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PRELIMINARY REPORT

PLACER DEPOSITS OF MONAZITE IN NORTH CAROLINA

by

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PLACER DEPOSITS OF MONAZITE IN NORTH CAROLINA

A PRELIMINARY REPORT

By E. G. Brill, Jr. and G. V. Carroll

ABSTRACT

Radioactivity of heavy mineral concentrates from the placer deposits of the Piedmont of North Carolina was investigated during the summer of 1946.

Samples of heavy mineral concentrates were obtained from about 320 localities in Cleveland, Rutherford, Lincoln, McDowell, Burke, Catawba, Caldwell, Alexander, and Iredell Counties.

The radioactive content of 111 of these samples was measured in the field by means of portable Geiger-Mueller counters. Of these 111 samples, 44 have been measured for radioactivity in the laboratory of the Geological Survey. The average equivalent uranium content of the samples as determined in the laboratory is about 36 percent of the average value as determined in the field. The discrepancy between laboratory and field measurement results from the lack of correction of the field measurements for the mass difference between the field standard and the heavy mineral samples. No chemical analyses of the samples are available as yet.

The following tonnages and grades of inferred reserves were established by sampling of placer deposits. The potential reserves represent estimates of the total tonnage of heavy minerals that might be expected if all placer deposits in the region were sampled:

Short tons of heavy minerals		Percent equivalent uranium (field measurement)
Inferred	Potential	
3,000	20,000	2.7
7,600	25,000	1.2
10,500	100,000	0.1

A total of more than 21,000 short tons of heavy minerals with a grade of more than 0.1 percent equivalent uranium is inferred. It is estimated that other deposits that were not sampled are a potential source of an additional 145,000 tons of heavy minerals.



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INTRODUCTION

Radioactivity of heavy mineral concentrates from placer deposits in the North Carolina Piedmont was investigated during the summer of 1946 by K. G. Brill, Jr. and G. V. Carroll under the Trace Elements program of the Geological Survey.

The purpose of the investigation was to determine the tonnage of heavy mineral concentrates available in both mined and unmined placer deposits, the radioactivity of the concentrates in percent equivalent uranium, and to delineate the area in which the higher grade deposits are found.

Monazite, which contains the element thorium, is the most abundant radioactive mineral in the region. Monazite and other minerals of high specific gravity have been concentrated by nature in the sand and gravel of valley bottoms. It is from these placer deposits that most of the samples were obtained.

Placer deposits in Cleveland, Rutherford, McDowell, Burke, Lincoln, and Catasta Counties were systematically sampled. Additional samples were obtained from Alexander, Caldwell, and Iredell Counties (pl. 1). The monazite-bearing placer deposits extend southwestward across South Carolina and into the northeastern corner of Georgia. No samples were taken in these states.

About 320 samples of heavy mineral concentrates were collected. Most of these samples were concentrated from the gravel by means of ^agold pan; however, some of the large samples were concentrated in a three-foot rocker. The weight of the individual samples ranged

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from a few grams to nearly two pounds.

The radioactivity of 111 of these samples was measured in the field office.

MEASUREMENT OF RADIOACTIVITY

Measurement of radioactivity of field samples was made by means of a portable Geiger-Mueller counter which detects gamma ray emission γ . Measurement of radioactivity with this instrument is

γ Stead, Frank W., Preliminary report on field measurement of radioactivity: U. S. Geol. Survey Trace Elements Investigations Rept. 13, 1945.

reasonably reliable, for measurements of the standard sample showed but slight variation from day to day at a given locality.

The radioactivity of a standard and background (blank) sample, each in an annular cylindrical container which fitted snugly over the Geiger-Mueller tube, was measured for 30 minutes at the beginning and end of the test period. The radioactivity of each heavy mineral sample was measured for 20 minutes; each sample being placed in a cylindrical container identical with those holding the standard and background samples. The equivalent uranium content of a sample, i. e. the amount of uranium in equilibrium with its disintegration products that would exhibit a radioactivity equivalent to that of the sample, is obtained by a comparison of the activities of the sample and of a standard that contains a known amount of uranium in equilibrium with its disintegration products.

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Samples of heavy mineral concentrates which weighed 60 grams or more could be tested for radioactivity with the Geiger-Mueller counter in the field office.

These samples were sent to the laboratory of the Geological Survey in Washington for carefully controlled beta-particle measurement of radioactivity.

At the time of writing, laboratory measurements of percent equivalent uranium had been made on 44 of the 111 samples. The average percent equivalent uranium of the 44 samples was 0.52 when measured with the laboratory equipment, whereas the average percent equivalent uranium of the same 44 samples was 1.36 when measured by the portable field counter. The average equivalent uranium content of the samples as determined in the laboratory is about 38 percent of the average value as determined in the field. This discrepancy between laboratory and field measurement is due almost entirely to the lack of correction of the field measurement for the mass difference between the field standard (specific gravity about 1.5) and the heavy mineral samples (specific gravity about 4.5).

In computing grade of heavy minerals (Tables 1, 2, 3) the figures for field measurement of radioactivity have been used. The field measurement was used rather than the more accurate laboratory measurement because a greater number of field measurements were available at the time of writing. Laboratory measurements for many other samples have been incorporated in the tables.

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GEOLOGY

Igneous and metamorphic rocks

The region is underlain by a variety of metamorphic rocks. The most common types of rocks are garnet, graphite, hornblende, and kyanite gneiss and mica schist, which trend in a northeasterly direction. The gneiss has been correlated with the "Carolina gneiss" of Pre-Cambrian age \checkmark . It has been injected by stringers,

\checkmark Sterrett, D. B., Monazite deposits of the Carolinas: U. S. Geol. Survey Bull. 340, 1908.

dikes, and irregular masses of pegmatite which commonly follow the layering.

The schist consists of elongate masses of biotite and chlorite schist several miles wide. These are infolded between masses of gneiss. The schist is presumed to be the same age as the "Carolina gneiss" and has been injected by pegmatite in many parts of the region. Monazite, zircon, and other accessory minerals are present in both the injected schist and pegmatized gneiss.

Pegmatite, a third type of rock, is commonly injected as stringers and lit-par-lit into the country rock. It is the source of much of the monazite and many other heavy minerals in the region. Samples of pegmatized and pegmatite bedrock from 7 localities average 0.016 percent heavy minerals (Table 6). Monazite is present in the concentrates from all 7 localities. The pegmatite seems to represent the final phase of the intrusion of a batholith.

[REDACTED]

A fourth main type of rock in the region is granite. Numerous masses of granite in northern Cleveland and southern Burke Counties are probably cupolas of a batholith intruded in Carboniferous time 3/

3/ Stose, G. W., et al., Geologic map of the United States: U. S. Geol. Survey, 1932.

(fig. 2). Although the term granite is used the rock is actually a granite gneiss. Much of this granite may be related to, or ^{is} the equivalent of, the Whiteside granite of late Carboniferous (?) age 4/, which

4/ Keith, Arthur, and Starrett, D. B., U. S. Geol. Survey Geol. Atlas, Gaffney-Kings Mountain folio 222, p. 10, 1931

Keith and Starrett say has been metamorphosed to some degree. Samples from the weathered Carboniferous (?) granite (Table 6, BCM-6a, BCM-88a, BCM-130) average 0.020 percent heavy minerals. All these samples contain monazite.

These rocks extend eastward to a fault 5/ that trends in a north-

5/ Stose, G. W. et al., op. cit., 1932.

easterly direction from the southeast corner of Cleveland County through Lincolnton toward Statesville.

Placer deposits

The bedrock is decomposed to a depth of several tens of feet over much of the region. The breakdown of the rock has liberated quartz as well as garnet, gold, monazite, zircon, and other

[REDACTED]

relatively indestructible minerals, which have been washed off the divides into the bottom lands. Two types of gravel deposits have been formed by these resistant minerals: (1) those that underlie the mantle in the bottom lands, which in this report are designated as bottom land gravels; and (2) those in the present stream channels which are designated as channel gravels.

Bottom land gravel:--Gravel deposits range from 1 inch to 3 feet in thickness, and some of the deposits underlie the floodplain of a stream for many miles. It will be noted from column 4, tables 1, 2, 3, and 7 that the bottom land gravel averages about 0.7 feet thick in the center of the smaller stream valleys. The deposits thin gradually and rather uniformly toward the sides of the floodplains.

The gravel is composed of about 50 percent quartz pebbles in a matrix of sand. A few pebbles of pegmatite or metamorphic rock are present. Most of the pebbles in the gravel are subangular. Heavy minerals show little abrasion. The transverse profile of the bedrock floors of the valleys of the smaller streams is gently concave upward. Where the bedrock is weathered, its surface is smooth or slightly undulant, but where the bedrock is more resistant its surface is irregular, and deposits of bottom land gravel tend to be concentrated in the depressions.

The bottom land gravel is overlain by interbedded gray clay and quartz sand, which in turn are overlain by soil. This overburden has a maximum thickness of 25 feet and averages about 4 feet thick in the center of the smaller valleys.

The gravel in the bottomland in many valleys was not disturbed when the stream channels were mined for monazite and gold because of the difficulty of removing the overburden by hand methods.

The inverse ratio of the heavy mineral content of the overburden to the distance above the bedrock is illustrated by Figure 3.

Channel gravel.--The valleys of the larger streams of the region, the Catawba River, Broad River, and their major tributaries, are incised to a depth of one hundred feet or more below the general level of the Piedmont. The channels of these streams are filled with many feet of fine sand and silt over which the streams flow. These fine-grained deposits contain but small quantities of heavy minerals. If gravel with coarse-grained heavy minerals in it is present in these valleys, it lies on the bedrock many feet below stream level.

In the headwaters of the major streams and in the channels of most of the minor tributaries, beds and bars of relatively coarse gravel occur at drainage level. Some streams flow on the bedrock or on a thin veneer of gravel; however, most of the smaller streams flow over gravel that ranges from 1 to 6 feet in thickness. Sand and gravel are dredged from some of the creeks for road metal. Dredge operators state that the sand and gravel deposits are about 6 feet thick in many of the streams. If this is true the figures for the thickness of the channel gravel in Tables 1, 2, 3, and 7 are very conservative.

[REDACTED]

Presumably much of the channel gravel is derived from the erosion of both the bottom land gravel and the weathered bedrock of the watersheds. Except for stains of iron oxide on the pebbles in the channel gravel, the fragments in the bottom land gravel and channel gravel are similar.

Some of the heavy minerals in the channel gravel are probably derived from erosion of the bottomland gravel; however, most of them probably were eroded from the bedrock of the watersheds. In many streams the heavy minerals are present in relatively large quantities (table 4) and are always concentrated near the bedrock.

Heavy minerals

The more common heavy minerals found in the placer concentrates are cerussite, garnet, gold, ilmenite, rutile, and zircon.

Gold.--The most important placer gold deposits lie outside the area of high radioactivity (fig. 2); however, colors of gold were found in concentrates from the Polkville area in Cleveland County and from the eastern end of the South Mountains in Burke County. Gold was an important by-product of some local monazite-washing operations.

Wraninite.--No wraninite was identified in the field; however, small quantities may be present in the pegmatite dikes.

Zircon.--Zircon is a common constituent in the heavy concentrates and was found at nearly every locality at which samples were taken. The zircon from this region is radioactive and, in this respect,

resembles that from central Idaho 6/. The radioactive ingredient

6/ Brill, K. G., Jr. and Wolfe, J. H., Jr., Fluor deposits of central Idaho: U. S. Geol. Survey Trace Elements Investigations Rept. 19, unpublished, 1945.

is probably thorium.

Monazite.--Two types of monazite occur in the region. In the areas where the heavy mineral concentrates are most radioactive the monazite fragments are yellow or amber-colored and are euhedral. On the periphery of the zone of high radioactivity much of the monazite is pale green, small in grain-size, and lacking in good crystal form (fig. 2). In a few localities in the area of high radioactivity green and yellow monazite occur together (localities BCM-63a, BCM-28, BCM-131). Detailed study of the bedrock would probably show whether the green monazite is merely a border phase of the pegmatization of the country rock or whether it had an origin different from the yellow monazite.

Fratt 7/ states that the chief occurrences of monazite are in

7/ Fratt, J. H., Zircon, monazite and other minerals used in the production of chemical compounds employed in the manufacture of lighting apparatus: North Carolina Geol. and Econ. Survey Bull. 25, p. 46, 1916.

the highly pegmatized phases of the gneiss and schist rather than in the slightly pegmatized rocks. This statement is true when applied to the region as a whole.

McDaniel 8/, who examined a number of rich monazite localities,

[REDACTED]

8/ McDaniel, W. T., The monazite deposits of the Carolinas; Tenn. Valley Authority, Regional Products Division, 1934.

mentions that at 23 localities that he visited, the bedrock was a mica schist.

Hertie 9/ suggests that the larger crystals of monazite are

9/ Hertie, J. B., Unpublished field notes on Carolina monazite, U. S. Geol. Survey, 1945.

associated with schist that has been injected by pegmatite. The writers concur in this opinion.

Monazite seems to be equally abundant in placer concentrates irrespective of whether the bedrock is pegmatized gneiss or pegmatized schist. Keith and Sterrett 10/ state that in certain places,

10/ Keith, Arthur, and Sterrett, D. B., op. cit., p. 10, 1931.

especially in Cleveland County, the Carboniferous granite and associated pegmatite form the bulk of the rocks underlying and surrounding the monazite placers, but that as a rule the country rock consists of some variety of the "Carolina gneiss" together with granitic and pegmatitic material.

The radioactivity in percent equivalent uranium measured from placer concentrates is an index of the relative amount of monazite present in the bedrock as well as in the placers, for the minerals in the placer deposits have not moved far from their source.

[REDACTED]

MINING

Monazite was mined in many streams in the region from 1887 to 1911. After the removal of the tariff on monazite in 1907 mining languished, partly because the cost of mining was higher here than abroad, and mainly because Brazilian monazite contains a higher percentage of ThO_2 11/₁₀₀.

11/₁₀₀ McDaniel, U. S., op. cit., 1934.

Former miners state that most of the placer mining for monazite was confined to sluicing the stream gravel in the smaller creeks. In the small stream valleys the overburden is thin, and the coarse-grained monazite-bearing sand and gravel is present at stream grade.

In the majority of creeks that were mined the stream channels were sluiced once or several times, but the bottom land gravel was not disturbed; however, in the vicinity of Carpenters Knob, three miles northwest of Tolosa and in the vicinity of Cesar, channels were cut in the bottom land parallel to the stream. At the present time undisturbed gravel remains in the bottom lands of many valleys, and the monazite has been replenished in the stream gravel. The overburden is less than 6 feet in thickness in the center of most of the valleys examined by the party. Almost invariably it consists of sandy clay and soil. Large boulders are rare in the bottom land gravel and channel gravel.

[REDACTED]

If monazite were to be mined by any method other than by hand, it would be necessary to strip the overburden from the bottom land and scrape the monazite-bearing gravel from the surface of the bed-rock. As bottom land is valuable, privately owned agricultural land leasing costs would be high.

The State of North Carolina has laws that prohibit the use of streams for disposing of mine tailings.

RESERVES

Grade

The grade of the reserves of heavy minerals, which is shown in Tables 1, 2, and 3 is based on percent equivalent uranium by field measurement rather than on percent equivalent uranium by laboratory measurement. At the time of writing 44 of the 111 samples had been checked for percent equivalent uranium by closely controlled beta particle measurement in the Washington laboratory. As mentioned above, a comparison of field and laboratory measurements indicates that the percent equivalent uranium by laboratory measurement is about 38 percent of the field; however, 44 samples are too few for an accurate comparison of the laboratory and field measurements. This discrepancy should be considered in estimating the grade of heavy mineral concentrates. Samples which contain 2 percent equivalent uranium by field measurement actually contain about 0.75 percent equivalent uranium, and samples which contain 1 percent equivalent uranium by field measurement actually contain about 0.38 percent equivalent uranium.

[REDACTED]

Two roughly concentric lines are drawn near the center of the map on figure 2. One encloses an area in which the heavy mineral concentrates from most localities contain 2 percent or more equivalent uranium by field measurement. The other encloses a larger area in which the heavy mineral concentrates from most localities contain 1 percent or more equivalent uranium by field measurement.

The largest area in which the heavy mineral concentrates contain 2 percent or more equivalent uranium lies roughly between Shelby, Toluca, Casar, and Polkville in Cleveland County. Other smaller areas are in Rutherford, Burke, and Caldwell Counties.

In the area between the lines for 2 percent and 1 percent equivalent uranium, the heavy-mineral concentrates from most localities contain more than 1 percent but less than 2 percent equivalent uranium by field measurement. This area includes much of Rutherford and Lincoln Counties and parts of Cleveland, Burke, and Catawba Counties. A smaller area is in central Catawba County.

A large area lying outside the line drawn for 1 percent equivalent uranium but within the borders of the map contains a considerable quantity of monazite. On the east, however, the area of monazite-bearing placer deposits is bounded by the fault that trends northeastward from southeastern Cleveland County through Lincolnton. The west boundary is indefinite, but monazite decreases markedly in amount in the placer deposits west of the Second Broad River.

A variable factor in concentrating heavy minerals occurs in panning. Heavy mineral concentrates contain some minerals which, although they are relatively heavy, have a specific gravity lower than that of monazite. It is possible to increase the relative amount of monazite in a sample by panning out all the heavy minerals except monazite and zircon. Care was taken to cease panning the sample when the garnet (a "light weight" heavy mineral) began to leave the pan. Nevertheless, because of the errors in panning, the limits of areas of different amounts of radioactivity are only approximate.

Chemical analyses for percent uranium and percent thorium are not available as yet. It is presumed that most of the radioactivity in the heavy mineral concentrates is due to thorium and its disintegration products; some of the radioactivity, however, is probably attributable to uranium. Analyses of concentrates from Poundingsill Creek ^{12/} indicate that uranium is as much as 25 percent of the

^{12/} Butler, A. P. Jr., and Chesterman, G. E., Trace Elements Reconnaissance in Alabama, Georgia, and North Carolina, preliminary report; U. S. Geol. Survey Trace Elements Investigations Rept. 12, p. 42, unpublished, 1945.

equivalent uranium of some samples.

According to Pratt and Sterrett ^{13/} the amount of thorium in the

^{13/} Pratt, J. H. and Sterrett, D. E., Monazite and monazite mining in the Carolinas; Am. Inst. Min. Eng., Trans. vol. 40, p. 314, 1910.

monazite ranges between 0.01 and about 7.0 percent. They list 10

[REDACTED]

localities in the area from which samples of monazite-bearing sands were analyzed for thorium. The ten samples of unstated purity average 3.8 percent thorium. McDaniel ¹⁴ reports that the thorium

¹⁴ McDaniel, W. T., op cit., 1934.

in three samples of monazite from the area ranges from 5.15 to 6.80 percent. Relatively clean monazite separated from two other samples of placer concentrates collected by Butler and Chesterman in this same area contains 5.12 and 6.60 percent thorium.

Tonnage

It was impossible for the party to sample every stream in the area. Probably fewer than one-tenth of the total number of placer deposits were examined. The length and width of the minable deposits was estimated by eye. In some valleys, which have been placer mined, the supply of heavy minerals has not been exhausted. Here the length of minable gravel may be learned by examining the abandoned operations. The thickness of the bottom land gravel was measured at one or more exposures in most of the valleys, but the average thickness over the entire deposit is an estimate (column 4, tables 1, 2, 3, and 7).

In the area in which the heavy mineral concentrates from most localities contain 2 percent or more equivalent uranium (field measurement), nearly 3,000 tons of heavy minerals are inferred in those placer deposits that have been sampled. They have an average

[REDACTED]

grade of 2.7 percent equivalent uranium by field measurement. The following summary of tonnage and grade has been compiled from table 1:

Drainage system	Short tons of heavy minerals /	Percent equiva- lent uranium (field measurement)
Tributaries of the First Broad River on the west side	1500	2.8
Tributaries of the First Broad River on the east side	650	2.7
Tributaries of the Broad River	650	2.5
Tributaries of the South Fork River	150	2.1
Tributaries of the Catawba River	<u>50</u> 3000	<u>2.3</u> 2.7

/ These tonnages are given only to the nearest 50 tons.

The tonnage figures shown above indicate what may be expected in the area of high radioactivity rather than the total tonnage available. If an estimate of the tonnage of heavy minerals were made for all of the placer deposits in this area, the potential reserve would be about 20,000 short tons with a grade of 2.0 or more equivalent uranium (field measurement).

In the area in which the heavy mineral concentrates from most localities contain 1 percent or more equivalent uranium, but less than 2 percent equivalent uranium, nearly 7600 short tons of heavy minerals are inferred in these placer deposits which have

been sampled. They have an average grade of 1.2 percent equivalent uranium by field measurement. The following summary of tonnage and grade has been compiled from table 2:

<u>Drainage system</u>	<u>Short tons of heavy minerals</u> ✓	<u>Percent equivalent uranium (field measurement)</u>
Tributaries of the First Broad River	900	1.5
Tributaries of the Second Broad River	550	1.0
Tributaries of the Broad River	3150	1.0
Tributaries of the South Fork River	2950	1.4
Tributaries of the Catsba River	<u>50</u>	<u>1.2</u>
	7600	1.2

✓ These totals are given only to the nearest 50 tons

The deposits from which these tonnage figures were computed represent but a small proportion of the placer deposits from which monazite could be recovered. It is probable that there are potential reserves of about 25,000 tons of heavy minerals, the grade of which is between 1 and 2 percent equivalent uranium, available in other placer deposits of the region.

Many samples were taken from the area in which the heavy mineral concentrates at most localities contain less than 1 percent equivalent uranium. Although some of the deposits are too low in grade to be of interest, many contain relatively large quantities of monazite. More than 10,000 short tons of heavy minerals

with an average grade of 0.10 percent equivalent uranium (field measurement) are inferred in this area. A summary of the tonnage and grade has been compiled from table 3:

<u>Drainage system</u>	<u>Short tons of heavy minerals</u>	<u>Percent equivalent uranium (field measurement)</u>
Tributaries of the First Broad River	950	0.5
Tributaries of the Second Broad River	4200	0.1
Tributaries of the Broad River	100	negligible
Tributaries of the South Fork River	300	0.4
Tributaries of the Catawba River on the south side	4500	0.2
Tributaries of the Catawba River on the north side	400	0.3
	<u>10,450</u>	<u>0.1</u>

The deposits from which these tonnages were computed represent but a small proportion of the placer deposits from which monazite could be recovered. It is probable that the drainage systems of other streams in this part of the area are potential sources of 100,000 tons of heavy minerals the grade of which ranges between 0.1 and 0.9 percent equivalent uranium.

Samples of heavy minerals large enough for measurement of radioactivity were taken from the bottom land gravel on some creeks and from the channel gravel on others. Smaller samples of heavy minerals suitable for weighing but not large enough for measurement of radioactivity were taken at the same time in order

[REDACTED]

to compute the tonnage of both the bottom land gravel and channel gravel. The following summary of table 7 shows the tonnage of heavy minerals for valleys or parts of valleys for which no grade has been determined:

<u>Drainage system</u>	<u>Short tons of heavy minerals</u>
Tributaries of the First Broad River	100
Tributaries of Broad River	200
Tributaries of South Fork River	1550
Tributaries of the Catawba River	<u>1400</u>
	3250

The ultimate source of both gravel and heavy minerals is the bed-rock; therefore it is reasonable to suppose that the grade of the bottom land gravel and the channel gravel in the same valley will be of the same order of magnitude.

Summary of reserves

The reserves of heavy minerals in the areas listed below fall within the range of inferred ore. In addition to these reserves, an estimate is made of the potential tonnage of heavy minerals that might be found if all the valleys were sampled.

Area (figure 2)	Reserves in short tons		Grade in percent equivalent uranium (field measurement)
	Inferred	Potential	
Valleys which lie within the area in which most samples of heavy mineral concentrates contain 2 percent or more equivalent uranium	3000	20,000	2.7
Valleys which lie within the area in which most samples of heavy mineral concentrates contain more than 1 percent but less than 2 percent equivalent uranium	7600	25,000	1.2
Valleys which lie within the "monazite belt" but in which most samples of heavy mineral concentrates contain less than 1 percent equivalent uranium	10,500	100,000	0.1

A total of more than 23,000 tons of inferred and potential ore with a grade of more than 2.0 percent equivalent uranium is estimated. More than 30,000 tons of inferred and potential ore containing more than 1.0 percent equivalent uranium and more than 100,000 tons of ore containing more than 0.1 percent equivalent uranium are also estimated.

[REDACTED]

EXPLANATION OF TABLES L, S, 3

The following tables show the estimated area and volumes of placer deposits at which samples were taken. Data obtained on proportion of heavy minerals - pounds of heavy minerals per cubic yard - and equivalent uranium are also tabulated. Estimates of the heavy mineral content of the gravels are based on only one to three samples and the equivalent uranium on only one or two samples for each tract for which the volume of gravel is estimated. The sample data, therefore, do not represent systematic appraisals of the relative merit of the individual tracts. They are, however, indicative of the range in quality and amount of material obtainable within the drainage system to which the tracts are grouped. For this drainage system as a whole they furnish a reasonable estimate of inferred quality and quantity of material. In the individual tracts, however, they are subject to a large range of error, probably as large as the apparent differences from tract to tract.

The figures for the pounds of heavy minerals to the cubic yard are given to the nearest pound for amounts under 10 pounds, to the nearest 5 pounds for amounts from 10 to 100 pounds, and to the nearest 10 pounds for amounts more than 100 pounds. The tons of heavy minerals are computed to the nearest 5 tons for amounts under 25 tons, to the nearest 10 tons for amounts between 25 tons and 100 tons, and to the nearest 50 tons for amounts greater than 100 tons.



Table 1

Localities at most of which the heavy mineral concentrates contain 2 percent or more equivalent uranium by field measurement

Sample number	Deposit and estimated length in feet	Estimated average width of gravel in feet	Estimated average thickness of gravel in feet	Cubic yards of gravel b-bottomland c-channel	Pounds of heavy minerals per cubic yard	Short tons of heavy minerals	Percent equivalent uranium field measurement
TRIBUTARIES OF FIRST BROAD RIVER (WEST SIDE)							
BCB-19a	Tributary of Brushy Creek	75	1.0	b 19,400	3	30	} 4.20
19b	"	10	1.0	c 2,500	10	15	
BCB-20a	Headwaters of Brushy Creek	300	1.0	b 22,200	30	350	} 2.60
20c	"	15	1.0	b 1,100	20	10	
BCB-23a	Tributary of Brushy Creek	100	0.7	b 13,000	35	250	0.96
BCB-13a	Big Harris Creek	100	1.0	b 18,000	10	100	5.10
BCB-24a	Little Harris Creek	500	0.8	b 59,000	15	450	3.00
BCB-12a,c	Grassy Branch	150	1.0	b 38,800	12	250	3.20
BCB-14a	Tributary of Hinton Creek	60	1.2	b 13,000	6	40	} 3.00
14b	"	8	1.0	c 1,500	2	neg.	
BCB-34c	Tributary of Duncan Creek	150	0.5	b 5,500	2	5	} 2.60
34d	"	7	1.0	c 500	18	5	
BCB-31a,b,c,d	Isen Branch and tributary	8	2.0	c 2,400	6 avg.	5	3.00
						1,510	2.8

Sample number	Deposit and estimated length in feet	Estimated average width of gravel in feet	Estimated average thickness of gravel in feet	Cubic yards of gravel b-bottomland c-channel	Pounds of heavy minerals per cubic yard	Short tons of heavy minerals	Percent equivalent uranium field measurement
TRIBUTARIES OF FIRST BRAD RIVER (EAST SIDE)							
Tributary of Ward Creek							
BCR-43a, b	2000	55	1.0	b 4,100	11	25	3.50
Tim Creek							
BCR-46a, b, c	4000	250	1.0	b 37,000	5	100	4.50
	"	10	2.0	c 2,900	15	20	3.00
Crooked Run Creek							
BCR-56a	5000	200	1.0	b 37,000	8	150	} 3.50
56b	"	25	2.0	c 9,300	20	90	
Tributary of Little Knob Creek							
BCR-55a	2000	10	2.0	c 1,500	20	15	0.82
Bald Knob Creek							
BCR-55d	3000	100	0.6	b 6,600	5	15	} 3.30
55e	"	30	2.0	c 6,600	7	25	
Headwaters of Knob Creek							
BCR-47a	1000	50	0.5	b 900	8	5	2.30
Tributaries of Knob Creek							
BCR-92	2000	10	2.0	c 1,500	15	10	2.40
54d	1000	5	2.0	b 370	25	5	3.60
54e	4000	75	1.0	b 11,000	7	40	} 1.70
54f	4000	10	2.0	c 3,000	15	20	
Poundingsmill Creek							
BCR-48g, h	10000	8	2.0	c 5,900	15	40	} 3.20
48d	3000	100	0.7	b 7,800	8	30	
48e	"	5	2.0	c 1,100	15	10	1.70
Maple Creek							
BCR-54a	2000	6	2.0	c 900	25	10	2.10
Magness Creek							
BCR-52b	2000	20	1.0	c 1,500	7	5	4.20
Hickory Creek							
BCR-63a	3000	75	0.9	b 7,500	10	40	} 5.20
63b	"	7	1.5	c 1,200	5	5	

Sample number	Deposit and estimated length in feet	Estimated average width of gravel in feet	Estimated average thickness of gravel in feet	Cubic yards of gravel bottomland or channel	Pounds of heavy minerals per cubic yard	Short tons of heavy minerals	Percent equivalent uranium field measurement
BCB-11	Tributary of First Broad River 2000	8	2.0	c 1,200	15	$\frac{10}{670}$	$\frac{2.30}{2.7}$
TRIBUTARIES OF BROAD RIVER							
BCB-50a	Buffalo Creek 4000	100	0.6	b 8,900	20	90	2.00
BCB-51, 51b	Tributary of Buffalo Creek 5000	15	1.5	a 4,200	15	30	4.00
CB-52c	Little Buffalo Creek 8000	150	0.8	b 35,500	15	250	1.90
CB-53d	Tributary of Little Buffalo Creek 4000	200	1.0	b 29,500	15	200	2.80
5011650r	Monasite Branch 3000	10	1.0	e 1,100	65	$\frac{40}{610}$	$\frac{3.50}{2.4}$
BCB-62a 62 b	TRIBUTARY OF SECOND BROAD RIVER 3000	100	0.8	b 8,900	4	20	} 3.80
	"	10	2.0	c 2,200	1	neg.	
TRIBUTARIES OF SOUTH FORK RIVER							
BCB-69a	Little Indian Creek 10,000	100	0.6	b 22,200	15	150	2.00
BCB-69	Tributaries of Jacob Fork River 3000	7	2.0	e 1,500	15	10	2.80
BCB-93	2000	5	1.0	e 400	25	$\frac{5}{165}$	$\frac{2.30}{2.1}$

Sample number	Deposit and estimated length in feet	Estimated average width of gravel in feet	Estimated average thickness of gravel in feet	Cubic yards of gravel b-bottomland a-channel	Pounds of heavy minerals per cubic yard	Short tons of heavy minerals	Percent equivalent uranium field measurement
<p>TRIBUTARY OF CATARAUGUS RIVER (SOUTH SIDE)</p>							
BCM-75a	Little Silver Creek 3000	10	2.5	0- 2,800	5.0	5	2.10
<p>TRIBUTARY OF CATARAUGUS RIVER (NORTH SIDE)</p>							
BCM-99	Tributary of Lower Creek 2000	5	2.0	0- 700	20.0	5	2.30
BCM-100	Tributary of Gunpowder Creek 3000	15	2.0	0- 3,300	15.0	$\frac{25}{30}$	$\frac{2.30}{2.30}$

Table 2

Localities at most of which the heavy mineral concentrates contain from 1 to 2 percent equivalent uranium by field measurement

Sample number	Deposit and estimated length in feet	Estimated average width of gravel in feet	Estimated average thickness of gravel in feet	Cubic yards of gravel b-bottomland c-channel	Pounds of heavy minerals per cubic yard	Short tons of heavy minerals	Percent equivalent uranium field measurement
TRIBUTARIES OF FIRST BROAD RIVER (WEST SIDE)							
Tributaries of Beaversdam Creek							
BCM-60a	5000	100	0.9	b-16,700	20	150	2.50
BCM-60c	4000	20	1.0	c- 3,000	100	150	1.20
BCM-60d	2000	100	0.8	b- 5,900	55	150	1.00
South Creek							
BCM-41b	13000	300	1.0	b-144,000	6	450	1.40
41c	"	8	2.0	c- 7,700	6	$\frac{25}{925}$	1.5
TRIBUTARIES OF SECOND RIVER							
Tributary of Sandy Run Creek							
BCM-61a	6000	300	1.0	b- 66,700	60	2,000	1.00
East Prong of Sandy Run Creek							
BCM-27a	2000	70	0.6	b- 4,600	30	70	0.67
27c	"	60	1.0	b- 4,400	25	50	1.60
Tributaries of Wayne Creek							
BCM-26a	4000	200	0.7	b- 20,800	30	300	1.10
26b,d,e	1500	50	0.6	b- 1,100	20	10	1.70
Tributaries of Floyd's Creek							
BCM-64a	4000	300	1.0	b- 44,400	20	450	1.00
64b	3000	175	1.0	b- 19,400	25	$\frac{250}{3130}$	$\frac{1.20}{1.00}$

Sample number	Deposit and estimated length in feet	Estimated average width of gravel in feet	Estimated average thickness of gravel in feet	Cubic yards of gravel b-bottomland e-channel	Pounds of heavy minerals per cubic yard	Short tons of heavy minerals	Percent equivalent uranium field measurement
TRIBUTARIES OF SECOND BROAD RIVER							
BCB-57e	Sable Branch 3000	200	1.0	b- 22,200	45	500	0.95
BCB-73a	Tributary of Hollands Creek 3000	10	2.0	e- 2,200	40	$\frac{45}{545}$	$\frac{1.80}{1.02}$
TRIBUTARIES OF SOUTH FORK RIVER							
BCB-49e	Tributary of Little Indian Creek 1000	75	0.4	b- 1,100	55	30	0.52
BCB-49f	Tributary of Indian Creek 3000	200	0.4	b- 6,900	10	40	1.30
BCB-95	Headwaters of Indian Creek 3000	75	0.5	e- 4,200	40	80	0.60
BCB-115	Leonard Fork Creek 5000	10	2.0	e- 3,700	35	60	1.80
BCB-115c	Tributary of Leonard Ford Creek 2000	150	1.0	b- 11,100	30	150	2.60
BCB-96	Headwaters of Howard Creek 9000	10	2.5	e- 6,300	10	40	1.40
BCB-113b	Roberts Branch 3000	15	1.0	e- 1,700	15	15	1.70
BCB-114	Tributary of Roberts Branch 3000	8	2.0	e- 2,000	15	15	1.60
BCB-110	Tributary of Pett Creek 10000	150	1.0	b- 55,500	85	2350	1.30
111	2000	10	1.0	e- 700	30	10	1.30
BCB-94	Tributary of Jacob Fork River 3000	15	2.0	e- 3,300	9	15	1.90

Sample number	Deposit and estimated length in feet	Estimated average width of gravel in feet	Estimated average thickness of gravel in feet	Cubic yards of gravel b-bottomland e-channel	Pounds of heavy minerals per cubic yard	Short tons of heavy minerals	Percent equivalent uranium field measurement
BCM-132	Whitaker Creek 3000	5	2.0	0- 1,100	20	10	1.20
BCM-91a	Headwaters of Jacob Fork River 2000	30	3.0	0- 6,700	15	50	1.20
BCM-105	Tributary of Henry Fork River Tim Creek 3000	7	2.0	0- 1,600	20	15	1.40
BCM-106 106a	Shoal Branch 2500	7	2.0	0- 1,300	25 avg.	15	2.20
BCM-86	Stacy Branch 2000	10	2.0	0- 1,500	35	25	1.10
BCM-88	Rook Creek 2000	10	2.0	0- 1,500	8	5	1.90
BCM-128	Tributary of Henry Fork River 1000	12	1.5	0- 700	60	$\frac{20}{2945}$	$\frac{1.20}{1.4}$
TRIBUTARIES OF CATAWA RIVER							
BCM-118	Elk Shoals Creek 3000	6	2.0	0- 1,300	25	15	1.40
BCM-117	Sawmill Branch, a tributary of Lyle Creek 5000	10	2.0	0- 3,700	20	$\frac{25}{50}$	$\frac{1.10}{1.20}$

Table 3

Localities at most of which the heavy mineral concentrates contain less than 1 percent equivalent uranium by field measurement

Sample number	Deposit and estimated length in feet	Estimated average width of gravel in feet	Estimated average thickness of gravel in feet	Cubic yards of gravel b-bottomland c-channel	Pounds of heavy minerals per cubic yard	Short tons of heavy minerals	Percent equivalent uranium field measurement
TRIBUTARIES OF FIRST BROAD RIVER							
SCM-40a 40b	Hard Bargain Branch	350	0.7	e- 45,500	9	200	} 0.72
	"	8	2.0	bt 3,000	20	30	
SCM-39b	North Fork	30	2.0	e- 11,100	30	150	0.73
SCM-34a,b	Headwaters of Duncan Creek	200	1.0	b- 37,000	30	550	0.35
	Headwaters of First Broad River	8	2.0	e- 1,800	25	$\frac{20}{950}$	$\frac{0.01}{0.5}$
TRIBUTARIES OF SECOND BROAD RIVER							
SCM-3, 3a 7a, b	Cane Creek	500	2.0	b- 185,000	25	2,300	0.15
	"	200	1.5	b- 55,500	45 avg.	1,200	0.03
SCM-4, 4a 6a	Camp Creek	15	2.0	e- 5,500	30	30	0.16
	"	200	1.0	b- 37,000	20	400	0.44
SCM-66a	Camp Branch	8	1.0	e- 600	10	5	0.01
SCM-72a 72b	Tributary of Calhoun's Creek	75	0.5	b- 4,200	10	20	0.18
	"	10	1.0	e- 1,100	85	45	0.14

Sample number	Deposit and estimated length in feet	Estimated average width of gravel in feet	Estimated average thickness of gravel in feet	Cubic yards of gravel in channel	Pounds of heavy minerals per cubic yard	Short tons of heavy minerals	Percent equivalent uranium field measurement
TRIBUTARIES OF SECOND BROAD RIVER (cont'd)							
BCB-70a	Galley Creek	7	2.0	0	25	20	0.11
70b	3000	7	1.0	0	85	20	0.00
BCB-71a	Hill Creek	10	2.0	0	100	150	0.04
	4000					2190	0.14
TRIBUTARIES OF BROAD RIVER							
BCB-76c	Tributary of Cove Creek	10	2.0	0	110	100	0.01
	3000						
TRIBUTARIES OF SOUTH FORK RIVER							
BCB-125	Tributary of Sayre Creek	7	2.0	0	110	50	0.03
	2000						
BCB-124	Rookden Creek	8	1.0	0	10	5	0.22
	3000						
BCB-126	Tributary of Pott Creek	4	2.0	0	40	20	0.34
	3000						
BCB-112		8	2.0	0	55	50	0.61
116	2000	10	2.0	0	25	20	0.52
TRIBUTARIES OF JACOB FORK RIVER							
BCB-90	Whiteoak Creek	15	3.0	0	30	80	0.72
	3000						
BCB-108a	Tributary of Camp Creek	10	2.0	0	30	10	0.47
	1000						

Sample number	Deposit and estimated length in feet	Estimated average width of gravel in feet	Estimated average thickness of gravel in feet	Cubic yards of gravel b-bottomland e-channel	Pounds of heavy minerals per cubic yard	Short tons of heavy minerals	Percent equivalent uranium field measurement
Henry Fork River and Tributaries							
BCR-107	2000	20	2.0	0-	10	15	0.51
87	2000	25	3.0	0-	25	70	0.17
Long Branch							
BCR-65	3000	7	3.0	0-	10	10	0.76
Laurel Creek							
BCR-82	3000	12	3.0	0-	25	$\frac{50}{340}$	$\frac{0.58}{0.44}$
TRIBUTARIES OF CATAWBA RIVER (SOUTH SIDE)							
Tributaries of North Huddy Creek							
BCR-62b	3000	10	2.0	0-	85	90	0.07
78b	1000	4	2.0	0-	100	15	0.06
BCR-67b	2000	15	2.0	0-	25	30	0.18
BCR-67a	2000	8	2.0	0-	85	50	0.77
BCR-67i,j	2000	8	2.0	0-	25	15	0.62
BCR-67g	4000	100	0.8	b-	15	90	} 0.38
67h,k	4000	8	2.0	0-	8	10	
BCR-69a	3000	10	2.0	0-	50	50	0.44
69a,b	5000	25	2.0	0-	15	70	0.63
BCR-69d	5000	20	3.0	0-	25	150	0.54
BCR-74b	5000	300	1.0	b-55,500	100	2800	0.15
BCR-79a	4000	10	3.0	0-	70	150	0.39

Sample number	Deposit and estimated length in feet	Estimated average width of gravel in feet	Estimated average thickness of gravel in feet	Cubic yards of gravel b-bottomland e-channel	Pounds of heavy minerals per cubic yard	Short tons of heavy minerals	Percent equivalent uranium field measurement
TRIBUTARIES OF CATANNA RIVER (SOUTH SIDE) (cont'd)							
BCM-80	Hunting Creek and tributary 3000	6	2.0	e- 1,300	40	30	0.24
80a	4000	7	2.0	e- 2,100	80	80	0.25
BCM-81b	Fiddlers Run Creek 6000	12	2.0	e- 5,300	25	70	0.21
BCM-81c	East Fring of Fiddlers Run 3000	300	1.0	b- 33,300	35	600	0.001
81f	" "	10	2.0	e- 2,200	40	40	0.77
BCM-104b	Double Creek 5000	10	2.0	e- 3,700	100	200	0.05
						4,540	0.18
CATANNA RIVER TRIBUTARIES (SOUTH SIDE)							
BCM-103	Tributary of Canos Creek 1000	3	2.0	e- 200	40	5	0.04
BCM-102	Cedar Creek 5000	5	2.0	e- 1,800	25	25	0.26
BCM-129	Tributary of Middle Little River 2000	5	2.0	e- 700	25	10	0.87
BCM-119a	Tributary of Third Creek 3000	150	0.9	b- 15,000	45	350	0.34
123	2000	8	1.0	e- 600	30	10	0.11
						400	0.35
BCM-121	SOUTH YALVIN RIVER TRIBUTARY 3000	7	1.5	e- 1,200	30	20	0.30



Table 4

Pounds of heavy minerals per cubic yard

Data on the pounds of heavy minerals per cubic yard of placer ground were secured from more than 300 samples that were concentrated by gold pan from the gravel. These samples were collected expressly to determine the proportion of heavy minerals per cubic yard.

The proportion of heavy minerals in each of these samples is assumed to be representative of the segment of gravel from which the sample was taken.

The approximate average weight of a panful of dry gravel is known. Each sample was weighed dry in a pan balance, and the weight in grams was recorded. A cubic yard of gravel is assumed to weigh 2,700 pounds. By simple computation the heavy mineral fraction in a one-pan sample is converted to pounds of heavy minerals per cubic yard.



Sample No.	Locality	County	Type of gravel deposit c-channel b-bottomland	Pounds of gravel panned	Grams heavy minerals	Pounds per cu. yd.
BGM- 1	Second Broad River	Rutherford	a	90.0		
1a	" " "	"	c	11.0	8.8	4.8
1b	" " "	"	bedrock	7.5	trace	
BGM- 2a	Robinson Creek	"	b	7.5	34.5	27.3
2b	" "	"	b	11.0	23.7	12.4
BGM- 3	Cane Creek	"	b	18.5		
3a	" "	"	b	7.5	30.0	24.0
BGM- 4	Camp Creek	"	c	18.5		
4a	" "	"	c	15.0	81.2	32.5
BGM- 5	Second Broad River	"	c	rockier		
5a	" " "	"	b?	22.0	28.0	7.2
BGM- 6	Camp Creek	"	a	22.0		
6a	" "	"	b	7.5	37.4	21.8
BGM- 7a	Cane Creek	"	b	11.0	55.5	45.7
7b	" "	"	b	7.5	43.3	38.9
BGM- 8a	First Broad River	"	c	7.5	20.5	28.6
8b	" " "	"	c	11.0	37.5	20.3
BGM- 9	Big Harris Creek	Cleveland	b	7.5	trace	0.0
BGM-10	First Broad River	"	b	18.5	"	0.0
BGM-11	Tributary First Broad River near Double Shoals	"	c	37.0	94.0	15.0
11a	Same as BGM-11	"	b	7.5	1.1	0.9
BGM-12	Grassy Branch	"	c	rockier		
12a	" "	"	b	23.0	58.0	15.4
12b	" "	"	b	7.5	24.0	19.1
12c	" "	"	b	15.0	27.3	10.9
12d	" "	"	c	11.0	3.8	2.1
BGM-13a	Big Harris Creek	"	b	22.0	42.2	11.4
13b	" " "	"	c	7.5	3.4	2.7
BGM-14a	Tributary on south side Hinton Creek	"	b	22.5	23.7	6.0
14b	Same as BGM-14a	"	c	22	6.5	1.8
BGM-19a	Tributary of Smoky Creek	"	b	53.0	31.5	2.5
19b	Same as BGM-19a	"	c	7.5	11.8	10.0



Sample No.	Locality	County	Type of gravel deposit c-channel b-bottomland	Pounds of gravel panned	Grams heavy minerals	Pounds per cu.yd.
BCM-20a	Brushy Creek	Cleveland	b	15.0	74.7	29.5
20b	" "	"	cf	11.0		
20c	" "	"	b	15.0	51.0	30.6
20d	" "	"	b	11.0	3.8	2.1
BCM-21a	Tributary, Brushy Creek	"	c	7.5	10.0	8.0
BCM-22a	Same as BCM-21a	"	weathered bedrock	15.0	0.4	0.2
22b	" "	"	b	15.0	7.5	3.0
22c	" "	"	overburden	11.0	2.0	1.6
22d	" "	"	"	15.0	0.8	0.3
22e	" "	"	b	15.0	16.0	6.4
22f	" "	"	c	7.5	4.0	3.1
BCM-23a	" "	"	b	26.0	158.5	35.6
BCM-24a	Little Barrie Creek	"	b	26.0	72.2	16.5
BCM-25a	East Prong of Sandy Run Creek	"	bf	15.0	3.5	1.4
25b	Same as BCM-25a	"	c	11.0	7.3	3.9
BCM-26a	Wayne Creek, tributary	"	b	30.0	153.0	31.5
26b	Same as BCM-26a	"	c - clay	11.0	6.3	3.4
26c	" "	"	b	15.0	40.0	16.0
26d	" "	"	b	26.0	170.0	38.8
26e	" "	"	b	8.0	9.5	7.5
BCM-27a	Tributary, East Prong of Sandy Run Creek	Rutherford	b	41.0	209.5	30.3
27b	Same as BCM-27a	"	b	8.0	30.0	22.4
27c	" "	"	b	15.0	59.4	24.0
BCM-28a	Tributary, Sandy Run Creek	"	b	15.0	9.0	3.5
28b	East Prong of Sandy Run Creek	"	c	11.0	51.5	27.8
28c	Tributary, East Prong of Sandy Run Creek	"	b	8.0	6.5	5.0
BCM-29a	Winton Creek	"	c	26.0	31.0	7.1





Sample No.	Locality	County	Type of gravel deposit c-channel b-bottomland	Pounds of gravel panned	Gross heavy minerals	Pounds per cu. yd.
BCM-30a	Tributary, Duncan Creek	Rutherford	c	15.0	7.5	3.0
30b	Same as BCM-30a	"	b	11.0	8.2	4.4
BCM-31a	Icen Branch	"	c	8.0	18.7	14.0
31b	Tributary, Icen Branch	"	c	15.0	1.0	0.4
31c	Same as BCM-31b	"	c	11.0	9.2	4.9
31d	"	"	b	15.0	10.0	4.0
31e	Icen Branch	"	c	rocker		
BCM-32a	Puzzle Creek	"	c	15.0	0.8	0.3
BCM-33a	Heaveners Creek	"	b	15.0	5.0	2.0
33b	"	"	c	22.0	trace	
BCM-34a	Duncan Creek	"	b?	15.0	65.4	26.3
34b	"	"	b?	11.0	63.7	26.6
34c	Tributary, Duncan Creek	"	b	15.0	4.8	1.8
34d	Same as BCM-34c	"	c	11.0	34.0	18.4
BCM-35a	Same as BCM-34c	"	b	26.0	22.0	8.0
BCM-36a	Tributary, First Broad River	"	b	15.0	8.2	3.3
BCM-37a	Brier Creek	"	c	11.0	4.2	2.3
37b	"	"	c	15.0	2.1	0.8
37c	"	"	b	15.0	1.7	0.7
BCM-38a	Tributary, First Broad River	"	b	26.0	69.9	16.0
BCM-39a	North Fork of First Broad River	"	b	15.0	13.1	5.2
39b	Same as BCM-39a	"	c	26.0	136.4	31.7
BCM-40a	Hard Bargain Branch, tributary of First Broad River	"	c	26.0	40.0	9.1
40b	Same as BCM-40a	"	b?	15.0	54.8	23.0
40c	Same as BCM-40a	"	c	11.0	2.0	1.1
BCM-41a	Tributary, First Broad River	"	b	15.0	17.3	6.9
41b	Broad River	"	b	15.0	15.9	6.4
41c	Same as BCM-41a	"	c	23.0	22.2	6.0





Sample No.	Locality	County	Type of gravel deposit c-channel b-bottomland	Pounds of gravel panned	Gross heavy minerals	Pounds per cu. yd.
BCM-42a	Tributary, Ward Cr.	Cleveland	b	15.0	10.6	4.2
42b	" " "	"	b	11.0	3.0	1.6
42c	" " "	"	bedrock	15.0	1.5	0.6
42d	" " "	"	b	11.0	3.8	1.9
42e	" " "	"	c	15.0	7.8	3.1
BCM-43	" " "	"	c	rockier		
43a	" " "	"	b	15.0	23.3	9.3
43b	" " "	"	b	11.0	28.9	13.9
BCM-44a	Ward Creek	"	b	11.0	2.1	1.1
44b	" "	"	c	15.0	10.0	4.0
BCM-45a	Tributary, Adams Branch	"	b	15.0	39.8	16.0
BCM-46	Tim Creek	"	c	52.0	133.4	15.3
46a	" "	"	b	15.0	7.9	3.3
46b	" "	"	b	15.0	35.6	15.2
46c	" "	"	b	22.0	4.5	1.2
BCM-47a	Knob Cr., headste.	"	b	26.0	33.1	7.6
47b	" "	"	b	15.0	13.1	6.2
47c	Tributary, Knob Cr.	"	b	11.0	1.7	0.9
47d	Knob Creek, Trib.	"	b	41.0	21.8	4.6
47e	" " "	"	c	26.0	8.8	3.0
47f	" " "	"	b	15.0	13.7	6.6
47g	" " "	"	c	41.0	14.2	2.1
47h	" " "	"	c	26.0	26.4	6.0
BCM-48a	Foundingmill Cr.	"	b	36.0	6.7	1.8
48b	" " "	"	b	15.0	20.8	8.3
48c	Tributary, Foundingmill Creek	"	b	9.0	6.2	4.6
48d	Same as BCM-48c	"	b	26.0	34.0	7.7
48e	" " "	"	c	16.0	25.7	14.3
48f	Foundingmill Cr.	"	b?	15.0	8.7	3.5
48g	" " "	"	c	11.0	37.7	15.0
48h	" " "	"	rockier			
BCM-49a	Little Indian Cr.	Lincoln	b	30.0	63.2	12.6
49b	" " "	"	c	11.0	5.1	2.8
49c	" " "	"	b?	15.0	59.7	21.1
49d	" " "	"	c	11.0	4.3	2.3
49e	Tributary, Indian Cr.	"	b	26.0	242.4	56.3
49f	" " "	"	b	30.0	59.1	11.6



Sample No.	Locality	County	Type of gravel deposit a-channel b-bottomland	Pounds of gravel panned	Grams heavy minerals	Pounds per cu. yd.
BGM-50a	Buffalo Creek	Lincoln	b	15.0	49.2	19.8
50b	"	"	c	11.0	14.5	7.8
BGM-51	Long Branch	Cleveland	reefer			
51a	"	"	b	20.0	14.9	3.0
51b	"	"	c	23.0	49.7	12.4
51c	Tributary, Buffalo Creek	"	b	26.0	5.3	1.3
51d	Self Branch	"	b	20.0	36.3	7.1
51e	"	"	c	33.0	57.7	10.3
BGM-52a	Wagness Creek, tributary of First Broad River.	"	b	20.0	6.6	1.3
52b	Same as BGM-52a	"	c	22.0	25.5	6.9
BGM-53a	Tributary, Buffalo Cr.	"	b?	11.0	19.8	10.6
53b	"	"	c	15.0	74.5	30.0
53c	Little Buffalo Cr.	Lincoln	b	78.0	192.7	14.7
53d	Tributary, Little Buffalo Creek	"	b	20.0	70.4	14.0
53e	Same as BGM-53d	"	c	11.0	46.8	25.4
BGM-54a	Hopie Creek, tributary of First Broad River	Cleveland	c	41.0	170.0	24.6
54b	Same as BGM-54a	"	c	15.0	36.0	10.4
54c	Invester Branch	"	b	11.0	5.4	2.9
54d	" " trib.	"	b	20.0	126.2	27.4
54e	Knob Creek, tributary	"	b	37.0	45.3	7.2
54f	"	"	c	15.0	22.3	12.9
BGM-55a	Little Knob Creek	"	c	20.0	87.8	17.6
55b	"	"	b	15.0	17.8	7.2
55c	Bald Knob Creek	"	b	15.0	69.9	28.1
55d	"	"	b	15.0	11.9	4.5
55e	"	"	c	20.0	33.1	6.6
BGM-56a	Crooked Run Creek	"	b	41.0	68.2	8.4
56b	"	"	c	15.0	49.7	20.0
56c	Tributary, Crooked Run Creek	"	b	15.0	14.4	5.8
56d	Same as BGM-56a	"	c	32.0	trace	



Sample No.	Locality	County	Type of gravel deposit a-channel b-bottomland	Pounds of gravel passed	Grams heavy minerals	Pounds per cu.yd.
BGM-57a	Tributary, Webbs Branch	Rutherford	b	30.0	34.0	4.8
57b	Same as BGM-57a	"	c	11.0	82.4	28.4
57c	Webbs Branch	"	b	30.0	226.8	45.2
57d	"	"	c	12.0	12.4	5.0
57e	Tributary, Webbs Branch	"	b	11.0	83.7	45.3
BGM-58a	Roween River	Cleveland	c	15.0	6.7	2.7
58b	"	"	c	11.0	2.0	1.1
58c	Tributary, Roween River	"	b	30.0	7.7	1.5
BGM-59a	Tributary, Hickory Creek	"	c	18.0	4.1	1.6
59b	Same as BGM-59a	"	c	11.0	6.5	2.0
59c	Little Hickory Creek	"	b	15.0	9.8	2.9
BGM-60a	Tributary, Beaverdam Creek	"	b	52.0	175.0	30.0
60b	Same as BGM-60a	"	b	15.0	13.9	5.6
60c	"	"	c	11.0	182.4	103.5
60d	"	"	b	15.0	140.3	56.1
60e	"	"	c	11.0	54.0	29.2
BGM-61a	Tributary, Sandy Run Creek	"	b	30.0	310.1	63.0
61b	Same as BGM-61a	"	c	11.0	112.7	60.0
61c	Road cut	"	granite	15.0	3.1	1.2
61d	Tributary, Sandy Run Creek	"	b	11.0	28.4	15.3
61e	Same as BGM-61d	"	c	30.0	20.6	4.1
BGM-62a	Tributary, Second Broad River	Rutherford	b	41.0	25.4	2.7
62b	Same as BGM-62a	"	c	15.0	2.9	1.2
BGM-63a	Hickory Creek	Cleveland	gravel bedrock	30.0	0.5	0.1
63b	"	"	c	23.0	17.8	4.7
63c	"	"	b	15.0	30.1	12.0
BGM-64a	Tributary, Floyds Creek	Rutherford	b	26.0	97.4	23.2
64b	Same as BGM-64a	"	b	26.0	98.2	23.3
64c	"	"	c	11.0	20.7	16.6





Sample no.	Locality	County	Type of gravel deposit c-channel b-bottomland	Pounds of gravel panned	Grams heavy minerals	Pounds per cu.yd.
BGM-66a	Jarretts Creek	Rutherford	b	26.0	60.5	11.6
BGM-66a	Camp Branch, tribu- tary of Second Broad River	McDowell	c	26.0	43.5	10.0
66b	Baker Creek	"	c	15.0	36.6	10.6
66c	" "	"	b?	11.0	4.4	3.4
BGM-67a	Headwaters of Manteville Creek, a tributary of S. Muddy Creek	"	c	15.0	213.3	85.0
67b	South Fork of Muddy Creek	"	c	30.0	116.2	33.2
67c	Southeast Fork of Muddy Creek	"	c	26.0	28.8	6.6
67d	Allen Branch, a tributary of South Muddy Creek	"	b	30.0	12.6	3.6
67e	Same as BGM-67d	"	c	22.0	61.5	16.6
67f	Alexander Branch, a tributary of South Muddy Creek	"	c	26.0	26.3	8.3
67g	Long Branch, a tributary of South Muddy Creek	"	b	26.0	67.0	15.4
67h	Long Branch	"	c	26.0	33.2	8.3
67i	Spruce Branch, a tributary of South Muddy Creek	"	c	rockier		
67j	Spruce Branch	"	c	26.0	108.0	34.8
67k	Long Branch, a tributary of South Muddy Creek	"	c	15.0	24.5	9.8
BGM-68a	Tributary, North Muddy Creek	"	b	15.0	45.6	18.4
68b	Same as BGM-68a	"	c	26.0	262.9	83.0
BGM-69a	Silver Creek	Burke	c	rockier		
69b	" "	"	c	26.0	61.5	14.0
69c	Nico prospect near Silver Creek	"	bedrock	15.0	trace	
69d	Hall Creek, tribu- tary of Silver Cr.	"	c	41.0	168.8	34.4
69e	Silver Creek	"	c	26.0	214.8	49.0
69f	Brindle Creek, tribu- tary of Silver Cr.	"	b?	15.0	17.8	7.3
69g	Brindle Creek	"	c	11.0	61.2	32.9



Sample No.	Locality	County	Type of gravel deposit c-channel b-bottomland	Pounds of gravel panned	Gross heavy minerals	Pounds per cu.yd.
BGM-70a	Tributary, Gilkey Creek	Rutherford	c	56.0	343.9	26.0
70b	Gilkey Creek	"	c	26.0	372.8	65.0
BGM-71a	Mill Creek	"	c	26.0	443.4	100.1
BGM-72a	Tributary, Cathays Creek	"	b	15.0	61.6	24.6
72b	Same as BGM-72a	"	c	11.0	58.5	31.8
72c	"	"	b	26.0	97.4	12.6
72d	"	"	c	15.0	314.0	85.6
BGM-73a	Tributary, Hollands Creek	"	c	41.0	277.6	40.0
BGM-74a	Subterwhite Creek, tributary of Silver Creek	Darke	c	41.0	117.6	17.0
74b	Clear Creek, tributary of Silver Cr.	"	b	15.0	246.5	96.0
74c	Clear Creek	"	c	11.0	34.3	13.6
74d	Double Creek, tributary of Silver Cr.	"	c	26.0	103.4	23.6
BGM-75a	Little Silver Creek	"	c	78.0	68.6	6.3
75b	" " "	"	b	15.0	3.6	1.0
BGM-76a	Cove Creek, tributary	McDowell	bedrock	7.5	4.5	3.8
76b	High-level gravel on small hill near Cove Creek	"	high-level	11.0	217.0	115.0
76c	Tributary, Cove Creek	"	c	15.0	281.0	113.0
BGM-77a	Out of Clinchfield railway	"	bedrock	15.0	38.5	14.4
BGM-78a	Glade Creek	"	b	30.0	61.4	13.5
78b	Tributary, Northuddy Creek	"	c	15.0	247.0	99.0
BGM-79a	Bailey Fork Creek	Darke	c	30.0	341.5	68.5
BGM-80	Hunting Creek, headwaters	"	c	37.0	262.5	41.9
80a	Hunting Creek	"	b	15.0	31.6	12.6
80b	Tributary, Hunting Creek	"	b	30.0	32.0	6.4

Sample No.	Locality	County	Type of gravel deposit a-channel b-bottomland	Pounds of gravel passed	Grams heavy minerals	Pounds per cu.yd.
BCM-80c	Tributary, Hunting Creek	Surke	b	11.0	144.0	77.8
BCM-81a	Fiddlers Run Creek	"	b	15.0	48.0	19.2
81b	"	"	c	30.0	127.2	35.8
81c	Tributary of East prong of Fiddlers Run Creek	"	b	41.0	240.0	34.6
81d	Same as BCM-81c	"	c	11.0	11.5	6.2
81e	East prong of Fiddlers Run Creek	"	b	11.0	38.3	15.2
81f	Same as BCM-81c	"	c	30.0	192.0	38.5
BCM-82	Laurel Creek	"	c	41.0	180.3	35.5
BCM-83a	Tributary, Cub Cr.	"	c	11.0	6.9	5.7
83b	Same as BCM-83a	"	c	30.0	89.0	7.8
BCM-84a	Bridge Creek, tributary of Hoyle Cr.	"	b	22.0	34.4	6.5
84b	Same as BCM-84a	"	c	30.0	10.0	2.0
BCM-85	Long Branch, tributary of Henry Fork River	"	c	89.0	167.8	11.2
85a	Same as BCM-85	"	b	15.0	24.5	9.8
BCM-86	Stacy Branch, tributary of Henry Fork River	"	c	82.0	280.8	33.0
86a	Same as BCM-86	"	b	15.0	17.0	6.8
BCM-87	Henry Fork River	"	c	82.0	319.0	35.0
BCM-88	Rock Creek	"	c	145.0	188.4	7.9
88a	Bedrock in road cut near Rock Creek	"	granite gneiss bedrock	15.0	0.5	0.2
88b	Rock Creek	"	b	22.0	24.9	6.5
BCM-89	Camp Creek, tributary of Jacob Fork River	"	c	59.5	156.5	15.6
89a	Camp Creek	"	b	15.0	27.4	10.9
89b	Tributary, Jacob Fork River	"	b	15.0	31.5	12.5
89c	Same as BCM-89b	"	c	22.0	17.5	4.7

Sample No.	Locality	County	Type of gravel deposit c-channel b-bottomland	Pounds of gravel panned	Grams heavy minerals	Pounds per cu. yd.
BGM-89	Whiteoak Creek, tributary of Jacob Fork River	Burke	c	26.0	136.3	31.3
90a	Road cut near Whiteoak Creek	"	high-level gravel	11.0	1.0	0.9
BGM-91	Tributary, Jacob Fork River	"	c	11.0	4.7	2.5
91a	Jacob Fork River	"	c	26.0	57.9	15.2
BGM-92	Tributary, Knob Creek	Cleveland	c	96.0	232.1	18.6
BGM-93	Tributary, Jacob Fork River	Burke	c	63.0	280.9	26.6
93a	Same as BGM-93	"	b	15.0	23.1	9.3
BGM-94	Tributary, Jacob Fork River	Catawba	c	115.0	159.0	8.6
94a	Same as BGM-94	"	b	15.0	26.7	10.7
BGM-95	Tributary, Indian Creek	Lincoln	c	37.0	244.7	39.2
95a	Same as BGM-95	"	b	15.0	20.9	8.4
95b	Road cut	"	b	15.0	3.8	1.5
BGM-96	Headwaters, Howards Creek	"	c	74.0	135.3	10.8
BGM-97	Jumping Branch	Burke	c	7.5	17.3	13.5
BGM-98	Snokey Creek	Caldwell	b	26.0	15.0	3.0
BGM-99	Tributary, Lower Creek	"	c	62.0	195.2	22.2
99a	Same as BGM-99	"	b	11.0	11.2	6.0
BGM-100	Tributary, Gunpowder Creek	"	c	62.0	244.1	17.0
BGM-101	Tributary, Gunpowder Creek	"	c	37.0	21.7	3.3
BGM-102	Tributary, Cedar Creek	"	c	52.0	222.7	25.5
BGM-103	Tributary, Canoe Creek	Burke	c	30.0	197.1	39.0

Sample No.	Locality	County	Type of gravel deposit c-channel b-bottomland	Pounds of gravel passed	Grams heavy minerals	Pounds per cu.yd.
BGM-104	White Run Creek	Barke	c	26.0	37.8	8.6
104a	Road cut near White Run Creek	"	bedrock, granite gneiss	18.0	8.3	3.1
104b	Double Creek	"	c	26.0	440.4	101.0
BGM-105	Tim Creek, tributary of Henry Fork River	"	c	63.0	194.9	18.4
BGM-106	Shoal Branch, tributary of Henry Fork River	"	c	52.0	167.8	19.1
106a	Same as BGM-106	"	c	15.0	68.4	26.3
BGM-107	Tributary of Henry Fork River	Catawba	c	115.0	205.5	10.6
107a	Same as BGM-107	"	bedrock sagen gneiss	15.0	1.6	0.6
BGM-108	Tributary of Camp Creek	Catawba	c	26.0	27.6	6.3
108a	Same as BGM-108	"	c	52.0	370.5	31.1
BGM-109	Tributary of Pott Creek	"	c	26.0	62.9	15.9
BGM-110	Tributary of Pott Creek	"	b	26.0	376.5	96.0
110a	Same as BGM-110	"	c	11.0	33.8	18.3
BGM-111	Tributary of Pott Creek	"	c	37.0	179.8	28.6
111a	Same as BGM-111	"	b	15.0	28.9	11.6
BGM-112	Suspeon Creek	"	c	30.0	264.2	53.6
112a	Same as BGM-112	"	b	11.0	108.0	58.5
BGM-113	Roberts Branch, a tributary of Howards Creek	Lincoln	c			rockier sample
113a	Same as BGM-113	"	b	15.0	28.5	9.0
113b	Same as BGM-113	"	c	11.0	30.6	18.4
113c	Ventured pagonitized gneiss from near Roberts Branch	"	bedrock	15.0	1.3	0.5



Sample No.	Locality	County	Type of gravel deposit c-channel b-bottomland	Pounds of gravel panned	Grams heavy minerals	Pounds per cu.yd
BGM-114	Tributary of Roberts Branch	Lincoln	c	48.0	142.8	17.4
114a	Same as BGM-114	"	b	15.0	38.7	15.6
BGM-115	Leonard Fork Creek, a tributary of Indian Creek	"	c	37.0	206.2	33.0
115a	Leonard Fork Creek	"	b	15.0	78.2	31.6
115b	Tributary of Leonard Fork Creek	"	c	48.0	53.7	6.6
115c	Same as BGM-115 b	"	b	15.0	69.2	27.7
BGM-116	Cow Branch, a tributary of Pott Creek	Catawba	c	52.0	217.1	24.7
BGM-117	Sawmill (or "Mill") Branch, tributary of Lyle Creek	"	c	30.0	90.0	18.2
117a	Sawmill Branch	"	b	55.0	261.1	25.4
117b	Pegetized gneiss from about 1 mile north of Conover Road cut	"	bedrock	15.0	1.3	0.6
BGM-118	Tributary of Elk Shoals Creek	"	c	52.0	228.2	22.6
118a	Same as BGM-118	"	b	15.0	18.8	7.4
BGM-119	Tributary of Third Creek	Alexander	c	66.0	77.8	7.0
119a	Same as BGM-119	"	b	30.0	217.3	42.1
BGM-120	Hiddenite Mine, camp, Hiddenite, N. C.	Alexander	wallrock	15.0	1.5	0.6
BGM-121	Tributary, South Yadkin River	"	c	37.0	194.3	30.9
121a	Same as BGM-121	"	b	15.0	38.5	15.6
BGM-122	Tributary, Third creek	Iredell	b	38.0	14.8	2.3





Sample No.	Locality	County	Type of gravel deposit c-channel b-bottomland	Pounds of gravel panned	Grams heavy minerals	Pounds per cu. yd
BGM-123	Tributary, Third Creek	Iredell	c	63.0	337.3	33.0
123a	Same as BGM-123	"	b	15.0	50.3	30.3
BGM-124	Tributary, Sayre Creek	Catawba	c	11.0	17.4	9.4
124a	Same as BGM-124	"	b	78.0	143.0	18.6
124b	Road cut 2 miles east of Newton	"	bedrock	15.0	3.0	1.3
BGM-125	Tributary, South Fork River	Lincoln	c	11.0	209.6	113.9
125a	Same as BGM-125	"	b	15.0	39.3	16.0
BGM-126	Rockden Creek	"	c	23.0	155.8	42.0
126a	Same as BGM-126	"	b	15.0	57.4	15.9
BGM-127	Rock quarry on north side of Howard Creek	"	weathered magen gneiss	15.0	3.5	1.4
BGM-128	Tributary, Henry Fork River	Catawba	c	36.0	257.1	58.8
BGM-129	Tributary, Middle Little River	Alexander	c	53.0	313.4	34.4
BGM-130	Bedrock at road side near Acro Rock quarry	Cleveland	bedrock	15.0	1.9	0.6
BGM-131	Nine Nine near Adams Creek	"	wallrock, pegmatized schist	11.0	2.1	1.1
131a	Same as BGM-131	"	weathered pegmatite	11.0	0.2	0.1
BGM-132	Headwaters, Whitener Creek	Burke	c	37.0	125.3	20.0
132a	Same as BGM-132	"	b	15.0	33.1	12.9
45 WT-165 Jr.	Monasite Branch	Cleveland	c	30.0	33.3	66.8



[REDACTED]

Table 5

List of placer sample localities

Sample number	Locality	Percent equivalent uranium	
		field	lab.
WYCKSWORTH COUNTY, NORTH CAROLINA			
BCH-1	Second Broad River, at U. S. Highway 74 crossing, 1 mile east of Forest City.	0.06	0.036
BCH-2	Robinson Creek, upstream from bridge where Washburn Store-Westminster road crosses creek.	--	--
BCH-3	Cane Creek, at road crossing, 0.6 mile airline east of church at Westminster.	0.15	0.052
BCH-4	Camp Creek, just upstream from bridge where Union Mills-Westminster road crosses creek.	0.16	0.032
BCH-5a	Second Broad River at road crossing on Union Mills-Westminster Road.	0.09	--
BCH-6	Camp Creek, at bridge where Frog Creek road crosses creek, 1.5 mile airline south of Camel Knob.	0.44	0.129
BCH-7a	Cane Creek, 300 feet east of N. C. Route 181, where road to South Mountain Institute crosses Cane Creek.	0.03	--
BCH-8a,b	First Broad River headwaters on north side of Carson Mts., at road crossing 2.0 miles airline east of W. C. Route 181.	0.01	--
CLEVELAND COUNTY			
BCH-9	Big Harris Creek, 0.5 mile south and 0.5 mile west of Double Shoals.	--	--
BCH-10	First Broad River, on west bank just north of bridge at Double Shoals.	--	--
BCH-11	Unnamed branch, where road crosses 0.5 mile airline due east of Double Shoals	3.32	1.72
BCH-12	Grassy Branch, V. A. Powell farm, 0.6 mile by road east of Folkville.	3.24	1.84

/ No chemical analyses have been made.

[REDACTED]

Sample number	Locality	Percent equivalent uranium	
		field	lab.
CLEVELAND COUNTY (cont'd)			
BCH-12a	Same locality as BCH-12	--	1.80
BCH-12b	Grassy Branch, about 400 feet northeast of bridge at third crossing of Grassy Branch northeast of Polkville.	--	0.262
BCH-12c	Grassy Branch, northwest of tenant's house on Hill Powell farm, about 1500 feet upstream from V. A. Powell farmhouse.	--	2.00
BCH-12d	Same locality as BCH-12c	--	1.30
BCH-13a	Big Harris Creek headwaters, Lloyd Ellert farm, 2.0 miles airline southeast of Polkville.	5.10	--
BCH-13b	Same locality as BCH-13a	--	0.354
BCH-14a,b	Tributary on south side of Hinton Creek, upstream from road crossing 1.1 mile northwest of Polkville N. E. Church.	2.95	1.73
BCH-19a,b	Tributary on north side of Brushy Creek, about 1.5 miles airline west and a little south of Polkville, east of Champ. Crowder farm.	4.20	2.02
BCH-20a,c	Brushy Creek, just upstream from road crossing 2.7 miles airline west and a little south of Polkville.	2.62	--
BCH-20d	Dry gully 500 feet northeast of BCH-20c	--	--
BCH-21a	First major tributary on the north side of Brushy Creek just upstream from road bridge 0.5 mile west of N. C. Route 26 and 1.3 mile airline northwest of the center of Shelby.	--	0.243
BCH-22	Branch of Brushy Creek, at road crossing west of N. C. Route 26 and 1.3 mile west of Zion Church.	--	--
BCH-22a	Branch of Brushy Creek, at road crossing of the second creek west of BCH-22.	--	--

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Sample number	Locality	Percent equivalent uranium	
		field	lab.
CLEVELAND COUNTY (cont'd)			
BCM-23a	Tributary of Brushy Creek, just downstream from road crossing, southeast of Cliff Blanton farm, 1.2 mile airline west and a little south of the junction of N. C. Route 26 and the Double Springs road.	0.96	--
BCM-24a	Little Harris Creek, at road crossing 1.4 mile airline east of Campall.	3.04	--
BCM-25	"East Prong" of Sandy Run Creek just upstream from road bridge 3.0 miles airline north of Mooresboro.	--	--
BCM-26a	Tributary of Wayne Creek, which is a tributary of "East Prong" of Sandy Run Creek, 2.0 miles airline south of New House.	1.12	0.250
BCM-26c	Tributary of Wayne Creek, just upstream from road bridge about 0.25 mile east of Emmett Green farmhouse, which is about 2 miles south and a little east of New House.	--	0.475
BCM-26d	Tributary of Wayne creek (different tributary from BCM-26c) behind Emmett Green house.	1.72	0.400
RUTHERFORD COUNTY			
BCM-27a	"East Prong" of Sandy Run Creek, at road crossing 1.7 mile airline east of Hopewell.	0.67	0.272
BCM-27b	Tributary of "East Prong" of Sandy Run Creek. 1.1 miles airline east and a little north of Hopewell.	--	--
BCM-27c	Small tributary of "East Prong" of Sandy Run Creek, 1.8 mile S.43°E. of Hopewell.	1.64	--
BCM-28	Headwaters of small tributary of Sandy Run Creek on property of Mr. John Glover.	--	--
BCM-28b	"East Prong" of Sandy Run Creek on the property of Mr. Clyde Geddison	--	--
BCM-28c	Tributary of the "East Prong" of Sandy Run Creek at road crossing 0.5 mile east of Mr. John Glover's farmhouse.	--	--



Sample number	Locality	Percent equivalent uranium	
		field	lab.
RUTHERFORD COUNTY (cont'd)			
BCM-29	Headwaters of Hinton Creek, 1.5 miles west of Hollis, on property of Mr. Zene Gettys.	--	--
BCM-30	Two small tributaries of Duncan Creek, 1.3 miles airline north of Hollis.	--	--
BCM-31a	Ison Branch, a tributary of Duncan Creek, at ford on property of Mr. Painter, 0.4 mile by road northwest of Duncan Creek Church.	--	1.08
BCM-31b	Tributary of Ison Branch, 1 mile west of BCM-31a, 500 feet downstream from Mr. Waters' farmhouse.	--	0.900
BCM-31c	Tributary of Ison Branch, just downstream from ford which lies just west of Mr. Waters' farmhouse.	--	1.40
BCM-31d	Tributary of Ison Branch, just upstream from ford which lies just east of Mr. Waters' farmhouse.	--	1.33
BCM-31e	Ison Branch at road crossing, 0.7 mile airline west of Duncan Creek Church.	3.07	0.785
BCM-32	Puzzle Creek, at sand sucker, at road crossing 0.75 mile east of Bostic.	--	--
BCM-33	Heaveners Creek at road crossing, 0.6 mile north of Sashburn Store.	--	--
BCM-34a,b	Duncan Creek at road crossing, 1.7 miles by road northeast of Sunshine on the paved road	0.35	--
BCM-34d	Tributary of Duncan Creek on south side, 0.6 mile airline east of bridge where Sunshine-Golden Valley road crosses Duncan Creek. Property of Mr. Murray.	2.62	--
BCM-35	Small branch that crosses Duncan Creek Church, Rt. 190 road at Horace Covison farm, 1.4 miles by road northeast of Duncan Creek Church.	--	--
BCM-36	Tributary of First Broad River at crossing of N. C. Route 190 2.5 miles airline due north of Hollis.	--	--



Sample Number	Locality	Percent equivalent uranium	
		field	lab.
RUTHERFORD COUNTY (cont'd)			
BGM-37	Brier Creek, 1.0 mile north of the junction of Brier Creek road and Golden Valley-Casar Road.	--	--
BGM-37c	Brier Creek, about 1.7 miles upstream from BGM-37.	--	--
BGM-38	Tributary of First Broad River where Golden Valley-Casar road crosses creek, about 8.0 miles west of Casar. On Mr. John Queen's property.	--	--
BGM-39a	North Fork of First Broad River, 2.5 miles airline north of N.C. Route 26.	--	0.117
BGM-39b	Same locality as BGM-39a	0.73	0.155
BGM-40a,b	Hard Bargain Branch, several localities west of N. C. Route 26 between 2 and 3 miles airline south of Bolin Gap.	0.72	0.280
BGM-40c	Same locality as BGM-40b	--	0.120
BGM-41	Tributary of First Broad River just east of road fork, 0.5 mile west of Golden Valley Church.	--	--
BGM-41b,c	South Creek, east of ford, about 0.9 mile airline southeast of Golden Valley Church. On Mr. John Tomney's property.	1.35	0.253
CLEVELAND COUNTY			
BGM-42	Tributary of Ward Creek, 1.6 miles airline N. 30° E. from Casar. Mr. Andy McKeely's property.	--	--
BGM-42a	Another tributary of Ward Creek near spring behind Mr. McKeely's farmhouse.	--	--
BGM-43	Small branch at crossing of Pisgah Church-Concord Church road, 1.5 miles airline north and a little west of Casar.	3.53	1.77
BGM-43b	Another branch 200 feet south of Pisgah Church-Concord Church Road, 1.5 miles airline north and a little west of Casar. In Mr. R. E. Snake's pasture.	--	--

Sample number	Locality	Percent equivalent uranium	
		field	lab.
CLEVELAND COUNTY (cont'd)			
BCH-44	Hard Creek where Hard Gap road crosses creek, 2.8 miles airline north of Caser.	--	--
BCH-45	Tributary of Adams Branch where new road crosses creek south of N. C. Route 10 and 1.25 miles west of Belwood road, which lies east of Adams Branch.	--	--
BCH-46	Tim Creek about 800 feet south of county road and about 1 mile upstream from the confluence of Tim Creek and Hard Creek, at west edge of Mr. Andy Parker's property.	3.05	--
BCH-46a, b, c	Tim Creek, various localities between ford where Tim Creek Road crosses creek and the Andy Parker property at BCH-46	4.65	--
BCH-47a	Knob Creek headwaters just upstream from road crossing 1.5 miles airline north of Olive Grove Church, on Mr. G. J. Johnson's property.	2.32	--
BCH-47b	Knob Creek just upstream from first tributary on north side of creek east of Olive Grove Church.	--	--
BCH-47c	First tributary on north side of Knob Creek at road crossing east of Olive Grove Church.	--	--
BCH-47d	Second tributary on north side of Knob Creek east of Olive Grove Church.	--	--
BCH-47e	Tributary on north side of Knob Creek which runs under third bridge on road east of Olive Grove Church.	--	--
BCH-47f	Deep valley on east side of road that connects N. C. Route 18 with the former town of Iite. Sample taken at spring in woods, just downstream from cleared land.	--	0.348
BCH-47h	Knob Creek at road crossing 1.7 miles S. 7° W. from Carpenter Knob on Mr. Gordon Carpenter's property	--	--
BCH-48a	Headwaters of Foundingmill Creek, on west side of road that lies between Carpenters Knob and Buffalo Knob, about 0.5 mile by road, south of N. C. Route 18.	--	1.70



Sample number	Locality	Percent equivalent uranium	
		field	lab.
CLEVELAND COUNTY (cont'd)			
BCH-48b	Foundingall Creek, 0.4 mile south of BCH-48a and about 1.5 miles by road northwest of the point where County Route 10 crosses the Lincoln-Cleveland county line at Toluca.	--	0.620
BCH-48c	Small tributary on east side of Foundingall Creek, 1.2 miles by road northwest of the point where County Route 10 crosses the Lincoln-Cleveland County line at Toluca.	--	0.775
BCH-48d,e	Tributary on the east side of Foundingall Creek at road crossing 0.8 mile airline north of Toluca.	1.72	--
BCH-48h	Foundingall Creek at road crossing 0.9 mile airline southeast of the top of Carpenters Knob.	3.16	0.710
LINCOLN COUNTY			
BCH-49a	Little Indian Creek at road crossing 1.0 mile airline due east of the town of Laurel Hill.	2.00	--
BCH-49b	Same locality as BCH-49a.	--	0.437
BCH-49c	Little Indian Creek at road crossing 1.3 miles southeast of BCH-49a and about 10 miles airline southeast of the town of Laurel Hill.	--	0.300
BCH-49d	Same locality as BCH-49c.	--	0.915
BCH-49e	Tributary of Little Indian Creek at road crossing about 0.3 mile southeast of BCH-49c and about 1.0 mile southeast of the town of Laurel Hill.	0.52	0.179
BCH-49f	Tributary of Indian Creek, at road crossing, 1.3 miles due south of Dora.	1.30	--
BCH-50a	Buffalo Creek at road crossing where N.C. Route 27 crosses creek 0.6 mile airline east of Toluca.	2.02	--
BCH-50b	Same locality as BCH-50a	--	0.255
CLEVELAND COUNTY			
BCH-51	Long Branch, a tributary of Buffalo Creek at road crossing, 1.0 mile airline southeast of Fallston.	4.00	1.49





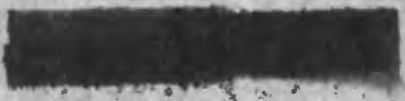
Sample number	Locality	Percent equivalent uranium	
		field	lab.
CLEVELAND COUNTY (cont'd)			
BCH-51a	Same locality as BCH-51	--	1.51
BCH-51c	Small tributary of Buffalo Creek where Route 16 crosses branch, 0.5 mile north of McGowan Store, which is about 4.5 miles north of Shelby.	--	--
BCH-51d	Self Branch, which forms the south boundary of Mr. W. J. Martin's property 1.5 miles south of Fallston.	--	--
BCH-52a,b	Magnoss Creek at road crossing, 3.6 miles airline S. 25° W. of Fallston.	4.16	--
BCH-53a	Tributary of Buffalo Creek 60 feet downstream from road crossing 1.1 miles airline northeast of Fallston.	--	--
LINCOLN COUNTY			
BCH-53c	Head waters of Little Buffalo Creek at road crossing, ^{about 4.0} 4.2 miles airline northeast of Fallston.	1.85	0.658
BCH-53d	Tributary of Little Buffalo Creek at road crossing, 0.4 mile airline southeast of North Brook School, and 0.9 mile northeast of Flay.	2.81	--
BCH-53e	Same locality as BCH-53d	--	0.855
CLEVELAND COUNTY			
BCH-54a	Headwaters of Maple Creek at road crossing, 1.0 mile airline southeast of Belwood School. Mr. Nead Wilson's property.	2.06	0.860
BCH-54b	Branch of Maple Creek at road crossing 0.1 mile west of BCH-54a.	--	--
BCH-54c	Ivester Branch, a tributary of Knob Creek at Ivester farmhouse, 0.7 mile southwest of Belwood School.	--	--
BCH-54d	Small tributary of Ivester Branch, 0.25 mile west of Ivester farmhouse, 1.0 mile airline west and a little south of Belwood School.	3.60	2.00





Sample number	Locality	Percent equivalent uranium	
		field	lab.
CLEVELAND COUNTY (cont'd)			
BCM-54a,f	Tributary of Knob Creek at road crossing 2.4 miles airline west of Belwood School	1.72	--
BCM-55a	Headwaters of Little Knob Creek at road crossing, 0.9 mile airline north of St. Paul Church. Mr. Wesley A. Cook's property.	0.82	--
BCM-55b	Same locality as BCM-55a.	--	0.398
BCM-55c,d	Head Knob Creek and small tributary at road crossing, 1.4 miles airline northeast of Casar.	3.30	--
BCM-56a,b	Headwaters of Crooked Run Creek at road crossing, 1.1 miles airline due south of Casar.	3.50	--
BCM-56c	Small tributary of Crooked Run Creek at road crossing, 0.5 mile west of the Leawald-Casar road 4.7 miles airline south of Casar.	--	--
RUTHERFORD COUNTY			
45Mt-165Br	Resample of J. B. Wertz's locality on Menasite Branch (a tributary on the east side of Sandy Run Creek), 3.0 miles airline northwest of Mooresboro.	3.53	1.20
BCM-57a	Tributary on the west side of Webb's Branch at road crossing, 0.5 mile north of U. S. Highway 74.	--	--
BCM-57c	Webb's Branch, 1000 feet east of gravel road and 0.9 mile airline north of the bridge where U. S. Highway 74 crosses Webb's Branch.	0.95	0.195
BCM-57d	Same locality as BCM-57c	--	0.306
BCM-57e	Small tributary on north side of Webb's Branch about 0.8 mile airline north of bridge where U. S. Highway 74 crosses Webb's Branch.	--	--
CLEVELAND COUNTY			
BCM-58a	Bowen River, where N. C. Route 18 crosses, 8.0 miles south of Shelby.	--	--





Sample number	Locality	Percent equivalent uranium	
		field	lab.
CLEVELAND COUNTY (cont'd)			
BCN-58a	Tributary on the south side of Bowen River, about 0.7 mile airline upstream from BCN-58a.	--	--
BCN-59a	Headwaters of first tributary on east side of Hickory Creek above mouth, 1.2 miles airline west of Patterson Springs.	--	--
BCN-59b	Branch on north side of first tributary on east side of Hickory Creek, 500 feet north of BCN-59a.	--	--
BCN-59c	"Little Hickory Creek" just south of N. C. Route 150 and 2.8 miles airline east of Shelby. On Mr. W. M. Spake's property.	--	--
BCN-60a	Headwaters tributary on east side of Beaverdam Creek at road crossing, 0.5 miles airline west of Shanghai School.	2.54	0.819
BCN-60b	Tributary on west side of Beaverdam Creek at road crossing, 2.3 miles airline northeast of Boiling Springs.	--	0.145
BCN-60c	Same locality as BCN-60	1.23	0.410
BCN-60d	Tributary on the west side of Beaverdam Creek (about 1.0 mile south of BCN-60b at road crossing, 1.3 miles airline northeast of Boiling Springs.	1.01	0.304
BCN-60e	Same locality as BCN-60d.	--	0.301
BCN-61a	Tributary on east side of Sandy Run Creek where Boiling Springs-Lattimore road crosses creek, 2.7 miles airline north of Boiling Springs.	1.02	0.250
BCN-61b	Same locality as BCN-61a on U. S. Highway 74.	--	0.164
BCN-61c	Road cut at R. R. trestle, 0.7 mile by road east of Mooresboro.	--	--
BCN-61d	Tributary on west side of Sandy Run Creek at road crossing, on the southern City limits of Mooresboro.	--	--



Sample number	Locality	Percent equivalent uranium	
		field	lab.
RUTHERFORD COUNTY			
BCM-62a,b	Tributary of Second Broad River at road crossing, 3.0 miles airline southwest of Ellenboro and 1.3 miles airline northeast of Caroleen.	3.80	--
CLEVELAND COUNTY			
BCM-63b,c	Headwaters of Hickory Creek on southwest side of Shelby Airport and 2.6 miles airline northeast of Shelby.	5.20	--
RUTHERFORD COUNTY			
BCM-64a	Tributary on west side of Floyd's Creek at road crossing, 1.1 mile airline south of Frog Level.	1.01	--
BCM-64b	Tributary on west side of Floyd's Creek at road crossing, 0.2 mile west of County Route 22 and 2.8 mile airline south of Frog Level.	1.16	0.243
BCM-65a	Headwaters of Jarrette Creek (a tributary of Broad River) at ford about 5.0 miles airline south of Rutherfordton.	--	--
McDOWELL COUNTY			
BCM-66a	Camp Branch, a tributary of Second Broad River, at ford about 1.5 miles airline upstream from bridge where U. S. Highway 221 crosses branch.	0.01	--
BCM-66b	Baker Creek, a tributary of Second Broad River, about 1 mile upstream from bridge where U. S. Highway 221 crosses creek.	--	--
BCM-67a	Headwaters of Huntville Creek, 400 feet upstream from county road crossing near Mark Rohsfield's farmhouse.	0.77	0.195
BCM-67b	South Ford of Huddy Creek at road crossing, 3.0 miles airline west of Dysortsville.	0.18	0.060
BCM-67c	Southeast Fork of Huddy Creek at road crossing, 0.2 mile airline south of Dysortsville.	--	--
BCM-67d	Allen Branch at road crossing 1.4 miles airline northwest of Dysortsville.	--	--
BCM-67f	Alexander Branch, at road crossing, 2.4 miles airline northwest of Dysortsville.	--	--



Sample number	Locality	Percent equivalent uranium	
		field	lab.
MCDONELL COUNTY (cont'd)			
BCM-67g,h	Long Branch, tributary of South Muddy Creek, where U. S. Route 190 crosses branch, 3.1 miles airline northwest of Dysortville.	0.38	--
BCM-67i	Spruce Branch at crossing of road to Mr. Lee Hill's farmhouse, about 3.0 miles airline west of Dysortville.	0.62	0.140
BCM-67k	Long Branch at road crossing 1.5 miles airline east of BCM-67g,h.	--	--
BCM-68a	Tributary of North Muddy Creek at road crossing, 1.0 mile southeast of junction of U. S. Route 190 and U. S. Highway 221. On State Prison Camp property.	--	0.024
BCM-68b	Same locality as BCM-68a.	0.07	0.008
BERKE COUNTY			
BCM-69a	Silver Creek at road crossing, 2.2 miles airline north and a little east of Pilot Sta., and 1.3 miles airline northwest of Brindletown.	0.63	0.169
BCM-69c	Dump of mica prospect pit about 2000 feet west of BCM-69a	--	--
BCM-69d	Hall Creek where U. S. Highway 64A crosses creek at Brindletown.	0.54	0.221
BCM-69e	Silver Creek where U. S. Highway 64A crosses creek, 1.2 miles airline southeast of Pilot Sta.	0.44	0.133
BCM-69f	Erindle Creek where U. S. Highway 64A crosses creek, 1.2 miles southwest of Brindletown.	--	--
RUTHERFORD COUNTY			
BCM-70a	Tributary of Gilkey Creek at road crossing, 1.6 miles airline west and a little south of Thermal City.	0.11	0.021
BCM-70b	Headwaters of Gilkey Creek at road crossing, 2.6 miles airline west and a little south of Thermal City.	0.000	--
BCM-71a	Mill Creek on east side of Chalk Mountain at road crossing, 3.6 miles airline southwest of Thermal City.	0.04	0.011



Sample number	Locality	Percent equivalent uranium	
		field	lab.
RUTHERFORD COUNTY (cont'd)			
BCM-72a	Tributary on west side of Cathays Creek, 1000 feet upstream from road crossing, 1.6 miles airline southeast of Gilkey.	---	--
BCM-72c	Tributary on east side of Cathays Creek at road crossing, 2.5 miles airline east and a little south of Gilkey.	0.18	0.009
BCM-72d	Tributary on the east side of Cathays Creek at road crossing, 2.5 miles airline east and a little south of Gilkey.	0.14	0.113
BCM-73a	Tributary of Hollands Creek at road crossing, 2.3 miles airline northeast of the center of Rutherfordton.	1.76	--
BUNY COUNTY			
BCM-74a	Buttershite Creek, where U. S. Highway 64 crosses creek, about 2.0 miles airline northeast of Brindletown.	--	--
BCM-74b	Clear Creek, where U. S. Highway 64 crosses creek, about 3.0 miles by road northeast of Brindletown.	0.15	--
BCM-74c	Same locality as BCM-74b	--	0.024
BCM-74d	Double Creek at first road crossing north of bridge, where U. S. Highway 64 crosses creek.	--	--
BCM-75a	Little Silver Creek on Tom Lytle's farm, about 1.2 miles airline southwest of Glen Alpine.	2.06	--
McDONELL COUNTY			
BCM-76a	Road cut on road between Sugar Hill and White House, 0.5 mile south of Sugar Hill.	--	--
BCM-76b	High-level gravel in road cut on small hill between Sugar Hill and White House, about 1.0 mile by road south of Sugar Hill.	0.01	--
BCM-76c	Tributary of Cove Creek at road crossing about 1.5 miles south of Sugar Hill.	0.01	--
BCM-77a	Out on the east side of the Clinchfield Ry., 200 feet east of U. S. Highway 221 and 0.5 mile north of the McDonell-Rutherford county line.	--	--



Sample number	Locality	Percent equivalent uranium	
		field	lab.
MCDOWELL COUNTY (cont'd)			
BCM-78a	Glade Creek at road crossing, 0.5 mile southeast of Glenwood (on Southern R. R.) On Mr. Goforth's property.	--	--
BCM-78b	Tributary of North Waddy Creek on south side, at road crossing, 1.8 miles airline southeast of State Prison Camp No. 908	0.06	--
MURKIN COUNTY			
BCM-79a	Bailey Fork Creek, 1.0 mile airline southwest of Chambers crossroad, On Mr. Wilson's property.	0.39	--
BCM-80	Headwaters of Hunting Creek, about 1.2 miles airline southeast of Chambers crossroad. On Mr. Lew Shipping's property.	0.24	--
BCM-80a	Same locality as BCM-80.	--	0.019
BCM-80c	Tributary of Hunting Creek on east side, 1.5 miles airline due south of Brittain Store. On Mr. Smith's property.	0.25	--
BCM-81b	Fiddlers Run Creek at road crossing, 0.3 mile east of Brittain Store.	0.21	--
BCM-81c	Headwater tributary of East Prong of Fiddlers Run Creek, 1000 feet upstream from road crossing, 1.8 miles airline east of Brittain Store.	0.01	--
BCM-81d	Same locality as BCM-81c.	--	0.107
BCM-81e	^{East prong of} Fiddlers Run Creek at road crossing, 1.5 miles airline due east of Brittain Store.	--	0.104
BCM-81f	Same locality as BCM-81e.	0.77	--
BCM-82	Laurel Creek at roadside, 4.3 miles by road upstream from the mouth of Laurel Creek.	0.58	--
BCM-83a	Tributary of Cub Creek at road crossing, 3.4 miles airline southeast of Valdese and 0.5 mile southwest of Smith Mountain.	--	1.49
BCM-83b	Same locality as BCM-83a	--	1.13



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Sample number	Locality	Percent equivalent uranium	
		field	lab.
BIRKE COUNTY (Cont'd)			
BCM-84a	Tributary of Bridge Creek where Absc-Valdese road crosses creek, 1.5 miles airline southeast of Valdese.	--	--
BCM-85	Long Branch at ford, 0.7 mile airline northwest of Enola. On Mr. O. J. Denton's property.	0.76	--
BCM-85a	Same locality as BCM-85.	--	--
BCM-86	Stacy Branch at road crossing, 0.4 mile airline southeast of Enola.	1.12	--
BCM-86a	Same locality as BCM-86.	--	0.159
BCM-87	Henry Fork River, at ford 300 feet upstream from Bethlehem Church.	0.17	--
BCM-88	Rock Creek at abandoned road crossing, 1.0 mile airline east of Pleasant Grove Church. On Mr. Pinkney York's property.	1.94	--
BCM-88a	Road cut near hilltop, 1.5 miles by road east of Pleasant Grove Church.	--	--
BCM-88b	Same locality as BCM-88.	--	0.675
BCM-89	Camp Creek, a tributary of Jacob Fork River, at road crossing, 0.7 mile airline southwest of Ramsay crossroad.	2.75	--
BCM-89a	Same locality as BCM-89.	--	1.27
BCM-89b	Tributary of Jacob Fork River on south side at road crossing 0.9 mile airline due west of Ramsay crossroad.	--	--
BCM-90	Whiteoak Creek at road crossing, 1.3 miles airline west and a little north of Ramsay crossroad.	0.72	--
BCM-90a	High-level gravel on north side of Whiteoak Creek (at road crossing) near ford, 1.8 miles airline west of Ramsay crossroad.	--	--
BCM-91	Tributary of Jacob Fork River at end of road up river, 3.0 miles airline west and a little north of Ramsay crossroad. On Bryson York's property.	--	--



Sample number	Locality	Percent equivalent uranium	
		field	lab.
BURKE COUNTY (cont'd)			
BCM-91a	Jacob Fork River at road bridge, which crosses river in a north-south direction, 2.2 miles airline northwest of Ramsay crossroad.	1.24	--
CLEVELAND COUNTY			
BCM-92	Tributary of Knob Creek, 0.5 mile airline southwest of Carpenters Knob. On Joe Costner (formerly Wade McClurd) property.	2.35	--
BURKE COUNTY			
BCM-93	Small tributary on north side of Jacob Fork River, about 1.5 miles airline northeast of Ramsay crossroad.	2.26	--
BCM-93a	Same locality as BCM-93	--	0.790
CATAWBA COUNTY			
BCM-94	Tributary on the south side of Jacob Fork River, 1.5 miles airline due north of Buffalo Knob.	1.90	--
BCM-94a	Same locality as BCM-94	--	0.675
LINCOLN COUNTY			
BCM-95	Headwater tributary of Indian Creek at road crossing, 1.0 mile airline due west of Henry.	0.99	--
BCM-95a	Same locality as BCM-95	--	--
BCM-95b	Ditch on north side of road, about 0.3 mile west of brick church at Henry.	--	--
BCM-96	Headwaters of Howards Creek at road crossing, 1.2 miles airline north and a little west of Vals.	--	--
BURKE COUNTY			
BCM-97	Jumping Branch, a tributary on north side of Catawba River, at road crossing, 3.0 miles airline northeast of Drexel.	--	--
CALDWELL COUNTY			
BCM-98	Smokey Creek at road crossing 0.95 mile S. 78° E. from Riptoe Mt.	--	--

ANALYZED





Sample number	Locality	Percent equivalent uranium	
		field	lab.
CALEWELL COUNTY (cont'd)			
BCM-99	Tributary of Lower Creek on north side of road, about 1.4 miles S. 60° W. from Bradford Mtn.	2.32	--
BCM-99a	Same locality as BCM-99	--	0.024
BCM-100	Tributary on north side of Gunpowder Creek at road crossing, 1.8 miles airline east of Hudson and 1.5 mile S. 26° W. from Chestnut Mtn.	2.26	--
BCM-101	Small tributary on north side of Gunpowder Creek, 1.3 miles S. 75° E. of Chestnut Mtn.	--	--
BCM-102	Tributary on south side of Cedar Creek on south side of Herman Mtn. road, 1.5 miles airline due west of Cedar Valley crossroad.	0.26	--
BURKE COUNTY			
BCM-103	Tributary on south side of Canoe Creek just west of Glen Alpine-Oak Hill road, about 2.5 miles airline south and a little west of Gold.	0.04	--
BCM-104	Whites Run Creek at road crossing, 1.6 miles airline northwest of Chesterfield.	--	--
BCM-104a	Deep road cut on N. C. Route 18, 1.2 miles airline southwest of Chesterfield crossroad.	--	--
BCM-104b	Double Creek at bridge where U. S. Highway 70 crosses creek, 1.5 miles airline southwest of Drexel.	0.99	--
BCM-105	Tim Creek at road crossing, 1.5 miles airline south of Icard. On Mr. Lester Taylor's property.	1.38	--
BCM-106	Shoal Branch at road crossing 2.4 miles airline south and a little west of Icard.	2.19	--
BCM-106a	Shoal Branch, about 0.5 mile northwest of BCM-106, in farmyard of Mr. Fondo Lowman, 0.25 mile west of county road.	--	--
CATAWBA COUNTY			
BCM-107	Tributary of the Neary Fork on the north side of Baker Mtn. at road crossing, 0.8 mile airline northwest of Baker Mtn. triangulation station (Niskory Quadrangle, U.S.G.S.)	0.51	--



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Sample number	Locality	Percent equivalent uranium	
		field	lab.
CATANEA COUNTY (cont'd)			
BCM-108	Tributary of Camp Creek at road crossing, 2.1 miles airline southwest of Baker Mtn triangulation station. This branch divides the property of Miss Claude Loman and Mr. J. W. Whisenant.	--	--
BCM-108a	Tributary on north side of Camp Creek, 1.8 miles airline southwest of Baker Mtn. triangulation station. On Mr. Whitener's property.	0.47	--
BCM-109	Tributary of Pott Creek, on south side of Mr. Jarrett's property (Mr. Dick Fulbright tenant) 0.5 mile east of Sardis Church, which is on the south side of N. C. Route 10.	--	--
BCM-110	Tributary of Pott Creek south of Mr. O. T. Hoyle's farmhouse, 0.25 mile west of Blackburn Store, which is on N. C. Route 10.	1.29	--
BCM-110a	Same locality as BCM-110	--	0.530
BCM-111	Tributary of Pott Creek, 1000 feet upstream from road crossing, 0.3 mile airline southeast of Plateau.	1.32	--
BCM-112	Sussex Creek, a tributary of Pott Creek, at road crossing, about 1.0 mile airline southeast of Plateau.	0.61	0.164
LINCOLN COUNTY			
BCM-113	Roberts Branch at road crossing, 2.0 miles airline north and a little west of Reepville. On Perry Jonas' property.	1.68	--
BCM-113a	Same locality as BCM-113	--	0.305
BCM-114	Tributary of Roberts Branch at road crossing, 1.4 miles airline northwest of Reepville.	1.41	0.560
BCM-115	Leonard Fork Creek at road crossing, 2.5 miles south and a little west of Reepville. On Mr. Grigg's property.	1.75	--
BCM-115a	Same locality as BCM-115	--	0.700
BCM-115b	Tributary of Leonard Fork Creek, 0.8 mile airline due east of White Lion Church. At ford on Dr. Reep's property.	2.55	--



Sample number	Locality	Percent equivalent uranium	
		field	lab.
CATANRA COUNTY			
BCM-116	Cow Branch, a tributary of Pott Creek, about 1.0 mile airline north and a little west of Plateau.	0.52	--
BCM-117	Sawmill (Mill) Branch, a tributary of Lyle Creek, about 0.5 mile airline northwest of Stipes Grebard Home. On Luther Prebat's property 4 miles northwest of Conover.	1.09	--
BCM-117b	Read cut on county road west of N. C. Route 16, about 1.0 mile north of Conover.	--	--
BCM-118	Tributary of Elk Shoals Creek at road crossing, 1.4 miles by road east and a little south of S. C. Holler Service Station, which is on N. C. Route 16, about 4 miles north of Conover.	1.44	--
BCM-118a	Same locality as BCM-118	--	0.37
ALEXANDER COUNTY			
BCM-119	Tributary of Third Creek at road crossing, 1.1 mile airline south of Hiddenite.	--	0.321
BCM-119a	Same locality as BCM-119.	0.34	--
BCM-120	Abandoned hiddenite mine, on south side of N. C. Route 90, 1.0 mile west of Hiddenite.	--	--
BCM-121	Tributary on north side of South Yadkin River, 2.3 miles airline N.75°E. of Hiddenite.	0.30	--
BCM-121a	Same locality as BCM-121.	--	0.140
IREDELL COUNTY			
BCM-122	Tributary of Third Creek at road crossing on Stoney Point-New Sterling Church road, 1.4 miles by road south of N. C. Route 90 at Stoney Point.	--	--
BCM-123	Tributary on the west side of Third Creek about 2.3 miles airline southwest of the junction of N. C. Route 90 and U. S. Highway 70. Locality at dirt road crossing creek 250 feet north of U. S. Highway 70.	0.44	--



Sample number	Locality	Percent equivalent uranium	
		field	lab.
IREDELL COUNTY (cont'd)			
BCM-123a	Same locality as BCM-123	--	0.066
CATANBA COUNTY			
BCM-124	Tributary of Sayre Creek at bridge where gravel road crosses creek 200 feet north of N. C. Route 16, 1.9 miles by road southeast of the junction of N. C. Route 16 and Route 10, east of Newton.	0.22	0.062
BCM-124a	Same locality as BCM-124	--	0.026
BCM-124b	Deep road cut on N. C. Route 16, 0.4 mile southeast of the junction of Route 16 and N. C. Route 10.	--	--
LINCOLN COUNTY			
BCM-125	Tributary of South Fork River at road crossing, 0.2 mile airline east of old Ramsour Bridge (abandoned) across South Fork.	0.03	0.007
BCM-126	Rockdam Creek at road crossing, 0.2 mile south of N. C. Route 27 and 3.7 miles airline due west of Lincolnton.	0.34	--
BCM-126a	Same locality as BCM-126.	--	0.019
BCM-127	Quarry on north side of Howards Creek, about 2.0 miles by road south of Reepville.	--	--
CATANBA COUNTY			
BCM-128	Tributary of Henry Fork River at road crossing, 1.6 miles airline due east of Brookford.	1.22	--
ALEXANDER COUNTY			
BCM-129	Tributary on east side of Middle Little River at road crossing 3.0 miles airline S. 30°W. from the top of Barrett Mtn. (Hickory quadrangle, U. S. G. S.)	0.87	--



Sample number	Locality	Percent equivalent uranium	
		field	lab.
CLEVELAND COUNTY			
BCM-130	Ditch at side of dirt road just southwest of Acre Rock, 1.0 mile airline southwest of Tolusa.	--	--
BCM-131	Mica pegmatite mine on county road just east of Adams Creek, 2.5 miles west and a little south of Tolusa, at entrance to Mr. Randall's property.	--	--
BURKE COUNTY			
BCM-132	Headwaters of Whitener Creek at road crossing, 1.8 miles due east of Pleasant Grove Church, which is on N. C. Route 18.	1.20	--

✓ No chemical analyses have been made.



[REDACTED]

Table 6
Bedrock Samples

Sample No.	Locality	Type of rock	Percentage heavy minerals by weight	Heavy minerals (field identification)
BGM-1b	On U.S. Highway 74, 1.0 mile east of Forest City, Rutherford County	Weathered gneiss	trace	black sand, yellow monazite
BGM-22a	Branch of Brushy Creek, 1.3 miles west of Zion Church, Cleveland County	Weathered pegmatized gneiss	0.007	yellow monazite
BGM-42c	Tributary of Ward Creek behind Ho-Neely farmhouse 1.6 miles northwest of Cassat, Cleveland County	Weathered pegmatized gneiss	0.023	yellow monazite, black sand
BGM-61a	Road cut 1.0 mile east of Mooresboro, Cleveland County	Weathered granite gneissoid	0.044	yellow monazite, zircon
BGM-63a	Old British Monazite Plant on headwaters of Hickory Creek, Cleveland County	Weathered pegmatized gneiss	✓ 0.005	amber-colored monazite, zircon
BGM-69c	Nica pegmatite prospect on west side of Silver Creek, Burke County	Weathered pegmatite dike	trace	yellow monazite, little black sand, no zircon
BGM-76a	Road cut 0.5 mile south of Sugar Hill, McDowell County	Weathered granite, gneissoid	0.140	abundant magnetite, little zircon, no monazite
BGM-77a	Cut on Clinchfield Ry., 0.5 mile south of the McDowell-Rutherford County line	Weathered granite, gneissoid	0.53	abundant euhedral magnetite, no monazite

✓ Samples taken during early bedrock mining at this locality contained from 0.03 to 1.10 percent monazite. *Stearns, D. B., op. cit., p. 261, 1907.*

[REDACTED]

Bedrock Samples

Sample No.	Locality	Type of rock	Percentage heavy minerals by weight	Heavy minerals (field identification)
BCM-88a	Road cut 1.3 miles east of Pleasant Grove Church, Burke County	Weathered granite, gneissoid	0.007	garnet, green monazite, a few grains of yellow monazite
BCM-104a	Cut on N.C. Route 18, 1.3 miles airline southwest of Chesterfield, Burke County	Weathered granite, gneissoid	0.077	abundant epidote, zircon, no monazite
BCM-107a	Tributary of Henry Fork River, 0.8 mile airline northwest of Baker Mtn. triangulation station, Catawba County	Weathered migmatite gneiss	0.022	zircon, black sand, little yellow monazite
BCM-115c	Roberts Branch, 2.0 miles airline north and a little west of Reesville, Lincoln County	Weathered pegmatized gneiss	0.019	yellow monazite, a few grains of black sand
BCM-117b	Cut on county road west of N.C. Route 16, about 1.0 mile north of Conover, Catawba County	Weathered pegmatized gneiss	0.019	yellow monazite, zircon
BCM-120	Abandoned hiddenite mine, 1.0 mile west of Hiddenite, Alexander County	Weathered biotite gneiss	0.022	black sand, yellow monazite
BCM-124b	Cut on N.C. Route 16, 0.4 mile southeast of junction of Route 16 and N.C. Route 10, Newton, Catawba County	Weathered gneiss	0.044	
BCM-127	Quarry on Howards Creek, about 2.0 miles by road south of Reesville, Lincoln County	Weathered migmatite gneiss	0.052	garnet, zircon

[REDACTED]

Bedrock Samples

Sample No.	Locality	Type of rock	Percentage heavy minerals by weight	Heavy minerals (field identification)
BGM-130	Ditch on dirt road just southwest of Acre Rock, 1.0 mile airline southwest of Toluca, Cleveland County	Weathered granite gneissoid	0.029	yellow monazite, garnet, zircon
BGM-131	Nico pegmatite mine just east of Adams Creek, 3.5 miles west and a little south of Toluca, Cleveland County	Weathered schist wall rock	0.043	fine-grained yellow monazite, larger grains of green monazite, zircon
BGM-131a	Same locality as BGM-131	Weathered pegmatite dike	0.004	large grains of yellow monazite, more green monazite than BGM-131, zircon

[REDACTED]

[REDACTED]

EXPLANATION OF TABLE 7

Table 7 shows the estimated areas and volumes of placer deposits from which samples were taken, but for which the radioactivity was not measured in the field.

The tonnage of heavy minerals for these drainage systems is not included in the inferred tonnages given in the text.

[REDACTED]

Table 7

Localities at which the tonnage but not the grade of heavy-mineral concentrates was determined

Sample no.	Estimated length of deposit in feet	Estimated average width of gravel in feet	Estimated average thickness of gravel in feet	Cubic yards of gravel b-bottomland c-channel	Pounds of heavy minerals per cubic yard	Short tons of heavy minerals
TRIBUTARIES OF FIRST BROAD RIVER						
BCM-139	Big Harris Creek 5000	15	1.0	c- 2,800	3	5
BCM-139	Grassy Branch 7000	10	2.0	b- 5,100	20	50
BCM-31a	Lean Branch 4000	300	0.6	b-17,800	4	40
BCM-53b	Little Knob Creek 3000	75	1.6	b- 5,200	7	30
BCM-53a	Magnuss Creek 3000	235	0.7	b-11,500	1	10
BCM-11a	Tributary of First Broad River 300	60	0.5	b- 2,300	1	1
TRIBUTARIES OF BROAD RIVER						
BCM-50b	Buffalo Creek 4000	25	1.5	c- 5,500	8	20
BCM-51a	Long Branch 5000	130	1.0	b-37,700	3	40
BCM-52a	Tributary of Little Buffalo Creek 4000	30	2.0	c- 6,000	25	80
BCM-52b	Bottom River and Tributary 4000	300	0.6	b-31,800	2	25

Sample no.	Estimated length of deposit in feet	Estimated average width of gravel in feet	Estimated average thickness of gravel in feet	Cubic yards of gravel b-bottomland c-channel	Pounds of heavy minerals per cubic yard	Short tons of heavy minerals
20L-50a	Bowen River and tributary 4000	30	2.0	c- 5,800	2	5
20L-51b	Tributary of Sandy Run Creek 6000	25	2.0	c- 1,100	60	30
20L-52b	Tributary of Wayne Creek 4000	12	1.5	c- 2,800	3	5
20L-54a	Tributary of Floyd Creek 3000	8	1.5	c- 1,300	15	10
TRIBUTARY OF SECOND HEAD RIVER						
20L-57A	Webbs Branch 3000	15	2.0	c- 3,300	5	10
TRIBUTARIES OF SOUTH FORK RIVER						
20L-59 ^a _d	Little Indian Creek 10,000	15	1.0	c- 5,500	3	10
20L-59a	Tributary of Jacob Fork River 3000	75	0.5	b- 4,100	10	30
20L-93a	Tributary of Jacob Fork River 3000	100	0.5	b- 5,900	9	35
20L-94a	Tributary of Jacob Fork River 3000	200	1.0	b-27,300	10	100





Sample no.	Estimated length of deposit in feet	Estimated average width of gravel in feet	Estimated average thickness of gravel in feet	Cubic yards of gravel b-bottomland c-channel	Pounds of heavy minerals per cubic yard	Short tons of heavy minerals
202-122a 2000	Waltner Creek	75	0.4	b-3,300	15	25
202-115a 5000	Leonard Fork Creek	150	1.0	b-77,800	20	40
202-112a 2000	Roberts Branch	175	0.9	b-17,800	9	80
202-114a 5000	Roberts Branch	150	0.6	b-18,000	15	80
202-113a 10,000	Tributary of Pett Creek	8	2.0	c-5,900	10	60
202-112a 2000	Tributary of Pett Cr.	325	0.7	b-25,500	60	750
202-124a 2000	Tributary of Sgro Creek	180	1.0	b-11,100	10	60
202-125a 2000	Tributary of South Fork	300	1.0	b-22,300	15	180
202-126a 2000	Madison Creek	100	0.5	b-5,180	15	40
202-26a 2000	Stacy Branch	175	1.0	b-13,500	7	40
202-27a 4000	Oak Creek	8	2.5	c-2,900	6 avg.	10
202-28a 5000	Rock Creek	150	0.9	b-10,000	6	30
202-25a 2000	Long Branch	75	0.3	b-2,500	10	10





Sample no. Estimated length of deposit in feet Estimated average width of gravel in feet Estimated average thickness of gravel in feet Cubic yards of gravel b-bottomland c-channel Pounds of heavy minerals per cubic yard Short tons of heavy minerals

SUBSTRATA OF CAYUGA RIVER (SOUTH SIDE)

SCM-72b	Little Silver Creek 5000	100	0.5	b-5,500	1	5
SCM-118a	Big Shale's Creek 3000	100	1.0	b-11,100	7	40
SCM-117a	Small Branch 5000	175	0.8	b-25,000	25	300
SCM-55a	North Waddy Creek 3000	175	1.0	b-19,300	20	300
SCM-74a	Substrate Creek 4000	15	2.0	c-4,400	20	40
SCM-74b	Clear Creek 5000	15	2.0	c-8,400	20	50
SCM-50a	Hunting Creek 3000	300	1.0	b-33,300	15	150
SCM-52b	Hunting Creek 4000	300	0.8	b-25,000	6	100
SCM-51a	Fiddlers Run Creek 6000	100	0.1	b-3,300	20	30
SCM-51b	Fiddlers Run Creek 3000	10	2.0	c-2,300	25	30
SCM-51c	Fiddlers Run Creek 3000	305	1.0	b-35,300	15	250



Sample no. Estimated length of deposit in feet Estimated average width of gravel in feet Estimated average thickness of gravel in feet Cubic yards of gravel b-bottomland b-channel Pounds of heavy minerals per cubic yard Short tons of heavy minerals

TRIBUTARIES OF CATSKILL RIVER (SOUTH SIDE)

202-104	White Run Creek 4000	10	2.0	6- 2,000	9	15
202-78	Beckley Creek 4000	125	0.5	b- 9,000	3	15
202-119	Tributary of Third Cr. 3000	10	2.0	6- 2,000	7	10
202-125a	Tributary of Third Creek 5000	150	0.5	b- 5,000	20	60

TRIBUTARY OF SOUTH YAMER RIVER

202-121a	500	175	1.0	b-15,000	15	150
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