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# GEOCHEMICAL DATA FOR JURASSIC BASALTS IN THE EARLY MESOZOIC NEWARK BASIN, NEW JERSEY: THE DATA OF G.T. FAUST.

By

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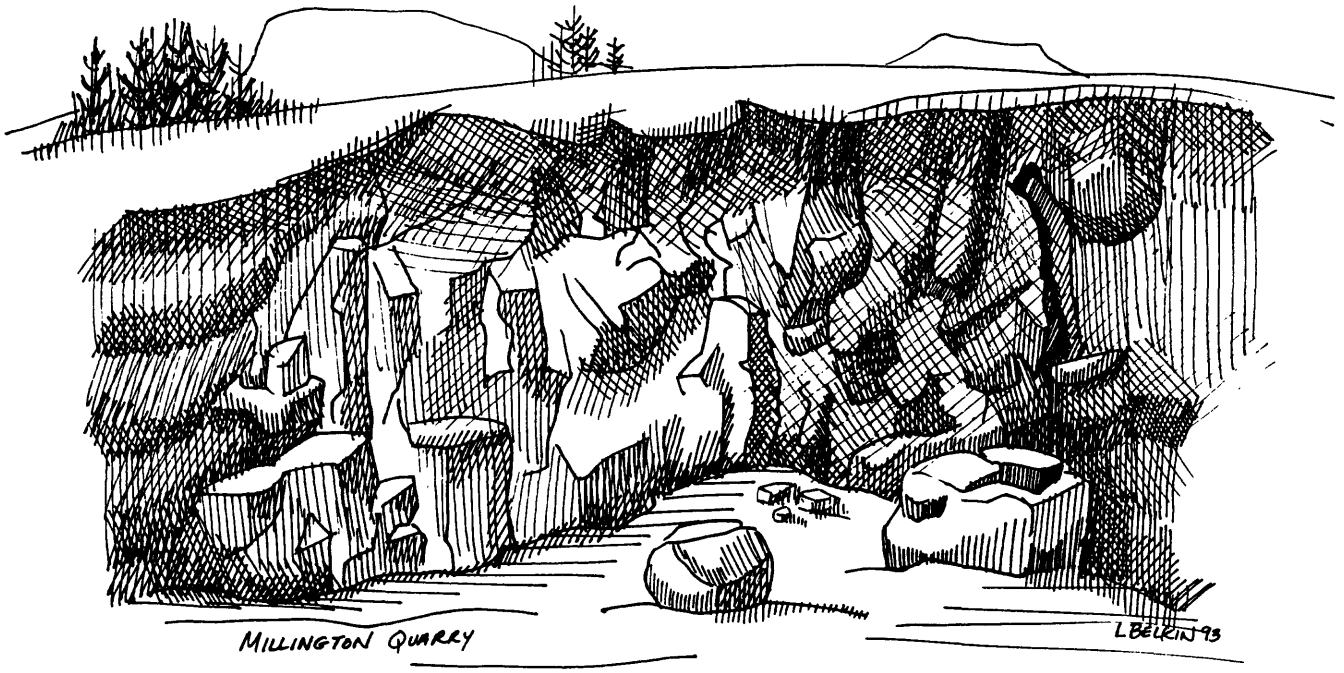


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# GEOCHEMICAL DATA FOR JURASSIC BASALTS IN THE EARLY MESOZOIC NEWARK BASIN, NEW JERSEY: THE DATA OF G.T. FAUST.

By HARVEY E. BELKIN AND DANIEL F. FIORITO

## INTRODUCTION

In 1947, George T. Faust (Fleischer, 1986) initiated a formal U.S. Geological Survey program to study the basalts of the Watchung Mountains, New Jersey. He planned a comprehensive "Geological Survey of the Watchung Mountains, New Jersey" in many of its various aspects: geology, chemistry and mineralogy. He had started collecting in 1936, and spent every field season (save 1976) until his retirement from the U.S. Geological Survey in 1977 at his summer home in Basking Ridge, New Jersey, working on the nearby basalts. He was mostly interested in topical studies resulting from his field work, e.g., Faust and Murata, 1953 and Faust and others, 1959; however, just before retirement he completed papers on the geological setting (Faust, 1975) and jointing (Faust, 1978) of the Watchung basalt flows. He was working on a series of papers concerning basalt chemistry before his death in 1985.

A year after his death, we obtained three large boxes containing field notes and various chemical analyses from his widow. The analyses tended to have multiple or conflicting field numbers and no complete sample location map was found. However, all the data presented here have been accurately located by a thorough reading of his field notes. Data were rejected if the location was questionable. This report presents the analytical data and locations for samples from the three Watchung Mountains, now named Orange Mountain, Preakness and the Hook Mountain Basalts, Newark basin, New Jersey (Olsen, 1980).

During the last decade a revolution in the interpretation of the Watchung Mountains has occurred due mainly to detailed analysis and the availability of extensive drill core (see Olsen, 1980, Puffer, 1988, and Tollo and others, 1990). Olsen (1980) assigned the three Watchung basalts formal formational status; (1) First Watchung Mountain basalt is the Orange Mountain Basalt, (2) Second Watchung Mountain basalt is the Preakness Basalt, and (3) Third Watchung Mountain basalt is the Hook Mountain Basalt. However, the data presented here are especially valuable because Faust had an exceptional coverage of the Hook Mountain Basalt in many localities and many analyses were done by the classical chemical technique (Kirschenbaum, 1983). Faust had arranged with two Geological Survey chemists, Laura E. Reichen and Angelina C. Vlisidis, to analyze the Watchung basalts by the classical chemical technique and to be his co-authors.

Some of the data presented here has been published; an average of the upper flow unit, Hook Mountain Basalt (Faust, 1975) and 24 Hook Mountain Basalt gold analyses (Gottfried and others, 1972).

Faust classified his samples according to his perceptions of cooling-joint formational processes (Faust 1978). We have kept his terminology as follows; vesicular (amygdaloidal) top, columnar zone, blocky zone, curvilinear zone, and vesicular (amygdaloidal) base. The vesicular, blocky, and curvilinear zones correspond to the entablature zone of Tomkeieff (1940).

From his home in Basking Ridge, he carefully studied the nearby Millington Quarry and recognized that there the Hook Mountain basalt had an upper and lower flow unit. Recognition of these two flow units perhaps influenced his interpretation of the other two basalt series, as he also interpreted the others as being composed of two flows. The Orange Mountain Basalt is composed of three flows and the Preakness Basalt is composed of at least nine flow units (Puffer, 1988, Tollo and others, 1990, and Tollo and Gottfried, 1992). We have retained Faust's terminology.

## GEOLOGIC SETTING

The early Mesozoic continental tholeiites of Eastern North America crop out from Massachusetts to Georgia in the form of either extrusive basalt flows, intrusive diabase sills and sheets or dikes. They are temporally and causally associated with the rift-related sedimentary basins that roughly parallel the Appalachian Orogen. Recent detailed petrochemical studies (Weigand and Ragland, 1970; Smith and others, 1975; Puffer and Philpotts, 1988; Tollo and Gottfried, 1989) of the tholeiites have defined four quartz-normative and two olivine-normative groups. The distinction centers on the distribution of MgO, $TiO_2$, iron, and trace elements. All the Newark basin basalt flows are quartz-normative. The following chart (modified from Gottfried and others, 1991) summarizes this taxonomy.

Classification of quartz-normative Mesozoic tholeiites
(weight % or ratio)

| magma type | $SiO_2$ | MgO | $TiO_2$ | $Fe_2O_3T$ | Th/Hf | 100 Nb/Ti |
|---|---|---|---|---|---|---|
| HTQ (high Ti) | 50-53 | 7-8 | 1.0-1.2 | <13 | 0.85 | 0.10 |
| LTQ (low Ti) | 49.5-52 | 7.5-8.5 | 0.7-0.85 | <13 | 0.90 | 0.07 |
| HFQ (high Fe) | 51-54 | 5.2-6 | 1.0-1.2 | 12.5-15 | 0.94 | 0.07 |
| HFTQ (high Fe-Ti) | 51-54 | 4.5-6.6 | 1.3-1.5 | >15 | 0.76 | 0.05 |

$Fe_2O_3T = (Fe_2O_3 + FeO)$

Tollo and Gottfried (1992) have characterized the basalt flows as follows; (1) the Orange Mountain Basalt [lowermost formation] composed of at least three flow units and with a limited range of composition is derived from a HTQ magma, (2) the Preakness Basalt containing possibly nine flow units [middle formation], has a wide chemical diversity and complexity composed of either separate HFQ and LTQ magmas or an evolving LTQ parent, and (3) the Hook Mountain Basalt [uppermost formation] comprised of two flow units is derived from a HFTQ magma with a limited range of composition. These results can be discriminated in the analytical data presented here. For example, Preakness Basalt samples 72-F-26 and 72-F-30 are probably derived from a

LTQ magma, whereas, the other Preakness samples are clearly HFQ (see total Fe as $Fe_2O_3$ tabulation).

## ANALYTICAL METHODS AND EXPLANATION OF TABLES

Tables 1a,b, 2a,b and 3a,b give the sample descriptions and data for the Orange Mountain, Preakness, and Hook Mountain Basalts respectively. Data for two hornfels samples just below the lower Hook Mountain Basalt flow are also given. All of the analyses were done by various members of the Analytical Laboratories of the U.S. Geological Survey from 1958 to 1983. The major elements were determined by either classical chemical analysis [CCA] or wave-length dispersive X-ray fluorescence spectrometry [XRF] as noted in the tables. Kirschenbaum (1983) indicates that a reasonable achievable precision for CCA is $< \pm 0.10\%$ Total S, $H_2O+$, $H_2O-$, $CO_2$, and FeO were done by methods discussed by Peck (1964) and Kirschenbaum (1983). Baedecker (1987) discusses most of the techniques listed in this report.

The minor elements were measured by various techniques as follows:

(a) Semi-quantitative emission spectrography, precision + 50% - 33% = all elements marked with an $\underline{*}$

(b) Quantitative emission spectrography, precision ± 15% = Li, Cu, Zn, Cr, Co, Sc, Ni

(c) Spectrophotometric determination, precision ± 15% = Cl

(d) Selective-ion electrode, precision ± 10% = F

(e) Atomic-absorption spectrometry using a heated graphite atomizer, precision ± 10% = As

(f) Fluorometric determination, precision ± 15% = U

(g) Neutron-activation analysis with fire assay, precision ± 10% = Au

(h) Energy-dispersive X-ray fluorescence spectrometry, precision ± 5% = Rb, Sr

(i) Chemical separation, graphite furnace-atomic-absorption spectrometry, precision ± 15% = Cd

(j) Isotope dilution-spectrophotometric determination, precision ± 10% = Nb

Instrumental neutron activation analysis was used to analyze two groups of samples (AL68 1976 and AL44 1977), and these data are marked with an n.

The totals for the major elements have not been corrected for excess oxygen when Cl, F, and S are present because of their relatively low abundance. The $Fe_2O_3$ reported for samples analyzed by XRF has been determined by the following equation: (total Fe as $Fe_2O_3$)-(FeO x 1.1113) = $Fe_2O_3$. Data preceded by a < denotes an upper limit but were below the detection limit. Dashes are shown for elements that were not analyzed.

For most samples analyzed by the classical chemical method, the specific gravity of the crushed sample was determined by the pycnometer method and is also provided.

## ALTERATION

It should be noted that some of the basalts analyzed are relatively fresh, whereas, others are highly altered, and some vesicular basalts have vesicles filled with amygdules of calcite, quartz, prehnite or a variety of zeolites. These particular samples are recognized by enrichments in, for example, $Na_2O$, $H_2O+$, or $CO_2$ relative to fresh basalt (Tollo and Gottfried, 1992). The reader should consequently be aware that the data presented here represents a range of specimens from relatively fresh to very altered basalt.

## EXPLANATION OF LOCATION MAPS

Figure 1 is a map of northern New Jersey showing the location and names of the various quadrangles in which the samples were collected for this report. Figure 2 describes the local stratigraphy and symbols used. Figures 3-10 show the sample locations and bedrock geology for each of the eight location maps. The geologic data contained in these maps was kindly provided by Ronald A. Parker (USGS).

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Table 1a
Orange Mountain Basalt

| Field no. | Alternative Field no. | New Jersey 7.5 min. Quadrangle | Sample description |
|---|---|---|---|
| 57-F-18 | O-246-18 | Califon | basalt |
| 57-F-2 | O-246-2 | Califon | basalt |
| 57-F-36 | O-245 | Califon | basalt |
| 57-F-39 | | Califon | basalt |
| 57-F-42 | O-245-44 | Califon | basalt |
| 57-F-45 | | Califon | basalt |
| 57-F-47 | | Califon | basalt |
| 57-F-48 | 57-5-49 | Califon | basalt |
| 57-F-50 | O-245-50 | Califon | basalt |
| 57-F-59 | O-246-59 | Califon | basalt |
| 68-F-55 | | Caldwell | basalt, lower flow unit, curvilinear zone, 5 ft. below columnar/curvilinear contact |
| 68-F-56 | | Caldwell | basalt, lower flow unit, curvilinear zone, 5 ft. below 68-F-55 |
| 68-F-59 | | Caldwell | basalt, lower flow unit, columnar, 5 ft. above curvilinear/columnar contact |
| 68-F-65 | | Caldwell | basalt, lower flow unit, curvilinear zone, 55 ft. above curvilinear/columnar contact |
| 68-F-68 | | Caldwell | basalt, lower flow unit, columnar zone, 85 ft. above curvilinear/columnar contact |
| 68-F-74 | | Caldwell | basalt, lower flow unit, curvilinear zone, 145 ft. above curvilinear/columnar contact |
| 68-F-76 | | Caldwell | basalt, lower flow unit, blocky zone, 165 ft. above curvilinear/columnar contact |
| 68-F-77 | | Caldwell | basalt, lower flow unit, blocky zone, 175 ft. above curvilinear/columnar contact |
| 68-F-78 | | Caldwell | basalt, lower flow unit, blocky zone, 185 ft. above curvilinear/columnar contact |
| 68-F-85 | | Caldwell | basalt dike, border zone |
| 68-F-91 | | Caldwell | basalt dike, middle part |
| 68-F-97 | | Caldwell | basalt dike, selvage |
| 68-F-98 | | Caldwell | wall rock of basalt dike |
| 71-F-105 | | Stockton | basalt, massive vesicular zone |
| 71-F-106 | | Stockton | basalt, vesicular zone |

Table 1b Orange Mountain basalt

| Field no. | 57-F-18 | 57-F-2 | 57-F-36 | 57-F-39 | 57-F-42 | 57-F-45 |
|---|---|---|---|---|---|---|
| Alternative field no. | O-246-18 | O-246-2 | O-245 | | O-245-44 | |
| Lab number | W-193477 | W-193451 | W-193479 | W-193448 | W-193481 | W-193482 |
| (wgt. %) SiO2 | 49.9 | 50.5 | 51.4 | 50.4 | 51.8 | 51.0 |
| TiO2 | 1.17 | 1.10 | 1.16 | 1.10 | 1.12 | 1.08 |
| Al2O3 | 14.3 | 13.4 | 13.7 | 14.6 | 13.6 | 13.6 |
| Fe2O3 | 3.71 | 2.60 | 4.46 | 4.47 | 3.00 | 3.44 |
| FeO | 6.2 | 7.2 | 6.6 | 5.7 | 7.2 | 6.8 |
| MnO | 0.17 | 0.17 | 0.17 | 0.16 | 0.17 | 0.16 |
| MgO | 4.5 | 3.4 | 7.0 | 4.4 | 7.2 | 7.0 |
| CaO | 8.2 | 8.3 | 7.4 | 7.8 | 7.53 | 9.17 |
| Na2O | 7.5 | 7.6 | 4.2 | 7.2 | 4.5 | 4.2 |
| K2O | 0.21 | 1.04 | 0.51 | 0.32 | 0.38 | 0.31 |
| P2O5 | 0.18 | 0.15 | 0.13 | 0.15 | 0.13 | 0.14 |
| H2O+ | 2.9 | 2.3 | 2.2 | 2.8 | 2.6 | 2.4 |
| H2O- | 0.6 | 0.1 | 1.5 | 0.87 | 0.66 | 0.6 |
| CO2 | 0.56 | 0.02 | 0.04 | 0.07 | 0.18 | 0.24 |
| S | - | - | - | - | - | - |
| F | 0.02 | 0.02 | 0.02 | 0.02 | 0.02 | 0.02 |
| Cl | 0.021 | 0.016 | 0.014 | 0.011 | 0.015 | 0.015 |
| Total | 100.10 | 97.88 | 100.47 | 100.04 | 100.07 | 100.14 |
| Total Fe as Fe2O3 | 10.60 | 10.60 | 11.79 | 10.80 | 11.00 | 11.00 |
| (ppm) Li | | | | | | |
| Be | <1.0* | <1.0* | | <1.0* | | |
| B | 15* | 41* | | 21* | | |
| Sc | 33* | 36.7n | | 36.6n | | |
| V | 160* | 220* | | 230* | | |
| Cr | 310* | 345.7n | | 330.8n | | |
| Co | 43* | 46.9n | | 45.7n | | |
| Ni | 71* | 95* | | 94* | | |
| Cu | 60* | 110* | | 120* | | |
| Zn | 100* | 144n | | 130n | | |
| Ga | 18* | 17* | | 21* | | |
| As | 1.2 | 0.86 | 1.1 | 1.8 | 1.6 | 1.8 |
| Rb | | <34n | 21 | <34n | 23 | 14 |
| Sr | 100* | 400* | 282 | 370* | 247 | 231 |
| Y | 12* | 15* | | 16* | | |
| Zr | 78* | <856n | | <854n | | |
| Nb | 9.2* | 11* | | 11* | | |
| Mo | | | | <1.0* | | |
| Pb | 8.5* | 14* | | 10* | | |
| Cd | | | | | | |
| Sn | <1.5* | <1.5* | | <1.5* | | |
| Sb | | <1.3n | | <1.2n | | |
| Cs | | <1.9n | | <1.9n | | |
| Ba | 29* | <243n | | 106n | | |
| La | <10 | 11n | | 9n | | |
| Ce | | 23n | | 23n | | |
| Nd | | 12n | | 12n | | |
| Sm | | 4.1n | | 4.0n | | |
| Eu | | 1.11n | | 1.08n | | |
| Gd | | 4.8n | | 2.8n | | |
| Tb | | 0.9n | | 0.73n | | |
| Tm | | 0.31n | | 0.32n | | |
| Yb | 1.6* | 2.1n | | 2.1n | | |
| Lu | | 0.3n | | 0.32n | | |
| Hf | | 2.5n | | 2.4n | | |
| Ta | | 0.65n | | <1.25n | | |
| Th | | 1.7n | | 2.1n | | |
| U | | 0.6n | | 0.5n | | |
| Specific Gravity Method: majors | XRF | XRF | CCA | XRF | CCA | CCA |

Table 1b Orange Mountain basalt

| Field no. | 57-F-47 | 57-F-48 | 57-F-50 | 57-F-59 | 68-F-55 | 68-F-56 |
|---|---|---|---|---|---|---|
| Alternative field no. | | 57-5-49 | O-245-50 | O-246-59 | | |
| Lab number | W-193449 | W-193484 | W-193485 | W-193450 | W-192426 | W-192427 |
| (wgt. %) SiO2 | 50.7 | 51.0 | 51.2 | 51.8 | 51.03 | 55.63 |
| TiO2 | 1.11 | 1.12 | 1.14 | 1.10 | 1.16 | 0.98 |
| Al2O3 | 14.2 | 13.60 | 14.3 | 13.4 | 15.88 | 15.00 |
| Fe2O3 | 2.78 | 3.15 | 2.97 | 3.81 | 1.05 | 1.25 |
| FeO | 7.4 | 7.6 | 7.5 | 6.2 | 8.2 | 7.2 |
| MnO | 0.17 | 0.18 | 0.17 | 0.17 | 0.18 | 0.16 |
| MgO | 4.0 | 7.5 | 4.2 | 3.4 | 7.62 | 6.86 |
| CaO | 8.5 | 8.15 | 6.8 | 8.3 | 8.92 | 9.57 |
| Na2O | 7.5 | 3.8 | 7.6 | 7.6 | 3.19 | 1.75 |
| K2O | 0.72 | 0.77 | 0.74 | 1.04 | 1.05 | 0.68 |
| P2O5 | 0.16 | 0.12 | 0.15 | 0.15 | 0.11 | 0.1 |
| H2O+ | 2.2 | 2.3 | 1.8 | 2.50 | 1.5 | 0.66 |
| H2O- | 0.6 | 0.60 | 0.96 | 0.48 | 0.17 | 0.55 |
| CO2 | 0.15 | 0.20 | 0.18 | 0.26 | 0.01 | 0.01 |
| S | - | - | - | - | 0.01 | 0.01 |
| F | 0.02 | 0.02 | 0.02 | 0.03 | 0.02 | 0.02 |
| Cl | 0.0095 | 0.010 | 0.011 | 0.025 | 0.0055 | 0.0027 |
| Total | 100.19 | 100.09 | 99.71 | 100.21 | 100.06 | 100.39 |
| Total Fe as Fe2O3 | 11.00 | 11.60 | 11.30 | 10.70 | 10.16 | 9.25 |
| (ppm) Li | | | | | | |
| Be | <1.0* | | <1.0* | <1.0* | 1.1* | 1.1* |
| B | 43* | | 38* | 29* | 23* | 29* |
| Sc | 35.5n | | 42* | 34.5n | 36.2n | 41* |
| V | 210* | | 220* | 230* | 250* | 190* |
| Cr | 346.3n | | 370* | 334n | 344 | 339 |
| Co | 45.2n | | 56* | 44.6n | 51 | 43 |
| Ni | 92* | | 94* | 110* | 108 | 89 |
| Cu | 120* | | 88* | 82* | 79* | 57* |
| Zn | 121n | | 92* | 130n | 129n | 100* |
| Ga | 19* | | 19* | 10* | 20* | 15* |
| As | 2.8 | 1.4 | 0.72 | 1.2 | 1.2 | 1.3 |
| Rb | 24n | 32 | | 35n | 32n | |
| Sr | 330* | 290 | 340* | 110* | 210* | 220* |
| Y | 13* | | 15* | 17* | 29* | 26* |
| Zr | <805n | | 82* | <818n | <801n | 180* |
| Nb | 11* | | 14* | | 24* | 15* |
| Mo | <1.0* | | | | 4.9* | 5.0* |
| Pb | 13* | | <6.8* | <6.8* | 16* | 15* |
| Cd | | | | | 0.083 | 0.1 |
| Sn | <1.5* | | <1.5* | <1.5* | 17* | 15* |
| Sb | <1.2n | | | <1.1n | <1.1n | |
| Cs | <1.8n | | | <1.8n | 4.9n | |
| Ba | 227n | | 160* | 232n | 163n | 140* |
| La | 11n | | <10* | 11n | 11n | 26* |
| Ce | 22n | | | 20n | 21n | |
| Nd | 11n | | | 10n | 12n | |
| Sm | 3.9n | | | 3.6n | 3.8n | |
| Eu | 1.10n | | | 1.03n | 1.04n | |
| Gd | 6.1n | | | 2.9n | 3.9n | |
| Tb | 0.78n | | | 0.77n | 0.79n | |
| Tm | 0.22n | | | 0.22n | 0.21n | |
| Yb | 2.1n | | 1.6* | 1.9n | 2.1n | 3.1* |
| Lu | 0.31n | | | 0.29n | 0.3n | |
| Hf | 2.4n | | | 2.1n | 2.1n | |
| Ta | 0.52n | | | 0.49n | 0.49n | |
| Th | 1.6n | | | 1.7n | 2.0n | |
| U | 0.6n | | | 0.62 | 0.5n | |
| Specific Gravity Method: majors | XRF | CCA | XRF | XRF | XRF | XRF |

Table 1b Orange Mountain basalt

| Field no. | 68-F-59 | 68-F-65 | 68-F-68 | 68-F-74 | 68-F-76 | 68-F-77 |
|---|---|---|---|---|---|---|
| Alternative field no. | | | | | | |
| Lab number | W-192428 | W-192429 | W-192430 | W-192431 | W-192432 | W-192433 |
| (wgt. %) SiO2 | 51.12 | 51.95 | 52.82 | 50.61 | 49.60 | 50.64 |
| TiO2 | 1.01 | 1.13 | 1.31 | 1.09 | 1.20 | 1.14 |
| Al2O3 | 15.68 | 15.54 | 14.86 | 16.63 | 16.65 | 15.51 |
| Fe2O3 | 1.23 | 1.52 | 1.09 | 1.44 | 2.57 | 2.60 |
| FeO | 7.8 | 8.2 | 7.8 | 7.8 | 7.2 | 7.1 |
| MnO | 0.18 | 0.17 | 0.17 | 0.18 | 0.18 | 0.16 |
| MgO | 7.81 | 7.21 | 7.87 | 7.64 | 7.89 | 7.41 |
| CaO | 11.33 | 11.05 | 10.63 | 10.93 | 10.85 | 11.01 |
| Na2O | 2.00 | 1.87 | 1.76 | 1.77 | 1.81 | 1.86 |
| K2O | 0.35 | 0.31 | 0.37 | 0.38 | 0.77 | 0.82 |
| P2O5 | 0.11 | 0.10 | 0.11 | 0.11 | 0.12 | 0.17 |
| H2O+ | 0.73 | 0.56 | 0.88 | 0.88 | 1.1 | 0.88 |
| H2O- | 0.68 | 0.8 | 0.82 | 0.94 | 1.8 | 1.5 |
| CO2 | 0.02 | 0.02 | 0.04 | 0.05 | 0.02 | 0.04 |
| S | 0.01 | 0.01 | 0.01 | 0.01 | 0.01 | 0.01 |
| F | 0.02 | 0.02 | 0.02 | 0.02 | 0.02 | 0.02 |
| Cl | 0.0043 | 0.003 | 0.0038 | 0.0043 | 0.0024 | 0.002 |
| Total | 100.03 | 100.41 | 100.49 | 100.40 | 101.74 | 100.80 |
| Total Fe as Fe2O3 | 9.90 | 10.63 | 9.76 | 10.11 | 10.57 | 10.49 |
| (ppm) Li | | | | | | |
| Be | 1.0* | 1.2* | 1.2* | 1.2* | 1.1* | |
| B | <15* | 14* | <15* | <15* | 17* | 14* |
| Sc | 43* | 31 | 36 | 35.6n | 37 | 36.0n |
| V | 230* | 230* | 220* | 240* | 220* | 240* |
| Cr | 380* | 349 | 346 | 341n | 286 | 329 |
| Co | 42* | 54 | 59 | 45n | 61 | 57 |
| Ni | 100* | 108 | 110 | 100* | 117 | 111 |
| Cu | 78* | 110* | 110* | 110* | 78* | 100* |
| Zn | 93* | | 84* | 126n | 95* | 113n |
| Ga | 19* | 19* | 21* | 22* | 18* | 21* |
| As | 1.3 | 1.5 | 1.2 | 1.6 | 1.3 | 0.86 |
| Rb | | | | <32n | | 33 |
| Sr | 210* | <320* | 220* | 220* | 220* | 220* |
| Y | 26* | 27* | 25* | 24* | 27* | 26* |
| Zr | 160* | 130* | 140* | <837n | 150* | 800* |
| Nb | 14* | 13* | 12* | 18* | 18* | 14* |
| Mo | 5.0* | 5.6* | 4.2* | 4.7* | 4.9* | 4.8* |
| Pb | 20* | 17* | 15* | 21* | 19* | 20* |
| Cd | 0.044 | 0.052 | 0.43 | 0.087 | 0.044 | 0.048 |
| Sn | 16* | 16* | 6.9* | 9.1 | 17* | 8.8* |
| Sb | | | | <1.1n | | <1.0n |
| Cs | | | | 1.1n | | <1.7n |
| Ba | 93* | 140* | 81* | <239n | 90* | 200n |
| La | 24* | 27* | 25* | 11n | 24* | 10* |
| Ce | | | | 22n | | 23n |
| Nd | | | | 14n | | 14n |
| Sm | | | | 4.5n | | 4.4n |
| Eu | | | | 1.07n | | 1.09n |
| Gd | | | | 4.2n | | 2.6n |
| Tb | | | | 0.65n | | 0.84n |
| Tm | | | | 0.23n | | 0.17n |
| Yb | 3.5* | 120* | 3.9* | 2.1n | 3.9* | 2.1n |
| Lu | | | | 0.3n | | 0.28n |
| Hf | | | | 2.4n | | 2.0n |
| Ta | | | | 1.02n | | 0.43n |
| Th | | | | 2.0n | | 2.2n |
| U | | | | 0.6n | | 0.5n |
| Specific Gravity Method: majors | XRF | XRF | XRF | XRF | XRF | XRF |

Table 1b Orange Mountain basalt

| Field no. | 68-F-78 | 68-F-85 | 68-F-91 | 68-F-97 | 68-F-98 | 71-F-105 |
|---|---|---|---|---|---|---|
| Alternative field no. | | | | | | |
| Lab number | W-192434 | D-205773 | D-205774 | D-205775 | W-209838 | W-193446 |
| (wgt. %) SiO2 | 50.98 | 50.97 | 49.94 | 51.12 | 52.10 | 50.5 |
| TiO2 | 1.19 | 1.14 | 1.17 | 1.18 | 1.11 | 1.08 |
| Al2O3 | 15.81 | 14.05 | 14.17 | 14.28 | 13.60 | 13.4 |
| Fe2O3 | 1.87 | 2.55 | 3.27 | 3.01 | 2.86 | 4.03 |
| FeO | 7.00 | 7.92 | 6.93 | 7.12 | 6.50 | 6.00 |
| MnO | 0.18 | 0.19 | 0.16 | 0.16 | 0.14 | 0.15 |
| MgO | 7.88 | 7.80 | 8.42 | 7.55 | 8.40 | 4.20 |
| CaO | 10.81 | 10.84 | 11.33 | 10.33 | 11.03 | 9.00 |
| Na2O | 1.86 | 1.90 | 1.83 | 1.98 | 1.92 | 7.00 |
| K2O | 0.41 | 0.30 | 0.27 | 0.55 | 0.83 | 0.12 |
| P2O5 | 0.1 | 0.13 | 0.13 | 0.13 | 0.14 | 0.15 |
| H2O+ | 1.1 | 0.99 | 0.93 | 1.12 | 0.90 | 2.70 |
| H2O- | 1.2 | 1.28 | 1.56 | 1.75 | 1.30 | 0.80 |
| CO2 | 0.04 | 0.04 | 0.02 | 0.02 | 0.07 | 0.01 |
| S | 0.01 | 0.01 | 0.02 | 0.01 | 0.02 | - |
| F | 0.02 | 0.02 | 0.03 | 0.02 | 0.02 | 0.02 |
| Cl | 0.0024 | 0.00 | 0.00 | 0.00 | 0.004 | 0.0092 |
| Total | 100.39 | 100.06 | 100.11 | 100.28 | 100.83 | 99.14 |
| Total Fe as Fe2O3 | 9.65 | 11.35 | 10.97 | 10.92 | 10.08 | 10.70 |
| (ppm) Li | | | | | | |
| Be | 1.0* | | | | | <1.0* |
| B | <15* | | | | 11* | 38* |
| Sc | 35.4n | | | | 24* | 35.7n |
| V | 240* | | | | 130* | 230* |
| Cr | 313 | | | | 340* | 343.8n |
| Co | 52 | | | | 38* | 44.7n |
| Ni | 105 | | | | 64* | 100* |
| Cu | 100* | | | | 83* | 54* |
| Zn | 140n | 50 | 63 | 50 | 75* | 147n |
| Ga | 20* | | | | 14* | 18* |
| As | 1.1 | | | | 3.2 | 4.8 |
| Rb | <33n | | | | 29 | <35n |
| Sr | 210* | | | | 178 | 230* |
| Y | 30* | | | | 8.4* | 17* |
| Zr | <882n | | | | 54* | <883n |
| Nb | 16* | | | | 6.6* | 13* |
| Mo | 5.1* | | | | <1.0* | <1.0* |
| Pb | 14* | | | | 10* | 13* |
| Cd | 0.094 | | | | | |
| Sn | <6.8* | | | | 1.7* | <1.5* |
| Sb | <1.1n | | | | | <1.3n |
| Cs | <1.9n | | | | | <1.9n |
| Ba | <253n | | | | 170* | <249n |
| La | 11* | | | | <10* | 10n |
| Ce | 22n | | | | | 21n |
| Nd | 14n | | | | | 12n |
| Sm | 4.6n | | | | | 4.0n |
| Eu | 1.03n | | | | | 1.04n |
| Gd | 0.7n | | | | | 4.0n |
| Tb | 0.62n | | | | | 0.74n |
| Tm | 0.05n | | | | | 0.33n |
| Yb | 2.0n | | | | 1.2* | 2.2n |
| Lu | 0.34n | | | | | 0.35n |
| Hf | 2.1n | | | | | 2.4n |
| Ta | <1.21n | | | | | <1.32n |
| Th | 1.9n | | | | | 2.0n |
| U | 0.6n | | | | | 0.5n |
| Specific Gravity Method: majors | XRF | CCA | CCA | CCA | CCA | XRF |

Table 1b Orange Mountain basalt

| | |
|---|---|
| Field no. | 71-F-106 |
| Alternative field no. | |
| Lab number | W-193447 |
| (wgt. %) SiO2 | 51.7 |
| TiO2 | 1.10 |
| Al2O3 | 13.7 |
| Fe2O3 | 5.78 |
| FeO | 3.8 |
| MnO | 0.13 |
| MgO | 4.8 |
| CaO | 7.2 |
| Na2O | 6.9 |
| K2O | 0.18 |
| P2O5 | 0.14 |
| H2O+ | 3.1 |
| H2O- | 2.1 |
| CO2 | 0.02 |
| S | - |
| F | 0.03 |
| Cl | 0.0076 |
| Total | 100.65 |
| Total Fe as Fe2O3 | 10.00 |
| (ppm) Li | |
| Be | <1.0* |
| B | 31 |
| Sc | 34.5n |
| V | 190* |
| Cr | 287.3n |
| Co | 39.2n |
| Ni | 87* |
| Cu | 12* |
| Zn | 135n |
| Ga | 17* |
| As | 1.6 |
| Rb | <32n |
| Sr | 120* |
| Y | 18* |
| Zr | <791n |
| Nb | 8.5* |
| Mo | <1.0* |
| Pb | 8.5* |
| Cd | |
| Sn | <1.5* |
| Sb | <1.2n |
| Cs | <1.7n |
| Ba | <223n |
| La | 12n |
| Ce | 21n |
| Nd | 11n |
| Sm | 3.6n |
| Eu | 1.11n |
| Gd | 6.5n |
| Tb | 1.36n |
| Tm | 0.51n |
| Yb | 2.2n |
| Lu | 0.31n |
| Hf | 2.2n |
| Ta | 0.54n |
| Th | 2.1n |
| U | 0.4n |
| Specific Gravity | |
| Method: majors | XRF |

Table 2a
Preakness Basalt

| Field no. | Alternative Field no. | New Jersey 7.5 min. Quadrangle | Sample description |
|---|---|---|---|
| 66-F-16 | 66-F-16-1 | Bernardsville | basalt "mineralized" and sheared |
| 69-F-14 | | Caldwell | basalt, coarse grained, curvilinear zone |
| 69-F-15 | | Caldwell | basalt, 10 ft. below 69-F-14 |
| 69-F-17 | | Caldwell | basalt, 10 ft. below 69-F-15 |
| 69-F-19 | | Caldwell | basalt, 10 ft. below 69-F-17 |
| 69-F-20 | | Caldwell | basalt, 10 ft. below 69-F-19 |
| 69-F-24 | | Caldwell | basalt, 10 ft. below 69-F-20 |
| 69-F-30 | | Caldwell | basalt, 20 ft. below 69-F-24 |
| 69-F-37 | | Caldwell | basalt, 60 ft. below 69-F-30 |
| 69-F-47 | | Caldwell | basalt, 40 ft. below 69-F-37 |
| 69-F-49 | | Caldwell | basalt, 20 ft. below 69-F-47 |
| 70-F-192 | 70-F-192-29 | Chatham | basalt, vesicular zone near the bottom of the outcrop |
| 70-F-194 | 70-F-194-30 | Chatham | basalt, vesicular zone near the bottom of the outcrop |
| 70-F-208 | 70-F-208-31 | Chatham | basalt, coarse facies |
| 72-F-2 | | Caldwell | basalt, blocky layer near top of hill |
| 72-F-26 | | Caldwell | basalt, curvilinear zone |
| 72-F-28 | | Caldwell | basalt, vesicular zone |
| 72-F-29 | | Caldwell | basalt, blocky zone |
| 72-F-3 | | Caldwell | coarse facies, curvilinear zone near top of wall, 10 ft. below 72-F-2 |
| 72-F-30 | | Caldwell | basalt, columnar zone |
| 72-F-4 | | Caldwell | coarse facies, curvilinear zone near top of wall, 10 ft. below 72-F-3 |
| 72-F-43 | | Paterson | basalt, curvilinear zone |
| 72-F-5 | | Paterson | basalt, curvilinear zone |
| 72-F-6 | | Paterson | basalt, blocky zone |
| 72-F-7 | | Paterson | basalt, blocky zone |
| 75-F-42 | | Paterson | basalt, coarse grained, lower flow unit |
| 75-F-49 | | Paterson | basalt, curvilinear zone, lower flow unit |
| 75-F-52 | | Paterson | basalt, lower flow unit, socket end |

Table 2a
Preakness Basalt

| Field no. | Alternative Field no. | New Jersey 7.5 min. Quadrangle | Sample description |
|---|---|---|---|
| 75-F-55 | | Paterson | basalt, curvilinear zone, lower flow unit |
| 75-F-56 | | Paterson | basalt, curvilinear zone, lower flow unit |

Table 2b Preakness basalt

| Field no. | 66-F-16 | 69-F-14 | 69-F-15 | 69-F-17 | 69-F-19 | 69-F-20 |
|---|---|---|---|---|---|---|
| Alternative field no. | 66-F-16-1 | | | | | |
| Lab number | W-225003 | W-191986 | W-191987 | W-191988 | W-191989 | W-191990 |
| (wgt. %) SiO2 | 51.3 | 53.92 | 53.27 | 52.83 | 53.02 | 52.63 |
| TiO2 | 1.75 | 1.04 | 1.10 | 1.00 | 1.05 | 0.90 |
| Al2O3 | 13.1 | 13.93 | 12.53 | 13.67 | 13.59 | 14.36 |
| Fe2O3 | 8.15 | 4.62 | 3.53 | 3.18 | 2.94 | 2.65 |
| FeO | 6.7 | 7.26 | 9.39 | 8.87 | 9.09 | 8.83 |
| MnO | 0.26 | 0.19 | 0.23 | 0.23 | 0.22 | 0.21 |
| MgO | 2.84 | 4.29 | 6.21 | 6.00 | 6.14 | 6.24 |
| CaO | 8.41 | 9.35 | 9.25 | 10.00 | 10.10 | 10.32 |
| Na2O | 2.7 | 2.58 | 2.82 | 2.21 | 2.23 | 2.29 |
| K2O | 0.84 | 0.39 | 0.54 | 0.47 | 0.46 | 0.45 |
| P2O5 | 0.22 | 0.13 | 0.12 | 0.12 | 0.11 | 0.10 |
| H2O+ | 1.60 | 1.21 | 0.64 | 0.74 | 0.49 | 0.51 |
| H2O- | 2.60 | 1.13 | 0.40 | 0.64 | 0.52 | 0.57 |
| CO2 | 0.02 | 0.02 | 0.01 | 0.01 | 0.02 | 0.02 |
| S | 0.09 | 0.02 | <0.01 | 0.05 | 0.05 | 0.03 |
| F | 0.03 | 0.04 | 0.05 | 0.04 | 0.04 | 0.05 |
| Cl | <0.002 | <0.01 | <0.01 | <0.01 | <0.01 | <0.01 |
| Total | 100.49 | 100.04 | 100.03 | 99.96 | 99.96 | 100.06 |
| Total Fe as Fe2O3 | 15.60 | 12.69 | 13.97 | 13.04 | 13.04 | 12.46 |
| (ppm) Li | | | | | | |
| Be | | 1.7* | | <1.1* | 1.4* | 1.2* |
| B | | <25* | <25* | <25* | <25* | <25* |
| Sc | | 46.1n | 55.3n | 72* | 65* | 58* |
| V | | 350* | 380* | 350* | 330* | 280* |
| Cr | | 9.3n | 16.3n | 25* | 35* | 30* |
| Co | | 41.1n | 49n | 53* | 57* | 48* |
| Ni | | 27* | 42* | <77* | 42* | 38* |
| Cu | | 57* | 47* | 57* | 89* | 57* |
| Zn | | 152n | 151n | 120* | 150* | 110* |
| Ga | | 25* | 23* | 20* | 25* | 17* |
| As | | 1.6 | 0.9 | 2.1 | 1.5 | 0.5 |
| Rb | | <33n | 39 | | | |
| Sr | | 200* | 230* | 200* | 200* | 150* |
| Y | | 40* | 37* | 43* | 30* | 23* |
| Zr | | <898 | <1064 | 200* | 120* | 82* |
| Nb | | 14* | 10* | 12* | 12* | 0.5* |
| Mo | | 5.3* | 4.2* | 6.2* | 4.2* | <3.7* |
| Pb | | <17* | <17* | <17* | <17* | <17* |
| Cd | | | | | | |
| Sn | | <11* | <11* | <11* | <11* | <11* |
| Sb | | <1.0n | <1.2n | | | |
| Cs | | <1.9n | <2.3n | | | |
| Ba | | 112n | <311n | 140* | 120* | 90* |
| La | | 11n | 11n | <17* | 28* | <17* |
| Ce | | 23n | 20n | | | |
| Nd | | 13n | 12n | | | |
| Sm | | 4.1n | 4.1n | | | |
| Eu | | 1.15n | 0.99n | | | |
| Gd | | 7.5n | 4.1n | | | |
| Tb | | 0.83n | 0.88n | | | |
| Tm | | 0.34n | 0.3n | | | |
| Yb | | 3.3n | 3.1n | 5.3* | 6.2* | 3.8* |
| Lu | | 0.47n | 0.49n | | | |
| Hf | | 2.6n | 2.1n | | | |
| Ta | | <1.14n | <1.33n | | | |
| Th | | 2.7 | 2.3n | | | |
| U | | 0.8n | 0.7n | | | |
| Specific Gravity | | 2.87 | 3.00 | 2.96 | 3.00 | 2.98 |
| Method: majors | XRF | CCA | CCA | CCA | CCA | CCA |

Table 2b Preakness basalt

| Field no. | 69-F-24 | 69-F-30 | 69-F-37 | 69-F-47 | 69-F-49 | 70-F-192 |
|---|---|---|---|---|---|---|
| Alternative field no. | | | | | | 70-F-192-29 |
| Lab number | W-191991 | W-191992 | W-191993 | W-191994 | W-191995 | W-191983 |
| (wgt. %) SiO2 | 52.79 | 52.64 | 52.40 | 52.78 | 52.71 | 50.05 |
| TiO2 | 0.98 | 0.84 | 0.94 | 1.12 | 1.11 | 0.80 |
| Al2O3 | 12.12 | 13.46 | 14.54 | 14.09 | 13.95 | 13.91 |
| Fe2O3 | 2.52 | 2.04 | 2.57 | 2.81 | 2.98 | 6.57 |
| FeO | 10.38 | 9.93 | 9.14 | 9.54 | 9.58 | 5.37 |
| MnO | 0.24 | 0.22 | 0.21 | 0.21 | 0.22 | 0.16 |
| MgO | 7.55 | 7.11 | 5.95 | 5.69 | 5.64 | 5.90 |
| CaO | 9.98 | 9.68 | 10.12 | 9.86 | 9.75 | 6.27 |
| Na2O | 1.98 | 2.25 | 2.33 | 2.35 | 2.37 | 5.10 |
| K2O | 0.45 | 0.62 | 0.54 | 0.52 | 0.56 | 0.54 |
| P2O5 | 0.10 | 0.10 | 0.11 | 0.13 | 0.12 | 0.22 |
| H2O+ | 0.49 | 0.56 | 0.49 | 0.37 | 0.45 | 2.82 |
| H2O- | 0.57 | 0.49 | 0.64 | 0.42 | 0.49 | 1.00 |
| CO2 | 0.01 | 0.02 | 0.02 | 0.01 | 0.01 | 1.08 |
| S | 0.02 | 0.02 | 0.02 | 0.05 | 0.01 | - |
| F | 0.03 | 0.03 | 0.02 | 0.04 | 0.04 | 0.021 |
| Cl | <0.01 | <0.01 | <0.01 | <0.01 | <0.01 | 0.024 |
| Total | 100.15 | 99.94 | 99.98 | 99.89 | 99.93 | 99.79 |
| Total Fe as Fe2O3 | 14.06 | 13.08 | 12.73 | 13.41 | 13.63 | 12.54 |
| (ppm) Li | | | | | | |
| Be | <1.1* | 1.2* | 1.3* | 1.4* | 1.3* | 1.0* |
| B | <25* | <25* | <25* | <25* | <25* | 110* |
| Sc | 55.0n | 72* | 45.3n | 63* | 67* | 53* |
| V | 400* | 350* | 330* | 350* | 350* | 270* |
| Cr | 43.8n | 60* | 28.8n | 35* | 35* | 89* |
| Co | 53.1n | 62* | 46.5n | 57* | 60* | 47* |
| Ni | 55* | 55* | 53* | 50* | 50* | 54* |
| Cu | 60* | 87* | 89* | 87* | 89* | 120* |
| Zn | 172n | 150* | 133n | 150* | 140* | 90* |
| Ga | 18* | 25* | 22* | 25* | 28* | 27* |
| As | 0.5 | 0.5 | 1.1 | 0.7 | 1.1 | 0.4 |
| Rb | <39n | | 19n | | | |
| Sr | 130* | 170* | 220* | 200* | 200* | 170* |
| Y | 33* | 32* | 35* | 35* | 35* | 36* |
| Zr | <1096n | 120* | <893n | 130* | 140* | 130* |
| Nb | 8.9* | 9.0* | 15* | 12* | 10* | <22* |
| Mo | 4.2* | 5.5* | <3.7* | 4.7* | 4.3* | <3.2* |
| Pb | <17* | <17* | <17* | <17* | <17* | 16* |
| Cd | | | | | | |
| Sn | <11* | <11* | <11* | <11* | <11* | <6.8* |
| Sb | <1.3n | | <1.2n | | | |
| Cs | <2.4n | | <1.9n | | | |
| Ba | <317n | 150* | 120n | 130* | 140* | 180* |
| La | 8n | 25* | 9n | 27* | 22* | 13* |
| Ce | 19n | | 18n | | | |
| Nd | 10n | | 9n | | | |
| Sm | 3.6n | | 3.5n | | | |
| Eu | 0.87n | | 0.94n | | | |
| Gd | 4.9n | | 5.1n | | | |
| Tb | 1.99n | | 1.63n | | | |
| Tm | 0.38n | | 0.3n | | | |
| Yb | 2.9n | 5.5* | 2.8n | 6.5* | 6.7* | 4.7* |
| Lu | 0.47n | | 0.42n | | | |
| Hf | 1.5n | | 1.9n | | | |
| Ta | <1.34n | | <1.1n | | | |
| Th | 1.8n | | 1.9n | | | |
| U | 0.5n | | 0.6n | | | |
| Specific Gravity | 3.03 | 3.00 | 2.96 | 2.98 | 2.98 | 2.84 |
| Method: majors | CCA | CCA | CCA | CCA | CCA | CCA |

Table 2b Preakness basalt

| Field no. | 70-F-194 | 70-F-208 | 72-F-2 | 72-F-26 | 72-F-28 | 72-F-29 |
|---|---|---|---|---|---|---|
| Alternative field no. | 70-F-194-30 | 70-F-208-31 | | | | |
| Lab number | W-191984 | W-191985 | W-178814 | W-225005 | W-225007 | W-225006 |
| (wgt. %) SiO2 | 49.96 | 52.12 | 51.20 | 50.7 | 51.8 | 51.8 |
| TiO2 | 0.78 | 2.02 | 0.93 | 0.75 | 1.00 | 0.99 |
| Al2O3 | 14.05 | 12.71 | 14.94 | 15.00 | 13.4 | 13.5 |
| Fe2O3 | 6.36 | 9.36 | 7.64 | 2.51 | 7.32 | 5.44 |
| FeO | 5.28 | 7.44 | 4.23 | 8.00 | 5.2 | 6.8 |
| MnO | 0.17 | 0.20 | 0.16 | 0.19 | 0.21 | 0.25 |
| MgO | 5.77 | 2.51 | 6.40 | 7.81 | 5.59 | 5.88 |
| CaO | 6.59 | 7.66 | 7.74 | 11.5 | 5.48 | 6.31 |
| Na2O | 5.32 | 2.85 | 3.50 | 1.97 | 5.22 | 4.6 |
| K2O | 0.54 | 0.80 | 0.65 | 0.23 | 0.33 | 0.76 |
| P2O5 | 0.17 | 0.23 | 0.23 | 0.09 | 0.12 | 0.14 |
| H2O+ | 3.25 | 1.22 | 1.71 | 0.44 | 2.9 | 2.5 |
| H2O- | 0.95 | 1.33 | 0.41 | 0.94 | 1.7 | 1.1 |
| CO2 | 1.32 | 0.02 | 0.02 | 0.05 | 0.21 | 0.07 |
| S | 0.4 | 0.6 | - | 0.03 | <0.01 | <0.01 |
| F | 0.015 | 0.016 | 0.023 | <0.02 | 0.02 | 0.02 |
| Cl | 0.007 | 0.003 | 0.027 | <0.002 | 0.002 | 0.002 |
| Total | 100.51 | 100.47 | 99.76 | 100.18 | 100.48 | 100.14 |
| Total Fe as Fe2O3 | 12.23 | 17.63 | 12.34 | 11.40 | 13.10 | 13.00 |
| (ppm) Li | | | | | | |
| Be | 0.85* | <0.68* | | | | |
| B | 110* | <15* | | | | |
| Sc | 50* | 57* | | | | |
| V | 260* | 530* | | | | |
| Cr | 82* | 6.5* | | | | |
| Co | 42* | 46* | | | | |
| Ni | 82* | 20* | | | | |
| Cu | 92* | 120* | | | | |
| Zn | 140* | 140* | 57 | | | |
| Ga | 21* | 27* | | | | |
| As | | | 2.3 | | | |
| Rb | | | | | | |
| Sr | 160* | 180* | | | | |
| Y | 31* | 53* | | | | |
| Zr | 110* | 250* | | | | |
| Nb | <22* | <22* | | | | |
| Mo | <3.2* | <3.2* | | | | |
| Pb | 13* | 20* | | | | |
| Cd | | | | | | |
| Sn | <6.8* | <6.8* | | | | |
| Sb | | | | | | |
| Cs | | | | | | |
| Ba | 100* | 180* | | | | |
| La | 13* | 37* | | | | |
| Ce | | | | | | |
| Nd | | | | | | |
| Sm | | | | | | |
| Eu | | | | | | |
| Gd | | | | | | |
| Tb | | | | | | |
| Tm | | | | | | |
| Yb | 4.2* | 6.9* | | | | |
| Lu | | | | | | |
| Hf | | | | | | |
| Ta | | | | | | |
| Th | | | | | | |
| U | | | | | | |
| Specific Gravity | 2.87 | 2.96 | 2.95 | | | |
| Method: majors | CCA | CCA | CCA | XRF | XRF | XRF |

Table 2b Preakness basalt

| Field no. | 72-F-3 | 72-F-30 | 72-F-4 | 72-F-43 | 72-F-5 | 72-F-6 |
|---|---|---|---|---|---|---|
| Alternative field no. | | | | | | |
| Lab number | W-178815 | W-225004 | W-178816 | W-224999 | W-178817 | W-178818 |
| (wgt. %) SiO2 | 52.69 | 50.8 | 54.98 | 52.7 | 50.59 | 51.86 |
| TiO2 | 1.06 | 0.75 | 1.23 | 1.06 | 1.14 | 1.06 |
| Al2O3 | 15.01 | 14.9 | 11.71 | 13.9 | 14.03 | 14.34 |
| Fe2O3 | 10.14 | 2.05 | 16.19 | 2.68 | 8.10 | 8.14 |
| FeO | 4.02 | 8.5 | 2.18 | 10.1 | 4.69 | 4.92 |
| MnO | 0.16 | 0.19 | 0.08 | 0.23 | 0.16 | 0.17 |
| MgO | 3.25 | 7.55 | 0.95 | 5.47 | 5.85 | 5.43 |
| CaO | 8.91 | 11.3 | 3.74 | 9.49 | 7.84 | 8.85 |
| Na2O | 2.10 | 1.99 | 3.28 | 2.65 | 4.06 | 2.94 |
| K2O | 0.58 | 0.20 | 1.50 | 0.9 | 0.56 | 0.73 |
| P2O5 | 0.19 | 0.09 | 0.22 | 0.13 | 0.2 | 0.22 |
| H2O+ | 1.35 | 0.97 | 2.19 | 0.44 | 2.33 | 1.14 |
| H2O- | 0.81 | 0.82 | 2.09 | 0.7 | 0.61 | 0.44 |
| CO2 | 0.02 | 0.03 | 0.02 | 0.03 | 0.1 | 0.08 |
| S | - | 0.03 | - | <0.01 | - | - |
| F | 0.014 | 0.01 | 0.011 | <0.01 | 0.014 | 0.021 |
| Cl | 0.0077 | <0.002 | 0.0084 | 0.075 | 0.036 | 0.021 |
| Total | 100.29 | 100.14 | 100.36 | 100.48 | 100.26 | 100.32 |
| Total Fe as Fe2O3 | 14.61 | 11.50 | 18.61 | 13.90 | 13.31 | 13.61 |
| (ppm) Li | | | | | | |
| Be | | | | | | |
| B | | | | | | |
| Sc | | | | | | |
| V | | | | | | |
| Cr | | | | | | |
| Co | | | | | | |
| Ni | | | | | | |
| Cu | | | | | | |
| Zn | 81 | | 60 | | 44 | 54 |
| Ga | | | | | | |
| As | 1.9 | | 2 | | 1.3 | 1.9 |
| Rb | | | | | | |
| Sr | | | | | | |
| Y | | | | | | |
| Zr | | | | | | |
| Nb | | | | | | |
| Mo | | | | | | |
| Pb | | | | | | |
| Cd | | | | | | |
| Sn | | | | | | |
| Sb | | | | | | |
| Cs | | | | | | |
| Ba | | | | | | |
| La | | | | | | |
| Ce | | | | | | |
| Nd | | | | | | |
| Sm | | | | | | |
| Eu | | | | | | |
| Gd | | | | | | |
| Tb | | | | | | |
| Tm | | | | | | |
| Yb | | | | | | |
| Lu | | | | | | |
| Hf | | | | | | |
| Ta | | | | | | |
| Th | | | | | | |
| U | | | | | | |
| Specific Gravity | 2.93 | | 2.88 | | 2.89 | 2.98 |
| Method: majors | CCA | XRF | CCA | XRF | CCA | CCA |

Table 2b Preakness basalt

| Field no. | 72-F-7 | 75-F-42 | 75-F-49 | 75-F-52 | 75-F-55 | 75-F-56 |
|---|---|---|---|---|---|---|
| Alternative field no. | | | | | | |
| Lab number | W-178819 | W-192435 | W-192437 | W-192436 | W-192439 | W-192438 |
| (wgt. %) SiO2 | 50.53 | 56.87 | 53.9 | 51.48 | 50.97 | 52.85 |
| TiO2 | 0.86 | 1.74 | 1.20 | 1.12 | 1.00 | 1.23 |
| Al2O3 | 13.77 | 12.13 | 14.02 | 15.28 | 15.66 | 15.18 |
| Fe2O3 | 8.28 | 5.64 | 1.23 | 1.76 | 2.65 | 3.15 |
| FeO | 4.86 | 8.6 | 9.4 | 9.7 | 8.7 | 8.3 |
| MnO | 0.17 | 0.24 | 0.21 | 0.22 | 0.26 | 0.22 |
| MgO | 5.94 | 2.37 | 5.68 | 4.66 | 5.7 | 4.82 |
| CaO | 8.39 | 6.72 | 6.78 | 9.83 | 9.72 | 9.84 |
| Na2O | 3.58 | 2.72 | 4.38 | 3.63 | 2.54 | 2.71 |
| K2O | 0.58 | 1.23 | 1.18 | 0.54 | 0.59 | 0.5 |
| P2O5 | 0.18 | 0.29 | 0.08 | 0.13 | 0.12 | 0.14 |
| H2O+ | 2.48 | 0.9 | 1.7 | 0.24 | 0.47 | 1.1 |
| H2O- | 0.38 | 2.5 | 0.27 | 0.58 | 0.7 | 1.2 |
| CO2 | 0.1 | 0.01 | 0.02 | 0.08 | 0.02 | 0.02 |
| S | - | 0.12 | 0.01 | 0.06 | 0.03 | 0.06 |
| F | 0.013 | 0.03 | 0.02 | 0.01 | 0.02 | 0.02 |
| Cl | 0.016 | 0.01 | 0.03 | 0.002 | 0.0035 | 0.0075 |
| Total | 100.10 | 101.96 | 100.05 | 99.25 | 99.10 | 101.26 |
| Total Fe as Fe2O3 | 13.68 | 15.20 | 11.68 | 12.54 | 12.32 | 12.37 |
| (ppm) Li | | | | | | |
| Be | | 2.4* | 1.0* | 1.1* | 1.2* | 1.1* |
| B | | 16* | 37* | 20* | 11* | <15* |
| Sc | | 38 | 34 | 43 | 45 | 41 |
| V | | 160* | 270* | 280* | 310* | 280* |
| Cr | | 6.2* | 99 | 60 | 42 | 39 |
| Co | | 42 | 45 | 53 | 37 | 46 |
| Ni | | 9 | 51 | 45 | 16 | 26 |
| Cu | | 80* | 110* | 76* | 52* | 77* |
| Zn | 53 | 170* | 88* | 130* | 130* | 140* |
| Ga | | 31* | 22* | 22* | 27* | 24* |
| As | 1.8 | 2.2 | 0.96 | 2.1 | 2.9 | 1.5 |
| Rb | | | | | | |
| Sr | | 170* | 130* | 180* | 180* | 170* |
| Y | | 50* | 27* | 33* | 31* | 32* |
| Zr | | 240* | 90* | 110* | 120* | 100* |
| Nb | | 13* | 9.4* | 15* | 15* | 13* |
| Mo | | 5.8* | 5.9* | 6.2* | 6.4* | 7.2* |
| Pb | | 24* | 15* | 22* | 20* | 14* |
| Cd | | 0.083 | 0.071 | 0.071 | 0.067 | 0.075 |
| Sn | | <6.8* | <6.8* | <6.8* | <6.8* | <6.8* |
| Sb | | | | | | |
| Cs | | | | | | |
| Ba | | 360* | 130* | 98* | 160* | 92* |
| La | | 43* | 16* | 22* | 21* | 26* |
| Ce | | | | | | |
| Nd | | | | | | |
| Sm | | | | | | |
| Eu | | | | | | |
| Gd | | | | | | |
| Tb | | | | | | |
| Tm | | | | | | |
| Yb | | 9.6* | 4.6* | 5.5* | 6.7* | 6.1* |
| Lu | | | | | | |
| Hf | | | | | | |
| Ta | | | | | | |
| Th | | | | | | |
| U | | | | | | |
| Specific Gravity | 2.95 | | | | | |
| Method: majors | CCA | XRF | XRF | XRF | XRF | XRF |

Table 3a
Hook Mountain Basalt

| Field no. | Alternative Field no. | New Jersey 7.5 min. Quadrangle | Sample description |
|---|---|---|---|
| 67-F-155 | | Bernardsville | basalt, lower flow unit |
| 70-F-150 | | Caldwell | basalt, upper flow unit, curvilinear zone |
| 70-F-151 | | Caldwell | basalt, upper flow unit, curvilinear zone |
| 70-F-153 | | Caldwell | basalt, upper flow unit, curvilinear zone |
| 70-F-155 | | Caldwell | basalt, upper flow unit, curvilinear zone |
| 73-F-10 | | Pompton Plains | basalt, curvilinear zone, lower flow unit, 7 ft. above 73-F-9 |
| 73-F-11 | | Pompton Plains | basalt, curvilinear zone, lower flow unit, 5 ft. above 73-F-10 |
| 73-F-12 | | Pompton Plains | basalt, curvilinear zone, lower flow unit, 5 ft. above 73-F-11 |
| 73-F-13 | | Pompton Plains | basalt, blocky zone, lower flow unit, just above curvilinear/blocky contact, 5 ft. above 73-F-12 |
| 73-F-14 | | Pompton Plains | basalt, blocky zone, lower flow unit, just above contact, 5 ft. above 73-F-13 |
| 73-F-15 | | Pompton Plains | basalt, columnar zone, lower flow unit, 5 ft. above 73-F-14 |
| 73-F-18 | | Pompton Plains | basalt, columnar zone, lower flow unit |
| 73-F-19 | | Pompton Plains | basalt, columnar zone, lower flow unit, 5 ft. above 73-F-18 |
| 73-F-20 | | Pompton Plains | basalt, vesicular zone, just above columnar/vesicular contact, lower flow unit, 4 ft. above 73-F-19 |
| 73-F-21 | | Pompton Plains | basalt, vesicular zone, lower flow unit |
| 73-F-22 | | Pompton Plains | basalt, curvilinear zone, upper flow unit |
| 73-F-23 | 73-F-37-A-3 | Pompton Plains | basalt, vesicular zone, upper flow unit (base of curvilinear zone) 2.8 ft. below 77-F-22 |
| 73-F-24 | | Pompton Plains | basalt, curvilinear zone, 8.7 ft. above the curvilinear/vesicular contact, upper flow unit |
| 73-F-26 | | Pompton Plains | basalt, blocky zone, lower flow unit |
| 73-F-6 | | Pompton Plains | basalt, base of curvilinear zone, lower flow unit |
| 73-F-7 | | Pompton Plains | basalt, curvilinear zone, 5 ft. above 73-F-6, lower flow unit |
| 73-F-8 | | Pompton Plains | basalt, curvilinear zone, 5 ft. above 73-F-7, lower flow unit |
| 73-F-9 | | Pompton Plains | basalt, curvilinear zone, 5 ft. above 73-F-8, lower flow unit |
| B-13 | B-13-7 | Bernardsville | basalt, blocky zone |
| B-17 | | Bernardsville | basalt, blocky zone |
| B-2 | | Bernardsville | basalt, blocky zone |
| B-20 | B-20-1 | Bernardsville | basalt, columnar zone |
| B-30 | B-30-2 | Bernardsville | basalt, columnar zone |

Table 3a
Hook Mountain Basalt

| Field no. | Alternative Field no. | New Jersey 7.5 min. Quadrangle | Sample description |
|---|---|---|---|
| B-6 | B-6-6 | Bernardsville | basalt, blocky zone |
| BT-2 | BT-2-3 | Bernardsville | basalt, vesicular zone |
| BT-5 | | Bernardsville | basalt, vesicular zone |
| C-2 | C-2-9 | Bernardsville | basalt, curvilinear zone, upper flow unit |
| C-6 | | Bernardsville | basalt, curvilinear zone, upper flow unit |
| D-1 | | Bernardsville | basalt, upper flow unit |
| M-1-AAAA | M-1-AAAA-11 | Bernardsville | basalt, tension jointed, blocky zone, upper flow unit |
| M-1-M | M-1-M-12 | Bernardsville | basalt, tension jointed, blocky zone, upper flow unit |
| ML-10 | ML-10-15 | Bernardsville | basalt, curvilinear zone, upper flow unit |
| ML-112 | ML-112-22 | Bernardsville | basalt, curvilinear zone, upper flow unit |
| ML-122 | ML-122-23 | Bernardsville | basalt, curvilinear zone, upper flow unit |
| ML-146 | | Bernardsville | basalt, curvilinear zone, upper flow unit |
| ML-162 | | Bernardsville | basalt, curvilinear zone, upper flow unit |
| ML-167 | | Bernardsville | basalt, curvilinear zone, upper flow unit |
| ML-170 | | Bernardsville | basalt, curvilinear zone, upper flow unit |
| ML-2 | | Bernardsville | basalt, curvilinear zone, upper flow unit |
| ML-28 | ML-28-16 | Bernardsville | basalt, curvilinear zone, upper flow unit |
| ML-48 | | Bernardsville | basalt, curvilinear zone, upper flow unit |
| ML-64 | ML-64-18 | Bernardsville | basalt, curvilinear zone, upper flow unit |
| ML-69 | | Bernardsville | basalt, curvilinear zone, upper flow unit |
| ML-86 | | Bernardsville | basalt, curvilinear zone, upper flow unit |
| ML-9 | | Bernardsville | basalt, curvilinear zone, upper flow unit |
| ML-98 | ML-98-21 | Bernardsville | basalt, curvilinear zone, upper flow unit |
| ML-DH-11-10 | | Bernardsville | basalt, vesicular zone top, lower flow unit |
| ML-DH-11-14 | | Bernardsville | basalt, vesicular zone top, lower flow unit |
| ML-DH-11-18 | | Bernardsville | basalt, curvilinear zone, lower flow unit |
| ML-DH-11-19 | | Bernardsville | basalt, curvilinear zone, lower flow unit |
| ML-DH-11-21 | | Bernardsville | basalt, curvilinear zone, lower flow unit |

Table 3a
Hook Mountain Basalt

| Field no. | Alternative Field no. | New Jersey 7.5 min. Quadrangle | Sample description |
|---|---|---|---|
| ML-DH-11-23 | | Bernardsville | basalt, curvilinear zone, lower flow unit |
| ML-DH-11-25 | | Bernardsville | basalt, curvilinear zone, lower flow unit |
| ML-DH-11-27 | | Bernardsville | basalt, dull luster, veined, lower flow unit |
| ML-DH-11-29 | | Bernardsville | basalt, dull luster, lower flow unit |
| ML-DH-11-3 | | Bernardsville | basalt |
| ML-DH-11-32A | | Bernardsville | hornfels |
| ML-DH-11-32D | | Bernardsville | hornfels |
| ML-DH-11-9 | | Bernardsville | basalt, vesicular zone, top, lower flow unit |
| ML-DH-3-1 | | Bernardsville | basalt, upper flow unit |
| ML-DH-3-10 | | Bernardsville | basalt, upper flow unit |
| ML-DH-3-13 | | Bernardsville | basalt, lower flow unit |
| ML-DH-3-15 | | Bernardsville | basalt, lower flow unit |
| ML-DH-3-18 | | Bernardsville | basalt, lower flow unit |
| ML-DH-3-22 | | Bernardsville | basalt, vesicular zone, lower flow unit |
| ML-DH-3-3 | | Bernardsville | basalt, upper flow unit |
| ML-DH-3-5 | | Bernardsville | basalt, upper flow unit |
| NV-F-1 | O-106 | Bernardsville | basalt |
| NV-F-2 | O-104 | Bernardsville | basalt |
| O-152-1 | | Caldwell | altered, upper flow unit, curvilinear zone |
| O-152-10 | | Caldwell | upper flow unit |
| O-152-11 | | Caldwell | upper flow unit |
| O-152-2 | | Caldwell | altered, upper flow unit, curvilinear zone |
| O-152-3 | | Caldwell | altered, upper flow unit, curvilinear zone |
| O-152-4 | | Caldwell | altered, upper flow unit, curvilinear zone |
| O-152-5 | | Caldwell | altered, upper flow unit, pillow zone |
| O-152-54-12 | | Caldwell | upper flow unit, curvilinear zone |
| O-152-6 | | Caldwell | altered, upper flow unit, curvilinear zone |
| O-152-7 | | Caldwell | upper flow unit, curvilinear zone |

Table 3a
Hook Mountain Basalt

| Field no. | Alternative Field no. | New Jersey 7.5 min. Quadrangle | Sample description |
|---|---|---|---|
| O-152-8 | | Caldwell | upper flow unit, curvilinear zone |
| O-152-9 | | Caldwell | upper flow unit, curvilinear zone |
| O-152-K | | Caldwell | upper flow unit, curvilinear zone |
| O-15X-Q | O-152 | Pompton Plains | upper flow unit, curvilinear zone |
| O-176 | | Boonton | basalt |
| O-178-B | | Pompton Plains | basalt |
| O-183 | O-180 | Pompton Plains | basalt |
| O-185 | | Pompton Plains | basalt |
| O-186-6 | | Pompton Plains | basalt |
| O-191 | | Pompton Plains | basalt |
| O-193 | O-193-16 | Paterson | basalt |
| O-205 | | Bernardsville | basalt |
| O-228 | | Bernardsville | basalt |
| O-27 | | Bernardsville | basalt |
| O-48 | | Chatham | basalt |
| O-59 | | Chatham | basalt |
| O-96 | | Chatham | basalt |
| RH-F-1 | RW-5-25 | Caldwell | basalt |
| RH-F-2 | RW-5-33 | Caldwell | basalt |

Table 3b Hook Mountain basalt

| Field no. | 67-F-155 | 70-F-150 | 70-F-151 | 70-F-153 | 70-F-155 | 73-F-10 |
|---|---|---|---|---|---|---|
| Alternative field no. | 67-F-55 | | | | | |
| Lab number | W-193443 | W-213586 | W-213587 | W-213588 | W-213589 | W-188245 |
| (wgt.%) SiO2 | 49.2 | 49.40 | 50.50 | 50.40 | 50.70 | 49.62 |
| TiO2 | 1.53 | 1.25 | 1.25 | 1.39 | 1.38 | 1.44 |
| Al2O3 | 13.4 | 14.10 | 13.80 | 13.20 | 13.20 | 13.25 |
| Fe2O3 | 6.68 | 4.89 | 5.50 | 5.04 | 4.59 | 3.91 |
| FeO | 8.3 | 9.10 | 9.00 | 9.50 | 10.00 | 10.89 |
| MnO | 0.18 | 0.23 | 0.23 | 0.22 | 0.23 | 0.24 |
| MgO | 4.2 | 6.49 | 6.08 | 5.99 | 5.96 | 5.61 |
| CaO | 7.00 | 9.80 | 9.90 | 10.20 | 10.00 | 9.97 |
| Na2O | 4.5 | 2.08 | 2.17 | 1.94 | 1.99 | 2.12 |
| K2O | 0.71 | 0.45 | 0.53 | 0.51 | 0.53 | 0.30 |
| P2O5 | 0.21 | 0.19 | 0.2 | 0.17 | 0.18 | 0.16 |
| H2O+ | 0.93 | 1.60 | 1.4 | 1.3 | 1.0 | 1.04 |
| H2O- | 0.67 | 1.90 | 1.4 | 1.6 | 1.1 | 1.26 |
| CO2 | 2.3 | 0.08 | 0.15 | 0.05 | 0.11 | 0.07 |
| S | - | - | - | - | - | - |
| F | 0.02 | 0.02 | 0.02 | 0.02 | 0.02 | 0.02 |
| Cl | 0.0047 | 0.0007 | 0.0026 | 0.0026 | 0.0025 | <0.01 |
| Total | 99.81 | 101.48 | 101.96 | 101.46 | 100.86 | 99.88 |
| Total Fe as Fe2O3 | 15.90 | 15.00 | 15.50 | 15.60 | 15.70 | 16.01 |
| (ppm) Li | | | | | | |
| Be | <1.0* | <1.0* | <1.0* | <1.0* | <1.0* | <1.00* |
| B | 83* | <6.8* | <6.8* | <6.8* | <6.8* | 20.3* |
| Sc | 45.9n | 46* | 55* | 53* | 44* | 38.1* |
| V | 310* | 280* | 300* | 260* | 220* | 299* |
| Cr | 67.3n | 88* | 79* | 68* | 73* | 51.3* |
| Co | 48.0n | 61* | 56* | 56* | 59* | 57.7* |
| Ni | 66* | 68* | 63* | 58* | 59* | 85.0* |
| Cu | 260* | 150* | 130* | 130* | 130* | 113* |
| Zn | 250n | 160* | 200* | 130* | 150* | 156* |
| Ga | 22* | 20* | 19* | 17* | 20* | 23.5* |
| As | 2.2 | 1.4 | 0.53 | 0.58 | 0.92 | 0.7 |
| Rb | <39n | 7 | 7 | 16 | 14 | |
| Sr | 220* | 115 | 119 | 115 | 116 | 229* |
| Y | 26* | 26* | 24* | 25* | 23* | 45.4* |
| Zr | <984n | 99* | 72* | 87* | 68* | 250* |
| Nb | 13 | 8.4* | 4.5* | 8.1* | 8.1* | <10.0* |
| Mo | <1.0* | <1.0* | <1.0* | <1.0* | <1.0* | <1.47* |
| Pb | 58* | 15* | 110* | 13* | 47* | 31.7* |
| Cd | | | | | | |
| Sn | <1.5* | <1.5* | <1.5* | <1.5* | <1.5* | <14.7* |
| Sb | <1.6n | | | | | |
| Cs | <2.2n | | | | | |
| Ba | 389n | 97* | 120* | 79* | 92* | 144* |
| La | 10n | <10* | 15* | <10* | <10* | <4.64* |
| Ce | 20n | | | | | |
| Nd | 11n | | | | | |
| Sm | 3.9n | | | | | |
| Eu | 1.23n | | | | | |
| Gd | 6.0n | | | | | |
| Tb | 1.04n | | | | | |
| Tm | 0.24n | | | | | |
| Yb | 3.7n | 2.6* | 3.0* | 2.8* | 2.7* | 5.67* |
| Lu | 0.55n | | | | | |
| Hf | 2.7n | | | | | |
| Ta | <1.33n | | | | | |
| Th | 2.2n | | | | | |
| U | 0.3n | | | | | |
| (ppb) Au | | | | | | |
| Specific Gravity | | | | | | |
| Method: majors | XRF | XRF | XRF | XRF | XRF | CCA |

Table 3b Hook Mountain basalt

| Field no. | 73-F-11 | 73-F-12 | 73-F-13 | 73-F-14 | 73-F-15 | 73-F-18 |
|---|---|---|---|---|---|---|
| Alternative field no. | | | | | | |
| Lab number | W-188246 | W-188247 | W-188248 | W-188249 | W-188250 | W-188251 |
| (wgt.%) SiO2 | 50.23 | 48.39 | 49.2 | 48.15 | 49.64 | 47.81 |
| TiO2 | 1.44 | 1.37 | 1.37 | 1.39 | 1.39 | 2.29 |
| Al2O3 | 13.4 | 13.49 | 13.19 | 13.46 | 12.74 | 12.03 |
| Fe2O3 | 3.82 | 5.32 | 5.41 | 3.82 | 3.35 | 4.77 |
| FeO | 10.89 | 9.68 | 9.35 | 10.89 | 10.89 | 12.27 |
| MnO | 0.24 | 0.24 | 0.21 | 0.22 | 0.23 | 0.24 |
| MgO | 5.37 | 5.76 | 5.64 | 5.63 | 5.30 | 4.77 |
| CaO | 9.87 | 10.24 | 9.06 | 8.72 | 8.11 | 7.48 |
| Na2O | 2.13 | 1.98 | 2.79 | 3.40 | 3.82 | 4.28 |
| K2O | 0.28 | 0.24 | 0.49 | 0.32 | 0.89 | 0.12 |
| P2O5 | 0.16 | 0.17 | 0.17 | 0.17 | 0.18 | 0.26 |
| H2O+ | 0.93 | 0.97 | 1.48 | 2.89 | 2.65 | 2.76 |
| H2O- | 1.09 | 1.99 | 1.50 | 0.66 | 0.42 | 0.42 |
| CO2 | 0.01 | 0.04 | 0.03 | 0.08 | 0.21 | 0.31 |
| S | - | - | - | - | - | - |
| F | 0.02 | 0.02 | 0.02 | 0.02 | 0.02 | 0.03 |
| Cl | <0.01 | <0.01 | 0.01 | 0.01 | 0.01 | <0.01 |
| Total | 99.86 | 99.88 | 99.89 | 99.80 | 99.82 | 99.81 |
| Total Fe as Fe2O3 | 15.92 | 16.08 | 15.80 | 15.92 | 15.45 | 18.41 |
| (ppm) Li | | | | | | |
| Be | 1.12* | <1.00* | <1.00* | <1.00* | 1.07* | 1.40* |
| B | 15.5* | <14.7* | <14.7* | 25.3* | <14.7* | <14.7* |
| Sc | 44.5n | 40.1* | 42.7* | 44.4n | 44.4n | 40.6* |
| V | 369* | 288* | 305* | 241* | 257* | 317* |
| Cr | 68.7n | 61.5* | 64.3* | 64.1n | 64.5n | 39.3* |
| Co | 51.3n | 55.1* | 62.5* | 49.4n | 48.5n | 51.0* |
| Ni | 94.4* | 83.4* | 91.6* | 79.7* | 97.6* | 54.4* |
| Cu | 191* | 181* | 231* | 228* | 146* | 286* |
| Zn | 177n | 144* | 129* | 171n | 203n | 195* |
| Ga | 27.1* | 24.7* | 27.5* | 30.8* | 24.7* | 26.1* |
| As | 0.8 | 0.6 | 0.3 | 0.4 | 1.3 | 0.5 |
| Rb | <38n | | | <38n | <38n | |
| Sr | 200* | 206* | 151* | 221* | 93.5* | 28.8* |
| Y | 48.4* | 40.4* | 42.0* | 33.8* | 45.4* | 56.7* |
| Zr | <1002n | 134* | 190* | <997n | <990n | 224* |
| Nb | <10.0* | <10.0* | <10.0* | <10.0* | <10.0* | 10.6* |
| Mo | <1.47* | <1.47* | <1.47* | <1.47* | <1.47* | <1.47* |
| Pb | 21.7* | 15.6* | 14.4* | 10.7* | 13.1* | <6.81* |
| Cd | | | | | | |
| Sn | <14.7* | <14.7* | <14.7* | <14.7* | <14.7* | <14.7* |
| Sb | <1.3n | | | <1.4n | <1.3n | |
| Cs | 1.7n | | | <2.2n | <2.1n | |
| Ba | <284n | 55.6* | 80.1* | 162n | 133n | <14.7* |
| La | 10n | <4.64* | <4.64* | 12n | 11n | <4.64* |
| Ce | 22n | | | 27n | 23n | |
| Nd | 14n | | | 14n | 15n | |
| Sm | 5.3n | | | 5.1n | 5.0n | |
| Eu | 1.3n | | | 1.29n | 1.33n | |
| Gd | 5.0n | | | 4.9n | 3.0n | |
| Tb | 0.94n | | | 0.93n | 0.97n | |
| Tm | 0.49n | | | 0.54n | 0.38n | |
| Yb | 4.4n | 5.65* | 6.32* | 4.4n | 4.4n | 9.18* |
| Lu | 0.64n | | | 0.63n | 0.63n | |
| Hf | 2.5n | | | 3.0n | 2.7n | |
| Ta | <1.32n | | | <1.33n | <1.33n | |
| Th | 2.3n | | | 2.4n | 2.1n | |
| U | 0.6n | | | 0.8n | 0.8n | |
| (ppb) Au | | | | | | |
| Specific Gravity Method: majors | CCA | CCA | CCA | CCA | CCA | CCA |

Table 3b Hook Mountain basalt

| Field no. | 73-F-19 | 73-F-20 | 73-F-21 | 73-F-22 | 73-F-23 | 73-F-24 |
|---|---|---|---|---|---|---|
| Alternative field no. | | | | | 73-F-37-A3 | |
| Lab number | W-188252 | W-188253 | W-188254 | W-188255 | W-188256 | W-188257 |
| (wgt.%) SiO2 | 49.65 | 50.89 | 49.41 | 48.89 | 46.65 | 51.25 |
| TiO2 | 1.45 | 1.52 | 1.45 | 1.30 | 1.29 | 1.40 |
| Al2O3 | 13.06 | 12.00 | 12.89 | 13.06 | 13.58 | 13.19 |
| Fe2O3 | 3.64 | 4.40 | 3.87 | 6.49 | 7.51 | 4.88 |
| FeO | 11.26 | 10.17 | 10.71 | 7.77 | 1.19 | 9.50 |
| MnO | 0.22 | 0.26 | 0.22 | 0.23 | 0.04 | 0.21 |
| MgO | 5.75 | 5.45 | 5.39 | 5.76 | 5.84 | 5.32 |
| CaO | 6.84 | 7.31 | 7.08 | 6.30 | 8.03 | 9.31 |
| Na2O | 4.07 | 4.55 | 4.32 | 4.54 | 3.59 | 2.33 |
| K2O | 0.41 | 0.14 | 0.47 | 0.53 | 1.98 | 0.83 |
| P2O5 | 0.17 | 0.17 | 0.17 | 0.15 | 0.27 | 0.16 |
| H2O+ | 2.61 | 2.30 | 2.90 | 2.99 | 2.70 | 0.71 |
| H2O- | 0.56 | 0.62 | 0.54 | 1.04 | 3.50 | 0.80 |
| CO2 | 0.05 | 0.01 | 0.31 | 0.87 | 3.55 | 0.03 |
| S | - | - | - | - | - | - |
| F | 0.02 | 0.02 | 0.02 | 0.02 | 0.05 | <0.01 |
| Cl | <0.01 | 0.01 | 0.01 | 0.01 | 0.01 | 0.01 |
| Total | 99.74 | 99.79 | 99.73 | 99.92 | 99.72 | 99.92 |
| Total Fe as Fe2O3 | 16.15 | 15.70 | 15.77 | 15.12 | 8.83 | 15.44 |
| (ppm) Li | | | | | | |
| Be | <1.00* | <1.00* | <1.00* | <1.00* | 1.81* | <1.00* |
| B | 18.0* | <14.7* | 17.7* | 15.1* | 214* | 28.4* |
| Sc | 38.1* | 41.7n | 35.7* | 41.9* | 25.7* | 65.1* |
| V | 246* | 297* | 241* | 232* | 175* | 251* |
| Cr | 75.9* | 62.0n | 72.4* | 77.6* | 117* | 80.7* |
| Co | 60.0* | 46.2n | 53.6* | 56.9* | 32.6* | 64.8* |
| Ni | 83.6* | 97.1* | 80.4* | 85.7* | 73.0* | 98.1* |
| Cu | 155* | 157* | 153* | 113* | 9.58* | 111* |
| Zn | 110* | 189n | 91.2* | 93.6* | 103* | 109* |
| Ga | 31.2* | 20.5* | 27.9* | 22.4* | 16.6* | 24.1* |
| As | 0.6 | 0.4 | 0.4 | 0.3 | 4.4 | 0.5 |
| Rb | | <36n | | | | |
| Sr | 133* | 40.6* | 47.7* | 80.2* | 211* | 173* |
| Y | 24.0* | 35.0* | 28.3* | 29.9* | 30.1* | 37.7* |
| Zr | 141* | <930n | 117* | 117* | 152* | 158* |
| Nb | <10.0* | <10.0* | <10.0* | <10.0* | <10.0* | <10.0* |
| Mo | <1.47* | <1.47* | <1.47* | <1.47* | <1.47* | <1.47* |
| Pb | 8.62* | <6.81* | <6.81* | 9.88* | 17.1* | 10.3* |
| Cd | | | | | | |
| Sn | <14.7* | <14.7* | <14.7* | <14.7* | <14.7* | <14.7* |
| Sb | | <1.2n | | | | |
| Cs | | <2.0n | | | | |
| Ba | 142* | 288n | 31.3* | 97.7* | 105* | 92.1* |
| La | <4.64* | 10n | <4.64* | <4.64* | <4.64* | <4.64* |
| Ce | | 23n | | | | |
| Nd | | 13n | | | | |
| Sm | | 4.6n | | | | |
| Eu | | 1.15n | | | | |
| Gd | | 4.2; | | | | |
| Tb | | 1.14n | | | | |
| Tm | | 0.5n | | | | |
| Yb | 7.81* | 4.1n | 6.01* | 5.41* | 4.14* | 5.49* |
| Lu | | 0.59n | | | | |
| Hf | | 2.4n | | | | |
| Ta | | 0.57n | | | | |
| Th | | 2.0n | | | | |
| U | | 0.6n | | | | |
| (ppb) Au | | | | | | |
| Specific Gravity Method: majors | CCA | CCA | CCA | CCA | CCA | CCA |

Table 3b Hook Mountain basalt

| Field no. | 73-F-26 | 73-F-6 | 73-F-7 | 73-F-8 | 73-F-9 | B-13 |
|---|---|---|---|---|---|---|
| Alternative field no. | | | | | | B-13-7 |
| Lab number | W-188258 | W-188241 | W-188242 | W-188243 | W-188244 | W-188277 |
| (wgt.%) SiO2 | 49.7 | 49.68 | 50.23 | 49.07 | 49.82 | 48.89 |
| TiO2 | 1.39 | 1.47 | 1.41 | 1.42 | 1.45 | 1.41 |
| Al2O3 | 13.28 | 13.79 | 13.55 | 13.38 | 13.33 | 13.82 |
| Fe2O3 | 3.67 | 5.40 | 4.08 | 5.35 | 5.21 | 5.41 |
| FeO | 10.89 | 9.54 | 10.89 | 9.67 | 9.80 | 9.19 |
| MnO | 0.21 | 0.24 | 0.23 | 0.23 | 0.24 | 0.23 |
| MgO | 5.79 | 5.25 | 5.31 | 5.78 | 5.43 | 5.58 |
| CaO | 6.91 | 9.70 | 9.77 | 9.80 | 9.69 | 10.37 |
| Na2O | 3.84 | 2.30 | 2.26 | 2.10 | 2.20 | 2.29 |
| K2O | 0.71 | 0.33 | 0.42 | 0.35 | 0.30 | 0.45 |
| P2O5 | 0.16 | 0.18 | 0.17 | 0.17 | 0.16 | 0.17 |
| H2O+ | 2.61 | 1.14 | 0.92 | 0.98 | 1.09 | 0.97 |
| H2O- | 0.74 | 0.85 | 0.56 | 1.54 | 1.19 | 1.09 |
| CO2 | 0.03 | 0.02 | 0.02 | 0.02 | 0.01 | 0.02 |
| S | - | - | - | - | - | 0.03 |
| F | 0.02 | 0.03 | 0.02 | 0.02 | 0.03 | 0.023 |
| Cl | <0.01 | <0.01 | <0.01 | <0.01 | <0.01 | 0.012 |
| Total | 99.93 | 99.89 | 99.82 | 99.86 | 99.91 | 99.89 |
| Total Fe as Fe2O3 | 15.77 | 16.00 | 16.18 | 16.10 | 16.10 | 15.62 |
| (ppm) Li | | | | | | 12 |
| Be | <1.00* | 2.09* | <1.00* | 1.2* | <0.56* | |
| B | 13.4* | <14.7* | 33.2* | 29* | <12* | <20* |
| Sc | 38.7* | 41.2* | 44.8* | 39* | 32* | 64* |
| V | 213* | 323* | 336* | 230* | 220* | 400* |
| Cr | 60.8* | 61.1* | 61.5* | 55* | 67* | 110* |
| Co | 52.7* | 69.7* | 62.5* | 40* | 47* | 52* |
| Ni | 81.8* | 94.1* | 97.3* | 57* | 60* | 70* |
| Cu | 187* | 114* | 132* | 180* | 160* | 180 |
| Zn | 93.7* | 145* | 149* | 130* | 130* | |
| Ga | 20.3* | 22.3* | 25.7* | 22* | 22* | 30* |
| As | 0.4 | 4.7 | 1.6 | 4.5 | 0.9 | 0.8 |
| Rb | | | | | | |
| Sr | 153* | 212* | 147* | 130* | 110* | 200* |
| Y | 26.2* | 54.5* | 40.9* | 34* | 21* | 60* |
| Zr | 124* | 268* | 189* | 140* | 48* | 120* |
| Nb | <10.0* | <10.0* | <10.0* | 11* | 8.2* | 6 |
| Mo | <1.47* | <1.47* | <1.47* | <2.6* | <2.6* | |
| Pb | 10.5* | 9.70* | 11.6* | 16* | 16* | <20* |
| Cd | | | | | | 0.15 |
| Sn | <14.7* | <14.7* | <14.7* | <5.6* | <5.6* | |
| Sb | | | | | | |
| Cs | | | | | | |
| Ba | 131* | 163* | 131* | 63* | 60* | 68* |
| La | <4.64* | <4.64* | <4.64* | 21* | <8.2* | |
| Ce | | | | | | |
| Nd | | | | | | |
| Sm | | | | | | |
| Eu | | | | | | |
| Gd | | | | | | |
| Tb | | | | | | |
| Tm | | | | | | |
| Yb | 5.58* | 5.03* | 6.18* | 5.5* | 4.0* | 4* |
| Lu | | | | | | |
| Hf | | | | | | |
| Ta | | | | | | |
| Th | | | | | | |
| U | | | | | | 0.77 |
| (ppb) Au | | | | | | 4.8 |
| Specific Gravity | | | | | | 2.98 |
| Method: majors | CCA | CCA | CCA | CCA | CCA | CCA |

Table 3b Hook Mountain basalt

| Field no. | B-17 | B-2 | B-20 | B-30 | B-6 | BT-2 |
|---|---|---|---|---|---|---|
| Alternative field no. | | | B-20-1 | B-30-2 | B-6-6 | BT-2-3 |
| Lab number | W-188276 | W-188279 | W-188275 | W-188274 | W-188278 | W-188273 |
| (wgt.%) SiO2 | 49.17 | 49.32 | 50.48 | 50.00 | 49.10 | 49.06 |
| TiO2 | 1.38 | 1.36 | 1.42 | 1.42 | 1.36 | 1.46 |
| Al2O3 | 13.46 | 13.29 | 13.38 | 13.55 | 13.97 | 13.56 |
| Fe2O3 | 5.30 | 5.41 | 5.30 | 5.13 | 5.07 | 4.13 |
| FeO | 9.44 | 9.94 | 9.34 | 9.54 | 9.84 | 10.34 |
| MnO | 0.23 | 0.21 | 0.21 | 0.24 | 0.25 | 0.22 |
| MgO | 5.41 | 5.45 | 5.64 | 5.62 | 5.63 | 5.30 |
| CaO | 10.47 | 11.06 | 7.32 | 6.30 | 10.43 | 7.47 |
| Na2O | 2.60 | 2.27 | 3.56 | 4.20 | 2.21 | 4.18 |
| K2O | 0.36 | 0.36 | 1.18 | 0.91 | 0.40 | 0.68 |
| P2O5 | 0.17 | 0.19 | 0.19 | 0.16 | 0.18 | 0.16 |
| H2O+ | 1.08 | 0.59 | 1.68 | 2.40 | 0.80 | 2.62 |
| H2O- | 0.95 | 1.03 | 0.69 | 0.63 | 1.00 | 0.55 |
| CO2 | 0.14 | 0.02 | 0.02 | 0.22 | 0.03 | 0.48 |
| S | 0.03 | 0.03 | 0.03 | <0.01 | 0.04 | 0.01 |
| F | 0.023 | 0.027 | 0.026 | 0.023 | 0.015 | 0.015 |
| Cl | 0.013 | 0.0084 | 0.0096 | 0.0067 | 0.0090 | 0.028 |
| Total | 100.16 | 100.50 | 100.41 | 100.32 | 100.27 | 100.21 |
| Total Fe as Fe2O3 | 15.79 | 16.46 | 15.68 | 15.73 | 16.01 | 15.62 |
| (ppm) Li | | | 37 | 34 | 18 | 23 |
| Be | | | | | | |
| B | 20* | <20* | 40* | 30* | <20* | 40* |
| Sc | 64* | 60* | 44.8n | 64* | 58* | 64* |
| V | 400* | 400* | 410* | 420* | 390* | 420* |
| Cr | 120* | 110* | 78.9n | 140* | 120* | 150* |
| Co | 54* | 54* | 54.3n | 45* | 52* | 47* |
| Ni | 68* | 72* | 56* | 65* | 69* | 70* |
| Cu | 160 | 160 | 180* | 150* | 190 | 160 |
| Zn | | | 188n | | | |
| Ga | 30* | 30* | 20* | 20* | 30* | 20* |
| As | 0.9 | 0.8 | 1.1 | 1.0 | 0.6 | 0.6 |
| Rb | | | 36n | | 9 | 20 |
| Sr | 160* | 180* | 92 | 160* | 120 | 66 |
| Y | 60* | 60* | 40* | 40* | 50* | 40* |
| Zr | 110* | 120* | <439n | 120* | 110* | 110* |
| Nb | 5.6 | 7.6 | 7.3 | 8.9 | 6.1 | 5.7 |
| Mo | | | | | | |
| Pb | <20* | <20* | <20* | <20* | <20* | <20* |
| Cd | 0.23 | 0.1 | 0.14 | 0.13 | 0.05 | 0.06 |
| Sn | | | | | | |
| Sb | | | <0.55n | | | |
| Cs | | | <1.4n | | | |
| Ba | 77* | 72* | 187n | 140* | 82* | 120* |
| La | | | 6n | | | |
| Ce | | | 19n | | | |
| Nd | | | 11.5n | | | |
| Sm | | | 2.55n | | | |
| Eu | | | 1.26n | | | |
| Gd | | | | | | |
| Tb | | | 1.04n | | | |
| Tm | | | | | | |
| Yb | 5* | 4* | 3.3n | 4* | 4* | 6* |
| Lu | | | 0.61n | | | |
| Hf | | | 2.65n | | | |
| Ta | | | <0.35n | | | |
| Th | | | 1.95n | | | |
| U | | | | | | 1.75 |
| (ppb) Au | 4.2 | 6.0 | 2.7 | 3.8 | 5.9 | 2.8 |
| Specific Gravity | 2.99 | 3.00 | 2.92 | 2.97 | 2.99 | 2.99 |
| Method: majors | CCA | CCA | CCA | CCA | CCA | CCA |

Table 3b Hook Mountain basalt

| Field no. | BT-5 | C-2 | C-6 | D-1 | M-1-AAAA | M-1-M |
|---|---|---|---|---|---|---|
| Alternative field no. | | C-2-9 | | | M-1-AAAA-11 | M-1-M-12 |
| Lab number | W-188272 | W-188280 | W-188281 | W-188299 | W-188282 | W-188283 |
| (wgt.%) SiO2 | 49.37 | 50.44 | 50.63 | 49.44 | 49.92 | 49.83 |
| TiO2 | 1.30 | 1.28 | 1.34 | 1.33 | 1.36 | 1.34 |
| Al2O3 | 13.25 | 13.27 | 13.21 | 13.27 | 13.34 | 13.31 |
| Fe2O3 | 5.92 | 6.00 | 5.02 | 4.09 | 7.25 | 7.71 |
| FeO | 8.33 | 8.43 | 9.24 | 10.13 | 7.88 | 7.68 |
| MnO | 0.20 | 0.19 | 0.21 | 0.25 | 0.21 | 0.21 |
| MgO | 5.74 | 5.56 | 5.53 | 5.72 | 5.19 | 5.25 |
| CaO | 7.65 | 9.78 | 9.99 | 7.89 | 10.03 | 9.95 |
| Na2O | 4.21 | 2.20 | 2.20 | 3.89 | 2.32 | 2.26 |
| K2O | 0.36 | 0.42 | 0.48 | 0.92 | 0.46 | 0.50 |
| P2O5 | 0.17 | 0.18 | 0.17 | 0.17 | 0.23 | 0.23 |
| H2O+ | 3.08 | 1.28 | 1.05 | 2.35 | 1.18 | 1.25 |
| H2O- | 0.93 | 1.20 | 1.11 | 0.30 | 0.88 | 0.85 |
| CO2 | 0.15 | 0.3 | 0.25 | 0.28 | 0.02 | 0.01 |
| S | 0.01 | 0.01 | <0.01 | 0.03 | 0.02 | <0.01 |
| F | 0.016 | 0.023 | 0.032 | 0.020 | 0.035 | 0.034 |
| Cl | 0.02 | 0.007 | 0.016 | 0.02 | 0.012 | 0.0095 |
| Total | 100.66 | 100.53 | 100.43 | 100.03 | 100.27 | 100.38 |
| Total Fe as Fe2O3 | 15.18 | 15.37 | 15.29 | 15.35 | 16.01 | 16.24 |
| (ppm) Li | | 20 | | 38 | 21 | 16 |
| Be | | | | <1.00* | | |
| B | 20* | 60* | 20* | 31.8* | 30* | 30* |
| Sc | 66* | 66* | 74* | 45.8* | 70* | 70* |
| V | 400* | 400* | 450* | 200* | 430* | 430* |
| Cr | 120* | 140* | 150* | 55.2* | 130* | 130* |
| Co | 42* | 44* | 49* | 52.9* | 42* | 42* |
| Ni | 61* | 74* | 69* | 76.6* | 62* | 62* |
| Cu | 190 | 180 | 84 | 194* | 240 | 140 |
| Zn | | | | 94.0* | | |
| Ga | 20* | 20* | 20* | 22.0* | 20* | 20* |
| As | 0.6 | 1.1 | 0.9 | 0.4 | 1.1 | 0.8 |
| Rb | | 9 | | 21 | | 10 |
| Sr | 58* | 112 | 200* | 77 | 180* | 106 |
| Y | 40* | 50* | 50* | 33.8* | 50* | 50* |
| Zr | 90* | 130* | 120* | 142* | 120* | 120* |
| Nb | 6.1 | 6 | 8 | <10.0* | 6.3 | 6.2 |
| Mo | | | | <1.47* | | |
| Pb | <20* | <20* | <20* | 9.57* | <20* | <20* |
| Cd | 0.14 | 0.14 | 0.25 | 0.24 | 0.08 | .14 |
| Sn | | | | <14.7* | | |
| Sb | | | | | | |
| Cs | | | | | | |
| Ba | 70* | 100* | 170* | 133* | 120* | 120* |
| La | | | | <4.64* | | |
| Ce | | | | | | |
| Nd | | | | | | |
| Sm | | | | | | |
| Eu | | | | | | |
| Gd | | | | | | |
| Tb | | | | | | |
| Tm | | | | | | |
| Yb | 5* | 5* | 5* | 4.89* | 4* | 5* |
| Lu | | | | | | |
| Hf | | | | | | |
| Ta | | | | | | |
| Th | | | | | | |
| U | | | | | | |
| (ppb) Au | 3.5 | 3.7 | 4.2 | | 4.0 | 4.0 |
| Specific Gravity | 2.92 | 2.96 | 2.96 | 2.99 | 2.99 | 2.99 |
| Method: majors | CCA | CCA | CCA | CCA | CCA | CCA |

Table 3b Hook Mountain basalt

| Field no. | ML-10 | ML-112 | ML-122 | ML-146 | ML-162 | ML-167 |
|---|---|---|---|---|---|---|
| Alternative field no. | ML-10-15 | ML-112-22 | ML-122-23 | | | |
| Lab number | W-188286 | W-188293 | W-188294 | W-188295 | W-188296 | W-188297 |
| (wgt.%) SiO2 | 48.58 | 49.99 | 50.17 | 49.68 | 50.11 | 50.36 |
| TiO2 | 1.30 | 1.22 | 1.18 | 1.22 | 1.28 | 1.40 |
| Al2O3 | 13.70 | 13.94 | 13.84 | 13.34 | 13.52 | 13.39 |
| Fe2O3 | 6.70 | 4.73 | 4.32 | 5.30 | 5.33 | 4.15 |
| FeO | 8.03 | 9.71 | 10.21 | 9.62 | 9.71 | 10.55 |
| MnO | 0.23 | 0.24 | 0.23 | 0.23 | 0.27 | 0.25 |
| MgO | 5.41 | 5.66 | 5.81 | 5.64 | 5.96 | 5.77 |
| CaO | 10.2 | 10.32 | 10.39 | 10.00 | 10.01 | 10.24 |
| Na2O | 2.54 | 2.20 | 2.16 | 2.44 | 2.17 | 2.11 |
| K2O | 0.40 | 0.51 | 0.47 | 0.53 | 0.58 | 0.53 |
| P2O5 | 0.10 | 0.15 | 0.16 | 0.15 | 0.19 | 0.19 |
| H2O+ | 1.69 | 1.14 | 1.12 | 1.30 | 0.80 | 0.84 |
| H2O- | 1.38 | 0.68 | 0.44 | 0.86 | 0.57 | 0.63 |
| CO2 | 0.19 | 0.06 | 0.07 | 0.05 | 0.12 | 0.05 |
| S | 0.01 | 0.02 | 0.01 | 0.02 | 0.01 | 0.01 |
| F | 0.019 | 0.015 | 0.023 | 0.024 | 0.032 | 0.013 |
| Cl | 0.0028 | 0.019 | 0.007 | 0.013 | 0.02 | 0.007 |
| Total | 100.45 | 100.55 | 100.57 | 100.36 | 100.62 | 100.46 |
| Total Fe as Fe2O3 | 15.62 | 15.52 | 15.67 | 15.99 | 16.12 | 15.87 |
| (ppm) Li | 13 | | 5 | 7 | 7 | 7 |
| Be | | | | | <1.00* | <1.00* |
| B | 20* | 20* | <20* | <20* | <14.7* | <14.7* |
| Sc | 66* | 45.1n | 43.4n | 45.1n | 44.8n | 48.0* |
| V | 340* | 400* | 430* | 400* | 349* | 283* |
| Cr | 110* | 87.2n | 92.4n | 93.2n | 87.6n | 60.1* |
| Co | 40* | 52.7n | 53.6n | 53.8n | 56.6n | 60.5* |
| Ni | 62* | 72* | 73* | 74* | 105* | 84.3* |
| Cu | 180 | 190* | 190* | 220* | 189* | 166* |
| Zn | | 165n | 162n | 161n | 169n | 110* |
| Ga | 20* | 20* | 20* | 20* | 19.6* | 19.0* |
| As | 0.4 | 0.8 | 0.8 | 0.7 | 1.1 | 0.4 |
| Rb | 12 | <37n | <34n | <36n | <36n | |
| Sr | 117 | 170* | 180* | 114 | 192* | 131* |
| Y | 40* | 50* | 50* | 50* | 39.5* | 39.2* |
| Zr | 110* | <459n | <411 | <445n | <428n | 159* |
| Nb | 7.1 | 5.4 | 6.8 | | <10.0* | <10.0* |
| Mo | | | | | <1.47* | <1.47* |
| Pb | 20* | <20* | <20* | 150* | 13.3* | 10.6* |
| Cd | .09 | 0.08 | 0.24 | | 0.14 | 0.1 |
| Sn | | | | | <14.7* | <14.7* |
| Sb | | <0.7n | <0.65 | <0.7n | <0.65n | |
| Cs | | <1.5n | <1.3n | 1.4n | <1.05n | |
| Ba | 130* | 281n | 254n | 275n | 266n | 90.7* |
| La | | 6n | 5n | 4.5n | 5n | <4.64* |
| Ce | | 17n | 17n | 16.5n | 17.5n | |
| Nd | | 9n | 10n | 9.5n | 10n | |
| Sm | | 2.2n | 2.25n | 2.25n | 2.3n | |
| Eu | | 1.26n | 1.16n | 1.1n | 1.21n | |
| Gd | | | | | | |
| Tb | | 0.83n | 0.87n | 0.84n | 0.83n | |
| Tm | | | | | | |
| Yb | 4* | 2.95n | 3.0n | 2.95n | 3.0n | 5.25* |
| Lu | | 0.59n | 0.56n | 0.56n | 0.57n | |
| Hf | | 2.65n | 2.35n | 2.45n | 2.55n | |
| Ta | | <0.56n | <0.38n | <0.35n | <0.22n | |
| Th | | 1.75n | 1.7n | 1.6n | 1.85n | |
| U | | | | | | |
| (ppb) Au | 4.4 | 5.2 | 23.1 | 5.8 | | |
| Specific Gravity | 2.93 | 3.00 | 3.00 | 2.99 | 3.03 | 3.01 |
| Method: majors | CCA | CCA | CCA | CCA | CCA | CCA |

Table 3b Hook Mountain basalt

| Field no. | ML-170 | ML-2 | ML-28 | ML-48 | ML-64 | ML-69 |
|---|---|---|---|---|---|---|
| Alternative field no. | | | ML-28-16 | | ML-64-18 | |
| Lab number | W-188298 | W-188284 | W-188287 | W-188288 | W-188289 | W-188290 |
| (wgt.%) SiO2 | 50.14 | 49.6 | 49.72 | 48.94 | 49.52 | 49.92 |
| TiO2 | 1.35 | 1.28 | 1.30 | 1.30 | 1.26 | 1.38 |
| Al2O3 | 13.74 | 13.88 | 13.54 | 13.53 | 13.49 | 13.23 |
| Fe2O3 | 4.60 | 4.46 | 4.94 | 6.61 | 4.85 | 5.07 |
| FeO | 10.05 | 10.04 | 9.84 | 7.63 | 9.84 | 9.49 |
| MnO | 0.30 | 0.23 | 0.25 | 0.20 | 0.23 | 0.22 |
| MgO | 5.71 | 5.49 | 5.59 | 5.34 | 5.75 | 5.67 |
| CaO | 10.39 | 10.06 | 10.22 | 10.71 | 10.41 | 10.22 |
| Na2O | 2.07 | 2.54 | 1.97 | 2.31 | 2.17 | 2.24 |
| K2O | 0.54 | 0.57 | 0.56 | 0.32 | 0.31 | 0.32 |
| P2O5 | 0.20 | 0.15 | 0.17 | 0.18 | 0.17 | 0.18 |
| H2O+ | 0.75 | 1.01 | 1.31 | 2.99 | 1.40 | 1.31 |
| H2O- | 0.64 | 1.14 | 0.94 | 0.41 | 0.78 | 0.99 |
| CO2 | 0.16 | 0.10 | 0.17 | 0.02 | 0.08 | 0.24 |
| S | 0.01 | 0.01 | 0.01 | 0.01 | <0.01 | 0.01 |
| F | 0.015 | 0.016 | 0.023 | 0.025 | 0.020 | 0.012 |
| Cl | 0.015 | 0.016 | 0.0028 | 0.0075 | 0.0058 | 0.005 |
| Total | 100.64 | 100.55 | 100.52 | 100.49 | 100.26 | 100.48 |
| Total Fe as Fe2O3 | 15.77 | 15.62 | 15.88 | 15.09 | 15.79 | 15.62 |
| (ppm) Li | 7 | | 9 | | 9 | |
| Be | <1.00* | | | | | |
| B | <14.7* | <20* | <20* | <20* | 20* | 30* |
| Sc | 38.4* | 62* | 64* | 60* | 56* | 54* |
| V | 309* | 400* | 440* | 400* | 360* | 400* |
| Cr | 59.5* | 120* | 140* | 130* | 110* | 100* |
| Co | 57.3* | 44* | 46* | 43* | 44* | 48* |
| Ni | 84.8* | 58* | 59* | 68* | 70* | 62* |
| Cu | 274* | 220 | 160 | 200 | 190* | 160* |
| Zn | 113* | | | | | |
| Ga | 18.3* | 20* | 30* | 30* | 20* | 20* |
| As | 0.4 | 0.6 | 0.7 | 0.9 | 0.8 | 0.7 |
| Rb | 15 | 13 | | 7 | | |
| Sr | 122 | 114 | 235* | 131 | 140* | 140* |
| Y | 32.7* | 40* | 50* | 50* | 50* | 50* |
| Zr | 134* | 110* | 120* | 110* | 100* | 110* |
| Nb | <10.0* | 7.3 | 10 | 6.3 | 6.6 | 5.6 |
| Mo | <1.47* | | | | | |
| Pb | 11.0* | <20* | <20* | <20* | <20* | <20* |
| Cd | 0.16 | 0.19 | 0.14 | 0.12 | 0.13 | 0.16 |
| Sn | <14.7* | | | | | |
| Sb | | | | | | |
| Cs | | | | | | |
| Ba | 97.5* | 130* | 130* | 94* | 80* | 80* |
| La | <4.64* | | | | | |
| Ce | | | | | | |
| Nd | | | | | | |
| Sm | | | | | | |
| Eu | | | | | | |
| Gd | | | | | | |
| Tb | | | | | | |
| Tm | | | | | | |
| Yb | 5.02* | 4* | 5* | 5* | 4* | 4* |
| Lu | | | | | | |
| Hf | | | | | | |
| Ta | | | | | | |
| Th | | | | | | |
| U | | | | | | |
| (ppb) Au | | 3.7 | 4.1 | 9.6 | 7.0 | 4.5 |
| Specific Gravity | 3.02 | 2.97 | 2.98 | 2.91 | 3.01 | 2.98 |
| Method: majors | CCA | CCA | CCA | CCA | CCA | CCA |

Table 3b Hook Mountain basalt

| Field no. | ML-86 | ML-9 | ML-98 | ML-DH-11-10 | ML-DH-11-14 | ML-DH-11-18 |
|---|---|---|---|---|---|---|
| Alternative field no. | | | ML-98-21 | | | |
| Lab number | W-188291 | W-188285 | W-188292 | W-179878 | W-179512 | W-179513 |
| (wgt.%) SiO2 | 49.51 | 48.57 | 49.21 | 48.4 | 50.19 | 49.32 |
| TiO2 | 1.22 | 1.38 | 1.28 | 1.60 | 0.64 | 0.96 |
| Al2O3 | 13.43 | 13.42 | 13.19 | 12.77 | 14.16 | 14.27 |
| Fe2O3 | 5.64 | 4.55 | 6.12 | 5.89 | 3.31 | 3.91 |
| FeO | 8.84 | 9.99 | 9.03 | 10.31 | 11.3 | 10.84 |
| MnO | 0.21 | 0.23 | 0.24 | 0.20 | 0.13 | 0.14 |
| MgO | 5.61 | 5.49 | 5.87 | 4.66 | 5.79 | 5.65 |
| CaO | 10.13 | 10.29 | 10.01 | 6.74 | 6.28 | 10.24 |
| Na2O | 2.17 | 2.54 | 2.11 | 4.05 | 5.00 | 2.43 |
| K2O | 0.41 | 0.50 | 0.45 | 0.65 | 0.02 | 0.17 |
| P2O5 | 0.18 | 0.16 | 0.15 | 0.42 | 0.29 | 0.25 |
| H2O+ | 1.32 | 1.40 | 1.36 | 3.26 | 2.46 | 0.44 |
| H2O- | 1.23 | 1.55 | 1.14 | 0.54 | 0.38 | 1.03 |
| CO2 | 0.08 | 0.03 | 0.05 | 0.34 | 0.02 | 0.00 |
| S | 0.03 | 0.01 | 0.02 | - | - | - |
| F | 0.020 | 0.017 | 0.020 | 0.025 | 0.026 | 0.022 |
| Cl | 0.0078 | 0.019 | 0.009 | 0.007 | 0.01 | 0.007 |
| Total | 99.98 | 100.10 | 100.21 | 99.83 | 99.97 | 99.65 |
| Total Fe as Fe2O3 | 15.46 | 15.65 | 16.16 | 17.35 | 15.87 | 15.96 |
| (ppm) Li | | | 7 | 38 | 56 | |
| Be | | | | <1.00* | | |
| B | 30* | <20* | <20* | 181* | | |
| Sc | 60* | 74* | 60* | 69.0* | | |
| V | 410* | 420* | 410* | 432* | | |
| Cr | 140* | 150* | 140* | 85.3* | | |
| Co | 48* | 40* | 46* | 65.4* | | |
| Ni | 72* | 74* | 65* | 63.0* | | |
| Cu | 190* | 170 | 220* | 137* | | |
| Zn | | | | 185* | 77 | 81 |
| Ga | 30* | 20* | 20* | 13.6* | | |
| As | 0.6 | 0.6 | 0.6 | 0.9 | 0.5 | 0.5 |
| Rb | 4 | | | | 2 | |
| Sr | 128 | 210* | 240* | 103* | 78 | |
| Y | 50* | 50* | 50* | 41.8* | | |
| Zr | 110* | 120* | 105* | 129* | | |
| Nb | 7.5 | | 10.5 | 7.25* | | |
| Mo | | | | 9.29* | | |
| Pb | <20* | <20* | <20* | 5.20* | | |
| Cd | 0.26 | 0.24 | 0.07 | | | |
| Sn | | | | 3.92* | | |
| Sb | | | | | | |
| Cs | | | | | | |
| Ba | 100* | 110* | 98* | 154* | | |
| La | | | | <14.7* | | |
| Ce | | | | | | |
| Nd | | | | | | |
| Sm | | | | | | |
| Eu | | | | | | |
| Gd | | | | | | |
| Tb | | | | | | |
| Tm | | | | | | |
| Yb | 5* | 4* | 4* | 6.71* | | |
| Lu | | | | | | |
| Hf | | | | | | |
| Ta | | | | | | |
| Th | | | | | | |
| U | 0.87 | | | | | |
| (ppb) Au | 5.6 | 4.0 | 4.9 | | | |
| Specific Gravity | 2.98 | 2.94 | 2.98 | 2.88 | 2.80 | 2.88 |
| Method: majors | CCA | CCA | CCA | CCA | CCA | CCA |

Table 3b Hook Mountain basalt

| Field no. | ML-DH-11-19 | ML-DH-11-21 | ML-DH-11-23 | ML-DH-11-25 | ML-DH-11-27 | ML-DH-11-29 |
|---|---|---|---|---|---|---|
| Alternative field no. | | | | | | |
| Lab number | W-179879 | W-179880 | W-179881 | W-179882 | W-179883 | W-179884 |
| (wgt.%) SiO2 | 49.36 | 49.72 | 49.4 | 48.54 | 41.22 | 41.91 |
| TiO2 | 1.65 | 1.60 | 1.42 | 0.72 | 1.49 | 1.52 |
| Al2O3 | 13.27 | 12.81 | 13.08 | 12.94 | 15.89 | 16.72 |
| Fe2O3 | 3.53 | 3.67 | 3.64 | 3.15 | 3.52 | 5.56 |
| FeO | 12.4 | 12.24 | 12.03 | 12.6 | 11.48 | 8.35 |
| MnO | 0.21 | 0.22 | 0.22 | 0.30 | 0.22 | 0.25 |
| MgO | 5.00 | 4.82 | 5.14 | 6.77 | 6.95 | 6.50 |
| CaO | 10.48 | 10.26 | 10.26 | 9.80 | 6.94 | 6.95 |
| Na2O | 1.80 | 1.90 | 1.89 | 1.87 | 1.90 | 2.05 |
| K2O | 0.26 | 0.24 | 0.27 | 0.47 | 0.67 | 0.59 |
| P2O5 | 0.22 | 0.32 | 0.32 | 0.21 | 0.28 | 0.30 |
| H2O+ | 0.64 | 1.62 | 1.72 | 2.12 | 0.84 | 3.28 |
| H2O- | 0.84 | 0.74 | 0.74 | 0.72 | 2.14 | 3.22 |
| CO2 | 0.00 | 0.00 | 0.00 | 0.05 | 6.23 | 2.29 |
| S | - | - | - | - | - | - |
| F | 0.024 | 0.024 | 0.031 | 0.023 | 0.018 | 0.077 |
| Cl | 0.007 | 0.005 | 0.007 | 0.009 | 0.01 | 0.007 |
| Total | 99.66 | 100.16 | 100.13 | 100.26 | 99.77 | 99.49 |
| Total Fe as Fe2O3 | 17.31 | 17.27 | 17.01 | 17.15 | 16.28 | 14.84 |
| (ppm) Li | | 7 | 5 | 7 | 28 | |
| Be | <1.00* | <1.00* | <1.00* | 1.08* | <1.00* | <1.00* |
| B | 152* | 63.7* | 42.4* | 30.8* | 45.1* | 70.9* |
| Sc | 61.2* | 50.7* | 43.7* | 48.2* | 42.6* | 45.0* |
| V | 526* | 489* | 481* | 478* | 438* | 482* |
| Cr | 78.0* | 76.1* | 83.6* | 77.2* | 72.6* | 78.6* |
| Co | 71.1* | 58.4* | 56.9* | 59.5* | 50.8* | 65.2* |
| Ni | 59.7* | 62.0* | 54.3* | 58.0* | 52.9* | 63.6* |
| Cu | 103* | 120* | 101* | 144* | 110* | 372* |
| Zn | 205* | 197* | 222* | 195* | 407* | 1760* |
| Ga | 14.1* | 13.6* | 12.7* | 14.8* | 13.1* | 16.9* |
| As | 0.5 | 0.7 | 0.7 | 0.8 | 170 | 120 |
| Rb | | | | 14 | 8 | 19 |
| Sr | 183* | 180* | 180* | 209 | 750 | 254 |
| Y | 48.3* | 41.5* | 60.7* | 54.8* | 43.7* | 42.8* |
| Zr | 207* | 145* | 166* | 176* | 136* | 142* |
| Nb | 8.73* | 9.50* | 5.63* | 7.35* | 6.09* | 2.52* |
| Mo | <2.15* | 6.49* | <2.15* | <2.15* | 17.0* | 29.9* |
| Pb | 10.5* | 9.33* | 8.27* | 8.32* | 7.43* | 9.21* |
| Cd | | | | | | |
| Sn | 4.58* | <3.16* | 3.38* | <3.16 | 3.37* | <3.16* |
| Sb | | | | | | |
| Cs | | | | | | |
| Ba | 114* | 108* | 134* | 303* | <2150* | 281* |
| La | <14.7* | <14.7* | <14.7* | <14.7* | <14.7* | <14.7* |
| Ce | | | | | | |
| Nd | | | | | | |
| Sm | | | | | | |
| Eu | | | | | | |
| Gd | | | | | | |
| Tb | | | | | | |
| Tm | | | | | | |
| Yb | 7.19* | 6.98* | 8.17* | 7.36* | 8.03* | 8.13* |
| Lu | | | | | | |
| Hf | | | | | | |
| Ta | | | | | | |
| Th | | | | | | |
| U | | | | | | |
| (ppb) Au | | | | | | |
| Specific Gravity | 2.98 | 2.93 | 2.99 | 2.95 | 2.90 | 2.88 |
| Method: majors | CCA | CCA | CCA | CCA | CCA | CCA |

Table 3b Hook Mountain basalt

| Field no. | ML-DH-11-3 | ML-DH-11-32A | ML-DH-11-32D | ML-DH-11-9 | ML-DH-3-1 | ML-DH-3-10 |
|---|---|---|---|---|---|---|
| Alternative field no. | | | | | | |
| Lab number | W-179510 | W-179885 | W-179886 | W-179511 | W-177657 | W-177660 |
| (wgt.%) SiO2 | 48.38 | 46.85 | 55.2 | 48.04 | 49.09 | 47.65 |
| TiO2 | 0.71 | 1.44 | 0.92 | 0.82 | 1.18 | 1.30 |
| Al2O3 | 14.34 | 7.23 | 18.01 | 14.46 | 13.61 | 13.8 |
| Fe2O3 | 3.75 | 6.95 | 2.72 | 3.53 | 4.90 | 3.72 |
| FeO | 10.55 | 6.89 | 3.45 | 11.14 | 9.82 | 10.4 |
| MnO | 0.13 | 0.19 | 0.29 | 0.13 | 0.25 | 0.29 |
| MgO | 5.92 | 3.59 | 4.09 | 5.70 | 5.77 | 5.74 |
| CaO | 6.75 | 10.6 | 3.54 | 6.59 | 7.42 | 7.57 |
| Na2O | 4.36 | 5.29 | 5.68 | 5.00 | 4.84 | 4.28 |
| K2O | 0.56 | 0.13 | 2.70 | 0.68 | 0.53 | 0.52 |
| P2O5 | 0.25 | 0.20 | 0.25 | 0.22 | 0.16 | 0.18 |
| H2O+ | 3.50 | 1.88 | 0.76 | 3.56 | 2.66 | 3.90 |
| H2O- | 0.39 | 0.78 | 0.42 | 0.34 | 0.22 | 0.24 |
| CO2 | 0.00 | 7.91 | 2.25 | 0.00 | 0.05 | 0.52 |
| S | - | - | - | - | - | - |
| F | 0.023 | 0.046 | 0.029 | 0.057 | 0.009 | 0.027 |
| Cl | 0.003 | 0.01 | 0.012 | 0.02 | 0.014 | 0.005 |
| Total | 99.59 | 99.93 | 100.28 | 100.21 | 100.50 | 100.11 |
| Total Fe as Fe2O3 | 15.47 | 14.61 | 6.55 | 15.91 | 15.81 | 15.28 |
| (ppm) Li | 58 | 24 | 55 | 28 | | 38 |
| Be | | 2.11* | 3.63* | | | |
| B | | 62.5* | 109* | | | |
| Sc | | 30.3 | 25.0* | | | |
| V | | 206* | 196* | | | |
| Cr | | 88.1* | 127* | | | |
| Co | | 13.7* | 11.3* | | | |
| Ni | | 40.8* | 30.3* | | | |
| Cu | | 137* | 82* | | | |
| Zn | 58 | 90* | 54* | 65 | 70 | 51 |
| Ga | | 17.8* | 25.9* | | | |
| As | 1.4 | 7 | 7.7 | 0.7 | 0.9 | 0.4 |
| Rb | | | | 11 | 13 | |
| Sr | | 152* | 129* | 100 | 80 | |
| Y | | 38.3* | 33.4* | | | |
| Zr | | 188* | 168* | | | |
| Nb | | 10.3* | 10.9* | | | |
| Mo | | 10.1* | 3.19* | | | |
| Pb | | 3.95* | 6.00* | | | |
| Cd | | | | | | |
| Sn | | 4.19* | 4.73* | | | |
| Sb | | | | | | |
| Cs | | | | | | |
| Ba | | 185* | 303* | | | |
| La | | 50.2* | 52.7* | | | |
| Ce | | | | | | |
| Nd | | | | | | |
| Sm | | | | | | |
| Eu | | | | | | |
| Gd | | | | | | |
| Tb | | | | | | |
| Tm | | | | | | |
| Yb | | 4.55* | 3.71* | | | |
| Lu | | | | | | |
| Hf | | | | | | |
| Ta | | | | | | |
| Th | | | | | | |
| U | | | | | | |
| (ppb) Au | | | | | | |
| Specific Gravity | 2.94 | 2.87 | 2.98 | 2.80 | 2.99 | 2.88 |
| Method: majors | CCA | CCA | CCA | CCA | CCA | CCA |

Table 3b Hook Mountain basalt

| Field no. | ML-DH-3-13 | ML-DH-3-15 | ML-DH-3-18 | ML-DH-3-22 | ML-DH-3-3 | ML-DH-3-5 |
|---|---|---|---|---|---|---|
| Alternative field no. | | | | | | |
| Lab number | W-177661 | W-177662 | W-177663 | W-177664 | W-177658 | W-177659 |
| (wgt.%) SiO2 | 48.26 | 48.82 | 48.88 | 48.53 | 48.37 | 49.02 |
| TiO2 | 1.19 | 1.13 | 1.29 | 1.14 | 1.25 | 1.15 |
| Al2O3 | 13.81 | 13.96 | 14.23 | 13.6 | 14.77 | 13.41 |
| Fe2O3 | 4.09 | 4.23 | 4.25 | 4.15 | 4.09 | 4.51 |
| FeO | 10.29 | 10.29 | 10.65 | 10.03 | 9.78 | 10.45 |
| MnO | 0.26 | 0.25 | 0.29 | 0.26 | 0.30 | 0.21 |
| MgO | 5.80 | 5.75 | 5.58 | 5.76 | 6.03 | 6.04 |
| CaO | 6.20 | 6.76 | 7.55 | 6.66 | 6.74 | 7.70 |
| Na2O | 4.74 | 4.22 | 3.34 | 4.30 | 4.19 | 4.36 |
| K2O | 0.38 | 0.36 | 0.65 | 0.35 | 0.63 | 0.37 |
| P2O5 | 0.20 | 0.18 | 0.21 | 0.16 | 0.19 | 0.16 |
| H2O+ | 4.40 | 3.86 | 2.36 | 3.31 | 3.22 | 2.78 |
| H2O- | 0.22 | 0.32 | 0.35 | 0.31 | 0.35 | 0.20 |
| CO2 | 0.05 | 0.05 | 0.15 | 1.58 | 0.26 | 0.05 |
| S | - | - | - | - | - | - |
| F | 0.037 | 0.042 | 0.025 | 0.073 | 0.025 | 0.02 |
| Cl | 0.012 | 0.007 | 0.014 | 0.0055 | 0.017 | 0.014 |
| Total | 99.89 | 100.18 | 99.78 | 100.14 | 100.17 | 100.41 |
| Total Fe as Fe2O3 | 15.53 | 15.67 | 16.09 | 15.30 | 14.96 | 16.12 |
| (ppm) Li | | | 9 | | | |
| Be | | | | | | |
| B | | | | | | |
| Sc | | | | | | |
| V | | | | | | |
| Cr | | | | | | |
| Co | | | | | | |
| Ni | | | | | | |
| Cu | | | | | | |
| Zn | 47 | 49 | 80 | 66 | 67 | 77 |
| Ga | | | | | | |
| As | | | | | 0.3 | 0.4 |
| Rb | | 8 | 10 | 6 | | 11 |
| Sr | | 73 | 167 | 62 | | 56 |
| Y | | | | | | |
| Zr | | | | | | |
| Nb | | | | | | |
| Mo | | | | | | |
| Pb | | | | | | |
| Cd | | | | | | |
| Sn | | | | | | |
| Sb | | | | | | |
| Cs | | | | | | |
| Ba | | | | | | |
| La | | | | | | |
| Ce | | | | | | |
| Nd | | | | | | |
| Sm | | | | | | |
| Eu | | | | | | |
| Gd | | | | | | |
| Tb | | | | | | |
| Tm | | | | | | |
| Yb | | | | | | |
| Lu | | | | | | |
| Hf | | | | | | |
| Ta | | | | | | |
| Th | | | | | | |
| U | | | | | | |
| (ppb) Au | | | | | | |
| Specific Gravity | 2.85 | 2.89 | 3.00 | 2.90 | 2.97 | 2.98 |
| Method: majors | CCA | CCA | CCA | CCA | CCA | CCA |

Table 3b Hook Mountain basalt

| Field no. | NV-F-1 | NV-F-2 | O-152-1 | O-152-10 | O-152-11 | O-152-2 |
|---|---|---|---|---|---|---|
| Alternative field no. | O-106 | O-104 | | | | |
| Lab number | W-193466 | W-193467 | W-209827 | W-209836 | W-209837 | W-209828 |
| (wgt.%) SiO2 | 49.8 | 49.7 | 51.1 | 50.9 | 51.0 | 53.0 |
| TiO2 | 1.29 | 1.32 | 1.57 | 1.31 | 1.26 | 1.49 |
| Al2O3 | 14.1 | 13.3 | 12.3 | 13.2 | 13.5 | 12.4 |
| Fe2O3 | 4.43 | 5.01 | 7.58 | 4.84 | 4.45 | 8.41 |
| FeO | 9.60 | 9.80 | 8.60 | 10.00 | 10.00 | 6.70 |
| MnO | 0.23 | 0.23 | 0.31 | 0.23 | 0.23 | 0.19 |
| MgO | 2.00 | 1.90 | 5.10 | 5.62 | 5.83 | 4.8 |
| CaO | 10.00 | 10.60 | 5.96 | 10.31 | 10.46 | 5.82 |
| Na2O | 5.30 | 6.00 | 5.60 | 2.22 | 2.22 | 5.4 |
| K2O | 0.45 | 0.40 | 0.66 | 0.50 | 0.45 | 0.78 |
| P2O5 | 0.17 | 0.17 | 0.14 | 0.15 | 0.16 | 0.17 |
| H2O+ | 1.20 | 0.60 | 2.40 | 0.16 | 0.37 | 1.9 |
| H2O- | 0.53 | 1.20 | 0.95 | 0.84 | 0.93 | 1.1 |
| CO2 | 0.01 | 0.31 | 0.02 | 0.01 | 0.03 | 0.16 |
| S | - | - | - | - | - | - |
| F | 0.02 | 0.02 | 0.02 | 0.02 | 0.02 | 0.03 |
| Cl | 0.0046 | 0.0051 | 0.017 | 0.0027 | 0.0029 | 0.0056 |
| Total | 99.11 | 100.54 | 102.29 | 100.29 | 100.89 | 102.32 |
| Total Fe as Fe2O3 | 15.10 | 15.90 | 17.14 | 15.95 | 15.56 | 15.86 |
| (ppm) Li | | | | | | |
| Be | <1.0* | <1.0* | <1.0* | <1.0* | | <1.0* |
| B | 11* | 17* | 39* | <6.8* | <6.8* | 19* |
| Sc | 44.4n | 45.8n | 27* | 29* | 34* | 27* |
| V | 240* | 260* | 130* | 160* | 180* | 140* |
| Cr | 71.5n | 79.9n | 110* | 80* | 56* | 84* |
| Co | 50.3n | 53.8n | 40* | 48* | 38* | 39* |
| Ni | 61* | 67* | 35* | 51* | 36* | 37* |
| Cu | 200* | 220* | 140* | 240* | 120* | 94* |
| Zn | 174n | 169n | 130* | 140* | 120* | 84* |
| Ga | 21* | 20* | 17* | 20* | 18* | 22* |
| As | 0.66 | 0.96 | 1.5 | 1.6 | 1.5 | 1.5 |
| Rb | <39n | <35n | 20 | 23 | 16 | 20 |
| Sr | 190* | 190* | 90 | 96 | 99 | 62 |
| Y | 22* | 23* | 17* | 12* | 17* | 17* |
| Zr | <1035n | <934n | 44* | 48* | 120* | 59* |
| Nb | 12* | 9.0* | 4.7* | 5.9* | 5.0* | 10* |
| Mo | | | 1.2* | <1.0* | 4.2* | <1.0* |
| Pb | 13* | <6.8* | 47* | <6.8* | <6.8* | <6.8* |
| Cd | | | | | | |
| Sn | <1.5* | <1.5* | | | 3.9* | |
| Sb | <1.2n | <1.1n | | | | |
| Cs | <2.3n | <2.1n | | | | |
| Ba | 300n | 273n | 140* | 170* | 150* | 150* |
| La | 9n | 8n | <10* | <10* | <10* | <10* |
| Ce | 19n | 19n | | | | |
| Nd | 12n | 11n | | | | |
| Sm | 4.8n | 4.3n | | | | |
| Eu | 1.17n | 1.2n | | | | |
| Gd | 4.9n | 5.4n | | | | |
| Tb | 0.92n | 0.97n | | | | |
| Tm | 0.39; | 0.34n | | | | |
| Yb | 3.8n | 3.7n | 3.4* | 2.1* | 3.1* | 3.1* |
| Lu | 0.59n | 0.63n | | | | |
| Hf | 2.3n | 2.5n | | | | |
| Ta | <1.31n | <1.18n | | | | |
| Th | 1.9n | 1.9n | | | | |
| U | 5.7 | | | 0.56 | | |
| (ppb) Au | | | | | | |
| Specific Gravity | | | | | | |
| Method: majors | XRF | XRF | XRF | XRF | XRF | XRF |

Table 3b Hook Mountain basalt

| Field no. | O-152-3 | O-152-4 | O-152-5 | O-152-54-12 | O-152-6 | O-152-7 |
|---|---|---|---|---|---|---|
| Alternative field no. | | | | | | |
| Lab number | W-209829 | W-209830 | W-209831 | W-209841 | W-209832 | W-209833 |
| (wgt.%) SiO2 | 50.4 | 51.1 | 51.5 | 50.0 | 51.6 | 50.9 |
| TiO2 | 1.46 | 1.4 | 1.34 | 1.37 | 1.41 | 1.39 |
| Al2O3 | 12.5 | 13.0 | 12.7 | 13.5 | 12.7 | 13.0 |
| Fe2O3 | 8.32 | 5.73 | 9.11 | 4.34 | 5.50 | 5.53 |
| FeO | 7.60 | 9.00 | 6.40 | 10.6 | 9.4 | 9.6 |
| MnO | 0.25 | 0.21 | 0.18 | 0.23 | 0.2 | 0.23 |
| MgO | 5.3 | 5.7 | 5.00 | 5.56 | 5.9 | 5.74 |
| CaO | 6.59 | 8.03 | 6.64 | 7.22 | 10.32 | 10.06 |
| Na2O | 5.2 | 3.8 | 5.1 | 3.6 | 2.2 | 2.36 |
| K2O | 0.64 | 0.81 | 0.2 | 1.2 | 0.5 | 0.53 |
| P2O5 | 0.1 | 0.11 | 0.09 | 0.16 | 0.09 | 0.16 |
| H2O+ | 2.5 | 2.8 | 3.0 | 2.2 | 0.9 | 0.5 |
| H2O- | 1.1 | 0.85 | 1.3 | 0.5 | 1.1 | 1.1 |
| CO2 | 0.01 | 0.02 | 0.21 | 0.15 | 0.05 | 0.01 |
| S | - | - | - | - | - | - |
| F | 0.02 | 0.02 | 0.02 | 0.02 | 0.02 | 0.02 |
| Cl | 0.022 | 0.029 | 0.011 | 0.034 | 0.0043 | 0.0043 |
| Total | 101.97 | 102.56 | 102.77 | 100.63 | 101.87 | 101.11 |
| Total Fe as Fe2O3 | 16.77 | 15.73 | 16.22 | 16.12 | 15.95 | 16.20 |
| (ppm) Li | | | | | | |
| Be | <1.0* | <1.0* | <1.0* | | <1.0* | |
| B | 21* | 14* | 67* | 33* | 6.2* | 25* |
| Sc | 27* | 24* | 23* | 23* | 28* | 27* |
| V | 140* | 140* | 130* | 130* | 150* | 150* |
| Cr | 69* | 45* | 54* | 68* | 70* | 61* |
| Co | 39* | 36* | 36* | 37* | 43* | 42* |
| Ni | 38* | 34* | 32* | 36* | 40* | 44* |
| Cu | 140* | 140* | 220* | 210* | 150* | 98* |
| Zn | 140* | 100* | 130* | 100* | 120* | 150* |
| Ga | 15* | 16* | 18* | 10* | 20* | 15* |
| As | 2.2 | 6 | 3.9 | 1.3 | 2 | 2 |
| Rb | 18 | 27 | 9 | 38 | 24 | 23 |
| Sr | 123 | 117 | 42 | 89 | 97 | 99 |
| Y | 16* | 11* | 11* | 11* | 15* | 13* |
| Zr | 63* | 43* | 42* | 37* | 54* | 69* |
| Nb | 5.5* | 5.4* | 3.5* | 4.5* | 7.1* | 5.8* |
| Mo | 1.5* | <1.0* | <1.0* | <1.0* | <1.0* | 2.9* |
| Pb | 34* | 10* | 51* | <6.8* | 13* | 16* |
| Cd | | | | | | |
| Sn | | | | <1.5* | | |
| Sb | | | | | | |
| Cs | | | | | | |
| Ba | 140* | 75* | 89* | 140* | 73* | 68* |
| La | <10* | <10* | <10* | <10* | 11* | <10* |
| Ce | | | | | | |
| Nd | | | | | | |
| Sm | | | | | | |
| Eu | | | | | | |
| Gd | | | | | | |
| Tb | | | | | | |
| Tm | | | | | | |
| Yb | 2.7* | 2.3* | 1.8* | 2.6* | 2.7* | 3.6* |
| Lu | | | | | | |
| Hf | | | | | | |
| Ta | | | | | | |
| Th | | | | | | |
| U | | | | | | |
| (ppb) Au | | | | | | |
| Specific Gravity Method: majors | XRF | XRF | XRF | XRF | XRF | XRF |

Table 3b Hook Mountain basalt

| Field no. | O-152-8 | O-152-9 | O-152-K | O-15X-Q | O-176 | O-178-B |
|---|---|---|---|---|---|---|
| Alternative field no. | | | | O-152 | | |
| Lab number | W-209834 | W-209835 | W-213239 | W-209839 | W-225000 | W-193442 |
| (wgt.%) SiO2 | 49.9 | 50.3 | 50.2 | 50.6 | 50.3 | 57.8 |
| TiO2 | 1.32 | 1.36 | 1.3 | 1.32 | 1.45 | 1.98 |
| Al2O3 | 13.4 | 13.6 | 14.2 | 13.0 | 13.3 | 11.6 |
| Fe2O3 | 5.66 | 5.46 | 5.12 | 4.91 | 4.52 | 10.89 |
| FeO | 9.7 | 9.2 | 9.7 | 10.0 | 10.6 | 2.8 |
| MnO | 0.25 | 0.21 | 0.24 | 0.23 | 0.24 | 0.19 |
| MgO | 5.74 | 5.63 | 6.2 | 5.76 | 5.31 | 3.0 |
| CaO | 8.38 | 9.76 | 10.16 | 10.6 | 10.0 | 4.2 |
| Na2O | 3.1 | 2.63 | 1.9 | 2.16 | 2.29 | 1.2 |
| K2O | 0.97 | 0.55 | 0.44 | 0.44 | 0.28 | 1.74 |
| P2O5 | 0.15 | 0.16 | 0.17 | 0.15 | 0.2 | 0.44 |
| H2O+ | 1.4 | 0.3 | 1.4 | 0.6 | 0.89 | 2.4 |
| H2O- | 0.84 | 1.3 | 1.35 | 1.1 | 0.92 | 2.2 |
| CO2 | 0.04 | 0.01 | 0.05 | 0.23 | 0.03 | 0.01 |
| S | - | - | - | - | 0.04 | - |
| F | 0.01 | 0.01 | 0.02 | 0.02 | 0.02 | 0.05 |
| Cl | 0.016 | 0.0065 | 0.0010 | 0.0052 | <0.002 | 0.019 |
| Total | 100.85 | 100.47 | 102.43 | 101.10 | 100.33 | 100.45 |
| Total Fe as Fe2O3 | 16.44 | 15.68 | 15.90 | 16.02 | 16.30 | 14.00 |
| (ppm) Li | | | | | | |
| Be | <1.0 | <1.0* | <1.0* | | | 2.2* |
| B | 17* | <6.8* | <6.8* | 12* | | <4.6* |
| Sc | 20* | 26* | 33* | 33* | | 25.7n |
| V | 110* | 140* | 220* | 160* | | 36* |
| Cr | 55* | 140* | 82* | 99* | | 14.9n |
| Co | 35* | 42* | 55* | 46* | | 26.7n |
| Ni | 33* | 43* | 62* | 44* | | 4.6* |
| Cu | 100* | 220* | 250* | 140* | | 420 |
| Zn | 110* | 140* | 170* | 140* | | 158n |
| Ga | 20* | 22* | 22* | 18* | | 26 |
| As | 1.1 | 2.5 | 0.82 | 3 | | 22 |
| Rb | 32 | 20 | 13 | 12 | | 59n |
| Sr | 95 | 100 | 108 | 111 | | 280* |
| Y | 8.3* | 11* | 17* | 14* | | 37* |
| Zr | 31* | 49* | 53* | 54* | | 500n |
| Nb | 3.9* | 4.4* | 8.4* | 5.7* | | 35* |
| Mo | <1.0* | <1.0* | 1.4* | <1.0* | | <1.0* |
| Pb | <6.8* | 14* | 12* | 21* | | 19* |
| Cd | | | | | | |
| Sn | | | <1.5* | 3.1* | | <1.5* |
| Sb | | | | | | <1.4n |
| Cs | | | | | | 1.9n |
| Ba | 89* | 100* | 69* | 77* | | 430n |
| La | <10* | <10* | <10* | <10* | | 46n |
| Ce | | | | | | 87n |
| Nd | | | | | | 45n |
| Sm | | | | | | 12.6n |
| Eu | | | | | | 2.93n |
| Gd | | | | | | 13n |
| Tb | | | | | | 2.19n |
| Tm | | | | | | 0.71n |
| Yb | 1.8* | 2.9* | 3.0* | 2.6* | | 6.7n |
| Lu | | | | | | 0.88n |
| Hf | | | | | | 8.6n |
| Ta | | | | | | 2.21n |
| Th | | | | | | 9.1n |
| U | | | | | | 1.9n |
| (ppb) Au | | | | | | |
| Specific Gravity | | | | | | |
| Method: majors | XRF | XRF | XRF | XRF | XRF | XRF |

Table 3b Hook Mountain basalt

| Field no. | O-183 | O-185 | O-186-6 | O-191 | O-193 | O-205 |
|---|---|---|---|---|---|---|
| Alternative field no. | O-180 | | | | O-193-16 | |
| Lab number | W-193443 | W-193441 | W-193440 | W-225002 | W-225001 | W-209840 |
| (wgt.%) SiO2 | 47.3 | 48.9 | 49.4 | 49.7 | 49.9 | 48.2 |
| TiO2 | 1.30 | 1.29 | 1.34 | 1.35 | 1.39 | 1.30 |
| Al2O3 | 13.4 | 12.7 | 12.4 | 13.4 | 13.0 | 13.4 |
| Fe2O3 | 7.70 | 4.94 | 7.20 | 5.00 | 4.74 | 5.80 |
| FeO | 7.27 | 9.5 | 7.2 | 9.9 | 10.4 | 9.2 |
| MnO | 0.17 | 0.27 | 0.23 | 0.24 | 0.24 | 0.2 |
| MgO | 5.0 | 5.9 | 5.0 | 5.68 | 5.58 | 5.34 |
| CaO | 6.0 | 8.0 | 7.6 | 10.3 | 10.1 | 7.08 |
| Na2O | 5.9 | 4.2 | 3.7 | 2.14 | 2.21 | 4.78 |
| K2O | 0.9 | 0.9 | 1.72 | 0.44 | 0.45 | 0.56 |
| P2O5 | 0.14 | 0.13 | 0.2 | 0.14 | 0.18 | 0.16 |
| H2O+ | 2.0 | 2.7 | 2.4 | 0.65 | 1.2 | 2.8 |
| H2O- | 2.3 | 0.57 | 1.0 | 1.5 | 1.6 | 0.76 |
| CO2 | 0.02 | 0.02 | 0.37 | 0.02 | 0.06 | - |
| S | - | - | - | 0.02 | 0.04 | - |
| F | 0.03 | 0.02 | 0.03 | 0.02 | 0.02 | 0.04 |
| Cl | 0.0085 | 0.0050 | 0.0037 | <0.002 | <0.002 | 0.013 |
| Total | 99.40 | 100.02 | 99.76 | 100.46 | 101.05 | 99.58 |
| Total Fe as Fe2O3 | 15.78 | 15.50 | 15.20 | 16.00 | 16.30 | 16.02 |
| (ppm) Li | | | | | | |
| Be | <1.0* | <1.0* | <1.0* | | | |
| B | 83* | 7.7* | 26* | | | 190* |
| Sc | 44.3n | 44.1n | 41.6n | | | 9.9* |
| V | 210* | 280* | 240* | | | 69* |
| Cr | 73.3n | 77.7n | 64.1n | | | 11* |
| Co | 52.4n | 51.6n | 42.7n | | | 14* |
| Ni | 55* | 67* | 60* | | | 13* |
| Cu | 120* | 35* | 35* | | | 89* |
| Zn | 129n | 194n | 158n | | | 74* |
| Ga | 22* | 21* | 21* | | | 15* |
| As | 0.74 | | 1.6 | | | 1.1 |
| Rb | 36n | 31n | 42n | | | 17 |
| Sr | 150* | 190* | 210* | | | 187 |
| Y | 16* | 26* | 26* | | | 6.4* |
| Zr | <928n | <933n | <937n | | | 23* |
| Nb | 7.0* | 12* | 11* | | | <3.2* |
| Mo | <1.0* | <1.0* | <1.0* | | | <1.0* |
| Pb | 13* | <6.8* | 18* | | | <6.0* |
| Cd | | | | | | |
| Sn | <1.5* | <1.5* | <1.5* | | | 4.0* |
| Sb | <1.4n | 1.4 | <1.3n | | | |
| Cs | 17.8n | 4.3n | 2.8n | | | |
| Ba | <262n | <262n | 199n | | | 160* |
| La | 8n | 8n | 9n | | | <10* |
| Ce | 17n | 18n | 20n | | | |
| Nd | 7n | 7n | 10n | | | |
| Sm | 3.3n | 3.4n | 3.7n | | | |
| Eu | 1.12n | 1.15n | 1.17n | | | |
| Gd | 1.9n | 4.9n | 3.5n | | | |
| Tb | 0.89n | 1.02n | 0.9n | | | |
| Tm | 0.31n | 0.34n | 0.36n | | | |
| Yb | 3.5n | 3.5n | 4.5n | | | 1.0* |
| Lu | 0.53n | 0.52n | 0.66n | | | |
| Hf | 2.2n | 2.4n | 2.3n | | | |
| Ta | <1.27n | <1.31n | <1.33n | | | |
| Th | 1.6n | 1.7n | 2.3n | | | |
| U | 0.59 | 0.4n | 0.5n | | 0.84 | 1.95 |
| (ppb) Au | | | | | | |
| Specific Gravity | | | | | | |
| Method: majors | XRF | XRF | XRF | XRF | XRF | XRF |

Table 3b Hook Mountain basalt

| Field no. | O-228 | O-27 | O-48 | O-59 | O-96 | RH-F-1 |
|---|---|---|---|---|---|---|
| Alternative field no. | | | | | | RW-5-25 |
| Lab number | W-193445 | W-213238 | W-213240 | W-213241 | W-213236 | W-193464 |
| (wgt.%) SiO2 | 48.5 | 50.9 | 49.5 | 50.0 | 51.0 | 50.4 |
| TiO2 | 1.37 | 1.40 | 1.45 | 1.32 | 1.4 | 1.38 |
| Al2O3 | 13.8 | 12.8 | 13.9 | 12.3 | 12.4 | 14.2 |
| Fe2O3 | 4.21 | 5.66 | 6.64 | 6.26 | 4.65 | 5.78 |
| FeO | 10.7 | 9.5 | 9.2 | 9.1 | 10.3 | 9.2 |
| MnO | 0.21 | 0.24 | 0.22 | 0.22 | 0.23 | 0.23 |
| MgO | 5.3 | 5.4 | 5.2 | 5.7 | 5.6 | 2.1 |
| CaO | 6.1 | 10.06 | 6.22 | 6.7 | 9.93 | 9.9 |
| Na2O | 5.4 | 2.3 | 3.7 | 4.1 | 2.2 | 5.4 |
| K2O | 0.15 | 0.46 | 0.85 | 0.76 | 0.34 | 0.25 |
| P2O5 | 0.18 | 0.2 | 0.18 | 0.16 | 0.21 | 0.19 |
| H2O+ | 2.3 | 1.2 | 3.0 | 3.5 | 1.5 | 1.6 |
| H2O- | 2.4 | 1.37 | 1.05 | 1.38 | 1.12 | 0.77 |
| CO2 | 0.03 | 0.22 | 0.06 | 0.04 | 0.06 | 0.01 |
| S | - | - | - | - | - | - |
| F | 0.04 | 0.05 | 0.03 | 0.02 | 0.03 | 0.03 |
| Cl | 0.011 | 0.0027 | 0.010 | 0.010 | 0.0026 | 0.0056 |
| Total | 100.65 | 101.71 | 101.17 | 101.54 | 100.94 | 101.41 |
| Total Fe as Fe2O3 | 16.10 | 16.22 | 16.86 | 16.37 | 16.10 | 16.00 |
| (ppm) Li | | | | | | |
| Be | <1.0* | <1.0* | <1.0* | <1.0* | <1.0* | <1.0* |
| B | 11* | 52* | 11* | 6.3* | 7.1* | <6.8* |
| Sc | 45.2n | 49* | 51* | 43* | 49* | 44.2n |
| V | 220* | 280* | 300* | 240* | 270* | 330* |
| Cr | 67.3n | 53* | 75* | 75* | 50* | 61.8n |
| Co | 50.7n | 56* | 58* | 52* | 57* | 50.7n |
| Ni | 49* | 59* | 63* | 60* | 61* | 78* |
| Cu | 240* | 140* | 260* | 140* | 130* | 280* |
| Zn | 168n | 180* | 170* | 130* | 160* | 165n |
| Ga | 22* | 15* | 21* | 15* | 16* | 21* |
| As | 0.64 | 3.5 | 0.41 | 0.26 | 1.1 | 1.2 |
| Rb | <39n | 10 | 15 | 18 | 16 | <38n |
| Sr | 140* | 118 | 114 | 65 | 117 | 230* |
| Y | 17* | 32* | 27* | 22* | 32* | 22* |
| Zr | <981n | 120* | 88* | 70* | 120* | 70* |
| Nb | 8.8* | 17* | 15* | 5.9* | 12* | 8.3* |
| Mo | <1.0* | <1.0* | <1.0* | <1.0* | <1.0* | |
| Pb | <6.8* | 12* | 12* | 12* | <6.8* | <6.8* |
| Cd | | | | | | |
| Sn | <1.5* | <1.5* | <1.5* | <1.5* | <10* | <1.5* |
| Sb | <1.5n | | | | | <1.2n |
| Cs | 3.9n | | | | | 1.5n |
| Ba | <277n | 180* | 270* | 53* | 100* | 100* |
| La | 10n | 16* | <10* | 11* | <10* | 9n |
| Ce | 22n | | | | | 21n |
| Nd | 10n | | | | | 15n |
| Sm | 3.9n | | | | | 4.9n |
| Eu | 1.26n | | | | | 1.23n |
| Gd | 2.7n | | | | | 4.0n |
| Tb | 0.9n | | | | | 1.11n |
| Tm | 0.23n | | | | | 0.39n |
| Yb | 4.2n | 3.3* | 3.2* | 2.4* | 2.9* | 4.2n |
| Lu | 0.65n | | | | | 0.63n |
| Hf | 2.5n | | | | | 2.6n |
| Ta | <1.36n | | | | | <1.28n |
| Th | 2.4n | | | | | 2.0n |
| U | 0.6n | | 1.5 | | | 0.6n |
| (ppb) Au | | | | | | |
| Specific Gravity Method: majors | XRF | XRF | XRF | XRF | XRF | XRF |

Table 3b Hook Mountain basalt

| | |
|---|---|
| Field no. | RH-F-2 |
| Alternative field no. | RW-5-33 |
| Lab number | W-193465 |
| (wgt.%) SiO2 | 50.6 |
| TiO2 | 1.4 |
| Al2O3 | 13.5 |
| Fe2O3 | 5.13 |
| FeO | 9.6 |
| MnO | 0.22 |
| MgO | 1.9 |
| CaO | 10.1 |
| Na2O | 5.3 |
| K2O | 0.25 |
| P2O5 | 0.19 |
| H2O+ | 1.2 |
| H2O- | 0.58 |
| CO2 | 0.01 |
| S | - |
| F | 0.02 |
| Cl | 0.0056 |
| Total | 99.98 |
| Total Fe as Fe2O3 | 15.80 |
| (ppm) Li | |
| Be | <1.0* |
| B | <6.8* |
| Sc | 44.7n |
| V | 370* |
| Cr | 65.1n |
| Co | 51.0n |
| Ni | 69* |
| Cu | 140* |
| Zn | 179n |
| Ga | 19* |
| As | 1.2 |
| Rb | <39n |
| Sr | 220* |
| Y | 33* |
| Zr | 160* |
| Nb | 17* |
| Mo | |
| Pb | <6.8* |
| Cd | |
| Sn | <1.5* |
| Sb | <1.2n |
| Cs | 1.8n |
| Ba | 110* |
| La | 11n |
| Ce | 22n |
| Nd | 17n |
| Sm | 5.7n |
| Eu | 1.3n |
| Gd | 3.8n |
| Tb | 0.89n |
| Tm | 0.44n |
| Yb | 4.0n |
| Lu | 0.66n |
| Hf | 2.8n |
| Ta | <1.35n |
| Th | 2.0n |
| U | 0.8n |
| (ppb) Au | |
| Specific Gravity | |
| Method: majors | XRF |

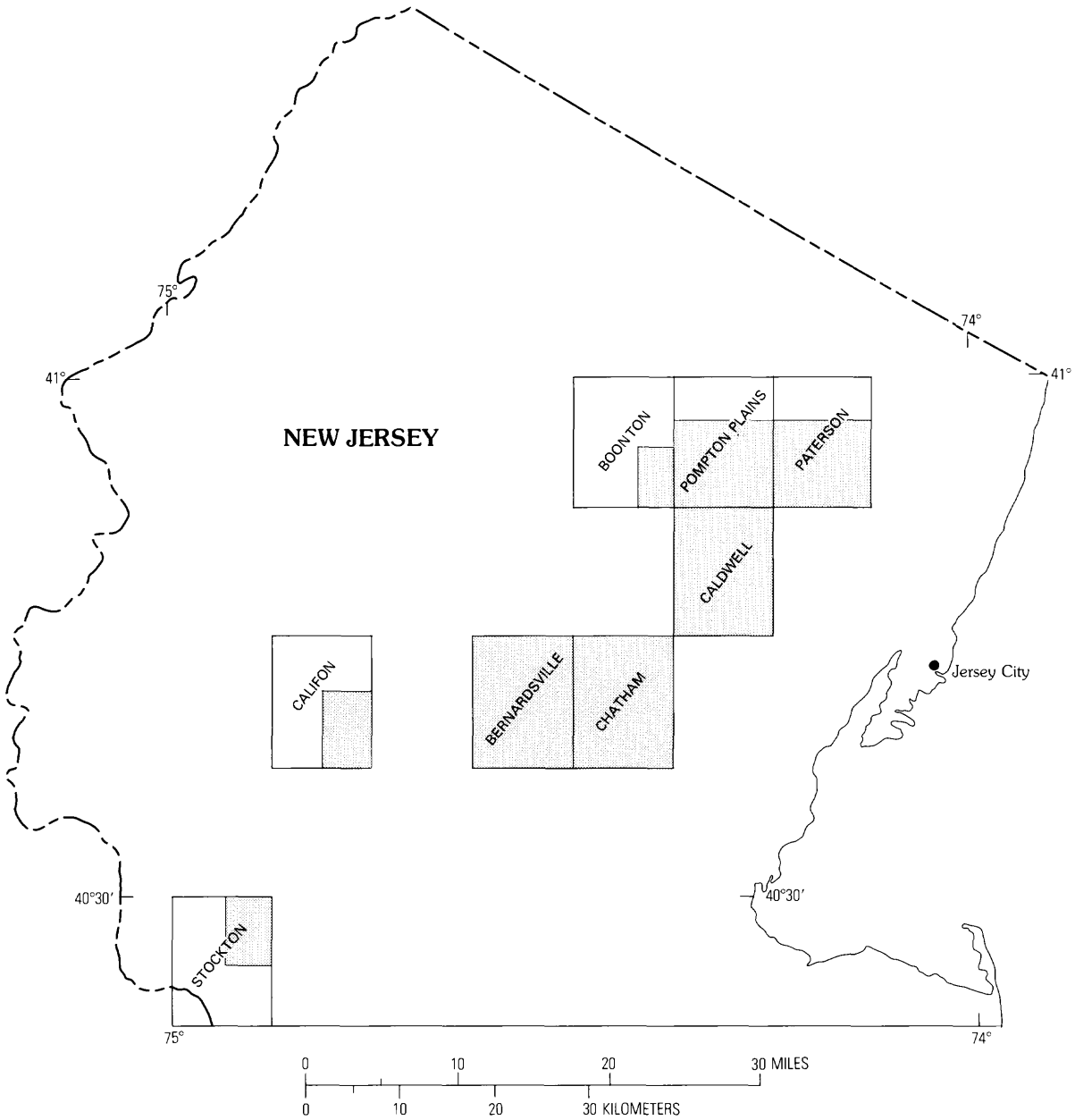


Figure 1: Index map of northern New Jersey showing the names and locations of the 7.5 minute quadrangles where samples were collected. The shaded areas indicate the portions of the quadrangles shown in figs. 3-10.

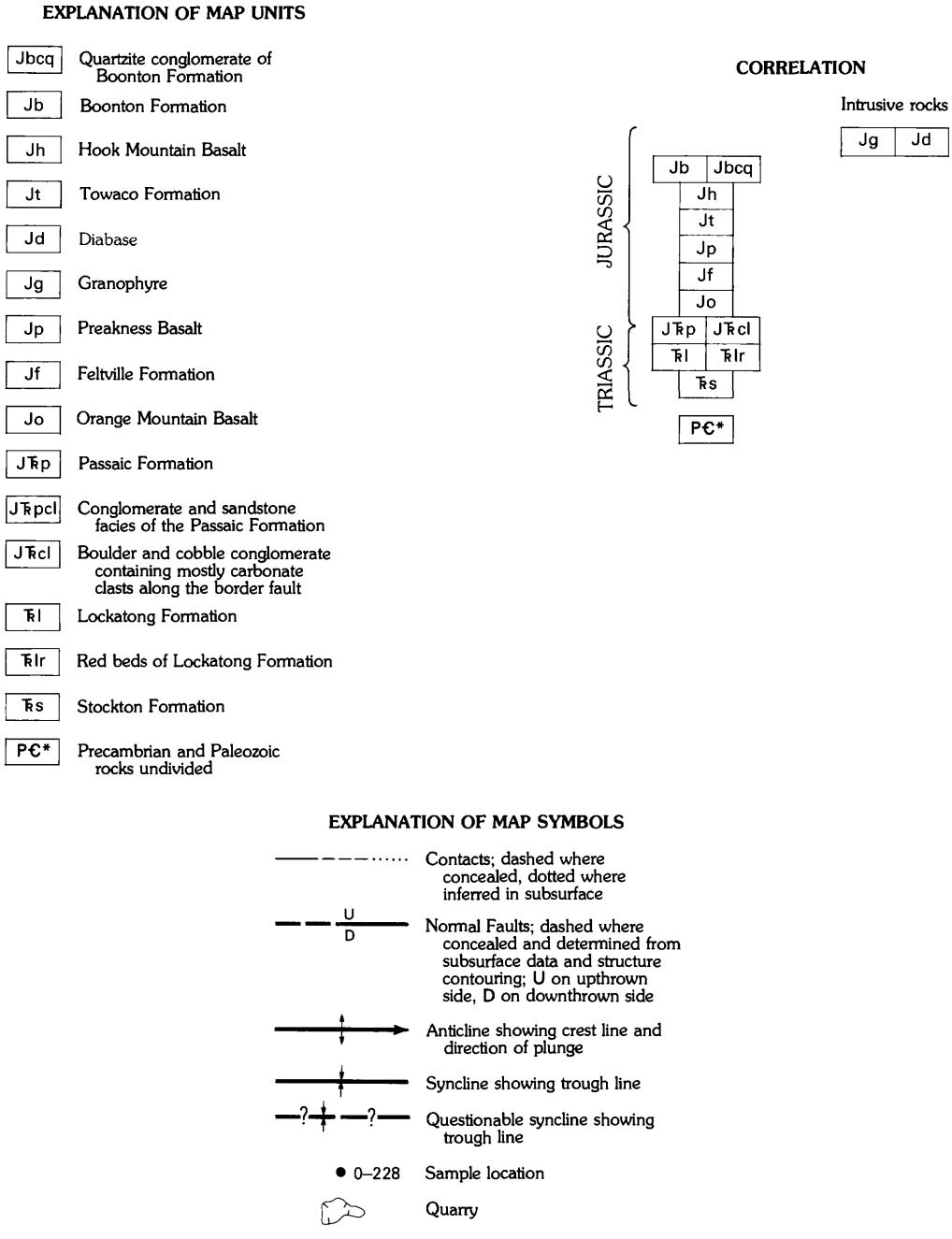


Figure 2: Stratigraphy and explanation of symbols.

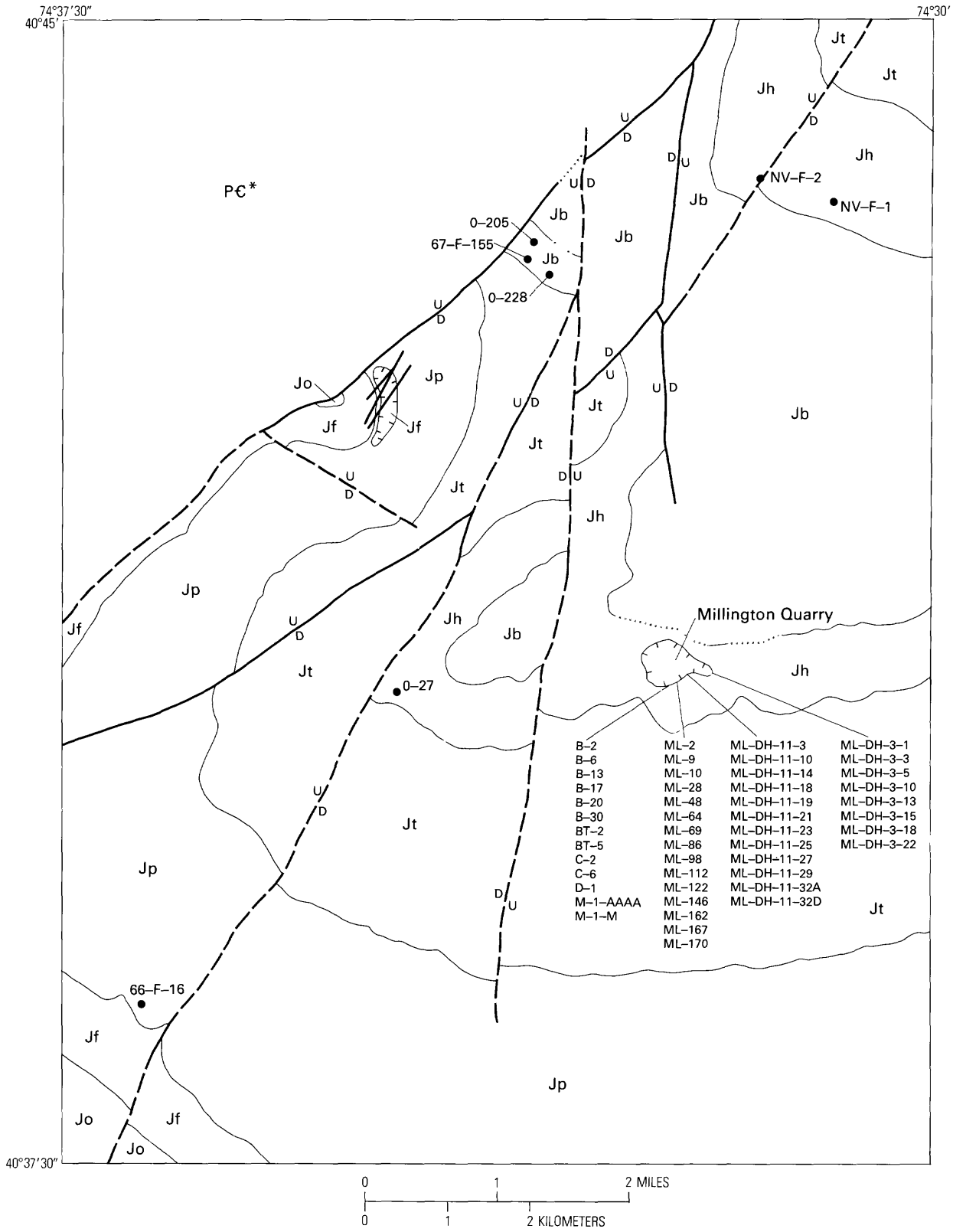


Figure 3: Sample locations and bedrock geology of the Bernardsville 7.5' quadrangle, NJ.

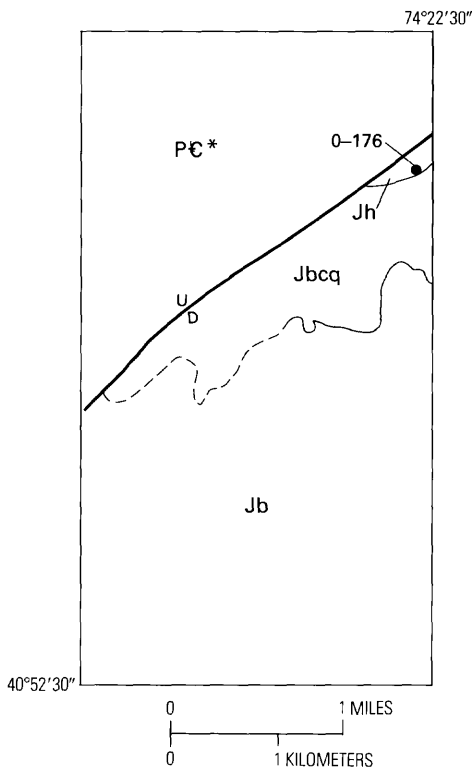


Figure 4: Sample locations and bedrock geology of the Boonton 7.5' quadrangle, NJ.

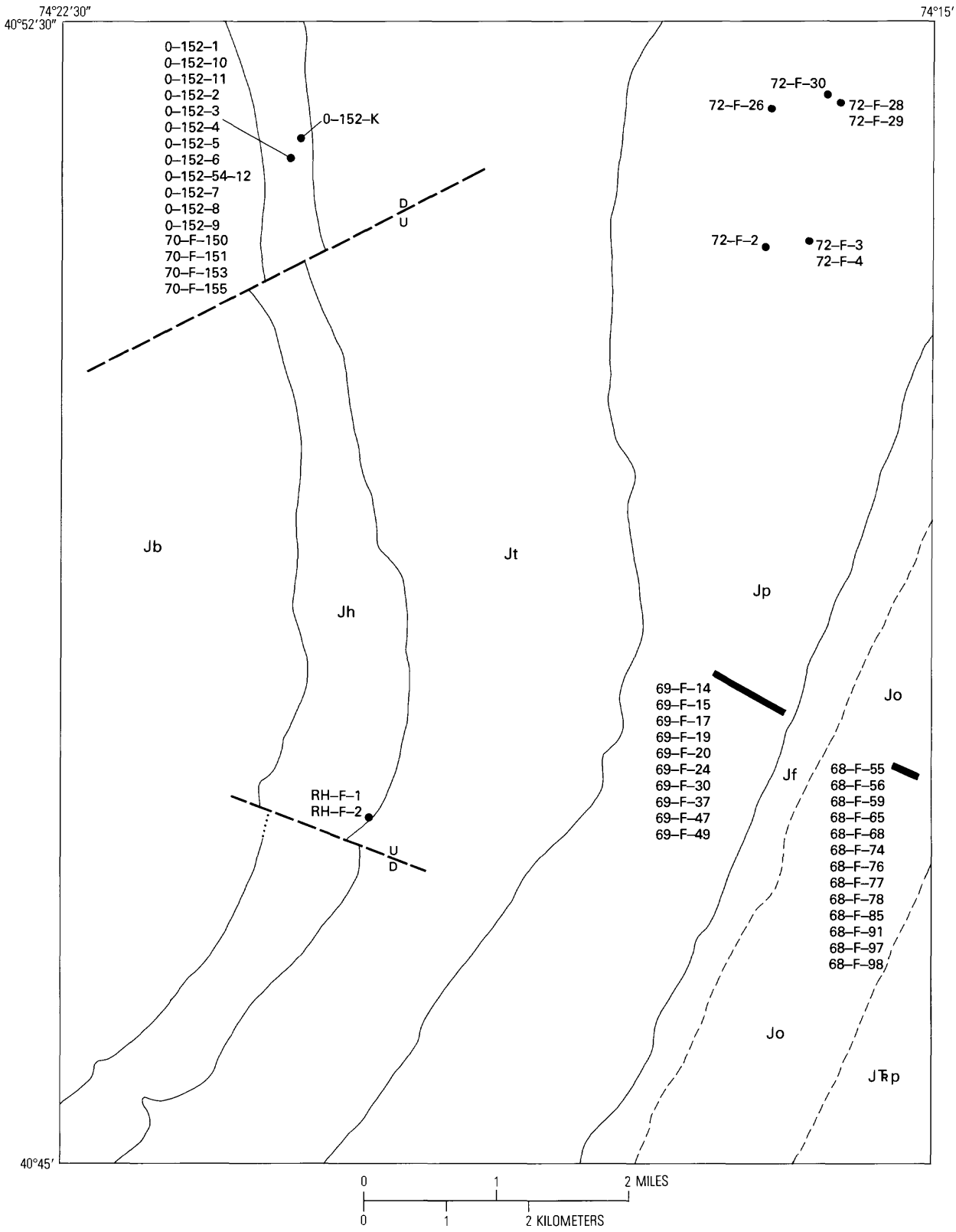


Figure 5: Sample locations and bedrock geology of the Caldwell 7.5' quadrangle, NJ.

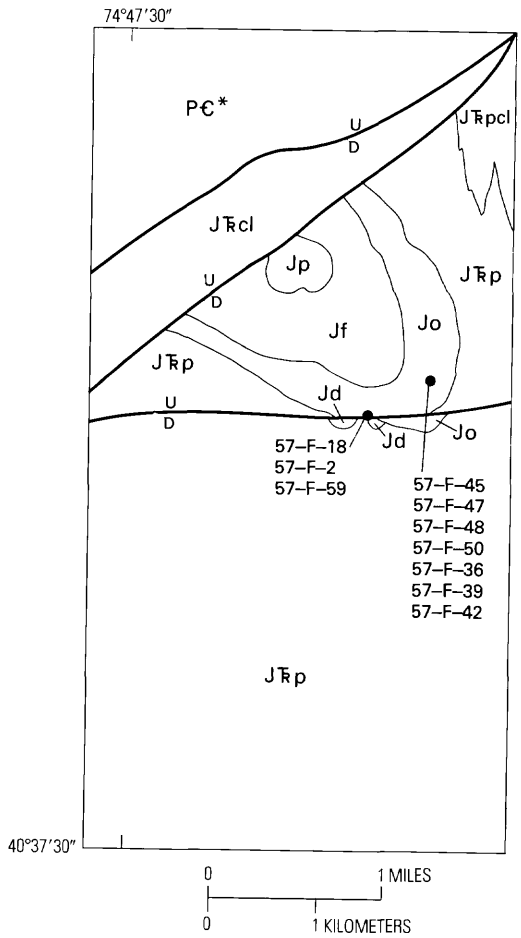


Figure 6: Sample locations and bedrock geology of the Califon 7.5' quadrangle, NJ.

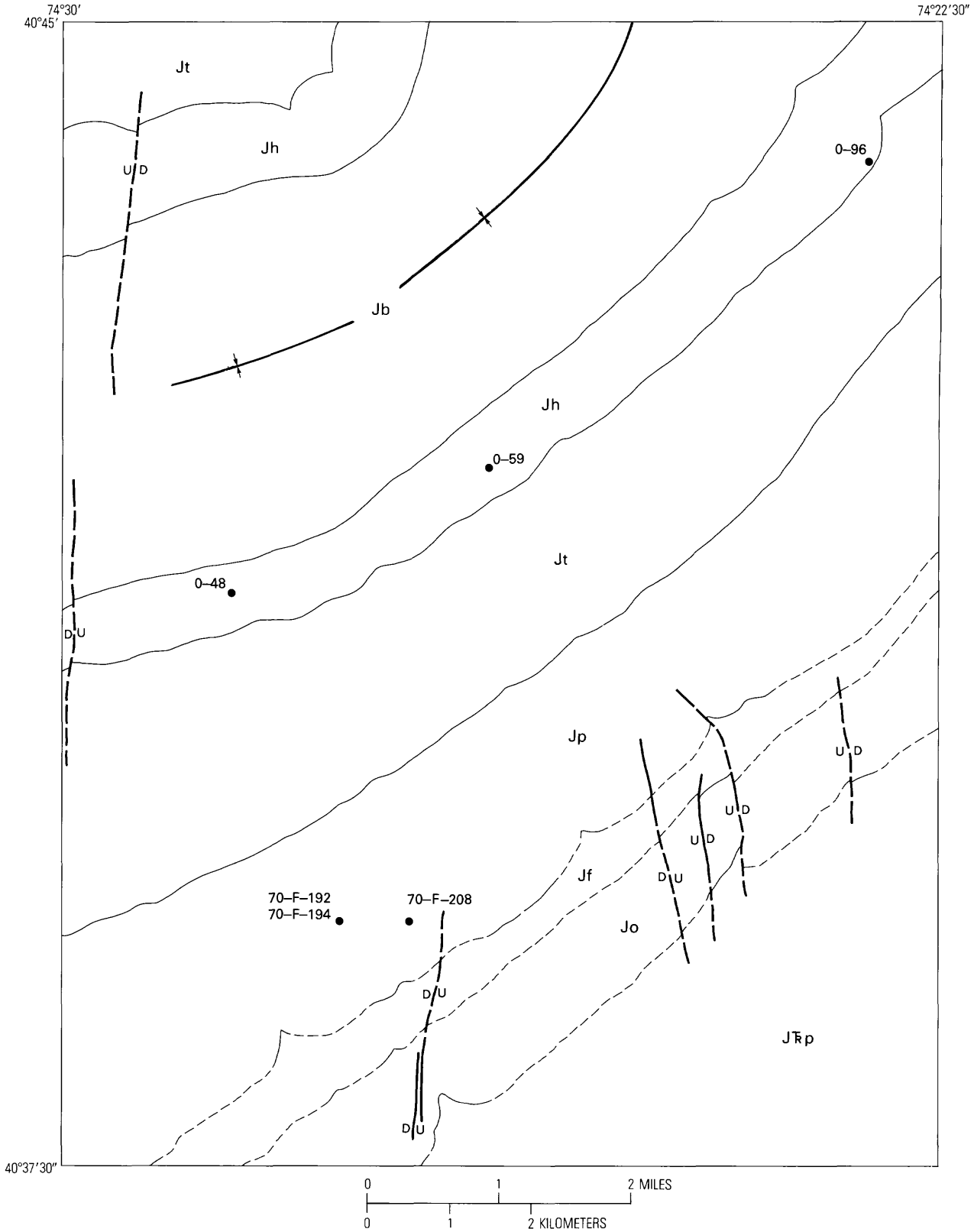


Figure 7: Sample locations and bedrock geology of the Chatham 7.5' quadrangle, NJ.

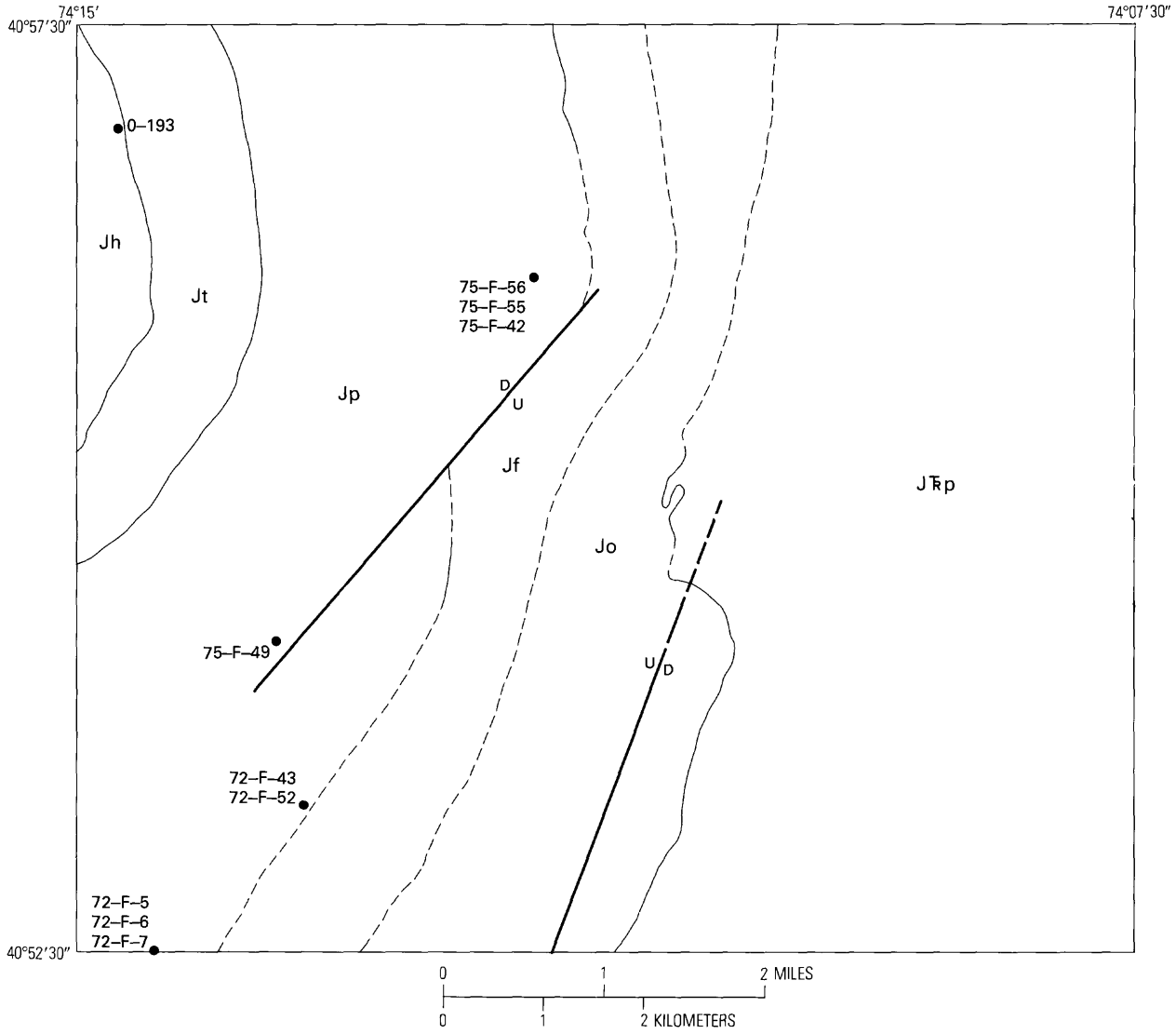


Figure 8: Sample locations and bedrock geology of the Paterson 7.5' quadrangle, NJ.

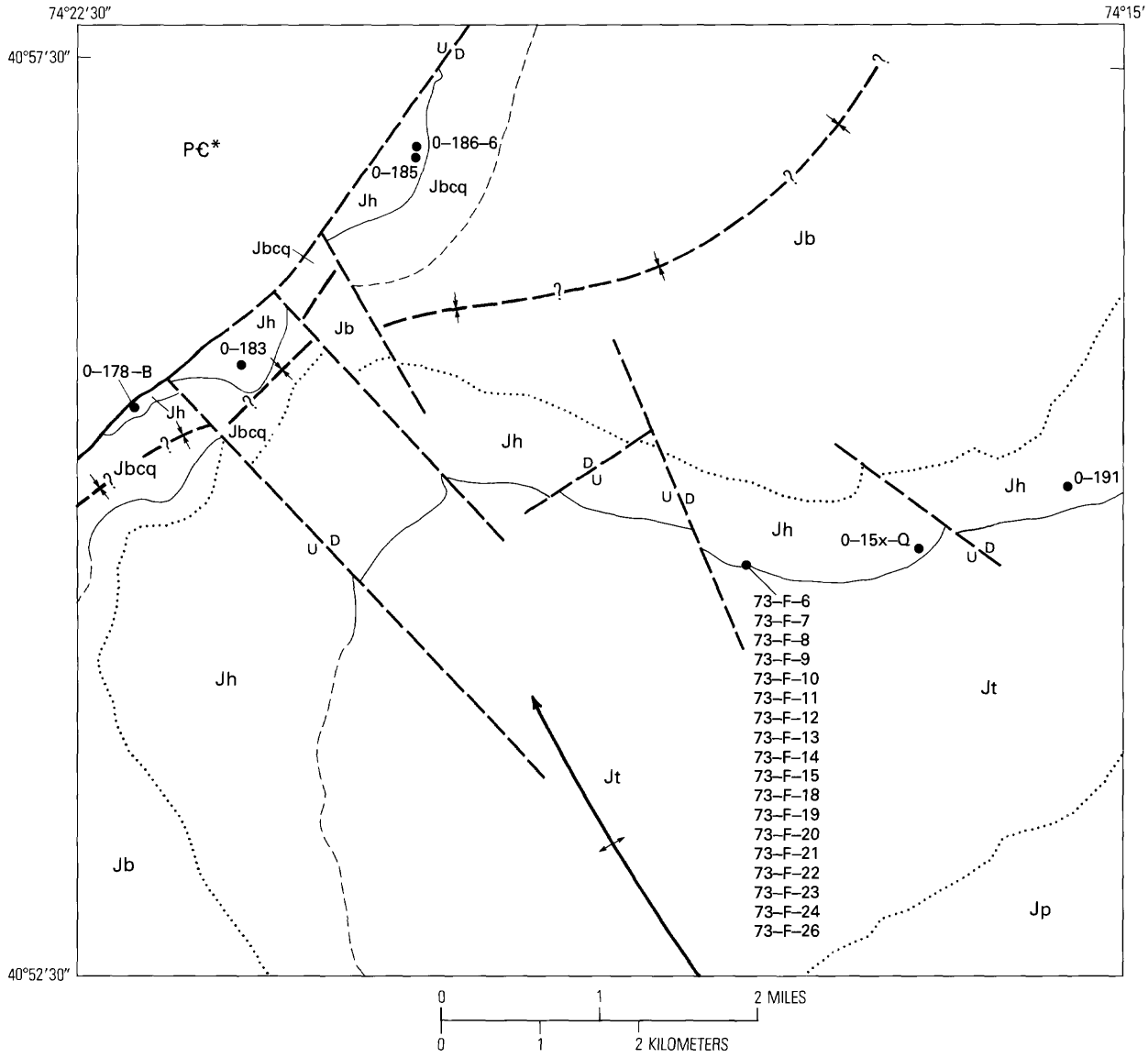


Figure 9: Sample locations and bedrock geology of the Pompton Plains 7.5' quadrangle, NJ.

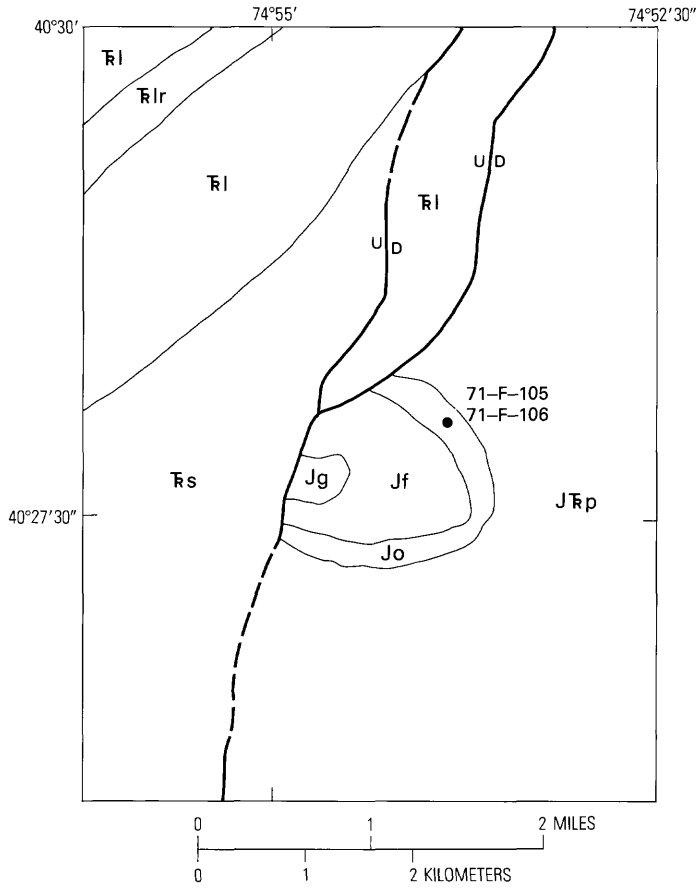


Figure 10: Sample locations and bedrock geology of the Stockton 7.5' quadrangle, NJ.