

Figure 1. 3D perspective view of the Emerald Lake Plateau, contours measured in meters.

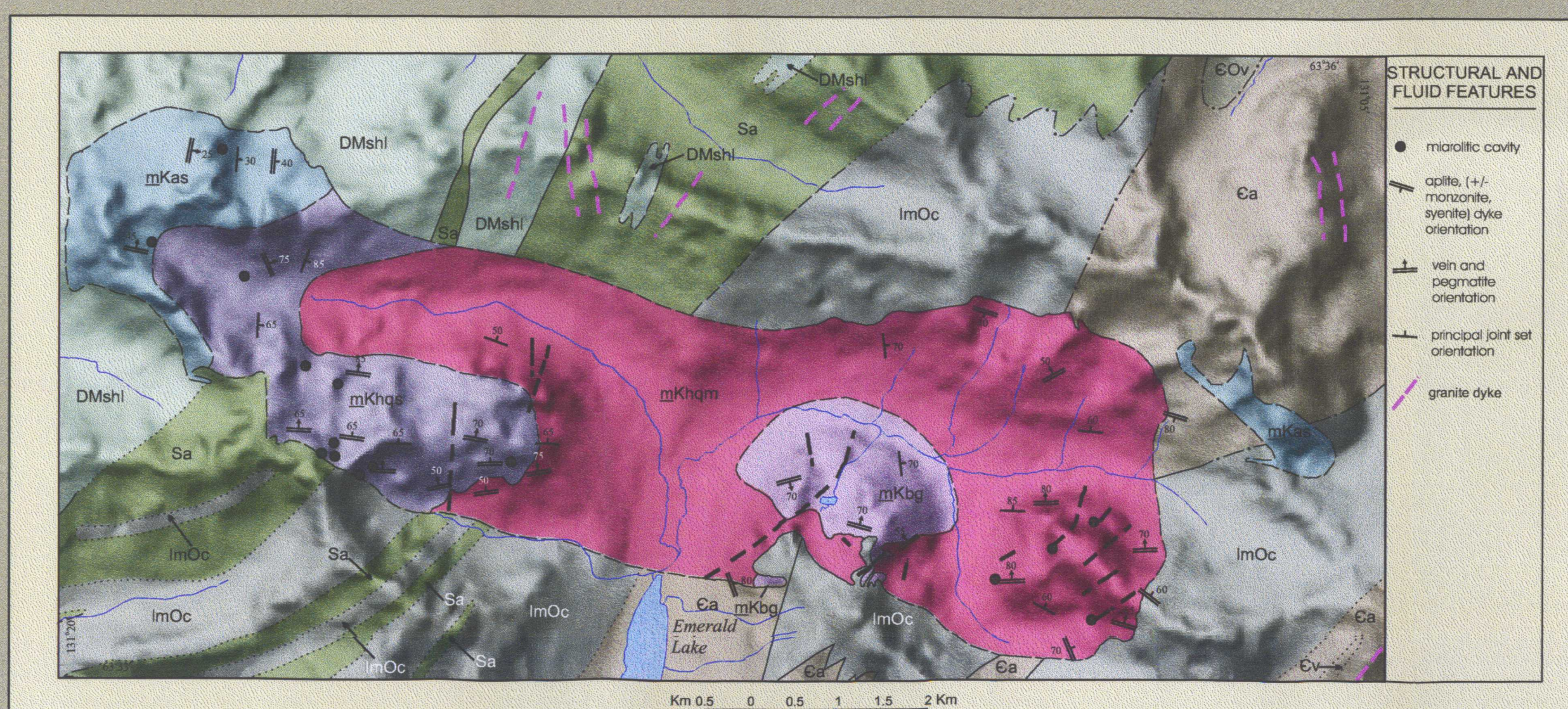


Figure 2. Structural map for the Emerald Lake Plateau depicting the occurrence and orientation of dykes and pegmatites, veins, primary joint sets, faults, and microcline cleavages in the Emerald Lake Plateau.

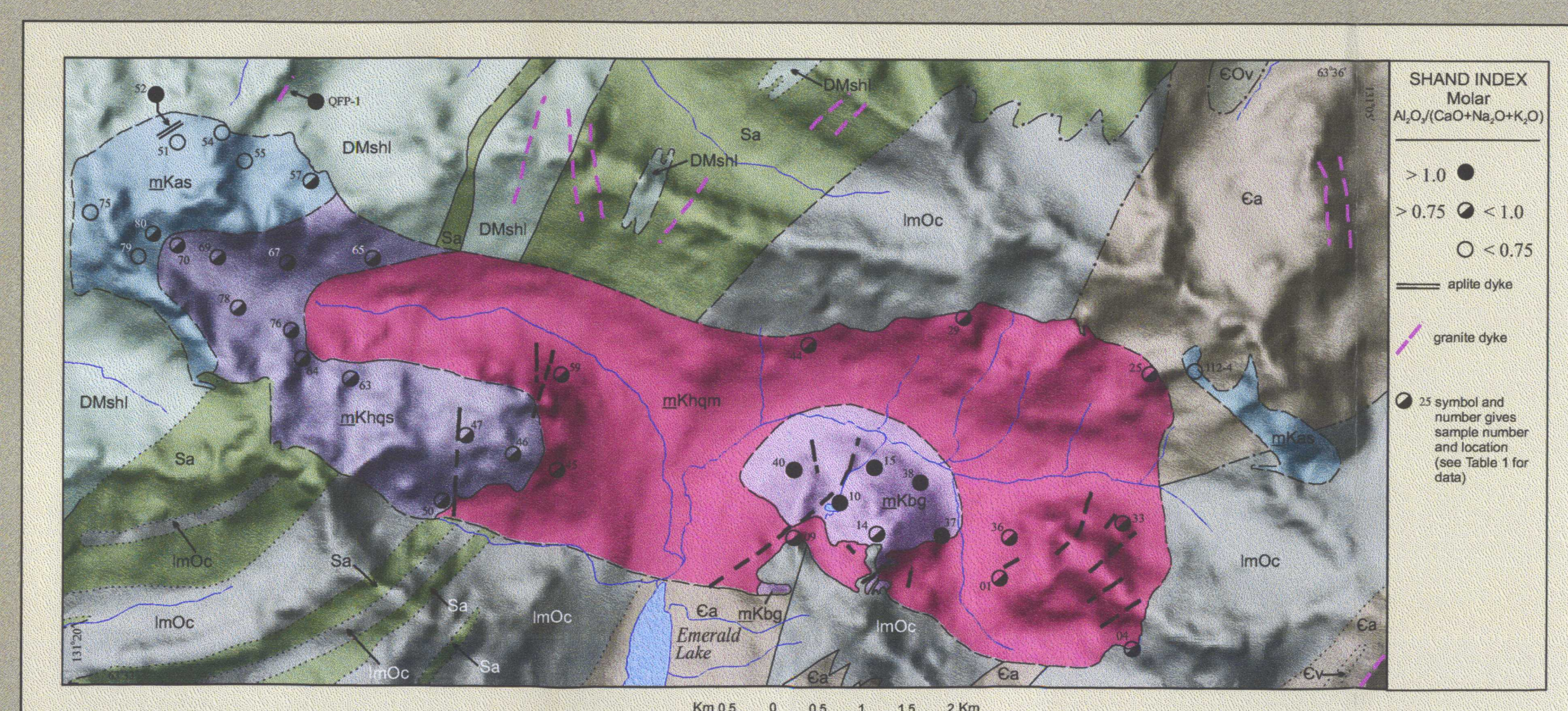


Figure 3. Shand Index (Carmichael, Turner, and Verbeek, 1974) values for Emerald Lake Plateau.

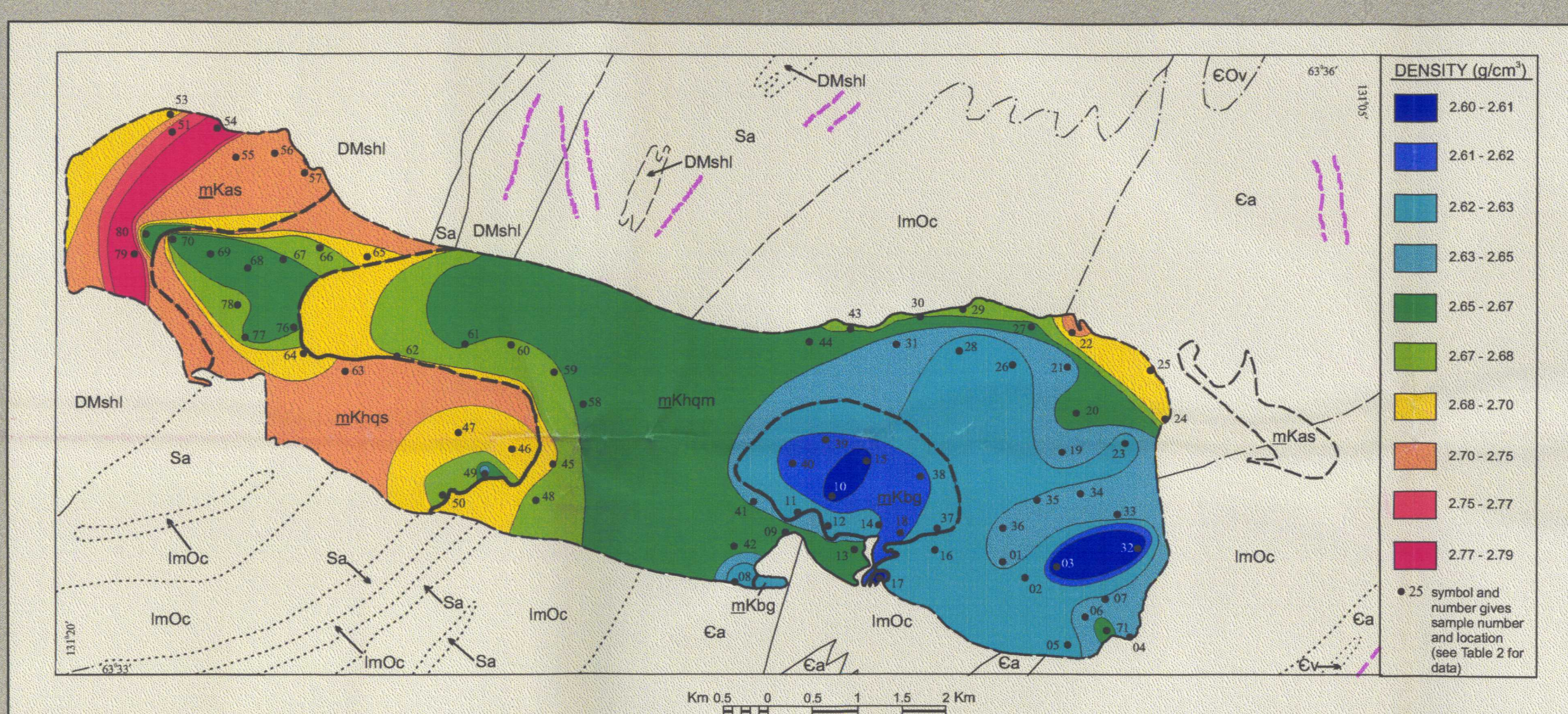


Figure 4. Contoured density values for Emerald Lake Plateau. Data has been contoured according to the following rules: contours may end at the boundaries of the intrusion and at the boundaries of interpreted younger phases.

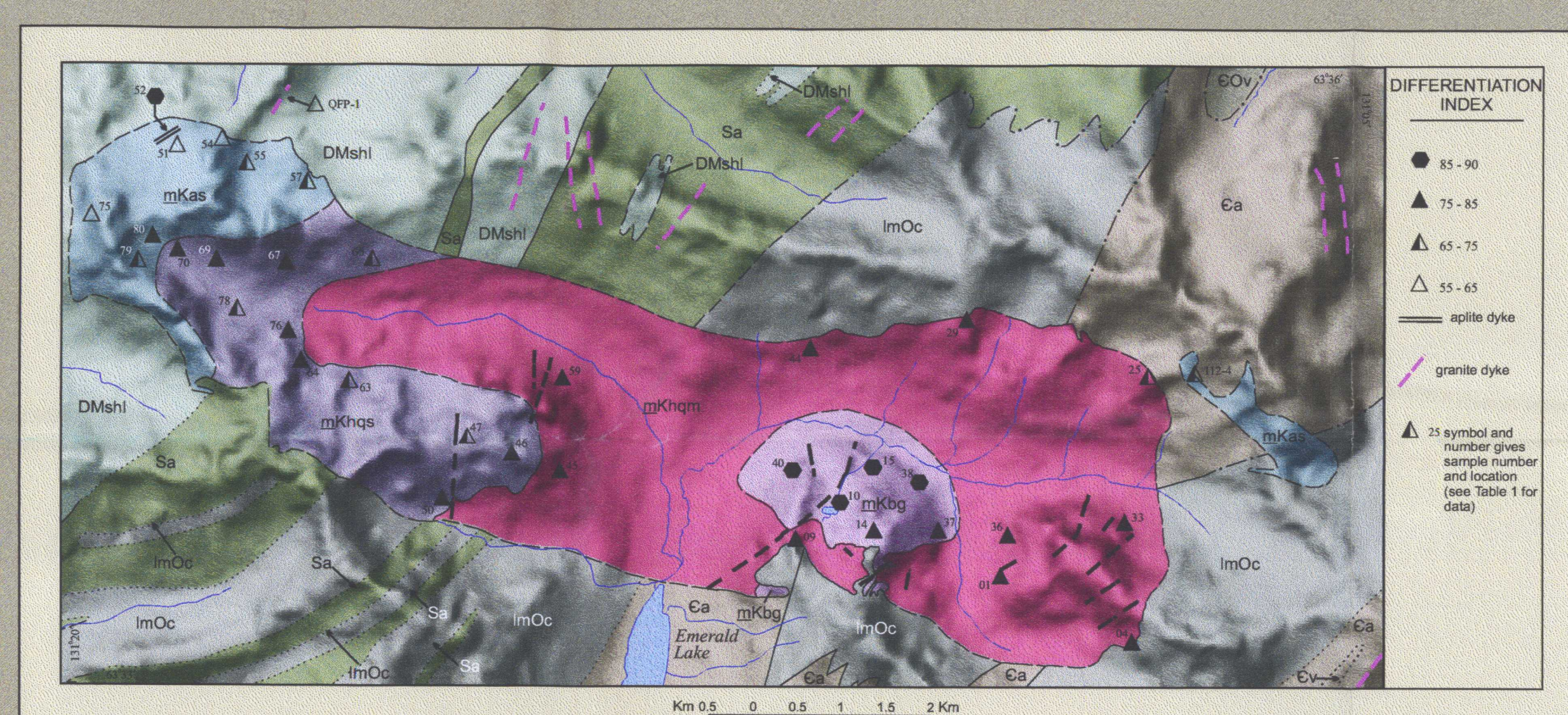


Figure 5. Differentiation Index (Thornon and Tuttle, 1969) values for Emerald Lake Plateau.

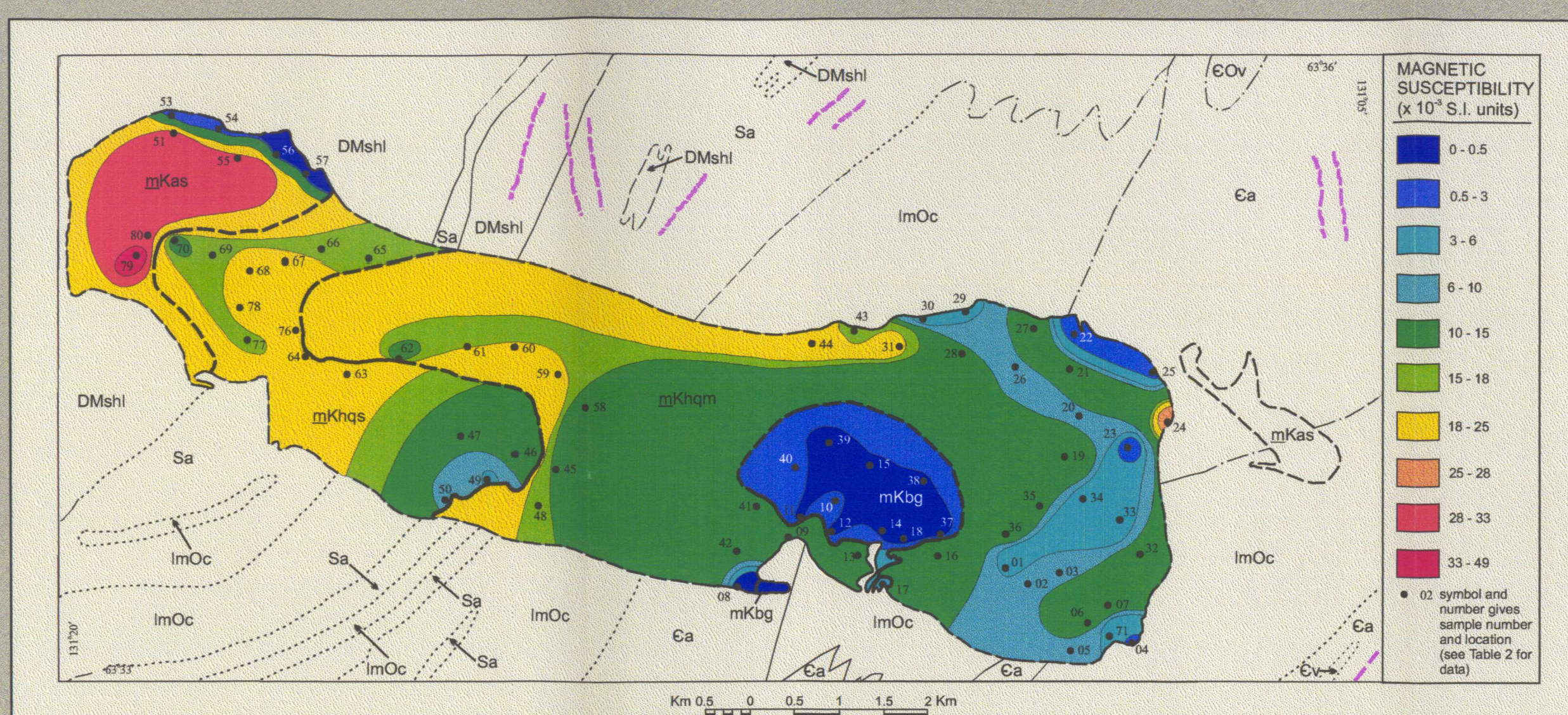


Figure 6. Contoured magnetic susceptibility values for Emerald Lake Plateau. Data has been contoured according to the same rules followed in contouring density data.

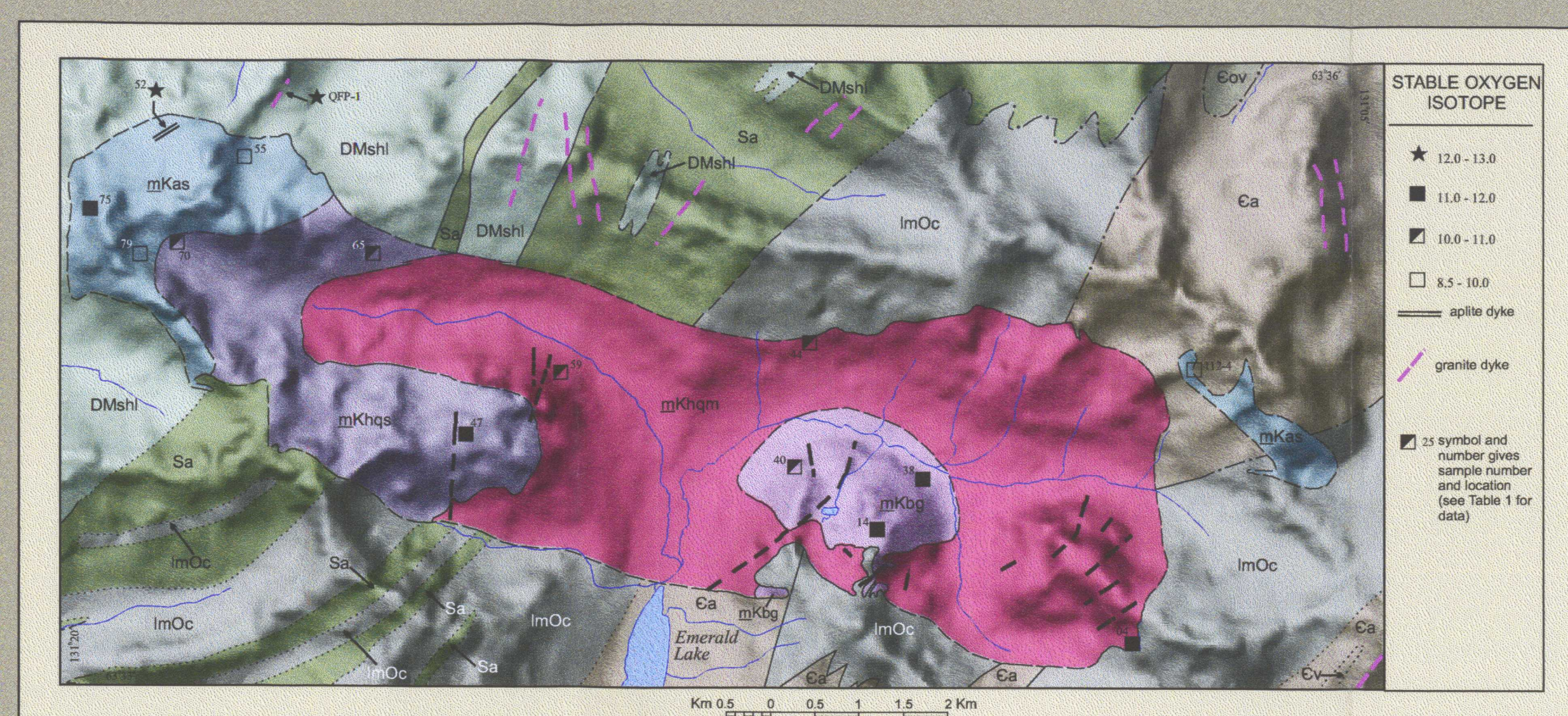


Figure 7. Whole rock stable oxygen isotope values for Emerald Lake Plateau.

Table 1. Geochemical and stable oxygen isotope data for Emerald Lake Plateau.

Sample No.	UTM Easting (m)	UTM Northing (m)	Rock	SiO <sub>2</sub>	TiO <sub>2</sub>	Al <sub>2</sub> O <sub>3</sub>	FeO	MgO	MnO	CaO	Na <sub>2</sub> O	K <sub>2</sub> O	Total	SiO <sub>2</sub>	FeO	CaO	Na <sub>2</sub> O	K <sub>2</sub> O	Si	Al	Ca	Na	K	Σ	δ <sup>18</sup> O
81	389132	700000	gphn	57.24	0.08	15.80	2.30	0.30	0.00	1.54	0.00	0.00	75.96	57.24	0.00	1.54	0.00	0.00	1.54	0.00	0.00	0.00	0.00	0.00	-0.1
82	389132	700000	gphn	57.24	0.08	15.80	2.30	0.30	0.00	1.54	0.00	0.00	75.96	57.24	0.00	1.54	0.00	0.00	1.54	0.00	0.00	0.00	0.00	0.00	-0.1
83	389132	700000	gphn	57.24	0.08	15.80	2.30	0.30	0.00	1.54	0.00	0.00	75.96	57.24	0.00	1.54	0.00	0.00	1.54	0.00	0.00	0.00	0.00	0.00	-0.1
84	389132	700000	gphn	57.24	0.08	15.80	2.30	0.30	0.00	1.54	0.00	0.00	75.96	57.24	0.00	1.54	0.00	0.00	1.54	0.00	0.00	0.00	0.00	0.00	-0.1
85	389132	700000	gphn	57.24	0.08	15.80	2.30	0.30	0.00	1.54	0.00	0.00	75.96	57.24	0.00	1.54	0.00	0.00	1.54	0.00	0.00	0.00	0.00	0.00	-0.1
86	389132	700000	gphn	57.24	0.08	15.80	2.30	0.30	0.00	1.54	0.00	0.00	75.96	57.24	0.00	1.54	0.00	0.00	1.54	0.00	0.00	0.00	0.00	0.00	-0.1
87	389132	700000	gphn	57.24	0.08	15.80	2.30	0.30	0.00	1.54	0.00	0.00	75.96	57.24	0.00	1.54	0.00	0.00	1.54	0.00	0.00	0.00	0.00	0.00	-0.1
88	389132	700000	gphn	57.24	0.08	15.80	2.30	0.30	0.00	1.54	0.00	0.00	75.96	57.24	0.00	1.54	0.00	0.00	1.54	0.00	0.00	0.00	0.00	0.00	-0.1
89	389132	700000	gphn	57.24	0.08	15.80	2.30	0.30	0.00	1.54	0.00	0.00	75.96	57.24	0.00	1.54	0.00	0.00	1.54	0.00	0.00	0.00	0.00	0.00	-0.1
90	389132	700000	gphn	57.24	0.08	15.80	2.30	0.30	0.00	1.54	0.00	0.00	75.96	57.24	0.00	1.54	0.00	0.00	1.54	0.00	0.00	0.00	0.00	0.00	-0.1
91	389132	700000	gphn	57.24	0.08	15.80	2.30	0.30	0.00	1.54	0.00	0.00	75.96	57.24	0.00	1.54	0.00	0.00	1.54	0.00	0.00	0.00	0.00	0.00	-0.1
92	389132	700000	gphn	57.24	0.08	15.80	2.30	0.30	0.00	1.54	0.00	0.00	75.96	57.24	0.00	1.54	0.00	0.00	1.54	0.00	0.00	0.00	0.00	0.00	-0.1
93	389132	700000	gphn	57.24	0.08	15.80	2.30	0.30	0.00	1.54	0.00	0.00	75.96	57.24	0.00	1.54	0.00	0.00	1.54	0.00	0.00	0.00	0.00	0.00	-0.1
94	389132	700000	gphn	57.24	0.08	15.80	2.30	0.30	0.00	1.54	0.00	0.00	75.96	57.24	0.00	1.54	0.00	0.00	1.54	0.00	0.00	0.00	0.00	0.00	-0.1
95	389132	700000	gphn	57.24	0.08	15.80	2.30	0.30	0.00	1.54	0.00	0.00	75.96	57.24	0.00	1.54	0.00	0.00	1.54	0.00	0.00	0.00	0.00	0.00	-0.1
96	389132	700000	gphn	57.24	0.08	15.80	2.30	0.30	0.00	1.54	0.00	0.00	75.96	57.24	0.00	1.54	0.00	0.00	1.54	0.00	0.00	0.00	0.00	0.00	-0.1
97	389132	700000	gphn	57.24	0.08	15.80	2.30	0.30	0.00	1.54	0.00	0.00	75.96	57.24	0.00	1.54	0.00	0.00	1.54	0.00	0.00	0.00	0.00	0.00	-0.1
98	389132	700000	gphn	57.24	0.08	15.80	2.30	0.30	0.00	1.54	0.00	0.00	75.96	57.24	0.00	1.54	0.00	0.00	1.54	0.00	0.00	0.00	0.00	0.00	-0.1
99	389132	700000	gphn	57.24	0.08	15.80	2.30	0.30	0.00	1.54	0.00	0.00	75.96	57.24	0.00	1.54	0.00	0.00	1.54	0.00	0.00	0.00	0.00	0.00	-0.1
100	389132	700000	gphn	57.24	0.08	15.80	2.30	0.30	0.00	1.54	0.00	0.00	75.96	57.24	0.00	1.54	0.00	0.00	1.54	0.00	0.00	0.00	0.00	0.00	-0.1

Table 2. Physical property data for Emerald Lake Plateau.

Sample No.	UTM Easting (m)	UTM Northing (m)	Rock	Density (g/cm <sup>3</sup> )	Magnetic Susceptibility (SI)
81	389132	700000	gphn	2.64	0.00
82	389132	700000	gphn	2.64	0.00
83	389132	700000	gphn	2.64	0.00
84	389132	700000	gphn	2.64	0.00
85	389132	700000	gphn	2.64	0.00
86	389132	700000	gphn	2.64	0.00
87	389132	700000	gphn	2.64	0.00
88	389132	700000	gphn	2.64	0.00
89	389132	700000	gphn	2.64	0.00
90	389132	700000	gphn	2.64	0.00
91	389132	700000	gphn	2.64	0.00
92	389132	700000	gphn	2.64	0.00
93	389132	700000	gphn	2.64	0.00
94	389132	700000	gphn	2.64	0.00
95	389132	700000	gphn	2.64	0.00
96	389132	700000	gphn	2.64	0.00
97	389132	700000	gphn	2.64	0.00
98	389132	700000	gphn	2.64	0.00
99	389132	700000	gphn	2.64	0.00
100	389132	700000	gphn	2.64	0.00

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**Marginal Notes**

Veins along the southern contact are structurally concordant with aplite and pegmatite dykes (Fig. 2). They contain microcline, pyrite, chlorite, arsenopyrite, hematite, and albite. Alteration is sparse around veins and consists of narrow envelopes of sericite. Veins have sericite alteration envelopes and are rarely coated with quartz. Within the biotite granite, joints are coated with muscovite, hematite, and barite. The wall rock is otherwise unaltered.

Along the western margin of the intrusion, north-trending veins and dykes have dips to the east (Fig. 2). Aplite dykes occur as centimetric-scale bodies. Joint surfaces are coated with chlorite, hornblende, tourmaline, chalcopyrite, pyrite, and pyrrhotite. Chlorite alteration extends into the wall rock for 1-2 cm. Pegmatites and veins also trend north and dip to the east but are otherwise similar to those along the southern margin. Microcline cavities in the western margin reach centimetric-scale sizes and contain quartz and scholite crystals.

Density and magnetic susceptibility and whole-rock chemical compositions of the different phases of Emerald Lake Plateau are summarized in Tables 1 and 2, and are contoured data superimposed on the geological map (Figs. 3, 4). Contouring has been implemented in a geographical tool to aid in the visualization of physical properties data and although subjective and non-unique, represents one valid interpretation of the data.

Each phase has a distinct average density value, however, there is overlap in the range of values between the different phases (Table 2). Contouring shows a general decreasing trend in density from west to east commensurate with the relative mafic to felsic composition and emplacement of the intrusion (Fig. 3). The density contrast primarily derives from differences in mineralogy. Two contoured zones of 2.60-2.61 g/cm<sup>3</sup> (Fig. 3) correspond to areas which have faults, and may result from a decrease in density due to the presence of microfractures in the mafic phase, microcline cavities, the partial alteration of K-feldspar, plagioclase, and/or amphibole to less dense feldspar, carbonate, and plagioclase minerals.

Magnetic susceptibility (MS) is contoured according to the same rules as density data (Fig. 4). Each intrusion phase has a characteristic average MS value, but there is significant overlap in the range of values present in each phase (Table 2). The same general trends found in the density data in the MS data are observed in the MS data. Alteration is sparse around veins and consists of narrow envelopes of sericite. Veins have sericite alteration envelopes and are rarely coated with quartz. Within the biotite granite, joints are coated with muscovite, hematite, and barite. The wall rock is otherwise unaltered.

Stable oxygen isotope data reveal a general increasing trend from 8.5‰ in the aegirine syenite to 13‰ in the biotite granite (Fig. 7). Anomalous samples from all phases are those that have heavier oxygen isotope values (11-12‰) compared with other samples from the same phase. These appear to be located near faults (Fig. 7), where the rocks were likely affected by the influx of isotopically heavier meteoric fluids from the country rocks.

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**Table 3. Mineral occurrences for the Emerald Lake Plateau (NTS 105 011)**

Mineral No.	Name	Status	UTM Easting	UTM Northing	UTM Easting	UTM Northing	UTM Easting	UTM Northing	Deposit Class	Chain Name	Commodities	Significant Minerals	Associated Minerals
1	Emerald	Prospect	384530	701510	384530	701510	384530	701510	Ignition/Yen	MY	silver/gold/bismuth/copper/manganese/zinc	silver/gold/bismuth/copper/manganese/zinc	pyrite/arsenopyrite/antimony/arsenic
2	North	Prospect	384530	701510	384530	701510	384530	701510	Ignition/Yen	MY	silver/gold/bismuth/copper/manganese/zinc	silver/gold/bismuth/copper/manganese/zinc	pyrite/arsenopyrite/antimony/arsenic
3	East	Prospect	384530	701510	384530	701510	384530	701510	Ignition/Yen	MY	silver/gold/bismuth/copper/manganese/zinc	silver/gold/bismuth/copper/manganese/zinc	pyrite/arsenopyrite/antimony/arsenic
4	West	Prospect	384530	701510	384530	701510	384530	701510	Ignition/Yen	MY	silver/gold/bismuth/copper/manganese/zinc	silver/gold/bismuth/copper/manganese/zinc	pyrite/arsenopyrite/antimony/arsenic
5	Central	Prospect	384530	701510	384530	701510	384530	701510	Ignition/Yen	MY	silver/gold/bismuth/copper/manganese/zinc	silver/gold/bismuth/copper/manganese/zinc	pyrite/arsenopyrite/antimony/arsenic

\* Most sections showing biotite obtained from assessment reports.