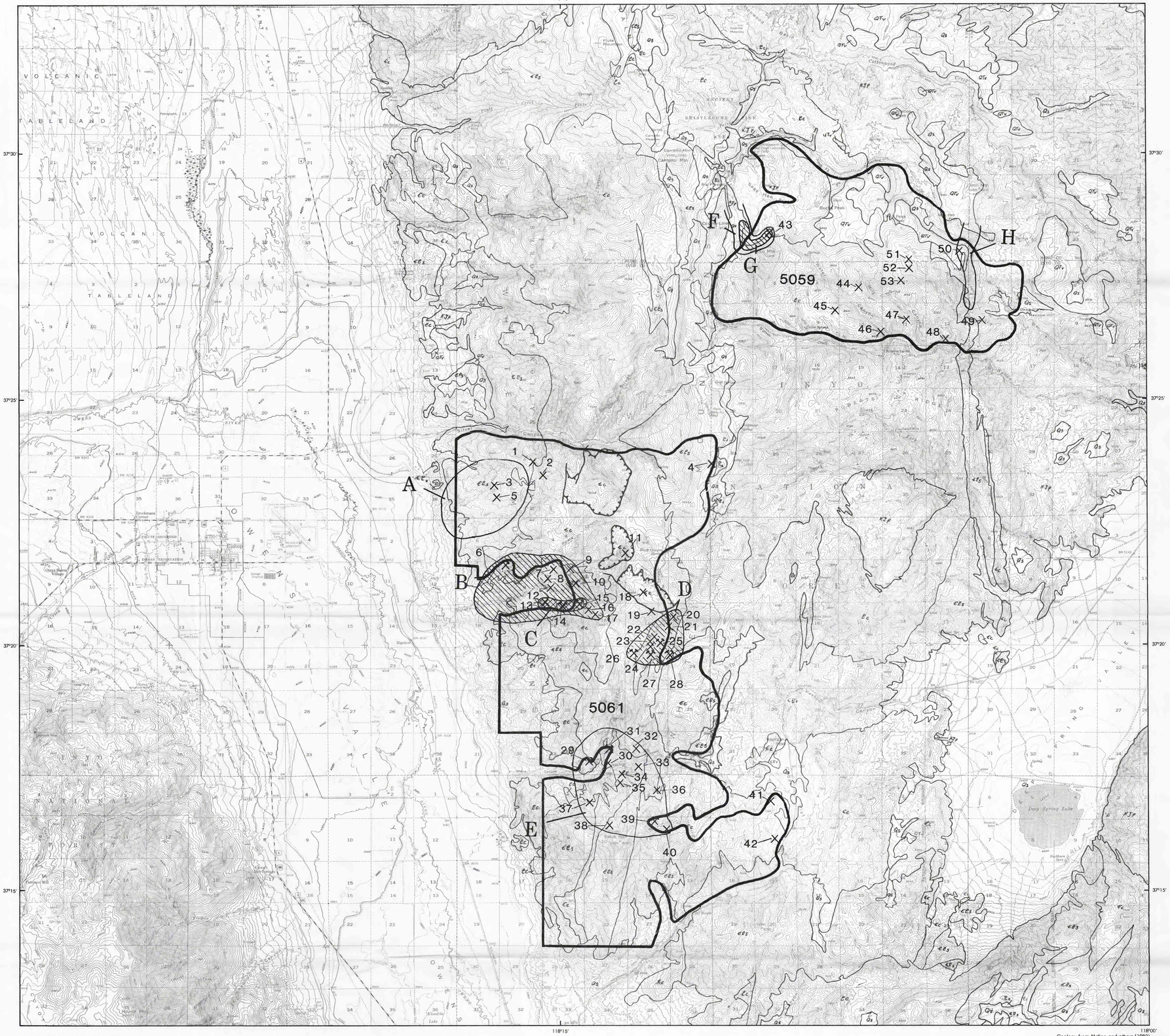
DEPARTMENT OF THE INTERIOR
UNITED STATES GEOLOGICAL SURVEY

MISCELLANEOUS FIELD STUDIES
MAP MF-1361-C



Base from U.S. Geological Survey, 1:62,500, Bishop, Blanco Mtn., 1957; Big Pine, Waucoba Mtn., 1958; Mt. Barcroft, 1962.

Geology from McKee and others (1982)

SCALE 1:62500

CONTOUR INTERVAL 80 FEET

NATIONAL GEODETIC VERTICAL DATUM OF 1929

APPROXIMATE MEAN DECLINATION, 1983

MINERAL RESOURCE POTENTIAL MAP OF THE BLANCO MOUNTAIN AND BLACK CANYON ROADLESS AREAS, INYO AND MONO COUNTIES, CALIFORNIA

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Explanatory pamphlet accompanies map

EXPLANATION

AREAS WITH POTENTIAL MINERAL RESOURCE POTENTIAL—See text for discussion of areas labeled A through H

- A — Area of low resource potential
- G — Area of moderate resource potential
- C — Area of high resource potential
- 15-X — MINES WITH PRODUCTION RECORD—Number refers to tables 1 and 2, pamphlet
- 3-X — PROSPECT—Number refers to tables 1 and 2, pamphlet

CORRELATION OF MAP UNITS

Qs	QUATERNARY
QTv	QUATERNARY AND (OR) TERTIARY
Unconformity	
KJp	CRETACEOUS AND (OR) JURASSIC
Gc	CAMBRIAN
€Ps	LOWER CAMBRIAN AND PROTEROZOIC
Pe	PROTEROZOIC

DESCRIPTION OF MAP UNITS

Qs — SURFICIAL DEPOSITS (HOLOCENE AND PLEISTOCENE)—Unconsolidated sand, silt, gravel, and boulders

QTv — VOLCANIC ROCKS (QUATERNARY AND (OR) TERTIARY)—Lava flows. Consists of andesite and basalt

KJp — PLUTONIC ROCKS (CRETACEOUS AND (OR) JURASSIC)—Medium- to coarse-grained mostly porphyritic bodies of quartz monzonite

Gc — CARBONATE AND SILICEOUS SEDIMENTARY ROCKS (CAMBRIAN)—Thin-bedded to massive carbonate units with interbedded sandstone and shale. About equal amount of carbonate and siliceous strata. Consists of the Ingigneat Formation, Mule Spring Limestone, Harkless Formation, and Poleta Formations.

€Ps — SILICEOUS SEDIMENTARY ROCKS (LOWER CAMBRIAN AND PROTEROZOIC)—Siliceous siltstone and fine-grained sandstone. Consists of Campito Formation members; the Montenegro (Lower Cambrian) and Andrews Mountain (Lower Cambrian and Upper Proterozoic).

Pe — SILICEOUS AND CARBONATE SEDIMENTARY ROCKS (PROTEROZOIC)—Thin-bedded to massive carbonate units with interbedded sandstone and shale. About equal amounts of carbonate and siliceous strata. Consists of the Deep Spring Formation, Reed Dolomite, and the Wyman Formation

CONTACT

FAULT—Mostly high angle

THRUST FAULT—Sawteeth on upper plate

BOUNDARY OF ROADLESS AREAS

STUDIES RELATED TO WILDERNESS

The Wilderness Act (Public Law 88-577, September 3, 1964) and related acts require the U.S. Geological Survey and the U.S. Bureau of Mines to survey certain areas on Federal lands to determine their mineral resource potential. Results must be made available to the public and be submitted to the President and the Congress. This report presents the results of a mineral resource potential survey of the Blanco Mountain (5059) and Black Canyon (5061) Roadless Areas in the Inyo National Forest, Inyo and Mono Counties, California. Blanco Mountain and Black Canyon Roadless Areas were classified as further planning areas during the Second Roadless Area Review and Evaluation (RARE II) by the U.S. Forest Service, January 1979.

SUMMARY

On the basis of geologic, geochemical, and geophysical investigations and a survey of mines and prospects, the mineral resource potential for gold, silver, lead, zinc, tungsten, and barite in the Blanco Mountain and Black Canyon Roadless Areas is judged to be low to moderate, except for one area in the Black Canyon Roadless Area that has high resource potential for gold and tungsten.

A geochemical survey detected moderately anomalous amounts of lead, copper, and zinc and less anomalous concentrations of tungsten, gold, and silver at some localities in the roadless areas. Elements that are known to occur as suites in various ore deposits were grouped and mineral resource potential was assessed partly on this basis. Four element suites that may be indicative of mineralization are recognized in the White Mountains: (1) lead, zinc, silver in carbonate rocks; (2) copper, lead, and barite in veins, (3) tungsten, molybdenum, and bismuth in skarns, and (4) arsenic and gold in mineralized vein deposits.

A mineral deposit survey by the U.S. Bureau of Mines indicates that there are no properties with identified mineral resources in the Blanco Mountain Roadless Area. There is one active placer claim. In the Black Canyon Roadless Area, two gold, silver, or lead-bearing properties have combined indicated and inferred low-grade resources of 40,000 tons. Five properties near this roadless area have 150,000 tons of indicated and inferred low-grade resources of gold, silver, lead, zinc, or tungsten. About 50 percent of this tonnage is estimated to occur at the Minaret-Mariposa and the Hope mines (locs. 14 and 28, respectively).

INTRODUCTION

The Blanco Mountain and Black Canyon Roadless Areas encompass approximately 27 mi² and 48 mi², respectively, in the Inyo National Forest in Inyo and Mono Counties, California. The Black Canyon Roadless Area is 6 mi east, and the Blanco Mountain Roadless Area is 20 mi northeast of Bishop.

GEOLOGY

Rocks in the roadless areas range in age from upper Proterozoic sedimentary rocks to unconsolidated Holocene deposits. These can be divided into four major groups (1) Upper Proterozoic through Cambrian strata consisting of a sequence of carbonate, sandstone, and shale deposited in a shallow-marine continental-shelf environment; (2) Mesozoic plutonic rocks of the Inyo batholith, an eastern extension of the Sierra Nevada batholith that consists predominantly of granite (nomenclature of Streckeisen, 1976); (3) Upper Tertiary, mainly Miocene and Pliocene, volcanic rocks consisting of olivine basalt flows found in the Blanco Mountain Roadless Area; and (4) Quaternary stream and alluvial fan deposits.

At least three distinct periods of deformation are recognized in the roadless areas. The oldest structures are found only in the Proterozoic and Paleozoic strata and record a period of thrusting before emplacement of the Inyo batholith. The thrusting event displaced relatively younger Cambrian strata over relatively older Cambrian rocks that elsewhere in the White Mountains are conformable. The second period of deformation is related to the emplacement of the Mesozoic batholith. Local deformation is related to the various plutonic intrusions that comprise this batholith. The third phase of deformation, involving Tertiary through Holocene basin and range block faulting, is responsible for the present configuration of the White Mountains.

GEOCHEMICAL STUDIES

The geochemical anomalies detected in roadless areas within the White Mountains are described by Diggles (1983). That summary of the geochemical results showed that one panned-concentrate sample from the Blanco Mountain Roadless Area yielded anomalous amounts of molybdenum and bismuth. The Reed Dolomite-Sage Hen Flat pluton contact is a likely location for skarn-type deposits from which these elements most likely originate.

Fourteen drainages in the Black Canyon Roadless Area produced anomalous amounts of a few elements in panned-concentrate samples. These drainages form two groups. The area between Silver Canyon and Poleta Canyon contained a few samples with anomalous amounts of lead, copper, zinc, gold, silver, and tungsten. Samples from the Marble Canyon area contained a few anomalies of gold, silver, lead, copper, zinc, and tungsten. No anomalies were found in the unconcentrated samples from this area.

The results of the geochemical survey indicate that mineralization occurs primarily as (1) silver, lead, and zinc in carbonate rocks; (2) lead, copper, and barite in veins; (3) tungsten, molybdenum, and bismuth from a possible skarn zone of contact metasomatic mineralization; and (4) gold and arsenic in mineralized quartz veins.

GEOPHYSICAL STUDIES

In the Blanco Mountain Roadless Area, the Beer Creek and Sage Hen Flat plutons create a distinctive magnetic anomaly. The magnetic intensity patterns suggest that the southwest margin of the Beer Creek pluton dips to the southwest below the Wyman Formation and other Proterozoic, as well as Paleozoic sedimentary rocks. This anomaly extends over the granite of Sage Hen Flat, indicating that the Proterozoic sedimentary rocks separating the Beer Creek pluton from the Sage Hen Flat pluton form only a thin septum.

A broad magnetic low occurs over the widespread Proterozoic and Paleozoic sedimentary rocks at the southern end of the White Mountains, suggesting that the sedimentary rocks are very thick and that plutonic rocks are not present near the surface. Small plutons, such as the Redding Canyon pluton, do not produce significant magnetic anomalies.

MINING ACTIVITY

Three principal mining districts within the Black Canyon Roadless Area are the Bishop, Black Canyon, and Poleta districts —eleven other districts are partially within the roadless areas. Since 1979, about 740 mining claims have been located within the Black Canyon Roadless Area. Sixteen of these were placer claims. The only patented mining claim, which covers the Poleta mine, is located just outside the roadless area. According to U.S. Bureau of Land Management records 53 lode claims are active. At least 31 lode claims and 18 placer claims were filed on 11 properties in the Blanco Mountain Roadless Area. The last lode claim was located in 1977; one group of three placer claims is active. There are no mines with recorded production in or near the

Mines and prospects examined during this study are shown on this map. Summary descriptions for all properties are in table 2 of the accompanying pamphlet. Mineral resource classifications used in this table are from U.S. Bureau of Mines and U.S. Geological Survey (1980). Indicated and inferred resource categories reflect degrees of geologic assurance and sample density. Properties for which no resources were calculated because of the lack of sufficient geologic control are also included in this table because they may contain undiscovered resources and because these, and nearby similar occurrences, provide evidence of mineral resource potential.

It is not likely that many of the mines with small reserves could operate profitably as single entities. Given favorable economic conditions, however, it is possible for several groups of mines to operate through centrally located processing facilities. Because of the relatively small tonnages at the individual properties, these mines could best be developed by small-scale mining operations.

MINERAL RESOURCE ASSESSMENT

Geochemical samples of stream sediment, panned concentrate, and rock were collected and analyzed from all drainages in the roadless areas (Diggles and others, 1983). Groups of elements that are known to commonly occur together, including silver-lead-zinc, tungsten-molybdenum-bismuth, gold-arsenic, and copper-lead, were plotted on a map. From this information, areas with metal anomalies were identified. Site-specific studies of mines and prospects provided additional information for defining areas with resource potential.

Eight areas within the Blanco Mountain and Black Canyon Roadless Areas are identified as having anomalous amounts of various metals in stream-sediment samples and are located on the map.

Black Canyon Roadless Area

Area A

Tungsten, gold, silver, antimony, lead, and barite are probably derived from mineralized quartz veins and barite veins in sedimentary rocks. The Sand A Gold and Barite Queen prospects in this area have gold and barite in veins, respectively. The mineral resource potential for area A is low for gold, lead, silver, zinc, and barite.

Areas B and C

Gold-bearing veins in granite were mined in the Gray Eagle mine (loc. 15) inside the roadless area in Redding Canyon. The past-producing mines in the vicinity suggest area B has moderate resource potential and area C has high resource potential for gold. Area C also has a high resource potential for tungsten.

Area D

In the upper Black Canyon drainage, the Hope (loc. 28) and Carol J (loc. 25) mines produced silver, lead, zinc, and gold from replacement-ore zones in carbonate rocks. Area D has moderate resource potential for silver, lead, zinc, and gold.

Area E

Stream-sediment samples from Area E contained anomalous amounts of lead, silver, and gold. Prospects in this area were developed on lead and silver-bearing quartz veins in carbonate rocks and on a sheared quartzite-dolomite contact zone. Area E has low resource potential for lead, silver, and zinc in carbonate rocks and for gold in quartz veins associated with shear zones in quartzite and dolomite.

Blanco Mountain Roadless Area

Areas F and G

The Blizzard Extension prospect (loc. 43) was developed on mineralized parts of the contact zone between the Reed Dolomite and the Sage Hen Flat pluton. Geochemical sampling showed tungsten and bismuth anomalies in both areas. Area G has a moderate resource potential for gold in vein deposits. Areas F and G have low resource potential for tungsten in skarn deposits.

Area H

On the east side of the roadless area, erosional remnants of Tertiary olivine basalt flows cover parts of a south flowing early(?) Tertiary stream channel. Mining in this area has yielded an unknown, and probably small, amount of gold from placer deposits. Area H has low potential for additional gold in placer deposits.

REFERENCES CITED

Diggles, M. F., 1983, Map and interpretation of geochemical anomalies in the White Mountains, Blanco Mountain, Birch Creek, and Black Canyon Roadless Areas, White Mountains, California and Nevada: U.S. Geological Survey Miscellaneous Field Studies Map MF-1361-D, scale 1:62,500.

McKee, E. H., Diggles, M.F., Dorsey, J. L., and Elliott, G. S., 1982, Geologic map of the White Mountains Wilderness and roadless areas, California and Nevada: U. S. Geological Survey Miscellaneous Field Studies Map MF-1361-A, scale 1:62,500.

Streckeisen, A. L., 1976, To each plutonic rock its proper name: Earth Science Review, v. 12, p. 1-33.

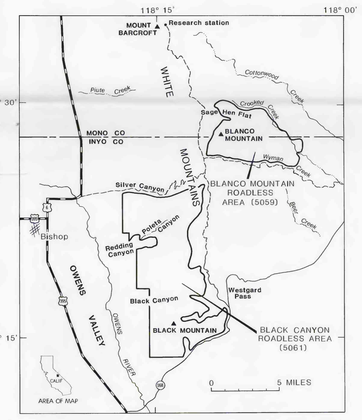
U.S. Bureau of Mines and U.S. Geological Survey, 1980, Principles of a resource/reserve classification for minerals: U.S. Geological Survey Circular 831, 5 p.

Mines and prospects, Black Canyon and Blanco Mountain Roadless Areas

[Mines are underlined]

Black Canyon Roadless Area		Blanco Mountain Roadless Area	
1. White Rock	22. Baxter	43. Blizzard Extension	49. Unknown (7, 6, 36)[1]
2. Happy Day	23. Chalcedony	44. Eclipse	50. Blue Bird Nos. 1-3 (placer)
3. Sand A Gold	24. Jody-Dee-Tom	45. Favor No. 1	51. Old Gold
4. Ground Hog	25. Carol J	46. Hidden Treasure	52. White Cloud
5. Barite Queen	26. Katy	47. Insulation	53. Unknown (2, 6, 35)[1]
6. Poleta	27. Grandview	48. S & S Nos. 1-8	
7. Jack Rabbit	28. Hope		
8. Desi Major	29. Trinity		
9. Stray Dog	30. Gold Crown		
10. Keystone	31. Trinity No. 1		
11. Curiosity	32. Vulcan		
12. North Star	33. Golden Nugget		
13 Little Gem (X-Ray)	34. Triple Canyon		
14. Mirage-Mariposa	35. Hall Extension		
15. Gray Eagle	36. Lone Chair		
16 Gray Eagle No. 2	37. Fay		
17. Gray Eagle No. 3	38. Crown K Nos. 1-5		
18. Golden Star	39. Black Beauty		
19. Sally	40. Quartz Lo		
20. Jay	41. Westgard		
21. Brown Hole	42. Della B		

[1] Numbers in parentheses refer to township, range, and section, respectively, according to the Mount Diablo Meridian.



INDEX MAP SHOWING LOCATIONS OF THE BLANCO MOUNTAIN (5059) AND BLACK CANYON (5061) ROADLESS AREAS IN INYO NATIONAL FOREST, INYO AND MONO COUNTIES, CALIFORNIA.

Interior—Geological Survey, Reston, Va.— 1983

For sale by Branch of Distribution, U.S. Geological Survey, Box 25286, Federal Center, Denver, CO 80225