

UNITED STATES DEPARTMENT OF THE INTERIOR  
GEOLOGICAL SURVEY

Analytical results and sample locality map  
of stream-sediment, heavy-mineral-concentrate, and rock samples  
from the Continental Divide (NM-020-044) and Horse Mountain (NM-020-043)  
Wilderness Study Areas, Catron County, New Mexico

By

B. M. Adrian<sup>1</sup>, R. L. Turner<sup>2</sup>, Paul Briggs<sup>1</sup>,  
L. A. Bradley<sup>1</sup>, and T. A. Delaney

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<sup>1</sup>USGS, DFC, Box 25046, MS 973, Denver, CO 80225-0046

<sup>2</sup>USGS, Mackay School of Mines, Univ. of Nev., Mackay Bldg. Rm MSM101A, Reno, NV

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## STUDIES RELATED TO WILDERNESS

### Bureau of Land Management Wilderness Study Areas

The Federal Land Policy and Management Act (Public Law 94-579, October 21, 1976) requires the U.S. Geological Survey and the U.S. Bureau of Mines to conduct mineral surveys on certain areas to determine their mineral values, if any. Results must be made available to the public and be submitted to the President and the Congress. This report presents the results of a geochemical survey of the Continental Divide and Horse Mountain Wilderness Study Areas, Catron County, New Mexico.

## INTRODUCTION

In November 1984, the U.S. Geological Survey conducted reconnaissance geochemical surveys of the Continental Divide and Horse Mountain Wilderness Study Areas, Catron County, New Mexico.

The Continental Divide Wilderness Study Area comprises about 59 mi<sup>2</sup> (152 km<sup>2</sup>) (37,600 acres) and Horse Mountain Wilderness Study Area comprises about 7 mi<sup>2</sup> (18 km<sup>2</sup>) (4,400 acres) in the southeast corner of Catron County, New Mexico. Continental Divide WSA lies about 35 miles southwest of Datil, New Mexico, and is between New Mexico State Highways 12 to the north and 78 to the south (fig. 1). Along the north, west, and south boundaries there are some dirt roads which provide access to this study area. Horse Mountain WSA lies about 20 miles southwest of Datil, New Mexico, and is just to the northwest of New Mexico State Highway 12 (fig. 1). Access to the flanks of this study area is by dirt roads.

In the Continental Divide WSA elevations range from about 7,000 ft where Cottonwood Canyon crosses the western boundary to 9,220 ft at the top of Pelona Mountain in the west central part of the area. The eastern and southern parts of the area are relatively flat plains covered with sage brush. The west central and northwest parts are hilly with pinyon pine and cedar trees at the highest elevations and cottonwood trees along small streams.

Horse Mountain WSA consists of an isolated mountain mass rising from a plain of about 7,000 ft to 9,550 ft at the top of Horse Mountain. Most of the area is covered with pinyon pine and desert cedar with cottonwood trees in the stream beds and sage brush on the lower flanks of the mountain.

The two study areas are located within the Datil-Mogollon Volcanic plateau. This area is transitional between the Basin and Range Province and the Colorado Plateau. The Plains of San Agustin, which separate the two study areas, have many features typical of a classic block-faulted Basin and Range valley. The major geologic features are Horse Mountain in the northern study area and Pelona Mountain in the southern study area. Horse Mountain is a composite volcanic dome of dacitic to rhyolitic composition. The rocks of this volcano are mainly lave flows and flow breccia which presently cover an area about 4 mi in diameter.

Pelona Mountain is a shield volcano of andesitic composition consisting mainly of lave flows about 6,500 ft thick. The lava flows overlie rhyolitic ash-flow tuffs and lava flows. Further discussion of the geology of the areas is given in Ratte and others (1988) and Stearns (1962).

The terrain has a moderate slope ascending from the nearly flat Plains of San Agustin to Horse Mountain in the north and Pelona Mountains to the south. The Plains of San Agustin are nearly bare but higher up the slopes there is ponderosa pine, pinyon pine, junipers, and oaks. The streams are intermittent and the climate is semiarid.

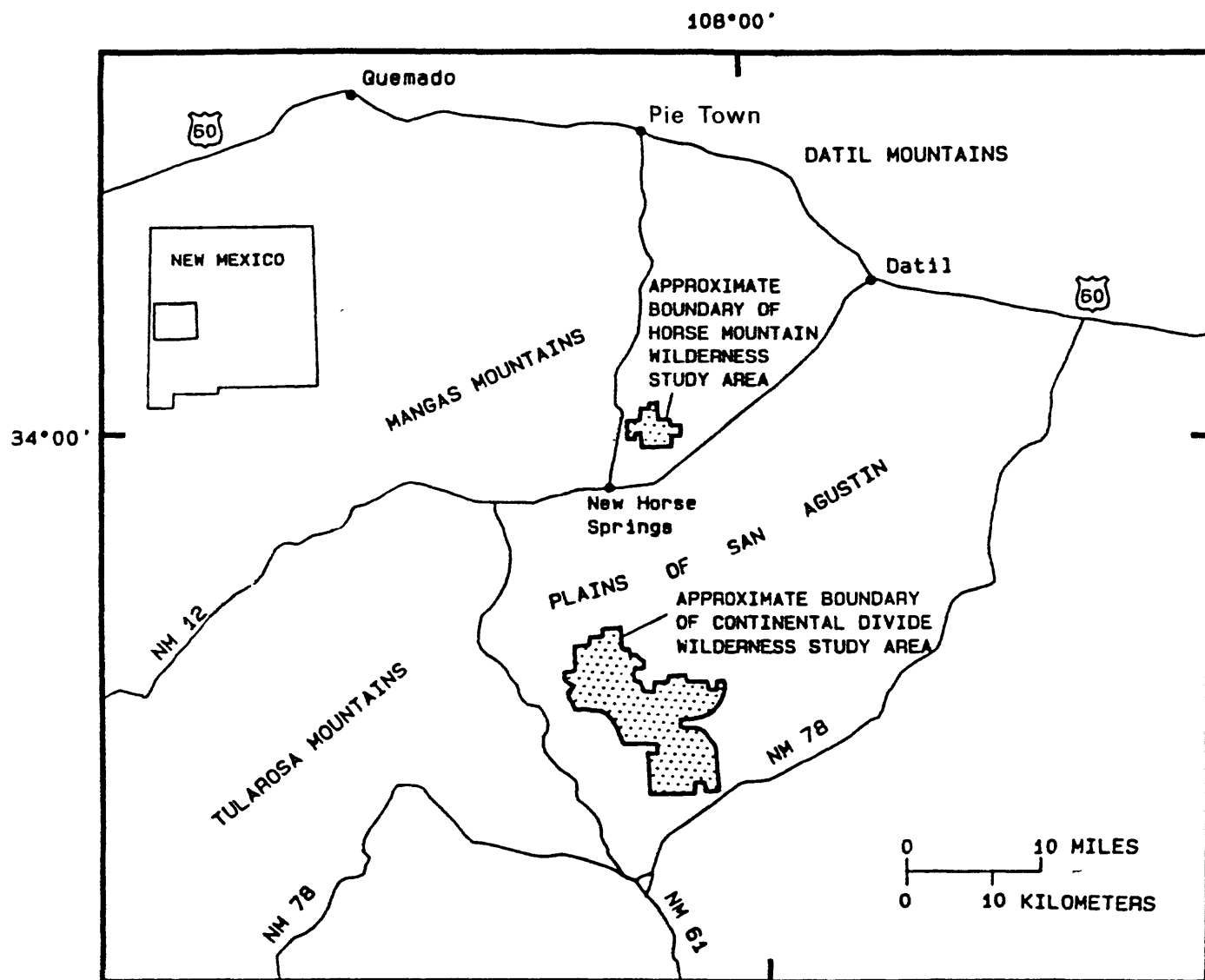


Figure 1. Location map of the Continental Divide (NM-020-044) and the Horse Mountain (NM-020-043) Wilderness Study Areas, Catron County, New Mexico.

## METHODS OF STUDY

### Sample Media

Analyses of the stream-sediment samples represent the chemistry of the rock material eroded from the drainage basin upstream from each sample site. Such information is useful in identifying those basins which contain concentrations of elements that may be related to mineral deposits. Heavy-mineral-concentrate samples provide information about the chemistry of certain minerals in rock material eroded from the drainage basin upstream from each sample site. The selective concentration of minerals, many of which may be ore related, permits determination of some elements that are not easily detected in stream-sediment samples.

Analyses of unaltered or unmineralized rock samples provide background geochemical data for individual rock units. On the other hand, analyses of altered or mineralized rocks, where present, may provide useful geochemical information about the major- and trace-element assemblages associated with a mineralizing system.

### Sample Collection

Heavy-mineral-concentrate samples were collected at 61 sites in the Continental Divide WSA (fig. 2) and 8 sites in the Horse Mountain WSA (fig. 3). Stream-sediment samples were only collected in the Continental Divide WSA, of which there were 59. Fourteen rock samples were collected in the Continental Divide WSA and three rocks were collected in the Horse Mountain WSA. Average sampling density in the Continental Divide WSA was about one sample site per 1 mi<sup>2</sup> for the stream sediments and heavy-mineral concentrates, and about one sample site per 4 mi<sup>2</sup> for the rocks. Average sampling density in the Horse Mountain WSA was about one sample site per 1 mi<sup>2</sup> for the heavy-mineral concentrates and 2 mi<sup>2</sup> for the rocks. The area of the drainage basins sampled ranged from 0.5 mi<sup>2</sup> to 2 mi<sup>2</sup>.

#### Stream-sediment samples

The stream-sediment samples consisted of active alluvium collected primarily from first-order (unbranched) and second-order (below the junction of two first-order) streams as shown on USGS topographic maps. Each sample was composited from several localities within an area that may extend as much as 50 ft from the site plotted on the map.

#### Heavy-mineral-concentrate samples

Heavy-mineral-concentrate samples were collected from the same active alluvium as the stream-sediment samples. Each bulk sample was screened with a 2.0-mm (10-mesh) screen to remove the coarse material. The less than 2.0-mm fraction was panned until most of the quartz, feldspar, organic material, and clay-sized material were removed.

#### Rock samples

Rock samples were collected from outcrops or exposures in the vicinity of the plotted site location. Samples were collected from unaltered and altered and mineralized rocks. Descriptions of rock samples are in table 6.

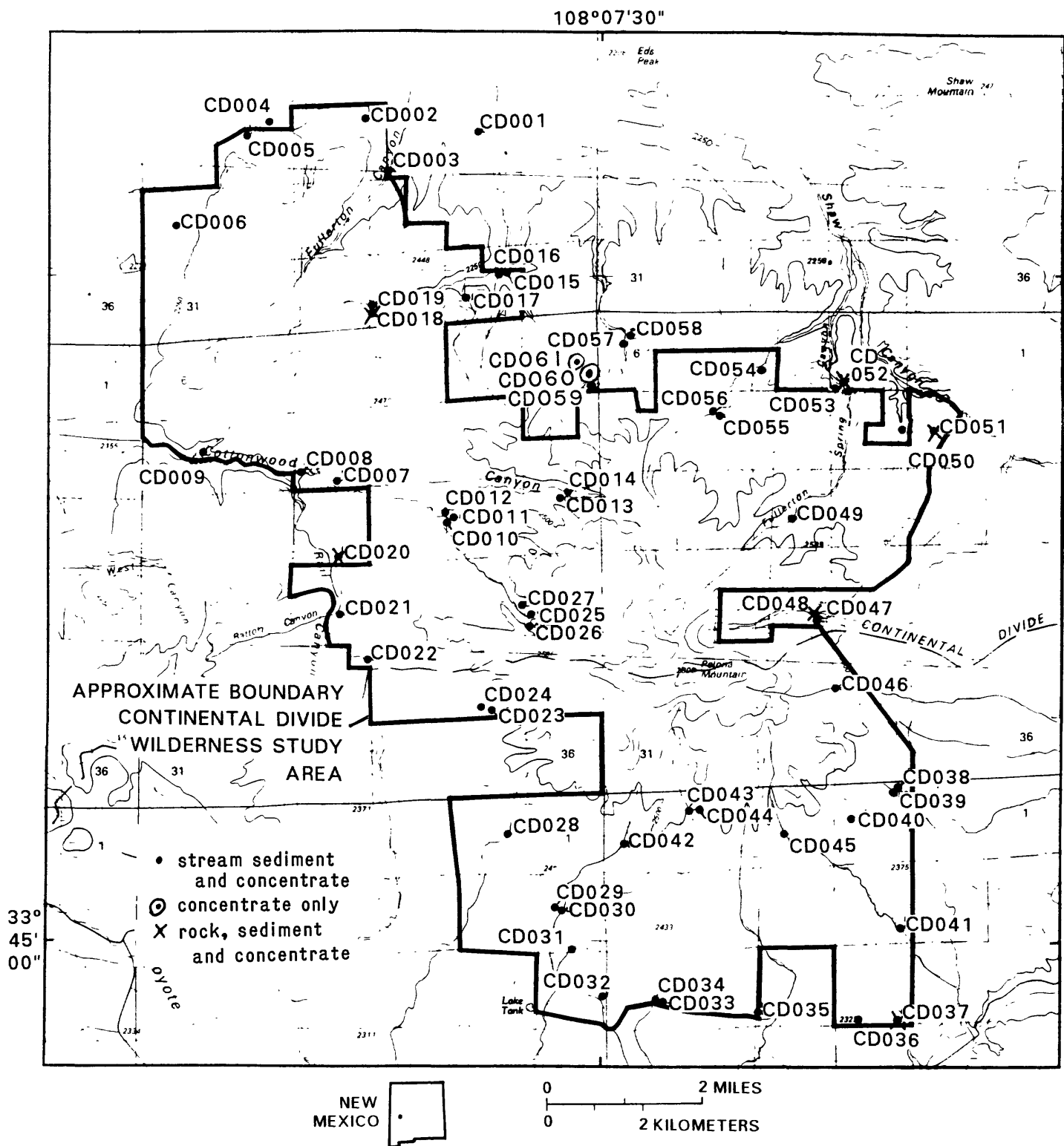


Figure 2. Localities of stream-sediment, heavy-mineral-concentrate, and rock samples from the Continental Divide (NM-020-044) Wilderness Study Area, Catron County, New Mexico.

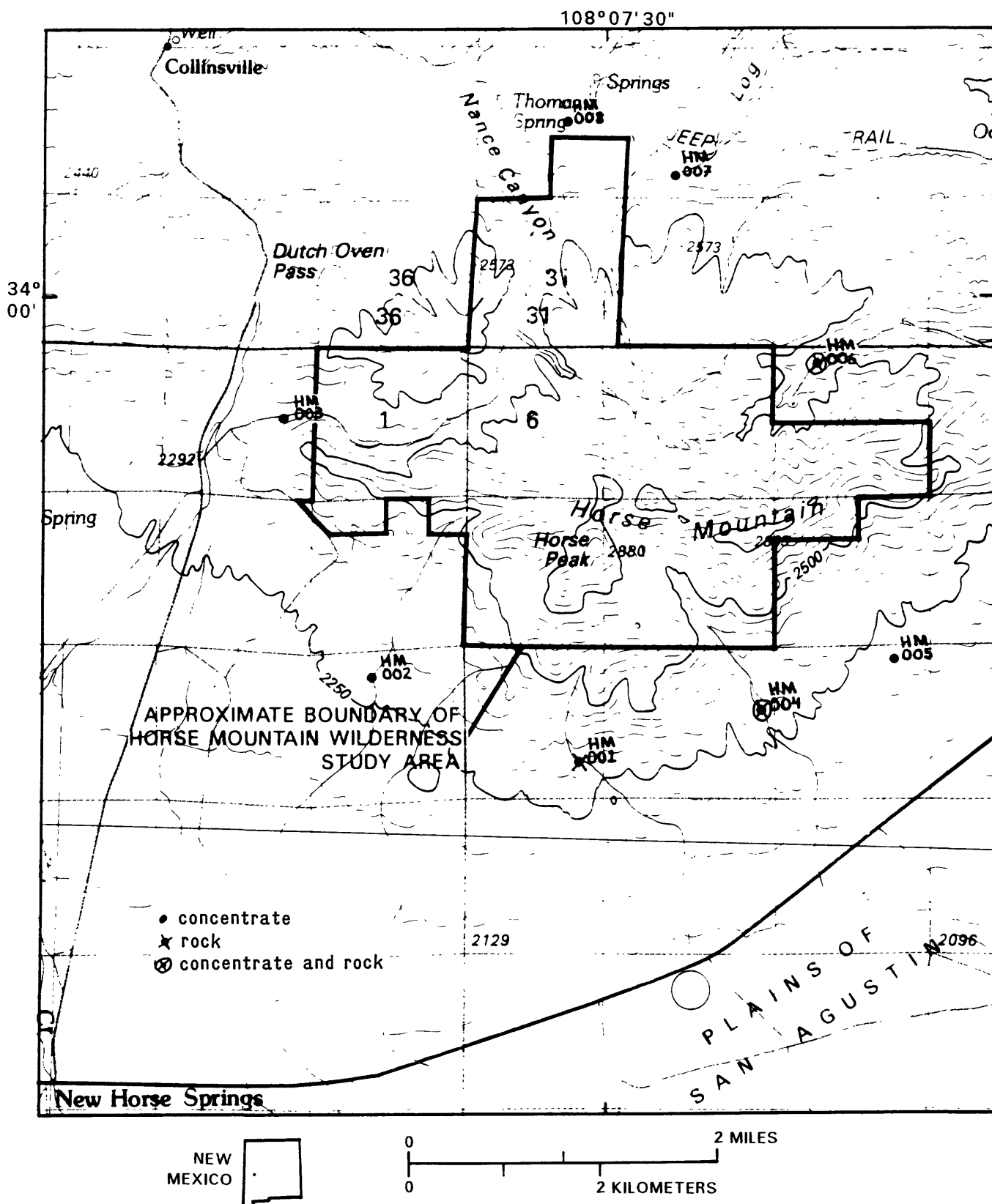


Figure 3. Localities of heavy-mineral-concentrate and rock samples from the Horse Mountain (NM-020-043) Wilderness Study Area, Catron County, New Mexico.

## Sample Preparation

The stream-sediment samples were air dried, then sieved using 80-mesh (0.17-mm) stainless-steel sieves. The portion of the sediment passing through the sieve was saved for analysis.

After air drying, bromoform (specific gravity 2.8) was used to remove the remaining quartz and feldspar from the heavy-mineral-concentrate samples that had been panned in the field. The resultant heavy-mineral sample was separated into three fractions using a large electromagnet (in this case a modified Frantz Isodynamic Separator). The most magnetic material, primarily magnetite, was not analyzed. The second fraction, largely ferromagnesian silicates and iron oxides, was analyzed. The third fraction (the least magnetic material which may include the nonmagnetic ore minerals, zircon, sphene, etc.) was split using a Jones splitter. One split was hand ground for spectrographic analysis; the other split was saved for mineralogical analysis. There was an insufficient amount of the nonmagnetic fraction for 44 samples from the Continental Divide WSA, therefore, the second fraction or the "slightly magnetic" fraction was also split, hand ground, and analyzed. These magnetic separates are the same separates that would be produced by using a Frantz Isodynamic Separator set at a slope of 15° and a tilt of 10° with a current of 0.1 ampere to remove the magnetite and ilmenite, and a current of 1.0 ampere to split the remainder of the sample into paramagnetic and nonmagnetic fractions.

Rock samples were crushed and then pulverized to minus 0.15 mm with ceramic plates.

## Sample Analysis

### Spectrographic method

The stream-sediment, heavy-mineral-concentrate, and rock samples were analyzed for 31 elements using semiquantitative, direct-current arc emission spectrographic methods. The analyses for heavy-mineral-concentrate samples were performed by analysts in the Branch of Exploration Geochemistry using the method of Grimes and Marranzino (1968); analyses for stream-sediment and rock samples were performed by analysts in the Branch of Analytical Chemistry using the method of Myers and others (1961). The elements analyzed and their lower limits of determination are listed in table 1. For arsenic (As), gold (Au), cadmium (Cd), lanthanum (La), and thorium (Th), the lower limits of determination of the two analytical methods varies. The values in the parentheses are the limits of determination for Myers and others (1961). Spectrographic results were obtained by visual comparison of spectra derived from the sample against spectra obtained from standards made from pure oxides and carbonates. Standard concentrations are geometrically spaced over any given order of magnitude of concentration as follows: 100, 50, 20, 10, and so forth. Samples whose concentrations are estimated to fall between those values are assigned values of 70, 30, 15, and so forth. The precision of the analytical method is approximately plus or minus two reporting interval at the 83 percent confidence level and plus or minus one reporting intervals at the 96 percent confidence level (Motooka and Grimes, 1976). Values determined for the major elements (iron, magnesium, calcium, and titanium) are given in weight percent; all others are given in parts per million (micrograms/gram). Analytical data for samples from the Continental Divide and Horse Mountain Wilderness Study Areas are listed in tables 3-5.



## Chemical methods

Rock and stream-sediment samples from these study areas were also analyzed for arsenic, antimony, zinc, bismuth, and cadmium using an inductively coupled plasma-atomic emission spectrographic method (Crock and others, 1987). See table 2 for a more detailed summary of these analyses.

Analytical results for stream-sediment, heavy-mineral-concentrate, and rock samples are listed in tables 3, 4, and 5, respectively.

## DATA STORAGE SYSTEM

Upon completion of all analytical work, the analytical results were entered into either the Branch of Geochemistry data base called Rock Analysis Storage System (RASS) or PLUTO. These data bases contain both descriptive geological information and analytical data. Any or all of this information may be retrieved and converted to a binary form (STATPAC) for computerized statistical analysis or publication (VanTrump and Miesch, 1977).

## DESCRIPTION OF DATA TABLES

Tables 3-5 list the results of analyses for the samples of stream sediment, heavy-mineral concentrate, and rock, respectively. For the five tables, the data are arranged so that column 1 contains the USGS-assigned sample numbers. These numbers correspond to the numbers shown on the site location maps (figs. 2 and 3). Columns in which the element headings show the letter "s" below the element symbol are emission spectrographic analyses; and "icp" indicates inductively coupled plasma-atomic emission spectroscopy. A letter "N" in the tables indicates that a given element was looked for but not detected at the lower limit of determination shown for that element in table 1. For emission spectrographic analyses, a "less than" symbol (<) entered in the tables in front of the lower limit of determination indicates that an element was observed but was below the lowest reporting value. For ICP analyses, a "less than" symbol (<) entered in the tables in front of the lower limit of determination indicates that an element was below the lowest reporting value. If an element was observed but was above the highest reporting value, a "greater than" symbol (>) was entered in the tables in front of the upper limit of determination. If an element was not looked for in a sample, two dashes (--) are entered in tables 3-5 in place of an analytical value. Because of the formatting used in the computer program that produced tables 3-5, some of the elements listed in these tables (Fe, Mg, Ca, Ti, Ag, and Be) carry one or more nonsignificant digits to the right of the significant digits. The analysts did not determine these elements to the accuracy suggested by the extra zeros.

## ACKNOWLEDGMENTS

A number of our colleagues also participated in the collection, preparation, and analyses of these samples: collection, Rick Graff and Allen Phillips; preparation, Robin Sanchez; and analyses, John Bullock, Gordon Day, Olga Erlich, and Mollie Malcolm.

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**TABLE 1.--Limits of determination for the spectrographic analysis of rocks and stream sediments, based on a 10-mg sample**

[The values shown are the lower limits of determination assigned by the Grimes and Marranzino method, except for those values in parentheses, which are the lower values assigned by the Myers and others method. The spectrographic limits of determination for heavy-mineral-concentrate samples are based on a 5-mg sample, and are therefore two reporting intervals higher than the limits given for rocks.]

Elements	Lower determination limit	Upper determination limit
Percent		
Iron (Fe)	0.05	20
Magnesium (Mg)	.02	10
Calcium (Ca)	.05	20
Titanium (Ti)	.002	1
Parts per million		
Manganese (Mn)	10	5,000
Silver (Ag)	0.5	5,000
Arsenic (As)	200 (700)	10,000
Gold (Au)	10 (15)	500
Boron (B)	10	2,000
Barium (Ba)	20	5,000
Beryllium (Be)	1	1,000
Bismuth (Bi)	10	1,000
Cadmium (Cd)	20 (30)	500
Cobalt (Co)	5	2,000
Chromium (Cr)	10	5,000
Copper (Cu)	5	20,000
Lanthanum (La)	20 (30)	1,000
Molybdenum (Mo)	5	2,000
Niobium (Nb)	20	2,000
Nickel (Ni)	5	5,000
Lead (Pb)	10	20,000
Antimony (Sb)	100	10,000
Scandium (Sc)	5	100
Tin (Sn)	10	1,000
Strontium (Sr)	100	5,000
Vanadium (V)	10	10,000
Tungsten (W)	50	10,000
Yttrium (Y)	10	2,000
Zinc (Zn)	200	10,000
Zirconium (Zr)	10	1,000
Thorium (Th)	100 (200)	2,000

TABLE 2.--Chemical methods used

[ICP = inductively coupled plasma spectroscopy]

Element or constituent determined	Sample type	Method	Determination limit (micrograms/gram or ppm)	Reference
Arsenic (As)	Rock and	ICP	5	Crock and others, 1987.
Antimony (Sb)	Stream-sediment	ICP	2	
Zinc (Zn)	"	ICP	2	
Bismuth (Bi)	"	ICP	2	
Cadmium (Cd)	"	ICP	.1	

TABLE 3. RESULTS OF ANALYSES OF STREAM-SEDIMENT SAMPLES FROM THE CONTINENTAL DIVIDE WILDERNESS STUDY AREA, CATRON COUNTY, NEW MEXICO.

Sample	Latitude	Longitude	Fe-pct. S	Hg-pct. S	Ca-pct. S	Tl-pct. S	Mn-ppm S	Ag-ppm S	As-ppm S	Au-ppm S	B-ppm S	Ba-ppm S
CD001S	33 46 34	108- 9 12	3.0	.5	1.0	.30	700	N	N	N	<10	1,000
CD002S	33 46 47	108 10 43	2.0	.5	1.0	.30	700	N	N	N	10	1,000
CD003S	33 46 11	108 10 25	3.0	.5	1.5	.30	700	N	N	N	10	1,000
CD004S	33 46 44	108 12 0	3.0	.7	1.5	.50	700	N	N	N	<10	1,000
CD005S	33 46 36	108 12 19	3.0	1.0	5.0	.30	700	N	N	N	N	700
CD006S	33 45 36	108 13 20	3.0	.7	1.5	.70	700	N	N	N	<10	1,500
CD007S	33 42 39	108 11 8	2.0	.5	.7	.30	700	N	N	N	20	700
CD008S	33 42 45	108 11 37	1.5	.7	.7	.30	500	N	N	N	10	700
CD009S	33 42 57	108 13 0	5.0	.7	1.5	1.00	1,000	N	N	N	<10	700
CD010S	33 42 13	108 9 35	5.0	.7	1.0	.70	1,500	N	N	N	<10	1,500
CD011S	33 42 16	108 9 34	5.0	.7	1.0	.70	1,000	N	N	N	<10	1,500
CD012S	33 42 16	108 9 37	3.0	.7	1.0	.50	1,000	N	N	N	<10	1,500
CD013S	33 42 33	108 8 5	3.0	.7	.7	.70	700	N	N	N	<10	1,500
CD014S	33 42 35	108 8 0	3.0	.5	.7	.70	700	N	N	N	<10	1,500
CD015S	33 45 2	108 8 50	3.0	.7	1.5	.50	700	N	N	N	<10	1,000
CD016S	33 45 2	108 8 55	2.0	.5	1.5	.30	700	N	N	N	<10	700
CD017S	33 44 43	108 9 20	3.0	.5	1.0	.30	700	N	N	N	10	1,000
CD018S	33 44 37	108 10 38	1.5	.3	.3	.30	700	N	N	N	10	500
CD019S	33 44 39	108 10 39	2.0	.2	.3	.50	700	N	N	N	<10	300
CD020S	33 41 47	108 11 1	3.0	.7	.7	.50	1,000	N	N	N	10	1,500
CD021S	33 41 9	108 11 5	1.5	.3	.3	.30	700	N	N	N	10	500
CD022S	33 40 41	108 10 44	3.0	.7	.5	.50	300	N	N	N	<10	1,000
CD023S	33 40 7	108 9 11	3.0	.5	.5	.50	700	N	N	N	<10	1,500
CD024S	33 40 8	108 9 17	3.0	.5	.3	.30	700	N	N	N	<10	1,000
CD025S	33 41 9	108 8 28	3.0	.5	.5	.50	500	N	N	N	<10	1,500
CD026S	33 41 5	108 8 30	3.0	.7	.7	.50	700	N	N	N	<10	1,500
CD027S	33 41 16	108 8 37	5.0	.7	.7	.50	700	N	N	N	<10	1,000
CD028S	33 38 39	108 8 48	3.0	.5	.5	.30	500	N	N	N	<10	1,000
CD029S	33 37 37	108 8 48	3.0	.5	.7	.30	700	N	N	N	<10	1,500
CD030S	33 37 36	108 8 7	3.0	.5	.5	.30	700	N	N	N	<10	1,000
CD031S	33 37 25	108 7 52	3.0	.3	.3	.20	500	N	N	N	10	700
CD032S	33 36 57	108 7 28	3.0	.5	.3	.30	500	N	N	N	15	700
CD033S	33 36 48	108 6 42	2.0	.3	.3	.30	700	N	N	N	15	700
CD034S	33 36 50	108 6 45	1.5	.3	.3	.30	300	N	N	N	15	700
CD035S	33 36 42	108 5 22	2.0	.5	.3	.30	700	N	N	N	15	700
CD036S	33 36 36	108 4 0	1.5	.5	.3	.30	300	N	N	N	10	500
CD037S	33 36 34	108 3 29	1.5	.7	.5	.30	300	N	N	N	10	500
CD038S	33 39 32	108 3 32	3.0	.7	.3	.30	500	N	N	N	10	700
CD039S	33 39 0	108 3 34	3.0	.5	.3	.30	700	N	N	N	10	500
CD040S	33 38 28	108 4 5	3.0	.7	.3	.30	500	N	N	N	10	700
CD041S	33 37 9	108 3 58	2.0	.7	.5	.30	300	N	N	N	<10	500
CD042S	33 38 36	108 7 11	2.0	.5	.3	.30	300	N	N	N	10	700
CD043S	33 38 59	108 6 19	3.0	.5	.3	.30	500	N	N	N	10	700
CD044S	33 38 59	108 6 11	3.0	.5	.3	.30	300	N	N	N	10	700
CD045S	33 38 42	108 5 1	3.0	.7	.3	.30	300	N	N	N	<10	700

TABLE 3. RESULTS OF ANALYSES OF STREAM-SEDIMENT SAMPLES FROM THE CONTINENTAL DIVIDE WILDERNESS STUDY AREA, CATRON COUNTY, NEW MEXICO.---Continued

Sample	Re-ppm S	Bi-ppm S	Cd-ppm S	Co-ppm S	Cr-ppm S	Cu-ppm S	La-ppm S	Mo-ppm S	Nb-ppm S	Ni-ppm S	Pb-ppm S	Sb-ppm S	Sc-ppm S
CD001S	1.0	N	N	15	50	50	70	N	<20	30	20	N	15
CD002S	1.5	N	N	15	50	50	50	N	<20	20	20	N	7
CD003S	1.5	N	N	15	50	30	50	N	<20	20	20	N	7
CD004S	1.5	N	N	15	70	70	50	N	<20	30	30	N	7
CD005S	1.0	N	N	10	30	30	50	N	<20	20	15	N	7
CD006S	1.5	N	N	15	70	70	50	N	<20	30	20	N	10
CD007S	1.5	N	N	7	50	30	50	N	20	20	30	N	5
CD008S	1.5	N	N	7	70	15	50	N	<20	15	20	N	5
CD009S	1.5	N	N	15	150	70	70	N	20	30	30	N	15
CD010S	1.5	N	N	30	150	50	50	N	<20	50	30	N	10
CD011S	1.5	N	N	30	150	50	50	N	<20	50	30	N	15
CD012S	1.5	N	N	20	100	50	50	N	<20	50	20	N	10
CD013S	1.5	N	N	20	70	30	50	N	<20	30	20	N	10
CD014S	1.0	N	N	20	70	30	50	N	<20	30	20	N	10
CD015S	1.5	N	N	15	70	50	50	N	<20	30	20	N	7
CD016S	1.5	N	N	15	70	50	30	N	<20	20	20	N	7
CD017S	1.5	N	N	15	150	30	30	N	<20	30	30	N	7
CD018S	1.5	N	N	5	30	15	30	N	20	7	30	N	5
CD019S	1.5	N	N	5	15	15	100	N	30	5	20	N	7
CD020S	1.5	N	N	20	150	30	70	N	<20	30	20	N	10
CD021S	1.5	N	N	5	50	15	30	N	20	7	15	N	7
CD022S	1.5	N	N	15	70	30	50	N	<20	30	20	N	10
CD023S	1.5	N	N	15	70	30	50	N	<20	30	15	N	10
CD024S	1.0	N	N	15	70	50	50	N	<20	30	15	N	10
CD025S	1.5	N	N	15	70	50	70	N	<20	30	20	N	10
CD026S	1.5	N	N	15	100	50	50	N	<20	30	20	N	10
CD027S	1.0	N	N	15	100	50	50	N	<20	30	20	N	10
CD028S	1.5	N	N	15	70	30	70	N	<20	30	15	N	10
CD029S	1.5	N	N	15	70	50	70	N	<20	30	15	N	15
CD030S	1.5	N	N	15	70	50	50	N	<20	30	15	N	10
CD031S	1.5	N	N	15	70	30	70	N	<20	30	20	N	10
CD032S	1.5	N	N	15	70	20	70	N	<20	30	15	N	10
CD033S	1.5	N	N	15	70	20	70	N	<20	20	20	N	7
CD034S	2.0	N	N	7	30	15	70	N	20	15	20	N	7
CD035S	1.5	N	N	15	70	20	70	N	<20	30	20	N	10
CD036S	2.0	N	N	10	30	20	70	N	<20	15	30	N	7
CD037S	3.0	N	N	7	30	15	50	N	30	15	20	N	7
CD038S	1.5	N	N	15	70	15	50	N	<20	30	20	N	7
CD039S	1.5	N	N	15	50	15	50	N	<20	20	20	N	10
CD040S	1.5	N	N	15	70	20	50	N	<20	30	30	N	7
CD041S	1.5	N	N	15	70	15	30	N	<20	20	20	N	7
CD042S	1.5	N	N	15	70	20	50	N	<20	20	20	N	7
CD043S	1.5	N	N	15	70	20	70	N	<20	30	30	N	10
CD044S	1.5	N	N	15	50	20	50	N	<20	30	20	N	7
CD045S	1.5	N	N	15	70	30	50	N	<20	30	20	N	7

TABLE 3. RESULTS OF ANALYSES OF STREAM-SEDIMENT SAMPLES FROM THE CONTINENTAL DIVIDE WILDERNESS STUDY AREA, CATRON COUNTY, NEW MEXICO.--Continued

Sample	Sn-ppm s	Str-ppm s	V-ppm s	W-ppm s	Y-ppm s	Zn-ppm s	Zr-ppm s	Th-ppm s	As-ppm icp	Bi-ppm icp	Cd-ppm icp	Sb-ppm icp	Zn-ppm icp
CD001S	N	500	100	N	30	N	200	N	<5	<2	.3	<2	57
CD002S	N	500	70	N	30	N	200	N	<5	<2	.6	<2	52
CD003S	N	500	70	N	50	N	300	N	<5	<2	.8	<2	46
CD004S	N	500	150	N	50	N	300	N	<5	<2	.7	<2	59
CD005S	N	700	70	N	30	N	300	N	<5	<2	.9	<2	51
CD006S	N	700	150	N	50	N	300	N	<5	<2	.7	<2	63
CD007S	N	300	70	N	70	N	300	N	<5	<2	.6	<2	43
CD008S	N	300	70	N	70	N	200	N	<5	<2	.5	<2	35
CD009S	N	500	200	N	100	N	300	N	<5	<2	.9	<2	77
CD010S	N	500	150	N	20	N	200	N	<5	<2	.8	<2	63
CD011S	N	500	150	N	30	N	200	N	<5	<2	.7	<2	60
CD012S	N	500	150	N	20	N	300	N	<5	<2	.8	<2	61
CD013S	N	300	100	N	20	N	200	N	<5	<2	.7	<2	58
CD014S	N	300	100	N	20	N	200	N	<5	<2	.8	<2	57
CD015S	N	500	100	N	20	N	200	N	<5	<2	.8	<2	59
CD016S	N	300	70	N	20	N	150	N	<5	<2	.9	2	70
CD017S	N	500	100	N	50	N	300	N	<5	<2	.6	<2	46
CD018S	N	150	30	N	70	N	300	N	<5	<2	.4	<2	37
CD019S	15	150	30	N	200	N	300	N	<5	<2	.3	<2	67
CD020S	N	500	150	N	30	N	200	N	<5	<2	.6	<2	53
CD021S	N	150	50	N	70	N	300	N	<5	<2	.3	<2	29
CD022S	N	300	150	N	30	N	300	N	<5	<2	.6	<2	48
CD023S	N	300	100	N	30	N	200	N	<5	<2	.6	<2	58
CD024S	N	300	100	N	30	N	200	N	<5	2	.7	<2	61
CD025S	N	300	150	N	30	N	200	N	<5	<2	.8	<2	56
CD026S	N	300	150	N	30	N	200	N	<5	<2	.6	<2	65
CD027S	N	300	150	N	20	N	300	N	<5	<2	.6	<2	61
CD028S	N	300	100	N	30	N	200	N	<5	<2	.6	<2	58
CD029S	N	300	100	N	30	N	150	N	<5	<2	.6	<2	68
CD030S	N	300	70	N	20	N	150	N	<5	<2	.4	<2	60
CD031S	N	200	70	N	30	N	150	N	<5	<2	.2	<2	56
CD032S	N	300	70	N	30	N	150	N	<5	<2	.4	<2	46
CD033S	N	150	70	N	30	N	150	N	<5	<2	.4	<2	48
CD034S	N	150	70	N	30	N	200	N	<5	<2	.4	<2	38
CD035S	N	200	100	N	30	N	150	N	<5	<2	.6	<2	48
CD036S	N	150	50	N	30	N	200	N	<5	<2	.6	<2	54
CD037S	N	300	70	N	30	N	150	N	<5	<2	.4	<2	47
CD038S	N	200	100	N	30	N	200	N	<5	<2	.7	<2	50
CD039S	N	150	70	N	20	N	150	N	<5	<2	.6	<2	46
CD040S	N	200	100	N	20	N	200	N	<5	<2	.9	3	61
CD041S	N	150	70	N	20	N	150	N	<5	<2	.7	<2	56
CD042S	N	150	70	N	20	N	150	N	<5	<2	.7	<2	58
CD043S	N	200	70	N	30	N	150	N	<5	<2	.6	<2	54
CD044S	N	150	70	N	20	N	150	N	<5	<2	.7	<2	56
CD045S	N	200	70	N	20	N	150	N	<5	<2	.8	<2	63

TABLE 3. RESULTS OF ANALYSES OF STREAM-SEDIMENT SAMPLES FROM THE CONTINENTAL DIVIDE WILDERNESS STUDY AREA, CATRON COUNTY, NEW MEXICO.--Continued

Sample	Latitude	Longitude	Fe-pct. S	Mg-pct. S	Ca-pct. S	Ti-pct. S	Mn-ppm S	Ag-ppm S	As-ppm S	Au-ppm S	B-ppm S	Ba-ppm S
CD046S	33 40 22	108 4 19	2.0	.5	.3	.30	300	N	N	N	10	700
CD047S	33 41 6	108 4 37	3.0	.7	.3	.30	300	N	N	N	10	700
CD048S	33 41 10	108 4 40	3.0	.7	.5	.30	300	N	N	N	<10	700
CD049S	33 42 18	108 4 57	2.0	.5	.3	.30	300	N	N	N	15	700
CD050S	33 43 17	108 3 29	1.5	.3	.3	.20	500	N	N	N	10	300
CD051S	33 43 16	108 3 1	1.5	.3	.3	.15	500	N	N	N	10	300
CD052S	33 43 48	108 4 16	2.0	.7	.5	.30	700	N	N	N	<10	500
CD053S	33 43 44	108 4 24	1.5	.5	.3	.30	500	N	N	N	<10	500
CD054S	33 43 55	108 5 24	3.0	.7	.3	.30	500	N	N	N	15	700
CD055S	33 43 23	108 6 1	3.0	.7	.5	.30	300	N	N	N	10	700
CD056S	33 43 25	108 6 7	3.0	.7	.5	.30	500	N	N	N	10	700
CD057S	33 44 15	108 7 14	3.0	.7	.5	.50	500	N	N	N	<10	700
CD058S	33 44 19	108 7 9	3.0	.7	.7	.30	500	N	N	N	<10	700
CD059S	33 43 46	108 7 39	1.5	.3	.3	.20	500	N	N	N	10	300



TABLE 3. RESULTS OF ANALYSES OF STREAM-SEDIMENT SAMPLES FROM THE CONTINENTAL DIVIDE WILDERNESS STUDY AREA, CATRON COUNTY, NEW MEXICO.--Continued

Sample	Be-ppm S	Bi-ppm S	Cd-ppm S	Co-ppm S	Cr-ppm S	Cu-ppm S	La-ppm S	Mo-ppm S	Nb-ppm S	Ni-ppm S	Pb-ppm S	Sb-ppm S	Sc-ppm S
CD046S	1.5	N	N	15	50	30	50	N	<20	20	15	N	7
CD047S	1.5	N	N	15	70	30	30	N	<20	30	15	N	7
CD048S	1.5	N	N	15	100	20	50	N	<20	30	15	N	7
CD049S	1.5	N	N	10	30	20	30	N	<20	20	20	N	7
CD050S	3.0	N	N	7	20	15	30	N	<20	15	30	N	7
CD051S	3.0	N	N	7	50	15	70	N	20	10	30	N	7
CD052S	1.5	N	N	15	70	15	50	N	20	30	20	N	7
CD053S	1.5	N	N	15	70	15	30	N	<20	20	20	N	7
CD054S	1.5	N	N	15	200	15	50	N	<20	30	30	N	7
CD055S	1.5	N	N	15	70	15	50	N	<20	20	30	N	7
CD056S	1.5	N	N	15	70	20	50	N	<20	30	30	N	7
CD057S	1.5	N	N	15	150	20	50	N	<20	30	20	N	10
CD058S	1.5	N	N	15	70	20	50	N	<20	30	30	N	10
CD059S	2.0	N	N	7	30	15	30	N	20	15	20	N	7

TABLE 3. RESULTS OF ANALYSES OF STREAM-SEDIMENT SAMPLES FROM THE CONTINENTAL DIVIDE WILDERNESS STUDY AREA, CATRON COUNTY, NEW MEXICO.--Continued

Sample	Sn-ppm S	Sr-ppm S	V-ppm S	W-ppm S	Y-ppm S	Zn-ppm S	Zr-ppm S	Th-ppm S	As-ppm icp	Bi-ppm icp	Cd-ppm icp	Sb-ppm icp	Zn-ppm icp
CD046S	N	200	70	N	20	N	150	N	<5	<2	.6	2	56
CD047S	N	150	70	N	20	N	150	N	<5	<2	.6	<2	61
CD048S	N	300	70	N	30	N	150	N	<5	<2	.8	<2	56
CD049S	N	200	70	N	20	N	150	N	<5	<2	.5	<2	58
CD050S	N	150	50	N	30	N	150	N	<5	<2	.3	<2	47
CD051S	N	150	30	N	50	N	300	N	<5	<2	.3	<2	39
CD052S	N	300	70	N	30	N	200	N	<5	<2	.6	<2	52
CD053S	N	200	70	N	30	N	150	N	<5	<2	.6	<2	55
CD054S	N	300	70	N	20	N	150	N	<5	<2	.7	<2	51
CD055S	N	300	70	N	20	N	150	N	<5	<2	.8	<2	65
CD056S	N	300	70	<50	20	N	150	N	<5	<2	.8	<2	63
CD057S	N	300	150	<50	30	N	200	N	<5	<2	.6	<2	63
CD058S	N	300	150	<50	30	N	150	N	<5	<2	.9	<2	68
CD059S	N	150	70	<50	70	N	200	N	<5	<2	.5	<2	50

TABLE 4A. RESULTS OF ANALYSES OF HEAVY-MINERAL-CONCENTRATE SAMPLES FROM THE CONTINENTAL DIVIDE WILDERNESS STUDY AREA, CATRON COUNTY, NEW MEXICO.

[N, not detected; <, detected but below the limit of determination shown; >, determined to be greater than the value shown.]

SLIGHTLY MAGNETIC FRACTION

Sample	Latitude	Longitude	Fe-pct. S	Hg-pct. S	Ca-pct. S	Ti-pct. S	Mn-ppm S	Ag-ppm S	As-ppm S	Au-ppm S
CD001H	33 46 34	108 9 12	30	1.5	1.0	>2.0	5,000	N	N	N
CD002H	33 46 47	108 10 43	20	2.0	3.0	>2.0	10,000	N	N	N
CD003H	33 46 11	108 10 25	30	1.5	3.0	>2.0	7,000	N	N	N
CD004H	33 46 44	108 12 0	30	1.5	2.0	>2.0	10,000	N	N	N
CD005H	33 46 36	108 12 19	30	2.0	2.0	>2.0	10,000	N	N	N
CD006H	33 45 36	108 13 20	20	2.0	2.0	>2.0	10,000	N	N	N
CD007H	33 42 39	108 11 8	20	2.0	1.5	>2.0	7,000	N	N	N
CD008H	33 42 45	108 11 37	15	3.0	3.0	>2.0	10,000	N	N	N
CD009H	33 42 57	108 13 0	30	1.0	2.0	>2.0	10,000	N	N	N
CD010H	33 42 13	108 9 35	10	10.0	.5	.7	3,000	N	N	N
CD011H	33 42 16	108 9 34	10	10.0	.5	.5	3,000	N	N	N
CD012H	33 42 18	108 9 37	10	7.0	.5	.5	2,000	N	N	N
CD013H	33 42 33	108 8 5	10	10.0	.5	.3	3,000	N	N	N
CD014H	33 42 35	108 8 0	10	10.0	.5	.7	3,000	N	N	N
CD015H	33 45 2	108 8 50	10	7.0	1.0	1.5	3,000	N	N	N
CD016H	33 45 2	108 8 55	30	5.0	1.5	2.0	10,000	N	N	N
CD017H	33 44 43	108 9 20	30	3.0	1.0	2.0	>10,000	N	N	N
CD018H	33 44 37	108 10 38	30	.5	2.0	>2.0	10,000	N	N	N
CD019H	33 44 39	108 10 39	30	.2	1.0	>2.0	10,000	N	N	N
CD020H	33 41 47	108 11 1	15	7.0	.7	2.0	5,000	N	N	N
CD021H	33 41 9	108 11 5	30	2.0	3.0	>2.0	7,000	N	N	N
CD022H	33 40 41	108 10 44	15	7.0	.5	.7	3,000	N	N	N
CD023H	33 40 7	108 9 11	20	10.0	.7	.7	5,000	N	N	N
CD024H	33 40 8	108 9 17	10	10.0	.7	.7	3,000	N	N	N
CD025H	33 41 9	108 8 28	10	10.0	.5	.5	3,000	N	N	N
CD026H	33 41 5	108 8 30	10	10.0	.5	.5	3,000	N	N	N
CD027H	33 41 16	108 8 37	7	10.0	.5	.3	3,000	N	N	N
CD028H	33 38 39	108 8 48	10	7.0	1.0	.7	3,000	N	N	N
CD029H	33 37 37	108 8 11	10	7.0	1.0	1.0	3,000	N	N	N
CD030H	33 37 36	108 8 7	15	7.0	.7	2.0	5,000	N	N	N
CD031H	33 37 25	108 7 52	15	10.0	.5	1.0	3,000	N	N	N
CD032H	33 36 57	108 7 28	15	10.0	.7	1.0	3,000	N	N	N
CD033H	33 36 48	108 6 42	20	7.0	.7	2.0	10,000	N	N	N
CD034H	33 36 50	108 6 45	30	1.5	.1	>2.0	>10,000	500	N	N
CD035H	33 36 42	108 5 22	20	10.0	.7	2.0	5,000	N	N	N
CD036H	33 36 36	108 4 0	30	3.0	.5	>2.0	>10,000	N	N	N
CD037H	33 36 34	108 3 29	30	1.5	1.0	>2.0	>10,000	N	N	N
CD038H	33 39 32	108 3 32	20	10.0	.5	1.0	5,000	N	N	N
CD039H	33 39 0	108 3 34	15	7.0	.7	2.0	5,000	N	N	N
CD040H	33 38 28	108 4 5	20	10.0	.7	.5	5,000	N	N	N
CD041H	33 37 9	108 3 58	20	10.0	2.0	1.0	5,000	N	N	N
CD042H	33 38 36	108 7 11	10	10.0	.5	.7	3,000	N	N	N
CD043H	33 38 59	108 6 19	10	10.0	1.0	.7	3,000	N	N	N
CD044H	33 38 59	108 6 11	10	10.0	.7	.5	3,000	N	N	N
CD045H	33 38 42	108 5 1	7	10.0	.7	.3	3,000	N	N	N

TABLE 4A. RESULTS OF ANALYSES OF HEAVY-MINERAL-CONCENTRATE SAMPLES FROM THE CONTINENTAL DIVIDE WILDERNESS STUDY AREA, CATRON COUNTY, NEW MEXICO.--Continued

SLIGHTLY MAGNETIC FRACTION

Sample	B-ppm S	Ba-ppm S	Be-ppm S	Bi-ppm S	Cd-ppm S	Co-ppm S	Cr-ppm S	Cu-ppm S	La-ppm S	Mo-ppm S	Nb-ppm S
CD001H	N	7,000	2	N	N	20	150	50	500	N	100
CD002H	N	3,000	2	N	N	20	70	50	700	<10	150
CD003H	N	2,000	<2	N	N	20	70	15	1,000	10	150
CD004H	N	1,500	<2	N	N	20	70	20	1,000	10	100
CD005H	N	700	2	N	N	20	50	15	500	<10	70
CD006H	N	500	<2	N	N	30	100	15	500	<10	100
CD007H	N	200	<2	N	N	20	100	10	700	10	150
CD008H	20	500	<2	N	N	20	200	10	500	15	200
CD009H	N	200	<2	N	N	15	100	15	700	<10	100
CD010H	20	300	N	N	N	70	1,500	<10	<50	N	<50
CD011H	20	200	N	N	N	70	1,500	10	<50	N	N
CD012H	20	150	N	N	N	70	1,500	10	N	N	N
CD013H	<20	150	N	N	N	70	1,500	<10	N	N	N
CD014H	20	100	N	N	N	70	1,500	15	N	N	N
CD015H	<20	100	N	N	N	70	1,000	15	100	N	50
CD016H	N	100	N	N	N	50	200	15	500	<10	100
CD017H	N	150	N	N	N	50	300	20	700	N	50
CD018H	N	N	<2	N	N	15	50	10	700	10	100
CD019H	N	N	N	N	N	15	50	10	1,000	<10	70
CD020H	20	300	<2	N	N	30	1,500	10	200	N	70
CD021H	N	N	<2	N	N	15	200	10	1,000	10	150
CD022H	<20	N	N	N	N	30	1,500	<10	<50	N	<50
CD023H	<20	100	N	N	N	30	2,000	10	<50	N	N
CD024H	<20	300	N	N	N	100	1,500	15	300	N	<50
CD025H	<20	100	N	N	N	70	1,500	<10	N	N	N
CD026H	<20	100	N	N	N	70	1,500	<10	<50	N	N
CD027H	<20	70	N	N	N	70	1,500	<10	N	N	N
CD028H	<20	200	N	N	N	70	1,500	15	<50	N	<50
CD029H	20	200	N	N	N	70	1,000	15	<50	N	<50
CD030H	<20	200	N	N	N	70	1,500	15	300	N	70
CD031H	<20	150	N	N	N	70	1,000	10	100	N	70
CD032H	<20	100	N	N	N	70	1,500	10	200	<10	50
CD033H	20	300	7	N	N	70	1,000	15	500	20	200
CD034H	N	100	7	N	N	20	200	10	700	50	500
CD035H	N	200	2	N	N	70	1,500	10	300	10	100
CD036H	N	100	5	N	N	50	500	15	500	20	300
CD037H	<20	200	7	N	N	20	200	15	1,000	20	200
CD038H	<20	100	N	N	N	70	1,500	10	100	N	70
CD039H	<20	1,500	<2	N	N	50	1,000	15	150	N	70
CD040H	<20	100	N	N	N	70	2,000	10	N	N	<50
CD041H	<20	100	N	N	N	70	1,500	10	300	N	50
CD042H	20	150	N	N	N	50	1,500	10	N	N	N
CD043H	<20	150	N	N	N	100	1,500	10	100	N	<50
CD044H	<20	200	N	N	N	70	1,500	10	100	N	N
CD045H	<20	100	N	N	N	70	1,500	<10	<50	N	N

TABLE 4A. RESULTS OF ANALYSES OF HEAVY-MINERAL-CONCENTRATE SAMPLES FROM THE CONTINENTAL DIVIDE WILDERNESS STUDY AREA, CATRON COUNTY, NEW MEXICO.--Continued

Sample	Ni-ppm S	Pb-ppm S	Sb-ppm S	Sc-ppm S	Sn-ppm S	SLIGHTLY MAGNETIC FRACTION					Y-ppm S	Zn-ppm S	Zr-ppm S	Th-ppm S
						Sr-ppm S	V-ppm S	W-ppm S						
CD001H	100	30	N	70	50	N	500	N	N	1,500	N	1,500	N	N
CD002H	100	30	N	100	100	N	200	N	N	2,000	N	1,500	N	N
CD003H	70	20	N	100	100	N	150	N	N	3,000	N	1,500	N	N
CD004H	50	50	N	100	100	N	300	N	N	1,500	N	1,000	N	N
CD005H	50	20	N	100	70	N	200	N	N	1,000	N	1,500	N	N
CD006H	100	20	N	100	70	N	500	N	N	1,500	N	1,000	N	N
CD007H	150	20	N	70	70	N	150	N	N	2,000	N	1,000	N	N
CD008H	150	20	N	100	70	N	100	N	N	2,000	N	1,500	N	N
CD009H	50	30	N	70	70	N	300	N	N	2,000	N	1,500	N	N
CD010H	500	N	N	50	N	N	70	N	N	200	N	200	N	N
CD011H	700	N	N	50	N	N	100	N	N	100	N	200	N	N
CD012H	700	N	N	50	N	N	100	N	N	50	N	150	N	N
CD013H	500	N	N	50	N	N	70	N	N	20	N	100	N	N
CD014H	500	N	N	50	N	N	100	N	N	20	N	100	N	N
CD015H	300	N	N	50	N	N	150	N	N	300	N	300	N	N
CD016H	300	100	N	70	70	N	100	N	N	1,500	N	2,000	N	N
CD017H	300	20	N	70	50	N	200	N	N	1,000	N	2,000	N	N
CD018H	20	20	N	70	100	N	150	N	N	2,000	N	2,000	N	N
CD019H	20	30	N	70	100	N	150	N	N	2,000	N	2,000	N	N
CD020H	500	20	N	50	30	N	100	N	N	500	N	700	N	N
CD021H	100	20	N	70	100	N	100	N	N	5,000	N	2,000	N	N
CD022H	500	N	N	50	N	N	100	N	N	200	N	200	N	N
CD023H	500	N	N	50	N	N	100	N	N	150	N	300	N	N
CD024H	700	N	N	50	N	N	100	N	N	200	N	200	N	N
CD025H	700	N	N	50	N	N	100	N	N	50	N	70	N	N
CD026H	700	N	N	50	N	N	200	N	N	50	N	100	N	N
CD027H	500	N	N	30	N	N	100	N	N	30	N	150	N	N
CD028H	700	N	N	50	N	N	150	N	N	100	N	500	N	N
CD029H	500	N	N	50	N	N	150	N	N	100	N	200	N	N
CD030H	500	N	N	70	30	N	200	N	N	300	N	200	N	N
CD031H	500	N	N	70	N	N	150	N	N	150	N	1,000	N	N
CD032H	700	N	N	50	N	N	100	N	N	150	N	200	N	N
CD033H	500	N	N	70	30	N	100	N	N	500	N	1,000	N	N
CD034H	70	<20	N	150	200	N	70	N	N	500	N	2,000	N	N
CD035H	700	N	N	70	20	N	150	N	N	300	N	1,000	N	N
CD036H	150	N	N	150	300	N	70	N	N	300	N	1,500	N	N
CD037H	50	30	N	200	300	N	100	N	N	700	N	700	N	N
CD038H	500	N	N	50	N	N	70	N	N	200	N	1,000	N	N
CD039H	200	20	N	50	N	N	200	N	N	300	N	1,000	N	N
CD040H	700	N	N	70	N	N	100	N	N	30	N	150	N	N
CD041H	700	N	N	100	N	<200	200	N	N	150	N	500	N	N
CD042H	300	N	N	50	N	N	100	N	N	30	N	100	N	N
CD043H	700	N	N	50	N	N	150	N	N	150	N	150	N	N
CD044H	500	N	N	50	N	N	100	N	N	50	N	200	N	N
CD045H	700	N	N	30	N	N	100	N	N	20	N	50	N	N

TABLE 4A. RESULTS OF ANALYSES OF HEAVY-MINERAL-CONCENTRATE SAMPLES FROM THE CONTINENTAL DIVIDE WILDERNESS STUDY AREA, CATRON COUNTY, NEW MEXICO.--Continued

Sample	Latitude	Longitude	Fe-pct. S	SLIGHTLY MAGNETIC FRACTION			Mn-ppm S	Ag-ppm S	As-ppm S	Au-ppm S
				Hg-pct. S	Ca-pct. S	Ti-pct. S				
CD046H	33 40 22	108 4 19	10	10.0	.7	1.0	3,000	N	N	N
CD047H	33 41 6	108 4 37	10	10.0	.7	.5	3,000	N	N	N
CD048H	33 41 10	108 4 40	20	7.0	.5	>2.0	2,000	N	N	N
CD049H	33 42 18	108 4 57	10	10.0	1.0	.5	2,000	N	N	N
CD050H	33 43 17	108 3 29	30	5.0	.3	>2.0	10,000	N	N	N
CD051H	33 43 16	108 3 1	30	3.0	.2	>2.0	>10,000	N	N	N
CD052H	33 43 48	108 4 16	20	10.0	.5	2.0	5,000	N	N	N
CD053H	33 43 44	108 4 24	20	7.0	.7	2.0	5,000	N	N	N
CD054H	33 43 55	108 5 24	10	10.0	.7	1.0	5,000	N	N	N
CD055H	33 43 23	108 6 1	10	10.0	.7	.5	3,000	N	N	N
CD056H	33 43 25	108 6 7	15	10.0	1.0	.7	3,000	N	N	N
CD057H	33 44 15	108 7 14	15	10.0	.7	.5	3,000	N	N	N
CD058H	33 44 19	108 7 9	15	10.0	.7	.5	3,000	N	N	N
CD059H	33 43 46	108 7 39	30	.5	.3	2.0	10,000	N	N	N
CD060H	33 43 47	108 7 39	20	3.0	5.0	1.5	7,000	N	N	N
CD061H	33 43 47	108 7 40	20	3.0	5.0	2.0	7,000	N	N	N
NONMAGNETIC FRACTION										
CD003H	33 46 11	108 10 25	7.0	.50	2.0	1.50	2,000	N	N	N
CD004H	33 46 44	108 12 0	.5	.05	.5	.20	150	N	N	N
CD006H	33 45 36	108 13 20	1.0	.05	.7	.50	200	N	N	N
CD009H	33 42 57	108 13 0	2.0	.10	1.0	1.00	1,000	N	N	N
CD017H	33 44 43	108 9 20	2.0	.50	1.0	1.00	500	N	N	N
CD018H	33 44 37	108 10 38	1.0	.05	.5	.70	200	N	N	N
CD019H	33 44 39	108 10 39	.5	<.05	.5	.50	100	N	N	N
CD032H	33 36 57	108 7 28	1.0	.20	2.0	.50	200	N	N	N
CD033H	33 36 48	108 6 42	.5	.05	.1	.20	100	N	N	N
CD034H	33 36 50	108 6 45	1.5	<.05	.1	.70	300	N	N	N
CD037H	33 36 34	108 3 29	1.0	.05	.2	.50	500	N	N	N
CD040H	33 38 28	108 4 5	.7	.20	1.0	.50	200	N	N	N
CD041H	33 37 9	108 3 58	5.0	5.00	5.0	1.50	1,000	N	N	N
CD051H	33 43 16	108 3 1	1.0	.10	.5	.50	500	N	N	N
CD059H	33 43 46	108 7 39	.5	.05	.5	.05	100	N	N	N
CD060H	33 43 47	108 7 39	1.0	.05	10.0	.50	300	5	N	N
CD061H	33 43 47	108 7 40	1.5	.10	20.0	1.00	500	20	N	N

TABLE 4A. RESULTS OF ANALYSES OF HEAVY-MINERAL-CONCENTRATE SAMPLES FROM THE CONTINENTAL DIVIDE WILDERNESS STUDY AREA, CATRON COUNTY, NEW MEXICO.--Continued

SLIGHTLY MAGNETIC FRACTION

Sample	R-ppm S	Ba-ppm S	Be-ppm S	Ri-ppm S	Cd-ppm S	Co-ppm S	Cf-ppm S	Cu-ppm S	La-ppm S	Mo-ppm S	Nb-ppm S
CD046H	<20	300	N	N	N	70	1,500	15	<50	<10	<50
CD047H	<20	150	N	N	N	70	1,500	10	N	N	N
CD048H	N	200	N	N	N	70	1,500	30	N	N	50
CD049H	<20	100	N	N	N	70	1,000	10	N	N	N
CD050H	N	<50	<2	N	N	20	700	15	1,000	20	200
CD051H	<20	<50	2	N	N	30	500	20	1,500	15	200
CD052H	<20	150	N	N	N	70	1,500	10	500	10	150
CD053H	<20	<50	N	N	N	100	1,500	15	300	<10	100
CD054H	<20	<50	N	N	N	70	1,500	10	100	N	70
CD055H	<20	300	N	N	N	70	1,500	10	<50	N	N
CD056H	20	100	N	N	N	70	1,500	20	N	N	N
CD057H	<20	100	N	N	N	100	2,000	15	N	N	N
CD058H	<20	<50	N	N	N	100	2,000	10	N	N	N
CD059H	<20	N	N	N	N	15	200	15	500	<10	70
CD060H	20	200	<2	N	N	50	200	70	200	<10	N
CD061H	30	200	<2	N	N	50	200	100	150	<10	N
NONMAGNETIC FRACTION											
CD003H	20	200	7	N	N	N	50	20	300	N	N
CD004H	<20	5,000	2	N	N	N	N	<10	50	N	N
CD006H	<20	1,000	7	N	N	N	N	10	50	N	N
CD009H	<20	1,000	7	N	N	N	N	<10	50	N	N
CD017H	20	7,000	2	N	N	N	50	10	100	N	N
CD019H	<20	700	5	N	N	N	N	<10	100	N	N
CD019H	<20	500	2	N	N	N	N	<10	50	N	N
CD032H	<20	3,000	2	N	N	N	20	<10	50	N	N
CD033H	100	7,000	10	N	N	N	20	<10	100	N	N
CD034H	70	1,000	15	N	N	N	N	<10	100	N	70
CD037H	100	70	15	N	N	N	N	<10	50	N	N
CD040H	20	1,000	N	N	N	N	100	<10	50	N	N
CD041H	50	7,000	N	N	N	N	300	15	300	N	70
CD051H	70	1,000	2	N	N	N	N	<10	50	N	N
CD059H	70	500	2	N	N	N	N	<10	<50	N	N
CD060H	<20	7,000	<2	N	50	N	N	150	50	300	N
CD061H	<20	5,000	<2	N	150	N	50	100	70	N	N

TABLE 4A. RESULTS OF ANALYSES OF HEAVY-MINERAL-CONCENTRATE SAMPLES FROM THE CONTINENTAL DIVIDE WILDERNESS STUDY AREA, CATRON COUNTY, NEW MEXICO.--Continued  
SLIGHTLY MAGNETIC FRACTION

Sample	Ni-ppm S	Pb-ppm S	Sb-ppm S	Sc-ppm S	Sn-ppm S	SE-ppm S	V-ppm S	W-ppm S	Y-ppm S	Zn-ppm S	Zr-ppm S	Th-ppm S
CD046H	700	N	N	50	N	N	150	N	150	N	100	N
CD047H	700	N	N	50	N	N	100	N	<20	N	50	N
CD048H	500	N	N	50	N	N	500	N	50	N	150	N
CD049H	500	N	N	50	N	N	100	N	50	N	100	N
CD050H	300	50	N	70	50	N	70	N	300	N	2,000	N
CD051H	200	70	N	100	50	N	70	N	1,000	N	>2,000	N
CD052H	500	20	N	70	300	N	100	N	200	N	2,000	N
CD053H	700	<20	N	70	N	N	100	N	150	N	2,000	N
CD054H	500	N	N	50	N	N	100	N	150	N	700	N
CD055H	500	N	N	50	N	N	100	N	70	N	100	N
CD056H	500	N	N	50	N	N	100	N	70	N	150	N
CD057H	1,000	N	N	50	N	N	100	N	30	N	70	N
CD058H	700	N	N	50	N	N	100	N	20	N	200	N
CD059H	50	70	N	30	100	N	150	N	500	1,000	2,000	N
CD060H	70	150	N	70	N	<200	500	N	500	700	200	N
CD061H	70	200	N	100	N	<200	500	N	300	500	200	N
NONMAGNETIC FRACTION												
CD003H	30	N	N	70	30	200	100	N	2,000	N	>2,000	N
CD004H	N	150	N	10	2,000	700	<20	N	150	N	>2,000	N
CD006H	N	100	N	10	30	200	<20	N	300	N	>2,000	N
CD009H	N	20	N	10	30	200	<20	N	300	N	>2,000	N
CD017H	30	20	N	10	300	10,000	20	N	500	N	>2,000	N
CD018H	N	70	N	10	20	200	<20	N	700	N	>2,000	N
CD019H	N	20	N	10	N	N	<20	N	300	N	>2,000	N
CD032H	N	20	N	10	N	10,000	<20	N	150	N	>2,000	N
CD033H	N	20	N	10	1,500	500	<20	N	200	N	>2,000	N
CD034H	N	20	N	10	>2,000	N	<20	N	200	N	>2,000	N
CD037H	N	<20	N	10	2,000	200	<20	N	200	N	>2,000	N
CD040H	N	<20	N	10	1,000	200	<20	N	200	N	>2,000	200
CD041H	70	20	<200	50	200	200	20	N	1,000	N	>2,000	N
CD051H	N	N	N	10	20	200	<20	N	200	N	>2,000	N
CD059H	N	50	N	10	1,500	200	<20	N	100	N	>2,000	N
CD060H	N	200	N	10	300	500	<20	150	200	3,000	>2,000	N
CD061H	N	700	N	10	N	500	20	N	500	5,000	>2,000	N



TABLE 4B. RESULTS OF ANALYSES OF HEAVY-MINERAL-CONCENTRATES FROM THE HORSE MOUNTAIN WILDERNESS STUDY AREA, CATRON COUNTY, NEW MEXICO.

[N, not detected; <, detected but below the limit of determination shown; >, determined to be greater than the value shown.]

Sample	Latitude	Longitude	Fe-pct. S	Mg-pct. S	Ca-pct. S	Ti-pct. S	Mn-ppm S	Ag-ppm S	As-ppm S	Au-ppm S	B-ppm S	Ba-ppm S
HM002H	33 57 53	108 9 5	.5	.05	1	.1	100	N	N	N	<20	700
HM003H	33 59 18	108 9 38	2.0	.50	2	.2	300	N	N	N	<20	2,000
HM004H	33 57 40	108 6 27	1.0	.50	10	.5	300	N	N	N	<20	700
HM005H	33 57 57	108 5 31	1.0	.20	7	.5	200	N	N	N	<20	1,500
HM006H	33 59 37	108 6 6	2.0	.50	5	.5	200	N	N	N	<20	1,500
HM007H	34 0 44	108 6 52	.3	.20	10	.5	200	N	N	N	<20	700
HM008H	34 0 56	108 7 45	.2	.10	2	.5	150	N	N	N	<20	500
HM009H	34 0 57	108 7 45	1.0	.05	20	.5	500	5	N	N	<20	7,000

Sample	Be-ppm S	Bi-ppm S	Cd-ppm S	Co-ppm S	Cr-ppm S	Cu-ppm S	La-ppm S	Mo-ppm S	Nb-ppm S	Ni-ppm S	Pb-ppm S	Sb-ppm S	Sc-ppm S
HM002H	2	N	N	N	N	10	50	N	N	N	20	N	N
HM003H	2	N	N	N	100	<10	50	N	N	N	20	N	15
HM004H	N	N	N	N	N	<10	100	N	N	N	100	N	10
HM005H	N	<20	N	N	N	<10	50	N	N	N	200	N	10
HM006H	N	N	N	N	50	10	50	N	N	N	150	N	10
HM007H	5	N	N	N	50	<10	100	N	N	N	<20	N	20
HM008H	7	N	N	N	N	<10	50	N	N	N	N	N	20
HM009H	2	<20	150	N	20	200	50	N	N	N	200	200	10

Sample	Sn-ppm S	Sr-ppm S	V-ppm S	W-ppm S	Y-ppm S	Zn-ppm S	Zr-ppm S	Th-ppm S
HM002H	N	500	<20	<100	30	N	2,000	N
HM003H	N	500	<20	N	50	N	2,000	N
HM004H	20	500	<20	N	150	N	>2,000	N
HM005H	<20	1,000	<20	N	100	N	>2,000	N
HM006H	N	500	<20	N	70	N	>2,000	N
HM007H	N	1,000	<20	N	200	N	>2,000	N
HM008H	N	200	<20	N	300	N	>2,000	N
HM009H	200	500	<20	N	300	3,000	>2,000	N

TABLE 5A. RESULTS OF ANALYSES OF ROCK SAMPLES FROM THE CONTINENTAL DIVIDE WILDERNESS STUDY AREA, CATRON COUNTY, NEW MEXICO.

Sample	Latitude	Longitude	Fe-ppt. S	Mg-pct. S	Ca-pct. S	Tl-pct. S	Mn-ppt. S	Ag-ppt. S	As-ppt. S	Au-ppt. S	B-ppt. S	Ba-ppt. S
CD018R1	33 44 37	108 10 38	.7	.15	.15	.10	1,000	1.0	N	N	10	50
CD020R	33 41 47	108 11 1	.7	.20	.30	.15	500	N	N	N	10	150
CD022R	33 40 41	108 10 44	5.0	2.00	3.00	.50	700	N	N	N	N	1,500
CD037R	33 36 34	108 3 29	.7	.15	.30	.10	300	N	N	N	10	200
CD048R1	33 41 10	108 4 40	7.0	2.00	3.00	.50	700	N	N	N	N	1,500
CD050R1	33 43 17	108 3 29	1.0	.07	.10	.15	300	N	N	N	<10	70
CD051R	33 43 16	108 3 1	1.0	.05	.07	.15	300	N	N	N	<10	30
CD052R	33 43 48	108 4 16	1.0	.07	.15	.15	300	N	N	N	<10	70
CD059R	33 43 46	108 7 39	.7	.15	.15	.15	300	N	N	N	20	70

Sample	Be-ppt. S	Ri-ppt. S	Cd-ppt. S	Co-ppt. S	Cr-ppt. S	Cu-ppt. S	La-ppt. S	Mo-ppt. S	Nb-ppt. S	Ni-ppt. S	Pb-ppt. S	Sb-ppt. S	Sc-ppt. S
CD018R1	3	N	N	N	<10	5	50	N	30	<5	70	N	5
CD020R	3	N	N	N	<10	<5	50	N	20	<5	30	N	<5
CD022R	1	N	N	15	70	50	70	N	<20	50	20	N	15
CD037R	7	N	N	N	<10	<5	50	<5	30	<5	15	N	<5
CD048R1	1	N	N	20	100	30	70	N	<20	50	15	N	20
CD050R1	3	N	N	<5	<10	<5	100	N	30	N	20	N	5
CD051R	3	N	N	N	N	<5	100	N	30	N	30	N	5
CD052R	3	N	N	N	<10	<5	70	N	30	N	20	N	5
CD059R	3	N	N	N	<10	<5	N	N	<20	N	20	N	<5

Sample	Sn-ppt. S	Sr-ppt. S	V-ppt. S	W-ppt. S	Y-ppt. S	Zn-ppt. S	Zr-ppt. S	Th-ppt. S	As-ppt. tcp	Ri-ppt. tcp	Cd-ppt. tcp	Sb-ppt. tcp	Zn-ppt. tcp
CD018R1	N	<100	<10	N	30	N	150	N	<5	<2	<.1	<2	90
CD020R	N	<100	15	N	70	N	200	N	<5	<2	<.1	<2	39
CD022R	N	700	100	N	50	N	300	N	<5	<2	.3	<2	30
CD037R	N	<100	30	N	70	N	150	N	8	<2	<.1	<2	24
CD048R1	N	700	150	N	50	N	300	N	<5	<2	.3	<2	38
CD050R1	N	<100	<10	N	70	N	300	N	<5	<2	.1	<2	41
CD051R	N	<100	<10	N	70	N	300	N	<5	<2	.1	<2	57
CD052R	N	<100	15	N	70	N	300	N	<5	<2	<.1	<2	56
CD059R	N	<100	10	N	70	N	150	N	<5	<2	<.1	<2	31

TABLE 5B. RESULTS OF ANALYSES OF ROCK SAMPLES FROM THE HORSE MOUNTAIN WILDERNESS STUDY AREA, CATRON COUNTY, NEW MEXICO.

Sample	Latitude	Longitude	Fe-ppt. S	Hg-ppt. S	Ca-ppt. S	Ti-pct. S	Mn-ppm S	Ag-ppm S	As-ppm S	Au-ppm S	B-ppm S	Ra-ppm S
HM001R	33 57 23	108 7 42	3	.7	2	.2	150	N	N	N	N	1,000
HM004R	33 57 40	108 6 27	5	3.0	3	.3	700	N	N	N	N	1,000
HM006R	33 59 37	108 6 6	2	1.0	2	.2	500	N	N	N	N	1,500

Sample	Re-ppm S	Bi-ppm S	Cd-ppm S	Co-ppm S	Cr-ppm S	Cu-ppm S	La-ppm S	Mo-ppm S	Nb-ppm S	Ni-ppm S	Pb-ppm S	Sb-ppm S	Sc-ppm S
HM001R	N	N	N	5	15	15	30	N	N	10	15	N	7
HM004R	N	N	N	15	15	30	N	N	<20	20	15	N	15
HM006R	N	N	N	7	<10	15	N	N	N	10	10	N	7

Sample	Sn-ppm S	Sr-ppm S	V-ppm S	W-ppm S	Y-ppm S	Zn-ppm S	Zr-ppm S	Th-ppm S	As-ppm tcp	Bi-ppm tcp	Cd-ppm tcp	Sb-ppm tcp	Zn-ppm tcp
HM001R	N	700	70	N	15	N	150	N	<5	<2	.3	<2	22
HM004R	N	700	200	N	15	N	100	N	<5	<2	.5	<2	29
HM006R	N	500	50	N	15	N	150	N	<5	<2	.2	<2	13

**Table 6A.--Description of rock samples from the Continental Divide WSA**

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CD018	rhyolite
CD020	rhyolite
CD022	basalt
CD037	rhyolite
CD048	basalt
CD050	rhyolite
CD051	tuff
CD052	tuff
CD059	rhyolite

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**Table 6B. Description of rock samples from the Horse Mountain WSA**

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HM001	rhyolite
HM004	ash-fall tuff
HM006	rhyolite tuff

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