Sor-1A - Sor-10
3) Results
    a. Old assay results
    b. Re-sampling assay and analysis results
    c. XRAL Laboratories certificates

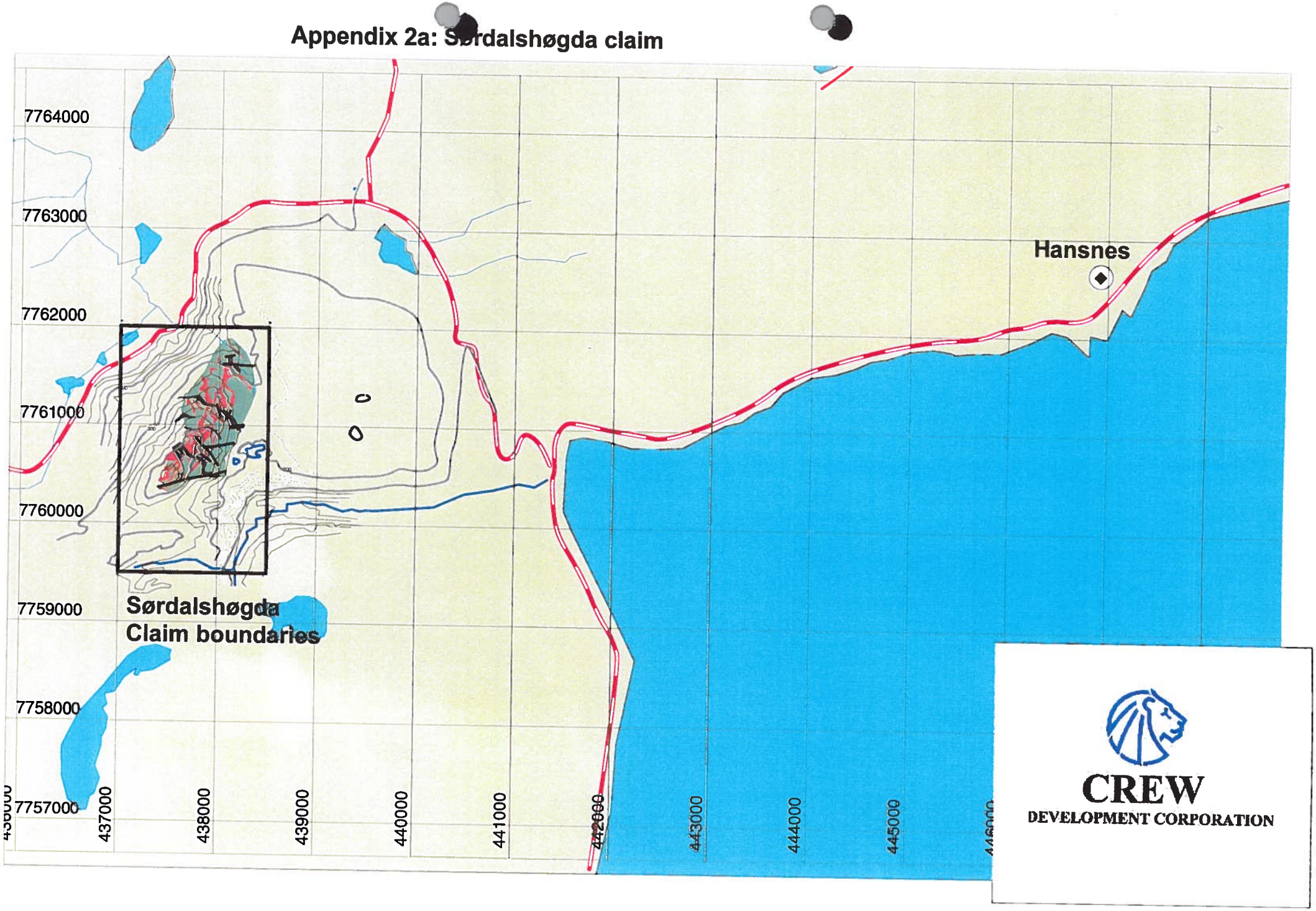
APPENDIX I

HOLE ID	LOCATION[X]	LOCATION[Y]	LOCATION[Z]	LENGTH	AZIMUTH	DIP
sor-1-84	437552.50	7760571.50	420	73.4	160	-60
sor-2-84	437570.00	7760434.00	420	64.9	160	-60
sor-3-84	437942.50	7760261.50	318	43.9	160	-50
sor-4-84	437390.00	7760459.00	415	83.6	160	-60
sor-5-85	437360.00	7760536.50	390	141.5	160	-55
sor-6-84	437307.50	7760461.50	395	91.6	160	-55
sor-7-84	437325.00	7760419.00	405	43.6	160	-60
sor-8-84	437530.00	7760519.00	430	88.7	160	-60
sor-9-84	437692.50	7760509.00	400	59.3	160	-65
sor-10-84	437127.50	7760711.50	295	65.0	160	-50

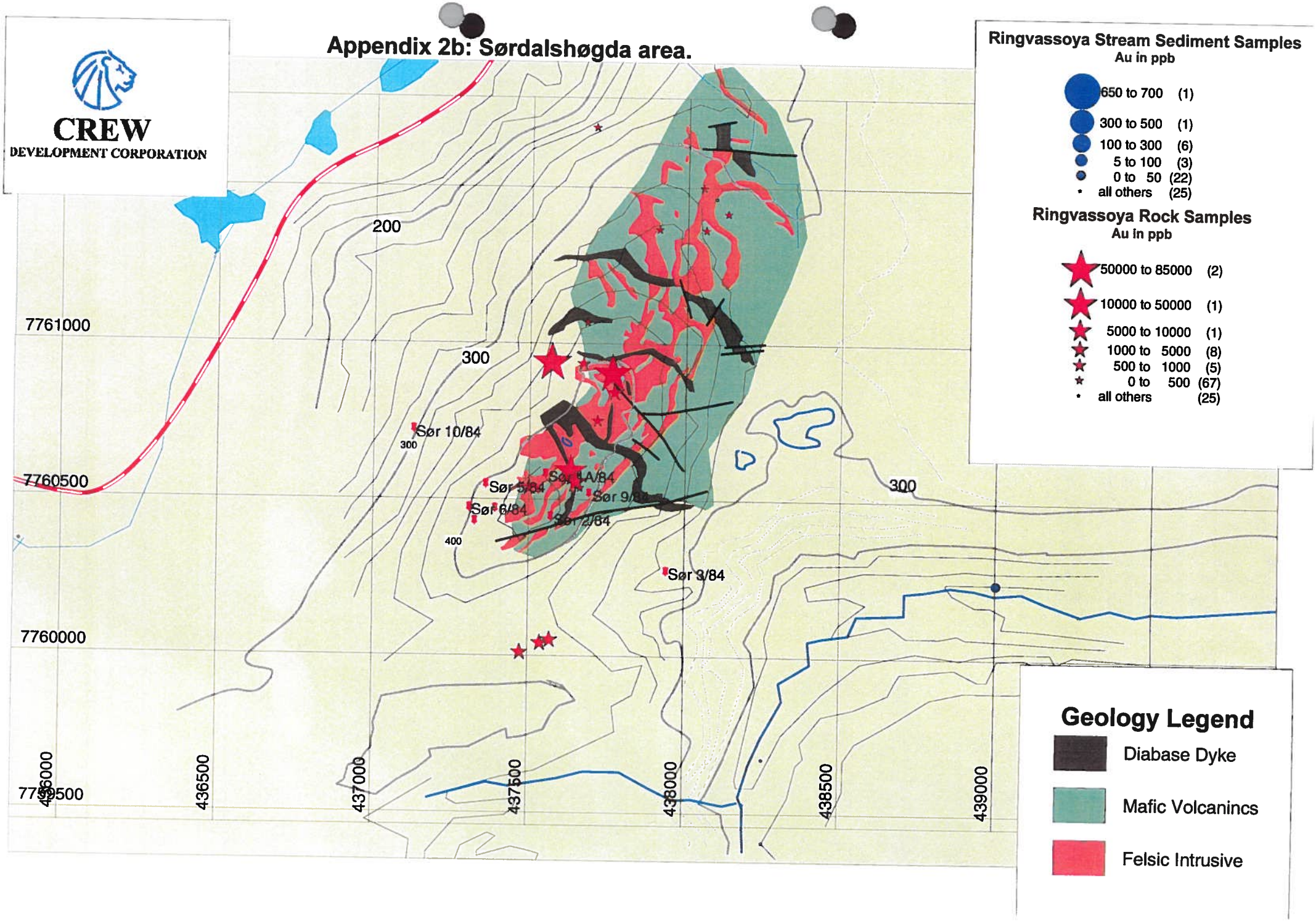
APPENDIX 2

MAPS

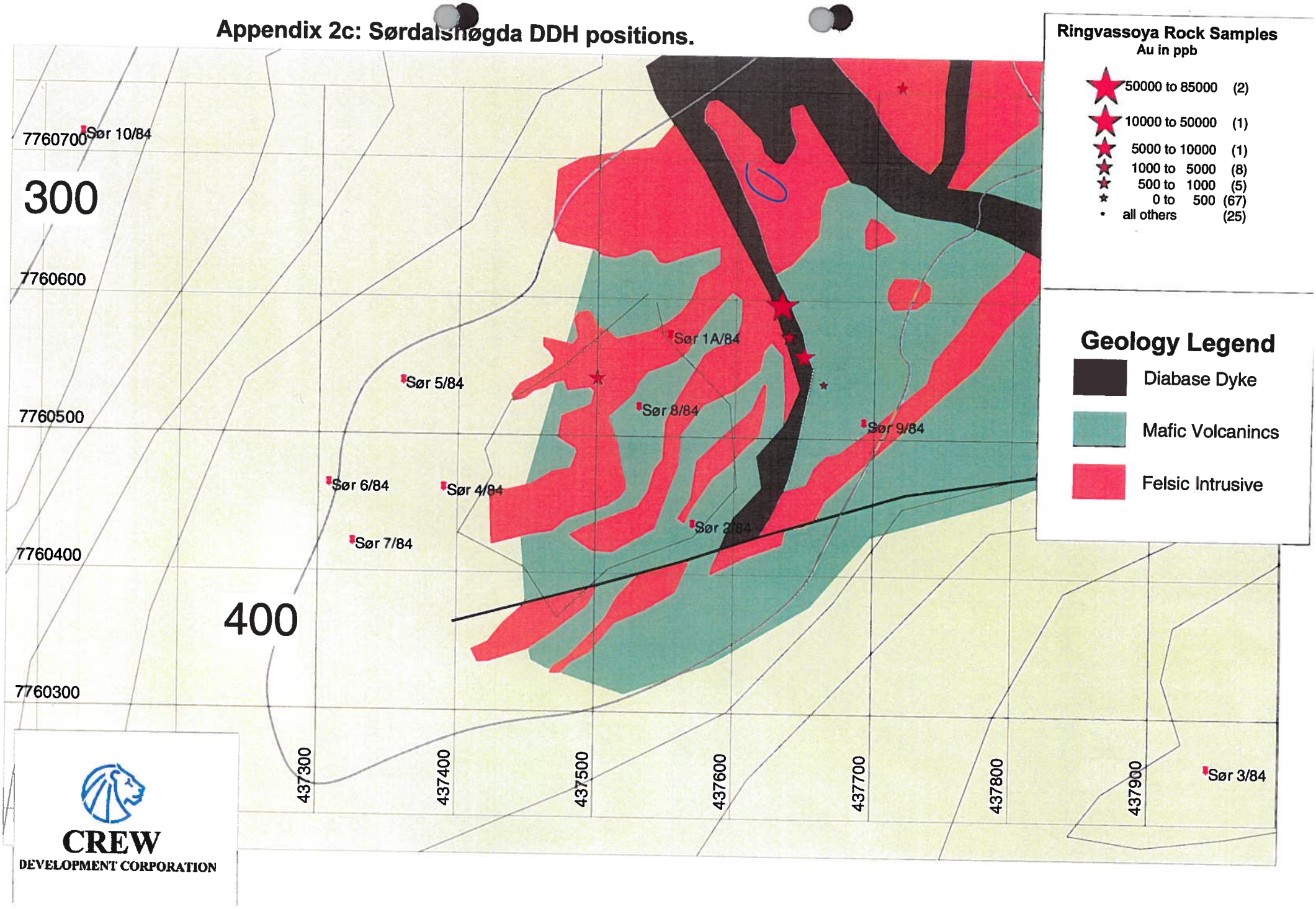
Appendix 2a: Sørdalshøgda claim



Appendix 2b: Sørdalshøgda area.



Appendix 2c: Sørdalshøgda DDH positions.



CREW
DEVELOPMENT CORPORATION

APPENDIX 3

ANALYSIS

HOLE-ID	FROM	TO	LENGTH	SAMPLE-ID	AU-ppb
sor-1-84	5.5	6.5	1	1	12
sor-1-84	6.5	7.5	1	2	10
sor-1-84	9.2	10.2	1	3	10
sor-1-84	11	12	1	4	11
sor-1-84	12	13	1	5	7
sor-1-84	13	14	1	6	6
sor-1-84	14	15	1	7	2
sor-1-84	17.5	18.5	1	8	2
sor-1-84	18.5	19.5	1	9	-2
sor-1-84	19.5	20.5	1	10	2
sor-1-84	22	23	1	11	-2
sor-1-84	23	24	1	12	
sor-1-84	24	25	1	13	2
sor-1-84	25	26	1	14	24
sor-1-84	26	27	1	15	19
sor-1-84	58	59	1	16	
sor-1-84	63.8	64.8	1	17	13
sor-1-84	64.8	65.8	1	18	7
sor-2-84	10.5	11.5	1	19	9
sor-2-84	11.5	12.5	1	20	23
sor-2-84	12.5	13.5	1	21	6
sor-2-84	13.5	14.5	1	22	8
sor-2-84	14.5	15.5	1	23	5
sor-2-84	15.5	16.5	1	24	9
sor-2-84	16.5	17.5	1	25	7
sor-2-84	17.5	18.5	1	26	24
sor-2-84	18.5	19.5	1	27	40
sor-2-84	19.5	20.5	1	28	41
sor-2-84	20.5	21.5	1	29	51
sor-2-84	21.5	22.5	1	30	17
sor-2-84	22.5	23.5	1	31	31
sor-2-84	23.5	24.5	1	32	150
sor-2-84	24.5	25.5	1	33	1200
sor-2-84	25.5	26.5	1	34	120
sor-2-84	26.5	27.5	1	35	6
sor-2-84	27.5	28.5	1	36	9
sor-2-84	28.5	29.5	1	37	8
sor-2-84	29.5	30.5	1	38	7
sor-2-84	30.5	31.1	0.6	39	5
sor-2-84	31.1	32.1	1	40	3
sor-2-84	32.1	33.1	1	41	5
sor-2-84	33.1	34.1	1	42	7
sor-2-84	34.1	35.1	1	43	10
sor-2-84	35.1	36.1	1	44	5
sor-2-84	36.1	37.1	1	45	10
sor-3-84	10.7	11.7	1	46	18
sor-3-84	25.75	26.75	1	47	2
sor-3-84	28.25	28.9	0.65	48	34
sor-3-84	28.9	29.9	1	49	6
sor-4-84	7.5	8.5	1	50	2
sor-4-84	11.5	12.5	1	51	4
sor-4-84	12.5	13.5	1	52	4
sor-4-84	22.7	23.7	1	53	4
sor-4-84	29.5	30.5	1	54	10
sor-4-84	30.5	31.5	1	55	34

HOLE-ID	FROM	TO	LENGTH	SAMPLE-ID	AU-ppb
sor-4-84	31.5	32.5	1	56	6
sor-4-84	32.5	33.5	1	57	690
sor-4-84	33.5	34.5	1	58	34
sor-4-84	34.5	35.5	1	59	1600
sor-4-84	35.5	36.5	1	60	1300
sor-4-84	36.5	37.5	1	61	9
sor-4-84	37.5	38.5	1	62	7
sor-4-84	58.4	59.4	1	63	n.a.
sor-4-84	68	69	1	64	n.a.
sor-4-84	74.4	75.4	1	65	n.a.
sor-5-84	7.5	8.5	1	66	4
sor-5-84	8.5	9.5	1	67	9
sor-5-84	9.5	10.5	1	68	13
sor-5-84	10.5	11.5	1	69	80
sor-5-84	11.5	12.5	1	70	13
sor-5-84	12.5	13.5	1	71	11
sor-5-84	13.5	14.5	1	72	7
sor-5-84	14.5	15.5	1	73	4
sor-5-84	15.5	16.5	1	74	9
sor-5-84	16.5	17.5	1	75	14
sor-5-84	17.5	18.5	1	76	12
sor-5-84	18.5	19.5	1	77	18
sor-5-84	19.5	20.5	1	78	4
sor-5-84	20.5	21.5	1	79	5
sor-5-84	21.5	22.5	1	80	6
sor-5-84	22.5	23.5	1	81	8
sor-5-84	76.3	77.3	1	82	3
sor-5-84	77.3	78.3	1	83	2
sor-5-84	78.3	79.3	1	84	2
sor-5-84	79.3	79.8	0.5	85	10
sor-5-84	79.8	80.3	0.5	86	10
sor-6-84	4.3	5.3	1	87	10
sor-6-84	5.3	6.3	1	88	9
sor-6-84	6.3	6.8	0.5	89	10
sor-6-84	6.8	7.8	1	90	6
sor-6-84	7.8	8.8	1	91	14
sor-6-84	8.8	9.8	1	92	13
sor-6-84	9.8	10.8	1	93	35
sor-6-84	10.8	11.8	1	94	11
sor-6-84	11.8	12.8	1	95	15
sor-6-84	12.8	13.8	1	96	9
sor-6-84	13.8	14.8	1	97	16
sor-6-84	14.8	15.8	1	98	17
sor-6-84	64	65	1	99	5
sor-6-84	65	66	1	100	13
sor-6-84	66	67	1	101	8
sor-6-84	67	68	1	102	8
sor-6-84	68	69	1	103	-2
sor-6-84	69	70	1	104	9
sor-6-84	70	71	1	105	10
sor-6-84	71	72	1	106	10
sor-6-84	72	73	1	107	10
sor-6-84	73	74	1	108	13
sor-6-84	74	75	1	109	8
sor-6-84	80.1	81.1	1	110	3

HOLE-ID	FROM	TO	LENGTH	SAMPLE-ID	AU-ppb
sor-6-84	81.1	81.5	0.4	111	9
sor-6-84	81.5	82.5	1	112	9
sor-7-84	10	11	1	113	10
sor-7-84	14.3	15.3	1	114	7
sor-7-84	15.3	16.3	1	115	9
sor-7-84	16.3	17.3	1	116	7
sor-7-84	17.3	18.3	1	117	15
sor-7-84	18.3	19.3	1	118	13
sor-7-84	19.3	20.3	1	119	30
sor-7-84	20.3	21.3	1	120	12
sor-7-84	21.3	22.3	1	121	11
sor-7-84	22.3	23.3	1	122	10
sor-7-84	23.3	24.3	1	123	12
sor-7-84	24.3	25.3	1	124	21
sor-7-84	25.3	26.3	1	125	14
sor-7-84	26.3	27.3	1	126	16
sor-7-84	27.3	28.3	1	127	12
sor-7-84	28.3	29.3	1	128	9
sor-7-84	29.3	30.3	1	129	14
sor-7-84	30.3	31.3	1	130	12
sor-7-84	31.3	32.3	1	131	10
sor-8-84	6.15	7.15	1	132	180
sor-8-84	7.15	8.15	1	133	540
sor-8-84	13	13.65	0.65	134	8
sor-8-84	14.2	14.8	0.6	135	7
sor-8-84	30.5	31.5	1	136	7
sor-8-84	31.5	32.5	1	137	19
sor-8-84	39	39.5	0.5	138	6
sor-9-84	3.7	4.7	1	139	4
sor-9-84	4.7	5.7	1	140	6
sor-9-84	5.7	6.7	1	141	3
sor-9-84	6.7	7.7	1	142	5
sor-9-84	7.7	8.7	1	143	3
sor-9-84	8.7	9.6	0.9	144	3
sor-9-84	9.6	10.2	0.6	145	430
sor-9-84	10.2	11.3	1.1	146	21
sor-9-84	11.3	12.1	0.8	147	520
sor-9-84	12.1	12.6	0.5	148	540
sor-9-84	12.6	13.1	0.5	149	1500
sor-9-84	13.1	14.1	1	150	23
sor-9-84	14.1	15.1	1	151	27
sor-9-84	15.1	16.1	1	152	61
sor-9-84	16.1	17.1	1	153	717
sor-9-84	17.1	18.1	1	154	16
sor-9-84	18.1	19.1	1	155	12
sor-9-84	19.1	19.7	0.6	156	990
sor-9-84	19.7	20.7	1	157	93
sor-9-84	20.7	21.7	1	158	36
sor-9-84	21.7	22.7	1	159	12
sor-9-84	22.7	23.7	1	160	13
sor-9-84	23.7	24.7	1	161	6
sor-9-84	24.7	25.7	1	162	3
sor-9-84	25.7	26.7	1	163	2
sor-9-84	26.7	27.7	1	164	4
sor-9-84	27.7	28.7	1	165	18

HOLE-ID	FROM	TO	LENGTH	SAMPLE-ID	AU-ppb
sor-9-84	28.7	29.7	1	166	5
sor-9-84	29.7	30.7	1	167	6
sor-10-84	8	9	1	168	90
sor-10-84	9	10	1	169	280
sor-10-84	10	11	1	170	140
sor-10-84	38.5	39	0.5	171	4
sor-10-84	40	40.5	0.5	172	3

HOLE-ID	FROM	TO	LENGTH	SAMPLE-ID	Au FA301 (ppb)	Be by ICP70 (ppm)	Na by ICP70 (%)	Mg by ICP70 (%)	Al by ICP70 (%)
sor-1-84	8.30	9.20	0.90	401367	10	-0.5	0.04	2.61	3.17
sor-1-84	20.30	21.30	1.00	401368	7	-0.5	0.04	1.52	2.32
sor-1-84	36.30	37.30	1.00	401369	9	-0.5	0.03	2.47	3.59
sor-1-84	37.30	38.30	1.00	401370	23	-0.5	0.03	1.92	2.59
sor-1-84	38.30	39.20	0.90	401371	7	-0.5	0.02	2.19	3.25
sor-1-84	42.65	43.30	0.65	401372	8	-0.5	0.07	1.7	2.08
sor-1-84	65.80	66.30	0.50	401373	7	-0.5	0.1	1.9	2.28
sor-2-84	7.50	7.85	0.35	401361	7	-0.5	0.08	1.8	2.41
sor-2-84	23.50	24.50	1.00	401362	103	-0.5	0.02	2.1	3.07
sor-2-84	24.50	25.50	1.00	401363	775	-0.5	0.02	1.88	2.88
sor-2-84	25.50	26.50	1.00	401364	154	-0.5	0.02	2.05	2.31
sor-2-84	63.00	63.80	0.80	401365	12	-0.5	0.05	1.93	2.74
sor-2-84	65.75	66.35	0.60	401366	27	-0.5	0.03	1.43	2.2
sor-3-84	3.00	3.80	0.80	399633	10	-0.5	0.09	1.86	2.41
sor-3-84	7.60	8.20	0.60	399634	12	1.2	0.06	2.16	2.7
sor-3-84	8.60	9.40	0.80	399635	7	-0.5	0.06	1.4	1.85
sor-3-84	10.10	10.70	0.60	399636	9	-0.5	0.03	2.11	2.8
sor-3-84	11.70	12.20	0.50	399637	12	-0.5	0.03	3.13	3.54
sor-3-84	4.90	5.50	0.60	399638	10	-0.5	0.09	1.89	2.51
sor-3-84	15.90	16.30	0.40	399639	13	-0.5	0.02	3.28	3.71
sor-3-84	17.20	18.20	1.00	399640	11	-0.5	0.06	2.32	2.59
sor-3-84	24.80	25.35	0.55	399641	10	-0.5	0.05	2.21	2.96
sor-3-84	36.05	36.80	0.75	399642	5	-0.5	0.07	1.87	2.14
sor-3-84	37.15	37.65	0.50	399643	8	-0.5	0.06	2.34	2.63
sor-3-84	39.15	39.75	0.60	399644	10	-0.5	0.06	2	2.29
sor-4-84	7.45	8.10	0.65	399611	13	-0.5	0.05	0.88	1.1
sor-4-84	14.80	15.80	1.00	399612	11	-0.5	0.03	2.14	2.83
sor-4-84	23.80	24.15	0.35	399613	19	-0.5	0.06	1.74	2.94
sor-4-84	26.30	26.65	0.35	399614	12	-0.5	0.09	2.09	2.76
sor-4-84	40.70	41.70	1.00	399615	25	1.3	0.02	3.16	3.41
sor-4-84	41.70	42.70	1.00	399616	19	-0.5	0.02	2.65	3.38
sor-4-84	42.70	43.30	0.60	399617	18	-0.5	0.02	3.12	4.23
sor-4-84	58.60	59.30	0.70	399618	8	-0.5	0.03	1.55	2.13
sor-4-84	64.85	65.35	0.50	399619	11	-0.5	0.03	1.85	2.67
sor-4-84	68.05	68.70	0.65	399620	13	-0.5	0.04	1.66	2.36

HOLE-ID	FROM	TO	LENGTH	SAMPLE-ID	Au FA301 (ppb)	Be by ICP70 (ppm)	Na by ICP70 (%)	Mg by ICP70 (%)	Al by ICP70 (%)
sor-4-84	74.10	74.95	0.85	399621	20	-0.5	0.03	2.25	2.88
sor-5-84	28.00	29.00	1.00	401374	15	1.5	0.03	1.55	1.85
sor-5-84	44.30	45.00	0.70	401375	10	-0.5	0.03	1.98	2.91
sor-5-84	46.70	47.10	0.40	401376	12	0.9	0.03	3	2.95
sor-5-84	48.85	49.70	0.85	401377	8	-0.5	0.03	2.49	3.39
sor-5-84	58.15	59.00	0.85	401378	8	-0.5	0.07	1.34	1.76
sor-5-84	98.00	99.00	1.00	401379	10	-0.5	0.07	2.14	2.57
sor-5-84	99.80	100.50	0.70	401380	10	-0.5	0.03	2.07	2.59
sor-5-84	110.00	111.00	1.00	401381	9	-0.5	0.07	1.77	2.26
sor-5-84	111.00	112.00	1.00	401382	8	-0.5	0.09	1.34	1.78
sor-5-84	112.00	113.00	1.00	401383	18	1.3	0.07	1.61	1.79
sor-5-84	113.00	114.00	1.00	401384	28	-0.5	0.06	1.56	1.59
sor-5-84	121.00	122.00	1.00	401385	7	-0.5	0.05	2.42	2.96
sor-5-84	142.40	143.40	1.00	401386	8	-0.5	0.03	2.14	2.54
sor-5-84	136.00	137.00	1.00	401387	8	-0.5	0.03	2.56	3.25
sor-5-84	140.00	141.00	1.00	401388	31	-0.5	0.03	2.1	2.91
sor-6-84	20.00	20.65	0.65	399601	6	-0.5	0.03	2.68	3.34
sor-6-84	35.20	35.90	0.70	399602	14	-0.5	0.05	2.35	2.99
sor-6-84	38.35	38.90	0.55	399603	10	-0.5	0.05	1.16	1.38
sor-6-84	42.10	43.00	0.90	399604	21	-0.5	0.07	1.7	2.26
sor-6-84	44.00	44.40	0.40	399605	10	-0.5	0.03	1.32	2.06
sor-6-84	47.40	48.10	0.70	399606	13	-0.5	0.04	2.07	2.81
sor-6-84	55.00	55.70	0.70	399607	9	-0.5	0.05	2.4	2.98
sor-6-84	61.90	62.40	0.50	399608	12	-0.5	0.08	0.97	1.5
sor-6-84	63.20	63.90	0.70	399609	11	-0.5	0.04	1.74	2.35
sor-6-84	82.80	83.45	0.65	399610	13	-0.5	0.06	2.3	2.82
sor-7-84	40.00	41.00	1.00	399645	17	-0.5	0.03	2.42	3.41
sor-7-84	41.50	42.30	0.80	399646	9	-0.5	0.04	1.7	2.61
sor-8-84	27.00	28.00	1.00	399622	16	-0.5	0.03	2.38	3.17
sor-8-84	28.00	28.50	0.50	399623	16	1.8	0.06	1.8	2.48
sor-8-84	44.00	44.70	0.70	399624	17	-0.5	0.02	2.38	3.35
sor-8-84	46.25	47.00	0.75	399625	14	-0.5	0.02	2.1	3.17
sor-8-84	57.40	58.00	0.60	399626	17	-0.5	0.02	2.83	3.72
sor-8-84	18.90	19.40	0.50	399627	15	-0.5	0.03	1.88	2.51
sor-8-84	50.00	51.00	1.00	399628	11	-0.5	0.03	2.58	3.09

Appendix 3b

HOLE-ID	FROM	TO	LENGTH	SAMPLE-ID	Au FA301 (ppb)	Be by ICP70 (ppm)	Na by ICP70 (%)	Mg by ICP70 (%)	Al by ICP70 (%)
sor-8-84	61.10	61.70	0.60	399629	14	-0.5	0.03	2.03	2.56
sor-8-84	64.00	64.80	0.80	399630	15	-0.5	0.03	1.5	2.44
sor-8-84	76.10	76.80	0.70	399631	10	-0.5	0.03	2.53	3.55
sor-8-84	87.70	88.00	0.30	399632	7	-0.5	0.03	2.14	2.53
sor-9-84	9.60	10.20	0.60	399647	204	-0.5	0.02	2.08	3.5
sor-9-84	11.30	12.10	0.80	399648	284	-0.5	0.02	1.41	2.41
sor-9-84	12.10	12.60	0.50	399649	504	-0.5	0.02	1.39	2.32
sor-9-84	12.60	13.10	0.50	399650	2020	-0.5	0.02	1.16	1.87
sor-9-84	16.10	17.10	1.00	401351	22	-0.5	0.02	2.54	3.99
sor-9-84	34.80	35.30	0.50	401352	13	-0.5	0.02	1.31	1.8
sor-9-84	40.10	41.10	1.00	401353	7	0.8	0.02	2.98	3.99
sor-9-84	45.55	46.00	0.45	401354	7	0.5	0.02	2.38	3.64
sor-9-84	44.70	45.10	0.40	401355	6	-0.5	0.02	2	2.9
sor-9-84	50.90	51.30	0.40	401356	7	-0.5	0.03	2.01	2.75
sor-10-84	5.65	6.00	0.35	401357	33	0.7	0.07	2.28	2.14
sor-10-84	45.25	46.00	0.75	401358	6	-0.5	0.03	2.24	2.04
sor-10-84	64.00	64.75	0.75	401359	9	-0.5	0.03	1.85	2.6
sor-10-84	52.00	52.50	0.50	401360	7	-0.5	0.03	2.97	3.57

Appendix 3b

SAMPLE-ID	P by ICP70 (%)	K by ICP70 (%)	Ca by ICP70 (%)	Sc by ICP70 (ppm)	Ti by ICP70 (%)	V by ICP70 (ppm)	Cr by ICP70 (ppm)
401367	0.07	0.02	3.73	3.4	0.03	137	89
401368	0.07	0.04	4.33	4.5	0.03	145	87
401369	0.08	0.04	4.26	16	0.03	270	61
401370	0.07	0.06	6.25	15.2	0.03	193	52
401371	0.08	0.08	5.27	15.1	0.02	204	55
401372	0.08	0.02	3.38	5.4	0.03	96	70
401373	0.07	0.02	1.95	7.6	0.04	105	92
401361	0.06	0.11	4.22	7.3	0.05	109	77
401362	0.07	0.65	4.98	12.4	0.06	138	86
401363	0.06	0.36	2.87	10.4	0.04	149	76
401364	0.06	0.11	3.61	9.4	0.01	108	73
401365	0.07	0.1	5.41	11.9	0.06	222	86
401366	0.07	0.02	5.48	4.3	0.03	145	76
399633	0.07	0.24	3.07	6.8	0.06	111	99
399634	0.06	0.02	2.29	5.5	0.03	99	92
399635	0.05	0.02	4.77	4.5	0.03	80	103
399636	0.05	0.23	5.3	3.3	0.05	153	138
399637	0.06	0.04	3.28	4.3	0.03	151	136
399638	0.07	0.17	3.38	6	0.05	109	98
399639	0.06	0.02	3.69	2.6	0.04	140	146
399640	0.07	0.02	2.47	4.8	0.04	100	114
399641	0.06	0.07	3.08	6.7	0.05	158	108
399642	0.06	0.02	2.72	4.2	0.04	66	102
399643	0.05	0.02	1.99	3.7	0.05	73	98
399644	0.05	0.02	2.54	2.9	0.04	66	119
399611	0.05	0.01	5.67	2.5	0.03	50	77
399612	0.08	-0.01	5.19	5.2	0.03	126	56
399613	0.09	0.37	1.04	7.5	0.04	148	79
399614	0.07	0.38	3.1	7.6	0.06	124	73
399615	0.04	0.03	4.83	7.7	0.04	121	99
399616	0.05	0.07	5.67	13.9	0.03	152	105
399617	0.06	0.01	3.96	12.8	0.03	204	124
399618	0.07	0.1	8.15	13.5	0.03	178	73
399619	0.08	0.02	4.32	9.7	0.03	212	83
399620	0.08	0.04	3.81	4.1	0.02	125	41

Appendix 3b

SAMPLE-ID	P by ICP70 (%)	K by ICP70 (%)	Ca by ICP70 (%)	Sc by ICP70 (ppm)	Ti by ICP70 (%)	V by ICP70 (ppm)	Cr by ICP70 (ppm)
399621	0.07	0.02	3.72	7.5	0.03	197	77
401374	0.07	0.05	5.49	9	0.02	116	97
401375	0.07	0.02	5.83	12.4	0.03	228	85
401376	0.18	0.82	6.1	9.4	0.1	273	103
401377	0.06	0.17	5.78	6.1	0.04	195	63
401378	0.08	0.02	3.04	5	0.03	91	78
401379	0.09	0.22	3.77	6.3	0.06	112	157
401380	0.05	0.16	5.01	5.5	0.04	134	199
401381	0.06	0.06	2.78	8.1	0.05	132	119
401382	0.06	0.05	2.18	6.4	0.05	92	120
401383	0.05	0.3	1.65	5.1	0.08	97	93
401384	0.06	0.09	2.2	4.1	0.06	71	83
401385	0.06	0.18	2.6	4.4	0.05	133	105
401386	0.07	0.03	5.15	5.5	0.04	155	137
401387	0.09	0.07	4.9	9.5	0.04	212	89
401388	0.07	0.13	4.47	11.1	0.04	182	97
399601	0.04	0.06	5.23	9.6	0.02	133	126
399602	0.07	0.02	3.66	3.3	0.03	137	90
399603	0.05	0.12	6.38	3.4	0.04	93	107
399604	0.07	0.08	3.18	5.5	0.04	138	88
399605	0.07	0.02	7.19	11.5	0.02	197	66
399606	0.09	0.12	2.69	4	0.03	125	40
399607	0.06	0.01	3.36	8.8	0.06	135	79
399608	0.07	0.36	4.12	8.3	0.07	134	51
399609	0.07	0.23	4.22	11.3	0.05	193	58
399610	0.09	0.22	2.78	8.2	0.05	161	95
399645	0.06	0.18	4.94	14.9	0.04	174	86
399646	0.09	0.1	4	9.8	0.03	148	47
399622	0.09	0.04	2.96	9.3	0.03	194	87
399623	0.07	0.01	3.51	6.4	0.04	144	68
399624	0.07	-0.01	4.77	10.4	0.02	193	112
399625	0.07	0.04	5.49	12.3	0.02	167	102
399626	0.06	-0.01	5.77	9	0.02	186	91
399627	0.07	0.03	6.68	18.3	0.03	163	98
399628	0.07	-0.01	3.94	2.8	0.03	117	94

Appendix 3b

SAMPLE-ID	P by ICP70 (%)	K by ICP70 (%)	Ca by ICP70 (%)	Sc by ICP70 (ppm)	Ti by ICP70 (%)	V by ICP70 (ppm)	Cr by ICP70 (ppm)
399629	0.07	0.08	5.35	6.4	0.04	190	99
399630	0.07	0.03	6.44	10.7	0.03	165	89
399631	0.08	0.48	4.61	11.4	0.07	257	52
399632	0.05	0.02	3.69	5.6	0.06	124	115
399647	0.07	0.09	2.78	14.1	0.02	175	75
399648	0.06	0.11	1.21	9.2	-0.01	120	95
399649	0.05	0.13	1.78	7.5	-0.01	109	96
399650	0.04	0.12	0.99	6.2	-0.01	102	114
401351	0.07	0.06	4.67	18.4	0.02	197	98
401352	0.04	0.03	6.33	8	0.02	106	165
401353	0.07	0.2	4.84	13.6	0.05	245	88
401354	0.07	0.48	4.91	9.9	0.07	226	71
401355	0.06	0.11	4.6	7.8	0.03	187	108
401356	0.06	0.02	4.88	18.6	0.03	222	91
401357	0.12	1.85	3.96	5.1	0.21	173	106
401358	0.06	0.43	7.58	3.7	0.04	75	79
401359	0.07	1.1	5.25	3.2	0.12	114	86
401360	0.06	0.48	4.68	12	0.06	168	137

SAMPLE-ID	Mn by ICP70 (ppm)	Fe by ICP70 (%)	Co by ICP70 (ppm)	Ni by ICP70 (ppm)	Cu by ICP70 (ppm)	Zn by ICP70 (ppm)	As by ICP70 (ppm)
401367	985	5.27	34	42	87.7	120	-3
401368	1320	4.57	41	42	105	108	-3
401369	1070	6.3	42	24	86.6	111	-3
401370	1480	5.37	33	21	67.3	75.3	-3
401371	1330	6.14	40	24	133	98.3	-3
401372	798	3.55	31	18	136	77	-3
401373	508	3.7	28	25	98.8	78.3	-3
401361	698	4.11	32	39	82.5	69.2	-3
401362	1520	6.02	39	32	101	1080	366
401363	1260	7.08	45	30	239	> 1000	3560
401364	1690	6.14	39	32	235	1690	157
401365	1120	5.93	41	41	129	174	-3
401366	1560	4.76	34	41	111	91.7	-3
399633	713	4.04	28	32	89.5	70.2	-3
399634	732	4.22	27	25	70.1	86.8	-3
399635	1130	3.28	32	64	104	57.7	-3
399636	1400	4.74	25	68	19	88.1	-3
399637	1190	4.96	31	68	24.9	103	-3
399638	806	4.32	30	35	105	74	-3
399639	1020	5.25	41	71	112	103	-3
399640	782	4.34	35	60	120	77.5	-3
399641	788	5.13	30	36	83.8	92.6	-3
399642	638	3.24	24	48	89.2	54.3	-3
399643	570	3.82	28	50	91.7	67.6	-3
399644	639	3.35	23	48	64.5	61.6	-3
399611	1020	2.48	18	21	54.2	37.5	-3
399612	1180	4.67	24	36	41.9	95	-3
399613	596	5.43	32	25	136	334	-3
399614	897	4.57	116	29	95.8	157	-3
399615	900	4.79	32	55	114	90.2	-3
399616	1070	5.67	34	51	109	85.1	-3
399617	838	6.85	38	52	74.1	108	-3
399618	2600	5.18	36	46	157	75.7	-3
399619	1200	6.09	33	24	153	74.2	-3
399620	900	4.7	34	19	146	93.9	-3

SAMPLE-ID	Mn by ICP70 (ppm)	Fe by ICP70 (%)	Co by ICP70 (ppm)	Ni by ICP70 (ppm)	Cu by ICP70 (ppm)	Zn by ICP70 (ppm)	As by ICP70 (ppm)
399621	1080	5.73	42	27	108	95.3	-3
401374	1270	4.34	31	41	627	56	-3
401375	1630	5.63	35	45	102	98.7	-3
401376	1590	5.87	34	61	233	115	-3
401377	1330	6.05	35	32	108	121	-3
401378	902	3.07	24	16	62.9	81.7	-3
401379	747	3.97	28	39	115	76.3	-3
401380	948	4.15	26	37	66.4	69.1	-3
401381	786	3.74	36	67	122	96.6	-3
401382	673	2.9	32	58	98.4	68.3	-3
401383	594	6.98	45	72	158	65.7	-3
401384	756	5.31	40	63	125	55	-3
401385	817	4.65	34	59	82.7	87.7	-3
401386	1100	4.02	31	49	104	84.7	-3
401387	1100	5.69	34	41	89.5	104	-3
401388	1110	7.34	45	59	211	169	-3
399601	914	5.29	31	65	94.7	116	-3
399602	876	5.28	28	34	75.2	96.2	-3
399603	1010	3.33	26	29	71.7	45.8	-3
399604	1060	4.85	45	44	123	88.5	12
399605	1890	5.59	38	40	96.3	79.8	20
399606	635	4.74	27	15	62.6	88.9	-3
399607	562	5.18	27	25	60.5	93	-3
399608	1080	3.79	24	17	151	74.5	-3
399609	1110	4.52	30	20	60.8	93.1	-3
399610	663	5.11	32	34	119	75.3	-3
399645	946	5.81	31	40	72.5	97.8	-3
399646	835	4.96	21	14	55.3	79.6	-3
399622	774	6.38	36	25	154	93.1	-3
399623	786	5.16	34	24	106	77.6	-3
399624	1060	5.97	36	47	88.1	103	-3
399625	1280	5.74	37	50	95.6	94.4	-3
399626	1240	6.26	42	65	84.4	110	-3
399627	1320	4.94	64	48	51.9	63.8	11
399628	1040	5.3	32	40	88	94.4	-3

Appendix 3b

SAMPLE-ID	Mn by ICP70 (ppm)	Fe by ICP70 (%)	Co by ICP70 (ppm)	Ni by ICP70 (ppm)	Cu by ICP70 (ppm)	Zn by ICP70 (ppm)	As by ICP70 (ppm)
399629	1290	5.26	37	49	108	95.4	-3
399630	1700	4.91	36	39	69.8	84.6	-3
399631	1140	6.07	40	22	93.7	129	-3
399632	568	3.65	34	43	68.3	81.9	-3
399647	1280	7.7	36	32	185	3300	-3
399648	863	6.36	32	29	147	1730	8370
399649	1030	6.12	32	27	132	2060	4810
399650	839	8.54	43	39	373	14750	20090
401351	1580	7.1	39	46	62.4	899	51
401352	1190	3.79	23	32	44.5	82.2	23
401353	1090	7.08	43	53	85.2	130	-3
401354	1270	6.79	35	27	46.8	121	-3
401355	1090	5.64	33	26	135	98.2	-3
401356	1340	5.59	31	19	85.1	82.4	-3
401357	976	4.87	48	69	97.7	320	5
401358	1890	4.87	21	29	113	80	-3
401359	958	4.74	45	49	168	96.4	-3
401360	1010	5.49	35	57	103	87.1	-3

SAMPLE-ID	Sr by ICP70 (ppm)	Y by ICP70 (ppm)	Zr by ICP70 (ppm)	Mo by ICP70 (ppm)	Ag by ICP70 (ppm)	Cd by ICP70 (ppm)
401367	24	3	1.2	-1	0.2	-1
401368	25.9	3.8	1	-1	0.2	-1
401369	36.1	9.7	1.6	-1	0.4	-1
401370	57.4	12.7	1.5	-1	0.4	-1
401371	42.7	14	0.6	-1	-0.2	-1
401372	22.9	3.6	0.5	-1	0.2	-1
401373	19.4	4.6	-0.5	-1	-0.2	-1
401361	58.9	4.1	1.4	-1	0.7	-1
401362	83.5	13.3	2.2	-1	2.4	3
401363	43	9.4	1.9	-1	7.5	88
401364	44.5	8.8	2	-1	3.8	7
401365	54.9	7.2	1.4	-1	0.4	1
401366	47.2	3.6	1.4	-1	0.6	-1
399633	36.8	5.4	1.7	-1	0.5	-1
399634	16.3	3.4	1	-1	0.4	-1
399635	40	2.4	1	1	-0.2	-1
399636	39.6	1.8	1.2	-1	0.3	-1
399637	17.8	3.1	0.6	-1	0.4	-1
399638	40.6	4.1	1.3	-1	0.3	-1
399639	27.5	2.8	1.2	-1	0.5	-1
399640	15.3	3.4	1.2	-1	0.2	-1
399641	24.9	6.1	1.4	-1	0.4	-1
399642	15.6	3	1.1	-1	-0.2	-1
399643	10.8	2.7	1	-1	-0.2	-1
399644	13.9	2.4	1	-1	0.4	-1
399611	66.6	2	-0.5	-1	0.5	-1
399612	58.6	4.2	1.1	-1	0.3	-1
399613	13.5	5.1	0.9	-1	0.9	-1
399614	40.1	4.2	1.3	-1	0.8	-1
399615	61	2.7	1.5	-1	1.7	-1
399616	77	15.8	1.2	-1	0.4	-1
399617	42.5	8.9	1.4	-1	0.7	-1
399618	75.3	12.2	1	-1	0.5	-1
399619	45.5	8.3	1.8	2	-0.2	-1
399620	32.4	4.9	1.9	-1	0.4	-1

Appendix 3b

SAMPLE-ID	Sr by ICP70 (ppm)	Y by ICP70 (ppm)	Zr by ICP70 (ppm)	Mo by ICP70 (ppm)	Ag by ICP70 (ppm)	Cd by ICP70 (ppm)
399621	29	4.1	1.6	-1	0.4	-1
401374	40.7	11	-0.5	-1	1.4	-1
401375	44.7	9.2	0.6	2	-0.2	-1
401376	86.2	7.9	1.1	-1	-0.2	-1
401377	57.2	3.6	-0.5	-1	0.2	-1
401378	15.4	4.3	0.7	-1	-0.2	-1
401379	36.8	4.8	0.9	-1	0.3	-1
401380	38.8	3.6	-0.5	-1	0.6	-1
401381	27.5	4.1	-0.5	-1	0.2	-1
401382	29	3.2	0.6	-1	-0.2	-1
401383	29	3.6	0.6	-1	0.4	-1
401384	33.6	3.6	0.6	-1	0.3	-1
401385	25.2	3	-0.5	-1	0.3	-1
401386	34.9	5.3	-0.5	-1	-0.2	-1
401387	40.9	9	-0.5	-1	0.6	-1
401388	38.3	10.2	-0.5	-1	-0.2	-1
399601	56.9	6.4	1.1	-1	0.8	-1
399602	36	2.7	1	-1	0.4	-1
399603	57.3	2.5	1.4	-1	0.5	-1
399604	25.9	3.4	0.8	-1	0.2	-1
399605	56.8	9	1.5	-1	0.3	-1
399606	27.5	4.1	1.8	-1	-0.2	-1
399607	33.8	6.4	0.8	-1	0.4	-1
399608	30.1	6.6	1.3	-1	0.3	-1
399609	35.3	6.8	0.9	-1	0.3	-1
399610	21.8	6.5	0.5	-1	0.2	-1
399645	53.6	10.1	1.2	-1	0.3	-1
399646	42.6	9.9	1.7	-1	0.3	-1
399622	25.2	6	1.4	-1	0.7	-1
399623	25.6	4.7	1.2	-1	0.2	-1
399624	37.5	7.8	1.4	-1	0.6	-1
399625	51.1	8.7	1	-1	0.6	-1
399626	37.7	6.4	1.5	-1	0.4	-1
399627	67.4	14.2	1.1	-1	0.6	-1
399628	29.7	2.8	1.5	-1	0.3	-1

Appendix 3b

SAMPLE-ID	Sr by ICP70 (ppm)	Y by ICP70 (ppm)	Zr by ICP70 (ppm)	Mo by ICP70 (ppm)	Ag by ICP70 (ppm)	Cd by ICP70 (ppm)
399629	40.3	4.8	0.9	-1	0.4	-1
399630	50.5	9.6	1.6	2	-0.2	-1
399631	35.2	6.4	1.2	-1	0.3	-1
399632	26.4	3.7	0.9	-1	0.5	-1
399647	31	13	1.8	4	2.6	22
399648	15.1	11.3	1.5	-1	4.4	10
399649	23	8.3	1.5	-1	5.3	12
399650	12	6.9	2.7	-1	10.9	95
401351	64.5	16.5	1.8	-1	1.8	3
401352	74.6	6.8	1.2	-1	-0.2	-1
401353	79.4	9.9	2.5	-1	0.6	-1
401354	59	6.3	1.9	-1	0.3	-1
401355	52	5.8	1.6	-1	0.5	-1
401356	60	12.6	1.2	-1	0.2	-1
401357	128	10.1	4.8	7	1.4	-1
401358	68.7	6.6	1.7	-1	0.7	-1
401359	43.8	2.9	1.2	1	0.6	-1
401360	52.4	9.8	0.9	-1	0.4	-1

Appendix 3b

SAMPLE-ID	Sn by ICP70 (ppm)	Sb by ICP70 (ppm)	Ba by ICP70 (ppm)	La by ICP70 (ppm)	W by ICP70 (ppm)	Pb by ICP70 (ppm)
401367	-10	-5	4	-0.5	-10	2
401368	-10	-5	21	-0.5	-10	3
401369	-10	-5	18	-0.5	-10	4
401370	-10	-5	32	0.8	-10	6
401371	-10	-5	47	-0.5	-10	7
401372	-10	-5	3	-0.5	-10	-2
401373	-10	-5	4	-0.5	-10	3
401361	-10	-5	59	-0.5	-10	5
401362	-10	-5	37	3.3	-10	27
401363	-10	-5	24	2.4	-10	32
401364	-10	-5	12	1	-10	25
401365	-10	-5	51	-0.5	-10	6
401366	-10	-5	13	-0.5	-10	3
399633	-10	-5	121	1	-10	5
399634	-10	-5	7	-0.5	-10	2
399635	-10	-5	9	-0.5	-10	3
399636	-10	-5	142	-0.5	-10	-2
399637	-10	-5	23	-0.5	-10	3
399638	-10	-5	85	0.9	-10	-2
399639	-10	-5	11	-0.5	-10	4
399640	-10	-5	12	-0.5	-10	-2
399641	-10	-5	30	-0.5	-10	4
399642	-10	-5	4	-0.5	-10	-2
399643	-10	-5	3	-0.5	-10	3
399644	-10	-5	5	-0.5	-10	-2
399611	-10	-5	3	-0.5	-10	4
399612	-10	-5	4	6.1	-10	4
399613	-10	-5	98	2.3	-10	10
399614	-10	-5	67	-0.5	-10	7
399615	-10	-5	4	-0.5	-10	10
399616	-10	-5	20	2.4	-10	9
399617	-10	-5	1	-0.5	-10	6
399618	-10	-5	45	1.1	-10	7
399619	-10	-5	9	-0.5	-10	6
399620	-10	-5	23	2.3	-10	6

Appendix 3b

SAMPLE-ID	Sn by ICP70 (ppm)	Sb by ICP70 (ppm)	Ba by ICP70 (ppm)	La by ICP70 (ppm)	W by ICP70 (ppm)	Pb by ICP70 (ppm)
399621	-10	-5	6	-0.5	-10	4
401374	-10	-5	19	-0.5	-10	8
401375	-10	-5	13	-0.5	-10	4
401376	-10	-5	235	1.9	-10	5
401377	-10	-5	75	-0.5	-10	6
401378	-10	-5	5	-0.5	-10	2
401379	-10	-5	159	-0.5	-10	-2
401380	-10	-5	97	-0.5	-10	3
401381	-10	-5	31	-0.5	-10	-2
401382	-10	-5	21	-0.5	-10	-2
401383	-10	-5	128	-0.5	-10	5
401384	-10	-5	30	-0.5	-10	5
401385	-10	-5	82	-0.5	-10	4
401386	-10	-5	14	-0.5	-10	5
401387	-10	-5	24	-0.5	266	3
401388	-10	-5	69	-0.5	-10	6
399601	-10	-5	17	-0.5	-10	46
399602	-10	-5	3	-0.5	-10	16
399603	-10	-5	40	-0.5	-10	8
399604	-10	-5	18	-0.5	-10	6
399605	-10	-5	5	-0.5	-10	5
399606	-10	-5	28	3.2	-10	2
399607	-10	-5	3	-0.5	-10	-2
399608	-10	-5	268	0.7	-10	3
399609	-10	-5	123	-0.5	-10	-2
399610	-10	-5	64	-0.5	-10	-2
399645	-10	-5	45	2.9	-10	5
399646	-10	-5	29	4.4	-10	4
399622	-10	-5	7	-0.5	-10	8
399623	-10	-5	2	-0.5	-10	3
399624	-10	-5	-1	-0.5	-10	6
399625	-10	-5	25	-0.5	-10	3
399626	-10	-5	1	-0.5	-10	2
399627	-10	-5	12	3.2	-10	3
399628	-10	-5	1	-0.5	-10	3

Appendix 3b

SAMPLE-ID	Sn by ICP70 (ppm)	Sb by ICP70 (ppm)	Ba by ICP70 (ppm)	La by ICP70 (ppm)	W by ICP70 (ppm)	Pb by ICP70 (ppm)
399629	-10	-5	29	-0.5	-10	3
399630	-10	-5	16	-0.5	-10	3
399631	-10	-5	167	-0.5	-10	3
399632	-10	-5	6	-0.5	-10	-2
399647	-10	-5	12	1.8	-10	12
399648	-10	-5	10	3.9	-10	19
399649	-10	-5	11	2.1	-10	18
399650	-10	-5	10	1.6	-10	26
401351	-10	-5	7	5.3	-10	10
401352	-10	-5	14	-0.5	-10	-2
401353	-10	-5	52	-0.5	-10	-2
401354	-10	-5	133	-0.5	-10	6
401355	-10	-5	29	0.5	-10	4
401356	-10	-5	10	1.5	-10	4
401357	-10	-5	661	13.6	-10	5
401358	-10	-5	94	1.9	-10	7
401359	-10	-5	204	-0.5	-10	4
401360	-10	-5	110	-0.5	-10	5

SAMPLE ID	Bi by ICP70 (ppm)	Li by ICP70 (ppm)
401367	5	13
401368	7	7
401369	7	10
401370	-5	8
401371	7	11
401372	-5	11
401373	-5	9
401361	-5	11
401362	-5	17
401363	-5	14
401364	7	9
401365	-5	9
401366	9	7
399633	-5	11
399634	7	11
399635	-5	7
399636	-5	11
399637	6	11
399638	-5	8
399639	7	9
399640	6	9
399641	-5	13
399642	-5	8
399643	-5	9
399644	-5	8
399611	-5	7
399612	-5	12
399613	-5	13
399614	-5	13
399615	6	17
399616	-5	18
399617	7	22
399618	-5	8
399619	-5	9
399620	8	10

SAMPLE ID	Bjiby ICP70 (ppm)	Lilby ICP70 (ppm)
399621	9	12
401374	-5	10
401375	5	10
401376	-5	17
401377	-5	11
401378	-5	6
401379	-5	9
401380	-5	8
401381	-5	11
401382	-5	9
401383	-5	10
401384	-5	8
401385	-5	12
401386	-5	9
401387	-5	9
401388	-5	9
399601	5	15
399602	-5	13
399603	-5	7
399604	-5	9
399605	-5	8
399606	6	12
399607	-5	14
399608	-5	10
399609	-5	11
399610	6	12
399645	-5	14
399646	8	10
399622	10	17
399623	5	15
399624	6	17
399625	-5	9
399626	9	13
399627	5	12
399628	-5	14

SAMPLE ID	Bi by ICP70 (ppm)	Li by ICP70 (ppm)
399629	5	11
399630	-5	9
399631	-5	16
399632	-5	11
399647	6	15
399648	-5	9
399649	6	9
399650	8	9
401351	11	21
401352	7	9
401353	7	16
401354	7	15
401355	11	9
401356	9	7
401357	-5	18
401358	-5	11
401359	-5	17
401360	-5	23

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CERTIFICATE OF ANALYSIS

Work Order: 063674

To: Crew Developement
Attn: Denis Schlatter
O.H. Bangsvei 54-58
N-1363
HOVIK,
NORWAY

Date : 15/06/01

Copy 1 to :

P.O. No.	:	
Project No.	:	Sordalshogda
No. of Samples	:	88 Core
Date Submitted	:	31/05/01
Report Comprises	:	Cover Sheet plus Pages 1 to 16

Distribution of unused material:
Pulps: STORE
Rejects: STORE

Certified By :

Dr. Hugh de Souza, General Manager
XRAL Laboratories

ISO 9002 REGISTERED

Report Footer:
L.N.R. = Listed not received
n.a. = Not applicable
*INF = Composition of this sample makes detection impossible by this method
I.S. = Insufficient Sample
– = No result
M after a result denotes ppb to ppm conversion, % denotes ppm to % conversion

XRAL Laboratories
A Division of SGS Canada Inc.

Work Order: 063674 **Date:** 15/06/01 **FINAL**

Element.	Au
Method.	FA301
Det.Lim.	1
Units.	ppb
399601	6
399602	14
399603	10
399604	21
399605	10
399606	13
399607	9
399608	12
399609	11
399610	13
399611	13
399612	11
399613	19
399614	12
399615	25
399616	19
399617	18
399618	8
399619	11
399620	13
399621	20
399622	16
399623	16
399624	17
399625	14
399626	17
399627	15
399628	11
399629	14
399630	15

Element.	Au
Method.	FA301
Det.Lim.	1
Units.	ppb
399631	10
399632	7
399633	10
399634	12
399635	7
399636	9
399637	12
399638	10
399639	13
399640	11
399641	10
399642	5
399643	8
399644	10
399645	17
399646	9
399647	204
399648	284
399649	504
399650	2020
401351	22
401352	13
401353	7
401354	7
401355	6
401356	7
401357	33
401358	6
401359	9
401360	7

Element.	Au
Method.	FA301
Det.Lim.	1
Units.	ppb
401361	7
401362	103
401363	775
401364	154
401365	12
401366	27
401367	10
401368	7
401369	9
401370	23
401371	7
401372	8
401373	7
401374	15
401375	10
401376	12
401377	8
401378	8
401379	10
401380	10
401381	9
401382	8
401383	18
401384	28
401385	7
401386	8
401387	8
401388	31
*Dup 399601	8
*Dup 399613	14

Element.	Au
Method.	FA301
Det.Lim.	1
Units.	ppb
*Dup 399625	11
*Dup 399637	12
*Dup 399649	522
*Dup 401361	10
*Dup 401373	9
*Dup 401385	9

Element.	Be	Na	Mg	Al	P	K	Ca	Sc	Ti	V	Cr	Mn	Fe	Co	Ni	Cu
Method.	ICP70	ICP70	ICP70	ICP70	ICP70	ICP70	ICP70	ICP70	ICP70	ICP70	ICP70	ICP70	ICP70	ICP70	ICP70	ICP70
Det.Lim.	0.5	0.01	0.01	0.01	0.01	0.01	0.01	0.5	0.01	2	1	2	0.01	1	1	0.5
Units.	ppm	%	%	%	%	%	%	ppm	%	ppm	ppm	ppm	%	ppm	ppm	ppm
399601	<0.5	0.03	2.68	3.34	0.04	0.06	5.23	9.6	0.02	133	126	914	5.29	31	65	94.7
399602	<0.5	0.05	2.35	2.99	0.07	0.02	3.66	3.3	0.03	137	90	876	5.28	28	34	75.2
399603	<0.5	0.05	1.16	1.38	0.05	0.12	6.38	3.4	0.04	93	107	1010	3.33	26	29	71.7
399604	<0.5	0.07	1.70	2.26	0.07	0.08	3.18	5.5	0.04	138	88	1060	4.85	45	44	123
399605	<0.5	0.03	1.32	2.06	0.07	0.02	7.19	11.5	0.02	197	66	1890	5.59	38	40	96.3
399606	<0.5	0.04	2.07	2.81	0.09	0.12	2.69	4.0	0.03	125	40	635	4.74	27	15	62.6
399607	<0.5	0.05	2.40	2.98	0.06	0.01	3.36	8.8	0.06	135	79	562	5.18	27	25	60.5
399608	<0.5	0.08	0.97	1.50	0.07	0.36	4.12	8.3	0.07	134	51	1080	3.79	24	17	151
399609	<0.5	0.04	1.74	2.35	0.07	0.23	4.22	11.3	0.05	193	58	1110	4.52	30	20	60.8
399610	<0.5	0.06	2.30	2.82	0.09	0.22	2.78	8.2	0.05	161	95	663	5.11	32	34	119
399611	<0.5	0.05	0.88	1.10	0.05	0.01	5.67	2.5	0.03	50	77	1020	2.48	18	21	54.2
399612	<0.5	0.03	2.14	2.83	0.08	<0.01	5.19	5.2	0.03	126	56	1180	4.67	24	36	41.9
399613	<0.5	0.06	1.74	2.94	0.09	0.37	1.04	7.5	0.04	148	79	596	5.43	32	25	136
399614	<0.5	0.09	2.09	2.76	0.07	0.38	3.10	7.6	0.06	124	73	897	4.57	116	29	95.8
399615	1.3	0.02	3.16	3.41	0.04	0.03	4.83	7.7	0.04	121	99	900	4.79	32	55	114
399616	<0.5	0.02	2.65	3.38	0.05	0.07	5.67	13.9	0.03	152	105	1070	5.67	34	51	109
399617	<0.5	0.02	3.12	4.23	0.06	0.01	3.96	12.8	0.03	204	124	838	6.85	38	52	74.1
399618	<0.5	0.03	1.55	2.13	0.07	0.10	8.15	13.5	0.03	178	73	2600	5.18	36	46	157
399619	<0.5	0.03	1.85	2.67	0.08	0.02	4.32	9.7	0.03	212	83	1200	6.09	33	24	153
399620	<0.5	0.04	1.66	2.36	0.08	0.04	3.81	4.1	0.02	125	41	900	4.70	34	19	146
399621	<0.5	0.03	2.25	2.88	0.07	0.02	3.72	7.5	0.03	197	77	1080	5.73	42	27	108
399622	<0.5	0.03	2.38	3.17	0.09	0.04	2.96	9.3	0.03	194	87	774	6.38	36	25	154
399623	1.8	0.06	1.80	2.48	0.07	0.01	3.51	6.4	0.04	144	68	786	5.16	34	24	106
399624	<0.5	0.02	2.38	3.35	0.07	<0.01	4.77	10.4	0.02	193	112	1060	5.97	36	47	88.1
399625	<0.5	0.02	2.10	3.17	0.07	0.04	5.49	12.3	0.02	167	102	1280	5.74	37	50	95.6
399626	<0.5	0.02	2.83	3.72	0.06	<0.01	5.77	9.0	0.02	186	91	1240	6.26	42	65	84.4
399627	<0.5	0.03	1.88	2.51	0.07	0.03	6.68	18.3	0.03	163	98	1320	4.94	64	48	51.9
399628	<0.5	0.03	2.58	3.09	0.07	<0.01	3.94	2.8	0.03	117	94	1040	5.30	32	40	88.0
399629	<0.5	0.03	2.03	2.56	0.07	0.08	5.35	6.4	0.04	190	99	1290	5.26	37	49	108
399630	<0.5	0.03	1.50	2.44	0.07	0.03	6.44	10.7	0.03	165	89	1700	4.91	36	39	69.8

Element.	Be	Na	Mg	Al	P	K	Ca	Sc	Ti	V	Cr	Mn	Fe	Co	Ni	Cu
Method.	ICP70	ICP70	ICP70	ICP70	ICP70	ICP70	ICP70	ICP70	ICP70	ICP70	ICP70	ICP70	ICP70	ICP70	ICP70	ICP70
Det.Lim.	0.5	0.01	0.01	0.01	0.01	0.01	0.01	0.5	0.01	2	1	2	0.01	1	1	0.5
Units.	ppm	%	%	%	%	%	%	ppm	%	ppm	ppm	ppm	%	ppm	ppm	ppm
399631	<0.5	0.03	2.53	3.55	0.08	0.48	4.61	11.4	0.07	257	52	1140	6.07	40	22	93.7
399632	<0.5	0.03	2.14	2.53	0.05	0.02	3.69	5.6	0.06	124	115	568	3.65	34	43	68.3
399633	<0.5	0.09	1.86	2.41	0.07	0.24	3.07	6.8	0.06	111	99	713	4.04	28	32	89.5
399634	1.2	0.06	2.16	2.70	0.06	0.02	2.29	5.5	0.03	99	92	732	4.22	27	25	70.1
399635	<0.5	0.06	1.40	1.85	0.05	0.02	4.77	4.5	0.03	80	103	1130	3.28	32	64	104
399636	<0.5	0.03	2.11	2.80	0.05	0.23	5.30	3.3	0.05	153	138	1400	4.74	25	68	19.0
399637	<0.5	0.03	3.13	3.54	0.06	0.04	3.28	4.3	0.03	151	136	1190	4.96	31	68	24.9
399638	<0.5	0.09	1.89	2.51	0.07	0.17	3.38	6.0	0.05	109	98	806	4.32	30	35	105
399639	<0.5	0.02	3.28	3.71	0.06	0.02	3.69	2.6	0.04	140	146	1020	5.25	41	71	112
399640	<0.5	0.06	2.32	2.59	0.07	0.02	2.47	4.8	0.04	100	114	782	4.34	35	60	120
399641	<0.5	0.05	2.21	2.96	0.06	0.07	3.08	6.7	0.05	158	108	788	5.13	30	36	83.8
399642	<0.5	0.07	1.87	2.14	0.06	0.02	2.72	4.2	0.04	66	102	638	3.24	24	48	89.2
399643	<0.5	0.06	2.34	2.63	0.05	0.02	1.99	3.7	0.05	73	98	570	3.82	28	50	91.7
399644	<0.5	0.06	2.00	2.29	0.05	0.02	2.54	2.9	0.04	66	119	639	3.35	23	48	64.5
399645	<0.5	0.03	2.42	3.41	0.06	0.18	4.94	14.9	0.04	174	86	946	5.81	31	40	72.5
399646	<0.5	0.04	1.70	2.61	0.09	0.10	4.00	9.8	0.03	148	47	835	4.96	21	14	55.3
*Blk BLANK	<0.5	0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.5	<0.01	<2	<1	<2	<0.01	<1	<1	<0.5
*Std NIST8606	2.1	0.03	0.43	1.18	0.16	0.11	7.14	3.0	0.07	17	18	4250	3.94	9	21	50.1
399647	<0.5	0.02	2.08	3.50	0.07	0.09	2.78	14.1	0.02	175	75	1280	7.70	36	32	185
399648	<0.5	0.02	1.41	2.41	0.06	0.11	1.21	9.2	<0.01	120	95	863	6.36	32	29	147
399649	<0.5	0.02	1.39	2.32	0.05	0.13	1.78	7.5	<0.01	109	96	1030	6.12	32	27	132
399650	<0.5	0.02	1.16	1.87	0.04	0.12	0.99	6.2	<0.01	102	114	839	8.54	43	39	373
401351	<0.5	0.02	2.54	3.99	0.07	0.06	4.67	18.4	0.02	197	98	1580	7.10	39	46	62.4
401352	<0.5	0.02	1.31	1.80	0.04	0.03	6.33	8.0	0.02	106	165	1190	3.79	23	32	44.5
401353	0.8	0.02	2.98	3.99	0.07	0.20	4.84	13.6	0.05	245	88	1090	7.08	43	53	85.2
401354	0.5	0.02	2.38	3.64	0.07	0.48	4.91	9.9	0.07	226	71	1270	6.79	35	27	46.8
401355	<0.5	0.02	2.00	2.90	0.06	0.11	4.60	7.8	0.03	187	108	1090	5.64	33	26	135
401356	<0.5	0.03	2.01	2.75	0.06	0.02	4.88	18.6	0.03	222	91	1340	5.59	31	19	85.1
401357	0.7	0.07	2.28	2.14	0.12	1.85	3.96	5.1	0.21	173	106	976	4.87	48	69	97.7
401358	<0.5	0.03	2.24	2.04	0.06	0.43	7.58	3.7	0.04	75	79	1890	4.87	21	29	113

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Element.	Be	Na	Mg	Al	P	K	Ca	Sc	Ti	V	Cr	Mn	Fe	Co	Ni	Cu
Method.	ICP70	ICP70	ICP70	ICP70	ICP70	ICP70	ICP70	ICP70	ICP70	ICP70	ICP70	ICP70	ICP70	ICP70	ICP70	ICP70
Det.Lim.	0.5	0.01	0.01	0.01	0.01	0.01	0.01	0.5	0.01	2	1	2	0.01	1	1	0.5
Units.	ppm	%	%	%	%	%	%	ppm	%	ppm	ppm	ppm	%	ppm	ppm	ppm
401359	<0.5	0.03	1.85	2.60	0.07	1.10	5.25	3.2	0.12	114	86	958	4.74	45	49	168
401360	<0.5	0.03	2.97	3.57	0.06	0.48	4.68	12.0	0.06	168	137	1010	5.49	35	57	103
401361	<0.5	0.08	1.80	2.41	0.06	0.11	4.22	7.3	0.05	109	77	698	4.11	32	39	82.5
401362	<0.5	0.02	2.10	3.07	0.07	0.65	4.98	12.4	0.06	138	86	1520	6.02	39	32	101
401363	<0.5	0.02	1.88	2.88	0.06	0.36	2.87	10.4	0.04	149	76	1260	7.08	45	30	239
401364	<0.5	0.02	2.05	2.31	0.06	0.11	3.61	9.4	0.01	108	73	1690	6.14	39	32	235
401365	<0.5	0.05	1.93	2.74	0.07	0.10	5.41	11.9	0.06	222	86	1120	5.93	41	41	129
401366	<0.5	0.03	1.43	2.20	0.07	0.02	5.48	4.3	0.03	145	76	1560	4.76	34	41	111
401367	<0.5	0.04	2.61	3.17	0.07	0.02	3.73	3.4	0.03	137	89	985	5.27	34	42	87.7
401368	<0.5	0.04	1.52	2.32	0.07	0.04	4.33	4.5	0.03	145	87	1320	4.57	41	42	105
401369	<0.5	0.03	2.47	3.59	0.08	0.04	4.26	16.0	0.03	270	61	1070	6.30	42	24	86.6
401370	<0.5	0.03	1.92	2.59	0.07	0.06	6.25	15.2	0.03	193	52	1480	5.37	33	21	67.3
401371	<0.5	0.02	2.19	3.25	0.08	0.08	5.27	15.1	0.02	204	55	1330	6.14	40	24	133
401372	<0.5	0.07	1.70	2.08	0.08	0.02	3.38	5.4	0.03	96	70	798	3.55	31	18	136
401373	<0.5	0.10	1.90	2.28	0.07	0.02	1.95	7.6	0.04	105	92	508	3.70	28	25	98.8
401374	1.5	0.03	1.55	1.85	0.07	0.05	5.49	9.0	0.02	116	97	1270	4.34	31	41	627
401375	<0.5	0.03	1.98	2.91	0.07	0.02	5.83	12.4	0.03	228	85	1630	5.63	35	45	102
401376	0.9	0.03	3.00	2.95	0.18	0.82	6.10	9.4	0.10	273	103	1590	5.87	34	61	233
401377	<0.5	0.03	2.49	3.39	0.06	0.17	5.78	6.1	0.04	195	63	1330	6.05	35	32	108
401378	<0.5	0.07	1.34	1.76	0.08	0.02	3.04	5.0	0.03	91	78	902	3.07	24	16	62.9
401379	<0.5	0.07	2.14	2.57	0.09	0.22	3.77	6.3	0.06	112	157	747	3.97	28	39	115
401380	<0.5	0.03	2.07	2.59	0.05	0.16	5.01	5.5	0.04	134	199	948	4.15	26	37	66.4
401381	<0.5	0.07	1.77	2.26	0.06	0.06	2.78	8.1	0.05	132	119	786	3.74	36	67	122
401382	<0.5	0.09	1.34	1.78	0.06	0.05	2.18	6.4	0.05	92	120	673	2.90	32	58	98.4
401383	1.3	0.07	1.61	1.79	0.05	0.30	1.65	5.1	0.08	97	93	594	6.98	45	72	158
401384	<0.5	0.06	1.56	1.59	0.06	0.09	2.20	4.1	0.06	71	83	756	5.31	40	63	125
401385	<0.5	0.05	2.42	2.96	0.06	0.18	2.60	4.4	0.05	133	105	817	4.65	34	59	82.7
401386	<0.5	0.03	2.14	2.54	0.07	0.03	5.15	5.5	0.04	155	137	1100	4.02	31	49	104
401387	<0.5	0.03	2.56	3.25	0.09	0.07	4.90	9.5	0.04	212	89	1100	5.69	34	41	89.5
401388	<0.5	0.03	2.10	2.91	0.07	0.13	4.47	11.1	0.04	182	97	1110	7.34	45	59	211

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Element.	Be	Na	Mg	Al	P	K	Ca	Sc	Ti	V	Cr	Mn	Fe	Co	Ni	Cu
Method.	ICP70	ICP70	ICP70	ICP70	ICP70	ICP70	ICP70	ICP70	ICP70	ICP70	ICP70	ICP70	ICP70	ICP70	ICP70	ICP70
Det.Lim.	0.5	0.01	0.01	0.01	0.01	0.01	0.01	0.5	0.01	2	1	2	0.01	1	1	0.5
Units.	ppm	%	%	%	%	%	%	ppm	%	ppm	ppm	ppm	%	ppm	ppm	ppm
*Dup 399601	<0.5	0.03	2.84	3.49	0.05	0.06	5.19	9.9	0.03	148	125	919	5.20	32	65	102
*Dup 399613	<0.5	0.07	1.85	3.10	0.09	0.37	1.06	8.2	0.05	166	77	635	5.44	33	24	133
*Dup 399625	<0.5	0.02	2.24	3.35	0.07	0.04	5.56	13.0	0.03	192	103	1320	5.85	37	51	95.9
*Dup 399637	<0.5	0.03	3.35	3.73	0.07	0.04	3.36	4.7	0.04	168	137	1240	5.03	31	70	26.5
*Blk BLANK	<0.5	0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.5	<0.01	<2	<1	<2	<0.01	<1	<1	<0.5
*Std XRAL01	<0.5	0.07	0.90	0.84	0.13	0.11	0.84	2.2	0.06	32	273	527	2.76	468	628	74.5
*Dup 399649	<0.5	0.02	1.42	2.33	0.05	0.12	1.77	7.4	<0.01	113	93	1040	5.92	33	27	139
*Dup 401361	<0.5	0.08	1.85	2.43	0.06	0.11	4.21	6.9	0.05	114	73	705	4.03	32	39	90.0
*Dup 401373	<0.5	0.10	1.92	2.30	0.06	0.02	1.98	7.4	0.04	106	92	517	3.68	28	24	101
*Dup 401385	<0.5	0.05	2.48	3.04	0.07	0.18	2.73	4.5	0.05	137	109	851	4.81	33	60	84.6
*Blk BLANK	<0.5	0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.5	<0.01	<2	<1	<2	<0.01	<1	<1	<0.5
*Std NIST8606	2.3	0.04	0.46	1.22	0.17	0.11	7.31	3.2	0.08	18	17	4410	3.99	9	22	45.1

Element.	Zn	As	Sr	Y	Zr	Mo	Ag	Cd	Sn	Sb	Ba	La	W	Pb	Bi	Li
Method.	ICP70	ICP70	ICP70	ICP70	ICP70	ICP70	ICP70	ICP70	ICP70	ICP70	ICP70	ICP70	ICP70	ICP70	ICP70	ICP70
Det.Lim.	0.5	3	0.5	0.5	0.5	1	0.2	1	10	5	1	0.5	10	2	5	1
Units.	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm
399601	116	<3	56.9	6.4	1.1	<1	0.8	<1	<10	<5	17	<0.5	<10	46	5	15
399602	96.2	<3	36.0	2.7	1.0	<1	0.4	<1	<10	<5	3	<0.5	<10	16	<5	13
399603	45.8	<3	57.3	2.5	1.4	<1	0.5	<1	<10	<5	40	<0.5	<10	8	<5	7
399604	88.5	12	25.9	3.4	0.8	<1	0.2	<1	<10	<5	18	<0.5	<10	6	<5	9
399605	79.8	20	56.8	9.0	1.5	<1	0.3	<1	<10	<5	5	<0.5	<10	5	<5	8
399606	88.9	<3	27.5	4.1	1.8	<1	<0.2	<1	<10	<5	28	3.2	<10	2	6	12
399607	93.0	<3	33.8	6.4	0.8	<1	0.4	<1	<10	<5	3	<0.5	<10	<2	<5	14
399608	74.5	<3	30.1	6.6	1.3	<1	0.3	<1	<10	<5	268	0.7	<10	3	<5	10
399609	93.1	<3	35.3	6.8	0.9	<1	0.3	<1	<10	<5	123	<0.5	<10	<2	<5	11
399610	75.3	<3	21.8	6.5	0.5	<1	0.2	<1	<10	<5	64	<0.5	<10	<2	6	12
399611	37.5	<3	66.6	2.0	<0.5	<1	0.5	<1	<10	<5	3	<0.5	<10	4	<5	7
399612	95.0	<3	58.6	4.2	1.1	<1	0.3	<1	<10	<5	4	6.1	<10	4	<5	12
399613	334	<3	13.5	5.1	0.9	<1	0.9	<1	<10	<5	98	2.3	<10	10	<5	13
399614	157	<3	40.1	4.2	1.3	<1	0.8	<1	<10	<5	67	<0.5	<10	7	<5	13
399615	90.2	<3	61.0	2.7	1.5	<1	1.7	<1	<10	<5	4	<0.5	<10	10	6	17
399616	85.1	<3	77.0	15.8	1.2	<1	0.4	<1	<10	<5	20	2.4	<10	9	<5	18
399617	108	<3	42.5	8.9	1.4	<1	0.7	<1	<10	<5	1	<0.5	<10	6	7	22
399618	75.7	<3	75.3	12.2	1.0	<1	0.5	<1	<10	<5	45	1.1	<10	7	<5	8
399619	74.2	<3	45.5	8.3	1.8	2	<0.2	<1	<10	<5	9	<0.5	<10	6	<5	9
399620	93.9	<3	32.4	4.9	1.9	<1	0.4	<1	<10	<5	23	2.3	<10	6	8	10
399621	95.3	<3	29.0	4.1	1.6	<1	0.4	<1	<10	<5	6	<0.5	<10	4	9	12
399622	93.1	<3	25.2	6.0	1.4	<1	0.7	<1	<10	<5	7	<0.5	<10	8	10	17
399623	77.6	<3	25.6	4.7	1.2	<1	0.2	<1	<10	<5	2	<0.5	<10	3	5	15
399624	103	<3	37.5	7.8	1.4	<1	0.6	<1	<10	<5	<1	<0.5	<10	6	6	17
399625	94.4	<3	51.1	8.7	1.0	<1	0.6	<1	<10	<5	25	<0.5	<10	3	<5	9
399626	110	<3	37.7	6.4	1.5	<1	0.4	<1	<10	<5	1	<0.5	<10	2	9	13
399627	63.8	11	67.4	14.2	1.1	<1	0.6	<1	<10	<5	12	3.2	<10	3	5	12
399628	94.4	<3	29.7	2.8	1.5	<1	0.3	<1	<10	<5	1	<0.5	<10	3	<5	14
399629	95.4	<3	40.3	4.8	0.9	<1	0.4	<1	<10	<5	29	<0.5	<10	3	5	11
399630	84.6	<3	50.5	9.6	1.6	2	<0.2	<1	<10	<5	16	<0.5	<10	3	<5	9

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Element.	Zn	As	Sr	Y	Zr	Mo	Ag	Cd	Sn	Sb	Ba	La	W	Pb	Bi	Li
Method.	ICP70	ICP70	ICP70	ICP70	ICP70	ICP70	ICP70	ICP70	ICP70	ICP70	ICP70	ICP70	ICP70	ICP70	ICP70	ICP70
Det.Lim.	0.5	3	0.5	0.5	0.5	1	0.2	1	10	5	1	0.5	10	2	5	1
Units.	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm
399631	129	<3	35.2	6.4	1.2	<1	0.3	<1	<10	<5	167	<0.5	<10	3	<5	16
399632	81.9	<3	26.4	3.7	0.9	<1	0.5	<1	<10	<5	6	<0.5	<10	<2	<5	11
399633	70.2	<3	36.8	5.4	1.7	<1	0.5	<1	<10	<5	121	1.0	<10	5	<5	11
399634	86.8	<3	16.3	3.4	1.0	<1	0.4	<1	<10	<5	7	<0.5	<10	2	7	11
399635	57.7	<3	40.0	2.4	1.0	1	<0.2	<1	<10	<5	9	<0.5	<10	3	<5	7
399636	88.1	<3	39.6	1.8	1.2	<1	0.3	<1	<10	<5	142	<0.5	<10	<2	<5	11
399637	103	<3	17.8	3.1	0.6	<1	0.4	<1	<10	<5	23	<0.5	<10	3	6	11
399638	74.0	<3	40.6	4.1	1.3	<1	0.3	<1	<10	<5	85	0.9	<10	<2	<5	8
399639	103	<3	27.5	2.8	1.2	<1	0.5	<1	<10	<5	11	<0.5	<10	4	7	9
399640	77.5	<3	15.3	3.4	1.2	<1	0.2	<1	<10	<5	12	<0.5	<10	<2	6	9
399641	92.6	<3	24.9	6.1	1.4	<1	0.4	<1	<10	<5	30	<0.5	<10	4	<5	13
399642	54.3	<3	15.6	3.0	1.1	<1	<0.2	<1	<10	<5	4	<0.5	<10	<2	<5	8
399643	67.6	<3	10.8	2.7	1.0	<1	<0.2	<1	<10	<5	3	<0.5	<10	3	<5	9
399644	61.6	<3	13.9	2.4	1.0	<1	0.4	<1	<10	<5	5	<0.5	<10	<2	<5	8
399645	97.8	<3	53.6	10.1	1.2	<1	0.3	<1	<10	<5	45	2.9	<10	5	<5	14
399646	79.6	<3	42.6	9.9	1.7	<1	0.3	<1	<10	<5	29	4.4	<10	4	8	10
*Blk BLANK	<0.5	<3	<0.5	<0.5	<0.5	<1	<0.2	<1	<10	<5	<1	<0.5	<10	<2	<5	2
*Std NIST8606	46.2	<3	5.5	14.1	16.8	1000	<0.2	<1	13	<5	12	23.7	601	20	<5	13
399647	3300	<3	31.0	13.0	1.8	4	2.6	22	<10	<5	12	1.8	<10	12	6	15
399648	1730	8370	15.1	11.3	1.5	<1	4.4	10	<10	<5	10	3.9	<10	19	<5	9
399649	2060	4810	23.0	8.3	1.5	<1	5.3	12	<10	<5	11	2.1	<10	18	6	9
399650	>10000	20090	12.0	6.9	2.7	<1	>10.0	95	<10	<5	10	1.6	<10	26	8	9
401351	899	51	64.5	16.5	1.8	<1	1.8	3	<10	<5	7	5.3	<10	10	11	21
401352	82.2	23	74.6	6.8	1.2	<1	<0.2	<1	<10	<5	14	<0.5	<10	<2	7	9
401353	130	<3	79.4	9.9	2.5	<1	0.6	<1	<10	<5	52	<0.5	<10	<2	7	16
401354	121	<3	59.0	6.3	1.9	<1	0.3	<1	<10	<5	133	<0.5	<10	6	7	15
401355	98.2	<3	52.0	5.8	1.6	<1	0.5	<1	<10	<5	29	0.5	<10	4	11	9
401356	82.4	<3	60.0	12.6	1.2	<1	0.2	<1	<10	<5	10	1.5	<10	4	9	7
401357	320	5	128	10.1	4.8	7	1.4	<1	<10	<5	661	13.6	<10	5	<5	18
401358	80.0	<3	68.7	6.6	1.7	<1	0.7	<1	<10	<5	94	1.9	<10	7	<5	11

Element.	Zn	As	Sr	Y	Zr	Mo	Ag	Cd	Sn	Sb	Ba	La	W	Pb	Bi	Li
Method.	ICP70	ICP70	ICP70	ICP70	ICP70	ICP70	ICP70	ICP70	ICP70	ICP70	ICP70	ICP70	ICP70	ICP70	ICP70	ICP70
Det.Lim.	0.5	3	0.5	0.5	0.5	1	0.2	1	10	5	1	0.5	10	2	5	1
Units.	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm
401359	96.4	<3	43.8	2.9	1.2	1	0.6	<1	<10	<5	204	<0.5	<10	4	<5	17
401360	87.1	<3	52.4	9.8	0.9	<1	0.4	<1	<10	<5	110	<0.5	<10	5	<5	23
401361	69.2	<3	58.9	4.1	1.4	<1	0.7	<1	<10	<5	59	<0.5	<10	5	<5	11
401362	1080	366	83.5	13.3	2.2	<1	2.4	3	<10	<5	37	3.3	<10	27	<5	17
401363	>10000	3560	43.0	9.4	1.9	<1	7.5	88	<10	<5	24	2.4	<10	32	<5	14
401364	1690	157	44.5	8.8	2.0	<1	3.8	7	<10	<5	12	1.0	<10	25	7	9
401365	174	<3	54.9	7.2	1.4	<1	0.4	1	<10	<5	51	<0.5	<10	6	<5	9
401366	91.7	<3	47.2	3.6	1.4	<1	0.6	<1	<10	<5	13	<0.5	<10	3	9	7
401367	120	<3	24.0	3.0	1.2	<1	0.2	<1	<10	<5	4	<0.5	<10	2	5	13
401368	108	<3	25.9	3.8	1.0	<1	0.2	<1	<10	<5	21	<0.5	<10	3	7	7
401369	111	<3	36.1	9.7	1.6	<1	0.4	<1	<10	<5	18	<0.5	<10	4	7	10
401370	75.3	<3	57.4	12.7	1.5	<1	0.4	<1	<10	<5	32	0.8	<10	6	<5	8
401371	98.3	<3	42.7	14.0	0.6	<1	<0.2	<1	<10	<5	47	<0.5	<10	7	7	11
401372	77.0	<3	22.9	3.6	0.5	<1	0.2	<1	<10	<5	3	<0.5	<10	<2	<5	11
401373	78.3	<3	19.4	4.6	<0.5	<1	<0.2	<1	<10	<5	4	<0.5	<10	3	<5	9
401374	56.0	<3	40.7	11.0	<0.5	<1	1.4	<1	<10	<5	19	<0.5	<10	8	<5	10
401375	98.7	<3	44.7	9.2	0.6	2	<0.2	<1	<10	<5	13	<0.5	<10	4	5	10
401376	115	<3	86.2	7.9	1.1	<1	<0.2	<1	<10	<5	235	1.9	<10	5	<5	17
401377	121	<3	57.2	3.6	<0.5	<1	0.2	<1	<10	<5	75	<0.5	<10	6	<5	11
401378	81.7	<3	15.4	4.3	0.7	<1	<0.2	<1	<10	<5	5	<0.5	<10	2	<5	6
401379	76.3	<3	36.8	4.8	0.9	<1	0.3	<1	<10	<5	159	<0.5	<10	<2	<5	9
401380	69.1	<3	38.8	3.6	<0.5	<1	0.6	<1	<10	<5	97	<0.5	<10	3	<5	8
401381	96.6	<3	27.5	4.1	<0.5	<1	0.2	<1	<10	<5	31	<0.5	<10	<2	<5	11
401382	68.3	<3	29.0	3.2	0.6	<1	<0.2	<1	<10	<5	21	<0.5	<10	<2	<5	9
401383	65.7	<3	29.0	3.6	0.6	<1	0.4	<1	<10	<5	128	<0.5	<10	5	<5	10
401384	55.0	<3	33.6	3.6	0.6	<1	0.3	<1	<10	<5	30	<0.5	<10	5	<5	8
401385	87.7	<3	25.2	3.0	<0.5	<1	0.3	<1	<10	<5	82	<0.5	<10	4	<5	12
401386	84.7	<3	34.9	5.3	<0.5	<1	<0.2	<1	<10	<5	14	<0.5	<10	5	<5	9
401387	104	<3	40.9	9.0	<0.5	<1	0.6	<1	<10	<5	24	<0.5	266	3	<5	9
401388	169	<3	38.3	10.2	<0.5	<1	<0.2	<1	<10	<5	69	<0.5	<10	6	<5	9

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Element.	Zn	As	Sr	Y	Zr	Mo	Ag	Cd	Sn	Sb	Ba	La	W	Pb	Bi	Li
Method.	ICP70	ICP70	ICP70	ICP70	ICP70	ICP70	ICP70	ICP70	ICP70	ICP70	ICP70	ICP70	ICP70	ICP70	ICP70	ICP70
Det.Lim.	0.5	3	0.5	0.5	0.5	1	0.2	1	10	5	1	0.5	10	2	5	1
Units.	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm
*Dup 399601	131	<3	57.3	6.8	0.7	<1	0.6	<1	<10	<5	17	<0.5	<10	48	<5	16
*Dup 399613	374	<3	13.9	6.0	0.5	<1	0.8	<1	<10	<5	100	1.9	<10	9	<5	13
*Dup 399625	108	<3	52.1	9.9	0.8	<1	0.4	1	<10	<5	25	<0.5	<10	4	<5	10
*Dup 399637	115	<3	18.7	3.5	1.0	<1	0.2	<1	<10	<5	24	<0.5	<10	4	<5	12
*Blk BLANK	<0.5	<3	<0.5	<0.5	<0.5	<1	<0.2	<1	<10	<5	<1	<0.5	<10	<2	<5	<1
*Std XRAL01	87.2	530	45.8	9.8	8.8	1	4.7	<1	<10	<5	140	11.0	<10	26	<5	10
*Dup 399649	2200	5250	23.0	8.6	1.1	1	4.9	13	<10	<5	10	2.0	<10	17	<5	8
*Dup 401361	74.7	<3	59.1	4.1	0.9	<1	0.5	<1	<10	<5	61	<0.5	<10	6	<5	10
*Dup 401373	77.5	<3	19.5	4.6	<0.5	<1	0.3	<1	<10	<5	4	<0.5	<10	3	<5	8
*Dup 401385	90.7	<3	25.9	3.1	<0.5	<1	0.2	<1	<10	<5	86	<0.5	<10	3	<5	10
*Blk BLANK	<0.5	<3	<0.5	<0.5	<0.5	<1	<0.2	<1	<10	<5	<1	<0.5	<10	<2	<5	<1
*Std NIST8606	41.6	<3	5.8	15.7	19.6	1070	<0.2	<1	15	<5	16	25.6	739	28	<5	11

Element.	Zn
Method.	ICAY50
Det.Lim.	0.01
Units.	%
399601	n.a.
399602	n.a.
399603	n.a.
399604	n.a.
399605	n.a.
399606	n.a.
399607	n.a.
399608	n.a.
399609	n.a.
399610	n.a.
399611	n.a.
399612	n.a.
399613	n.a.
399614	n.a.
399615	n.a.
399616	n.a.
399617	n.a.
399618	n.a.
399619	n.a.
399620	n.a.
399621	n.a.
399622	n.a.
399623	n.a.
399624	n.a.
399625	n.a.
399626	n.a.
399627	n.a.
399628	n.a.
399629	n.a.
399630	n.a.

Element.	Zn
Method.	ICAY50
Det.Lim.	0.01
Units.	%
399631	n.a.
399632	n.a.
399633	n.a.
399634	n.a.
399635	n.a.
399636	n.a.
399637	n.a.
399638	n.a.
399639	n.a.
399640	n.a.
399641	n.a.
399642	n.a.
399643	n.a.
399644	n.a.
399645	n.a.
399646	n.a.
*Blk BLANK	n.a.
*Std MRG_1	n.a.
399647	n.a.
399648	n.a.
399649	n.a.
399650	1.65
401351	n.a.
401352	n.a.
401353	n.a.
401354	n.a.
401355	n.a.
401356	n.a.
401357	n.a.
401358	n.a.

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Element.	Zn
Method.	ICAY50
Det.Lim.	0.01
Units.	%
401359	n.a.
401360	n.a.
401361	n.a.
401362	n.a.
401363	1.93
401364	n.a.
401365	n.a.
401366	n.a.
401367	n.a.
401368	n.a.
401369	n.a.
401370	n.a.
401371	n.a.
401372	n.a.
401373	n.a.
401374	n.a.
401375	n.a.
401376	n.a.
401377	n.a.
401378	n.a.
401379	n.a.
401380	n.a.
401381	n.a.
401382	n.a.
401383	n.a.
401384	n.a.
401385	n.a.
401386	n.a.
401387	n.a.
401388	n.a.

Element.	Zn
Method.	ICAY50
Det.Lim.	0.01
Units.	%
*Dup 399601	n.a.
*Dup 399613	n.a.
*Dup 399625	n.a.
*Dup 399637	n.a.
*Blk BLANK	<0.01
*Std NIST8604	2.63
*Dup 399650	1.64
*Dup 401361	n.a.
*Dup 401373	n.a.
*Dup 401385	n.a.
*Blk BLANK	n.a.
*Std MP1A	n.a.

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Upper Concentration Limits Have Been Exceeded

Some of the results in this report are outside the applicable analytical range. Please refer to the table below or the current Schedule of Fees and Services for our recommended upper concentration limits. Results greater than the upper concentration limit are reported for the convenience of our clients, but are of poor precision and/or subject to interferences.

Please contact us for additional technical information or for an accurate determination by an appropriate technique.

Method Code	Instrument	Elements	Upper Limit	Comments
ICP 70	ICP/AA	Ag	10 ppm	See note below
ICP 70 ICP 80 ICP 90	ICP	32 elements 24 elements	5,000 ppm	As, Sb, Bi, W, La may be affected for samples with >1,0% Cu, Zn or >25% Fe
XRF 7	XRF	25 elements	4,000 ppm	Matrix dependent. Not suitable for concentrates or highly mineralized samples.
CHM 20	Cold vapour	Hg	100 ppm	
AAH 3	AA Hydride	Sb, As, Bi	200 ppm	
Es 4	DCP Fusion	Be, B, Ge, V	2,000 ppm	
GFAA 10	GFAA	Ce, Se, Te	200 ppm	
CHM 13 CHM 10	Specific Ion	Cl F	5,000 ppm 1%	
ICPMS 10	ICPMS	In	4,000 ppm	

Note: Method code is ICP 70 utilizes a nitric agua regia digestion. Silver may precipitate from solution as a chloride and may be underestimated. A fire assay determination for silver is recommend.