UNITED STATES DEPARTMENT OF THE INTERIOR

GEOLOGICAL SURVEY

ELEMENTAL COMPOSITION OF SURFICIAL MATERIALS FROM CENTRAL OKLAHOMA

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ABSTRACT

The geochemical analyses of B-horizon soil samples and outcrop rock samples from central Oklahoma have been completed by the U.S. Geological Survey. Geochemical analyses of surficial materials in central Oklahoma is part of a ground-water-quality assessment of the Central Oklahoma Aquifer, Oklahoma pilot study of the National Water-Quality Assessment (NAWQA) Program, which is intended to identify and explain major factors affecting ground-water quality. The Central Oklahoma aquifer underlies approximately 8,000 square kilometers of central Oklahoma and is a major source of ground water for municipal, industrial, commercial, and domestic usage. Detailed studies of water chemistry and hydrology coupled with the results of geochemical analyses of solid constituents of the aquifer will be used to understand rock-water interaction within the aquifer.

Analytical results and summary statistics for 44 elements have been compiled based on the analyses of 293 B-horizon soil samples and 362 outcrop rock samples. The samples were analyzed by inductively coupled plasma-atomic emission spectroscopy to determine the concentrations of 38 elements; arsenic and selenium abundances were determined by hydride generation-atomic absorption spectroscopy, and uranium and thorium concentrations were measured by delayed neutron activation analysis. In addition, boron and zirconium concentrations in the outcrop rock samples were determined using direct-current arc optical emission spectroscopy.

INTRODUCTION

Solid-phase geochemical studies of Central Oklahoma are a part of a ground-water-quality assessment of the Central Oklahoma Aquifer, Oklahoma pilot study which is part of the National Water Quality Assessment (NAWQA) Program of the U.S. Geological Survey. As outlined by Hirsch and others (1988) the long term goals of the NAWQA Program are:

(1) Provide a nationally consistent description of current water-quality conditions for a large part of the Nation's surface- and ground-water resources;
(2) Define long-term trends (or lack of trends) in water quality; and,
(3) Identify, describe, and explain, as possible, the major factors that affect the observed water-quality conditions and trends.

The term "solid-phase" is used to differentiate between geochemical studies of solid materials in the aquifer and water chemistry studies of the aquifer.

The Central Oklahoma aquifer study is one of three pilot ground-water projects of the NAWQA Program. The aquifer, located in central Oklahoma (fig. 1), underlies about 8,000 square kilometers and is used extensively for municipal, industrial, commercial, and domestic water supplies. The aquifer was

selected as a NAWQA pilot study because of its extensive use and known water-quality problems. At various localities in the aquifer, ground-water concentrations of potentially toxic naturally occurring trace substances such as arsenic (As), chromium (Cr), selenium (Se), and residual-alpha radioactivity exceed the primary drinking-water standards of the Environmental Protection Agency (U.S. Environmental Protection Agency, 1986). In addition, high concentrations of uranium (U) have been detected in water from some wells. An assessment of the ground-water quality within the Central Oklahoma aquifer through 1987 is presented by Parkhurst and others (1989).

At the beginning of this study, few data were available on the abundance of the elements in solid-phase materials of central Oklahoma. Most of the early reports pertain to discussions of Permian red-bed copper deposits and their associated elements that were of economic importance to mining and occur in the region. Mosier and Bullock (1988) provide a review of the general geology and previously conducted geochemical studies in the vicinity of central Oklahoma. Associated with the Central Oklahoma aquifer study are two reports presenting analytical data on subsurface Permian rocks (Mosier and others, 1990; Mosier and others, 1991) and a report on the mineralogy and petrography of subsurface Permian rocks (Breit and others, 1990). These three reports are data releases for samples collected from eight test wells that were cored specifically for the Central Oklahoma aquifer study. The purpose of this report is to release analytical data on 293 B-horizon soil samples and 362 outcrop rock samples collected from the central Oklahoma study. Some of the samples were collected from areas outside of the Central Oklahoma aquifer boundaries. With the exception of map figures (figures 1-6), U.S. Geological Survey Open-File Report 91-442B is a digital version of this report. In the digital version, the textual part of the report and tables 1, 4, and 5 are in standard ASCII format. The analytical data, tables 1 and 2, are contained in USGS STATPAC formatted files executable by the USGS conversion program STP2DAT (Grundy and Miesch, 1987).

LOCATION

The surficial solid-phase geochemical study area occurs mostly within the Oklahoma City 1° x 2° quadrangle (scale 1:250,000) and extends south into the Ardmore 1° x 2° quadrangle. The study area defined for this report is bounded by 34°45′ and 36° north latitude, and 96°45′ and 97°45′ west longitude (fig. 2).

The Central Oklahoma aquifer underlies all or parts of Cleveland, Lincoln, Logan, Oklahoma, Payne, and Pottawatomie Counties and is totally within the boundaries of the study area (fig. 2). As defined by Parkhurst and others (1989), the aquifer extends south from the Cimarron River to the Canadian River and east from approximately the eastern Canadian/Kingfisher County lines to the eastern limit of the outcrop of the Chase, Council

Grove, and Admire Groups (meandering line on the right side of figure 2).

GEOLOGIC SETTING

The generalized geologic map (fig. 3) and the description of the geologic units that crop out in the study area are taken from Hart (1974) and Bingham and Moore (1975). Rocks that are exposed in the study area are Pennsylvanian and Permian consolidated sedimentary units that are known generally as the red beds and unconsolidated terrace deposits, alluvium, and sand dunes of Quaternary age. Structurally the surface formations generally dip gently to the west at about 10 m/km and strike slightly west of north. The formations are apparently conformable and become progressively younger to the west. Sediments that make up the Permian beds were deposited by a large fluviatile system flowing from the east into a Permian basin that extended into western Oklahoma and Texas. Patterson (1933) placed the main part of the delta in approximately the area of central Oklahoma County.

Pennsylvanian Rocks

The oldest rocks exposed in the study area are red-brown to gray shale and red-orange-brown fine-grained sandstone of Late Pennsylvanian age that occupy the eastern one-eighth of the study area. These rocks make up the Vanoss Formation and yield limited to moderate amounts of ground water of poor to fair quality. Water quality suffers from high concentrations of dissolved solids which may make the water unsuitable for some purposes. Total thickness of the group ranges from 75 to 150 m and increases to the north. The Vanoss Formation is not considered to be part of the Central Oklahoma aquifer.

Permian Rocks

Overlying the Pennsylvanian rocks are siltstones, sandstones, and shales of Permian age. It is the Permian rocks that are generally called the red beds; however, color change can not be used as a key for distinguishing the Pennsylvanian-Permian contact (Aurin and others, 1926; Anderson, 1941).

The Permian rocks exposed in the study area are, in ascending order: the Admire, Council Grove, and Chase Groups, Wellington Formation, Garber Sandstone, and the Hennessey and El Reno Groups.

The strata referred to as the Admire, Council Grove, and Chase Groups (undifferentiated in this report) overlie the Vanoss Group and crop out to the west of the Vanoss Group in the eastern portion of the study area. Rocks of the Admire, Council Grove, and Chase Groups are red-brown to gray shale and orange-brown fine-grained, crossbedded sandstone that grade into arkosic sandstone and conglomerate toward the south. The Admire, Council Grove, and Chase Groups contribute ground water to the Central

Oklahoma aquifer and are collectively 170-290 m thick with a median thickness of 230 m (Christenson and others, 1990).

The Wellington Formation and the Garber Sandstone are the main water-bearing units of the Central Oklahoma aquifer and crop out across the middle portion of the study area. These two units are a single aquifer system because their lithologies and water-bearing characteristics are similar (Wood and Burton, 1968). The units are a complex of interfingering lenticular beds of sandstone, siltstone, and shale that can change in thickness over very short distances. In general, the sandstones are fine to very fine grained and friable. The most common matrix is a fine red mud. The sandstone beds vary in color from white to pink, orange, deep red, or purple and most beds show rather deep hematitic staining. The percentage of sandstone in the aquifer varies throughout the study area. Carr and Marcher (1977) reported that studies of geophysical logs in Logan and Oklahoma Counties show that the sandstone composes 35-75 percent of the aquifer and averages about 50 percent. Sandstone beds reach a maximum thickness of 12 m but 1.5-3 m beds are most common. The combined thickness of the Wellington Formation and Garber Sandstone is 100-270 m with a median thickness of 460 m (Christenson and others, 1990).

In the approximate western one-fourth of the study area, the aquifer is confined by shales and siltstones of the Hennessey Group. The Hennessey Group ranges from 40-200 m thick and becomes thicker to the west and south. The Hennessey consists mainly of massive shale beds that range from a few cm to 3 m or more in thickness with less common layers of well-indurated siltstone and sandstone beds that similarly range from a few cm to about 3 m in thickness. Generally, the contact between the Garber Sandstone and the Hennessey Group can be readily detected because of changes in the geomorphology and vegetation. Areas underlain by sandstone are characterized by rolling steep-sided hills that are chiefly forested with scrub oak, whereas areas underlain by shale are typically rather flat, grass-covered prairies that are mostly devoid of trees. Exceptions are areas where outcrops of well-indurated beds of Hennessey siltstone and sandstone have weathered to form low shelves or ledges or local areas where the contact appears to be gradational.

Rocks of the El Reno Group were the last Permian beds to be deposited in the study area. These rocks crop out in the western part and southwest corner of the study area and are mostly of the Duncan Sandstone with some Chickasha Formation. The Duncan Sandstone is mainly red-brown to orange-brown fine-grained sandstone, with some mudstone and shale. The Chickasha Formation is a variegated mudstone conglomerate and red-brown to orange-brown silty shale and siltstone, with minor amounts of orange-brown fine-grained sandstone. The Duncan Sandstone and Chickasha Formation are 30-50 m thick and form the hilly area that is located in the western part of McClain County and extends into Grady County to the west and Garvin County to the south. The El

Reno Group is not considered to be part of the Central Oklahoma aquifer.

In contrast to the rest of the study area, the strata south of the Canadian River, in the southwestern and southern portion of the study area, strikes southwest and dips northwest. North of the Canadian River in Pottawatomie County, the Permian Admire, Council Grove, and Chase Groups and the older Vanoss Formation of Pennsylvanian age strike east of north, whereas the strike of the top of the Permian Hennessey Group in Cleveland County is west of north. Thus, there is a hublike center in the approximate vicinity of the Canadian River in eastern McClain County from which the formations are spread apart (Anderson, 1927). The hublike center in eastern McClain County indicates the southeastern termination of the northwest-southeast synclinal axis of the Anadarko Basin, which is a geosyncline that dominates structural features in western Oklahoma

Quaternary Deposits

The Quaternary deposits of the study area include terrace deposits of one or more levels adjacent to and associated with broad alluvium-filled stream and river valleys and dune sand. Terrace deposits are relics of old stream systems that have since cut valleys to lower levels. Wind-blown sand accumulates on the northern side of major rivers due to the prevailing south winds and forms in places rather large dunes that are 6-10 m thick. Three major rivers with wide alluvium-filled valleys cut across the area from west to east. These include the Cimarron River to the north, the North Canadian River in the central part of the study area, and the Canadian River to the south. The Deep Fork of the North Canadian River, between the North Canadian and Cimarron Rivers, and the Little River, between the North Canadian and Canadian Rivers, also have significant alluvium-filled valleys but do not transect the total width of the study area.

SAMPLE MEDIA AND DATA COLLECTION

B-Horizon Soils

B-Horizon soil samples were collected over a 2 year period from the study area using a two-phase sampling design. In the first year, phase one soil samples were collected on a three level grid system (fig. 4). For level one, a sample was randomly collected from each 10-square kilometer grid cell. In level two, a second sample was randomly collected in 10 percent of the grid cells and in level three, a second sample was collected at 10 percent of the level one sample sites. Grid cell locations for level two samples and site locations for level three samples were selected using a random number table. Phase two soil samples (fig. 5) were collected in the second year to target areas considered anomalous from the analysis of phase one samples in one or more of the potentially toxic elements (As, Cr, Se, or U).

In general, these areas are the northeast quadrant of the study area, soils developed over the Hennessey Group in the northwest portion of the study area, and in the south central part of the study area. A portion of both phase one and two soil samples were collected from areas outside of the Central Oklahoma aquifer boundaries. The soil samples were collected from well drained locations, usually at or near the crest of a hill and at a site well off the road to minimize contamination from vehicular emissions. Most sample sites were off roads with light vehicular traffic. Approximately three quarters of the samples were collected from pasture or forested land and the remainder were collected from cultivated land. A standard garden spade was used for digging the hole and the soil sample was collected at or near the top of the B-horizon where the soil easily parted from the less dense, more organic rich A-horizon. Usually a color variation could be detected between the A and B horizons. The contact between the A and B horizons was usually at 20 to 30 cm but ranged from no more than 3 to 5 cm to as much as 50 cm. Soil samples were air dried, disaggregated, and then sieved through a 10-mesh sieve. The minus-10-mesh fraction of the sample was pulverized to minus-150-mesh and used for analysis.

Outcrop Rocks

During the reconnaissance surface geochemical sampling program, 362 rock samples were collected from 343 outcrop sites in the study area (fig. 6). The material sampled included sandstones, mudstones, siltstones, and conglomerates. Some of the outcrop samples collected in the study area were outside the aquifer boundaries. Nearly all of the outcrop rock samples were collected from road cuts. Most of the outcrops in the study area are small in size and fairly uniform in their lithologic makeup. For such outcrops, a composite sample of several rock chips was made. When distinct lithologies were present, more than one sample was collected. The outcrop rock samples were crushed in the laboratory and then pulverized to minus-150-mesh prior to analysis.

CHEMICAL ANALYSIS PROCEDURES

All B-horizon soil and outcrop rock samples were analyzed by an inductively coupled plasma-atomic emission spectrometric (ICP-AES) technique for 40 elements (Lichte and others, 1987). The elements determined and their lower limits of determination are presented in table 1. Arsenic was determined by hydride generation-atomic absorption spectroscopy (HG-AAS) (Crock and Lichte, 1982). Selenium was also determined by HG-AAS (Briggs and Crock, 1986 and Sanzolone and Chao, 1987). The lower limit of determination for both As and Se is 0.1 ppm. Uranium and thorium were measured using delayed neutron activation analysis (DNAA) which has lower limits of determination of 0.1 ppm for U and 1 ppm for Th (McKown and Millard, 1987). In addition the outcrop rock samples were analyzed by a six-step,

semiquantitative direct-current-arc atomic emission spectrographic (AES) method (Grimes and Marranzino, 1968). All analysis were performed at the U.S. Geological Survey laboratories in Lakewood, Colorado, by David L. Fey--ICP-AES, Eric P. Welsch and Kay R. Kennedy--HG-AAS, Dave M. KcKown and Bobert B. Vaughn--DNAA and John H. Bullock, Jr.--AES.

DESCRIPTION OF DATA TABLES

Table 2 lists the analyses for the B-horizon soil samples and table 3 lists the analysis for the outcrop rock samples. The data are arranged so that column 1 contains the assigned sample identifier. These identifiers correspond to the numbers shown on the site location maps (figs. 4, 5, and 6). B-horizon soil samples with identifiers S0011 to S1261 are from the phase 1 sample set and samples with identifiers S2011 to S3171 are from the phase 2 sample set. Soil sample identifiers ending with 1 are level 1 samples, ending with 2 are level 2 samples and identifiers ending with X are level 3 samples. Outcrop rock sample identifiers end with the letters V, O, W, G, H, or E. These letters are indicative of the geologic formation that the sample was collected from. The letter "V" indicates Vanoss Formation; "O" indicates Oscar Group; "W" indicates Wellington Formation, "G" indicates Garber Sandstone; "H" indicates Hennessey Group and "E" indicates the El Reno Group. The term "Oscar Group" refers to the undifferentiated Admire, Council Grove, and Chase Groups (Bingham and Moore, 1975). The Admire, Council Grove, and Chase Groups are not actually part of the Oscar Group. These units were apparently misclassified by the stratigraphers who did the mapping for Hart and Bingham and Moore. The COSUNA chart published by Lindberg (1987) refers to Bingham and Moore's Oscar Group as the Permian-age Admire, Council Grove, and Chase Groups. Columns 2 and 3 gives the latitude and longitude in degrees, minutes and seconds. Column 4 shows the county where the sample was collected. The remaining columns give analytical values. Columns marked "ICP" are induction coupled plasma-atomic emission spectrometric analyses; "AES" means semiquantitative direct-current-arc atomic emission spectrographic analyses; "HGAA" indicates hydride generation-atomic absorption spectroscopic analyses; and "DNAA" refers to delayed neutron activation analyses.

The first eight ICP columns (Al, Ca, Fe, K, Mg, Na, P, and Ti) report values in percent. All other values are reported in parts per million (ppm). The alphanumeric symbol "N(10)" in the B-AES column for outcrop rock samples indicates that the element was looked for but not detected at the lower limit of determination, which is 10 ppm, and if B or Zr were detected lower than the lower limit of determination by the AES analytical procedure a "less than" symbol (<) followed by the lower limit of determination was entered. If an element was not detected by the ICP-AES, HG-AAS, or DNAA analytical procedure, a "less than" symbol (<) was entered in the tables in front of lower limit of

determination. The precision of the ICP-AES technique permits the use of two significant figures. Because of the formatting used in the computer program that produced tables 2 and 3, some values listed in the columns for elements reported as percent carry a nonsignificant digit to the right of the significant digits.

The ICP-AES determinations for Ag, Au, Bi, Cd, Ho, Mo, Sn, Ta, and U were all below the lower limits of determination shown in table 1; consequently, the columns for these elements have been deleted from the tables. Because the lower limit of determination for As and Th is lower by the HG-AAS and DNAA methods than by the ICP-AES method, the ICP-AES results for As and Th are not shown. Only B and Zr results are shown for the AES analyses.

A brief statistical summary for phase 1, phase 2, and all 293 B-horizon soil samples is presented in table 4. Table 5 gives the statistical summary for the outcrop rock samples by formation and for all 362 samples. The count row shows the number of reported values for each element. Statistical values for maximum, average, and standard deviation are based only on the reported values and the median value is based on the total population of each element. The minimum value lists either the lowest reported value or the lower limit of determination.

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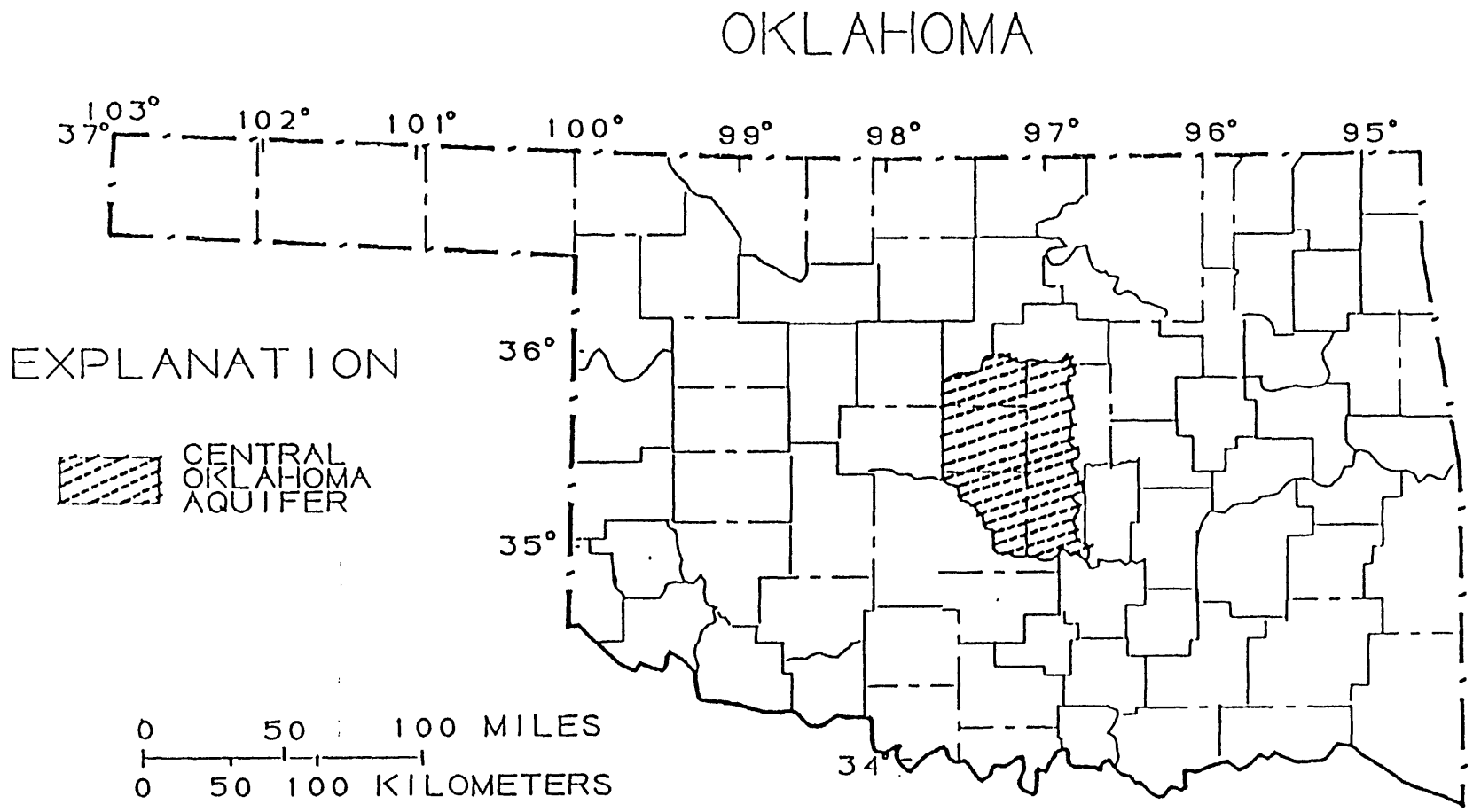

Figure 1. Location of the Central Oklahoma aquifer.

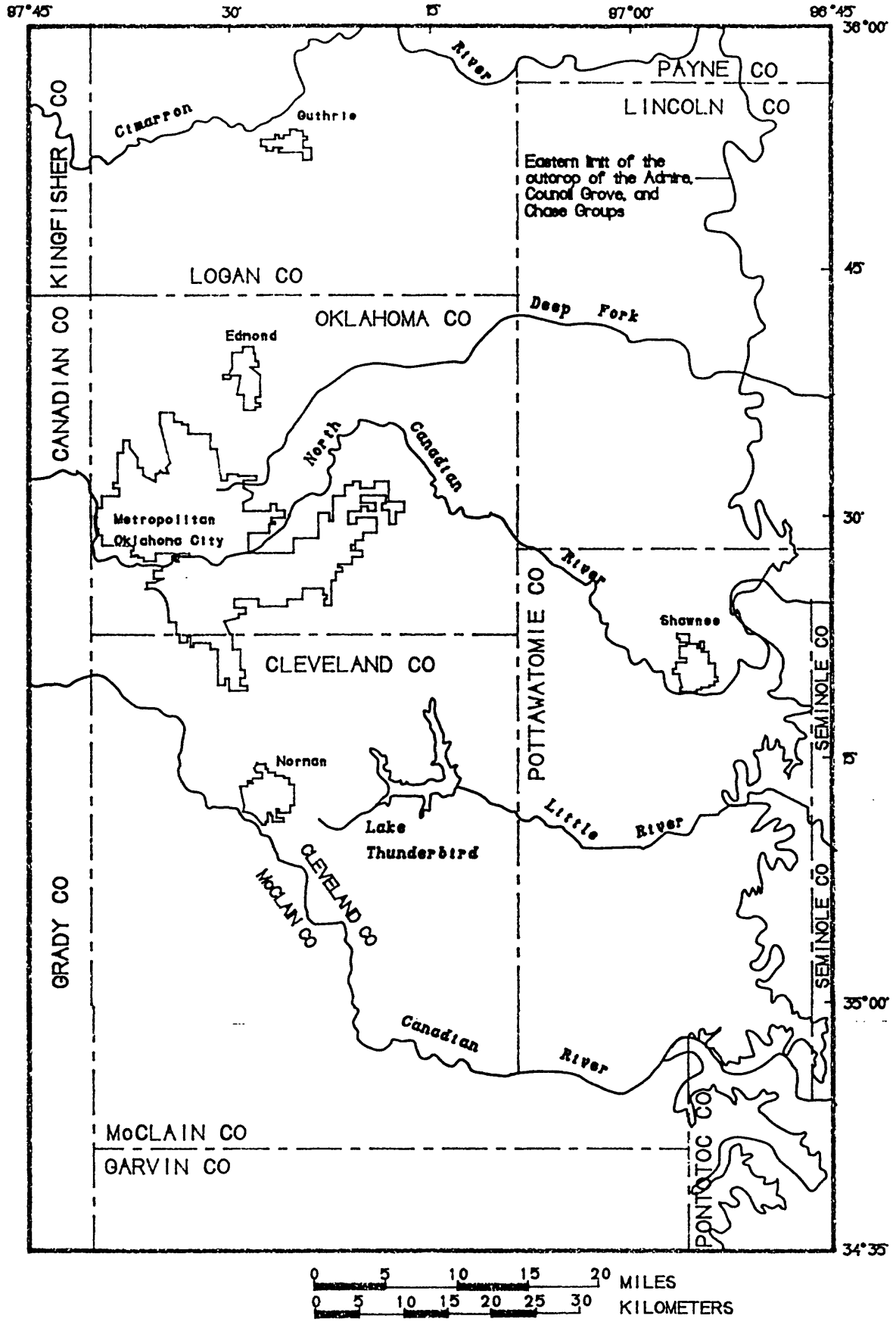

Figure 2. Location and geographic features of the study area.

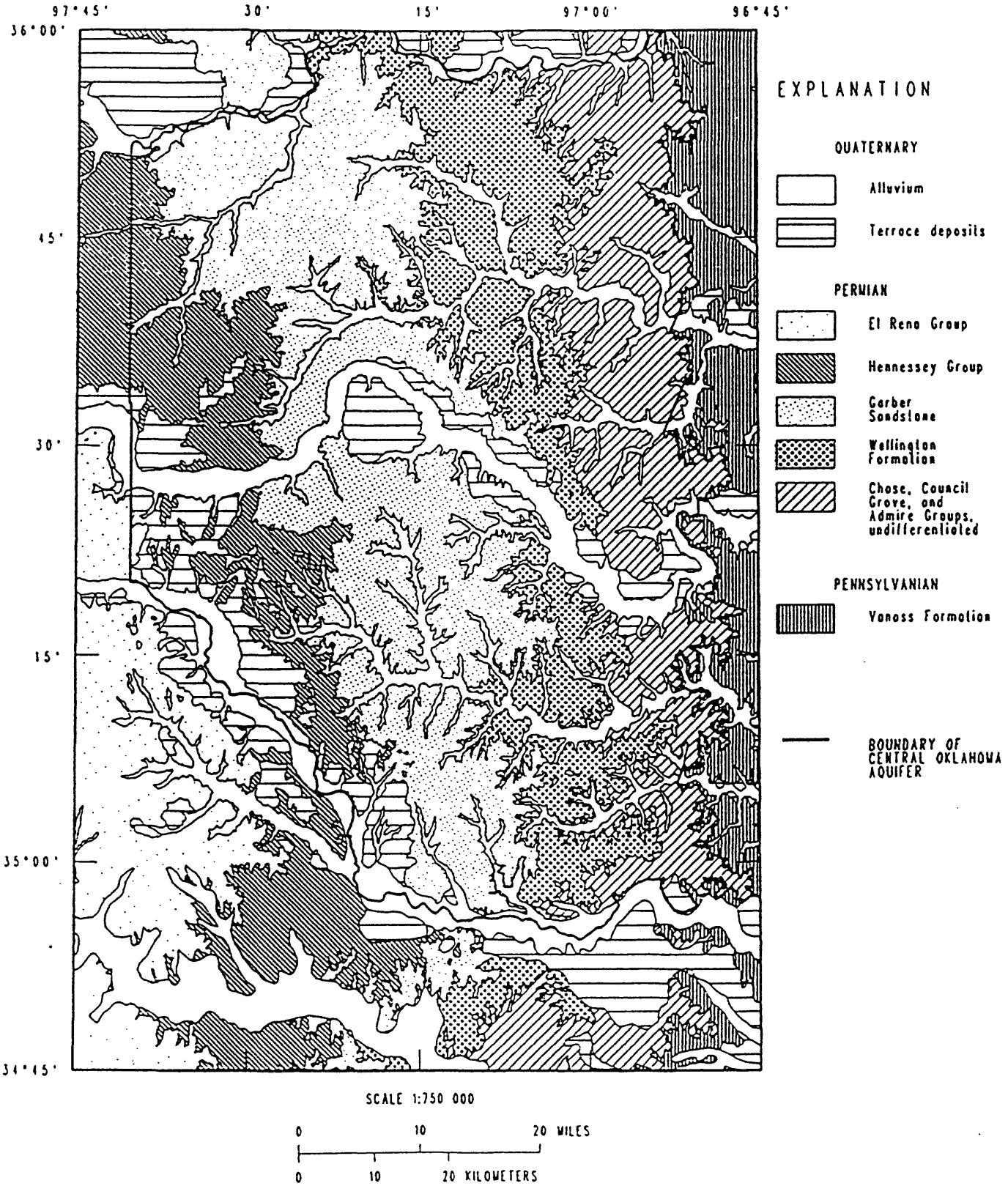

Figure 3.—Geologic map of central Oklahoma (modified from Bingham and Moore, 1975, and Hart, 1974).

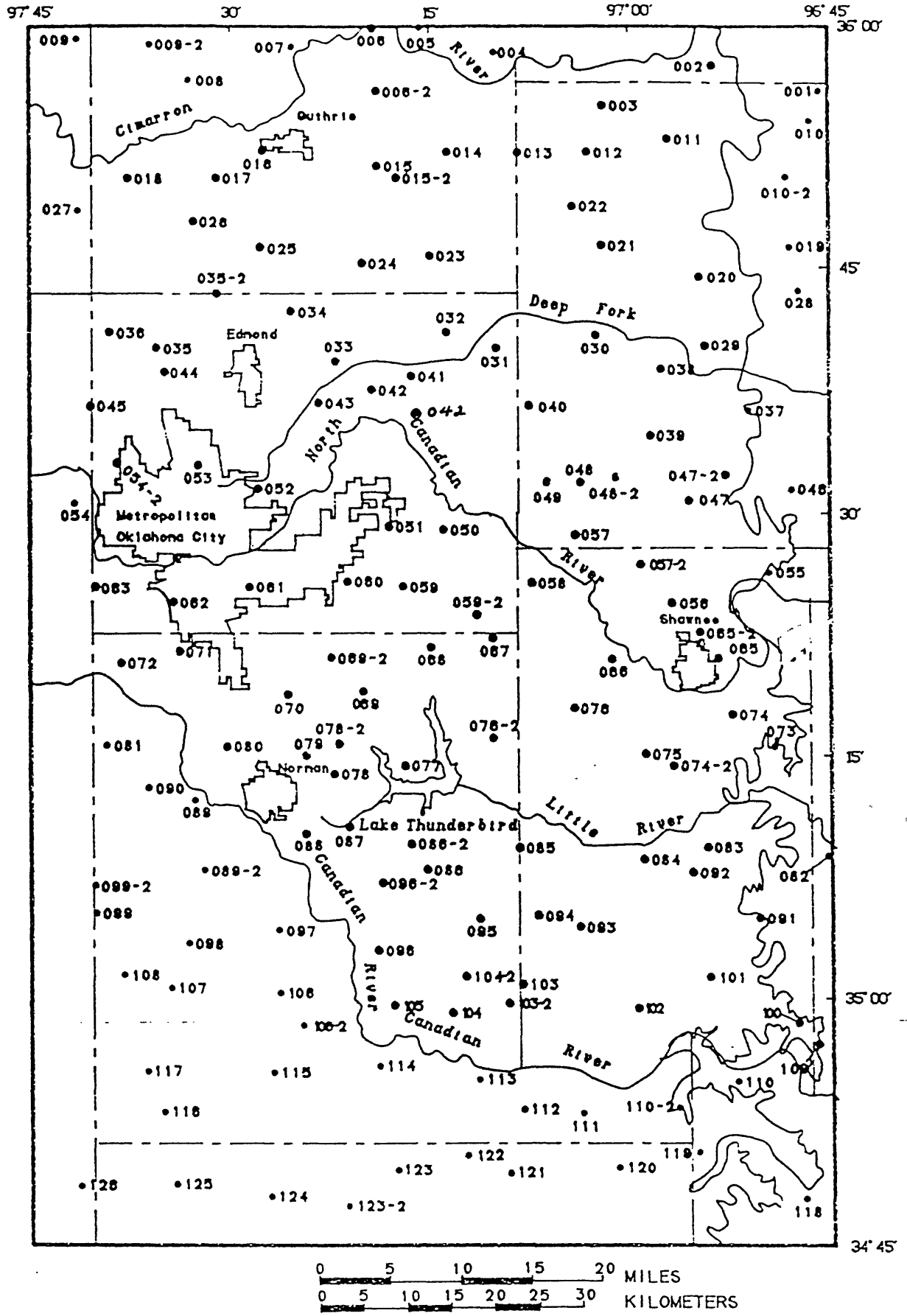

Figure 4. Map showing location sites for phase 1 B-horizon soil samples.

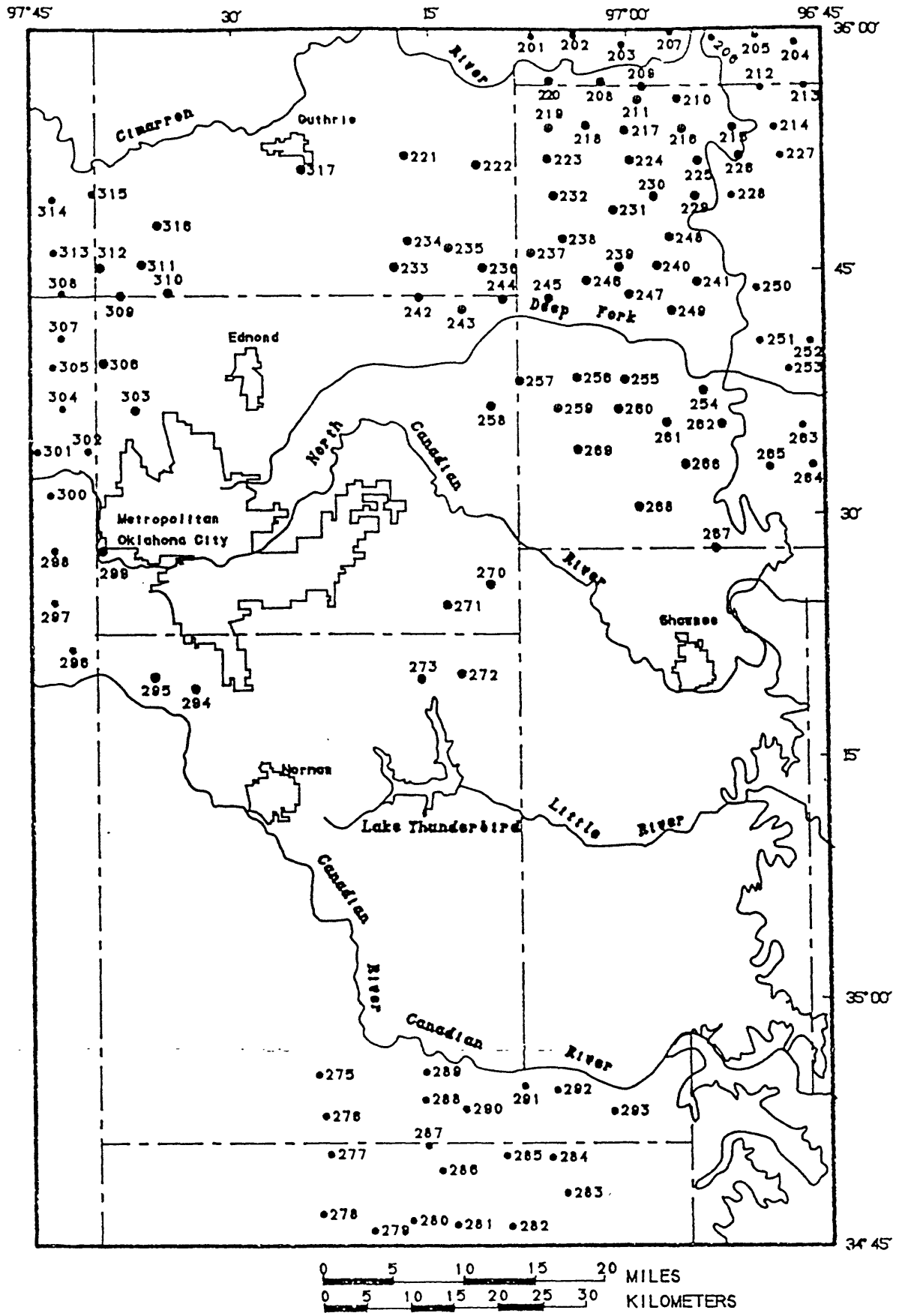

Figure 5. Map showing location sites for phase 2 B-horizon soil samples.

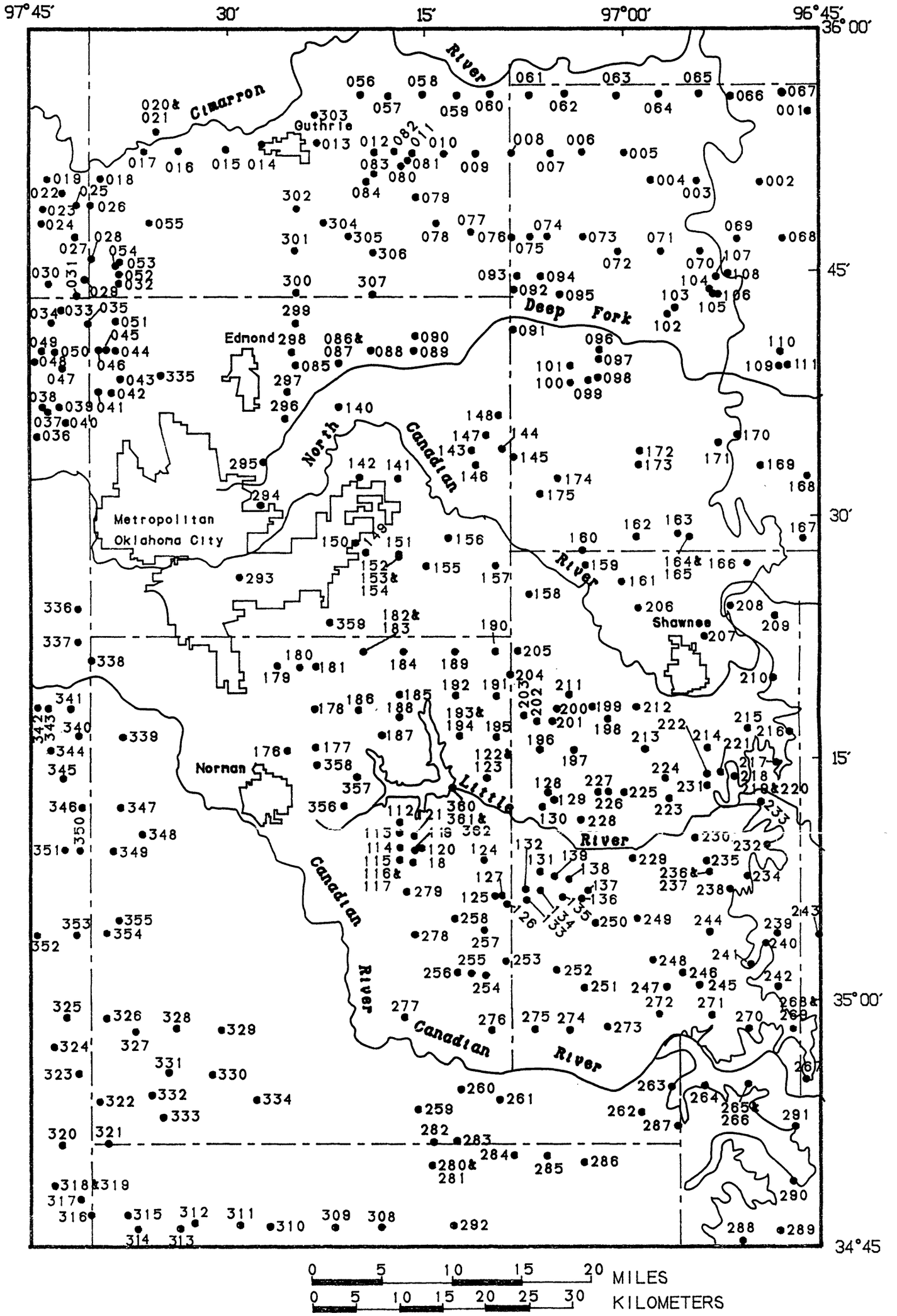

Figure 6. Map showing location sites for outcrop rock samples.

Table 1. Lower limit of determination for ICP-AES analyses (in micrograms per gram, unless otherwise indicated)

Element	Limit (percent)	Element	Limit	Element	Limit
Al	0.005	Ag	2	Mn	10
Ca	0.005	As	10	Mo	2
Fe	0.005	Au	8	Nb	4
K	0.05	Ba	1	Nd	4
Mg	0.005	Be	1	Ni	2
Na	0.005	Bi	10	Pb	4
P	0.005	Cd	2	Sc	2
Ti	0.005	Ce	4	Sn	10
		Co	1	Sr	2
		Cr	1	Ta	40
		Cu	1	Th	4
		Eu	2	U	100
		Ga	4	V	2
		Ho	4	Y	2
		La	2	Yb	1
		Li	2	Zn	2

Table 2. Analytical results for B-horizon soil samples from Central Oklahoma. Al, Ca, Fe, Mg, Na, P, and Ti are in percent, all other elements are in parts per million (PPM). ICP = Induction Coupled Plasma, HGAAS = Hydride Generation Atomic Absorption Spectroscopy, and DNAA = Delayed Neutron Activation Analysis. Dashes (--) indicate element not determined.

Sample ID	Lat.	Long.	County	ICP Al %	ICP Ca %	ICP Fe %	ICP K %	ICP Mg %	ICP Na %	ICP P %	ICP Ti %	ICP Mn PPM	ICP Ba PPM	ICP Be PPM	ICP Ce PPM	ICP Co PPM	ICP Cr PPM	ICP Cu PPM	ICP Eu PPM
S0011	35 55 41	96 45 48	Lincoln	4.20	0.16	1.60	0.56	0.29	0.18	0.020	0.18	85	210	<1	50	6	47	15	<2
S001X	35 55 41	96 45 48	Lincoln	4.80	0.16	1.70	0.54	0.33	0.17	0.020	0.20	79	220	1	52	7	57	9	<2
S0021	35 57 09	96 53 50	Payne	6.90	0.26	4.50	1.20	0.68	0.21	0.020	0.28	250	340	2	71	17	88	24	<2
S0031	35 55 05	97 02 02	Lincoln	8.30	0.44	4.40	1.20	1.20	0.25	0.020	0.26	310	290	3	110	18	100	21	<2
S0041	35 58 14	97 10 29	Payne	2.50	0.14	0.74	1.70	0.11	0.45	0.010	0.17	180	450	<1	32	4	15	7	<2
S004X	35 58 14	97 10 29	Payne	2.00	0.09	0.56	1.50	0.08	0.32	0.009	0.12	150	440	<1	29	3	13	7	<2
S0051	35 59 44	97 16 02	Payne	2.30	0.15	0.44	1.70	0.06	0.51	0.007	0.10	130	560	<1	25	2	8	4	<2
S0061	35 59 58	97 19 22	Logan	4.10	0.31	1.40	1.90	0.34	0.93	0.030	0.24	330	540	1	60	5	30	10	<2
S0062	35 55 50	97 19 06	Logan	5.60	0.39	2.50	0.91	0.53	0.37	0.020	0.22	460	450	1	54	8	53	12	<2
S0071	35 58 27	97 25 38	Logan	3.50	0.17	1.30	1.60	0.25	0.22	0.010	0.13	160	470	<1	35	4	28	8	<2
S0081	35 56 30	97 33 04	Logan	2.10	0.10	0.42	1.80	0.07	0.35	0.008	0.10	160	560	<1	22	2	11	2	<2
S0091	35 59 05	97 41 57	Kingfisher	3.80	0.21	1.40	1.70	0.28	0.31	0.020	0.15	230	530	<1	33	4	26	9	<2
S009X	35 59 05	97 41 57	Kingfisher	3.70	0.20	1.40	1.70	0.27	0.29	0.020	0.15	220	510	<1	33	4	27	8	<2
S0092	35 58 44	97 36 26	Logan	3.90	0.20	1.50	1.70	0.37	0.38	0.020	0.17	530	510	<1	41	7	44	8	<2
S0101	35 53 58	96 46 42	Lincoln	7.50	0.22	4.60	1.50	0.75	0.31	0.030	0.31	360	430	2	79	18	100	58	<2
S0102	35 50 27	96 48 30	Lincoln	5.80	0.26	2.10	0.80	0.45	0.32	0.020	0.25	89	240	1	56	5	74	21	<2
S0111	35 52 40	96 57 10	Lincoln	6.90	0.33	3.80	1.00	0.65	0.22	0.020	0.22	680	290	2	73	14	76	18	<2
S0121	35 52 00	97 03 05	Lincoln	5.40	0.21	2.70	0.81	0.35	0.24	0.020	0.23	160	230	2	67	11	77	7	<2
S0131	35 51 52	97 08 26	Lincoln	4.40	0.24	2.10	0.80	0.35	0.21	0.020	0.19	260	340	1	44	7	43	11	<2
S0141	35 52 03	97 13 49	Logan	5.00	2.80	3.10	0.85	1.50	0.35	0.020	0.23	1700	480	2	73	14	58	15	<2
S014X	35 52 03	97 13 49	Logan	5.00	3.60	3.00	0.78	1.10	0.33	0.020	0.27	1300	430	2	74	13	63	16	<2
S0151	35 51 06	97 18 58	Logan	4.20	0.24	1.90	1.00	0.33	0.44	0.020	0.20	570	400	1	54	8	37	10	<2
S0152	35 50 24	97 17 28	Logan	2.10	0.11	1.00	0.50	0.17	0.24	0.010	0.15	260	160	<1	43	5	29	12	<2
S0161	35 52 02	97 27 35	Logan	4.50	0.25	2.00	1.50	0.62	0.53	0.020	0.18	280	420	1	51	9	51	19	<2
S0171	35 50 29	97 31 07	Logan	4.10	0.19	1.80	0.85	0.31	0.25	0.020	0.16	140	440	1	53	6	47	8	<2
S0181	35 50 30	97 37 44	Logan	7.20	0.68	3.40	1.80	1.30	0.75	0.030	0.30	400	400	2	79	14	77	16	<2
S0191	35 46 07	96 48 09	Lincoln	3.80	0.17	1.90	0.60	0.27	0.21	0.020	0.16	240	240	1	48	8	38	7	<2
S0201	35 44 30	96 53 31	Lincoln	1.10	0.05	0.40	0.31	0.06	0.13	0.008	0.11	73	110	<1	30	3	14	5	<2
S0211	35 46 16	97 02 06	Lincoln	6.90	0.36	3.50	1.10	0.62	0.34	0.020	0.28	530	420	2	75	15	75	18	<2
S0221	35 48 39	97 04 16	Lincoln	0.80	0.03	0.33	0.19	0.04	0.08	0.007	0.07	40	65	<1	29	2	9	6	<2
S0231	35 45 41	97 15 03	Logan	5.50	0.48	4.30	1.10	0.74	0.36	0.020	0.25	850	440	2	70	15	78	20	<2
S023X	35 45 41	97 15 03	Logan	5.60	0.50	3.70	1.10	0.73	0.35	0.030	0.24	730	410	2	75	13	75	21	<2
S0241	35 45 17	97 20 33	Logan	0.81	0.05	0.36	0.25	0.05	0.11	0.007	0.07	130	81	<1	20	3	9	3	<2
S0251	35 46 11	97 28 03	Logan	3.70	0.21	1.80	0.61	0.32	0.16	0.010	0.16	110	270	1	47	5	43	10	<2
S0261	35 47 43	97 32 55	Logan	6.10	0.43	2.70	1.40	0.60	0.59	0.020	0.26	660	510	2	77	11	54	19	<2

Table 2. Continued

Sample ID	ICP Ga PPM	ICP La PPM	ICP Li PPM	ICP Nb PPM	ICP Nd PPM	ICP Ni PPM	ICP Pb PPM	ICP Sc PPM	ICP Sr PPM	ICP V PPM	ICP Y PPM	ICP Yb PPM	ICP Zn PPM	HGAAS As PPM	HGAAS Se PPM	DNAA Th PPM	DNAA U PPM
S0011	10	28	25	--	23	20	8	6	45	54	13	1	30	5.4	0.5	7.86	2.430
S001X	10	31	28	--	24	22	9	6	45	58	14	2	28	5.3	0.4	8.33	2.350
S0021	17	38	62	--	35	47	9	11	120	91	19	2	50	8.4	0.5	10.20	2.700
S0031	20	46	75	--	41	53	11	14	130	92	17	2	53	15.0	0.4	10.90	2.820
S0041	5	17	11	--	13	6	12	2	61	21	8	<1	14	4.6	0.4	4.10	2.470
S004X	<4	15	8	--	13	4	11	<2	53	16	6	<1	9	3.4	<0.1	3.00	1.800
S0051	<4	13	6	--	11	2	9	<2	73	10	5	<1	6	0.8	<0.1	3.40	1.170
S0061	8	32	20	--	30	12	13	4	91	37	15	2	27	3.5	0.3	12.40	3.250
S0062	13	33	31	--	27	20	17	7	75	69	18	2	45	6.8	0.6	12.00	2.660
S0071	7	19	16	--	16	14	12	4	51	35	9	1	23	3.8	0.3	6.10	1.640
S0081	<4	12	6	--	11	3	9	<2	61	11	6	<1	8	1.1	<0.1	2.10	1.380
S0091	7	18	17	--	16	12	13	4	63	35	9	1	31	3.7	0.5	6.54	1.510
S009X	8	18	16	--	16	12	11	4	60	35	9	1	25	4.2	0.3	4.60	1.720
S0092	8	22	20	--	21	17	12	5	68	38	11	2	22	3.8	0.3	4.60	2.010
S0101	17	42	68	--	38	46	11	13	100	100	22	3	57	11.0	0.9	12.10	2.450
S0102	13	30	33	--	27	21	13	9	91	74	15	2	43	4.8	0.6	9.36	3.960
S0111	17	37	51	--	31	42	12	11	100	81	16	2	37	6.7	0.5	12.90	2.360
S0121	12	36	42	--	30	33	10	9	94	72	17	2	29	6.9	1.0	10.90	2.620
S0131	10	23	26	--	21	15	14	5	49	61	11	1	35	7.1	0.7	8.36	2.610
S0141	13	38	42	--	39	30	21	9	160	80	26	3	43	9.2	0.4	11.50	2.680
S014X	11	40	43	--	38	30	16	9	140	88	26	3	43	10.0	0.5	11.20	2.810
S0151	9	28	24	--	25	15	16	5	65	55	14	2	38	6.4	0.5	12.80	2.990
S0152	4	21	15	--	20	12	8	3	57	26	10	1	15	4.1	<0.1	6.35	1.970
S0161	10	29	30	--	26	21	11	6	55	55	15	2	37	5.1	0.6	6.14	2.280
S0171	9	30	24	--	25	17	12	5	48	47	14	1	29	5.2	0.4	8.17	2.870
S0181	16	42	51	--	38	39	16	12	120	80	19	2	61	7.9	0.4	12.40	2.810
S0191	8	27	24	--	23	18	7	5	43	46	15	2	24	4.8	0.6	5.82	2.440
S0201	<4	15	10	--	14	6	<4	<2	34	12	6	<1	7	1.8	<0.1	3.81	1.530
S0211	17	38	51	--	34	31	17	10	100	89	20	2	47	9.5	0.8	10.80	3.310
S0221	<4	14	8	--	13	3	23	<2	28	10	5	<1	8	1.9	<0.1	2.60	1.380
S0231	14	35	43	--	36	36	20	9	120	80	19	3	54	13.0	0.6	10.40	3.120
S023X	12	37	41	--	33	35	16	10	120	72	19	2	47	16.0	0.7	11.60	2.810
S0241	<4	11	8	--	9	4	<4	<2	23	10	5	<1	6	1.8	0.4	3.40	1.510
S0251	9	28	23	--	22	16	11	5	37	46	15	2	31	5.3	0.5	8.11	1.970
S0261	13	38	33	--	33	23	20	8	92	76	19	2	54	7.7	0.5	17.30	3.470

Table 2. Continued

Sample ID	Lat.	Long.	County	ICP Al %	ICP Ca %	ICP Fe %	ICP K %	ICP Mg %	ICP Na %	ICP P %	ICP Ti %	ICP Mn PPM	ICP Ba PPM	ICP Be PPM	ICP Ce PPM	ICP Co PPM	ICP Cr PPM	ICP Cu PPM	ICP Eu PPM
S0271	35 48 33	97 41 35	Kingfisher	8.20	0.58	4.20	2.30	1.30	0.66	0.040	0.31	590	500	2	74	16	92	22	<2
S0281	35 43 30	96 47 19	Lincoln	3.00	0.16	1.70	0.80	0.20	0.22	0.030	0.16	630	290	<1	49	7	36	9	<2
S0291	35 40 01	96 54 33	Lincoln	7.80	0.44	3.90	1.50	0.82	0.23	0.030	0.30	420	530	2	81	16	88	21	<2
S0301	35 40 48	97 02 33	Lincoln	7.10	0.29	3.10	0.92	0.57	0.17	0.020	0.25	160	330	2	65	12	75	17	<2
S0311	35 40 06	97 10 10	Oklahoma	2.90	0.13	1.30	0.71	0.18	0.29	0.020	0.16	320	200	<1	53	6	44	7	<2
S0321	35 41 02	97 13 43	Oklahoma	5.10	0.15	2.40	0.84	0.34	0.18	0.020	0.25	110	240	1	60	10	64	11	<2
S0331	35 39 11	97 22 09	Oklahoma	4.00	0.17	2.00	0.56	0.31	0.07	0.010	0.17	68	200	1	41	5	44	10	<2
S0341	35 42 21	97 25 27	Oklahoma	1.80	0.08	0.97	0.48	0.13	0.16	0.010	0.12	270	150	<1	29	4	22	7	<2
S0351	35 40 00	97 35 35	Oklahoma	5.50	0.34	2.60	1.50	0.69	0.51	0.020	0.25	540	770	2	71	12	59	24	<2
S0352	35 43 30	97 30 53	Oklahoma	4.00	0.20	1.80	0.88	0.31	0.25	0.020	0.17	220	330	1	48	6	44	12	<2
S0361	35 40 58	97 39 10	Oklahoma	6.60	0.48	2.80	1.60	0.59	0.57	0.020	0.29	480	460	2	76	13	59	18	<2
S0371	35 36 09	96 51 22	Lincoln	8.50	3.70	5.00	1.70	1.20	0.23	0.040	0.29	210	500	3	73	18	110	16	<2
S0381	35 38 37	96 57 47	Lincoln	7.30	0.32	3.60	0.89	0.75	0.28	0.020	0.29	230	330	2	65	10	76	15	<2
S0391	35 34 42	96 58 40	Lincoln	6.00	0.19	2.60	0.77	0.48	0.11	0.020	0.23	130	190	2	72	15	79	6	<2
S0401	35 36 28	97 07 38	Lincoln	6.10	0.26	4.10	0.71	0.39	0.07	0.020	0.18	290	350	2	48	14	67	18	<2
S0411	35 38 15	97 16 22	Oklahoma	3.40	0.17	1.90	0.77	0.22	0.26	0.020	0.17	580	230	1	57	7	51	8	<2
S0412	35 34 37	97 14 47	Oklahoma	3.60	0.20	1.50	1.10	0.23	0.29	0.010	0.20	120	330	<1	45	6	32	8	<2
S0421	35 37 26	97 19 34	Oklahoma	3.80	0.18	1.70	0.80	0.29	0.19	0.010	0.16	160	310	1	47	7	38	7	<2
S0431	35 36 37	97 23 26	Oklahoma	3.30	0.15	1.90	0.55	0.27	0.13	0.010	0.14	120	230	<1	38	5	32	10	<2
S0441	35 38 38	97 35 03	Oklahoma	4.20	4.20	1.90	1.10	1.60	0.52	0.030	0.14	680	6400	1	57	15	49	14	<2
S044X	35 38 38	97 35 03	Oklahoma	4.20	4.40	1.90	1.10	1.70	0.53	0.030	0.18	730	4900	1	57	13	51	16	<2
S0451	35 36 20	97 40 33	Canadian	6.50	0.44	3.00	1.70	0.87	0.61	0.020	0.29	520	490	2	67	12	65	18	<2
S0461	35 31 14	96 48 15	Lincoln	5.60	0.19	2.60	0.51	0.41	0.06	0.010	0.19	70	200	1	36	6	54	18	<2
S0471	35 30 34	96 54 40	Lincoln	5.00	0.26	1.80	0.60	0.42	0.36	0.020	0.21	300	300	1	58	10	57	16	<2
S0472	35 32 11	96 53 07	Lincoln	6.10	0.23	3.30	1.00	0.68	0.32	0.020	0.25	400	590	2	65	14	73	13	<2
S0481	35 31 51	97 03 53	Lincoln	4.80	0.18	2.30	0.69	0.38	0.12	0.010	0.19	170	260	1	49	8	44	8	<2
S048X	35 31 51	97 03 53	Lincoln	4.40	0.16	2.20	0.70	0.35	0.11	0.010	0.20	140	240	1	42	7	43	9	<2
S0482	35 31 58	97 01 06	Lincoln	8.10	0.52	4.30	0.62	1.00	0.17	0.020	0.32	240	590	2	73	15	96	24	<2
S0491	35 31 49	97 06 24	Lincoln	2.00	0.06	0.93	0.37	0.11	0.04	0.010	0.11	100	100	<1	30	3	20	4	<2
S0501	35 28 54	97 14 02	Oklahoma	4.60	0.23	2.40	0.79	0.31	0.28	0.020	0.24	280	250	1	58	8	52	12	<2
S0511	35 29 08	97 18 16	Oklahoma	3.60	0.11	1.90	0.62	0.28	0.07	0.010	0.16	73	180	1	40	6	42	14	<2
S0521	35 31 20	97 27 54	Oklahoma	0.65	0.04	0.90	0.18	0.06	0.10	0.006	0.05	93	4200	<1	14	6	9	4	<2
S0531	35 32 46	97 32 25	Oklahoma	5.60	2.30	2.40	1.70	1.10	0.64	0.030	0.24	550	530	2	57	11	55	16	<2
S0541	35 30 32	97 41 51	Canadian	5.10	0.34	2.00	1.70	0.49	0.68	0.020	0.25	290	440	1	67	7	45	14	<2
S0542	35 32 28	97 38 47	Oklahoma	7.40	0.65	3.70	2.40	1.30	0.65	0.030	0.29	470	480	2	68	14	80	20	<2

Table 2. Continued

Sample ID	ICP Ga PPM	ICP La PPM	ICP Li PPM	ICP Nb PPM	ICP Nd PPM	ICP Ni PPM	ICP Pb PPM	ICP Sc PPM	ICP Sr PPM	ICP V PPM	ICP Y PPM	ICP Yb PPM	ICP Zn PPM	HGAAS As PPM	HGAAS Se PPM	DNAA Th PPM	DNAA U PPM
S0271	20	39	59	--	35	43	22	13	80	89	20	3	79	9.6	0.7	12.40	2.640
S0281	7	24	20	--	23	15	7	4	77	45	12	1	20	14.0	0.4	7.03	2.170
S0291	19	44	60	--	40	41	16	12	120	91	23	3	60	8.3	1.1	12.60	2.730
S0301	16	33	49	--	31	41	12	11	77	82	18	2	42	5.9	0.5	8.53	3.040
S0311	6	28	21	--	24	14	9	5	69	35	12	2	20	3.9	0.3	7.70	2.520
S0321	12	32	45	--	30	28	14	8	140	70	16	2	35	6.8	0.5	8.69	2.480
S0331	9	24	27	--	23	20	10	6	50	52	13	2	27	6.2	0.3	5.75	2.240
S0341	<4	16	14	--	15	10	6	2	36	23	9	1	16	3.3	0.3	3.10	2.060
S0351	12	35	39	--	36	28	16	8	78	62	20	2	47	7.3	0.5	11.00	2.860
S0352	9	28	26	--	23	17	10	5	46	44	14	2	32	5.4	0.4	8.58	2.320
S0361	15	40	37	--	36	25	17	8	83	75	22	3	56	6.5	0.7	12.20	3.180
S0371	21	42	77	--	34	53	10	14	170	130	19	2	57	15.0	0.6	9.60	2.670
S0381	17	32	50	--	33	30	15	10	83	93	19	2	51	7.7	0.8	10.70	2.950
S0391	15	39	48	--	32	42	9	9	89	69	16	2	36	5.3	0.6	10.70	2.160
S0401	14	27	43	--	25	32	20	10	59	93	15	2	35	10.0	1.0	6.50	2.610
S0411	8	30	26	--	25	18	12	5	69	45	13	2	21	3.7	0.4	8.26	2.330
S0412	8	23	22	--	20	13	9	4	53	41	11	2	24	3.8	0.5	10.30	3.090
S0421	9	25	22	--	21	15	11	5	45	46	12	1	27	5.6	0.4	7.38	2.420
S0431	7	19	21	--	16	14	11	4	40	47	10	1	26	6.0	0.4	8.10	2.070
S0441	10	36	33	--	30	23	12	7	300	47	18	2	38	5.7	0.3	7.27	2.030
S044X	10	36	33	--	32	24	11	7	240	47	19	2	36	4.6	0.4	7.76	2.280
S0451	16	35	41	--	34	31	18	9	96	74	20	3	53	7.3	0.5	8.98	3.120
S0461	12	21	33	--	16	20	10	7	41	70	11	1	41	6.9	0.7	11.40	2.540
S0471	11	28	39	--	25	27	8	8	63	70	13	2	31	3.5	0.5	8.83	1.990
S0472	15	33	53	--	33	36	12	10	80	75	18	2	44	9.5	0.6	11.10	2.440
S0481	11	25	28	--	21	18	14	6	40	62	12	1	34	6.7	0.5	7.41	2.630
S048X	10	20	27	--	18	15	12	6	37	60	11	1	33	11.0	0.6	5.81	2.610
S0482	20	37	90	--	39	47	16	13	94	97	21	3	57	6.0	0.6	12.70	2.290
S0491	4	15	15	--	13	10	5	3	45	23	6	<1	12	2.7	0.3	5.13	1.000
S0501	10	28	28	--	25	17	17	7	47	62	13	2	28	6.2	0.5	9.25	2.510
S0511	9	23	24	--	22	19	10	5	41	52	12	2	25	6.9	0.8	7.94	1.830
S0521	<4	8	7	--	7	4	6	<2	150	13	3	<1	13	8.4	0.3	1.60	0.960
S0531	13	32	38	--	28	25	22	8	140	64	18	2	50	6.5	0.7	11.10	2.520
S0541	11	36	27	--	34	19	14	7	78	49	19	2	35	4.9	0.4	9.83	3.640
S0542	17	36	51	--	33	37	19	12	100	84	18	2	70	10.0	<0.1	9.56	2.980

Table 2. Continued

Sample ID	Lat.	Long.	County	ICP Al %	ICP Ca %	ICP Fe %	ICP K %	ICP Mg %	ICP Na %	ICP P %	ICP Ti %	ICP Mn PPM	ICP Ba PPM	ICP Be PPM	ICP Ce PPM	ICP Co PPM	ICP Cr PPM	ICP Cu PPM	ICP Eu PPM
S0551	35 26 09	96 49 35	Pottawatomie	4.50	0.20	1.80	1.20	0.32	0.26	0.010	0.21	150	380	1	34	5	33	8	<2
S0561	35 24 12	96 56 47	Pottawatomie	5.20	0.18	2.40	0.96	0.40	0.24	0.010	0.20	550	240	2	63	13	56	15	<2
S056X	35 24 12	96 56 47	Pottawatomie	5.10	0.18	2.60	0.99	0.40	0.25	0.010	0.21	310	240	1	49	9	53	15	<2
S0571	35 28 39	97 04 00	Lincoln	3.90	0.21	1.80	0.90	0.30	0.30	0.010	0.22	410	340	1	53	8	38	8	<2
S0572	35 26 58	96 59 03	Pottawatomie	6.90	0.13	3.70	0.75	0.55	0.22	0.020	0.25	140	370	2	66	11	80	14	<2
S0581	35 25 50	97 07 25	Pottawatomie	4.20	0.22	2.10	0.77	0.33	0.22	0.010	0.19	180	310	1	49	8	41	16	<2
S0591	35 25 30	97 16 53	Oklahoma	0.38	0.01	0.18	0.10	0.02	0.03	<0.005	0.04	24	47	<1	14	2	5	3	<2
S0592	35 23 41	97 11 36	Oklahoma	2.90	0.07	1.90	0.49	0.24	0.02	0.010	0.10	80	100	<1	27	5	34	9	<2
S0601	35 25 49	97 21 08	Oklahoma	0.67	0.03	0.45	0.21	0.05	0.09	<0.005	0.04	53	79	<1	19	2	9	2	<2
S0611	35 25 44	97 28 33	Oklahoma	0.71	0.04	0.28	0.19	0.04	0.10	<0.005	0.07	36	4500	<1	20	5	9	4	<2
S0621	35 24 29	97 34 10	Oklahoma	6.00	0.45	2.70	1.60	0.70	0.58	0.020	0.25	910	590	2	72	13	56	20	<2
S0631	35 25 26	97 40 14	Oklahoma	4.00	0.25	1.70	1.20	0.36	0.60	0.030	0.19	260	290	1	52	6	35	9	<2
S0641	35 20 53	96 48 01	Pottawatomie	3.60	0.24	1.50	1.10	0.21	0.58	0.010	0.25	480	340	1	57	8	35	8	<2
S0651	35 20 45	96 53 20	Pottawatomie	5.80	0.26	2.50	1.10	0.44	0.28	0.010	0.23	360	320	1	67	9	55	13	<2
S0652	35 22 21	96 54 46	Pottawatomie	3.80	0.19	1.70	0.91	0.26	0.38	0.010	0.19	290	290	1	52	8	40	11	<2
S0661	35 20 49	97 01 22	Pottawatomie	3.60	0.19	1.50	1.30	0.22	0.43	0.020	0.21	280	380	<1	58	5	39	10	<2
S066X	35 20 49	97 01 22	Pottawatomie	3.70	0.18	1.50	1.20	0.22	0.43	0.020	0.22	260	370	<1	64	6	34	7	<2
S0671	35 22 16	97 10 09	Cleveland	2.30	0.09	1.30	0.56	0.14	0.13	0.010	0.13	220	190	<1	46	6	31	7	<2
S067X	35 22 16	97 10 09	Cleveland	2.10	0.09	1.30	0.56	0.13	0.13	0.010	0.15	230	190	<1	37	5	27	6	<2
S0681	35 21 37	97 14 52	Cleveland	8.30	1.10	4.80	1.60	1.40	0.11	0.030	0.34	660	420	3	72	19	94	24	<2
S0691	35 18 57	97 20 05	Cleveland	1.40	0.07	0.70	0.34	0.10	0.09	0.010	0.06	160	200	<1	28	3	14	3	<2
S0692	35 20 59	97 22 18	Cleveland	3.80	0.18	1.80	0.88	0.30	0.30	0.020	0.20	280	690	<1	49	8	39	9	<2
S0701	35 18 44	97 25 39	Cleveland	6.00	0.33	2.60	1.20	0.54	0.50	0.020	0.26	610	480	2	78	12	66	13	<2
S0711	35 21 26	97 33 51	Cleveland	5.40	0.37	2.20	1.60	0.47	0.62	0.030	0.24	530	490	1	70	9	46	13	<2
S0721	35 20 52	97 37 18	Cleveland	4.90	0.40	1.90	1.90	0.45	0.81	0.030	0.25	390	510	1	60	8	41	14	<2
S0731	35 15 25	96 49 26	Pottawatomie	5.90	0.35	2.00	1.10	0.58	0.40	0.020	0.24	1100	430	2	73	14	63	52	<2
S0741	35 17 20	96 52 26	Pottawatomie	6.40	0.35	2.80	0.78	0.53	0.24	0.010	0.25	160	300	2	62	10	63	17	<2
S074X	35 17 20	96 52 26	Pottawatomie	6.60	0.38	2.90	0.85	0.56	0.25	0.010	0.28	220	300	2	84	17	69	18	<2
S0742	35 14 14	96 56 43	Pottawatomie	6.20	0.19	3.10	0.83	0.50	0.10	0.040	0.27	92	2400	2	81	16	88	16	<2
S0751	35 15 14	96 58 58	Pottawatomie	3.40	0.11	1.50	0.58	0.20	0.07	0.010	0.15	57	170	<1	35	5	39	10	<2
S0761	35 17 58	97 04 20	Pottawatomie	0.73	0.04	0.31	0.24	0.04	0.10	<0.005	0.08	70	120	<1	27	2	11	3	<2
S0762	35 16 06	97 10 14	Cleveland	2.60	0.07	1.30	0.52	0.15	0.09	0.010	0.14	100	170	<1	36	6	32	6	<2
S0771	35 14 24	97 16 54	Cleveland	0.74	0.03	0.58	0.28	0.04	0.07	0.006	0.07	78	91	<1	19	3	9	3	<2
S0781	35 13 55	97 22 10	Cleveland	4.90	0.24	2.20	1.20	0.55	0.42	0.010	0.25	380	360	1	64	9	47	12	<2
S0782	35 15 44	97 21 54	Cleveland	2.70	0.11	1.20	0.62	0.18	0.29	0.010	0.16	300	1700	<1	41	7	27	7	<2

Table 2. Continued

Sample ID	ICP Ga PPM	ICP La PPM	ICP Li PPM	ICP Nb PPM	ICP Nd PPM	ICP Ni PPM	ICP Pb PPM	ICP Sc PPM	ICP Sr PPM	ICP V PPM	ICP Y PPM	ICP Yb PPM	ICP Zn PPM	HGAAS As PPM	HGAAS Se PPM	DNAA Th PPM	DNAA U PPM
S0551	10	18	25	--	17	15	11	5	56	51	10	2	26	4.7	0.4	7.81	2.430
S0561	11	29	32	--	26	27	12	7	52	59	14	2	33	6.1	0.4	12.30	2.580
S056X	12	24	31	--	25	24	13	7	52	61	15	2	34	7.4	0.5	7.17	2.950
S0571	9	26	22	--	25	14	14	5	52	52	14	2	27	4.8	0.5	6.60	3.430
S0572	16	38	55	--	32	40	11	12	100	95	18	2	33	6.9	1.0	8.78	3.480
S0581	9	25	25	--	21	15	14	5	45	58	13	1	33	7.0	0.7	8.17	2.660
S0591	<4	7	5	--	6	2	<4	<2	13	5	3	<1	4	1.5	<0.1	<1.40	0.788
S0592	7	13	19	--	15	16	9	4	24	50	11	1	29	11.0	0.3	5.07	1.080
S0601	<4	10	7	--	8	4	<4	<2	17	10	3	<1	6	2.1	<0.1	3.84	0.855
S0611	<4	11	7	--	9	5	<4	<2	140	7	4	<1	5	1.2	<0.1	<1.70	0.968
S0621	13	36	42	--	32	29	17	9	110	71	19	2	53	8.7	0.7	11.10	2.720
S0631	8	29	24	--	25	16	10	5	66	38	15	2	29	4.7	0.5	5.75	3.140
S0641	8	28	20	--	27	12	13	4	66	44	15	2	23	4.0	0.4	10.80	3.310
S0651	13	36	32	--	28	21	17	7	54	65	16	2	32	6.0	0.6	10.50	3.240
S0652	8	27	25	--	23	14	12	5	54	45	12	2	25	3.8	0.4	9.37	2.930
S0661	7	30	20	--	26	12	12	4	60	41	13	2	21	4.2	0.4	8.78	3.360
S066X	8	34	20	--	29	12	13	5	61	41	14	2	22	3.9	0.4	10.40	3.220
S0671	5	23	16	--	19	12	10	3	36	32	9	1	17	3.3	0.3	5.18	1.930
S067X	4	17	16	--	16	12	10	3	35	32	9	1	18	3.3	0.3	5.54	1.810
S0681	20	38	73	--	38	51	20	14	98	93	20	3	70	12.0	<0.1	9.75	2.590
S0691	<4	16	10	--	14	8	4	2	28	16	6	<1	11	3.2	0.3	4.53	1.090
S0692	9	25	25	--	23	14	11	5	49	49	12	2	29	5.5	0.6	6.74	3.100
S0701	13	40	37	--	34	23	17	8	82	70	20	2	39	7.3	0.6	15.00	3.220
S0711	12	37	30	--	32	19	18	7	82	61	17	2	43	6.2	0.4	13.40	3.180
S0721	10	33	24	--	30	16	13	6	91	51	18	2	38	4.9	0.6	7.70	3.720
S0731	14	44	36	--	40	36	11	9	54	81	27	3	45	4.7	0.3	10.00	3.190
S0741	14	28	43	--	29	28	12	9	57	80	16	2	35	6.1	0.6	9.33	3.230
S074X	15	31	46	--	28	29	13	9	58	82	18	2	38	5.1	0.5	11.40	2.590
S0742	15	38	55	--	33	41	12	11	110	98	18	2	25	7.4	0.7	11.20	2.060
S0751	8	18	24	--	14	17	7	5	62	42	7	<1	17	4.5	0.4	7.55	1.710
S0761	<4	13	8	--	11	3	<4	<2	18	9	5	<1	4	1.1	<0.1	<1.90	1.460
S0762	6	19	20	--	16	13	8	4	42	33	9	<1	17	3.2	0.5	4.30	1.960
S0771	<4	10	8	--	9	4	5	<2	23	12	4	<1	5	1.5	<0.1	2.50	1.160
S0781	11	31	32	--	31	23	13	7	59	56	16	2	36	5.7	0.4	10.50	2.710
S0782	5	23	18	--	21	11	8	4	54	32	12	1	21	3.9	0.5	8.32	2.360

Table 2. Continued

Sample ID	Lat.	Long.	County	ICP Al %	ICP Ca %	ICP Fe %	ICP K %	ICP Mg %	ICP Na %	ICP P %	ICP Ti %	ICP Mn PPM	ICP Ba PPM	ICP Be PPM	ICP Ce PPM	ICP Co PPM	ICP Cr PPM	ICP Cu PPM	ICP Eu PPM
S0791	35 15 07	97 24 19	Cleveland	6.90	0.42	3.00	1.20	0.81	0.46	0.020	0.27	480	440	2	78	11	62	19	<2
S0801	35 15 40	97 30 11	Cleveland	2.50	0.16	0.46	1.60	0.08	0.64	0.009	0.07	120	490	<1	19	2	10	2	<2
S0811	35 15 41	97 39 30	McClain	4.70	0.27	2.30	1.50	0.64	0.33	0.020	0.19	320	380	1	58	11	48	16	<2
S0821	35 08 40	96 45 34	Seminole	8.40	0.28	3.50	0.93	0.75	0.33	0.020	0.26	290	250	2	68	27	93	40	<2
S0831	35 09 17	96 54 27	Pottawatomie	3.40	0.15	1.40	0.70	0.21	0.16	0.020	0.13	140	240	<1	47	5	30	5	<2
S0841	35 08 36	96 59 05	Pottawatomie	3.30	0.12	1.60	0.53	0.22	0.17	0.010	0.15	1300	990	<1	65	10	40	10	<2
S0851	35 09 22	97 08 32	Cleveland	3.00	0.06	1.30	0.60	0.16	0.05	0.010	0.16	56	200	<1	47	5	43	7	<2
S085X	35 09 32	97 08 32	Cleveland	3.40	0.07	1.50	0.67	0.20	0.05	0.010	0.18	59	230	<1	50	6	47	6	<2
S0861	35 08 00	97 15 24	Cleveland	1.70	0.06	0.81	0.53	0.13	0.15	0.010	0.12	170	160	<1	39	4	21	4	<2
S086X	35 08 00	97 15 24	Cleveland	2.10	0.08	1.10	0.66	0.17	0.14	0.010	0.13	170	170	<1	39	5	24	7	<2
S0862	35 09 35	97 16 34	Cleveland	3.60	0.15	2.10	0.95	0.36	0.08	0.010	0.16	110	270	1	39	7	46	5	<2
S0871	35 10 31	97 21 15	Cleveland	4.90	0.27	2.20	1.20	0.50	0.49	0.020	0.23	330	390	1	64	9	56	9	<2
S087X	35 10 31	97 21 15	Cleveland	4.60	0.23	2.00	1.20	0.50	0.41	0.020	0.22	370	340	1	58	8	45	11	<2
S0881	35 10 18	97 24 24	Cleveland	6.50	0.46	2.90	1.70	0.73	0.66	0.050	0.28	750	510	2	77	13	60	19	<2
S0891	35 12 16	97 32 44	McClain	4.10	0.27	1.60	1.60	0.31	0.62	0.020	0.23	230	430	1	51	6	32	10	<2
S0892	35 07 25	97 31 50	McClain	4.40	0.57	1.70	1.50	0.69	0.85	0.030	0.18	350	350	1	79	7	42	11	<2
S0901	35 13 04	97 36 18	McClain	3.40	0.20	1.40	1.10	0.34	0.54	0.020	0.15	220	270	<1	48	5	44	6	<2
S0911	35 04 44	96 50 37	Pottawatomie	6.70	0.42	3.40	0.94	0.74	0.24	0.020	0.23	980	420	2	78	14	78	14	<2
S0921	35 07 38	96 55 37	Pottawatomie	1.70	0.08	0.52	0.78	0.05	0.26	0.008	0.08	210	230	<1	29	3	15	2	<2
S0931	35 04 19	97 04 05	Pottawatomie	1.00	0.07	0.53	0.19	0.04	0.07	0.010	0.07	57	69	<1	19	3	14	5	<2
S0941	35 04 56	97 07 08	Pottawatomie	0.74	0.04	0.28	0.27	0.04	0.12	0.006	0.08	65	130	<1	24	1	9	3	<2
S0951	35 04 56	97 11 44	Cleveland	3.60	0.06	1.70	0.55	0.29	0.09	0.010	0.18	60	190	<1	36	5	36	7	<2
S0961	35 03 03	97 19 02	Cleveland	3.80	0.25	1.40	1.60	0.24	0.58	0.020	0.22	350	460	<1	50	6	29	9	<2
S0962	35 07 12	97 18 53	Cleveland	3.60	0.13	1.80	0.68	0.29	0.14	0.010	0.14	110	390	<1	41	6	29	5	<2
S0971	35 04 06	97 26 27	McClain	4.00	0.22	1.70	1.30	0.30	0.50	0.030	0.20	320	390	1	49	7	34	10	<2
S0981	35 03 29	97 33 19	McClain	2.50	0.50	1.10	0.82	0.49	0.50	0.020	0.12	360	210	<1	48	5	24	11	<2
S0991	35 05 22	97 40 16	McClain	3.60	9.40	1.80	1.30	5.30	0.33	0.020	0.10	950	200	1	69	9	30	12	3
S0992	35 07 02	97 40 15	Grady	2.40	0.14	1.10	0.82	0.23	0.36	0.010	0.13	180	220	<1	42	5	23	5	<2
S1001	34 58 15	96 47 36	Pottawatomie	5.30	0.32	2.80	1.00	0.47	0.33	0.020	0.23	970	370	2	66	12	62	8	<2
S100X	34 58 15	96 47 36	Pottawatomie	5.70	0.32	3.00	1.00	0.51	0.33	0.020	0.24	850	370	2	64	12	63	6	<2
S1011	35 01 12	96 54 23	Pottawatomie	6.10	0.22	2.80	1.00	0.91	0.25	0.010	0.22	180	270	2	58	15	71	20	<2
S101X	35 01 12	96 54 23	Pottawatomie	7.30	0.26	3.40	1.20	1.20	0.23	0.010	0.25	180	280	2	65	17	96	28	<2
S1021	34 59 19	97 00 08	Pottawatomie	5.20	0.25	2.70	0.83	0.36	0.27	0.010	0.23	210	260	1	49	8	67	14	<2
S102X	34 59 19	97 00 08	Pottawatomie	4.60	0.23	2.40	0.79	0.31	0.28	0.020	0.23	270	260	1	54	8	51	12	<2
S1031	35 00 50	97 08 18	Pottawatomie	4.30	0.23	2.20	0.73	0.34	0.08	0.010	0.17	120	200	1	34	6	42	10	<2

Table 2. Continued

Sample ID	ICP Ga PPM	ICP La PPM	ICP Li PPM	ICP Nb PPM	ICP Nd PPM	ICP Ni PPM	ICP Pb PPM	ICP Sc PPM	ICP Sr PPM	ICP V PPM	ICP Y PPM	ICP Yb PPM	ICP Zn PPM	HGAAS As PPM	HGAAS Se PPM	DNAA Th PPM	DNAA U PPM
S0791	14	43	41	--	38	28	15	10	82	75	24	2	50	8.4	0.5	12.10	2.920
S0801	4	10	7	--	9	4	9	<2	71	12	5	<1	7	1.4	<0.1	2.50	1.210
S0811	11	31	31	--	29	22	13	7	69	54	16	2	38	4.7	0.6	9.64	2.310
S0821	20	40	55	--	31	40	27	11	70	100	20	3	57	5.8	1.2	12.10	2.530
S0831	7	23	19	--	18	13	10	4	53	45	10	1	19	4.3	0.4	8.67	2.170
S0841	9	29	26	--	27	22	10	6	76	57	13	2	13	3.0	0.3	6.27	2.020
S0851	7	22	22	--	20	16	9	5	56	37	10	1	17	2.9	0.3	6.37	1.710
S085X	9	22	26	--	22	19	9	5	62	45	11	1	19	3.2	0.4	6.75	1.830
S0861	<4	21	14	--	19	10	5	3	52	19	11	1	12	4.2	0.2	5.20	1.490
S086X	5	22	16	--	20	11	4	3	55	24	12	1	16	3.4	0.3	4.66	1.690
S0862	9	20	27	--	20	21	8	5	63	43	11	2	49	4.7	0.4	5.23	1.600
S0871	11	33	35	--	32	24	14	7	82	68	17	2	34	5.4	0.5	8.62	3.500
S087X	10	31	31	--	27	21	12	6	57	52	16	2	35	5.3	0.6	9.98	2.750
S0881	15	36	41	--	36	27	19	8	100	77	20	2	49	6.4	0.7	10.20	3.420
S0891	8	28	21	--	25	13	12	5	65	42	14	2	28	3.6	0.5	8.83	3.420
S0892	8	30	23	--	28	19	10	6	68	40	14	2	25	6.6	0.4	9.85	2.150
S0901	7	29	20	--	23	18	8	5	60	33	13	2	22	4.3	0.3	9.43	2.150
S0911	16	41	45	--	34	37	18	10	81	89	22	2	51	8.7	0.6	11.10	2.250
S0921	<4	14	9	--	13	5	7	<2	50	18	5	<1	7	2.3	<0.1	4.00	1.510
S0931	<4	9	9	--	7	3	5	<2	27	14	4	<1	7	1.5	<0.1	<1.70	1.180
S0941	<4	11	7	--	11	5	4	<2	22	8	4	<1	3	1.0	<0.1	2.70	1.310
S0951	8	20	24	--	14	14	8	4	37	46	9	1	27	4.3	0.5	7.90	2.180
S0961	8	26	19	--	25	12	13	4	69	39	14	2	27	3.4	0.4	9.48	2.780
S0962	9	24	24	--	21	16	9	5	43	43	12	1	24	5.3	0.3	6.79	1.740
S0971	8	27	23	--	21	14	13	5	58	46	14	2	29	4.6	0.6	8.37	3.080
S0981	5	23	16	--	21	11	12	4	43	26	13	1	20	5.3	0.3	8.82	1.630
S0991	8	42	21	--	47	17	7	9	73	39	43	4	18	4.9	0.3	16.10	1.260
S0992	5	22	17	--	21	10	7	3	40	27	11	1	18	3.3	0.3	5.59	1.960
S1001	13	31	39	--	30	28	17	8	59	70	18	2	47	7.0	0.6	9.39	2.930
S100X	14	32	42	--	31	29	14	8	61	72	18	2	47	5.7	0.6	8.66	3.360
S1011	15	34	41	--	30	37	17	10	94	160	17	2	37	4.6	0.4	9.73	2.730
S101X	18	37	49	--	35	48	20	12	100	220	19	2	45	5.6	0.5	10.90	3.280
S1021	10	25	32	--	22	19	17	8	48	68	12	2	34	7.4	0.5	12.30	3.310
S102X	10	26	28	--	24	17	16	7	47	62	12	2	28	7.1	0.5	10.50	3.350
S1031	10	18	28	--	16	18	11	6	36	51	9	1	37	5.8	0.5	6.10	1.910

Table 2. Continued

Sample ID	Lat.	Long.	County	ICP Al %	ICP Ca %	ICP Fe %	ICP K %	ICP Mg %	ICP Na %	ICP P %	ICP Ti %	ICP Mn PPM	ICP Ba PPM	ICP Be PPM	ICP Ce PPM	ICP Co PPM	ICP Cr PPM	ICP Cu PPM	ICP Eu PPM
S1032	34 59 30	97 09 37	Cleveland	5.80	0.23	3.00	0.80	0.50	0.33	0.020	0.25	280	270	1	59	10	58	17	<2
S1041	34 59 01	97 14 49	Cleveland	5.30	0.20	2.60	0.80	0.49	0.26	0.010	0.21	230	340	1	47	8	58	10	<2
S1042	35 01 21	97 12 40	Cleveland	7.40	0.25	3.80	1.20	0.70	0.26	0.020	0.28	550	370	2	80	14	86	21	<2
S1051	34 59 12	97 17 58	Cleveland	2.60	0.17	0.84	1.50	0.14	0.51	0.010	0.11	210	440	<1	24	3	14	5	<2
S1061	35 00 26	97 26 31	McClain	5.00	2.70	2.20	1.70	1.30	0.61	0.030	0.18	320	350	1	48	9	71	11	<2
S1062	34 58 00	97 25 24	McClain	3.50	0.23	1.50	1.10	0.44	0.54	0.020	0.17	290	270	<1	67	6	42	11	<2
S1071	35 00 38	97 34 58	McClain	4.00	0.15	1.80	1.30	0.59	0.76	0.010	0.18	120	220	1	42	7	34	7	<2
S1081	35 01 28	97 38 03	McClain	4.00	0.14	2.00	0.99	0.42	0.13	0.010	0.14	92	220	1	38	6	36	7	<2
S1091	34 56 52	96 46 28	Pottawatomie	2.70	0.16	0.96	1.40	0.12	0.38	0.010	0.17	200	430	<1	35	5	21	8	<2
S109X	34 56 52	96 46 28	Pottawatomie	2.90	0.18	0.97	1.60	0.13	0.46	0.010	0.19	240	460	<1	38	5	21	7	<2
S1101	34 54 48	96 52 24	Pontotoc	8.10	1.20	3.80	1.10	1.30	0.41	0.040	0.31	660	410	2	84	16	99	20	<2
S1102	34 53 15	96 56 50	McClain	2.70	0.16	1.10	0.44	0.15	0.19	0.010	0.14	370	190	<1	36	5	24	9	<2
S1111	34 53 00	97 04 05	McClain	4.90	0.33	1.90	1.50	0.33	0.62	0.020	0.25	390	470	1	52	7	42	15	<2
S1121	34 53 08	97 08 34	McClain	4.20	0.17	2.00	0.77	0.31	0.21	0.010	0.17	250	310	1	49	8	36	9	<2
S112X	34 53 08	97 08 34	McClain	4.20	0.17	2.30	0.82	0.31	0.21	0.010	0.22	500	340	1	52	12	44	10	<2
S1131	34 55 16	97 11 44	McClain	4.50	0.29	1.80	1.30	0.35	0.55	0.020	0.23	280	430	1	67	7	42	8	<2
S1141	34 56 04	97 19 03	McClain	5.40	0.36	2.10	1.70	0.50	0.76	0.020	0.22	300	570	1	67	8	42	11	<2
S1151	34 55 38	97 27 24	McClain	4.40	0.22	2.00	1.20	0.45	0.44	0.020	0.21	270	340	1	69	7	46	12	<2
S1161	34 53 05	97 35 17	McClain	6.00	0.26	3.40	0.93	0.57	0.19	0.020	0.21	150	210	2	58	12	66	14	<2
S1171	34 55 38	97 36 54	McClain	3.40	0.84	1.70	1.10	0.87	0.58	0.020	0.15	330	200	<1	51	7	31	9	<2
S117X	34 55 38	97 36 54	McClain	3.30	0.87	1.60	1.00	0.90	0.62	0.010	0.15	320	210	<1	49	7	32	11	<2
S1181	34 47 34	96 47 34	Pontotoc	4.00	0.15	1.40	1.50	0.25	0.21	0.009	0.12	89	410	<1	22	4	23	8	<2
S1191	34 50 30	96 55 28	Pontotoc	7.00	0.26	3.00	0.94	0.47	0.11	0.010	0.21	90	250	2	39	7	53	10	<2
S1201	34 49 34	97 01 34	Garvin	6.00	0.36	2.40	1.40	0.51	0.26	0.020	0.22	300	390	2	59	8	45	18	<2
S1211	34 49 16	97 09 38	Garvin	6.40	0.40	2.80	1.00	0.56	0.55	0.020	0.26	440	370	2	68	9	65	18	<2
S1221	34 50 18	97 12 44	Garvin	4.60	0.24	2.10	0.84	0.30	0.22	0.020	0.22	630	320	1	70	12	50	30	<2
S1231	34 49 31	97 18 04	Garvin	4.80	0.33	1.90	1.50	0.37	0.70	0.020	0.25	530	460	1	65	8	42	15	<2
S1232	34 47 29	97 21 41	Garvin	4.50	0.19	2.10	0.91	0.34	0.24	0.020	0.21	700	300	1	55	8	42	10	<2
S1241	34 48 11	97 27 24	Garvin	5.10	3.60	2.10	1.20	2.10	0.94	0.030	0.22	680	440	1	63	11	57	10	<2
S1251	34 48 43	97 34 32	Garvin	4.50	0.22	1.80	1.70	0.35	0.50	0.020	0.23	310	400	1	63	6	40	14	<2
S1261	34 48 44	97 41 29	Grady	3.20	0.12	1.50	1.00	0.24	0.39	0.010	0.18	330	290	<1	44	7	30	6	<2
S2011	35 59 33	97 07 25	Payne	3.30	0.14	1.40	1.20	0.20	0.27	0.030	0.20	150	340	<1	48	6	36	6	<2
S2021	35 59 45	97 04 11	Payne	3.30	0.20	1.50	0.92	0.26	0.34	0.020	0.15	190	270	1	42	6	34	8	<2
S2031	35 59 05	97 00 25	Payne	1.20	0.09	0.41	0.43	0.06	0.25	0.008	0.12	68	150	<1	33	2	11	4	<2
S2041	35 59 07	96 47 10	Payne	5.50	3.70	3.00	1.30	1.10	0.24	0.040	0.31	810	300	2	73	11	76	15	<2

Table 2. Continued

Sample ID	ICP Ga PPM	ICP La PPM	ICP Li PPM	ICP Nb PPM	ICP Nd PPM	ICP Ni PPM	ICP Pb PPM	ICP Sc PPM	ICP Sr PPM	ICP V PPM	ICP Y PPM	ICP Yb PPM	ICP Zn PPM	HGAAS As PPM	HGAAS Se PPM	DNAA Th PPM	DNAA U PPM
S1032	13	30	40	--	27	25	16	9	87	73	15	2	37	8.3	0.7	11.30	2.950
S1041	12	27	37	--	24	22	11	8	66	65	13	2	35	6.5	0.7	8.61	2.320
S1042	17	42	54	--	39	44	12	12	110	79	22	3	46	11.0	0.6	10.20	2.670
S1051	6	12	11	--	12	7	9	2	63	20	7	1	14	2.5	0.3	2.90	1.550
S1061	11	32	27	--	28	23	13	7	75	64	17	2	35	7.8	0.6	6.80	2.090
S1062	8	29	21	--	26	17	9	5	51	36	14	2	24	7.4	0.5	6.92	2.880
S1071	8	23	25	--	23	18	9	5	61	40	13	2	28	4.2	0.3	7.65	1.780
S1081	9	22	24	--	17	18	7	6	45	45	11	1	28	6.9	0.4	6.62	1.440
S1091	5	19	14	--	16	7	10	3	53	28	8	1	16	3.7	0.4	5.14	2.630
S109X	6	20	15	--	17	7	11	3	58	29	9	1	16	3.9	0.4	6.37	3.260
S1101	19	45	50	--	39	48	15	13	100	100	23	3	75	7.1	0.6	13.20	2.310
S1102	5	19	16	--	18	10	12	3	28	32	10	1	29	3.4	0.2	6.40	1.850
S1111	10	30	27	--	27	15	13	6	75	53	16	2	38	4.2	0.7	9.18	3.580
S1121	10	25	23	--	21	16	15	5	40	55	11	1	29	6.2	0.5	7.90	2.710
S112X	10	22	25	--	22	17	19	5	41	61	12	2	32	6.5	0.6	7.64	2.840
S1131	9	37	25	--	32	17	13	6	63	47	17	2	29	5.0	0.4	13.30	3.600
S1141	11	38	29	--	33	19	15	7	86	55	18	2	38	5.6	0.3	10.50	3.540
S1151	9	33	26	--	31	20	13	6	52	51	16	2	29	5.6	0.5	10.80	3.030
S1161	14	32	43	--	27	30	21	9	70	80	18	2	49	12.0	1.2	10.90	2.950
S1171	7	28	24	--	26	16	6	5	55	33	16	2	26	3.7	0.5	8.72	1.520
S117X	7	28	24	--	25	15	7	5	55	31	14	2	26	4.0	0.3	9.25	1.410
S1181	8	12	14	--	10	12	11	4	51	33	6	<1	24	2.5	0.3	3.70	1.670
S1191	16	23	34	--	19	22	14	9	45	78	12	2	40	7.6	0.7	10.90	2.920
S1201	13	32	28	--	28	21	15	8	57	59	18	2	38	5.5	0.5	10.20	2.080
S1211	14	36	36	--	31	23	18	9	82	69	20	2	52	6.2	0.6	11.50	3.920
S1221	11	29	29	--	29	21	25	6	41	58	15	2	61	5.5	0.5	9.11	2.940
S1231	10	36	26	--	32	15	15	7	85	53	18	2	31	4.8	0.5	10.60	3.670
S1232	11	27	29	--	27	21	30	6	44	51	15	2	32	5.3	0.5	7.64	3.240
S1241	11	37	39	--	30	25	10	7	140	54	19	2	33	5.9	<0.1	10.90	2.180
S1251	9	35	23	--	32	15	13	6	60	45	17	2	29	4.8	0.4	9.90	3.520
S1261	7	21	20	--	21	12	11	4	46	39	11	1	23	4.5	0.4	7.45	2.650
S2011	8	22	23	<4	20	14	9	5	78	39	11	1	16	3.9	<0.1	6.45	2.020
S2021	8	22	26	<4	19	16	9	5	62	35	11	1	15	3.2	<0.1	6.84	2.100
S2031	<4	16	8	<4	12	3	4	<2	36	11	6	<1	6	0.6	<0.1	4.00	1.340
S2041	14	36	42	4	32	27	12	10	66	78	20	3	40	5.0	0.3	9.75	2.320

Table 2. Continued

Sample ID	Lat.	Long.	County	ICP Al %	ICP Ca %	ICP Fe %	ICP K %	ICP Mg %	ICP Na %	ICP P %	ICP Ti %	ICP Mn PPM	ICP Ba PPM	ICP Be PPM	ICP Ce PPM	ICP Co PPM	ICP Cr PPM	ICP Cu PPM	ICP Eu PPM
S2051	35 59 36	96 50 08	Payne	5.70	3.30	3.20	1.10	1.10	0.31	0.020	0.24	850	350	2	70	12	69	8	<2
S2061	35 59 26	96 53 34	Payne	5.10	0.30	2.40	1.10	0.42	0.39	0.020	0.29	280	350	2	68	11	57	9	<2
S2071	35 59 48	96 56 40	Payne	4.10	0.22	1.70	1.50	0.28	0.31	0.010	0.19	210	440	1	39	7	32	9	<2
S2081	35 56 33	97 02 04	Payne	3.30	0.40	1.60	0.62	0.30	0.45	0.020	0.28	75	120	<1	100	8	48	10	<2
S2091	35 56 31	96 58 55	Lincoln	6.00	0.21	3.10	0.94	0.58	0.35	0.020	0.25	240	230	2	61	12	67	15	<2
S2101	35 55 38	96 56 15	Lincoln	3.10	0.16	1.40	0.92	0.21	0.49	0.010	0.24	520	290	1	60	9	33	7	<2
S2111	35 55 38	96 53 10	Lincoln	6.80	0.34	4.00	0.98	0.63	0.15	0.020	0.26	140	250	2	71	16	89	15	<2
S2121	35 56 30	96 49 54	Lincoln	4.60	0.24	2.20	0.69	0.33	0.21	0.020	0.22	160	270	1	54	6	46	12	<2
S2131	35 56 30	96 46 40	Lincoln	5.80	0.25	2.80	0.78	0.55	0.36	0.020	0.29	250	240	2	60	10	66	15	<2
S2141	35 53 55	96 48 37	Lincoln	7.90	0.24	4.60	0.99	0.71	0.31	0.020	0.32	100	280	2	72	12	95	13	<2
S2151	35 53 53	96 52 07	Lincoln	3.60	0.25	1.70	0.72	0.27	0.34	0.020	0.22	380	320	1	58	8	37	8	<2
S2161	35 53 53	96 56 07	Lincoln	4.20	0.23	2.00	0.81	0.30	0.31	0.020	0.25	400	320	1	65	11	46	9	<2
S2171	35 53 53	97 00 09	Lincoln	5.30	0.21	2.60	0.74	0.44	0.22	0.020	0.27	130	250	2	61	11	68	11	<2
S217X	35 53 53	97 00 09	Lincoln	5.90	0.23	3.00	0.82	0.52	0.21	0.020	0.24	120	270	2	61	12	77	12	<2
S2181	35 53 55	97 03 26	Lincoln	3.80	0.07	1.10	0.55	0.26	0.25	0.010	0.27	53	150	1	90	10	57	5	<2
S2191	35 53 53	97 06 14	Lincoln	3.10	0.15	1.50	0.48	0.24	0.14	0.010	0.15	150	200	<1	49	7	33	7	<2
S2201	35 56 33	97 06 14	Payne	5.10	0.19	2.30	0.80	0.44	0.41	0.020	0.27	130	220	1	63	7	55	10	<2
S220X	35 56 33	97 06 14	Payne	5.10	0.19	2.30	0.85	0.45	0.41	0.020	0.21	150	230	1	53	7	49	10	<2
S2211	35 52 08	97 16 59	Logan	4.90	0.45	2.70	1.00	0.59	0.26	0.020	0.30	570	310	2	66	11	64	22	<2
S221X	35 52 08	97 16 59	Logan	5.30	0.41	2.80	1.20	0.65	0.26	0.020	0.23	570	320	2	75	12	63	22	<2
S2221	35 51 39	97 11 38	Logan	8.30	2.60	4.70	1.50	2.20	0.33	0.030	0.42	550	410	3	68	23	95	18	<2
S2231	35 51 54	97 06 19	Lincoln	4.00	0.20	2.00	0.59	0.36	0.13	0.010	0.18	150	250	1	39	6	41	10	<2
S2241	35 51 45	97 00 03	Lincoln	3.00	0.09	1.80	0.46	0.24	0.17	0.010	0.19	86	130	<1	47	7	42	5	<2
S2251	35 51 45	96 54 50	Lincoln	3.60	0.18	1.90	0.56	0.25	0.12	0.020	0.19	100	210	1	47	7	42	9	<2
S2261	35 52 05	96 51 35	Lincoln	2.90	0.12	2.60	0.41	0.18	0.08	0.010	0.11	3400	210	1	72	25	35	8	<2
S2271	35 52 12	96 48 21	Lincoln	2.70	0.21	1.70	0.55	0.20	0.14	0.030	0.14	480	180	<1	42	10	34	9	<2
S2281	35 49 33	96 52 08	Lincoln	2.90	0.13	1.40	0.47	0.21	0.11	0.010	0.17	130	170	<1	39	6	30	7	<2
S2291	35 49 33	96 55 00	Lincoln	1.40	0.06	0.59	0.34	0.08	0.13	0.010	0.12	120	120	<1	34	4	19	4	<2
S2301	35 49 33	96 58 15	Lincoln	5.80	0.15	3.40	0.64	0.40	0.03	0.020	0.18	130	200	2	44	12	68	10	<2
S2311	35 48 42	97 01 06	Lincoln	4.00	0.25	1.90	0.99	0.30	0.37	0.020	0.20	480	340	1	54	9	39	11	<2
S231X	35 48 42	97 01 06	Lincoln	4.10	0.25	1.90	0.98	0.31	0.37	0.020	0.20	620	360	1	58	10	40	10	<2
S2321	35 49 34	97 05 48	Lincoln	0.78	0.06	0.40	0.21	0.04	0.09	0.006	0.06	68	73	<1	20	2	9	3	<2
S2331	35 45 14	97 17 48	Logan	2.70	0.13	1.30	0.49	0.19	0.20	0.030	0.15	100	130	<1	43	6	33	8	<2
S2341	35 46 57	97 16 50	Logan	7.00	3.90	3.50	1.30	1.80	0.29	0.030	0.29	670	320	2	64	17	81	29	<2
S2351	35 46 17	97 13 32	Logan	6.70	5.10	3.40	0.77	1.40	0.26	0.020	0.28	670	410	2	67	17	79	22	<2

Table 2. Continued

Sample ID	ICP Ga PPM	ICP La PPM	ICP Li PPM	ICP Nb PPM	ICP Nd PPM	ICP Ni PPM	ICP Pb PPM	ICP Sc PPM	ICP Sr PPM	ICP V PPM	ICP Y PPM	ICP Yb PPM	ICP Zn PPM	HGAAS As PPM	HGAAS Se PPM	DNAA Th PPM	DNAA U PPM
S2051	15	46	36	7	40	31	10	10	100	63	23	2	35	20.0	0.7	10.80	2.460
S2061	12	33	35	7	28	20	14	8	72	64	17	2	30	8.1	0.1	10.50	3.030
S2071	9	20	20	5	17	13	14	5	53	48	11	1	26	3.2	0.1	9.26	2.880
S2081	8	51	24	7	45	17	6	7	77	52	25	3	21	2.7	0.1	13.60	6.400
S2091	15	30	41	6	27	29	14	9	65	76	16	2	36	9.3	0.5	11.90	2.790
S2101	7	27	18	5	24	9	15	4	59	46	13	2	17	4.0	0.1	8.24	2.660
S2111	17	37	58	6	32	41	11	12	89	89	17	2	39	7.8	0.2	10.80	2.350
S2121	11	28	27	6	23	16	14	7	56	61	13	2	29	4.5	0.3	9.20	2.860
S2131	14	28	34	8	25	20	14	9	60	70	16	2	39	5.0	0.6	8.33	2.800
S2141	20	38	54	10	32	36	12	13	130	100	20	3	44	9.0	1.0	12.80	2.290
S2151	8	28	21	5	23	10	16	5	54	52	14	2	25	4.1	0.4	8.31	2.650
S2161	10	29	27	6	25	15	16	6	57	58	15	2	26	4.4	0.3	9.65	2.860
S2171	13	30	42	6	25	26	11	9	79	76	15	2	29	4.4	0.5	10.10	2.460
S217X	15	31	48	5	27	33	12	10	86	80	15	2	32	6.3	0.5	10.70	2.360
S2181	9	41	30	6	38	22	5	7	86	49	20	3	21	3.0	<0.1	10.90	3.180
S2191	7	22	20	<4	20	14	10	5	50	40	11	1	21	3.7	0.2	6.11	2.000
S2201	12	30	31	7	26	17	13	8	68	66	15	2	31	5.1	0.5	8.55	2.740
S220X	12	27	31	5	25	19	13	7	66	66	14	2	31	5.0	0.4	10.30	2.800
S2211	13	30	32	7	26	22	13	9	75	59	18	2	38	5.5	0.4	8.71	2.500
S221X	14	30	34	4	28	25	14	9	78	62	17	2	40	6.0	0.1	8.35	2.790
S2221	21	37	78	11	32	47	22	15	220	110	19	3	62	8.8	0.1	11.80	3.010
S2231	9	20	25	5	18	15	11	6	42	55	11	1	31	5.0	0.1	8.26	2.120
S2241	8	21	25	<4	18	16	5	5	59	39	10	1	17	3.1	<0.1	8.54	1.480
S2251	9	23	27	5	19	15	8	6	45	52	12	2	21	3.8	0.4	6.20	1.950
S2261	9	18	27	<4	16	29	18	4	44	65	9	1	13	8.4	0.8	5.46	2.190
S2271	7	20	20	<4	17	13	19	4	51	51	9	1	42	5.1	<0.1	6.02	2.250
S2281	7	20	19	<4	15	10	8	4	42	42	10	1	17	3.1	<0.1	5.63	1.910
S2291	<4	16	11	<4	14	6	5	2	50	19	7	<1	10	2.0	<0.1	3.90	1.580
S2301	15	22	44	5	21	30	12	9	64	89	13	2	33	13.0	0.7	8.20	1.920
S2311	10	27	24	5	23	14	16	5	62	57	15	2	27	5.1	0.2	12.50	3.290
S231X	10	28	25	6	24	15	17	6	61	59	15	2	27	5.1	0.2	11.80	3.270
S2321	<4	9	7	<4	8	4	<4	<2	22	11	4	<1	4	0.8	<0.1	3.20	1.110
S2331	6	22	23	<4	19	14	10	4	75	31	10	1	22	4.4	<0.1	6.86	1.740
S2341	17	36	59	5	31	37	12	12	120	66	18	2	58	6.2	0.1	12.40	2.090
S2351	17	36	56	8	33	35	12	11	160	71	18	2	48	5.2	0.1	12.10	2.370

Table 2. Continued

Sample ID	Lat.	Long.	County	ICP Al %	ICP Ca %	ICP Fe %	ICP K %	ICP Mg %	ICP Na %	ICP P %	ICP Ti %	ICP Mn PPM	ICP Ba PPM	ICP Be PPM	ICP Ce PPM	ICP Co PPM	ICP Cr PPM	ICP Cu PPM	ICP Eu PPM
S2361	35 45 10	97 11 05	Logan	2.10	0.11	1.20	0.47	0.13	0.24	0.020	0.14	590	180	<1	44	6	26	7	<2
S2371	35 45 51	97 07 24	Lincoln	0.97	0.05	0.89	0.22	0.06	0.09	0.010	0.06	240	88	<1	24	4	14	5	<2
S2381	35 46 55	97 05 11	Lincoln	8.20	0.65	4.80	0.75	1.50	0.16	0.020	0.38	310	630	3	85	25	110	27	<2
S2391	35 45 13	97 00 43	Lincoln	6.50	0.33	3.20	0.88	0.67	0.29	0.010	0.32	360	330	2	79	15	73	17	<2
S2401	35 45 13	96 57 40	Lincoln	4.50	0.13	2.70	0.68	0.32	0.11	0.020	0.20	320	230	1	52	10	55	9	<2
S2411	35 44 21	96 54 51	Lincoln	4.30	0.10	3.30	0.62	0.30	0.08	0.020	0.19	730	170	1	54	24	52	7	<2
S2421	35 43 29	97 15 55	Oklahoma	4.20	0.75	2.50	1.00	0.56	0.35	0.020	0.23	1100	410	2	61	12	57	13	<2
S2431	35 42 39	97 12 34	Oklahoma	0.83	0.02	0.50	0.12	0.03	0.06	0.006	0.06	47	49	<1	18	2	11	2	<2
S2441	35 43 26	97 09 33	Oklahoma	1.10	0.05	0.58	0.28	0.06	0.11	0.009	0.10	74	93	<1	28	3	16	3	<2
S2451	35 43 26	97 06 17	Lincoln	3.80	0.18	2.20	0.68	0.28	0.15	0.010	0.22	110	160	1	52	9	63	10	<2
S2461	35 44 21	97 03 09	Lincoln	3.70	0.14	2.20	0.49	0.24	0.08	0.010	0.15	83	160	1	33	5	43	7	<2
S2471	35 43 30	97 00 01	Lincoln	0.46	0.03	0.26	0.18	0.03	0.05	0.006	0.05	50	75	<1	14	1	7	2	<2
S2481	35 46 57	96 56 40	Lincoln	1.20	0.05	0.64	0.26	0.09	0.09	0.008	0.08	120	82	<1	23	3	17	4	<2
S2491	35 42 35	96 56 59	Lincoln	3.50	0.17	1.50	0.74	0.35	0.16	0.010	0.15	480	190	1	47	10	43	12	<2
S2501	35 44 08	96 50 22	Lincoln	4.60	0.16	2.80	0.62	0.30	0.06	0.020	0.16	81	150	1	39	8	55	8	<2
S2511	35 40 49	96 50 01	Lincoln	1.30	0.09	0.58	0.59	0.07	0.25	0.010	0.12	230	220	<1	32	4	16	3	<2
S2521	35 40 45	96 46 10	Lincoln	3.10	0.12	1.60	0.70	0.24	0.14	0.010	0.17	160	240	<1	37	6	32	8	<2
S2531	35 39 02	96 47 52	Lincoln	3.20	0.18	1.50	0.59	0.24	0.14	0.010	0.16	73	180	<1	34	4	34	6	<2
S2541	35 37 37	96 54 37	Lincoln	5.10	0.26	3.30	0.91	0.58	0.18	0.030	0.24	530	210	2	77	18	66	16	<2
S2551	35 38 15	97 00 35	Lincoln	4.80	0.23	2.50	0.76	0.40	0.22	0.020	0.23	530	250	2	57	11	60	10	<2
S2561	35 38 30	97 04 12	Lincoln	8.90	0.23	4.40	1.60	0.67	0.08	0.030	0.34	210	370	3	79	24	97	25	<2
S2571	35 38 18	97 08 28	Oklahoma	6.20	0.18	3.50	0.99	0.39	0.09	0.020	0.23	130	210	2	58	13	78	14	<2
S2581	35 36 33	97 10 42	Oklahoma	1.40	0.07	0.78	0.31	0.08	0.11	0.010	0.08	320	110	<1	32	4	18	4	<2
S2591	35 36 30	97 05 29	Lincoln	2.10	0.10	0.95	0.36	0.15	0.08	0.010	0.10	68	120	<1	31	4	24	5	<2
S2601	35 36 29	97 00 49	Lincoln	4.80	0.15	1.20	0.80	0.31	0.28	0.010	0.29	71	160	1	74	11	63	9	<2
S2611	35 35 35	96 57 20	Lincoln	0.78	0.04	0.42	0.19	0.05	0.10	0.008	0.09	140	75	<1	31	2	12	3	<2
S2621	35 35 37	96 53 02	Lincoln	3.70	0.12	2.10	0.54	0.26	0.13	0.010	0.19	140	190	1	44	8	47	12	<2
S2631	35 35 35	96 46 56	Lincoln	4.20	0.24	2.30	0.92	0.32	0.32	0.020	0.26	580	400	1	68	10	53	13	<2
S2641	35 33 02	96 46 09	Lincoln	7.20	1.20	4.20	1.50	0.95	0.24	0.020	0.35	300	290	2	78	13	93	15	<2
S2651	35 32 29	96 49 28	Lincoln	3.50	0.16	1.70	0.57	0.37	0.15	0.020	0.15	470	200	1	48	11	41	8	<2
S2661	35 33 03	96 55 43	Lincoln	6.50	0.18	3.30	0.67	0.51	0.16	0.020	0.28	190	190	2	72	10	72	12	<2
S2671	35 27 50	96 53 41	Lincoln	3.70	0.21	2.10	0.65	0.26	0.25	0.020	0.22	940	320	1	63	14	44	14	<2
S2681	35 30 31	96 59 36	Lincoln	6.50	0.32	3.90	0.89	0.69	0.16	0.020	0.29	430	210	2	80	16	91	14	<2
S2691	35 33 54	97 04 11	Lincoln	4.80	0.11	2.60	0.72	0.38	0.06	0.020	0.20	100	170	2	59	12	63	11	<2
S2701	35 25 38	97 10 34	Oklahoma	1.50	0.07	0.70	0.40	0.09	0.11	0.009	0.09	210	120	<1	29	4	18	4	<2

Table 2. Continued

Sample ID	ICP Ga PPM	ICP La PPM	ICP Li PPM	ICP Nb PPM	ICP Nd PPM	ICP Ni PPM	ICP Pb PPM	ICP Sc PPM	ICP Sr PPM	ICP V PPM	ICP Y PPM	ICP Yb PPM	ICP Zn PPM	HGAAS As PPM	HGAAS Se PPM	DNAA Th PPM	DNAA U PPM
S2361	4	22	16	<4	19	10	14	4	71	29	11	1	14	3.5	<0.1	6.68	1.800
S2371	<4	11	9	<4	12	5	11	<2	33	19	5	<1	40	1.6	<0.1	3.70	1.270
S2381	20	39	100	11	36	53	27	15	110	95	20	3	61	12.0	0.3	12.80	3.140
S2391	16	37	46	9	33	26	17	11	79	83	21	3	39	5.6	0.6	11.70	2.750
S2401	11	25	34	5	22	23	13	7	62	66	12	2	28	9.1	0.2	8.63	2.560
S2411	11	24	32	<4	21	21	11	7	57	60	12	2	24	5.7	0.4	9.41	2.010
S2421	10	31	29	<4	29	23	21	7	110	63	17	2	32	7.7	0.3	10.60	2.540
S2431	<4	9	7	<4	8	4	5	<2	27	12	3	<1	4	2.0	<0.1	2.10	0.650
S2441	<4	13	10	<4	12	6	5	<2	34	15	6	<1	7	2.4	<0.1	5.10	1.470
S2451	10	24	38	5	21	21	10	7	81	52	13	2	21	4.2	0.1	7.55	1.920
S2461	9	17	26	<4	14	17	8	5	54	54	8	1	17	5.4	0.5	5.96	1.800
S2471	<4	7	6	<4	6	2	6	<2	13	8	3	<1	8	1.0	<0.1	1.90	0.838
S2481	<4	12	11	<4	11	7	5	<2	26	19	6	<1	19	1.5	<0.1	3.30	1.510
S2491	9	27	27	4	23	22	11	6	56	47	14	1	22	5.4	<0.1	6.43	2.170
S2501	11	20	34	5	17	22	10	7	68	67	11	1	27	6.4	0.3	6.08	1.880
S2511	<4	18	9	<4	16	5	8	<2	33	17	8	<1	9	2.3	<0.1	5.03	1.870
S2521	7	20	20	<4	18	13	11	4	35	45	10	1	36	5.9	0.1	7.89	2.230
S2531	7	18	24	4	14	13	7	4	40	38	8	1	20	3.6	<0.1	6.05	1.660
S2541	13	32	44	<4	29	34	11	9	82	77	17	2	32	12.0	0.3	9.21	2.150
S2551	12	28	38	5	25	26	13	8	55	61	15	2	28	6.2	0.4	9.03	2.420
S2561	23	44	60	16	39	46	13	15	150	110	21	3	54	11.0	0.7	11.60	3.000
S2571	14	29	64	6	27	33	19	10	100	92	15	2	32	7.1	0.2	11.20	2.070
S2581	<4	15	13	<4	14	7	8	2	44	19	7	<1	7	1.5	<0.1	4.00	1.390
S2591	5	16	15	<4	14	10	7	3	34	28	8	<1	13	2.2	<0.1	4.00	1.670
S2601	11	37	37	6	31	24	11	8	95	76	18	2	25	2.4	0.1	10.30	3.360
S2611	<4	14	8	<4	12	3	<4	<2	21	11	5	<1	7	1.0	0.1	2.30	1.330
S2621	10	21	27	4	17	15	10	6	42	53	11	2	21	5.1	0.2	8.72	2.180
S2631	11	31	29	6	26	17	14	7	63	65	16	2	27	5.8	0.2	10.60	2.700
S2641	18	40	62	8	35	38	11	13	88	94	21	3	47	10.0	0.1	14.10	2.240
S2651	8	20	36	<4	19	19	9	5	52	73	11	1	21	4.2	0.3	5.71	3.310
S2661	16	29	46	9	26	23	13	10	69	95	15	2	34	6.3	0.8	9.99	2.630
S2671	9	24	24	5	19	12	20	5	46	63	13	2	24	5.5	0.7	10.10	2.810
S2681	17	37	56	9	33	39	16	12	71	92	19	2	38	9.3	0.4	12.60	2.300
S2691	13	26	37	4	24	32	11	8	77	67	15	2	24	6.4	0.2	8.17	1.960
S2701	<4	14	12	<4	13	8	6	2	29	19	7	<1	10	1.8	<0.1	5.12	1.380

Table 2. Continued

Sample ID	Lat.	Long.	County	ICP Al %	ICP Ca %	ICP Fe %	ICP K %	ICP Mg %	ICP Na %	ICP P %	ICP Ti %	ICP Mn PPM	ICP Ba PPM	ICP Be PPM	ICP Ce PPM	ICP Co PPM	ICP Cr PPM	ICP Cu PPM	ICP Eu PPM
S2711	35 24 23	97 13 51	Oklahoma	0.44	0.06	0.20	0.16	0.03	0.07	0.007	0.05	58	73	<1	15	<1	7	<1	<2
S2721	35 20 08	97 12 46	Cleveland	1.60	0.07	0.72	0.33	0.08	0.07	0.010	0.10	140	110	<1	30	3	19	4	<2
S2731	35 19 50	97 15 50	Cleveland	7.60	0.17	5.80	1.60	0.76	0.08	0.020	0.34	320	400	3	74	23	99	22	<2
S2751	34 55 39	97 24 04	McClain	5.00	0.25	2.20	1.10	0.44	0.38	0.020	0.25	230	330	1	64	8	48	11	<2
S2761	34 53 03	97 23 39	McClain	5.40	0.33	2.30	1.40	0.56	0.86	0.020	0.24	430	380	2	61	9	49	13	<2
S276X	34 53 03	97 23 39	McClain	5.50	0.34	2.40	1.40	0.57	0.85	0.020	0.30	490	380	2	69	9	52	14	<2
S2771	34 50 42	97 23 14	Garvin	3.50	0.17	1.40	1.30	0.26	0.33	0.020	0.19	180	340	1	45	5	30	8	<2
S2781	34 47 00	97 23 58	Garvin	3.90	0.30	1.50	1.30	0.29	0.79	0.020	0.29	580	390	1	68	8	37	11	<2
S2791	34 46 04	97 20 05	Garvin	5.10	0.27	2.20	1.50	0.39	0.47	0.020	0.31	310	400	1	75	9	47	11	<2
S2801	34 46 29	97 16 56	Garvin	5.30	0.22	2.20	1.50	0.41	0.38	0.020	0.24	260	370	2	59	8	46	13	<2
S2811	34 46 17	97 13 17	Garvin	4.00	0.17	1.70	1.40	0.27	0.33	0.010	0.21	160	390	1	45	6	35	9	<2
S2821	34 46 06	97 09 43	Garvin	3.60	0.23	1.50	0.94	0.29	0.46	0.010	0.19	410	830	1	49	9	34	12	<2
S2831	34 48 05	97 05 26	Garvin	5.80	0.89	2.50	1.10	0.64	0.75	0.020	0.26	660	360	2	68	11	50	16	<2
S2841	34 50 25	97 06 29	Garvin	6.80	1.10	3.70	0.60	0.76	0.38	0.020	0.28	570	530	2	88	15	80	10	<2
S2851	34 50 26	97 10 07	Garvin	3.40	0.28	1.70	0.38	0.39	0.12	0.020	0.18	550	240	1	52	10	48	39	<2
S2861	34 49 41	97 14 49	Garvin	2.50	0.16	1.10	0.54	0.21	0.29	0.010	0.14	600	520	<1	44	6	27	21	<2
S2871	34 51 17	97 15 52	Garvin	4.80	0.35	2.00	1.60	0.36	0.65	0.020	0.26	760	500	1	70	12	43	14	<2
S2881	34 54 07	97 15 56	McClain	3.90	0.22	1.90	0.97	0.38	0.48	0.020	0.20	310	410	1	58	8	40	10	<2
S2891	34 55 41	97 15 50	McClain	4.00	0.28	1.60	1.50	0.29	0.69	0.020	0.27	310	450	1	58	6	33	9	<2
S2901	34 53 30	97 12 45	McClain	3.00	0.19	1.40	0.75	0.23	0.37	0.020	0.19	410	310	<1	54	6	31	9	<2
S2911	34 54 46	97 08 54	McClain	4.50	0.30	1.90	1.40	0.33	0.59	0.020	0.31	340	440	1	68	9	43	11	<2
S2921	34 54 39	97 06 22	McClain	4.60	0.29	1.90	1.60	0.36	0.62	0.020	0.30	340	470	1	70	8	43	11	<2
S2931	34 53 33	97 01 50	McClain	3.20	0.17	1.20	1.50	0.19	0.33	0.010	0.16	180	430	<1	38	6	24	6	<2
S2941	35 19 15	97 32 51	Cleveland	4.00	0.27	1.50	1.50	0.33	0.54	0.020	0.18	250	450	1	43	6	30	8	<2
S2951	35 19 59	97 35 59	Cleveland	4.90	0.41	2.00	1.50	0.51	0.62	0.020	0.22	710	520	2	64	11	42	12	<2
S2961	35 21 48	97 41 54	Canadian	2.30	0.14	1.10	0.74	0.27	0.26	0.010	0.10	120	170	<1	38	4	26	8	<2
S2971	35 24 49	97 43 29	Canadian	3.70	0.18	2.10	1.10	0.43	0.31	0.030	0.17	1000	290	1	68	10	54	9	<2
S2981	35 27 54	97 43 24	Canadian	4.60	0.29	2.10	1.50	0.53	0.63	0.030	0.20	380	360	2	54	9	48	11	<2
S2991	35 27 53	97 39 40	Oklahoma	4.60	0.57	1.50	2.10	0.51	0.99	0.040	0.20	320	570	1	48	7	31	10	<2
S3001	35 31 18	97 43 29	Canadian	4.80	0.37	1.80	1.90	0.38	0.78	0.030	0.24	370	530	1	56	8	36	11	<2
S3011	35 33 54	97 44 34	Canadian	4.10	0.23	1.50	1.70	0.32	0.36	0.010	0.15	130	420	1	36	4	29	7	<2
S3021	35 33 58	97 40 45	Canadian	6.60	0.32	3.00	1.70	0.73	0.53	0.020	0.25	440	420	2	65	12	64	15	<2
S3031	35 36 31	97 37 33	Oklahoma	6.90	0.45	3.30	1.70	0.92	0.68	0.020	0.28	690	470	2	72	14	70	19	<2
S3041	35 36 34	97 42 43	Canadian	6.00	0.52	2.40	1.60	0.55	0.63	0.030	0.24	350	460	2	60	9	53	16	<2
S3051	35 39 09	97 43 20	Canadian	6.40	0.48	3.00	1.60	0.78	0.64	0.030	0.27	720	490	2	75	15	64	19	<2

Table 2. Continued

Sample ID	ICP Ga PPM	ICP La PPM	ICP Li PPM	ICP Nb PPM	ICP Nd PPM	ICP Ni PPM	ICP Pb PPM	ICP Sc PPM	ICP Sr PPM	ICP V PPM	ICP Y PPM	ICP Yb PPM	ICP Zn PPM	HGAAS As PPM	HGAAS Se PPM	DNAA Th PPM	DNAA U PPM
S2711	<4	7	6	<4	6	<2	<4	<2	14	5	3	<1	4	0.6	<0.1	2.20	0.895
S2721	<4	15	13	<4	12	6	8	2	33	20	7	<1	8	1.5	<0.1	5.57	1.560
S2731	20	45	41	12	38	61	27	14	92	120	23	3	58	21.0	0.4	13.10	2.150
S2751	11	33	31	7	31	18	15	7	60	58	17	2	34	5.5	0.2	12.90	3.050
S2761	13	32	31	4	29	18	16	8	99	63	19	2	40	5.0	0.3	11.00	3.100
S276X	13	34	32	8	31	17	17	8	100	66	19	2	41	4.6	0.5	11.60	3.130
S2771	7	22	18	<4	20	10	10	5	49	37	12	2	19	2.6	<0.1	8.03	1.890
S2781	8	33	20	6	29	11	16	5	87	45	16	2	24	3.2	0.3	11.50	3.100
S2791	11	35	29	8	31	16	15	7	64	61	18	2	31	5.0	0.1	14.90	3.830
S2801	12	30	33	5	27	21	16	7	55	55	17	2	43	6.0	<0.1	11.50	3.200
S2811	8	22	21	5	19	12	13	5	53	47	12	2	24	3.8	0.1	7.92	2.410
S2821	8	30	19	<4	26	14	15	5	57	41	17	2	23	5.4	<0.1	7.99	2.120
S2831	14	36	32	6	32	21	18	8	110	70	22	2	44	5.1	0.5	9.03	2.790
S2841	17	46	48	5	39	38	19	11	84	94	24	3	43	7.0	0.4	11.30	2.670
S2851	10	23	24	<4	21	21	22	6	67	44	12	2	54	4.1	<0.1	7.95	2.090
S2861	7	20	17	<4	19	11	10	4	36	31	11	1	24	2.1	0.1	7.35	1.770
S2871	11	34	27	5	30	18	18	7	76	56	17	2	35	4.5	0.3	12.80	3.720
S2881	9	29	25	<4	27	17	16	6	56	51	15	2	68	5.7	<0.1	9.64	2.620
S2891	8	29	21	6	25	11	13	5	73	45	15	2	30	3.2	0.1	8.84	3.200
S2901	7	26	20	<4	24	13	12	4	45	36	13	2	22	3.5	<0.1	8.42	2.620
S2911	9	33	24	7	29	14	16	6	70	54	17	2	29	3.6	0.1	10.30	3.690
S2921	10	35	25	7	30	15	15	6	72	55	17	2	31	4.0	<0.1	11.60	3.440
S2931	7	19	16	<4	18	10	11	3	54	32	9	1	20	3.0	<0.1	7.35	2.160
S2941	9	22	20	<4	21	13	12	5	71	39	12	2	27	4.7	<0.1	7.43	2.180
S2951	11	29	31	<4	27	20	17	7	76	57	16	2	34	4.4	0.1	8.57	2.690
S2961	5	21	16	<4	17	11	7	3	43	25	12	1	15	2.3	<0.1	5.31	1.650
S2971	9	37	25	<4	37	17	10	7	72	46	31	3	26	6.3	0.1	7.50	2.110
S2981	11	29	31	<4	28	21	13	7	81	55	18	2	34	4.9	0.1	9.27	2.640
S2991	10	26	22	6	23	13	17	5	120	41	15	2	31	2.8	<0.1	6.73	2.710
S3001	10	29	23	5	27	14	15	6	93	52	16	2	33	3.4	<0.1	10.30	3.190
S3011	9	19	17	<4	16	13	11	4	59	34	10	1	26	3.1	<0.1	6.48	1.610
S3021	16	32	47	7	29	26	20	9	78	85	18	2	45	7.0	0.4	10.50	3.010
S3031	17	36	46	7	33	32	20	11	170	79	20	2	56	6.7	0.1	9.90	2.920
S3041	15	31	34	7	28	21	18	8	88	72	18	2	51	4.7	0.1	11.70	3.180
S3051	15	32	48	7	31	29	21	10	90	80	18	2	56	7.5	0.4	10.30	2.620

Table 2. Continued

Sample ID	Lat.	Long.	County	ICP Al %	ICP Ca %	ICP Fe %	ICP K %	ICP Mg %	ICP Na %	ICP P %	ICP Ti %	ICP Mn PPM	ICP Ba PPM	ICP Be PPM	ICP Ce PPM	ICP Co PPM	ICP Cr PPM	ICP Cu PPM	ICP Eu PPM
S3061	35 39 12	97 39 42	Oklahoma	5.00	0.36	2.30	1.70	0.63	0.59	0.020	0.22	300	390	2	54	8	51	13	<2
S3071	35 40 54	97 42 51	Canadian	7.00	0.43	3.50	2.20	1.10	0.70	0.040	0.35	560	440	2	78	15	77	25	<2
S307X	35 40 54	97 42 51	Canadian	7.20	0.43	3.60	2.20	1.20	0.71	0.040	0.32	560	440	2	73	15	79	25	<2
S3081	35 43 35	97 42 50	Kingfisher	6.80	0.55	3.30	1.90	1.00	0.74	0.030	0.27	640	520	2	76	15	71	21	<2
S3091	35 43 32	97 38 32	Oklahoma	6.30	0.40	2.70	1.50	0.89	0.73	0.030	0.25	990	340	2	66	12	73	59	<2
S3101	35 43 44	97 35 03	Logan	5.30	0.33	2.20	1.40	0.51	0.42	0.020	0.22	200	380	2	56	8	49	13	<2
S3111	35 45 19	97 36 53	Logan	7.10	3.40	3.50	1.70	1.80	0.73	0.040	0.30	560	320	2	72	15	77	36	<2
S3121	35 45 17	97 40 01	Logan	7.00	0.35	3.30	1.70	0.81	0.60	0.030	0.25	670	390	2	67	13	69	19	<2
S3131	35 46 10	97 43 34	Kingfisher	7.60	0.46	3.80	2.20	1.30	0.94	0.040	0.30	520	480	2	77	15	84	20	<2
S3141	35 49 24	97 43 35	Kingfisher	7.40	2.30	3.80	2.00	1.60	0.95	0.050	0.37	560	380	2	82	16	86	21	<2
S3151	35 49 47	97 40 27	Kingfisher	6.40	0.44	3.00	2.00	0.92	0.79	0.060	0.34	660	450	2	79	13	68	19	<2
S3161	35 47 53	97 35 48	Logan	6.10	0.42	2.80	1.50	0.77	0.67	0.020	0.32	630	470	2	79	13	63	18	<2
S3171	35 51 20	97 25 02	Logan	3.00	0.20	1.30	0.98	0.21	0.41	0.020	0.17	280	290	<1	43	6	27	8	<2

Table 2. Continued

Sample ID	ICP Ga PPM	ICP La PPM	ICP Li PPM	ICP Nb PPM	ICP Nd PPM	ICP Ni PPM	ICP Pb PPM	ICP Sc PPM	ICP Sr PPM	ICP V PPM	ICP Y PPM	ICP Yb PPM	ICP Zn PPM	HGAAS As PPM	HGAAS Se PPM	DNAA Th PPM	DNAA U PPM
S3061	11	28	33	<4	26	22	16	7	70	51	14	2	40	6.0	<0.1	9.10	2.500
S3071	17	38	54	8	34	32	22	12	89	85	19	3	62	7.5	0.3	11.00	3.030
S307X	17	38	56	7	34	37	23	12	87	82	19	2	67	9.2	0.1	10.70	3.110
S3081	16	38	46	6	35	32	22	11	100	85	20	2	59	7.4	0.2	10.10	3.090
S3091	15	34	43	<4	33	30	16	10	75	100	20	2	79	8.3	0.2	11.30	2.720
S3101	12	27	31	4	23	21	15	7	64	59	14	2	36	4.6	0.1	11.00	2.810
S3111	17	39	56	6	35	36	20	13	210	74	20	3	60	10.0	0.2	13.30	2.420
S3121	17	32	45	6	28	34	20	10	84	85	18	2	52	8.9	0.3	11.20	2.510
S3131	18	40	58	8	35	40	22	13	110	91	21	3	68	10.0	0.2	9.21	2.730
S3141	19	41	53	8	38	34	22	13	99	89	20	3	62	7.7	0.2	13.00	2.550
S3151	15	38	44	9	32	28	19	11	91	69	19	3	49	7.1	<0.1	12.20	2.930
S3161	15	36	41	8	33	25	17	10	140	83	20	3	50	7.7	0.3	11.60	2.700
S3171	6	23	17	5	19	10	12	4	55	39	12	1	19	3.4	<0.1	5.10	3.000

Table 3. Analytical results for outcrop rock samples from central Oklahoma. Al, Ca, Fe, K, Mg, Na, P, and Ti are in percent, all other elements are in parts per million (PPM). ICP Induction Coupled Plasma, AES = Atomic Emission Spectroscopy, HGAAS = Hydride Generation Atomic Absorption Spectroscopy, and DNAA = Delayed Neutron Activation Analysis.

Sample ID	Lat.	Long.	County	ICP Al %	ICP Ca %	ICP Fe %	ICP K %	ICP Mg %	ICP Na %	ICP P %	ICP Ti %	ICP Mn PPM	ICP Ba PPM	ICP Be PPM	ICP Ce PPM	ICP Co PPM	ICP Cr PPM	ICP Cu PPM	ICP Eu PPM
R001V	35 54 38	96 46 02	Linclon	0.98	6.90	0.89	0.14	3.00	0.09	0.020	0.05	2800	940	<1	41	5	9	6	<2
R002V	35 50 26	96 49 47	Linclon	0.92	0.04	0.28	0.14	0.05	0.02	0.007	0.07	140	61	<1	16	4	15	1	<2
R003O	35 50 26	96 54 35	Linclon	1.20	0.03	0.41	0.15	0.06	0.03	0.006	0.06	260	60	<1	23	4	10	7	<2
R004O	35 50 26	96 58 10	Linclon	1.10	0.03	0.46	0.16	0.06	0.02	0.006	0.06	85	70	<1	26	3	10	3	<2
R005O	35 52 09	97 00 13	Linclon	1.00	0.05	0.56	0.14	0.08	0.02	<0.005	0.06	300	100	<1	16	3	12	3	<2
R006W	35 52 09	97 03 13	Linclon	1.10	0.02	0.16	0.16	0.07	0.15	<0.005	0.09	95	47	<1	28	3	5	3	<2
R007W	35 52 09	97 05 40	Linclon	1.90	0.04	1.40	0.28	0.11	0.05	0.009	0.10	86	70	<1	27	4	21	4	<2
R008W	35 52 08	97 08 12	Logan	0.50	0.02	0.24	0.08	0.03	0.02	<0.005	0.05	170	1400	<1	16	3	6	3	<2
R009W	35 52 09	97 10 57	Logan	1.20	0.04	0.79	0.17	0.08	0.09	<0.005	0.10	31	60	<1	29	3	14	4	<2
R010W	35 52 03	97 13 46	Logan	0.75	2.80	0.20	0.09	0.33	0.09	<0.005	0.05	170	40	<1	15	3	9	2	<2
R011G	35 52 09	97 16 01	Logan	0.87	10.00	0.42	0.12	5.50	0.08	0.006	0.06	3100	860	<1	35	8	17	5	<2
R012G	35 52 12	97 18 57	Logan	1.30	0.06	0.68	0.15	0.09	0.15	<0.005	0.12	44	48	<1	31	3	11	3	<2
R013G	35 52 45	97 23 23	Logan	1.90	0.27	1.00	0.30	0.19	0.18	0.010	0.12	76	77	<1	39	5	19	3	<2
R014G	35 52 46	97 27 24	Logan	1.00	0.05	0.47	0.20	0.11	0.05	<0.005	0.05	20	55	<1	16	4	5	3	<2
R015G	35 52 13	97 30 21	Logan	0.94	0.05	0.63	0.19	0.08	0.06	<0.005	0.09	55	58	<1	17	5	21	2	<2
R016G	35 52 16	97 33 45	Logan	0.87	0.04	0.38	0.24	0.06	0.13	<0.005	0.06	62	200	<1	19	2	5	2	<2
R017G	35 52 16	97 36 28	Logan	1.30	6.30	0.52	0.30	2.50	0.21	0.008	0.07	1900	110	<1	33	6	12	5	<2
R018H	35 50 32	97 39 50	Logan	4.00	7.50	1.20	0.94	3.00	1.10	0.040	0.17	1200	190	<1	51	8	24	8	<2
R019H	35 50 31	97 43 48	Kingfisher	5.80	4.60	2.40	1.60	2.90	1.20	0.040	0.25	970	320	2	57	12	44	17	<2
R020G	35 53 18	97 35 29	Logan	2.10	15.00	0.44	0.52	6.20	0.26	0.020	0.11	2100	6800	<1	49	15	29	17	3
R021G	35 53 18	97 35 29	Logan	1.90	4.50	0.87	0.49	2.00	0.31	0.010	0.12	650	200	<1	37	6	28	14	<2
R022H	35 49 46	97 42 37	Kingfisher	3.80	4.60	1.40	0.90	2.30	1.40	0.040	0.21	890	230	1	55	7	39	18	<2
R023H	35 48 47	97 44 14	Kingfisher	4.90	5.70	1.30	1.10	3.50	1.50	0.030	0.27	1000	240	1	52	10	50	20	<2
R024H	35 47 56	97 44 13	Kingfisher	4.70	2.10	2.10	1.30	1.50	1.30	0.040	0.28	530	260	1	57	9	57	22	<2
R025H	35 49 07	97 41 29	Kingfisher	6.20	3.90	2.40	1.70	2.60	1.30	0.040	0.29	830	490	2	61	13	73	26	<2
R026H	35 49 03	97 40 27	Kingfisher	4.50	3.20	1.80	1.10	1.50	1.20	0.040	0.25	950	300	1	58	8	47	23	<2
R027H	35 47 02	97 41 52	Kingfisher	6.20	4.70	2.90	1.80	2.80	1.30	0.050	0.27	1100	630	2	61	15	73	35	<2
R028H	35 45 46	97 40 26	Kingfisher	5.90	6.70	2.70	1.60	3.80	1.10	0.050	0.29	1200	520	2	75	15	74	33	<2
R029H	35 44 26	97 40 54	Kingfisher	3.10	5.10	1.30	0.77	2.40	0.83	0.020	0.18	1700	200	<1	57	6	26	23	<2
R030H	35 44 11	97 43 40	Kingfisher	8.30	6.50	4.30	2.40	1.90	0.95	0.050	0.39	560	430	3	66	18	74	37	<2
R031H	35 43 32	97 41 28	Canadian	7.40	4.30	3.70	2.10	2.80	1.30	0.050	0.34	940	550	2	67	17	66	33	<2
R032H	35 44 14	97 38 18	Logan	5.80	6.40	2.40	1.40	2.90	1.40	0.040	0.27	1100	400	2	62	13	53	25	<2
R033H	35 42 40	97 42 38	Canadian	7.10	2.30	3.50	2.10	2.20	1.40	0.060	0.35	720	440	2	57	13	76	33	<2
R034H	35 41 50	97 43 20	Canadian	8.20	1.80	4.20	2.40	2.70	0.94	0.060	0.41	570	410	3	74	18	75	41	<2

Table 3. Continued

Sample ID	ICP Ga PPM	ICP La PPM	ICP Li PPM	ICP Nb PPM	ICP Nd PPM	ICP Ni PPM	ICP Pb PPM	ICP Sc PPM	ICP Sr PPM	ICP V PPM	ICP Y PPM	ICP Yb PPM	ICP Zn PPM	AES B PPM	AES Zr PPM	HGAAS As PPM	HGAAS Se PPM	DNAA Th PPM	DNAA U PPM
R001V	5	23	7	<4	26	8	<4	3.0	47	20	21	2	<2	<10	100	2.7	<0.1	2.90	0.612
R002V	<4	7	10	<4	8	6	<4	<2	43	9	5	<1	5	15	100	2.4	<0.1	2.80	0.652
R003O	<4	11	11	<4	10	10	<4	<2	44	12	5	<1	7	<10	50	2.4	<0.1	<1.70	0.531
R004O	<4	12	8	<4	13	8	<4	<2	42	15	5	<1	8	10	100	2.6	<0.1	<2.10	0.750
R005O	<4	9	11	<4	9	6	<4	<2	25	32	4	<1	9	10	150	2.4	<0.1	2.50	0.787
R006W	<4	13	12	<4	12	8	<4	<2	31	14	5	<1	9	15	300	2.5	<0.1	2.70	1.820
R007W	4	13	15	<4	11	10	9	3	51	36	7	<1	13	30	1000	4.4	0.6	6.40	1.130
R008W	<4	8	6	<4	8	5	<4	<2	24	9	4	<1	4	10	150	1.0	<0.1	2.30	0.841
R009W	<4	14	12	<4	14	7	5	2	25	19	8	1	9	20	1000	4.6	<0.1	4.20	2.140
R010W	<4	9	10	<4	7	6	<4	<2	62	5	6	<1	5	10	500	1.7	<0.1	2.90	0.856
R011G	4	27	9	<4	31	5	6	3	180	19	26	2	7	15	500	3.9	<0.1	3.70	1.750
R012G	<4	14	13	<4	13	8	10	2	42	24	7	<1	9	20	1000	4.3	<0.1	3.60	1.870
R013G	4	18	18	<4	18	13	6	3	74	26	9	1	14	15	200	4.4	<0.1	4.70	1.660
R014G	<4	9	11	<4	7	9	<4	<2	24	11	4	<1	9	15	150	1.7	<0.1	3.00	0.474
R015G	<4	10	9	<4	9	7	<4	<2	17	14	6	<1	11	20	700	4.0	0.5	2.60	1.220
R016G	<4	10	10	<4	9	5	<4	<2	23	11	4	<1	11	<10	30	1.6	<0.1	<1.90	1.040
R017G	<4	19	14	<4	25	4	4	2	55	13	18	2	13	10	150	1.6	<0.1	<2.30	1.640
R018H	8	28	27	<4	27	15	7	6	170	26	19	2	19	30	100	2.9	<0.1	4.00	2.100
R019H	13	32	42	6	30	29	14	9	130	49	20	2	43	50	100	5.0	<0.1	21.60	2.280
R020G	6	62	17	<4	60	13	5	4	270	66	50	4	30	10	70	2.6	0.2	4.40	2.260
R021G	<4	24	17	<4	24	8	5	4	59	29	19	2	14	15	300	2.2	0.1	6.01	1.780
R022H	7	30	20	<4	30	14	10	5	100	37	18	2	18	20	200	2.9	0.1	9.31	2.070
R023H	10	30	31	4	29	21	7	8	110	94	21	2	29	20	150	2.4	0.1	8.56	1.610
R024H	10	30	32	5	27	23	14	7	87	53	16	2	34	30	300	5.2	0.1	7.60	2.250
R025H	14	35	39	5	31	30	12	10	120	58	19	2	48	20	150	5.0	0.1	8.94	2.100
R026H	9	31	28	4	29	18	12	7	93	39	18	2	28	30	300	3.4	0.1	8.64	2.150
R027H	14	34	43	5	32	31	16	10	130	66	19	2	47	30	100	6.2	0.1	8.40	2.090
R028H	13	45	43	<4	36	31	14	9	150	63	20	2	42	30	200	11.0	0.1	10.10	2.200
R029H	7	31	18	<4	32	12	8	5	85	27	21	2	17	20	300	3.2	<0.1	6.47	2.110
R030H	20	38	65	11	31	44	25	14	120	120	19	2	80	30	50	12.0	<0.1	11.50	2.700
R031H	19	36	54	7	32	44	21	12	120	80	20	2	63	50	100	7.4	<0.1	11.60	2.360
R032H	13	36	39	5	34	27	16	9	180	66	22	2	41	30	100	5.4	0.1	7.94	2.330
R033H	16	33	50	16	29	34	24	11	120	81	18	2	60	70	150	8.7	<0.1	11.30	1.810
R034H	20	39	70	10	35	47	24	14	97	95	19	2	84	70	100	10.0	<0.1	11.20	2.680

Table 3. Continued

Sample ID	Lat.	Long.	County	ICP Al %	ICP Ca %	ICP Fe %	ICP K %	ICP Mg %	ICP Na %	ICP P %	ICP Ti %	ICP Mn PPM	ICP Ba PPM	ICP Be PPM	ICP Ce PPM	ICP Co PPM	ICP Cr PPM	ICP Cu PPM	ICP Eu PPM
RO35H	35 41 47	97 40 42	Canadian	6.40	4.80	3.00	1.80	2.60	1.40	0.050	0.29	860	650	2	59	13	49	29	<2
RO36H	35 34 48	97 44 28	Canadian	7.20	1.40	3.60	2.30	1.90	1.20	0.060	0.31	810	450	3	55	14	61	26	<2
RO37H	35 36 17	97 43 35	Canadian	5.60	3.10	2.30	1.50	2.90	1.20	0.040	0.26	760	300	2	53	10	44	30	<2
RO38H	35 36 34	97 44 02	Canadian	5.30	3.60	2.20	1.40	2.60	1.50	0.040	0.28	890	280	2	48	10	54	18	<2
RO39H	35 36 33	97 42 50	Canadian	7.80	3.00	4.00	2.30	3.10	1.10	0.060	0.36	770	680	3	65	18	62	39	<2
RO40H	35 35 41	97 42 13	Canadian	9.00	1.60	4.70	2.70	2.50	0.99	0.070	0.45	650	500	3	87	18	91	42	<2
RO41H	35 37 26	97 39 58	Oklahoma	7.50	2.10	3.90	2.00	1.80	1.30	0.050	0.38	510	640	2	71	17	68	32	<2
RO42H	35 37 25	97 38 54	Oklahoma	5.20	4.30	2.30	1.40	2.70	1.30	0.040	0.24	900	560	2	52	12	50	33	<2
RO43H	35 38 18	97 37 57	Oklahoma	5.30	3.40	2.00	1.10	1.90	1.30	0.030	0.28	610	230	1	56	11	58	27	<2
RO44H	35 40 04	97 38 35	Oklahoma	6.40	4.90	2.90	1.70	2.50	1.10	0.050	0.29	1100	530	2	63	14	69	37	<2
RO45H	35 40 04	97 39 16	Oklahoma	5.70	4.60	2.30	1.40	2.50	1.50	0.040	0.25	890	990	2	59	11	60	26	<2
RO46H	35 40 00	97 39 51	Oklahoma	4.60	3.70	1.80	1.00	2.00	1.50	0.040	0.24	810	220	1	64	9	46	21	<2
RO47H	35 39 06	97 42 34	Canadian	7.10	2.90	3.40	2.00	2.30	1.30	0.050	0.33	670	670	2	59	15	66	43	<2
RO48H	35 39 31	97 44 41	Canadian	5.30	3.50	2.10	1.50	2.70	1.40	0.050	0.26	820	310	2	54	9	38	25	<2
RO49H	35 40 03	97 44 03	Canadian	6.30	3.90	2.80	1.70	4.00	1.10	0.050	0.31	1000	350	2	62	14	61	32	<2
RO50H	35 40 02	97 43 02	Canadian	5.00	5.00	2.10	1.40	2.60	1.20	0.040	0.21	810	420	1	43	10	58	22	<2
RO51H	35 41 48	97 38 31	Oklahoma	9.20	1.70	4.70	2.10	2.40	1.10	0.050	0.42	750	310	3	70	19	85	47	<2
RO52H	35 44 44	97 38 16	Logan	4.30	3.90	1.80	0.83	1.10	1.40	0.030	0.29	510	900	1	58	9	29	27	<2
RO53H	35 45 34	97 38 16	Logan	5.00	3.90	1.90	1.10	1.60	1.30	0.030	0.29	390	250	1	73	9	48	22	<2
RO54H	35 45 17	97 38 40	Logan	4.50	5.10	1.70	1.00	2.70	1.30	0.040	0.26	1000	230	1	72	9	30	23	<2
RO55G	35 47 54	97 36 24	Logan	3.40	15.00	1.50	0.68	0.96	0.80	0.030	0.20	440	340	<1	45	8	38	22	<2
RO56G	35 55 36	97 20 10	Logan	1.20	0.09	0.47	0.17	0.09	0.12	0.006	0.10	23	51	<1	32	2	11	19	<2
RO57W	35 55 39	97 17 53	Lincoln	2.40	13.00	2.60	0.37	6.10	0.23	0.010	0.16	5400	190	1	59	15	39	17	2
RO58W	35 55 38	97 15 26	Lincoln	1.30	0.13	0.61	0.16	0.12	0.09	0.005	0.10	91	59	<1	22	4	24	18	<2
RO59W	35 55 42	97 12 42	Lincoln	1.20	0.07	0.43	0.17	0.09	0.12	<0.005	0.10	28	59	<1	25	3	9	13	<2
RO60W	35 55 38	97 10 14	Lincoln	0.90	0.04	0.42	0.14	0.07	0.11	<0.005	0.09	94	67	<1	21	2	24	<1	<2
RO61W	35 55 40	97 07 10	Lincoln	1.00	6.20	0.32	0.14	0.80	0.21	0.005	0.08	970	45	<1	24	5	16	<1	<2
RO62W	35 55 40	97 04 40	Lincoln	1.40	0.06	0.47	0.20	0.10	0.11	0.005	0.09	270	72	<1	26	4	20	<1	<2
RO63O	35 55 40	97 00 27	Lincoln	1.30	0.06	0.27	0.19	0.11	0.17	<0.005	0.13	31	53	<1	30	3	21	5	<2
RO64O	35 55 40	96 57 30	Lincoln	1.60	0.05	0.90	0.25	0.13	0.02	0.006	0.05	87	76	<1	23	4	27	5	<2
RO65O	35 55 40	96 54 35	Lincoln	1.20	0.02	0.69	0.17	0.08	0.03	0.006	0.08	190	69	<1	27	4	18	<1	<2
RO66O	35 55 40	96 52 02	Lincoln	1.20	0.04	0.64	0.18	0.08	0.02	<0.005	0.08	19	53	<1	17	2	19	<1	<2
RO67V	35 55 40	96 48 07	Lincoln	1.20	0.09	0.59	0.17	0.10	0.21	0.006	0.12	40	44	<1	32	3	17	<1	<2
RO68V	35 46 57	96 47 59	Lincoln	1.30	0.10	0.37	0.17	0.10	0.24	0.007	0.14	1200	160	<1	35	4	19	9	<2
RO69V	35 46 56	96 51 31	Lincoln	1.20	0.03	0.36	0.22	0.07	0.12	0.009	0.08	50	44	<1	28	3	8	3	<2

Table 3. Continued

Sample ID	ICP Ga PPM	ICP La PPM	ICP Li PPM	ICP Nb PPM	ICP Nd PPM	ICP Ni PPM	ICP Pb PPM	ICP Sc PPM	ICP Sr PPM	ICP V PPM	ICP Y PPM	ICP Yb PPM	ICP Zn PPM	AES B PPM	AES Zr PPM	HGAAS As PPM	HGAAS Se PPM	DNAA Th PPM	DNAA U PPM
R035H	15	33	44	5	32	32	18	10	120	66	19	2	50	50	100	6.4	<0.1	8.51	2.200
R036H	17	30	49	7	28	35	22	11	110	83	17	2	61	70	150	7.0	<0.1	7.85	2.420
R037H	12	29	55	4	25	24	15	8	91	51	15	2	57	20	100	5.2	0.1	7.82	2.010
R038H	12	27	41	5	25	22	16	8	90	47	16	2	41	20	200	5.1	0.1	7.84	2.070
R039H	19	34	66	7	31	44	20	13	110	93	18	2	75	70	100	11.0	<0.1	10.70	2.670
R040H	21	45	76	12	41	52	24	15	110	110	22	3	88	70	70	14.0	0.1	12.20	2.740
R041H	18	41	57	9	33	41	18	12	160	89	20	3	70	50	100	9.6	0.1	10.60	2.620
R042H	12	29	37	<4	26	25	16	8	160	62	16	2	36	20	70	5.9	0.1	11.50	3.270
R043H	11	33	37	5	32	24	12	9	130	52	20	2	34	30	100	3.8	0.1	8.28	2.180
R044H	15	36	46	6	33	32	17	10	120	68	19	2	48	70	200	8.1	0.1	9.04	2.530
R045H	13	33	33	<4	32	25	17	10	130	56	20	2	33	50	150	6.7	<0.1	7.37	2.170
R046H	9	35	28	<4	33	17	14	7	100	42	20	2	25	50	300	4.2	<0.1	9.25	2.600
R047H	16	32	53	7	28	36	22	11	120	76	16	2	62	50	100	8.1	0.2	11.40	2.130
R048H	12	30	41	<4	26	21	18	7	100	51	15	2	44	30	200	5.1	0.1	7.92	2.090
R049H	15	35	70	5	32	31	19	10	99	67	18	2	85	30	200	6.7	0.1	10.90	2.410
R050H	11	23	41	5	23	20	13	7	120	47	13	2	32	30	70	4.7	0.1	6.23	1.600
R051H	22	37	61	12	34	51	26	15	150	110	21	3	71	70	150	9.6	0.1	11.80	2.830
R052H	9	33	34	7	32	18	13	7	190	53	20	2	25	30	100	4.8	0.1	9.37	2.150
R053H	10	39	33	5	37	21	12	8	130	53	23	3	34	30	300	4.5	0.1	10.70	2.450
R054H	10	40	27	<4	37	17	11	7	180	37	21	2	23	30	200	4.0	<0.1	10.90	2.650
R055G	7	31	25	<4	26	16	9	6	140	34	21	2	21	50	150	4.0	<0.1	7.42	1.880
R056G	<4	17	9	<4	16	6	6	<2	37	16	7	<1	8	<10	500	2.4	<0.1	4.23	1.030
R057W	9	31	21	<4	39	12	30	6	110	68	35	3	28	30	300	4.4	0.2	6.82	2.030
R058W	<4	11	14	<4	10	10	10	2	38	56	7	<1	8	20	300	13.0	0.2	3.90	1.270
R059W	<4	12	11	<4	10	8	<4	<2	28	14	7	<1	7	15	300	2.0	<0.1	3.60	1.170
R060W	<4	11	9	<4	10	5	<4	<2	28	12	6	<1	6	10	200	2.0	<0.1	3.10	1.070
R061W	<4	12	11	<4	9	5	<4	4	69	10	11	1	4	10	300	1.0	<0.1	3.40	0.880
R062W	<4	13	13	<4	12	9	<4	2	38	17	5	<1	8	15	200	1.0	<0.1	3.50	0.758
R063O	<4	14	13	<4	14	8	<4	<2	25	13	7	<1	9	10	500	0.8	<0.1	3.50	1.220
R064O	<4	10	14	<4	8	9	<4	2	31	24	4	<1	12	15	30	2.2	<0.1	2.50	0.651
R065O	<4	12	11	<4	12	8	<4	2	35	15	5	<1	8	20	70	2.0	<0.1	2.40	0.788
R066O	<4	8	9	<4	8	5	<4	<2	29	14	3	<1	6	15	100	1.0	<0.1	2.70	0.746
R067V	<4	15	10	<4	13	6	<4	<2	24	17	5	<1	12	20	200	0.8	<0.1	3.90	1.170
R068V	<4	17	13	<4	17	6	<4	<2	26	20	14	1	12	15	500	0.6	<0.1	6.41	2.730
R069V	<4	13	10	<4	14	5	<4	<2	38	10	4	<1	9	10	200	1.0	<0.1	2.70	0.808

Table 3. Continued

Sample ID	Lat.	Long.	County	ICP Al %	ICP Ca %	ICP Fe %	ICP K %	ICP Mg %	ICP Na %	ICP P %	ICP Ti %	ICP Mn PPM	ICP Ba PPM	ICP Be PPM	ICP Ce PPM	ICP Co PPM	ICP Cr PPM	ICP Cu PPM	ICP Eu PPM
R070O	35 46 06	96 54 35	Lincoln	1.20	0.05	0.41	0.19	0.10	0.06	0.006	0.10	48	54	<1	29	4	19	<1	<2
R071O	35 46 06	96 57 30	Lincoln	1.10	0.04	0.84	0.19	0.09	0.05	0.007	0.09	27	50	<1	22	3	26	<1	<2
R072O	35 46 06	97 00 32	Lincoln	2.00	8.00	1.30	0.43	4.70	0.22	0.040	0.11	4800	140	<1	40	10	18	<1	<2
R073W	35 46 57	97 03 16	Lincoln	1.10	0.03	0.49	0.15	0.06	0.09	0.006	0.14	100	48	<1	38	3	24	<1	<2
R074W	35 46 58	97 05 55	Lincoln	0.77	0.03	0.44	0.13	0.05	0.04	<0.005	0.07	220	52	<1	16	3	18	1	<2
R075W	35 46 56	97 07 00	Lincoln	1.60	0.04	1.50	0.28	0.10	0.05	0.010	0.10	170	75	1	30	5	19	4	<2
R076W	35 46 56	97 08 35	Logan	1.70	0.11	0.68	0.25	0.09	0.22	0.010	0.17	490	100	<1	45	4	23	2	<2
R077W	35 47 24	97 11 40	Logan	1.00	0.04	0.53	0.15	0.07	0.08	<0.005	0.11	64	52	<1	29	2	13	<1	<2
R078G	35 47 51	97 14 22	Logan	1.20	0.54	0.74	0.18	0.39	0.16	0.005	0.11	230	2000	<1	37	5	19	<1	<2
R079G	35 49 20	97 15 53	Logan	0.82	0.03	0.51	0.13	0.06	0.04	0.006	0.07	37	50	<1	20	2	6	<1	<2
R080G	35 51 33	97 16 54	Logan	1.10	0.13	5.70	0.18	0.13	0.09	0.020	0.09	310	93	1	39	14	21	6	<2
R081G	35 51 45	97 16 26	Logan	2.00	13.00	3.00	0.37	7.30	0.13	0.020	0.10	4600	79	1	72	17	33	7	3
R082G	35 52 11	97 17 26	Logan	2.30	9.10	0.77	0.38	5.30	0.28	0.007	0.13	3300	82	<1	43	9	33	6	<2
R083G	35 50 49	97 19 03	Logan	4.00	3.30	0.59	0.69	0.46	0.38	0.010	0.22	91	170	<1	55	6	52	8	<2
R084G	35 50 27	97 19 35	Logan	1.10	0.05	0.42	0.15	0.08	0.18	0.005	0.12	27	46	<1	38	2	20	<1	<2
R085G	35 39 09	97 24 58	Oklahoma	1.80	0.05	1.10	0.39	0.12	0.18	0.008	0.16	150	91	<1	38	5	29	3	<2
R086G	35 39 10	97 21 48	Oklahoma	1.00	8.20	0.25	0.16	0.18	0.13	<0.005	0.04	36	56	<1	25	3	18	<1	<2
R087G	35 37 10	97 21 48	Oklahoma	0.91	6.40	1.00	0.14	3.70	0.15	<0.005	0.09	2500	46	<1	29	8	20	2	<2
R088G	35 40 03	97 19 07	Oklahoma	1.90	1.40	0.91	0.26	0.89	0.21	0.008	0.12	540	71	<1	29	4	25	5	<2
R089W	35 39 57	97 15 54	Oklahoma	0.82	0.02	0.82	0.13	0.05	0.03	0.005	0.04	110	63	<1	17	2	16	4	<2
R090G	35 40 40	97 15 51	Oklahoma	0.77	0.03	0.78	0.11	0.04	0.08	0.006	0.13	66	43	<1	33	4	24	5	<2
R091W	35 41 15	97 08 26	Lincoln	1.80	0.01	0.73	0.31	0.11	0.04	0.008	0.09	37	64	<1	24	4	21	<1	<2
R092W	35 43 49	97 08 29	Logan	3.20	0.03	4.30	0.56	0.17	0.05	0.010	0.23	160	120	1	55	11	54	3	<2
R093W	35 44 27	97 07 56	Lincoln	1.80	0.04	2.40	0.30	0.09	0.18	0.010	0.22	140	78	<1	100	5	38	3	<2
R094W	35 44 31	97 06 19	Lincoln	2.20	0.02	0.39	0.35	0.11	0.06	0.008	0.13	22	100	<1	31	4	15	<1	<2
R095W	35 43 27	97 04 54	Lincoln	0.75	0.01	0.25	0.12	0.04	0.02	<0.005	0.07	17	37	<1	22	2	15	6	<2
R096O	35 40 01	97 02 03	Lincoln	0.82	1.30	0.18	0.13	0.79	0.13	<0.005	0.09	690	54	<1	23	3	7	<1	<2
R097O	35 39 34	97 39 34	Lincoln	3.50	1.30	1.20	0.50	1.10	0.18	0.020	0.20	750	94	<1	64	11	45	7	<2
R098O	35 38 30	97 02 04	Lincoln	4.60	0.24	1.30	0.88	0.36	0.25	0.010	0.30	63	170	1	70	12	49	10	<2
R099O	35 38 14	97 02 52	Lincoln	1.60	0.03	0.98	0.26	0.10	0.07	0.006	0.11	84	63	<1	25	5	14	4	<2
R100W	35 38 03	97 04 12	Lincoln	1.60	0.02	0.38	0.22	0.10	0.03	0.006	0.09	19	140	<1	30	2	25	4	<2
R101W	35 38 54	97 04 12	Lincoln	4.60	0.89	3.80	0.69	0.72	0.07	0.060	0.22	690	140	2	120	14	66	17	<2
R102O	35 42 18	96 56 45	Lincoln	1.10	0.08	0.29	0.14	0.09	0.19	<0.005	0.07	33	46	<1	19	2	13	4	<2
R103O	35 42 36	96 56 18	Lincoln	2.10	0.07	1.30	0.23	0.11	0.26	0.009	0.09	230	74	<1	31	6	23	6	<2
R104O	35 43 47	96 53 35	Lincoln	1.30	0.05	0.41	0.17	0.08	0.10	<0.005	0.07	23	48	<1	20	2	12	2	<2

Table 3. Continued

Sample ID	ICP Ga PPM	ICP La PPM	ICP Li PPM	ICP Nb PPM	ICP Nd PPM	ICP Ni PPM	ICP Pb PPM	ICP Sc PPM	ICP Sr PPM	ICP V PPM	ICP Y PPM	ICP Yb PPM	ICP Zn PPM	AES B PPM	AES Zr PPM	HGAAS As PPM	HGAAS Se PPM	DNAA Th PPM	DNAA U PPM
R0700	<4	13	10	<4	14	8	<4	2	38	14	6	<1	9	30	300	2.0	<0.1	3.40	0.977
R0710	<4	12	13	<4	11	9	<4	<2	44	15	5	<1	8	15	200	1.0	<0.1	2.30	0.950
R0720	6	16	17	<4	15	10	7	6	90	45	19	2	2	15	200	2.4	<0.1	2.70	0.950
R073W	<4	18	11	<4	16	7	5	2	33	16	8	1	7	10	1000	1.0	<0.1	4.81	1.470
R074W	<4	8	9	<4	7	5	4	<2	26	12	4	<1	14	20	200	1.0	<0.1	1.90	0.768
R075W	<4	14	13	<4	13	8	9	3	55	38	8	1	9	10	300	4.0	<0.1	3.60	1.210
R076W	<4	21	13	<4	21	8	7	3	55	26	12	1	10	30	700	2.0	<0.1	6.55	2.160
R077W	<4	12	11	<4	12	5	<4	<2	26	18	6	<1	6	15	500	1.0	<0.1	4.31	1.360
R078G	<4	18	14	<4	18	7	10	4	47	29	7	<1	7	20	200	2.0	<0.1	3.40	1.320
R079G	<4	9	8	<4	9	5	7	<2	32	16	4	<1	6	10	100	2.1	<0.1	2.50	0.726
R080G	<4	16	11	<4	22	12	49	2	54	170	10	1	21	20	300	10.0	0.4	<2.10	2.590
R081G	8	36	18	<4	39	15	28	5	160	80	42	3	29	15	150	17.0	0.2	5.12	2.310
R082G	6	19	19	<4	26	11	6	5	90	20	30	2	9	15	500	4.3	<0.1	5.55	1.430
R083G	8	31	34	4	24	18	9	6	140	49	14	2	27	20	300	3.4	<0.1	10.60	3.400
R084G	<4	18	11	<4	16	7	4	<2	53	13	8	<1	8	<10	1000	2.5	<0.1	4.51	1.750
R085G	<4	19	15	<4	18	8	4	3	56	25	9	1	16	10	300	8.4	<0.1	5.64	2.470
R086G	<4	15	10	<4	7	4	9	<2	78	5	7	<1	8	10	500	1.0	<0.1	3.60	1.490
R087G	<4	14	9	<4	13	4	21	4	46	36	13	1	3	10	500	2.9	0.1	3.20	1.680
R088G	<4	15	17	<4	12	7	11	5	70	42	7	<1	8	15	150	2.3	0.1	3.40	1.020
R089W	<4	8	10	<4	8	4	10	2	42	32	4	<1	6	<10	300	1.0	0.1	1.60	0.634
R090G	<4	17	8	<4	18	4	12	<2	35	26	6	<1	6	30	500	4.9	<0.1	3.30	1.400
R091W	<4	11	15	<4	10	8	7	3	65	33	5	<1	11	30	100	2.7	<0.1	3.94	0.678
R092W	8	28	21	5	25	17	20	6	87	89	10	2	20	30	200	5.8	0.2	7.84	1.680
R093W	<4	47	15	<4	45	10	13	3	68	61	20	3	12	50	>1000	2.9	0.1	15.60	4.860
R094W	4	16	17	<4	14	8	5	3	72	22	7	<1	10	<10	150	2.0	<0.1	3.40	0.911
R095W	<4	10	7	<4	9	3	<4	<2	27	10	4	<1	6	<10	50	1.0	<0.1	2.40	0.587
R0960	<4	12	12	<4	8	3	<4	<2	24	7	6	<1	2	10	200	0.6	<0.1	3.40	0.764
R0970	8	25	32	<4	22	24	5	7	66	36	14	2	16	20	150	2.0	<0.1	6.32	1.070
R0980	10	37	45	7	31	30	7	7	110	54	14	2	34	50	200	3.4	<0.1	9.86	2.050
R0990	<4	13	14	<4	12	9	5	2	40	29	6	<1	10	<10	100	2.5	<0.1	3.68	0.857
R100W	<4	14	14	<4	13	7	<4	2	45	14	6	<1	9	<10	70	1.0	<0.1	3.55	0.599
R101W	12	47	32	<4	46	29	38	10	140	110	23	2	20	30	100	4.3	0.1	10.50	2.450
R1020	<4	9	9	<4	7	5	<4	<2	30	19	3	<1	8	<10	50	0.7	<0.1	2.10	0.780
R1030	5	16	14	<4	14	12	5	4	66	43	8	<1	8	<10	150	11.0	<0.1	3.60	1.230
R1040	<4	9	10	<4	8	5	<4	<2	26	14	4	<1	7	<10	70	0.9	<0.1	2.80	0.736

Table 3. Continued

Sample ID	Lat.	Long.	County	ICP Al %	ICP Ca %	ICP Fe %	ICP K %	ICP Mg %	ICP Na %	ICP P %	ICP Ti %	ICP Mn PPM	ICP Ba PPM	ICP Be PPM	ICP Ce PPM	ICP Co PPM	ICP Cr PPM	ICP Cu PPM	ICP Eu PPM
R105O	35 43 29	96 53 30	Lincoln	0.62	0.03	0.16	0.09	0.03	0.11	<0.005	0.04	15	36	<1	12	<1	2	6	<2
R106O	35 43 44	96 53 05	Lincoln	1.50	0.06	1.30	0.19	0.10	0.13	0.010	0.09	2100	120	<1	24	7	30	6	<2
R107O	35 44 37	96 53 03	Lincoln	1.90	0.04	0.69	0.27	0.13	0.14	0.007	0.15	35	69	<1	42	4	26	3	<2
R108O	35 44 46	96 52 22	Lincoln	1.60	0.06	0.52	0.26	0.10	0.19	0.006	0.09	28	69	<1	25	4	7	<1	<2
R109V	35 39 06	96 48 25	Lincoln	0.43	14.00	0.98	0.08	8.10	0.11	0.060	0.02	5500	34	<1	16	10	8	6	<2
R110V	35 40 04	96 48 17	Lincoln	1.60	17.00	3.20	0.38	9.40	0.18	0.140	0.07	7700	1200	<1	45	17	80	16	<2
R111V	35 39 06	96 47 43	Lincoln	3.00	0.17	1.20	0.35	0.21	0.66	0.010	0.10	2700	500	<1	24	8	11	18	<2
R112G	35 11 06	97 16 56	Cleveland	2.00	0.04	1.80	0.42	0.17	0.03	0.010	0.10	81	440	<1	31	5	31	5	<2
R113G	35 10 35	97 16 56	Cleveland	2.00	0.09	1.10	0.58	0.19	0.06	0.008	0.15	71	130	<1	36	6	19	2	<2
R114G	35 09 40	97 16 57	Cleveland	0.99	0.04	0.45	0.29	0.08	0.05	<0.005	0.11	59	550	<1	27	4	6	<1	<2
R115G	35 09 02	97 16 57	Cleveland	2.00	11.00	1.70	0.49	6.40	0.10	0.020	0.11	3100	240	<1	46	14	14	6	<2
R116G	35 09 02	97 16 57	Cleveland	3.40	0.57	1.70	0.88	0.68	0.22	0.020	0.24	230	620	1	49	11	48	7	<2
R117G	35 09 02	97 16 57	Cleveland	0.98	0.04	0.42	0.30	0.08	0.12	<0.005	0.15	48	1300	<1	46	3	21	5	<2
R118G	35 08 45	97 16 02	Cleveland	2.30	7.20	1.00	0.68	4.40	0.09	0.010	0.14	1700	180	<1	34	9	25	10	<2
R119G	35 09 27	97 15 54	Cleveland	1.40	0.09	1.00	0.33	0.13	0.03	0.010	0.12	200	4800	<1	32	10	17	4	<2
R120G	35 09 37	97 15 27	Cleveland	0.57	0.05	0.31	0.17	0.06	0.03	<0.005	0.05	35	190	<1	13	2	2	3	<2
R121G	35 10 18	97 15 52	Cleveland	1.40	0.06	0.67	0.33	0.11	0.03	0.006	0.11	86	150	<1	30	4	8	5	<2
R122G	35 13 56	97 10 15	Cleveland	1.80	0.03	0.18	0.40	0.06	0.03	<0.005	0.19	17	120	<1	36	2	15	3	<2
R123G	35 13 56	97 10 15	Cleveland	2.20	0.03	0.33	0.44	0.11	0.08	0.007	0.17	32	100	<1	40	3	19	4	<2
R124W	35 08 59	97 10 37	Cleveland	0.61	0.02	6.50	0.14	0.03	0.02	0.009	0.06	1800	390	1	24	18	18	8	<2
R125G	35 06 37	97 09 43	Cleveland	3.60	0.04	1.30	0.65	0.25	0.04	0.009	0.21	84	130	<1	51	9	49	10	<2
R126G	35 06 06	97 09 01	Cleveland	2.10	0.02	1.60	0.44	0.13	0.03	0.007	0.16	94	92	<1	45	8	38	1	<2
R127G	35 06 38	97 09 18	Cleveland	1.10	0.02	0.41	0.21	0.05	0.02	<0.005	0.08	19	56	<1	18	2	6	<1	<2
R128W	35 13 03	97 05 52	Pottawatomie	2.00	0.02	0.85	0.28	0.08	0.02	0.007	0.15	66	65	<1	44	5	20	3	<2
R129W	35 12 42	97 05 20	Pottawatomie	1.30	0.02	0.53	0.19	0.07	0.02	0.005	0.07	25	79	<1	32	3	9	3	<2
R130W	35 12 11	97 06 08	Pottawatomie	1.10	0.03	1.80	0.20	0.08	0.02	0.010	0.08	3700	740	<1	31	11	26	11	<2
R131W	35 08 22	97 06 24	Pottawatomie	0.61	0.02	0.19	0.11	0.03	0.02	<0.005	0.05	29	54	<1	17	2	5	<1	<2
R132G	35 07 16	97 07 26	Pottawatomie	1.10	0.03	0.40	0.18	0.07	0.02	0.005	0.07	33	57	<1	23	2	6	4	<2
R133W	35 06 34	97 07 29	Pottawatomie	4.40	0.15	1.60	0.82	0.31	0.05	0.010	0.27	81	160	1	64	10	39	12	<2
R134W	35 06 58	97 06 18	Pottawatomie	2.60	1.70	2.50	0.42	1.10	0.10	0.008	0.19	1000	130	<1	43	9	31	8	<2
R135G	35 06 33	97 04 49	Pottawatomie	3.50	0.06	2.10	0.53	0.16	0.08	0.010	0.25	710	170	<1	54	8	49	11	<2
R136G	35 06 27	97 03 14	Pottawatomie	2.00	0.98	1.10	0.37	0.58	0.11	0.010	0.10	690	90	<1	31	5	12	5	<2
R137W	35 06 58	97 02 43	Pottawatomie	1.50	1.10	0.67	0.21	0.66	0.23	<0.005	0.12	800	54	<1	28	4	16	3	<2
R138W	35 07 50	97 04 22	Pottawatomie	2.80	0.03	1.30	0.51	0.13	0.05	0.010	0.20	64	130	<1	45	7	29	1	<2
R139W	35 08 22	97 05 21	Pottawatomie	1.70	0.01	8.90	0.29	0.11	0.03	0.020	0.10	370	79	1	36	19	38	5	<2

Table 3. Continued

Sample ID	ICP Ga PPM	ICP La PPM	ICP Li PPM	ICP Nb PPM	ICP Nd PPM	ICP Ni PPM	ICP Pb PPM	ICP Sc PPM	ICP Sr PPM	ICP V PPM	ICP Y PPM	ICP Yb PPM	ICP Zn PPM	AES B PPM	AES Zr PPM	HGAAS As PPM	HGAAS Se PPM	DNAA Th PPM	DNAA U PPM
R105O	<4	6	6	<4	<4	<2	<4	<2	25	5	2	<1	4	<10	20	0.8	<0.1	1.80	0.337
R106O	4	13	14	<4	13	10	5	3	46	27	10	<1	13	10	100	2.0	<0.1	4.37	1.050
R107O	<4	20	14	<4	17	11	<4	3	48	18	9	1	11	15	300	2.0	<0.1	5.12	1.850
R108O	<4	12	12	<4	11	9	<4	<2	44	14	5	<1	8	<10	100	0.8	<0.1	2.90	0.699
R109V	4	8	4	<4	5	<2	5	<2	67	14	11	<1	<2	10	15	1.0	<0.1	<1.20	0.550
R110V	9	22	15	<4	21	12	8	4	160	90	24	2	<2	20	30	28.0	0.5	4.10	2.950
R111V	7	11	20	<4	12	13	5	3	73	34	7	<1	20	20	150	3.4	<0.1	3.60	1.210
R112G	4	16	13	<4	13	10	6	3	55	33	7	<1	15	15	50	7.5	0.1	4.26	0.816
R113G	5	18	16	<4	16	14	5	3	52	26	9	<1	14	20	100	4.7	<0.1	4.85	0.921
R114G	<4	13	11	<4	13	7	<4	<2	28	11	6	<1	6	30	500	0.9	<0.1	4.03	0.927
R115G	6	26	17	<4	24	12	<4	6	72	30	43	4	3	30	300	19.0	<0.1	6.19	1.410
R116G	8	25	26	5	21	22	7	5	68	36	12	2	21	70	500	5.5	<0.1	8.45	1.690
R117G	<4	23	10	<4	19	5	5	<2	32	13	12	2	8	<10	500	1.0	<0.1	5.99	1.890
R118G	6	21	19	<4	17	13	4	7	87	24	22	2	8	15	200	3.1	<0.1	5.73	1.150
R119G	<4	17	11	<4	19	10	<4	3	170	23	9	1	11	10	200	4.0	<0.1	4.02	1.200
R120G	<4	7	7	<4	6	4	<4	<2	18	7	3	<1	6	<10	50	0.9	<0.1	1.60	0.367
R121G	<4	15	14	<4	12	8	5	2	38	17	6	<1	9	10	100	2.0	<0.1	5.25	0.984
R122G	<4	17	15	<4	14	4	5	3	23	31	8	1	8	15	200	1.0	<0.1	5.04	2.710
R123G	5	20	16	<4	17	10	8	4	51	85	9	1	12	15	200	0.7	<0.1	<2.60	4.260
R124W	<4	9	6	<4	8	11	40	2	19	100	8	<1	9	20	200	6.5	0.1	2.40	0.988
R125G	9	26	30	5	22	23	7	6	49	39	13	2	17	20	150	2.4	0.1	6.81	1.250
R126G	5	21	19	<4	18	14	11	4	29	34	10	1	14	15	500	2.7	0.2	5.99	1.940
R127G	<4	8	9	<4	7	3	4	<2	20	14	3	<1	6	20	70	0.8	<0.1	2.50	0.641
R128W	4	20	16	<4	19	8	8	2	46	29	8	1	9	15	500	1.5	<0.1	6.35	1.330
R129W	<4	14	12	<4	12	5	<4	<2	26	15	5	<1	7	10	20	1.0	<0.1	4.45	0.627
R130W	5	13	12	<4	13	14	12	3	28	48	9	1	11	10	100	4.2	<0.1	2.70	1.130
R131W	<4	7	7	<4	6	3	<4	<2	18	6	2	<1	3	<10	50	0.7	<0.1	1.50	0.525
R132G	<4	11	14	<4	10	5	<4	<2	26	21	5	<1	7	20	50	0.9	<0.1	2.00	0.953
R133W	10	31	35	7	25	28	10	7	74	44	14	2	26	70	500	2.2	<0.1	8.53	1.740
R134W	7	23	21	<4	19	13	18	5	57	67	11	2	9	30	500	2.2	<0.1	5.52	1.820
R135G	8	27	25	6	23	15	14	6	58	49	12	2	15	30	300	2.2	<0.1	7.55	1.860
R136G	5	15	16	<4	12	9	6	3	48	27	7	<1	8	20	100	2.4	<0.1	3.83	0.770
R137W	<4	15	12	<4	12	4	8	2	32	21	6	<1	4	15	100	1.0	<0.1	3.20	1.080
R138W	6	21	19	6	19	13	8	4	69	34	11	2	13	30	150	1.9	0.1	4.00	1.620
R139W	5	16	13	<4	16	15	43	4	36	150	8	1	13	50	200	8.8	0.3	3.00	1.480

Table 3. Continued

Sample ID	Lat.	Long.	County	ICP Al %	ICP Ca %	ICP Fe %	ICP K %	ICP Mg %	ICP Na %	ICP P %	ICP Ti %	ICP Mn PPM	ICP Ba PPM	ICP Be PPM	ICP Ce PPM	ICP Co PPM	ICP Cr PPM	ICP Cu PPM	ICP Eu PPM
R140G	35 36 34	97 21 45	Oklahoma	0.99	0.04	3.50	0.19	0.07	0.03	0.009	0.07	470	66	<1	28	6	37	6	<2
R141G	35 32 11	97 17 16	Oklahoma	1.50	0.08	1.40	0.24	0.11	0.02	<0.005	0.07	1100	160	<1	24	23	23	3	<2
R142G	35 32 12	97 20 05	Oklahoma	2.10	0.04	1.90	0.47	0.17	0.07	0.007	0.14	270	100	1	33	10	32	13	<2
R143G	35 33 54	97 11 35	Oklahoma	1.00	0.03	0.55	0.18	0.06	0.02	0.006	0.07	240	58	<1	24	4	17	5	<2
R144W	35 33 54	97 09 17	Oklahoma	1.70	0.02	1.50	0.29	0.08	0.02	0.007	0.12	110	78	<1	31	5	36	9	<2
R145W	35 33 33	97 08 26	Oklahoma	2.30	0.02	1.70	0.34	0.11	0.03	0.010	0.19	190	85	<1	57	6	39	7	<2
R146G	35 33 03	97 11 12	Oklahoma	1.90	0.06	1.00	0.33	0.12	0.03	0.009	0.11	210	160	<1	28	5	31	9	<2
R147G	35 34 44	97 10 35	Oklahoma	1.10	0.09	0.64	0.22	0.07	0.10	<0.005	0.12	9200	390	<1	44	18	22	6	<2
R148W	35 36 02	97 09 29	Oklahoma	1.40	0.47	1.10	0.20	0.18	0.02	0.100	0.11	230	62	<1	36	5	29	9	<2
R149G	35 27 51	97 19 27	Oklahoma	2.30	0.07	0.75	0.55	0.17	0.03	0.008	0.19	61	120	<1	43	5	19	6	<2
R150G	35 28 27	97 20 06	Oklahoma	0.78	0.03	1.50	0.20	0.07	0.02	<0.005	0.07	840	130	<1	17	13	9	9	<2
R151G	35 27 41	97 16 56	Oklahoma	1.20	0.07	0.66	0.22	0.11	0.02	0.006	0.06	59	83	<1	23	4	6	8	<2
R152G	35 27 30	97 16 56	Oklahoma	0.82	0.02	5.20	0.17	0.07	0.02	0.010	0.05	1200	160	1	20	34	18	8	<2
R153G	35 27 30	97 16 56	Oklahoma	6.10	0.03	2.80	1.30	0.35	0.06	0.020	0.44	160	240	2	90	18	100	15	<2
R154G	35 27 30	97 16 56	Oklahoma	0.79	0.01	0.58	0.16	0.06	0.01	<0.005	0.05	120	47	<1	19	7	4	3	<2
R155G	35 26 59	97 14 47	Oklahoma	1.40	0.05	0.76	0.25	0.10	0.02	0.006	0.07	92	68	<1	18	5	6	2	<2
R156G	35 28 44	97 13 11	Oklahoma	5.30	0.16	2.40	1.00	0.52	0.08	0.010	0.32	100	690	2	65	17	92	9	<2
R157G	35 27 01	97 09 31	Oklahoma	2.80	0.06	1.70	0.51	0.13	0.03	0.007	0.21	130	120	<1	47	6	30	11	<2
R158G	35 25 13	97 06 01	Pottawatomie	3.90	0.06	1.50	0.82	0.22	0.06	0.020	0.32	150	220	1	71	11	39	11	<2
R159W	35 26 58	97 02 44	Pottawatomie	2.80	0.07	0.96	0.48	0.15	0.03	0.010	0.23	44	120	<1	53	6	29	5	<2
R160W	35 27 49	97 02 54	Lincoln	1.70	0.04	0.23	0.26	0.09	0.02	0.007	0.14	300	100	<1	37	4	8	4	<2
R161W	35 25 51	97 00 01	Pottawatomie	4.10	0.09	2.40	0.63	0.30	0.15	0.010	0.25	150	430	2	73	20	32	5	<2
R162O	35 28 41	96 58 53	Lincoln	2.40	0.06	1.80	0.29	0.21	0.15	0.008	0.15	460	91	<1	64	9	37	7	<2
R163O	35 28 51	96 55 46	Lincoln	2.50	1.70	1.60	0.36	1.10	0.34	0.030	0.17	930	76	1	48	9	33	8	<2
R164O	35 28 41	96 54 56	Lincoln	4.10	0.38	0.74	0.85	0.66	0.58	0.020	0.22	130	170	1	43	10	38	11	<2
R165O	35 28 41	96 54 56	Lincoln	1.80	0.11	0.55	0.17	0.08	0.37	0.007	0.10	310	53	<1	22	3	16	3	<2
R166O	35 27 07	96 50 28	Lincoln	4.60	0.12	2.10	0.63	0.36	0.11	0.010	0.19	64	170	1	42	9	54	15	<2
R167V	35 28 23	96 46 13	Lincoln	2.20	3.00	0.78	0.35	1.90	0.36	0.020	0.13	1600	200	<1	36	7	25	15	<2
R168V	35 32 20	96 46 14	Lincoln	3.60	0.17	0.92	0.83	0.50	0.62	0.020	0.19	110	160	1	46	11	40	23	<2
R169V	35 33 01	96 49 45	Lincoln	5.00	0.53	3.80	1.00	0.60	0.37	0.020	0.32	120	220	2	76	16	74	11	<2
R170O	35 34 44	96 51 40	Lincoln	5.00	0.39	0.96	1.10	0.66	0.43	0.040	0.29	200	210	2	67	12	64	8	<2
R171O	35 34 27	96 53 02	Lincoln	3.20	0.19	0.47	0.61	0.12	0.77	0.008	0.06	71	140	<1	22	5	17	6	<2
R172O	35 33 44	96 58 53	Lincoln	2.30	0.06	0.71	0.28	0.17	0.14	0.007	0.17	40	67	<1	36	7	25	8	<2
R173O	35 33 02	96 59 12	Lincoln	1.20	0.05	0.40	0.14	0.09	0.10	0.006	0.08	28	54	<1	28	4	17	9	<2
R174G	35 32 09	97 04 06	Lincoln	1.90	0.03	1.30	0.27	0.12	0.04	0.008	0.12	47	57	<1	34	6	24	7	<2

Table 3. Continued

Sample ID	ICP Ga PPM	ICP La PPM	ICP Li PPM	ICP Nb PPM	ICP Nd PPM	ICP Ni PPM	ICP Pb PPM	ICP Sc PPM	ICP Sr PPM	ICP V PPM	ICP Y PPM	ICP Yb PPM	ICP Zn PPM	AES B PPM	AES Zr PPM	HGAAS As PPM	HGAAS Se PPM	DNAA Th PPM	DNAA U PPM
R140G	<4	13	9	<4	12	7	44	2	44	65	7	<1	8	10	300	5.8	0.3	4.64	1.150
R141G	<4	8	9	<4	9	6	11	3	24	31	5	<1	8	10	50	2.7	0.1	3.10	0.737
R142G	6	15	12	<4	14	17	15	4	40	32	8	1	22	15	100	10.0	0.1	3.50	1.330
R143G	<4	9	10	<4	9	5	7	<2	35	14	5	<1	6	10	300	1.0	<0.1	2.50	0.612
R144W	<4	14	13	<4	13	6	15	3	47	36	5	<1	7	10	100	2.0	<0.1	4.08	1.130
R145W	5	24	19	<4	24	12	21	4	62	40	12	2	10	15	500	2.7	0.1	8.49	2.030
R146G	<4	14	18	<4	11	11	7	3	42	29	7	<1	10	10	70	2.1	<0.1	4.85	0.937
R147G	6	18	12	<4	23	8	9	6	31	22	24	3	9	15	200	0.9	0.1	5.09	1.270
R148W	<4	15	13	<4	19	6	15	3	49	26	24	1	5	<10	150	2.4	<0.1	3.10	1.040
R149G	5	20	17	4	20	12	<4	4	47	29	10	1	16	20	300	2.8	<0.1	5.88	1.450
R150G	<4	7	8	<4	7	16	14	3	19	30	5	<1	19	<10	500	6.3	0.1	2.80	0.749
R151G	4	9	10	<4	9	6	5	2	20	17	5	<1	12	<10	30	2.3	<0.1	2.30	0.512
R152G	<4	6	7	<4	5	15	48	<2	15	62	4	<1	53	10	150	11.0	0.2	2.80	1.010
R153G	15	41	31	12	40	29	28	10	100	75	22	3	46	30	500	7.7	0.1	12.40	2.850
R154G	<4	8	8	<4	7	7	9	<2	14	15	4	<1	12	<10	150	3.3	<0.1	2.80	0.534
R155G	<4	9	10	<4	8	8	5	<2	23	19	5	<1	10	<10	30	2.0	<0.1	2.90	0.491
R156G	14	29	34	8	26	36	8	10	78	52	16	2	32	30	150	2.0	0.1	9.20	1.840
R157G	7	20	17	<4	20	11	21	5	56	54	12	2	11	20	200	2.4	0.1	6.71	1.740
R158G	10	32	29	9	33	26	7	6	100	48	20	2	25	20	500	3.2	<0.1	9.17	2.320
R159W	7	24	17	6	24	13	5	5	89	32	12	2	15	20	300	2.4	<0.1	7.59	1.510
R160W	4	16	14	<4	18	9	<4	3	44	26	9	1	8	15	150	0.8	<0.1	3.60	1.120
R161W	10	29	29	6	29	25	10	6	93	58	16	2	17	20	500	4.2	0.1	8.33	1.920
R1620	6	20	19	4	21	22	7	3	33	48	9	1	9	15	70	1.0	<0.1	5.84	1.040
R1630	6	23	18	<4	20	12	10	6	48	42	12	1	9	30	300	5.2	<0.1	5.31	1.560
R1640	10	19	30	5	18	21	4	6	69	48	11	1	24	30	150	0.6	<0.1	6.76	1.810
R1650	4	13	10	<4	12	5	<4	<2	37	22	10	<1	3	<10	<10	0.8	<0.1	2.60	0.684
R1660	11	19	33	5	18	23	8	6	40	57	11	1	26	10	150	4.0	0.2	7.32	1.740
R167V	5	19	16	<4	16	10	7	4	70	26	11	1	7	20	700	2.2	<0.1	5.58	1.550
R168V	8	19	22	4	22	21	<4	5	77	39	13	2	34	20	70	0.9	<0.1	7.23	1.220
R169V	14	35	46	8	34	32	9	9	110	93	19	2	32	30	200	3.1	0.1	11.00	2.710
R1700	12	32	39	6	32	29	5	8	110	72	18	2	31	50	200	2.6	0.1	9.28	2.500
R1710	6	10	13	<4	9	9	5	3	90	23	5	<1	8	<10	70	5.2	<0.1	3.20	0.713
R1720	6	17	20	<4	17	16	<4	4	41	26	9	1	10	10	100	1.0	<0.1	4.69	1.010
R1730	<4	13	12	<4	11	9	<4	<2	33	13	6	<1	6	20	30	0.7	<0.1	3.46	0.669
R174G	5	14	17	<4	15	10	8	3	48	27	7	<1	9	10	150	3.6	<0.1	4.68	1.400

Table 3. Continued

Sample ID	Lat.	Long.	County	ICP Al %	ICP Ca %	ICP Fe %	ICP K %	ICP Mg %	ICP Na %	ICP P %	ICP Ti %	ICP Mn PPM	ICP Ba PPM	ICP Be PPM	ICP Ce PPM	ICP Co PPM	ICP Cr PPM	ICP Cu PPM	ICP Eu PPM
R175G	35 31 08	97 05 18	Lincoln	2.60	0.02	1.50	0.42	0.12	0.03	0.007	0.26	430	120	<1	110	9	68	10	<2
R176H	35 15 42	97 25 23	Cleveland	3.10	4.70	0.93	0.71	2.90	1.20	0.030	0.17	1100	330	<1	44	6	14	9	<2
R177G	35 15 59	97 23 16	Cleveland	0.98	0.04	0.50	0.28	0.09	0.12	0.007	0.08	36	87	<1	20	3	14	11	<2
R178G	35 18 18	97 23 29	Cleveland	1.50	1.70	0.76	0.38	1.10	0.24	0.006	0.11	600	91	<1	28	4	9	3	<2
R179H	35 20 55	97 26 11	Cleveland	1.70	2.80	0.82	0.28	1.70	0.32	0.008	0.11	810	140	<1	26	4	12	3	<2
R180H	35 20 56	97 24 44	Cleveland	2.30	3.30	1.20	0.44	2.00	0.33	0.010	0.14	780	150	<1	35	6	32	10	<2
R181G	35 20 54	97 23 10	Cleveland	1.30	0.12	0.66	0.28	0.14	0.20	<0.005	0.08	510	140	<1	17	3	17	18	<2
R182G	35 21 47	97 19 37	Cleveland	2.40	0.07	2.20	0.59	0.28	0.13	0.010	0.16	110	180	<1	46	7	41	9	<2
R183G	35 21 47	97 19 37	Cleveland	0.50	0.02	0.44	0.11	0.04	0.01	<0.005	0.05	78	59	<1	15	2	12	3	<2
R184G	35 21 47	97 16 39	Cleveland	1.90	0.02	1.10	0.41	0.13	0.03	0.009	0.16	71	100	<1	37	5	38	29	<2
R185G	35 19 09	97 17 03	Cleveland	3.10	0.04	1.50	0.62	0.20	0.03	0.010	0.19	170	420	<1	46	8	59	11	<2
R186G	35 18 04	97 20 07	Cleveland	1.10	3.00	0.65	0.33	1.80	0.03	<0.005	0.08	910	75	<1	23	6	20	5	<2
R187G	35 16 35	97 18 19	Cleveland	1.70	0.01	0.83	0.41	0.14	0.02	0.007	0.11	52	660	<1	33	5	28	7	<2
R188G	35 17 56	97 16 56	Cleveland	1.30	0.02	0.56	0.23	0.08	0.02	0.007	0.09	31	64	<1	19	3	21	11	<2
R189G	35 21 45	97 12 40	Cleveland	3.20	0.03	3.30	0.56	0.18	0.03	0.010	0.19	140	140	1	49	9	61	11	<2
R190G	35 21 45	97 09 46	Cleveland	1.60	0.03	2.20	0.32	0.10	0.02	0.009	0.07	150	120	<1	22	5	14	8	<2
R191G	35 19 08	97 09 36	Cleveland	2.80	0.08	1.30	0.41	0.15	0.04	0.010	0.20	60	110	<1	79	6	40	7	<2
R192G	35 19 08	97 12 39	Cleveland	0.53	0.02	0.40	0.13	0.03	0.01	<0.005	0.05	28	48	<1	14	2	1	11	<2
R193G	35 16 32	97 12 21	Cleveland	3.10	0.01	4.80	0.70	0.19	0.03	0.010	0.19	630	330	2	58	13	52	14	<2
R194G	35 16 32	97 12 19	Cleveland	0.90	0.01	0.86	0.19	0.04	0.01	<0.005	0.06	80	76	<1	17	5	4	9	<2
R195G	35 16 31	97 09 31	Cleveland	1.30	0.08	0.66	0.28	0.07	0.02	0.007	0.09	300	120	<1	33	5	10	15	<2
R196G	35 15 39	97 06 17	Pottawatomie	2.30	2.40	2.10	0.48	1.50	0.07	0.010	0.17	1300	720	<1	41	9	41	12	<2
R197W	35 15 38	97 03 44	Pottawatomie	0.73	0.03	0.48	0.16	0.04	0.01	<0.005	0.05	270	75	<1	17	2	4	3	<2
R198W	35 17 36	97 01 05	Pottawatomie	1.50	0.06	0.74	0.45	0.08	0.04	0.008	0.09	54	120	<1	30	3	21	7	<2
R199W	35 18 14	97 02 28	Pottawatomie	1.00	0.05	0.46	0.18	0.08	0.02	0.006	0.07	27	4200	<1	22	7	7	7	<2
R200W	35 18 15	97 04 54	Pottawatomie	1.30	0.03	1.00	0.22	0.07	0.02	0.006	0.07	370	120	<1	22	10	7	5	<2
R201G	35 17 28	97 05 21	Pottawatomie	1.20	0.02	0.49	0.23	0.07	0.02	0.006	0.06	16	79	<1	17	2	6	10	<2
R202G	35 17 22	97 06 40	Pottawatomie	1.70	0.06	1.10	0.28	0.09	0.02	0.007	0.13	67	76	<1	26	4	28	6	<2
R203G	35 17 54	97 07 27	Pottawatomie	1.30	0.03	0.93	0.23	0.07	0.02	0.007	0.14	33	110	<1	28	4	33	11	<2
R204G	35 20 24	97 08 30	Pottawatomie	1.20	0.03	1.90	0.25	0.08	0.02	0.008	0.07	97	120	<1	20	4	26	12	<2
R205G	35 21 45	97 07 58	Pottawatomie	1.10	0.02	0.44	0.24	0.06	0.02	0.006	0.07	30	72	<1	18	3	17	12	<2
R206O	35 24 19	96 58 46	Pottawatomie	2.50	3.40	0.26	0.34	2.00	0.19	0.009	0.14	2600	170	<1	37	7	34	9	<2
R207O	35 22 35	96 53 47	Pottawatomie	0.71	0.17	0.09	0.07	0.10	0.13	<0.005	0.05	150	36	<1	15	2	3	15	<2
R208V	35 24 20	96 51 56	Pottawatomie	2.70	5.00	1.10	0.31	2.90	0.52	0.040	0.12	2500	75	<1	38	9	29	6	<2
R209V	35 23 50	96 48 24	Pottawatomie	1.10	0.05	0.32	0.11	0.06	0.06	<0.005	0.10	140	48	<1	21	2	4	31	<2

Table 3. Continued

Sample ID	ICP Ga PPM	ICP La PPM	ICP Li PPM	ICP Nb PPM	ICP Nd PPM	ICP Ni PPM	ICP Pb PPM	ICP Sc PPM	ICP Sr PPM	ICP V PPM	ICP Y PPM	ICP Yb PPM	ICP Zn PPM	AES B PPM	AES Zr PPM	HGAAS As PPM	HGAAS Se PPM	DNAA Th PPM	DNAA U PPM
R175G	7	46	18	<4	48	11	20	6	53	43	28	4	11	20	1000	2.2	0.1	16.40	6.920
R176H	5	21	19	<4	21	8	6	5	72	37	15	2	5	20	100	2.3	<0.1	7.14	1.860
R177G	<4	10	12	<4	12	7	<4	<2	30	12	5	<1	7	<10	30	4.8	<0.1	2.30	0.479
R178G	<4	16	12	<4	15	7	5	3	37	19	11	1	5	15	300	2.0	<0.1	3.75	1.210
R179H	<4	15	17	<4	13	8	5	3	42	28	9	1	5	15	200	2.0	<0.1	4.03	1.150
R180H	6	20	19	<4	19	13	6	4	53	27	12	2	11	20	300	3.5	<0.1	5.15	1.270
R181G	<4	9	12	<4	10	7	5	<2	26	15	6	<1	11	10	150	2.0	<0.1	1.70	0.595
R182G	5	23	16	<4	24	17	6	4	57	33	13	2	20	20	1000	5.0	0.1	5.92	1.500
R183G	<4	8	6	<4	8	4	<4	<2	16	8	4	<1	12	<10	70	2.2	<0.1	1.90	0.422
R184G	<4	17	12	<4	16	12	8	3	44	21	10	1	20	20	1000	2.2	<0.1	4.31	1.360
R185G	7	22	19	4	22	17	15	5	82	48	11	1	22	30	300	2.5	0.1	6.20	1.230
R186G	<4	13	9	<4	13	7	4	4	30	18	10	1	4	15	500	3.2	<0.1	3.00	0.615
R187G	<4	18	11	<4	18	10	<4	3	46	18	10	1	13	15	100	2.9	0.1	3.38	0.832
R188G	<4	9	10	<4	10	7	4	<2	36	15	5	<1	9	<10	70	2.0	<0.1	2.90	0.627
R189G	9	23	16	4	23	17	12	6	66	49	12	2	24	30	500	6.4	0.2	6.15	1.740
R190G	4	9	10	<4	10	8	21	3	32	40	5	<1	14	50	50	2.5	<0.1	2.60	0.647
R191G	6	21	23	5	22	13	6	5	45	31	12	2	11	20	150	3.2	<0.1	6.74	1.080
R192G	<4	7	7	<4	5	3	7	<2	19	8	3	<1	6	<10	20	1.0	<0.1	1.80	0.367
R193G	9	22	17	5	23	16	46	6	65	92	11	2	20	30	70	4.0	0.1	5.36	1.190
R194G	<4	7	7	<4	7	7	9	<2	17	18	3	<1	10	<10	100	2.9	<0.1	2.10	0.510
R195G	<4	13	10	<4	13	9	8	2	37	26	6	<1	9	<10	30	2.2	<0.1	3.20	0.803
R196G	6	19	19	<4	18	11	18	5	52	46	12	2	7	30	1000	3.3	<0.1	6.23	1.560
R197W	<4	8	8	<4	8	9	5	<2	20	13	5	<1	6	<10	50	1.0	<0.1	2.00	0.397
R198W	<4	15	12	<4	17	8	4	3	50	24	9	1	7	10	500	2.6	<0.1	3.98	0.631
R199W	<4	10	9	<4	10	7	<4	<2	220	13	5	<1	7	<10	70	1.0	<0.1	2.00	0.741
R200W	<4	9	11	<4	8	10	9	2	35	20	4	<1	7	10	70	1.0	<0.1	3.00	0.513
R201G	<4	8	10	<4	9	6	<4	<2	27	14	5	<1	7	10	70	1.0	<0.1	2.50	0.632
R202G	<4	11	13	<4	10	7	9	3	37	31	6	<1	8	15	150	2.6	<0.1	3.30	1.070
R203G	<4	13	9	<4	12	6	7	2	20	20	8	1	10	30	1000	2.4	0.1	5.69	1.920
R204G	<4	9	8	<4	9	8	18	2	23	33	5	<1	9	20	200	4.9	<0.1	2.80	0.774
R205G	<4	8	9	<4	7	5	5	<2	24	33	4	<1	8	10	20	2.0	<0.1	2.00	0.921
R206O	7	19	18	<4	18	10	<4	5	57	56	15	2	5	10	150	1.0	<0.1	3.90	2.460
R207O	<4	8	6	<4	5	4	<4	<2	21	8	3	<1	3	10	100	0.3	<0.1	2.30	0.531
R208V	7	21	15	<4	21	10	7	6	79	30	17	2	4	20	200	2.0	<0.1	5.23	1.060
R209V	<4	10	7	<4	8	5	<4	<2	25	11	4	<1	11	15	150	0.7	<0.1	3.41	0.559

Table 3. Continued

Sample ID	Lat.	Long.	County	ICP Al %	ICP Ca %	ICP Fe %	ICP K %	ICP Mg %	ICP Na %	ICP P %	ICP Ti %	ICP Mn PPM	ICP Ba PPM	ICP Be PPM	ICP Ce PPM	ICP Co PPM	ICP Cr PPM	ICP Cu PPM	ICP Eu PPM
R210V	35 19 59	96 48 34	Pottawatomie	1.90	0.10	0.64	0.27	0.20	0.33	0.010	0.15	39	84	<1	27	5	15	24	<2
R211W	35 19 07	97 04 08	Pottawatomie	2.80	0.06	1.50	0.46	0.15	0.03	0.010	0.16	45	140	<1	54	6	27	11	<2
R212O	35 18 14	96 58 58	Pottawatomie	1.90	0.04	0.27	0.35	0.08	0.10	<0.005	0.08	200	110	<1	21	8	3	13	<2
R213W	35 15 39	96 58 27	Pottawatomie	2.50	0.05	1.30	0.52	0.16	0.05	0.010	0.12	89	120	<1	38	6	25	7	<2
R214O	35 15 38	96 53 30	Pottawatomie	1.70	0.10	0.48	0.34	0.06	0.23	0.006	0.07	100	110	<1	20	2	9	7	<2
R215O	35 16 58	96 50 32	Pottawatomie	1.20	0.07	0.26	0.21	0.09	0.19	<0.005	0.13	180	71	<1	25	2	19	14	<2
R216O	35 16 40	96 47 20	Pottawatomie	1.50	0.08	0.65	0.13	0.07	0.22	0.007	0.07	1600	83	<1	21	4	6	22	<2
R217V	35 14 41	96 48 25	Pottawatomie	2.50	3.30	0.80	0.47	1.50	0.55	0.010	0.14	1400	360	<1	28	7	23	9	<2
R218V	35 13 52	96 51 41	Pottawatomie	11.00	0.43	2.40	1.60	1.80	0.13	0.050	0.55	120	230	4	89	38	150	55	<2
R219V	35 13 52	96 51 41	Pottawatomie	2.30	14.00	2.10	0.43	5.80	0.17	0.020	0.10	6500	95	<1	67	25	18	56	2
R220V	35 13 52	96 51 41	Pottawatomie	2.00	1.00	1.70	0.58	0.46	0.37	0.020	0.07	6400	540	<1	46	16	18	91	<2
R221O	35 14 23	96 52 38	Pottawatomie	1.90	0.14	3.40	0.47	0.07	0.55	0.008	0.09	41	130	<1	18	4	12	<1	<2
R222O	35 14 09	96 53 41	Pottawatomie	2.70	0.11	0.87	0.37	0.20	0.41	0.009	0.10	120	86	<1	30	7	29	4	<2
R223O	35 12 35	96 56 29	Pottawatomie	1.40	0.07	0.80	0.28	0.07	0.16	0.005	0.07	2000	270	<1	30	5	15	5	<2
R224W	35 13 48	96 56 58	Pottawatomie	2.50	0.01	1.80	0.48	0.12	0.05	0.010	0.14	58	110	<1	40	6	40	6	<2
R225W	35 13 03	96 59 50	Pottawatomie	1.70	0.04	0.43	0.33	0.09	0.12	0.008	0.10	31	71	<1	35	4	7	3	<2
R226W	35 13 03	97 01 10	Pottawatomie	2.00	0.04	1.60	0.69	0.11	0.11	0.010	0.10	99	200	<1	26	4	31	7	<2
R227W	35 13 03	97 02 00	Pottawatomie	1.30	0.70	0.77	0.27	0.08	0.05	0.006	0.10	52	210	<1	28	3	9	4	<2
R228W	35 11 24	97 03 14	Pottawatomie	2.10	0.84	1.10	0.47	0.55	0.13	0.020	0.16	550	110	<1	43	8	29	9	<2
R229O	35 08 42	96 59 37	Pottawatomie	1.30	0.50	0.69	0.23	0.34	0.14	0.006	0.10	300	2300	<1	28	6	6	12	<2
R230O	35 10 15	96 54 51	Pottawatomie	2.20	0.16	0.38	0.52	0.08	0.60	0.009	0.06	420	210	<1	17	3	2	5	<2
R231O	35 13 30	96 53 42	Pottawatomie	1.80	13.00	1.10	0.54	6.20	0.32	0.020	0.07	5300	140	<1	44	8	5	6	<2
R232V	35 09 27	96 49 07	Pottawatomie	2.70	0.20	0.36	0.80	0.08	0.72	0.006	0.06	42	220	<1	18	3	<1	3	<2
R233V	35 12 24	96 49 34	Pottawatomie	2.00	5.20	0.99	0.46	3.00	0.38	0.010	0.10	3300	96	<1	38	11	21	70	<2
R234O	35 07 48	96 50 47	Pottawatomie	1.80	0.09	0.37	0.41	0.11	0.28	0.006	0.11	69	110	<1	28	4	9	5	<2
R235O	35 08 42	96 53 55	Pottawatomie	3.40	2.00	0.52	0.95	1.30	0.47	0.020	0.16	700	230	<1	35	7	12	9	<2
R236O	35 08 08	96 53 48	Pottawatomie	2.10	0.14	0.93	0.56	0.15	0.34	0.008	0.17	630	150	<1	44	7	10	3	<2
R237O	35 08 08	96 53 48	Pottawatomie	2.80	14.00	2.60	0.63	7.30	0.20	0.090	0.12	5000	130	1	80	13	26	4	5
R238O	35 06 56	96 52 08	Pottawatomie	1.20	0.07	0.56	0.24	0.10	0.14	<0.005	0.09	270	120	<1	24	4	19	1	<2
R239V	35 04 06	96 48 32	Pottawatomie	2.20	2.40	0.40	0.38	1.30	0.48	0.010	0.18	910	130	<1	42	9	12	25	<2
R240V	35 03 28	96 49 20	Pottawatomie	2.90	6.80	0.52	0.70	3.80	0.56	0.020	0.17	2000	850	<1	35	9	16	5	<2
R241O	35 02 11	96 50 39	Pottawatomie	3.30	0.24	0.12	1.40	0.05	0.95	0.008	0.04	54	380	<1	14	3	<1	4	<2
R242V	35 35 53	96 48 32	Pottawatomie	3.30	0.58	0.53	0.85	0.19	0.66	0.006	0.11	160	220	<1	29	8	9	10	<2
R243V	35 04 01	96 45 27	Seminole	2.20	0.15	0.54	0.49	0.13	0.37	0.006	0.09	67	130	<1	27	4	7	22	<2
R244O	35 04 23	96 53 28	Pottawatomie	3.00	4.40	0.63	0.79	2.10	0.88	0.020	0.10	1100	190	<1	26	7	13	3	<2

Table 3. Continued

Sample ID	ICP Ga PPM	ICP La PPM	ICP Li PPM	ICP Nb PPM	ICP Nd PPM	ICP Ni PPM	ICP Pb PPM	ICP Sc PPM	ICP Sr PPM	ICP V PPM	ICP Y PPM	ICP Yb PPM	ICP Zn PPM	AES B PPM	AES Zr PPM	HGAAS As PPM	HGAAS Se PPM	DNAA Th PPM	DNAA U PPM
R210V	<4	12	14	6	12	12	<4	3	22	19	7	1	21	10	150	2.4	<0.1	3.10	1.320
R211W	6	22	18	4	22	15	6	5	77	31	12	2	13	20	200	2.0	<0.1	5.89	1.050
R212O	<4	9	12	<4	8	8	6	2	36	48	4	<1	6	<10	100	0.9	<0.1	2.70	2.530
R213W	6	16	17	<4	17	13	8	5	58	35	14	2	11	30	200	2.4	0.1	4.34	0.966
R214O	<4	10	9	<4	10	5	4	<2	35	17	4	<1	6	<10	70	8.8	<0.1	1.80	0.598
R215O	<4	11	12	<4	11	7	<4	<2	20	15	6	<1	7	10	200	1.0	<0.1	3.89	1.220
R216O	<4	10	8	<4	9	6	4	<2	24	26	7	<1	14	<10	15	1.0	0.1	3.00	1.260
R217V	6	16	16	<4	16	10	10	4	52	28	14	1	35	10	150	0.7	<0.1	2.70	2.350
R218V	26	44	73	16	46	74	15	18	79	120	23	3	64	30	100	8.2	0.1	15.40	4.480
R219V	10	39	15	<4	46	18	9	8	81	47	37	3	14	<10	100	9.3	<0.1	5.53	2.980
R220V	7	24	9	<4	32	16	7	4	53	38	29	2	16	<10	100	12.0	<0.1	3.70	1.980
R221O	4	8	9	<4	9	6	10	2	48	39	4	<1	7	20	150	1.0	<0.1	<2.00	2.020
R222O	6	14	18	<4	15	14	4	3	71	25	5	<1	16	<10	30	2.0	<0.1	4.39	0.644
R223O	4	11	13	<4	10	10	<4	2	41	19	5	<1	6	<10	20	2.0	<0.1	2.60	0.522
R224W	6	16	18	<4	19	10	10	5	62	39	11	1	9	10	300	2.0	0.1	4.94	1.280
R225W	4	16	12	<4	16	7	<4	2	46	18	8	<1	9	10	300	1.0	0.1	5.42	1.160
R226W	5	14	10	<4	14	6	7	3	56	36	7	<1	10	<10	200	2.6	0.1	3.50	0.972
R227W	<4	13	12	<4	12	7	<4	<2	43	23	7	<1	7	<10	100	2.0	<0.1	3.60	0.985
R228W	5	18	16	<4	18	11	12	4	48	34	12	1	14	15	300	3.7	0.3	5.79	1.810
R229O	<4	13	11	<4	13	6	6	2	55	18	6	<1	9	<10	300	2.1	<0.1	3.50	1.030
R230O	<4	8	10	<4	7	5	4	<2	70	19	4	<1	5	<10	50	1.0	<0.1	2.10	0.423
R231O	7	34	10	<4	31	8	8	3	83	31	22	2	<2	<10	30	2.0	<0.1	3.40	0.626
R232V	<4	8	9	<4	9	4	6	<2	73	17	5	<1	7	<10	20	1.0	<0.1	1.80	0.707
R233V	6	25	13	<4	23	11	17	3	51	110	20	2	8	10	200	2.1	0.1	4.31	1.260
R234O	4	13	12	<4	14	7	4	2	36	44	8	<1	13	20	500	0.9	0.1	<2.50	4.000
R235O	8	19	20	<4	16	12	5	5	70	35	12	1	15	10	150	2.0	<0.1	4.73	1.630
R236O	5	21	13	<4	22	11	6	4	69	26	11	1	10	<10	1000	1.0	0.1	8.05	1.860
R237O	10	49	19	<4	75	13	11	7	120	86	73	4	8	15	50	7.4	0.1	5.90	1.130
R238O	<4	10	10	<4	11	8	<4	2	21	16	5	<1	8	<10	50	0.9	<0.1	2.60	0.657
R239V	5	21	14	<4	20	10	<4	4	44	34	15	2	19	10	1000	0.9	<0.1	8.21	4.260
R240V	7	18	21	<4	18	12	5	4	73	88	15	2	19	20	200	1.0	0.1	6.03	1.760
R241O	6	7	8	<4	8	4	7	<2	110	16	5	<1	5	<10	10	0.2	<0.1	1.40	0.476
R242V	6	16	16	<4	16	9	6	3	83	25	8	<1	17	<10	70	0.6	<0.1	2.30	0.506
R243V	4	12	15	<4	10	10	4	2	39	22	5	<1	23	<10	70	9.5	0.1	3.10	0.960
R244O	6	15	14	<4	14	9	6	3	88	24	10	1	8	<10	70	1.0	<0.1	2.50	0.577

Table 3. Continued

Sample ID	Lat.	Long.	County	ICP Al %	ICP Ca %	ICP Fe %	ICP K %	ICP Mg %	ICP Na %	ICP P %	ICP Ti %	ICP Mn PPM	ICP Ba PPM	ICP Be PPM	ICP Ce PPM	ICP Co PPM	ICP Cr PPM	ICP Cu PPM	ICP Eu PPM
R245W	35 01 01	96 54 23	Pottawatomie	1.80	0.10	0.36	0.61	0.06	0.38	<0.005	0.08	37	160	<1	24	3	3	3	<2
R246W	35 01 45	96 55 36	Pottawatomie	2.70	4.50	0.97	0.73	0.58	0.45	0.030	0.16	410	160	<1	38	6	32	4	<2
R247W	35 00 53	96 57 02	Pottawatomie	3.10	1.40	0.58	0.43	0.52	0.21	0.010	0.16	200	110	<1	59	9	12	28	<2
R248W	35 02 33	96 57 59	Pottawatomie	1.60	0.82	0.55	0.20	0.52	0.20	0.005	0.11	890	67	<1	26	5	8	5	<2
R249W	35 05 14	96 59 05	Pottawatomie	1.10	0.03	0.27	0.14	0.05	0.10	<0.005	0.09	140	55	<1	25	3	2	4	<2
R250W	35 04 55	97 02 13	Pottawatomie	1.70	0.05	0.61	0.36	0.08	0.17	0.006	0.09	28	340	<1	21	3	7	4	<2
R251W	35 00 52	97 03 04	Pottawatomie	1.20	0.04	2.10	0.13	0.07	0.04	0.010	0.07	72	81	<1	27	4	13	7	<2
R252W	35 01 51	97 05 20	Pottawatomie	1.50	0.02	0.58	0.24	0.09	0.05	0.006	0.12	37	71	<1	29	3	9	10	<2
R253G	35 02 39	97 09 02	Cleveland	1.20	0.04	0.30	0.28	0.06	0.06	<0.005	0.12	22	170	<1	23	2	6	8	<2
R254G	35 01 45	97 10 37	Cleveland	1.10	0.03	0.75	0.18	0.09	0.07	0.006	0.10	94	61	<1	31	3	9	4	<2
R255G	35 02 06	97 11 40	Cleveland	1.20	0.07	0.73	0.26	0.11	0.07	0.006	0.09	66	64	<1	27	3	7	<1	<2
R256G	35 02 02	97 12 45	Cleveland	1.20	0.06	0.63	0.24	0.10	0.12	0.006	0.09	110	160	<1	28	4	6	3	<2
R257G	35 04 36	97 10 38	Cleveland	3.00	0.24	1.70	0.68	0.33	0.09	0.010	0.23	130	140	<1	51	9	40	4	<2
R258G	35 05 16	97 12 57	Cleveland	1.10	0.03	0.60	0.27	0.08	0.06	0.006	0.11	37	88	<1	26	3	7	8	<2
R259H	34 53 25	97 15 54	McClain	2.10	3.90	0.99	0.26	0.20	0.10	0.009	0.11	670	160	<1	35	5	14	8	<2
R260G	34 54 35	97 12 45	McClain	1.90	0.43	0.68	0.24	0.20	0.15	0.008	0.13	4300	5000	<1	41	15	34	18	<2
R261W	34 53 54	97 09 40	McClain	1.20	0.06	1.40	0.19	0.07	0.09	0.007	0.11	1100	140	<1	30	4	21	15	<2
R262O	34 53 02	96 58 57	McClain	2.60	17.00	1.40	0.52	0.43	0.28	0.030	0.10	7800	170	<1	100	8	26	12	3
R263O	34 54 45	96 56 35	McClain	1.90	0.17	0.26	0.59	0.08	0.53	0.009	0.11	52	140	<1	20	2	15	20	<2
R264O	34 54 07	96 54 44	Pontotoc	2.80	7.30	0.46	0.37	0.96	1.00	0.010	0.07	950	88	<1	18	6	10	5	<2
R265V	34 54 42	96 50 51	Pontotoc	2.90	4.40	1.20	0.71	2.20	0.56	0.020	0.16	1600	120	<1	61	8	37	40	<2
R266V	34 54 42	96 50 51	Pontotoc	5.40	1.10	1.90	1.40	1.40	0.65	0.030	0.27	270	210	2	52	14	70	7	<2
R267V	34 55 07	96 46 29	Seminole	2.00	0.20	0.68	0.28	0.11	0.57	0.020	0.08	650	100	<1	20	5	14	11	<2
R268O	34 58 15	96 47 21	Pottawatomie	3.40	0.32	0.27	1.20	0.09	1.10	0.010	0.09	200	310	<1	17	4	13	10	<2
R269O	34 58 15	96 47 21	Pottawatomie	3.20	9.60	0.21	1.20	0.24	1.10	0.020	0.07	230	290	<1	12	6	3	24	<2
R270O	34 58 16	96 50 54	Pottawatomie	2.90	15.00	1.10	0.71	7.80	0.18	0.030	0.13	4700	120	<1	130	11	38	9	4
R271O	34 59 08	96 53 35	Pottawatomie	2.00	2.00	1.10	0.72	1.10	0.39	0.010	0.12	930	160	<1	26	6	13	9	<2
R272O	34 59 09	96 57 21	Pottawatomie	1.30	0.05	0.41	0.19	0.06	0.08	0.005	0.08	56	55	<1	20	2	9	14	<2
R273W	34 58 27	97 01 31	Pottawatomie	1.10	0.05	0.20	0.14	0.07	0.10	<0.005	0.09	130	52	<1	18	2	13	7	<2
R274W	34 58 15	97 04 11	Pottawatomie	2.00	17.00	1.90	0.06	8.30	0.07	0.007	0.08	13000	2500	<1	170	16	13	17	4
R275W	34 58 16	97 06 53	Pottawatomie	1.30	0.07	1.00	0.16	0.08	0.05	0.006	0.13	730	140	<1	39	4	14	7	<2
R276G	34 58 27	97 10 13	Cleveland	1.00	0.15	0.67	0.16	0.12	0.02	<0.005	0.07	150	430	<1	19	3	21	9	<2
R277G	34 59 08	97 16 34	Cleveland	5.30	0.67	3.00	1.20	1.10	0.47	0.030	0.30	450	270	2	70	15	56	14	<2
R278G	35 04 11	97 15 54	Cleveland	1.20	0.03	0.62	0.26	0.09	0.10	0.005	0.07	54	65	<1	22	3	18	9	<2
R279G	35 06 59	97 16 24	Cleveland	1.10	0.05	0.72	0.36	0.10	0.08	0.007	0.11	51	86	<1	32	3	16	20	<2

Table 3. Continued

Sample ID	ICP Ga PPM	ICP La PPM	ICP Li PPM	ICP Nb PPM	ICP Nd PPM	ICP Ni PPM	ICP Pb PPM	ICP Sc PPM	ICP Sr PPM	ICP V PPM	ICP Y PPM	ICP Yb PPM	ICP Zn PPM	AES B PPM	AES Zr PPM	HGAAS As PPM	HGAAS Se PPM	DNAA Th PPM	DNAA U PPM
R245W	<4	12	8	<4	11	4	6	<2	54	11	5	<1	5	<10	150	0.7	<0.1	2.70	0.577
R246W	6	19	15	<4	19	10	6	5	89	22	15	1	12	10	200	1.0	<0.1	6.27	1.390
R247W	7	20	29	<4	19	17	<4	6	66	40	10	1	16	<10	100	0.5	<0.1	6.38	1.460
R248W	4	12	13	<4	11	8	<4	3	33	16	7	<1	7	<10	200	0.6	<0.1	3.91	0.844
R249W	<4	11	9	<4	10	5	<4	<2	26	10	5	<1	5	<10	100	0.8	<0.1	3.44	0.713
R250W	<4	9	10	<4	9	6	<4	<2	35	16	5	<1	7	10	100	1.0	<0.1	3.41	0.559
R251W	<4	11	13	<4	11	7	6	<2	24	36	5	<1	5	15	30	0.7	<0.1	3.32	0.578
R252W	<4	12	15	<4	12	10	<4	2	33	18	6	<1	9	10	200	1.0	<0.1	3.20	0.832
R253G	<4	11	12	<4	12	5	4	<2	22	13	7	<1	6	10	200	0.8	<0.1	3.30	1.080
R254G	<4	13	13	<4	13	7	4	2	29	23	7	<1	8	10	1000	1.0	<0.1	3.75	1.070
R255G	<4	12	11	<4	13	8	5	<2	29	15	6	<1	6	10	150	1.0	<0.1	4.08	0.531
R256G	<4	13	13	<4	13	7	5	2	32	17	7	<1	7	10	200	2.0	<0.1	3.34	0.812
R257G	7	22	26	6	23	15	5	5	69	39	12	2	17	15	100	3.3	<0.1	7.10	1.350
R258G	<4	12	11	<4	12	6	<4	<2	31	14	7	<1	8	15	700	2.0	<0.1	3.88	1.330
R259H	<4	17	19	<4	15	11	5	3	35	28	9	1	11	10	100	2.0	<0.1	4.84	1.300
R260G	6	18	21	<4	17	12	12	3	110	120	13	1	17	10	500	1.7	<0.1	5.10	3.390
R261W	<4	12	12	<4	12	7	26	2	20	39	6	<1	11	<10	150	1.7	<0.1	3.50	1.020
R262O	10	81	14	<4	63	11	5	6	160	40	38	3	14	<10	70	3.3	0.1	4.70	1.840
R263O	<4	10	9	<4	7	3	100	<2	50	16	5	<1	18	<10	100	0.6	<0.1	3.20	1.120
R264O	4	12	9	<4	4	4	21	2	93	15	7	<1	29	<10	15	1.6	<0.1	2.00	0.854
R265V	7	28	21	<4	27	13	20	6	54	35	24	2	46	15	1000	2.0	<0.1	6.17	2.120
R266V	14	25	45	5	24	29	57	9	61	68	14	2	64	20	300	3.3	0.1	9.27	3.200
R267V	4	10	10	<4	10	6	29	2	50	18	9	<1	71	10	100	11.0	<0.1	<1.70	1.060
R268O	7	8	11	<4	7	6	12	<2	120	55	4	<1	16	<10	10	0.4	<0.1	3.10	1.410
R269O	6	8	10	<4	<4	5	18	<2	150	120	4	<1	21	<10	50	0.2	<0.1	<4.90	13.200
R270O	8	78	20	<4	82	17	7	8	77	48	54	4	19	15	50	1.5	<0.1	7.57	1.140
R271O	5	14	12	<4	11	8	9	4	66	20	9	1	9	15	50	1.4	<0.1	4.12	0.981
R272O	<4	9	9	<4	7	6	4	<2	16	17	5	<1	7	<10	100	0.5	<0.1	4.09	0.690
R273W	<4	9	10	<4	7	5	<4	<2	14	12	6	<1	6	<10	200	0.2	<0.1	2.70	1.130
R274W	8	86	12	<4	83	8	6	5	440	98	59	4	<2	20	15	11.0	0.1	8.94	0.910
R275W	<4	15	15	<4	15	13	7	3	24	24	9	1	6	10	200	2.0	0.1	4.70	1.410
R276G	<4	8	9	<4	7	5	4	<2	31	13	4	<1	7	10	30	1.3	<0.1	2.90	0.763
R277G	12	34	45	<4	31	31	14	9	100	62	20	2	36	50	300	7.6	<0.1	10.40	2.180
R278G	<4	10	12	<4	10	6	5	<2	29	16	5	<1	9	<10	70	1.5	<0.1	1.60	0.673
R279G	<4	16	10	<4	17	6	4	<2	33	14	9	1	10	10	150	1.7	<0.1	3.40	1.220

Table 3. Continued

Sample ID	Lat.	Long.	County	ICP Al %	ICP Ca %	ICP Fe %	ICP K %	ICP Mg %	ICP Na %	ICP P %	ICP Ti %	ICP Mn PPM	ICP Ba PPM	ICP Be PPM	ICP Ce PPM	ICP Co PPM	ICP Cr PPM	ICP Cu PPM	ICP Eu PPM
R280W	34 49 50	97 14 16	Garvin	2.00	0.06	0.51	0.43	0.20	0.25	0.010	0.14	62	95	<1	41	7	20	2100	<2
R281W	34 49 50	97 14 16	Garvin	3.00	0.09	1.20	0.59	0.26	0.51	0.010	0.19	97	130	<1	49	9	23	240	<2
R282G	34 51 17	97 14 15	Garvin	2.70	1.70	0.39	0.30	0.24	0.23	0.007	0.20	630	190	<1	52	8	44	51	<2
R283G	34 51 17	97 13 00	Garvin	0.87	0.06	0.38	0.11	0.05	0.02	<0.005	0.06	1900	470	<1	22	6	16	26	<2
R284W	34 50 24	97 08 45	Garvin	5.20	2.00	1.00	1.00	0.61	0.70	0.020	0.28	1800	1200	2	75	14	64	49	<2
R285O	34 50 23	97 06 06	Garvin	2.70	1.60	0.80	0.21	0.24	0.16	0.006	0.15	1300	5700	<1	45	14	40	12	<2
R286O	34 50 04	97 03 18	Garvin	1.60	1.90	0.28	0.37	0.04	0.34	0.006	0.08	2000	110	<1	27	3	6	39	<2
R287O	34 52 08	96 56 14	McClain	2.30	0.15	0.68	0.44	0.16	0.45	0.006	0.12	260	190	<1	27	4	12	35	<2
R288V	34 45 10	96 51 26	Pontotoc	4.80	11.00	0.93	2.40	0.71	1.70	0.030	0.14	730	590	1	30	6	9	28	<2
R289V	34 48 36	96 45 40	Pontotoc	5.60	6.00	0.48	2.80	0.25	2.10	0.020	0.08	270	720	1	23	5	2	11	<2
R290V	34 48 41	96 47 32	Pontotoc	5.20	6.00	1.30	2.00	3.00	2.10	0.040	0.15	830	440	2	38	7	14	14	<2
R291O	34 52 04	96 47 22	Pontotoc	2.10	0.19	0.76	0.24	0.20	0.52	0.020	0.13	500	77	<1	35	5	24	11	<2
R292W	34 46 05	97 13 11	Garvin	2.30	1.10	0.57	0.43	0.23	0.36	0.008	0.15	1400	78	<1	49	12	29	73	<2
R293G	35 26 04	97 29 07	Oklahoma	0.99	0.06	0.59	0.19	0.08	0.14	0.006	0.09	310	92	<1	35	5	14	7	<2
R294G	35 30 30	97 27 35	Oklahoma	2.00	3.40	0.98	0.48	2.00	0.33	0.009	0.14	1100	1700	<1	37	9	15	5	<2
R295G	35 33 13	97 27 18	Oklahoma	1.30	1.10	1.30	0.34	0.51	0.07	0.007	0.08	360	89	<1	24	4	29	6	<2
R296G	35 35 45	97 25 45	Oklahoma	0.74	0.23	0.29	0.17	0.15	0.07	0.010	0.08	160	58	<1	20	2	6	<1	<2
R297G	35 37 29	97 25 27	Oklahoma	0.59	0.03	0.31	0.15	0.05	0.05	<0.005	0.10	190	71	<1	21	3	9	8	<2
R298G	35 39 58	97 25 16	Oklahoma	0.94	0.05	0.28	0.22	0.07	0.07	0.005	0.09	83	67	<1	21	3	12	3	<2
R299G	35 41 45	97 24 55	Oklahoma	0.51	0.02	0.34	0.11	0.03	0.04	<0.005	0.05	48	42	<1	15	2	4	9	<2
R300G	35 43 42	97 24 56	Logan	1.00	0.05	0.39	0.25	0.07	0.05	0.005	0.08	84	65	<1	19	3	17	5	<2
R301G	35 46 15	97 24 53	Logan	0.59	0.08	0.45	0.16	0.07	0.02	<0.005	0.05	180	53	<1	18	2	10	2	<2
R302G	35 48 44	97 24 55	Logan	0.61	0.06	0.37	0.12	0.04	0.03	<0.005	0.05	37	55	<1	16	2	12	2	<2
R303G	35 34 29	97 23 34	Logan	0.64	0.30	0.14	0.11	0.05	0.13	<0.005	0.09	72	240	<1	20	2	14	1	<2
R304G	35 47 54	97 22 46	Logan	1.00	0.07	0.63	0.33	0.10	0.06	0.007	0.09	92	82	<1	28	3	21	6	<2
R305G	35 47 00	97 20 57	Logan	1.40	0.06	0.57	0.33	0.13	0.19	0.007	0.16	45	67	<1	39	3	11	4	<2
R306G	35 45 56	97 19 05	Logan	1.10	0.05	0.44	0.19	0.08	0.06	0.007	0.09	28	48	<1	36	4	11	<1	<2
R307G	35 43 25	97 19 06	Oklahoma	0.75	0.03	4.00	0.12	0.04	0.07	0.009	0.08	330	50	<1	26	20	29	7	<2
R308W	34 46 04	97 18 38	Garvin	2.90	1.80	0.92	0.59	0.81	0.48	0.010	0.20	3200	370	<1	63	9	37	12	<2
R309H	34 46 05	97 22 07	Garvin	1.60	16.00	1.10	0.39	0.32	0.16	0.020	0.09	4300	470	<1	39	6	22	4	<2
R310H	34 46 06	97 27 05	Garvin	2.10	6.20	0.92	0.59	0.38	0.45	0.010	0.11	190	870	<1	24	7	23	4	<2
R311H	34 46 21	97 29 13	Garvin	2.20	15.00	1.40	0.77	7.60	0.37	0.020	0.12	2400	930	<1	97	13	25	7	3
R312H	34 46 28	97 32 44	Garvin	4.90	1.70	1.90	1.60	1.50	1.10	0.040	0.29	350	250	2	66	10	33	13	<2
R313E	34 46 05	97 33 44	Garvin	2.70	6.00	1.30	0.98	3.50	0.70	0.020	0.14	750	170	<1	44	7	26	6	<2
R314E	34 46 06	97 37 08	Garvin	2.60	11.00	1.70	1.00	6.30	0.36	0.020	0.12	1300	340	1	49	10	29	6	<2

Table 3. Continued

Sample ID	ICP Ga PPM	ICP La PPM	ICP Li PPM	ICP Nb PPM	ICP Nd PPM	ICP Ni PPM	ICP Pb PPM	ICP Sc PPM	ICP Sr PPM	ICP V PPM	ICP Y PPM	ICP Yb PPM	ICP Zn PPM	AES B PPM	AES Zr PPM	HGAAS As PPM	HGAAS Se PPM	DNAA Th PPM	DNAA U PPM
R280W	4	19	13	4	17	11	<4	3	26	22	11	1	20	10	200	0.6	<0.1	7.95	1.840
R281W	7	24	18	5	21	13	7	4	38	34	12	2	35	30	500	0.7	<0.1	5.42	1.600
R282G	6	23	22	5	20	16	6	6	28	32	15	2	39	20	1000	0.7	<0.1	8.48	2.180
R283G	<4	8	8	<4	6	6	59	<2	10	12	4	<1	230	<10	70	1.4	<0.1	2.60	0.500
R284W	12	36	36	7	34	22	45	9	86	63	22	3	71	20	200	1.2	<0.1	10.70	3.020
R285O	6	18	24	<4	15	16	6	5	160	45	11	1	11	15	100	1.2	<0.1	6.29	1.190
R286O	<4	22	6	<4	17	<2	5	<2	34	11	11	<1	51	<10	30	4.0	<0.1	2.60	0.784
R287O	4	14	12	<4	11	8	37	3	47	25	7	<1	25	20	150	0.8	<0.1	4.22	1.490
R288V	9	17	12	<4	8	5	150	4	160	28	28	3	190	<10	20	1.7	<0.1	3.99	0.552
R289V	11	12	11	<4	7	3	120	2	190	22	14	1	83	<10	<10	0.9	<0.1	3.48	0.484
R290V	12	19	19	<4	17	6	13	5	210	38	23	3	21	<10	50	1.2	0.2	4.60	2.100
R291O	<4	17	14	<4	15	10	190	3	39	25	10	1	100	15	1000	2.8	0.1	7.34	2.380
R292W	6	24	15	<4	21	11	620	4	35	23	17	2	290	15	200	3.0	<0.1	7.36	3.080
R293G	<4	18	9	<4	16	7	5	<2	29	13	11	1	8	10	300	2.0	<0.1	4.12	1.500
R294G	5	22	18	<4	20	11	5	4	67	25	17	2	14	20	500	6.4	<0.1	5.58	1.800
R295G	<4	13	12	<4	12	6	13	3	53	43	8	<1	8	10	100	17.0	0.2	2.30	1.190
R296G	<4	10	9	<4	10	4	<4	<2	25	9	8	<1	4	15	200	2.4	0.1	2.70	1.010
R297G	<4	10	8	<4	11	3	<4	<2	20	8	6	<1	6	<10	100	2.2	<0.1	2.00	1.140
R298G	<4	11	9	<4	11	5	4	<2	28	8	5	<1	6	<10	100	1.9	<0.1	3.63	0.944
R299G	<4	8	7	<4	7	3	5	<2	19	7	3	<1	5	<10	20	3.9	<0.1	1.50	0.594
R300G	<4	10	10	<4	10	6	4	<2	29	11	5	<1	10	<10	200	2.0	0.1	3.10	0.922
R301G	<4	8	8	<4	8	4	5	<2	23	10	5	<1	7	<10	20	9.1	<0.1	2.30	0.604
R302G	<4	8	7	<4	7	4	<4	<2	28	8	4	<1	7	<10	300	2.0	0.1	2.30	0.615
R303G	<4	10	8	<4	10	3	6	<2	34	25	5	<1	11	<10	200	2.0	0.1	3.20	2.620
R304G	<4	13	13	<4	14	7	6	2	28	16	8	<1	10	<10	100	2.0	0.1	3.00	0.855
R305G	<4	19	15	<4	17	7	6	2	37	17	11	1	11	10	500	2.9	0.1	6.71	2.230
R306G	<4	15	12	<4	16	7	<4	<2	41	12	7	<1	8	<10	100	2.0	<0.1	3.34	0.928
R307G	<4	11	8	<4	11	16	33	2	29	66	6	<1	12	<10	300	7.1	0.4	2.20	1.780
R308W	7	32	19	5	27	13	5	5	45	30	17	2	25	10	1000	2.7	<0.1	9.09	2.310
R309H	4	36	12	<4	24	8	10	4	140	20	28	2	14	10	70	3.2	<0.1	3.50	1.700
R310H	5	14	18	<4	9	11	5	3	1700	24	7	<1	18	10	70	2.4	<0.1	4.58	0.888
R311H	6	58	14	<4	54	11	7	7	100	28	50	4	5	10	150	4.1	<0.1	11.50	1.610
R312H	10	34	38	7	30	22	11	7	160	72	19	2	35	50	700	4.8	0.2	9.81	3.660
R313E	5	24	14	<4	21	9	8	4	110	27	17	2	6	15	500	1.0	0.1	4.83	1.380
R314E	6	34	17	<4	31	12	7	5	120	32	31	3	9	20	150	4.8	0.1	6.29	1.260

Table 3. Continued

Sample ID	Lat.	Long.	County	ICP Al %	ICP Ca %	ICP Fe %	ICP K %	ICP Mg %	ICP Na %	ICP P %	ICP Ti %	ICP Mn PPM	ICP Ba PPM	ICP Be PPM	ICP Ce PPM	ICP Co PPM	ICP Cr PPM	ICP Cu PPM	ICP Eu PPM
R315E	34 46 51	97 38 00	Garvin	2.40	6.60	1.10	0.84	3.90	0.58	0.020	0.13	870	130	<1	54	7	25	4	<2
R316E	34 46 59	97 40 35	Grady	3.90	0.64	1.30	1.80	0.46	0.70	0.009	0.07	190	550	1	27	4	24	3	<2
R317E	34 48 04	97 41 12	Grady	2.40	0.79	1.70	0.82	0.27	0.48	0.020	0.14	80	160	<1	39	7	22	16	<2
R318E	34 48 44	97 43 25	Grady	2.20	11.00	1.70	0.79	5.90	0.25	0.010	0.11	1700	140	<1	57	9	23	10	3
R319E	34 48 44	97 43 25	Grady	2.10	0.21	1.20	0.75	0.22	0.34	0.010	0.09	140	180	<1	28	5	8	7	<2
R320E	34 51 28	97 42 40	Grady	3.20	0.17	2.80	1.00	0.32	0.43	0.010	0.13	860	340	1	38	8	19	9	<2
R321E	34 51 17	97 39 05	Garvin	3.70	2.60	1.40	1.40	1.70	0.96	0.030	0.20	390	260	1	47	10	19	22	<2
R322E	34 53 55	97 39 51	Grady	3.60	5.20	0.84	1.20	3.10	0.93	0.030	0.17	750	770	1	45	18	31	30	<2
R323E	34 55 39	97 41 36	Grady	2.40	3.00	1.20	0.78	2.00	0.60	0.010	0.12	490	290	<1	37	7	24	7	<2
R324E	34 57 12	97 43 23	Grady	1.50	3.60	0.85	0.54	1.20	0.29	0.009	0.08	460	220	<1	30	6	16	5	<2
R325E	34 59 10	97 42 14	Grady	2.50	0.12	1.20	0.84	0.31	0.41	0.007	0.11	71	190	<1	30	5	11	3	<2
R326E	34 59 10	97 39 18	McClain	1.40	0.08	0.58	0.56	0.13	0.23	0.006	0.08	36	130	<1	23	3	14	1	<2
R327E	34 58 17	97 37 08	McClain	5.60	2.10	2.30	2.00	1.80	1.00	0.030	0.30	500	380	2	63	12	50	24	<2
R328E	34 58 28	97 34 09	McClain	2.80	1.70	1.20	1.00	1.00	0.66	0.020	0.16	270	330	<1	37	6	30	3	<2
R329H	34 58 14	97 30 41	McClain	4.40	4.40	1.80	1.60	1.70	0.94	0.030	0.22	370	380	1	53	10	42	7	<2
R330H	34 55 35	97 31 28	McClain	2.20	8.20	0.78	0.78	4.70	0.50	0.010	0.09	1300	1600	<1	35	9	24	3	<2
R331E	34 55 39	97 34 42	McClain	3.40	1.70	1.60	1.20	1.20	0.52	0.020	0.18	370	250	1	34	10	37	7	<2
R332E	34 54 13	97 35 59	McClain	3.70	3.50	1.30	1.20	2.30	0.99	0.030	0.20	550	270	1	44	7	32	8	<2
R333H	34 53 00	97 34 53	McClain	4.60	4.10	1.70	1.60	2.90	0.92	0.040	0.23	650	280	2	50	10	56	7	<2
R334H	34 53 55	97 28 04	McClain	2.70	1.70	1.20	0.80	1.30	0.61	0.020	0.17	350	640	<1	40	7	18	5	<2
R335H	35 38 38	97 35 03	Oklahoma	2.80	3.10	1.50	0.66	1.30	0.66	0.020	0.17	530	240	<1	46	7	39	7	<2
R336E	35 24 35	97 41 20	Canadian	3.00	7.80	1.40	0.96	4.60	0.63	0.030	0.15	1600	910	1	61	9	33	9	2
R337E	35 22 20	97 41 20	Canadian	2.20	6.80	1.30	0.70	4.00	0.29	0.010	0.11	1200	130	<1	48	7	25	4	<2
R338E	35 21 22	97 40 16	McClain	3.40	0.24	1.50	1.00	0.41	0.75	0.020	0.19	340	250	1	51	7	19	6	<2
R339E	35 16 34	97 37 58	Grady	3.70	3.50	1.60	1.20	2.40	0.75	0.030	0.19	680	280	1	48	8	22	5	<2
R340E	35 16 47	97 41 17	Grady	2.30	4.70	1.00	0.85	3.00	0.49	0.010	0.11	900	170	<1	44	6	23	11	<2
R341E	35 18 20	97 41 56	Grady	1.60	0.11	0.81	0.57	0.18	0.34	0.008	0.09	87	140	<1	26	3	17	3	<2
R342E	35 18 20	97 44 26	Grady	2.30	1.40	1.10	0.76	0.99	0.54	0.010	0.14	260	160	<1	44	5	26	6	<2
R343E	35 18 20	97 43 42	Grady	1.40	3.10	0.76	0.52	1.40	0.32	0.008	0.08	350	110	<1	30	4	23	5	<2
R344E	35 15 53	97 43 24	Grady	2.60	4.70	1.30	0.95	3.00	0.44	0.010	0.13	620	160	<1	34	8	26	6	<2
R345E	35 13 57	97 42 24	Grady	1.20	3.80	0.61	0.48	2.30	0.23	0.007	0.06	510	97	<1	30	4	5	5	<2
R346E	35 12 14	97 40 54	Grady	2.80	4.60	1.20	1.00	3.00	0.59	0.010	0.12	700	190	<1	39	7	14	7	<2
R347E	35 12 14	97 38 08	McClain	2.90	4.80	1.10	1.00	3.10	0.80	0.020	0.13	680	230	<1	36	6	28	7	<2
R348E	35 10 29	97 36 32	McClain	3.30	4.20	1.10	1.20	2.70	1.10	0.030	0.19	610	300	<1	50	6	24	8	<2
R349E	35 09 36	97 38 42	McClain	3.50	7.50	1.50	1.30	4.10	0.60	0.020	0.17	1000	220	1	56	9	37	10	<2

Table 3. Continued

Sample ID	ICP Ga PPM	ICP La PPM	ICP Li PPM	ICP Nb PPM	ICP Nd PPM	ICP Ni PPM	ICP Pb PPM	ICP Sc PPM	ICP Sr PPM	ICP V PPM	ICP Y PPM	ICP Yb PPM	ICP Zn PPM	AES B PPM	AES Zr PPM	HGAAS As PPM	HGAAS Se PPM	DNAA Th PPM	DNAA U PPM
R315E	5	31	16	<4	29	10	8	4	76	32	22	2	7	15	200	2.0	0.2	8.00	1.820
R316E	6	17	13	<4	18	7	13	3	120	36	11	1	10	<10	15	2.0	0.2	3.20	1.040
R317E	5	21	17	<4	17	12	14	3	56	45	11	1	16	10	300	2.0	0.1	8.07	2.450
R318E	5	29	13	<4	35	10	7	9	93	31	44	3	<2	15	70	4.0	1.1	12.40	1.170
R319E	4	14	13	<4	12	9	8	3	52	26	7	<1	11	10	50	2.3	0.4	4.14	1.170
R320E	7	20	20	<4	21	15	25	6	72	53	19	2	24	20	30	4.7	1.1	4.85	1.330
R321E	8	25	22	<4	22	14	39	6	87	54	15	2	23	50	300	1.0	0.1	9.17	2.110
R322E	7	24	22	<4	21	14	8	6	99	34	18	2	17	30	150	1.0	0.2	5.62	1.580
R323E	5	21	17	<4	19	11	6	4	58	23	18	2	14	20	100	5.0	0.2	5.08	1.110
R324E	<4	17	14	<4	14	7	6	3	52	16	14	1	9	10	150	2.3	0.1	3.20	0.781
R325E	6	16	17	<4	15	12	5	3	52	23	8	<1	17	15	50	4.2	<0.1	3.90	0.917
R326E	<4	12	10	<4	12	6	4	<2	35	12	6	<1	9	<10	70	1.0	<0.1	2.20	0.778
R327E	12	33	37	7	29	24	21	9	92	94	20	2	33	70	200	5.2	0.1	8.28	2.020
R328E	5	21	19	<4	18	11	9	3	64	26	11	1	13	70	500	5.1	<0.1	5.24	1.260
R329H	9	29	28	5	25	19	14	7	110	43	16	2	23	50	200	7.0	0.1	6.76	1.670
R330H	5	21	12	<4	20	8	7	5	95	22	20	2	<2	20	200	1.0	0.1	4.22	0.757
R331E	8	22	25	<4	21	17	10	6	61	71	13	2	25	70	150	4.9	0.1	4.78	1.590
R332E	7	24	23	<4	21	13	7	5	85	34	17	2	16	20	100	5.1	0.2	6.32	1.420
R333H	10	26	35	4	24	20	12	8	130	48	19	2	30	50	150	2.8	0.6	7.10	1.630
R334H	6	24	19	<4	21	13	9	4	58	31	14	2	17	10	200	3.9	0.1	6.19	1.900
R335H	6	25	20	<4	20	13	10	4	61	32	14	2	20	20	300	3.4	0.1	6.11	1.690
R336E	8	35	21	<4	35	13	9	5	98	33	32	3	11	20	200	3.5	0.2	5.92	1.760
R337E	4	28	16	<4	32	10	6	5	78	24	32	3	7	15	50	3.0	0.2	6.21	1.260
R338E	7	26	22	5	24	15	8	5	77	35	15	2	22	30	300	4.0	0.1	7.40	2.030
R339E	8	28	25	<4	28	15	9	6	88	38	21	2	18	20	200	4.0	0.1	6.31	1.950
R340E	5	23	15	<4	26	11	5	4	58	20	20	2	8	20	300	2.0	<0.1	6.62	1.490
R341E	<4	14	13	<4	14	8	4	<2	45	15	7	<1	12	10	500	2.2	<0.1	4.43	1.120
R342E	5	24	16	<4	23	11	4	3	58	26	13	1	14	15	500	3.5	<0.1	6.73	1.730
R343E	<4	18	11	<4	18	7	4	2	51	14	15	1	8	15	1000	4.4	<0.1	4.45	1.090
R344E	6	23	18	<4	27	14	<4	5	69	29	25	2	13	30	200	3.4	0.1	7.65	1.380
R345E	<4	17	9	<4	17	6	<4	3	43	13	14	1	3	20	100	2.2	<0.1	4.75	0.875
R346E	7	21	20	<4	21	11	4	6	74	25	23	2	12	50	200	2.4	<0.1	8.24	1.280
R347E	6	20	17	<4	19	11	5	4	140	26	14	1	9	30	300	2.9	0.1	7.80	1.480
R348E	7	27	18	<4	27	11	7	5	84	25	17	2	9	30	500	3.1	<0.1	8.12	1.950
R349E	10	30	24	<4	35	18	7	12	95	35	31	3	19	50	150	3.3	0.1	14.00	1.430

Table 3. Continued

Sample ID	Lat.	Long.	County	ICP Al %	ICP Ca %	ICP Fe %	ICP K %	ICP Mg %	ICP Na %	ICP P %	ICP Ti %	ICP Mn PPM	ICP Ba PPM	ICP Be PPM	ICP Ce PPM	ICP Co PPM	ICP Cr PPM	ICP Cu PPM	ICP Eu PPM
R350E	35 09 31	97 41 07	Grady	1.40	3.20	0.63	0.53	2.00	0.32	0.008	0.07	400	110	<1	47	4	6	8	<2
R351E	35 09 38	97 42 19	Grady	2.60	3.20	1.30	0.93	1.80	0.42	0.010	0.12	500	160	<1	44	7	11	15	<2
R352E	35 04 23	97 44 20	Grady	3.10	2.20	1.40	1.10	1.40	0.53	0.010	0.15	270	190	1	53	8	19	12	<2
R353E	35 04 23	97 41 41	Grady	2.70	5.80	1.30	1.00	3.40	0.38	0.010	0.13	610	170	<1	48	7	29	18	<2
R354E	35 04 23	97 39 16	McClain	2.70	6.90	1.40	0.97	4.30	0.43	0.010	0.13	840	300	<1	52	8	25	18	2
R355E	35 05 16	97 38 19	McClain	1.60	0.07	0.86	0.58	0.22	0.19	0.005	0.07	41	140	<1	23	4	8	16	<2
R356G	35 12 15	97 21 09	Cleveland	1.10	0.05	0.74	0.36	0.08	0.12	0.007	0.10	67	110	<1	28	3	10	21	<2
R357G	35 14 02	97 20 06	Cleveland	0.96	0.03	1.20	0.27	0.10	0.03	0.006	0.07	62	140	<1	28	4	9	23	<2
R358G	35 14 49	97 23 13	Cleveland	2.90	1.80	1.60	0.82	1.40	0.40	0.020	0.21	630	570	<1	50	8	41	19	<2
R359H	35 23 30	97 22 13	Oklahoma	1.80	7.90	1.50	0.43	4.50	0.11	0.010	0.09	2600	2800	<1	30	10	34	24	<2
R360G	35 13 28	97 12 54	Cleveland	0.89	0.02	0.45	0.20	0.07	0.01	<0.005	0.05	34	130	<1	15	2	4	4	<2
R361G	35 13 28	97 12 54	Cleveland	1.70	0.03	1.10	0.41	0.08	0.02	0.007	0.14	340	230	<1	38	5	12	6	<2
R362G	35 13 28	97 12 54	Cleveland	1.70	0.04	0.17	0.40	0.07	0.02	0.005	0.13	78	150	<1	38	14	14	4	<2

Table 3. Continued

Sample ID	ICP Ga PPM	ICP La PPM	ICP Li PPM	ICP Nb PPM	ICP Nd PPM	ICP Ni PPM	ICP Pb PPM	ICP Sc PPM	ICP Sr PPM	ICP V PPM	ICP Y PPM	ICP Yb PPM	ICP Zn PPM	AES B PPM	AES Zr PPM	HGAAS As PPM	HGAAS Se PPM	DNAA Th PPM	DNAA U PPM
R350E	<4	29	11	<4	27	7	<4	3	47	13	17	1	8	20	100	2.9	<0.1	5.97	0.843
R351E	6	27	19	<4	29	14	5	5	64	27	21	2	20	30	200	3.1	<0.1	8.51	1.100
R352E	7	28	20	<4	29	15	6	6	76	31	18	2	24	50	700	4.2	<0.1	9.15	1.560
R353E	6	29	17	<4	32	14	4	5	73	29	27	2	18	50	200	4.1	0.1	8.33	1.070
R354E	6	40	16	<4	46	14	6	7	68	31	35	3	16	70	500	3.9	0.1	12.20	1.440
R355E	<4	12	14	<4	12	10	<4	2	30	17	8	<1	20	20	150	2.2	<0.1	4.16	0.643
R356G	<4	14	9	<4	15	8	5	<2	38	14	8	<1	23	10	500	3.5	<0.1	4.47	1.140
R357G	<4	15	9	<4	18	10	7	<2	32	29	11	<1	22	<10	200	6.3	0.1	3.45	0.792
R358G	7	26	25	4	26	16	6	5	71	44	14	2	25	50	300	3.4	0.1	6.76	1.670
R359H	7	19	16	<4	24	11	6	5	78	28	30	3	16	20	150	5.7	<0.1	6.04	0.997
R360G	<4	7	7	<4	9	4	<4	<2	16	14	4	<1	7	<10	30	1.0	<0.1	2.00	0.412
R361G	<4	16	13	<4	17	10	13	3	44	28	8	1	9	10	200	2.0	<0.1	4.69	1.090
R362G	<4	18	15	<4	18	5	4	2	33	13	9	1	8	10	150	0.9	<0.1	5.68	1.500

Table 4. Statistical summary for Phase 1, Phase 2, and all B-horizon soil samples from central Oklahoma. Al, Ca, Fe, K, Mg, Na, P, and Ti are in percent, all other elements are in parts per million. Dashes (--) indicates insufficient data or no data. ICP = Induction Coupled Plasma, HGAAS = Hydride Generation Atomic Absorption Spectroscopy, and DNAA = Delayed Neutron Activation Analysis.

	ICP Al %	ICP Ca %	ICP Fe %	ICP K %	ICP Mg %	ICP Na %	ICP P %	ICP Ti %	ICP Mn PPM	ICP Ba PPM	ICP Be PPM
					Phase 1 B-horizon soil samples (171)						
Count	171	171	171	171	171	171	167	171	171	171	171
Minimum	0.38	0.01	0.18	0.10	0.02	0.02	<0.005	0.04	24	47	<1.0
Maximum	8.50	9.40	5.00	2.40	5.30	0.94	0.05	0.34	1700	6400	3.0
Average	4.43	0.45	2.08	1.02	0.49	0.32	0.017	0.19	329	466	1.5
Median	4.20	0.22	1.90	0.95	0.35	0.28	0.020	0.20	260	340	1.0
Std. Dev.	1.85	0.99	1.02	0.45	0.52	0.20	0.0078	0.064	266	753	0.55
					Phase 2 B-horizon soil samples (122)						
Count	122	122	122	122	122	122	122	122	122	122	92
Minimum	0.44	0.02	0.20	0.12	0.03	0.03	0.006	0.05	47	49	<1.0
Maximum	8.90	5.10	5.80	2.20	2.20	0.99	0.060	0.42	3400	830	3.0
Average	4.46	0.44	2.21	1.00	0.48	0.34	0.020	0.22	378	301	1.6
Median	4.50	0.23	2.10	0.92	0.36	0.29	0.020	0.22	310	305	1.0
Std. Dev.	1.90	0.80	1.08	0.52	0.39	0.24	0.0093	0.078	368	140	0.58
					All B-horizon soil samples (293)						
Count	293	293	293	293	293	293	289	293	293	293	203
Minimum	0.38	0.01	0.18	0.10	0.02	0.02	<0.005	0.04	24	47	<1.0
Maximum	8.90	9.40	5.80	2.40	5.30	0.99	0.060	0.42	3400	6400	3.0
Average	4.44	0.45	2.14	1.01	0.49	0.33	0.019	0.20	350	397	1.5
Median	4.40	0.22	2.00	0.94	0.36	0.28	0.020	0.21	280	320	1.0
Std. Dev.	1.87	0.91	1.05	0.42	0.47	0.22	0.0085	0.071	313	587	0.57

	ICP Ce PPM	ICP Co PPM	ICP Cr PPM	ICP Cu PPM	ICP Eu PPM	ICP Ga PPM	ICP La PPM	ICP Li PPM	ICP Nb PPM	ICP Nd PPM	ICP Ni PPM
					Phase 1 B-horizon soil samples (171)						
Count	171	171	171	171	1	152	171	171	--	171	171
Minimum	14	1.0	5.0	2.0	<1.0	<4.0	7.0	5.0	--	6.0	2.0
Maximum	110	27	110	58	3.0	21	46	90	--	47	53
Average	53	8.0	47	12	3.0	10	28	29	--	25	21
Median	52	7.0	44	10	3.0	10	28	26	--	25	18
Std. Dev.	17	4.3	23	7.7	--	5.0	9.0	15	--	8.4	12
					Phase 2 B-horizon soil samples (122)						
Count	122	121	122	121	--	109	122	122	77	122	121
Minimum	14	<1.0	7.0	<1.0	--	<4.0	7.0	6.0	<4.0	6.0	<2.0
Maximum	100	25	110	59	--	23	51	100	16	45	61
Average	56	10	50	12	--	10	28	31	6.5	25	20
Median	58	9.0	47.5	10.5	--	11	28.5	29	5.0	25	18
Std. Dev.	18	5.0	23	7.9	--	5.3	8.9	19	2.1	8.1	11
					All B-horizon soil samples (293)						
Count	293	292	292	292	--	261	293	293	77	293	292
Minimum	14	<1.0	5.0	<1.0	--	<4.0	7.0	5.0	<4.0	6.0	<2.0
Maximum	110	27	110	59	--	23	51	100	16	47	61
Average	54	9.0	48	12	--	11	28	30	6.5	25	20
Median	55	8.0	44	10	--	10	28	27	5.0	25	18
Std. Dev.	18	4.7	23	7.8	--	4.1	9.0	16	2.1	8.3	11

Table 4. Continued

	ICP Pb PPM	ICP Sc PPM	ICP Sr PPM	ICP V PPM	ICP Y PPM	ICP Yb PPM	ICP Zn PPM	HGAAS As PPM	HGAAS Se PPM	DNAA Th PPM	DNAA U PPM
					Phase 1 B-horizon soil samples (171)						
Count	162	154	171	171	171	148	171	171	150	165	171
Minimum	<4.0	<2.0	13	5.0	3.0	<1.0	3.0	0.8	<0.1	<1.40	0.788
Maximum	30	14	300	220	43	4.0	79	16	1.2	17.3	3.96
Average	12	6.2	70	54	14	1.6	32	5.7	0.45	8.32	2.45
Median	11	6.0	60	51	14	2.0	29	5.3	0.40	8.72	2.52
Std. Dev.	5.0	3.3	37	29	5.5	0.83	15	2.75	0.23	3.18	0.717
					Phase 2 B-horizon soil samples (122)						
Count	119	113	122	122	122	108	122	122	83	122	122
Minimum	<4.0	<2.0	13	5.0	3.0	<1.0	4.0	0.6	<0.1	1.90	0.650
Maximum	27	15	220	120	31	3.0	79	21	1.0	14.9	6.40
Average	13	6.8	72	57	14	1.7	32	5.4	0.20	8.85	2.44
Median	15.5	7.0	67.5	57.5	15	2.0	30	5.0	0.10	9.15	2.48
Std. Dev.	4.9	3.6	34	25	5.1	0.86	16	3.22	0.22	2.90	0.729
					All B-horizon soil samples (293)						
Count	281	267	293	293	293	256	293	293	233	287	293
Minimum	<4.0	<2.0	13	5.0	3.0	<1.0	3.0	0.6	<0.1	<1.40	0.650
Maximum	30	15	300	220	43	4.0	79	21	1.2	17.3	6.40
Average	13	7.1	70	56	14	1.7	32	5.6	0.43	8.66	2.44
Median	13	6.0	63	54	15	2.0	30	5.1	0.30	8.83	2.51
Std. Dev.	4.7	3.0	35	27	5.4	0.85	16	2.95	0.21	2.93	0.721

Table 5. Statistical summary for outcrop rock samples by formationand for all outcrop rock samples from central Oklahoma. Al, Ca, Fe, K, Mg, Na, P, and Ti are in percent, all other elements are in parts per million. Dashes (--) indicates insufficient data or no data. ICP = Induction Coupled Plasma, AES = Atomic Emission Spectroscopy, HGAAS = Hydride Generation Atomic Absorption Spectroscopy, and DNAA = Neutron Activation Analysis.

	ICP Al %	ICP Ca %	ICP Fe %	ICP K %	ICP Mg %	ICP Na %	ICP P %	ICP Ti %	ICP Mn PPM	ICP Ba PPM	ICP Be PPM	ICP Ce PPM
						Outcrop rock sampled (362)						
Count	362	362	362	362	362	362	306	362	362	362	82	362
Minimum	0.43	0.008	0.09	0.06	0.03	0.01	<0.005	0.02	15	34	<1.0	12
Maximum	11	17	8.9	2.8	9.4	2.1	0.14	0.55	13000	6800	4.0	170
Average	2.4	2.1	1.2	0.58	1.1	0.34	0.017	0.14	560	320	--	39
Median	2.0	0.15	0.93	0.39	0.19	0.16	0.009	0.115	270	140	--	35
Std. Dev.	1.7	3.5	1.1	0.52	1.7	0.42	0.017	0.081	1400	690	--	20
						Vanoss Group (30)						
Count	30	30	30	30	30	30	29	30	30	30	7	30
Minimum	0.43	0.03	0.28	0.08	0.05	0.02	<0.005	0.02	39	34	<1.0	16
Maximum	11	17	3.8	2.8	9.4	2.1	0.14	0.55	7700	1200	4.0	89
Average	2.9	3.7	1.1	0.70	1.8	0.53	0.024	0.14	1700	290	--	37
Median	2.25	1.05	0.85	0.45	0.66	0.38	0.020	0.115	780	180	--	35
Std. Dev.	2.1	4.7	0.85	0.69	2.4	0.53	0.026	0.10	2200	300	--	17
						Chase, Council Grove, and Admire Group (61)						
Count	61	61	61	61	61	61	50	61	61	61	6	61
Minimum	0.62	0.02	0.07	0.07	0.03	0.02	<0.005	0.04	15	36	<1.0	12
Maximum	5.0	17	1.4	1.4	7.8	1.1	0.09	0.30	7800	5700	2.0	130
Average	2.1	1.8	0.41	0.41	0.72	0.30	0.013	0.11	850	250	--	33
Median	1.9	0.12	0.29	0.29	0.11	0.19	0.007	0.09	200	110	--	26
Std. Dev.	0.99	3.9	0.30	0.30	1.6	0.27	0.014	0.053	1600	770	--	21
						Wellington Formation (68)						
Count	68	68	68	68	68	68	53	68	68	68	9	68
Minimum	0.50	0.01	0.16	0.06	0.03	0.01	<0.005	0.04	37	37	<1.0	15
Maximum	5.2	17	8.9	1.0	8.3	0.70	0.10	0.28	4200	4200	2.0	170
Average	1.8	0.86	1.2	0.32	0.40	0.12	0.012	0.12	250	250	--	39
Median	1.65	0.05	0.78	0.27	0.10	0.065	0.0075	0.105	98	98	--	31
Std. Dev.	0.97	2.7	1.4	0.20	1.2	0.13	0.015	0.056	610	610	--	25
						Garber Sandstone (116)						
Count	116	116	116	116	116	116	87	116	116	116	11	116
Minimum	0.50	0.008	0.14	0.11	0.03	0.01	<0.005	0.04	42	42	<1.0	23
Maximum	6.1	15	5.7	1.3	7.3	0.80	0.030	0.44	6800	6800	2.0	110
Average	1.7	1.2	1.1	0.34	0.58	0.09	0.009	0.12	340	340	--	34
Median	1.3	0.06	0.74	0.28	0.11	0.06	0.007	0.105	110	110	--	31
Std. Dev.	1.0	3.0	1.0	0.22	1.4	0.11	0.005	0.067	910	910	--	16
						Hennessey Group (49)						
Count	49	49	49	49	49	49	49	49	49	49	36	49
Minimum	1.6	1.4	0.78	0.26	0.20	0.10	0.008	0.09	140	140	<1.0	24
Maximum	9.2	16	4.7	2.7	7.6	1.5	0.070	0.45	2800	2800	3.0	97
Average	5.0	4.6	2.3	1.4	2.5	1.1	0.037	0.25	500	500	1.9	56
Median	5.0	3.9	2.1	1.4	2.5	1.2	0.040	0.26	400	400	1.0	57
Std. Dev.	2.0	2.8	1.1	0.62	1.2	0.40	0.015	0.090	430	430	0.67	14
						Elreno Group (38)						
Count	38	38	38	38	38	38	38	38	38	38	13	38
Minimum	1.2	0.07	0.58	0.48	0.13	0.19	0.005	0.06	97	97	<1.0	23
Maximum	5.6	11	2.8	2.0	6.3	1.1	0.030	0.30	910	910	2.0	63
Average	2.7	3.7	1.3	0.96	2.2	0.54	0.015	0.13	250	250	--	42
Median	2.65	3.35	1.3	0.97	2.0	0.51	0.010	0.13	190	190	--	44
Std. Dev.	0.88	2.9	0.43	0.33	1.6	0.24	0.0085	0.048	170	170	--	11

Table 5. Continued

	ICP Co PPM	ICP Cr PPM	ICP Cu PPM	ICP Eu PPM	ICP Ga PPM	ICP La PPM	ICP Li PPM	ICP Nb PPM	ICP Nd PPM	ICP Ni PPM	ICP Pb PPM	ICP Sc PPM
Outcrop rock sampled (362)												
Count	361	359	336	12	203	362	362	66	360	358	284	266
Minimum	<1.0	<1.0	<1.0	<2.0	<4.0	6.0	4.0	<4.0	<4.0	<2.0	<4.0	<2.0
Maximum	150	150	2100	5.0	26	86	76	16	83	74	620	18
Average	25	25	19	--	8.0	20	18	--	19	12	15	4.9
Median	21	21	7.0	--	4.0	17	14	--	17	10	6.0	3.0
Std. Dev.	20	20	115	--	3.9	11	12	--	11	9.0	40	2.8
Vanoss Group (30)												
Count	30	29	29	1	23	30	30	5	30	29	21	23
Minimum	2.0	<1.0	<1.0	<2.0	<4.0	7.0	4.0	<4.0	5.0	<2.0	<4.0	<2.0
Maximum	38	150	91	2.0	26	44	73	16	46	74	150	18
Average	9.3	26	21	--	8.4	19	18	--	19	13	24	5.0
Median	7.5	16	13	--	6.0	18	15	--	17	10	7.0	3.5
Std. Dev.	7.3	30	21	--	4.8	8.8	14	--	10	13	39	3.5
Chase, Council Grove, and Admire Group (61)												
Count	60	59	53	3	32	61	61	5	59	59	38	37
Minimum	<1.0	<1.0	<1.0	<2.0	<4.0	6.0	6.0	<4.0	<4.0	<2.0	<4.0	<2.0
Maximum	14	64	39	5.0	12	81	45	7.0	82	30	190	8.0
Average	5.6	19	8.0	--	6.6	17	14	--	16	10	15	4.0
Median	4.0	15	6.0	--	4.0	13	12	--	12	8.0	5.0	2.0
Std. Dev.	3.1	13	7.5	--	2.3	14	7.6	--	15	6.0	33	1.9
Wellington Formation (68)												
Count	68	68	60	2	30	68	68	10	68	68	45	50
Minimum	2.0	2.0	<1.0	<2.0	<4.0	7.0	6.0	<4.0	6.0	3.0	<4.0	<2.0
Maximum	20	66	2100	4.0	12	86	36	7.0	83	29	620	10
Average	6.1	22	48	--	6.4	18	14	--	17	9.7	26	3.8
Median	4.0	20	5.0	--	--	14	13	--	14	8.0	6.0	3.0
Std. Dev.	4.4	14	269	--	2.3	12	6.1	--	12	5.3	91	1.8
Garber Sandstone (116)												
Count	116	116	107	2	40	116	116	15	116	116	97	71
Minimum	2.0	1.0	<1.0	<2.0	<4.0	6.0	6.0	<4.0	5.0	3.0	<4.0	<2.0
Maximum	34	100	51	3.0	15	42	45	12	60	36	59	10
Average	6.4	23	8.6	--	6.8	16	14	--	16	9.6	11	4.0
Median	5.0	19	6.0	--	--	15	12	--	14	7.5	6.0	2.0
Std. Dev.	5.1	17	6.9	--	2.5	8.6	6.7	--	8.6	5.9	11	1.9
Hennessey Group (49)												
Count	49	49	49	1	47	49	49	29	49	49	49	49
Minimum	4.0	12	3.0	<2.0	<4.0	14	12	<4.0	9.0	8.0	5.0	3.0
Maximum	19	91	47	3.0	22	58	76	16	54	52	26	15
Average	11	48	23	--	12	31	37	6.7	29	24	14	8.1
Median	10	50	25	--	11	32	37	5.0	30	22	14	8.0
Std. Dev.	3.9	20	12	--	4.7	8.0	17	2.9	7.3	12	5.9	3.2
Elreno Group (38)												
Count	38	38	38	3	31	38	38	2	38	38	34	36
Minimum	3.0	5.0	1.0	<2.0	<4.0	12	9.0	<4.0	12	6.0	<4.0	<2.0
Maximum	18	50	30	3.0	12	40	37	7.0	46	24	39	12
Average	7.1	23	9.2	--	6.4	24	18	--	24	12	8.8	4.9
Median	7.0	24	7.0	--	6.0	24	17	--	21.5	11	6.5	5.0
Std. Dev.	2.8	9.2	6.4	--	1.7	6.5	5.2	--	7.7	3.6	7.0	2.1

Table 5. Continued

	ICP Sr PPM	ICP V PPM	ICP Y PPM	ICP Yb PPM	ICP Zn PPM	AES B PPM	AES Zr PPM	HGAAS As PPM	HGAAS Se PPM	DNAA Th PPM	DNAA U PPM
					Outcrop rock sampled (362)						
Count	362	362	362	208	355	278	359	362	123	351	362
Minimum	10	5.0	2.0	<1.0	<2.0	<10	<10	0.2	<0.1	<1.20	0.337
Maximum	1700	170	73	4.0	290	70	>1000	28	1.1	21.6	13.2
Average	69	35	12	1.9	19	23	230	3.3	0.16	4.71	1.47
Median	52	28	10	1.0	11	15	150	2.4	--	3.91	1.24
Std. Dev.	97	25	9.0	0.74	26	15	240	3.1	--	2.55	1.02
					Vanoss Group (30)						
Count	30	30	30	20	27	21	29	30	8	28	30
Minimum	22	9.0	4.0	<1.0	<2.0	<10	<10	0.6	<0.1	<1.20	0.484
Maximum	210	120	37	3.0	190	30	1000	28	0.5	15.4	4.48
Average	74	39	15	2.0	32	17	210	3.9	0.16	5.09	1.66
Median	64	28	14	1.5	18	10	125	2.0	--	3.95	1.24
Std. Dev.	47	30	8.4	0.69	38	6.2	250	5.5	--	2.92	1.11
					Chase, Council Grove, and Admire Group (61)						
Count	61	61	61	21	60	33	60	61	8	56	61
Minimum	16	5.0	2.0	1.0	<2.0	<10	<10	0.2	<0.1	<1.70	0.337
Maximum	160	120	73	4.0	100	50	1000	11	0.2	9.86	13.2
Average	58	30	10	1.7	13	18	150	2.0	0.11	4.01	1.36
Median	44	24	6.0	--	9.0	10	100	1.2	--	3.40	0.981
Std. Dev.	35	20	11	0.97	14	10	190	2.0	--	1.92	1.68
					Wellington Formation (68)						
Count	68	68	68	34	67	52	68	68	19	68	68
Minimum	14	5.0	2.0	<1.0	<2.0	<10	15	0.2	<0.1	1.50	0.397
Maximum	440	150	59	4.0	290	70	>1000	13	0.6	15.6	4.86
Average	56	33	10	1.6	15	19	290	2.4	0.16	4.81	1.30
Median	45	26	8.0	1.0	9.0	10	200	2.0	--	3.93	1.13
Std. Dev.	57	27	8.2	0.77	35	12	280	2.3	--	2.55	0.729
					Garber Sandstone (116)						
Count	116	116	116	52	116	87	116	116	36	112	116
Minimum	10	5.0	3.0	<1.0	3.0	<10	20	0.7	<0.1	<1.50	0.367
Maximum	270	170	50	4.0	230	70	1000	19	0.5	16.4	6.92
Average	49	29	10	1.8	15	19	280	3.5	0.15	4.44	1.35
Median	37	24	8.0	--	10	10	200	2.4	--	3.67	1.17
Std. Dev.	38	24	7.9	0.81	22	11	260	3.2	--	2.37	0.869
					Hennessey Group (49)						
Count	49	49	49	48	48	49	49	49	28	49	49
Minimum	35	20	7.0	<1.0	<2.0	10	50	1.0	<0.1	3.50	0.757
Maximum	1700	120	50	4.0	88	70	700	14	0.6	21.6	3.66
Average	150	56	19	2.1	39	35	170	5.6	0.13	8.66	2.10
Median	120	52	19	2.0	34	30	150	5.0	0.1	8.51	2.13
Std. Dev.	230	25	6.1	0.47	23	19	110	2.9	0.1	3.02	0.572
					Elreno Group (38)						
Count	38	38	38	33	37	36	38	38	24	38	38
Minimum	30	12	6.0	<1.0	<2.0	<10	15	1.0	<0.1	2.20	0.643
Maximum	140	94	44	3.0	33	70	1000	5.2	1.1	14.0	2.45
Average	74	31	19	1.9	14	29	250	3.2	0.23	6.65	1.39
Median	73	28	17	2.0	13	20	200	3.2	0.1	6.30	1.36
Std. Dev.	25	16	8.6	0.68	6.5	19	210	1.3	0.28	2.57	0.417

END OF SECTION