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SUBJECT: Robe Mesa Project: Mine-Waste & LG-Ore Characterisation Investigation – Implications for Mining-Stream Management

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Stefan,

The testwork results obtained in this study are presented in **Tables 1-11**, and shown on **Figure 1**.

Photographs of the 'bulk-grab' samples from the Weathered-Surface-Zone (0-1 m nominal) collected from locations across the proposed pit-footprint are shown on **Plates 1-4**. This cobbly / blocky mining-stream at the top of the geologic-profile *in situ* stands to be a valuable resource for both initial construction works at Project 'start-up', and final site-wide decommissioning and rehabilitation.

Details of the sampling programmes for the Phase-1 review of multi-element assays, and the subsequent Phase-2 testing programme, are presented in **Attachment A**.

In the Phase-1 work, assays (including **S** and a range of major/minor-elements) for 1m-interval-pulps for **35** RC-holes within the Project's geological database were reviewed. Excluding HG-ore intersections, assays for 816 waste samples, and 402 LG-ore samples (i.e. **1,218** samples in total), were reviewed.

Though volume estimations and schedules are currently being refined, almost all of the total-waste inventory for the Project will comprise the Middle-Sandy-Ironstone (MSI) unit with a very minor contribution form the Upper-Sandy-Ironstone [USI] unit, together with the Weathered-Surface-Zone.

The MSI-waste unit separates the two stratigraphic ore-zones (viz. Upper-Pisolitic-Ironstone [UPI], and Lower-Pisolitic-Ironstone [LPI]).

Irrespective of lithotype (viz. differing mine-waste-lithology, or LG-ore), the Robe Mesa Deposit is characterised by **'negligible-sulphides'** (viz. for the 1,218 assayed samples for the Phase-1 review, all 1m-intervals, but one (0.12%S), have a S-tenor less than 0.1%S, and typically less than 0.02%S) (**Table A1** in **Attachment A**).

In the main Phase-2 testwork programme, 4m-composites prepared from available RC-cuttings (each from 1m-intervals) were subjected to geochemical 'static-testing' (i.e. 'whole-rock' assays and tests). The number of 4m-composites tested in the Phase-2 work was **20**; in addition, **4** 'bulk-grab' samples collected from the Weathered-Surface-Zone (**Plates 1-4**) were also tested. The total number of Phase-2 samples tested was therefore **24**.

Copies of the laboratory reports are presented in **Attachment B**.

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Note: Of the above 20 4m-composites, **5** correspond to the Lower-Silty-Clay [LSC] unit, and were selected in the early stages of the current study. However, since the LSC unit resides below the watertable, and since mining is to only occur above watertable, **no** LSC-waste stream is to be produced during the Project. When mining the LPI ore-zone which overlies the LSC unit, mining will cease before the watertable is reached.

The testwork results presented in the Data-Tables herein for samples of the LSC unit are accordingly reported for ***'testing-completeness' purposes only***.

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1.0 TESTWORK OUTCOMES FOR MINE-WASTE SAMPLES

1.1 Acid-forming Tendency

All samples classify as Non-Acid Forming (NAF), due to 'negligible-sulphides' (Total-S < 0.1 %) in a groundmass devoid of carbonates (**Table 1**).

Sample RM_WC09 (USI) had a CO_3-C value of 0.26 %, reflective of 'accessory-calcite' (**Table 3**, and **Figure 1**).

All samples were circum-neutral (pH 6-9) with low-to-moderate contents of soluble-salts.

1.2 Lithochemistry, Mineralogy, and Solubility Characteristics

1.2.1 Lithochemistry

All samples were characterised by contents of minor-elements (e.g. As) within the range typically recorded for "S-free" variants of mine-wastes produced at iron-ore mines in the Pilbara (**Table 2**) (Campbell, unpublished results since the late-1980s). Such contents are either below, or close to, those generally recorded for soils, regoliths, and bedrocks derived from non-mineralised terrain (Bowen 1979).[1]

[1] Bowen HJM, 1979, "Environmental Chemistry of the Elements", Academic Press, New York.

Though slight enrichment in As and Se occurred for selected samples (**Table 2**), they are of no consequence environmentally, especially given the 'Fe-oxide-rich' status of the various Lith_1 units.

1.2.2 Mineralogy

Three samples were subjected to mineralogical characterisation (viz. RM_BULK_01 [Weathered-Surface-Zone], RM_WC09 [USI], and RM_WC01 [MSI]) (**Table 3**).

All samples chiefly comprised Fe-oxides (goethites) and quartz with sub-ordinate kaolinites, and Ti-oxides. Sample RM_WC09 (USI) contained smectitic-clays as a minor component; accessory amounts of calcites were also present in this sample.

1.2.3 Solubility Characteristics

The solubility of minor-elements was tightly constrained as shown by water-extraction testwork corresponding to a solid:deionised-water ratio of 1:2 (w/v) (**Table 4**).[2]

Minor-element concentrations in the water-extracts were typically below, or close to, the respective detection-limits (0.1-10 µg/L range generally).

1.3 Clay-Surface Chemistry and Dispersion Tendency of 'Soil-Colloids'

Selected samples were tested for effective-Cation-Exchange-Capacity (eCEC), and tendency for dispersion of 'soil-colloids' (viz. 'true-clays', and sesquioxides) when subjected to osmotic stress, as per Emerson dispersion Testing (**Table 5**).

The eCEC values were typically within the range 3.4-8.1 cmol [+]/kg, though sample RM_WC09 (USI) had an eCEC value of 13 cmol [+]/kg, reflective of it containing smectite (**Table 4**). The Exchangeable-Sodium-Percentage (ESP) values were 6-15 %.

When subjected to Emerson dispersion testing, the 'fine-earth' (-2 mm) fractions exhibited a range in tendency for 'soil-colloids' to disperse. Two of the four Weathered-Surface-Zone samples exhibited dispersion. However, in practice such dispersion tendency will be offset by the modest 'fine-earth' content, and the **cobbly / blocky** nature, of this mining-stream.

Though sample RM_WC09 (USI) contained 'minor-smectite', it also contained 'accessory-calcite' such that the ESP was low (6 %) with Exchangeable-Ca forms predominating on the clay-exchange complex. Occurrence of 'clay-tactoids' (and/or 'quasi-crystals'), due to Ca-occupancy of smectite-lamellae-exchange sites results in clay-aggregates that are stable when wetted for this sample.

1.4 Soil-Nutritional Status of Weathered-Surface-Zone

Results of soil-nutritional testing by CSBP (Bibra Lake) of the -2 mm fraction of the Weathered-Surface-Zone samples are presented in **Table 6**.

The recorded modest 'pool' sizes for macro- and micro-nutrients reflects the highly

[2] The water-extraction testwork was performed on the -4.75 mm fraction of the RC-cuttings, and corresponds to 'bottle-rolling' overnight at 20-22 °C in a CT-room, leaving the test-slurries to 'still-stand' for 1-2 days before 'siphoning-off' the supernatant-waters for filtration (0.45µm-membrane), and preservation of 'filtrate-splits', as appropriate, for assaying.

efficient and 'tight' cycling of nutrients within natural rangeland ecosystems within the Western Australian interior generally.

2.0 TESTWORK OUTCOMES FOR LG-ORE SAMPLES

The testwork results indicate that:

- all samples classify as NAF, due to 'negligible-sulphides' (**Table 7**)
- all samples lacked appreciable enrichments in minor-elements with solubility correspondingly tightly constrained (**Tables 8** and **10**)
- the mineralogy of sample RM_WC11 was dominated by goethites with sub-ordinate quartz and kaolinites, and trace amounts of rutiles (**Table 9**)

The three samples tested for clay-surface chemistry and dispersion tendency had eCEC values of 5.0-6.4 cmol (+)/kg, and ESP values of 13-17 % (i.e. sodic) (**Table 11**). All samples were dispersive.

3.0 MANAGEMENT IMPLICATIONS

The geochemical and physical attributes of the Project's mine-wastes and LG-ores outlined below underpin development of strategies for mining-stream management for both operations, and planning for site decommissioning and rehabilitation.

3.1 Biogeochemical Weathering

All mining-streams (viz. Weathered-Surface-Zone, USI-waste, MSI-waste and LG-ores) to be produced during the Project are **inert**.

Put simply, hydrogeochemically, these mining-streams have nothing more to "give" as they undergo further biogeochemical weathering under the strongly seasonal moisture regime and extreme temperatures attendant with the Pilbara climate. Such inertness reflects both the geology and age of the various Lith_1 units.

Geochemically, the above mining-streams may be handled and stored without restriction, and pose no concerns for impaired water-quality, and/or revegetation, over the longer-term.

3.2 Erosion Control

USI-waste, MSI-waste, and LG-ores

In terms of their likely 'as-mined' granulometry, the USI-waste and MSI-waste streams, and LG-ores, are expected to be 'fines-rich' (i.e. quite "earthy"). These mining-streams therefore need to be managed appropriately to constrain erosion rates.

Weathered-Surface-Zone

Though relatively shallow at the top of the geologic-profile, the cobbly / blocky nature of the Weathered-Surface-Zone means that this mining-stream stands to be an important Project resource for a number of construction, physical-stabilisation (e.g. cladding / armouring), and rehabilitation applications.

3.3 Revegetation

Together with topsoil that has been scalped during pre-strip operations, and stockpiled for later redeployment, the Weathered-Surface-Zone is the mining-stream of choice for use in site-wide rehabilitation works.

4.0 CLOSING

Due to the geochemical inertness of the various lithotypes, controlling erosion of the "earthy" variants is the key "environmental-demand" for mining-stream management for the Project during operations (e.g. LG-ore stockpile outside the pit). However, since any mining-stream remaining outside the pit is to be returned to the pit (inside the mesa) at site decommissioning, any interim erosion-control measures implemented during operations become redundant for the longer-term.

I trust the above is useful to you.

Regards,

Dr GD Campbell
Director

encl. Tables 1-11
Figure 1
Plates 1-4
Attachments A-B

TABLES

Table 1: Results for Acid-Base-Analysis (ABA) and Net-Acid-Generation (NAG) Testing of Mine-Waste Samples

SAMPLE_ ID	SECTION	HOLE_ ID	From_ m	To_ m	Lith_1	pH-(1:2)	EC-(1:2) [mS/cm]	TOTAL-S (%)	TOTAL-C (%)	ACID-INSOL.-C (%)	CO3-C (%)	CARB.-ANC (calc'd)	BULK-ANC	NAG-pH4.5	NAG-pH7.0	NAG-pH	AFP CATEGORY
													GCA	GCA	GCA		
						GCA	GCA	GLS	GLS	GLS	GLS	kg H2SO4/tonne		kg H2SO4/tonne		GCA	
RM_BULK_01	'bulk-grab' sample (0-1 m nominal) from Weathered-Surface-Zone					6.9	0.023	0.01	0.28	0.11	0.17	14	2	<1	<1	5.9	NAF
RM_BULK_02	'bulk-grab' sample (0-1 m nominal) from Weathered-Surface-Zone					6.9	0.12	0.01	0.48	0.24	0.24	20	2 (2)				NAF
RM_BULK_03	'bulk-grab' sample (0-1 m nominal) from Weathered-Surface-Zone					7.2	0.13	0.01	0.53	0.25	0.28	23	2				NAF
RM_BULK_04	'bulk-grab' sample (0-1 m nominal) from Weathered-Surface-Zone					6.5 (6.4)	0.026 (0.021)	0.02	0.33	0.14	0.18	15	2	<1 (<1)	<1 (<1)	6.0 (6.1)	
RM_WC09	B	YAR281	0	4	Upper-Sandy-Ironstone, USI	8.5	0.11	0.02	0.53	0.27	0.26	21	20 (20)				NAF
RM_WC16	C	YAR343	0	4		7.6	0.045	0.02	0.24	0.15	0.09	7	3	<1	<1	7.1	NAF
RM_WC01	A	YAR256	30	34	Middle-Sandy-Ironstone, MSI	7.3	0.25	0.01	0.10	0.09	<0.01	<1	2				NAF
RM_WC04		YAR258	30	34		7.3	0.35	0.02	0.20	0.17	0.03	2	1	<1	<1	7.1	NAF
RM_WC07		YAR261	26	30		5.8	0.060	0.01	0.18	0.16	0.02	2	1				NAF
RM_WC12	B	YAR286	30	34		7.3	0.40	0.01	0.15	0.14	0.01	1	1 (1)	<1	<1	5.4	NAF
RM_WC14		YAR291	26	30		7.2	0.70	0.02	0.18	0.17	0.01	1	3				NAF
RM_WC18	C	YAR343	26	30		7.2	0.14	0.01	0.26	0.21	0.05	4	2				NAF
RM_WC20		YAR344	24	28		7.9 (7.9)	0.19 (0.19)	0.02	0.28	0.19	0.09	7	2	<1	<1	7.2	NAF
RM_WC02	A	YAR256	66	70	Lower-Silty-Clay, LSC	7.4	0.091	0.01	0.21	0.19	0.01	1	3				NAF
RM_WC05		YAR258	60	64		7.6	0.11	<0.01	0.08	0.08	<0.01	<1	3				NAF
RM_WC08		YAW261	54	58		7.1	0.097	<0.01	0.06	0.07	<0.01	<1	2				NAF
RM_WC10	B	YAW281	56	60		7.5 (7.5)	0.083 (0.080)	<0.01	0.27	0.23	0.04	3	2 (2)	<1	<1	6.5	NAF
RM_WC13		YAW286	56	60		7.3	0.065	<0.01	0.23	0.21	0.01	1	3				NAF

Notes:
EC = Electrical-Conductivity; Acid-Insol.-C = Acid-Insoluble-C; ANC = Acid-Neutralisation Capacity; NAG = Net-Acid Generation; AFP = Acid-Formation Potential.
NAF = Non-Acid Forming.
pH-(1:2) and EC-(1:2) values correspond to pH and EC measured on sample slurries prepared with deionised-water, and a solid:solution ratio of ***ca.* 1:2 (w/w)**.
All results expressed on a dry-weight basis, except for pH-(1:2), EC-(1:2), and NAG-pH.
Values in parentheses represent duplicates.

Calculated Carbonate-ANC values assume that all CO3-C is associated with Ca/Mg-carbonates (i.e. 'non-ferroan-carbonates').

N.B. For the 'bulk-grab' samples from the Weathered-Surface-Zone, the CO3-C values are 'biased-on-the-high-side', and reflect acid-soluble forms of organic-C (cf. CO3-C *senso stricto*).

Table 2: Multi-Element-Analysis Results for Mine-Waste Samples

SAMPLE_ ID	SECTION	HOLE_ ID	From_ m	To_ m	Lith_1	S	Ca	Mg	K	Na	Fe	Al	Ti	Si	As	Sb	Se	Mo	B	F
						%									mg/kg					
RM_BULK_01	'bulk-grab' sample (0-1 m nominal) from Weathered-Surface-Zone					0.01	0.05	0.09	0.32	0.02	43.59	3.56	0.22	9.9	19.6	1.20	1.13	1.4	<50	115
RM_BULK_04	'bulk-grab' sample (0-1 m nominal) from Weathered-Surface-Zone					0.02	0.04	0.08	0.31	0.02	42.24	4.19	0.26	9.7	19.0	1.17	0.85	1.2	<50	130
RM_WC09	B	YAR281	0	4	Upper-Sandy-Ironstone, USI	0.02	0.95	0.35	0.08	0.04	45.92	2.20	0.10	8.0	15.1	0.52	0.32	1.3	<50	178
RM_WC16	C	YAR343	0	4		0.02	0.16	0.15	0.16	0.02	47.79	2.72	0.10	7.8	11.9	0.53	0.33	1.1	<50	149
RM_WC01	A	YAR256	30	34	Middle-Sandy-Ironstone, MSI	0.01	0.09	0.10	0.07	0.05	38.37	4.30	0.41	12.4	9.7	0.78	0.16	1.3	<50	114
RM_WC14	B	YAR291	26	30		0.02	0.17	0.20	0.10	0.07	37.18	3.86	0.32	12.7	9.9	0.80	0.28	0.9	53	231
RM_WC18	C	YAR343	26	30		0.01	0.09	0.10	0.18	0.05	39.22	3.45	0.30	12.3	12.4	0.96	0.36	1.1	<50	154
RM_WC05	A	YAR258	60	64	Lower-Silty-Clay, LSC	<0.01	0.10	0.28	1.18	0.04	21.00	6.89	0.31	23.0	10.5	1.83	0.12	1.2	<50	457
RM_WC13	B	YAW286	56	60		<0.01	0.16	0.32	0.87	0.04	19.61	6.63	0.36	23.9	28.2	1.08	0.40	1.8	<50	498
					Average-Crustal Abundance (Bowen 1979)										1.5	0.2	0.05	1.5	10	950

SAMPLE_ ID	SECTION	HOLE_ ID	From_ m	To_ m	Lith_1	Cu	Zn	Cd	Pb	Hg	Ni	Cr	Co	Mn	Ag	Bi	P	Sr	Ba	Sn	V	Tl	Th	U
						mg/kg																		
RM_BULK_01	'bulk-grab' sample (0-1 m nominal) from Weathered-Surface-Zone					22.6	36	0.05	12.1	0.027	40.9	103	13.7	330	<0.05	0.16	338	12.96	82.8	1.3	111	0.19	7.16	1.88
RM_BULK_04	'bulk-grab' sample (0-1 m nominal) from Weathered-Surface-Zone					25.3	27	0.02	13.3	0.049	35.0	97	10.2	195	<0.05	0.20	290	10.71	75.0	1.4	97	0.22	8.59	1.76
RM_WC09	B	YAR281	0	4	Upper-Sandy-Ironstone, USI	7.1	41	0.03	5.4	0.004	18.1	38	7.3	162	<0.05	0.06	277	51.91	275.3	0.7	50	0.05	3.31	0.69
RM_WC16	C	YAR343	0	4		6.3	50	<0.02	5.7	0.005	15.5	38	6.1	184	<0.05	0.08	201	24.98	323.4	0.9	47	0.12	4.69	0.78
RM_WC01	A	YAR256	30	34	Middle-Sandy-Ironstone, MSI	10.2	74	0.03	10.8	0.014	50.1	57	20.3	935	<0.05	0.12	132	13.33	136.8	2.0	52	0.23	5.92	1.79
RM_WC14	B	YAR291	26	30		8.6	44	0.02	9.0	0.013	44.5	54	18.6	196	<0.05	0.12	96	25.04	46.1	1.6	46	0.19	7.03	1.85
RM_WC18	C	YAR343	26	30		8.8	54	0.05	11.4	0.023	38.1	69	13.9	274	<0.05	0.14	238	13.96	75.4	1.5	70	0.15	6.42	1.58
RM_WC05	A	YAR258	60	64	Lower-Silty-Clay, LSC	4.0	52	0.04	14.4	0.025	38.6	95	17.2	368	<0.05	0.45	1161	25.14	289.9	2.1	113	0.40	18.96	2.43
RM_WC13	B	YAW286	56	60		6.9	18	0.03	20.3	0.034	20.9	86	6.0	229	<0.05	0.35	492	40.48	245.4	2.4	110	0.32	16.49	2.65
					Average Crustal Abundance (Bowen 1979)	50	75	0.11	14	0.05	80	100	20	950	0.07	0.05	1,000	370	500	2.2	160	0.6	12	2.4

signifies element content 10-100 times average-crustal abundance

signifies element content 100+ times average-crustal abundance

Reference: Bowen HJM, 1979, "Environmental Chemistry of the Elements", Academic Press, New York

Table 3: Mineralogical Results for Mine-Waste Samples

Weathered-Surface-Zone (0-1 m nominal) [RM_BULK_01]		Upper-Sandy-Ironstone (USI) (YAR281, 0-4 m) [RM_WC09]		Middle-Sandy-Ironstone (MSI) (YAR256, 30-34 m) [RM_WC01]	
		goethite	> 50 %	goethite	> 50 %
goethite quartz	20-50 %			quartz	20-50 %
hematite	10-20 %	smectite	10-20 %		
kaolinite maghemite rutile	2-10 %	quartz hematite calcite	2-10 %	kaolinite	2-10 %
muscovite	< 2 %	rutile	< 2 %	rutile anatase	< 2 %

Notes:
dominant = greater than 50 %; major = 20-50 %; minor = 10-20 %; accessory = 2-10 %; trace = less than 2 %

Table 4: Water-Extraction-Testwork Results for Mine-Waste Samples

SAMPLE_ ID	SECTION	HOLE_ ID	From_ m	To_ m	Lith_1	pH	pH (GCA)	EC (µS/cm)	EC (µS/cm) (GCA)	HCO3 (as mg/L CaCO3)	Cl (mg/L)	SO4 (mg/L)	F (mg/L)	Ca	Mg	K	Na	Fe	Al	Mn	Si	As	Sb	Mo	Se	B
														mg/L								µg/L				
RM_BULK_01	'bulk-grab' sample (0-1 m nominal) from Weathered-Surface-Zone					6.5	6.7	18	31	5	<2	2	<0.1	0.78	0.30	1.1	1.5	0.02	0.04	0.026	0.64	1.36	1.21	0.07	<0.5	20
RM_BULK_04	'bulk-grab' sample (0-1 m nominal) from Weathered-Surface-Zone					6.6	7.0	15	24	4	<2	3	<0.1	0.39	0.20	0.8	1.8	0.02	0.02	<0.01	0.44	0.28	0.15	<0.05	<0.5	10
RM_WC09	B	YAR281	0	4	Upper-Sandy-Ironstone, USI	7.7	7.8	87	91	42	<2	2	0.3	2.76	0.95	2.4	15.1	0.06	0.04	<0.01	5.97	10.53	3.07	0.60	<0.5	40
RM_WC16	C	YAR343	0	4		7.3	7.4	53	75	18	<2	5	0.3	4.23	1.45	2.5	2.8	0.11	0.06	<0.01	3.82	2.20	0.89	0.38	<0.5	<10
RM_WC01	A	YAR256	30	34	Middle-Sandy-Ironstone, MSI	6.9	6.9	250	270	7	64	12	0.3	3.21	1.85	2.7	43.3	0.19	0.11	0.027	4.95	3.35	2.31	0.13	0.6	40
RM_WC14	B	YAR291	26	30		7.0	7.1	610	627	10	136	81	0.4	11.53	5.83	3.2	99.2	<0.01	<0.01	<0.01	3.37	0.30	0.16	0.05	1.4	70
RM_WC18	C	YAR343	26	30		7.0	7.3	119	128	10	19	12	0.6	0.67	0.28	1.0	21.9	0.54	0.57	<0.01	5.55	5.36	2.41	0.18	0.7	60
RM_WC05	A	YAR258	60	64	Lower-Silty-Clay, LSC	7.0	7.1	109	128	10	17	10	1.5	0.97	0.80	2.0	18.6	0.57	1.07	<0.01	5.53	3.70	1.31	2.16	<0.5	50
RM_WC13	B	YAW286	56	60		7.1	7.1	60	72	12	5	8	2.1	0.42	0.28	0.9	11.6	2.04	1.42	<0.01	8.31	3.89	1.25	3.34	<0.5	40

						Cu	Zn	Cd	Pb	Hg	Ni	Cr	Co	Ag	Sr	Ba	P	Bi	Sn	Tl	Th	U	V
						µg/L																	
RM_BULK_01	'bulk-grab' sample (0-1 m nominal) from Weathered-Surface-Zone					<10	14	0.05	<0.2	<0.1	15	<10	1.8	<0.05	8.04	1.50	<10	<0.01	<0.1	0.01	<0.01	0.018	<10
RM_BULK_04	'bulk-grab' sample (0-1 m nominal) from Weathered-Surface-Zone					<10	<10	<0.02	<0.2	<0.1	<10	<10	<0.1	<0.05	3.87	2.06	<10	0.05	<0.1	0.17	<0.01	<0.005	<10
RM_WC09	B	YAR281	0	4	Upper-Sandy-Ironstone, USI	<10	<10	<0.02	<0.2	<0.1	<10	<10	0.2	<0.05	26.6	25.94	<10	<0.01	<0.1	<0.01	<0.01	0.651	<10
RM_WC16	C	YAR343	0	4		<10	<10	0.07	<0.2	<0.1	<10	<10	0.4	<0.05	43.38	172.3	<10	<0.01	<0.1	<0.01	<0.01	0.105	<10
RM_WC01	A	YAR256	30	34	Middle-Sandy-Ironstone, MSI	<10	<10	0.06	0.3	<0.1	16	<10	2.0	<0.05	31.20	25.41	<10	0.02	<0.1	0.02	<0.01	0.065	<10
RM_WC14	B	YAR291	26	30		<10	10	0.04	<0.2	<0.1	<10	<10	<0.1	<0.05	132.00	12.93	<10	0.01	<0.1	0.21	<0.01	0.007	<10
RM_WC18	C	YAR343	26	30		<10	<10	0.03	0.2	<0.1	<10	<10	0.8	<0.05	8.15	13.96	<10	0.03	<0.1	0.02	0.03	0.067	<10
RM_WC05	A	YAR258	60	64	Lower-Silty-Clay, LSC	<10	<10	1.92	<0.2	<0.1	<10	<10	0.3	<0.05	11.85	8.84	31	<0.01	<0.1	0.02	0.07	0.041	<10
RM_WC13	B	YAW286	56	60		<10	<10	<0.02	0.2	<0.1	<10	<10	0.2	<0.05	4.96	7.13	40	0.02	<0.1	0.02	0.18	0.066	<10

Notes:
EC = Electrical-Conductivity.
Water-Extraction Testwork corresponds to slurries prepared from -4.75mm fraction, and high-purity-deionised-water (HPDW), and a solid:water ratio of **1:2 (w/w)**.
Test-slurries bottle-rolled for 18 hrs and then left to 'still-stand' for approx. 24 hrs prior to decanting supernatants for pressure-filtration (0.45µm-membrane) for analysis.
Fe and **Al** concentrations in mocha-text correspond to colloidal sesquioxides/clays which passed through the 0.45µm-membrane during water-extract filtration.

Table 5: Results of Clay-Surface-Chemistry and Emerson-Dispersion Testing of Mine-Waste Samples

SAMPLE_ ID	SECTION	HOLE_ ID	From_ m	To_ m	Lith_1	eCEC (cmol [+]/ kg)	ESP (%) [Na]	EMP (%) [Mg]	ECP (%) [Ca]	EPP (%) [K]	Emerson Class Number
						GLS	GLS				GCA
RM_BULK_01	'bulk-grab' sample (0-1 m nominal) from Weathered-Surface-Zone					4.0	4	32	58	6	5
RM_BULK_02	'bulk-grab' sample (0-1 m nominal) from Weathered-Surface-Zone					3.4	14	37	45	4	3a
RM_BULK_03	'bulk-grab' sample (0-1 m nominal) from Weathered-Surface-Zone					3.0	5	39	51	6	3a
RM_BULK_04	'bulk-grab' sample (0-1 m nominal) from Weathered-Surface-Zone					4.0	13	34	48	5	5
RM_WC09	B	YAR281	0	4	Upper-Sandy-Ironstone, USI	13	6	30	61	<1	4
RM_WC01	A	YAR256	30	34	Middle-Sandy-Ironstone, MSI	5.8	15	39	45	<1	3b
RM_WC18	C	YAR343	26	30		5.8	15	30	53	2	3a
RM_WC05	A	YAR258	60	64	Lower-Silty-Clay, LSC	8.1	8	49	42	2	3b

Notes:
eCEC = Effective-Cation-Exchange Capacity; ESP = Exchangeable-Sodium Percentage; EMP = Exchangeable-Magnesium Percentage;
ECP = Exchangeable-Calcium Percentage; EPP = Exchangeable-Potassium Percentage.

Determination of soil-exchange characteristics, and Emerson Dispersion Testing, conducted on 'fine-earth' (-2 mm) fractions.

Emerson Class Number:

3a	'fine-earth' fraction readily liberates 'soil-colloids' (clays/sesquioxides') when subjected to osmostic-stress upon inundation from rainfall (i.e. strong dispersion tendency)
3b	'fine-earth' fraction exhibits a weak dispersion tendency
4	calcite / gypsum presence inhibiting dispersion of 'soil-colloids'
5	though 'fine-earth' fraction does not disperse when subjected to 'osmotic-stress' from soaking in deionised-water, 'short-range' attractive forces between particle-surfaces insufficient for flocculation (i.e. following vigorous agitation, soil-suspension remains dispersed).

Table 6: Results of Soil-Nutritional Determinations by CSBP for 'Bulk-Grab' Samples from Weathered-Surface-Zone (0-1 m nominal)

SAMPLE_ ID	SOIL-ORGANIC-C (%)	NO3-N (%)	NH4-N (%)	COLWELL-P (mg/kg)	COLWELL-K (mg/kg)	KCl-EXTRACTABLE-S (mg/kg)	DTPA-Cu (mg/kg)	DTPA-Fe (mg/kg)	DTPA-Mn (mg/kg)	DTPA-Zn (mg/kg)
RM_BULK_01	0.20	1	2	3	97	15.9	0.64	4.90	0.86	0.49
RM_BULK_02	0.34	<1	3	2	85	9.4	0.70	8.30	1.40	0.28
RM_BULK_03	0.32	1	2	3	111	6.8	0.78	6.30	1.93	0.57
RM_BULK_04	0.25	<1	3	4	83	30.2	0.29	5.6	0.38	0.28

Notes:
All testing performed on 'fine-earth' (-2 mm) fraction.
Soil-Organic-C corresponds to a hot digestion with concentrated H2SO4 / K2Cr2O7 ("Walkley Black" method).
NO3-N and NH4-N correspond to extraction with 1 N-KCl.
Colwell-P and Colwell-K correspond to extraction with 0.5 M-NaHCO3 (pH 8.5).
DTPA = diethylenetriamine pentaacetic acid

Table 7: Results for Acid-Base-Analysis (ABA) and Net-Acid-Generation (NAG) Testing of LG-Ore Samples

SAMPLE_ ID	SECTION	HOLE_ ID	From_ m	To_ m	pH-(1:2)	EC-(1:2) [mS/cm]	TOTAL-S (%)	TOTAL-C (%)	ACID-INSOL.-C (%)	CO3-C (%)	CARB.-ANC (calc'd)	BULK-ANC	NAG-pH4.5	NAG-pH7.0	NAG-pH	AFP CATEGORY
												GCA	GCA	GCA		
					GCA	GCA	GLS	GLS	GLS	GLS	kg H2SO4/tonne		kg H2SO4/tonne		GCA	
RM_WC03	A	YAR258	22	26	7.3	0.44	0.02	0.33	0.25	0.09	7	2				NAF
RM_WC06		YAR261	12	16	5.9	0.043	0.02	0.39	0.32	0.07	6	1	<1	<1	5.0	NAF
RM_WC11	B	YAR286	20	24	7.5	0.28	0.01	0.35	0.27	0.07	6	2				NAF
RM_WC15	C	YAR360	20	24	6.5	0.28	0.02	0.38	0.30	0.07	6	2 (2)	<1	<1	6.2	NAF
RM_WC17		YAR343	20	24	8.1	0.075	0.01	0.36	0.28	0.07	6	2				NAF
RM_WC19		YAR344	14	18	8.3	0.22	0.04	0.44	0.34	0.10	8	3				NAF

Notes:
EC = Electrical-Conductivity; Acid-Insol.-C = Acid-Insoluble-C; ANC = Acid-Neutralisation Capacity; NAG = Net-Acid Generation; AFP = Acid-Formation Potential.
NAF = Non-Acid Forming.
pH-(1:2) and EC-(1:2) values correspond to pH and EC measured on sample slurries prepared with deionised-water, and a solid:solution ratio of ***ca.* 1:2 (w/w)**.
All results expressed on a dry-weight basis, except for pH-(1:2), EC-(1:2), and NAG-pH.
Values in parentheses represent duplicates.

Calculated Carbonate-ANC values assume that all CO3-C is associated with Ca/Mg-carbonates (i.e. 'non-ferroan-carbonates').

Table 8: Multi-Element-Analysis Results for LG-Ore Samples

SAMPLE_ ID	SECTION	HOLE_ ID	From_ m	To_ m	S	Ca	Mg	K	Na	Fe	Al	Ti	Si	As	Sb	Se	Mo	B	F
					%									mg/kg					
RM_WC03	A	YAR258	22	26	0.02	0.08	0.12	0.04	0.05	49.02	3.02	0.11	5.6	11.8	0.97	0.59	1.5	<50	156
RM_WC11	B	YAR286	20	24	0.01	0.09	0.10	0.07	0.04	45.79	3.37	0.13	7.6	11.4	0.94	0.52	1.4	<50	133
RM_WC17	C	YAR343	20	24	0.01	0.08	0.11	0.05	0.04	49.56	2.49	0.07	6.1	10.6	0.68	0.41	1.4	<50	186
					Average-Crustal Abundance (Bowen 1979)									1.5	0.2	0.05	1.5	10	950

					Cu	Zn	Cd	Pb	Hg	Ni	Cr	Co	Mn	Ag	Bi	P	Sr	Ba	Sn	V	Tl	Th	U
					mg/kg																		
RM_WC03	A	YAR258	22	26	16.7	110	0.03	9.4	0.010	52.0	60	20.8	520	<0.05	0.12	343	12.73	45.8	1.0	76	0.08	6.30	1.59
RM_WC11	B	YAR286	20	24	13.3	121	0.03	7.1	0.010	52.0	55	25.7	979	<0.05	0.14	320	12.02	104.6	1.1	70	0.16	6.90	1.54
RM_WC17	C	YAR343	20	24	8.5	80	<0.02	4.0	0.014	39.6	48	15.8	243	<0.05	0.08	340	11.03	23.0	0.8	49	0.05	4.37	1.10
Average Crustal Abundance (Bowen 1979)					50	75	0.11	14	0.05	80	100	20	950	0.07	0.05	1,000	370	500	2.2	160	0.6	12	2.4

signifies element content 10-100 times average-crustal abundance
signifies element content 100+ times average-crustal abundance

Reference: Bowen HJM, 1979, "Environmental Chemistry of the Elements", Academic Press, New York

Table 9: Mineralogical Results for LG-Ore Sample

YAR286, 12-16 m [RM_WC11]	
goethite	> 50 %
quartz	10-20 %
kaolinite	2-10 %
rutile	< 2 %

Notes:
dominant = greater than 50 %; minor = 10-20 %; accessory = 2-10 %; trace = less than 2 %

Table 10: Water-Extraction-Testwork Results for LG-Ore Samples

SAMPLE_ ID	SECTION	HOLE_ ID	From_ m	To_ m	pH	pH (GCA)	EC (µS/cm)	EC (µS/cm) (GCA)	HCO3 (as mg/L CaCO3)	Cl (mg/L)	SO4 (mg/L)	F (mg/L)	Ca	Mg	K	Na	Fe	Al	Mn	Si	As	Sb	Mo	Se	B
													mg/L								µg/L				
RM_WC03	A	YAR258	22	26	6.7	6.8	350	370	7	73	37	0.7	2.81	1.67	1.7	64.1	0.02	0.01	<0.01	2.88	0.61	0.19	<0.05	<0.5	60
RM_WC11	B	YAR286	20	24	6.9	6.9	215	234	9	50	12	0.8	2.59	1.26	1.3	37.7	0.89	1.22	<0.01	5.83	1.88	0.68	0.08	<0.5	50
RM_WC17	C	YAR343	20	24	6.9	6.9	54	68	8	7	3	1.4	0.25	0.20	1.0	10.0	1.59	1.43	<0.01	6.40	1.00	0.44	0.74	<0.5	50

					Cu	Zn	Cd	Pb	Hg	Ni	Cr	Co	Ag	Sr	Ba	P	Bi	Sn	Tl	Th	U	V
					µg/L																	
RM_WC03	A	YAR258	22	26	<10	<10	0.05	<0.2	<0.1	<10	<10	0.1	<0.05	32.89	6.58	<10	<0.01	<0.1	0.05	<0.01	0.014	<10
RM_WC11	B	YAR286	20	24	<10	<10	0.05	0.2	<0.1	<10	<10	0.5	<0.05	24.13	11.46	<10	<0.01	<0.1	0.02	0.11	0.049	<10
RM_WC17	C	YAR343	20	24	<10	<10	<0.02	<0.2	<0.1	<10	<10	0.2	<0.05	2.47	2.43	<10	0.01	<0.1	0.01	0.08	0.036	<10

Notes:

EC = Electrical-Conductivity.

Water-Extraction Testwork corresponds to slurries prepared from -4.75mm fraction, and high-purity-deionised-water (HPDW), and a solid:water ratio of **1:2 (w/w)**.

Test-slurries bottle-rolled for 18 hrs and then left to 'still-stand' for approx. 24 hrs prior to decanting supernatants for pressure-filtration (0.45µm-membrane) for analysis.

Fe and **Al** concentrations in mocha-text correspond to colloidal sesquioxides/clays which passed through the 0.45µm-membrane during water-extract filtration.

Table 11: Results of Clay-Surface-Chemistry and Emerson-Dispersion Testing of LG-Ore Samples

SAMPLE_ ID	SECTION	HOLE_ ID	From_ m	To_ m	eCEC (cmol [+]/ kg)	ESP (%) [Na]	EMP (%) [Mg]	ECP (%) [Ca]	EPP (%) [K]	Emerson Class Number
					GLS	GLS				GCA
RM_WC03	A	YAR258	22	26	6.0	15	39	47	<1	3b
RM_WC11	B	YAR286	20	24	6.4	13	33	53	1	3a
RM_WC17	C	YAR343	20	24	5.0	17	31	49	3	3a

Notes:
eCEC = Effective-Cation-Exchange Capacity; ESP = Exchangeable-Sodium Percentage; EMP = Exchangeable-Magnesium Percentage;
ECP = Exchangeable-Calcium Percentage; EPP = Exchangeable-Potassium Percentage.

Determination of soil-exchange characteristics, and Emerson Dispersion Testing, conducted on 'fine-earth' (-2 mm) fractions.

Emerson Class Number:

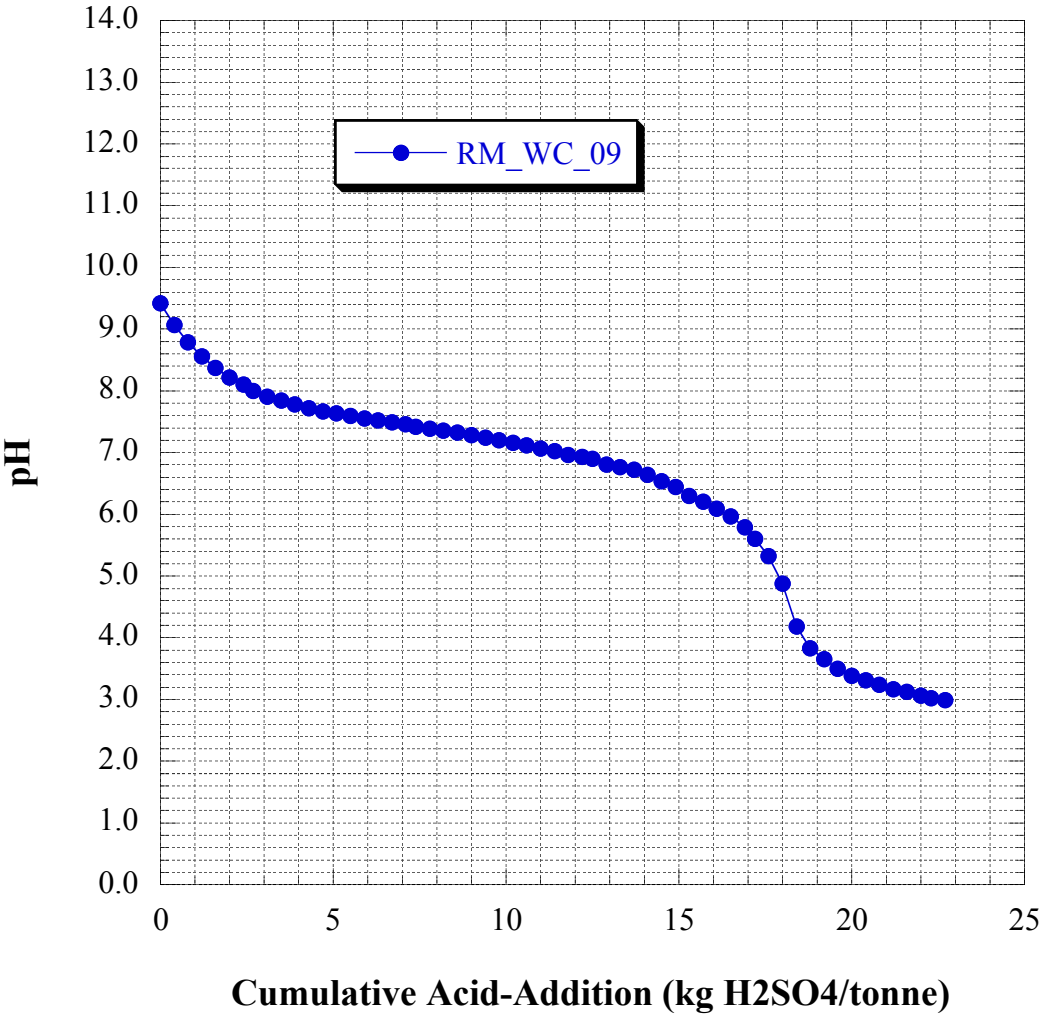
3a 'fine-earth' fraction readily liberates 'soil-colloids' (clays/sesquioxides') when subjected to osmostic-stress upon inundation from rainfall (i.e. strong dispersion tendency)

3b 'fine-earth' fraction exhibits a weak dispersion tendency

FIGURE

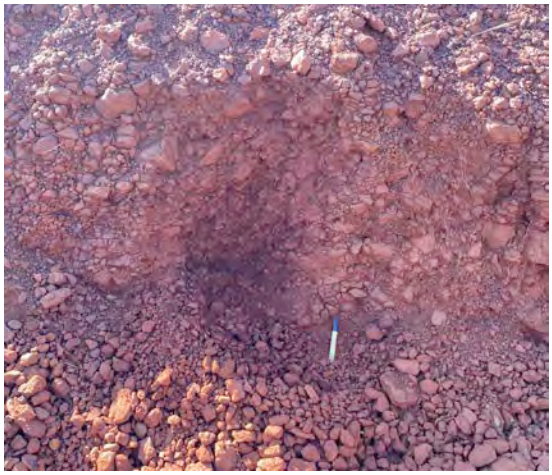
Figure 1

pH-Buffering Curve for Mine-Waste Sample
(Upper-Sandy-Ironstone, USI)



PLATES

Photographs of Field Sampling



Photograph of Submitted Sample in Steel-Mould Ahead of Sieving

PLATE 1: 'Bulk-grab' sample of Surficial-Waste-Zone (**CZR_RM_BULK_01**).

Of the 26.4 kg of 'whole-material' submitted, after modest compaction with a 10 kg weight, 22 % (w/w) corresponded to 19-53 mm; 48 % (w/w) corresponded to 4.75-19 mm; and, 30 % (w/w) corresponded to -4.75 mm.

Photographs of Field Sampling

Photograph of Submitted Sample in Steel-Mould Ahead of Sieving

PLATE 2: 'Bulk-grab' sample of Surficial-Waste-Zone (**CZR_RM_BULK_02**).

Of the 30.6 kg of 'whole-material' submitted, after modest compaction with a 10 kg weight, 22 % (w/w) corresponded to 19-53 mm; 39 % (w/w) corresponded to 4.75-19 mm; and, 39 % (w/w) corresponded to -4.75 mm.

Photographs of Field Sampling

Photograph of Submitted Sample in Steel-Mould Ahead of Sieving

PLATE 3: 'Bulk-grab' sample of Surficial-Waste-Zone (**CZR_RM_BULK_03**).

Of the 28.2 kg of 'whole-material' submitted, after modest compaction with a 10 kg weight, 29 % (w/w) corresponded to 19-53 mm; 38 % (w/w) corresponded to 4.75-19 mm; and, 33 % (w/w) corresponded to -4.75 mm.

Photographs of Field Sampling

Photograph of Submitted Sample in Steel-Mould Ahead of Sieving

PLATE 4: 'Bulk-grab' sample of Surficial-Waste-Zone (**CZR_RM_BULK_04**).

Of the 30.0 kg of 'whole-material' submitted, after modest compaction with a 10 kg weight, 21 % (w/w) corresponded to 19-53 mm; 43 % (w/w) corresponded to 4.75-19 mm; and, 36 % (w/w) corresponded to -4.75 mm.

ATTACHMENT A

DETAILS OF SAMPLING PROGRAMMES

ATTACHMENT A

DETAILS OF SAMPLING PROGRAMMES

1.0 PHASE-1: REVIEW OF MULTI-ELEMENT ASSAYS

- During the initial component of the current investigation, multi-element assays for drilling samples (as 1m-intervals) within the Project's geological database were reviewed.

- The collar locations of the **35** RC-holes employed for the Phase-1 review are shown on **Figure A1**.

  The RC-holes are grouped into three sections (viz. Section A, Section B, and Section C).

  Excluding ore-zone intersections, assays for a total of **1,218** 1m-intervals were reviewed.

  In terms of 'downhole-profiling' the resulting Phase-1 dataset (**Table A1**) represents a 'fine-resolution' of 1m-intervals.

- Lithologically (viz. Lith_1 variants) the 1,218 1m-intervals are broken-down as follows:

  - Upper-Sandy-Ironstone (USI) — 27 waste intervals
  - Middle-Sandy-Ironstone (MSI) — 366 waste intervals
  - Lower-Silty-Clay (LSC) — 423 waste intervals
  - LG-Ore — 402 intervals

- The MSI stream will make-up almost all of the total-waste inventory for the Project.

  Occurrences of the USI stream are both laterally locally restricted, and of shallow vertical extent.

  The LSC stream resides below the watertable, and since ground disturbance and mining is to occur above the watertable only, no LSC-waste is to be produced during the Project.

- Inspection of **Table A1** indicates that, irrespective of lithotype (viz. differing mine-waste lithology, or LG-ore), the Robe Mesa Deposit is characterised by **'negligible-sulphides'** (viz. all 1m-intervals, but one (0.12%S), have a S-tenor less than 0.1%S, and typically less than 0.02%S).

2.0 PHASE-2: MAIN TESTING PROGRAMME

2.1 Drilling Samples

- Based on the Phase-1 review, **20** 4m-composites (as RC-cuttings) derived from **9** drillholes were selected for the main programme of testing.

- The selected 4m-composites with Sample_IDs are indicated in **Table A1**, and the corresponding drillholes shown on **Figure A1**.

- Note: Whilst 4-m-composites of the LSC-stream were selected for Phase-2 testing in the early stages of the current study, as noted above, no mining of this lithotype is to take place, since it resides below watertable.

2.2 'Bulk-Grab' Samples

- **4** 'bulk-grab' samples from the Weathered-Surface-Zone (0-1 m nominal) were collected from shallow excavations whose locations are shown on **Figure A1**.

  Photographs of the 'bulk-grab' samples, together with their site-sampling locations, are shown on **Plates 1-4**.

- Note: For practical reasons for testing, the 'bulk-grab' samples of around 20-30 kgs submitted to GCA correspond to clast sizes less than 50-100 mm nominal. However, as shown on **Plates 1-4**, disturbance of the Weathered-Surface-Zone *in situ* generates a reasonably well-graded stream with clasts grading up to 1-2 decimetres (i.e. mining-stream quite **cobbly / blocky**).

397500 398000 398500

7594500 7594500

7594000 7594000

WC_BULK_01

YAR121 YAR256 YAR120 YAR119 YAR258 YAR259 YAR260 YAR116 YAR115

(WC1, WC2) YAR257 YAR118 YAR117 YAR261

(WC3, WC4, WC5) (WC6, WC7, WC8)

Section A

YAR281 YAR282 YAR283 YAR284 YAR285 YAR286 YAR287 YAR288 YAR291

(WC9, WC10) (WC11, WC12,WC13) YAR289 (WC14)

Section B

Deeper Mining Extent

WC_BULK_02

7593500 7593500

Pit Boundary

WC_BULK_03

Deeper Mining Extent

YAR153 YAR154 YAR351 YAR343 YAR145 YAR344 YAR144 YAR143

YAR146 YAR346

Section C

7593000

YAR360 YAR361 (WC16, WC17, WC18) (WC19, WC20)

(WC15)

WC_BULK_04

LEGEND

- Phase-1 Assays
- Phase-1 Assays and Phase-2 Sampling
- Grab-Samples of Surficial waste zone.
- YAR000 RC hole ID.
- (WC00) Phase-2 individual sample
- Mining Extents

Figure A1:
Locations of Drillholes and Grab Sampling Sites

Table A1: Phase-1 Assays

USI = Upper-Sandy-Ironstone; **MSI** = Middle-Sandy-Ironstone; **LSC** = Lower-Silty-Clay; **LGO** = LG-Ore

Phase-2 Sample	Section	Hole_ ID	From (m)	To (m)	Lith_1	S	Fe	CaO	MgO	K2O	Al2O3	TiO2	SiO2	P	Mn
						%									
	A	**YAR121**	0	22	ORE-ZONE										
	A	YAR121	22	23	LGO	0.03	52.23	0.07	0.15	0.051	4.60	0.16	8.52	0.032	0.04
	A	YAR121	23	24	LGO	0.03	52.71	0.07	0.15	0.043	4.66	0.13	7.51	0.024	0.06
	A	YAR121	24	25	LGO	0.02	51.77	0.07	0.13	0.082	4.34	0.16	9.22	0.026	0.23
	A	YAR121	25	26	LGO	0.02	51.68	0.06	0.12	0.052	4.67	0.19	9.15	0.018	0.22
	A	YAR121	26	27	LGO	0.02	51.79	0.07	0.12	0.043	4.07	0.18	9.36	0.017	0.18
	A	YAR121	27	28	LGO	0.02	54.30	0.06	0.08	0.036	2.66	0.13	7.46	0.017	0.12
	A	YAR121	28	29	**MSI-waste**	0.02	41.92	0.10	0.21	0.257	6.63	0.43	21.49	0.022	0.15
	A	YAR121	29	30	**MSI-waste**	0.02	35.57	0.09	0.17	0.127	5.75	0.99	32.49	0.013	0.09
	A	YAR121	30	31	**MSI-waste**	0.01	34.95	0.11	0.21	0.107	7.33	1.08	31.67	0.017	0.10
	A	YAR121	31	32	**MSI-waste**	0.01	45.02	0.08	0.13	0.072	6.06	0.60	17.62	0.027	0.08
	A	YAR121	32	33	**MSI-waste**	0.01	37.09	0.09	0.15	0.111	8.67	0.91	26.52	0.024	0.07
	A	YAR121	33	34	**MSI-waste**	0.01	24.68	0.10	0.16	0.162	10.74	1.54	43.49	0.018	0.05
	A	YAR121	34	35	**MSI-waste**	0.01	40.78	0.07	0.12	0.092	6.73	0.77	23.69	0.034	0.07
	A	YAR121	35	36	**MSI-waste**	0.01	42.52	0.07	0.12	0.090	6.85	0.68	20.80	0.047	0.06
	A	YAR121	36	37	LGO	0.01	53.71	0.05	0.09	0.039	3.77	0.19	7.57	0.055	0.05
	A	YAR121	37	38	LGO	0.02	50.38	0.06	0.10	0.034	2.83	0.14	14.80	0.044	0.15
	A	YAR121	38	64	ORE-ZONE										
	A	YAR121	64	65	**LSC-waste**	0.01	49.32	0.06	0.14	0.165	5.07	0.27	12.90	0.130	0.15
	A	YAR121	65	66	**LSC-waste**	0.01	52.78	0.06	0.14	0.117	3.92	0.19	9.16	0.202	0.14
	A	YAR121	66	67	**LSC-waste**	0.01	46.76	0.07	0.16	0.169	4.64	0.32	16.76	0.176	0.15
	A	YAR121	67	68	**LSC-waste**	0.01	50.43	0.08	0.14	0.110	3.73	0.22	12.31	0.186	0.15
	A	YAR121	68	69	**LSC-waste**	0.01	42.46	0.06	0.14	0.136	4.22	0.30	23.79	0.150	0.17
	A	YAR121	69	70	**LSC-waste**	0.01	44.65	0.05	0.11	0.090	4.63	0.34	19.80	0.158	0.23
	A	YAR121	70	71	**LSC-waste**	0.01	41.84	0.05	0.14	0.176	5.84	0.40	23.14	0.137	0.25
	A	YAR121	71	72	**LSC-waste**	0.01	42.64	0.06	0.18	0.157	4.78	0.33	22.81	0.108	0.30
	A	YAR121	72	73	**LSC-waste**	0.01	29.67	0.05	0.12	0.134	2.38	0.20	47.71	0.075	0.20
	A	YAR121	73	74	**LSC-waste**	0.01	35.98	0.05	0.16	0.153	3.27	0.24	35.75	0.088	0.27
	A	YAR121	74	75	**LSC-waste**	0.01	42.22	0.05	0.16	0.142	3.12	0.22	25.80	0.097	0.30
	A	YAR121	75	76	**LSC-waste**	0.01	40.22	0.06	0.17	0.172	4.18	0.29	27.42	0.102	0.30
	A	YAR121	76	77	**LSC-waste**	0.01	41.45	0.06	0.17	0.160	4.02	0.29	25.78	0.103	0.29
	A	YAR121	77	78	**LSC-waste**	0.01	39.78	0.05	0.16	0.163	3.98	0.27	28.49	0.102	0.28
	A	YAR121	78	79	**LSC-waste**	0.01	35.50	0.05	0.16	0.149	3.90	0.28	35.37	0.095	0.26
	A	YAR121	79	80	**LSC-waste**	0.01	33.65	0.05	0.16	0.167	3.84	0.27	38.74	0.090	0.24
	A	YAR121	80	81	**LSC-waste**	0.01	36.28	0.05	0.18	0.210	4.69	0.34	33.43	0.100	0.23
	A	YAR121	81	82	**LSC-waste**	0.01	36.02	0.06	0.19	0.256	4.58	0.32	34.27	0.109	0.24
	A	YAR121	82	83	**LSC-waste**	0.01	34.64	0.06	0.18	0.273	4.50	0.31	36.25	0.117	0.22
	A	YAR121	83	84	**LSC-waste**	0.01	32.76	0.06	0.19	0.292	3.95	0.27	40.83	0.121	0.21
	A	YAR121	84	85	**LSC-waste**	0.01	33.83	0.06	0.20	0.389	5.06	0.35	37.13	0.143	0.19
	A	YAR121	85	86	**LSC-waste**	0.01	27.38	0.08	0.59	1.211	7.15	0.35	43.92	0.103	0.20
	A	YAR121	86	87	**LSC-waste**	<0.01	17.45	0.14	1.22	2.697	11.37	0.43	54.11	0.053	0.17
	A	YAR121	87	88	**LSC-waste**	<0.01	16.12	0.18	1.31	2.538	11.41	0.40	55.86	0.053	0.16
	A	YAR121	88	89	**LSC-waste**	<0.01	12.22	0.25	1.28	2.971	13.09	0.46	59.31	0.062	0.12
	A	YAR121	89	90	**LSC-waste**	<0.01	12.77	0.21	1.31	2.932	12.91	0.44	58.86	0.047	0.11
	A	YAR121	90	91	**LSC-waste**	<0.01	18.44	0.14	0.97	1.657	9.48	0.55	54.39	0.057	0.23
	A	YAR121	91	92	**LSC-waste**	<0.01	9.45	0.12	0.99	2.616	13.72	0.86	62.96	0.033	0.11
	A	YAR121	92	93	**LSC-waste**	<0.01	16.41	0.11	0.91	1.870	11.28	0.64	55.80	0.059	0.15
	A	YAR121	93	94	**LSC-waste**	<0.01	7.75	0.16	1.48	3.553	16.37	0.79	61.23	0.023	0.08
	A	YAR121	94	95	**LSC-waste**	<0.01	6.44	0.17	1.46	3.467	17.32	0.90	62.04	0.020	0.08
	A	YAR121	95	96	**LSC-waste**	<0.01	16.54	0.13	1.16	2.592	12.57	0.60	53.04	0.054	0.18
	A	**YAR256**	0	23	ORE-ZONE										
	A	YAR256	23	24	LGO	0.03	51.90	0.08	0.08	0.034	4.06	0.11	9.38	0.030	
	A	YAR256	24	25	LGO	0.02	50.27	0.07	0.09	0.040	4.60	0.16	11.36	0.027	
	A	YAR256	25	26	**MSI-waste**	0.01	46.79	0.09	0.10	0.044	5.10	0.22	16.49	0.021	
	A	YAR256	26	27	**MSI-waste**	0.01	38.79	0.15	0.17	0.072	9.14	0.33	23.87	0.013	
	A	YAR256	27	28	**MSI-waste**	0.01	44.96	0.11	0.14	0.054	6.85	0.31	16.89	0.011	
	A	YAR256	28	29	**MSI-waste**	0.02	42.14	0.13	0.18	0.066	7.31	0.54	20.67	0.009	
	A	YAR256	29	30	**MSI-waste**	0.02	35.16	0.15	0.19	0.085	9.31	0.87	28.88	0.009	
WC01	A	YAR256	30	31	**MSI-waste**	0.01	29.53	0.18	0.21	0.092	10.92	1.17	35.31	0.008	
	A	YAR256	31	32	**MSI-waste**	0.01	39.07	0.12	0.15	0.083	7.71	0.81	24.75	0.010	
	A	YAR256	32	33	**MSI-waste**	0.01	39.58	0.10	0.12	0.090	8.02	0.78	23.90	0.017	
	A	YAR256	33	34	**MSI-waste**	0.01	26.48	0.13	0.14	0.148	12.30	1.22	38.33	0.016	
	A	YAR256	34	35	**MSI-waste**	0.01	24.23	0.12	0.13	0.174	13.68	1.26	40.23	0.019	
	A	YAR256	35	36	**MSI-waste**	0.01	35.67	0.10	0.11	0.130	11.60	0.74	25.47	0.026	
	A	YAR256	36	37	**MSI-waste**	0.02	46.56	0.07	0.09	0.072	5.96	0.35	15.72	0.038	
	A	YAR256	37	38	**MSI-waste**	0.02	42.28	0.11	0.15	0.083	7.99	0.49	19.39	0.043	
	A	YAR256	38	39	**MSI-waste**	0.03	39.02	0.13	0.16	0.088	9.52	0.60	24.88	0.027	
	A	YAR256	39	58	ORE-ZONE										
	A	YAR256	58	59	**LSC-waste**	0.01	44.87	0.08	0.15	0.129	6.77	0.44	18.09	0.050	
	A	YAR256	59	60	**LSC-waste**	0.01	18.62	0.14	0.24	0.296	15.62	1.12	46.77	0.028	
	A	YAR256	60	61	**LSC-waste**	0.01	27.18	0.10	0.18	0.222	13.59	1.08	35.82	0.055	
	A	YAR256	61	62	**LSC-waste**	0.01	15.31	0.13	0.20	0.253	15.75	1.35	51.67	0.033	
	A	YAR256	62	63	**LSC-waste**	0.01	41.09	0.07	0.12	0.094	7.18	0.48	22.76	0.090	
	A	YAR256	63	64	**LSC-waste**	0.01	36.13	0.14	0.23	0.073	7.60	0.61	29.91	0.132	
	A	YAR256	64	65	**LSC-waste**	0.01	28.00	0.13	0.22	0.179	11.10	0.86	37.94	0.094	
	A	YAR256	65	66	**LSC-waste**	0.01	45.48	0.13	0.22	0.042	4.85	0.21	18.07	0.198	
WC02	A	YAR256	66	67	**LSC-waste**	0.01	46.07	0.18	0.32	0.049	5.35	0.22	16.30	0.226	
	A	YAR256	67	68	**LSC-waste**	0.01	43.50	0.22	0.39	0.064	5.84	0.23	19.76	0.232	
	A	YAR256	68	69	**LSC-waste**	0.01	43.12	0.18	0.34	0.085	4.96	0.26	21.41	0.246	
	A	YAR256	69	70	**LSC-waste**	0.04	43.96	0.10	0.20	0.140	4.14	0.29	22.34	0.173	

Phase-2 Sample	Section	Hole_ ID	From (m)	To (m)	Lith_1	S	Fe	CaO	MgO	K2O	Al2O3	TiO2	SiO2	P	Mn
						%									
	A	YAR256	70	71	**LSC-waste**	0.04	44.37	0.09	0.18	0.153	4.87	0.31	21.08	0.149	
	A	YAR256	71	72	**LSC-waste**	0.01	44.08	0.08	0.15	0.165	4.15	0.27	21.70	0.122	
	A	YAR256	72	73	**LSC-waste**	0.01	45.72	0.07	0.16	0.169	4.77	0.30	17.51	0.139	
	A	YAR256	73	74	**LSC-waste**	0.01	45.21	0.07	0.16	0.169	4.86	0.31	18.65	0.136	
	A	YAR256	74	75	**LSC-waste**	0.01	44.98	0.06	0.16	0.171	4.88	0.31	18.73	0.138	
	A	YAR256	75	76	**LSC-waste**	0.01	44.19	0.06	0.18	0.199	4.89	0.31	20.30	0.131	
	A	YAR256	76	77	**LSC-waste**	0.01	44.14	0.06	0.18	0.192	5.41	0.36	19.88	0.133	
	A	YAR256	77	78	**LSC-waste**	0.01	43.43	0.06	0.18	0.193	5.12	0.35	21.14	0.131	
	A	YAR256	78	79	**LSC-waste**	0.01	42.87	0.07	0.20	0.186	5.26	0.38	22.37	0.134	
	A	YAR256	79	80	**LSC-waste**	0.01	43.79	0.07	0.19	0.185	5.16	0.35	20.56	0.135	
	A	YAR256	80	81	**LSC-waste**	0.01	43.21	0.07	0.19	0.209	5.49	0.38	20.98	0.140	
	A	YAR256	81	82	**LSC-waste**	0.01	45.51	0.07	0.19	0.204	5.04	0.34	18.05	0.144	
	A	YAR256	82	83	**LSC-waste**	0.01	44.05	0.07	0.19	0.225	4.89	0.33	20.39	0.139	
	A	YAR256	83	84	**LSC-waste**	0.01	42.22	0.07	0.20	0.254	5.03	0.33	23.01	0.137	
	A	**YAR120**	0	1	LGO	0.01	38.55	0.12	0.24	0.604	7.56	0.55	30.51	0.062	0.05
	A	YAR120	1	2	LGO	0.02	47.95	0.14	0.23	0.319	6.63	0.27	14.23	0.054	0.02
	A	YAR120	2	3	LGO	0.04	51.49	0.15	0.23	0.246	5.51	0.23	10.51	0.058	0.04
	A	YAR120	3	4	LGO	0.04	52.17	0.09	0.21	0.258	4.11	0.14	10.28	0.065	0.03
	A	YAR120	4	13	ORE-ZONE										
	A	YAR120	13	14	LGO	0.02	52.36	0.23	0.13	0.025	2.89	0.12	9.77	0.038	0.02
	A	YAR120	14	15	LGO	0.03	52.53	0.14	0.18	0.027	3.54	0.14	9.07	0.040	0.02
	A	YAR120	15	16	LGO	0.03	49.83	0.36	0.32	0.042	4.41	0.17	11.58	0.044	0.01
	A	YAR120	16	17	LGO	0.03	49.28	1.06	0.27	0.039	4.83	0.15	10.75	0.043	0.03
	A	YAR120	17	18	LGO	0.02	51.60	0.13	0.18	0.028	3.74	0.12	10.06	0.057	0.03
	A	YAR120	18	19	LGO	0.01	53.15	0.09	0.15	0.022	3.62	0.15	8.07	0.026	0.01
	A	YAR120	19	20	LGO	0.02	52.48	0.62	0.16	0.022	3.79	0.12	8.23	0.024	0.03
	A	YAR120	20	21	LGO	0.03	52.67	0.26	0.14	0.025	4.13	0.15	7.95	0.026	0.02
	A	YAR120	21	22	LGO	0.03	53.86	0.07	0.12	0.024	3.94	0.13	6.68	0.026	0.02
	A	YAR120	22	23	LGO	0.02	52.56	0.21	0.17	0.025	4.60	0.13	7.71	0.034	0.02
	A	YAR120	23	24	LGO	0.02	50.16	1.49	0.20	0.038	4.58	0.12	9.32	0.030	0.08
	A	YAR120	24	25	LGO	0.02	53.13	0.11	0.12	0.036	4.14	0.10	7.69	0.042	0.07
	A	YAR120	25	26	LGO	0.02	55.11	0.05	0.07	0.020	2.12	0.09	7.63	0.030	0.07
	A	YAR120	26	27	LGO	0.02	53.43	0.06	0.09	0.028	3.58	0.16	8.14	0.016	0.06
	A	YAR120	27	28	LGO	0.02	53.36	0.07	0.11	0.026	3.39	0.13	8.40	0.013	0.08
	A	YAR120	28	29	**MSI-waste**	0.02	49.39	0.11	0.16	0.043	4.53	0.21	12.94	0.011	0.12
	A	YAR120	29	30	**MSI-waste**	0.01	37.17	0.18	0.30	0.107	8.49	0.61	26.71	0.012	0.08
	A	YAR120	30	31	**MSI-waste**	0.01	25.78	0.21	0.33	0.183	10.41	1.10	43.82	0.016	0.17
	A	YAR120	31	32	**MSI-waste**	0.01	36.77	0.13	0.21	0.090	7.72	0.80	28.70	0.027	0.06
	A	YAR120	32	33	**MSI-waste**	0.01	50.83	0.05	0.08	0.047	4.10	0.44	11.31	0.045	0.05
	A	YAR120	33	34	**MSI-waste**	0.01	49.02	0.05	0.07	0.061	4.74	0.54	13.64	0.033	0.06
	A	YAR120	34	35	**MSI-waste**	0.02	44.90	0.07	0.09	0.084	6.18	0.62	17.89	0.040	0.05
	A	YAR120	35	36	**MSI-waste**	0.02	43.81	0.09	0.13	0.088	7.61	0.58	18.48	0.046	0.04
	A	YAR120	36	37	LGO	0.02	53.36	0.06	0.10	0.056	3.49	0.16	8.89	0.047	0.18
	A	YAR120	37	38	LGO	0.01	53.58	0.05	0.09	0.031	3.01	0.11	8.74	0.041	0.07
	A	YAR120	38	39	LGO	0.01	51.88	0.08	0.14	0.054	5.67	0.19	9.85	0.044	0.07
	A	YAR120	39	40	LGO	0.01	46.11	0.09	0.16	0.082	7.47	0.34	14.67	0.063	0.15
	A	YAR120	40	41	LGO	0.01	58.35	0.06	0.09	0.021	1.64	0.05	4.68	0.046	0.22
	A	YAR120	41	59	ORE-ZONE										
	A	YAR120	59	60	**LSC-waste**	0.01	49.00	0.05	0.12	0.040	4.40	0.33	14.06	0.078	0.09
	A	YAR120	60	61	**LSC-waste**	0.01	44.08	0.06	0.14	0.058	7.02	0.67	19.60	0.079	0.08
	A	YAR120	61	62	**LSC-waste**	<0.01	33.35	0.11	0.20	0.099	7.75	0.78	34.35	0.066	0.03
	A	YAR120	62	63	**LSC-waste**	<0.01	39.34	0.25	0.41	0.072	8.20	0.60	24.57	0.141	0.04
	A	YAR120	63	64	**LSC-waste**	<0.01	46.31	0.11	0.21	0.060	5.40	0.42	17.00	0.176	0.06
	A	YAR120	64	65	**LSC-waste**	<0.01	46.74	0.09	0.20	0.085	5.65	0.34	15.32	0.138	0.04
	A	YAR120	65	66	**LSC-waste**	<0.01	50.99	0.11	0.21	0.039	3.32	0.15	11.70	0.182	0.08
	A	YAR120	66	67	**LSC-waste**	<0.01	34.13	0.30	0.55	0.128	5.33	0.23	35.16	0.216	0.46
	A	YAR120	67	68	**LSC-waste**	<0.01	9.17	0.02	0.05	0.057	0.85	0.10	83.66	0.046	0.24
	A	YAR120	68	69	**LSC-waste**	0.01	29.07	0.11	0.25	0.327	6.13	0.58	40.75	0.094	1.52
	A	YAR120	69	70	**LSC-waste**	<0.01	26.28	0.10	0.21	0.252	6.65	0.57	46.46	0.086	0.47
	A	YAR120	70	71	**LSC-waste**	<0.01	37.95	0.08	0.20	0.184	4.41	0.30	30.89	0.117	0.20
	A	YAR120	71	72	**LSC-waste**	<0.01	18.93	0.10	0.79	2.637	12.39	0.51	49.31	0.084	0.27
	A	YAR120	72	73	**LSC-waste**	<0.01	12.69	0.10	0.94	3.584	15.22	0.58	54.19	0.057	0.75
	A	YAR120	73	74	**LSC-waste**	<0.01	4.65	0.10	1.15	4.570	18.09	0.64	63.18	0.026	0.49
	A	YAR120	74	75	**LSC-waste**	<0.01	4.84	0.12	1.24	4.488	17.83	0.61	62.38	0.029	0.96
	A	**YAR257**	0	1	LGO	0.01	54.66	0.20	0.18	0.107	3.92	0.20	8.36	0.033	
	A	YAR257	1	2	LGO	0.01	56.02	0.27	0.17	0.076	3.47	0.15	6.85	0.033	
	A	YAR257	2	3	LGO	0.01	48.47	1.04	0.23	0.201	5.15	0.29	13.62	0.046	
	A	YAR257	3	4	LGO	0.01	47.10	1.34	0.27	0.246	5.17	0.30	15.34	0.032	
	A	YAR257	4	5	LGO	0.01	52.47	0.48	0.20	0.119	3.61	0.16	9.55	0.032	
	A	YAR257	5	6	LGO	0.02	53.65	0.17	0.19	0.046	2.54	0.09	9.81	0.031	
	A	YAR257	6	7	LGO	0.01	34.15	0.43	0.50	0.107	3.89	0.19	37.71	0.014	
	A	YAR257	7	16	ORE-ZONE										
	A	YAR257	16	17	LGO	0.02	46.20	0.18	0.35	0.033	4.65	0.17	17.56	0.041	
	A	YAR257	17	18	LGO	0.03	46.78	0.14	0.29	0.022	4.22	0.12	16.89	0.042	
	A	YAR257	18	19	LGO	0.04	45.62	0.13	0.25	0.048	6.08	0.25	16.42	0.051	
	A	YAR257	19	20	LGO	0.02	47.61	0.12	0.27	0.035	5.66	0.20	14.06	0.044	
	A	YAR257	20	21	LGO	0.02	50.80	0.10	0.21	0.022	4.15	0.12	10.88	0.041	
	A	YAR257	21	22	LGO	0.03	53.74	0.08	0.17	0.013	2.85	0.07	7.85	0.025	
	A	YAR257	22	23	LGO	0.03	50.47	0.12	0.25	0.021	4.40	0.11	10.67	0.026	
	A	YAR257	23	24	LGO	0.03	48.09	0.11	0.23	0.032	5.27	0.14	14.00	0.024	
	A	YAR257	24	25	LGO	0.02	49.49	0.10	0.20	0.057	5.51	0.18	11.31	0.044	
	A	YAR257	25	26	LGO	0.02	51.84	0.10	0.22	0.033	4.11	0.15	9.51	0.040	
	A	YAR257	26	27	LGO	0.02	49.33	0.10	0.21	0.051	4.94	0.30	12.47	0.025	
	A	YAR257	27	28	LGO	0.02	48.57	0.10	0.18	0.051	5.35	0.30	13.19	0.019	

Phase-2 Sample	Section	Hole_ ID	From (m)	To (m)	Lith_1	S	Fe	CaO	MgO	K2O	Al2O3	TiO2	SiO2	P	Mn
						%									
	A	YAR257	28	29	LGO	0.02	54.06	0.07	0.11	0.029	3.31	0.15	7.22	0.015	
	A	YAR257	29	30	LGO	0.02	51.15	0.10	0.18	0.040	4.39	0.18	10.14	0.017	
	A	YAR257	30	31	**MSI-waste**	0.03	38.82	0.16	0.32	0.121	9.47	0.60	22.78	0.028	
	A	YAR257	31	32	**MSI-waste**	0.02	28.76	0.18	0.34	0.120	10.52	1.21	36.74	0.021	
	A	YAR257	32	33	**MSI-waste**	0.01	49.90	0.07	0.11	0.044	4.74	0.44	11.71	0.020	
	A	YAR257	33	34	**MSI-waste**	0.01	48.08	0.07	0.10	0.055	4.90	0.56	14.89	0.025	
	A	YAR257	34	35	**MSI-waste**	0.01	48.00	0.06	0.10	0.064	5.46	0.53	14.51	0.031	
	A	YAR257	35	36	**MSI-waste**	0.01	44.38	0.07	0.13	0.086	7.04	0.67	19.04	0.029	
	A	YAR257	36	37	**MSI-waste**	0.02	50.88	0.10	0.13	0.058	4.46	0.28	11.65	0.041	
	A	YAR257	37	38	**MSI-waste**	0.02	49.90	0.09	0.18	0.081	5.03	0.26	10.87	0.041	
	A	YAR257	38	39	**MSI-waste**	0.02	37.90	0.17	0.39	0.139	9.83	0.59	22.61	0.047	
	A	YAR257	39	40	LGO	0.02	52.60	0.11	0.21	0.049	4.65	0.15	8.65	0.059	
	A	YAR257	40	55	ORE-ZONE										
	A	YAR257	55	56	LGO	0.01	52.95	0.07	0.13	0.029	3.37	0.20	9.76	0.079	
	A	YAR257	56	57	LGO	0.01	52.02	0.08	0.13	0.029	3.53	0.29	12.83	0.077	
	A	YAR257	57	58	**LSC-waste**	0.01	43.07	0.09	0.16	0.039	6.79	0.62	21.71	0.070	
	A	YAR257	58	59	**LSC-waste**	0.01	35.97	0.16	0.25	0.050	9.30	0.86	28.55	0.074	
	A	YAR257	59	60	**LSC-waste**	0.01	42.97	0.21	0.35	0.071	7.47	0.38	18.77	0.081	
	A	YAR257	60	61	**LSC-waste**	<0.01	21.81	0.43	0.73	0.094	6.42	0.28	53.05	0.120	
	A	YAR257	61	62	**LSC-waste**	<0.01	27.82	0.44	0.75	0.092	6.26	0.35	43.77	0.141	
	A	YAR257	62	63	**LSC-waste**	<0.01	38.38	0.31	0.54	0.076	5.21	0.29	28.31	0.298	
	A	YAR257	63	64	**LSC-waste**	<0.01	44.85	0.14	0.29	0.070	3.88	0.17	20.80	0.242	
	A	YAR257	64	65	**LSC-waste**	<0.01	48.49	0.13	0.29	0.064	3.92	0.15	14.62	0.317	
	A	YAR257	65	66	**LSC-waste**	<0.01	32.20	0.10	0.22	0.068	3.92	0.22	41.23	0.304	
	A	YAR257	66	67	**LSC-waste**	0.01	40.85	0.06	0.15	0.086	3.29	0.21	28.07	0.231	
	A	YAR257	67	68	**LSC-waste**	0.01	45.33	0.06	0.18	0.138	5.14	0.35	18.45	0.186	
	A	YAR257	68	69	**LSC-waste**	0.01	43.74	0.08	0.20	0.162	7.91	0.55	18.36	0.198	
	A	YAR257	69	70	**LSC-waste**	0.01	35.72	0.06	0.16	0.174	6.58	0.49	32.93	0.110	
	A	YAR257	70	71	**LSC-waste**	<0.01	19.58	0.07	0.76	1.778	11.33	0.57	50.67	0.085	
	A	YAR257	71	72	**LSC-waste**	<0.01	10.30	0.09	1.27	3.847	16.13	0.63	57.12	0.054	
	A	**YAR119**	0	1	LGO	0.01	48.33	0.09	0.16	0.254	4.35	0.30	17.60	0.042	0.03
	A	YAR119	1	2	LGO	0.03	51.34	1.38	0.25	0.169	4.10	0.16	10.18	0.020	0.01
	A	YAR119	2	3	LGO	0.03	50.04	1.68	0.43	0.121	3.55	0.13	12.16	0.017	0.01
	A	YAR119	3	4	LGO	0.02	51.47	0.71	0.38	0.049	3.17	0.10	12.68	0.019	0.02
	A	YAR119	4	5	LGO	0.02	46.67	2.72	0.55	0.052	2.48	0.08	16.50	0.024	0.02
	A	YAR119	5	6	LGO	0.02	53.18	0.46	0.25	0.033	2.55	0.07	10.58	0.030	0.02
	A	YAR119	6	7	LGO	0.02	41.83	0.36	0.54	0.074	3.34	0.13	26.18	0.022	0.01
	A	YAR119	7	8	LGO	0.01	52.08	0.18	0.26	0.034	2.85	0.10	12.11	0.031	0.02
	A	YAR119	8	9	LGO	0.02	55.95	0.12	0.15	0.018	2.19	0.06	8.12	0.032	0.02
	A	YAR119	9	10	LGO	0.01	47.15	0.64	0.53	0.045	3.77	0.12	17.79	0.033	0.01
	A	YAR119	10	11	LGO	0.01	26.54	3.21	1.26	0.074	4.31	0.19	43.61	0.007	0.01
	A	YAR119	11	12	LGO	0.01	44.06	0.30	0.50	0.031	2.99	0.12	23.57	0.029	0.02
	A	YAR119	12	20	ORE-ZONE										
	A	YAR119	20	21	LGO	0.02	52.24	0.06	0.10	0.019	4.60	0.15	8.25	0.024	0.02
	A	YAR119	21	22	LGO	0.03	51.83	0.07	0.10	0.023	4.44	0.16	9.05	0.027	0.03
	A	YAR119	22	23	LGO	0.02	46.24	0.09	0.14	0.040	7.17	0.30	14.50	0.031	0.02
	A	YAR119	23	24	LGO	0.02	53.34	0.05	0.09	0.022	4.32	0.13	6.96	0.034	0.03
	A	YAR119	24	25	LGO	0.02	52.62	0.06	0.11	0.026	4.76	0.11	7.46	0.045	0.03
	A	YAR119	25	26	LGO	0.04	51.90	0.06	0.10	0.046	5.02	0.15	8.25	0.035	0.06
	A	YAR119	26	27	LGO	0.02	52.05	0.05	0.07	0.051	4.78	0.23	8.73	0.033	0.05
	A	YAR119	27	28	LGO	0.02	54.66	0.04	0.07	0.023	3.47	0.12	6.41	0.014	0.03
	A	YAR119	28	29	LGO	0.02	52.45	0.06	0.08	0.024	4.11	0.15	8.87	0.013	0.03
	A	YAR119	29	30	LGO	0.02	50.82	0.07	0.10	0.033	4.76	0.19	10.67	0.014	0.04
	A	YAR119	30	31	**MSI-waste**	0.02	41.67	0.14	0.18	0.081	8.25	0.47	20.08	0.010	0.05
	A	YAR119	31	32	**MSI-waste**	0.03	38.81	0.14	0.18	0.114	9.07	0.68	23.49	0.012	0.13
	A	YAR119	32	33	**MSI-waste**	0.01	42.04	0.09	0.13	0.082	7.25	0.78	20.94	0.015	0.09
	A	YAR119	33	34	**MSI-waste**	0.01	49.27	0.06	0.09	0.058	5.06	0.47	12.51	0.021	0.14
	A	YAR119	34	35	**MSI-waste**	0.01	49.06	0.06	0.09	0.058	5.12	0.48	13.13	0.030	0.08
	A	YAR119	35	36	**MSI-waste**	0.01	46.05	0.05	0.08	0.065	5.62	0.67	17.11	0.025	0.07
	A	YAR119	36	37	**MSI-waste**	0.01	37.72	0.08	0.10	0.109	8.49	0.88	26.62	0.027	0.09
	A	YAR119	37	38	**MSI-waste**	0.01	30.01	0.11	0.13	0.166	12.90	1.07	32.23	0.033	0.08
	A	YAR119	38	39	LGO	0.02	50.99	0.06	0.07	0.053	4.14	0.29	12.25	0.038	0.14
	A	YAR119	39	53	ORE-ZONE										
	A	YAR119	53	54	LGO	0.01	49.84	0.05	0.09	0.056	3.60	0.32	13.40	0.071	0.06
	A	YAR119	54	55	**LSC-waste**	0.01	54.54	0.04	0.07	0.018	1.65	0.11	7.88	0.073	0.06
	A	YAR119	55	56	**LSC-waste**	0.01	47.55	0.07	0.15	0.044	6.01	0.22	13.88	0.074	0.09
	A	YAR119	56	57	**LSC-waste**	0.01	46.71	0.07	0.12	0.039	5.74	0.64	18.51	0.068	0.06
	A	YAR119	57	58	**LSC-waste**	<0.01	28.44	0.11	0.19	0.072	10.07	1.34	39.15	0.057	0.07
	A	YAR119	58	59	**LSC-waste**	<0.01	26.80	0.20	0.37	0.117	11.70	1.19	38.97	0.051	0.10
	A	YAR119	59	60	**LSC-waste**	<0.01	24.26	0.35	0.64	0.152	8.99	0.82	46.36	0.047	0.08
	A	YAR119	60	61	**LSC-waste**	<0.01	16.26	0.53	1.02	0.156	7.57	0.38	60.74	0.041	0.03
	A	YAR119	61	62	**LSC-waste**	<0.01	20.18	0.47	0.86	0.150	6.80	0.39	55.90	0.055	0.04
	A	YAR119	62	63	**LSC-waste**	0.01	29.35	0.39	0.75	0.202	8.37	0.47	39.06	0.106	0.05
	A	YAR119	63	64	**LSC-waste**	<0.01	38.49	0.31	0.60	0.171	6.59	0.29	26.68	0.245	0.05
	A	YAR119	64	65	**LSC-waste**	<0.01	45.05	0.33	0.69	0.094	4.91	0.14	18.07	0.367	0.07
	A	YAR119	65	66	**LSC-waste**	<0.01	53.51	0.11	0.25	0.054	2.16	0.08	8.57	0.528	0.14
	A	YAR119	66	67	**LSC-waste**	<0.01	51.33	0.07	0.17	0.056	2.34	0.16	12.07	0.322	0.18
	A	YAR119	67	68	**LSC-waste**	<0.01	48.26	0.07	0.19	0.098	3.28	0.25	16.06	0.301	0.21
	A	YAR119	68	69	**LSC-waste**	<0.01	16.21	0.06	0.56	1.495	10.71	0.62	56.92	0.142	0.08
	A	YAR119	69	70	**LSC-waste**	<0.01	4.18	0.04	0.94	2.556	14.96	0.81	69.56	0.035	0.06
	A	YAR119	70	71	**LSC-waste**	<0.01	4.30	0.04	0.96	2.830	15.58	0.86	68.39	0.033	0.05
	A	YAR119	71	72	**LSC-waste**	<0.01	4.07	0.04	1.47	4.371	16.79	0.60	66.00	0.021	0.07
	A	**YAR258**	0	21	ORE-ZONE										
	A	YAR258	21	22	LGO	0.02	46.98	0.16	0.32	0.042	6.85	0.27	13.55	0.023	

Phase-2 Sample	Section	Hole_ ID	From (m)	To (m)	Lith_1	S	Fe	CaO	MgO	K2O	Al2O3	TiO2	SiO2	P	Mn
						%									
WC03	A	YAR258	22	23	LGO	0.03	48.46	0.14	0.27	0.035	6.00	0.23	12.11	0.028	
	A	YAR258	23	24	LGO	0.02	44.00	0.17	0.32	0.045	7.98	0.24	16.71	0.022	
	A	YAR258	24	25	LGO	0.02	54.02	0.07	0.13	0.030	3.69	0.11	6.39	0.046	
	A	YAR258	25	26	LGO	0.04	48.54	0.10	0.17	0.071	6.37	0.20	11.87	0.024	
	A	YAR258	26	27	LGO	0.02	54.10	0.06	0.08	0.036	3.43	0.17	7.37	0.024	
	A	YAR258	27	28	LGO	0.02	53.03	0.06	0.09	0.030	3.90	0.17	7.93	0.014	
	A	YAR258	28	29	**MSI-waste**	0.02	47.96	0.11	0.16	0.039	6.38	0.25	12.73	0.012	
	A	YAR258	29	30	**MSI-waste**	0.02	47.86	0.11	0.15	0.051	6.30	0.26	12.89	0.011	
WC04	A	YAR258	30	31	**MSI-waste**	0.03	45.96	0.10	0.15	0.082	6.57	0.40	15.26	0.016	
	A	YAR258	31	32	**MSI-waste**	0.01	43.66	0.07	0.11	0.076	5.47	0.83	20.52	0.019	
	A	YAR258	32	33	**MSI-waste**	0.01	45.12	0.05	0.09	0.054	4.78	0.90	19.38	0.022	
	A	YAR258	33	34	**MSI-waste**	0.01	48.52	0.06	0.09	0.048	5.14	0.51	13.67	0.019	
	A	YAR258	34	35	**MSI-waste**	0.01	43.22	0.09	0.13	0.064	7.30	0.68	19.21	0.022	
	A	YAR258	35	36	**MSI-waste**	0.01	46.91	0.05	0.07	0.059	4.65	0.68	16.89	0.025	
	A	YAR258	36	37	**MSI-waste**	0.01	38.82	0.08	0.11	0.103	7.76	0.89	25.76	0.036	
	A	YAR258	37	38	**MSI-waste**	0.02	47.91	0.05	0.07	0.054	4.78	0.36	15.80	0.041	
	A	YAR258	38	39	**MSI-waste**	0.01	49.34	0.06	0.07	0.059	4.25	0.29	14.03	0.041	
	A	YAR258	39	40	LGO	0.02	50.52	0.07	0.11	0.056	4.92	0.23	11.23	0.040	
	A	YAR258	40	54	ORE-ZONE										
	A	YAR258	54	55	**LSC-waste**	0.01	45.96	0.07	0.13	0.069	6.88	0.31	15.36	0.042	
	A	YAR258	55	56	**LSC-waste**	0.01	25.58	0.13	0.17	0.154	17.52	0.88	34.83	0.022	
	A	YAR258	56	57	**LSC-waste**	0.00	22.75	0.15	0.22	0.288	19.84	1.07	36.90	0.025	
	A	YAR258	57	58	**LSC-waste**	0.01	32.21	0.12	0.29	0.656	15.06	0.80	27.43	0.034	
	A	YAR258	58	59	**LSC-waste**	0.01	36.21	0.14	0.30	0.550	12.21	0.69	23.64	0.032	
	A	YAR258	59	60	**LSC-waste**	<0.01	28.69	0.25	0.53	0.708	11.31	0.76	36.06	0.050	
WC05	A	YAR258	60	61	**LSC-waste**	<0.01	22.39	0.15	0.45	1.068	12.48	0.80	45.26	0.093	
	A	YAR258	61	62	**LSC-waste**	<0.01	24.57	0.14	0.42	0.966	14.52	0.49	38.36	0.159	
	A	YAR258	62	63	**LSC-waste**	<0.01	30.26	0.10	0.34	1.054	11.99	0.32	32.71	0.213	
	A	YAR258	63	64	**LSC-waste**	<0.01	3.86	0.05	0.58	3.076	13.80	0.49	72.22	0.027	
	A	YAR258	64	65	**LSC-waste**	<0.01	5.43	0.04	0.57	3.047	13.42	0.48	70.18	0.044	
	A	YAR258	65	66	**LSC-waste**	<0.01	6.83	0.04	0.57	3.056	12.95	0.48	68.94	0.058	
	A	**YAR118**	0	1	LGO	0.02	52.13	0.04	0.07	0.115	5.17	0.26	8.58	0.033	
	A	YAR118	1	2	LGO	0.02	48.53	0.04	0.12	0.392	6.25	0.28	12.19	0.026	
	A	YAR118	2	3	LGO	0.01	48.03	0.06	0.14	0.381	6.11	0.31	13.51	0.028	
	A	YAR118	3	4	LGO	0.02	47.38	0.73	0.19	0.222	5.27	0.27	15.26	0.024	
	A	YAR118	4	5	LGO	0.02	50.44	0.21	0.13	0.154	3.62	0.15	14.97	0.020	
	A	YAR118	5	6	LGO	0.02	52.33	0.11	0.13	0.080	2.19	0.08	13.20	0.030	
	A	YAR118	6	25	ORE-ZONE										
	A	YAR118	25	26	LGO	0.01	37.88	0.18	0.19	0.082	9.24	0.36	24.81	0.026	
	A	YAR118	26	27	LGO	0.01	35.73	0.18	0.16	0.082	11.62	0.53	25.00	0.032	
	A	YAR118	27	28	LGO	0.02	48.81	0.09	0.09	0.056	5.99	0.25	12.17	0.024	
	A	YAR118	28	29	LGO	0.02	50.85	0.07	0.08	0.037	4.89	0.20	10.13	0.017	
	A	YAR118	29	30	LGO	0.02	51.16	0.07	0.08	0.034	5.22	0.19	9.66	0.015	
	A	YAR118	30	31	LGO	0.02	50.48	0.09	0.09	0.034	5.15	0.20	10.46	0.014	
	A	YAR118	31	32	LGO	0.02	50.50	0.08	0.09	0.041	4.56	0.23	10.75	0.010	
	A	YAR118	32	33	**MSI-waste**	0.03	45.12	0.11	0.11	0.081	6.44	0.48	16.73	0.019	
	A	YAR118	33	34	**MSI-waste**	0.02	40.86	0.07	0.09	0.079	5.33	1.08	25.37	0.017	
	A	YAR118	34	35	**MSI-waste**	0.01	45.31	0.06	0.07	0.060	4.96	0.83	19.14	0.032	
	A	YAR118	35	36	**MSI-waste**	0.01	38.89	0.11	0.13	0.094	8.79	0.93	23.41	0.032	
	A	YAR118	36	37	**MSI-waste**	0.01	44.58	0.06	0.08	0.073	6.29	0.74	18.25	0.030	
	A	YAR118	37	38	**MSI-waste**	0.01	31.61	0.11	0.11	0.155	12.17	1.06	30.69	0.027	
	A	YAR118	38	39	LGO	0.02	50.18	0.07	0.07	0.059	5.32	0.31	12.29	0.032	
	A	YAR118	39	55	ORE-ZONE										
	A	YAR118	55	56	**LSC-waste**	0.01	42.71	0.11	0.12	0.058	7.33	0.46	20.12	0.035	
	A	YAR118	56	57	**LSC-waste**	<0.01	17.54	0.19	0.22	0.284	20.07	1.16	44.27	0.021	
	A	YAR118	57	58	**LSC-waste**	<0.01	16.00	0.21	0.33	0.649	20.12	1.35	45.28	0.034	
	A	YAR118	58	59	**LSC-waste**	0.01	19.08	0.29	0.47	0.720	14.78	1.10	46.82	0.042	
	A	YAR118	59	60	**LSC-waste**	0.01	19.23	0.35	0.64	0.919	16.86	0.91	44.16	0.046	
	A	YAR118	60	61	**LSC-waste**	<0.01	8.31	0.19	0.51	1.647	16.55	0.88	61.44	0.035	
	A	YAR118	61	62	**LSC-waste**	<0.01	1.79	0.05	0.49	2.596	17.55	0.85	70.69	0.011	
	A	YAR118	62	63	**LSC-waste**	<0.01	6.10	0.06	0.49	2.540	16.83	0.70	64.95	0.045	
	A	YAR118	63	64	**LSC-waste**	<0.01	3.77	0.04	0.47	2.814	10.75	0.40	77.36	0.020	
	A	YAR118	64	65	**LSC-waste**	<0.01	3.02	0.04	0.53	3.271	14.13	0.52	73.42	0.026	
	A	YAR118	65	66	**LSC-waste**	<0.01	1.24	0.05	0.63	3.762	16.20	0.51	73.49	0.011	
	A	**YAR259**	0	1	LGO	0.01	50.70	0.05	0.10	0.211	4.68	0.27	12.43	0.035	
	A	YAR259	1	2	LGO	0.01	49.53	0.06	0.11	0.260	4.97	0.32	15.01	0.042	
	A	YAR259	2	23	ORE-ZONE										
	A	YAR259	23	24	LGO	0.03	54.70	0.03	0.05	0.020	2.92	0.08	7.12	0.031	
	A	YAR259	24	25	LGO	0.02	50.38	0.04	0.08	0.062	4.95	0.20	11.06	0.035	
	A	YAR259	25	26	LGO	0.02	50.09	0.05	0.08	0.053	5.10	0.23	11.43	0.020	
	A	YAR259	26	27	LGO	0.01	45.18	0.08	0.11	0.080	8.27	0.25	14.86	0.018	
	A	YAR259	27	28	LGO	0.02	52.52	0.04	0.07	0.030	4.30	0.14	8.17	0.014	
	A	YAR259	28	29	LGO	0.02	53.65	0.03	0.06	0.024	4.01	0.14	7.18	0.014	
	A	YAR259	29	30	LGO	0.02	54.04	0.03	0.07	0.027	3.89	0.15	6.94	0.016	
	A	YAR259	30	31	**MSI-waste**	0.02	41.29	0.16	0.29	0.069	8.51	0.34	20.13	0.012	
	A	YAR259	31	32	**MSI-waste**	0.02	36.67	0.15	0.23	0.145	10.09	0.66	25.45	0.014	
	A	YAR259	32	33	**MSI-waste**	0.01	38.52	0.12	0.20	0.153	8.82	0.76	24.36	0.034	
	A	YAR259	33	34	**MSI-waste**	0.01	47.96	0.06	0.09	0.062	5.23	0.58	14.55	0.051	
	A	YAR259	34	35	**MSI-waste**	0.01	46.68	0.05	0.08	0.071	5.60	0.64	16.15	0.036	
	A	YAR259	35	36	**MSI-waste**	0.02	43.00	0.05	0.09	0.097	6.43	0.80	20.77	0.037	
	A	YAR259	36	37	**MSI-waste**	0.02	36.81	0.08	0.11	0.135	9.12	0.86	26.80	0.038	
	A	YAR259	37	38	**MSI-waste**	0.02	44.34	0.08	0.10	0.100	6.56	0.52	19.02	0.032	
	A	YAR259	38	39	LGO	0.01	55.92	0.05	0.06	0.024	2.11	0.09	6.79	0.038	
	A	YAR259	39	40	LGO	0.02	54.53	0.04	0.06	0.022	2.34	0.08	8.42	0.041	

Phase-2 Sample	Section	Hole_ ID	From (m)	To (m)	Lith_1	S	Fe	CaO	MgO	K2O	Al2O3	TiO2	SiO2	P	Mn
						%									
	A	YAR259	40	41	LGO	0.02	49.47	0.09	0.11	0.059	6.37	0.20	13.96	0.038	
	A	YAR259	41	42	LGO	0.02	43.84	0.10	0.14	0.140	9.80	0.43	15.46	0.043	
	A	YAR259	42	51	ORE-ZONE										
	A	YAR259	51	52	LGO	0.01	51.13	0.06	0.12	0.060	4.12	0.21	10.48	0.062	
	A	YAR259	52	53	**LSC-waste**	0.01	43.83	0.06	0.11	0.120	7.23	0.49	18.72	0.048	
	A	YAR259	53	54	**LSC-waste**	0.01	46.75	0.07	0.12	0.075	5.75	0.35	15.77	0.043	
	A	YAR259	54	55	**LSC-waste**	0.01	10.56	0.27	0.34	0.165	20.10	1.52	53.89	0.018	
	A	YAR259	55	56	**LSC-waste**	0.01	11.02	0.23	0.33	0.351	19.55	1.40	54.12	0.025	
	A	YAR259	56	57	**LSC-waste**	0.01	11.73	0.28	0.53	0.552	21.42	1.14	50.21	0.029	
	A	YAR259	57	58	**LSC-waste**	0.01	12.26	0.33	0.65	1.023	18.09	0.91	53.36	0.028	
	A	YAR259	58	59	**LSC-waste**	0.01	14.87	0.35	0.74	1.345	14.64	0.71	53.27	0.040	
	A	YAR259	59	60	**LSC-waste**	<0.01	5.32	0.27	0.90	3.013	16.58	0.63	65.69	0.016	
	A	YAR259	60	61	**LSC-waste**	<0.01	5.72	0.21	0.89	3.601	17.31	0.66	64.17	0.030	
	A	YAR259	61	62	**LSC-waste**	<0.01	5.69	0.18	0.86	3.628	17.77	0.52	63.43	0.047	
	A	YAR259	62	63	**LSC-waste**	0.01	9.04	0.06	0.50	2.536	17.42	0.52	59.41	0.148	
	A	YAR259	63	64	**LSC-waste**	0.01	5.23	0.04	0.46	2.520	17.73	0.58	65.26	0.092	
	A	**YAR117**	0	21	ORE-ZONE										
	A	YAR117	21	22	LGO	0.02	52.96	0.04	0.07	0.042	4.09	0.12	7.46	0.045	
	A	YAR117	22	23	LGO	0.02	49.18	0.05	0.08	0.072	5.41	0.29	12.40	0.039	
	A	YAR117	23	24	LGO	0.02	48.36	0.06	0.09	0.080	6.27	0.21	12.70	0.015	
	A	YAR117	24	25	LGO	0.02	51.83	0.05	0.08	0.054	5.03	0.16	8.84	0.020	
	A	YAR117	25	26	LGO	0.02	50.34	0.06	0.09	0.053	5.55	0.19	10.64	0.014	
	A	YAR117	26	27	LGO	0.02	50.62	0.06	0.09	0.045	5.23	0.18	10.27	0.012	
	A	YAR117	27	28	LGO	0.02	51.73	0.06	0.09	0.038	4.20	0.15	9.52	0.011	
	A	YAR117	28	29	**MSI-waste**	0.02	46.92	0.10	0.18	0.059	6.27	0.26	14.60	0.009	
	A	YAR117	29	30	**MSI-waste**	0.02	37.82	0.13	0.23	0.132	9.58	0.59	24.50	0.011	
	A	YAR117	30	31	**MSI-waste**	0.01	31.94	0.12	0.20	0.180	10.36	1.06	32.33	0.018	
	A	YAR117	31	32	**MSI-waste**	0.01	43.50	0.06	0.10	0.084	6.16	0.77	19.77	0.024	
	A	YAR117	32	33	**MSI-waste**	0.01	37.72	0.07	0.12	0.120	8.90	0.98	25.70	0.024	
	A	YAR117	33	34	**MSI-waste**	0.01	43.87	0.05	0.08	0.101	7.31	0.68	18.12	0.024	
	A	YAR117	34	35	**MSI-waste**	0.01	38.55	0.06	0.10	0.127	8.88	0.86	24.30	0.034	
	A	YAR117	35	36	**MSI-waste**	0.01	46.16	0.05	0.09	0.095	6.64	0.44	16.08	0.033	
	A	YAR117	36	37	**MSI-waste**	0.01	51.65	0.04	0.06	0.044	3.59	0.16	11.15	0.041	
	A	YAR117	37	38	**MSI-waste**	0.01	43.93	0.08	0.13	0.098	8.15	0.38	16.97	0.041	
	A	YAR117	38	39	**MSI-waste**	0.02	43.94	0.07	0.12	0.100	8.62	0.31	16.99	0.039	
	A	YAR117	39	40	LGO	0.01	50.61	0.06	0.11	0.085	6.15	0.24	9.45	0.046	
	A	YAR117	40	50	ORE-ZONE										
	A	YAR117	50	51	LGO	0.01	50.80	0.04	0.07	0.059	5.22	0.20	10.27	0.048	
	A	YAR117	51	52	LGO	0.01	55.17	0.03	0.08	0.021	3.02	0.09	5.98	0.067	
	A	YAR117	52	53	**LSC-waste**	0.01	38.62	0.07	0.13	0.152	6.22	0.60	28.18	0.041	
	A	YAR117	53	54	**LSC-waste**	<0.01	20.74	0.16	0.29	0.539	14.47	1.11	45.63	0.043	
	A	YAR117	54	55	**LSC-waste**	<0.01	16.75	0.17	0.42	0.810	13.55	0.99	53.03	0.059	
	A	YAR117	55	56	**LSC-waste**	<0.01	13.14	0.32	0.75	1.295	21.02	0.77	47.78	0.047	
	A	YAR117	56	57	**LSC-waste**	<0.01	9.71	0.21	0.58	1.769	22.81	0.67	51.34	0.035	
	A	YAR117	57	58	**LSC-waste**	<0.01	12.70	0.13	0.45	1.766	16.70	0.48	55.25	0.052	
	A	YAR117	58	59	**LSC-waste**	<0.01	7.46	0.13	0.53	2.472	14.59	0.39	65.89	0.070	
	A	YAR117	59	60	**LSC-waste**	<0.01	17.22	0.10	0.52	2.741	15.61	0.41	48.10	0.220	
	A	YAR117	60	61	**LSC-waste**	0.01	31.19	0.08	0.36	1.628	9.04	0.29	34.14	0.537	
	A	YAR117	61	62	**LSC-waste**	<0.01	21.18	0.06	0.39	2.302	11.91	0.37	46.63	0.393	
	A	YAR117	62	63	**LSC-waste**	<0.01	1.35	0.04	0.33	2.644	18.42	0.94	70.50	0.020	
	A	YAR117	63	64	**LSC-waste**	<0.01	1.25	0.03	0.49	3.970	19.81	0.64	68.40	0.013	
	A	**YAR260**	0	12	ORE-ZONE										
	A	YAR260	12	13	LGO	0.01	17.68	0.72	1.32	0.539	16.21	0.42	45.85	0.008	
	A	YAR260	13	14	LGO	0.02	36.14	0.45	0.62	0.333	9.65	0.26	26.42	0.026	
	A	YAR260	14	15	LGO	0.01	23.68	0.39	0.81	0.512	16.17	0.50	37.40	0.010	
	A	YAR260	15	16	LGO	0.01	35.25	0.48	0.50	0.134	9.98	0.33	27.70	0.014	
	A	YAR260	16	17	LGO	0.02	41.88	0.24	0.34	0.095	7.46	0.20	20.86	0.023	
	A	YAR260	17	18	LGO	0.02	43.42	1.50	0.28	0.072	5.88	0.15	18.03	0.035	
	A	YAR260	18	19	LGO	0.02	48.87	0.14	0.20	0.053	4.73	0.15	13.36	0.031	
	A	YAR260	19	20	LGO	0.02	49.90	0.11	0.19	0.050	4.81	0.15	11.71	0.023	
	A	YAR260	20	21	LGO	0.02	46.44	0.14	0.26	0.065	6.48	0.23	14.80	0.032	
	A	YAR260	21	22	LGO	0.03	48.72	0.11	0.18	0.051	5.26	0.26	12.74	0.034	
	A	YAR260	22	23	LGO	0.03	48.94	0.12	0.19	0.054	5.46	0.20	12.14	0.033	
	A	YAR260	23	24	LGO	0.03	51.61	0.09	0.15	0.060	4.65	0.15	9.42	0.032	
	A	YAR260	24	25	LGO	0.02	51.70	0.09	0.14	0.053	4.83	0.15	9.32	0.022	
	A	YAR260	25	26	LGO	0.02	51.22	0.10	0.14	0.048	4.87	0.18	10.40	0.021	
	A	YAR260	26	27	LGO	0.02	53.47	0.07	0.11	0.029	3.95	0.15	7.63	0.014	
	A	YAR260	27	28	LGO	0.02	53.00	0.08	0.13	0.030	3.86	0.14	8.48	0.014	
	A	YAR260	28	29	**MSI-waste**	0.02	47.89	0.13	0.22	0.054	6.07	0.26	13.15	0.013	
	A	YAR260	29	30	**MSI-waste**	0.03	43.95	0.16	0.27	0.083	7.45	0.39	17.58	0.014	
	A	YAR260	30	31	**MSI-waste**	0.01	37.71	0.14	0.25	0.142	7.84	0.94	26.90	0.011	
	A	YAR260	31	32	**MSI-waste**	0.01	33.40	0.13	0.23	0.124	7.81	1.27	33.71	0.011	
	A	YAR260	32	33	**MSI-waste**	0.01	40.78	0.12	0.19	0.088	7.24	0.84	23.01	0.018	
	A	YAR260	33	34	**MSI-waste**	0.01	42.62	0.09	0.15	0.092	6.54	0.80	21.08	0.025	
	A	YAR260	34	35	**MSI-waste**	0.02	45.46	0.08	0.11	0.092	6.70	0.61	16.61	0.026	
	A	YAR260	35	36	**MSI-waste**	0.02	40.69	0.09	0.14	0.118	7.85	0.71	22.41	0.029	
	A	YAR260	36	37	**MSI-waste**	0.01	39.62	0.13	0.18	0.135	9.49	0.68	22.98	0.033	
	A	YAR260	37	38	**MSI-waste**	0.03	22.01	0.18	0.28	0.237	14.73	1.29	42.42	0.033	
	A	YAR260	38	39	**MSI-waste**	0.03	50.51	0.10	0.13	0.052	4.27	0.19	13.55	0.050	
	A	YAR260	39	40	**MSI-waste**	0.03	40.52	0.13	0.19	0.113	10.07	0.38	20.52	0.031	
	A	YAR260	40	47	ORE-ZONE										
	A	YAR260	47	48	LGO	0.02	44.26	0.11	0.19	0.172	6.82	0.40	15.60	0.061	
	A	YAR260	48	49	LGO	0.01	54.08	0.10	0.15	0.060	3.81	0.16	7.21	0.063	
	A	YAR260	49	50	LGO	0.01	51.69	0.08	0.15	0.064	4.40	0.21	8.77	0.077	

Phase-2 Sample	Section	Hole_ ID	From (m)	To (m)	Lith_1	S	Fe	CaO	MgO	K2O	Al2O3	TiO2	SiO2	P	Mn
						%									
	A	YAR260	50	51	**LSC-waste**	0.01	45.78	0.09	0.16	0.109	5.20	0.42	17.35	0.057	
	A	YAR260	51	52	**LSC-waste**	0.01	40.40	0.07	0.12	0.156	6.76	0.61	24.07	0.040	
	A	YAR260	52	53	**LSC-waste**	0.01	48.53	0.08	0.16	0.074	5.73	0.25	12.48	0.058	
	A	YAR260	53	54	**LSC-waste**	0.01	39.88	0.11	0.20	0.146	6.82	0.62	25.08	0.044	
	A	YAR260	54	55	**LSC-waste**	0.01	22.05	0.22	0.39	0.652	14.42	1.26	45.08	0.046	
	A	YAR260	55	56	**LSC-waste**	0.01	21.34	0.22	0.49	0.941	13.90	1.06	45.29	0.040	
	A	YAR260	56	57	**LSC-waste**	0.01	16.20	0.39	0.88	1.087	14.53	0.82	51.25	0.029	
	A	YAR260	57	58	**LSC-waste**	0.01	13.67	0.34	0.89	1.709	19.92	0.67	48.21	0.031	
	A	YAR260	58	59	**LSC-waste**	0.01	16.60	0.32	0.79	1.516	18.14	0.62	46.49	0.037	
	A	YAR260	59	60	**LSC-waste**	0.01	13.66	0.29	0.76	2.032	16.06	0.49	53.32	0.062	
	A	YAR260	60	61	**LSC-waste**	0.01	24.87	0.16	0.55	2.041	11.96	0.34	41.35	0.221	
	A	YAR260	61	62	**LSC-waste**	0.01	26.65	0.09	0.48	2.505	11.23	0.36	39.00	0.372	
	A	YAR260	62	63	**LSC-waste**	0.01	6.44	0.05	0.67	3.024	14.06	0.47	68.18	0.060	
	A	YAR260	63	64	**LSC-waste**	0.01	12.80	0.08	0.46	2.540	14.59	0.66	57.36	0.109	
	A	YAR260	64	65	**LSC-waste**	0.01	1.97	0.03	0.39	3.082	16.26	0.76	72.56	0.015	
	A	YAR260	65	66	**LSC-waste**	0.01	7.06	0.05	0.40	2.896	16.11	0.78	64.51	0.029	
	A	**YAR116**	0	15	ORE-ZONE										
	A	YAR116	15	16	LGO	0.03	39.57	0.20	0.27	0.053	8.42	0.25	22.36	0.034	
	A	YAR116	16	17	LGO	0.02	37.20	0.21	0.32	0.068	9.25	0.28	25.48	0.020	
	A	YAR116	17	18	LGO	0.01	39.07	0.19	0.30	0.063	8.50	0.28	23.52	0.017	
	A	YAR116	18	19	LGO	0.01	47.24	0.15	0.21	0.038	5.32	0.19	15.03	0.023	
	A	YAR116	19	20	LGO	0.01	42.52	0.17	0.27	0.056	6.86	0.33	20.71	0.029	
	A	YAR116	20	21	LGO	0.02	42.62	0.15	0.23	0.061	6.93	0.24	20.08	0.036	
	A	YAR116	21	22	LGO	0.03	51.49	0.07	0.09	0.051	4.14	0.14	10.30	0.028	
	A	YAR116	22	23	LGO	0.02	46.95	0.10	0.13	0.090	6.44	0.24	14.57	0.020	
	A	YAR116	23	24	LGO	0.01	48.10	0.10	0.14	0.069	6.35	0.17	12.71	0.022	
	A	YAR116	24	25	LGO	0.02	52.25	0.07	0.09	0.038	4.19	0.14	8.72	0.022	
	A	YAR116	25	26	LGO	0.02	50.17	0.08	0.10	0.043	5.32	0.18	10.63	0.020	
	A	YAR116	26	27	LGO	0.02	51.63	0.08	0.09	0.038	4.18	0.16	10.15	0.017	
	A	YAR116	27	28	LGO	0.02	53.01	0.08	0.11	0.030	3.13	0.12	8.79	0.017	
	A	YAR116	28	29	**MSI-waste**	0.01	36.04	0.22	0.36	0.174	10.30	0.47	25.70	0.016	
	A	YAR116	29	30	**MSI-waste**	0.02	40.72	0.13	0.19	0.100	6.81	0.63	24.80	0.014	
	A	YAR116	30	31	**MSI-waste**	0.01	39.37	0.11	0.15	0.113	8.14	0.84	23.96	0.023	
	A	YAR116	31	32	**MSI-waste**	0.01	35.13	0.11	0.14	0.129	9.39	1.01	28.65	0.024	
	A	YAR116	32	33	**MSI-waste**	0.01	27.45	0.13	0.16	0.181	11.74	1.25	37.61	0.021	
	A	YAR116	33	34	**MSI-waste**	0.01	31.09	0.09	0.12	0.141	9.50	1.19	34.97	0.026	
	A	YAR116	34	35	**MSI-waste**	0.01	29.11	0.11	0.14	0.166	11.59	1.07	35.35	0.033	
	A	YAR116	35	36	**MSI-waste**	0.01	39.36	0.11	0.14	0.115	9.40	0.58	22.85	0.035	
	A	YAR116	36	37	**MSI-waste**	0.01	44.68	0.29	0.16	0.084	7.29	0.33	17.93	0.041	
	A	YAR116	37	38	**MSI-waste**	0.01	35.30	0.35	0.19	0.108	11.07	0.34	27.97	0.030	
	A	YAR116	38	48	ORE-ZONE										
	A	YAR116	48	49	LGO	0.01	52.93	0.06	0.10	0.080	2.60	0.19	9.20	0.057	
	A	YAR116	49	50	**LSC-waste**	0.01	46.25	0.06	0.09	0.076	6.12	0.33	15.66	0.057	
	A	YAR116	50	51	**LSC-waste**	0.01	46.80	0.07	0.11	0.063	5.68	0.26	15.46	0.059	
	A	YAR116	51	52	**LSC-waste**	0.01	42.18	0.11	0.17	0.085	7.20	0.55	20.28	0.053	
	A	YAR116	52	53	**LSC-waste**	0.01	34.54	0.18	0.26	0.155	11.30	0.88	27.26	0.064	
	A	YAR116	53	54	**LSC-waste**	0.01	24.96	0.27	0.49	0.548	15.60	0.99	36.38	0.052	
	A	YAR116	54	55	**LSC-waste**	<0.01	19.61	0.26	0.57	1.055	20.21	0.98	39.10	0.058	
	A	YAR116	55	56	**LSC-waste**	<0.01	16.99	0.34	0.78	1.169	16.55	0.81	47.16	0.048	
	A	YAR116	56	57	**LSC-waste**	<0.01	15.85	0.31	0.83	1.589	17.51	0.87	48.01	0.044	
	A	YAR116	57	58	**LSC-waste**	<0.01	19.42	0.34	0.85	1.336	14.64	0.63	46.03	0.067	
	A	YAR116	58	59	**LSC-waste**	0.01	20.47	0.43	1.00	1.453	14.34	0.46	43.98	0.149	
	A	YAR116	59	60	**LSC-waste**	0.01	23.77	0.17	0.75	2.030	10.99	0.39	43.21	0.295	
	A	YAR116	60	61	**LSC-waste**	0.01	31.12	0.13	0.78	2.262	10.58	0.30	31.68	0.381	
	A	YAR116	61	62	**LSC-waste**	0.01	19.64	0.09	0.61	2.346	11.65	0.36	49.55	0.267	
	A	YAR116	62	63	**LSC-waste**	<0.01	5.01	0.05	0.86	4.223	17.08	0.54	65.24	0.049	
	A	YAR116	63	64	**LSC-waste**	<0.01	5.12	0.05	0.99	4.050	17.34	0.64	64.78	0.037	
	A	YAR116	64	65	**LSC-waste**	<0.01	5.29	0.06	0.78	1.673	18.24	0.84	64.68	0.020	
	A	**YAR261**	0	12	ORE-ZONE										
WC06	A	YAR261	12	13	LGO	0.03	50.01	0.04	0.07	0.054	6.74	0.20	9.02	0.046	
	A	YAR261	13	14	LGO	0.03	44.82	0.06	0.12	0.079	9.24	0.29	14.03	0.038	
	A	YAR261	14	15	LGO	0.02	49.90	0.04	0.08	0.036	5.05	0.16	11.31	0.033	
	A	YAR261	15	16	LGO	0.02	37.35	0.09	0.17	0.069	9.29	0.32	26.07	0.022	
	A	YAR261	16	17	LGO	0.02	43.74	0.06	0.12	0.050	6.88	0.24	19.15	0.031	
	A	YAR261	17	18	LGO	0.03	50.27	0.04	0.07	0.034	4.72	0.17	11.65	0.031	
	A	YAR261	18	19	LGO	0.04	51.33	0.03	0.06	0.045	4.93	0.17	9.58	0.031	
	A	YAR261	19	20	**MSI-waste**	0.03	49.41	0.04	0.07	0.054	5.74	0.15	11.43	0.020	
	A	YAR261	20	21	**MSI-waste**	0.03	47.74	0.05	0.08	0.064	6.70	0.18	12.80	0.014	
	A	YAR261	21	22	**MSI-waste**	0.02	45.26	0.06	0.09	0.076	8.32	0.22	14.87	0.018	
	A	YAR261	22	23	**MSI-waste**	0.02	47.12	0.06	0.09	0.056	6.96	0.20	13.51	0.018	
	A	YAR261	23	24	**MSI-waste**	0.02	48.03	0.05	0.09	0.049	6.24	0.21	13.21	0.014	
	A	YAR261	24	25	**MSI-waste**	0.02	48.28	0.06	0.11	0.041	5.58	0.22	13.82	0.014	
	A	YAR261	25	26	**MSI-waste**	0.02	45.15	0.08	0.15	0.059	6.24	0.37	17.44	0.010	
WC07	A	YAR261	26	27	**MSI-waste**	0.01	24.18	0.13	0.28	0.182	9.72	1.62	45.47	0.008	
	A	YAR261	27	28	**MSI-waste**	0.01	35.49	0.06	0.14	0.132	8.26	1.13	29.71	0.010	
	A	YAR261	28	29	**MSI-waste**	0.02	42.74	0.04	0.08	0.096	6.68	0.77	20.51	0.019	
	A	YAR261	29	30	**MSI-waste**	0.01	39.78	0.05	0.10	0.107	7.46	0.92	24.31	0.024	
	A	YAR261	30	31	**MSI-waste**	0.02	41.42	0.04	0.08	0.088	6.50	0.82	22.76	0.034	
	A	YAR261	31	32	**MSI-waste**	0.02	41.99	0.04	0.08	0.090	7.39	0.67	21.22	0.044	
	A	YAR261	32	33	**MSI-waste**	0.02	30.02	0.05	0.10	0.155	11.31	1.19	34.77	0.023	
	A	YAR261	33	34	**MSI-waste**	0.02	47.03	0.04	0.07	0.081	6.64	0.43	15.30	0.035	
	A	YAR261	34	35	LGO	0.02	54.72	0.02	0.04	0.022	2.43	0.10	8.75	0.042	
	A	YAR261	35	36	LGO	0.03	50.84	0.03	0.06	0.048	5.18	0.16	11.50	0.045	
	A	YAR261	36	47	ORE-ZONE										

Phase-2 Sample	Section	Hole_ ID	From (m)	To (m)	Lith_1	S	Fe	CaO	MgO	K2O	Al2O3	TiO2	SiO2	P	Mn
						%									
	A	YAR261	47	48	**LSC-waste**	0.01	43.32	0.04	0.08	0.109	7.75	0.40	18.68	0.045	
	A	YAR261	48	49	**LSC-waste**	0.01	49.48	0.03	0.07	0.033	5.16	0.29	12.63	0.057	
	A	YAR261	49	50	**LSC-waste**	0.01	37.64	0.06	0.12	0.072	8.98	0.74	25.52	0.054	
	A	YAR261	50	51	**LSC-waste**	0.01	25.03	0.15	0.25	0.147	17.07	1.32	35.56	0.066	
	A	YAR261	51	52	**LSC-waste**	0.01	26.80	0.14	0.26	0.214	15.98	1.31	34.01	0.072	
	A	YAR261	52	53	**LSC-waste**	0.01	30.87	0.09	0.21	0.368	14.90	0.78	29.09	0.066	
	A	YAR261	53	54	**LSC-waste**	0.01	29.87	0.24	0.61	0.460	12.30	0.70	33.17	0.058	
WC08	A	YAR261	54	55	**LSC-waste**	<0.01	15.89	0.21	0.57	0.797	15.43	1.03	51.05	0.065	
	A	YAR261	55	56	**LSC-waste**	0.01	18.64	0.25	0.64	0.733	13.97	0.89	48.74	0.069	
	A	YAR261	56	57	**LSC-waste**	<0.01	19.16	0.28	0.57	0.538	7.70	0.53	55.88	0.081	
	A	YAR261	57	58	**LSC-waste**	0.01	19.29	0.36	0.84	0.970	10.74	0.37	51.75	0.084	
	A	YAR261	58	59	**LSC-waste**	<0.01	27.80	0.31	0.75	0.796	9.57	0.26	39.43	0.129	
	A	YAR261	59	60	**LSC-waste**	0.01	24.43	0.36	0.84	0.586	8.62	0.23	46.00	0.184	
	A	YAR261	60	61	**LSC-waste**	0.01	32.01	0.39	0.93	0.525	8.74	0.17	33.27	0.263	
	A	YAR261	61	62	**LSC-waste**	0.01	32.99	0.20	0.56	0.809	9.27	0.30	31.41	0.383	
	A	YAR261	62	63	**LSC-waste**	<0.01	2.90	0.05	0.48	2.006	17.60	0.74	69.13	0.040	
	A	YAR261	63	64	**LSC-waste**	<0.01	3.54	0.05	0.75	2.809	16.86	0.67	68.52	0.038	
	A	YAR261	64	65	**LSC-waste**	<0.01	7.88	0.07	0.84	2.908	15.27	0.54	62.87	0.091	
	A	YAR261	65	66	**LSC-waste**	0.01	18.32	0.12	0.72	2.053	13.50	0.49	48.93	0.132	
	A	**YAR115**	0	1	LGO	0.01	45.95	0.09	0.15	0.388	4.43	0.36	21.83	0.059	0.05
	A	YAR115	1	18	ORE-ZONE										
	A	YAR115	18	19	LGO	0.03	49.43	0.09	0.12	0.068	6.11	0.29	10.55	0.028	0.01
	A	YAR115	19	20	LGO	0.03	50.55	0.09	0.11	0.058	6.22	0.15	8.83	0.033	0.01
	A	YAR115	20	21	LGO	0.03	49.39	0.08	0.11	0.075	6.49	0.19	10.36	0.015	0.01
	A	YAR115	21	22	LGO	0.02	52.94	0.07	0.10	0.054	4.76	0.13	7.89	0.024	0.01
	A	YAR115	22	23	LGO	0.02	52.50	0.06	0.09	0.049	4.71	0.17	8.11	0.023	0.01
	A	YAR115	23	24	LGO	0.02	55.06	0.05	0.07	0.025	2.75	0.11	6.02	0.017	0.01
	A	YAR115	24	25	**MSI-waste**	0.02	48.15	0.09	0.13	0.058	5.74	0.27	12.70	0.013	0.01
	A	YAR115	25	26	**MSI-waste**	0.02	46.68	0.10	0.17	0.076	5.59	0.44	16.19	0.011	0.02
	A	YAR115	26	27	**MSI-waste**	0.01	31.65	0.16	0.30	0.179	8.67	1.13	34.65	0.008	0.01
	A	YAR115	27	28	**MSI-waste**	0.01	30.94	0.15	0.25	0.157	8.94	1.22	35.40	0.012	0.01
	A	YAR115	28	29	**MSI-waste**	0.01	47.45	0.06	0.11	0.072	5.45	0.45	14.52	0.017	0.01
	A	YAR115	29	30	**MSI-waste**	0.01	46.62	0.06	0.10	0.080	5.95	0.53	15.59	0.022	0.01
	A	YAR115	30	31	**MSI-waste**	0.01	35.23	0.07	0.12	0.129	9.05	0.99	28.96	0.025	0.02
	A	YAR115	31	32	**MSI-waste**	0.01	36.11	0.07	0.12	0.130	9.25	0.97	27.49	0.027	0.01
	A	YAR115	32	33	**MSI-waste**	0.01	33.85	0.08	0.11	0.141	10.27	0.99	29.86	0.025	0.01
	A	YAR115	33	34	**MSI-waste**	0.02	46.71	0.06	0.11	0.078	5.81	0.43	15.79	0.040	0.03
	A	YAR115	34	35	**MSI-waste**	0.02	52.47	0.04	0.08	0.035	3.42	0.15	9.85	0.045	0.03
	A	YAR115	35	36	**MSI-waste**	0.01	48.69	0.07	0.10	0.052	6.11	0.19	14.46	0.043	0.05
	A	YAR115	36	43	ORE-ZONE										
	A	YAR115	43	44	**LSC-waste**	0.01	54.16	0.03	0.10	0.037	3.76	0.12	6.43	0.057	0.22
	A	YAR115	44	45	**LSC-waste**	0.01	55.57	0.03	0.09	0.030	3.15	0.11	5.47	0.055	0.20
	A	YAR115	45	46	**LSC-waste**	0.01	55.44	0.03	0.09	0.027	3.23	0.10	5.63	0.051	0.18
	A	YAR115	46	47	**LSC-waste**	0.01	54.00	0.03	0.09	0.039	3.43	0.11	6.18	0.063	0.26
	A	YAR115	47	48	**LSC-waste**	0.01	50.16	0.04	0.10	0.076	3.79	0.25	11.64	0.056	0.25
	A	YAR115	48	49	**LSC-waste**	0.01	49.00	0.04	0.09	0.099	5.18	0.29	13.15	0.043	0.08
	A	YAR115	49	50	**LSC-waste**	0.01	44.36	0.05	0.09	0.107	6.80	0.37	17.80	0.037	0.09
	A	YAR115	50	51	**LSC-waste**	0.01	42.49	0.07	0.15	0.064	9.18	0.30	17.23	0.073	0.12
	A	YAR115	51	52	**LSC-waste**	0.04	53.49	0.05	0.11	0.036	3.61	0.14	8.17	0.048	0.12
	A	YAR115	52	53	**LSC-waste**	0.01	55.99	0.04	0.10	0.018	2.37	0.08	5.61	0.052	0.14
	A	YAR115	53	54	**LSC-waste**	0.01	50.16	0.04	0.10	0.051	4.30	0.20	12.16	0.059	0.15
	A	YAR115	54	55	**LSC-waste**	0.01	49.95	0.03	0.11	0.126	5.47	0.23	10.68	0.044	0.07
	A	YAR115	55	56	**LSC-waste**	0.01	31.06	0.32	0.73	0.260	10.74	0.59	32.59	0.073	0.17
	A	YAR115	56	57	**LSC-waste**	<0.01	21.88	0.32	0.77	0.551	11.64	0.66	46.25	0.079	0.04
	A	YAR115	57	58	**LSC-waste**	<0.01	20.38	0.24	0.64	1.026	13.86	0.80	45.57	0.089	0.13
	A	YAR115	58	59	**LSC-waste**	<0.01	19.15	0.20	0.57	1.127	9.49	0.84	53.00	0.093	0.16
	A	YAR115	59	60	**LSC-waste**	<0.01	26.15	0.24	0.64	0.903	7.20	0.57	44.79	0.196	0.23
	A	YAR115	60	61	**LSC-waste**	<0.01	22.55	0.32	1.00	1.209	12.07	0.55	43.87	0.090	0.10
	A	YAR115	61	62	**LSC-waste**	<0.01	9.67	0.09	0.38	0.974	8.25	0.50	70.66	0.034	0.44
	A	YAR115	62	63	**LSC-waste**	<0.01	5.41	0.03	0.47	2.070	12.79	0.44	71.28	0.025	0.22
WC09	B	**YAR281**	0	1	**USI-waste**	0.02	54.18	0.08	0.17	0.089	4.04	0.17	7.91	0.041	
	B	YAR281	1	2	**USI-waste**	0.02	52.98	0.18	0.29	0.087	3.80	0.16	9.02	0.042	
	B	YAR281	2	3	**USI-waste**	0.03	48.01	1.56	0.56	0.097	3.90	0.17	13.78	0.029	
	B	YAR281	3	4	**USI-waste**	0.02	36.91	2.26	1.01	0.108	4.47	0.21	28.77	0.014	
	B	YAR281	4	5	**USI-waste**	0.03	40.65	1.12	0.84	0.095	4.33	0.19	25.70	0.021	
	B	YAR281	5	26	ORE-ZONE										
	B	YAR281	26	27	**MSI-waste**	0.02	41.41	0.18	0.44	0.190	7.63	0.38	20.51	0.016	
	B	YAR281	27	28	**MSI-waste**	0.03	41.27	0.13	0.29	0.443	7.60	0.51	23.59	0.009	
	B	YAR281	28	29	**MSI-waste**	0.02	36.68	0.13	0.31	0.397	8.45	0.71	27.31	0.014	
	B	YAR281	29	30	**MSI-waste**	0.02	38.75	0.11	0.22	0.152	7.54	0.91	25.27	0.019	
	B	YAR281	30	31	**MSI-waste**	0.02	44.37	0.07	0.15	0.090	5.81	0.66	18.69	0.035	
	B	YAR281	31	32	**MSI-waste**	0.02	49.21	0.05	0.11	0.060	4.53	0.48	13.67	0.035	
	B	YAR281	32	33	**MSI-waste**	0.02	42.92	0.06	0.13	0.086	6.01	0.73	20.86	0.038	
	B	YAR281	33	34	**MSI-waste**	0.02	31.70	0.08	0.17	0.139	9.69	1.25	33.35	0.033	
	B	YAR281	34	35	LGO	0.03	54.63	0.07	0.13	0.043	3.33	0.23	8.05	0.041	
	B	YAR281	35	36	LGO	0.03	50.07	0.10	0.19	0.070	5.32	0.33	11.15	0.047	
	B	YAR281	36	37	LGO	0.05	52.40	0.11	0.18	0.035	4.10	0.14	10.34	0.046	
	B	YAR281	37	47	ORE-ZONE										
	B	YAR281	47	48	LGO	0.03	51.49	0.09	0.16	0.056	4.51	0.28	10.58	0.054	
	B	YAR281	48	49	**LSC-waste**	0.01	44.98	0.06	0.13	0.100	5.33	0.51	18.93	0.038	
	B	YAR281	49	50	**LSC-waste**	0.01	44.26	0.06	0.13	0.130	7.68	0.47	16.77	0.051	
	B	YAR281	50	51	**LSC-waste**	0.02	55.08	0.04	0.08	0.022	2.18	0.13	8.14	0.049	
	B	YAR281	51	52	**LSC-waste**	0.02	55.53	0.07	0.13	0.020	2.75	0.15	7.06	0.043	

Phase-2 Sample	Section	Hole_ ID	From (m)	To (m)	Lith_1	S	Fe	CaO	MgO	K2O	Al2O3	TiO2	SiO2	P	Mn
						%									
	B	YAR281	52	53	**LSC-waste**	0.02	57.07	0.06	0.11	0.012	1.98	0.11	5.77	0.052	
	B	YAR281	53	54	**LSC-waste**	0.02	55.69	0.06	0.11	0.020	2.29	0.14	8.31	0.050	
	B	YAR281	54	55	**LSC-waste**	0.02	54.66	0.05	0.10	0.030	3.67	0.22	8.38	0.050	
	B	YAR281	55	56	**LSC-waste**	0.02	53.62	0.05	0.11	0.036	4.48	0.29	9.53	0.068	
	B	YAR281	56	57	**LSC-waste**	0.02	50.85	0.06	0.11	0.058	5.45	0.39	13.29	0.084	
WC10	B	YAR281	57	58	**LSC-waste**	0.01	48.34	0.05	0.11	0.061	5.49	0.50	17.42	0.085	
	B	YAR281	58	59	**LSC-waste**	0.01	49.31	0.07	0.13	0.068	5.67	0.48	15.04	0.101	
	B	YAR281	59	60	**LSC-waste**	0.01	42.81	0.07	0.16	0.160	7.41	0.72	22.02	0.118	
	B	YAR281	60	61	**LSC-waste**	0.01	48.81	0.08	0.15	0.076	5.56	0.58	16.60	0.121	
	B	YAR281	61	62	**LSC-waste**	0.01	47.87	0.08	0.15	0.082	5.91	0.57	17.17	0.124	
	B	YAR281	62	63	**LSC-waste**	0.01	44.44	0.06	0.15	0.072	6.10	0.53	20.77	0.110	
	B	YAR281	63	64	**LSC-waste**	0.02	51.09	0.04	0.13	0.042	3.81	0.27	11.51	0.121	
	B	YAR281	64	65	**LSC-waste**	0.01	48.02	0.07	0.18	0.069	4.47	0.29	14.97	0.131	
	B	YAR281	65	66	**LSC-waste**	0.01	44.04	0.10	0.23	0.089	5.25	0.35	19.91	0.160	
	B	YAR281	66	67	**LSC-waste**	0.02	28.99	0.09	0.23	0.304	6.90	0.66	40.01	0.116	
	B	YAR281	67	68	**LSC-waste**	0.01	34.63	0.04	0.14	0.159	4.13	0.35	36.42	0.088	
	B	YAR281	68	69	**LSC-waste**	0.01	42.45	0.05	0.19	0.153	4.98	0.36	22.63	0.115	
	B	YAR281	69	70	**LSC-waste**	0.01	23.12	0.07	0.61	2.024	11.21	0.43	44.31	0.076	
	B	YAR281	70	71	**LSC-waste**	0.01	6.97	0.10	1.05	3.488	16.45	0.53	62.58	0.030	
	B	YAR281	71	72	**LSC-waste**	0.01	12.55	0.13	1.05	3.384	15.06	0.44	55.30	0.040	
	B	YAR281	72	73	**LSC-waste**	0.01	6.16	0.16	1.28	3.352	15.80	0.55	64.16	0.024	
	B	YAR281	73	74	**LSC-waste**	0.01	5.85	0.33	1.65	4.019	17.70	0.60	61.17	0.052	
	B	YAR281	74	75	**LSC-waste**	0.01	5.90	0.44	1.90	3.999	18.01	0.62	60.32	0.087	
	B	YAR281	75	76	**LSC-waste**	0.01	5.62	0.45	2.22	4.113	18.42	0.61	60.34	0.100	
	B	YAR281	76	77	**LSC-waste**	0.01	5.78	0.47	2.22	4.082	18.27	0.60	60.15	0.105	
	B	YAR281	77	78	**LSC-waste**	0.01	5.53	0.48	2.16	4.109	18.30	0.60	60.66	0.109	
	B	**YAR282**	0	1	**USI-waste**	0.02	53.82	0.08	0.18	0.112	3.46	0.14	8.19	0.029	
	B	YAR282	1	2	**USI-waste**	0.02	47.64	0.36	0.47	0.170	4.46	0.21	14.65	0.026	
	B	YAR282	2	3	**USI-waste**	0.03	48.56	0.95	0.35	0.101	3.42	0.15	12.43	0.034	
	B	YAR282	3	4	**USI-waste**	0.02	27.94	2.82	1.06	0.194	5.68	0.27	38.04	0.011	
	B	YAR282	4	5	LGO	0.02	43.82	1.02	0.52	0.069	3.59	0.14	22.04	0.023	
	B	YAR282	5	6	LGO	0.01	51.79	0.63	0.25	0.033	2.64	0.08	11.96	0.030	
	B	YAR282	6	27	ORE-ZONE										
	B	YAR282	27	28	**MSI-waste**	0.03	46.16	0.15	0.26	0.069	5.94	0.37	15.70	0.013	
	B	YAR282	28	29	**MSI-waste**	0.02	39.97	0.15	0.25	0.091	7.95	0.72	22.99	0.011	
	B	YAR282	29	30	**MSI-waste**	0.01	40.59	0.14	0.23	0.062	7.70	0.77	22.34	0.010	
	B	YAR282	30	31	**MSI-waste**	0.02	43.83	0.12	0.19	0.058	7.01	0.56	17.44	0.020	
	B	YAR282	31	32	**MSI-waste**	0.01	48.66	0.07	0.12	0.045	4.87	0.44	13.15	0.027	
	B	YAR282	32	33	**MSI-waste**	0.02	41.72	0.09	0.15	0.073	6.69	0.69	21.16	0.024	
	B	YAR282	33	34	**MSI-waste**	0.01	32.18	0.12	0.18	0.128	10.73	1.02	31.03	0.026	
	B	YAR282	34	35	**MSI-waste**	0.01	31.69	0.13	0.20	0.138	11.45	1.04	31.09	0.029	
	B	YAR282	35	36	**MSI-waste**	0.01	42.91	0.09	0.16	0.076	6.67	0.58	20.40	0.035	
	B	YAR282	36	37	LGO	0.02	51.60	0.11	0.17	0.048	4.84	0.27	10.38	0.043	
	B	YAR282	37	57	ORE-ZONE										
	B	YAR282	57	58	**LSC-waste**	0.01	48.98	0.06	0.12	0.056	5.61	0.42	14.06	0.069	
	B	YAR282	58	59	**LSC-waste**	0.01	47.93	0.05	0.11	0.034	4.92	0.53	14.89	0.080	
	B	YAR282	59	60	**LSC-waste**	0.01	45.88	0.05	0.11	0.021	4.33	0.67	18.16	0.095	
	B	YAR282	60	61	**LSC-waste**	0.01	40.86	0.11	0.18	0.039	7.48	0.85	23.07	0.115	
	B	YAR282	61	62	**LSC-waste**	<0.01	38.83	0.15	0.26	0.038	7.60	0.74	25.05	0.181	
	B	YAR282	62	63	**LSC-waste**	<0.01	36.36	0.12	0.23	0.074	8.40	0.80	27.50	0.173	
	B	YAR282	63	64	**LSC-waste**	0.01	46.11	0.08	0.17	0.062	5.92	0.45	15.45	0.145	
	B	YAR282	64	65	**LSC-waste**	0.01	37.87	0.22	0.38	0.100	8.80	0.59	24.70	0.134	
	B	YAR282	65	66	**LSC-waste**	0.01	40.25	0.28	0.51	0.108	6.42	0.34	23.41	0.315	
	B	YAR282	66	67	**LSC-waste**	<0.01	55.22	0.09	0.15	0.030	1.37	0.07	6.33	0.523	
	B	YAR282	67	68	**LSC-waste**	<0.01	52.27	0.07	0.15	0.099	2.04	0.11	9.54	0.307	
	B	YAR282	68	69	**LSC-waste**	<0.01	44.11	0.06	0.19	0.127	2.89	0.23	21.45	0.105	
	B	YAR282	69	70	**LSC-waste**	0.01	42.58	0.06	0.16	0.124	3.48	0.28	24.34	0.145	
	B	YAR282	70	71	**LSC-waste**	<0.01	6.97	0.06	0.74	4.034	17.01	0.56	61.66	0.042	
	B	YAR282	71	72	**LSC-waste**	<0.01	7.04	0.07	0.81	4.264	17.60	0.58	60.70	0.044	
	B	**YAR283**	0	1	LGO	0.02	54.64	0.05	0.15	0.146	3.82	0.18	8.01	0.031	
	B	YAR283	1	2	LGO	0.01	50.92	0.26	0.28	0.204	3.96	0.18	12.60	0.028	
	B	YAR283	2	3	LGO	0.02	49.78	0.27	0.28	0.073	2.68	0.09	14.61	0.030	
	B	YAR283	3	21	ORE-ZONE										
	B	YAR283	21	22	LGO	0.03	52.35	0.16	0.16	0.023	4.29	0.13	8.01	0.030	
	B	YAR283	22	23	LGO	0.02	52.70	0.08	0.15	0.042	4.29	0.12	7.88	0.028	
	B	YAR283	23	24	LGO	0.03	53.39	0.07	0.12	0.032	3.85	0.12	7.37	0.022	
	B	YAR283	24	25	LGO	0.02	54.38	0.06	0.10	0.018	2.73	0.16	7.16	0.023	
	B	YAR283	25	26	LGO	0.02	54.72	0.09	0.10	0.016	2.85	0.12	6.46	0.018	
	B	YAR283	26	27	LGO	0.02	53.62	0.07	0.10	0.020	2.85	0.16	8.62	0.020	
	B	YAR283	27	28	**MSI-waste**	0.03	48.61	0.12	0.17	0.034	5.13	0.28	12.89	0.016	
	B	YAR283	28	29	**MSI-waste**	0.02	36.42	0.19	0.31	0.072	9.23	0.77	26.57	0.015	
	B	YAR283	29	30	**MSI-waste**	0.01	44.89	0.09	0.15	0.043	5.44	0.69	18.38	0.014	
	B	YAR283	30	31	**MSI-waste**	0.01	41.47	0.12	0.17	0.055	7.00	0.77	21.97	0.018	
	B	YAR283	31	32	**MSI-waste**	0.01	48.72	0.07	0.10	0.045	4.98	0.49	13.28	0.028	
	B	YAR283	32	33	**MSI-waste**	0.01	49.24	0.06	0.08	0.050	4.40	0.48	13.28	0.028	
	B	YAR283	33	34	**MSI-waste**	0.01	41.54	0.06	0.09	0.084	5.91	0.84	23.37	0.029	
	B	YAR283	34	35	**MSI-waste**	0.01	31.28	0.10	0.15	0.142	10.05	1.13	34.05	0.030	
	B	YAR283	35	36	**MSI-waste**	0.01	46.89	0.08	0.10	0.052	4.77	0.36	17.94	0.034	
	B	YAR283	36	37	LGO	0.01	51.73	0.08	0.10	0.035	3.53	0.21	12.34	0.037	
	B	YAR283	37	51	ORE-ZONE										
	B	YAR283	51	52	LGO	0.01	50.72	0.06	0.11	0.042	4.65	0.24	10.50	0.050	
	B	YAR283	52	53	LGO	0.02	49.93	0.08	0.14	0.042	5.48	0.23	10.62	0.057	
	B	YAR283	53	54	LGO	0.02	52.41	0.08	0.16	0.029	4.19	0.19	8.32	0.062	
	B	YAR283	54	55	LGO	0.02	55.98	0.06	0.12	0.013	1.93	0.13	5.70	0.056	

Phase-2 Sample	Section	Hole_ ID	From (m)	To (m)	Lith_1	S	Fe	CaO	MgO	K2O	Al2O3	TiO2	SiO2	P	Mn
						%									
	B	YAR283	55	56	LGO	0.01	54.32	0.05	0.11	0.019	2.88	0.19	7.84	0.057	
	B	YAR283	56	57	LGO	0.01	50.17	0.06	0.12	0.029	3.88	0.35	13.19	0.057	
	B	YAR283	57	58	**LSC-waste**	0.01	37.33	0.06	0.11	0.069	6.38	0.89	29.87	0.045	
	B	YAR283	58	59	**LSC-waste**	0.01	35.42	0.09	0.16	0.061	9.27	0.85	29.28	0.076	
	B	YAR283	59	60	**LSC-waste**	0.01	33.23	0.13	0.22	0.070	9.54	0.77	31.68	0.058	
	B	YAR283	60	61	**LSC-waste**	0.01	36.31	0.13	0.24	0.079	10.00	0.71	25.70	0.097	
	B	YAR283	61	62	**LSC-waste**	<0.01	25.68	0.21	0.36	0.089	10.20	0.93	42.65	0.075	
	B	YAR283	62	63	**LSC-waste**	<0.01	28.51	0.23	0.36	0.086	7.78	0.64	41.49	0.079	
	B	YAR283	63	64	**LSC-waste**	<0.01	26.49	0.32	0.55	0.233	9.93	0.46	41.23	0.079	
	B	YAR283	64	65	**LSC-waste**	<0.01	19.62	0.40	0.78	0.281	6.96	0.35	55.86	0.134	
	B	YAR283	65	66	**LSC-waste**	0.01	17.71	0.44	0.99	0.371	8.11	0.38	57.44	0.082	
	B	YAR283	66	67	**LSC-waste**	0.01	36.19	0.24	0.61	0.627	8.89	0.22	26.72	0.266	
	B	YAR283	67	68	**LSC-waste**	0.01	42.01	0.14	0.46	1.042	7.00	0.20	19.62	0.491	
	B	YAR283	68	69	**LSC-waste**	<0.01	12.75	0.23	1.13	3.470	15.71	0.54	53.57	0.117	
	B	YAR283	69	70	**LSC-waste**	<0.01	6.06	0.19	1.32	3.937	17.68	0.60	61.64	0.047	
	B	YAR283	70	71	**LSC-waste**	<0.01	4.42	0.16	1.13	3.251	17.51	0.68	65.07	0.034	
	B	YAR283	71	72	**LSC-waste**	<0.01	7.66	0.21	0.90	2.642	15.93	0.67	62.75	0.073	
	B	**YAR284**	0	1	LGO	0.05	52.39	0.04	0.12	0.201	5.00	0.17	8.52	0.040	
	B	YAR284	1	13	ORE-ZONE										
	B	YAR284	13	14	LGO	0.02	52.84	0.03	0.10	0.015	3.62	0.14	9.18	0.039	
	B	YAR284	14	15	LGO	0.02	47.31	0.04	0.12	0.022	6.07	0.21	14.20	0.043	
	B	YAR284	15	16	LGO	0.02	52.74	0.01	0.05	0.013	3.53	0.14	8.93	0.034	
	B	YAR284	16	17	LGO	0.02	52.27	0.02	0.08	0.012	3.90	0.17	9.11	0.030	
	B	YAR284	17	18	LGO	0.01	52.35	0.02	0.07	0.011	3.00	0.11	10.56	0.029	
	B	YAR284	18	19	LGO	0.02	50.66	0.02	0.09	0.014	4.05	0.15	11.58	0.034	
	B	YAR284	19	20	LGO	0.02	48.02	0.04	0.11	0.023	4.83	0.25	14.51	0.029	
	B	YAR284	20	21	LGO	0.02	47.22	0.03	0.11	0.028	6.05	0.23	14.45	0.027	
	B	YAR284	21	22	LGO	0.03	49.18	0.03	0.10	0.026	5.26	0.19	12.26	0.027	
	B	YAR284	22	23	LGO	0.03	54.64	0.01	0.06	0.017	3.28	0.09	6.26	0.030	
	B	YAR284	23	24	LGO	0.02	53.89	0.02	0.07	0.015	3.46	0.10	6.80	0.052	
	B	YAR284	24	25	LGO	0.02	53.68	0.01	0.05	0.022	2.89	0.12	7.93	0.026	
	B	YAR284	25	26	**MSI-waste**	0.02	54.17	0.01	0.04	0.024	3.04	0.14	7.43	0.022	
	B	YAR284	26	27	**MSI-waste**	0.02	49.64	0.03	0.08	0.033	4.03	0.23	13.18	0.016	
	B	YAR284	27	28	**MSI-waste**	0.03	40.85	0.07	0.16	0.055	8.11	0.40	20.97	0.016	
	B	YAR284	28	29	**MSI-waste**	0.02	45.47	0.04	0.10	0.042	5.47	0.53	17.20	0.015	
	B	YAR284	29	30	**MSI-waste**	0.01	40.55	0.04	0.11	0.047	5.69	0.90	24.79	0.014	
	B	YAR284	30	31	**MSI-waste**	0.01	38.81	0.05	0.12	0.052	6.86	0.75	25.75	0.016	
	B	YAR284	31	32	**MSI-waste**	0.01	44.20	0.04	0.10	0.054	6.04	0.56	19.40	0.021	
	B	YAR284	32	33	**MSI-waste**	0.01	44.37	0.03	0.07	0.075	5.97	0.65	18.75	0.023	
	B	YAR284	33	34	**MSI-waste**	0.02	46.26	0.03	0.07	0.072	5.52	0.49	16.61	0.036	
	B	YAR284	34	35	**MSI-waste**	0.01	46.73	0.03	0.08	0.081	6.20	0.42	15.34	0.045	
	B	YAR284	35	36	LGO	0.01	53.10	0.02	0.05	0.032	2.54	0.14	11.41	0.042	
	B	YAR284	36	37	LGO	0.01	54.23	0.02	0.05	0.023	2.05	0.09	10.78	0.045	
	B	YAR284	37	38	LGO	0.01	52.40	0.03	0.08	0.040	4.78	0.16	11.32	0.044	
	B	YAR284	38	39	LGO	0.02	51.86	0.03	0.08	0.046	4.65	0.18	10.49	0.057	
	B	YAR284	39	50	ORE-ZONE										
	B	YAR284	50	51	LGO	0.01	50.55	0.02	0.07	0.070	4.40	0.31	12.56	0.053	
	B	YAR284	51	52	LGO	0.01	52.66	0.02	0.06	0.015	2.43	0.13	11.57	0.047	
	B	YAR284	52	53	**LSC-waste**	0.01	43.68	0.03	0.10	0.101	6.84	0.54	19.38	0.032	
	B	YAR284	53	54	**LSC-waste**	0.01	46.33	0.04	0.12	0.187	8.31	0.41	12.52	0.043	
	B	YAR284	54	55	**LSC-waste**	0.01	40.43	0.06	0.17	0.338	12.14	0.57	17.36	0.049	
	B	YAR284	55	56	**LSC-waste**	0.01	42.91	0.04	0.15	0.333	10.87	0.51	15.30	0.052	
	B	YAR284	56	57	**LSC-waste**	0.01	45.34	0.06	0.14	0.274	8.88	0.57	13.60	0.050	
	B	YAR284	57	58	**LSC-waste**	0.01	29.69	0.31	0.57	0.335	10.10	0.56	35.75	0.057	
	B	YAR284	58	59	**LSC-waste**	<0.01	11.75	0.36	0.71	0.553	11.47	0.42	62.18	0.037	
	B	YAR284	59	60	**LSC-waste**	0.01	21.53	0.34	0.77	0.798	13.07	0.53	44.73	0.057	
	B	YAR284	60	61	**LSC-waste**	0.01	20.18	0.33	0.94	1.194	17.16	0.59	41.38	0.044	
	B	YAR284	61	62	**LSC-waste**	0.01	21.82	0.39	1.00	1.137	12.97	0.45	43.74	0.058	
	B	YAR284	62	63	**LSC-waste**	0.01	14.93	0.37	1.00	1.399	12.58	0.55	55.48	0.039	
	B	YAR284	63	64	**LSC-waste**	0.01	16.43	0.40	1.14	2.101	15.84	0.48	48.11	0.098	
	B	YAR284	64	65	**LSC-waste**	<0.01	4.39	0.10	1.18	4.532	18.81	0.63	62.82	0.039	
	B	YAR284	65	66	**LSC-waste**	0.01	4.32	0.05	1.29	2.900	15.09	0.71	68.55	0.029	
	B	**YAR285**	0	1	**USI-waste**	0.01	53.74	0.06	0.16	0.124	4.18	0.20	8.33	0.027	
	B	YAR285	1	2	**USI-waste**	0.02	49.79	0.16	0.34	0.134	4.36	0.22	12.31	0.025	
	B	YAR285	2	3	**USI-waste**	0.02	47.68	0.23	0.33	0.064	3.34	0.19	16.67	0.019	
	B	YAR285	3	4	**USI-waste**	0.02	49.12	0.21	0.26	0.043	2.82	0.11	15.03	0.024	
	B	YAR285	4	14	ORE-ZONE										
	B	YAR285	14	15	LGO	0.02	52.42	0.12	0.16	0.014	3.09	0.11	10.18	0.047	
	B	YAR285	15	16	LGO	0.02	42.03	0.24	0.42	0.045	7.44	0.24	20.34	0.034	
	B	YAR285	16	17	LGO	0.02	47.25	0.17	0.27	0.027	5.48	0.15	14.55	0.047	
	B	YAR285	17	18	LGO	0.01	35.57	0.26	0.48	0.059	10.91	0.62	25.59	0.035	
	B	YAR285	18	19	LGO	0.02	39.95	0.23	0.44	0.055	9.66	0.53	20.68	0.030	
	B	YAR285	19	20	LGO	0.02	48.95	0.15	0.28	0.028	5.50	0.22	12.14	0.029	
	B	YAR285	20	21	LGO	0.02	46.24	0.18	0.31	0.032	6.79	0.23	14.03	0.028	
	B	YAR285	21	22	LGO	0.03	48.28	0.13	0.25	0.037	6.10	0.22	11.75	0.029	
	B	YAR285	22	23	LGO	0.03	40.79	0.22	0.45	0.057	9.28	0.37	19.84	0.030	
	B	YAR285	23	24	LGO	0.02	54.82	0.07	0.14	0.018	2.61	0.06	5.66	0.056	
	B	YAR285	24	25	LGO	0.02	52.00	0.08	0.15	0.043	4.42	0.17	8.60	0.056	
	B	YAR285	25	26	LGO	0.03	53.68	0.06	0.11	0.040	3.71	0.14	6.84	0.032	
	B	YAR285	26	27	LGO	0.04	54.69	0.05	0.09	0.028	2.97	0.11	5.91	0.023	
	B	YAR285	27	28	LGO	0.03	54.63	0.05	0.09	0.026	2.81	0.11	7.08	0.020	
	B	YAR285	28	29	LGO	0.04	54.03	0.06	0.10	0.032	3.19	0.12	7.43	0.024	
	B	YAR285	29	30	LGO	0.05	51.90	0.08	0.13	0.040	4.26	0.16	9.07	0.020	
	B	YAR285	30	31	LGO	0.04	47.64	0.11	0.18	0.075	6.25	0.23	12.50	0.030	

Phase-2 Sample	Section	Hole_ ID	From (m)	To (m)	Lith_1	S	Fe	CaO	MgO	K2O	Al2O3	TiO2	SiO2	P	Mn
						%									
	B	YAR285	31	32	LGO	0.02	50.30	0.06	0.10	0.043	4.59	0.44	11.47	0.034	
	B	YAR285	32	33	**MSI-waste**	0.01	47.26	0.06	0.10	0.068	5.16	0.62	15.47	0.027	
	B	YAR285	33	34	**MSI-waste**	0.01	43.30	0.06	0.11	0.101	6.58	0.75	19.90	0.030	
	B	YAR285	34	35	**MSI-waste**	0.01	38.34	0.06	0.10	0.120	7.47	0.95	26.47	0.034	
	B	YAR285	35	36	**MSI-waste**	0.01	44.65	0.09	0.13	0.116	8.03	0.51	16.92	0.041	
	B	YAR285	36	50	ORE-ZONE										
	B	YAR285	50	51	**LSC-waste**	0.01	42.73	0.06	0.13	0.118	8.46	0.49	18.41	0.040	
	B	YAR285	51	52	**LSC-waste**	0.01	40.02	0.08	0.16	0.108	10.71	0.44	19.50	0.055	
	B	YAR285	52	53	**LSC-waste**	0.01	45.76	0.05	0.11	0.061	5.25	0.33	17.97	0.036	
	B	YAR285	53	54	**LSC-waste**	0.01	32.69	0.12	0.20	0.110	8.94	1.02	33.45	0.018	
	B	YAR285	54	55	**LSC-waste**	0.01	16.94	0.24	0.35	0.219	16.29	1.55	48.64	0.016	
	B	YAR285	55	56	**LSC-waste**	<0.01	14.01	0.26	0.48	0.250	16.11	1.50	53.34	0.021	
	B	YAR285	56	57	**LSC-waste**	<0.01	12.45	0.34	0.73	0.373	14.49	1.44	57.33	0.018	
	B	YAR285	57	58	**LSC-waste**	<0.01	10.17	0.31	0.86	0.628	18.50	1.15	55.18	0.024	
	B	YAR285	58	59	**LSC-waste**	<0.01	10.08	0.31	0.99	0.772	17.81	0.99	56.74	0.025	
	B	YAR285	59	60	**LSC-waste**	<0.01	11.99	0.28	0.86	1.158	19.97	0.82	50.95	0.032	
	B	YAR285	60	61	**LSC-waste**	0.01	19.92	0.33	0.86	1.345	13.35	0.57	45.76	0.067	
	B	YAR285	61	62	**LSC-waste**	0.01	19.67	0.36	0.88	1.214	13.16	0.51	47.30	0.058	
	B	YAR285	62	63	**LSC-waste**	0.01	9.89	0.23	0.79	2.122	14.66	0.72	60.83	0.053	
	B	YAR285	63	64	**LSC-waste**	<0.01	28.30	0.18	0.71	2.044	11.20	0.37	35.66	0.404	
	B	YAR285	64	65	**LSC-waste**	<0.01	2.90	0.03	0.92	3.892	17.19	0.61	68.28	0.027	
	B	YAR285	65	66	**LSC-waste**	<0.01	3.09	0.03	0.92	3.772	17.30	0.61	68.16	0.019	
	B	**YAR286**	0	1	LGO	0.02	51.19	0.09	0.19	0.128	4.16	0.15	11.70	0.030	
	B	YAR286	1	2	LGO	0.02	51.77	0.11	0.21	0.054	3.78	0.12	10.89	0.030	
	B	YAR286	2	3	LGO	0.02	51.27	0.11	0.20	0.029	3.38	0.09	11.84	0.023	
	B	YAR286	3	4	LGO	0.02	50.64	0.17	0.29	0.025	3.21	0.09	12.81	0.025	
	B	YAR286	4	5	LGO	0.02	51.76	0.12	0.21	0.024	2.91	0.08	11.66	0.029	
	B	YAR286	5	6	LGO	0.02	49.41	0.20	0.32	0.056	3.07	0.11	15.39	0.026	
	B	YAR286	6	15	ORE-ZONE										
	B	YAR286	15	16	LGO	0.01	45.67	0.37	0.39	0.053	6.75	0.24	15.32	0.036	
	B	YAR286	16	17	LGO	0.01	32.50	0.48	0.63	0.093	12.92	0.44	27.76	0.022	
	B	YAR286	17	18	LGO	0.01	31.63	0.38	0.53	0.080	12.75	0.47	29.42	0.021	
	B	YAR286	18	19	LGO	0.01	35.97	0.30	0.41	0.063	11.39	0.46	24.45	0.024	
	B	YAR286	19	20	LGO	0.01	43.33	0.17	0.25	0.073	7.99	0.24	17.53	0.032	
	B	YAR286	20	21	LGO	0.01	41.91	0.19	0.25	0.075	8.98	0.28	18.66	0.029	
WC11	B	YAR286	21	22	LGO	0.02	48.21	0.11	0.15	0.082	6.12	0.15	12.27	0.036	
	B	YAR286	22	23	LGO	0.01	47.50	0.10	0.13	0.070	5.96	0.22	13.71	0.032	
	B	YAR286	23	24	LGO	0.01	48.09	0.08	0.10	0.064	5.07	0.37	14.52	0.033	
	B	YAR286	24	25	LGO	0.02	51.89	0.06	0.07	0.040	3.84	0.25	10.13	0.018	
	B	YAR286	25	26	LGO	0.02	50.82	0.07	0.10	0.044	4.82	0.21	10.38	0.015	
	B	YAR286	26	27	LGO	0.02	50.61	0.08	0.10	0.043	5.07	0.18	10.32	0.015	
	B	YAR286	27	28	LGO	0.04	51.45	0.07	0.09	0.045	4.52	0.19	9.38	0.013	
	B	YAR286	28	29	**MSI-waste**	0.02	38.91	0.16	0.19	0.103	9.46	0.58	22.74	0.015	
	B	YAR286	29	30	**MSI-waste**	0.01	39.44	0.11	0.13	0.086	7.44	0.88	24.65	0.012	
	B	YAR286	30	31	**MSI-waste**	0.01	44.82	0.10	0.11	0.065	6.24	0.60	17.62	0.016	
WC12	B	YAR286	31	32	**MSI-waste**	0.01	47.15	0.07	0.09	0.062	5.75	0.54	14.94	0.023	
	B	YAR286	32	33	**MSI-waste**	0.01	46.40	0.06	0.07	0.074	5.74	0.59	16.14	0.028	
	B	YAR286	33	34	**MSI-waste**	0.01	35.73	0.07	0.08	0.124	8.36	1.01	29.54	0.026	
	B	YAR286	34	35	**MSI-waste**	0.01	29.03	0.10	0.12	0.172	12.05	1.15	35.00	0.027	
	B	YAR286	35	36	**MSI-waste**	0.01	51.22	0.05	0.05	0.048	3.84	0.22	12.23	0.042	
	B	YAR286	36	37	**MSI-waste**	0.03	47.90	0.11	0.13	0.101	7.80	0.24	11.92	0.048	
	B	YAR286	37	49	ORE-ZONE										
	B	YAR286	49	50	**LSC-waste**	0.01	48.59	0.06	0.10	0.070	4.86	0.30	13.67	0.036	
	B	YAR286	50	51	**LSC-waste**	0.01	34.82	0.08	0.10	0.123	10.26	0.43	28.80	0.035	
	B	YAR286	51	52	**LSC-waste**	0.01	30.60	0.09	0.10	0.094	8.61	0.57	38.00	0.029	
	B	YAR286	52	53	**LSC-waste**	0.01	6.63	0.21	0.23	0.161	23.80	1.71	54.96	0.013	
	B	YAR286	53	54	**LSC-waste**	0.01	5.66	0.19	0.24	0.262	24.48	1.59	55.75	0.022	
	B	YAR286	54	55	**LSC-waste**	0.01	21.72	0.14	0.33	0.768	21.12	0.87	34.83	0.079	
	B	YAR286	55	56	**LSC-waste**	0.01	22.61	0.18	0.48	0.815	16.54	0.89	39.04	0.077	
	B	YAR286	56	57	**LSC-waste**	0.01	20.86	0.18	0.44	0.756	13.62	0.88	45.94	0.062	
WC13	B	YAR286	57	58	**LSC-waste**	0.01	20.45	0.17	0.45	0.907	12.69	0.74	47.70	0.048	
	B	YAR286	58	59	**LSC-waste**	0.01	22.44	0.18	0.52	1.049	12.15	0.60	45.62	0.050	
	B	YAR286	59	60	**LSC-waste**	0.01	15.63	0.27	0.70	1.379	12.19	0.58	55.50	0.062	
	B	YAR286	60	61	**LSC-waste**	0.01	21.59	0.17	0.67	1.881	11.75	0.45	46.04	0.112	
	B	YAR286	61	62	**LSC-waste**	0.01	17.27	0.17	0.72	2.466	13.12	0.50	50.63	0.105	
	B	YAR286	62	63	**LSC-waste**	0.01	24.33	0.09	0.55	2.455	11.52	0.39	41.31	0.323	
	B	YAR286	63	64	**LSC-waste**	<0.01	9.23	0.04	0.60	3.614	15.28	0.56	61.29	0.140	
	B	YAR286	64	65	**LSC-waste**	0.01	8.16	0.05	0.63	3.583	15.38	0.54	60.92	0.090	
	B	YAR286	65	66	**LSC-waste**	<0.01	1.93	0.03	0.64	3.776	18.13	0.66	69.32	0.021	
	B	**YAR287**	0	8	ORE-ZONE										
	B	YAR287	8	9	LGO	0.03	50.79	0.27	0.14	0.037	3.74	0.13	11.59	0.034	
	B	YAR287	9	10	LGO	0.02	51.87	0.12	0.16	0.036	4.10	0.14	9.66	0.034	
	B	YAR287	10	11	LGO	0.02	52.34	0.08	0.12	0.039	4.13	0.14	8.64	0.043	
	B	YAR287	11	12	LGO	0.03	50.16	0.10	0.16	0.045	4.42	0.14	11.34	0.040	
	B	YAR287	12	13	LGO	0.04	50.74	0.09	0.15	0.044	4.21	0.09	10.44	0.043	
	B	YAR287	13	14	LGO	0.03	50.27	0.08	0.14	0.049	4.63	0.16	10.72	0.021	
	B	YAR287	14	15	LGO	0.03	53.12	0.06	0.09	0.027	3.45	0.10	8.34	0.022	
	B	YAR287	15	16	LGO	0.02	52.73	0.07	0.10	0.027	3.15	0.13	9.53	0.026	
	B	YAR287	16	17	LGO	0.02	53.14	0.07	0.10	0.026	3.22	0.10	9.13	0.028	
	B	YAR287	17	18	LGO	0.02	53.98	0.04	0.08	0.027	3.81	0.13	6.86	0.032	
	B	YAR287	18	19	LGO	0.02	52.45	0.05	0.09	0.034	4.59	0.15	7.93	0.030	
	B	YAR287	19	20	LGO	0.02	56.17	0.05	0.08	0.014	2.13	0.05	4.98	0.039	
	B	YAR287	20	21	LGO	0.02	53.85	0.05	0.08	0.034	3.34	0.10	7.18	0.035	
	B	YAR287	21	22	LGO	0.02	50.84	0.06	0.11	0.057	5.00	0.15	9.87	0.029	

Phase-2 Sample	Section	Hole_ ID	From (m)	To (m)	Lith_1	S	Fe	CaO	MgO	K2O	Al2O3	TiO2	SiO2	P	Mn
						%									
	B	YAR287	22	23	**MSI-waste**	0.02	49.85	0.06	0.10	0.066	5.42	0.19	10.90	0.019	
	B	YAR287	23	24	**MSI-waste**	0.02	48.29	0.07	0.11	0.052	5.70	0.23	12.98	0.019	
	B	YAR287	24	25	**MSI-waste**	0.02	51.56	0.05	0.09	0.042	4.06	0.18	10.76	0.009	
	B	YAR287	25	26	**MSI-waste**	0.02	42.35	0.09	0.14	0.101	7.22	0.45	20.22	0.009	
	B	YAR287	26	27	**MSI-waste**	0.01	35.83	0.08	0.14	0.139	7.85	0.90	29.65	0.010	
	B	YAR287	27	28	**MSI-waste**	0.01	41.02	0.06	0.12	0.105	6.87	0.77	23.11	0.023	
	B	YAR287	28	29	**MSI-waste**	0.01	48.62	0.03	0.07	0.057	4.40	0.62	14.83	0.036	
	B	YAR287	29	30	**MSI-waste**	0.01	47.80	0.03	0.06	0.072	5.01	0.58	15.00	0.032	
	B	YAR287	30	31	**MSI-waste**	0.01	41.54	0.05	0.09	0.123	7.39	0.72	21.77	0.028	
	B	YAR287	31	32	**MSI-waste**	0.01	26.40	0.08	0.12	0.190	10.93	1.26	40.32	0.024	
	B	YAR287	32	33	**MSI-waste**	0.01	31.23	0.09	0.14	0.215	12.54	0.95	30.78	0.034	
	B	YAR287	33	34	LGO	0.01	51.96	0.04	0.08	0.077	4.88	0.23	10.96	0.036	
	B	YAR287	34	35	LGO	0.01	50.15	0.04	0.09	0.079	5.84	0.20	11.40	0.040	
	B	YAR287	35	36	LGO	0.02	51.04	0.04	0.09	0.057	4.90	0.16	10.72	0.043	
	B	YAR287	36	44	ORE-ZONE										
	B	YAR287	44	45	LGO	0.01	52.48	0.03	0.08	0.042	4.07	0.19	10.45	0.038	
	B	YAR287	45	46	LGO	0.01	52.11	0.03	0.09	0.055	4.08	0.18	10.16	0.037	
	B	YAR287	46	47	LGO	0.01	54.22	0.02	0.07	0.034	2.96	0.12	8.01	0.031	
	B	YAR287	47	48	**LSC-waste**	0.01	30.49	0.05	0.11	0.132	5.88	0.34	42.13	0.019	
	B	YAR287	48	49	**LSC-waste**	<0.01	12.06	0.17	0.40	0.966	23.42	0.93	46.33	0.009	
	B	YAR287	49	50	**LSC-waste**	<0.01	10.98	0.14	0.39	1.107	21.62	0.78	50.52	0.018	
	B	YAR287	50	51	**LSC-waste**	<0.01	10.39	0.16	0.49	1.377	21.77	0.74	51.24	0.024	
	B	YAR287	51	52	**LSC-waste**	<0.01	9.12	0.11	0.51	1.977	18.32	0.69	57.77	0.028	
	B	YAR287	52	53	**LSC-waste**	<0.01	8.32	0.13	0.60	2.267	18.75	0.67	57.92	0.034	
	B	YAR287	53	54	**LSC-waste**	<0.01	12.97	0.22	0.70	1.800	18.09	0.51	51.34	0.080	
	B	YAR287	54	55	**LSC-waste**	0.01	21.60	0.10	0.46	1.774	11.88	0.31	46.29	0.271	
	B	YAR287	55	56	**LSC-waste**	<0.01	26.89	0.08	0.42	1.817	10.46	0.30	39.22	0.407	
	B	YAR287	56	57	**LSC-waste**	<0.01	4.39	0.04	0.77	4.367	17.35	0.55	65.76	0.042	
	B	YAR287	57	58	**LSC-waste**	<0.01	13.22	0.09	0.58	2.586	15.35	0.51	54.98	0.105	
	B	YAR287	58	59	**LSC-waste**	<0.01	3.56	0.04	0.87	4.800	18.06	0.59	65.78	0.027	
	B	YAR287	59	60	**LSC-waste**	<0.01	3.48	0.04	0.84	4.542	17.79	0.59	66.34	0.027	
	B	**YAR288**	0	10	ORE-ZONE										
	B	YAR288	10	11	LGO	0.03	44.09	0.06	0.10	0.206	8.25	0.45	17.76	0.026	
	B	YAR288	11	12	LGO	0.04	49.11	0.04	0.06	0.098	7.20	0.30	10.76	0.023	
	B	YAR288	12	13	LGO	0.04	51.66	0.04	0.05	0.050	5.96	0.23	8.08	0.021	
	B	YAR288	13	14	LGO	0.03	47.59	0.06	0.06	0.070	8.02	0.31	11.26	0.020	
	B	YAR288	14	15	LGO	0.03	50.46	0.04	0.05	0.039	6.53	0.20	8.49	0.028	
	B	YAR288	15	16	LGO	0.03	49.21	0.05	0.08	0.040	6.71	0.22	9.88	0.032	
	B	YAR288	16	17	LGO	0.02	48.19	0.07	0.12	0.049	6.83	0.30	11.70	0.026	
	B	YAR288	17	18	LGO	0.02	50.11	0.07	0.12	0.053	6.22	0.16	9.62	0.030	
	B	YAR288	18	19	LGO	0.01	52.26	0.04	0.08	0.044	5.33	0.11	7.14	0.055	
	B	YAR288	19	20	LGO	0.01	52.54	0.03	0.06	0.040	4.88	0.15	7.64	0.033	
	B	YAR288	20	21	LGO	0.01	54.53	0.02	0.04	0.024	3.50	0.13	6.37	0.016	
	B	YAR288	21	22	LGO	0.02	53.78	0.03	0.07	0.021	3.40	0.11	7.51	0.015	
	B	YAR288	22	23	**MSI-waste**	0.01	49.26	0.07	0.13	0.039	5.25	0.22	12.06	0.011	
	B	YAR288	23	24	**MSI-waste**	0.02	47.30	0.10	0.23	0.054	5.74	0.29	14.43	0.010	
	B	YAR288	24	25	**MSI-waste**	0.01	29.19	0.18	0.32	0.217	10.60	1.21	35.99	0.006	
	B	YAR288	25	26	**MSI-waste**	0.01	33.69	0.12	0.19	0.128	8.02	1.18	32.48	0.009	
	B	YAR288	26	27	**MSI-waste**	0.01	40.34	0.08	0.12	0.110	7.37	0.81	23.09	0.013	
	B	YAR288	27	28	**MSI-waste**	0.01	44.73	0.06	0.11	0.093	6.37	0.59	17.87	0.019	
	B	YAR288	28	29	**MSI-waste**	0.01	45.07	0.04	0.07	0.112	6.09	0.65	18.04	0.025	
	B	YAR288	29	30	**MSI-waste**	0.02	46.05	0.03	0.06	0.108	5.25	0.58	17.75	0.029	
	B	YAR288	30	31	**MSI-waste**	0.01	41.40	0.05	0.09	0.145	7.46	0.68	22.14	0.036	
	B	YAR288	31	32	**MSI-waste**	0.01	41.36	0.06	0.11	0.172	9.26	0.60	19.95	0.038	
	B	YAR288	32	33	**MSI-waste**	0.01	49.31	0.04	0.08	0.096	6.28	0.29	10.89	0.046	
	B	YAR288	33	34	LGO	0.02	51.66	0.04	0.07	0.062	4.37	0.19	11.13	0.035	
	B	YAR288	34	42	ORE-ZONE										
	B	YAR288	42	43	**LSC-waste**	0.03	46.92	0.03	0.06	0.045	3.40	0.19	19.03	0.038	
	B	YAR288	43	44	**LSC-waste**	0.01	33.79	0.06	0.14	0.276	6.18	0.36	35.73	0.042	
	B	YAR288	44	45	**LSC-waste**	0.01	19.76	0.13	0.33	1.656	12.18	0.52	50.12	0.030	
	B	YAR288	45	46	**LSC-waste**	<0.01	7.54	0.08	0.48	2.739	14.92	0.77	64.96	0.046	
	B	YAR288	46	47	**LSC-waste**	<0.01	2.66	0.06	0.52	3.244	14.31	0.76	73.81	0.016	
	B	YAR288	47	48	**LSC-waste**	<0.01	3.23	0.06	0.51	3.417	15.00	0.66	71.64	0.043	
	B	**YAR289**	0	16	ORE-ZONE										
	B	YAR289	16	17	LGO	0.02	51.46	0.05	0.08	0.059	5.17	0.21	8.70	0.021	
	B	YAR289	17	18	LGO	0.02	51.40	0.06	0.10	0.052	5.45	0.18	8.32	0.022	
	B	YAR289	18	19	LGO	0.01	42.18	0.12	0.19	0.099	10.61	0.28	16.53	0.028	
	B	YAR289	19	20	LGO	0.02	48.00	0.09	0.14	0.087	7.10	0.24	12.20	0.020	
	B	YAR289	20	21	LGO	0.02	53.45	0.05	0.08	0.040	3.94	0.16	7.54	0.015	
	B	YAR289	21	22	LGO	0.02	51.32	0.08	0.11	0.047	4.61	0.17	9.74	0.013	
	B	YAR289	22	23	LGO	0.03	53.31	0.07	0.10	0.034	3.29	0.12	8.24	0.010	
	B	YAR289	23	24	**MSI-waste**	0.03	50.10	0.08	0.12	0.048	4.68	0.23	11.34	0.010	
	B	YAR289	24	25	**MSI-waste**	0.01	27.62	0.19	0.31	0.199	10.51	1.39	38.58	0.008	
	B	YAR289	25	26	**MSI-waste**	<0.01	13.86	0.20	0.35	0.238	11.71	2.31	58.30	0.008	
	B	YAR289	26	27	**MSI-waste**	0.01	23.43	0.15	0.24	0.196	10.14	1.83	45.69	0.009	
	B	YAR289	27	28	**MSI-waste**	0.01	39.78	0.08	0.13	0.134	7.98	0.83	23.40	0.017	
	B	YAR289	28	29	**MSI-waste**	0.01	36.16	0.09	0.15	0.172	9.19	0.92	27.61	0.019	
	B	YAR289	29	30	**MSI-waste**	0.01	28.10	0.10	0.15	0.255	10.16	1.38	38.57	0.013	
	B	YAR289	30	31	**MSI-waste**	0.01	33.30	0.08	0.12	0.184	9.50	1.06	31.58	0.017	
	B	YAR289	31	32	**MSI-waste**	0.01	29.57	0.10	0.16	0.246	11.52	1.20	34.81	0.028	
	B	YAR289	32	33	**MSI-waste**	0.03	40.66	0.07	0.12	0.167	8.32	0.64	21.10	0.050	
	B	YAR289	33	34	**MSI-waste**	0.02	44.00	0.08	0.12	0.108	8.23	0.35	18.17	0.045	
	B	YAR289	34	35	**MSI-waste**	0.03	48.98	0.07	0.10	0.077	5.82	0.25	11.60	0.050	
	B	YAR289	35	36	**MSI-waste**	0.02	47.99	0.07	0.11	0.097	6.35	0.27	12.68	0.049	

Phase-2 Sample	Section	Hole_ ID	From (m)	To (m)	Lith_1	S	Fe	CaO	MgO	K2O	Al2O3	TiO2	SiO2	P	Mn
						%									
	B	YAR289	36	44	ORE-ZONE										
	B	YAR289	44	45	**LSC-waste**	0.01	40.31	0.04	0.18	0.718	5.61	0.25	25.53	0.058	
	B	YAR289	45	46	**LSC-waste**	<0.01	8.83	0.06	0.65	3.886	14.46	0.60	62.82	0.032	
	B	YAR289	46	47	**LSC-waste**	<0.01	11.86	0.05	0.54	3.291	11.95	0.47	61.95	0.055	
	B	YAR289	47	48	**LSC-waste**	<0.01	5.16	0.04	0.69	4.271	16.38	0.60	66.16	0.027	
	B	**YAR291**	0	1	**USI-waste**	0.04	44.53	0.11	0.21	0.493	7.27	0.39	17.78	0.037	
	B	YAR291	1	2	**USI-waste**	0.04	47.65	0.13	0.19	0.258	6.45	0.34	13.64	0.037	
	B	YAR291	2	3	**USI-waste**	0.04	48.69	0.15	0.20	0.207	5.23	0.30	13.21	0.036	
	B	YAR291	3	15	ORE-ZONE										
	B	YAR291	15	16	LGO	0.02	49.84	0.11	0.10	0.039	4.15	0.15	12.75	0.035	
	B	YAR291	16	17	LGO	0.02	47.58	0.11	0.13	0.051	5.27	0.26	15.09	0.027	
	B	YAR291	17	18	LGO	0.02	50.53	0.16	0.09	0.043	4.32	0.18	11.63	0.022	
	B	YAR291	18	19	LGO	0.02	52.27	0.09	0.11	0.041	3.97	0.13	9.13	0.023	
	B	YAR291	19	20	LGO	0.02	51.10	0.09	0.12	0.050	4.52	0.14	10.15	0.026	
	B	YAR291	20	21	**MSI-waste**	0.02	47.33	0.23	0.19	0.075	6.12	0.19	13.96	0.029	
	B	YAR291	21	22	**MSI-waste**	0.03	49.00	0.12	0.16	0.080	5.53	0.20	12.38	0.024	
	B	YAR291	22	23	**MSI-waste**	0.02	48.13	0.12	0.17	0.088	6.28	0.21	13.02	0.022	
	B	YAR291	23	24	**MSI-waste**	0.02	50.04	0.11	0.13	0.068	5.36	0.19	11.06	0.017	
	B	YAR291	24	25	**MSI-waste**	0.02	43.94	0.24	0.34	0.070	6.94	0.25	17.96	0.010	
	B	YAR291	25	26	**MSI-waste**	0.02	45.65	0.23	0.31	0.058	5.74	0.24	16.82	0.007	
WC14	B	YAR291	26	27	**MSI-waste**	0.02	40.29	0.31	0.44	0.094	7.71	0.42	22.80	0.006	
	B	YAR291	27	28	**MSI-waste**	0.01	27.35	0.40	0.58	0.199	10.42	1.09	38.90	0.006	
	B	YAR291	28	29	**MSI-waste**	0.01	26.41	0.29	0.42	0.238	10.41	1.32	40.39	0.007	
	B	YAR291	29	30	**MSI-waste**	0.01	31.79	0.23	0.29	0.156	9.28	1.13	33.94	0.010	
	B	YAR291	30	31	**MSI-waste**	0.02	48.32	0.09	0.11	0.082	5.04	0.47	14.16	0.026	
	B	YAR291	31	32	**MSI-waste**	0.01	42.91	0.10	0.11	0.127	6.20	0.75	21.00	0.021	
	B	YAR291	32	33	**MSI-waste**	0.02	35.51	0.12	0.15	0.183	8.73	0.96	29.32	0.021	
	B	YAR291	33	34	**MSI-waste**	0.01	22.73	0.16	0.20	0.297	13.34	1.47	43.15	0.018	
	B	YAR291	34	35	**MSI-waste**	0.01	44.88	0.10	0.11	0.121	5.72	0.46	19.61	0.034	
	B	YAR291	35	36	**MSI-waste**	0.02	47.30	0.10	0.11	0.113	5.48	0.31	15.74	0.045	
	B	YAR291	36	37	**MSI-waste**	0.02	41.41	0.16	0.18	0.138	10.33	0.41	20.32	0.033	
	B	YAR291	37	38	**MSI-waste**	0.03	38.93	0.16	0.19	0.139	10.34	0.46	21.43	0.037	
	B	YAR291	38	39	**MSI-waste**	0.02	32.66	0.19	0.22	0.216	14.65	0.64	25.77	0.038	
	B	YAR291	39	48	ORE-ZONE										
	B	YAR291	47	48	**LSC-waste**	0.01	49.53	0.07	0.12	0.329	3.47	0.12	15.25	0.047	
	C	**YAR153**	0	1	LGO	0.01	48.47	0.12	0.14	0.292	4.37	0.31	18.49	0.051	0.03
	C	YAR153	1	2	LGO	0.03	55.69	0.03	0.13	0.161	4.63	0.17	7.57	0.026	0.03
	C	YAR153	2	13	ORE-ZONE										
	C	YAR153	13	14	LGO	0.02	48.39	0.13	0.20	0.057	4.90	0.16	15.57	0.036	0.04
	C	YAR153	14	15	**MSI-waste**	0.02	44.06	0.12	0.18	0.058	5.49	0.15	20.02	0.037	0.03
	C	YAR153	15	16	**MSI-waste**	0.02	49.12	0.13	0.21	0.047	4.33	0.14	13.89	0.032	0.05
	C	YAR153	16	17	**MSI-waste**	0.01	41.25	0.21	0.37	0.129	8.52	0.30	20.25	0.031	0.03
	C	YAR153	17	18	**MSI-waste**	0.02	39.62	0.21	0.38	0.106	8.96	0.34	22.20	0.024	0.03
	C	YAR153	18	19	**MSI-waste**	0.01	45.67	0.16	0.29	0.057	5.30	0.17	17.30	0.037	0.03
	C	YAR153	19	20	**MSI-waste**	0.02	44.70	0.16	0.33	0.085	6.90	0.25	16.65	0.024	0.10
	C	YAR153	20	21	**MSI-waste**	0.02	48.17	0.16	0.27	0.065	5.49	0.18	13.33	0.025	0.08
	C	YAR153	21	22	**MSI-waste**	0.03	42.26	0.24	0.40	0.098	7.73	0.24	19.34	0.021	0.07
	C	YAR153	22	23	**MSI-waste**	0.03	51.32	0.07	0.14	0.062	2.98	0.10	11.50	0.027	0.04
	C	YAR153	23	24	**MSI-waste**	0.02	39.07	0.09	0.19	0.142	4.21	0.16	29.83	0.019	0.06
	C	YAR153	24	25	**MSI-waste**	0.01	44.08	0.06	0.14	0.336	5.17	0.24	20.45	0.039	0.03
	C	YAR153	25	26	**MSI-waste**	0.01	45.63	0.09	0.18	0.328	6.43	0.29	16.33	0.015	0.04
	C	YAR153	26	27	**MSI-waste**	0.01	42.83	0.11	0.24	0.351	5.88	0.33	21.20	0.012	0.03
	C	YAR153	27	28	**MSI-waste**	0.01	22.09	0.24	0.52	0.878	11.37	0.91	46.69	0.008	0.02
	C	YAR153	28	29	**MSI-waste**	0.01	32.43	0.22	0.38	0.214	10.54	0.83	31.31	0.009	0.02
	C	YAR153	29	30	**MSI-waste**	0.01	40.61	0.16	0.25	0.137	7.39	0.52	22.96	0.008	0.04
	C	YAR153	30	31	**MSI-waste**	0.01	33.17	0.21	0.30	0.147	9.58	0.88	31.71	0.009	0.03
	C	YAR153	31	32	**MSI-waste**	0.01	35.30	0.13	0.18	0.130	8.47	0.93	30.04	0.012	0.03
	C	YAR153	32	33	**MSI-waste**	0.01	38.34	0.10	0.14	0.126	8.24	0.80	25.45	0.020	0.03
	C	YAR153	33	34	**MSI-waste**	0.01	36.71	0.10	0.14	0.152	9.78	0.78	25.84	0.022	0.03
	C	YAR153	34	35	**MSI-waste**	0.01	38.03	0.11	0.14	0.132	8.60	0.62	25.67	0.023	0.04
	C	YAR153	35	36	**MSI-waste**	0.01	38.74	0.11	0.15	0.136	8.55	0.61	24.48	0.026	0.06
	C	YAR153	36	37	LGO	0.02	53.95	0.05	0.08	0.034	2.67	0.13	9.89	0.033	0.09
	C	YAR153	37	38	LGO	0.01	34.03	0.14	0.17	0.178	11.07	0.82	29.36	0.025	0.08
	C	YAR153	38	39	LGO	0.01	52.50	0.07	0.12	0.101	4.46	0.27	10.59	0.026	0.13
	C	YAR153	39	40	LGO	0.01	39.58	0.09	0.17	0.221	8.03	0.75	24.29	0.025	0.10
	C	YAR153	40	41	**LSC-waste**	0.01	53.26	0.04	0.09	0.079	2.89	0.19	9.75	0.032	0.14
	C	YAR153	41	42	**LSC-waste**	0.01	45.39	0.04	0.09	0.179	4.24	0.35	19.54	0.030	0.10
	C	YAR153	42	43	**LSC-waste**	0.01	39.58	0.05	0.13	0.305	6.55	0.45	26.68	0.031	0.08
	C	YAR153	43	44	**LSC-waste**	<0.01	32.20	0.28	0.53	0.654	9.30	0.49	34.57	0.030	0.17
	C	YAR153	44	45	**LSC-waste**	<0.01	25.99	0.47	0.86	0.747	10.42	0.43	42.97	0.043	0.04
	C	YAR153	45	46	**LSC-waste**	<0.01	23.50	0.44	0.73	0.896	12.35	0.56	44.29	0.066	0.05
	C	YAR153	46	47	**LSC-waste**	<0.01	21.86	0.41	0.68	0.951	13.43	0.50	45.67	0.083	0.04
	C	YAR153	47	48	**LSC-waste**	<0.01	22.61	0.28	0.53	1.190	15.72	0.60	41.59	0.110	0.05
	C	YAR153	48	49	**LSC-waste**	<0.01	23.01	0.19	0.44	1.382	14.95	0.58	41.23	0.132	0.05
	C	YAR153	49	50	**LSC-waste**	<0.01	24.79	0.18	0.47	1.620	14.35	0.57	39.47	0.129	0.03
	C	YAR153	50	51	**LSC-waste**	0.01	23.96	0.20	0.55	2.006	15.77	0.62	38.29	0.117	0.02
	C	YAR153	51	52	**LSC-waste**	<0.01	17.53	0.33	0.71	1.954	15.23	0.54	48.35	0.121	0.02
	C	YAR153	52	53	**LSC-waste**	<0.01	4.18	0.13	0.57	3.486	18.01	0.62	65.77	0.054	0.01
	C	YAR153	53	54	**LSC-waste**	<0.01	9.50	0.07	0.48	3.201	17.28	0.63	58.92	0.116	0.02
	C	**YAR154**	0	1	**USI-waste**	0.01	46.63	0.12	0.18	0.317	5.04	0.37	20.89	0.045	0.03
	C	YAR154	1	2	LGO	0.03	50.66	1.15	0.43	0.047	3.33	0.14	13.16	0.019	0.03
	C	YAR154	2	3	LGO	0.02	51.17	0.77	0.43	0.032	3.07	0.11	13.28	0.021	0.03
	C	YAR154	3	4	LGO	0.02	51.70	0.36	0.34	0.031	3.19	0.11	13.00	0.026	0.02

Phase-2 Sample	Section	Hole_ ID	From (m)	To (m)	Lith_1	S	Fe	CaO	MgO	K2O	Al2O3	TiO2	SiO2	P	Mn
						%									
	C	YAR154	4	5	LGO	0.02	50.68	0.38	0.36	0.042	3.84	0.15	13.77	0.020	0.02
	C	YAR154	5	6	LGO	0.02	48.28	0.31	0.39	0.037	3.88	0.12	17.34	0.019	0.02
	C	YAR154	6	27	ORE-ZONE										
	C	YAR154	27	28	LGO	0.02	49.59	0.06	0.10	0.081	3.51	0.13	13.32	0.040	0.04
	C	YAR154	28	29	LGO	0.02	42.73	0.09	0.14	0.354	6.77	0.30	19.76	0.037	0.08
	C	YAR154	29	30	LGO	0.02	52.58	0.06	0.09	0.106	3.77	0.17	8.47	0.042	0.05
	C	YAR154	30	31	LGO	0.02	54.58	0.05	0.06	0.075	2.67	0.16	7.03	0.033	0.04
	C	YAR154	31	32	LGO	0.03	52.60	0.05	0.07	0.107	2.86	0.19	9.17	0.038	0.04
	C	YAR154	32	33	LGO	0.02	51.24	0.05	0.08	0.116	3.22	0.30	11.62	0.038	0.05
	C	YAR154	33	34	**MSI-waste**	0.01	48.61	0.06	0.09	0.111	3.98	0.50	14.59	0.036	0.04
	C	YAR154	34	35	**MSI-waste**	0.01	45.99	0.06	0.08	0.117	4.21	0.65	18.53	0.034	0.04
	C	YAR154	35	36	**MSI-waste**	0.01	49.53	0.05	0.06	0.074	3.95	0.49	13.73	0.038	0.04
	C	YAR154	36	37	**MSI-waste**	0.01	42.51	0.06	0.07	0.108	5.07	0.82	23.08	0.034	0.04
	C	YAR154	37	38	**MSI-waste**	0.01	45.78	0.09	0.09	0.091	5.74	0.60	18.45	0.036	0.08
	C	YAR154	38	39	LGO	0.01	50.01	0.08	0.09	0.059	4.30	0.32	13.31	0.032	0.10
	C	YAR154	39	60	ORE-ZONE										
	C	YAR154	60	61	**LSC-waste**	0.01	55.45	0.04	0.11	0.063	2.83	0.12	6.27	0.114	0.15
	C	YAR154	61	62	**LSC-waste**	0.01	38.54	0.04	0.10	0.108	3.84	0.19	31.11	0.089	0.25
	C	YAR154	62	63	**LSC-waste**	0.01	46.85	0.04	0.15	0.141	5.11	0.27	15.80	0.125	0.12
	C	YAR154	63	64	**LSC-waste**	0.01	40.85	0.06	0.19	0.550	8.27	0.50	22.85	0.112	0.10
	C	YAR154	64	65	**LSC-waste**	0.01	32.06	0.06	0.23	0.793	10.11	0.64	32.93	0.077	0.09
	C	YAR154	65	66	**LSC-waste**	0.01	45.34	0.04	0.15	0.319	5.79	0.35	17.00	0.098	0.13
	C	YAR154	66	67	**LSC-waste**	<0.01	21.13	0.06	0.33	2.329	12.49	0.44	46.69	0.156	0.06
	C	YAR154	67	68	**LSC-waste**	<0.01	6.32	0.06	0.43	3.246	16.49	0.57	65.14	0.058	0.02
	C	YAR154	68	69	**LSC-waste**	<0.01	5.77	0.04	0.54	3.395	17.27	0.59	64.39	0.049	0.04
	C	YAR154	69	70	**LSC-waste**	<0.01	4.74	0.05	0.72	3.752	18.00	0.63	65.08	0.042	0.05
	C	**YAR360**	0	17	ORE-ZONE										
	C	YAR360	17	18	LGO	0.04	55.17	0.04	0.08	0.017	2.59	0.08	6.04	0.023	
	C	YAR360	18	19	LGO	0.02	50.98	0.07	0.15	0.027	3.99	0.10	10.68	0.024	
	C	YAR360	19	20	LGO	0.02	46.53	0.08	0.17	0.037	4.13	0.11	17.79	0.024	
WC15	C	YAR360	20	21	LGO	0.02	46.94	0.08	0.18	0.039	4.45	0.12	16.57	0.025	
	C	YAR360	21	22	LGO	0.02	50.70	0.07	0.14	0.037	4.67	0.13	10.21	0.029	
	C	YAR360	22	23	LGO	0.03	52.47	0.05	0.10	0.034	3.72	0.14	8.37	0.037	
	C	YAR360	23	24	LGO	0.02	52.00	0.05	0.10	0.036	3.62	0.21	9.68	0.030	
	C	YAR360	24	25	LGO	0.01	50.27	0.04	0.09	0.041	3.79	0.35	12.50	0.026	
	C	YAR360	25	26	**MSI-waste**	0.01	45.42	0.05	0.09	0.062	4.19	0.66	19.36	0.027	
	C	YAR360	26	27	**MSI-waste**	0.01	50.68	0.04	0.07	0.052	4.13	0.48	12.46	0.036	
	C	YAR360	27	28	**MSI-waste**	0.01	41.49	0.04	0.08	0.081	6.09	0.78	23.19	0.034	
	C	YAR360	28	29	**MSI-waste**	0.01	47.68	0.04	0.07	0.062	5.14	0.49	14.94	0.038	
	C	YAR360	29	30	**MSI-waste**	0.01	43.59	0.04	0.07	0.086	6.09	0.70	19.77	0.036	
	C	YAR360	30	31	**MSI-waste**	0.01	29.34	0.08	0.12	0.181	10.29	1.06	36.76	0.029	
	C	YAR360	31	32	**MSI-waste**	0.01	30.20	0.10	0.16	0.205	12.86	0.76	32.11	0.040	
	C	YAR360	32	33	**MSI-waste**	0.02	47.48	0.05	0.08	0.058	5.23	0.20	14.73	0.036	
	C	YAR360	33	34	**MSI-waste**	0.02	51.48	0.04	0.07	0.032	3.59	0.11	11.88	0.035	
	C	YAR360	34	35	LGO	0.02	50.81	0.05	0.09	0.050	5.01	0.20	10.42	0.040	
	C	YAR360	35	36	LGO	0.02	54.59	0.04	0.08	0.035	3.89	0.16	7.62	0.039	
	C	**YAR361**	0	7	ORE-ZONE										
	C	YAR361	7	8	LGO	0.02	48.87	0.11	0.20	0.035	4.08	0.12	15.53	0.036	
	C	YAR361	8	9	LGO	0.02	47.55	0.10	0.17	0.043	4.50	0.13	17.39	0.028	
	C	YAR361	9	10	LGO	0.02	45.12	0.13	0.21	0.049	5.25	0.15	20.18	0.023	
	C	YAR361	10	11	LGO	0.02	48.95	0.08	0.12	0.044	4.23	0.12	15.59	0.030	
	C	YAR361	11	12	LGO	0.03	49.00	0.08	0.12	0.048	3.90	0.10	16.39	0.029	
	C	YAR361	12	13	LGO	0.02	46.29	0.09	0.14	0.046	4.61	0.11	18.36	0.030	
	C	YAR361	13	14	LGO	0.01	43.89	0.11	0.16	0.054	6.27	0.19	18.84	0.039	
	C	YAR361	14	15	LGO	0.01	49.14	0.08	0.12	0.034	3.96	0.12	14.83	0.039	
	C	YAR361	15	16	LGO	0.01	54.46	0.05	0.08	0.012	1.88	0.06	10.15	0.039	
	C	YAR361	16	17	LGO	0.02	54.23	0.04	0.07	0.007	1.41	0.04	11.08	0.034	
	C	YAR361	17	18	**MSI-waste**	0.02	48.41	0.08	0.11	0.026	2.95	0.09	17.10	0.032	
	C	YAR361	18	19	**MSI-waste**	0.01	36.02	0.14	0.23	0.066	8.77	0.31	28.33	0.023	
	C	YAR361	19	20	**MSI-waste**	0.01	36.96	0.14	0.24	0.057	9.22	0.36	25.85	0.020	
	C	YAR361	20	21	**MSI-waste**	0.02	34.15	0.17	0.28	0.070	10.31	0.44	28.61	0.020	
	C	YAR361	21	22	**MSI-waste**	0.02	40.08	0.11	0.22	0.051	7.96	0.29	22.50	0.017	
	C	YAR361	22	23	**MSI-waste**	0.04	43.99	0.10	0.19	0.037	5.84	0.14	19.32	0.021	
	C	YAR361	23	24	**MSI-waste**	0.03	41.68	0.10	0.22	0.092	6.85	0.20	21.46	0.026	
	C	YAR361	24	25	**MSI-waste**	0.02	50.75	0.05	0.11	0.043	4.26	0.16	10.81	0.036	
	C	YAR361	25	26	**MSI-waste**	0.02	51.13	0.03	0.07	0.048	3.74	0.24	11.27	0.019	
	C	YAR361	26	27	**MSI-waste**	0.02	42.80	0.06	0.11	0.081	6.39	0.50	20.88	0.010	
	C	YAR361	27	28	**MSI-waste**	0.02	42.10	0.05	0.09	0.060	6.08	0.69	22.08	0.012	
	C	YAR361	28	29	**MSI-waste**	0.01	43.25	0.05	0.09	0.045	5.64	0.67	20.89	0.015	
	C	YAR361	29	30	**MSI-waste**	0.01	45.75	0.05	0.09	0.048	5.31	0.52	17.28	0.026	
	C	YAR361	30	31	**MSI-waste**	0.01	51.21	0.03	0.06	0.040	4.22	0.34	10.55	0.034	
	C	YAR361	31	32	**MSI-waste**	0.01	46.44	0.04	0.07	0.055	5.32	0.60	16.42	0.035	
	C	YAR361	32	33	**MSI-waste**	0.01	39.07	0.04	0.07	0.102	7.72	0.84	24.61	0.034	
	C	YAR361	33	34	**MSI-waste**	0.01	42.59	0.04	0.08	0.088	7.85	0.51	19.37	0.030	
	C	YAR361	34	35	**MSI-waste**	0.02	44.63	0.06	0.10	0.083	7.21	0.35	16.49	0.028	
	C	YAR361	35	36	**MSI-waste**	0.01	39.66	0.08	0.13	0.104	10.18	0.40	20.32	0.029	
	C	**YAR351**	0	14	ORE-ZONE										
	C	YAR351	14	15	LGO	0.01	46.12	0.09	0.24	0.061	4.52	0.18	17.35	0.041	
	C	YAR351	15	16	**MSI-waste**	0.02	42.29	0.10	0.30	0.074	5.21	0.17	22.53	0.031	
	C	YAR351	16	17	**MSI-waste**	0.02	45.10	0.07	0.24	0.065	4.72	0.12	19.32	0.030	
	C	YAR351	17	18	**MSI-waste**	0.02	45.71	0.06	0.21	0.062	4.42	0.10	18.38	0.028	
	C	YAR351	18	19	**MSI-waste**	0.01	48.01	0.06	0.15	0.053	4.09	0.10	15.38	0.032	
	C	YAR351	19	20	**MSI-waste**	0.02	49.52	0.03	0.08	0.038	3.52	0.07	14.06	0.027	
	C	YAR351	20	21	**MSI-waste**	0.02	47.69	0.06	0.16	0.062	5.29	0.25	14.33	0.030	

Phase-2 Sample	Section	Hole_ ID	From (m)	To (m)	Lith_1	S	Fe	CaO	MgO	K2O	Al2O3	TiO2	SiO2	P	Mn
						%									
	C	YAR351	21	22	**MSI-waste**	0.03	44.24	0.09	0.23	0.083	7.09	0.36	17.47	0.019	
	C	YAR351	22	23	**MSI-waste**	0.02	45.79	0.06	0.15	0.057	5.34	0.50	17.09	0.017	
	C	YAR351	23	24	**MSI-waste**	0.01	38.86	0.08	0.17	0.071	6.53	0.86	26.41	0.014	
	C	YAR351	24	25	**MSI-waste**	0.01	39.05	0.08	0.15	0.093	7.17	0.80	25.45	0.021	
	C	YAR351	25	26	**MSI-waste**	0.01	41.40	0.06	0.12	0.097	7.01	0.70	22.25	0.024	
	C	YAR351	26	27	**MSI-waste**	0.01	45.18	0.04	0.09	0.108	6.02	0.57	17.77	0.032	
	C	YAR351	27	28	**MSI-waste**	0.01	41.09	0.04	0.10	0.147	7.23	0.71	22.10	0.033	
	C	YAR351	28	29	**MSI-waste**	0.01	35.60	0.06	0.12	0.185	11.46	0.69	25.59	0.036	
	C	YAR351	29	30	**MSI-waste**	0.01	45.61	0.05	0.09	0.111	6.77	0.34	15.98	0.045	
	C	YAR351	30	36	ORE-ZONE										
	C	**YAR146**	0	1	LGO	0.01	51.84	0.09	0.10	0.191	3.97	0.26	13.37	0.044	0.03
	C	YAR146	1	12	ORE-ZONE										
	C	YAR146	12	13	LGO	0.01	51.89	0.09	0.11	0.038	4.05	0.18	10.23	0.044	0.04
	C	YAR146	13	14	LGO	0.01	48.68	0.12	0.16	0.046	5.02	0.17	13.59	0.045	0.03
	C	YAR146	14	15	LGO	0.01	50.61	0.13	0.17	0.055	4.63	0.16	11.71	0.043	0.06
	C	YAR146	15	16	LGO	0.01	54.47	0.07	0.09	0.029	3.18	0.12	6.62	0.039	0.04
	C	YAR146	16	17	LGO	0.01	42.88	0.19	0.26	0.066	7.65	0.24	18.47	0.030	0.09
	C	YAR146	17	18	LGO	0.01	46.86	0.14	0.20	0.057	6.27	0.22	14.18	0.044	0.03
	C	YAR146	18	19	LGO	0.01	47.57	0.12	0.18	0.065	5.67	0.26	14.32	0.037	0.04
	C	YAR146	19	20	LGO	0.01	51.77	0.10	0.14	0.045	4.26	0.15	9.35	0.045	0.06
	C	YAR146	20	21	LGO	0.02	49.69	0.11	0.14	0.059	4.98	0.18	11.29	0.036	0.04
	C	YAR146	21	22	LGO	0.02	51.06	0.10	0.15	0.050	4.36	0.11	10.71	0.031	0.08
	C	YAR146	22	23	LGO	0.02	54.65	0.06	0.10	0.042	3.31	0.09	6.29	0.032	0.04
	C	YAR146	23	24	LGO	0.01	51.64	0.08	0.12	0.060	4.42	0.17	9.47	0.035	0.07
	C	YAR146	24	25	LGO	0.02	52.66	0.07	0.10	0.047	4.32	0.17	7.72	0.040	0.06
	C	YAR146	25	26	LGO	0.02	53.26	0.06	0.08	0.044	3.79	0.19	7.47	0.040	0.05
	C	YAR146	26	27	**MSI-waste**	0.03	48.76	0.06	0.09	0.061	4.50	0.45	13.36	0.033	0.05
	C	YAR146	27	28	**MSI-waste**	0.02	45.54	0.06	0.08	0.058	4.20	0.70	18.87	0.019	0.02
	C	YAR146	28	29	**MSI-waste**	0.01	40.12	0.11	0.13	0.087	6.71	0.84	24.20	0.014	0.04
	C	YAR146	29	30	**MSI-waste**	0.01	44.43	0.08	0.11	0.123	6.13	0.63	18.09	0.022	0.04
	C	YAR146	30	31	**MSI-waste**	0.02	49.10	0.07	0.10	0.096	4.87	0.43	12.90	0.036	0.04
	C	YAR146	31	32	**MSI-waste**	0.02	41.17	0.08	0.11	0.182	7.47	0.68	21.59	0.034	0.03
	C	YAR146	32	33	**MSI-waste**	0.01	28.03	0.12	0.16	0.325	13.44	1.05	34.74	0.031	0.02
	C	YAR146	33	34	**MSI-waste**	0.01	43.04	0.11	0.14	0.189	9.34	0.40	17.61	0.048	0.06
	C	YAR146	34	35	LGO	0.02	50.26	0.09	0.12	0.093	5.72	0.21	9.96	0.044	0.10
	C	YAR146	35	51	ORE-ZONE										
	C	YAR146	51	52	**LSC-waste**	0.02	46.38	0.08	0.13	0.039	4.09	0.47	18.09	0.050	0.11
	C	YAR146	52	53	**LSC-waste**	0.01	38.00	0.14	0.20	0.064	8.15	0.66	25.63	0.042	0.04
	C	YAR146	53	54	**LSC-waste**	0.01	24.28	0.39	0.59	0.185	13.13	0.99	40.61	0.038	0.06
	C	YAR146	54	55	**LSC-waste**	0.01	18.87	0.68	1.15	0.271	10.48	0.81	51.85	0.023	0.05
	C	YAR146	55	56	**LSC-waste**	0.01	16.96	0.54	0.92	0.707	11.64	0.77	54.12	0.023	0.02
	C	YAR146	56	57	**LSC-waste**	0.01	16.11	0.39	0.62	0.821	8.26	0.63	60.23	0.028	0.06
	C	YAR146	57	58	**LSC-waste**	<0.01	15.79	0.48	0.78	1.026	9.60	0.51	58.34	0.032	0.04
	C	YAR146	58	59	**LSC-waste**	<0.01	13.80	0.54	0.97	1.199	9.86	0.38	60.68	0.041	0.10
	C	YAR146	59	60	**LSC-waste**	<0.01	14.04	0.58	1.12	1.942	13.96	0.39	54.63	0.059	0.02
WC16	C	**YAR343**	0	1	**USI-waste**	0.02	51.20	0.11	0.16	0.079	4.42	0.16	12.18	0.024	
	C	YAR343	1	2	**USI-waste**	0.02	47.44	0.19	0.23	0.079	4.31	0.13	18.35	0.021	
	C	YAR343	2	3	**USI-waste**	0.01	36.40	0.37	0.40	0.122	5.34	0.17	32.41	0.012	
	C	YAR343	3	4	**USI-waste**	0.01	39.99	0.36	0.38	0.112	4.96	0.16	28.30	0.016	
	C	YAR343	4	5	**USI-waste**	0.02	50.27	0.18	0.19	0.044	3.66	0.12	14.69	0.032	
	C	YAR343	5	6	**USI-waste**	0.02	48.38	0.21	0.20	0.046	4.00	0.13	15.79	0.032	
	C	YAR343	6	7	**USI-waste**	0.01	32.70	0.53	0.50	0.114	7.44	0.27	34.47	0.012	
	C	YAR343	7	8	LGO	0.02	52.07	0.12	0.13	0.032	3.10	0.08	10.78	0.041	
	C	YAR343	8	11	ORE-ZONE										
	C	YAR343	11	12	LGO	0.02	47.71	0.19	0.26	0.066	5.32	0.19	14.39	0.033	
	C	YAR343	12	13	LGO	0.01	32.20	0.38	0.41	0.116	8.23	0.27	34.62	0.020	
	C	YAR343	13	14	LGO	0.03	45.29	0.14	0.15	0.062	4.41	0.14	19.36	0.034	
	C	YAR343	14	15	LGO	0.01	47.64	0.13	0.16	0.058	4.81	0.18	15.10	0.043	
	C	YAR343	15	16	LGO	0.01	41.18	0.22	0.31	0.120	7.79	0.21	21.46	0.030	
	C	YAR343	16	17	LGO	0.01	51.64	0.12	0.17	0.055	3.77	0.10	11.25	0.044	
	C	YAR343	17	18	LGO	0.01	51.32	0.12	0.16	0.044	3.36	0.09	13.07	0.037	
	C	YAR343	18	19	LGO	0.01	54.09	0.08	0.12	0.025	2.29	0.06	9.19	0.044	
	C	YAR343	19	20	LGO	0.02	47.44	0.27	0.31	0.091	6.00	0.16	13.82	0.036	
WC17	C	YAR343	20	21	LGO	0.01	50.94	0.13	0.18	0.054	4.53	0.17	10.35	0.035	
	C	YAR343	21	22	LGO	0.01	49.93	0.13	0.22	0.070	4.76	0.14	11.47	0.033	
	C	YAR343	22	23	LGO	0.02	52.02	0.08	0.15	0.053	3.81	0.11	9.52	0.028	
	C	YAR343	23	24	LGO	0.02	48.85	0.10	0.18	0.074	4.57	0.11	13.20	0.034	
	C	YAR343	24	25	LGO	0.02	51.30	0.08	0.12	0.061	4.75	0.16	9.55	0.044	
	C	YAR343	25	26	LGO	0.02	52.84	0.06	0.10	0.043	3.72	0.17	8.32	0.032	
WC18	C	YAR343	26	27	**MSI-waste**	0.03	49.34	0.10	0.16	0.066	5.21	0.26	12.17	0.027	
	C	YAR343	27	28	**MSI-waste**	0.02	44.59	0.11	0.17	0.079	5.87	0.55	18.76	0.016	
	C	YAR343	28	29	**MSI-waste**	0.01	41.99	0.11	0.17	0.101	6.51	0.71	22.05	0.012	
	C	YAR343	29	30	**MSI-waste**	0.01	39.53	0.13	0.19	0.122	7.57	0.77	24.61	0.013	
	C	**YAR145**	0	1	LGO	0.01	51.26	0.06	0.11	0.164	4.71	0.23	12.02	0.044	0.03
	C	YAR145	1	2	LGO	0.02	52.22	0.03	0.12	0.125	6.09	0.20	8.24	0.027	0.01
	C	YAR145	2	3	LGO	0.02	47.34	0.16	0.23	0.151	5.54	0.15	15.06	0.027	0.01
	C	YAR145	3	4	LGO	0.02	51.77	0.15	0.16	0.089	3.81	0.11	12.51	0.021	0.02
	C	YAR145	4	5	LGO	0.02	51.51	0.18	0.16	0.056	3.31	0.11	15.07	0.023	0.03
	C	YAR145	5	26	ORE-ZONE										
	C	YAR145	26	27	LGO	0.02	49.84	0.09	0.15	0.055	5.42	0.15	10.88	0.025	0.04
	C	YAR145	27	28	LGO	0.04	52.06	0.09	0.14	0.048	4.52	0.12	8.70	0.021	0.07
	C	YAR145	28	29	**MSI-waste**	0.03	48.45	0.10	0.16	0.083	5.70	0.27	12.91	0.018	0.04
	C	YAR145	29	30	**MSI-waste**	0.01	48.79	0.07	0.10	0.079	4.71	0.45	13.60	0.022	0.02
	C	YAR145	30	31	**MSI-waste**	0.01	29.75	0.14	0.18	0.229	10.26	1.05	36.13	0.016	0.01

Phase-2 Sample	Section	Hole_ ID	From (m)	To (m)	Lith_1	S	Fe	CaO	MgO	K2O	Al2O3	TiO2	SiO2	P	Mn
						%									
	C	YAR145	31	32	**MSI-waste**	0.01	35.31	0.11	0.16	0.230	9.00	0.89	29.30	0.025	0.02
	C	YAR145	32	33	**MSI-waste**	0.01	34.06	0.10	0.14	0.245	8.85	0.96	31.32	0.027	0.02
	C	YAR145	33	34	**MSI-waste**	0.01	19.43	0.11	0.15	0.284	12.40	1.50	50.12	0.018	0.01
	C	YAR145	34	35	**MSI-waste**	0.02	37.35	0.11	0.15	0.235	9.99	0.67	24.65	0.047	0.03
	C	YAR145	35	36	**MSI-waste**	0.02	47.93	0.09	0.14	0.111	6.44	0.30	12.43	0.044	0.05
	C	YAR145	36	37	**MSI-waste**	0.02	38.22	0.16	0.21	0.180	10.51	0.57	22.82	0.034	0.03
	C	YAR145	37	38	**MSI-waste**	0.03	46.04	0.14	0.19	0.100	7.54	0.31	15.23	0.042	0.08
	C	YAR145	38	48	ORE-ZONE										
	C	YAR145	48	49	**LSC-waste**	0.01	47.89	0.05	0.10	0.075	3.86	0.44	16.52	0.036	0.05
	C	YAR145	49	50	**LSC-waste**	0.01	43.60	0.06	0.10	0.106	4.72	0.54	22.19	0.038	0.05
	C	YAR145	50	51	**LSC-waste**	<0.01	20.60	0.18	0.30	0.608	16.04	0.79	43.82	0.021	0.03
	C	YAR145	51	52	**LSC-waste**	<0.01	14.79	0.24	0.43	1.149	20.77	1.15	46.75	0.029	0.05
	C	YAR145	52	53	**LSC-waste**	<0.01	13.51	0.24	0.49	1.394	20.74	1.02	48.40	0.031	0.04
	C	YAR145	53	54	**LSC-waste**	<0.01	15.04	0.28	0.65	1.545	18.29	0.76	48.43	0.035	0.08
	C	YAR145	54	55	**LSC-waste**	<0.01	16.83	0.38	0.79	1.472	15.82	0.70	48.71	0.044	0.01
	C	YAR145	55	56	**LSC-waste**	<0.01	6.93	0.21	0.65	2.788	21.47	0.66	57.24	0.039	0.01
	C	YAR145	56	57	**LSC-waste**	<0.01	11.68	0.15	0.53	2.127	17.56	0.56	55.14	0.085	0.03
	C	YAR145	57	58	**LSC-waste**	<0.01	6.33	0.04	0.54	3.321	18.05	0.64	62.95	0.052	0.06
	C	YAR145	58	59	**LSC-waste**	<0.01	2.30	0.03	0.39	2.344	16.91	0.62	71.25	0.025	0.11
	C	YAR145	59	60	**LSC-waste**	<0.01	1.72	0.04	0.40	2.511	18.84	0.83	69.76	0.019	0.02
	C	**YAR344**	0	1	LGO	0.02	51.89	0.07	0.16	0.127	5.05	0.17	8.92	0.030	
	C	YAR344	1	2	LGO	0.02	51.81	0.15	0.20	0.087	4.10	0.11	11.90	0.026	
	C	YAR344	2	3	LGO	0.02	52.09	0.15	0.17	0.106	4.31	0.12	12.14	0.022	
	C	YAR344	3	4	LGO	0.01	23.47	0.24	0.42	0.938	15.19	0.63	39.88	0.010	
	C	YAR344	4	5	LGO	0.01	24.98	0.23	0.41	0.904	14.93	0.60	38.02	0.011	
	C	YAR344	5	6	LGO	0.01	25.99	0.24	0.40	0.876	14.83	0.57	36.65	0.011	
	C	YAR344	6	7	LGO	0.02	47.32	0.14	0.16	0.219	5.61	0.18	15.97	0.031	
	C	YAR344	7	10	ORE-ZONE										
	C	YAR344	10	11	LGO	0.02	47.97	0.14	0.16	0.147	5.61	0.16	14.63	0.026	
	C	YAR344	11	12	LGO	0.02	46.63	0.16	0.19	0.092	5.56	0.15	16.26	0.025	
	C	YAR344	12	13	LGO	0.05	46.92	0.28	0.26	0.100	6.18	0.19	15.28	0.026	
	C	YAR344	13	14	LGO	0.05	44.10	1.60	0.32	0.134	6.68	0.18	15.58	0.025	
	C	YAR344	14	15	LGO	0.02	51.72	0.13	0.16	0.057	4.08	0.12	9.52	0.031	
WC19	C	YAR344	15	16	LGO	0.03	48.27	0.14	0.22	0.079	5.46	0.18	12.99	0.034	
	C	YAR344	16	17	LGO	0.12	42.56	0.25	0.37	0.150	8.07	0.24	17.92	0.038	
	C	YAR344	17	18	LGO	0.03	42.84	0.23	0.37	0.122	8.10	0.27	18.43	0.034	
	C	YAR344	18	19	LGO	0.02	48.03	0.19	0.25	0.070	5.50	0.16	13.62	0.037	
	C	YAR344	19	20	LGO	0.02	55.15	0.09	0.13	0.034	2.52	0.07	6.42	0.038	
	C	YAR344	20	21	LGO	0.02	44.47	0.21	0.36	0.125	7.47	0.22	16.16	0.034	
	C	YAR344	21	22	**MSI-waste**	0.02	44.02	0.20	0.34	0.096	7.70	0.24	16.70	0.030	
	C	YAR344	22	23	**MSI-waste**	0.02	41.15	0.24	0.42	0.115	9.18	0.27	19.14	0.027	
	C	YAR344	23	24	**MSI-waste**	0.03	47.19	0.15	0.27	0.077	6.48	0.18	13.37	0.032	
	C	YAR344	24	25	**MSI-waste**	0.03	51.56	0.25	0.19	0.057	4.39	0.12	9.28	0.028	
WC20	C	YAR344	25	26	**MSI-waste**	0.03	50.82	0.12	0.18	0.062	4.69	0.19	10.37	0.026	
	C	YAR344	26	27	**MSI-waste**	0.02	46.15	0.10	0.15	0.075	5.10	0.38	17.27	0.020	
	C	YAR344	27	28	**MSI-waste**	0.01	42.03	0.09	0.15	0.096	5.62	0.72	23.18	0.014	
	C	YAR344	28	29	**MSI-waste**	0.01	36.73	0.13	0.18	0.111	7.45	0.92	28.57	0.011	
	C	YAR344	29	30	**MSI-waste**	0.01	37.60	0.13	0.20	0.184	8.04	0.77	26.91	0.013	
	C	**YAR144**	0	1	**USI-waste**	0.02	50.11	0.12	0.13	0.245	4.27	0.29	15.75	0.052	0.03
	C	YAR144	1	2	**USI-waste**	0.02	48.76	0.03	0.12	0.444	5.04	0.14	13.80	0.044	0.02
	C	YAR144	2	3	LGO	0.03	47.89	0.11	0.16	0.453	4.86	0.13	16.99	0.030	0.02
	C	YAR144	3	4	LGO	0.02	53.19	0.11	0.14	0.103	3.63	0.10	10.06	0.019	0.02
	C	YAR144	4	21	ORE-ZONE										
	C	YAR144	21	22	**MSI-waste**	0.02	47.04	0.27	0.24	0.086	6.05	0.19	14.16	0.022	0.12
	C	YAR144	22	23	**MSI-waste**	0.02	49.37	0.43	0.18	0.074	4.69	0.14	11.54	0.023	0.04
	C	YAR144	23	24	**MSI-waste**	0.02	51.73	0.09	0.15	0.069	3.96	0.11	9.04	0.029	0.04
	C	YAR144	24	25	**MSI-waste**	0.01	49.04	0.09	0.15	0.075	5.21	0.22	12.52	0.026	0.03
	C	YAR144	25	26	**MSI-waste**	0.02	40.45	0.17	0.30	0.143	9.24	0.39	20.94	0.010	0.02
	C	YAR144	26	27	**MSI-waste**	0.01	33.20	0.17	0.27	0.203	9.87	0.77	30.70	0.007	0.11
	C	YAR144	27	28	**MSI-waste**	0.01	40.98	0.12	0.19	0.132	6.81	0.59	23.01	0.011	0.07
	C	YAR144	28	29	**MSI-waste**	0.01	36.00	0.13	0.21	0.173	7.95	0.82	29.52	0.011	0.05
	C	YAR144	29	30	**MSI-waste**	0.01	39.24	0.11	0.17	0.177	7.75	0.69	24.92	0.021	0.02
	C	YAR144	30	31	**MSI-waste**	0.01	35.95	0.11	0.18	0.213	8.23	0.76	29.22	0.020	0.02
	C	YAR144	31	32	**MSI-waste**	0.01	38.97	0.09	0.15	0.214	7.77	0.63	25.29	0.026	0.02
	C	YAR144	32	33	**MSI-waste**	0.01	42.30	0.09	0.14	0.220	7.86	0.52	20.63	0.031	0.03
	C	YAR144	33	34	**MSI-waste**	0.02	47.45	0.08	0.12	0.145	6.02	0.33	14.63	0.036	0.05
	C	YAR144	34	35	**MSI-waste**	0.01	13.51	0.18	0.27	0.418	14.25	1.43	56.24	0.018	0.01
	C	YAR144	35	36	**MSI-waste**	0.02	47.69	0.14	0.17	0.117	6.62	0.27	16.51	0.037	0.13
	C	YAR144	36	39	ORE-ZONE										
	C	YAR144	39	40	**LSC-waste**	0.01	48.29	0.08	0.12	0.048	4.58	0.28	15.03	0.031	0.18
	C	YAR144	40	41	**LSC-waste**	0.01	28.44	0.05	0.09	0.055	7.45	0.62	42.13	0.029	0.07
	C	YAR144	41	42	**LSC-waste**	<0.01	14.74	0.05	0.07	0.077	6.83	0.79	65.72	0.023	0.06
	C	YAR144	42	43	**LSC-waste**	<0.01	2.32	0.07	0.35	1.944	13.72	0.70	76.03	0.011	0.01
	C	YAR144	43	44	**LSC-waste**	<0.01	2.00	0.05	0.71	4.168	19.92	0.62	66.91	0.010	0.01
	C	YAR144	44	45	**LSC-waste**	<0.01	1.41	0.04	0.59	3.518	19.33	0.66	69.11	0.009	0.01
	C	**YAR345**	0	22	ORE-ZONE										
	C	YAR345	22	23	**MSI-waste**	0.01	47.92	0.08	0.16	0.086	5.18	0.18	14.33	0.022	
	C	YAR345	23	24	**MSI-waste**	0.01	47.56	0.07	0.14	0.087	4.93	0.20	15.41	0.027	
	C	YAR345	24	25	**MSI-waste**	0.01	40.69	0.16	0.31	0.147	8.71	0.36	20.99	0.010	
	C	**YAR143**	0	1	**USI-waste**	0.01	46.46	0.10	0.13	0.374	4.76	0.37	23.25	0.058	0.03
	C	YAR143	1	18	ORE-ZONE										
	C	YAR143	18	19	LGO	0.02	50.28	0.05	0.10	0.058	5.14	0.16	11.56	0.025	0.03
	C	YAR143	19	20	LGO	0.02	52.34	0.03	0.08	0.043	3.94	0.20	9.54	0.019	0.03
	C	YAR143	20	21	**MSI-waste**	0.02	47.46	0.05	0.11	0.074	5.91	0.20	14.33	0.034	0.02

Phase-2 Sample	Section	Hole_ ID	From (m)	To (m)	Lith_1	S	Fe	CaO	MgO	K2O	Al2O3	TiO2	SiO2	P	Mn
						%									
	C	YAR143	21	22	**MSI-waste**	0.02	45.79	0.05	0.10	0.074	6.18	0.23	16.80	0.015	0.01
	C	YAR143	22	23	**MSI-waste**	0.02	38.30	0.06	0.10	0.072	6.65	0.26	28.01	0.007	0.01
	C	YAR143	23	24	**MSI-waste**	0.03	37.38	0.08	0.12	0.086	6.69	0.33	29.68	0.007	0.01
	C	YAR143	24	25	**MSI-waste**	0.02	33.24	0.10	0.16	0.168	8.23	0.64	33.64	0.007	0.01
	C	YAR143	25	26	**MSI-waste**	0.03	36.58	0.09	0.17	0.221	7.62	0.70	28.97	0.010	0.02
	C	YAR143	26	27	**MSI-waste**	0.03	29.94	0.13	0.24	0.305	10.42	0.96	35.59	0.007	0.07
	C	YAR143	27	28	**MSI-waste**	0.03	32.09	0.11	0.21	0.285	9.44	0.86	33.64	0.007	0.02
	C	YAR143	28	29	**MSI-waste**	0.03	29.08	0.10	0.22	0.350	11.64	0.92	35.39	0.007	0.02
	C	YAR143	29	30	**MSI-waste**	0.02	30.36	0.09	0.22	0.359	11.30	0.88	33.84	0.009	0.02
	C	YAR143	30	31	**MSI-waste**	0.02	34.88	0.07	0.18	0.340	11.16	0.70	27.09	0.019	0.01
	C	YAR143	31	32	**MSI-waste**	0.02	37.88	0.06	0.15	0.270	9.56	0.57	24.36	0.031	0.02
	C	YAR143	32	33	**LSC-waste**	0.02	27.45	0.06	0.14	0.231	12.29	0.68	37.63	0.031	0.01
	C	YAR143	33	34	**LSC-waste**	0.01	11.34	0.09	0.14	0.088	23.81	1.27	48.67	0.009	0.01
	C	YAR143	34	35	**LSC-waste**	0.01	17.64	0.09	0.14	0.115	24.02	1.04	38.30	0.020	0.02
	C	YAR143	35	36	**LSC-waste**	0.01	16.88	0.09	0.16	0.218	25.87	0.82	36.89	0.049	0.02
	C	YAR143	36	37	**LSC-waste**	0.01	15.88	0.08	0.22	0.620	27.01	1.08	37.49	0.044	0.01
	C	YAR143	37	38	**LSC-waste**	0.01	17.90	0.07	0.26	1.094	24.09	1.06	37.74	0.035	0.01
	C	YAR143	38	39	**LSC-waste**	0.01	23.34	0.05	0.34	1.706	19.57	0.89	35.33	0.033	0.01
	C	YAR143	39	40	**LSC-waste**	0.01	18.89	0.05	0.33	1.939	17.78	0.66	43.77	0.025	0.01
	C	YAR143	40	41	**LSC-waste**	0.01	16.64	0.05	0.37	2.384	10.53	0.50	58.10	0.039	0.01
	C	YAR143	41	42	**LSC-waste**	0.01	17.33	0.04	0.36	2.500	9.73	0.45	57.93	0.074	0.01
	C	YAR143	42	43	**LSC-waste**	0.01	19.00	0.04	0.29	2.045	9.51	0.34	56.64	0.073	0.01
	C	YAR143	43	44	**LSC-waste**	0.01	7.55	0.04	0.34	2.604	12.03	0.41	70.13	0.051	0.01
	C	YAR143	44	45	**LSC-waste**	<0.01	17.98	0.03	0.28	2.112	9.89	0.34	58.24	0.073	0.02
	C	YAR143	45	46	**LSC-waste**	<0.01	19.59	0.03	0.26	1.874	9.22	0.34	57.17	0.054	0.02
	C	YAR143	46	47	**LSC-waste**	<0.01	16.60	0.03	0.28	2.077	10.25	0.35	60.03	0.047	0.01
	C	YAR143	47	48	**LSC-waste**	<0.01	14.46	0.03	0.32	2.325	11.23	0.36	61.60	0.044	0.01

ATTACHMENT B

LABORATORY REPORTS

A23959 (MIN5926)
Graeme Campbell and Associates Pty Ltd

Samples received

Four samples were submitted to ALS Metallurgy Mineralogy for semi-quantitative XRD analysis.

Sample 1	**CZR_RM_BULK_01**
Sample 2	**RM_WC_01**
Sample 3	**RM_WC_09**
Sample 4	**RM_WC_11**

Sample preparation

The samples were pressed into a back-packed sample holder to minimise preferred orientation of the particles. Powder X-ray diffraction (XRD) was used to analyse each sample and a combination of matrix flushing and reference intensity ratio (RIR) derived constants was used in the quantification of the minerals identified in each sample.

Analytical procedure

The XRD traces were collected under the following instrument conditions:

XRD	**Panalytical Empyrean**
Radiation	**Co Kα 1.789 Å**
Generator	**40 kV 40 mA**
Angular Range	**5 to 77 °2θ**
Time/Step	**120 s**
Step Size	**0.0131 °2θ**
Divergence Slit	**1°**
Anti-Scatter Slit	**7.5 mm**
Slit Type	**Fixed**
Detector	**PIXcel in linear mode**
Rotation Speed	**60 rpm**

Samples submitted by

Graeme Campbell (Graeme Campbell and Associates Pty Ltd)

Interpretation and reporting

Maike Schulz (ALS Metallurgy Mineralogy)

Final check

Karsten Winter (ALS Metallurgy Mineralogy)

Report date

13 October 2022

Results

The quantitative results shown in the table below have been normalised to 100 %, and the values shown represent the relative proportion of the crystalline material in the sample. Totals greater or less than 100 % are due to rounding errors.

Results in the table preceded by an asterisk indicate a larger than usual uncertainty in regard to the quantity of the phase reported; for some of the minor and trace phases it may also indicate an uncertainty in regard to the presence of the phase itself.

Mineral or mineral group	Sample 1	Sample 2	Sample 3	Sample 4
	CZR_RM_BULK_01	RM_WC_01	RM_WC_09	RM_WC_11
	Mass %			
Clay mineral	0	0	17	0
Kaolinite	4	5	0	4
Muscovite	1	0	0	0
K-feldspar and/or rutile	3	1	1	1
Quartz	27	27	8	10
Calcite	0	0	2	0
Hematite	10	0	4	0
Maghemite	8	0	0	0
Goethite	49	66	68	85
Anatase	0	1	0	0

Comments

Goethite shows signs of substitution and/or incomplete formation.
'Clay mineral' is most likely smectite.
Some amorphous material is very likely present.

MINERALS
TEST REPORT

CLIENT

GRAEME CAMPBELL
CAMPBELL & ASSOCIATES PTY LIMITED
PO Box 247
BRIDGETOWN, W.A. 6255
AUSTRALIA

JOB INFORMATION

JOB CODE	: 143.0/2219767
NO. SAMPLES	: 24
NO. ELEMENTS	: 5
CLIENT ORDER NO.	: GCA2223 (Job 1 of 1)
SAMPLE SUBMISSION NO.	:
PROJECT	: ROBE MESA
SAMPLE TYPE	: Various
DATE RECEIVED	: 14/09/2022
DATE TESTED	: 28/09/2022 - 03/10/2022
DATE REPORTED	: 03/10/2022
DATE PRINTED	: 03/10/2022

REPORT NOTES

TESTED BY

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APPROVED SIGNATURE FOR

Craig RITCHIE
Operations Manager - Perth

Accredited for compliance with ISO/IEC 17025 - Testing.
Company Accreditation Number 3244

This report relates specifically to the sample(s) tested that were drawn and/or provided by the client or their nominated third party to Intertek. The reported result(s) provide no warranty or verification on the sample(s) representing any specific goods and/or shipment. This report was prepared solely for the use of the client named in this report. Intertek accepts no responsibility for any loss, damage or liability suffered by a third party as a result of any reliance upon or use of this report. The results provided are not intended for commercial settlement purposes.
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SIGNIFICANT FIGURES

It is common practice to report data derived from analytical instrumentation to a maximum of two or three significant figures. Some data reported herein may show more figures than this. The reporting of more than two or three figures in no way implies that figures beyond the least significant digit have significance.

For more information on the uncertainty on individual reported values, please contact the laboratory.

MEASUREMENT OF UNCERTAINTY

Measurement of uncertainty estimates are available for most tests upon request.

SAMPLE STORAGE

All solid samples (assay pulps, bulk pulps and residues) will be stored for 60 days without charge. Following this samples will be stored at a daily rate until clients written advice regarding return, collection or disposal is received. If storage information is not supplied on the submission, or arranged with the laboratory in writing the default will be to store the samples with the applicable charges. Storage is charged at $4.00 per m3 per day, expenses related to the return or disposal of samples will be charged at cost. Current disposal cost is charged at $150.00 per m3.

Samples received as liquids, waters or solutions will be held for 60 days free of charge then disposed of, unless written advice fo return or collection is received.

LEGEND	X	= Less than Detection Limit		NA	= Not Analysed
	SNR	= Sample Not Received		UA	= Unable to Assay
	LNR	= Lab Not Received		>	= Value beyond Limit of Method
	DTF	= Result still to come		+	= Extra Sample Received Not Listed
	I/S	= Insufficient Sample for Analysis			

UNITS	ppm for Solid Samples	= mg/Kg
	ppb for Solid Samples	= µg/Kg
	ppm for Liquid Samples	= mg/L
	ppb for Liquid Samples	= µg/L

ELEMENTS	C	C-Acinsol	C-CO3	S	WTTOT
UNITS	%	%	%	%	g
DETECTION LIMIT	0.01	0.01	0.01	0.01	0.01
DIGEST		C71/			
ANALYTICAL FINISH	/CSA	CSA	/CALC	/CSA	WT01
SAMPLE NUMBERS					
0001 RM_WC_01	0.10	0.09	X	0.01	359.80
0002 RM_WC_02	0.21	0.19	0.01	0.01	282.30
0003 RM_WC_03	0.33	0.25	0.09	0.02	319.10
0004 RM_WC_04	0.20	0.17	0.03	0.02	339.60
0005 RM_WC_05	0.08	0.08	X	X	261.90
0006 RM_WC_06	0.39	0.32	0.07	0.02	367.60
0007 RM_WC_07	0.18	0.16	0.02	0.01	384.70
0008 RM_WC_08	0.06	0.07	X	X	261.30
0009 RM_WC_09	0.53	0.27	0.26	0.02	351.60
0010 RM_WC_10	0.27	0.23	0.04	X	396.90
0011 RM_WC_11	0.35	0.27	0.07	0.01	343.70
0012 RM_WC_12	0.15	0.14	0.01	0.01	340.90
0013 RM_WC_13	0.23	0.21	0.01	X	304.30
0014 RM_WC_14	0.18	0.17	0.01	0.02	297.90
0015 RM_WC_15	0.38	0.30	0.07	0.02	312.50
0016 RM_WC_16	0.24	0.15	0.09	0.02	382.00
0017 RM_WC_17	0.36	0.28	0.07	0.01	353.80
0018 RM_WC_18	0.26	0.21	0.05	0.01	378.30
0019 RM_WC_19	0.44	0.34	0.10	0.04	350.50
0020 RM_WC_20	0.28	0.19	0.09	0.02	416.10
0021 CZR_RM_BULK_01	0.28	0.11	0.17	0.01	423.70
0022 CZR_RM_BULK_02	0.48	0.24	0.24	0.01	533.40
0023 CZR_RM_BULK_03	0.53	0.25	0.28	0.01	416.30
0024 CZR_RM_BULK_04	0.33	0.14	0.18	0.02	460.10
CHECKS					
0001 RM_WC_10	0.27	0.20	0.07	X	
STANDARDS					
0001 OREAS 45d	1.02			0.04	
0002 OREAS 279		0.21			
BLANKS					
0001 Control Blank	X	X	X	X	

METHOD CODE DESCRIPTION

Method Code Date Tested	Analysing Laboratory NATA Laboratory Accreditation	NATA Scope of Accreditation
/CALC **03/10/22 10:50**	Intertek Genalysis Perth **3244 3237** No digestion or other pre-treatment undertaken. Results Determined by calculation from other reported data.	*
/CSA **03/10/22 10:46**	Intertek Genalysis Perth **3244 3237** Induction Furnace Analysed by Infrared Spectrometry	**ENV_W061(Per), MPL_W161(Adl)**
C71/CSA **28/09/22 06:40**	Intertek Genalysis Perth **3244 3237** Digestion by hot acid(s) and Induction Furnace Analysed by Infrared Spectrometry	**ENV_W063**
WT01 **03/10/22 10:46**	Intertek Genalysis Perth **3244 3237** Reporting weights of samples	*

* Denotes not on Scope of Accreditation

NATA ENDORSED DOCUMENT

Analysing Laboratory: Intertek Genalysis Perth

The contents of this report have been prepared in accordance with the terms of NATA accreditation and as such should only be reproduced in full.
The analysis results reported herein have been obtained using the following methods and conditions:

Job: 143/2219767

PROJECT: ROBE MESA – GCA-Job-No 2223

24 samples were received on 14/09/2022 via Startrack-Express (S31260259).

SAMPLE PREPARATION:

Each sample was pulverised to -75µm in a steel bowl of which 50-100g were retained for analysis and the remainder returned to GCA.

ANALYSES

The pulverised samples were analysed for the following:

- Total-C, total-S by Carbon and Sulphur analyser (/CSA)
- C-Acinsol (acid insoluble carbon – C71/) by Carbon and Sulphur analyser after removal of carbonates and soluble organic carbon using hot hydrochloric acid.
- C-CO_3 Calculation C-CO_3 = Total C - C-Acinsol

DIGESTIONS:

ENV_W063 (C71).

ANALYTICAL FINISHES:

ENV_W061 (/CSA).

OBSERVATIONS:

No remarks.

RESULTS:

Results are expressed in units: % (CSA, C71, C-CO_3).

The results included the assay of blank, duplicate and international reference standards: OREAS 45d (/CSA) and OREAS 279 (C71/)

Intertek Genalysis signatory
Chiara CAPORALE

Chiara Caporale

Date: 03-Oct-2022

Graeme Campbell & Associates Pty Ltd
Laboratory Report

pH-(1:2) & EC-(1:2) TESTWORK

SAMPLE_ ID	SAMPLE WEIGHT (g)	pH-(1:2)	EC-(1:2) (µS/cm)
RM_WC_01	30.09	7.3	250
RM_WC_02	30.06	7.4	91
RM_WC_03	29.98	7.3	440
RM_WC_04	30.05	7.3	350
RM_WC_05	29.96	7.6	110
RM_WC_06	30.10	5.9	43
RM_WC_07	30.15	5.8	60
RM_WC_08	29.98	7.1	97
RM_WC_09	30.07	8.5	110
RM_WC_10	30.09	7.5	83
RM_WC_10 d	29.95	7.5	80
RM_WC_11	30.06	7.5	280
RM_WC_12	30.09	7.3	400
RM_WC_13	30.02	7.6	65
RM_WC_14	30.06	7.2	700
RM_WC_15	30.01	6.5	280
RM_WC_16	30.07	7.6	45
RM_WC_17	30.09	8.1	75
RM_WC_18	30.05	7.2	135
RM_WC_19	30.06	8.3	220
RM_WC_20	30.03	7.9	190
RM_WC_20 d	30.07	7.9	190
RM_BULK_01	30.09	6.9	23
RM_BULK_02	30.02	6.9	120
RM_BULK_03	30.08	7.2	130
RM_BULK_04	30.06	6.5	26
RM_BULK_04 d	30.07	6.4	21

Comment:

- The supernatants for all samples were clear enough for direct EC measurement.

Notes: EC = Electrical-Conductivity
Testwork performed on **-4.75mm fraction** (dry-sieved).
pH-(1:2) and EC=(1:2) values correspond to pH and EC values for slurries prepared with deionised-water, and a solid:solution ratio of ***ca.* 1:2 (w/w)** [i.e. approx. 30 g solids + 60 mL DW).
Test-slurries allowed to 'age' / 'breathe' / equilibrate for *ca.* 2-3 days before pH and EC determinations.
Test-slurries in 100 mL glass-beakers were stirred with a spatula once daily during ageing / equilibration.
Supernatants decanted into a 30mL plastic-vial for measurement of EC, i.e. EC-(1:2) = **'Supernatant-EC'**.
After EC measurement, supernatants returned to glass-beakers, and mixing of slurry, prior to measuring pH-(1:2), i.e. pH-(1:2) = **'Mud-pH'**.
Testwork performed in a CT-room (viz. **20 +/- 2 oC**).

Dr GD Campbell **25th September 2022**

pH-(1:2) and EC-(1:2) Testwork

Graeme Campbell & Associates Pty Ltd

ACID-NEUTRALISATION-CAPACITY (ANC) TESTWORK:

BASED ON AMIRA (2002) WITH VARIATIONS TO CONSTRAIN DISSOLUTION OF ALUMINO-SILICATES UNRELATED TO CIRCUM-NEUTRAL BUFFERING SAVE FOR NEGLIGIBLE ACID-GENERATION RATES (AGRs) (e.g. < 0.1 kg H2SO4/tonne/year) FROM OXIDATION OF PYRITE, PYRRHOTITE, ELEMENTAL-S, ETC.

SAMPLE		HCl		milli	Slurry-pH		NaOH		milli	pH	BULK-	
ID	WT (g)	Conc. (M)	Pipette Volume (mL)	moles H+ Added	Initial	After HCl-Digest	Conc. (M)	Titre Volume (mL)	moles OH- Added	after H2O2 Added	ANC (kg H2SO4/ tonne)	
RM_WC_01	10.03	0.10	10	1.00	1.7	1.8	0.05	11.55	0.578	> 4.0	**2**	
RM_WC_05	10.00	0.10	10	1.00	1.7	1.8	0.05	9.20	0.460	> 4.0	**3**	
RM_WC_08	10.04	0.10	10	1.00	2.1	2.4	0.05	11.20	0.560	> 4.0	**2**	
RM_WC_02	10.05	0.10	10	1.00	1.8	2.0	0.05	8.60	0.430	> 4.0	**3**	
RM_WC_12	10.04	0.10	10	1.00	1.6	1.6	0.05	15.25	0.763	> 4.0	**1**	
RM_WC_12 d	10.05	0.10	10	1.00	1.6	1.6	0.05	14.60	0.730	> 4.0	**1**	
RM_WC_13	10.00	0.10	10	1.00	1.8	2.1	0.05	9.40	0.470	> 4.0	**3**	
RM_WC_14	10.07	0.10	10	1.00	1.8	2.1	0.05	9.15	0.458	> 4.0	**3**	
RM_WC_07	10.06	0.10	10	1.00	1.6	1.6	0.05	15.00	0.750	> 4.0	**1**	
RM_WC_04	9.99	0.10	10	1.00	1.6	1.6	0.05	14.90	0.745	> 4.0	**1**	
RM_WC_10	10.06	0.10	10	1.00	1.6	1.7	0.05	13.25	0.663	> 4.0	**2**	"magnetite"
RM_WC_10 d	10.01	0.10	10	1.00	1.6	1.6	0.05	13.00	0.650	> 4.0	**2**	"magnetite"
RM_WC_18	10.01	0.10	10	1.00	1.6	1.6	0.05	12.80	0.640	> 4.0	**2**	"magnetite"
RM_WC_06	10.07	0.10	10	1.00	1.6	1.6	0.05	15.35	0.768	> 4.0	**1**	
RM_WC_17	10.00	0.10	10	1.00	1.6	1.8	0.05	13.20	0.660	> 4.0	**2**	
RM_WC_11	9.99	0.10	10	1.00	1.7	2.0	0.05	11.20	0.560	> 4.0	**2**	
RM_WC_15	10.03	0.10	10	1.00	1.7	2.0	0.05	12.05	0.603	> 4.0	**2**	
RM_WC_15 d	10.02	0.10	10	1.00	1.7	2.0	0.05	12.30	0.615	> 4.0	**2**	
ANC Std	5.01	0.10	20	2.00	1.7	3.1	0.05	16.75	0.838	3.0	11	
ANC Std d	5.00	0.10	20	2.00	1.7	3.1	0.05	16.70	0.835	3.1	11	
HCl	-	0.10	10	1.00	1.5	1.5	0.05	20.10	1.01	> 4.0	100.5%	
HCl (d)	-	0.10	10	1.00	1.5	1.5	0.05	20.15	1.01	> 4.0	100.8%	

Notes:

1. Testing performed on **-2 mm fraction (dry-sieved)** of RC-cuttings.
2. ***ca.* 20 mL** of high-purity-deionised-water (HPDW) added to all samples (including HCl-solution 'reagent-blank') initially.
3. HCl solution added manually via volumetric glass pipette (A Class). Within *ca.* 10-15 minutes of HCl addition the **initial-slurry-pH** is measured.
4. **HCl** and **NaOH** solutions are certified reagents from Merck (viz. Titripur® reagents in hermetically-sealed Titripac® casks).
5. Sample weight, and volume and strength of HCl added, based on corresponding CO3-C value(s).
6. During acid-digestion temperature of waterbath is **80 +/- 5 oC,** and digestion performed for **1.0 hr** with beakers swirled by hand 1-2 times during this reaction period. Digestion performed using 250 mL tall-form beakers covered with watchglasses.
7. After completion of the acid-digestion step, the test-slurries are boiled for *ca.* 1 min to expel any dissolved CO2(aq) which is important for the attainment of a stable pH7 end-point in the subsequent back-titration with NaOH solution.
8. Following cooling to room-T, **digest-slurry-final-pH** is measured. HPDW is then added to bring test-slurry volume to *ca.* **125 mL** for titration with NaOH solution.
9. Titration with NaOH performed manually using 50 mL glass burette with slurry stirred using magnetic stirrer-bar. Fast titration with stopcock fully open until slurry-pH rises to approximate range 4.0-4.5 when titration stops for H2O2 addition.
10. Three drops of **30 % H2O2 (v/v)** [pH 4.0-4.5] added to slurry to oxidise **soluble-Fe(II)** forms ('latent-acidity') and precipitation of Fe(III)/Al-oxyhydroxides, etc. Minimum slurry-pH attained following H2O2 addition recorded.
11. Following completion of H2O2 addition, titration with NaOH continues to a **pH7** end-point. Titration with NaOH undertaken so that slurry-pH at end-point is within range 6.9-7.1 (i.e. pH 7.0 +/- 0.1) for *ca.* 30 seconds. [Related pH-end-point stability criteria for a manual titration (cf. autotititration) option applies in ASTM E1915-13, and AS-4969.12-09].
12. ANC Standard is pulped Scharlau® sea-sand with a CO3-C value of 0.14 % (corresponding to 11.4 kg H2SO4/tonne as "CaCO3").
13. "magnetite" signifies heavy deposits clinging to magnetic stirrer-bar upon retrieval at end of the back-titration step with dilute NaOH.

The main variations to the AMIRA (2002) method are the use of -2 mm fraction , and the initial 'aplied-HCl-loading', as governed by the CO3-C value.

Testing of pulverised samples (e.g. pulps as -75 µm nominal) as per the AMIRA (2002) method with a large initial excess of added HCl results in a net consumption of multiple kg H2SO4/tonne which are only applicable to an **'acidic' (pH < 4) buffering** regime (cf. circum-neutral-pH). The amount of **'unavailable-ANC' for circum-neutral (pH 6+) buffering** determined by the AMIRA (2002) method can range up to 5-10 kg H2SO4/tonne' for felsic rock types; up to 20+ kg H2SO4/tonne for mafic rocks; and, up to 100+ kg H2SO4/tonne for High-MgO ultramafics. Such 'unavailable-ANC' becomes increasingly important to the assessment of acid-forming tendency as the relative contribution from carbonates to the Bulk-ANC decreases.

Dr GD Campbell
22nd October 2022

Reference:

- AMIRA International Limited, 2002, "ARD Test Handbook April 2002", AMIRA Research Project P387A

ANC Testwork: Back-Titrations with NaOH Solution

Graeme Campbell & Associates Pty Ltd

ACID-NEUTRALISATION-CAPACITY (ANC) TESTWORK:

BASED ON AMIRA (2002) WITH VARIATIONS TO CONSTRAIN DISSOLUTION OF ALUMINO-SILICATES UNRELATED TO CIRCUM-NEUTRAL BUFFERING SAVE FOR NEGLIGIBLE ACID-GENERATION RATES (AGRs) (e.g. < 0.1 kg H2SO4/tonne/year) FROM OXIDATION OF PYRITE, PYRRHOTITE, ELEMENTAL-S, ETC.

SAMPLE		HCl		milli	Slurry-pH		NaOH		milli	pH	Vigour of	BULK-	
ID	WT (g)	Conc. (M)	Pipette Volume (mL)	moles H+ Added	Initial	After HCl-Digest	Conc. (M)	Titre Volume (mL)	moles OH- Added	after H2O2 Added	'Fizzing' from HCl Addition ('in-the-cold')	ANC (kg H2SO4/ tonne)	
RM_WC_03	10.09	0.10	10	1.00	1.7	1.8	0.05	11.35	0.568	> 4.0		**2**	
RM_WC_16	10.01	0.10	10	1.00	1.6	1.7	0.05	8.30	0.415	> 4.0		**3**	"magnetite"
RM_WC_20	10.04	0.10	10	1.00	1.6	1.8	0.05	11.50	0.575	> 4.0		**2**	
CZR_RM_BULK_01	10.06	0.10	10	1.00	1.6	1.8	0.05	11.90	0.595	> 4.0		**2**	"magnetite"
CZR_RM_BULK_02	10.04	0.10	10	1.00	1.6	1.8	0.05	13.65	0.683	> 4.0		**2**	"magnetite"
CZR_RM_BULK_02 d	10.02	0.10	10	1.00	1.6	1.8	0.05	12.90	0.645	> 4.0		**2**	"magnetite"
CZR_RM_BULK_03	10.01	0.10	10	1.00	1.6	1.8	0.05	12.10	0.605	> 4.0		**2**	"magnetite"
CZR_RM_BULK_04	9.99	0.10	10	1.00	1.6	2.0	0.05	13.05	0.653	> 4.0		**2**	"magnetite"
RM_WC_19	5.01	0.10	10	1.00	1.5	1.6	0.05	14.20	0.710	> 4.0		**3**	
RM_WC_09	5.06	0.10	25	2.50	1.4	2.1	0.05	7.90	0.395	> 4.0	moderate	**20**	
RM_WC_09 d	5.00	0.10	25	2.50	1.5	2.0	0.05	9.20	0.460	> 4.0		**20**	
ANC Std	5.00	0.10	20	2.00	1.6	3.0	0.05	16.60	0.830	3.2		11	
ANC Std d	5.00	0.10	20	2.00	1.6	3.0	0.05	16.65	0.833	3.1		11	
HCl	-	0.10	10	1.00	1.5	1.5	0.05	20.15	1.01	> 4.0		100.8%	
HCl (d)	-	0.10	10	1.00	1.5	1.5	0.05	20.10	1.01	> 4.0		100.5%	

Notes:

1. Testing performed on **-2 mm fraction (dry-sieved)** of RC-cuttings.
'Fizz' testing employed 2-3 M-HCl, and performed on pulps (-75 mm nominal).
2. ***ca.* 20 mL** of high-purity-deionised-water (HPDW) added to all samples (including HCl-solution 'reagent-blank') initially.
3. HCl solution added manually via volumetric glass pipette (A Class). Within *ca.* 10-15 minutes of HCl addition the **initial-slurry-pH** is measured.
4. **HCl** and **NaOH** solutions are certified reagents from Merck (viz. Titripur® reagents in hermetically-sealed Titripac® casks).
5. Sample weight, and volume and strength of HCl added, based on corresponding CO3-C value(s).
6. During acid-digestion temperature of waterbath is **80 +/- 5 oC,** and digestion performed for **1.0 hr** with beakers swirled by hand 1-2 times during this reaction period. Digestion performed using 250 mL tall-form beakers covered with watchglasses.
7. After completion of the acid-digestion step, the test-slurries are boiled for *ca.* 1 min to expel any dissolved CO2(aq) which is important for the attainment of a stable pH7 end-point in the subsequent back-titration with NaOH solution.
8. Following cooling to room-T, **digest-slurry-final-pH** is measured. HPDW is then added to bring test-slurry volume to *ca.* **125 mL** for titration with NaOH solution.
9. Titration with NaOH performed manually using 50 mL glass burette with slurry stirred using magnetic stirrer-bar. Fast titration with stopcock fully open until slurry-pH rises to approximate range 4.0-4.5 when titration stops for H2O2 addition.
10. Three drops of **30 % H2O2 (v/v)** [pH 4.0-4.5] added to slurry to oxidise **soluble-Fe(II)** forms ('latent-acidity') and precipitation of Fe(III)/Al-oxyhydroxides, etc. Minimum slurry-pH attained following H2O2 addition recorded.
11. Following completion of H2O2 addition, titration with NaOH continues to a **pH7** end-point. Titration with NaOH undertaken so that slurry-pH at end-point is within range 6.9-7.1 (i.e. pH 7.0 +/- 0.1) for *ca.* 30 seconds. [Related pH-end-point stability criteria for a manual titration (cf. autotititration) option applies in ASTM E1915-13, and AS-4969.12-09].
12. ANC Standard is pulped Scharlau® sea-sand with a CO3-C value of 0.14 % (corresponding to 11.4 kg H2SO4/tonne as "CaCO3").
13. "magnetite" signifies heavy deposits clinging to magnetic stirrer-bar upon retrieval at end of the back-titration step with dilute NaOH.

The main variations to the AMIRA (2002) method are the use of -2 mm fraction , and the initial 'aplied-HCl-loading', as governed by the CO3-C value.

Testing of pulverised samples (e.g. pulps as -75 µm nominal) as per the AMIRA (2002) method with a large initial excess of added HCl results in a net consumption of multiple kg H2SO4/tonne which are only applicable to an **'acidic' (pH < 4) buffering** regime (cf. circum-neutral-pH). The amount of **'unavailable-ANC' for circum-neutral (pH 6+) buffering** determined by the AMIRA (2002) method can range up to 5-10 kg H2SO4/tonne' for felsic rock types; up to 20+ kg H2SO4/tonne for mafic rocks; and, up to 100+ kg H2SO4/tonne for High-MgO ultramafics. Such 'unavailable-ANC' becomes increasingly important to the assessment of acid-forming tendency as the relative contribution from carbonates to the Bulk-ANC decreases.

Dr GD Campbell
22nd October 2022

Reference:

• AMIRA International Limited, 2002, "ARD Test Handbook April 2002", AMIRA Research Project P387A

ANC Testwork: Back-Titrations with NaOH Solution

Graeme Campbell & Associates Pty Ltd

Laboratory Report

pH-BUFFERING TESTWORK (RM_WC_09)

Cumulative Volume of Acid Added (mL)	Cumulative Acid Consumption (kg H2SO4/tonne)	pH	Cumulative Volume of Acid Added (mL)	Cumulative Acid Consumption (kg H2SO4/tonne)	pH
0.00	0.0	9.42	16.40	16.1	6.09
0.40	0.4	9.07	16.80	16.5	5.96
0.80	0.8	8.79	17.20	16.9	5.79
1.20	1.2	8.56	17.60	17.2	5.60
1.60	1.6	8.37	18.00	17.6	5.32
2.00	2.0	8.22	18.40	18.0	4.88
2.40	2.4	8.10	18.80	18.4	4.18
2.80	2.7	8.00	19.20	18.8	3.83
3.20	3.1	7.91	19.60	19.2	3.65
3.60	3.5	7.84	20.00	19.6	3.50
4.00	3.9	7.78	20.40	20.0	3.38
4.40	4.3	7.72	20.80	20.4	3.31
4.80	4.7	7.67	21.20	20.8	3.24
5.20	5.1	7.63	21.60	21.2	3.17
5.60	5.5	7.59	22.00	21.6	3.12
6.00	5.9	7.55	22.40	22.0	3.06
6.40	6.3	7.52	22.80	22.3	3.02
6.80	6.7	7.49	23.20	22.7	2.99
7.20	7.1	7.46			
7.60	7.4	7.42			
8.00	7.8	7.39			
8.40	8.2	7.36			
8.80	8.6	7.32			
9.20	9.0	7.28			
9.60	9.4	7.24			
10.00	9.8	7.20			
10.40	10.2	7.16			
10.80	10.6	7.11			
11.20	11.0	7.06			
11.60	11.4	7.02			
12.00	11.8	6.96			
12.40	12.2	6.93			
12.80	12.5	6.90			
13.20	12.9	6.80			
13.60	13.3	6.76			
14.00	13.7	6.72			
14.40	14.1	6.64			
14.80	14.5	6.54			
15.20	14.9	6.44			
15.60	15.3	6.30			
16.00	15.7	6.21			

Notes: Titration performed using Metrohm® Eco Titrator, and 0.05 M-H2SO4. Equlibration time between titrant additions is 15 minutes.
5.00 g of pulped (nominal -75 µm) sample initially dispersed in *ca.* 150 mL of deionised-water.
Test-suspension in contact with air in a CT-room @ 22 (+/- 1-2) oC, and continuously stirred.
Calibration of pH-Glass Electrode:
Immediately prior to titration: asymmetry potential = 6.2 mV (pH=7.00); slope-point = 177.6 mV (pH=4.00); 96.6 % of Nernstian response.

Dr GD Campbell
31st October 2022

Graeme Campbell & Associates Pty Ltd

Laboratory Report

NET-ACID-GENERATION (NAG) TESTWORK (SINGLE-ADDITION)

Sample_ ID	Sample Weight (g)	Comments	pH of Test Suspension within approx. 10 mins	pH of Test-Suspension After O'Night Reaction [Before Boiling Steps]	pH of Test-Suspension After 1st-Boiling Step [Before Cu(II) Addition]	Test-Suspension Values After 2nd-Boiling Step [Cu(II) Added Before 2nd-Boiling Step]		Titre (mL) (0.1 M-NaOH)		NAG (kg H2SO4/tonne)		
						NAG-pH	NAG-EC (µS/cm)	To pH 4.5	pH 4.5 to pH 7.0	To pH 4.5	pH 4.5 to pH 7.0	To pH 7.0
RM_WC_06	3.01	no apparent reaction overnight	5.3	5.5	5.7	5.0	66	-	0.30	<1	<1	<1
RM_WC_15	3.02	no apparent reaction overnight	5.9	6.0	6.0	6.2	51	-	0.25	<1	<1	<1
RM_WC_16	3.04	no apparent reaction overnight	6.2	6.3	6.8	7.1	71	-	-	<1	<1	<1
RM_WC_20	3.01	no apparent reaction overnight	6.0	6.4	6.9	7.2	61	-	-	<1	<1	<1
RM_WC_04	3.03	very slight reaction overnight	5.9	6.5	6.9	7.1	53	-	-	<1	<1	<1
RM_WC_10	3.07	no apparent reaction overnight	5.8	6.3	6.9	6.5	41	-	0.15	<1	<1	<1
RM_WC_07	3.06	no apparent reaction overnight	5.6	5.7	5.7	5.4	45	-	0.30	<1	<1	<1
CZ_RM_BULK_01	3.03	no apparent reaction overnight	5.7	5.7	6.3	5.9	43	-	0.15	<1	<1	<1
CZ_RM_BULK_04	2.97	no apparent reaction overnight	5.4	5.4	6.1	6.0	37	-	0.15	<1	<1	<1
CZ_RM_BULK_04 d	3.09	no apparent reaction overnight	5.4	5.4	6.0	6.1	41	-	0.15	<1	<1	<1
Blank		no apparent reaction overnight	4.8	4.8	5.2	5.8	25	-	0.40			"<1"

Notes: Chem-Supply® A.R. 30 % H2O2 employed ('apparent-pH' = 4.3). **15 % H2O2** reagent corresponds to 1:1 (v/v) mixing with high-purity deionised-water (HPDW).
250 mL of peroxide solution is added to sample in in 500 mL conical Erlenmeyer beaker that is then covered with a watchglass. pH values of test-suspensions determined at different stages during testing. Following reaction overnight, the occurrence and vigour of reaction is judged according to degree of water condensation on the underside of the watchglass. The suspension-pH is measured, and the test-suspensions then boiled for *ca.* 1 hr. After allowing to cool, *ca.* 1 mL of **0.016 M-CuSO4** is added, and the 2nd-boiling step carried out for *ca.* 1 hr. The added Cu(II) catalyses the decomposition of any residual, unreacted H2O2 (AS 4969.12-2009).
Following determination of supernatant-EC and suspension-pH, the test-suspensions are titrated manually with standardised NaOH solution to respective **pH4.5** and **pH7.0** end-points.
The Blank corresponds to a "NAG-[pH7]" value less than 1 kg H2SO4/tonne for a sample weight of 3.00 gm. CuSO4 was added to Blank. Boiling during 2nd-boiling step continued until it was visually evident that residual-H2O2 in the Blank was negligible.
Separate Blank* (results not reported) without CuSO4 addition characterised by appreciable residual H2O2 after completion of boiling steps, as expected.
Testing performed on **pulps** (nominal -75 µm).

Dr GD Campbell
12th October 2022

NAG Testwork: 1st-Boiling Step [without Cu(II) addition] After Overnight Reaction

MINERALS
TEST REPORT

CLIENT

GRAEME CAMPBELL
CAMPBELL & ASSOCIATES PTY LIMITED
PO Box 247
BRIDGETOWN, W.A. 6255
AUSTRALIA

JOB INFORMATION

JOB CODE	: 143.0/2221569
NO. SAMPLES	: 12
NO. ELEMENTS	: 34
CLIENT ORDER NO.	: GCA2223 (Job 1 of 1)
SAMPLE SUBMISSION NO.	:
PROJECT	: ROBE MESA
SAMPLE TYPE	: Various
DATE RECEIVED	: 06/10/2022
DATE TESTED	: 10/10/2022 - 19/10/2022
DATE REPORTED	: 20/10/2022
DATE PRINTED	: 20/10/2022

REPORT NOTES

TESTED BY

Intertek
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Tel: +61 8 9263 0100
Email: min.aus.per@intertek.com

APPROVED SIGNATURE FOR

Craig RITCHIE
Operations Manager - Perth

Accredited for compliance with ISO/IEC 17025 - Testing.
Company Accreditation Number 3244

This report relates specifically to the sample(s) tested that were drawn and/or provided by the client or their nominated third party to Intertek. The reported result(s) provide no warranty or verification on the sample(s) representing any specific goods and/or shipment. This report was prepared solely for the use of the client named in this report. Intertek accepts no responsibility for any loss, damage or liability suffered by a third party as a result of any reliance upon or use of this report. The results provided are not intended for commercial settlement purposes.
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SIGNIFICANT FIGURES

It is common practice to report data derived from analytical instrumentation to a maximum of two or three significant figures. Some data reported herein may show more figures than this. The reporting of more than two or three figures in no way implies that figures beyond the least significant digit have significance.

For more information on the uncertainty on individual reported values, please contact the laboratory.

MEASUREMENT OF UNCERTAINTY

Measurement of uncertainty estimates are available for most tests upon request.

SAMPLE STORAGE

All solid samples (assay pulps, bulk pulps and residues) will be stored for 60 days without charge. Following this samples will be stored at a daily rate until clients written advice regarding return, collection or disposal is received. If storage information is not supplied on the submission, or arranged with the laboratory in writing the default will be to store the samples with the applicable charges. Storage is charged at $4.00 per m3 per day, expenses related to the return or disposal of samples will also be charged. Current disposal costs including packaging in a Class2 waste disposal facility is charged at $175.00 per m3.

Samples received as liquids, waters or solutions will be held for 60 days free of charge then disposed of, unless written advice fo return or collection is received.

LEGEND	X	= Less than Detection Limit	NA	=	Not Analysed
	SNR	= Sample Not Received	UA	=	Unable to Assay
	LNR	= Lab Not Received	>	=	Value beyond Limit of Method
	DTF	= Result still to come	+	=	Extra Sample Received Not Listed
	I/S	= Insufficient Sample for Analysis			

UNITS	ppm for Solid Samples	= mg/Kg
	ppb for Solid Samples	= µg/Kg
	ppm for Liquid Samples	= mg/L
	ppb for Liquid Samples	= µg/L

ELEMENTS	Ag	Al	As	B	Ba	Bi	Ca	Cd	Co	Cr
UNITS	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm
DETECTION LIMIT	0.05	50	0.5	50	0.1	0.01	50	0.02	0.1	1
DIGEST	4A/	4A/	4A/	FP1/	4A/	4A/	4A/	4A/	4A/	4A/
ANALYTICAL FINISH	MS	OE	MS	OE	MS	MS	OE	MS	MS	MS
SAMPLE NUMBERS										
0001 RM_WC_01	X	4.30%	9.7	X	136.8	0.12	873	0.03	20.3	57
0002 RM_WC_03	X	3.02%	11.8	X	45.8	0.12	796	0.03	20.8	60
0003 RM_WC_05	X	6.89%	10.5	X	289.9	0.45	988	0.04	17.2	95
0004 RM_WC_09	X	2.20%	15.1	X	275.3	0.06	9525	0.03	7.3	38
0005 RM_WC_11	X	3.37%	11.4	X	104.6	0.14	949	0.03	25.7	55
0006 RM_WC_13	X	6.63%	28.2	X	245.4	0.35	1562	0.03	6.0	86
0007 RM_WC_14	X	3.86%	9.9	53	46.1	0.12	1731	0.02	18.6	54
0008 RM_WC_16	X	2.72%	11.9	X	323.4	0.08	1623	X	6.1	38
0009 RM_WC_17	X	2.49%	10.6	X	23.0	0.08	778	X	15.8	48
0010 RM_WC_18	X	3.45%	12.4	X	75.4	0.14	943	0.05	13.9	69
0011 CZR_RM_BULK_01	X	3.56%	19.6	X	82.8	0.16	513	0.05	13.7	103
0012 CZR_RM_BULK_04	X	4.19%	19.0	X	75.0	0.20	361	0.02	10.2	97
CHECKS										
0001 RM_WC_16	X	2.67%	11.9	X	321.3	0.08	1595	X	6.1	40
STANDARDS										
0001 AMIS0424	1.26	2865	24.8		401.6	1.35	22.32%	0.21	91.4	90
0002 AMIS0407				807						
0003 OREAS 46										
0004 AMIS0342										
0005 OREAS 97.01										
0006 Se 0.1ppm										
0007 Se 1.0 ppm										
BLANKS										
0001 Control Blank	X	134	X	X	0.1	X	X	X	X	X

ELEMENTS	Cu	F	Fe	Hg	K	Mg	Mn	Mo	Na	Ni
UNITS	ppm	ppm	%	ppb	ppm	ppm	ppm	ppm	ppm	ppm
DETECTION LIMIT	0.5	50	0.01	1	20	20	1	0.1	20	0.5
DIGEST	4A/	FC7/	4A/	AR005/	4A/	4A/	4A/	4A/	4A/	4A/
ANALYTICAL FINISH	MS	SIE	OE	MSHg	OE	OE	MS	MS	OE	MS
SAMPLE NUMBERS										
0001 RM_WC_01	10.2	114	38.37	14	655	961	935	1.3	457	50.1
0002 RM_WC_03	16.7	156	49.02	10	446	1175	520	1.5	480	52.0
0003 RM_WC_05	4.0	457	21.00	25	1.18%	2810	368	1.2	373	38.6
0004 RM_WC_09	7.1	178	45.92	4	797	3527	162	1.3	421	18.1
0005 RM_WC_11	13.3	133	45.79	10	701	1004	979	1.4	379	52.0
0006 RM_WC_13	6.9	498	19.61	34	8678	3201	229	1.8	441	20.9
0007 RM_WC_14	8.6	231	37.18	13	1004	1999	196	0.9	741	44.5
0008 RM_WC_16	6.3	149	47.79	5	1598	1455	184	1.1	193	15.5
0009 RM_WC_17	8.5	186	49.56	14	528	1092	243	1.4	377	39.6
0010 RM_WC_18	8.8	154	39.22	23	1790	1019	274	1.1	455	38.1
0011 CZR_RM_BULK_01	22.6	115	43.59	27	3150	913	330	1.4	231	40.9
0012 CZR_RM_BULK_04	25.3	130	42.24	49	3094	794	195	1.2	172	35.0
CHECKS										
0001 RM_WC_16	6.0	145	46.96	6	1555	1435	184	1.1	183	15.5
STANDARDS										
0001 AMIS0424	1.14%		13.07		1904	4.24%	1088	0.7	275	153.2
0002 AMIS0407										
0003 OREAS 46				7						
0004 AMIS0342		1033								
0005 OREAS 97.01										
0006 Se 0.1ppm										
0007 Se 1.0 ppm										
BLANKS										
0001 Control Blank	X	X	X	X	X	X	X	X	X	X

ELEMENTS	P	Pb	S	Sb	Se	Si	Sn	Sr	Th	Ti
UNITS	ppm	ppm	ppm	ppm	ppm	%	ppm	ppm	ppm	ppm
DETECTION LIMIT	20	0.5	50	0.05	0.01	0.1	0.1	0.05	0.01	5
DIGEST	4A/	4A/	4A/	4A/	SE1/	FP1/	4A/	4A/	4A/	4A/
ANALYTICAL FINISH	MS	MS	OE	MS	MS	OE	MS	MS	MS	OE
SAMPLE NUMBERS										
0001 RM_WC_01	132	10.8	106	0.78	0.16	12.4	2.0	13.33	5.92	4099
0002 RM_WC_03	343	9.4	217	0.97	0.59	5.6	1.0	12.73	6.30	1084
0003 RM_WC_05	1161	14.4	X	1.83	0.12	23.0	2.1	25.14	18.96	3058
0004 RM_WC_09	277	5.4	147	0.52	0.32	8.0	0.7	51.91	3.31	982
0005 RM_WC_11	320	7.1	130	0.94	0.52	7.6	1.1	12.02	6.90	1320
0006 RM_WC_13	492	20.3	X	1.08	0.40	23.9	2.4	40.48	16.49	3643
0007 RM_WC_14	96	9.0	170	0.80	0.28	12.7	1.6	25.04	7.03	3156
0008 RM_WC_16	201	5.7	155	0.53	0.33	7.8	0.9	24.98	4.69	960
0009 RM_WC_17	340	4.0	114	0.68	0.41	6.1	0.8	11.03	4.37	732
0010 RM_WC_18	238	11.4	100	0.96	0.36	12.3	1.5	13.96	6.42	3014
0011 CZR_RM_BULK_01	338	12.1	136	1.20	1.13	9.9	1.3	12.96	7.16	2218
0012 CZR_RM_BULK_04	290	13.3	200	1.17	0.85	9.7	1.4	10.71	8.59	2642
CHECKS										
0001 RM_WC_16	207	5.7	142	0.52	0.35	7.9	0.9	25.27	4.51	936
STANDARDS										
0001 AMIS0424	1.48%	37.2	8331	1.46			5.9	3543.67	151.03	2082
0002 AMIS0407						2.8				
0003 OREAS 46										
0004 AMIS0342										
0005 OREAS 97.01					0.65					
0006 Se 0.1ppm					0.10					
0007 Se 1.0 ppm					0.99					
BLANKS										
0001 Control Blank	X	X	X	X	X	X	X	X	X	X

ELEMENTS	Tl	U	V	Zn
UNITS	ppm	ppm	ppm	ppm
DETECTION LIMIT	0.02	0.01	1	1
DIGEST	4A/	4A/	4A/	4A/
ANALYTICAL FINISH	MS	MS	MS	MS
SAMPLE NUMBERS				
0001 RM_WC_01	0.23	1.79	52	74
0002 RM_WC_03	0.08	1.59	76	110
0003 RM_WC_05	0.40	2.43	113	52
0004 RM_WC_09	0.05	0.69	50	41
0005 RM_WC_11	0.16	1.54	70	121
0006 RM_WC_13	0.32	2.65	110	18
0007 RM_WC_14	0.19	1.85	46	44
0008 RM_WC_16	0.12	0.78	47	50
0009 RM_WC_17	0.05	1.10	49	80
0010 RM_WC_18	0.15	1.58	70	54
0011 CZR_RM_BULK_01	0.19	1.88	111	36
0012 CZR_RM_BULK_04	0.22	1.76	97	27
CHECKS				
0001 RM_WC_16	0.13	0.78	46	49
STANDARDS				
0001 AMIS0424	0.04	37.94	104	78
0002 AMIS0407				
0003 OREAS 46				
0004 AMIS0342				
0005 OREAS 97.01				
0006 Se 0.1ppm				
0007 Se 1.0 ppm				
BLANKS				
0001 Control Blank	X	X	X	X

METHOD CODE DESCRIPTION

Method Code Date Tested	Analysing Laboratory NATA Laboratory Accreditation	NATA Scope of Accreditation
4A/MS **10/10/22 10:38**	Intertek Genalysis Perth **3244 3237** Multi-acid digest including Hydrofluoric, Nitric, Perchloric and Hydrochloric acids in Teflon Tubes. Analysed by Inductively Coupled Plasma Mass Spectrometry.	**MPL_W002, MS_IM_001(Per), *(Adl)**
4A/OE **10/10/22 10:38**	Intertek Genalysis Perth **3244 3237** Multi-acid digest including Hydrofluoric, Nitric, Perchloric and Hydrochloric acids in Teflon Tubes. Analysed by Inductively Coupled Plasma Optical (Atomic) Emission Spectrometry.	**MPL_W002, ICP_IM_001(Per), *(Adl)**
AR005/MSHg **14/10/22 14:08**	Intertek Genalysis Perth **3244 3237** 0.5 gram mini Aqua-Regia digest. Analysed by Inductively Coupled Plasma Mass Spectrometry.	****
FC7/SIE **10/10/22 09:48**	Intertek Genalysis Perth **3244 3237** Alkaline fusion (Nickel crucible) specific for Fluorine. Analysed by Specific Ion Electrode.	**ENV_W012**
FP1/OE **14/10/22 10:30**	Intertek Genalysis Perth **3244 3237** Sodium peroxide fusion (Zirconia crucibles) and Hydrochloric acid to dissolve the melt. Analysed by Inductively Coupled Plasma Optical (Atomic) Emission Spectrometry.	**MPL_W011, MS_IM_001**
SE1/MS **10/10/22 08:01**	Intertek Genalysis Perth **3244 3237** Aqua-Regia digest followed by Precipitation and Concentration. Specific for Selenium. Analysed by Inductively Coupled Plasma Mass Spectrometry.	**MPL_W005, MS_IM_001**

* Denotes not on Scope of Accreditation

Job: 143/2221569

Project: ROBE MESA - GCA-Job-No. 2223

SAMPLES:

12 pulped samples (-75µm nominal) were received on 6/10/22 from existing job 143/2219767.

SAMPLE PREPARATION:

No additional sample preparation performed.

ANALYSES

The samples were analysed for the following:

- 4A/MS samples were analysed for Ag, As, Ba, Bi, Cd, Co, Cr, Cu, Mn, Mo, Ni, P, Pb, Sb, Sn, Sr, Th, Tl, U, V and Zn
- 4A/OE samples were analysed for Al, Ca, Fe, K, Mg, Na, S and Ti
- AR005/MSHg samples were analysed for Hg
- FP1/OE samples were analysed for B and Si
- SE1/MS samples were analysed for Se
- Fluoride analysis was performed by Carbonate fusion and dissolution (FC7/) and read by Selective ion electrode (/SIE).

DIGESTIONS:

MPL_W002 (4A/), GL_W009 (AR005/), MPL_W011 (FP1/), MPL_W005 (SE1/) and ENV_W012 (FC7/SIE).

ANALYTICAL FINISHES:

MS_IM_001 (/MS), ICP_IM_001 (/OE)

OBSERVATIONS:

No remarks.

RESULTS:

Results are expressed in units: ppm (4A/MS, 4A/OE, FP1/OE, SE1/MS, FC7/SIE), ppb (AR005/MSHg), % (FP1/OE, 4A/OE).

The results included the assay of blanks and international reference standards: AMIS0424 (4A), OREAS 46 (AR005), AMIS0407 (FP1), AMIS0342 (FC7), and OREAS 97.01 (SE1).

In-House reference standards: Se 0.1ppm (SE1), Se 1.0 ppm (SE1).

Intertek Genalysis signatory
Chiara CAPORALE

Date: 19-Oct-2022

MINERALS
TEST REPORT

CLIENT

GRAEME CAMPBELL
CAMPBELL & ASSOCIATES PTY LIMITED
PO Box 247
BRIDGETOWN, W.A. 6255
AUSTRALIA

JOB INFORMATION

JOB CODE	: 143.0/2222104
NO. SAMPLES	: 24
NO. ELEMENTS	: 40
CLIENT ORDER NO.	: GCA2223 (Job 1 of 1)
SAMPLE SUBMISSION NO.	:
PROJECT	: ROBE MESA
SAMPLE TYPE	: Solutions
DATE RECEIVED	: 14/10/2022
DATE TESTED	: 03/11/2022
DATE REPORTED	: 04/11/2022
DATE PRINTED	: 04/11/2022

REPORT NOTES

TESTED BY

Intertek
544 Bickley Road, Maddington 6109, Western Australia
PO Box 144, Gosnells 6990, Western Australia
Tel: +61 8 9263 0100
Email: min.aus.per@intertek.com

APPROVED SIGNATURE FOR

Craig RITCHIE
Operations Manager - Perth

Accredited for compliance with ISO/IEC 17025 - Testing.
Company Accreditation Number 3244

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Samples received as liquids, waters or solutions will be held for 60 days free of charge then disposed of, unless written advice fo return or collection is received.

LEGEND	X	= Less than Detection Limit		NA	= Not Analysed
	SNR	= Sample Not Received		UA	= Unable to Assay
	LNR	= Lab Not Received		>	= Value beyond Limit of Method
	DTF	= Result still to come		+	= Extra Sample Received Not Listed
	I/S	= Insufficient Sample for Analysis			

UNITS	ppm for Solid Samples	= mg/Kg
	ppb for Solid Samples	= µg/Kg
	ppm for Liquid Samples	= mg/L
	ppb for Liquid Samples	= µg/L

ELEMENTS	Ag	Al	As	B	Ba	Bi
UNITS	ug/l	mg/l	ug/l	mg/l	ug/l	ug/l
DETECTION LIMIT	0.05	0.01	0.05	0.01	0.05	0.01
DIGEST						
ANALYTICAL FINISH	/MS	/OE	/MS	/OE	/MS	/MS
SAMPLE NUMBERS						
0001 CZR_RM_BULK_01 RAW						
0002 CZR_RM_BULK_04 RAW						
0003 RM_WC_01 RAW						
0004 RM_WC_03 RAW						
0005 RM_WC_05 RAW						
0006 RM_WC_09 RAW						
0007 RM_WC_14 RAW						
0008 RM_WC_16 RAW						
0009 RM_WC_18 RAW						
0010 RM_WC_11 RAW						
0011 RM_WC_13 RAW						
0012 RM_WC_17 RAW						
0013 CZR_RM_BULK_01 HNO3	X	0.04	1.36	0.02	1.50	X
0014 CZR_RM_BULK_04 HNO3	X	0.02	0.28	0.01	2.06	0.05
0015 RM_WC_01 HNO3	X	0.11	3.35	0.04	25.41	0.02
0016 RM_WC_03 HNO3	X	0.01	0.61	0.06	6.58	X
0017 RM_WC_05 HNO3	X	1.07	3.70	0.05	8.84	X
0018 RM_WC_09 HNO3	X	0.04	10.53	0.04	25.94	X
0019 RM_WC_14 HNO3	X	X	0.30	0.07	12.93	0.01
0020 RM_WC_16 HNO3	X	0.06	2.20	X	172.27	X
0021 RM_WC_18 HNO3	X	0.57	5.36	0.06	13.96	0.03
0022 RM_WC_11 HNO3	X	1.22	1.88	0.05	11.46	X
0023 RM_WC_13 HNO3	X	1.42	3.89	0.04	7.13	0.02
0024 RM_WC_17 HNO3	X	1.43	1.00	0.05	2.43	0.01
CHECKS						
0001 RM_WC_17 RAW						
0002 CZR_RM_BULK_04 HNO3	X	0.04	0.31	0.01	2.08	0.05
STANDARDS						
0001 ICP-AM-MISA6		101.36		100.69		
0002 GWS-5						
0003 GWS-5						
0004 GWS-4						
0005 GWS-5						
0006 GWS-5						
0007 CCV-1-B-500		X		0.02		
0008 CRM-TMDW-500	1.92		81.83		50.40	9.57

ELEMENTS	CO3	Ca	Cd	Cl	Co	Cr
UNITS	mgCaCO3/L	mg/l	ug/l	mg/l	ug/l	ug/l
DETECTION LIMIT	1	0.01	0.02	2	0.1	10
DIGEST						
ANALYTICAL FINISH	/VOL	/OE	/MS	/COL	/MS	/MS
SAMPLE NUMBERS						
0001 CZR_RM_BULK_01 RAW	X			X		
0002 CZR_RM_BULK_04 RAW	X			X		
0003 RM_WC_01 RAW	X			64		
0004 RM_WC_03 RAW	X			73		
0005 RM_WC_05 RAW	X			17		
0006 RM_WC_09 RAW	X			X		
0007 RM_WC_14 RAW	X			136		
0008 RM_WC_16 RAW	X			X		
0009 RM_WC_18 RAW	X			19		
0010 RM_WC_11 RAW	X			50		
0011 RM_WC_13 RAW	X			5		
0012 RM_WC_17 RAW	X			7		
0013 CZR_RM_BULK_01 HNO3		0.78	0.05		1.8	X
0014 CZR_RM_BULK_04 HNO3		0.39	X		X	X
0015 RM_WC_01 HNO3		3.21	0.06		2.0	X
0016 RM_WC_03 HNO3		2.81	0.05		0.1	X
0017 RM_WC_05 HNO3		0.97	1.92		0.3	X
0018 RM_WC_09 HNO3		2.76	X		0.2	X
0019 RM_WC_14 HNO3		11.53	0.04		X	X
0020 RM_WC_16 HNO3		4.23	0.07		0.4	X
0021 RM_WC_18 HNO3		0.67	0.03		0.8	X
0022 RM_WC_11 HNO3		2.59	0.05		0.5	X
0023 RM_WC_13 HNO3		0.42	X		0.2	X
0024 RM_WC_17 HNO3		0.25	X		0.2	X
CHECKS						
0001 RM_WC_17 RAW	X			7		
0002 CZR_RM_BULK_04 HNO3		0.38	X		X	X
STANDARDS						
0001 ICP-AM-MISA6		101.96				
0002 GWS-5						
0003 GWS-5	X					
0004 GWS-4						
0005 GWS-5				39		
0006 GWS-5						
0007 CCV-1-B-500		X				
0008 CRM-TMDW-500			9.80		24.2	19

ELEMENTS	Cu	EC	F	Fe-Sol	HCO3	Hg
UNITS	ug/l	uS/cm	mg/l	mg/l	mgCaCO3/L	ug/l
DETECTION LIMIT	10	10	0.1	0.01	2	0.1
DIGEST						
ANALYTICAL FINISH	/MS	/MTR	/SIE	/OE	/VOL	/MS
SAMPLE NUMBERS						
0001 CZR_RM_BULK_01 RAW		18	X		5	
0002 CZR_RM_BULK_04 RAW		15	X		4	
0003 RM_WC_01 RAW		250	0.3		7	
0004 RM_WC_03 RAW		350	0.7		7	
0005 RM_WC_05 RAW		109	1.5		10	
0006 RM_WC_09 RAW		87	0.3		42	
0007 RM_WC_14 RAW		610	0.4		10	
0008 RM_WC_16 RAW		53	0.3		18	
0009 RM_WC_18 RAW		119	0.6		10	
0010 RM_WC_11 RAW		215	0.8		9	
0011 RM_WC_13 RAW		60	2.1		12	
0012 RM_WC_17 RAW		54	1.4		8	
0013 CZR_RM_BULK_01 HNO3	X			0.02		X
0014 CZR_RM_BULK_04 HNO3	X			0.02		X
0015 RM_WC_01 HNO3	X			0.19		X
0016 RM_WC_03 HNO3	X			0.02		X
0017 RM_WC_05 HNO3	X			0.57		X
0018 RM_WC_09 HNO3	X			0.06		X
0019 RM_WC_14 HNO3	X			X		X
0020 RM_WC_16 HNO3	X			0.11		X
0021 RM_WC_18 HNO3	X			0.54		X
0022 RM_WC_11 HNO3	X			0.89		X
0023 RM_WC_13 HNO3	X			2.04		X
0024 RM_WC_17 HNO3	X			1.59		X
CHECKS						
0001 RM_WC_17 RAW		54	1.4		8	
0002 CZR_RM_BULK_04 HNO3	X			0.02		X
STANDARDS						
0001 ICP-AM-MISA6				101.71		
0002 GWS-5		315				
0003 GWS-5					92	
0004 GWS-4						
0005 GWS-5						
0006 GWS-5			0.6			
0007 CCV-1-B-500				X		
0008 CRM-TMDW-500	20					X

ELEMENTS	K	Mg	Mn	Mo	Na	Ni
UNITS	mg/l	mg/l	ug/l	ug/l	mg/l	ug/l
DETECTION LIMIT	0.1	0.01	10	0.05	0.1	10
DIGEST						
ANALYTICAL FINISH	/OE	/OE	/MS	/MS	/OE	/MS
SAMPLE NUMBERS						
0001 CZR_RM_BULK_01 RAW						
0002 CZR_RM_BULK_04 RAW						
0003 RM_WC_01 RAW						
0004 RM_WC_03 RAW						
0005 RM_WC_05 RAW						
0006 RM_WC_09 RAW						
0007 RM_WC_14 RAW						
0008 RM_WC_16 RAW						
0009 RM_WC_18 RAW						
0010 RM_WC_11 RAW						
0011 RM_WC_13 RAW						
0012 RM_WC_17 RAW						
0013 CZR_RM_BULK_01 HNO3	1.1	0.30	26	0.07	1.5	15
0014 CZR_RM_BULK_04 HNO3	0.8	0.20	X	X	1.8	X
0015 RM_WC_01 HNO3	2.7	1.85	27	0.13	43.3	16
0016 RM_WC_03 HNO3	1.7	1.67	X	X	64.1	X
0017 RM_WC_05 HNO3	2.0	0.80	X	2.16	18.6	X
0018 RM_WC_09 HNO3	2.4	0.95	X	0.60	15.1	X
0019 RM_WC_14 HNO3	3.2	5.83	X	0.05	99.2	X
0020 RM_WC_16 HNO3	2.5	1.45	X	0.38	2.8	X
0021 RM_WC_18 HNO3	1.0	0.28	X	0.18	21.9	X
0022 RM_WC_11 HNO3	1.3	1.26	X	0.08	37.7	X
0023 RM_WC_13 HNO3	0.9	0.28	X	3.34	11.6	X
0024 RM_WC_17 HNO3	1.0	0.20	X	0.74	10.0	X
CHECKS						
0001 RM_WC_17 RAW						
0002 CZR_RM_BULK_04 HNO3	0.8	0.20	X	X	1.8	X
STANDARDS						
0001 ICP-AM-MISA6	101.2	102.73			100.0	
0002 GWS-5						
0003 GWS-5						
0004 GWS-4						
0005 GWS-5						
0006 GWS-5						
0007 CCV-1-B-500	0.1	0.08			835.6	
0008 CRM-TMDW-500			39	96.34		60

ELEMENTS	OH	P	Pb	pH	S	Sb
UNITS	mgCaCO3/L	ug/l	ug/l	NONE	mg/l	ug/l
DETECTION LIMIT	1	10	0.2	0.1	0.1	0.05
DIGEST						
ANALYTICAL FINISH	/VOL	/MS	/MS	/MTR	/OE	/MS
SAMPLE NUMBERS						
0001 CZR_RM_BULK_01 RAW	X			6.5		
0002 CZR_RM_BULK_04 RAW	X			6.6		
0003 RM_WC_01 RAW	X			6.9		
0004 RM_WC_03 RAW	X			6.7		
0005 RM_WC_05 RAW	X			7.0		
0006 RM_WC_09 RAW	X			7.7		
0007 RM_WC_14 RAW	X			7.0		
0008 RM_WC_16 RAW	X			7.3		
0009 RM_WC_18 RAW	X			7.0		
0010 RM_WC_11 RAW	X			6.9		
0011 RM_WC_13 RAW	X			7.1		
0012 RM_WC_17 RAW	X			6.9		
0013 CZR_RM_BULK_01 HNO3		X	X		0.7	1.21
0014 CZR_RM_BULK_04 HNO3		X	X		0.8	0.15
0015 RM_WC_01 HNO3		X	0.3		3.7	2.31
0016 RM_WC_03 HNO3		X	X		12.2	0.19
0017 RM_WC_05 HNO3		31	X		3.4	1.31
0018 RM_WC_09 HNO3		X	X		0.5	3.07
0019 RM_WC_14 HNO3		X	X		27.0	0.16
0020 RM_WC_16 HNO3		X	X		1.7	0.89
0021 RM_WC_18 HNO3		X	0.2		3.9	2.41
0022 RM_WC_11 HNO3		X	0.2		4.1	0.68
0023 RM_WC_13 HNO3		40	0.2		2.5	1.25
0024 RM_WC_17 HNO3		X	X		1.1	0.44
CHECKS						
0001 RM_WC_17 RAW	X			6.9		
0002 CZR_RM_BULK_04 HNO3		X	X		0.8	0.15
STANDARDS						
0001 ICP-AM-MISA6					2.6	
0002 GWS-5				8.9		
0003 GWS-5	X					
0004 GWS-4						
0005 GWS-5						
0006 GWS-5						
0007 CCV-1-B-500					511.3	
0008 CRM-TMDW-500		X	39.5			9.73

ELEMENTS	Se	Si	Sn	Sr	Th	Tl
UNITS	ug/l	mg/l	ug/l	ug/l	ug/l	ug/l
DETECTION LIMIT	0.5	0.05	0.1	0.02	0.01	0.01
DIGEST						
ANALYTICAL FINISH	/MS	/OE	/MS	/MS	/MS	/MS
SAMPLE NUMBERS						
0001 CZR_RM_BULK_01 RAW						
0002 CZR_RM_BULK_04 RAW						
0003 RM_WC_01 RAW						
0004 RM_WC_03 RAW						
0005 RM_WC_05 RAW						
0006 RM_WC_09 RAW						
0007 RM_WC_14 RAW						
0008 RM_WC_16 RAW						
0009 RM_WC_18 RAW						
0010 RM_WC_11 RAW						
0011 RM_WC_13 RAW						
0012 RM_WC_17 RAW						
0013 CZR_RM_BULK_01 HNO3	X	0.64	X	8.04	X	0.01
0014 CZR_RM_BULK_04 HNO3	X	0.44	X	3.87	X	0.17
0015 RM_WC_01 HNO3	0.6	4.95	X	31.20	X	0.02
0016 RM_WC_03 HNO3	X	2.88	X	32.89	X	0.05
0017 RM_WC_05 HNO3	X	5.53	X	11.85	0.07	0.02
0018 RM_WC_09 HNO3	X	5.97	X	26.60	X	X
0019 RM_WC_14 HNO3	1.4	3.37	X	132.00	X	0.21
0020 RM_WC_16 HNO3	X	3.82	X	43.38	X	X
0021 RM_WC_18 HNO3	0.7	5.55	X	8.15	0.03	0.02
0022 RM_WC_11 HNO3	X	5.83	X	24.13	0.11	0.02
0023 RM_WC_13 HNO3	X	8.31	X	4.96	0.18	0.02
0024 RM_WC_17 HNO3	X	6.40	X	2.47	0.08	0.01
CHECKS						
0001 RM_WC_17 RAW						
0002 CZR_RM_BULK_04 HNO3	X	0.43	X	3.71	X	0.17
STANDARDS						
0001 ICP-AM-MISA6		X				
0002 GWS-5						
0003 GWS-5						
0004 GWS-4						
0005 GWS-5						
0006 GWS-5						
0007 CCV-1-B-500		513.82				
0008 CRM-TMDW-500	9.9		X	238.81	X	9.82

ELEMENTS	TotAlk	U	V	Zn
UNITS	mgCaCO3/L	ug/l	ug/l	ug/l
DETECTION LIMIT	5	0.005	10	10
DIGEST				
ANALYTICAL FINISH	/CALC	/MS	/MS	/MS
SAMPLE NUMBERS				
0001 CZR_RM_BULK_01 RAW	5			
0002 CZR_RM_BULK_04 RAW	X			
0003 RM_WC_01 RAW	7			
0004 RM_WC_03 RAW	7			
0005 RM_WC_05 RAW	10			
0006 RM_WC_09 RAW	42			
0007 RM_WC_14 RAW	10			
0008 RM_WC_16 RAW	18			
0009 RM_WC_18 RAW	10			
0010 RM_WC_11 RAW	9			
0011 RM_WC_13 RAW	12			
0012 RM_WC_17 RAW	8			
0013 CZR_RM_BULK_01 HNO3		0.018	X	14
0014 CZR_RM_BULK_04 HNO3		X	X	X
0015 RM_WC_01 HNO3		0.065	X	X
0016 RM_WC_03 HNO3		0.014	X	X
0017 RM_WC_05 HNO3		0.041	X	X
0018 RM_WC_09 HNO3		0.651	X	X
0019 RM_WC_14 HNO3		0.007	X	10
0020 RM_WC_16 HNO3		0.105	X	X
0021 RM_WC_18 HNO3		0.067	X	X
0022 RM_WC_11 HNO3		0.049	X	X
0023 RM_WC_13 HNO3		0.066	X	X
0024 RM_WC_17 HNO3		0.036	X	X

CHECKS				
0001 RM_WC_17 RAW	8			
0002 CZR_RM_BULK_04 HNO3		X	X	X

STANDARDS				
0001 ICP-AM-MISA6				
0002 GWS-5				
0003 GWS-5				
0004 GWS-4	92			
0005 GWS-5				
0006 GWS-5				
0007 CCV-1-B-500				
0008 CRM-TMDW-500		9.783	30	71

ELEMENTS	Ag	Al	As	B	Ba	Bi
UNITS	ug/l	mg/l	ug/l	mg/l	ug/l	ug/l
DETECTION LIMIT	0.05	0.01	0.05	0.01	0.05	0.01
DIGEST						
ANALYTICAL FINISH	/MS	/OE	/MS	/OE	/MS	/MS
BLANKS						
0001 Control Blank						
0002 Control Blank	X	X	X	X	X	X

ELEMENTS	CO3	Ca	Cd	Cl	Co	Cr
UNITS	mgCaCO3/L	mg/l	ug/l	mg/l	ug/l	ug/l
DETECTION LIMIT	1	0.01	0.02	2	0.1	10
DIGEST						
ANALYTICAL FINISH	/VOL	/OE	/MS	/COL	/MS	/MS
BLANKS						
0001 Control Blank	X			X		
0002 Control Blank		X	X		X	X

ELEMENTS	Cu	EC	F	Fe-Sol	HCO3	Hg
UNITS	ug/l	uS/cm	mg/l	mg/l	mgCaCO3/L	ug/l
DETECTION LIMIT	10	10	0.1	0.01	2	0.1
DIGEST						
ANALYTICAL FINISH	/MS	/MTR	/SIE	/OE	/VOL	/MS
BLANKS						
0001 Control Blank		X	X		2	
0002 Control Blank	X			X		X

ELEMENTS	K	Mg	Mn	Mo	Na	Ni
UNITS	mg/l	mg/l	ug/l	ug/l	mg/l	ug/l
DETECTION LIMIT	0.1	0.01	10	0.05	0.1	10
DIGEST						
ANALYTICAL FINISH	/OE	/OE	/MS	/MS	/OE	/MS
BLANKS						
0001 Control Blank						
0002 Control Blank	X	X	X	X	X	X

ELEMENTS	OH	P	Pb	pH	S	Sb
UNITS	mgCaCO3/L	ug/l	ug/l	NONE	mg/l	ug/l
DETECTION LIMIT	1	10	0.2	0.1	0.1	0.05
DIGEST						
ANALYTICAL FINISH	/VOL	/MS	/MS	/MTR	/OE	/MS
BLANKS						
0001 Control Blank	X			5.3		
0002 Control Blank		X	X		X	X

ELEMENTS	Se	Si	Sn	Sr	Th	Tl
UNITS	ug/l	mg/l	ug/l	ug/l	ug/l	ug/l
DETECTION LIMIT	0.5	0.05	0.1	0.02	0.01	0.01
DIGEST						
ANALYTICAL FINISH	/MS	/OE	/MS	/MS	/MS	/MS
BLANKS						
0001 Control Blank						
0002 Control Blank	X	X	X	X	X	X

ELEMENTS	TotAlk	U	V	Zn
UNITS	mgCaCO3/L	ug/l	ug/l	ug/l
DETECTION LIMIT	5	0.005	10	10
DIGEST				
ANALYTICAL FINISH	/CALC	/MS	/MS	/MS
BLANKS				
0001 Control Blank	X			
0002 Control Blank		X	X	X

METHOD CODE DESCRIPTION

Method Code Date Tested	Analysing Laboratory NATA Laboratory Accreditation	NATA Scope of Accreditation
/CALC **03/11/22 13:57**	Intertek Genalysis Perth **3244 3237** No digestion or other pre-treatment undertaken. Results Determined by calculation from other reported data.	*
/COL **03/11/22 13:57**	Intertek Genalysis Perth **3244 3237** No digestion or other pre-treatment undertaken. Analysed by UV-Visible Spectrometry.	*
/MS **01/11/22 11:44**	Intertek Genalysis Perth **3244 3237** No digestion or other pre-treatment undertaken. Analysed by Inductively Coupled Plasma Mass Spectrometry.	**MS_IM_001**
/MTR **03/11/22 13:57**	Intertek Genalysis Perth **3244 3237** No digestion or other pre-treatment undertaken. Analysed with Electronic Meter Measurement	*
/OE **26/10/22 09:37**	Intertek Genalysis Perth **3244 3237** Analysed by Inductively Coupled Plasma Optical (Atomic) Emission Spectrometry.	**ICP_IM_001**
/SIE **03/11/22 13:57**	Intertek Genalysis Perth **3244 3237** No digestion or other pre-treatment undertaken. Analysed by Specific Ion Electrode.	*
/VOL **03/11/22 13:57**	Intertek Genalysis Perth **3244 3237** No digestion or other pre-treatment undertaken. Analysed by Volumetric Technique.	*

* Denotes not on Scope of Accreditation

Job: 143/2222104

PROJECT: ROBE MESA – GCA-Job-Number-GCA2223

SAMPLES: 24 x water-extract samples were received on 14/10/22 by Startrack-Express (**S31260262**):

- 12 x Filtered-(0.45µm-membrane)-Raw-Water in 125mL plastic bottles
- 12 x HNO_3-Dosed-Filtered-(0.45µm-membrane)-Water in 30mL plastic vials

ANALYSES:

- RAW waters were analysed for Alkalinity, Chloride, Electrical Conductivity, Fluoride, pH.
- HNO_3-Dosed waters were analysed for Ag, As, Ba, Bi, Cd, Co, Cr, Cu, Hg, Mn, Mo, Ni, P, Pb, Sb, Se, Sn, Sr, Th, Tl, U, V and Zn by ICPMS and Al, B, Ca, Fe-sol, K, Mg, Na, S and Si by ICPOES

METHODS:

- ICP /MS (method code: MS_IM_001) and ICP /OE (method code: ICP_IM_001)
- pH and Electrical Conductivity (EC) were read by metered instrumentation following the respective method codes ENV_W001 and ENV_W002
- Alkalinity forms (HCO_3, CO_3, OH, and Total) were determined by titration, expressed in units of mg($CaCO_3$)/L by method ENV_W007
- Chloride was read by UV-Vis spectrophotometric (/COL) method code ENV_W013
- Fluoride was read by ion selective electrode using method number ENV_W011 for water extracted samples.

OBSERVATIONS:

No remarks.

RESULTS:

Results are expressed in units of: µg/L (/MS), mg/L (/OE, F, Cl), mg($CaCO_3$)/L (Alkalinity), µS/cm (EC), pH units.

The results included the assay of blanks and reference standards: CRM-TMDW-500 (/MS), CCV-1-B-500 (/OE), ICP-AM-MISA6 (/OE), and in-house standard: GWS-5 (Alkalinity, EC, pH, Cl, F).

Intertek Genalysis signatory
Chiara CAPORALE

Date: 04-Nov-2022

Accredited for compliance with ISO/IEC 17025 - Testing

Dr G Campbell
GRAEME CAMPBELL and ASSOCIATES PTY LTD
PO Box 247
BRIDGETOWN WA 6255

Emails:
gca@wn.com.au

JOB INFORMATION

JOB CODE	143/2221766 Rev0
No. of SAMPLES	11
CLIENT O/N	GCA-Job-No. 2223
PROJECT	Robe Mesa
STATE	Mine Wastes
DATE RECEIVED	10/10/2022
DATE COMPLETED	26/10/2022

LEGEND

< or X = Less than Detection Limit
N/R = Sample Not Received
* = Result Checked
( ) = Result still to come
I/S = Insufficient Sample for Analysis
E6 = Result X 1,000,000
UA = Unable to Assay
> = Value beyond Limit of Method

The determination of effective Cation Exchange Capacity (eCEC) (Intertek analysis code: ENV_W049) and reporting of results, as given below, correspond to the requirements specified by GCA for the testing of soil samples. These determinations are based on classical soil science procedures developed for calcareous and non-calcareous systems, and where the cation-exchange properties are dominated by permanent-charge clay minerals (cf. variable-charge sesquioxides and soil humic materials).

Samples: RM_WC_01, RM_WC_03, RM_WC_05, RM_WC_09, RM_WC_11, RM_WC_17, RM_WC_18, CZR_RM_BULK_01, CZR_RM_BULK_02, CZR_RM_BULK_03, CZR_RM_BULK_04, were received as -2mm fractions (dry-sieved).

1.0 Prewashing step using organic solvent for removal of soluble salts

A prewashing step was carried out for all samples to remove soluble salts using an organic solvent in which loss of dispersed / peptised clays, induced by dilution during washing, is restricted / prevented. Unwanted hydrolysis-related alteration of the initial cation suite on the exchange complex is also thereby minimised.

2 g of sample was weighed into a centrifuge tube and pre-washed with 2 x 25 mL of 10% (v/v) ethylene glycol in ethanol, which has been previously deionised by passing through Amberlite resin.

The centrifugate / supernatant may contain dispersed colloids (clays / sesquioxides) after centrifugation. If this is the case the addition of a few drops of PVA may be necessary to clarify the supernatant. The PVA aqueous solution is 0.05% (w/v) polyvinyl alcohol. No additions were required for these samples.

2.0 Extraction of Exchangeable Ca, Mg, K, and Na using 1 M-NH_4Cl buffered solutions

Cationic forms of Ca, Mg, K, and Na exchangeable with 1 M-NH_4Cl buffered solutions are determined following an ethanol/ethylene glycol wash by either a pH 7 buffered extraction for non-calcareous samples or an alcoholic pH 8.5 buffered extraction for calcareous samples.

As advised by Dr GD Campbell, samples with CO_3-C values ≤ 0.09 % were taken as being 'non-calcareous' for the purposes of the eCEC determination, and samples with CO_3 ≥ 0.10 % were taken as being 'calcareous'.

A Vortex mixer is used to ensure thorough resuspension of the 'soil-plug' at the bottom of the centrifuge tube during the step-wise extraction process.

3.0 Extraction step for Non-calcareous samples

GLS method AmCl7 (Intertek analysis codes: ENV_W049) was used on all the samples (excluding RM_WC_09), being non-calcareous.

After decanting following completion of the 2nd pre-wash, the residue in the centrifuge tube was subjected to 2 x 30-minute extractions via end-over-end tumbling at approx. 10 rpm. Each extraction uses 20 mL of 1 M-NH_4Cl buffered at pH 7.0 using ammonia solution 28 % (w/w). At the completion of each extraction, the suspension was centrifuged for 30 minutes and the supernatant decanted and collected into a communal extract. The final communal extract was volumed to 50 mL with 4 M-HCl, and analysed for Ca, Mg, K and Na by OES.

Reference:
Based on procedure 15B2: Exchangeable bases and CEC – 1 M NH_4Cl at pH 7.0; in "Soil Chemical Methods – Australasia", G.E. Rayment & D.J. Lyons, 2011, CSIRO Publishing.

Results:

Table 1

Element	Na	Mg	Ca	K	eCEC	Na	Mg	Ca	K
Method						exch	exch	exch	exch
	DF25	DF25	DF25	DF25		ESP			
Units	mg/Kg	mg/Kg	mg/Kg	mg/Kg	cmol(+)/kg	%	%	%	%
RM_WC_01	206	277	527	60	5.8	15	39	45	<1
CH: RM_WC_01	209	300	561	55	6.0	14	39	44	2
RM_WC_03	199	280	557	<20	6.0	15	39	47	<1
RM_WC_05	146	478	672	53	8.1	8	49	42	2

Element	Na	Mg	Ca	K	eCEC	Na	Mg	Ca	K
Method						**exch**	**exch**	**exch**	**exch**
	DF25	DF25	DF25	DF25		ESP			
Units	mg/Kg	mg/Kg	mg/Kg	mg/Kg	cmol(+)/kg	%	%	%	%
RM_WC_11	194	256	680	23	6.4	13	33	53	1
RM_WC_17	202	192	490	54	5.0	17	31	49	3
RM_WC_18	204	212	614	52	5.8	15	30	53	2
CZR_RM_BULK_01	36	145	433	84	4.0	4	32	58	6
CZR_RM_BULK_02	107	153	307	56	3.4	14	37	45	4
CZR_RM_BULK_03	32	138	297	68	3.0	5	39	51	6
CZR_RM_BULK_04	109	154	364	77	4.0	13	34	48	5
ST: ASS1511-3	67	192	1415	427	10	3	16	70	11
ST: AQA 21-01	55	105	370	<20	3.0	8	29	63	<1

DF = dilution factor

4.0 Extraction step for Calcareous samples

GLS method AmCl (Intertek analysis codes: ENV_W049) was used on sample RM_WC_09, being calcareous.

After decanting following completion of the 2nd pre-wash, the residue in the centrifuge tube was subjected to 4 x 30-minute extractions via end-over-end tumbling at approx. 10 rpm. Each extraction uses 20 mL of 1 M-NH4Cl buffered at pH 8.5 using ammonia solution 28 % (w/w). At the completion of each extraction, the suspension was centrifuged for 30 minutes and the supernatant decanted and collected into a communal extract. The final communal extract was volumed to 100 mL with 4 M-HCl, and analysed for Ca, Mg, K and Na by OES.

Reference:
Based on procedure 15C1: Exchangeable bases and CEC – alcoholic 1 M NH_4Cl at pH 8.5; in "Soil Chemical Methods – Australasia", G.E. Rayment & D.J. Lyons, 2011, CSIRO Publishing.

Results:

Table 2

Element	Na	Mg	Ca	K	eCEC	Na	Mg	Ca	K
Method						**exch**	**exch**	**exch**	**exch**
	DF50	DF50	DF50	DF50		ESP			
Units	mg/Kg	mg/Kg	mg/Kg	mg/Kg	cmol(+)/kg	%	%	%	%
RM_WC_09	262	477	1606	47	13	9	30	61	<1
ST: ASS1511-3	44	143	883	386	6.8	3	17	65	15
ST: AQA 21-01	19	60	149	<20	1.0	6	37	56	<1

DF = dilution factor

5.0 Significant figures and rounding-off

The eCEC and 'exchangeable percentage' values are expressed to no more than 2 significant figures. The exchangeable percentage of the individual 'base-cations' (as a percentage of the eCEC value) is rounded to the nearest integral value (e.g. 4%) or expressed as <1%, as appropriate. With such rounding-off for practical purposes, the sum of the respective exchangeable percentage may therefore not always equate to 100%.

NATA ENDORSED DOCUMENT
Company Accreditation Number 3244
The contents of this report have been prepared in accordance with the scope of NATA accreditation and as such should only be reproduced in full.

Intertek Genalysis Signatory:

Date: 26/10/2022

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Emerson Dispersion Testing

1.0 TESTING OF 'SOIL-BALLS' REMOULDED FROM WET-SHEARED SAMPLES

Notes:

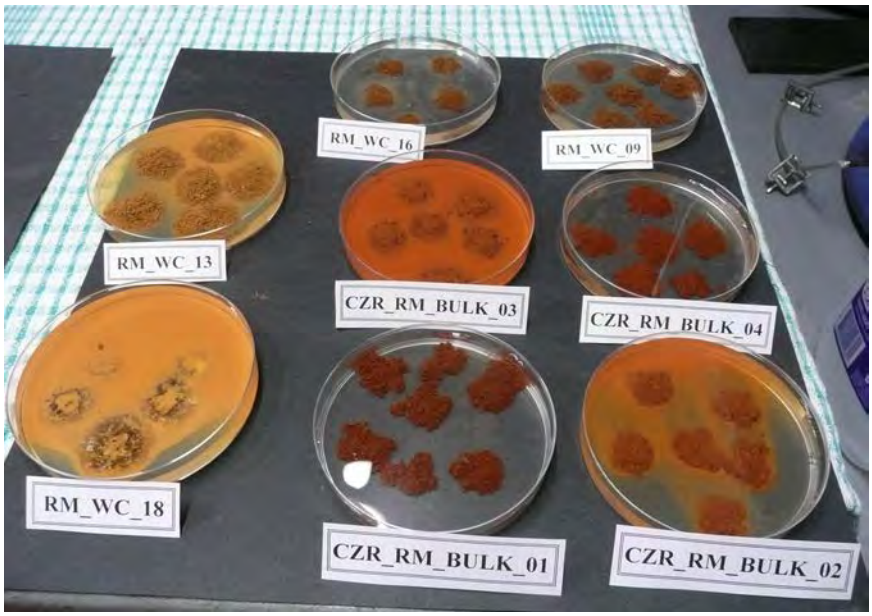
1. Testing based on **Emerson (2002)**.
2. Testing was performed on the **-2 mm fraction.**
3. The testing procedure employed was as follows. Approx. 50 gms of the air-dry solids is moistened with deionised-water and kneaded into a 'soil-bolus'.
4. **'Soil-balls'** around 3-5mm in diameter were then moulded by hand for immersion in deionised-water.

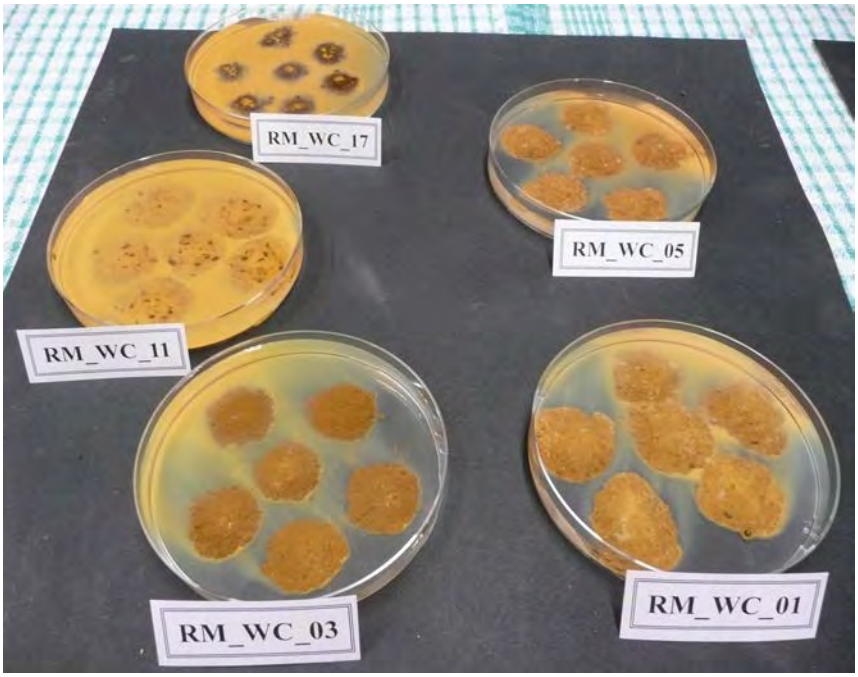
Reference:

• Emerson WW, 2002, "Emerson Dispersion Test", Chapter 13, pp. 190-0199 in McKenzie N, Coughlan K, and Cresswell H (eds), *"Soil Physical Measurement and Interpretation for Land Evaluation"*, CSIRO Publishing, Collingwood.

2.0 RESPONSE WHEN 'SOIL-BALLS' IMMERSED IN DEIONISED-WATER

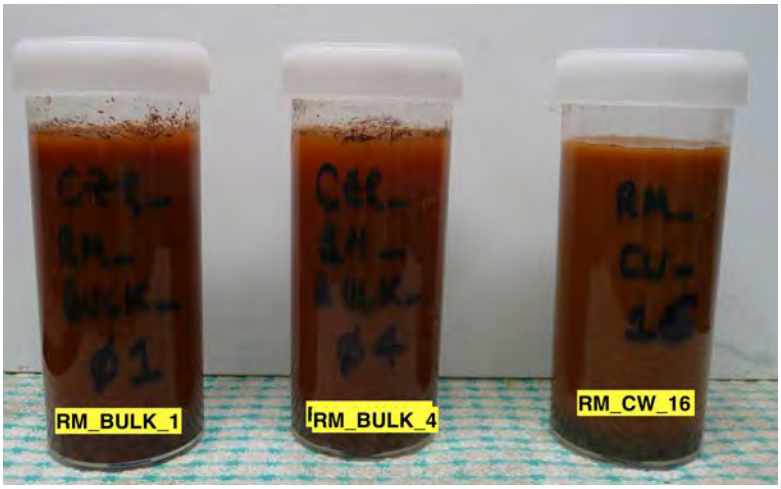
After Standing Overnight





3.0 PEPTISATION / FLOCCULATION RESPONSES FOR SAMPLES WHERE 'SOIL-BALLS' DID NOT DISPERSE WHEN IMMERSED IN DEIONISED-WATER

• 20 gms of the -2 mm fraction was mixed with 100 mL of deionised-water, and vigorously agitated via a flask-shaker for 10 minutes. The agitated suspensions were then left to 'still-stand' for 15 minutes before assessing peptisation or flocculation.



Dr GD Campbell
1st November 2022

Analysis Results

CSBP Soil and Plant Laboratory

87693
Graeme Campbell & Associates Pty Ltd

		Lab No	B1S22171	B1S22172	B1S22173	B1S22174
		Name	CZR-RM-Bulk-01	CZR-RM-Bulk-02	CZR-RM-Bulk-03	CZR-RM-Bulk-04
		Code	12/10/22	12/10/22	12/10/22	12/10/22
		Customer	Graeme Campbell & Associates	Graeme Campbell & Associates	Graeme Campbell & Associates	Graeme Campbell & Associates
		Depth	0-10	0-10	0-10	0-10
Colour			BRRD	BRRD	BRRD	BRRD
Gravel	%		0	0	0	0
Texture			2.0	2.0	2.0	2.0
Ammonium Nitrogen	mg/kg		2	3	2	3
Nitrate Nitrogen	mg/kg		1	< 1	1	< 1
Phosphorus Colwell	mg/kg		3	2	3	4
Potassium Colwell	mg/kg		97	85	111	83
Sulfur	mg/kg		15.9	9.4	6.8	30.2
Organic Carbon	%		0.20	0.34	0.32	0.25
Conductivity	dS/m		0.028	0.045	0.042	0.021
pH Level (CaCl2)			5.9	5.8	6.0	5.6
pH Level (H2O)			6.5	6.6	7.2	6.5
DTPA Copper	mg/kg		0.64	0.70	0.78	0.29
DTPA Iron	mg/kg		4.90	8.30	6.30	5.60
DTPA Manganese	mg/kg		0.86	1.40	1.93	0.38
DTPA Zinc	mg/kg		0.49	0.28	0.57	0.24

CSBP Lab. Extract Value.