|  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **Appendix 1** | Bulk | Geochemistry |   |  |  |  |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| **Paleosol** | **Depth** | **Ag** | **Al** | **Al2O3** | **As** | **Ba** | **Be** | **Bi** | **Ca** | **CaO** | **Cd** | **Ce** | **Co** |
| **PTK A** | **cm** | **ppm** | **%** | **wt%** | **ppm** | **ppm** | **ppm** | **ppm** | **%** | **wt%** | **ppm** | **ppm** | **ppm** |
| PTK A 0-5 | -2.5 | 0.13 | 5.19 | 9.81 | 1.5 | 880 | 6.26 | 0.1 | 3.79 | 5.30 | 0.24 | 309 | 16.8 |
| PTK A 5-10 | -7.5 | 0.13 | 5.34 | 10.09 | 1.7 | 740 | 7.39 | 0.11 | 2.77 | 3.88 | 0.28 | 229 | 13.2 |
| PTK A 10-15 | -12.5 | 0.1 | 5.54 | 10.47 | 1.5 | 1060 | 8.27 | 0.11 | 0.97 | 1.36 | 0.13 | 466 | 9.1 |
| PTK A 15-20 | -17.5 | 0.12 | 5.52 | 10.43 | 1.5 | 630 | 8.5 | 0.12 | 1.04 | 1.46 | 0.12 | 235 | 8.8 |
| PTK A 20-25 | -22.5 | 0.12 | 5.32 | 10.05 | 1.6 | 730 | 8.59 | 0.13 | 0.8 | 1.12 | 0.06 | 301 | 8.2 |
| PTK A 25-30 | -27.5 | 0.12 | 5 | 9.45 | 1.6 | 670 | 7.37 | 0.1 | 2.87 | 4.02 | 0.5 | 224 | 6.7 |
| PTK A 30-35 | -32.5 | 0.07 | 5.12 | 9.67 | 1.6 | 560 | 6.87 | 0.1 | 0.52 | 0.73 | 0.08 | 169 | 5.7 |
| Sums |  | 0.79 | 37.03 | 69.97 | 11 | 5270 | 53.25 | 0.77 | 12.76 | 17.85 | 1.41 | 1933 | 68.5 |
| **Means** |  | **0.11** | **5.29** | **10.00** | **1.6** | **753** | **7.61** | **0.11** | **1.82** | **2.55** | **0.20** | **276** | **9.8** |
|  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| **Cr** | **Cs** | **Cu** | **Fe** | **Fe2O3** | **Ga** | **Ge** | **Hf** | **In** | **K** | **K2O** | **La** | **Li** | **Mg** |
| **ppm** | **ppm** | **ppm** | **%** | **wt%** | **ppm** | **ppm** | **ppm** | **ppm** | **%** | **wt%** | **ppm** | **ppm** | **%** |
| 59 | 3.23 | 44.4 | 6.29 | 8.99 | 20.5 | 0.23 | 9.6 | 0.098 | 2.14 | 2.58 | 145 | 42.4 | 2.37 |
| 42 | 3.67 | 49.2 | 4.94 | 7.06 | 19.9 | 0.22 | 9.4 | 0.091 | 2.16 | 2.60 | 116 | 56.3 | 2.74 |
| 35 | 3.8 | 41 | 3.91 | 5.59 | 21 | 0.23 | 9.9 | 0.083 | 2.38 | 2.87 | 136 | 61.8 | 2.77 |
| 35 | 3.79 | 39.4 | 4 | 5.72 | 21.7 | 0.21 | 10.8 | 0.09 | 2.33 | 2.81 | 119.5 | 69.1 | 2.69 |
| 34 | 3.69 | 41.9 | 3.99 | 5.70 | 23 | 0.23 | 10.5 | 0.081 | 2.15 | 2.59 | 153 | 74.7 | 2.76 |
| 25 | 3.13 | 41.7 | 3.59 | 5.13 | 21.2 | 0.23 | 8.8 | 0.077 | 1.83 | 2.20 | 124.5 | 66.1 | 2.84 |
| 20 | 2.17 | 39.9 | 3.52 | 5.03 | 20.1 | 0.21 | 10.6 | 0.097 | 1.82 | 2.19 | 122 | 62.4 | 3.15 |
| 250 | 23.48 | 297.5 | 30.24 | 43.24 | 147.4 | 1.56 | 69.6 | 0.617 | 14.81 | 17.84 | 916 | 432.8 | 19.32 |
| **36** | **3.35** | **42.5** | **4.32** | **6.18** | **21.1** | **0.22** | **9.9** | **0.088** | **2.12** | **2.55** | **131** | **61.8** | **2.76** |
|  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| **MgO** | **Mn** | **MnO** | **Mo** | **Na** | **Na2O** | **Nb** | **Ni** | **P** | **P2O5** | **Pb** | **Rb** | **S** | **Sb** |
| **wt%** | **ppm** | **wt%** | **ppm** | **%** | **wt%** | **ppm** | **ppm** | **ppm** | **wt%** | **ppm** | **ppm** | **%** | **ppm** |
| 3.93 | 1520 | 0.196 | 1.44 | 3.3 | 4.45 | 205 | 26.6 | 3500 | 0.802 | 15.3 | 86.2 | 0.07 | 0.59 |
| 4.54 | 1250 | 0.161 | 1.5 | 3.62 | 4.88 | 172.5 | 28.2 | 1800 | 0.412 | 15.2 | 109 | 0.08 | 0.52 |
| 4.59 | 1020 | 0.132 | 1.45 | 3.8 | 5.12 | 173.5 | 24.1 | 900 | 0.206 | 13.8 | 125.5 | 0.08 | 0.48 |
| 4.46 | 1030 | 0.133 | 1.59 | 3.75 | 5.05 | 180 | 26.1 | 960 | 0.220 | 14.2 | 109.5 | 0.08 | 0.46 |
| 4.58 | 1040 | 0.134 | 1.59 | 3.66 | 4.93 | 164.5 | 25.1 | 910 | 0.209 | 14.6 | 106 | 0.08 | 0.45 |
| 4.71 | 1040 | 0.134 | 1.57 | 3.61 | 4.87 | 136 | 24.3 | 690 | 0.158 | 13.4 | 80.9 | 0.07 | 0.41 |
| 5.22 | 929 | 0.120 | 2.67 | 4.4 | 5.93 | 135.5 | 18.6 | 410 | 0.094 | 12.2 | 67.2 | 0.14 | 0.39 |
| 32.04 | 7829 | 1.011 | 11.81 | 26.14 | 35.24 | 1167 | 173 | 9170 | 2.101 | 98.7 | 684.3 | 0.6 | 3.3 |
| **4.58** | **1118** | **0.144** | **1.69** | **3.73** | **5.03** | **166.7** | **24.7** | **1310** | **0.300** | **14.1** | **97.8** | **0.09** | **0.47** |
|  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| **Sc** | **Se** | **Sn** | **Sr** | **Ta** | **Th** | **Ti** | **TiO2** | **Tl** | **U** | **V** | **W** | **Y** | **Zn** |
| **ppm** | **ppm** | **ppm** | **ppm** | **ppm** | **ppm** | **%** | **wt%** | **ppm** | **ppm** | **ppm** | **ppm** | **ppm** | **ppm** |
| 9 | 3 | 3.1 | 1240 | 8.36 | 28 | 1.21 | 2.01 | 0.32 | 2.5 | 224 | 1.8 | 49.5 | 133 |
| 7.4 | 3 | 3.2 | 491 | 7.12 | 25.7 | 0.75 | 1.25 | 0.31 | 2.3 | 157 | 1.8 | 40.6 | 131 |
| 5.7 | 3 | 3.5 | 644 | 6.85 | 23.2 | 0.50 | 0.83 | 0.29 | 2.1 | 125 | 1.8 | 59.5 | 134 |
| 5.3 | 2 | 3.5 | 325 | 7.22 | 18.2 | 0.51 | 0.84 | 0.26 | 2 | 130 | 1.6 | 35.9 | 131 |
| 5 | 3 | 3.6 | 390 | 7.39 | 19.6 | 0.46 | 0.77 | 0.23 | 1.9 | 159 | 1.5 | 43.5 | 131 |
| 4.2 | 2 | 3.6 | 501 | 6.86 | 15.6 | 0.41 | 0.68 | 0.22 | 1.4 | 123 | 1.4 | 36.8 | 127 |
| 3.6 | 2 | 4.2 | 276 | 8.23 | 11.1 | 0.30 | 0.50 | 0.36 | 1.5 | 118 | 1.8 | 36 | 139 |
| 40.2 | 18 | 24.7 | 3867 | 52.03 | 141.4 | 4.12 | 6.88 | 1.99 | 13.7 | 1036 | 11.7 | 301.8 | 926 |
| 5.7 | 2.6 | 3.5 | 552 | 7.43 | 20.2 | 0.59 | 0.98 | 0.28 | 2.0 | 148 | 1.7 | 43.1 | 132 |
|  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| **Paleosol** | **Zr** | **SiO2** | **Depth** |  |  |  |  |  |  |  |  |  |  |
| **PTK A** | **ppm** | **wt%** | **cm** |  |  |  |  |  |  |  |  |  |  |
| PTK A 0-5 | 447 | 61.48 | -2.5 |  |  |  |  |  |  |  |  |  |  |
| PTK A 5-10 | 418 | 64.77 | -7.5 |  |  |  |  |  |  |  |  |  |  |
| PTK A 10-15 | 430 | 68.41 | -12.5 |  |  |  |  |  |  |  |  |  |  |
| PTK A 15-20 | 423 | 68.56 | -17.5 |  |  |  |  |  |  |  |  |  |  |
| PTK A 20-25 | 404 | 69.57 | -22.5 |  |  |  |  |  |  |  |  |  |  |
| PTK A 25-30 | 339 | 68.34 | -27.5 |  |  |  |  |  |  |  |  |  |  |
| PTK A 30-35 | 358 | 70.16 | -32.5 |  |  |  |  |  |  |  |  |  |  |
| Sums | 2819 | 471.30 |  |  |  |  |  |  |  |  |  |  |  |
| **Means** | **403** | **67.33** |  |  |  |  |  |  |  |  |  |  |  |

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **Paleosol** | **Depth** | **Ag** | **Al** | **Al2O3** | **As** | **Ba** | **Be** | **Bi** | **Ca** | **CaO** | **Cd** | **Ce** | **Co** |
| **PTK B** | **cm** | **ppm** | **%** | **wt%** | **ppm** | **ppm** | **ppm** | **ppm** | **%** | **wt%** | **ppm** | **ppm** | **ppm** |
| PTK B 0-5 | -2.5 | 0.11 | 4.75 | 8.97 | 1.4 | 550 | 8.65 | 0.1 | 3.2 | 4.48 | 0.31 | 197 | 10.9 |
| PTK B 5-10 | -7.5 | 0.12 | 4.69 | 8.86 | 2.3 | 480 | 8.03 | 0.08 | 2.34 | 3.27 | 0.2 | 165.5 | 11.1 |
| PTK B 10-15 | -12.5 | 0.11 | 5.07 | 9.58 | 2.1 | 480 | 8.79 | 0.11 | 1.54 | 2.15 | 0.1 | 153 | 14.3 |
| PTK B 15-20 | -17.5 | 0.12 | 5.13 | 9.69 | 2.6 | 490 | 8.42 | 0.12 | 1.38 | 1.93 | 0.09 | 122 | 12.7 |
| PTK B 20-25 | -22.5 | 0.09 | 4.92 | 9.30 | 1.9 | 620 | 9.31 | 0.11 | 1.7 | 2.38 | 0.14 | 197.5 | 8.7 |
| PTK B 25-30 | -27.5 | 0.08 | 4.97 | 9.39 | 1 | 650 | 8.75 | 0.12 | 1.06 | 1.48 | 0.13 | 212 | 6.8 |
| PTK B 30-35 | -32.5 | 0.06 | 5.03 | 9.50 | 1.4 | 660 | 7.73 | 0.1 | 0.52 | 0.73 | 0.07 | 233 | 6.1 |
| Sums |  | 0.69 | 34.56 | 65.30 | 12.7 | 3930 | 59.68 | 0.74 | 11.74 | 16.43 | 1.04 | 1280 | 70.6 |
| **Means** |  | **0.10** | **4.94** | **9.33** | **1.8** | **561** | **8.53** | **0.11** | **1.68** | **2.35** | **0.15** | **183** | **10.1** |

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **Cr** | **Cs** | **Fe** | **Fe2O3** | **Ga** | **Ge** | **Hf** | **In** | **K** | **K2O** | **La** | **Li** | **Mg** | **MgO** |
| **ppm** | **ppm** | **%** | **wt%** | **ppm** | **ppm** | **ppm** | **ppm** | **%** | **wt%** | **ppm** | **ppm** | **%** | **wt%** |
| 34 | 3.62 | 3.97 | 5.68 | 19 | 0.22 | 9.1 | 0.079 | 2.01 | 2.42 | 99.2 | 54.4 | 3.12 | 5.17 |
| 40 | 3.32 | 3.95 | 5.65 | 18.05 | 0.22 | 8.8 | 0.077 | 1.87 | 2.25 | 102 | 50.5 | 3.01 | 4.99 |
| 45 | 3.3 | 4.47 | 6.39 | 19.6 | 0.2 | 9.7 | 0.081 | 1.94 | 2.34 | 91.7 | 50.9 | 3.27 | 5.42 |
| 40 | 3.46 | 4.33 | 6.19 | 19.15 | 0.15 | 9.6 | 0.091 | 2.04 | 2.46 | 62.6 | 53.5 | 3.33 | 5.52 |
| 26 | 3.73 | 3.72 | 5.32 | 19.25 | 0.16 | 9.5 | 0.085 | 2.12 | 2.55 | 74.9 | 70 | 3.93 | 6.52 |
| 20 | 3.76 | 3.46 | 4.95 | 19.85 | 0.17 | 9.5 | 0.075 | 2.02 | 2.43 | 88.5 | 72.9 | 3.7 | 6.14 |
| 21 | 2.96 | 3.57 | 5.10 | 20.3 | 0.23 | 10.6 | 0.09 | 1.95 | 2.35 | 143 | 64.2 | 3.6 | 5.97 |
| 226 | 24.15 | 27.47 | 39.27 | 135.2 | 1.35 | 66.8 | 0.578 | 13.95 | 16.80 | 661.9 | 416.4 | 23.96 | 39.73 |
| **32** | **3.45** | **3.92** | **5.61** | **19.3** | **0.19** | **9.5** | **0.083** | **1.99** | **2.40** | **95** | **59.5** | **3.42** | **5.68** |
|  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| **Mn** | **Mn** | **MnO** | **Mo** | **Na** | **Na2O** | **Nb** | **Ni** | **P** | **P2O5** | **Pb** | **Rb** | **S** | **Sb** |
| **ppm** | **%** | **wt%** | **ppm** | **%** | **wt%** | **ppm** | **ppm** | **ppm** | **wt%** | **ppm** | **ppm** | **%** | **ppm** |
| 707 | 0.0707 | 0.091 | 3.02 | 3.95 | 5.32 | 143 | 22.6 | 1540 | 0.353 | 11.4 | 112.5 | 0.16 | 0.56 |
| 677 | 0.0677 | 0.087 | 4.09 | 4.53 | 6.11 | 147.5 | 26 | 1780 | 0.408 | 10.9 | 100.5 | 0.23 | 0.56 |
| 768 | 0.0768 | 0.099 | 3.12 | 4.2 | 5.66 | 170 | 35.1 | 1210 | 0.277 | 12.1 | 104.5 | 0.16 | 0.59 |
| 814 | 0.0814 | 0.105 | 2.93 | 3.93 | 5.30 | 162 | 32.5 | 690 | 0.158 | 12.6 | 107.5 | 0.14 | 0.58 |
| 892 | 0.0892 | 0.115 | 1.99 | 3.76 | 5.07 | 168.5 | 22.7 | 530 | 0.121 | 12.6 | 115 | 0.11 | 0.48 |
| 955 | 0.0955 | 0.123 | 1.87 | 3.71 | 5.00 | 164.5 | 23 | 450 | 0.103 | 13.2 | 104 | 0.1 | 0.42 |
| 807 | 0.0807 | 0.104 | 2.97 | 4.26 | 5.74 | 147.5 | 19.7 | 440 | 0.101 | 12.8 | 87.3 | 0.15 | 0.45 |
| 5620 | 0.562 | 0.726 | 19.99 | 28.34 | 38.20 | 1103 | 181.6 | 6640 | 1.521 | 85.6 | 731.3 | 1.05 | 3.64 |
| **803** | **0.080** | **0.104** | **2.86** | **4.05** | **5.46** | **157.6** | **25.9** | **949** | 0.217 | **12.2** | **104.5** | **0.15** | **0.52** |
|  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| **Sc** | **Se** | **Sn** | **Sr** | **Ta** | **Th** | **Ti** | **TiO2** | **Tl** | **U** | **V** | **W** | **Y** | **Zn** |
| **ppm** | **ppm** | **ppm** | **ppm** | **ppm** | **ppm** | **%** | **wt%** | **ppm** | **ppm** | **ppm** | **ppm** | **ppm** | **ppm** |
| 6.5 | 3 | 3.1 | 624 | 5.73 | 36.2 | 0.53 | 0.89 | 0.18 | 2.9 | 130 | 1.5 | 57.7 | 126 |
| 6.4 | 3 | 2.9 | 446 | 5.57 | 34.8 | 0.54 | 0.90 | 0.18 | 2.8 | 132 | 1.7 | 58.9 | 121 |
| 7.9 | 3 | 3 | 310 | 6.01 | 25.6 | 0.63 | 1.06 | 0.2 | 2.2 | 156 | 1.4 | 46.6 | 136 |
| 7.3 | 2 | 3.1 | 267 | 5.89 | 15.9 | 0.58 | 0.96 | 0.21 | 2 | 130 | 1.4 | 25 | 137 |
| 4.8 | 2 | 3.3 | 772 | 6.43 | 13.8 | 0.44 | 0.73 | 0.23 | 1.7 | 100 | 1.4 | 27.1 | 133 |
| 4.1 | 2 | 3.5 | 500 | 6.83 | 13.7 | 0.36 | 0.60 | 0.24 | 1.6 | 102 | 1.6 | 27 | 125 |
| 3.9 | 3 | 3.9 | 382 | 7.83 | 16.1 | 0.34 | 0.57 | 0.19 | 1.8 | 103 | 1.6 | 37 | 133 |
| 40.9 | 18 | 22.8 | 3301 | 44.29 | 156.1 | 3.42 | 5.70 | 1.43 | 15 | 853 | 10.6 | 279.3 | 911 |
| **5.8** | **2.6** | **3.3** | **472** | **6.33** | **22.3** | **0.49** | **0.81** | **0.20** | **2.1** | **122** | **1.5** | **39.9** | **130** |

|  |  |  |
| --- | --- | --- |
| **Paleosol** | **Zr** | **SiO2** |
| **PTK B** | **ppm** | **wt%** |
| PTK B 0-5 | 471 | 66.20 |
| PTK B 5-10 | 466 | 67.01 |
| PTK B 10-15 | 497 | 66.63 |
| PTK B 15-20 | 465 | 67.33 |
| PTK B 20-25 | 406 | 67.52 |
| PTK B 25-30 | 365 | 69.44 |
| PTK B 30-35 | 378 | 69.45 |
| Sums | 3048 | 473.58 |
| **Means** | **435** | **67.65** |
|  |  |  |
| **Paleosol** | **Depth** | **Ag** | **Al** | **Al2O3** | **As** | **Ba** | **Be** | **Bi** | **Ca** | **CaO** | **Cd** | **Ce** | **Co** |
| **E 4** | **cm** | **ppm** | **%** | **wt%** | **ppm** | **ppm** | **ppm** | **ppm** | **%** | **wt%** | **ppm** | **ppm** | **ppm** |
| E4 0-3 | -1.5 | 0.06 | 5.54 | 10.47 | 1.1 | 600 | 12.6 | 0.07 | 0.39 | 0.55 | 0.17 | 161.5 | 8.5 |
| E4 3-6 | -4.5 | 0.04 | 5.4 | 10.20 | 1.5 | 550 | 13.45 | 0.09 | 0.61 | 0.85 | 0.22 | 187 | 8.4 |
| E4 6-9 | -7.5 | 0.03 | 5.8 | 10.96 | 1.4 | 440 | 13.8 | 0.09 | 0.3 | 0.42 | 0.09 | 159.5 | 6.4 |
| E4 9-12 | -10.5 | 0.05 | 5.67 | 10.71 | 1 | 690 | 13.95 | 0.11 | 0.28 | 0.39 | 0.14 | 205 | 6.4 |
| E4 12-15 | -13.5 | 0.04 | 5.52 | 10.43 | 1 | 660 | 13.4 | 0.11 | 0.28 | 0.39 | 0.1 | 190 | 6 |
| E4 15-18 | -16.5 | 0.04 | 5.6 | 10.58 | 1 | 510 | 10.4 | 0.09 | 0.37 | 0.52 | 0.13 | 181.5 | 5.3 |
| E4 18-21 | -19.5 | 0.06 | 5.71 | 10.79 | 0.8 | 480 | 8.19 | 0.1 | 0.53 | 0.74 | 0.1 | 256 | 5.1 |
| E4 21-24 | -22.5 | 0.06 | 5.98 | 11.30 | 0.8 | 500 | 7.6 | 0.1 | 0.52 | 0.73 | 0.1 | 212 | 5.6 |
| E4 24-27 | -25.5 | 0.07 | 5.92 | 11.19 | 1 | 510 | 6.76 | 0.11 | 0.53 | 0.74 | 0.09 | 244 | 5.7 |
| E4 27-30 | -28.5 | 0.07 | 6.02 | 11.37 | 1.1 | 520 | 6.27 | 0.1 | 0.6 | 0.84 | 0.12 | 228 | 6.2 |
| E4 30-33 | -31.5 | 0.06 | 6.34 | 11.98 | 0.7 | 520 | 5.59 | 0.1 | 0.91 | 1.27 | 0.09 | 206 | 7.3 |
| Sums |  | 0.58 | 63.5 | 119.98 | 11.4 | 5980 | 112.01 | 1.07 | 5.32 | 7.44 | 1.35 | 2230.5 | 70.9 |
| **Means** |  | **0.05** | **5.77** | **10.91** | **1.0** | **544** | **10.18** | **0.10** | **0.48** | **0.68** | **0.12** | **203** | **6.4** |

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **Cr** | **Cs** | **Cu** | **Fe** | **Fe2O3** | **Ga** | **Ge** | **Hf** | **In** | **K** | **K2O** | **La** | **Li** | **Mg** |
| **ppm** | **ppm** | **ppm** | **%** | **wt%** | **ppm** | **ppm** | **ppm** | **ppm** | **%** | **wt%** | **ppm** | **ppm** | **%** |
| 22 | 3.74 | 41.5 | 3.31 | 4.73 | 27.1 | 0.2 | 13.6 | 0.072 | 2.04 | 2.46 | 99.4 | 111 | 4.63 |
| 22 | 3.61 | 41.4 | 3.44 | 4.92 | 28.2 | 0.22 | 12.2 | 0.077 | 1.98 | 2.39 | 115 | 125 | 5.25 |
| 18 | 3.65 | 37.1 | 3.24 | 4.63 | 31.2 | 0.25 | 11.6 | 0.075 | 1.99 | 2.40 | 133.5 | 148.5 | 5.09 |
| 12 | 3.8 | 37.7 | 3.25 | 4.65 | 29.9 | 0.25 | 10.9 | 0.086 | 2 | 2.41 | 135 | 165.5 | 5.25 |
| 10 | 3.63 | 35 | 3.25 | 4.65 | 27.6 | 0.24 | 10.5 | 0.083 | 1.92 | 2.31 | 127 | 177.5 | 5.52 |
| 9 | 3.12 | 31.3 | 3.4 | 4.86 | 24.1 | 0.23 | 9 | 0.09 | 1.87 | 2.25 | 122.5 | 144 | 4.88 |
| 10 | 2.92 | 26 | 3.96 | 5.66 | 22.5 | 0.23 | 8.7 | 0.116 | 2.02 | 2.43 | 136.5 | 98.5 | 4.09 |
| 9 | 2.8 | 27.2 | 4.18 | 5.98 | 22.4 | 0.26 | 9.1 | 0.114 | 2.27 | 2.73 | 134.5 | 96.1 | 4.09 |
| 9 | 2.51 | 25.8 | 4.12 | 5.89 | 22.1 | 0.25 | 9 | 0.119 | 2.25 | 2.71 | 124 | 87.5 | 3.66 |
| 10 | 2.26 | 26.1 | 4.28 | 6.12 | 23.2 | 0.25 | 8.6 | 0.121 | 2.26 | 2.72 | 125 | 82.5 | 3.39 |
| 12 | 1.46 | 22.5 | 4.49 | 6.42 | 26 | 0.22 | 7.9 | 0.117 | 2.32 | 2.79 | 112 | 77.6 | 3.16 |
| 143 | 33.5 | 351.6 | 40.92 | 58.50 | 284.3 | 2.6 | 111.1 | 1.07 | 22.92 | 27.61 | 1364.4 | 1313.7 | 49.01 |
| **13** | **3.05** | **32.0** | **3.72** | **5.32** | **25.8** | **0.24** | **10.1** | **0.097** | **2.08** | **2.51** | **124.0** | **119.4** | **4.46** |
|  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| **MgO** | **Mn** | **Mn** | **MnO** | **Mo** | **Na** | **Na2O** | **Nb** | **Ni** | **P** | **P2O5** | **Pb** | **Rb** | **S** |
| **wt%** | **ppm** | **%** | **wt%** | **ppm** | **%** | **wt%** | **ppm** | **ppm** | **ppm** | **wt%** | **ppm** | **ppm** | **%** |
| 7.68 | 1600 | 0.16 | 0.207 | 0.25 | 2.79 | 3.76 | 243 | 24.7 | 340 | 0.078 | 9.9 | 151 | 0.01 |
| 8.71 | 1440 | 0.144 | 0.186 | 0.22 | 2.68 | 3.61 | 251 | 26 | 380 | 0.087 | 9.7 | 136.5 | 0.01 |
| 8.44 | 1130 | 0.113 | 0.146 | 0.29 | 2.73 | 3.68 | 185 | 26 | 330 | 0.076 | 8 | 114 | 0.005 |
| 8.71 | 2130 | 0.213 | 0.275 | 0.32 | 2.77 | 3.73 | 183.5 | 26.9 | 330 | 0.076 | 15 | 108.5 | 0.005 |
| 9.15 | 1960 | 0.196 | 0.253 | 0.27 | 2.88 | 3.88 | 175.5 | 26.2 | 310 | 0.071 | 15.8 | 103 | 0.005 |
| 8.09 | 1190 | 0.119 | 0.154 | 0.27 | 3.23 | 4.35 | 137.5 | 20.5 | 340 | 0.078 | 12.6 | 84.3 | 0.005 |
| 6.78 | 799 | 0.0799 | 1.032 | 0.4 | 3.47 | 4.68 | 123.5 | 15.7 | 380 | 0.087 | 11.6 | 78 | 0.005 |
| 6.78 | 819 | 0.0819 | 0.106 | 0.44 | 3.56 | 4.80 | 152.5 | 16.3 | 370 | 0.085 | 13.8 | 82.2 | 0.005 |
| 6.07 | 794 | 0.0794 | 0.103 | 0.45 | 3.5 | 4.72 | 142 | 15.8 | 360 | 0.082 | 14.6 | 78.2 | 0.005 |
| 5.62 | 795 | 0.0795 | 0.103 | 0.63 | 3.55 | 4.79 | 129 | 15.8 | 370 | 0.085 | 15.5 | 74.3 | 0.005 |
| 5.24 | 766 | 0.0766 | 0.099 | 0.62 | 3.62 | 4.88 | 127 | 15.5 | 460 | 0.105 | 13.6 | 58.6 | 0.005 |
| 81.27 | 13423 | 2.0614 | 2.662 | 4.16 | 34.78 | 46.88 | 1849.5 | 229.4 | 3970 | 0.910 | 140.1 | 1068.6 | 0.065 |
| **7.39** | **1220** | **0.122** | **0.158** | **0.38** | **3.16** | **4.262** | **168.1** | **20.9** | **361** | **0.083** | **12.7** | **97.1** | **0.006** |

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **Sb** | **Sc** | **Se** | **Sn** | **Sr** | **Ta** | **Th** | **Ti** | **TiO2** | **Tl** | **U** | **V** | **W** | **Y** |
| **ppm** | **ppm** | **ppm** | **ppm** | **ppm** | **ppm** | **ppm** | **%** | **wt%** | **ppm** | **ppm** | **ppm** | **ppm** | **ppm** |
| 0.3 | 5.1 | 2 | 2.8 | 292 | 5.91 | 19.1 | 0.41 | 0.69 | 0.26 | 0.9 | 47 | 2.6 | 30.9 |
| 0.53 | 5.2 | 2 | 3 | 449 | 6.2 | 18.3 | 0.42 | 0.70 | 0.2 | 0.9 | 48 | 2.8 | 46.3 |
| 0.3 | 5.1 | 2 | 3.7 | 281 | 7.08 | 21.3 | 0.33 | 0.56 | 0.16 | 0.9 | 45 | 1.8 | 42.7 |
| 0.29 | 4.4 | 3 | 3.9 | 267 | 7.84 | 22 | 0.31 | 0.51 | 0.17 | 0.9 | 57 | 2.1 | 47.1 |
| 0.27 | 4.2 | 3 | 4 | 212 | 8.17 | 22.7 | 0.31 | 0.51 | 0.15 | 0.9 | 53 | 1.8 | 36.6 |
| 0.23 | 3.6 | 2 | 4.2 | 193 | 8.39 | 24.5 | 0.30 | 0.50 | 0.17 | 0.7 | 66 | 1 | 26.4 |
| 0.17 | 3.5 | 2 | 5 | 211 | 10.3 | 28.4 | 0.34 | 0.56 | 0.16 | 0.6 | 51 | 0.6 | 31.1 |
| 0.2 | 3.6 | 2 | 5.3 | 183 | 11.25 | 27.6 | 0.34 | 0.57 | 0.18 | 0.7 | 56 | 0.6 | 25.4 |
| 0.18 | 3.5 | 2 | 5.3 | 175.5 | 11.75 | 26.6 | 0.33 | 0.55 | 0.18 | 0.6 | 57 | 0.6 | 26.5 |
| 0.2 | 3.6 | 2 | 5.3 | 179 | 11.35 | 26.3 | 0.33 | 0.55 | 0.17 | 0.6 | 51 | 0.6 | 24.6 |
| 0.21 | 4.3 | 2 | 5.2 | 228 | 10.4 | 22.3 | 0.40 | 0.67 | 0.12 | 0.6 | 63 | 0.6 | 26.3 |
| 2.88 | 46.1 | 24 | 47.7 | 2670.5 | 98.64 | 259.1 | 3.82 | 6.37 | 1.92 | 8.3 | 594 | 15.1 | 363.9 |
| **0.26** | **4.2** | **2.2** | **4.3** | **243** | **8.97** | **23.6** | **0.35** | **0.58** | **0.17** | **0.8** | **54** | **1.4** | **33.1** |
|  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| **Zn** | **Zr** | **SiO2** | **Paleosol** |  |  |  |  |  |  |  |  |  |  |
| **ppm** | **ppm** | **wt%** | **E 4** |  |  |  |  |  |  |  |  |  |  |
| 152 | 498 | 69.14 | E4 0-3 |  |  |  |  |  |  |  |  |  |  |
| 150 | 458 | 68.09 | E4 3-6 |  |  |  |  |  |  |  |  |  |  |
| 133 | 441 | 68.48 | E4 6-9 |  |  |  |  |  |  |  |  |  |  |
| 133 | 421 | 68.29 | E4 9-12 |  |  |  |  |  |  |  |  |  |  |
| 138 | 391 | 68.12 | E4 12-15 |  |  |  |  |  |  |  |  |  |  |
| 139 | 339 | 68.41 | E4 15-18 |  |  |  |  |  |  |  |  |  |  |
| 141 | 321 | 67.04 | E4 18-21 |  |  |  |  |  |  |  |  |  |  |
| 151 | 344 | 66.72 | E4 21-24 |  |  |  |  |  |  |  |  |  |  |
| 142 | 322 | 67.76 | E4 24-27 |  |  |  |  |  |  |  |  |  |  |
| 144 | 312 | 67.61 | E4 27-30 |  |  |  |  |  |  |  |  |  |  |
| 143 | 284 | 66.36 | E4 30-33 |  |  |  |  |  |  |  |  |  |  |
| 1566 | 4131 | 746.02 | Sums |  |  |  |  |  |  |  |  |  |  |
| **142** | **376** | **67.82** | **Means** |  |  |  |  |  |  |  |  |  |  |

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **Paleosol** | **Depth** | **Ag** | **Al** | **Al2O3** | **As** | **Ba** | **Be** | **Bi** | **Ca** | **CaO** | **Cd** | **Ce** | **Co** |
| **FLK** | **cm** | **ppm** | **%** | **wt%** | **ppm** | **ppm** | **ppm** | **ppm** | **%** | **wt%** | **ppm** | **ppm** | **ppm** |
| FLK 0-3 | -1.5 | 0.19 | 5.24 | 9.90 | 1.4 | 860 | 8.21 | 0.13 | 1.38 | 1.93 | 0.38 | 101.5 | 15 |
| FLK 3-5 | -4 | 0.16 | 5.03 | 9.50 | 1.5 | 630 | 8.17 | 0.14 | 1.36 | 1.90 | 0.34 | 100.5 | 14.7 |
| FLK 5-7 | -6 | 0.11 | 4.96 | 9.37 | 1.5 | 620 | 8.06 | 0.12 | 0.46 | 0.64 | 0.24 | 73.5 | 7.7 |
| FLK 7-10 | -8.5 | 0.08 | 4.91 | 9.28 | 1.4 | 630 | 8.64 | 0.13 | 0.33 | 0.46 | 0.32 | 64.8 | 7.7 |
| FLK 10-12 | -11 | 0.06 | 4.69 | 8.86 | 1.1 | 490 | 8.11 | 0.1 | 0.31 | 0.43 | 0.24 | 88.6 | 6.7 |
| FLK 12-14 | -13 | 0.04 | 5.01 | 9.47 | 1.1 | 470 | 7.4 | 0.11 | 0.47 | 0.66 | 0.19 | 106.5 | 6.3 |
| FLK 14-16 | -15 | 0.06 | 5.28 | 9.98 | 1 | 450 | 6.7 | 0.11 | 0.6 | 0.84 | 0.18 | 134 | 5.8 |
| FLK 16-18 | -17 | 0.06 | 5.13 | 9.69 | 1.2 | 490 | 6.82 | 0.1 | 1.01 | 1.41 | 0.19 | 162 | 6.1 |
| FLK 18-20 | -19 | 0.06 | 5.26 | 9.94 | 1 | 530 | 6.14 | 0.09 | 0.52 | 0.73 | 0.16 | 187 | 5.1 |
| FLK 20-30 | -25 | 0.03 | 5.76 | 10.88 | 0.7 | 570 | 5.27 | 0.11 | 0.51 | 0.71 | 0.15 | 165.5 | 5.2 |
| Sums |  | 0.85 | 51.27 | 96.87 | 11.9 | 5740 | 73.52 | 1.14 | 6.95 | 9.72 | 2.39 | 1183.9 | 80.3 |
| **Means** |  | **0.09** | **5.13** | **9.69** | **1.2** | **574** | **7.35** | **0.11** | **0.70** | **0.97** | **0.24** | **118** | **8.0** |
|  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| **Cr** | **Cs** | **Cu** | **Fe** | **Fe2O3** | **Ga** | **Ge** | **Hf** | **In** | **K** | **K2O** | **La** | **Li** | **Mg** |
| **ppm** | **ppm** | **ppm** | **%** | **wt%** | **ppm** | **ppm** | **ppm** | **ppm** | **%** | **wt%** | **ppm** | **ppm** | **%** |
| 59 | 2.69 | 58.6 | 5.3 | 7.58 | 27.4 | 0.17 | 14.7 | 0.091 | 2.13 | 2.57 | 68.7 | 87.5 | 4.16 |
| 52 | 2.71 | 50.5 | 5.26 | 7.52 | 26.7 | 0.17 | 14.1 | 0.086 | 2.06 | 2.48 | 68.1 | 97.9 | 4.5 |
| 36 | 2.81 | 32.2 | 4.36 | 6.23 | 25.7 | 0.13 | 14 | 0.08 | 2.3 | 2.77 | 55.3 | 116 | 4.7 |
| 31 | 2.97 | 33 | 4.56 | 6.52 | 31.1 | 0.14 | 14 | 0.087 | 2.2 | 2.65 | 53.8 | 161.5 | 5.7 |
| 30 | 2.39 | 27.5 | 3.98 | 5.69 | 27.8 | 0.14 | 11.4 | 0.074 | 1.91 | 2.30 | 80.8 | 181 | 6.16 |
| 25 | 2.27 | 24 | 3.84 | 5.49 | 26.3 | 0.13 | 10.9 | 0.081 | 1.96 | 2.36 | 90.1 | 148.5 | 5.57 |
| 22 | 2.08 | 21.4 | 3.42 | 4.89 | 23.7 | 0.18 | 10 | 0.076 | 1.88 | 2.26 | 116 | 126.5 | 4.78 |
| 20 | 2.15 | 21.5 | 3.6 | 5.15 | 23.8 | 0.21 | 10.2 | 0.093 | 1.82 | 2.19 | 129.5 | 123 | 4.87 |
| 16 | 1.66 | 18.6 | 3.53 | 5.05 | 23.8 | 0.17 | 8.8 | 0.095 | 1.71 | 2.06 | 114.5 | 103 | 4.25 |
| 14 | 1.56 | 16.9 | 3.73 | 5.33 | 23.8 | 0.19 | 9.2 | 0.101 | 1.93 | 2.32 | 91.7 | 82 | 3.58 |
| 305 | 23.29 | 304.2 | 41.58 | 59.45 | 260.1 | 1.63 | 117.3 | 0.864 | 19.9 | 23.97 | 868.5 | 1226.9 | 48.27 |
| **31** | **2.33** | **30.4** | **4.16** | **5.94** | **26.0** | **0.16** | **11.7** | **0.086** | **1.99** | **2.40** | **86.9** | **122.7** | **4.83** |

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| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **MgO** | **Mn** | **Mn** | **MnO** | **Mo** | **Na** | **Na2O** | **Nb** | **Ni** | **P** | **P2O5** | **Pb** | **Rb** | **S** |
| **wt%** | **ppm** | **%** | **wt%** | **ppm** | **%** | **wt%** | **ppm** | **ppm** | **ppm** | **wt%** | **ppm** | **ppm** | **%** |
| 6.90 | 1350 | 0.135 | 0.174 | 0.43 | 3.33 | 4.49 | 207 | 34.4 | 640 | 0.147 | 11.1 | 138.5 | 0.03 |
| 7.46 | 1340 | 0.134 | 0.173 | 0.37 | 3.15 | 4.25 | 199 | 35 | 610 | 0.140 | 12.5 | 138.5 | 0.02 |
| 7.79 | 1200 | 0.12 | 0.155 | 0.34 | 3.14 | 4.23 | 210 | 20.6 | 430 | 0.099 | 12.5 | 149 | 0.02 |
| 9.45 | 1740 | 0.174 | 0.225 | 0.32 | 3.08 | 4.15 | 213 | 21.2 | 360 | 0.082 | 13.9 | 152 | 0.02 |
| 10.21 | 1400 | 0.14 | 0.181 | 0.29 | 2.98 | 4.02 | 181.5 | 19.4 | 330 | 0.076 | 11.4 | 122 | 0.01 |
| 9.24 | 1200 | 0.12 | 0.155 | 0.28 | 3.2 | 4.31 | 169.5 | 17.2 | 380 | 0.087 | 10.5 | 116 | 0.01 |
| 7.93 | 1060 | 0.106 | 0.137 | 0.23 | 3.49 | 4.70 | 150 | 15.6 | 440 | 0.101 | 10.2 | 103 | 0.01 |
| 8.08 | 1020 | 0.102 | 0.132 | 0.28 | 3.38 | 4.56 | 143.5 | 14.9 | 470 | 0.108 | 10.8 | 98.4 | 0.01 |
| 7.05 | 808 | 0.0808 | 0.104 | 0.23 | 3.6 | 4.85 | 113 | 11.6 | 340 | 0.078 | 11.7 | 74.4 | 0.01 |
| 5.94 | 737 | 0.0737 | 0.095 | 0.27 | 3.8 | 5.12 | 114.5 | 10.3 | 290 | 0.066 | 13.6 | 76.3 | 0.01 |
| 80.04 | 11855 | 1.1855 | 1.531 | 3.04 | 33.15 | 44.69 | 1701 | 200.2 | 4290 | 0.983 | 118.2 | 1168.1 | 0.15 |
| **8.00** | **1186** | **0.119** | **0.153** | **0.30** | **3.32** | **4.47** | **170.1** | **20.0** | **429** | **0.098** | **11.8** | **116.8** | **0.02** |
|  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| **Sb** | **Sc** | **Se** | **Sn** | **Sr** | **Ta** | **Th** | **Ti** | **TiO2** | **Tl** | **U** | **V** | **W** | **Y** |
| **ppm** | **ppm** | **ppm** | **ppm** | **ppm** | **ppm** | **ppm** | **%** | **wt%** | **ppm** | **ppm** | **ppm** | **ppm** | **ppm** |
| 0.44 | 9.4 | 1 | 2.8 | 191.5 | 5.92 | 16.4 | 0.73 | 1.22 | 0.35 | 2.8 | 413 | 1.2 | 20.6 |
| 0.42 | 9 | 1 | 3.1 | 186.5 | 5.62 | 16.4 | 0.68 | 1.13 | 0.34 | 2.5 | 299 | 1 | 23 |
| 0.36 | 5 | 1 | 3.1 | 103 | 6.12 | 12.4 | 0.43 | 0.71 | 0.33 | 2.3 | 236 | 1 | 17.9 |
| 0.37 | 4.6 | 1 | 3.5 | 82.8 | 6.78 | 10.1 | 0.36 | 0.59 | 0.27 | 2.2 | 210 | 1.1 | 16.4 |
| 0.27 | 3.9 | 1 | 3.3 | 75 | 6.65 | 9.9 | 0.30 | 0.51 | 0.2 | 1.9 | 208 | 0.9 | 14.1 |
| 0.24 | 3.8 | 1 | 3.6 | 95 | 7.15 | 11.7 | 0.32 | 0.54 | 0.23 | 1.8 | 185 | 0.9 | 16 |
| 0.24 | 3.4 | 1 | 3.4 | 115 | 6.77 | 15 | 0.29 | 0.48 | 0.32 | 1.7 | 143 | 0.8 | 19.2 |
| 0.21 | 3.8 | 1 | 4 | 133 | 7.93 | 17.3 | 0.31 | 0.52 | 0.26 | 1.7 | 127 | 0.8 | 18.2 |
| 0.19 | 3.3 | 2 | 4.4 | 222 | 8.5 | 17.4 | 0.28 | 0.47 | 0.28 | 1.2 | 91 | 0.6 | 25.9 |
| 0.19 | 3.4 | 2 | 4.9 | 239 | 9.7 | 15.6 | 0.29 | 0.49 | 0.24 | 1.1 | 84 | 0.6 | 25.4 |
| 2.93 | 49.6 | 12 | 36.1 | 1442.8 | 71.14 | 142.2 | 4.00 | 6.67 | 2.82 | 19.2 | 1996 | 8.9 | 196.7 |
| **0.29** | **5.0** | **1.2** | **3.6** | **144.3** | **7.11** | **14.2** | **0.40** | **0.67** | **0.28** | **1.9** | **200** | **0.9** | **19.7** |

|  |  |  |  |
| --- | --- | --- | --- |
| **Zn** | **Zr** | **SiO2** | **Paleosol** |
| **ppm** | **ppm** | **wt%** | **FLK** |
| 143 | 380 | 64.80 | FLK 0-3 |
| 132 | 367 | 65.19 | FLK 3-5 |
| 126 | 364 | 67.75 | FLK 5-7 |
| 138 | 350 | 66.35 | FLK 7-10 |
| 133 | 285 | 67.52 | FLK 10-12 |
| 129 | 286 | 67.51 | FLK 12-14 |
| 119 | 261 | 68.50 | FLK 14-16 |
| 134 | 274 | 67.97 | FLK 16-18 |
| 135 | 237 | 69.48 | FLK 18-20 |
| 140 | 243 | 68.84 | FLK 20-30 |
| 1329 | 3047 | 673.92 | Sums |
| **133** | **305** | **67.39** | **Means** |
| **Chapati Tuff** | **Geotrench** | **Ag** | **Al** | **Al2O3** | **As** | **Ba** | **Ba** | **Be** | **Bi** | **Ca** | **CaO** | **Cd** | **Ce** | **Ce** | **Co** |
|  |  | **ppm** | **%** | **wt%** | **ppm** | **ppm** | **wt%** | **ppm** | **ppm** | **%** | **wt%** | **ppm** | **ppm** | **wt%** | **ppm** |
| GA-34-08 | FLK-NN-1 | <0.01 | 6.53 | 12.34 | 1.9 | 440 | 0.044 | 2.88 | 0.1 | 0.68 | 0.95 | 0.02 | 113 | 0.0113 | 3.4 |
| GA-49-08 | FLK-NN-1 | 0.05 | 7.23 | 13.66 | 3.7 | 660 | 0.066 | 3.79 | 0.16 | 1.99 | 2.78 | 0.08 | 201 | 0.0201 | 9.2 |
| GA-69-12 | FLK-10 | <0.01 | 6.67 | 12.60 | 2.3 | 860 | 0.086 | 5.3 | 0.13 | 0.79 | 1.11 | 0.14 | 235 | 0.0235 | 6.6 |
| GA-83-12 | FLK-6 | <0.01 | 5.57 | 10.52 | 1 | 310 | 0.031 | 3.93 | 0.07 | 0.38 | 0.53 | 0.07 | 62.8 | 0.00628 | 4.5 |
| GA-137-12 | FLK-S-6 | <0.01 | 6.38 | 12.05 | 2 | 940 | 0.094 | 5.36 | 0.16 | 0.2 | 0.28 | 0.14 | 245 | 0.0245 | 4.1 |
| GA-97-13 | FLK-03 | <0.01 | 6.02 | 11.37 | 1 | 650 | 0.065 | 5.5 | 0.12 | 0.83 | 1.16 | 0.14 | 245 | 0.0245 | 6.8 |
| Sums |  |  | 38.4 | 72.56 | 11.9 | 3860 | 0.386 | 26.76 | 0.74 | 4.87 | 6.81 | 0.59 | 1101.8 | 0.11018 | 34.6 |
| **Means** |  |  | **6.4** | **12.09** | **1.98** | **643** | **0.064** | **4.46** | **0.12** | **0.81** | **1.14** | **0.10** | **183.6** | **0.0184** | **5.8** |
|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| **Cr** | **Cr** | **Cs** | **Cu** | **Cu** | **Fe** | **Fe2O3** | **Ga** | **Ge** | **Hf** | **In** | **K** | **K2O** | **La** | **La** | **Li** | **Li** | **Mg** |
| **ppm** | **wt%** | **ppm** | **ppm** | **wt%** | **%** | **wt%** | **ppm** | **ppm** | **ppm** | **ppm** | **%** | **wt%** | **ppm** | **wt%** | **ppm** | **wt%** | **%** |
| 13 | 0.0013 | 0.95 | 15.9 | 0.00159 | 3.55 | 5.08 | 21.7 | 0.15 | 7.7 | 0.11 | 2.54 | 3.06 | 87.7 | 0.00877 | 58.7 | 0.00587 | 2.46 |
| 30 | 0.003 | 0.74 | 15.8 | 0.00158 | 4.44 | 6.35 | 25.7 | 0.16 | 7.6 | 0.099 | 2.4 | 2.89 | 103.5 | 0.01035 | 26.5 | 0.00265 | 1.75 |
| 19 | 0.0019 | 2.84 | 21.4 | 0.00214 | 4.18 | 5.98 | 27.3 | 0.18 | 10.6 | 0.103 | 2.67 | 3.22 | 122.5 | 0.01225 | 35.4 | 0.00354 | 2.45 |
| 21 | 0.0021 | 1.4 | 21.3 | 0.00213 | 2.89 | 4.13 | 21.9 | 0.11 | 5.5 | 0.07 | 1.67 | 2.01 | 48.9 | 0.00489 | 85.6 | 0.00856 | 4.08 |
| 12 | 0.0012 | 3.6 | 18.1 | 0.00181 | 4.23 | 6.05 | 23.2 | 0.18 | 10 | 0.118 | 2.21 | 2.66 | 116 | 0.0116 | 18.5 | 0.00185 | 1.51 |
| 17 | 0.0017 | 1.92 | 19.9 | 0.00199 | 4.16 | 5.95 | 26.1 | 0.15 | 9.9 | 0.104 | 1.98 | 2.39 | 107.5 | 0.01075 | 83.8 | 0.00838 | 4.37 |
| 112 | 0.0112 | 11.45 | 112.4 | 0.01124 | 23.45 | 33.53 | 145.9 | 0.93 | 51.3 | 0.604 | 13.47 | 16.23 | 586.1 | 0.05861 | 308.5 | 0.03085 | 16.62 |
| **19** | **0.0019** | **1.91** | **18.7** | **0.0019** | **3.91** | **5.59** | **24.3** | **0.16** | **8.6** | **0.101** | **2.25** | **2.70** | **97.7** | **0.0098** | **51.4** | **0.0051** | **2.77** |
|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| **MgO** | **Mn** | **Mn** | **MnO** | **Mo** | **Na** | **Na2O** | **Nb** | **Nb** | **Ni** | **Ni** | **P** | **P** | **P2O5** | **Pb** | **Pb** | **Rb** | **Rb** |  | **S** |
| **wt%** | **ppm** | **%** | **wt%** | **ppm** | **%** | **wt%** | **ppm** | **wt%** | **ppm** | **wt%** | **ppm** | **wt%** | **wt%** | **ppm** | **wt%** | **ppm** | **wt%** |  | **%** |
| 4.08 | 381 | 0.0381 | 0.049 | 1.68 | 4.72 | 6.36 | 61.6 | 0.00616 | 8.7 | 0.00087 | 320 | 0.032 | 0.073 | 15.1 | 0.00151 | 65.5 | 0.00655 |  | 0.08 |
| 2.90 | 672 | 0.0672 | 0.087 | 1.19 | 4.53 | 6.11 | 128 | 0.0128 | 16.4 | 0.00164 | 820 | 0.082 | 0.188 | 28.8 | 0.00288 | 63.3 | 0.00633 |  | 0.04 |
| 4.06 | 911 | 0.0911 | 0.118 | 0.71 | 4.07 | 5.49 | 147 | 0.0147 | 11.8 | 0.00118 | 530 | 0.053 | 0.121 | 16.9 | 0.00169 | 105.5 | 0.01055 |  | 0.02 |
| 6.77 | 633 | 0.0633 | 0.082 | 0.5 | 4.12 | 5.55 | 75.8 | 0.00758 | 11.3 | 0.00113 | 290 | 0.029 | 0.066 | 7.6 | 0.00076 | 42.8 | 0.00428 |  | 0.01 |
| 2.50 | 1380 | 0.138 | 0.178 | 2.98 | 5.15 | 6.94 | 134.5 | 0.01345 | 9.1 | 0.00091 | 270 | 0.027 | 0.062 | 23.6 | 0.00236 | 81.1 | 0.00811 |  | 0.16 |
| 7.25 | 969 | 0.0969 | 0.125 | 0.74 | 4.19 | 5.65 | 117.5 | 0.01175 | 13.5 | 0.00135 | 450 | 0.045 | 0.103 | 15.7 | 0.00157 | 78.7 | 0.00787 |  | 0.03 |
| 27.56 | 4946 | 0.4946 | 0.639 | 7.8 | 26.78 | 36.10 | 664.4 | 0.06644 | 70.8 | 0.00708 | 2680 | 0.268 | 0.614 | 107.7 | 0.01077 | 436.9 | 0.04369 |  | 0.34 |
| **4.59** | **824** | **0.0824** | **0.106** | **1.30** | **4.46** | **6.02** | **110.7** | **0.0111** | **11.8** | **0.0012** | **447** | **0.045** | **0.102** | **18.0** | **0.00180** | **72.8** | **0.00728** |  | **0.06** |

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| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **S** | **Sb** | **Sc** | **Se** | **Sn** | **Sr** | **Sr** | **Ta** | **Te** | **Th** | **Th** | **Ti** | **TiO2** | **Tl** | **U** | **V** | **V** | **W** | **Y** |
| **%** | **ppm** | **ppm** | **ppm** | **ppm** | **ppm** | **wt%** | **ppm** | **ppm** | **ppm** | **wt%** | **%** | **wt%** | **ppm** | **ppm** | **ppm** | **wt%** | **ppm** | **ppm** |
| 0.08 | 0.5 | 2.9 | 1 | 5.1 | 127 | 0.0127 | 11.3 | <0.05 | 18.8 | 0.00188 | 0.259 | 0.43 | 0.17 | 1.8 | 74 | 0.0074 | 0.8 | 15.6 |
| 0.04 | 2.12 | 6.9 | 2 | 3.9 | 391 | 0.0391 | 8.22 | <0.05 | 15.5 | 0.00155 | 0.612 | 1.02 | 0.19 | 1.2 | 127 | 0.0127 | 0.8 | 33.4 |
| 0.02 | 0.85 | 4.5 | 2 | 4.8 | 488 | 0.0488 | 9.71 | <0.05 | 19.7 | 0.00197 | 0.423 | 0.71 | 0.32 | 1.1 | 104 | 0.0104 | 1.1 | 55.1 |
| 0.01 | 0.3 | 2.7 | <1 | 2.9 | 61 | 0.0061 | 5.9 | <0.05 | 7.6 | 0.00076 | 0.22 | 0.37 | 0.14 | 0.6 | 79 | 0.0079 | 0.5 | 8.5 |
| 0.16 | 0.48 | 4 | 1 | 4 | 307 | 0.0307 | 8.69 | <0.05 | 16 | 0.0016 | 0.35 | 0.58 | 0.29 | 1.9 | 56 | 0.0056 | 2 | 36 |
| 0.03 | 0.28 | 4.3 | 1 | 4.4 | 395 | 0.0395 | 9.09 | <0.05 | 16.2 | 0.00162 | 0.4 | 0.67 | 0.29 | 1.1 | 67 | 0.0067 | 0.7 | 35.1 |
| 0.34 | 4.53 | 25.3 |  | 25.1 | 1769 | 0.1769 | 52.91 |  | 93.8 | 0.00938 | 2.264 | 3.78 | 1.4 | 7.7 | 507 | 0.0507 | 5.9 | 183.7 |
| **0.06** | **0.76** | **4.2** |  | **4.2** | **295** | **0.02948** | **8.82** |  | **15.6** | **0.00156** | **0.377** | **0.63** | **0.2** | **1.3** | **85** | **0.00845** | **1.0** | **30.6** |

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| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **Y** | **Zn** | **Zn** | **Zr** | **Zr** |  | **SiO2** | **Geotrench** | **Chapati Tuff** |
| **wt%** | **ppm** | **wt%** | **ppm** | **wt%** |  |  |  |  |
| 0.00156 | 104 | 0.0104 | 234 | 0.0234 |  | 67.36 | FLK-NN-1 | GA-34-08 |
| 0.00334 | 129 | 0.0129 | 255 | 0.0255 |  | 63.76 | FLK-NN-1 | GA-49-08 |
| 0.00551 | 146 | 0.0146 | 294 | 0.0294 |  | 66.33 | FLK-10 | GA-69-12 |
| 0.00085 | 89 | 0.0089 | 161.5 | 0.01615 |  | 69.85 | FLK-6 | GA-83-12 |
| 0.0036 | 146 | 0.0146 | 354 | 0.0354 |  | 68.29 | FLK-S-6 | GA-137-12 |
| 0.00351 | 155 | 0.0155 | 265 | 0.0265 |  | 65.09 | FLK-03 | GA-97-13 |
| 0.01837 | 769 | 0.0769 | 1563.5 | 0.15635 |  |  |  | Sums |
| **0.00306** | **128** | **0.01282** | **260.6** | **0.02606** |  | **66.78** |  | **Means** |