

# RADIOACTIVE MINERAL OCCURRENCES OF COLORADO

## AND BIBLIOGRAPHY

by James L. Nelson-Moore,  
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## Abstract

This two-part report provides an essentially complete listing of radioactive occurrences in Colorado, with a comprehensive bibliography and bibliographic cross-indexes. Part 1 lists approximately 3000 known radioactive occurrences with their locations and brief accounts of the geology, mineralogy, radioactivity, host rock, production data, and source of data for each. The occurrences are classified by host rock and plotted on U.S. Geological Survey 1° x 2° topographic quadrangle maps with a special 1:100,000-scale base map for the Uravan mineral belt. Part 2 contains the bibliography of approximately 2500 citations on radioactive mineral occurrences in the state, with cross-indexes by county, host rock, and the special categories of "Front Range", "Colorado Plateau", and "thorium". The term "occurrence" as used in this report is defined as any site where the concentration of uranium or thorium is at least 0.01 percent or where the range of radioactivity is greater than twice the background radioactivity. All citations and occurrence data are stored on computer diskettes for easy retrieval, correction, and updating.

The U.S. Geological Survey and the U.S. Department of Energy provided the largest volumes of both bibliographic and occurrence data. Additional sources included private mining and exploration companies working in Colorado, State agencies, and various published and unpublished reports.

The intimate association of radium, uranium, and vanadium on the Colorado Plateau sparked several periods of exploration that ultimately led to a mining "boom" in the 1950's. Since its meager start at Roc Creek in 1881, the Uravan mineral belt in southwestern Colorado has yielded more than 364 million pounds of  $V_2O_5$  and nearly 85 million pounds of  $U_3O_8$ .

Sedimentary uranium-vanadium ores, principally uraninite and carnotite, occur in sandstones of the Salt Wash Member of the Morrison Formation. Uraniferous vanadium is found in roscoelite deposits in the Entrada Sandstone. Uranium has also been discovered in Tertiary conglomerates in the Tallahassee Creek district in Fremont County. Uranium, recoverable by solution mining of Upper Cretaceous sandstones, is now being evaluated in Weld County. Vein-type uranium occurrences are typified in Jefferson County by the Schwartzwalder Mine, the largest uranium mine in Colorado.

Since its use in the atomic bomb, uranium has become more important as a nuclear reactor fuel and as an alloy in aerospace and metallurgical applications. Another potential reactor fuel is thorium, which is found both in fossil beach-sand placers and in veins. It too has metallurgical, chemical and industrial applications.



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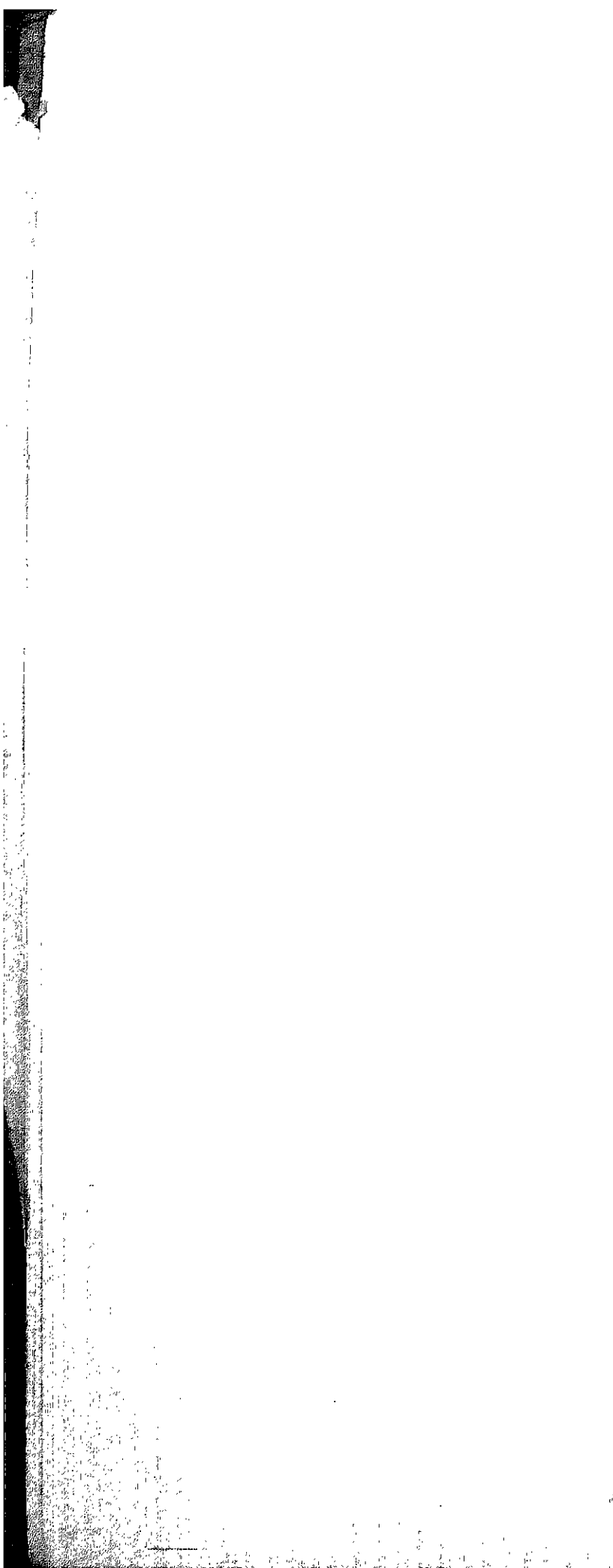
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## Introduction

The primary objective of this report is to provide in one document as complete a listing as possible of all radioactive occurrences in Colorado with a cross-indexed bibliography. This publication summarizes widely scattered data, much of which had been classified or was not generally available to the public. The report, therefore, should be invaluable to government agencies for planning and impact studies, and to geologists, explorationists, industry, students, landowners, and developers, and all citizens of the state. We believe it is the most comprehensive and complete report of its kind for Colorado.

This project, funded by the Grand Junction Office of the Department of Energy (DOE) under Contract EY-76-C-13-1674, is presented in two parts. Part 1 lists all known radioactive occurrences with their locations and a brief account of the geology, mineralogy, radioactivity, host rock, production data and source of data. The occurrences are plotted on U.S. Geological Survey 1° x 2° topographic quadrangle maps (scale 1:250,000), with a separate 1:100,000-scale base map for the Uravan mineral belt. Part 2 includes the bibliography of literature on radioactive mineral occurrences in the state with cross-indexes by county, host rock, and the special categories of "Front Range", "Colorado Plateau", and "thorium".

A customized computer program was developed to handle the occurrence and bibliographic data as it was gathered. This made possible the retrieval of a wide variety of types of data by county or area, or the creation of cross-indexes of bibliographic or subject data.

The bibliography drew references from many sources, with the beginning base being the GEOREF bibliography for Colorado (Colorado Geological Survey Bulletin 37) prepared for the Colorado Geological Survey by the American Geological Institute. Additional reference lists from the U.S. Geological Survey, U.S. Atomic Energy Commission, U.S. Energy Research and Development Administration, U.S. Department of Energy, and other published and unpublished sources were incorporated into the bibliography. The bibliography was assembled with keywords so that cross-indexes by county, host rock, "Front Range", "Colorado Plateau", and "thorium" could be pulled from the computer storage and printed separately.

The authors visited most of the major deposits and at least one of each type of occurrence in the state. The term "occurrence", as used in this report is defined as being any site or area where the concentration of uranium or thorium is 0.01 percent or greater or where the range of radioactivity is greater than two times the background radioactivity. Because of the numerous occurrences and the relatively short term of the project, no attempt was made to visit all occurrences--in fact, it would have been physically impossible. Appropriate notation is made when an occurrence could not be adequately verified.

## HISTORY AND BACKGROUND

The development of uranium mining in Colorado reflects the natural association, development of knowledge, and demand through the years for three metals: radium, vanadium and uranium. Uranium was first discovered in the United States in 1871 at the Wood Mine in the Central City district (Sims and others, 1963, p. 5). It became important because of its association with radium, which was in great demand as a result of the work of Marie and Pierre Curie. Production from the Central City district totalled about 36 tons of  $U_3O_8$  by 1900 and most of that was hand-sorted high-grade ore. In the Roc Creek area of Montrose County uranium ore (containing radium) was discovered in 1881. From this district, 10 tons of carnotite ore was mined and shipped to Marie and Pierre Curie in 1898. This small Roc Creek district was the beginning of the Uravan mineral belt, the largest uranium-producing area in Colorado today.

Colorado ranks fourth among the states in production of uranium and first in production of vanadium recovered from sandstone uranium ores. The table below summarizes salient statistics on uranium and vanadium produced and recovered from 1948 to January 1, 1978. The majority of that production was from sandstones, but production figures from other types of deposits are also included.

The first two producing districts mentioned above, the Central City (Front Range) area and the Uravan mineral belt, represent the two major, geologically distinct, uranium-producing areas in Colorado (Fig. 1).

TABLE 1  
Uranium and vanadium produced in Colorado  
1948 to January 1, 1978

	<u>Tons of ore</u>	<u>Pounds recovered</u>	<u>Grade %</u>	<u>% US total</u>
Uranium ( $U_3O_8$ )	17,260,000	84,832,300	0.25	13.45
Vanadium ( $V_2O_5$ )	15,834,900*	364,275,400	1.15	74.18

\*This tonnage of ore is included in the tons of uranium ore.

Source: Wm. Chenoweth, pers. comm., 1978

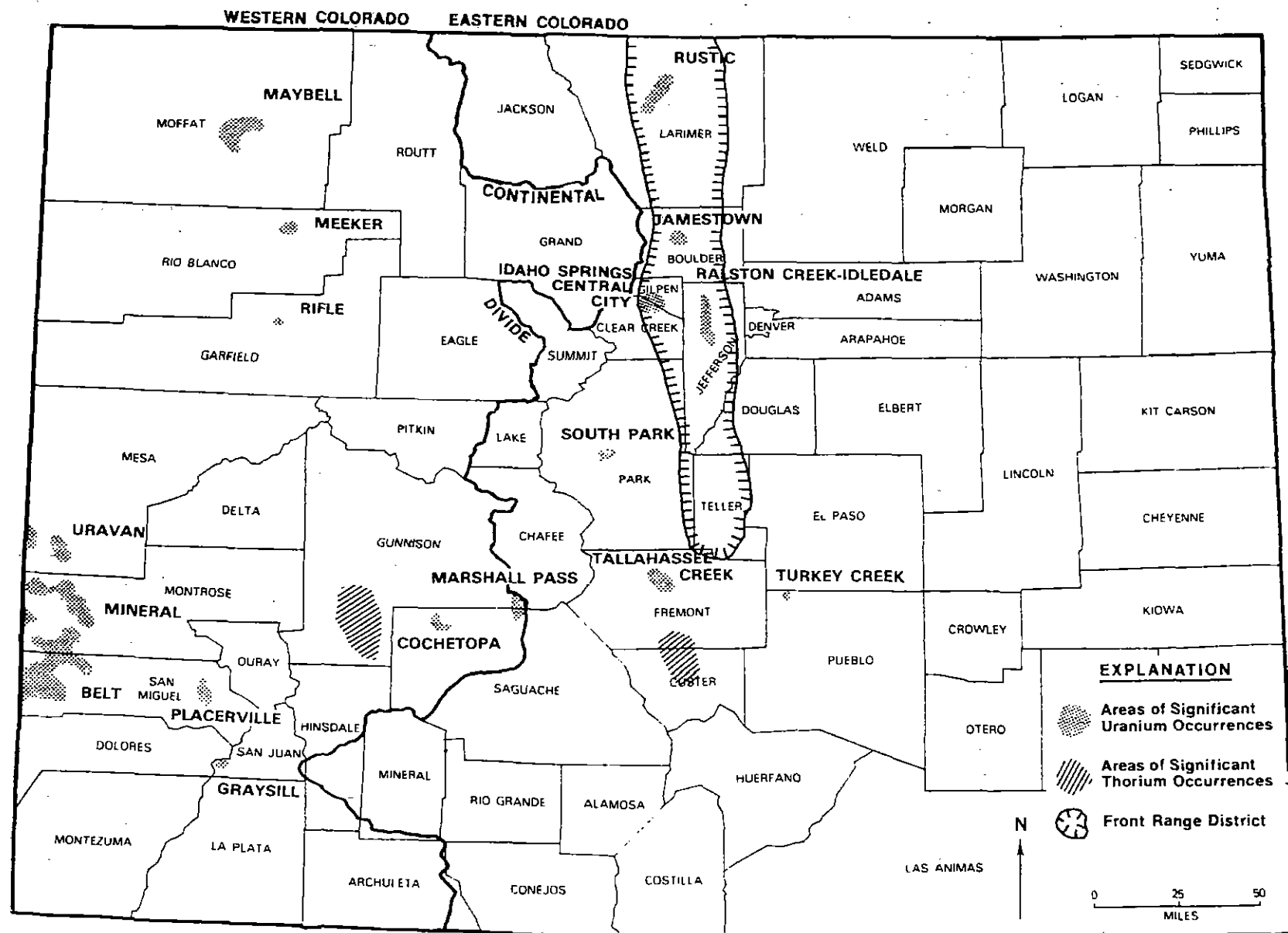


Figure 1. Uranium and Thorium Districts in Colorado (After Morse, J.G., and Curtin, M.S., 1977, Colorado Energy Resources Handbook, Volume 3 - Uranium: Colorado School of Mines, Golden, Colorado.)

System or series	Group	Formation	Member or tongue	Thickness (feet)	Description	Direction of sediment transport
Upper and Lower(?) Cretaceous		Dakota		0-200	Sandstone and shale, gray and brown; cliff-forming, widespread	
Lower Cretaceous		Burro Canyon		0-250	Sandstone, light-colored, conglomeratic, and green and maroon mudstone; mesa capping; absent in western part of area.	
Upper Jurassic		Morrison	Brushy Basin	300-500	Shale (or mudstone), varicolored, some sandstone lenses; forms slopes; widespread.	Northeast
			Wentwater Canyon	0-350	Sandstone, light-colored; forms cliffs and benches; absent in northern part of area.	Northeast
			Recapture	0-080	Shales, red, and sandstones; forms cliffs and benches; absent in northern part of area.	Northeast
			Salt Wash	0-400	Sandstone, light-colored, and red mudstone; forms cliffs and benches; widespread.	Northeast
	San Rafael		Bluff	0-55	Sandstone, red, massive; forms cliff; absent in northern part of area.	
			Summerville	0-400	Shale, red and gray, and thin sandstone; forms slopes; thickens westward; widespread.	
			Curts	0-100	Sandstone, light-colored; absent in southern Utah.	
			Entrada	50-1,000	Sandstone, light-colored; forms cliff; thickens westward to red earthy sandstone.	
Upper and Middle Jurassic		Carmel		0-600	Sandstone, red, earthy; thickens westward to gray and red shale, limestone, and gypsum; widespread.	
Jurassic and Jurassic(?)	Glen Canyon		Navajo	0-2,000	Sandstone, red; irregularly bedded; forms bench; absent in eastern part of area.	Southeast
Jurassic(?)			Kayenta	0-300	Sandstone, light-colored, massive; cliff-forming; absent in western Colorado.	
Upper Triassic			Wingate	0-100	Sandstone, red, massive; cliff-forming; absent in eastern part of area.	Southeast
		Chinle	"A" unit of Gregory	0-350	Siltstone, red, and sandstone; forms ledges and slopes; widespread.	
			Owl Rock	0-450	Limestone, gray, and red siltstone; forms ledges and slopes; widespread.	
			Petrified Forest	0-700	Claystone, variegated; forms slopes; widespread; absent in northern Utah.	
			Moss Back sandstone	0-150	Sandstone, light-colored, conglomeratic; cliff-forming; fills channels; widespread.	Northwest
			Monitor Butte	0-250	Claystone, gray, and sandstone; forms slopes; widespread.	
		Shinarump		0-250	Sandstone, light-colored, conglomeratic; cliff-forming; fills channels; widespread.	Northwest
Middle(?) and Lower Triassic		Moenkopi	Shubad	0-700	Siltstone, red, and sandstone; contains ripple marks; forms slopes and ledges; widespread.	
				0-200	Limestone; absent in eastern part of area.	Northwest
				0-200	Siltstone, red; contains ripple marks; forms slopes and ledges; thins eastward.	
Permian		Kaibab	Hoskinsburg	0-120	Siltstone, red; absent in northwestern part of area; forms steep slopes and cliffs.	
			White Rim	0-230	Sandstone, white; cliff-forming; absent in eastern part of area.	
	Coconino	Cutler	De Chelly	0-860	Sandstone, light-colored; cliff-forming; absent in northern part of area.	Southwest
			Organ Rock	250-800	Siltstone, red; forms steep slopes; absent in northern part of area.	
			Cedar Mesa	0-1,250	Sandstone, light-colored; thickens northward; forms cliffs and benches.	Southeast
			Holgalto	0-500	Siltstone, red, and sandstone; absent in northern part of area.	
Permian(?) and Pennsylvanian.		Rico		300-500	Sandstone, red, siltstone, and light-gray limestone; forms cliffs and ledges; widespread.	

Figure 2. Generalized Stratigraphy in the Uravan mineral belt area (from Pool and Williams, 1956.)



## GEOLOGY OF COLORADO URANIUM DISTRICTS

Western Colorado (Fig. 1), lying west of the Continental Divide, is the site of the oldest uranium mining area in the United States. The Uravan mineral belt, as it is known, is an arcuate belt extending from western Montrose and San Miguel Counties through southwestern Mesa County and into eastern Utah. It produces vanadium-uranium ores contained in sandstones--predominantly the Salt Wash Member of the Morrison Formation (Fig. 2).

Ore bodies are contained in continental sandstones with the mineralized rock forming elongate podlike masses and irregular bodies called "rolls". Roll ore deposits lie generally near the base of thick sandstone units where thin but well-defined mudstones are interbedded with thin sandstones (D. R. Shawe, 1956). Rolls commonly show C, S, and socket shapes in cross section but may be complicated by splits, bulges, loops, flattening or transition into tabular deposits (Fig. 3).

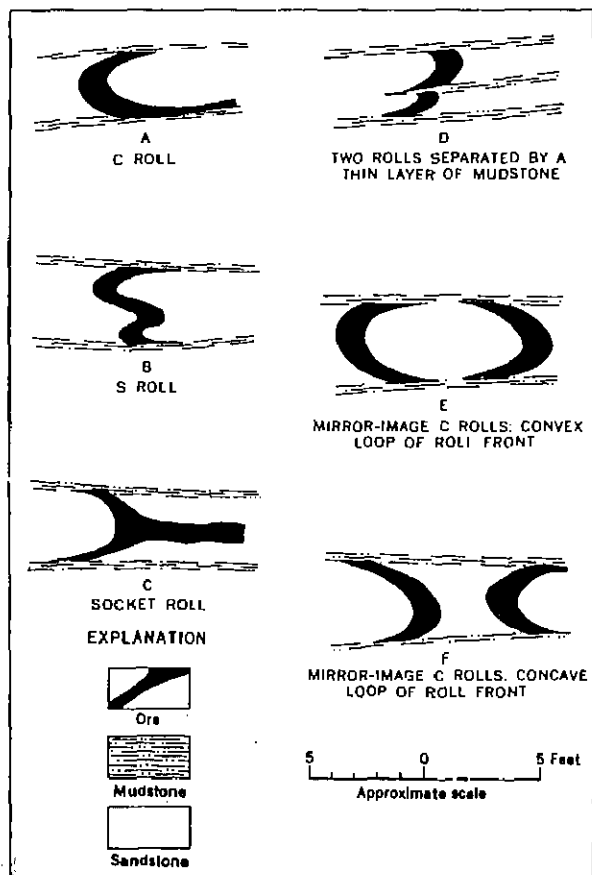


Figure 3. Cross-sections of Uranium Roll Fronts (From Shawe, 1956).

Minor elements are usually asymmetrically distributed across an ore body (Fig. 4). In the Salt Wash Member of the Morrison Formation, layers rich in hematite or limonite, calcite, and selenium are commonly found concentrically arranged on the

concave side of roll ore deposits. Where numerous and well developed deposits tend to lie in clusters, generally elongated in a common direction nearly perpendicular to the trend of the belt. Ore in these deposits may range in size from less than a ton to several hundred thousand tons. The grade ranges from a trace to several percent uranium oxide ( $U_3O_8$ ), generally averaging 0.2 to 0.3 percent  $U_3O_8$ .

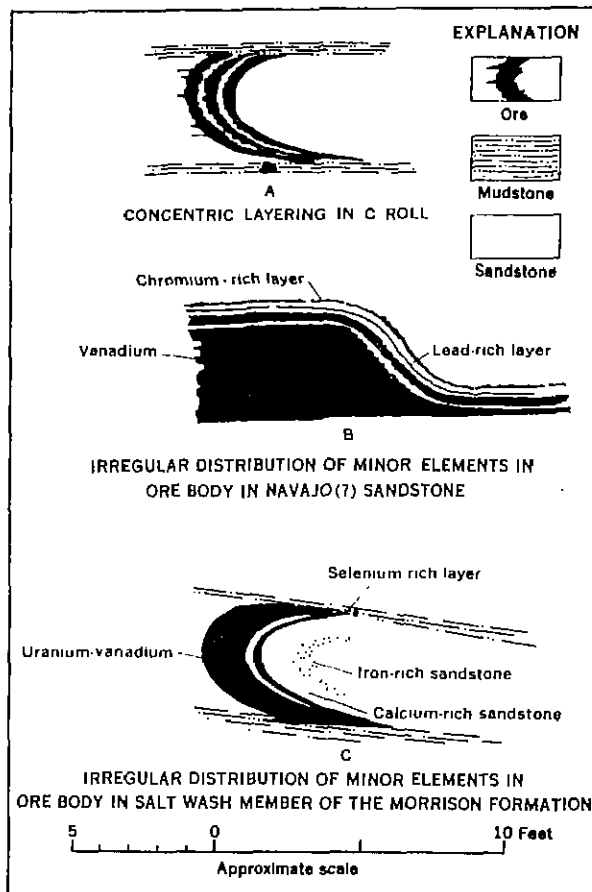


Figure 4. Mineral Distribution of Roll Fronts (From Shawe, 1956).

The Uravan mineral belt contains about 1200 mines, some active and many inactive. Since 1948 the Colorado portion of the belt has produced 12,742,000 tons of ore averaging 0.25 percent  $U_3O_8$  and containing 63,336,400 lb of uranium oxide ( $U_3O_8$ ) with 331,778,000 lb of vanadium oxide ( $V_2O_5$ ) recovered as a co-product. The average uranium-vanadium ratio has been about 1:5, but it varies considerably. This production from the Uravan mineral belt represents 89 percent of the total uranium production in western Colorado.

Other deposits of the type found in the Uravan mineral belt occur in the Salt Wash Member of the Morrison Formation on Coal Creek Anticline east of Meeker in Rio Blanco County.

Large uraniferous vanadium deposits occur in the Entrada Sandstone northeast of Rifle in Garfield County, near Placerville in San Miguel County, and

north of Graysill Mountain in San Juan County. Smaller similar types of deposits occur in the Lightner Creek area in La Plata County. Some ore also occurs in the Jurassic (?) Navajo Sandstone at Rifle. These uraniumiferous vanadium deposits are referred to as the "roscoelite-type" because of the vanadium mica that is always associated with them. This belt appears to be continuous from the La Plata Mountains to the area near Rifle.

Another uranium mining district is found near Maybell on the south flank of the Sand Wash Basin in Moffat County. There, the Browns Park Formation, a fluvial, arkosic, locally tuffaceous sandstone of Miocene age serves as the host for uranium deposits. These deposits are roughly tabular, consisting of groups of lenticular, discontinuous ore bodies distributed within a limited stratigraphic interval. Relatively large amounts of low-grade ore occur in the upper part of the Browns Park Formation. Currently, Union Carbide Corporation is producing approximately 200,000 lb of  $U_3O_8$  annually from this locality by a heap leach method.

Vein-type deposits in western Colorado are subordinate in size and numbers to those deposits in sandstone but are represented by two significant areas. Marshall Pass, the first area, straddles the Gunnison-Saguache County line just west of the Continental Divide. Geologically, it consists of an exposed remnant of Paleozoic rocks bounded on the east by the Chester Fault, a high-angle reverse fault. Precambrian granites, schist and gneiss from the east were pushed over these Paleozoic rocks. Ore bodies at the Pitch Mine, the largest uranium producer in the area, consist of numerous pods and lenses in brecciated, steeply dipping limestones and dolomites in the Belden Formation, in the hanging wall of the Chester Fault. The surface trace of the fault is undulatory, but strikes generally in a north-south direction. The eastward dip varies from about  $40^\circ$  to nearly vertical. Displacement is believed to be at least 1,400 ft and possibly as much as 2,000 ft. Uraninite is the primary ore mineral. Development is currently under way to bring this mine back into production.

The Cochetopa district, the second principal area of vein-type deposits in western Colorado, is located on the northern margin of the San Juan Mountains and was discovered in 1954. The deposits in the area consist of nearly vertical tabular bodies in brecciated and silicified Morrison sandstone and siltstone along the east-west-trending Los Ochos high-angle, normal fault. The principal ore is uraninite.

Small amounts of uranium have been produced in western Colorado from numerous localities outside these major areas in a variety of sedimentary, metamorphic and igneous host rocks. Production from all western Colorado areas, exclusive of the Uravan mineral belt, totals 2,847,100 tons of uranium ore, yielding approximately 7,806,000 lb of  $U_3O_8$  with an average grade of 0.137 percent  $U_3O_8$ . The total production for western Colorado is 15,589,000 tons of ore yielding 71,132,400 lb of  $U_3O_8$  (Table 2, Chenoweth, 1977).

The second major producing area in the state is the Eastern Slope, defined very broadly as all of the area between the Continental Divide and the Great Plains (Fig. 1). The major districts within the Eastern Slope are the Front Range district and the Tallahassee Creek district. In general, less is known about uranium resources in the Eastern Slope than in western Colorado, simply because there has not been as much interest in exploring for Eastern Slope deposits until recently. This is because uranium ores from sandstone-type deposits have produced about 95 percent of all the uranium found in the United States.

Large areas of sandstone-type deposits such as the Uravan mineral belt, the Grants mineral belt in New Mexico, and the Powder River Basin in Wyoming have been explored and mined intensively for the past 25 years. The fact that such a large proportion of mined uranium has come from sandstone, combined with the ease of exploration and mining, and the generally conservative nature of mining companies have all made sandstone-type deposits the most sought after. Consequently, exploration for uranium in other geologic environments such as the Front Range has been minimal. Today, however, more time is being spent examining "other" geologic environments for possible uranium resources. This has caused more activity in relatively unexplored areas of the state and on the Eastern Slope.

To date, most uranium in the Eastern Slope has been produced from veins of pitchblende found in small bodies associated with sulfide minerals. In most of the occurrences the veins have been mined chiefly for their precious- or base-metal content. The discovery and importance of uranium in the veins was secondary.

The Schwartzwalder Mine, about 8 miles northwest of Golden in Jefferson County, is the largest uranium mine in Colorado, and the most notable exception to the statement that uranium is secondary to base and precious metals. The Schwartzwalder produced approximately one-seventh of the total amount of uranium in the state in 1977. Total production for the mine to May 1978 is reported as 10,500,000 lb of  $U_3O_8$  (Cotter Corp., personal comm., 1978). The uranium is found in pitchblende and uraninite within veins and breccia fillings along a major fault system in Precambrian metamorphic rocks. Uranium, the major element found, has some associated copper mineralization. The Schwartzwalder Mine typifies the major type of uranium occurrence that is being sought in the Front Range district. This mine is a prime example of vein-type uranium deposits in North America.

The Tallahassee Creek area contains different types of deposits than those generally found on the Eastern Slope. There the uranium occurs in Eocene and Oligocene conglomerates, deposited primarily in ancient stream channels totally different from present drainage systems. Reports in the news media indicate that the Tallahassee Creek has more than 30,000,000 lb of recoverable  $U_3O_8$  at Cyprus Mines' newly discovered Hanson ore body. Uraninite is the principal ore mineral.

A similar but smaller deposit in High Park has a pilot open pit from which ore was graded and stockpiled for various testing purposes. This deposit will probably be worked simultaneously with the Tallahassee Creek deposit to provide supplemental feed to a new mill that is being planned near that site.

On the eastern Great Plains one other important district lies in Weld County. One important deposit here, the Grover deposit, is being developed for production. The Grover uranium deposits in Weld County, 3 miles southwest of Grover, were discovered in 1970. Uranium occurs in sandstones of the upper Fox Hills and Laramie Formations. Deposits in these formations, although generally small and low grade, contain reserves varying from a few thousand to 1,000,000 lb  $U_3O_8$  and have become commercially significant due to price increases for uranium. The average grade of the Grover Deposit is estimated at 0.14 percent  $U_3O_8$  for a 1,000,000 lb ore body (H. L. Reade, Jr., 1976). Exploration and in-situ development (Fig. 5) of these deposits are joint ventures of Wyoming Mineral Corporation and Power Resources Corporation. They conducted extensive pilot and monitoring studies and are presently planning a commercial recovery operation.

These deposits are very similar to those found along the Gulf Coast in Texas. Mining is to be carried out by the in-situ leach-mining method, which was developed for the Texas uranium deposits. The development of these deposits will make this area an important new uranium district in Colorado.

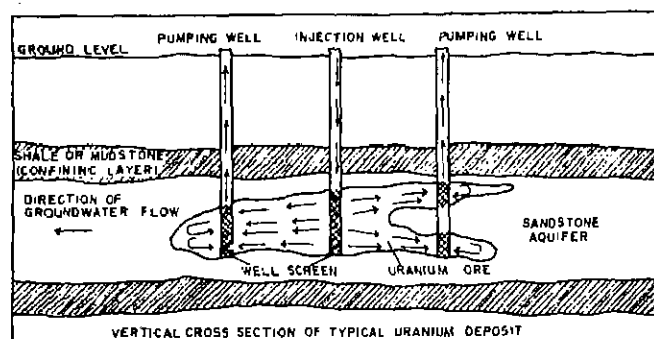


Figure 5. Diagram of In-situ Solution Mining. (From Morse, J. G., and Curtin, M.S., 1977, Colorado Energy Resources Handbook, Volume 3 - Uranium: Colorado School of Mines, Golden, Colorado, p. 19).

#### CHEMISTRY AND MINERALOGY OF URANIUM AND THORIUM

The three naturally occurring radioactive elements are potassium, uranium, and thorium, but radioactive potassium is not found in significant concentrations in the earth's crust and is not commercially important. Uranium is one of the less common elements, averaging about 2 ppm in the earth's crust. Thorium, on the other hand, is more widely distributed, usually associated with uranium or rare-earth elements, and averages about 6.5 ppm in the earth's crust.

Uranium is a polyvalent element with values of +3, +4, and +6. The hexavalent (+6) form is one of the more common forms and is soluble in both dilute acid and dilute basic solutions. Four probable naturally occurring oxides,  $UO$ ,  $UO_2$ ,  $U_3O_8$ , and  $UO_3$  are known, but pure  $UO$  is definitely established only as a thin surface layer on the native metal, which does not occur naturally.  $U_3O_8$ , an olive-green uranium-uranyl oxide, contains 84.8 percent uranium. It is used as a unit of measurement when uranium content is discussed.

"Yellowcake" is the concentrate produced at mills and is generally considered to be ammonium diuranate,  $(NH_4)_2(U_2O_7)$ , or sodium diuranate,  $(Na_2U_2O_7)$ . The exact composition depends on the conditions of precipitation. Refinery specifications, first established by the Atomic Energy Commission, require a minimum of 75 percent  $U_3O_8$  in yellowcake.

The most common uranium mineral is uraninite  $[(U^{4+}_{1-x}, U^{6+}_x)O_{2+x}]$  or  $(U^{4+}, U^{6+})U_{2.6}$ . Uraninite is a primary mineral of uranium found throughout the world and is concentrated in sedimentary deposits, granitic rocks, pegmatites and in primary vein deposits. It is commonly referred to as "pitchblende", a term that has had many meanings but is currently used to describe the sooty, fine-grained, colloform variety of uraninite.

The uranium silicate, coffinite, occurs in unoxidized sedimentary ores of the western states. Secondary (oxidized) uranium minerals include an assortment of hydrated oxides, sulfates, phosphates, vanadates, silicates, and carbonates. Carnotite, a hydrated potassium uranium vanadate, is perhaps the best known secondary uranium mineral. The term "carnotite" is often used to include any of a number of similar yellow-colored minerals, including tyuyamunite and meta-tyuyamunite.

Uranium is frequently a minor constituent of such complex oxides as uranothorianite and the fergusonite-formanite, samarskite-yttrotantalite, and euxenite-polycrase series. These contain such elements as thorium, the rare earths, columbium, and tantalum. Quadrivalent uranium is isomorphous with thorium, zirconium, and the rare-earth elements.

Most of the uranium ores in Colorado, represented by the deposits in the Uravan mineral belt and Tallahassee Creek area, occur in sandstones and conglomerates. Tyuyamunite and uraninite, the most important uranium ore minerals, occur as interstitial fillings, grain coatings, and replacements of organic or carbonaceous materials within these deposits. The ore bodies are in irregularly shaped tabular, lenticular, or roll-type deposits. Important vein-type uranium deposits are represented by the Schwartzwalder and Pitch mines, in which pitchblende is the important ore mineral.

Monazite concentrations occurring in paleo-placer beach sands and containing  $ThO_2$  are the principal sources of thorium in the world. Additional sources of thorium include veins and deposits in sedimentary

rocks (conglomerates or quartzites enriched in thorium, and uranium). Thorite ( $\text{ThO}_2$ ), thorianite ( $\text{ThSiO}_4$ ), and monazite ( $(\text{Ce}, \text{La}, \text{Y}, \text{Th})\text{PO}_4$ ), are the main thorium-bearing minerals.

Vein-type deposits are the most important sources of thorium in Colorado. Thorium, principally in the form of thorite, occurs both in the Powderhorn district in southern Gunnison County near Lake City, and in the Wet Mountain district in Fremont and Custer Counties. Uranium is associated with the thorium in these areas but only as a minor element. The occurrences are in Tertiary veins that cut Precambrian gneisses, and ultrabasic rocks. These veins are not closely associated with any recognized intrusives. Paleo-placer beach sands are found in small deposits in Elbert, La Plata, and Montezuma counties. Their potential for development is not as favorable as that of vein-type occurrences.

#### USES AND TECHNOLOGY

Uranium became important during World War II when it was used in the development of the atomic bomb. Development of uranium resources after the war became the responsibility of the U.S. Atomic Energy Commission (AEC), who required large quantities of uranium for its weapons and for nuclear research and development programs. During this time a commercial nuclear power industry, using uranium as a fuel, has slowly developed into the principal civilian use for uranium. Small amounts are also needed for medical research and other technology.

Uranium is also useful after it has been depleted in the fissionable isotope and subsequently not suitable for nuclear use. It is one of the most dense metals that will alloy readily with other metals. Through alloying it forms stable compounds that are easily fabricated and useful in numerous specialized nonenergy applications. Depleted uranium is better than lead and other less costly dense metals for gamma-ray and X-ray shielding and for containers for radioactive materials. The density and ease of fabrication make depleted uranium castings suitable for missile ballast, for control surface balancing and counterweights in aircraft and space vehicles, and for payload simulation in test space vehicles. The structural and mechanical properties of depleted uranium make it particularly useful in alloys with molybdenum and titanium for a wide range of military applications--equipment parts, ammunition and special-purpose artillery shells.

Early uses of uranium are still important and include a uranium-antimony oxide catalyst used in the plastics industry to produce acrylonitrile, a colorant in glass and ceramics, and in steel and nonferrous metallurgy. It is important in the electrical industry where it is used for targets in X-ray tubes, for electrodes in ultraviolet lights, and for resistors in incandescent lamps.

Thorium is used principally for making compounds of oxides, nitrates, and chlorides. The main nonenergy use is in the fabrication of incandescent gas mantles. Varying percentages of thorium in magnesium-base alloys are used for aircraft and aerospace applications. Small quantities are used to produce certain

high-strength, corrosion-resistant metals. Thorium oxide is the most stable of the refractory oxides but is expensive and has poor resistance to shock. Both the metal and the oxide are used in radiation detectors, electric discharge tubes, and computers.

The use of high-temperature gas-cooled reactors (HTGR), such as the one at Fort St. Vrain, would create a substantial market for thorium. These types of reactors use thorium and uranium in the feedstock. The fuel elements consist of thorium and uranium carbide-coated ceramic particles. In the fuel cycle, highly enriched  $\text{U}_{235}$  serves as the initial and make-up fissile material,  $\text{Th}_{232}$  as the fertile material, and  $\text{U}_{233}$  as the converted material.

Theoretical studies of the light-water breeder-reactor (LWBR) program will use the pressurized-water reactor (PWR) to convert  $\text{Th}_{232}$  to fissionable  $\text{U}_{233}$ . This system, under development by Westinghouse, uses thorium as the major fuel component. If successful, it would permit conversion of PWR's to LWBR cores without extensive or costly changes. Utilizing thorium as the principal fuel component would drastically reduce the increasing demand for dwindling uranium resources.

Much research is directed toward large-scale production of thorium as a nuclear fuel. Standardization of HTGR parts to speed licensing, and the development of HTGR gas-turbine powerplants could eliminate conventional steam systems. The symbiotic relationship between the gas-cooled fast-breeder reactor (GCFR) and the HTGR is an important factor in the conversion to thorium fuels, as the GCFR breeds  $\text{U}_{233}$  from  $\text{Th}_{232}$ , with the  $\text{U}_{233}$  then used to fuel the HTGR. Possible applications of heat resulting from the high operating temperature of the HTGR include coal gasification, oil production from oil shales and tar sands, and hydrogen generation (water splitting).

#### CONCLUDING REMARKS

The prime objective of this project was to compile a reference data base for uranium and thorium exploration, for land-use planning and impact studies by government agencies, and as general information on radioactive occurrences for students, landowners, developers, and all citizens of the state.

Every effort has been made to ensure that the report is as complete and accurate as possible within our time and budget constraints, but we anticipate some errors and omissions. We also recognize that new uranium occurrences not included in this report are being located through industry exploration and as a result of favorability evaluations conducted by subcontractors to Bendix Field Engineering Corporation as part of the NURE program. Data on radioactive occurrences and bibliographic citations have been entered into a mini-computer diskette storage system in such a way that additions and corrections can be made and data retrieved with minimum effort. We therefore welcome comments from users of this report and request that information on new occurrences or corrections be sent to the Colorado Geological Survey, 1313 Sherman Street, Denver, Colorado 80203 so that our records on radioactive occurrences and bibliographic citations may be kept current.



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Kerr McGee  
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# COLORADO STRATIGRAPHIC NOMENCLATURE CHART

ERA	PERIOD	N.W. SAN JUAN PARADOX BASINS	PICEANCE CREEK BASIN	SAND WASH BASIN	EAGLE BASIN	NORTH AND MIDDLE PARK BASINS	SOUTH PARK BASIN	FRONT RANGE UPLIFT	DENVER-JULESBURG BASIN	SOUTHEAST COLORADO AREA	RATON BASIN
CENOZOIC	PLIOCENE										
	MIOCENE			BROWNE PARK FM							
	OLIGOCENE			BRAL CONGLOMERATE							
	Eocene										
	PALEOCENE										
MESOZOIC	UPPER	FRUITLAND SHALE									
		PICTURED CLIFFS SS									
		LEWIS SS									
		LEWIS SS									
		LEWIS SS									
	LOWER	MANCOS									
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		MANCOS									
JURASSIC	UPPER	MANCOS									
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	LOWER	MANCOS									
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TRIASSIC	UPPER	MANCOS									
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PERMIAN	UPPER	MANCOS									
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PENNSYLVANIAN	UPPER	MANCOS									
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	LOWER	MANCOS									
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MISSISSIPPIAN	UPPER	MANCOS									
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	LOWER	MANCOS									
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DEVONIAN	UPPER	MANCOS									
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	LOWER	MANCOS									
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SILURIAN	UPPER	MANCOS									
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ORDOVICIAN	UPPER	MANCOS									
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	LOWER	MANCOS									
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		MANCOS									
		MANCOS									
CAMBRIAN	UPPER	MANCOS									
		MANCOS									
		MANCOS									
		MANCOS									
		MANCOS									
	LOWER	MANCOS									
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		MANCOS									
METAMORPHIC AND INTRUSIVE ROCKS											

COMPILED BY RICHARD H. PEARL  
COLORADO GEOLOGICAL SURVEY

SOURCE OF DATA: CROSS SECTIONS, ATLAS OF THE ROCKY MOUNTAIN REGION (1933) AND OTHER PUBLICATIONS  
FROM ROCKY MOUNTAIN ASSOCIATION OF GEOLOGISTS SPECIAL PUBLICATION NO. 2, 1937, FIGURE 2, WITH PERMISSION



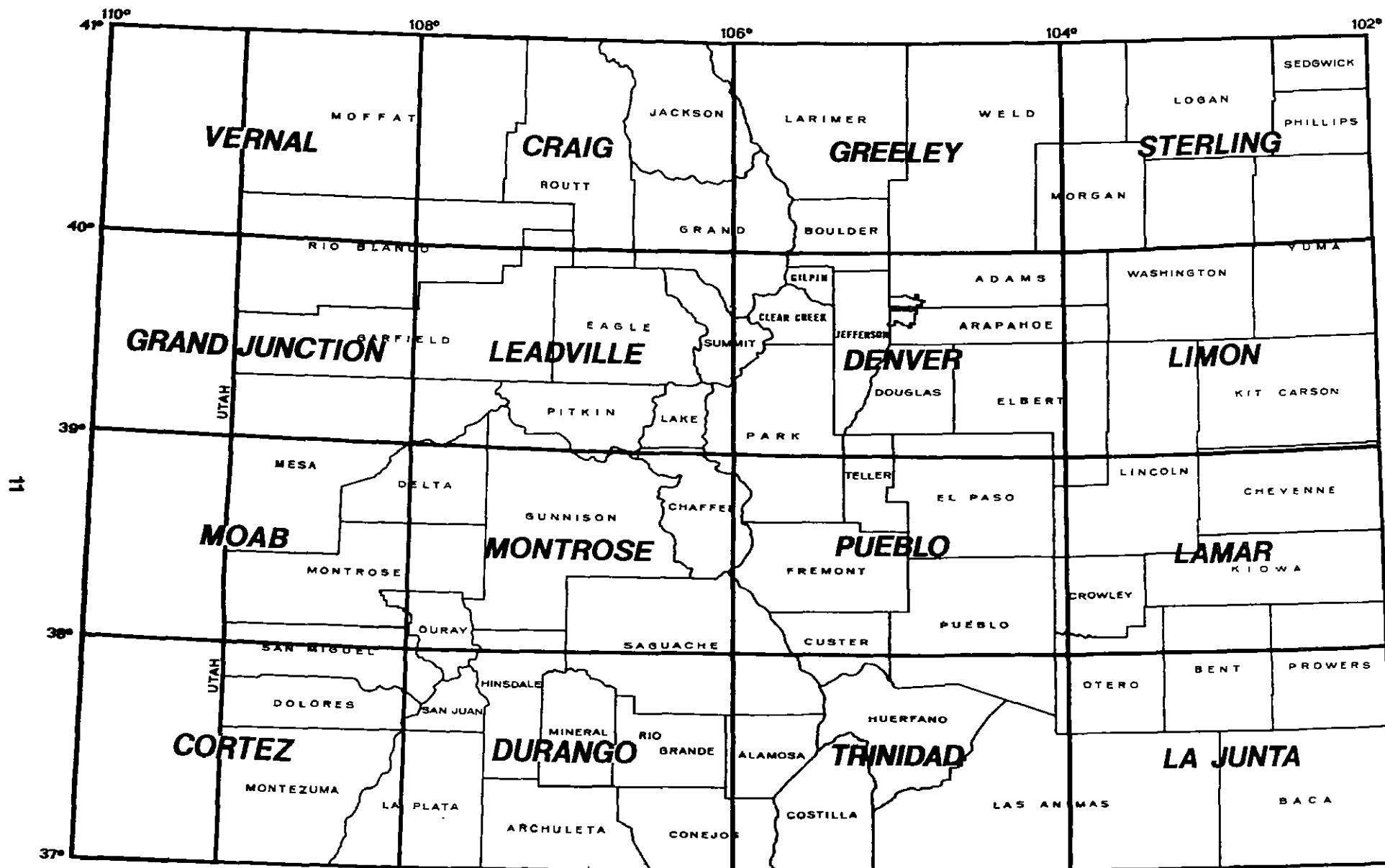


Figure 8. Map of Colorado showing counties and 1° x 2° quadrangles.





**PART ONE**  
**Occurrences**



## Introduction

The following list of occurrences and their descriptions is the most comprehensive set of data on natural radioactive occurrences in Colorado to date. An occurrence for this project was defined as any site with radiation over twice the background rate, or a concentration of uranium or thorium at 0.01% or more. The compilation was carried out from every source of data that could be accessed. The list is as complete as possible to January 1978. The information was arranged to be as useful as possible to all types of readers--geologists, planners, landowners, government agencies, and students.

### DESCRIPTION OF COMPILATION METHODS

There were five major sources for compiling the occurrences:

U.S. Atomic Energy Commission Preliminary Reconnaissance Reports (PRR's).

U.S. Atomic Energy Commission Production Records for Colorado.

U.S. Department of Energy Lease Records for Colorado.

U.S. Geological Survey Computerized Resource Information Bank (CRIB).

Personal and Company Communications.

The Preliminary Reconnaissance Reports (PRR's) are a series of one-page documents describing all sites that were examined for possible radioactive occurrences in the United States. These were visited by U.S. Atomic Energy Commission and U.S. Geological Survey personnel from 1945 to 1960. All of the individual examinations made in a county were released as a single county report. These documents are available from the National Technical Information Service, U.S. Department of Commerce, Springfield, VA 22161. Paper copies of all reports on the counties in Colorado are available for inspection at the Colorado Geological Survey, and the Colorado Division of Mines has microfiche copies of these reports for the entire United States. The reports are now outdated, and the reliability of some are questionable. However, they do describe most of the major occurrences in the state, except those in the Uravan mineral belt on the Colorado Plateau. As such, they are a good base from which to begin compiling occurrences.

The second major source of information was the U.S. Atomic Energy Commission's Production Records, on file at the Grand Junction Office of the Department of Energy. A computer printout of a condensed version is also on file at Colorado Geological Survey. The production records list producing mines in the United States with information on the number of tons and the grade of the ore mined. The information is cumulative from January 1, 1948 to January 1, 1971. Government purchasing of uranium ended on December 31, 1970. Certain properties controlled by the Cotter Corporation and Climax Uranium began

production for sales to private industry as early as 1967. Before 1971 all purchases of uranium ore were made primarily by the U.S. Atomic Energy Commission; hence, any of that tonnage and grade information is now public information. These records were kept on all producing properties; therefore, when a mine dump was later reworked and sent to a mill, it received a new production record. As a result, many mine dumps in the Uravan mineral belt are listed as producers. There was even a production record of the cleanings from barrels that contained yellowcake.

The third source of information was the Department of Energy's Lease Tract Records. The lease tracts are areas of land that have been withdrawn at various times from mineral entry or claiming and later leased by competitive bids for uranium and vanadium production. All of the lease tract areas in Colorado are within the Uravan mineral belt. The records are kept current and contain the number of tons mined, the grade of the ore, and the number of pounds of uranium and vanadium produced. Over a period of years, these tracts have changed boundaries, names, owner, etc. They have been known by various names, including "Reserve Blocks", "Lease Tracts", "Mining Leases", "Lease Units", and "Mineral Leases". Occasionally some of these areas have been restored for standard mineral entry. Following this introduction are tables containing information on the Colorado leased areas, relating former lease units to the current lease unit numbers. The production figures are complete only to 1962. For more up-to-date production numbers, the individual property occurrence listings should be consulted.

The fourth source for compilation was the Computerized Resource Information Bank (CRIB) of the U.S. Geological Survey. This computer data base is currently being operated by the University of Oklahoma at Norman for the Geological Survey. It is a data base containing information on all commodities, their occurrences, reserves, mineralogy and other pertinent data. All of the uranium data had been entered into the data base during 1972 and 1973. It was not possible to check the dates of the information closer than 1973. During 1977 some information from the Defense Minerals Exploration Assistance Program (DMEA) was entered into CRIB. We had early access to the DMEA material and used it as a source for compiling our occurrences. The DMEA program was intended to provide assistance to individuals and companies in the exploration and development of strategic minerals, including uranium. Many properties in Colorado were explored with DMEA funds for uranium and other metals. The reports on the properties are confidential, and only the owner of the property and the U.S. Geological Survey have copies. These reports are both accurate and useful if they are available to an occurrence evaluator.

The fifth source of information was personal interviews and company communications. During the period of this project we contacted every major company and individual that had at some time explored for uranium or investigated uranium or thorium in the state. Many people contacted were very helpful and some even opened their submittal files to us.

A computer printout from the U.S. Bureau of Mines Mines Availability System (MAS), another computer data base, was also used for compiling occurrence records. The information for the MAS file had been researched in 1975. We found that the information differed from the U.S. Geological Survey and the U.S. Atomic Energy Commission's information in many instances. As a result, we used the MAS data only as a secondary source of information. When using any occurrence data where the U.S. Bureau of Mines is the only reference, it should be used with discretion.

Other sources of information for compiling the occurrences included published and unpublished literature on uranium, thorium, and radioactive occurrences in the state. References to most of this literature can be found in the accompanying bibliography.

#### DESCRIPTION OF INFORMATION HEADINGS

When researching the occurrences, we looked for the following 17 types of information. In most cases, all the information was not found and most occurrences will have less than the complete set of data shown below. The four-letter headings used in the occurrence records are mnemonic codes for the information listed below.

NAME---Name. Primary name and any aliases under which the primary occurrence may be found.

LOCATION---Location. Using the land-grid system, the location is given by section, township, and range.

LCST---Location Status. We used either "unsurveyed", "uncertain", or "unlocatable" if we believed there was any question as to the validity of the location. "Unsurveyed" means that the area where the occurrence is located has not been surveyed into the land-grid system; hence, there is a question as to its exact legal description. This is not of great concern to the user since the township and range lines are projected into the area, and most occurrences can be found. "Uncertain" was used when the location, the directions to the occurrence and/or the described geology did not correlate. This status is a more serious problem for the user than "unsurveyed" because the validity of the location is questionable. "Unlocatable" means either no location was given or the location given is obviously incorrect. This category makes the total validity of the occurrence questionable and its value negligible.

QUAD---Topographic Map Quadrangle. The name of the 7 1/2' or 15' U.S. Geological Survey topographic map quadrangle in which the occurrence can be found.

MAP--- 1° x 2° Map Quadrangle. The name of the 1° x 2° map in the pocket of this volume on which the occurrence is plotted.

DEVL---Development. A short description of the type of mining or prospecting that has taken place at the site.

PROD---Tonnage and Grade. The tons and grade of ore mined with the number of pounds of  $U_3O_8$  and  $V_2O_5$  produced.

BKG--- Background Radioactivity---The normal range of the background radiation, reported in either mr/hr (milliroentgens per hour) or cps (counts per second) as measured with a radiation detection device.

RNG--- Range of Radioactivity. Range of the radioactivity that was found at the occurrence, from normal background to a maximum reading. This, like the background, is reported in mr/hr or cps. In a few cases the range is reported as xbg, which means the range of the radioactivity was recorded as a multiplication of the background rate.

HOST---Host Rock. Rock type in which the occurrence is found.

STRT---Structural Controls. Any structure in the rock that may have helped to localize the uranium mineralization.

ALT--- Alteration. Any change in the rock which may be due to emplacement of the uranium or have contributed to the emplacement.

MNZ--- Mineralization. The minerals found at the occurrence and any sample analysis data. The analysis is given as a percentage or as parts per million (ppm) of U (uranium or  $U_3O_8$ ). The symbol for uranium is given as "U", "eU", and "cU". "U" stands for uranium in its elemental form. "eU" is the symbol for "equivalent uranium" which is the amount of uranium as measured on a radiation detection device such as a scintillometer or gelger counter. There is not necessarily any uranium at an occurrence that has "eU". The radiation seen on a counter can be caused by radon, radium, or other daughter products of uranium, or by thorium. "cU" means "chemical uranium", an amount that has been measured chemically and is a true measure of uranium in the sample.

RMKS---Remarks. Any additional pertinent information.

DOI--- Date of Information. Date that is applicable to most of the information given on the occurrence.

REF--- References. These are given in the short citation format of Author and Date. Using this citation, the reference can be found in the accompanying bibliography. For those references that are not listed in the bibliography, a full citation is given. This is not necessarily a complete listing of references for a given property.

#### USE OF OCCURRENCES

The following list of occurrences is arranged alphabetically by county and numbered alphabetically by primary name within each county. The numbers are used to plot the occurrence on the 1° x 2° maps in the pocket at the back of this volume. To facilitate finding occurrences, a complete alphabetized list of occurrence names by county follows the Introduction. The names are given only up to 60 characters in length.

#### MAPS

Sixteen 1° x 2° maps that cover Colorado are shown in the figure on the following page. All natural radioactive occurrences were plotted on these maps, which are included as plates in the pocket at the back of this volume. The La Junta, Lamar, Limon, and Grand Junction sheets were not printed, however,

because there were very few occurrences on these sheets. Maps of those few occurrences were included as figures with the occurrences in the appropriate county occurrence listing. The opposite situation of too many occurrences for the scale of the map appeared with Clear Creek, Gilpin, Mesa, Montrose, and San Miguel Counties. Clear Creek and Gilpin Counties were plotted at 1:125,000 scale and included as figures with their respective county occurrences. Mesa, Montrose, and San Miguel Counties lie within the Ura-van mineral belt and contain about 50 percent of all the occurrences in the state. The area of the Ura-van mineral belt within these three counties was printed as one map at a scale of 1:100,000 and included as a plate in the pocket.

Each occurrence within the county is numbered alphabetically, and plotted on the appropriate 1° x 2° map with a symbol to indicate its host rock, and its number. The host rock symbols were arranged within the following generalized host categories:

- Coal, shale, and limestone
- ▲ Igneous and metamorphic
- Sandstone, arkose, conglomerate, and siltstone, lake sediments
- Spring deposits and ground water
- ◆ Undetermined

This method of plotting the host placed similar rock types together and does not address the question of genesis.

Separate single copies of these maps can be obtained at the office of the Colorado Geological Survey.

## EXPLANATION FOR TABLES 2 & 3

### HISTORY OF LEASING (G. C. Ritter, personal communication)

1945-55	Atomic Energy Commission obtained mineral rights on 700 square miles of land, and conducted exploration.
1953-57	660 square miles were returned to public domain.
1948-56	Deposits leased for mining to operators selected by the Atomic Energy Commission.
1962	By March 31 all leases had expired.
1962-present	Atomic Energy Commission held mineral rights on 40 square miles
1970-71	Environmental studies made and Impact statement prepared on withdrawn lands.
1973	Reestablished leasing program under revised Circular 8--rules and regulations for leasing.
mid 1974	Leases awarded
late 1974	Development began
mid 1975	Ore production began

### Abbreviations and Definitions

ML-15	Mineral Lease (or Mining Lease) 15
C-AM-20	Colorado-Atkinson Mesa, Uravan District-DOE Lease Tract 20
C-BL-23	Colorado-Bitter Creek and Long Park areas, Uravan District - DOE Lease Tract 23
C-CM-24	Colorado-Club Mesa, Uravan District-DOE Lease Tract 24
C-G-26	Colorado-Gateway District-DOE Lease Tract 26
C-JD-9	Colorado-Jo Dandy area, Monogram Mesa-DOE Lease Tract 9
C-LP-23	Colorado-Long Park, Uravan District-DOE Lease Tract 23
C-SM-18	Colorado-Spring Creek Mesa, Uravan District-DOE Lease Tract 18
C-SR-10	Colorado-Slick Rock District-DOE Lease Tract 10
C-WM-17	Colorado-Wedding Bell Mountain, Bull Canyon-DOE Lease Tract 17
U-PM-28	Utah-Polar Mesa-DOE Lease Tract 28
"Withdrawn"	An area of land that the Atomic Energy Commission withdrew from standard mineral entry, later leasing parts of it to private companies for development.
"Restored"	An Atomic Energy Commission withdrawn area that was later restored to standard mineral entry.



"Reserve Blocks" Tracts of land held by the government that contain known reserves. They were identified by the USGB prefix, indicating U.S. Government Block, the reserve block number, a two digit code for the general location, and a final two digit code indicating the government agency responsible for evaluating the property.

The location codes include:

USGB-1-JDGS	Jo Dandy area, Monogram Mesa
USGB-9-JDOR	Jo Dandy area, Monogram Mesa
USGB-1-LGGS	Legin Group, Slick Rock
USGB-2-RGGS	Radium Group, Slick Rock
USGB-3-SPGS	Spud Patch Group, Slick Rock
USGB-5-GTLD	Georgetown Group, Slick Rock
USGB-6-RGOR	Lower Group, Radium Group, Slick Rock
USGB-3-SCGS	Spring Creek Mesa, Uravan
USGB-4-SMGS	Spring Creek Mesa, Uravan
USGB-1-AMGS	Atkinson Mesa, Uravan
USGB-18-AMOR	Atkinson Mesa, Uravan
USGB-9-LPGS	Long Park, Uravan
USGB-13-CMGS	Club Mesa, Uravan

The agency codes are:

GS	Block is the responsibility of the U.S. Geological Survey
LD	Block is the responsibility of the Leasing and Development Branch of the AEC
OR	Block is the responsibility of the Ore Reserves Branch of the AEC

TABLE 2

Correlation of current DOE lease unit numbers, locations, and property names with former AEC reserve block and lease numbers  
(A. S. J. Taylor, written comm.)

<u>Current Lease Unit Number</u>	<u>Former Reserve Block Number or Lease Number</u>	<u>General Location</u>	<u>Property Name(s) (not necessarily comprehensive)</u>
C-JD-5	USGB-1-JDGS USGB-6-JDGS	Jo Dandy area Monogram Mesa Montrose County	
C-JD-6	USGB-4-JDGS USGB-5-JDGS	Jo Dandy area Monogram Mesa Montrose County	
C-JD-7	USGB-2-JDGS USGB-3-JDGS USGB-9-JDOR USGB-10-JDOR USGB-11-JDOR USGB-12-JDOR	Jo Dandy area Monogram Mesa Montrose County	
C-JD-8	USGB-8-JDOR	Jo Dandy area Monogram Mesa Montrose County	
C-JD-9	USGB-7-JDGS	Jo Dandy area Monogram Mesa Montrose County	
C-SR-10	USGB-1-LGGS ML-1 ML-2 ML-4 ML-18 ML-29	Legin Group Slick Rock District San Miguel County	King, King No. 2, Sam, Frenchy, May, Cowgirl, Block 32 (Black Jack Strip) Eloisa, Otero
C-SR-11	USGB-2-RGGS ML-4	Radium Group Slick Rock District San Miguel County	Tomboy, Beth Emma Lou, Teller, Mercantile; Independence, Avoca, Ike Nos. 1-6, Sibley, Park, Brighton
C-SR-12	USGB-3-SPGS USGB-4-SPGS	Spud Patch area Slick Rock District San Miguel County	

TABLE 2 (Cont.)

Current Lease Unit Number	Former Reserve Block Number or Lease Number	General Location	Property Name(s) (not necessarily comprehensive)
C-SR-13	USGB-5-GTLD ML-28 ML-30 ML-32 ML-42	Georgetown area Slick Rock District San Miguel County	Hawkeye; Little Yolande, Herbert, Vanadium, Ocumpaugh; Ellison, Burrow; Dan
C-SR-13A	ML-12 ML-17 ML-46	Georgetown area Slick Rock District San Miguel County	Veta Mad, Veta Glad, Georgeto
C-SR-14	ML-21 ML-44	Middle and Upper Groups Slick Rock District San Miguel County	Sunnyside, Grant, Big Four; Canyon View, Grants, Black Fox
C-SR-14A	ML-27	Middle and Upper Groups Slick Rock District San Miguel County	Ned Claim
C-SR-15	USGB-6-RGOR ML-6 ML-20	Lower Group Slick Rock District San Miguel County	Cougar, Last Chance, Rainbow, Little Muriel, Chico, Lower Fraction; Knoll, Helen, Cacti, Alice
C-SR-16	ML-3 ML-4 ML-5 ML-8 ML-9 ML-43 ML-45	Charles T. Group Slick Rock District San Miguel County	Nucleus, Easton B., Michael Bray, Michael Bray 1 & 2, Ann No. 1 & 2 and Fraction adjacent to Ann No. 3 2, Hawk 2, Frankie 2; Charles T. No. 1, 2 & 4, Sunflower, Fraction No. 1, Fraction No. 5, Summit, Benny T. No. 2 1 & 2, Neomi D. and Neomi D. Angle
C-SR-16A	ML-5 ML-7 ML-22 ML-25 ML-45 ML-48	Golden Rod Group Slick Rock District San Miguel County	Pretty Boy, Golden Rod, Golden Rod No. 1 & 2, Lease Block including Golden Rod No. 5, Fraction 3 & 4, Bush No. 6 & 7

TABLE 2 (Cont.)

<u>Current Lease Unit Number</u>	<u>Former Reserve Block Number or Lease Number</u>	<u>General Location</u>	<u>Property Name(s) (not necessarily comprehensive)</u>
C-WM-17	Wedding Bell Block	Wedding Bell Mountain and Bachelor Draw Groups Bull Canyon San Miguel County and Montrose County	
C-SM-18	USGB-3-SCGS USGB-4-SMGS USGB-5-SCGS USGB-6-SCGS USGB-7-SMGS USGB-8-SCGS	Spring Creek Mesa Uravan District Montrose County	
C-AM-19	USGB-1-AMGS USGB-2-AMGS ML-38 ML-39 ML-47	Atkinson Mesa Uravan District Montrose County	Block C (Dolores Bench), Block A (Atkinson Mesa)
C-AM-20	USGB-18-AMOR USGB-19-AMOR	Atkinson Mesa Uravan District Montrose County	
C-LP-21	USGB-9-LPGS USGB-10-LPGS USGB-11-LPGS USGB-15-LPGS ML-14	Long Park Uravan District Montrose County	Reserve Block B (Virgin Shaft)
C-LP-22	USGB-16-LPGS	Long Park Uravan District Montrose County	
C-LP-22A	ML-15 ML-23	Long Park Uravan District Montrose County	Reserve Block A (adjacent to TNT No. 3); Lease Block (adjacent to Dusty and TNT No. 1 & 2)
C-LP-23	USGB-12-LPGS USGB-17-LPGS	Long Park and Bitter Creek areas Uravan District Montrose County	

TABLE 2 (Cont.)

<u>Current Lease Unit Number</u>	<u>Former Reserve Block Number or Lease Number</u>	<u>General Location</u>	<u>Property Name(s) (not necessarily comprehensive)</u>
C-CM-24	USGB-13-CMGS ML-26 ML-41	Club Mesa Uravan District Montrose County	South 670 ft of SE/4 sec. 29, T48N, R17W, with certain lands excepted
C-CM-25	ML-10 ML-11 ML-24 ML-37	Club Mesa Uravan District Montrose County	Lease Block (adjacent to Mill No. 4); Lease Blocks No. 3 & 4 (adjacent to Mill No. 2), Reserve Block No. 6 (NW of LaSalle Mining Company), Block 8 (Club Mesa)
C-G-26	AT(05-1)-36 ML-19	Calamity Mesa Gateway District Mesa County	All Fractions between Government claims leased to U.S. Vanadium under Contract AT(05-1)-36
C-G-26A	AT(05-1)-36 ML-34	Calamity Mesa Gateway District Mesa County	Block of public land adjoining Small Spot claim on the west; Matchless, Queen of the Hills, Calamity Claims
C-G-27	G-2 & G-4 AT(05-1)-36 AT(05-1)-526	Outlaw Mesa Gateway District Mesa County	Neglected, Calamity No. 14 & 15 (Calamity Mesa); Outlaw Mesa G-1
C-G-27A	AT(05-1)-526	Outlaw Mesa Gateway District Mesa County	Outlaw Mesa G-2

TABLE 3

Former AEC mining leases, their producing properties and location with information on annual production and grade (to 1962) of uranium-vanadium ore (A. S. J. Taylor, written comm.)

Former Mining Lease Number	Current Lease Unit Number	Property Name	District(s) Group Name(s) Location	Duration of Lease Production	Calendar Year	Dry Tons	% U <sub>308</sub>	% V <sub>205</sub>	Comments	
ML-1	C-SR-10	King No. 2, Sam	Slick Rock District	7/1/49	1949	1,296	0.44			
			Legin Group	to	1950	1,928	0.42			
				1951	2,679	0.40				
				1952	9,641	0.30				
				1953	10,015	0.28				
			SW/4 NW/4 sec. 28, T43N, R19W	3/31/62	1954	5,174	0.29			
				1955	3,020	0.38				
				1956	3,206	0.29				
				1957	2,709	0.33				
				1958	1,929	0.23				
				1959	1,490	0.30				
				1960	4,525	0.24				
				1961	931	0.17				
			1962	181	0.23					
			TOTAL	48,724	0.31	2.20				
ML-2	C-SR-10	Frenchy, King, May, Cowgirl	Slick Rock District	7/1/49	1949	893	0.35		See ML-29 (ML-2 became ML-29 on 7/1/52)	
			Legin Group	to	1950	4,188	0.29			
				1951	3,934	0.32				
				1952	2,117	0.31				
				NE/4 sec. 29, T43N, R19W	6/30/52	TOTAL	11,132	0.32		2.33
			ML-3	C-SR-16	Nucles, Easton B., Michael Bray 1 & 2	Slick Rock District	7/15/49	1949		944
Michael Bray Group	to	1950				918	0.21			
	5/1/50	TOTAL				1,862	0.26	1.89		
	E/2 sec. 16, T43N, R19W									
	ML-4	C-SR-11				Tomboy, Beth Emma Lou, Teller, Mercantile; Independence, Avoca, Ike Nos. 1-6, Sibley, Park, Brighton	Slick Rock District	7/15/49	1949	1,820
Mercantile Group			to	1950	4,854		0.39			
			1951	8,059	0.20					
			1952	4,918	0.28					
			C-SR-16	Nucles, Easton B., Michael Bray, Michael Bray No. 1, Ann Nos. 1	secs. 8, 16, 17, 18, T43N, R19W		10/31/59	1953	23,767	0.33
1954		19,078				0.26				
1955		19,027				0.31				
1956		23,054				0.36				
1957		4,769				0.34				

		& 2, Fraction adjacent to Ann No. 2, Hawk No. 2, Frankie No. 2		1958	3,326	0.40	
				1959	<u>1,221</u>	<u>0.65</u>	
C-SR-10		Block 32 (Black Jack Strip)		TOTAL	113,893	0.32	1.35
		Pinto*					

ML-5	C-SR-16	Charles T. Nos. 2 & 4, Sunflower	Slick Rock District	10/15/49	1949	212	0.24	See ML-45. ML-5 terminated 11/12/52 with part becoming ML-45
			Charles T. Group	to	1950	3,400	0.51	
	C-SR-16A	Pretty Boy			1951	4,485	0.23	
			SW/4 sec. 10, and NE/4 sec. 15, T43N, R19W	11/12/52	1952	<u>1,593</u>	<u>0.33</u>	
				TOTAL		9,490	0.34	

ML-6	C-SR-15	Cougar, Last Chance, Rainbow, Little Mariel, Chico, Lower Fraction	Slick Rock District	12/1/49	1949	60	0.53	
			Lower Group	to	1950	1,556	0.50	
					1951	2,565	0.51	
					1952	2,574	0.48	
			NW/4 SE/4 and NE/4	5/31/59	1953	5,026	0.48	
			SW/4 sec. 25, T44N, R19W		1954	2,611	0.57	
					1955	1,897	0.35	
					1956	2,455	0.34	
					1957	2,533	0.40	
					1958	5,360	0.31	
					1959	<u>1,019</u>	<u>0.37</u>	
				TOTAL		25,658	0.42	2.44

ML-7	C-SR-16A	Golden Rod, Fraction 3	Slick Rock District	10/23/50	1950	339	0.32	
			Golden Rod Group	to	1951	2,717	0.26	
					1952	2,425	0.22	
					1953	4,415	0.23	
			E/2 NE/4 sec. 14, T43N R19W	10/23/54	1954	<u>324</u>	<u>0.19</u>	
				TOTAL		7,220	0.24	2.43

ML-8	C-SR-16	Originally portions of Fraction No. 1 & Summit with Charles T. No. 1 added June 1951, Fraction No. 5, Benny T. Nos. 1 & 2 and remaining portions of Fraction No. 1 and Summit added 10/52	Slick Rock District	10/23/50	1950	84	0.48	See ML-9
				to	1951	1,415	0.40	
			Charles T. Group		1952	1,160	0.34	
					1953	1,545	0.42	
			sec. 10, T43N, R19W	3/31/62	1954	1,204	0.34	
					1955	1,137	0.39	
					1956	962	0.57	
					1957	322	0.43	
					1958	633	0.32	
					1959	1,242	0.30	
					1960	2,097	0.34	
					1961	1,720	0.29	
					1962	<u>15</u>	<u>0.37</u>	
				TOTAL		13,536	0.37	2.15

TABLE 3 (Cont.)

Former Mining Lease Number	Current Lease Unit Number	Property Name	District(s) Group Name(s) Location	Duration of Lease Production	Calendar Year	Dry Tons	% U-308	% V-205	Comments
ML-9	C-SR-16	Original lease-remaining portion of Fracture No. 1 and Summit, all of Bennie T. No. 1, Fraction No. 5 and Bennie T. No. 2 added 7/15/51	Slick Rock District Lower San Miguel Mining District sec. 10, T43N, R19W	10/23/50 to 9/9/52	1950 1951 1952 TOTAL	23 1,861 1,671 3,555	0.89 0.42 0.29 0.36	2.62	See ML-8. ML-9 was terminated 9/9/52
ML-10	C-CM-25	Lease Block, adjacent to Mill No. 4	Club Mesa S/2 NE/4 sec. 5, T47N, R17W	1/15/51 to 7/31/60	1951 1952 1953 1954 1955 1956 1957 1958 1959 1960 TOTAL	4,400 13,565 16,627 21,822 21,650 16,853 11,432 8,366 7,603 2,903 125,221	0.34 0.24 0.26 0.27 0.25 0.23 0.23 0.21 0.19 0.18 0.24	1.63	
ML-11	C-CM-25	Blocks 3 & 4, adjacent to Mill No. 2	Club Mesa N/2 NE/4 sec. 5, T47N, R17W	1/1/51 to 3/31/61	1951 1952 1953 1954 1955 1956 1957 1958 1959 1960 1961 TOTAL	736 1,262 1,346 2,047 1,856 1,723 1 1,541 2,394 2,453 1,911 17,270	0.53 0.47 0.40 0.52 0.49 0.36 0.59 0.27 0.34 0.39 0.49 0.42	1.79	
ML-12	C-SR-13A	Veta Mad, Veta Glad	Slick Rock District Georgeto Group NW/4 NW/4 sec. 30, T44N, R18W	12/4/50 to 12/4/53	1951 1952 1953 TOTAL	866 1,223 2,157 4,246	0.74 0.42 0.46 0.50	2.37	See ML-46. Noncom- pliance on lease. Expired 12/4/53 and reissued as ML-46



ML-13	Restored	Reserve Block 1	Club Marks	5/1/51	1951	2,420	0.31	This lease was restored to standard claim procedures
					1952	5,365	0.29	
			NW/4 sec. 31, T48N, R17W	to	1953	6,789	0.25	
					1954	6,978	0.22	
				10/1/55	1955	3,179	0.24	
					TOTAL	24,731	0.25	1.43
ML-14	C-LP-21	Reserve Block B (Virgin Shaft)	Long Park	10/1/51	1952	272	0.17	
					1953	2,238	0.25	
			S/2 SW/4 sec. 22, T47N, R17W	to	1954	2,459	0.35	
					1955	1,886	0.34	
				3/31/61	1956	2,369	0.31	
					1957	2,553	0.21	
					1958	1,999	0.22	
					1959	818	0.50	
					1960	15,364	0.28	
					1961	2,788	0.29	
					TOTAL	33,746	0.28	2.14
ML-15	C-LP-22A	Reserve Block A (adjacent to TNT No. 3)	Long Park	8/1/51	1953	61	0.53	
					1954	148	0.36	
			NW/4 sec. 21, T47N, R17W	to	1955	-	-	
					1956	-	-	
				4/30/61	1957	832	0.39	
					1958	792	0.27	
					1959	865	0.36	
					1960	525	0.28	
					1961	25	0.28	
					TOTAL	3,248	0.32	1.63
ML-16	Restored	Lease Block adjacent to Falcon Claim	Slick Rock District	3/1/51	1951	274	0.23	This lease was restored to standard claiming procedures
					1952	-	-	
			SE/4 SE/4 sec. 20, T43N, R19W	to	1953	7	0.36	
				2/28/55	TOTAL	281	0.23	
								2.55
ML-17	C-SR-13A	Georgeto	Slick Rock District	9/26/51	1951	1,319	0.32	
					1952	2,832	0.39	
			S/2 NW/4 sec. 30, T44N, R18W	to	1953	4,002	0.34	
					1954	4,163	0.41	
				9/26/55	1955	2,271	0.30	
					1956	14	0.50	
					TOTAL	13,415	0.36	1.75

TABLE 5 (Cont.)

Former Mining Lease Number	Current Lease Unit Number	Property Name	District(s) Group Name(s) Location	Duration of Lease Production	Calendar Year	Dry Tons	% U <sub>3</sub> O <sub>8</sub>	% V <sub>2</sub> O <sub>5</sub>	Comments
ML-18	C-SR-10	Eloisa, Otero	Slick Rock District	12/1/51	1952	5,054	0.32		
			Legin Group	to	1953	2,530	0.29		
					1954	1,123	0.42		
			NW/4 sec. 28, T43N, R19W	12/1/55	1955	1,219	0.21		
					TOTAL	9,926	0.29	1.75	
ML-19	C-G-26	All Fractions between government claims leased to U.S. Vanadium under contract AT(05-1)-36	Gateway District Grand County, Utah and Mesa County, Colorado Polar Mesa*, Calamity Mesa Sec. 12, T50N, R18W Sec. 34, T24S, R25E	12/1/51 to 7/31/57	1955 TOTAL	97 97	0.26 0.26		*Polar Mesa was covered by Lease Unit No. U-PM-28 which was not leased  See ML-AT(05-1)-36
ML-20	C-SR-15	Knoll, Helen, Cacti, Alice	Slick Rock District Lower Group SW/4 SW/4 sec. 23, T44N, R19W	1/14/52 to 1/14/56	1952 1953 1954 1955 TOTAL	3,031 5,276 3,687 1,903 14,797	0.30 0.30 0.34 0.33 0.32		1.74
ML-21	C-SR-14	Sunnyside, Grant, Big Four	Slick Rock District Upper Group S/2 NW/4 sec. 5, T43N, R18W	1/14/52 to 10/10/52	1952 TOTAL	1,798 1,798	0.26 0.26		1.79
ML-22	C-SR-16A	Golden Rod No. 1 & 2, Fraction No. 4	Slick Rock District Golden Rod Group SE/4, sec. 11, T43N, R19W	2/15/52 to 2/6/54	1952 1953 1954 TOTAL	1,582 437 29 2,048	0.25 0.28 0.21 0.26		ML-22 was terminated See ML-48  2.35

ML-23	C-LP-22A	Lease Block adjacent to Dusty and TNT No. 1 & 2	Long Park	3/1/52	1952	137	0.39	
			E/2 sec. 20 and W/2 sec. 21, T4N, R17W	to	1953	3,997	0.32	
				12/31/60	1954	4,637	0.32	
					1955	2,784	0.24	
					1956	1,707	0.34	
					1957	682	0.21	
					1958	2,650	0.44	
					1959	2,112	0.38	
					1960	2,077	0.30	
					1961	1,631	0.30	
					TOTAL	22,842	0.32	1.68

ML-24	C-CM-25	Reserve Block No. 6 (NW of LaSalle Mining Company property)	Club Mesa	9/1/52	1953	2,880	0.25	
			NE/4 NW/4 sec. 5, T47N R17W	to	1954	--	--	
				10/31/58	1955	1,486	0.32	
					1956	936	0.22	
					1957	944	0.23	
					1958	137	0.22	
					TOTAL	6,383	0.26	1.86

ML-25	C-SR-16A	Lease Block, including Golden Rod No. 5	Slick Rock District	5/1/52	1952	1,788	0.32		Ceased mining 2/54
			Golden Rod Group	to	1953	2,533	0.28		
			NE/4 NW/4 sec. 14, T43N, R19W	5/1/54	1954	161	0.20		
					TOTAL	4,482	0.29	2.77	

ML-26	C-CM-24	South 670 ft of SE/4 sec. 29, T48N, R17W, with cer- tain lands excepted	Club Mesa	5/1/52	NO PRODUCTION			No production under this lease. See ML-41
			Near Shamrock Group	to				
			SE/4 sec. 29, T48N, R17W	9/30/52				

ML-27	C-SR-14A	Ned Claim	Slick Rock District	6/15/52	1952	460	0.18		Mining ceased 2/54
				to	1953	435	0.20		
			NW/4 NE/4 sec. 1, T43N R19W	6/15/54	1954	75	0.33		
					TOTAL	970	0.20	1.21	

ML-28	C-SR-13	Hawkeye	Slick Rock District	7/1/52	1952	440	0.27	
				to	1953	1,016	0.35	
			W/2 SW/4 sec. 32, T44N R18W	10/1/53	TOTAL	1,456	0.33	1.12

TABLE 3 (Cont.)

Former Mining Lease Number	Current Lease Unit Number	Property Name	District(s) Group Name(s) Location	Duration of Lease Production	Calendar Year	Dry- Tons	% U <sub>3</sub> O <sub>8</sub>	% V <sub>2</sub> O <sub>5</sub>	Comments
ML-29	C-SR-10	Cowgirl, Frenchy, King, May	Slick Rock District	6/30/52	1952	2,305	0.41		See ML-2
					1953	4,093	0.38		
			Legin Group	to	1954	4,861	0.31		
					1955	5,823	0.24		
			NE/4 sec. 29, T43N, R19W	3/30/62	1956	5,831	0.23		
					1957	6,500	0.21		
					1958	7,843	0.20		
					1959	6,835	0.24		
					1960	6,450	0.23		
					1961	6,750	0.21		
					1962	874	0.16		
					TOTAL	58,162	0.25	1.80	
ML-30	C-SR-13	Little Yolande, Herbert, Vanadium, Ocumpaugh	Slick Rock District	7/15/52	1952	2,707	0.17		
					1953	4,198	0.23		
			Middle Group	to	1954	1,721	0.25		
					1955	2,180	0.32		
			W/2 NE/4 sec. 31, T44N R18W	3/31/58	1956	3,039	0.24		
					1957	554	0.26		
					1958	909	0.24		
					TOTAL	15,308	0.24	1.17	
ML-31	Restored	Reserve Block 4, Blue Creek Mesa	Northeast end of Blue Creek Mesa, Mesa County	9/1/52	1952	386	0.50		This lease was re- stored to standard claiming procedures
				to	1953	293	0.71		
			SE/4 sec. 29 and NE/4 sec. 32, T50N, R17W	9/1/53	TOTAL	679	0.60	3.02	
ML-32	C-SR-13	Ellison, Burro	Slick Rock District	11/15/52	1952	73	0.23		
					1953	775	0.36		
			Middle Group	to	1954	466	0.45		
					1955	220	0.31		
			NE/4 NE/4 sec. 31, T44N, R18W	11/15/57	1956	198	0.28		
					1957	9	0.33		
					TOTAL	1,741	0.36	1.67	
ML-33		Oyler Tunnel Tract	Capitol Reef National Monument						NO PRODUCTION Lease never executed

ML-34	C-G-26A	Block of public land adjoining Small Spot claim on the west	Gateway District Calamity Mesa area  NE/4 sec. 9, T50N, R18W	2/1/53 to 1/31/54	1953 TOTAL	<u>15</u> 15	<u>0.15</u> 0.15	<u>    </u> 0.69	
ML-35	Restored	Public land adjoining Last Chance claim on the north	Cottonwood area, west of Blanding, Utah  N/2 SE/4 sec. 4, T37S, R21E	1/15/53 to 1/15/55	1953 1954 TOTAL	<u>1,063</u> <u>1,253</u> 2,316	<u>0.13</u> <u>0.17</u> 0.15	<u>    </u> <u>    </u> 1.87	This lease was restored to standard claiming procedures
ML-36	Restored	Public land adjoining Cottonwood No. 3 claim on the north	Cottonwood area, west of Blanding, Utah  NE/4 SE/4 sec. 4, T37S, R21E	3/1/53 to 9/23/54	1953 1954 TOTAL	<u>616</u> <u>537</u> 1,153	<u>0.25</u> <u>0.17</u> 0.21	<u>    </u> <u>    </u> 1.51	This lease was restored to standard claiming procedures
ML-37	C-CM-25	Block 8 (Club Mesa)	Club Mesa  W/2 W/2 sec. 5 and E/2 E/2 sec. 6, T47N, R17W	5/1/53 to 5/1/58	1954 1955 1956 1957 1958 TOTAL	<u>6,735</u> <u>13,162</u> <u>9,229</u> <u>8,555</u> <u>1,724</u> 39,405	<u>0.42</u> <u>0.38</u> <u>0.23</u> <u>0.37</u> <u>0.23</u> 0.35	<u>    </u> <u>    </u> <u>    </u> <u>    </u> <u>    </u> 1.76	
ML-38	C-AM-19	Block C (Dolores Bench)	Atkinson Mesa Dolores Bench, north of Uravan  W/2 NE/4 sec. 24, T48N, R18W	5/15/53 to 2/1/54	NO PRODUCTION			See ML-47 This lease was changed to ML-47 due to death of one of the partners	
ML-39	C-AM-19	Block A (Atkinson Mesa)	Atkinson Mesa  E/2 NE/4 sec. 24, T48N R18W	5/15/53 to 3/31/62	1954 1955 1956 1957 1958 1959 1960 1961 1962 TOTAL	<u>1,210</u> <u>6,459</u> <u>8,158</u> <u>14,560</u> <u>21,458</u> <u>17,824</u> <u>20,754</u> <u>21,492</u> <u>23,088</u> 135,003	<u>0.48</u> <u>0.24</u> <u>0.30</u> <u>0.26</u> <u>0.26</u> <u>0.28</u> <u>0.32</u> <u>0.28</u> <u>0.30</u> 0.28	<u>    </u> <u>    </u> <u>    </u> <u>    </u> <u>    </u> <u>    </u> <u>    </u> <u>    </u> <u>    </u> 1.61	

TABLE 3 (Cont.)

Former Mining Lease Number	Current Lease Unit Number	Property Name	District(s) Group Name(s) Location	Duration of Lease Production	Calendar Year	Dry Tons	% U <sub>3</sub> O <sub>8</sub>	% V <sub>2</sub> O <sub>5</sub>	Comments
ML-40	Restored	Lease Block in Cottonwood District	Cottonwood District, west of Blanding, Utah sec. 10, T37S, R21E	6/20/53 to 6/20/54	1952 1953 TOTAL	1,391 47 1,438	0.18 0.14 0.17	  1.70	This lease was re- stored to standard claiming procedures
ML-41	C-CM-24	South 670 ft of SE/4 sec. 29, T48N, R17W with certain lands excepted	Club Mesa Near Shamrock Group SE/4 sec. 29, T48N, R17W	11/1/53 to 11/1/55	1954 1955 TOTAL	793 1,035 1,828	0.25 0.19 0.21	  1.31	See ML-26
ML-42	C-SR-13	Dan	Slick Rock District SW/4 sec. 30, T44N, R18W	11/15/53 to 11/15/54	1954 TOTAL	14 14	0.23 0.23	 1.45	
ML-43	C-SR-16	Charles T. No. 2 & 4	Slick Rock District Charles T. Group SW/4 sec. 10, T43N, R19W	11/15/53 to 11/15/57	1953 1954 1955 1956 1957 1958 TOTAL	40 762 555 497 385 7 2,255	0.27 0.33 0.25 0.15 0.12 0.11 0.23	      1.54	
ML-44	C-SR-14	Canyon View, Grants, Black Fox	Slick Rock District Upper Group SW/4 sec. 5, T43N, R18W	11/15/53 to 12/31/57	1953 1954 1955 1956 1957 1958 TOTAL	128 3,232 2,301 802 922 305 7,690	0.33 0.29 0.33 0.32 0.26 0.10 0.30	      1.86	

ML-45	C-SR-16	Sunflower	Slick Rock District	12/1/53	1953	33	0.22	ML-45 was terminated 12/1/54
	C-SR-16A	Pretty Boy, Bush Nos. 6 & 7	Near Golden Rod Group	to	1954	<u>313</u>	<u>0.14</u>	
		NW/4 sec. 14 and NE/4 NE/4 sec. 15, T43N, R19W	12/1/54	TOTAL	346	0.15	1.45	

ML-46	C-SR-13A	Veta Mad, Veta Glad	Slick Rock District	12/5/53	1954	1,006	0.56	See ML-12
					1955	4,586	0.42	
			Georgeto Group	to	1956	4,332	0.35	
					1957	6,371	0.33	
			NW/4 NW/4 sec. 30,	3/31/62	1958	7,513	0.26	
			T44N, R18W		1959	3,762	0.22	
					1960	2,379	0.22	
					1961	6,115	0.25	
					1962	<u>6,266</u>	<u>0.25</u>	
				TOTAL	42,330	0.30	1.55	

ML-47	C-AM-19	Block C (Dolores Bench)	Atkinson Mesa	2/1/54	1954	2,045	0.43	See ML-38
					1955	9,885	0.38	
			Dolores Bench, north of Uravan	to	1956	12,441	0.32	
					1957	17,201	0.31	
				3/31/62	1958	21,899	0.29	
			W/2, NE/4 sec. 24,		1959	20,662	0.30	
			T48N, R18W		1960	20,565	0.28	
					1961	15,567	0.25	
					1962	<u>12,648</u>	<u>0.26</u>	
				TOTAL	132,884	0.30	1.43	

ML-48	C-SR-16A	Neomie D., Neomie D. Angle, Fraction No. 1 (part)	Slick Rock District	2/6/54	1954	194	0.21	See ML-22
			West of Golden Rod Group	to	1955	<u>9</u>	<u>0.18</u>	
			SW/4 sec. 11 and NW/4 sec. 14, T43N, R19W	2/6/55	TOTAL	203	0.21	

TABLE 3 (Cont.)

Former Mining Lease Number	Current Lease Unit Number	Property Name	District(s) Group Name(s) Location	Duration of Lease Production	Calendar Year	Dry Tons	% U-308	% V-205	Comments
ML- AT(05-1)-36	C-G-26A	Matchless, Queen of the Hills, Calamity Claims	Gateway District	4/13/49	1949	1,790	0.59		
					1950	10,695	0.41		
	C-G-27	Neglected, Calamity 14, Calamity 15 (Calamity Mesa)	Outlaw side of Calamity Mesa and Maverick Group	4/24/61	1951	9,677	0.50		
					1952	8,531	0.61		
					1953	11,348	0.43		
					1954	10,715	0.41		
					1955	11,145	0.33		
					1956	9,577	0.38		
					1957	7,422	0.32		
					1958	3,541	0.42		
					1959	3,473	0.34		
					1960	524	0.21		
					TOTAL	88,438	0.42	1.80	
ML- AT(05-1)-305	Dropped	Cove Mesa and other Navajo tracts of the Wade-Curran Lease	Northeastern Arizona Navajo Reservation	1/13/49	1948	10	0.18		Lease was dropped
					1949	3,554	0.14		
				to	1950	664	0.21		
					1951	931	0.20		
				6/30/58	1952	632	0.24		
					1953	1,242	0.32		
					1954	2,696	0.30		
					1955	2,353	0.29		
					1956	5,875	0.21		
					1957	4,175	0.19		
					1958	3,492	0.22		
					1959	3,632	0.25		
					1960	2,430	0.22		
					1961	695	0.21		
					TOTAL	32,381	0.22	1.63	
ML- AT(05-1)-526	C-G-27	Outlaw Mesa G-1	Gateway District	7/10/50	1950	1,630	0.37		
					1951	15,811	0.34		
	C-G-27A	Outlaw Mesa G-2	Outlaw Mesa	7/22/60	1952	19,417	0.30		
					1953	17,780	0.27		
					1954	15,472	0.28		
					1955	15,836	0.24		
					1956	11,820	0.20		
					1957	6,268	0.16		
					1958	26,060	0.19		
					1959	27,205	0.22		
					1960	7,098	0.19		
					TOTAL	165,397	0.25	1.09	
					GRAND TOTAL	1,252,000 (rounded)	0.29	1.63	



## Alphabetical and Numerical List of Occurrences by County

Archuleta	1	Sunetha Claim Group (Sunetha Anticline)
Bent	1	Allen Jones Property
	2	G. R. Acton Property
	3	Unknown No. 1
Boulder	1	Argo
	2	Bat Claim No. 1 (Corona Mine)
	3	Bell Group
	4	Black Cloud
	5	Blue Jay (Mill Tailings)
	6	Brown Spar
	7	Burlington
	8	Caribou Mines (Radium, Elmer and Nelson Veins)
	9	Cerite Prospect
	10	Cloud City (Virginia, Bob, Marilyn)
	11	Copper Blush
	12	Diamond Group
	13	Emmet
	14	Energy
	15	Fairday (Faraday, Collowa, Overland Mountain Group)
	16	Fox Hills Outcrop
	17	Gibson
	18	Gold Lake Claims
	19	Golden Age
	20	Golden Reward
	21	Goldsmith Maid
	22	Grand View Lode
	23	Horseshoe Lode
	24	King Tunnel
	25	Kipp Lease
	26	La Salle Claims
	27	Ladybug Claim (Suzebell, Thunderbolt)
	28	Lease Tailings Pond (Stattendale Dump)
	29	Lehman Lode
	30	Lewis Lode
	31	Lucky Lode
	32	Lulu B. (Victory and Gold Leaf Lodes)
	33	Marc 1
	34	Marion Mill
	35	Miller Lease (Miller Group, Kipp Property)
	36	Miranda A. Johnson Lode
	37	Mountain Goat (Mountain Goat Claim No. 1)
	38	Nations Treasure
	39	No Sloop Claim
	40	North St. Vrain Uranium
	41	Orion
	42	Poorman
	43	Pueblo Belle Mine
	44	Rose Mary 3
	45	Shirley Mine
	46	Sisk Property
	47	Terror-Roseberry
	48	Unknown 1
	49	Unknown 2
	50	Unknown 3
	51	Unknown 4
	52	Unknown 5
	53	Victory
Chaffee	1	Clara May Pegmatite Quarry
	2	Cosmo Claims No. 1 and 2
	3	Gold Bug Claim
	4	Josephine Mine
	5	Little Jimmie 5
	6	Lucky Break Placer (Lucky Break Iron Mine)
	7	Lucky John 2
	8	Madonna Mine
	9	Mica Beryl Claims (Falfar, Gray Hen)
	10	Mount Antero Pegmatites
	11	Newett (Trout Creek, View No. 2, Lucky Jack)

# ALPHABETICAL LIST OF OCCURRENCES BY COUNTY

Chaffee	12 No. 8
	13 Once Again Claim
	14 Pegmatite Quarry
	15 Pegmatites
	16 Ramsey Mines
	17 Silver Crop Mine
	18 Swiss Boy Mine
	19 Unnamed 1
	20 Unnamed 2
	21 Unnamed 3
	22 Yard Mine
Cheyenne	1 Unnamed 1
Clear Creek	1 Alma-Lincoln
	2 Almaden-Blazing Star Tunnel
	3 Alpine Mine
	4 Argo
	5 Arladne
	6 Baltic Tunnel
	7 Beaver Brook
	8 Belle Creole Mine
	9 Bellevue-Rochester
	10 Big Chief
	11 Blameless Mine
	12 Bonanza
	13 Brazil Mine
	14 Cleveland Tunnel
	15 Conqueror Mine
	16 Crazy Girl
	17 Diamond Mountain Mine (Glucky)
	18 Elizabeth M. Lode (Daisey Freeze Claim)
	19 Ella McKinney
	20 Golconda
	21 Gold Anchor
	22 Gold Chloride Mine
	23 Golden Calf Mine
	24 Golden Glen
	25 Gomer Mine
	26 Grover
	27 Highland Lassie Tunnel
	28 Highlander
	29 Hill Top Claims
	30 J. C. Vol Claim
	31 Jo Reynolds
	32 Kitty Emmet
	33 Lake Central Project
	34 Lamartine Tunnel
	35 Lelew No. 1
	36 Little Cub Mine
	37 Little Warrior 1-A (April Fool 1-4, Little Warrior No. 7,
	38 Lone Star (Magic Radon)
	39 Lucania Tunnel
	40 Lucky Strike Claims
	41 M and E Mine
	42 Major C. and Little Colonial
	43 Martha E Mine (Elizabeth M Lode)
	44 Miller Tunnel
	45 Muscovite Mine
	46 New Era
	47 Old Settler Tunnel
	48 Peabody Mine
	49 Polar Star Mine
	50 Robineau Claims
	51 Silverline Mine
	52 Spanish Bar
	53 Standard Mine
	54 Stanley Mines
	55 Star Mine
	56 Sunnyside Tunnel

# ALPHABETICAL LIST OF OCCURRENCES BY COUNTY

Clear Creek	57	Two Brothers Tunnel
	58	Unknown 1
	59	Unknown 2
	60	Unknown 174
	61	Unknown 357
	62	Unknown 358
	63	Unknown 406
	64	Unknown 419
	65	Unknown 428
	66	Unknown FR-118
	67	Unknown FR-75
	68	Unknown FR-78
	69	Unnamed 3 (Mine Dump No. 1)
	70	Unnamed Mine 4 (Mine Dump No. 2)
	71	Urad Mine
Conejos Costilla	1	Shirley Rae
	1	Black Jack No. 2
	2	Loco Alice Prospect Prospect (Trinchera Ranch)
	3	Unnamed 1
Crowley Custer	1	Unnamed No. 1
	1	18, Airborne Anomaly
	2	Anna Lee (Anna Lee Lode)
	3	Barlito Lode 2
	4	Beck Mountain (Beck Mountain Lode)
	5	Big Chief 1 (Star Mine)
	6	Bull Domingo Mine
	7	D. P. Van Nieuhuys Property
	8	Damn Fool (see Hopeful 1-3, King Midas 1-25, Macho 1-20,
	9	Derby Extension (Derby Extension)
	10	Fair View Lode
	11	Floyd Watters (Watter's Ranch, Mundy Claim, Lewis C. Mundy,
	12	Franklin Mine (Frankland Mine)
	13	G. W. and Antrim Claims
	14	Gold Crown 2
	15	Hardin Claim Group
	16	Horn Peak Claims (Little Horn Peak Claims, Reese Claims,
	17	John Spalding
	18	King Midas and Bonanza Claims (King Midas No. 8)
	19	Lee Jones Ranch
	20	Lucky Find (Lucky Strike)
	21	Mystery Lode
	22	Nightengale Claim (Atomic Mountain Group, Nightingale,
	23	Pennie Poker
	24	Rare Earth Special 1, 2, 4
	25	Sewell Ranch
	26	Sunshine Valley Lode
	27	Swartz Ranch (Unnamed)
	28	Thorite Mother Lode 1, 4
Delta	1	Austin Springs
	2	Colonel Chinn Artesian Well
	3	Doughty Spring
	4	Geysers (Lucky Strike Claims 1 - 30)
	5	Hotchkiss National Fish Hatchery
	6	L. B. Wyman Property
	7	Little U Claims
Dolores	8	Sulfur Gulch
	1	Arrow Head (Arrowhead Group)
	2	Barlow Group (Barlow Creek)
	3	Black Hat (Legion Group)
	4	Blue Eagle 1
	5	Blue Eagle Mine
	6	Broken Thumb 2 (Bottle & Jug)
	7	Rainy Day (Pack Rat)
	8	Rico Argentine Mine (Rico Argentine Mining Company,
	9	Silver Swan
Douglas	10	South Barlow
	1	Highland Ranch (Airborn Anomaly No. 1, Phipps Ranch)
	2	Kaminski Prospect
	3	Penley No. 1 Lease

# ALPHABETICAL LIST OF OCCURRENCES BY COUNTY

Eagle	1	Arrowhead 1
	2	Blue-Bell (Lady Bell, Ground Hog 1, Black Eagle Lode, G
	3	Dorado Claims (Little Spring Claims, Golden Fleece, Gringo
	4	Dortha 1
	5	Horse Mountain Uranium Mines
	6	Lone Tree Claims
	7	Lucky Strike 1
	8	Rock Hat Claim
	9	Tipton Ranch
	10	Unnamed 1
	11	Unnamed 2
	12	Unnamed 3
	13	Unnamed 4
El Paso	1	17, Airborne Anomaly
	2	B. F. Reed Claim
	3	Bluebird
	4	Burgess Claim
	5	Dorothy O. Claim
	6	Duffields Property (Duffields Deposit, Leyte Claim)
	7	Folbre 2
	8	Mike Doyle Carnotite Deposit (Lucky Ben Lease)
	9	Mobil Oil Corporation Drill Hole 2
	10	Mobil Oil Corporation Drill Hole 1
	11	Morris Prospect (Antonita Valjean)
	12	Rock View Claim
	13	St. Peter's Dome 2
	14	St. Peter's Dome 1
	15	Unnamed 1
Elbert Fremont	16	Unnamed 2
	1	Limon Locality
	1	A. E. Jones Claim (Taylor Soda Springs)
	2	A. Griffin Ranch
	3	Ant Claims
	4	Barbara Claims (True Blue No. 1 Claim, Oliver No. 1 Claim)
	5	Beaver Creek
	6	Big Bear (Big Hole, Cactus Claims)
	7	Bill and Bud 2 and 4
	8	Brandt Claims
	9	Brown Lava Lode (Pink Lady)
	10	Cap Rock Claims (Cap Rock 40)
	11	Claim 2
	12	Colexco No. 1-43 (Red Cliff 30)
	13	Conac Minerals, Inc. Mining Claims (Wagner-Grape Creek Lode)
	14	Copper Gulch
	15	D-C Claims (Owl Claims, Samargar No. 7 Claim of Karl
	16	Deer Ridge Claim
	17	Dickson-Snooper Mine (Ponderosa, Rainbow-Moose Ore Bodies)
	18	Dilleys Lease (Dilleys Ranch)
	19	East Big Wash (Sputnik No. 1)
	20	Felch Creek 1
	21	First Chance
	22	Good Hope Dreamer (Dreamer Mine, Dreamer, Delano No. 5-12,
	23	Gunnison School Section Mine (Colorado Lease 519, Section
	24	Hanson Ore Body
	25	Hilltop Prospect
	26	Homestake 2 & 6 Claims
	27	Hoyt Adkins Ranch Anomaly 3
	28	James-Taylor Lease (Spring Valley)
	29	Jesus Lode
	30	Joan 2 Mine (Seattle Chief Mine)
	31	Knob Hill Mine (Dipper Mine, Knob Hill OS, Knob Hill Ore
	32	Last Chance
	33	Lightning 2 (DAC Uranium, Lightning No. 1-8, Honest John
	34	Little Abner Mine
	35	Mary L. (Mary L. 1-6 Claims)
	36	Misery Mines (Red Hill?, Tanner Boy Group?, Joe & Bob
	37	Navajo (Big Emma)
	38	Perry DeLeillis Claim
	39	Picnic Tree Mine (Picnic Tree Claims - Hall Homestead)

# ALPHABETICAL LIST OF OCCURRENCES BY COUNTY

- Fremont 40 Pine Canyon Lode (Southmost Claim Group)  
 41 Rupp Property (Raup Mine 39)  
 42 Sand Creek Claims  
 43 School Section  
 44 Section 36 Mine (Glen Williams Mine)  
 45 Shella 1  
 46 Smaller Lease  
 47 Sunrise Claims 1, 2, 3 (Stinkhole Claims)  
 48 Sunshine Claims  
 49 Tanner Boy Group (Red Hills Group)  
 50 Texas Creek  
 51 Thome Claims (Thome 1-14)  
 52 Unnamed 1  
 53 Unnamed 2  
 54 Unnamed 4  
 55 Unnamed 5  
 56 Willis Tuttle
- Garfield 1 Atlas Minerals Corporation Property  
 2 Elk Van Tunnel and UV Claims (UV and Elk Van Claims)  
 3 End of Trail 1 & 2  
 4 Enterprise 1, 2, 3  
 5 Garfield Mine  
 6 Homestake Mine  
 7 Incorporated 1, 2, 3 & 4  
 8 Lottl B (Lottl 1-3, Canary, Canary 2 & 3)  
 9 Marvola Lode 1-14 (Marvol)  
 10 Revelation Group  
 11 Rifle Mine (Rifle Creek Mine, Oriole Claims, and North Star  
 12 Schulte 1 - SW1/4, Test Well  
 13 Ward Gulch
- Glipin 1 Ashland Mine  
 2 Big Bertha Prospect  
 3 Black Hawk 2 Claim  
 4 Bowman Lease  
 5 Buckley Mine  
 6 Bullion  
 7 Carrol Mine (Carrol, Spur-Daisy Group, Central City,  
 8 Cherokee Mine  
 9 Copper Queen (Copper King?)  
 10 E & H-Jelly Roll Mine  
 11 Elliot Mine (Wealthy Lode Mining Claim, Wealthy Lode Claim)  
 12 Flack No. 3 Mine (Kirk Mine)  
 13 German and Balcher  
 14 Gold Chief Mine  
 15 Gold-Spring Group  
 16 Golder - Passarella Claims  
 17 Iron Mine (Pewabic-Iron)  
 18 J. P. Whitney  
 19 James Peak Anomaly (Tucker #1)  
 20 Priscilla Claim (Priscilla Group Claims, Priscilla, Dorothy,  
 21 Root Ranch Lease  
 22 Smith Hill Gulch Prospect  
 23 Spread Eagle (Queen)  
 24 Telegraph Mine  
 25 Two Sisters Claim (Two Sisters Group)  
 26 Unnamed 1  
 27 Wood Mine (East Calhoun Mine, Calhoun-Wood)
- Grand 1 Alaska-Humes Group  
 2 Corral Creek Occurrence  
 3 CPJ Claims (Lucky Jack Prospect)  
 4 Engles-Yust Property (Engels Ranch)  
 5 First Chance  
 6 Jerome Claims (Alkali Flat Spring)  
 7 Julie Johnson 1  
 8 Lease #011850  
 9 Limestone Occurrence  
 10 Lucky Strike 5

# ALPHABETICAL LIST OF OCCURRENCES BY COUNTY

- Grand
- 11 Lucky Strike Claims
  - 12 Lynn No. 1
  - 13 No Name Claims
  - 14 Phillips 1
  - 15 Phillip Stafford Property
  - 16 Pickering
  - 17 Tucker Mine
  - 18 Undecided Claims (Beaver Group 1-20)
  - 19 Unnamed 2
  - 20 Unnamed 3
  - 21 Unnamed 5
  - 22 Unnamed 7
  - 23 Unnamed 8
  - 24 Unnamed 9
  - 25 Unnamed 10
  - 26 Unnamed 11
  - 27 Unnamed 14
  - 28 Unnamed 15
- Gunnison
- 1 Atlantic Richfield Drill Hole
  - 2 Badger 1
  - 3 Big Red 22
  - 4 Big Red 39
  - 5 Black Mica Company?
  - 6 Brown Derby Mine
  - 7 Brush Creek Group (Brush Creek Mining Co.)
  - 8 Buzzard's Roost (Pento)
  - 9 Czar 3
  - 10 Gray Jeep Group
  - 11 Jacks Cabin Area (North Star Claims)
  - 12 Jeanie 6 & 2
  - 13 Jenny Claims
  - 14 Lady In Red Shaft (Lady In Red No. 5)
  - 15 Little Indian No. 36
  - 16 Little Johnnie 1 and 2
  - 17 Matchless Group
  - 18 May Queen
  - 19 Mrs. Roberts Deeded Land
  - 20 North Star Group
  - 21 Saverne
  - 22 Silent Friend
  - 23 Sunset Claims
  - 24 Surefire Mining Claims
  - 25 Ten Mile Group (Claims 1, 2, 3, Holman Claims)
  - 26 Wayne Wright Propsect (Adair Group, Dubois Mine)
- Hinsdale
- 1 Bess
  - 2 Beth Group
  - 3 Eagle Claims 1-5 (Eagle, Mary Alice)
  - 4 Golden Fleece
  - 5 Jody Claims 1-5 (Belson-Gibfrey Claim, Ranger No. 2 Claim)
  - 6 Nellie M Mine
  - 7 Rio Grande Claims 1-10
- Huerfano
- 1 Anal No. 1, (Security Exploration Company Claim, Buckhorn,
  - 2 Badito Cone (Stumbling Stud Mine)
  - 3 Bel Aire Claims (Bel Aire 1-6)
  - 4 Black Jack 2 (Black Jack 1-9)
  - 5 City Slicker Claim
  - 6 Columbine Hills
  - 7 Dallas Dottie
  - 8 Delz Ranch
  - 9 Hall Property (School Section)
  - 10 Independent Claim
  - 11 Isabell Group
  - 12 McGuire
  - 13 McGuire Lode (C.E. Wilson Property)
  - 14 McIntire Property
  - 15 Muleshoe (La Veta Pass)
  - 16 Parks Lode Claim
  - 17 Red Canyon

# ALPHABETICAL LIST OF OCCURRENCES BY COUNTY

Huerfano	18	Santa Rosa Claim
	19	Spanish Peaks
	20	Virginia-Verna 1-6
	21	Washout Claim (Price Ranch)
	22	Whitecliff 1-26
Jackson	1	Bear Creek Mine
	2	Crystal Fluorspar Mine
	3	Felder Prospect
	4	Fred Brad's Ranch (Spring Claims)
	5	James Bird Prospect
	6	Pedad Claims Nos. 1-5
	7	Sample No. 7
	8	Sheep Mountain Prospect
	9	Simmons
Jefferson	1	Appel Lease
	2	Ascension Mine (Nair Prospect, Nare Lease)
	3	Aubrey Ladwig Mine (Aubrey Ladwig Lease, Gary Mine)
	4	Babcock Prospect (Ralston Buttes Uranium Mining Co.
	5	Bankers Lode Claim
	6	Billiken Lode
	7	Bonzo 1
	8	Borazetti Property
	9	Bray Lease
	10	Brereton Prospect
	11	Buckman Property (Golden Gate Canyon No. 2)
	12	Cervi Lease
	13	Coors Pegmatite
	14	F.M.D. Mine
	15	Fork Prospect
	16	Gilpin Mine
	17	Grapevine Mine (Grapevine 1 and Grapevine Lease)
	18	Grosso
	19	Hidden Treasure Group
	20	Ladwig 1 (Ladwig 2 Prospect)
	21	Ladwig 2 & 3
	22	Lindsay Clay Mine
	23	Little Patsy (Oregon 1 - 3?)
	24	Mann Ranch (Mann Mine, Vanadium Queen)
	25	Mena Mine (Hoffmeister Homestead Prospect, Black Judge
	26	Morrison Lime
	27	Noack Pegmatite
	28	North Star Mine
	29	Ohman Mine (Nare Lease)
	30	Old Leyden Mine (Old Leyden Coal Mine, Leyden Mine)
	31	Oregon 1, 2 & 3 (Little Patsy)
	32	Pallaora Lease (Morrison Mine, Four Corners)
	33	Quatman Lease
	34	Schwartzwalder Mine (Ralston Creek Mine)
	35	Shale Prospect
	36	Stevenson Prospect
	37	Stone Placer (7 Devils Prospect)
	38	Sunrise Peak Pegmatite
	39	Union Pacific Prospect 2
	40	Union Pacific Shaft (Union Pacific Prospect)
	41	Unnamed 1
	42	Unnamed 2
	43	Unnamed 3
	44	Unnamed 4
	45	Unnamed 5
	46	Unnamed 6
	47	Unnamed 7
	48	Wright Lease (Foothills Mine)
La Plata	1	Black Hawk
	2	Cape of Good Hope
	3	Good Hope-Nevada Group
	4	Lucky Lepracon
	5	Schafer Ranch
	6	Shorty Lode
	7	Texarado Oil Uranium Co.
	8	Thunder Mountain (Florida Mountain)
	9	Tomahawk Mine

# ALPHABETICAL LIST OF OCCURRENCES BY COUNTY

- La Plata 10 Tripp Gulch Property  
Lake 1 Eclipse Mine  
2 Griffin Mines  
3 Huckleberry Mine  
4 Josie May  
5 Rosse Tunnel  
6 Turquoise Chief (Poor Boy)  
7 Unnamed 1  
8 Unnamed 2  
9 Unnamed 3  
10 Unnamed 4  
11 Unnamed 5  
12 Unnamed 6  
13 Unnamed 7  
14 Unnamed 8  
15 Wilkesbarre Mine (Wilkes Barre Tunnels)  
Larimer 1 A. L. Stein Ranch (Stein Ranch)  
2 Batterson Lode  
3 Big Boulder Prospect (Boulder Rock)  
4 Carter Lake  
5 Copper King Shaft (Cherokee Mines, Ismert Property, Black  
6 Estes Bell (Hilltop)  
7 Eureka Group  
8 Hide Above Lode  
9 Hyatt Ranch  
10 Lucky Strike Claims  
11 New Hope Claims  
12 Red Head Claim  
13 Robinson Ranch and Boy Scout Camp  
14 Sheep Creek Prospect  
15 Soda Springs Group (1-8)  
16 Spring Claim (Revis Claim, Unnamed Claim, Spring 1 Claim)  
17 Unnamed Radioactive Spring 1  
18 Uranium Queen (Red Hill, Red Hill 1)  
19 Wahketa Lease (Wahketa Mine)  
Las Animas 1 16, Airborne Anomaly (B-4-1-1954)  
2 Booster Claim 1  
3 Cliff Martin Claims  
4 Dave Welsh Claim  
5 Fan Dyke No. 1 (Fan Dyke 1-15, 17-22; Phebolite 1-8)  
6 Mike's Mine  
7 Morning Star 1  
8 Unnamed 1  
9 Virginia 14  
Logan 1 Unnamed 1  
Mesa 1 31, AEC Mining Lease (Reserve Block 4, Blue Creek Mesa)  
2 34, AEC Mining Lease (C-G-26A, DOE Lease Tract)  
3 Ajax 1 Mine  
4 Ajax Mine  
5 Arrowhead 1 & 7 (Arrowhead No. 7)  
6 Arrowhead 4  
7 Arrowhead 5  
8 Arrowhead 8  
9 Arrowhead 10  
10 Arrowhead 11  
11 Arrowhead 13 (Arrowhead No. 25)  
12 Arrowhead 14  
13 Arrowhead 16  
14 Arrowhead 17  
15 Arrowhead 18  
16 Arrowhead 19  
17 Arrowhead 20 & 20 A  
18 Arrowhead 21  
19 Arrowhead 22  
20 Arrowhead 25  
21 Arrowhead 26  
22 Arrowhead 27  
23 Arrowhead 28



# ALPHABETICAL LIST OF OCCURRENCES BY COUNTY

Mesa

- 24 Arrowhead 29 (OS)
- 25 Arrowhead 30
- 26 Arrowhead 33
- 27 Arrowhead 34
- 28 Arrowhead Incline 6
- 29 Arrowhead Incline 2
- 30 Arrowhead Incline 12 & 23 (Arrowhead Incline No. 23)
- 31 Arrowhead Incline 24
- 32 AT (05-1)-526, AEC Mining Lease (C-G-27, DOE Lease Tract,
- 33 AT(05-1)-36, AEC Mining Lease (C-G-26A and C-G-27, DOE Lease
- 34 Atlas 1,2,3 (Lone Mesa No. 7, Atlas-Lone Mesa No. 1)
- 35 Austin Mine (Austin and Austin Adit)
- 36 Banco 1-7
- 37 Bar-W-Bar Claims 1-16
- 38 Belmont 1 & 2
- 39 Bessie Group (Jerry Kay)
- 40 Big Indian Lease
- 41 Big Maverick (Juanita Group)
- 42 Big Seven (AEC Mining Lease 31, Reserve Block No. 4)
- 43 Black Mama (Nigger Baby)
- 44 Black Mesa
- 45 Black Rock 2 (Black Rock No. 1 - 20)
- 46 Black Streak (Black Streak - Yellow Bird, Black Jumbo)
- 47 Blackbird
- 48 Blue Canyon
- 49 Blue Creek
- 50 Blue Mesa View
- 51 Blue Ribbon 1 Incline
- 52 Blue Ribbon 3
- 53 Blue Ribbon #7
- 54 Blue Ribbon 17
- 55 Blue Ribbon 32
- 56 Blue Ribbon Group (Blue Ribbon No. 2)
- 57 Bluebird (Blue Bird)
- 58 Bluebird Dump (Blue Bird Dump)
- 59 Bonanza 2 (Bonanza No. 2 and 4, E 1/2)
- 60 Bonanza 3
- 61 Bonanza 5 (Bonanza # 4, 5, 7)
- 62 Bonanza 6
- 63 Bonanza Shaft
- 64 Bonnie
- 65 Buckhorn Claims
- 66 Bud 1 (Outside Sales)
- 67 Buena Vista
- 68 Bulck (Bujan Mine)
- 69 Burcar Mines
- 70 Calamity 1 (AT(05-1)-36), AEC Mining Lease)(C-G-26, DOE
- 71 Calamity 2 (AT(05-U-36, AEC Mining Lease) (C-G-26, DOE
- 72 Calamity 6
- 73 Calamity 7
- 74 Calamity 9
- 75 Calamity 13
- 76 Calamity 14 (AT(05-1)-36, AEC Mining Lease)(C-G-27, DOE
- 77 Calamity 15 (AT(05-1)-36), AEC Mining Lease)(C-G-27, DOE
- 78 Calamity 16
- 79 Calamity 17
- 80 Calamity 20
- 81 Calamity 21
- 82 Calamity 27
- 83 Calamity Homestead
- 84 Calamity Mesa Dump (Queen of the Hills Dump)(AT(05-1)-36),
- 85 Calco (Cedar Cliff Group)
- 86 Captain Jack
- 87 Captain Jinks (Lumsden Group)
- 88 Cave
- 89 Cave Canyon Lode (Linda, Linda-Cave Canyon)
- 90 Cedar Pt 3 (Little Chief)
- 91 Charlie 1 & 2
- 92 Cherokee Shaft (JWL Fraction No. 1)

# ALPHABETICAL LIST OF OCCURRENCES BY COUNTY

## Mesa

- 93 Chico & Chico Fraction
- 94 Cliff Dweller (Cliff Dweller 1 & 2; Cliff House 1 & 2;
- 95 C-G-26, DOE Lease Tract (Contract No. AT[05-1] - 36 and 19,
- 96 C-G-26A, DOE Lease Tract (34, AEC Mining Lease)
- 97 C-G-27, DOE Lease Tract (AT (05-1) - 36, AEC Mining Lease)
- 98 C-G-27A, DOE Lease Tract (AT[05-1] - 526, AEC Mining Lease)
- 99 Cave No. 1 Adit
- 100 Climax
- 101 Climax Residue
- 102 Coal Town Citation
- 103 Cottonwood 3 & 5 (Little Girl, Pretty Boy)
- 104 Crescent
- 105 Crows Nest (Mineral Channel Group)(Rainbow)
- 106 Cub
- 107 Dallu-Yellowbird
- 108 Deal Group (Last Chance 1-2, Black Jumbo 1, 2, and 3)
- 109 Depression Group
- 110 Depression No. 6
- 111 Depression No. 2 & 3
- 112 Depression No. 4 & 5
- 113 Drum Dust
- 114 Durango No. 2
- 115 Economy
- 116 Elizabeth 17 & 18
- 117 Elizabeth No. 7, 8, 9, 10
- 118 Emerson (Blair, Bluebird, Jumbo)
- 119 Flat Top
- 120 Ford & Fordo Claim Group (Cat Track) (Fordo 6)
- 121 Fountain of Youth
- 122 Fraction
- 123 G-1
- 124 Gateway Tailings
- 125 Gilmore Lode (Lumsden Group)
- 126 Gladys 1-4
- 127 Great Hesper (AT(05-1)-36), AEC Mining Lease)(C-G-26A, DOE
- 128 Hanson-Negus (Hanson Dump)(C-G-27A, DOE Lease Tract)
- 129 Harvey-Pick & Shovel
- 130 Hidden Treasure Shaft (AT-05-1)-36, AEC Mining Lease) and
- 131 Hole 24
- 132 Homestead Patent
- 133 Hope 1 to 4
- 134 Hubbard Homestead and Pack Rat (Shakin Quakle)
- 135 Humdinger
- 136 Hummer (AT(05-1)-36), AEC Mining Lease) and (C-G-26A, DOE
- 137 Incline 1 G 1 (AT[05-1]-526, AEC Mining Lease; now
- 138 Incline 2 G 2 (Now C-G-27A, DOE Lease Tract)
- 139 Incline 3 G 3 (Now C-G-27, DOE Lease Tract)
- 140 Incline 4 G 4 (Now C-G-27, DOE Lease Tract)
- 141 J. W. Lewis (Larsen 1-13, Sampson 1-9)
- 142 J.W.L. Fraction 2
- 143 J.W.L. Fraction 3
- 144 J.W.L. Fraction (Cherokee Shaft)
- 145 Jean 1, 2, & 3
- 146 Jody Group
- 147 Joe
- 148 John Brown
- 149 John Brown 14 & 15 (John Brown Extension, Duffy, Duffy
- 150 John Brown No. 18 (John Brown 16-19; John Brown Annex)
- 151 John Brown No. 21
- 152 Johnnie Mae 2
- 153 Johnnie Mae 3
- 154 Ju Dee 1
- 155 July
- 156 Jumbo 1
- 157 Kanarado 3
- 158 Karns Incline
- 159 King Solomon
- 160 Klondike
- 161 La Plaz 1

# ALPHABETICAL LIST OF OCCURRENCES BY COUNTY

- Mesa
- 162 La Sal
- 163 La Sal Group (La Salle Group)
- 164 La Sal No. 1 & 2
- 165 La Sal No. 4
- 166 La Sal No. 5 & 7
- 167 Larry & Leslie Claim Group
- 168 Lavada (Lavada 2-7, Mineral Jack 1-3)
- 169 Lee 1-6
- 170 Legal & Lucky Day
- 171 Liberty Bell
- 172 Lincoln
- 173 Little Johnny
- 174 Little Maverick 1, 4, 5 & 6
- 175 Locus 1, 2, & 3
- 176 Lode Claim
- 177 Log Cabin (Homestead)
- 178 Lone Peak
- 179 Look Out
- 180 Lost Dutchman 17
- 181 Lost Indian (Last Indian)
- 182 Lucky Day
- 183 Lucky Hole
- 184 Lucky K
- 185 Lucky Strike
- 186 Lumsden No. 2 & 6
- 187 Lumson 1 (Lumsden 1)
- 188 Mammoth
- 189 Mammoth-Lincoln
- 190 Mark 2
- 191 Matchless (AT(05-1)-36, AEC Mining Lease)(C-G-26A, DOE
- 192 Maverick
- 193 Maverick 6
- 194 Mesa 8
- 195 Mesa No. 5 (Outlaw Mesa)
- 196 Mill Site Lode (June)
- 197 Mineral Channel 10 & 12
- 198 Mineral Channel 3
- 199 Mineral Channel 5
- 200 Monroe 18
- 201 Montezuma
- 202 Neglected (AT(05-1)-36, AEC Mining Lease)(C-G-27, DOE
- 203 Neilson
- 204 Neilson Mother Dee
- 205 New Verde (Horn Group)
- 206 Newhiesel
- 207 October Adit
- 208 Okan
- 209 Outlaw-Economy
- 210 Pack Rat 1 & 2
- 211 Pay Lode (Pay Rock Group)
- 212 Payday 1-7
- 213 Payrock Group (Payrock No. 14 & 16, Payrock Mines)
- 214 Peach 10 Incline 1 & 2 (Peach 7)
- 215 Pond & Schubert Group
- 216 Powder Horn Incline
- 217 PPT. Concentrate
- 218 Protector
- 219 Purple Heart
- 220 Queen of the Hills (AT(05-1)-36, AEC Mining Lease) (C-G-26A,
- 221 Radium 7
- 222 Rae Marie (Rae Marie No. 3)
- 223 Rae Marie Group
- 224 Rainbow
- 225 Rajah 1
- 226 Rajah 11 & 63
- 227 Rajah 30 (Rajah 30 Incline) (Rajah 30 Shaft)
- 228 Rajah 49
- 229 Rajah 67 & 68, 61, 62, and 63
- 230 Rajah 72

# ALPHABETICAL LIST OF OCCURRENCES BY COUNTY

Mesa	231	Rajah No. 2
	232	Rajah No. 4
	233	Rajah No. 9
	234	Ranch View
	235	Raven 3
	236	Rena (Lost Marble)
	237	Roger, Mike, et al claims
	238	Ronnie 1 (C-G-27, DOE Lease Tract)
	239	Ronnie 2 (C-G-27, DOE Lease Tract)
	240	Rosebud
	241	Rudot 1
	242	Salute 3
	243	Scott 2
	244	Shakin Quakie
	245	Shelby Dean 2
	246	Silver Moon
	247	Small Spot
	248	Snow Shoe
	249	Spring
	250	Stormy Treasure
	251	Strode 1
	252	Sun
	253	Sunflower (AT(05-1)-36), AEC Mining Lease)(C-G-26A, DOE
	254	Sunspot, Cloud 1, Thundercloud
	255	Supply 11
	256	Supply 14
	257	Surprise Group (Surprise No. 1-3)
	258	Teepee Pole
	259	Tenderfoot Group (Payrock Group)
	260	The Cave
	261	The Duke
	262	Thorton Tunnel (Zee Lease)
	263	Thunder Cloud No. 1 Mine
	264	Trojan 18 & 20
Moffat	265	Turner
	266	Vanadium King 1 (Vana King No. 1)
	267	Vanadium King 2 (Vana King No. 2)
	268	Wasp 1
	269	Yellow Jacket 9
	270	Yellow Jacket 2
	271	Yellow Jacket 15
	272	Yellow Jacket Incline 1
	273	Yellow Spot Group
	274	Yellowbird 1
	275	Yellowbird 2
	276	Yellowbird 3
	277	Yellowbird 5
	278	Yellowbird 6
	279	Zee Lease Rajah 49
	1	56- 1, Airborne Anomaly
	2	56- 2, Airborne Anomaly
	3	56- 9, Airborne Anomaly
	4	56-10, Airborne Anomaly
	5	56-11, Airborne Anomaly
	6	56-12, Airborne Anomaly
	7	56-13, Airborne Anomaly
	8	56-15, Airborne Anomaly
	9	56-16, Airborne Anomaly
	10	56-17, Airborne Anomaly
	11	57-10, Airborne Anomaly
	12	Agnes No. 7 Claims
	13	Airborne Anomaly
	14	B17- 15, Airborne Anomaly
	15	B17- 89, Airborne Anomaly
	16	B17- 90, Airborne Anomaly
	17	B17- 93, Airborne Anomaly
	18	B17- 94, Airborne Anomaly
	19	B17-101, Airborne Anomaly
	20	B17-102, Airborne Anomaly

# ALPHABETICAL LIST OF OCCURRENCES BY COUNTY

- Moffat
- 21 B17-103, Airborne Anomaly
  - 22 B17-104, Airborne Anomaly
  - 23 B17-105, Airborne Anomaly
  - 24 B17-106, Airborne Anomaly
  - 25 B17-107, Airborne Anomaly
  - 26 B17-108, Airborne Anomaly
  - 27 B17-109, Airborne Anomaly
  - 28 B17-110, Airborne Anomaly
  - 29 B17-111, Airborne Anomaly
  - 30 B17-112, Airborne Anomaly
  - 31 B17-113, Airborne Anomaly
  - 32 B17-114, Airborne Anomaly
  - 33 B17-115, Airborne Anomaly
  - 34 B17-117, Airborne Anomaly
  - 35 B17-118, Airborne Anomaly
  - 36 B17-119, Airborne Anomaly
  - 37 B17-120, Airborne Anomaly
  - 38 B17-121, Airborne Anomaly
  - 39 B17-122, Airborne Anomaly
  - 40 B17-123, Airborne Anomaly
  - 41 B17-124, Airborne Anomaly
  - 42 B17-125, Airborne Anomaly
  - 43 B17-126, Airborne Anomaly
  - 44 B17-127, Airborne Anomaly
  - 45 B17-128, Airborne Anomaly
  - 46 B17-129, Airborne Anomaly
  - 47 B17-130, Airborne Anomaly
  - 48 B17-95, Airborne Anomaly (Cedars Mining Company Claim
  - 49 B17-96, Airborne Anomaly (Cedars Prospect, Cedars Mining
  - 50 Biles' Shaft
  - 51 Bimbo 1
  - 52 Blue Mountain Group (Blue Mountains 4, Skull Creek
  - 53 Bob Cat Group
  - 54 Bozo No. 1 (CRIB Unnamed)
  - 55 Breadline
  - 56 Buffalo Head Prospect (Buffalo Head Mining Co. Claim No. 6)
  - 57 Butler Lease
  - 58 Cacey Machelheny Claims
  - 59 Carol J. Claims
  - 60 Claim 1
  - 61 Cleeta Group
  - 62 Coal Ridge
  - 63 Doc Armor Mine
  - 64 Epsilon Claims No. 3, (56-14, Airborne Anomaly)
  - 65 Eskridge Property
  - 66 Farnsworth Uranium Deposit (Housel Gulch Placer, Pardner,
  - 67 Fly Claims (Iles Formation)
  - 68 Gertrude Mine (Gertrude No. 5 and No. 6 Claims)
  - 69 Glory Bee
  - 70 Golden Grain Claims
  - 71 Hazel Whetstone Property
  - 72 Hex Claims
  - 73 Hudson Claim Group
  - 74 Humming Bird Claim (B17-100, Airborne Anomaly)
  - 75 Iron and Copper Claims
  - 76 John D. 11 & 12
  - 77 John D. 8 & 9
  - 78 Johnson Lease (Johnson MCS)
  - 79 Lay-Governor Groups
  - 80 Leon Claims
  - 81 Little Snake No. 2 (B17-36, Airborne Anomaly)
  - 82 Little Star (Little Star Claims, CRIB Unnamed)
  - 83 Lucky Boy (Lucky Claim)
  - 84 Magpie Mine
  - 85 Marge Mine (Marge 1-5, Maybell 1 & 2, Baba 1-3, Bessie 1-3,
  - 86 Olds Claim Group (Olds Group of Claims)
  - 87 Orr Claims (Orr and T and L Claims, Orr Et Al Claims)
  - 88 Oscar No. 1 Claim
  - 89 Owl Group

# ALPHABETICAL LIST OF OCCURRENCES BY COUNTY

Moffat	90	Rob Rollo
	91	Sage-Buella
	92	Sec. 16, T. 6 N., R. 94 W.
	93	Sec. 16, T. 7 N., R. 93 W.
	94	Sec. 16, T. 7 N., R. 94 W.
	95	September Morn Claims
	96	Shell Group (Shell Group, Claim No. 1)
	97	Star Prospect (Front Range Star Group)
	98	Sugarloaf (Sugarloaf No. 1, 2, 3, 4, 9, Sugar Loaf Claim
	99	Three Sisters (Three Sisters No. 11)
	100	Trevenen Claims
	101	Unnamed No. 1
	102	Unnamed No. 2
	103	Unnamed No. 3
	104	Unnamed No. 4
Montezuma	105	Unnamed No. 5
	106	Unnamed No. 6
	107	Unnamed No. 7
	108	Unnamed No. 8
	109	Unnamed No. 9
	110	Unnamed No. 10
	111	Unnamed No. 11
	112	Unnamed No. 12
	113	Unnamed No. 13
	114	Unnamed No. 14
	115	Woodpile No. 1
	1	25, Airborne Anomaly
	2	26, Airborne Anomaly
	3	27, Airborne Anomaly
	4	28, Airborne Anomaly
	5	29, Airborne Anomaly
	6	31, Airborne Anomaly
	7	38, Airborne Anomaly
	8	39, Airborne Anomaly
	9	40, Airborne Anomaly
	10	41, Airborne Anomaly
	11	42, Airborne Anomaly
	12	43, Airborne Anomaly
	13	44, Airborne Anomaly
	14	45, Airborne Anomaly
Montrose	15	Broken Bow
	16	CB Claims
	17	Cliff House
	18	Coffin's Prospect
	19	Karla Kay
	20	Pay Day (?)
	21	Roberta Jean
	22	Surprise
	23	Swallow 1
	24	Vaach
	25	Virginia Ann
	1	30-30
	2	45-90 (Jullian Group) (Mineral Survey #20473)
	3	10, AEC Mining Lease (C-CM-25, DOE Lease Tract)
	4	11, AEC Mining Lease (C-CM-25, DOE Lease Tract) (Reserve
	5	13, AEC Mining Lease (Reserve Block 1)
	6	14, AEC Mining Lease (C-LP-21, DOE Lease Tract)
	7	15, AEC Mining Lease (Reserve Block A) (C-LP-22A,
	8	23, AEC Mining Lease (C-LP-22A, DOE Lease Tract)
	9	24, AEC Mining Lease (C-CM-25, DOE Lease Tract) (Reserve
	10	37, AEC Mining Lease (C-CM-25, DOE Lease Tract)
	11	39, AEC Mining Lease (C-AM-19, DOE Lease Tract) (Block
	12	41, AEC Mining Lease (C-CM-24, DOE Lease Tract) (Reserve
	13	47, AEC Mining Lease (C-AM-19, DOE Lease Tract)
	14	Abajo 1-5 (Laura, Mustard)
	15	Adak
	16	All Stars - Evening Star
	17	Alta
	18	Altair Capella Vega

# ALPHABETICAL LIST OF OCCURRENCES BY COUNTY

Montrose	19	American Eagle Group
	20	American Eagle No. 4
	21	Anchor (Invincible)
	22	Andrews and Andrews Claims
	23	Angle Mine
	24	Anna May 1 (Monogram Group, Bobtail)
	25	Anna May 1 Dumps (Happy Thoughts)
	26	Annex (Saucer Basin Group)
	27	Anomaly 18
	28	April (April Group)
	29	Arcturus
	30	Arrowhead (Colorado Group)
	31	Austin (Dolores)
	32	AWOL and Pet (AWOL 1-20, Pet 1-20)
	33	Aztec (1)
	34	Aztec (Silver, Silvia Group)
	35	B.T.M. Claim Group
	36	Babe Ruth (Mitchell - Archer Group)
	37	Baby Fawn (Big Fawn, Joker)
	38	Badger
	39	Badger 1 (Badger #3)
	40	Badger 2 Dump
	41	Badger and Crown Prince
	42	Badger Dump
	43	Bagger
	44	Ball Point
	45	Banner
	46	Basin Group (Club Mine)
	47	Batty (Batty 1-4) (Franklin 1-3 & 5, Ben Frac., Ralph 1 & 2)
	48	Beaver
	49	Bed Rock (Red Canyon Claim?)
	50	Bernard
	51	Bertles Beauty Claims 1 - 24 (Hard Rock 1 - 3)
	52	Beta Wonder
	53	Better B #7 (Better B)
	54	Betty Jean (Farmer Girl, Hope #1, Monogram 4-7)
	55	Big Bull
	56	Big Dick (Dolores)
	57	Big Mitt
	58	Big Rock (Starlight) (Wedding Bell Group)
	59	Big Shot
	60	Bill Bady - Lucky Boy
	61	Binder Group
	62	Birthday 1 (Big Bug, Birthday, Morning Star #1 Group)
	63	Bismark
	64	Bitter Creek (Radium King) (Easy)
	65	Black Bess 2
	66	Black Dinah
	67	Black Eagle Group
	68	Black Gnat
	69	Black Hawk
	70	Black Jack (Joker, Log Cabin, West)
	71	Black Point
	72	Black Prince (John C., Morning Star, Midnight)
	73	Black Rock
	74	Black Tom (Westport Blackburn)
	75	Blackburn (Joe Dandy Group)
	76	Blackfoot Rattlesnake
	77	Bliss Mine
	78	Blonda
	79	Blondy (ESA, Martin Mesa)
	80	Blue Bell
	81	Blue Bird Dump
	82	Blue Cap (North Crowley Group)
	83	Blue-Atkin Mesa
	84	Bluebird
	85	Bob 6-7-8
	86	Bob 9
	87	Bobcat

# ALPHABETICAL LIST OF OCCURRENCES BY COUNTY

Montrose	88	Bobcat (La Porte, Wild Horse)
	89	Bonanza
	90	Bonita 1 (Bonito)
	91	BP 1
	92	Breezy (Wedding Bell Group)
	93	Brooke 1, 2 (Brooks)
	94	Broomstick
	95	Brown Derby
	96	Brushy Basin
	97	Buckeye 4
	98	Buckhorn - Ureka (Applejack, Shuffle)
	99	Buckhorn 1
	100	Buckhorn No. 2
	101	Buckshot (Saucer Basin Group)
	102	Buckskin
	103	Butterfly
	104	Butterfly (Wat Nos. 1, 3, 5, 7, 16; Prayer 13-19)
	105	C-AM-19, DOE Lease Tract
	106	C-AM-19A, DOE Lease Tract
	107	C-AM-20, DOE Lease Tract
	108	C-BL-23A, DOE Lease Tract
	109	C-BL-23B, DOE Lease Tract
	110	C-CM-24, DOE Lease Tract (26, AEC Mining Lease) (41, AEC
	111	C-CM-25, DOE Lease Tract (10, AEC Mining Lease)[Lease Block,
	112	C-JD-5, DOE Lease Tract (Jo Dandy Area)
	113	C-JD-5A, DOE Lease Tract
	114	C-JD-6, DOE Lease Tract
	115	C-JD-7, DOE Lease Tract
	116	C-JD-7A, DOE Lease Tract
	117	C-JD-8A, DOE Lease Tract
	118	C-JD-9, DOE Lease Tract
	119	C-LP-21, DOE Lease Tract (14, AEC Mining Lease) (Reserve
	120	C-LP-22, DOE Lease Tract
	121	C-LP-22A, DOE Lease Tract (15, AEC Mining Lease) (Reserve
	122	C-LP-23, DOE Lease Tract
	123	C-SM-18, DOE Lease Tract
	124	C-WM-17, DOE Lease Tract
	125	C-WM-17A, DOE Lease Tract
	126	Cabin View
	127	Calvert 2 (Calvert 3)
	128	Camel (Camel Group, Leighton-Camel Group)
	129	Canon 4, 5, 7
	130	Canon 738 (Canon 1, 2, 5-9; Wilson 1-3)
	131	Canopus (Monogram Group, Sirius)
	132	Canyon 2 (Sylvay's Pocket Group)
	133	Canyon View
	134	Carpathia
	135	Carpenter Ridge
	136	Cashin Mill
	137	Cedar Ridge #2 - Brushy Basin Member
	138	Cedar Ridge - Brushy Basin Member
	139	Cedars Ridge Group (Cedar Ridge Bill #1-3)
	140	CFC
	141	Checker
	142	Chesterfield Trespass (Pluto, Saturn)
	143	Chipmunk 1
	144	Christie
	145	Christmas Lode
	146	Cilffdweller 2
	147	Cilffdweller
	148	Club 2
	149	Club Group (Club Sandwich)
	150	Clyde J. Wright (Pinon and Cedar Groups)
	151	Coloradium
	152	Columbus
	153	Confusion Mine (Angle)
	154	Copper Jack (Radium King)
	155	Corporation (Lease)
	156	Correct



# ALPHABETICAL LIST OF OCCURRENCES BY COUNTY

Montrose 157 Cottonwood 1, 2, 3 (Red Bird Group)  
 158 Cougar (Cougar 1-11, Bobcat 1-4)  
 159 Crab Orchard  
 160 Cripple Creek 2  
 161 Cripple Creek 2 Dump  
 162 Cripple Creek (Cripple Creek No. 1)  
 163 Crown Prince  
 164 Cue Ball  
 165 Cycle 3  
 166 D & D 3  
 167 D & D 5  
 168 Dads (Carbon King, Shamrock 1-7; Piper 1-3, Kingpin 1-8,  
 169 Dan Patch  
 170 Dawn (Down)(Echo Group)  
 171 Deer (July, Slim)  
 172 Deer Shaft  
 173 Diana (Mitchell-Archer Group)  
 174 Doctor Mine (Yellowbird)  
 175 Dola  
 176 Dolores Mine (Pippy)  
 177 Donald L  
 178 Donald L Dump  
 179 Donna K  
 180 Dorothy (M.U. #141, Grace Chato)  
 181 Dorothy E  
 182 Dorothy Jean No. 1  
 183 Double Jack  
 184 Dry Creek Prospect  
 185 Duchess 2, 3 (Duchess Group, Dutchess, Duke 1-3, Persistence  
 186 Duggan Adit  
 187 Dusty Dump  
 188 Eagle Rock 1  
 189 Echo 2 & 3 (Hatch 1-8, Echo 1-3)  
 190 Echo 6 (Echo 4-6, Jackrabbit, Dawn)  
 191 Eclipse  
 192 Edith Irene (Gypsy Queen)  
 193 Eight Ball (Julian Group, Eagle Basin)  
 194 Eight O Clock  
 195 Elizabeth Ann 1 & 2  
 196 Elray Mine  
 197 Equinox  
 198 Eula Belle Craig  
 199 Eva Group (Eva Lode, Yellowbird Group)  
 200 Evening Star Mine (Lion Creek Group)(Incline 2; Slick Rock,  
 201 Expectant 1 (Rambler)  
 202 Fairy Queen (Fairy King & Fairy Queen)  
 203 Farmer Boy  
 204 Farmer Girl  
 205 Fawn Springs 3  
 206 Fawn Springs 4, 10  
 207 Fawn Springs 5  
 208 Fawn Springs 9  
 209 Fawn Springs 15  
 210 Fawn Springs 13  
 211 Fawn Springs 18  
 212 Fawn Springs 11  
 213 Fawn Springs 12  
 214 Fawn Springs 29  
 215 Fawn Springs 21  
 216 Fawn Springs 30  
 217 Fifth National Bank  
 218 Firebird Mine  
 219 Firecracker  
 220 First National Bank  
 221 Flat Top  
 222 Florence Nellie, 75 50, 50-50, 25 50, 10 50  
 223 Fossil  
 224 Fourth National Bank

# ALPHABETICAL LIST OF OCCURRENCES BY COUNTY

Montrose 225 Fox (Little Dick)  
 226 Fox Cistern  
 227 Fraction (Fraction South)  
 228 Franklin  
 229 Franklin 1, 2 (Red Bird Group)  
 230 Glibert  
 231 Gnome  
 232 Golden Eagle  
 233 Golden Eagle 14 & 16  
 234 Golden Eagle 23  
 235 Good Hope Red Fox  
 236 Gramlich Group  
 237 Grand Dad  
 238 Grass Roots  
 239 Grass Roots Dump  
 240 Gray  
 241 Gray Dump  
 242 Gray Fox  
 243 Greagor Group  
 244 Greasy Spoon (Geo No. 7)  
 245 Great Western Dump  
 246 Great Western (Mineral Survey 20184)  
 247 Green Back (Mineral Survey 20233)  
 248 Ground Hog Mine  
 249 Groundhog  
 250 Groundhog #2  
 251 Guadalcanal Mine (Long Park 17, Tumis)  
 252 Gyp Lease (Gyp 1-3, Surprise)  
 253 Happy Jack (Robert Lee #3)  
 254 Happy Joe (Happy Joe No. 1, Miracle)  
 255 Happy St.  
 256 Happy Thought  
 257 Happy, Happy West, Happy No. 1  
 258 Hard Luck (Hot Dog, Hard Luck 1-5)  
 259 Hardrock  
 260 Harold (Glibert Claim)  
 261 Harrison-Burnett and Small-Lee  
 262 Hatch No. 8 (Echo Group)  
 263 Henry Clay Dumps  
 264 Henry Clay Mine  
 265 Hidden Basin  
 266 High Ball 5  
 267 Hobo  
 268 Homestead  
 269 Honeymoon (Phonograph)  
 270 Honeymoon Dumps  
 271 Horsehair 1  
 272 Horsehair Group (Horsehair 2-5)  
 273 Hot Rocks, Boomer and Pole Cat (Hot Rock 1-5)  
 274 Hot Shot No. 3 (Wedding Bell Group)  
 275 Hot Spot  
 276 Howling Coyote  
 277 Hummer  
 278 Hummer Dumps (Joe Dandy Dump)  
 279 Ilene (Mexico Group)  
 280 Independence  
 281 Index  
 282 Indians  
 283 Invincible  
 284 Irene  
 285 Island View 1-7 (Island View 2)  
 286 J. M.  
 287 J. B. Group  
 288 J. J.  
 289 Jack No. 8-13  
 290 Jack Rabbit (Echo Group)  
 291 Jackpot Mines No. 2 & 5 (Jackpot Group)  
 292 Jeep  
 293 Jitterbug

# ALPHABETICAL LIST OF OCCURRENCES BY COUNTY

Montrose 294 Joanne Group (Jo Ann 1-7)  
 295 Joe  
 296 Joe Ann  
 297 Joe Dandy Mine  
 298 Joe Jr.  
 299 Joe Pete  
 300 Joe Riverside, Joe (Skalla) Mine, Joe  
 301 John Z  
 302 Joker  
 303 Joker (Black Jack, Log Cabin, West)  
 304 Joker (Joker 1-3)  
 305 Judy Ann (Patterson Springs No. 2, Patterson Springs Group)  
 306 Jumbo  
 307 Jungle Basin (Lone Cedar, Vanadium Bar, Tip Top)  
 308 Just Right  
 309 Keystone Claims  
 310 King  
 311 King of Lodes  
 312 King Solomon #5  
 313 La Salle Mine, La Salle Group (10, AEC Mining Lease)  
 314 Lark 7 & 8, 2  
 315 Last Chance  
 316 Last Chance 1 (Last Chance #1-10)  
 317 Last Chance No. 4  
 318 Last Chance-Long Shot  
 319 Last Dollar  
 320 Last Dollar (Doagy 2)  
 321 Last Hope  
 322 Last Load (Red Rose Group, Lost Lode)  
 323 Laura  
 324 Lazy Three  
 325 Levi  
 326 Lilly Love  
 327 Little Alice  
 328 Little Basin (Grass Roots)  
 329 Little Buckhorn Group (Termite 1-12)  
 330 Little Chief  
 331 Little Dick  
 332 Little Dick Dumps  
 333 Little Jewel (Black Gem Group)  
 334 Little Joe  
 335 Little Slip 1  
 336 Lo High (Lohl)  
 337 Log Cabin  
 338 Lone Cedar (Jungle Basin 1-14, Vanadium Bar, Tip Top,  
 339 Lone Pine (Big Spruce 1-2, Golo)  
 340 Lone Pine No. 2  
 341 Long John  
 342 Long Park 1  
 343 Long Park 2  
 344 Long Park 3  
 345 Long Park 4  
 346 Long Park 5 (Black Dinah Group)  
 347 Long Park 6  
 348 Long Park 6 Dumps  
 349 Long Park 9  
 350 Long Park 10  
 351 Long Park 11  
 352 Long Park 12  
 353 Long Park 13  
 354 Long Park 16  
 355 Lost Horse (Shamrock Group)  
 356 Lower Valley View  
 357 Lucky Blunder  
 358 Lucky Day  
 359 Lucky Day  
 360 Lucky Group (Lucky No. 1-14, Wray Mesa)  
 361 Lucky Marx  
 362 Lucky Strike 4

# ALPHABETICAL LIST OF OCCURRENCES BY COUNTY

- Montrose 363 Lucky Strike  
 364 Lynx  
 365 Maggie C  
 366 Maggie C Dump  
 367 Margie 2  
 368 Margie Group  
 369 Marjorie Ann Mine  
 370 Martha Belle (Martha Belle East)  
 371 Mary Ann 4 (Dorothy Jean 2)  
 372 Maud Mine  
 373 Maybe 1, 2  
 374 Maybe 5 & 6  
 375 Maybe Dumps  
 376 Media (Group)  
 377 Merry Christmas (Mesa Creek)  
 378 Merry Widow  
 379 Mesa  
 380 Mesa 2  
 381 Mesa 3  
 382 Mesa Creek  
 383 Midas  
 384 Mike 1  
 385 Mill 4  
 386 Mill No. 1  
 387 Mill No. 2 (Mill No. 2 Incline)  
 388 Mineral Joe Group (Mineral Joe 1-12)  
 389 Mineral Park 2  
 390 Mineral Park 3  
 391 Mineral Park 4, 5, 6  
 392 Mineral Park 2-6  
 393 MLB-C-JD-8, DOE Lease Tract  
 394 Modeen  
 395 Modeen 2  
 396 Monogram 5, Farmer Girl  
 397 Monogram 12  
 398 Monogram Claim  
 399 Moonbeam  
 400 Morning Glory 2  
 401 Morning No. 2  
 402 Morning Star Mine  
 403 Morning Star-Moonlite  
 404 Movie Star  
 405 Mueker  
 406 Mum  
 407 Mustard  
 408 Nat Group  
 409 Naturita 4  
 410 Naturita 24  
 411 Navajo (Lark 7 & 8 Mine)  
 412 New Camp Bird (Starlight Group)  
 413 Newton (Bull Canyon Group)  
 414 Nil No. 2 (and Dump)  
 415 Nil Trace  
 416 No Name  
 417 Noel  
 418 Nora L. Claims  
 419 North Star Dump (Mineral Survey 19793)  
 420 North Star-Unawep  
 421 Nucla (Mineral Survey 19790)  
 422 Nucla (VCA)  
 423 Old Crow 1 (Greagor Group)  
 424 Old Grandad  
 425 Old Quaker  
 426 Old Salt Lick, (Old Salt Lick Extension, Shamrock Group)  
 427 Opera Box  
 428 Ophir  
 429 Ophir Bluebird (Ophir)  
 430 Ophir Dump  
 431 Oregon

# ALPHABETICAL LIST OF OCCURRENCES BY COUNTY

Montrose 432 Oversight Mine  
 433 Pablo 4 & 5  
 434 Pain-Obnoxious  
 435 Paradox 4, 5 & 6  
 436 Paradox Belle  
 437 Paradox C  
 438 Paradox D (Reserve Block A)  
 439 Paradox Right Of Way (Doe Lease Tract C-JD-7)  
 440 Paradox View  
 441 Patterson Seep  
 442 Patty 4  
 443 Patty 5  
 444 Patty No. 2  
 445 Pay day  
 446 Peanut No. 19  
 447 Peg Leg 2  
 448 Peggy  
 449 Picket Corral  
 450 Pie Face 1  
 451 Pine Face 1  
 452 Pinion-Cedar Group  
 453 Pluto (Pluto-Saturn)  
 454 Point-Empire  
 455 Pooch & Pooch 1  
 456 Poor Boy  
 457 Prayer 11  
 458 Prayer No. 8 & 9  
 459 Princess  
 460 Princess Pat  
 461 Probable  
 462 Production Dumps  
 463 Production West (Production)  
 464 Prohibition (American Eagle MS 19852)  
 465 Quarrel Group  
 466 Quo Vadis  
 467 R.A.L. 1 & 2  
 468 R.A.M.  
 469 R.A.M. Dump  
 470 Rabbit Foot 2 (Rimrock Blues Group)  
 471 Radium Cycle  
 472 Radium Hill 7  
 473 Radium Hill 10  
 474 Radium Hill 31  
 475 Radium Hill Group  
 476 Radium King (Bitter Creek Group)  
 477 Radium Queen 13  
 478 Rainbow  
 479 Rainy Day  
 480 Rajah (Big Chief 2) (Mineral Survey 19851A and 20019)  
 481 Rajah Dump Ore (Roc Creek)  
 482 Rambler Dumps  
 483 Ratex  
 484 Rattler 1  
 485 Rattlesnake 1 (Lower Group)  
 486 Rattlesnake (Rattlesnake-David)  
 487 Rattlesnake Turnover  
 488 Raven  
 489 Raven  
 490 Red Beds  
 491 Red Bird No. 1, 2  
 492 Red Bird No. 20  
 493 Red Cow (Wild Horse Group)  
 494 Red Head 1  
 495 Red Hill Group  
 496 Red Rock  
 497 Red Rock 2  
 498 Red Rock 5  
 499 Red Sox, Yankees  
 500 Redbird

# ALPHABETICAL LIST OF OCCURRENCES BY COUNTY

Montrose 501 Redbird, Yellowbird  
502 Remanent 1  
503 Renegade Group  
504 Republican (Republican-Dusty, Republican and Dusty)  
505 Republican Dump  
506 Rex Mine  
507 Rigel Mine  
508 Rim Claims  
509 Rim Rock  
510 Rimrock 15-17  
511 Rimrock Blues 2  
512 Rimrock Blues 5  
513 Rimrock Blues 6E  
514 Rimrock Blues 9  
515 Rimrock Blues 12  
516 Rimrock Blues 20  
517 Rimrock Blues 6, 14  
518 Rimrock Group  
519 Rimrock No. 5  
520 Riverside  
521 Rock Raven  
522 Rodman No. 8  
523 Roosevelt  
524 Rosebud  
525 Royal Oak  
526 Rubadale (Rubedale)  
527 Rusty 5  
528 Ruth K (Pine Group)  
529 Rye (Rye No. 8)  
530 Salt Lake Extension  
531 Sam  
532 Sandy  
533 Saturn (Pluto - Saturn)  
534 Saucer Basin Group (Rust 3, Peggy)  
535 School Marm  
536 Second National Bank  
537 Sego Lily Lou  
538 September Morn  
539 Sesmo  
540 Shadow  
541 Shadow Rock  
542 Shamrock  
543 Shamrock (Shamrock and Roadside)  
544 Sharkey  
545 Shooting Star  
546 Shriver  
547 Slim Chance  
548 Smoky (Starlight Group)  
549 Socket  
550 Soldier Boy  
551 Spencer-Fairy Princess  
552 Sphinx  
553 Sphinx Dump  
554 St. Patrick  
555 St. Patrick 9  
556 St. Patrick No. 7  
557 Star 3, 4 (Wright Group)  
558 Star No. 3 Dump  
559 Star No. 5 (Star No. 5 & 6, Movie Star, Polar Star)  
560 Star No. 10  
561 Star No. 13, 14 (Wright Group)  
562 Starlight  
563 Starlight 1  
564 Starlight 2  
565 Starlight 4  
566 Starlight 8  
567 Steer 1, 8  
568 Straight Arrow  
569 Summer Mine

# ALPHABETICAL LIST OF OCCURRENCES BY COUNTY

Montrose 570 Sunbeam Group  
 571 Sunflower (Sunflower 2, Brammer Group)  
 572 Sunnyside  
 573 Sunrise Group (Sunrise No. 2, 3, 4, 5)  
 574 Sunset  
 575 Surprise (Joe Jr.)  
 576 Swindler Dump  
 577 Sylveys Pocket (Sylvia's Pocket)  
 578 Tango  
 579 Teapot Dome 2, 3  
 580 Terrible  
 581 Three Jacks (Yellow Bird)  
 582 Three Musketeers  
 583 Thunderbolt  
 584 TNT 1, 2  
 585 TNT 3  
 586 Too High Mine 2  
 587 Top Notch  
 588 Tornado No. 5 & 6  
 589 Town House (Dolores Group)  
 590 Tramp 2  
 591 Tramp Dumps  
 592 Triangulation  
 593 Tripod  
 594 Tripod Low Grade (Tripod Dumps)  
 595 Truscott  
 596 Twilight 1-2  
 597 Twin Sisters  
 598 Two Bits (Joker Group)  
 599 Two Shovel  
 600 U.S. Grant  
 601 Uncle Sam  
 602 Upper Valley View  
 603 URA  
 604 Uranium Girl (Emergency Claim)  
 605 Uranus (Dorothy Jean)  
 606 Uravan Group No. 5  
 607 Uravan No. 2  
 608 Ureka (Carpenter Ridge)  
 609 Uriah  
 610 Ute 4  
 611 Vaden View  
 612 Valentine  
 613 Valley View (N. Star)  
 614 Van  
 615 Van 1-3 (Tulla 1,3)  
 616 Vanablend 47  
 617 Vanadite  
 618 Vanadium King 1-8  
 619 Venture Lode (Venture Lode)  
 620 Vernita  
 621 Victory 2  
 622 Virgin Mine 3  
 623 Vista Grande Mine (Lion Creek)  
 624 Vonnie 5  
 625 Wamba  
 626 Wanda 3  
 627 Watchman  
 628 Waterloo  
 629 Wedge 1  
 630 Wedge Mine (Pl Warren Mine)  
 631 Wednesday & Thursday  
 632 West  
 633 West Lode  
 634 West Martha Belle  
 635 Whang Doodle  
 636 White Cow  
 637 White Crow  
 638 White Face

# ALPHABETICAL LIST OF OCCURRENCES BY COUNTY

- Montrose 639 Whitney  
640 Whiz Bang  
641 Wild Cat 2  
642 Wild Horse (Adak, Colorado)  
643 Wildcat 3  
644 Wildcat 8  
645 Willie Dee  
646 Windy Day  
647 Woodchuck  
648 Woodward  
649 Wray Mesa  
650 Wright  
651 Yellow Bird 1 (Deer Run)  
652 Yellow Bird Mines (Center)  
653 Yellow Jacket  
654 Yellow Spot Group (New Yellow Spot Mine)  
655 Yellowbird D  
656 Yip Yip  
657 Yucca  
658 Zebra
- Ouray 659 Zell Group (Zella Group)  
1 Bear Creek Falls  
2 Bear Creek Mine  
3 Campbell Mine  
4 Carbonate King Mine  
5 Dunmore Mine  
6 Genessee Tunnel  
7 Guston Mine  
8 Larson Property  
9 Michael Braen Mine  
10 National Bell  
11 Ouray Hot Springs  
12 Pony Express Mine  
13 Robinson Mine  
14 Yankee Girl Shaft
- Park 1 Amrine and Perrigue Claims (Lady Elk No. 1)  
2 Balfour Mines  
3 Blue Bull Claim  
4 Boomer Mine (Shamrock-Irish Group)  
5 Buckskin Joe Mine (Phillips Mine)  
6 Carson Mining and Development (Nina No. 7)  
7 Champaign Mine (Treasury Vault)  
8 Chumway Park  
9 Garo Deposit (DuVall Discovery, Shirley May Mine)  
10 Gem Dandy (Jim Dandy)  
11 Goerner Lease  
12 Gold Star  
13 Hartsel Ranch (Airborne Anomaly No. 6)  
14 Hass 1-12  
15 Hill Top Claims  
16 Horn Property  
17 Kentucky Belle Mine  
18 Last Chance  
19 London Butte Tunnel  
20 London Extension Mine  
21 Lone Star Claim  
22 Lucky Jim Claims  
23 Mud Claims  
24 Muley Gulch  
25 Orphan Boy Mine  
26 Pegmatite Prospect  
27 Redskin Claim  
28 Redskin Mines (Shawnee No. 1 and Redskin 1A, 1B, 2A, 2B)  
29 Rogers Publishing Co. (Katydid Mine)  
30 South London House  
31 Spring Claim  
32 Sweet Home Mine  
33 Tedco and MacGeorge (Mac George 4)  
34 Two Bit Claims



# ALPHABETICAL LIST OF OCCURRENCES BY COUNTY

Park	35	Unnamed No. 1
	36	Unnamed No. 2
	37	Wheel of Fortune Claim
	38	Willow Claims (Bell Property)
	39	Wyandotte Mine
Pitkin	1	Frying Pan Claims 1-16 (Frying Pan Group, Frying Pan Claims)
	2	Silver King
	3	Smuggler Mine, (Nos. 1 & 2 Tunnels)
	4	Tower Durant Tunnel and Dump
	5	Unnamed Dump
Pueblo	1	Dinosaur No. 1 Claim (John Gatley Ranch)
	2	George Avery Ranch (George Avery Mine, Kathryn No. 2
Rio Blanco	1	Allen
	2	Brown Group (Brown 2)
	3	Burrell 1, 2 and 3 (Last Day?)
	4	Burrell 5
	5	Butterfly Group (Butterfly No. 1)
	6	Chris
	7	Coal Creek 1
	8	Columbine 1 - 4
	9	Evening Star
	10	Fawn Springs Group
	11	Frying Pan 1
	12	Iles Formation
	13	Jerry Zochol (Red Doe Claim)
	14	Last Day (Urin Mining Claim)
	15	Lucil 106
	16	M & G
	17	Marvine View 10
	18	Midnight Group (Midnight Mine,
	19	Naomi Ann
	20	Rio Blanco
	21	S & G 4
	22	Shylo Group (Brown 2, Brown 5)
	23	St. Lue
	24	Stealy Claims (Guy Stealy Claims,
	25	TB
	26	Twin Star 500
	27	Unnamed No. 1
	28	Ute Group (Blue Dish Group)
	29	Windy Point 1
Routt	1	Dead Horse Claims
	2	Dennis D. Claims
	3	E. C. Ellis Property
	4	Fair U Claims (Fish Creek Claims)
	5	Marth Uranesich (Glipin Falls No. 1 and 2)
	6	Sample No. 1
	7	Sample No. 2
	8	Sample No. 3
	9	Sample No. 4
	10	Sample No. 5
	11	Sample No. 6
	12	Sample No. 8
	13	Sample No. 9
	14	Sample No. 10
	15	Sample No. 11
	16	Sample No. 12
	17	Sample No. 13
	18	Sample No. 14
	19	Twenty Mile Park
	20	Willow Creek Claims
Saguache	1	Anna Claim
	2	Apache No. 4
	3	Barlum Lode
	4	Beginner's Luck Claim (Beginner's Luck 3)
	5	Belle Lode (Balls Lode, Freeman Claims)
	6	Big Indian Group of Claims
	7	Bob Cat

# ALPHABETICAL LIST OF OCCURRENCES BY COUNTY

Saguache	8	Bonita Nos. 1 & 2 Claims (Bonita Claim, Bonita Group)
	9	Dependable Group (Snowshoe Claim)
	10	DNG 1, 2, 3, and 4
	11	Erle No. 33
	12	Green Cliff Group
	13	I. Kreiner
	14	Judith Claim
	15	Kerber Creek Prospect
	16	La Rue Claims (Elisha Group, Elisha-LaRue, La Rue 2,
	17	Little Indian No. 6 (Indian Creek Group)
	18	Lookout Claims (Lookout Group, Lookout No. 15-34)
	19	Los Ochos Group (Kathy Jo, East Mine, Thornburg Mine, T-1,
	20	M & W Group
	21	Marshall Pass Group Nos. 1-58
	22	Mercury - Alpine Claims
	23	Mercury Mine
	24	Millie Luna (Sylvia, Faith Groups)
	25	Mocking Bird Claim
	26	Old Rawley Mine
	27	Pitch Mine (Erle No. 28)
	28	Rainbow's End
	29	Ram Lode and Pam Lode (Ram Lode 1)
	30	Ridgeway No. 3 Claim
	31	Sage Hen (Friendly Neighbor)
	32	Shurshot Claims
	33	T-2 Mine (Sec. 3 Mine)
	34	Unnamed No. 1
	35	Unnamed No. 2
	36	Unnamed No. 3
	37	Unnamed No. 4
	38	Unnamed No. 5
	39	Unnamed No. 6
	40	Unnamed No. 7
	41	Unnamed No. 8
	42	Unnamed No. 9
	43	Unnamed No. 10
	44	Unnamed No. 11
	45	Unnamed No. 12
	46	Unnamed No. 13
	47	Unnamed No. 14
	48	Venus 14 (Venus 1-14)
	49	Whale Mine
	50	Wild Cherry Creek Area (Beginners Luck Claims)
	51	Willow Creek Group (Beta Group)
San Juan	1	Black Hawk Mine
	2	Bushwacker (B & B No. 1 & 2)
	3	Carbon Lake Shaft
	4	Elk Park (Surprise Claims, Clyde Long Property)
	5	Graysill Mine
	6	Henrietta Mine
	7	Hercules
	8	Koehler Tunnel
	9	Lark Tunnel
	10	Longfellow Mine
	11	Mighty Monarch Mine
	12	Surprise
	13	Syracuse Pride
San Miguel	1	1, AEC Mining Lease (C-SR-10*, DOE Lease Tract) (King No.
	2	4, AEC Mining Lease (C-SR-11, DOE Lease Tract) [Tomboy,
	3	6, AEC Mining Lease (C-SR-15, DOE Lease Tract) [Lower
	4	7, AEC Mining Lease (C-SR-16A, DOE Lease Tract) (Golden Rod
	5	8, AEC Mining Lease (C-SR-16, DOE Lease Tract) (Fraction
	6	16, AEC Mining Lease
	7	17, AEC Mining Lease (C-SR-13A, DOE Lease Tract) (Georgeto
	8	18, AEC Mining Lease (C-SR-10, DOE Lease Tract) [Legin
	9	20, AEC Mining Lease (C-SR-15, DOE Lease Tract) (Knoll,
	10	21, AEC Mining Lease (C-SR-14, DOE Lease Tract) [Upper
	11	22, AEC Mining Lease (C-SR-16A, DOE Lease Tract) [Golden Rod
	12	25, AEC Mining Lease (C-SR-16A, DOE Lease Tract) (Golden

# ALPHABETICAL LIST OF OCCURRENCES BY COUNTY

San Miguel

- 13 28, AEC Mining Lease (C-SR-13, DOE Lease Tract) (Hawkeye)
- 14 29\*, AEC Mining Lease (C-SR-10, DOE Lease Tract) [Legin
- 15 30, AEC Mining Lease (C-SR-13, DOE Lease Tract) [Middle
- 16 32, AEC Mining Lease (C-SR-13, DOE Lease Tract) [Middle
- 17 42, AEC Mining Lease (C-SR-13, DOE Lease Tract) (Dan)
- 18 43, AEC Mining Lease (C-SR-16, DOE Lease Tract) (Charles
- 19 44, AEC Mining Lease (C-SR-14, DOE Lease Tract) (Canyon
- 20 45, AEC Mining Lease (C-SR-16, C-SR-16A, DOE Lease Tracts)
- 21 46, AEC Mining Lease (C-SR-13A, DOE Lease Tract) (Georgetown
- 22 48, AEC Mining Lease (C-SR-16A, DOE Lease Tract) (Neomie D.,
- 23 Ada Bell
- 24 Ajax Lease (Thomas, Richard; Robin 8, 9, 12; Susan 3 and 4)
- 25 Alchemist (Alchemist #1)
- 26 April (April 1-13, Rio Grande)
- 27 Ava Jay Group (Chinnee, Four Fingers, Lost Dutchman,
- 28 Babe 1-4
- 29 Bachelor Mine (Bachelor #3)
- 30 Bald Eagle (Uravan #1, Morning Glory, Keystone #1)
- 31 Bay Mule
- 32 Bean 2 and 3
- 33 Bean 4, 5 (Bean 4, Parker Lease)
- 34 Bean 6
- 35 Bean 8, 9 (North Slope #2 [E1/2])
- 36 Bean 10
- 37 Bean 15, 16, 17
- 38 Bean No. 1 (Radium No. 9) (Radium Group)
- 39 Bean Patch (Parker Lease, Bean Patch Incline 3 and 4)
- 40 Bear Creek
- 41 Belle
- 42 Bench
- 43 Betty Jane 2
- 44 Betty Ruth
- 45 Big Buck 1 (Little Buck, Jackie)
- 46 Big Chief (Mineral Survey #20580)
- 47 Big Chief (Spud Patch Group)
- 48 Big Gyp 1-8
- 49 Big Medicine
- 50 Big S
- 51 Black Fox (Upper Group Claims)(44, AEC Mining Lease)
- 52 Black Jack (Hot Rock)
- 53 Black King 5 (Weatherly)
- 54 Black Spider (Red Ant)
- 55 Blue Horse & Nancy
- 56 Blue Moon (Lucky #1, 2)
- 57 Bluebird (Radium Group)
- 58 Bluff (Mexico Group)
- 59 Bobtail
- 60 Breezy
- 61 Bretton & Norcott
- 62 Brown Mule
- 63 Buck Horn
- 64 Buckhorn (Lone Star 1 & 2, Canary Bird No. 1, Rim, Humming
- 65 Bugwine (Empire Group)
- 66 Bull Moose
- 67 Bull Snake No. 1 and No. 2 Claims
- 68 Burro Point
- 69 Burro Tunnel (Burro 1-10, Jack 1-5)
- 70 Butterfly
- 71 C-SR-10, DOE Lease Tract (1, AEC Mining Lease) [King No. 2,
- 72 C-SR-11, DOE Lease Tract (4, AEC Mining Lease) (Tomboy,
- 73 C-SR-12, DOE Lease Tract
- 74 C-SR-13, DOE Lease Tract (28, AEC Mining Lease) (Hawkeye)
- 75 C-SR-13A, DOE Lease Tract (12, AEC Mining Lease) (Veta Mad,
- 76 C-SR-14, DOE Lease Tract (21, AEC Mining Lease) (Sunnyside,
- 77 C-SR-14A, DOE Lease Tract (27, AEC Mining Lease) (Ned Claim)
- 78 C-SR-15, DOE Lease Tract (6, AEC Mining Lease) (Lower Group,
- 79 C-SR-16, DOE Lease Tract (43, AEC Mining Lease) (Nucleus,
- 80 C-SR-16A, DOE Lease Tract (5, AEC Mining Lease) [Pretty Boy
- 81 Canyon Group (Snyder Dunning Group)

# ALPHABETICAL LIST OF OCCURRENCES BY COUNTY

San	82	Canyon View
Miguel	83	Cape Mairs
	84	Cardinal No. 2
	85	Carnation Mine (Carnation 1-5, St. Jude)
	86	Charles T1 (8, AEC Mining Lease)(C-SR-16, DOE Lease Tract)
	87	Charlotte 1
	88	Chesta (Mexico Group)
	89	Chief 1 & 3
	90	Chile 5 (Old Mexico, New Mexico, Breezy)
	91	Chinnee (Ava Jay Group)
	92	Chipmunk
	93	Chipmunk
	94	Chipmunk 1
	95	Civet Cat Group (Vanadium Queen)
	96	Clear Creek
	97	Clear View
	98	Clear View Claims (Horseshoe Group)
	99	Cliff Dweller (Cliff Dweller Nail)
	100	Colorado Cat
	101	Cone 1-6
	102	Cone No. 14
	103	Cowhand 2
	104	Crucible
	105	Cub 1
	106	Curtis
	107	Cusco
	108	D.U. and Vanderualker Groups
	109	Dalpaz
	110	Deluxe & Master Deluxe
	111	Deremo (Bigler Shaft, Pup No. 1, W. B. Snyder, Bigler,
	112	Deremo Dumps
	113	Deremo No. 2
	114	Dickle 1 & 3 (Dickle Group)
	115	Dolores River (Horseshoe Group)
	116	Dolores Uranium (Monument Valley, Red Canyon, Deer, Bush
	117	Donald Hill
	118	Donegan Lease
	119	Doss Claim Group
	120	Dragon
	121	Duncan (Mexico Group)
	122	Durango and Las Animas
	123	Early Morn Group
	124	Eaverson Lease
	125	Eclipse
	126	Edna Mae
	127	Empire Group (Tunis, Libia, Sudan, Algiers, Bugwine,
	128	Fair View
	129	Falcon (Bov Ayla, Bob Incline)
	130	Fall Creek Group
	131	Faultless (Faultless Group, Blue Bird Fraction, Faultless
	132	Federal
	133	Fervanite
	134	Firefly 3 (Firefly Mine)
	135	Five Points (Five Points No. 1-3, 5, 6 and Oneta 2 & 3)
	136	Florence (Radium Group)
	137	Fort Knox Claims
	138	Fox Group
	139	Fraction
	140	Fraction 1 (one)
	141	France
	142	Frances (Speed Patch Group)
	143	Frazier (Vanadium No. 1-3, Belvedere)
	144	Frazier Mine (Fall Creek Mine)
	145	Frenchy 2
	146	Fuji Property
	147	Full Moon Group (Full Moon #4, Full Moon #7)
	148	G M D 1 (Little Gyp Group)
	149	Gap
	150	Gelsinger

# ALPHABETICAL LIST OF OCCURRENCES BY COUNTY

San	151	Gerald T.
Miguel	152	Giant (Giant No. 2)
	153	Glen 24 (Dowdy Lease)
	154	GMG (GMG 4-7, 10-13; GMG South 6 & 7)
	155	Goforth Homestead
	156	Golden Eagle No. 14-16
	157	Golden Rod 1
	158	Golden Rod 2
	159	Golden Rod 4
	160	Gopher (Wedding Bell Group)
	161	Governor Mine
	162	Grass Flats (Phillura Group)
	163	Grassy Hill
	164	Green Arrow
	165	Ground Hog
	166	Ground Hog Dump
	167	Grub Stake
	168	Gypsum Homestead (Big Gyp Homestead)
	169	Gypsum Valley Claims
	170	Hacket
	171	Halloween
	172	Hangover (Hangover No. 3)
	173	Happy Jack (Gypsy Rose)
	174	Hawk - Frankie
	175	Haymaker - Sunset (Sunset, Susan H.)
	176	Hazel (Hazel #3, 4, and 5)
	177	Hogback
	178	Horseshoe 1
	179	Horseshoe 2
	180	Horseshoe 3
	181	Horseshoe 4
	182	Horseshoe 5
	183	Horseshoe 6
	184	Horseshoe 7
	185	Horseshoe Bend 1
	186	Hot Drill 11
	187	Hot Shot
	188	Hot Spot
	189	Hoyman Lease (Gravy Claims, West Group)
	190	I.V.
	191	Independence (Lower Group)
	192	Inspiration 1 (Lost Group)
	193	Inspiration 15
	194	J V Eavenson Lease
	195	J.J.Z.
	196	Jack Knife (Jack Knife No. 1, Wedding Bell Group)
	197	Jack Knife No. 3 (Wedding Bell Group)
	198	Jack-o-lantern
	199	Jackie L
	200	Jackie Walls 3
	201	Jackknife 3 East E
	202	Jackknife 3 West W
	203	Jackknife No. 2
	204	Jackpot Group (Long Ridge Group, Jackpot No. 1-3)
	205	Jim 2
	206	Joe Dandy Group (Edward, Wesley, Lone Wolf)
	207	Jungle Basin
	208	Jupiter
	209	Kate Meyers
	210	Katie
	211	Keystone
	212	Klondike (Lower Group)
	213	La Salle
	214	Lara's Pengent
	215	Larimer Street
	216	Last Chance
	217	Last Chance
	218	Last Hope

# ALPHABETICAL LIST OF OCCURRENCES BY COUNTY

San	219	Latricia
Miguel	220	Lawton (Fall Creek Group)
	221	Lease 875 N W 16
	222	Lee C
	223	Lee Mack (Lemack)
	224	Leopard Vanadium 2 & 3
	225	Letty Jones (Letty Jones Lease)
	226	Liberty Bell
	227	Little Chief
	228	Little Helen
	229	Little Marie
	230	Little Max
	231	Little Roy
	232	Lizzie Group (Lizzie OS)
	233	Lone Peak 1-3
	234	Lone Star Group
	235	Lonesome 34
	236	Long Ridge and Long Ridge 2 (Mist)
	237	Lookout
	238	Lost
	239	Lost Brothers
	240	Lost Dog
	241	Lucky 1 and Joe Ray 1
	242	Lucky B (Rowena, Nancy 1-4, Blue Horse)
	243	Lucky Day
	244	Lucky Strike
	245	Mac Intyre Claims
	246	Magpie 2
	247	Magpie (Mine)
	248	Mainstreet (Almon Street)
	249	Margaret C. 1-6
	250	Marie
	251	Marie 1 (Legin Group)
	252	Marne Group
	253	Martha Sue
	254	Mary Jane (Broadway)
	255	Mary M
	256	May Day (Speed Patch Group)
	257	Maybe 1 & 2 (Mercantile Group)
	258	Mayflower
	259	Mc Kee Group
	260	Mc Millan
	261	Memphis 1 & 2
	262	Mercantile (4, AEC Mining Lease) (C-SR-11, DOE Lease Tract)
	263	Mesa 7
	264	Mesa Mill
	265	Mickey 3 (Mickey Group)
	266	Midnight
	267	Midnight
	268	Midnight
	269	Mike 1
	270	Mineral Mines
	271	Mineral Mountain 3
	272	Mineral Mountain 3 & 4
	273	Mineral Mountain 4
	274	Mineral Mountain 5
	275	Mineral Mountain 6
	276	Mineral Mountain 7
	277	Mint #1
	278	Mint #13
	279	Mitchel and Archer Group (Baby Ruth, September Horn, Diana)
	280	Montezuma
	281	Monument 4
	282	Moqui Jug (Depression, Dorothy May)
	283	Mortgage Lifter (Radium Group)
	284	Mucho (Grande)
	285	Mule Group (Horseshoe Group)
	286	Muleshoe 6
	287	Murietta

# ALPHABETICAL LIST OF OCCURRENCES BY COUNTY

San	288	Mystery (Muleshoe Group)
Miguel	289	National
	290	Navajo
	291	Navejo
	292	Nellie Gray
	293	New Deal
	294	New Discovery (Barbara Jo Claim, White Spur)
	295	Nigger Head (Radium Group)
	296	Norma Jean No. 1 & 2
	297	North Continent Mill (C-SR-13, DOE Lease Tract)
	298	North Slope 2
	299	Northern 5 & 6
	300	Northern Light
	301	Old Mexico
	302	Omega
	303	Owensby
	304	Painted Rock
	305	Parrot Group
	306	Payday
	307	Paystreak No. 3
	308	Peanut Group (Mines)
	309	Pecas No. 1
	310	Penigai
	311	Penju
	312	Phillips 66 1 (one)
	313	Phillura Group
	314	Pine Bug (Legin Group, Pine Berg)
	315	Pinto #1
	316	Pioneer
	317	Pitchfork
	318	Pointed Rock
	319	Polaris 1
	320	Pond
	321	Pour Off
	322	Prospectors Fortune Group
	323	Queen of Spades
	324	R. L. Duncan Mining Property
	325	Radar, Early Morning
	326	Radio
	327	Radium
	328	Radium 1 (one)
	329	Radium 3
	330	Radium 4
	331	Radium 5 & 6
	332	Radium 6
	333	Radium 7
	334	Radium 8
	335	Radium 9, 10 & 11
	336	Radium 12
	337	Radium 19
	338	Radium 22
	339	Radium 24
	340	Radium 25
	341	Radium 26 & 27
	342	Radium GP (Blackbird)
	343	Radium Hills
	344	Radium No. 29
	345	Rainy Day
	346	Rainy Day
	347	Rambler
	348	Rambler
	349	Rat Hole
	350	Rattlesnake 2
	351	Rattlesnake 2
	352	Red Ant
	353	Red Horse
	354	Red Rock 4
	355	Red Rock 5
	356	Red Snake

# ALPHABETICAL LIST OF OCCURRENCES BY COUNTY

San	357	Red Top 1 (Horseshoe Group)
Miguel	358	Red Top 2
	359	Red Wing
	360	Retribution
	361	Rex Claim
	362	Rim (Buckhorn, et al)
	363	Riverview
	364	Robert M
	365	Roberta Jean
	366	Rosa L
	367	Rose June
	368	Roy Lee
	369	S. B. Group
	370	Sage II
	371	Saint Jude
	372	San Miguel (Radium Group)
	373	Santa Maria (Charles T and Golden Rod Group)
	374	Sarah Ellen (Muleshoe Group)
	375	Sarah Jane
	376	Sarah M. (Muleshoe Group, Mystery Group)
	377	Schlee (Golden Rod Group)
	378	Sibley
	379	Silver Chief
	380	Single Jack
	381	Slick Rim
	382	Slick Rock Mill
	383	Snyder (Snyder and Peterson)
	384	Spring
	385	Spud Patch
	386	Star
	387	Star+
	388	State Line
	389	Strawberry Roan
	390	Summit Incline 1 (Summit No. 21)
	391	Suncup (Puckett)
	392	Sunday Group
	393	Sundown
	394	Sundown Group
	395	Sunnyside
	396	Sunrise
	397	Sunrise 1 (one)
	398	Sunrise 3, 4 and 5
	399	Sunrise and Patented Land
	400	Sunshine 6
	401	Tailholt
	402	Texas Chief 1
	403	Tiny
	404	Topaz Group
	405	Two Bar
	406	Uintah
	407	Uintah 2 Lode
	408	Uncle Sam 1
	409	Uncle Sam 2
	410	Valley View
	411	Van
	412	Vanadium 7
	413	Vanadium (Middle Group)
	414	Vanadium Queen
	415	Vanura Claims
	416	Veta Med Mine
	417	Victor
	418	Victor 2
	419	Virginia
	420	Wally (Wally 1, Double Jack, Double Buck)
	421	Weatherly Claims (Evans Claims, Black King No. 5)
	422	Wedding Bell Group (Ground Hog Claims)
	423	White Star and Black King Claims
	424	Wilmarth



# ALPHABETICAL LIST OF OCCURRENCES BY COUNTY

San	425	Windswept
Miguel	426	Windy Day (Bell)
	427	Wyoming
	428	Yellow Girl
	429	Yellow Girl (Lower Group)
	430	Yellowbird (Radium)
	431	Yorkton
	432	Zebra Claims AN (Yellow Jacket, D. Hattie Claims)
Summit	1	Como Claims
	2	Loveland Pass
	3	Unnamed No. 1
Teller	1	April Nos. 2,6,8
	2	Carl Claim No. 1
	3	Curtis, Thorpe & Green Lease (Tree No. 3)
	4	Fluorine Mine
	5	Genevieve Lode (Phonolite Mountain)
	6	High Park Prospect
	7	Hilda May Claim No. 3
	8	Lady Stith Claim (Globe Hill Group)
	9	McVey Lease
	10	Rhyolite Mountain
	11	School Section (Park City No. 1)
	12	Summit Claims; (Dandy Dollar; McDonough; Breen Extension
	13	SWQ NEQ SEC. 36
Weld	1	Eastman Basin
	2	Grover Deposit
	3	Indian Creek
	4	King Solomon
	5	Pawnee Buttes N.E.
	6	Unnamed No. 1
	7	Unnamed No. 2
	8	Unnamed No. 3
	9	Unnamed No. 4
	10	Unnamed No. 5
	11	Unnamed No. 6
	12	Unnamed No. 7
	13	Unnamed No. 8
	14	Unnamed No. 9
	15	Unnamed No. 10
	16	Unnamed No. 11
	17	Unnamed No. 12
	18	Unnamed No. 13
	19	Unnamed No. 14
	20	Unnamed No. 15
	21	Unnamed No. 16
	22	Unnamed No. 17
	23	Unnamed No. 18
	24	Unnamed No. 19
	25	Unnamed No. 20
	26	Unnamed No. 21
	27	Unnamed No. 22
	28	Unnamed No. 23
	29	Unnamed No. 24
	30	Wildhorse



## Occurrences

1. 2000 10 31

## ADAMS COUNTY

There has been no production of uranium from Adams County, nor are any occurrences noted in the county.

The county is mostly covered by Quaternary alluvium, with the Cretaceous Laramie and Fox Hills Formations cropping out in the eastern part of the county.

The potential for uranium resources to be found in the county is small. The Laramie and Fox Hills do contain uranium ore bodies farther north in Weld County, and the possibility exists that these formations might contain sandstone-type uranium occurrences similar to those in Weld County.

## ALAMOSA COUNTY

No occurrences of uranium have been reported in the county.

Almost the entire county is underlain by the late Tertiary Alamosa Formation, which consists of unconsolidated gravels, sands and silts. A small part of eastern Alamosa County consists of Precambrian gneisses and granitic rocks. The county lies astride

the San Luis valley Graben, which is filled with many thousands of feet of gravels and sands similar to the Alamosa Formation.

The potential for occurrences in the county is small. The San Luis Valley sediments show the greatest potential for uranium mineralization, most probably in the form of sandstone-type occurrences.

## ARAPAHOE COUNTY

No uranium occurrences have been reported in Arapahoe County. The geology of the county is relatively simple. Quaternary sands and gravels cover the western part of the county, and the Cretaceous Laramie and

Fox Hills Formations crop out along the eastern edge. These formations contain uranium in Weld County, and the same type of occurrence may be found in Arapahoe County. However, the potential for resources is small.

## ARCHULETA COUNTY

Although no production is reported from Archuleta County, one occurrence has been recorded.

Archuleta County, located in the southwestern part of the state, is dominated by sedimentary rocks ranging from Pennsylvanian in the northwestern corner to Quaternary in the eastern part of the county. Three major structures dominate the county: the northwest-trending San Juan Basin in the southwest, the Archuleta Anticlinorium paralleling the San Juan Basin in the southwest, and the Chama Basin, which in turn parallels the Archuleta Anticlinorium.

No uranium production has taken place in the county, but some exploration and underground work was carried out on the Sunetha Claim Group (Sunetha Anticline). This is the only known uranium prospect in the county and is located on the Sunetha Anticline southwest of Pagosa Springs. The host for the deposit is reported to be the Jurassic Morrison Formation.

Potential for additional uranium resources in the county is small. Areas in the county that may be favorable for such resources include the northwestern section where sandstone-type occurrences may be found in the exposed Jurassic Morrison Formation.



## ARCHULETA COUNTY

### Sunetha Claim Group (Sunetha Anticline)

LOCATION: sec. 34, T. 35 N., R. 2 W.

LCRM The CRIB file lists this location as sec. 21, 28, T. 38 N., R. 2 W.

QUAD Pagosa Junction 15'

MAP DURANGO

DVEL Exploration and some underground work has been carried out.

HOST The deposit occurs in beds of the Jurassic Morrison Formation.

MNZ Uranium and vanadium mineralization were detected, and carnotite was identified.

RMKS The CRIB reference shows this as being in Archuleta County; however, the location falls in Mineral County. Also there are Tertiary volcanics at the CRIB location and no Morrison Formation.

DOI 1975

REF U.S. Bur. of Mines, 1977, (Unpubl.). U.S. Geol. Survey, 1977, CRIB file.

## BACA COUNTY

No production of uranium and no uranium occurrences have been reported from Baca County.

The rocks exposed in Baca County are primarily of sedimentary origin, ranging in age from Permian to Quaternary. Although the surface geology of the county is largely dominated by unconsolidated Quaternary and Tertiary sediments, some Tertiary dikes and lava flows occur in the southwest. Most of the formations are flat-lying, but small monoclines and anticlines do occur.

Uranium resource potential is limited in the county. Water sampling in the central Great Plains, however, has shown some increase of uranium from the

waters in certain parts of the county. Analyses in the county from wells, streams, and springs range from less than 1 ppb to 35 ppb, with most samples ranging between 2 and 20 ppb. Values of the water samples increase near the northwest part of the county on the flank of the Las Animas Arch near Two Butte Creek and Hackberry Creek.

The most favorable formation for uranium resources in the county is the Triassic Dockum Group, which is exposed along Two Butte Creek and in the southwestern part of the county. In the past, minor gold, silver, and copper were mined from the Jurassic Entrada Sandstone, and it may also warrant further investigation for uranium occurrences.

## BENT COUNTY

No uranium production has been recorded from this county. Bent County is located in the southeastern part of the state and is underlain by sedimentary rocks ranging in age from Jurassic to Tertiary. The majority of these rocks are the Lower Cretaceous Dakota Sandstone and the Upper Cretaceous Colorado Group. Surfactially, the county is dominated by the flood-plain deposits of the Arkansas River.

Although no uranium production has come from the county, several uranium occurrences are known. Probably the most important of these is the Allen Jones Property, which is an old copper prospect in the Jurassic Morrison Formation.

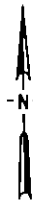
Uranium occurrences are known in the area south of the Arkansas River and in the southwestern part

of the county. These are found in facies of the Dakota Sandstone and the Morrison Formation. These formations are also favorable for further discoveries of uranium. Due to the low topography in the county, much exploration is done by sampling wells, springs, and streams. Water sampling done by the U.S. Geological Survey showed higher than average uranium values in the Rule Creek drainage basin, especially in those areas draining the Cheyenne Sandstone Member of the Purgatoire Formation. The highest values come from samples taken on the north flank of the Las Animas Arch. Water from the Ogallala Formation north of the Arkansas River also shows high uranium values, and may warrant further study.

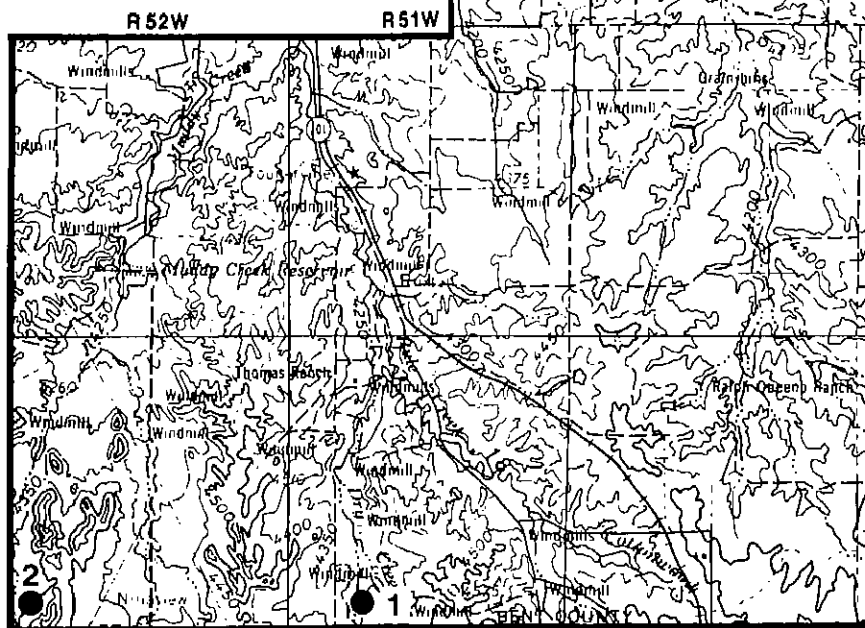
# EXPLANATION

- SANDSTONE, ARKOSE, CONGLOMERATE, SILTSTONE, LAKE SEDIMENT HOST ROCKS FOR OCCURRENCE

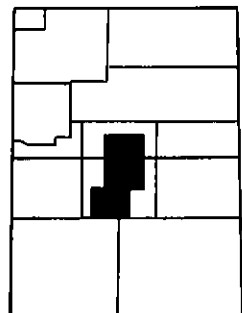
- 7 OCCURRENCE NUMBER FROM TEXT



Base from U.S.G.S.



## LOCATION OF INSET



LAMAR & LA JUNTA

1° x 2° SHEETS

SCALE 1:250 000

5 0 5 10 15 MILES

5 0 5 10 15 KILOMETERS

CONTOUR INTERVAL 200 FEET

Figure 9. Radioactive mineral occurrences in Bent County, Colorado.

## BENT COUNTY

### Allen Jones Property

LOCATION: sec. 32, T. 27 S., R. 51 W.

QUAD Ninaview 7 1/2'

DVEL This is an old copper prospect with a pit. There was also some shallow core drilling carried out. Some copper production occurred in the past, but the mine is not now operational.

BKG .16 mr/hr

RNG .01 to .1% eU

HOST The host is upper Jurassic Morrison Formation. The mineralized horizon is a fine- to medium-grained sandstone member about ten ft thick, underlain by gray shale.

MNZ Probable secondary copper minerals and iron minerals are present. A possible uranium mineral could not be identified. Sample values are as follows: grab sample sandstone - .01 eU estimated; grab selected sandstone - .1 to .3% eU estimated; grab selected sandstone - .01 to .05% estimated; grab selected sandstone - .01% eU estimated (represents approximately 80% to 90% of deposit); grab high grade sample - 1% eU.

DOI 1954

REF U.S. Bur. of Mines, 1977, (Unpubl.). U.S. A.E.C., 1966, Preliminary Reconnaissance Reports, Bent County, Colorado.

### G. R. Acton Property

LOCATION: sec. 31, T. 27 S., R. 52 W.

LCRM Three miles west of Ninaview store.

DVEL There is one prospect pit which is now caved in.

BKG .015 mr/hr

RNG To .028 mr/hr

HOST The host is the Jurassic Morrison Formation and primarily the greenish gray shales near the top of the formation.

ALT Calcium carbonate and iron oxide are present.

MNZ A grab sample of silicified bone registered .01% estimated eU.

RMKS Bone fragments (1 x 1 1/2 ft) contain the mineralization.

DOI 1954

REF U.S. A.E.C., 1966, Preliminary Reconnaissance Reports, Bent County, Colorado.

### Unknown No. 1

LOCATION: NW1/4SW1/4 sec. 5, T. 23 S., R. 49 W.

LCRM On small scarp on north side of Arkansas River basin just east of John Martin Dam spillway; about 15 yds left of road; PRR location in error.

QUAD Hasty

BKG .008 mr/hr

RNG .032 mr/hr

HOST The host is Cretaceous Dakota Sandstone. (?) with a black, carbonaceous shale lens 3 in to 2 ft thick.

MNZ Chip sample up to 4 x b.g.

DOI 1954

REF U.S. A.E.C., 1966, Preliminary Reconnaissance Reports, Bent County, Colorado.

## BOULDER COUNTY

As of 1971, 22,127 tons containing 188,648 lb of  $U_3O_8$  had been mined in Boulder County, making it one of the major uranium-producing counties in the state. The potential for more reserves to be found in the county is quite favorable.

The county is divided into two different geologic terranes. The eastern part of the county is underlain by sedimentary rocks, ranging from Pennsylvanian to Quaternary in age. The strata are flat-lying except near the mountain front where they are upturned to the east. West of the mountain front the Precambrian metamorphic rocks are most abundant rock type. They are cut by numerous northwest-southeast trending faults or breccia systems. They are also the hosts for the uranium producers. The most important producers in the county were the Fairday Mine and the Victory Mine.

Both of these mines lie in the Jamestown mining district, which produced gold, silver, and fluorite.

The Fairday produced 20,934 tons containing 182,679 lb of  $U_3O_8$ , and the Victory produced 595 tons containing 1,908 lb of  $U_3O_8$ . Both mines produced uraninite from Tertiary veins within Precambrian metamorphics and Tertiary Intrusives. The uraninite was associated with the primary precious-metal minerals and found in a number of mines. The one exception was the Fairday Mine where only pyrite and quartz were associated with the uraninite.

There is moderate potential for reserves to be found in the county. Vein-type deposits in the crystalline rocks of the Front Range have the most potential for future reserves in the county. The soda granite on Porphyry Mountain north of Jamestown is an example of alkaline rocks that are being studied as possible hosts for uranium. For further information see Murphy, M., and others, 1978, U.S. Department of Energy GJBX-(78)78, 183 p.

# Boulder County

## Argo

LOCATION: sec. 13, T. 2 N., R. 73 W.  
 LCRM Occurrence noted in reference as being on south central edge of the section.  
 QUAD Raymond 7 1/2'  
 MAP GREELEY  
 DVEL This is a fluorite mine with extensive underground workings.  
 PROD There has been no production of uranium.  
 HOST Host is a vein in the Precambrian Silver Plume Granite.  
 ALT The granite is sericitized and brecciated.  
 MNZ Uranium, fluorite, gold, clay minerals abundant, galena, sphalerite, pyrite, quartz.  
 DOI 1972  
 REF U.S. Geol. Survey, 1977, CRIB File.

## Bat Claim No. 1 (Corona Mine)

LOCATION: NW1/4NE1/4 sec. 14, T. 3 N., R. 71 W.  
 MAP GREELEY  
 DVEL The Corona Mine was a copper producer prior to 1900.  
 MNZ A selected sample had a value of 0.282% U308.  
 DOI 1974  
 REF U.S. Geol. Survey, 1977, CRIB File.

## Bell Group

LOCATION: sec. 1, T. 1 N., R. 71 W.  
 LCRM Poorman Hill.  
 MAP GREELEY  
 HOST Poorman dike (fault zone) in Precambrian Boulder Creek Granite.  
 STRC Veins cut fractures in the Poorman fault zone which is 20 to 60 ft wide.  
 ALT Silicified.  
 MNZ Gold - silver tellurides. Samples range from 0.0006 to 0.041 U308.  
 DOI 1950  
 REF U.S. A.E.C., 1966, Preliminary Reconnaissance Reports, Boulder County, Colorado.

## Black Cloud

LOCATION: sec. 12, T. 1 N., R. 72 W.  
 LCRM 2 3/4 miles southeast by road from Gold Hill Village.  
 MAP GREELEY  
 DVEL Property is a gold silver mine.  
 HOST Precambrian Boulder Creek Granite with pegmatites.  
 STRC Three ft wide shear zone striking N60°E and dipping 75°NW.  
 MNZ Gold, pyrite, galena, shalerite. Channel sample had a value of 17% U308.  
 DOI 1950  
 REF U.S. A.E.C., 1966, Preliminary Reconnaissance Reports, Boulder County, Colorado. Goddard, E. N., 1940.

## Blue Jay (Mill Tailings)

LOCATION: sec. 30, T. 2 N., R. 71 W.  
 LCRM Mine is in center of section in McCorkle Gulch, 3,000 ft S20°E of Jamestown.

QUAD Boulder 7 1/2'  
 MAP GREELEY  
 DVEL Past producer of fluorite. Underground mining.  
 PROD In 1951, 7 tons averaging 0.14% U308, and containing 20 lbs of U308 were shipped by Ozark Mahoney Co. to the mill at Rifle, Colorado.  
 HOST Late Tertiary vein in granodiorite.  
 ALT Host partly altered to sericite, chlorite, and clay minerals.  
 MNZ Pitchblende or uraninite and uranothorite, fluorite, galena, pyrite, quartz. Values are reported from 0.037% to 0.045% U.  
 DOI 1971  
 REF U.S. Bur. of Mines, 1977, (Unpubl.). U.S. Geol. Survey, 1977, CRIB File. U.S. A.E.C., 1971, Production Records, Colorado. Sims, P. K., and Sheridan, D. M., 1964. Lovering, T. S., and Goddard, E. N., 1950. Argall, G. O., 1949, Colo. Sch. Mines Quart., v. 44, no. 2. Goddard, E. N., 1946, Colo. Sci. Soc. Proc., v. 15, no. 1, p. 33-34.

## Brown Spar

LOCATION: NW1/4SW1/4NE1/4 sec. 24, T. 2 N., R. 72 W.  
 MAP GREELEY  
 DVEL A past producer of fluorite.  
 HOST Vein.  
 MNZ Fluorite, galena, pyrite, uranium.  
 DOI 1974  
 REF U.S. Geol. Survey, 1977, CRIB File. Sims, P. K., and Sheridan, 1964. Lovering, T. S., and Goddard, E. N., 1950, p. 278, fig. 77. Goddard, E. N., 1946.

## Burlington

LOCATION: NE1/4NE1/4NE1/4 sec. 24, T. 2 N., R. 72 W.  
 QUAD Raymond 7 1/2'  
 MAP GREELEY  
 DVEL A past producing fluorite mine.  
 HOST Tertiary vein in (Precambrian?) granite.  
 STRC Breccia zone strikes N50°E and dips nearly vertical.  
 MNZ Fluorite, galena, pyrite, quartz, clay minerals, uraninite?  
 DOI 1974  
 REF U.S. Geol. Survey, 1977, CRIB File. Sims, P. K., and Sheridan, D. M., 1964.

## Carlou Mines (Radium, Elmer and Nelson Veins)

LOCATION: sec. 8, T. 1 S., R. 73 W.  
 LCRM U.S. A.E.C. Production Records also show sec. 9.  
 QUAD Nederland 7 1/2'  
 MAP GREELEY  
 DVEL The mine is a past producer of gold and silver. No production of uranium noted.  
 HOST Vein in Precambrian metamorphic and igneous rocks and Tertiary monzonite.  
 MNZ Uranium content of samples range from 0.001% to 1.45% U. Vein has a quartz, carbonate gangue and ore minerals of silver, galena, pyrite, sphalerite and some uraninite. Pitchblende was produced from the radium vein only. All other veins were noted for only Pb-Ag ore.

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RMKS These veins are exposed in the 920 and 1,040 levels of the mine.  
 REF U.S. Geol. Survey, 1977, CRIB File. U.S. Bur. of Mines, 1977, (Unpubl.). Lovering, T. S., and Goddard, E. N., 1950. Henderson, C. W., 1929.

### Carlite Prospect

LOCATION: NE1/4 sec. 17, T. 2 N., R. 71 W.  
 MAP GREELEY  
 HOST Precambrian gneiss and schist.  
 STRC Vein strikes N30°E and is 1 to 2 ft thick.  
 ALT Wall rock altered to clay.  
 MNZ Cerite.  
 REF U.S. A.E.C., 1966, Preliminary Reconnaissance Reports, Boulder County, Colorado. Goddard, E. N., and Glass, J. J., 1940.

### Cloud City (Virginia, Bob, Marilyn)

LOCATION: sec. 29, T. 1 N., R. 71 W.  
 QUAD Boulder 7 1/2'  
 MAP GREELEY  
 HOST Unnamed Precambrian granite.  
 MNZ Pitchblende or uraninite and scattered sulfides.  
 DOI 1971  
 REF U.S. A.E.C., 1971, Production Records, Colorado.

### Copper Blush

LOCATION: sec. 17, T. 2 N., R. 71 W.  
 MAP GREELEY  
 DVEL An inactive mine with extensive workings.  
 HOST Tertiary vein in Precambrian Silver Plume Granite.  
 MNZ Fluorite, pyrite, chalcopryrite, quartz, chalcedony.  
 DOI 1973  
 REF U.S. Geol. Survey, 1977, CRIB File. Sims, P. K., and Sheridan, D. M., 1964.

### Diamond Group

LOCATION: sec. 34, T. 2 N., R. 72 W.  
 MAP GREELEY  
 DVEL Two test pits.  
 BKG .02 mr/hr  
 RNG .02 to 4 mr/hr  
 HOST Precambrian orthogneiss and Boulder Creek Granite.  
 STRC Vertical shear zone striking N5°W.  
 MNZ Uranophane.  
 DOI 1956  
 REF U.S. Bur. of Mines, 1977, (Unpubl.). U.S. A.E.C., 1966, Preliminary Reconnaissance Reports, Boulder County, Colorado.

### Emmet

LOCATION: W1/2NE1/4NE1/4 sec. 24, T. 2 N., R. 72 W.  
 QUAD Raymond 7 1/2'  
 MAP GREELEY  
 DVEL An inactive producer of fluorite. No production of uranium reported.  
 HOST Tertiary vein in Precambrian Silver Plume Granite.  
 STRC Vein follows or is part of a breccia zone.

MNZ A high grade fluorite vein with pyrite, galena, chalcopryrite, quartz, chalcedony and minor uraninite, and torbernite.  
 DOI 1974  
 REF U.S. Geol. Survey, 1977, CRIB File. Sims, P. K., and Sheridan, D. M., 1964. Lovering, T. S., and Goddard, E. N., 1950, p. 274-277. Argall, G. O., 1949. Goddard, E. N., 1946.

### Energy

LOCATION: sec. 19, T. 2 N., R. 72 W.  
 MAP GREELEY  
 DVEL Pits and trenches.  
 HOST Vein in (Cretaceous?) granodiorite.  
 MNZ Fluorite, pyrite, quartz, (uraninite?).  
 DOI 1973  
 REF U.S. Geol. Survey, 1977, CRIB File. Sims, P. K., and Sheridan, D. M., 1964.

### Fairday (Faraday, Collowa, Overland Mountain Group)

LOCATION: NW1/4SE1/4SW1/4 sec. 23, T. 2 N., R. 72 W.  
 LCRM About 2 miles west of Jamestown.  
 QUAD Gold Hill 7 1/2(?)'  
 MAP GREELEY  
 DVEL Adit shown on map.  
 PROD Prior to 1971, 20,934 tons were mined at a grade of 0.44% U3O8, containing 182,679 lbs of U3O8.  
 HOST Precambrian Silver Plume Granite and graphic biotite gneiss.  
 MNZ Uraninite, coffinite, pyrite, galena, quartz.  
 RMKS Mr. Cazier reported this mine was once owned by the La Salle Mining Co.  
 DOI 1971  
 REF J. H. Cazier, Personal Communication, 1977. U.S. Bur. of Mines, 1977, (Unpubl.). U.S. Geol. Survey, 1977, CRIB File. U.S. A.E.C., 1966, Production Records, Colorado. Sims, P. K., and Sheridan, D. M., 1964. U.S. A.E.C., 1959 (RME-141).

### Fox Hills Outcrop

LOCATION: sec. 15, T. 1 S., R. 71 W.  
 MAP DENVER  
 DVEL Inactive coal mining district.  
 BKG .03 - .04 mr/hr  
 RNG .1 - .25 mr/hr  
 HOST Cretaceous Fox Hills Sandstone.  
 MNZ Abundant ilmonite.  
 DOI 1953  
 REF U.S. Bur. of Mines, 1977, (Unpubl.). U.S. A.E.C., 1966, Preliminary Reconnaissance Reports, Boulder County, Colorado.

### Gibson

LOCATION: sec. 12, T. 2 N., R. 72 W.  
 MAP GREELEY  
 DVEL No production reported.  
 MNZ Uranium.  
 DOI 1973  
 REF U.S. Geol. Survey, 1977, CRIB File. Sims, P. K., and Sheridan, D. M., 1964.

### Gold Lake Claims



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LOCATION: sec. 34, T. 2 N., R. 72 W.

LCRM 4 miles ENE of Ward. Also in the NE1/4NW1/4 sec. 3, T. 1 N., R. 72 W.; and sec. 237, T. 2 N., R. 72 W.

MAP GREELEY

DVEL One shaft.

PROD Grade reported 0.03% to 0.15% and up to 0.5% U3O8.

HOST Pegmatites intruded in biotite schist of Precambrian Idaho Springs Formation.

STRC In or near a shear zone in Precambrian Boulder Creek Granite.

MNZ Uraninite with uranophane. Channel samples had values of 0.15% to 0.73% U3O8.

DOI 1971

REF Norman Bennette, Personal Communication, 1977. U.S. Bur. of Mines, 1977, (Unpubl.). U.S. Geol. Survey, 1977, CRIB File.

### Golden Age

LOCATION: NE1/4 sec. 20, T. 2 N., R. 71 W.

LCRM On high spur of Golden Age hill about 2,000 ft northeast from top.

QUAD Lyons 7 1/2'

HOST Vein in Precambrian Silver Plume Granite.

MNZ Gold, silver, uranium, pyrite, chalcocopyrite.

DOI 1973

REF U.S. Geol. Survey, 1977, CRIB File. Sims, P. K., and Sheridan, D. M., 1964.

### Golden Reward

LOCATION: sec. 15, T. 1 S., R. 73 W.

MAP DENVER

PROD No production reported.

HOST Vein.

MNZ Uranium.

DOI 1973

REF U.S. Geol. Survey, 1977, CRIB File. Sims, P. K., and Sheridan, D. M., 1964.

### Goldsmith Maid

LOCATION: sec. 13, T. 1 N., R. 72 W.

LCRM West of Boulder on Colorado 119, 1/4 mile west of Summerville.

MAP GREELEY

DVEL Shaft with several levels.

BKG .03 mr/hr

RNG .03 to .1 mr/hr

HOST Precambrian Boulder Creek granite.

STRC Brecciation or a breccia reef.

ALT Argillized, chloritized, and pyritized.

MNZ Sooty pitchblende, pyrite, quartz, galena, sphalerite, tobernite. Chip sample had a value of 0.3% U.

RMKS Cemented breccia contains small pods of sulfides about 1/2 in. in diameter. All radioactivity is in hanging wall of vein.

DOI 1953

REF U.S. Bur. of Mines, 1977, (Unpubl.). U.S. Geol. Survey, 1977, (Unpubl.) U.S. A.E.C., 1966, Preliminary Reconnaissance Reports, Boulder County, Colorado. Sims, P. K., and Sheridan, D. M., 1964. Lovering, T. S., and Goddard, E. N., 1950. Goddard, E. N., 1940.

### Grand View Lode

LOCATION: sec. 8, T. 1 N., R. 71 W.

LCRM In Gold Hill district.

MAP GREELEY

BKG .03 mr/hr

RNG .15 to .2 mr/hr

HOST Precambrian pegmatite in Boulder Creek Granite.

MNZ Ferberite, sylvanite, quartz.

DOI 1951

REF U.S. A.E.C., 1966, Preliminary Reconnaissance Reports, Boulder County, Colorado.

### Horseshoe Lode

LOCATION: sec. 7, T. 1 N., R. 71 W.

LCRM 1.4 miles east of Gold Hill.

MAP GREELEY

DVEL One tunnel 130 ft in length and one shaft 50 ft deep.

RNG 2 x bg

HOST Vein in Tertiary quartz monzonite.

STRC Vein strikes E-W.

MNZ Gold, pyrite, chalcocopyrite.

RMKS It is reported that in 1953 the U.S. Geol. Survey carried out a radiometric survey of the property and the east tunnel.

DOI 1952

REF U.S. A.E.C., 1966, Preliminary Reconnaissance Reports, Boulder County, Colorado.

### King Tunnel

LOCATION: sec. 21, T. 1 N., R. 71 W.

MAP GREELEY

HOST Vein in Precambrian Boulder Creek Granite.

MNZ Base metal sulfides, uranium.

DOI 1973

REF U.S. Geol. Survey, 1977, CRIB File. Sims, P. K., and Sheridan, D. M., 1964.

### Kipp Lease

LOCATION: sec. 12, T. 2 N., R. 72 W.

LCRM Also sec. 7, 8, T. 2 N., R. 71 W.

PROD As of 1971, 30 tons were mined at a grade of 0.04% U3O8, producing 24 lbs of U3O8, 0.02% V2O5, producing 12 lbs of V2O5.

HOST Precambrian granite.

MNZ Uranophane.

DOI 1971

REF U.S. A.E.C., 1971, Production Records, Colorado.

### La Salle Claims

LOCATION: sec. 23, T. 2 N., R. 72 W.

LCST UNLOCATABLE

QUAD Gold Hill 7 1/2'

MAP GREELEY

BKG .03 mr/hr

RNG .7 to 1.3 mr/hr

HOST Boulder Creek Granite with gneiss and schist.

STRC Two shear zones - one striking N11°W dipping 72°NE and the other striking N63°W and dipping 81°E.

ALT Shear zone highly iron-manganese stained, probably a gossen.

MNZ No minerals identified.

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DOI 1956  
REF U.S. A.E.C., 1966, Preliminary Reconnaissance Reports, Boulder County, Colorado.

## Ladybug Claim (Suzebell, Thunderbolt)

LOCATION: sec. 20, T. 2 N., R. 71 W.  
LCRM Mine is on Gold Age Hill 1.8 miles northeast of Peaceful Valley Road. U.S. A.E.C. Production Records show this location as sec. 20, T. 2 N., R. 70 W.  
MAP GREELEY  
DVEL Shaft.  
PROD In 1956 and 1966, a total of 47 tons averaging 0.25% U3O8 and containing 219 lbs U3O8 were mined.  
BKG .05 mr/hr  
RNG .05 to 5 mr/hr  
HOST Precambrian schist in Silver Plume Granite.  
STRC Mineralization seems to parallel near vertical schistosity, striking N50°E.  
MNZ Pitchblende, torbernite, pyrite, chalcophyllite.  
RMKS An eight ton ore pile was represented by grab sample which gave a reading of .5 mr/hr.  
DOI 1977  
REF U.S. A.E.C., 1977, Production Records, Colorado. U.S. Geol. Survey, 1977, CRIB File. U.S. Bur. of Mines, 1977, (Unpubl.). U.S. A.E.C., 1966, Preliminary Reconnaissance Reports, Boulder County, Colorado. Sims, P. K., and Sheridan, D. M., 1964.

## Lease Tailings Pond (Stattendale Dump)

LOCATION: sec. 36, T. 1 N., R. 71 W.  
LCRM Slag and tailings dump in city of Boulder, 200 ft west of intersection of 3rd Street and Walnut Street.  
MAP GREELEY  
PROD During 1955 through 1959, a total of 93 tons averaging 1.11% U3O8 was shipped to mills at Rifle and Gunnison.  
MNZ Uranium recovered for tailings of old vanadium mill which was operated by VCA 1918-1919.  
DOI 1973  
REF U.S. Geol. Survey, 1977, CRIB File. U.S. A.E.C., 1971, Production Records, Colorado.

## Lehman Lode

LOCATION: sec. 19, T. 2 N., R. 71 W.  
MAP GREELEY  
DVEL No production reported. Work consists of 67 ft adit.  
HOST Vein.  
MNZ Uranium.  
DOI 1973  
REF U.S. Geol. Survey, 1977, CRIB File.

## Lewis Lode

LOCATION: sec. 20, T. 2 N., R. 71 W.  
LCRM Top of Golden Age Hill near Golden Age Mine.  
MAP GREELEY  
DVEL An inactive gold mining area.  
BKG .03 mr/hr  
RNG .03 to 1 mr/hr  
HOST Tertiary granite with schist pendants of the Precambrian Idaho Springs Formation.

STRC Joints.  
MNZ Autunite, torbernite, fluorite, hematite, ilmonite, gold.  
RMKS Secondary uranium minerals were found along joint planes in both lithologies.  
DOI 1954  
REF U.S. Bur. of Mines, 1977, (Unpubl.). U.S. A.E.C., 1966, Preliminary Reconnaissance Reports, Boulder County, Colorado.

## Lucky Lode

LOCATION: sec. 20, T. 2 N., R. 71 W.  
MAP GREELEY  
DVEL No production reported.  
MNZ Uranium.  
DOI 1973  
REF U.S. Geol. Survey, 1977, CRIB File. Sims, P. K., and Sheridan, D. M., 1964.

## Lulu B. (Victory and Gold Leaf Lodes)

LOCATION: SE1/4 sec. 19, T. 2 N., R. 71 W.  
LCST UNCERTAIN  
LCRM From Jamestown Post Office, go 1/4 mile southeast on county road, then 0.2 miles north on private road. Also reported in NE1/4 sec. 30.  
MAP GREELEY  
PROD Production for 1955-1956 reported as 400 tons at 0.2% U3O8.  
BKG .03 mr/hr  
RNG .03 to .45 mr/hr  
HOST Tertiary quartz monzonite intrusive (dike?)  
STRC Joints with no dominate orientation.  
ALT (Granite?) highly weathered.  
MNZ Torbernite. Six ft horizontal channel sample in middle pit had a value of 0.21% U3O8. Secondaries were only mineralization found.  
DOI 1955  
REF U.S. Bur. of Mines, 1977, (Unpubl.). U.S. Geol. Survey, 1977, CRIB File. U.S. A.E.C., 1966, Preliminary Reconnaissance Reports, Boulder County, Colorado.

## Marc 1

LOCATION: SW1/4 sec. 24, T. 2 N., R. 72 W.  
LCRM Also reported in sec. 13.  
MAP GREELEY  
DVEL Prospect tunnel and pits. No production reported.  
BKG .03 to .05 mr/hr  
RNG .05 to 1 mr/hr  
HOST Tertiary granite.  
MNZ Torbernite, pyrite, bournonite, molybdenite.  
RMKS Uranium mineralization occurs in talus on hillside. Source has not been determined.  
DOI 1954  
REF U.S. Bur. of Mines, 1977, (Unpubl.). U.S. Geol. Survey, 1977, CRIB File. U.S. A.E.C., 1966, Preliminary Reconnaissance Reports, Boulder County, Colorado. Sims, P. K., and Sheridan, D. M., 1964. Goddard, E. N., 1946. Goddard, E. N., 1940.

## Marlon Mill

LOCATION: sec. 29, T. 1 N., R. 71 W.

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QUAD Boulder 15'  
MAP GREELEY  
MNZ Uranium, vanadium.  
DOI 1975  
REF U.S. Bur. of Mines, 1977, (Unpubl.)

## Miller Lease (Miller Group, Kipp Property)

LOCATION: sec. 12, T. 2 N., R. 72 W.  
LCRM Assumed to be the Miller Group which is reported in the USGS CRIB File.  
MAP GREELEY  
PROD In 1955, 5 tons were mined at a grade of 0.40% U3O8, producing 39 lbs of U3O8.  
HOST Vein in the Precambrian Idaho Springs Formation. Granite is also reported as a host.  
RMKS Autunite.  
DOI 1971  
REF U.S. Geol. Survey, 1977, CRIB File. U.S. A.E.C., 1971, Production Records, Colorado. Sims, P. K., and Sheridan, D. M., 1964

## Miranda A. Johnson Lode

LOCATION: NW1/4 sec. 18, T. 2 N., R. 71 W.  
MAP GREELEY  
DVEL Small workings with no production reported.  
BKG .03 mr/hr  
RNG .03 to .5 mr/hr  
HOST Precambrian Silver Plume granite with pegmatite.  
STRC Fracture surfaces.  
ALT Clay minerals.  
MNZ Meta - autunite. Grab sample of altered granite had a value of 0.055% U3O8.  
DOI 1955  
REF U.S. Bur. of Mines, 1977, (Unpubl.). U.S. Geol. Survey, 1977, CRIB File. U.S. A.E.C., 1966, Preliminary Reconnaissance Reports, Boulder County, Colorado. Sims, P. K., and Sheridan, D. M., 1964. Lovering, T. S., and Goddard, E. N., 1950.

## Mountain Goat (Mountain Goat Claim No. 1)

LOCATION: NW1/4NW1/4 sec. 2, T. 1 S., R. 74 W.  
LCRM On Middle Fork of North Boulder Creek.  
QUAD East Portal 7 1/2'  
MAP DENVER  
PROD In 1956, 4 tons were mined at a grade of 0.11% U3O8, producing 8 lbs of U3O8.  
BKG .02 mr/hr  
RNG .02 to 1.0 mr/hr  
HOST The host is Precambrian Boulder Creek Granite and Idaho Springs Formation, with pegmatite. The radioactivity is associated with coarse-grained biotite in pegmatites and on joints and fractures in a hornblende gneiss.  
STRC Fractures and joints helped control ore emplacement.  
MNZ Autunite, molybdenite, fluorite, chalcopryrite, and specular hematite are all present. Sample had a value of 0.01 to 0.2% eU3O8.  
DOI 1954  
REF Robert U. King, 1977, Personal Communication. U.S. Bur. of Mines, 1977, (Unpubl.). U.S. A.E.C., 1977, Production Records, Colorado. U.S. A.E.C., 1966, Preliminary Reconnaissance Reports, Boulder County, Colorado.

## Nations Treasure

LOCATION: sec. 24, T. 2 N., R. 72 W.  
MAP GREELEY  
PROD No production reported.  
HOST Vein in Precambrian Silver Plume granite.  
MNZ Torbernite, pyrite, fluorite, galena, quartz, chlorite, clay minerals, chalcedony.  
DOI 1973  
REF U.S. Geol. Survey, 1977, CRIB File. Sims, P. K., and Sheridan, D. M., 1964.

## No Scoop Claim

LOCATION: sec. 20, T. 2 N., R. 72 W.  
LCRM From Jamestown, drive 5/8 mile west along Jamestown road. Claim is 1,500 ft south of road.  
MAP GREELEY  
PROD No production reported.  
BKG .04 mr/hr  
RNG .7 to 5 mr/hr  
HOST Tertiary granite (Monzonite?).  
STRC Breccia zone?  
ALT Silicification.  
MNZ Dark quartz, fine-grained pyrite. An 0.8 ft channel sample had a value of 0.16% U3O8.  
DOI 1954  
REF U.S. Bur. of Mines, 1977, (Unpubl.). U.S. Geol. Survey, 1977, CRIB File. U.S. A.E.C., 1966, Preliminary Reconnaissance Reports, Boulder County, Colorado. Sims, P. K., and Sheridan, D. M., 1964.

## North St. Vrain Uranium

LOCATION: T. 3 N., R. 71 W.  
LCST UNKNOWN  
MAP GREELEY  
MNZ Uranium.  
DOI 1975  
REF U.S. Bur. of Mines, 1977, (Unpubl.)

## Orion

LOCATION: sec. 24, T. 2 N., R. 72 W.  
MAP GREELEY  
PROD No production reported.  
HOST Vein in (Cretaceous?) granodiorite.  
MNZ Uranium, fluorite, quartz.  
DOI 1973  
REF U.S. Geol. Survey, 1977, CRIB File. Sims, P. K., and Sheridan, D. M., 1964.

## Poorman

LOCATION: NW1/4 sec. 30, T. 2 N., R. 71 W.  
LCRM On a low flat ridge 1,200 ft S35°W of Jamestown at an elevation of 7,200 ft.  
MAP GREELEY  
DVEL No production reported.  
HOST Vein in (Cretaceous?) granodiorite.  
STRC Vein strikes N25°W and dips 80°NE, width is 2 to 3 ft.  
MNZ Uranium, fluorite, gold, galena, pyrite, quartz, carbonate minerals, clay minerals, biotite.

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DOI 1973  
REF U.S. Geol. Survey, 1977, CRIB File. Sims, P. K., and Sheridan, 1964. Argall, G. O., 1949. Goddard, E. N., 1946

## Pueblo Belle Mine

LOCATION: SE1/4NW1/4 sec. 31, T. 1 N., R. 71 W.  
LCRM Along Black Tiger Gulch.  
QUAD Gold Hills 7 1/2'  
MAP GREELEY  
PROD No production reported.  
HOST Vein in Precambrian Boulder Creek Granite.  
STRC Vein is in a wider breccia zone.  
ALT Wall rock is reported as being altered.  
MNZ Iron, ferberite, gold, uranium, quartz, pyrite. Channel sample 0.008% U3O8 and grab sample - 0.017% U3O8.

DOI 1950  
REF U.S. Geol. Survey, 1977, CRIB File. U.S. A.E.C., 1966, Preliminary Reconnaissance Reports, Boulder County, Colorado. State of Colorado Metal Mining Fund Board, 1960. Sims, P. K., and Sheridan, D. M., 1964. Langenheim, 1947, Colorado Univ. M.S. Thesis. Langenheim, R. L., 1947. Goddard, E. N., 1940.

## Rose Mary 3

LOCATION: sec. 4, T. 3 N., R. 70 W.  
QUAD Hygiene 7 1/2'  
MAP GREELEY  
BKG .04 mr/hr  
RNG .04 to 17 mr/hr  
HOST Cretaceous Dakota Sandstone, conglomerate at base of formation.  
STRC Mineralization is in overturned limb of isoclinal fold in and adjacent to small sills.  
MNZ Sooty minerals (pitchblende) and ilmonite. Grab sample had a value of 0.13% U, a one ft channel sample had a value of 0.009% U.  
DOI 1954  
REF U.S. Bur. of Mines, 1977, (Unpubl.). U.S. Geol. Survey, 1977, CRIB File. U.S. A.E.C., 1966, Preliminary Reconnaissance Reports, Boulder County, Colorado. Sims, P. K., and Sheridan, D. M., 1964.

## Shirley Mine

LOCATION: NW1/4 sec. 19, T. 1 S., R. 73 W.  
LCRM Located about 6 miles west of Nederland.  
MAP DENVER  
DVEL Adit about 600 ft long.  
PROD Values reported of 0.001 to 0.034% U.  
HOST Vein is manzonite intrusive into Precambrian Idaho Springs Formation.  
STRC Vein strikes N10°E and dips 70°SE.  
MNZ Sylvanite, quartz, gypsum, pyrite.  
RMKS Only reference to radioactivity is the following statement: "Radioactive mineral not identified" and an analysis of 0.01% U3O8."  
DOI 1973  
REF U.S. Geol. Survey, 1977, CRIB File. U.S. A.E.C., 1966, Preliminary Reconnaissance Reports, Boulder County, Colorado. Sims, P. K., and Sheridan, D. M., 1964.

## Sisk Property

LOCATION: S1/2 sec. 2, T. 3 N., R. 71 W.  
LCRM 3 miles northwest of Lyons and 1/4 mile north of State Highway 66.  
MAP GREELEY  
DVEL Several holes drilled by Kerr McGee and Public Service Co. of Oklahoma.  
PROD In 1959 and 1960, a total of 12 tons averaging 0.37% U3O8 and containing 86 lbs U3O8 was produced.  
HOST Gneiss and pegmatites - vein?  
STRC A shear zone controls the mineralization in part.  
MNZ 0.05 to 2.8% U3O8 in drill holes,, minor malachite. Graphite, molybdenum.  
RMKS Public Service Co. of Oklahoma drilled the property in 1975-1976. Primary mineralization is altered fault zone in porphyry and pegmatite. Porphyry is silicified. Mineralization is spotty but was still occurring at 600 ft. Assays have values up to 3% in the brecciated pegmatite zone. "Thin seams of pitchblende occur in subsidiary fractures on the footwall or NE side of a NW striking shear."  
DOI 1976  
REF Norman Bennette, 1977, Personal Communication. Larry Millikan, 1977, Personal Communication. U.S. Geol. Survey, 1977, CRIB File. U.S. A.E.C., 1971, Production Records, Colorado. U.S. A.E.C., 1966, Preliminary Reconnaissance Reports, Boulder County, Colorado. Sims, P. K., and Sheridan, D. M., 1964.

## Terror-Roseberry

LOCATION: sec. 21, T. 1 S., R. 73 W.  
MAP DENVER  
DVEL 200 ft shaft with 700 ft of drifting.  
MNZ Uranium, quartz, pyrite, telluride.  
DOI 1973  
REF U.S. Geol. Survey, 1977, CRIB File. Sims, P. K., and Sheridan, D. M., 1964.

## Unknown 1

LOCATION: sec. 7, T. 1 N., R. 71 W.  
LCRM Sec. 8 also listed in reference.  
MAP GREELEY  
PROD No production reported.  
HOST Precambrian Boulder Creek Granite.  
MNZ Uranium.  
DOI 1973  
REF U.S. Geol. Survey, 1977, CRIB File. Sims, P. K., and Sheridan, D. M., 1964.

## Unknown 2

LOCATION: sec. 18, T. 1 N., R. 71 W.  
LCRM Locations 22 and 41 in figure 2 of Campbell, R. H., 1955, USGS TEM 563-A.  
MAP GREELEY  
DVEL Two mines.  
HOST Vein in Precambrian Boulder Creek Granite.  
DOI 1973  
REF U.S. Geol. Survey, 1977, CRIB File. Sims, P. K., and Sheridan, D. M., 1964. Campbell, R. H., 1955.

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### Unknown 3

LOCATION: sec. 17, T. 1 N., R. 71 W.  
LCRM Locations 24 and 49 in figure 2 in Campbell,  
R. H., 1955, USGS TEM 563-A.  
MAP GREELEY  
HOST Vein in Precambrian Boulder Creek Granite.  
MNZ Uranium.  
DOI 1973  
REF U.S. Geol. Survey, 1977, CRIB File. Sims,  
P. K., and Sheridan, D. M., 1964. Campbell,  
R. H., 1955.

### Unknown 4

LOCATION: sec. 12, T. 1 N., R. 72 W.  
LCRM This is locality 36 in figure 2 of Campbell,  
R. H., 1955, USGS TEM 563-A.  
MAP GREELEY  
PROD No production reported.  
HOST Vein in Precambrian Boulder Creek Granite.  
MNZ Uranium.  
DOI 1973  
REF U.S. Geol. Survey, 1977, CRIB File. Sims,  
P. K., and Sheridan, D. M., 1964. Campbell,  
R. H., 1955.

### Unknown 5

LOCATION: sec. 13, T. 1 N., R. 73 W.  
LCRM Location 87 in figure 2 of Campbell, R.  
H., 1955.  
MAP GREELEY  
PROD No production reported.  
HOST Vein in Precambrian Boulder Creek granite.  
MNZ Uranium.  
DOI 1973  
REF U.S. Geol. Survey, 1977, CRIB File. Sims,  
P. K., and Sheridan, D. M., 1964. Campbell,  
R. H., 1955.

### Victory

LOCATION: NE1/4 sec. 30, T. 2 N., R. 71 W.  
LCRM About 1/2 mile east of Jamestown on southwest  
slope of Golden Age hill, also includes  
SE1/4 sec. 19.  
QUAD Boulder 7 1/2'  
MAP GREELEY  
PROD In 1955 and 1956, a total of 595 tons were  
mined at a grade of 0.16% U3O8, producing  
1,908 lbs of U3O8.  
HOST Veins in a late Tertiary intrusive.  
MNZ Uranium, copper, uranium.  
DOI 1971  
REF U.S. Bur. of Mines, 1977, (Unpubl.). U.S.  
A.E.C., 1977, Production Records, Colorado.  
U.S. Geol. Survey, 1977, CRIB File. Sims,  
P. K., and Sheridan, D. M., 1964. U.S. A.E.C.,  
1959, (RME-141).

## CHAFFEE COUNTY

AEC records show no production of uranium from Chaffee County. Potential for reserves to be found within the county is small.

Chaffee County is situated in the central part of the state. The Arkansas River flows south through the east-central part of the county. Sedimentary rocks of Cambrian to Permian age and Precambrian granites cover the quarter of the county east of the alluvial valley of the Arkansas River. Precambrian gneisses and schists dominate the northwestern, southwestern, and southeastern areas. Later Tertiary (primarily Miocene) extrusives are often found associated with these early Tertiary intrusives. Several base- and precious-metal mining districts are located in the mountainous areas.

Uranium is found in a number of mines in the metal mining districts of the county, but all of the mine production was base- and precious-metals or other products, with none for uranium.

The largest concentrations of radioactive occurrences are located in mines and prospects east of the Arkansas River. Most of the occurrences are clustered in T 14 S, R 77 W (near the Free Gold and Trout Creek districts) and in the Calumet district.

There is some potential for reserves of uranium to be found in the county. The area with the greatest potential for new uranium reserves is the Monarch mining district. Although that part of the district within Chaffee County has had no uranium production, the portions within Gunnison and Saguache Counties have reported some, with new production about to begin. Such basic structures as the Chester Fault, which extends into Chaffee County, may contain mineralization. Any additional areas within the county where Precambrian complexes are intruded by the varied Tertiary intrusives provide favorable areas for prospecting for vein-type uranium deposits.

## CHAFFEE COUNTY

### Clara May Pegmatite Quarry

LOCATION: NE1/4 sec. 11, T. 14 S., R. 77 W.  
 LCRM "South side of Colorado 285. The quarry is five miles west of Trout Creek Pass."  
 QUAD Antero Reservoir 15'  
 MAP PUEBLO  
 DVEL Feldspar has been produced from open cuts. One cut measures 100 x 40 x 30 ft.  
 HOST The host is Precambrian Pikes Peak Granite, intruded by pegmatites, and locally capped by Tertiary volcanics and cut by Tertiary dikes.  
 STRC The pegmatite strikes N85°E., is relatively flat lying, and measures 175 x 70 x 30 ft.  
 MNZ Euxenite and allamite have been found in highly radioactive pods in the pegmatite. Bismutite and bismutinite are present in the quartz - feldspar, zoned pegmatite, along with garnet and rare earths.  
 DOI 1953?  
 REF U.S. Geol. Survey, 1977, CRIB File. U.S. A.E.C., 1966, Preliminary Reconnaissance Reports, Chaffee County, Colorado. Heinrich, E. William, & Bever, James E., 1957, Colo. School of Mines Quarterly, v. 52, no. 4, p. 18. Argall, George O., Jr., 1949, Colo. School Mine Quarterly, v. 44, no. 2, p. 160-161. Heinrich, E. William, 1948. Heinrich, E. William, 1948.

### Cosmo Claims No. 1 and 2

LOCATION: T. 14 S., R. 77 W.  
 LCST UNLOCATABLE  
 LCRM The claims are about 10 miles S87°E from Buena Vista.  
 QUAD Antero Reservoir 15'  
 MAP PUEBLO  
 DVEL There are several small prospect pits.  
 BKG .15 mr/hr  
 RNG 2.8 to 3.8 mr/hr  
 HOST The occurrence is in pegmatites cutting Precambrian granite.  
 STRC The radioactive zone trends due north for 1,500 ft and is 30 to 40 ft wide.  
 MNZ The radioactive minerals (not identifiable megascopically) occur as fracture coatings and disseminations in pegmatitic granites. Assays had values of 0.041% to 0.060% U308, and 0.034% to 0.040% U308.  
 DOI 1951  
 REF U.S. Bur. of Mines, 1977, (Unpubl.). U.S. A.E.C., 1966, Preliminary Reconnaissance Reports, Chaffee County, Colorado.

### Gold Bug Claim

LOCATION: sec. 21, T. 51 N., R. 9 E.  
 LCRM The claim is 1/2 mile northeast of Turret on the south side of the truck trail.  
 QUAD Cameron Mountain 15'  
 MAP PUEBLO  
 DVEL The Gold Bug shaft was reportedly sunk to a depth of 500 ft. It was originally developed as a gold mine. The underground workings

are now caved and abandoned.

BKG 60 cps  
 RNG 300 to 950 cps  
 HOST The shaft is sunk in Precambrian granite.  
 MNZ Mineralization is in narrow veins of quartz with scant gold-bearing pyrite and ilmonite. The veins strike N80°W and dip 76°N. A grab sample from the dump shows 0.46% eU, 0.28% U and 0.05% V205. Several other samples assay between 0.002 and 0.012% U308. However, the radioactivity was found in only a small area of the dump. The anomaly could not be located in 1977.  
 DOI 1952  
 REF U.S. Geol. Survey, 1977, CRIB File. U.S. Bur. of Mines, 1977, (Unpubl.). U.S. A.E.C., 1966, Preliminary Reconnaissance Reports, Chaffee County, Colorado.

### Josephine Mine

LOCATION: SW1/4 sec. 35, T. 12 S., R. 79 W.  
 LCST UNCERTAIN  
 LCRM "The mine is ten miles north of Buena Vista on U.S. 285, then cross the Arkansas River on the dirt road at the fire station. The mine is 59 yds east of the river."  
 QUAD Buena Vista 15'  
 MAP MONTROSE  
 DVEL There is one tunnel that is 305 ft long.  
 RNG To 3 x bg  
 HOST The host consists of Tertiary rhyolite and diabase dikes in gneiss of the Precambrian Pikes Peak Granite. The radioactivity is confined to serpentinized diabase in a 2-ft wide shear zone at the contact between the diabase and the granite.  
 STRC Minor shears also show some radioactivity in the area of the major shear zone.  
 MNZ The radioactive minerals are unknown, but could be associated with ilmonite staining in the shear zone.  
 DOI 1953  
 REF U.S. A.E.C., 1966, Preliminary Reconnaissance Reports, Chaffee County, Colorado.

### Little Jimie 5

LOCATION: NW1/4NE1/4 sec. 6, T. 49 N., R. 7 E.  
 QUAD Poncha Springs 15'  
 MAP MONTROSE  
 DVEL There is an adit bearing southeast into the hill. It is inaccessible, but was reported to be 600 ft long.  
 BKG .1 mr/hr  
 RNG To .7 mr/hr  
 HOST The mineralization occurs in veins (Tertiary?) cutting Precambrian granite and schist.  
 STRC The vein appears to strike E to NE, and dips steeply.  
 MNZ Primary ore minerals include chalcopyrite, galena, and thorite (?). Secondary minerals present are malachite and azurite, with quartz and ilmonite forming the gangue. The ores and gangue are intergrown and crudely banded.  
 DOI 1952  
 REF U.S. A.E.C., 1966, Preliminary Reconnaissance Reports, Chaffee County, Colorado.

## CHAFFEE COUNTY

### Lucky Break Placer (Lucky Break Iron Mine)

LOCATION: SW1/4NW1/4 sec. 2, T. 50 N., R. 9 E.  
 QUAD Cameron Mountain 15'  
 MAP PUEBLO  
 DVEL There is an open pit, roughly 150 ft in diameter and 100 ft deep, with a 75 ft adit.  
 HOST The host is an undifferentiated limestone composed of Upper Devonian Dyer Dolomite (Chaffee Group) and Mississippian Leadville Limestone.  
 STRC The deposit lies on a N to NW trending normal fault which dips steeply to the east.  
 ALT Intense alteration has taken place and obscured the fault in the vicinity of the mine.  
 MNZ Mineralization consists of massive red and black bands of iron oxides (hematite, goethite) replacing the limestone. Grab samples of these iron oxides assayed between 0.002 and 0.069% eU308, while assay data submitted by the owner to the U.S. A.E.C. showed 0.23 to 0.30% U308. The more radioactive samples show small fractures filled with late quartz. The radioactive specimens are also enriched in Cu, Zn, Co, Be, Y, while being depleted in Al, Ti, Ca, Mg, Na, K, Ba, Sr, Ga, Zr, as compared to the nonradioactive specimens.  
 DOI 1959  
 REF U.S. A.E.C., 1966, Preliminary Reconnaissance Reports, Chaffee County, Colorado. Lovering, T. G., and Beroni, E. P., 1959, p. 356-358.

### Lucky John 2

LOCATION: sec. 22, T. 51 N., R. 9 E.  
 QUAD Cameron Mountain 15'  
 MAP PUEBLO  
 DVEL The owners sank a small shaft on a 4 ft dike.  
 BKG .08 mr/hr  
 RNG to .12 mr/hr  
 HOST The host rock is Precambrian granite cut by a ferromagnesian dike.  
 STRC The dike strikes N76°E and dips 80°NW.  
 MNZ The radioactivity is moderate, and is associated with magnetite. Samples collected assayed 0.061 to 0.098% U308, 0.54 to 0.74% ThO2, and 1.02 to 1.58% rare earths.  
 DOI 1952-1954  
 REF U.S. Geol. Survey, 1977, CRIB File. U.S. A.E.C., 1966, Preliminary Reconnaissance Reports, Chaffee County, Colorado.

### Madonna Mine

LOCATION: NW1/4 sec. 4, T. 49 N., R. 6 E.  
 LCST UNSURVEYED  
 LCRM The deposit also extends to sec. 33, T. 50 N., R. 6 E.  
 QUAD Garfield 15'  
 MAP MONTROSE  
 DVEL There are at least 12,000 ft of workings, most of which are inaccessible. The vertical range of the workings is about 1,525 ft.  
 BKG .1 mr/hr  
 RNG To .6 mr/hr  
 HOST The wallrocks of the mine are Precambrian granite and Ordovician Manitou Dolomite.  
 STRC The Madonna Fault cuts through the mine, and strikes N25-50°W, dipping 85 to 90°SW.

The ore occurs as a replacement in the dolomite along the fault.

MNZ The mine was worked for gold, silver, lead, zinc, and copper. Galena and pyrite are present with a gauge of quartz, pyrite, calcite, dolomite, and sparse ilmonite. Samples range from 0.004 to 0.11% eU308 and between 0.012 to 0.15% U308. The most radioactive material is a secondary gauge of carbonate, calcite, and some chlorite.  
 REF U.S. Bur. of Mines, 1977, (Unpubl.) U.S. A.E.C., 1966, Preliminary Reconnaissance Reports, Chaffee County, Colorado. Dings, M. G., and Robinson, C. S., 1957, Geology and ore deposits of the Garfield Quadrangle, Colorado: U.S. Geol. Survey Prof. Paper 289, 110 p. Crawford, R. D., 1913, Geology and ore deposits of the Monarch and Tomichi Districts, Colorado: Colo. Geol. Survey Bull. 4, p. 235-243.

### Mica Beryl Claims (Falfar, Gray Hen)

LOCATION: sec. 27, T. 51 N., R. 9 E.  
 QUAD Cameron Mountain 15'  
 MAP PUEBLO  
 DVEL The claim was located in 1942, and produced some feldspar and mica.  
 PROD Twenty-one tons of beryl were mined that brought \$203/ton. During 1949-50, the mine produced 5,000 tons of feldspar and 300 tons of scrap mica.  
 HOST The host rock is a pink, medium- to coarse-grained Precambrian granite with visible flow structures and a prominent joint set. Pegmatite dikes cut the granite.  
 STRC The joint set possibly controlled the emplacement of the pegmatite dikes. They strike N80°E and dip 70°N.  
 MNZ Mineralization lies in the zoned pegmatite which consists of extremely coarse-grained quartz (crystals up to 2 ft in diameter) intergrown with a good grade of feldspar and mica. Some beryl is present in crystals up to 6 in. in diameter. Close examination of several areas of abnormal radioactivity revealed small amounts of monazite and samarskite. Assay of three selected samples had values up to 1.29% U308.  
 DOI 1950  
 REF U.S. A.E.C., 1966, Preliminary Reconnaissance Reports, Chaffee County, Colorado.

### Mount Antero Pegmatites

LOCATION: W1/2 sec. 7, T. 51 N., R. 7 E.  
 LCST UNCERTAIN  
 QUAD Poncha Springs 15'  
 MAP MONTROSE  
 HOST The host is Tertiary Antero granite, a stock containing pegmatites and microclitic cavities.  
 MNZ Brannerite, beryl, phenakite, bertrandite, fluorite, and titanite - rutile are present in the quartz - microcline pegmatite.  
 DOI 1953  
 REF U.S. A.E.C., 1966, Preliminary Reconnaissance Reports, Chaffee County, Colorado. Adams, John W., 1953. Switzer, George, 1939, Am. Mineral.



# CHAFFEE COUNTY

## Newett (Trout Creek, View No. 2, Lucky Jack)

LOCATION: sec. 1, T. 14 S., R. 77 W.  
 LCRM The deposit extends to sec. 2, 3 and 10.  
 QUAD Antero Reservoir 15'  
 MAP PUEBLO  
 HOST Pegmatite.  
 MNZ Monazite, euxenite, and other rare earth minerals are present in a pegmatite.  
 DOI 1973  
 REF U.S. Geol. Survey, 1977, CRIB File.

## No. 8

LOCATION: sec. 17, T. 14 S., R. 77 W.  
 QUAD Buena Vista 15'  
 MAP MONTROSE  
 DVEL The pegmatite was mined for potash feldspar by a two level open cut and adit.  
 STRC The pegmatite is 300 x 40 ft, and is shallow and lenticular with two zones. It strikes N85°E.  
 MNZ Quartz, pink microcline, and sericitized plagioclase are the primary minerals with euxenite, allanite, garnet, and biotite.  
 DOI 1957  
 REF Argall, George O., Jr., 1949, Colo. School Mines Quarterly, v. 44, no. 2, p. 161.

## Once Again Claim

LOCATION: SE1/4NE1/4 sec. 31, T. 51 N., R. 9 E.  
 LCRM UNSURVEYED  
 QUAD Poncha Springs 15'  
 MAP MONTROSE  
 DVEL The mine was worked for copper around 1930. The main workings are caved, but there were probably about 200 ft of drifting.  
 BKG .005 mr/hr  
 RNG .01 to .015 mr/hr  
 HOST The host consists of Precambrian schist and gneiss.  
 STRC Small mineralized fractures parallel foliation of the host rocks, with a strike of S80°E and a dip of N40°W.  
 MNZ The main vein has gray colored gouge 0.5 to 1.0 ft wide. The footwall is fractured and slightly silicified for a thickness of one ft. Some malachite stain is present in the gouge.  
 DOI 1954  
 REF U.S. A.E.C., 1966, Preliminary Reconnaissance Reports, Chaffee County, Colorado.

## Pegmatite Quarry

LOCATION: sec. 34, T. 13 S., R. 77 W.  
 LCST UNCERTAIN  
 LCRM "South side of Colorado 285. The quarry is two miles west of Trout Creek Pass."  
 QUAD Antero Reservoir 15'  
 MAP PUEBLO  
 DVEL Feldspar has been produced from open cuts.  
 HOST The host is Precambrian Pikes Peak Granite, intruded by pegmatites and locally capped by Tertiary volcanics and cut by Tertiary dikes.  
 MNZ Euxenite has been found in highly radioactive pods in the pegmatite. The pods also contain

blismutite and blismutinite, with quartz - feldspar in typical zones. Tourmaline is present as an accessory mineral.

DOI 1953?  
 REF U.S. Bur. of Mines, 1977, (Unpubl.). U.S. A.E.C., 1966, Preliminary Reconnaissance Reports, Chaffee County, Colorado. Heinrich, E. William, 1948.

## Pegmatites

LOCATION: sec. 32, T. 15 S., R. 77 W.  
 LCST UNLOCATABLE  
 LCRM The deposit is 6 to 7 miles southeast of Buena Vista on the east side of the Arkansas River, on county road #70.  
 QUAD Buena Vista 15'  
 MAP PUEBLO  
 DVEL There are 30 to 50 ft of open-cut workings.  
 HOST The radioactive pegmatites cut Pikes Peak Granite. There is a local capping of the granite by rhyolite flows.  
 RMKS The radioactivity appears to be caused by rare-earth minerals concentrated in the pegmatites. Minerals found included allanite and euxenite.  
 DOI 1953  
 REF U.S. A.E.C., 1966, Preliminary Reconnaissance Reports, Chaffee County, Colorado.

## Ramsey Mines

LOCATION: sec. 2, T. 50 N., R. 9 E.  
 LCRM Also sec. 3.  
 QUAD Cameron Mountain 15'  
 MAP PUEBLO  
 DVEL There is a 35 ft tunnel from the roadside through a small hogback to an open pit where black manganese-iron ore was mined. Probably about 200 tons were shipped.  
 BKG .02 mr/hr  
 RNG .04 to .08 mr/hr  
 HOST The deposit lies in Precambrian schists about 200 yds west from the contact with a Precambrian granite.  
 MNZ Hematite and pyrolusite were noted.  
 DOI 1953?  
 REF U.S. A.E.C., 1966, Preliminary Reconnaissance Reports, Chaffee County, Colorado.

## Silver Crop Mine

LOCATION: sec. 22, T. 12 S., R. 81 W.  
 LCST UNSURVEYED  
 LCRM The mine is two miles northeast of Winfield, 800-1,000 ft above the valley floor.  
 QUAD Mount Harvard 15'  
 MAP MONTROSE  
 DVEL The mine is a past producer of silver. It has approximately 500 ft of workings.  
 HOST The deposit is of a fissure vein type in a Tertiary monzonite stock.  
 ALT The wall rock is argillized and silicified.  
 MNZ Samples collected from a pile of ore on the Silver Crop dump assay 15.22% Ag, 0.11% Pb, 0.00X% Mo, and between 0.026 to 2.99% U3O8. The ore is primarily silver-bearing galena and sphalerite, with small amounts of pyrite and chalcopyrite. Radioactive

# CHAFFEE COUNTY

minerals occur in the pyritic ore, some of which is brecciated, and all of which shows hematitic alteration. The latter ore is unlike the rest of the ore on the dump. This mine and the Swiss Boy Mine are close to each other and appear to be very closely related. The same information was given for both mines.

DOI 1953  
REF U.S. A.E.C., 1966, Preliminary Reconnaissance Reports, Chaffee County, Colorado.

## Swiss Boy Mine

LOCATION: sec. 22, T. 12 S., R. 81 W.  
LCST UNSURVEYED  
LCRM The claim is 1/2 mile east of Winfield, 1,000 ft above the valley floor on the north slope.  
QUAD Mt. Harvard 15'  
MAP MONTROSE  
DVEL The mine was a producer of gold and small amounts of lead and silver around 1900.  
BKG .3 mr/hr  
RNG To 20.0 mr/hr  
HOST The host rock is reported to be a Tertiary Intrusive that is probably quartz monzonite cut by a decomposed quartz porphyry dike.  
MNZ The ore consists of gold-bearing pyrite, some galena, sphalerite and probably argentite and molybdenite. The gangue is quartz, pyrite, with associated pitchblende, chalcopryite, hematite, and some calcite. Assays show 0.026% to 2.99% U3O8, 15.22 oz/ton Ag, 0.11% Pb, and 0.00X% Mo.  
DOI 1973, 1952  
REF U.S. Bur. of Mines, 1977, (Unpubl.). U.S. Geol. Survey, 1977, CRIB File. U.S. A.E.C., 1966, Preliminary Reconnaissance Reports, Chaffee County, Colorado. Howell, J. V., 1919, Twin Lakes District of Colorado: Colo. Geol. Survey Bull. 17, 106 p.

## Unnamed 1

LOCATION: NW1/4SW1/4NE1/4 sec. 34, T. 14 S., R. 77 W.  
LCST UNSURVEYED  
QUAD Antero Reservoir 15'  
MAP PUEBLO  
HOST Pegmatite.  
MNZ Monazite, euxenite, and other rare earths all present in a pegmatite.  
DOI 1973  
REF U.S. Geol. Survey, 1977, CRIB File.

## Unnamed 2

LOCATION: NE1/4NW1/4 sec. 6, T. 14 S., R. 77 W.  
LCST UNSURVEYED  
QUAD Buena Vista 15'  
MAP MONTROSE  
HOST Pegmatite.  
MNZ Monazite, euxenite and other rare earth minerals are present in the pegmatite.  
DOI 1973  
REF U.S. Geol. Survey, 1977, CRIB File.

## Unnamed 3

LOCATION: S1/2NE1/4 sec. 22, T. 13 S., R. 77 W.  
QUAD Antero Reservoir 7 1/2'  
MAP PUEBLO  
HOST Pegmatite.  
MNZ Monazite, euxenite, and other rare earth minerals are present in a pegmatite.  
DOI 1973  
REF U.S. Geol. Survey, 1977, CRIB File.

## Yard Mine

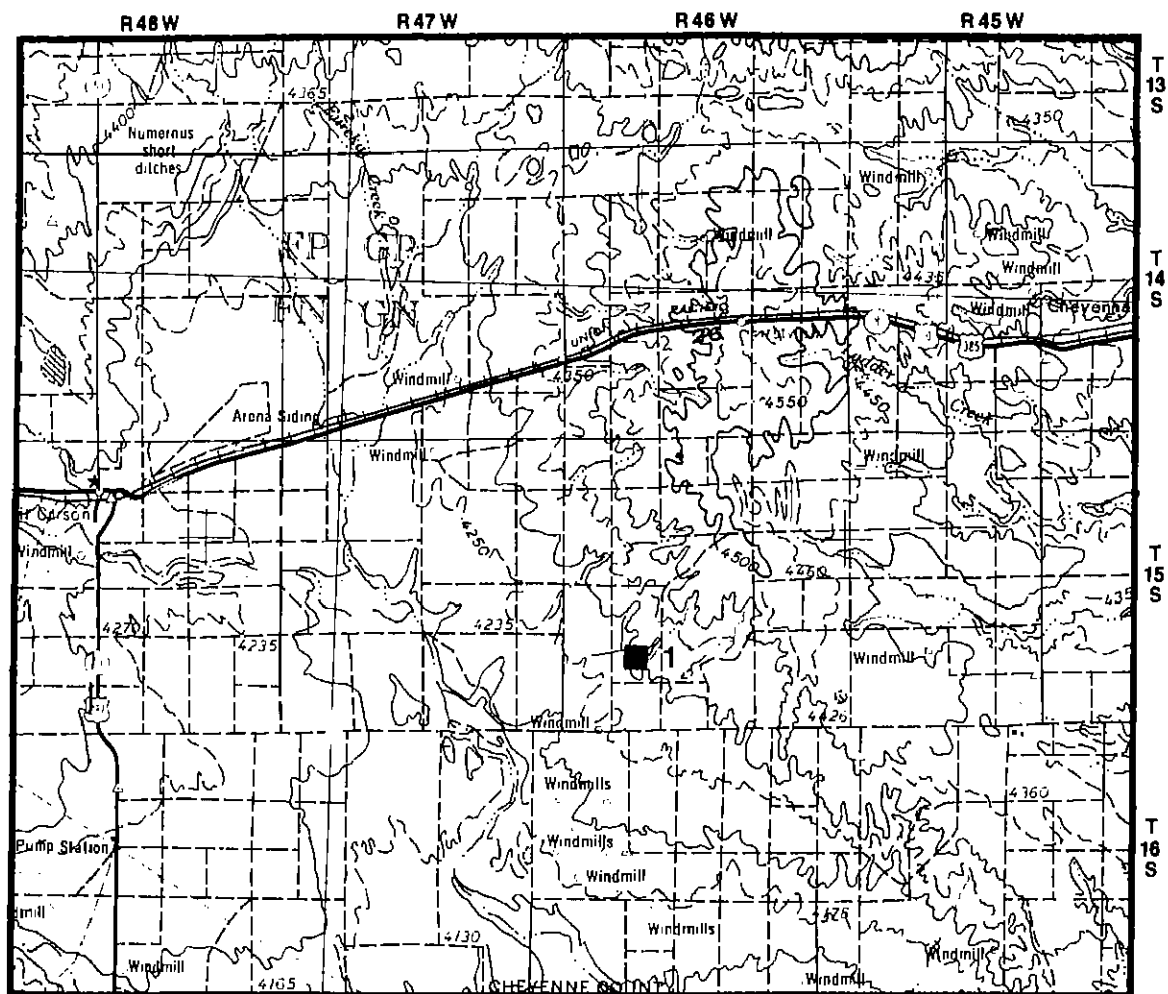
LOCATION: sec. 26, T. 13 S., R. 78 W.  
LCRM "5 miles east on Colo. 24 from Junction of U.S. 24 and Colo. 285, thence north on dirt road at McGee Gulch for about 4 miles."  
QUAD Buena Vista 15'  
MAP MONTROSE  
DVEL Feldspar was produced from an open cut, roughly 200 x 50 ft.  
HOST The host rock is Precambrian Pikes Peak Granite, cut by pegmatites. The granite and pegmatites are unzoned.  
STRC The pegmatite strike N43°E with a slight southeasterly dip.  
MNZ The radioactivity is limited to 2 to 3 ft "pods" at a zoned contact between the feldspar core and the quartz-feldspar zone. Minerals are euxenite and monazite in a microcline-quartz pegmatite.  
DOI 1953  
REF U.S. A.E.C., 1966, Preliminary Reconnaissance Reports, Chaffee County, Colorado. Ballile, William N., 1962, Feldspar occurrences in Colorado: Colo. School of Mines Mineral Industries Bulletin, v. 5, no. 4, p. 4. Argall, G. O., Jr., 1949, Colo. School of Mines Quarterly, v. 44, no. 2, p. 161. Heinrich, E. W., 1948.

## CHEYENNE COUNTY

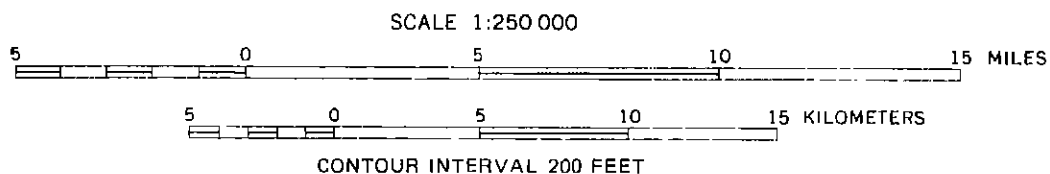
There has been no uranium production from Cheyenne County. Cheyenne County is located on the eastern plains of Colorado. The county is both topographically and geologically flat-lying, with Upper Cretaceous Pierre Shale surfacing in the western half and Miocene-Pliocene Ogallala Formation in the eastern half. Upper Cretaceous rocks crop out along the stream beds of Rush Creek and Big Sandy River.

The one small uranium occurrence that has been recorded in the county is located in the Sharon Springs Member of the Pierre Shale.

Due to lack of outcrops within the county, much of the exploration to date has been in the form of water sampling of wells, springs, and streams. Higher than average uranium values have come from samples taken from drainages on the northern flank of the Las Animas Arch. Water from the Ogallala Formation shows higher than average uranium values. Both the Sharon Springs Member of the Pierre Shale and the Ogallala Formation are favorable units for further exploration for uranium resources.



Base from U.S.G.S.



### EXPLANATION

- COAL, SHALE, LIMESTONE  
HOST ROCKS FOR OCCURRENCES
- 7 OCCURRENCE NUMBER FROM TEXT

LOCATION OF INSET  
Cheyenne Co.



LAMAR  
1° x 2° SHEET

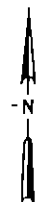


Figure 10. Radioactive mineral occurrences in Cheyenne County, Colorado.

CHEYENNE COUNTY

Unnamed 1

LOCATION: sec. 29, T. 15 S., R. 46 W.

HOST The host is the Sharon Spring Member of the Upper Cretaceous Pierre Shale.

MNZ Uranium is present, although the form of mineralization is unknown. A sample assayed .006% U.

DOI 1973

REF U.S. Geol. Survey, 1977, CRIB File. Landis, E. R., 1959.

## CLEAR CREEK COUNTY

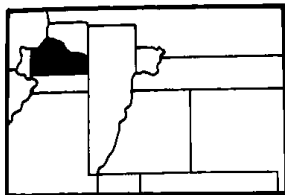
Clear Creek County, located within the Front Range mineral belt, is the site of several famous metal-mining districts that were active during the late 1800's and early 1900's. Precambrian rocks of the Idaho Springs Formation, the Boulder Creek Granite, and the Silver Plume Granite cover much of the county. Sills, dikes, and stocks of early Tertiary age intrude the Precambrian rocks, and many of the county's ore deposits are associated with these intrusive porphyries. Uranium occurs as a localized, minor component of many of these ore deposits.

Of 66 known uranium occurrences within the county, only five have recorded production, and that totalled only 162 tons of ore at an average grade of 0.16 percent  $U_3O_8$ , producing 518 pounds of  $U_3O_8$ .

The Highlander Mine and the Spanish Bar Mine produced the largest amounts of uranium ore in the county. The Jo Reynolds and Almaden Mines are reported

in some literature as containing the most anomalous radioactivity. These mines are typical of occurrences within the county. They are found in Precambrian metamorphics that have been cut by Tertiary intrusive porphyries and Laramide age veins. These mineralized veins were actively mined in the past for base and precious metals. The uranium present in these veins often occurs as uraninite, associated with chalcopyrite, galena, and sphalerite. Uranium mineralization appears to have occurred both before and after base- and precious-metal sulfide mineralization. Secondary minerals and radioactive hydrocarbons have been reported from a number of mines.

It is unlikely that Clear Creek County will ever be a large uranium producer because the vein occurrences are too small and scattered. If any of the old mines are reopened, or if new mines are developed for base- and precious-metals, then it is possible that uranium could be recovered as a by-product.



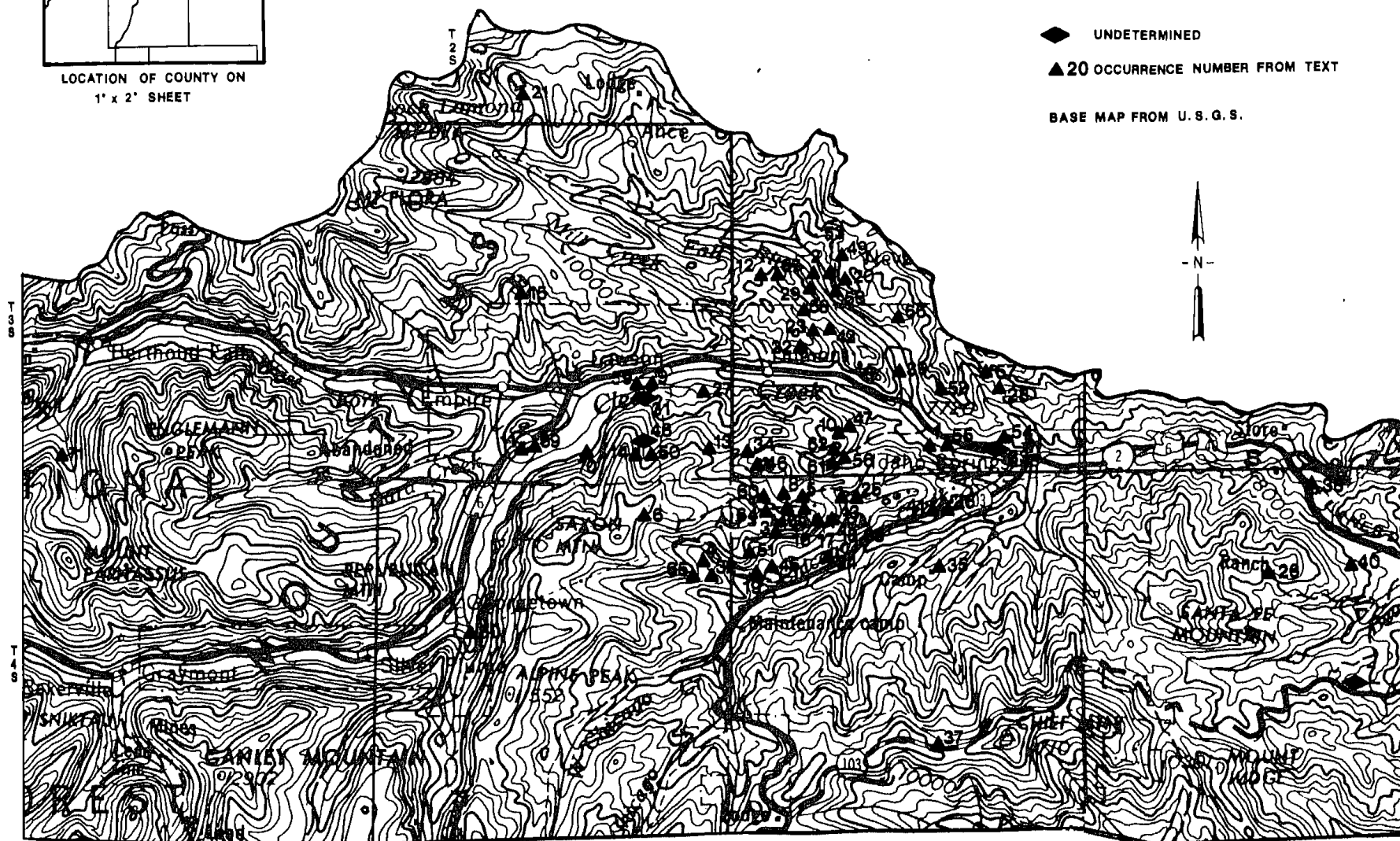
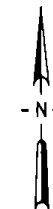
LOCATION OF COUNTY ON  
1' x 2' SHEET

## EXPLANATION

### HOST ROCKS FOR OCCURRENCES

- ▲ IGNEOUS AND METAMORPHIC
- ◆ UNDETERMINED
- ▲20 OCCURRENCE NUMBER FROM TEXT

BASE MAP FROM U.S.G.S.



R75W

R74W

R73W

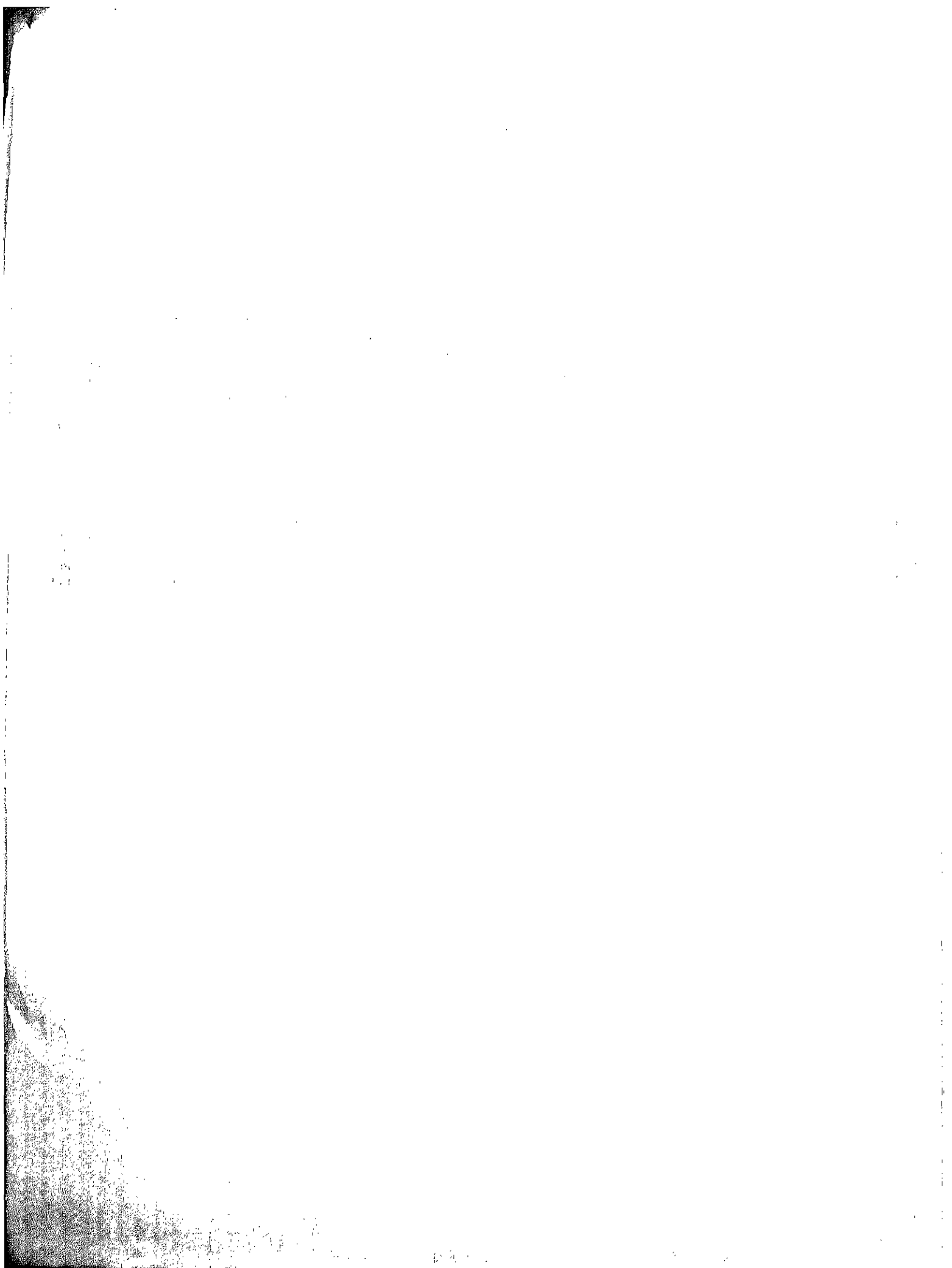
R72W

SCALE 1:125 000



CONTOUR INTERVAL FEET

Figure 11. Radioactive mineral occurrences in Clear Creek County, Colorado.





# CLEAR CREEK COUNTY

## Alma-Lincoln

LOCATION: sec. 34, T. 3 S., R. 73 W.  
 LCRM About 1 mile west of Idaho Springs on south side of Clear Creek at road level.  
 QUAD Idaho Springs 7 1/2'  
 MAP DENVER  
 DVEL This is an inactive gold-silver mine with extensive workings.  
 BKG .05 mr/hr  
 RNG To .5 mr/hr  
 HOST The deposit lies in veins and pegmatites in the Precambrian Idaho Springs Formation.  
 RMKS Radiation was localized near biotite pegmatites.  
 DOI 1953  
 REF U.S. A.E.C., 1966, Preliminary Reconnaissance Reports, Clear Creek County, Colorado.

## Almaden-Blazing Star Tunnel

LOCATION: sec. 17, T. 3 S., R. 73 W.  
 LCST UNSURVEYED  
 QUAD Central City 7 1/2'  
 MAP DENVER  
 DVEL The Blazing Star Tunnel is reported to be 1,300 ft long, but in places is badly caved and inaccessible.  
 PROD All production was for gold and silver, and that was small.  
 BKG 0.1 mr/hr  
 RNG 0.1 to 10 mr/hr  
 HOST The host rock is Precambrian Idaho Springs Formation, composed of quartz-biotite schists and gneisses.  
 STRC Ore deposition was controlled by veins.  
 ALT Supergene.  
 MNZ The vein consists of hard, silicified pyritic material, with ore minerals of polybasite, galena, pyrite, chalcopyrite, sphalerite, argentite, proustite in a gangue of quartz, calcite and siderite. Radioactivity is found at 520 and 720 ft from the portal. In those areas, pitchblende? is found coated with secondary green and yellow uranium minerals. Chemical assays of samples taken in the radioactive areas range from 0.0867 to 0.96% U3O8.  
 DOI 1951  
 REF U.S. A.E.C., 1966, Preliminary Reconnaissance Reports, Clear Creek County, Colorado. Bastin and Hill, 1917.

## Alpine Mine

LOCATION: SW1/4SE1/4 sec. 6, T. 4 S., R. 73 W.  
 QUAD Idaho Springs 7 1/2'  
 MAP DENVER  
 DVEL Inactive gold-silver mine.  
 RNG To 3 x bg  
 HOST Vein in Precambrian Silver Plume Granite.  
 MNZ Limonite, quartz.  
 DOI 1952  
 REF U.S. A.E.C., 1966, Preliminary Reconnaissance Reports, Clear Creek County, Colorado. Sims, P. K., and others, 1963. Lovering,

T. S., and Goddard, E. N., 1950. Bastin, E. S., and Hill, J. M., 1917.

## Argo

LOCATION: sec. 12, T. 4 S., R. 74 W.  
 LCST UNCERTAIN  
 LCRM Directions to deposit are as follows: "West from Idaho Springs up Chicago and Ute Creeks approximately 6.5 miles; proceed about 0.3 miles northwest on an abandoned access road. Idaho Springs and Georgetown 7 1/2'  
 QUAD DENVER  
 MAP DENVER  
 RNG To 2.5 x bg  
 HOST Vein in Precambrian Idaho Springs Formation.  
 MNZ Limonite and an unidentified green mineral.  
 DOI 1952  
 REF U.S. A.E.C., 1966, Preliminary Reconnaissance Reports, Clear Creek County, Colorado. Sims, P. K., and others, 1963. Lovering, T. S., and Goddard, E. N., 1950. Spurr, J. E., and Garrey, G. H., 1908, U.S. Geol. Survey Prof. Paper 63, 422 p.

## Ariadne

LOCATION: SW1/4NW1/4 sec. 5, T. 4 S., R. 73 W.  
 LCRM The dump is on the south side of the road.  
 QUAD Idaho Springs 7 1/2'  
 MAP DENVER  
 DVEL There is a shaft and several hundred ft of inaccessible workings.  
 BKG 130 cps  
 RNG To 275 cps  
 HOST The host is Precambrian Silver Plume Granite and pegmatite cut by Tertiary veins.  
 MNZ Ore minerals include pyrite, ilmonite, torbernite and uranophane (?) or dumontite (?) in a quartz gangue. Assays yield 0.039% eU and 0.032% U.  
 DOI 1952  
 REF U.S. A.E.C., 1966, Preliminary Reconnaissance Reports, Clear Creek County, Colorado. Harrison, J. E., and Wells, J. D., 1956, U.S. Geol. Survey Bull. 1032-B, p. 79, 80, 87-88, pl. 5. Spurr, Garrey, and Ball, 1908, U.S. Geol. Survey Prof. Paper 63, pl. XVII.

## Baltic Tunnel

LOCATION: sec. 2, T. 4 S., R. 74 W.  
 LCST UNCERTAIN  
 QUAD Georgetown 7 1/2'  
 MAP DENVER  
 RNG To 10 x bg  
 HOST A vein in the Precambrian Idaho Springs Formation contains the occurrence.  
 MNZ Minerals present include autunite(?), torbernite, galena, sphalerite, and quartz. The autunite-type mineral was fluorescent and occurred in the vein and hanging wall.  
 DOI 1952  
 REF U.S. A.E.C., 1966, Preliminary Reconnaissance Reports, Clear Creek County, Colorado.

## CLEAR CREEK COUNTY

### Beaver Brook

LOCATION: sec. 23, T. 4 S., R. 72 W.  
 QUAD Squaw Pass 7 1/2'  
 MAP DENVER  
 MNZ Uranium.  
 DOI 1975  
 REF U.S. Bur. of Mines, 1977, (Unpubl.).

### Belle Creole Mine

LOCATION: NE1/4 sec. 6, T. 4 S., R. 73 W.  
 LCRM From the forks in the road just west of the eastern section line for sec. 6, take the right fork 0.2 miles to mine access road that switches back right, down the slope. Proceed 0.1 miles to the dump.  
 QUAD Idaho Springs 7 1/2'  
 MAP DENVER  
 DVEL The mine consists of at least 540 ft of drift.  
 BKG 0.14 mr/hr  
 RNG 0.27 to 0.34 mr/hr  
 HOST The host rock is Precambrian Idaho Springs Formation and Silver Plume Granite, and is cut by Tertiary veins.  
 STRC The veins strike N50°E and dip 75 to 85°NW.  
 MNZ The ore minerals are chalcopryite, galena, sphalerite, chalcocite and limonite in a gangue of quartz and pyrite. Two chip samples were taken from inside the mine. The one of quartz with disseminated pyrite assayed 0.002% cU and .10% eU, while the one taken of limonitic material assayed 0.033% U and 0.037% eU.  
 DOI 1952  
 REF U.S. A.E.C., 1966, Preliminary Reconnaissance Reports, Clear Creek County, Colorado.

### Bellevue-Rochester

LOCATION: sec. 26, T. 3 S., R. 74 W.  
 LCST UNCERTAIN  
 QUAD Empire 7 1/2'  
 MAP DENVER  
 HOST A vein in the Precambrian Idaho Springs Formation contains the mineralization.  
 MNZ Pitchblende was found along with galena, pyrite, and quartz in a 1 in. stringer about 6 ft long in the Bellevue west drift, 96 ft west of the main crosscut. Three channel samples had values of 0.009, 0.212 and 8.024% U.  
 DOI 1951  
 REF U.S. A.E.C., 1966, Preliminary Reconnaissance Reports, Clear Creek County, Colorado. Sims, P. K., and others, 1963.

### Big Chief

LOCATION: SE1/4NE1/4 sec. 32, T. 3 S., R. 73 W.  
 LCST UNSURVEYED  
 LCRM The mine is on the west side of the road up Turkey Gulch.  
 QUAD Idaho Springs 7 1/2'  
 MAP DENVER  
 BKG 80 to 90 cps  
 RNG 250 to 400 cps  
 HOST The host is Precambrian Idaho Springs Formation, cut by Tertiary veins.

MNZ Ore minerals consist of galena and sphalerite with secondary limonite in a white and gray quartz and pyrite gangue. A grab sample of the limonitic material assayed 0.018% eU and 0.002% U.  
 DOI 1952  
 REF U.S. A.E.C., 1966, Preliminary Reconnaissance Reports, Clear Creek County, Colorado.

### Blameless Mine

LOCATION: sec. 33, T. 3 S., R. 74 W.  
 LCRM Original directions to deposit are as follows: "Mine on north side of U.S. 6, 1.0 miles west of Junction of U.S. 40 and 6. Two story building on dump 100 ft above road".  
 QUAD Idaho Springs 7 1/2'  
 MAP DENVER  
 HOST The deposit lies in a vein in the Precambrian Idaho Springs Formation.  
 ALT The wall rock is reported to be argillized and sericitized.  
 MNZ Pyrite and chalcopryite in a quartz gangue were identified.  
 RMKS Part of the vein, about 40 ft inside the portal, shows radioactivity of up to 3 x bg.  
 DOI 1953  
 REF U.S. A.E.C., 1966, Preliminary Reconnaissance Reports, Clear Creek County, Colorado. Spurr, J. E., Garrey, G. H., and Ball, S. H., 1908, U.S. Geol. Survey Prof. Paper 63, 422 p.

### Bonanza

LOCATION: SW1/4 sec. 18, T. 3 S., R. 73 W.  
 MAP DENVER  
 DVEL There is a mine along the vein, with a shaft and several hundred ft of tunnels.  
 PROD During 1953, there were 7 tons mined at a grade of 0.54% U3O8 and 0.03% V2O5, producing 76 lbs of U3O8 and 4 lbs of V2O5.  
 HOST The mineralized vein is in a schist of the Precambrian Idaho Springs Formation.  
 STRC There is a two in. fractured, iron stained zone that strikes N65°E and dips 75°SE.  
 MNZ Uranium. The mineralization is of the pyritic gold type, with associated pitchblende. The pyrite is both disseminated and fissure-filling in the vicinity of the mine.  
 DOI 1950  
 REF U.S. Geol. Survey, 1977, CRIB File. U.S. Bur. of Mines, 1977, (Unpubl.). U.S. A.E.C., 1971, Production Records, Colorado. U.S. A.E.C., 1966, Preliminary Reconnaissance Reports, Gilpin County, Colorado. Bastin, E. S., and Hall, J. M., 1917, U.S. Geol. Survey Prof. Paper 94.

### Brazil Mine

LOCATION: sec. 36, T. 3 S., R. 74 W.  
 LCRM Original directions to deposit are as follows: "West from Idaho Springs up Clear Creek to Trail Creek approximately 5 miles to where the road leaves the Trail Creek valley; leave main road here and proceed on up the creek on an abandoned mine access road about a mile; it is the lower of 2 mines".  
 QUAD Idaho Springs 7 1/2'

## CLEAR CREEK COUNTY

MAP DENVER  
 BKG 125 cps  
 RNG Average 450 cps  
 HOST Vein in Idaho Springs Formation.  
 ALT The host is reported to be altered.  
 MNZ Limonite and unidentified green mineral.  
 DOI 1952  
 REF U.S. A.E.C., 1966, Preliminary Reconnaissance Reports, Clear Creek County, Colorado. Sims, P. K., and others, 1963. Lovering, T. S., and Goddard, E. N., 1950.

### Cleveland Tunnel

LOCATION: sec. 35, T. 3 S., R. 74 W.  
 LCST UNCERTAIN  
 LCRM Original directions are as follows: "From U.S. 40 in Lawson proceed south across Clear Creek on unnumbered county road for 0.3 miles and turn right, thence 0.4 miles and turn right, thence 0.6 miles to small shack, turn right here on poor road and drive approximately 2 miles to the crest of ridge and walk about 1/4 mile northwest down to mine".  
 QUAD Empire and Georgetown 7 1/2'  
 MAP DENVER  
 DVEL One 600 ft adit was driven.  
 BKG .05 mr/hr  
 RNG To 10 mr/hr  
 HOST The occurrence is in a shear biotite schist of the Precambrian Idaho Springs Formation.  
 STRC The shear zone localizes ore emplacement.  
 MNZ Pyrite and manganese minerals are the primary mineralization. Pitchblende occurs in a 2 ft wide, 10 ft long zone.  
 DOI 1956  
 REF U.S. A.E.C., 1966, Preliminary Reconnaissance Reports, Clear Creek County, Colorado.

### Conqueror Mine

LOCATION: SE1/4SW1/4 sec. 16, T. 3 S., R. 74 W.  
 LCST UNSURVEYED  
 QUAD Empire 7 1/2'  
 MAP DENVER  
 DVEL There are several prospect pits and three adits on the property.  
 HOST Tertiary bostonite dike.  
 MNZ Assays of up to 0.5% U3O8 from samples of the dike.  
 RMKS Dike reported to be in the Conqueror Mine.  
 REF David Wolf, 1977, Personal Communication.

### Crazy Girl

LOCATION: SW1/4NW1/4 sec. 5, T. 4 S., R. 73 W.  
 QUAD Idaho Springs 7 1/2'  
 MAP DENVER  
 DVEL Incline shaft with 1,200 ft of drifts and stopes on two levels.  
 BKG To 150 cps  
 RNG To 750 cps  
 HOST Vein in Tertiary bostonite dike, and Precambrian Silver Plume Granite, and Idaho Springs Formation.  
 MNZ Limonite, chalcocite, azurite, malachite, pyrite, hematite and quartz. A grab from vein material on dump had a value of 0.026% U.

DOI 1952  
 REF U.S. A.E.C., 1966, Preliminary Reconnaissance Reports, Clear Creek County, Colorado. Sims, P. K., and others, 1963. Spurr, J. E., Garrey, G. H., and Bell, S. H., 1908.

### Diamond Mountain Mine (Glucky)

LOCATION: sec. 5, T. 4 S., R. 73 W.  
 LCST UNCERTAIN  
 QUAD Idaho Springs 7 1/2'  
 MAP DENVER  
 HOST The host is Precambrian Idaho Springs Formation, consisting primarily of schists and gneisses.  
 MNZ The mineralization is associated with a bostonite porphyry intruded into the schists and gneisses. Grab samples range from .16 to .30% eU, and from .046 to .35% U.  
 DOI 1950  
 REF U.S. A.E.C., 1966, Preliminary Reconnaissance Reports, Clear Creek County, Colorado.

### Elizabeth M. Lode (Dalsey Freeze Claim)

LOCATION: sec. 5, T. 4 S., R. 73 W.  
 QUAD Idaho Springs 7 1/2'  
 MAP DENVER  
 HOST Vein in the Precambrian Idaho Springs Formation.  
 STRC Vein occurs in shear zone.  
 MNZ Uranium.  
 DOI 1975  
 REF U.S. Bur. of Mines, 1977, (Unpubl.). U.S. Geol. Survey, 1977, CRIB file.

### Ella McKinney

LOCATION: sec. 7, T. 4 S., R. 73 W.  
 LCRM Original directions to deposit are as follows: "West up Chicago Creek and Ute Creek from Idaho Springs approximately 6 miles; the mine is in the rear vicinity of an abandoned house next to the road on the right".  
 QUAD Idaho Springs 7 1/2'  
 MAP DENVER  
 DVEL There are two shafts, one above, and one below the road.  
 BKG 150 cps  
 RNG To 300 cps  
 HOST Vein in Precambrian (Idaho Springs Formation?)  
 MNZ Limonite and unidentified green mineral.  
 DOI 1952  
 REF U.S. A.E.C., 1966, Preliminary Reconnaissance Reports, Clear Creek County, Colorado. Spurr, J. E., Garrey, G. H., and Bell, S. H., 1908.

### Golconda

LOCATION: SE1/4 sec. 17, T. 3 S., R. 73 W.  
 LCST UNSURVEYED  
 QUAD Central City 7 1/2'  
 MAP DENVER  
 DVEL There was a small production of high-grade gold ore. The tunnel extends more than 1,380 ft, but due to caving is partially inaccessible. Examination of the mine by U.S. A.E.C. geologists in 1954 indicated several hundred tons of rock, approaching ore grade, existed in mine.

## CLEAR CREEK COUNTY

BKG 0.01 mr/hr  
 RNG 0.017 to 0.389 mr/hr  
 HOST Vein in Precambrian Idaho Springs Formation, consisting of schists and gneisses with pegmatite intrusions.  
 STRC The uranium occurs in two fissure veins located 1,015 ft and 1,190 ft from the portal.  
 ALT Supergene alteration is present, with sericitic and clay alteration ranging from moderate to intense.  
 MNZ The vein located at 1,015 ft from the portal has been drifted on for 20 ft. It strikes N50°W and dips 75°NE. It is 4 to 8 in. in width, consisting of white and gray quartz, crushed schist, pyrite, galena, chalcopryrite and thin streaks and blebs of pitchblende. The second vein has been drifted on for 290 ft to the SE. It strikes N68°W and dips 55°NE. It ranges from 1 in. to 2 ft in width. It consists of white and gray quartz, pyrite, chalcopryrite and pitchblende. The pitchblende occurs in black lenses 1/3 to 3 in. wide consisting of fine-grained pyrite and sooty pitchblende. Green and yellow secondary uranium minerals have formed since the vein was opened. Chemical assays of samples range from 0.014 to 0.519% U3O8.  
 DOI 1951, 1971  
 REF U.S. A.E.C., 1971, Production Records, Colorado. U.S. A.E.C., 1966, Preliminary Reconnaissance Reports, Clear Creek County, Colorado. Bastin and Hill, 1917.

### Gold Anchor

LOCATION: sec. 33, T. 2 S., R. 74 W.  
 LCST UNCERTAIN  
 LCRM Original directions are as follows: "Follow Fall River Road about 0.6 miles from Alice toward St. Marys Glacier. Turn left on old wagon road for about 0.2 miles. Drive to small stream where bridge is out. Mine is on other side of stream". This is probably the mine in Anchor Gulch.  
 QUAD Empire 7 1/2'  
 MAP DENVER  
 DVEL This is an inactive gold mine with about 1,000 ft of workings.  
 RNG To 3 x bg  
 HOST The host is a vein in the Precambrian Idaho Springs Formation.  
 MNZ Pyrite (gold bearing), galena and sphalerite are present. Pitchblende was found associated with pyrite.  
 DOI 1953  
 REF U.S. A.E.C., 1966, Preliminary Reconnaissance Reports, Clear Creek County, Colorado.

### Gold Chloride Mine

LOCATION: SW1/4 sec. 20, T. 3 S., R. 73 W.  
 LCST UNSURVEYED  
 LCRM The mine is on the east side of the gulch and the highest one in the gulch.  
 QUAD Central City 7 1/2'  
 MAP DENVER  
 DVEL There is a short crosscut and drift. The dump is roughly 30 x 30 x 10 ft,

BKG 60 to 80 cps  
 RNG 200 to 300 cps  
 HOST The host is Precambrian Idaho Springs Formation. It is cut by a Tertiary vein, which contains the radioactive deposit.  
 STRC The vein strikes N65°E.  
 MNZ The only mineral visible was a ilmonitic material, which assayed at 0.003% U; other spectographic data for that sample include: 0.16 oz/ton Ag, 0.01% Pb, and 0.04% Cu.  
 DOI 1952  
 REF U.S. A.E.C., 1966, Preliminary Reconnaissance Reports, Clear Creek County, Colorado.

### Golden Calf Mine

LOCATION: sec. 20, T. 3 S., R. 73 W.  
 LCST UNCERTAIN  
 QUAD Central City 7 1/2'  
 MAP DENVER  
 DVEL One 300 ft adit has been driven.  
 BKG .03 mr/hr  
 RNG .3 to .6 mr/hr  
 HOST The occurrence lies in a vein in the Precambrian Idaho Springs Formation.  
 STRC The vein strikes S72°W and dips 47°NW.  
 MNZ Sooty pitchblende (possibly primary as pitchblende was described as sooty in another property in the county and this characteristic was due to a very fine-grained botryoidal nature), pyrite, chalcopryrite, galena, sphalerite, gold and silver are present. Channel samples had the following values: sample 1, 0.022% eU, 0.021% U, 0.280z./Ton Au, 1.86 Oz./Ton Ag; sample 2, 0.64% eU, 0.020% U, 0.04 Oz./Ton Au, 1.12 Oz./Ton Ag; sample 3, 0.017% eU, 0.007% U, 0.62 Oz./Ton Au, 18.30 Oz./Ton Ag; sample 4, 0.069% eU, 0.047% U, 0.14 Oz./Ton Au, 2.56 Oz./Ton Ag.  
 DOI 1952  
 REF U.S. A.E.C., 1966, Preliminary Reconnaissance Reports, Clear Creek County, Colorado. Sims, P. K., and others, 1963.

### Golden Glen

LOCATION: SW1/4NE1/4 sec. 8, T. 4 S., R. 73 W.  
 QUAD Idaho Springs 7 1/2'  
 MAP DENVER  
 DVEL A tunnel was driven on the property.  
 BKG 110 to 120 cps  
 RNG To 350 cps  
 HOST Vein in Tertiary bostonite and Precambrian Idaho Springs Formation.  
 MNZ Grab sample from dump had values of 0.18% eU, and 0.22% U.  
 DOI 1952  
 REF U.S. A.E.C., 1966, Preliminary Reconnaissance Reports, Clear Creek County, Colorado. Sims, P. K., and others, 1963. Spurr, J. E., Garrey, G. H., and Ball, S. H., 1908.

### Gomer Mine

LOCATION: SW1/4NW1/4 sec. 4, T. 4 S., R. 73 W.  
 LCRM 400 ft east of Junction of Spring Gulch road and road going southwest around Alps Mountain, on the south side of the road.  
 QUAD Idaho Springs 7 1/2'

# CLEAR CREEK COUNTY

MAP DENVER  
DVEL There is an inclined shaft and drifts.  
BKG 6.0 cps  
RNG 18 to 20 cps  
HOST The deposit lies in veins in the Precambrian Idaho Springs Formation which consists of biotite schist and gneiss intruded by pegmatites.  
MNZ Ore minerals are galena, sphalerite, pyrite and chalcopyrite in a quartz gangue. The radioactivity appears to be associated with the sphalerite.  
DOI 1951  
REF U.S. A.E.C., 1966, Preliminary Reconnaissance Reports, Clear Creek County, Colorado. Spurr and Garrey, 1908, U.S. Geol. Survey Prof. Paper 63, p. 351-352.

## Grover

LOCATION: SW1/4SW1/4 sec. 10, T. 4 S., R. 72 W.  
LCRM S1/2SE1/4 sec. 9 also included in this patented homestead.  
QUAD Squaw Pass 7 1/2'  
MAP DENVER  
DVEL Two open cuts - 250 and 150 ft long. Mined for feldspar, muscovite and beryl, 1937-1942, produced 1,557 tons.  
HOST Pegmatite in the Precambrian Idaho Springs Formation.  
STRC The pegmatite is zoned and outcrops in an area of 1,000 ft x 40 ft. Pegmatite strikes N85°E.  
MNZ Samarskite, tantalite, monazite, columbite, gadolite, garnet, beryl.  
DOI 1944  
REF U.S. Geol. Survey, 1977, CRIB File. Gulliot, G. B., 1944.

## Highland Lassie Tunnel

LOCATION: sec. 25, T. 3 S., R. 74 W.  
LCST UNCERTAIN  
LCRM Original directions to deposit are as follows: "Drive north out of Lawson for 1/2 mile; make sharp turn to east and go to end of road."  
QUAD Central City and Empire 7 1/2'  
MAP DENVER  
DVEL An inactive gold-silver prospect with a 400 ft long tunnel.  
RNG 2 to 3 x bg  
HOST Vein in Precambrian Idaho Springs Formation.  
MNZ Sphalerite, galena, pyrite, quartz, siderite.  
DOI 1952  
REF U.S. A.E.C., 1966, Preliminary Reconnaissance Reports, Clear Creek County. Sims, P. K., and others, 1963.

## Highlander

LOCATION: sec. 26, T. 3 S., R. 73 W.  
QUAD Central City 7 1/2'  
MAP DENVER  
PROD In 1955, 51 tons were mined at a grade of 0.24% U3O8, producing 245 lbs of U3O8.  
HOST Unnamed Precambrian granite.  
MNZ Pitchblende or uraninite, many sulfides in a pegmatite.

DOI 1971  
REF U.S. A.E.C., 1971, Production Records, Colorado.

## Hill Top Claims

LOCATION: SW1/4 sec. 17, T. 3 S., R. 73 W.  
LCST UNSURVEYED  
LCRM Original directions are as follows: "Travel west on U.S. 40/6 through Idaho Springs (5.0 mi.). North on Spring Gulch Road. Travel up road 1.6 miles - park car and follow trail 600 ft uphill. Well defined trail leads to mine. (750 ft east).  
QUAD Central City 7 1/2'  
MAP DENVER  
DVEL There are several pits and one 20 ft long tunnel.  
BKG .08 mr/hr  
RNG To 1.0 mr/hr  
HOST The occurrence is in a vein in Precambrian Silver Plume Granite with remnants of schist of the Idaho Springs Formation.  
STRC The vein on which pits were dug strikes N45°E.  
MNZ Autunite and torbernite are reported.  
RMKS 1.0 mr/hr occurred over an "oxidized schist" in the tunnel with a maximum reading of 0.4 mr/hr in the surface pits.  
DOI 1955  
REF U.S. A.E.C., 1966, Preliminary Reconnaissance Reports, Clear Creek County, Colorado.

## J. C. Vol Claim

LOCATION: sec. 17, T. 4 S., R. 74 W.  
LCST UNCERTAIN  
LCRM Original directions are as follows: "Take road out of Georgetown past old Centennial mill and get onto Public Service Co. of Colorado road following their penstock on way south, up creek to reservoir. Go 100 yds beyond the first wooden bridge. Car cannot cross the bridge. The property comes down to the bridge".  
QUAD Georgetown 7 1/2'  
MAP DENVER  
DVEL There are several pits and small adits.  
BKG .01 mr/hr  
RNG .2 to 2.0 mr/hr  
HOST The deposit occurs in a vein in the Precambrian Idaho Springs Formation.  
MNZ Minerals present include pyrite, ilmonite, hematite.  
DOI 1955  
REF U.S. A.E.C., 1966, Preliminary Reconnaissance Reports, Clear Creek County, Colorado.

## Jo Reynolds

LOCATION: sec. 26, T. 3 S., R. 74 W.  
QUAD Empire 7 1/2'  
MAP DENVER  
MNZ Uranium.  
DOI 1975  
REF U.S. Bur. of Mines, 1977, (Unpubl.).

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## Kitty Emmet

LOCATION: sec. 12, T. 4 S., R. 74 W.

LCRM The original directions to mine are as follows:  
"West from Idaho Springs up Chicago and Cascade Creeks approximately 7.4 miles; proceed about 0.2 miles northeast on a mine access road; the dump is up the slope about 100 yds to the north."

QUAD Idaho Springs 7 1/2'

MAP DENVER

BKG 125 cps

RNG 200 to 250 cps

HOST Vein in Precambrian Idaho Springs Formation.

ALT The host is reported to be altered.

MNZ Limonite and unidentified green mineral.

DOI 1952

REF U.S. A.E.C., 1966, Preliminary Reconnaissance Reports, Clear Creek County, Colorado. Sims, P. K., and others, 1963. Spurr, J. E., and Garrey, G. H., and Ball, S. H., 1908.

## Lake Central Project

LOCATION: sec. 35, T. 3 S., R. 73 W.

QUAD Central City 15' (?)

MAP DENVER

MNZ Uranium.

DOI 1975

REF U.S. Bur. of Mines, 1977, (Unpubl.).

## Lamarline Tunnel

LOCATION: SW1/4 sec. 31, T. 3 S., R. 73 W.

LCRM Original directions to property are "Follow road west from Freeland; road ends at property".

QUAD Idaho Springs 7 1/2'

MAP DENVER

DVEL Over 5,000 ft of workings on 10 levels in this inactive gold-silver mine.

HOST Vein in Precambrian Idaho Springs Formation.

MNZ Gold, galena, spalerite, siderite pyrite, hematite in a gangue of quartz, dolomite, and rhodochrosite.

RMKS It was reported that "radon gas in back of tunnel made gelger counter useless".

DOI 1952

REF U.S. A.E.C., 1966, Preliminary Reconnaissance Reports, Clear Creek County, Colorado.

## Lelew No. 1

LOCATION: sec. 10, T. 4 S., R. 73 W.

LCST UNCERTAIN

LCRM Original directions to property are as follows:  
"From Miner Street in Idaho Springs, travel 2.7 miles up Soda Creek to location of property."

QUAD Idaho Springs 7 1/2'

MAP DENVER

BKG .08 mr/hr

RNG To .15 mr/hr

HOST Tertiary bostonite dike.

MNZ Uranium minerals were observed.

RMKS Anomalous radiation was observed over an area of 100 x 200 ft.

DOI 1954

REF U.S. A.E.C., 1966, Preliminary Reconnaissance Reports, Clear Creek County, Colorado.

## Little Cub Mine

LOCATION: sec. 3, T. 4 S., R. 73 W.

QUAD Idaho Springs 7 1/2'

MAP DENVER

DVEL The mine consists of approximately 800 ft of drift along the vein, 90 ft of crosscut to the north, 20 ft of crosscut to the south, and a two-compartment raise about 22 ft to the back.

RNG To 3 x bg

HOST The host is a vein in the Precambrian Idaho Springs Formation, which consists of quartz-biotite schist.

STRC The deposit is in a quartz-pyrite fissure vein striking N63°E and dipping 68°NW.

MNZ Quartz, pyrite, and possibly some gold are present, and the radioactive mineral is unknown.

DOI 1951

REF U.S. A.E.C., 1966, Preliminary Reconnaissance Reports, Clear Creek County, Colorado.

## Little Warrior 1-A (April Fool 1-4, Little Warrior No. 7, Warrior Mtn. Claims)

LOCATION: sec. 27, T. 4 S., R. 73 W.

QUAD Idaho Springs 7 1/2'

MAP DENVER

PROD In 1960 and 1961, a total of 6 tons were mined at a grade of 0.12% U3O8, producing 21 lbs of U3O8.

HOST Precambrian Idaho Springs Formation.

MNZ Uranium, autunite.

DOI 1971

REF U.S. Bur. of Mines, 1977, (Unpubl.). U.S. Geol. Survey, 1977, CRIB File. U.S. A.E.C., 1971, Production Records, Colorado.

## Lone Star (Magic Radon)

LOCATION: NE1/4NE1/4 sec. 3, T. 4 S., R. 72 W.

LCRM Located on the north side of Colorado Highway 119.

QUAD Squaw Pass 7 1/2'

MAP DENVER

DVEL There is one adit.

BKG .03 mr/hr

RNG .05 to 2.0 mr/hr

HOST The host is Precambrian Idaho Springs Formation, composed primarily of schists intruded by pegmatites.

MNZ The ore mineral appears to be uranophane in a gangue of quartz, pink feldspar, and mica. Allanite is sparsely scattered through the pegmatite. All mineralization is confined to the pegmatites.

DOI 1949

REF U.S. A.E.C., 1966, Preliminary Reconnaissance Reports, Clear Creek County, Colorado.

## Lucania Tunnel

LOCATION: NE1/4 sec. 28, T. 3 S., R. 73 W.

LCST UNSURVEYED

QUAD Central City 7 1/2'

MAP DENVER

DVEL The tunnel extends 6,240 ft, and was designed to cut the veins in Quartz Hill at 14,800 ft.

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BKG .1 mr/hr  
 RNG .3 mr/hr  
 HOST The deposit lies in veins in the Precambrian Idaho Formation, which is composed of schist and gneiss and cut by pegmatites.  
 MNZ The mineralization is found in quartz and pyrite veins. No radioactive mineral could be seen, and the abnormal count was attributed to radon gas.  
 DOI 1951  
 REF U.S. A.E.C., 1966, Preliminary Reconnaissance Reports, Clear Creek County, Colorado. Spurr and Garrey, 1908, U.S. Geol. Survey Prof. Paper 94.

## Lucky Strike Claims

LOCATION: sec. 11, T. 4 S., R. 72 W.  
 LCRM In the Floyd Hill area.  
 QUAD Squaw Pass 7 1/2'  
 MAP DENVER  
 HOST Pegmatite.  
 MNZ Minor torbernite and autunite. Sample from the dump of the prospect pit had values of 0.12% to 0.14% U3O8. The area of anomalous radioactivity does not exceed the pit area.  
 DOI 1973  
 REF U.S. Geol. Survey, 1977, CRIB File.

## M and E Mine

LOCATION: sec. 3, T. 4 S., R. 73 W.  
 LCST UNCERTAIN  
 LCRM Original directions to mine are as follows: "Along Spring Creek gulch for 0.9 miles. Mine portal is on south side of road across Spring Creek gulch and is 80 ft south of Coffindaffer home".  
 QUAD Idaho Springs 7 1/2'  
 MAP DENVER  
 DVEL An 800 ft tunnel was driven.  
 RNG To 4 x bg  
 HOST A Tertiary bostonite dike contains the mineralization.  
 DOI 1951  
 REF U.S. A.E.C., 1966, Preliminary Reconnaissance Reports, Clear Creek County, Colorado.

## Major C. and Little Colonial

LOCATION: sec. 20, T. 3 S., R. 73 W.  
 LCST UNSURVEYED  
 LCRM East from Dumont 0.9 miles to the second gulch; proceed north up the gulch to the first dump on the east.  
 QUAD Central City 7 1/2'  
 MAP DENVER  
 DVEL There is a tunnel on the property.  
 BKG 75 to 80 cps  
 RNG 170 to 175 cps  
 HOST The host is Precambrian Idaho Springs Formation, which is cut by Tertiary veins.  
 MNZ Ore minerals are chalcopryrite and ilmonite in a gangue of quartz and pyrite. A grab sample of the ilmonitic material assayed 0.001% cU and 0.014% eU.  
 DOI 1952  
 REF U.S. A.E.C., 1966, Preliminary Reconnaissance Reports, Clear Creek County, Colorado.

## Martha E Mine (Elizabeth M Lode)

LOCATION: SE1/4NE1/4 sec. 5, T. 4 S., R. 73 W.  
 QUAD Idaho Springs 7 1/2'  
 MAP DENVER  
 DVEL The tunnel extended at least 152 ft from the portal.  
 PROD In 1954, 1 ton of ore averaging 0.14% U3O8 and containing 3 lbs U3O8 was produced.  
 RNG 2 to 4 x bg  
 HOST The deposit occurs in Tertiary veins within the Precambrian Idaho Springs Formation, which consists primarily of schist with thin seams of pegmatite.  
 STRC The ore was deposited in veins following the schist foliation.  
 MNZ Mineralization consists of low grade gold ore (reported \$4/ton), which is iron stained and vuggy. No sulfides were visible. A green, radioactive mineral (torbernite?) is present in small fractures in the schist. Channel samples from inside the mine all show weak radioactivity.  
 DOI 1950  
 REF U.S. A.E.C., 1966, Preliminary Reconnaissance Reports, Clear Creek County, Colorado. U.S. A.E.C., 1971, Production Records, Colorado. Bastin and Hill, 1917, U.S. Geol. Survey Prof. Paper 94.

## Miller Tunnel

LOCATION: SW1/4SE1/4NE1/4 sec. 6, T. 4 S., R. 73 W.  
 QUAD Idaho Springs 7 1/2'  
 MAP DENVER  
 DVEL There is at least 900 ft of cross-cut tunnel and drifts.  
 PROD Between 1908 and 1940, a total of 160 tons of ore was produced, yielding gold, silver, copper, lead, and zinc. No uranium ore was shipped.  
 BKG .01 mr/hr  
 RNG .03 to .04 mr/hr  
 HOST The host rock is Precambrian in age, and the mine lies near the boundary between the Idaho Springs Formation and the biotite-muscovite Silver Plume granite. Granite gneiss and bostonite also are present.  
 STRC The Miller vein strikes N63°E and dips on the average of about 8°NW.  
 MNZ Minerals observed include galena, sphalerite, chalcopryrite, and pyrite, with secondary ilmonite and torbernite in scattered disseminated flakes. The gangue is quartz and brecciated bedrock. Grab samples analyzed contain between 0.006 and 0.014% eU and between 0.001 and 0.004% cU.  
 DOI 1952  
 REF U.S. A.E.C., 1966, Preliminary Reconnaissance Reports, Clear Creek County, Colorado. Harrison and Wells, 1956, p. 79, 82, 113-114. Spurr, Garrey, and Ball, 1908, U.S. Geol. Survey Prof. Paper 63, p. 334-335.

## Muscovite Mine

LOCATION: sec. 7, T. 4 S., R. 73 W.  
 LCST UNCERTAIN

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LCRM Original directions are as follows: "West from Idaho Springs up Chicago Creek and Spring Gulch approximately 3.25 miles; turn left onto a mine access road and proceed about 2.7 miles to end of the road; walk westerly cross creek and up slope about 0.2 mile."

QUAD Idaho Springs 7 1/2'

MAP DENVER

BKG 120 to 125 cps

RNG 250 to 800 cps

HOST Vein in Tertiary bostonite and Precambrian Silver Plume Granite.

MNZ Limonite and unidentified green mineral. Grab sample from dump had a value of 0.046% U.

DOI 1958

REF U.S. A.E.C., 1966, Preliminary Reconnaissance Reports, Clear Creek County, Colorado. Sims, P. K., and others, 1963. Lovering, T. S., and Goddard, E. N., 1950. Spurr, J. E., Garrey, G. H., and Ball, S. H., 1908.

### New Era

LOCATION: SW1/4 sec. 31, T. 3 S., R. 73 W.

LCRM Original directions to deposit are as follows: "County road up Trail Creek about 4 miles southwest of Idaho Springs. Mine is located 1,000 ft east of Lamertine Mine".

QUAD Idaho Springs 7 1/2'

MAP DENVER

DVEL This is an inactive gold-silver mine with approximately 3,000 ft of drifts.

HOST The occurrence is in a vein in the Precambrian Idaho Springs Formation.

MNZ Galena, sphalerite, pyrite, silver and gold were identified.

RMKS It was reported that the mine had a large amount of radon gas in it.

DOI 1948-1958?

REF U.S. A.E.C., 1966, Preliminary Reconnaissance Reports, Clear Creek County, Colorado.

### Old Settler Tunnel

LOCATION: NE1/4 sec. 32, T. 3 S., R. 73 W.

LCST UNSURVEYED

QUAD Idaho Springs 7 1/2'

MAP DENVER

DVEL There is one partially caved adit, an inclined shaft and a series of levels and stopes, all inaccessible.

BKG 60 to 70 cps

RNG To 150 cps

HOST The host is Precambrian Idaho Springs Formation, and is cut by Tertiary veins.

MNZ Pyrite, chalcopryite, chalcocite, azurite, malachite, and limonite are present in the veins, with a gangue of white and gray quartz. An assay of the limonitic material yielded 0.006% Cu and 0.009% Au.

DOI 1952

REF U.S. A.E.C., 1966, Preliminary Reconnaissance Reports, Clear Creek County, Colorado. Spurr & Garrey, 1908, U.S. Geol. Survey Prof. Paper 63, p. 340-341.

### Peabody Mine

LOCATION: sec. 35, T. 3 S., R. 74 W.

QUAD Georgetown 7 1/2'

MAP DENVER

MNZ Uranium.

DOI 1975

REF U.S. Bur. of Mines, 1977, (Unpubl.).

### Polar Star Mine

LOCATION: NE1/4 sec. 17, T. 3 S., R. 73 W.

LCST UNSURVEYED

QUAD Central City 7 1/2'

MAP DENVER

RNG 2 to 4 x bg

HOST The host rock is Precambrian Idaho Springs Formation, and in this area is primarily schist.

MNZ There is slight radioactivity in a light green travertine that is associated with the vein zone in the area. The original radioactivity was discovered in a museum specimen of pitchblende with pyrite and chalcopryite.

DOI 1950

REF U.S. A.E.C., 1966, Preliminary Reconnaissance Reports, Clear Creek County, Colorado. Bastin, E. S., and Hill, J. M., 1917.

### Robineau Claims

LOCATION: sec. 35, T. 3 S., R. 74 W.

LCRM Original directions are as follows: "By 1 mile of trail from Silver Creek. Mine is located on top of ridge above the Jo Reynolds Mine."

QUAD Empire and Georgetown 7 1/2'

MAP DENVER

DVEL There is one 30 ft shaft and a 30 ft crosscut.

RNG 3 to 10 x bg

HOST The occurrence is in the Peabody vein in Precambrian Idaho Springs Formation(?).

STRC The anomalous zone strikes N70°W.

MNZ The zone of radioactivity was found at surface over an area 6 ft wide and 600 ft long. Samples of float had values from 0.59 to 5.81% U308.

DOI 1950

REF U.S. A.E.C., Preliminary Reconnaissance Reports, Clear Creek County, Colorado. U.S. Geol. Surv., 1950, TEM-24.

### Silverine Mine

LOCATION: NW1/4 sec. 7, T. 4 S., R. 73 W.

LCST UNCERTAIN

LCRM Original directions to deposit are as follows: "West from Idaho Springs up Chicago Creek and Spring Gulch approximately 3.25 miles; turn left onto a mine access road and proceed about 2.7 miles to the end of the road; dump is in that immediate vicinity".

QUAD Idaho Springs 7 1/2'

MAP DENVER

DVEL There is a shaft and tunnel on property.

BKG 120 to 125 cps

RNG 300 to 350 cps

HOST Vein in Tertiary bostonite dike.



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MNZ Limonite and unidentified green mineral.  
DOI 1952  
REF U.S. A.E.C., 1966, Preliminary Reconnaissance Reports, Clear Creek County, Colorado. Spurr, J. E., Garrey, G. H., and Ball, S. H., 1908.

## Spanish Bar

LOCATION: sec. 27, T. 3 S., R. 73 W.

LCST UNCERTAIN

LCRM Original directions are as follows: "From U.S. 6 in Idaho Springs, drive up Virginia Canyon 2.0 miles to the Two Brothers Mine, turn left following the road across the mine yard. Follow dirt road 1.1 miles around to the south side of the mountain where the property is located. The prospect is on the south slope of Bellview Mountain." U.S. A.E.C. Production Records also show sec. 26.

QUAD Central City 7 1/2'

MAP DENVER

DVEL The property has an incline shaft and was prospected for gold.

PROD In 1957, 97 tons of ore averaging 0.10% U308 and containing 196 lbs of U308 was produced.

BKG .02 mr/hr

RNG To 4 mr/hr

HOST Mineralization occurs in veins in quartz-biotite schist of the Precambrian Idaho Springs Formation. Also graphic granite dikes outcrop nearby and are reported to be radioactive.

STRC The hanging wall of the vein strikes N5°E with a vertical dip. Strike of granite dikes is N70°W.

MNZ Pitchblende, quartz, pyrite, chalcopyrite. A 1.6 ft channel sample across the vein had a value of 0.20% eU308. This sample was taken where wall rock was pegmatite (graphic granite?) The graphic granite is reported to contain syngenetic uranium minerals.

RMKS Radioactivity was found on the hanging wall side of the vein in the shaft and drift.

DOI 1956

REF U.S. A.E.C., 1971, Production Records, Colorado. U.S. A.E.C., 1966, Preliminary Reconnaissance Reports, Clear Creek County, Colorado. Sims, P. K., and others, 1963. Bastin, E. S., and Hill, J. M., 1917.

## Standard Mine

LOCATION: sec. 17, T. 3 S., R. 73 W.

LCST UNSURVEYED

LCRM The mine is located 1/2 mile south of Woodpecker Gulch on the Fall River.

QUAD Central City 7 1/2'

MAP DENVER

DVEL The tunnel is at least 850 ft long, with at least 5 drifts on it.

BKG .04 mr/hr

RNG .1 to .2 mr/hr

HOST The host is Precambrian Idaho Springs Formation composed of schist and pegmatite. There is also a Tertiary (?) quartz monzonite porphyry.

STRC The deposits are controlled by veins.

MNZ The minerals present are pyrite, galena and sphalerite in a quartz gangue. A slightly radioactive green carbonate precipitate is also present.

DOI 1951

REF U.S. A.E.C., 1966, Preliminary Reconnaissance Reports, Clear Creek County, Colorado. Bastin & Hill, 1917, U.S. Geol. Survey Prof. Paper 94.

## Stanley Mines

LOCATION: sec. 35, T. 3 S., R. 73 W.

LCRM One mile west of Idaho Springs on south side of road.

QUAD Idaho Springs 7 1/2'

MAP DENVER

DVEL Inactive gold-silver mine with very extensive workings.

BKG 600 cps

RNG To 1200 cps

HOST Vein in a pegmatite and granite gneiss of the Precambrian Idaho Springs Formation.

ALT There is no alteration in the wall rock.

MNZ Pitchblende, galena, sphalerite, chalcopyrite, pyrite in a quartz gangue. Pitchblende occurs as hard botryoidal coatings on pyrite, galena, and quartz, in vugs, and along fractures that apparently cut the galena and pyrite. Channel sample of the vein had values ranging from 0.003% U to 0.14% U.

DOI 1954

REF U.S. A.E.C., 1966, Preliminary Reconnaissance Reports, Clear Creek County, Colorado. Spurr, J. E., Garrey, G. H., and Ball, S. H., 1908.

## Star Mine

LOCATION: sec. 34, T. 3 S., R. 73 W.

LCRM From Idaho Springs go up Chicago Gulch to Spring Creek. Up Spring Creek about 1.3 miles. Portal is on north side of road.

QUAD Idaho Springs 7 1/2'

MAP DENVER

DVEL This inactive gold-silver mine that consists of 200 ft of drifting at road level and a 10 ft deep shaft.

BKG .06 mr/hr

RNG To 5.0 mr/hr

HOST The deposit lies in a pegmatite of the Precambrian Idaho Springs Formation and in a Tertiary monzonite porphyry.

STRC The main vein strikes N46°E and dips 80°NW. A crossing vein that strikes N75°W intersects the main one at about 28 ft from portal. This junction is where the pitchblende occurs.

MNZ Pitchblende and torbernite were identified.

DOI 1954

REF U.S. A.E.C., 1966, Preliminary Reconnaissance Reports, Clear Creek County, Colorado. Sims, P. K. and others, 1963.

## Sunnyside Tunnel

LOCATION: SE1/4 sec. 32, T. 3 S., R. 73 W.

LCRM Original directions to tunnel are as follows: "1.2 miles northwest from west edge of Idaho Springs, turn southwest up Trail Creek,

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mine is 1.5 miles. Buildings and portal on north side of creek".  
 IDAHO SPRINGS 7 1/2'  
 QUAD DENVER  
 MAP 300 ft of stopes and drifts, 550 ft crosscut.  
 DVEL 225 cps  
 BKG To 550 cps  
 RNG Vein in Precambrian Idaho Springs Formation, and Silver Plume granite.  
 HOST  
 MNZ Galena, sphalerite, chalcopryite, pyrite, ilmonite, quartz. A grab sample from vein had a value of 0.019% U.  
 DOI 1952  
 REF U.S. A.E.C., 1966, Preliminary Reconnaissance Reports, Clear Creek County, Colorado.

## Two Brothers Tunnel

LOCATION: NW1/4 sec. 26, T. 3 S., R. 73 W.  
 LCST UNSURVEYED  
 LCRM The large dump to the west of the road is from the tunnel.  
 QUAD Central City 7 1/2'  
 MAP DENVER  
 BKG 10 to 80 cps  
 RNG 150 to 300 cps  
 HOST The host is Precambrian Idaho Springs Formation. It is cut by Tertiary veins, which control and contain mineralization.  
 MNZ Primary ore minerals are galena and sphalerite, with ilmonite as a secondary ore mineral. Pyrite and white and gray quartz make up the gangue. A grab sample of the ilmonitic material yielded .009% eU, but less than .001% U by chemical assay.  
 DOI 1952  
 REF U.S. A.E.C., 1966, Preliminary Reconnaissance Reports, Clear Creek County, Colorado. Bastin & Hill, 1917, U.S. Geol. Survey Prof. Paper 94, p. 285.

## Unknown 1

LOCATION: SE1/4 sec. 17, T. 3 S., R. 73 W.  
 LCST UNSURVEYED  
 LCRM The property is near the Golconda Mine and the Blazing Star vein in the Fall River district.  
 QUAD Central City 7 1/2'  
 MAP DENVER  
 DVEL Seven small workings in the local area were examined.  
 BKG .05 Cps  
 RNG .1 to .2 Cps  
 HOST The host rock is the Precambrian Idaho Springs Formation, consisting of schist and gneiss.  
 STRC Veins control ore deposition.  
 MNZ Reconnaissance work showed radioactivity 2 times background in the mine northeast of the Fall River Power House, 2 to 3 times background in the Blazing Star Vein, and 3 to 4 times background on a vein that lines up with the No. 4 vein of the Golconda Mine. A yellow carbonate mineral was found in the mine NE of the Power House. Quartz, pyrite, and galena were found in all of the workings.  
 DOI 1951

REF U.S. A.E.C., 1966, Preliminary Reconnaissance Reports, Clear Creek County, Colorado. Lovering and Goddard, 1950. Bastin and Hill, 1917.

## Unknown 2

LOCATION: sec. 26, T. 3 S., R. 74 W.  
 QUAD Empire 7 1/2'  
 MAP DENVER  
 BKG 3 to 4 mr/hr  
 RNG 7 mr/hr  
 HOST The host is Precambrian Idaho Springs Formation, consisting of schist and gneiss.  
 STRC The mineralization occurs in a bostonite porphyry dike that is 100 ft wide.  
 MNZ No uranium minerals were seen, but a composite chip sample showed .008% eU, and radioactivity went about twice background at the contacts of dike and host rock.  
 DOI 1956  
 REF U.S. A.E.C., 1966, Preliminary Reconnaissance Reports, Clear Creek County, Colorado.

## Unknown 174

LOCATION: sec. 6, T. 4 S., R. 73 W.  
 LCRM Original directions to deposits are as follows: "Southwest from Idaho Springs, 0.5 miles to Spring Gulch road, west for 4.6 miles to fork in road, take right fork for .15 miles, dump is uphill in timber on left".  
 QUAD Idaho Springs 7 1/2'  
 MAP DENVER  
 DVEL There is one shaft on the property.  
 BKG 125 cps  
 RNG To 275 cps  
 HOST A vein in a Tertiary bostonite dike and Precambrian Silver Plume Granite contains the mineralization.  
 MNZ Quartz and ilmonite were the only minerals identified.  
 DOI 1952  
 REF U.S. A.E.C., 1966, Preliminary Reconnaissance Reports, Clear Creek County, Colorado.

## Unknown 357

LOCATION: SW1/4SE1/4 sec. 32, T. 3 S., R. 73 W.  
 LCST UNSURVEYED  
 LCRM The mine is the middle one of three mines in that quarter-quarter section.  
 QUAD Idaho Springs 7 1/2'  
 MAP DENVER  
 DVEL The mine workings consist of 155 ft of crosscut tunnel and 250 ft of drift and stopes.  
 BKG .07 mr/hr  
 RNG .27 mr/hr  
 HOST The host rock is Precambrian Idaho Springs Formation cut by Tertiary veins.  
 STRC The mineralization is controlled by fault gouge in a shear zone.  
 MNZ The minerals seen were galena, chalcopryite, sphalerite and ilmonite in a gangue of quartz and pyrite. Chip samples of the ilmonitic material ranged from 0.002 to 0.033% eU.  
 DOI 1952  
 REF U.S. A.E.C., 1966, Preliminary Reconnaissance Reports, Clear Creek County, Colorado.

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## Unknown 358

LOCATION: SW1/4SE1/4 sec. 32, T. 3 S., R. 73 W.  
 LCST UNSURVEYED  
 LCRM The mine is the one furthest east in that quarter section.  
 QUAD Idaho Springs 7 1/2'  
 MAP DENVER  
 DVEL The workings had 470 ft of drift.  
 BKG .07 mr/hr  
 RNG To .12 mr/hr  
 HOST The host rock is Idaho Springs Formation of Precambrian age. It is cut by Tertiary veins.  
 MNZ Limonite was the only mineral identified, and a chip sample taken from 280 ft inside the mine assayed 0.017% eU and 0.013% cU.  
 DOI 1952  
 REF U.S. A.E.C., 1966, Preliminary Reconnaissance Reports, Clear Creek County, Colorado.

## Unknown 406

LOCATION: sec. 5, T. 4 S., R. 73 W.  
 LCST UNCERTAIN  
 LCRM Original directions to mine are as follows: "West from Idaho Springs up Chicago Creek and Spring Gulch approximately 3.25 miles; turn left onto mine access road and proceed about 0.7 miles; the dump is small and about 100 yds up the slope to the right".  
 QUAD Idaho Springs 7 1/2'  
 MAP DENVER  
 DVEL There is one shaft on the property.  
 BKG 80 to 90 cps  
 RNG 180 to 230 cps  
 HOST A vein in the Precambrian Idaho Springs Formation contains the deposit.  
 ALT The host was reported to be altered.  
 MNZ Limonite was the only mineral mentioned.  
 DOI 1952  
 REF U.S. A.E.C., 1966, Preliminary Reconnaissance Reports, Clear Creek County, Colorado.

## Unknown 419

LOCATION: sec. 6, T. 4 S., R. 73 W.  
 LCRM Original directions are as follows: "West from Idaho Springs up Chicago Creek and Spring Gulch approximately 7 miles to the abandoned town of Lamartine; proceed southeast on a mine access road about 0.6 mile; the dump is small and to the east of the road".  
 QUAD Idaho Springs 7 1/2'  
 MAP DENVER  
 DVEL There is one shaft.  
 BKG 60 to 80 cps  
 RNG 175 to 200 cps  
 HOST Vein in Precambrian Idaho Springs Formation.  
 ALT Host is reported to be altered.  
 MNZ Limonite and unidentified green mineral.  
 DOI 1952  
 REF U.S. A.E.C., 1966, Preliminary Reconnaissance Reports, Clear Creek County, Colorado.

## Unknown 428

LOCATION: sec. 12, T. 4 S., R. 74 W.

LCRM Original directions to mine is as follows: "West from Idaho Springs up Chicago and Cascade Creeks approximately 7 miles; the dump is on left near the creek, the lower tunnel is at road level on the right".  
 QUAD Idaho Springs 7 1/2'  
 MAP DENVER  
 DVEL There are two tunnels on the property.  
 BKG 100 to 125 cps  
 RNG 200 to 300 cps  
 HOST Vein in Precambrian Idaho Springs Formation.  
 ALT Host is reported to be altered.  
 MNZ Limonite and unidentified green mineral, uranium.  
 DOI 1952  
 REF U.S. A.E.C., 1966, Preliminary Reconnaissance Reports, Clear Creek County, Colorado.

## Unknown FR-118

LOCATION: NE1/4 sec. 21, T. 3 S., R. 73 W.  
 LCST UNSURVEYED  
 LCRM The mine dump is on the west side of York Gulch.  
 QUAD Central City 7 1/2'  
 MAP DENVER  
 DVEL There is an old shaft and tunnel.  
 BKG 40 to 50 cps  
 RNG 300 to 400 cps  
 HOST The host is Precambrian Idaho Springs Formation composed of gneiss and schist. It is intruded by pegmatites.  
 STRC The pegmatites parallel the foliation of the gneiss and schist. Tertiary veins cut the host.  
 ALT Supergene.  
 MNZ Mineralization appears to be in the granite pegmatites. Two chip samples were submitted for analysis: Results were 0.003% and 0.004% cU.  
 DOI 1952  
 REF U.S. A.E.C., 1966, Preliminary Reconnaissance Reports, Clear Creek County, Colorado.

## Unknown FR-75

LOCATION: sec. 18, T. 3 S., R. 73 W.  
 LCST UNSURVEYED  
 LCRM From U.S. 6-40 go up Spring Gulch approximately 2 miles to a ranch house; turn right and proceed about 0.1 miles.  
 QUAD Central City 7 1/2'  
 MAP DENVER  
 BKG 60 to 80 cps  
 RNG 200 to 225 cps  
 HOST The host rocks are Precambrian Idaho Springs gneiss, schist, and pegmatite, all cut by Tertiary veins.  
 MNZ Limonite was the only visible mineral mentioned. A grab sample of limonitic material from the portal assayed 0.004% eU, 0.001% U, 0.10 oz/ton Ag, 0.01% Pb, & 0.01% Cu.  
 DOI 1952  
 REF U.S. A.E.C., 1966, Preliminary Reconnaissance Reports, Clear Creek County, Colorado.

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## Unknown FR-78

LOCATION: NW1/4 sec. 20, T. 3 S., R. 73 W.  
 LCST UNSURVEYED  
 LCRM The dump is adjacent to, and south of, Spring Gulch road about 1.3 miles northwest of its intersection with U.S. 6 & 40.  
 QUAD Central City 7 1/2'  
 MAP DENVER  
 DVEL The mine has one caved adit.  
 BKG 60 to 80 cps  
 RNG 250 to 300 cps  
 HOST The host rocks are Precambrian Idaho Springs Formation, cut by Tertiary veins which contain the mineralization.  
 MNZ The only ore mineral seen was ilmonite, which assayed 0.011 eU and 0.006% U. The sample also contained 0.06 oz/ton of Ag, 0.01% Pb, and 0.01% Cu.  
 DOI 1952  
 REF U.S. A.E.C., 1966, Preliminary Reconnaissance Reports, Clear Creek County, Colorado.

HOST Vein in Tertiary granite porphyry and Precambrian granite and schist.  
 MNZ Molybdenite, quartz, pyrite, fluorite, rhodochrosite. Three grab samples had the following values: #60376 - 0.15% eU308, 0.037% cU308; #60377 - 0.009% eU308, 0.002% cU308; #60378 - 0.069% eU308, 0.021% cU308.  
 DOI 1952  
 REF U.S. A.E.C., 1966, Preliminary Reconnaissance Reports, Clear Creek County, Colorado.

## Unnamed 3 (Mine Dump No. 1)

LOCATION: sec. 33, T. 3 S., R. 74 W.  
 LCST UNCERTAIN  
 LCRM The mine dump is on the north side of U.S. 6 1 mile west of the junction of U.S. 40 and 6 and 100 ft above the road.  
 QUAD Georgetown 7 1/2'  
 MAP DENVER  
 RNG To 5 x bg  
 HOST Vein in the Precambrian Idaho Spring Formation.  
 ALT Argillization and silicification.  
 MNZ Galena, sphalerite, pyrite, quartz (pitchblende?).  
 DOI 1953  
 REF U.S. A.E.C., 1966, Preliminary Reconnaissance Reports, Clear Creek County, Colorado.

## Unnamed Mine 4 (Mine Dump No. 2)

LOCATION: sec. 34, T. 3 S., R. 74 W.  
 LCST UNCERTAIN  
 LCRM Directions are as follows: "dumps on south side of east end of Douglas Mountain, 1/2 mile west of U.S. 40 and 6 road junction".  
 QUAD Empire 7 1/2'  
 MAP DENVER  
 RNG To 4 x bg  
 HOST A vein in the Precambrian Idaho Springs Formation contains the mineralization.  
 ALT The wall rock is sericitized and silicified.  
 MNZ Pyrite, galena, sphalerite, quartz and (pitchblende (?) are present in the vein.  
 DOI 1953  
 REF U.S. A.E.C., 1966, Preliminary Reconnaissance Reports, Clear Creek County, Colorado. Spurr, J. E., Garrey, G. H., and Ball, S. H., 1908, U.S. Geol. Survey Prof. Paper 63, 422 p.

## Unad Mine

LOCATION: sec. 31, T. 3 S., R. 75 W.  
 QUAD Berthoud Pass 7 1/2'  
 MAP DENVER  
 DVEL Active molybdenum mine with extensive workings.  
 BKG 117 cps  
 RNG To 13 cps

## CONEJOS COUNTY

Very limited uranium production has come from this county. In fact the producing deposit is also the only recorded occurrence of uranium.

The county is divided geologically into two terranes. The eastern half is underlain by Tertiary sediments filling the huge San Luis Valley Graben. The western half of the county is mountainous and covered by Tertiary volcanics associated with the two calderas in the northern part of the county--the Summitville and the Platoro Calderas.

The only producing occurrence in the county is the Shirley Rae Deposit, but its location is unknown. By 1971, 4 tons of ore containing one lb of  $U_3O_8$

had been mined from this deposit. The geology of the county is not favorable for the occurrence of uranium, and this fact combined with an unknown location casts doubt on the validity of the occurrence. It is possible that sandstone-type deposits occur in the sediments filling the San Luis Valley, but of more importance is a new type of uranium occurrence that is associated with volcanogenic rocks. The two calderas in northwest Conejos County thus appear to have limited favorability for uranium resources. Also, as more research is carried out, volcanogenic-type occurrences may become economically important in the future. However, from the present state of knowledge this county has very small potential for developable reserves.

## CONEJOS COUNTY

### Shirley Rae

#### LOCATION:

LCST UNCERTAIN

DVEL Past producer.

PROD As of 1971, 4 tons were mined at a grade of 0.01% U3O8, producing 1 lb of U3O8, 0.05% V2O5, producing 4 lbs of V2O5.

MNZ Uranium.

DOI 1971

REF U.S. A.E.C., 1977, Production Records, Colorado.  
U.S. Bur. of Mines, 1977, (Unpubl.).

## COSTILLA COUNTY

Minor production from Costilla County consisted of 0.75 tons of ore that yielded 3.3 pounds of  $U_3O_8$ .

The geology of the county is complex. The two main structural elements in the county are the Sangre de Cristo Mountains and the San Luis Graben Valley. Precambrian alaskite granites, gneissic granodiorite and other minor gneisses are exposed in the Sangre de Cristo Mountains and Culebra Range in the northern and eastern parts of the county. The Quaternary Alamosa Formation crops out in the San Luis Valley and consists of unconsolidated sands and gravel. Tertiary lava flows and tuffs are widespread in the southeastern half of the county.

The producing deposit in the county was the Black Jack No. 2 Deposit. It produced from sandstone in the Permian Sangre de Cristo Formation. The ore at the mine is reported to be carnotite.

There is potential for reserves to be found in the county. All the occurrences within the county lie in the Permo-Pennsylvanian Sangre de Cristo Formation in the northeastern part of the county. These occurrences are a continuation of a mineralized belt within the Sangre de Cristo Formation.

This belt is continuous along the Sangre de Cristo Range from New Mexico into Custer County. The occurrences are characterized by uranium, vanadium, and copper minerals in silty sandstone and sandy siltstone containing abundant organic material. This type of occurrence has potential but its development is seriously limited by steep dips, high elevations, and rugged topography.

# COSTILLA COUNTY

## Black Jack No. 2

LOCATION: sec. 36, T. 31 S., R. 70 W.  
 MAP TRINIDAD  
 PROD During 1959, 0.75 tons of ore average 0.22% U3O8 and containing 3.3 lbs U3O8 was shipped to the Canon City mill.  
 HOST Permian Sangre de Cristo Formation.  
 MNZ Carnotite.  
 RMKS This prospect is on or near the section line between the location given and sec. 1, T. 32 S., R. 70 W.  
 DOI 1973  
 REF U.S. Geol. Survey CRIB File. U.S. A.E.C., 1971, Production Records, Colorado.

## Loco Alice Prospect (Trinchera Ranch)

LOCATION: sec. 15, T. 30 S., R. 70 W.  
 LCST UNCERTAIN.  
 LCRM Located on Blanca Trinchera Ranch. Directions to the deposit are as follow: "From the east edge of Fort Garland, go east on U.S. 160 for 10.7 miles and turn right onto dirt road. Go 0.2 miles to the locked gate. Go 7.3 miles from the gate to an old red gate. Drive through for 2.1 miles then take right fork for 4.7 miles and another right fork for 0.2 miles to the prospect just above the road on the right."  
 QUAD Trinchera Ranch 7 1/2' (?)  
 MAP TRINIDAD  
 DVEL A small prospect pit has been dug and several shallow trenches have been bulldozed. Nine holes have been drilled and six have been probed. Two holes show anomalous radioactivity.  
 RNG To 30 X bg.  
 HOST The host is arkosic, medium- to coarse-grained conglomeratic red sandstone with some carbon trash within the Permian Sangre de Cristo Formation.  
 STRC The beds are vertical and strike N20°W. The radioactivity occurs in a six inch wide shear zone which parallels the bedding.  
 MNZ Carnotite, volborthite, malachite, and jarosite are present. A grab sample had a value of 0.24% U3O8. Two other samples had values as follows: 0.24% eU3O8, 0.31% U3O8; 0.068% eU3O8, 0.071% U3O8, 0.32% V2O5, 3.59% Cu, and 0.22 oz/ton Ag.  
 RMKS The occurrence is on the east side of a domal structure, and seems to only occur in this small area. The type of mineral holdings are undetermined.  
 DOI 1954, 1975  
 REF U.S. Bur. of Mines, 1977, (Unpubl.). U.S. A.E.C., 1966, Preliminary Reconnaissance Reports, Costilla County, Colorado.

## Unnamed 1

LOCATION: sec. 20, T. 28 S., R. 70 W.  
 LCST UNCERTAIN  
 LCRM Directions are as follows: "For .4 mile along the west side of U.S. 160, 30.6 miles

west of Walsenburg and a few miles west of La Veta Pass near Sangre de Cristo Creek and Vega Creek".

QUAD Russell 7 1/2'  
 MAP TRINIDAD  
 BKG .025 mr/hr  
 RNG .025 to .15 mr/hr  
 HOST The country rocks are dark gray shales and olive colored sandstones in two stratigraphic intervals of the Pennsylvanian Formations.  
 STRC The beds are steeply dipping and strike northwest.  
 RMKS Anomalous radioactivity was noted over a stratigraphic interval of 700 ft.  
 DOI 1954  
 REF U.S. A.E.C., 1966, Preliminary Reconnaissance Reports, Costilla County, Colorado.



## CROWLEY COUNTY

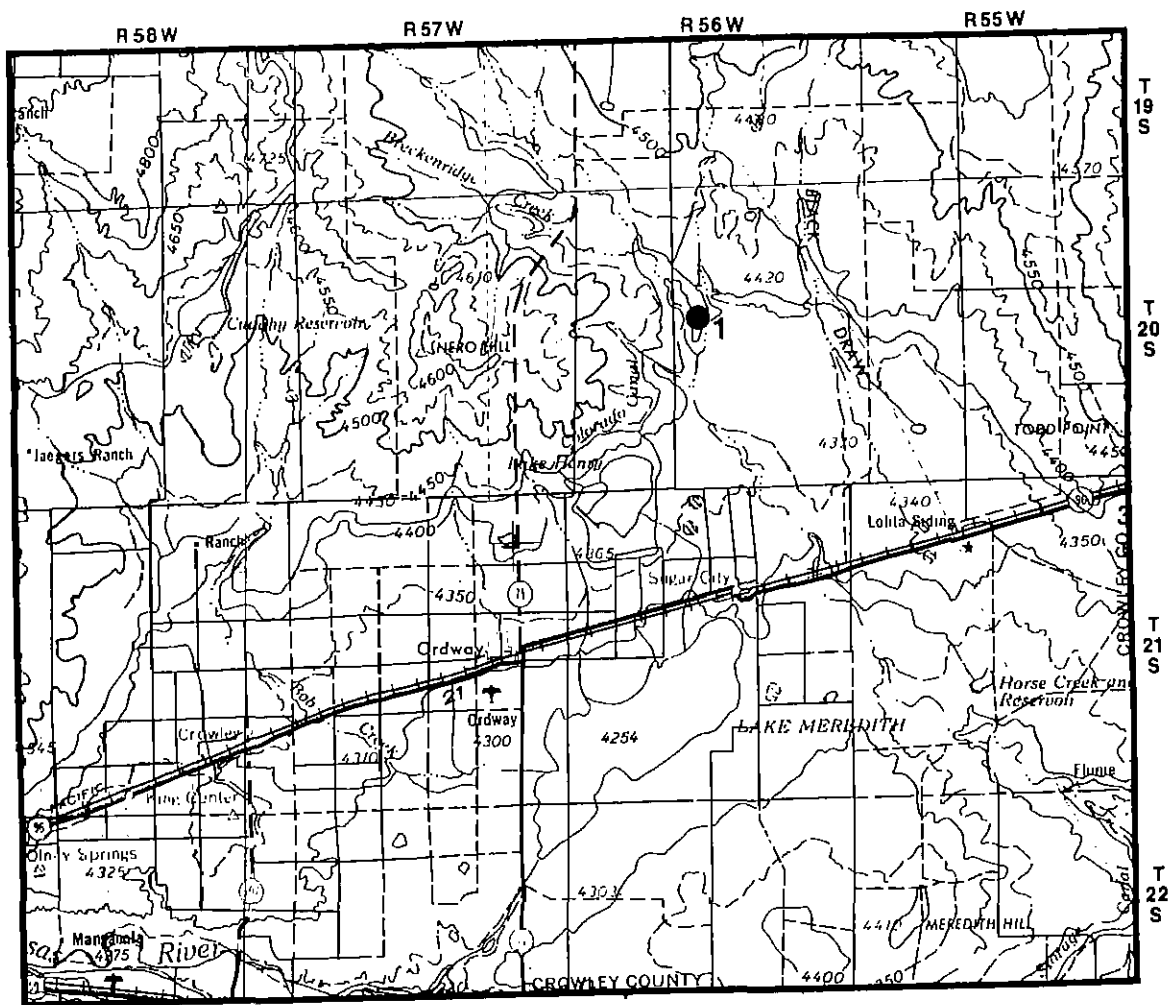
No production has been reported for the county, and potential for uranium resources to be developed in the county is very minor.

Crowley County is entirely surfaced by sedimentary rocks predominantly of the Miocene-Pliocene Ogallala Formation and the Upper Cretaceous Pierre Shale. The southwestern end of the Las Animas Arch extends into the county.

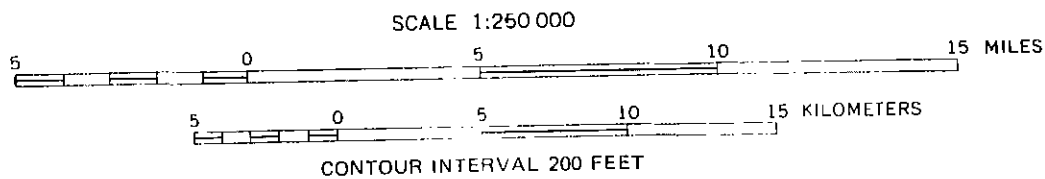
One small uranium occurrence is known within Crowley County. This occurrence is located in the

Sharon Springs Member of the Pierre Shale and is associated with iron carbonate.

The Ogallala Formation has shown higher than average uranium values from water samples taken in the county and in areas adjacent to the county. It could possibly warrant further exploration for uranium. The Sharon Springs Member of the Pierre Shale is known to contain uranium mineralization both in Colorado and adjacent states, and may also be a favorable unit for uranium resources.



Base from U.S.G.S.



### EXPLANATION

- SANDSTONE, ARKOSE, CONGLOMERATE, SILTSTONE  
LAKE SEDIMENT HOST ROCKS FOR OCCURRENCE
- 7 OCCURRENCE NUMBER FROM TEXT

### LOCATION OF INSET



LAMAR  
1° x 2° SHEET

Figure 12. Radioactive mineral occurrences in Crowley County, Colorado.

## CROWLEY COUNTY

### Unnamed No. 1

LOCATION: sec. 16, T. 20 S., R. 56 W.

HOST The host is the Sharon Springs Member of the Pierre Shale. It is a bentonitic clay in a sandy shale with iron carbonate. The Pierre Shale is Middle to Upper Cretaceous.

MNZ .018% eU and .02% U

RMKS Mineralization is shown on plate #36 in the USGS Bulletin listed below. The mineralized area covers both sec. 16 and 17.

DOI 1959

REF Landis, E. R., 1959.

## CUSTER COUNTY

Custer County contains both uranium and thorium occurrences. The Wet Mountain thorium district is one of two in the state, and one of the few in the United States. The potential for reserves to be found in the county are problematic. Thorium is not now a widely sought commodity, and the uranium occurrences are found in an area under study for wilderness designation. Production to date is 8 tons at 0.11 percent  $U_3O_8$ .

Custer County is situated in the south-central part of the state. It is bounded by the Sangre de Cristo Mountains on the west and by the Wet Mountains on the east with the Wet Mountain Valley between the two ranges. The core of the Wet Mountains is composed of Precambrian igneous and metamorphic rocks, overlain on the west by Miocene volcanics and intrusives and on the east by Pennsylvanian to Cretaceous sedimentary rocks. The Wet Mountain Valley is a graben filled with thick Tertiary and Quaternary sediments. Pennsylvanian and Permian sediments crop out over most of the Sangre de Cristo Range. Recent alluvial fans and torrential wash form a broad apron at the base of the Sangre de Cristo Mountains.

There has not been much uranium or thorium production from the county. A total of about 9 tons of ore was shipped, primarily as test shipments. Most of that ore (8 tons) came from the Floyd Watters Ranch and had an average grade of 0.11 percent  $U_3O_8$ . This property produced from a limonite carbonate vein in Precambrian gneiss. Thorium was more abundant than uranium, as were rare earth minerals. This prospect is a typical example of radioactive occurrences in the Wet Mountain district.

Important occurrences within the county fall into two categories: thorium deposits in the Wet Mountains and uranium deposits in the Pennsylvanian-Permian sedimentary beds. The most extensively prospected thorium deposits lie in an area about 12 miles long and 6 miles wide, extending from the Haputa Ranch north-northwest into Fremont County. The larger overall thorium-bearing district, discovered by the U.S. Geological Survey, is about 20 miles long and 10 miles wide. The Tertiary-age thorium deposits occur in northwest-

treaching shear zones associated with barite-sulfide veins that cut such Precambrian complexes as amphibolite, biotite-granite gneiss, metagabbro, migmatite, microcline granite, pegmatites, white granite, and syenite. Premineralization basic dikes occur along the shear zones. The minerals found in the shear zones include thorite, barite, quartz, galena, fluorite, limonite, pyrite, and rare-earth oxides and uranium minerals, but the uranium is minor compared to the thorium. The largest thorium-bearing ore body known is 300 ft long, 26 ft wide, and 400 ft deep, with channel samples that had maximum values of 4.5 percent  $eThO_2$  and 0.002 percent U (Del Rio, 1960, p. 110). The thorite and rare-earths occur as fracture fillings and coatings, and as replacement bodies in sheared rocks. A close association exists with sulfides, barite, and fluorite mineralization, all tentatively classed as Tertiary in age.

In searching for additional thorium deposits of this type, any shear zones in the county should be investigated. The most favorable areas can be recognized by 1) radioactivity, 2) siderite, quartz, and/or barite, 3) basic rocks, often altered completely to limonite, 4) fetid odor of altered rocks, 5) rad-stained rocks, and 6) green or blue amphibolite minerals coating fractures.

Uranium occurrences are primarily located in the Crestone Needles area, around Horn Peak, and all along the Sangre de Cristo Range in bedded deposits of Pennsylvanian and Permian age. Most occur in slightly metamorphosed conglomerates, arkosic sandstones, siltstones, and shales in the Maroon Formation. Where the beds are most radioactive they become very dense and black and contain abundant asphaltic material.

In Custer County, mildly metamorphosed mudstones and asphalt-bearing sandstones of Pennsylvanian and Permian age in the Sangre de Cristos are the host rocks with the most potential. The uranium deposits would probably be of a low-grade, bedded type, either oxidized or unoxidized.

# CUSTER COUNTY

## 18, Airborne Anomaly

LOCATION: NE1/4NE1/4 sec. 12, T. 21 S., R. 69 W.  
 QUAD Wetmore 7 1/2'  
 MAP PUEBLO  
 BKG .01 mr/hr  
 RNG .028 to .03 mr/hr  
 HOST The host is a gray to black shale formation.  
 MNZ There is no visible mineralization, and the radioactivity seems to occur throughout the shale.  
 DOI 1954  
 REF U.S. Bur. of Mines, 1977, (Unpubl.). U.S. A.E.C., 1966, Preliminary Reconnaissance Reports, Custer County, Colorado.

## Anna Lee (Anna Lee Lode)

LOCATION: SW1/4SE1/4 sec. 21, T. 21 S., R. 75 W.  
 LCST UNCERTAIN  
 LCRM Directions given as follows: "West side of Hwy 143, 1 1/4 miles northwest of Junction of Hwy 96". It is probably sec. 21, T. 21 S., R. 71 W.  
 QUAD Mount Tyndall 7 1/2'  
 MAP PUEBLO  
 DVEL There are several shallow prospect pits.  
 BKG .6 mr/hr  
 RNG 2.0 to 400 mr/hr  
 HOST The host rock is Precambrian granite. It is cut by a mineralized Tertiary (?) sheared syenite dike and a thorium-bearing ilmonite vein.  
 STRC The mineralized zone trends N60°W with an average width of about 6 in.  
 MNZ Thorium is the primary mineralization, with ilmonite as the gangue. Assays show .22 to .72% eU, .003 to .005% chem. U, 1.25 to 4.09% eThO2, 3.81% chem. ThO2, and 4.13% rare earths, with Th, Y, La, Ce, Nd, Sm, Pr, Gd and Dy all detected by spectrographic analysis. Manganese accounted for .135% of the sample assayed.  
 DOI 1952  
 REF U.S. Bur. of Mines, 1977, (Unpubl.). U.S. A.E.C., 1966, Preliminary Reconnaissance Reports, Custer County, Colorado.

## Barite Lode 2

LOCATION: SW1/4 sec. 8, T. 22 S., R. 71 W.  
 LCRM Located near the road on the east side.  
 QUAD Mount Tyndall 7 1/2'  
 MAP PUEBLO  
 DVEL There is one 5x8x10 prospect shaft and several smaller prospect pits to the northwest and southeast.  
 BKG 8.0 mr/hr  
 HOST The wall rock is a Precambrian quartz-hornblende gneiss injected by Precambrian granite and cut by a Tertiary vein.  
 STRC The mineralized vein strikes N45°W, and dips 85°W on the east wall and 77°E on the west wall. It is approximately 3,000 ft in length and averages 3.5 ft in width.

MNZ Primary ore minerals are thorite (?), galena, chalcopryrite, and reported silver. Gangue minerals are quartz, barite, ilmonite, and hematite. A channel sample assayed .042% eU and .001% U.  
 DOI 1951  
 REF U.S. A.E.C., 1966, Preliminary Reconnaissance Report, Custer County, Colorado.

## Beck Mountain (Beck Mountain Lode)

LOCATION: sec. 19, T. 24 S., R. 72 W.  
 QUAD Beck Mountain 7 1/2'  
 MAP TRINIDAD  
 PROD Production has been 1 ton in 1955 at an average grade of .10% U3O8, and .24% V2O5, producing 2 lbs of U3O8 and 5 lbs of V2O5. This ore was shipped to the mill at Rifle, Colorado.  
 HOST The deposit is a vein - type in the Permian-Pennsylvanian Maroon Formation.  
 DOI 1971  
 REF U.S. Geol. Survey, 1977, CR18 File. U.S. Bur. of Mines, 1977, (Unpubl.). U.S. A.E.C., 1971, Production Records, Colorado.

## Big Chief 1 (Star Mine)

LOCATION: SW1/4 sec. 6, T. 21 S., R. 70 W.  
 QUAD Mount Tyndall 7 1/2'  
 MAP PUEBLO  
 DVEL There are extensive old barite workings throughout the length of the vein.  
 BKG 1.0 mr/hr  
 RNG To 3.0 mr/hr  
 HOST The host rock is Precambrian injection gneiss cut by a Tertiary barite vein.  
 STRC The vein strikes N10°W and dips 70°E, with about 400 ft exposed for a width of 2 to 4 1/2 ft. In the shaft it is exposed for 50 ft.  
 MNZ The ore minerals are barite, galena, and chalcopryrite, with a gangue of quartz and iron carbonate. A channel sample assayed 0.009% eU and 0.002% U.  
 DOI 1951  
 REF U.S. Bur. of Mines, 1977, (Unpubl.). U.S. A.E.C., 1966, Preliminary Reconnaissance Reports, Custer County, Colorado.

## Bull Domingo Mine

LOCATION: sec. 33, T. 21 S., R. 72 W.  
 LCRM Also see sec. 34, T. 21 S.  
 QUAD Westcliffe 7 1/2'  
 MAP PUEBLO  
 DVEL There are two shafts: 1) 80 ft deep - 135 ft of caved drifts; 2) 1025 ft deep - 6 levels; several hundred ft on -250 ft and -550 ft level accessible; water at -570 ft.  
 BKG .6 to .8 mr/hr  
 RNG 2.2 to 3.4 mr/hr  
 HOST The host is a Precambrian granite pegmatite on the footwall, a schist on the hanging wall, cut by Tertiary veins.  
 STRC The radioactive minerals occur in a shear zone that is not spatially close to the breccia chimney which contained the gold-

# CUSTER COUNTY

silver - lead - zinc ore that was mined before abandonment of the mine. The shear zone trends N60°E with a N80°W dip, and a width of 1 - 4 in.

MNZ The radioactive minerals are not megascopically identifiable. Silver, gold, sphalerite, galena, and uranium minerals were all detected.

DOI 1951

REF U.S. Bur. of Mines, 1977, (Unpubl.). U.S. A.E.C., 1966, Preliminary Reconnaissance Reports, Custer County, Colorado. Cross, Whitman, 1896, Emmons, S. R., 1896

## D. P. Van Nieuhuys Property

LOCATION: sec. 9, T. 22 S., R. 71 W.

QUAD Mount Tyndall 7 1/2'

MAP PUEBLO

MNZ Uranium and thorium have been found.

DOI 1975

REF U.S. Bur. of Mines, 1977, (Unpubl.)

## Damn Fool (see Hopeful 1-3, King Midas 1-25, Macho 1-20, Crastone 1-6, Margaret Group)

LOCATION: sec. 10, T. 24 S., R. 73 W.

LCRM Also sec. 11, 14-18, 20-23 (any production would be listed for those individual properties).

HOST Permian Sangre de Cristo Formation.

MNZ Carnotite.

DOI 1971

REF U.S. Geol. Survey, 1977, CRIB File, U.S. A.E.C., 1971, Production Records, Colorado.

## Darby Extension (Derby Extension)

LOCATION: sec. 7, T. 21 S., R. 71 W.

QUAD Mount Tyndall 7 1/2'

MAP PUEBLO

DVEL There are two shafts, two adits, and numerous prospect pits.

HOST The host is probably Precambrian granites and gneisses.

MNZ Channel and grab samples assayed show between 0.19 and 0.25% eU, between 0.001 to 0.003% U, 1.08 to 1.65% eThO2, 1.39% ThO2 & 0.18% (RE)2O3. Minor quantities of Ce, La, Nd, Sm, Th, and Y were detected by semi-quantitative spectrographic analysis.

DOI 1953

REF U.S. Bur. of Mines, 1977, (Unpubl.). U.S. A.E.C., 1966, Preliminary Reconnaissance Reports, Custer County, Colorado.

## Fair View Lode

LOCATION: sec. 16, T. 23 S., R. 71 W.

LCST UNCERTAIN

LCRM Directions given as follows: "2.5 miles west of Rosita, south 2.5 miles, south through goat farmer's yard, past hematite deposits, northwest of summit of road."

QUAD Rosita 7 1/2'

MAP PUEBLO

DVEL There is one trench.

BKG .02 mr/hr

RNG .35 to 1.0 mr/hr

HOST The host is Precambrian hornblende-plagioclase gneiss and granite gneiss, cut by a Tertiary thorium vein.

MNZ The radioactive minerals were not visible, but are probably minute concentrations of thorite(?). The gangue minerals include quartz, red barite, siderite, and limonite. A grab sample assayed 0.058% eU, less than 0.001% U, and 0.32% eThO2.

DOI 1953

REF U.S. Bur. of Mines, 1977, (Unpubl.). U.S. A.E.C., 1966, Preliminary Reconnaissance Reports, Custer County, Colorado.

## Floyd Watters (Watter's Ranch, Mundy Claim, Lewis C. Mundy, Walters Ranch)

LOCATION: SW1/4 sec. 33, T. 21 S., R. 70 W.

LCRM Also in sec. 32.

QUAD Hardscrabble Mountain 7 1/2'

MAP PUEBLO

DVEL The area was originally prospected for lead. A trench following the vein was opened after radioactivity was discovered.

PROD 8 tons of ore at a grade of 0.11% U3O8 were shipped to the U.S. A.E.C. ore buying station at Bluewater, NM in July 1953. The ore yielded 17 lbs U3O8 and 8 lbs V2O5 (0.05% V2O5).

BKG 50 cps

RNG To 3500 cps

HOST A Tertiary siliceous carbonate vein cutting Precambrian granite gneiss and hornblende gneiss contains the mineralization. It is a purple-red color, possibly due to manganese or fluorite. The vein minerals have replaced a fine-grained biotite dike (lamprophyre). The calcareous portion of the vein is the only radioactive part, and it occurs in discontinuous lenses.

STRC The vein strikes N70°W, dips vertically, and is from 6 to 24 in. thick. Radiometric examination of the projected extension of the deposit indicates that its lateral extent is only about 150 ft.

ALT Altered limonitic clay material, about one inch thick, lies on either side of the vein.

MNZ The radioactive mineral has not been identified. The vein contains abundant calcite and limonite with hematite, radium, and rare earths reportedly present by assay. Assays show from 0.10% to 0.32% U3O8. Other elements looked for and found were V2O5 (0.05% - 0.19%), ThO2 (0.54%), six rare earths at 0.10% each and radium (1.43 mg/ton).

RMKS One sample submitted to Anaconda Copper Mining Company at Grants, New Mexico in 1953 indicated that the ore from this deposit was not amenable to standard milling practice at Grants.

DOI 1953

REF U.S. A.E.C., 1977, Production Records, Colorado. U.S. Bur. of Mines, 1977, (Unpubl.). U.S. Geol. Survey, 1977, CRIB File. U.S. A.E.C., 1966, Preliminary Reconnaissance Reports, Custer County, Colorado. Brown, L. J., & Malan, R. C., 1954. Troyer, M. L., McKay, E. J., Solster, P. E., & Wallace, S. R., 1953.

## CUSTER COUNTY

### Franklin Mine (Frankland Mine)

LOCATION: sec. 32, T. 21 S., R. 70W.  
 QUAD Hardscrabble Mountain 7 1/2'  
 MAP PUEBLO  
 DVEL There is one shaft, with 300 ft of accessible adit, and an unknown length of inaccessible adits. There are also 2 caved shafts and several prospect pits.  
 BKG .6 mr/hr  
 RNG To 6.0 mr/hr  
 HOST The host is Precambrian granite and gneiss cut by a Tertiary vein.  
 STRC Mineralization occurs in a shear zone striking N65°W for 300 ft, dipping 75°NE, with a thickness of more than 50 ft and a width of 5-10 ft.  
 ALT In the shear zone, there has been abundant alteration to clay minerals.  
 MNZ Galena and thorite(?) are the ore minerals, in a gangue of barite, quartz (some amethyst), siderite, ilmonite, hematite, and minor amounts of copper minerals. Samples assayed ranged from 0.025% to 0.031% eU, 0.13% to 0.17% eThO2, and contained 0.002% U3O8.  
 DOI 1952  
 REF U.S. Bur. of Mines, 1977, (Unpubl.). U.S. A.E.C., 1966, Preliminary Reconnaissance Reports, Custer County, Colorado.

### G. W. and Antrim Claims

LOCATION: sec. 9, T. 22 S., R. 71 W.  
 LCRM Also noted in sec. 10.  
 QUAD Mt. Tyndall 7 1/2'  
 MAP PUEBLO  
 DVEL At least 90 ft of trenching and 35 ft of cross cutting were completed under a DMEA loan.  
 HOST The host is Precambrian schists and gneiss.  
 STRC The host rock is cut by Tertiary fissure veins.  
 MNZ There is widespread radioactivity of low to moderate intensity. Channel samples range from 0.023% to 0.112% eU3O8, from 0.005% to 0.012% U3O8, and from 0.11% to 0.49% ThO2.  
 DOI 1954  
 REF U.S. Bur. of Mines, 1977, (Unpubl.) Singewald, Q. D., Christman, R. A., and Brock, M. R., 1953. Christman, R. A.; and others, 1953.

### Gold Crown 2

LOCATION: NW1/4 sec. 30, T. 23 S., R. 69 W.  
 QUAD Deer Peak 7 1/2'  
 MAP PUEBLO  
 DVEL There is one caved, inclined shaft and one 7 ft timbered prospect pit.  
 BKG .02 mr/hr  
 RNG .1 to .4 mr/hr  
 HOST The host is a series of Precambrian metamorphic rocks, including hornblende-plagioclase gneiss cut by Tertiary thorium vein.  
 STRC The vein strikes between N75°E and N55°W for more than 500 ft.  
 MNZ The primary radioactive ore minerals are not megascopically visible, but are probably minute coatings of thorite(?). Gangue minerals

Include barite, red feldspar, quartz, and iron oxides. A grab sample assayed 0.061% eU and less than 0.001% U, with 0.34% eThO2.  
 RMKS Also in the same area are the Mt. Day Lode Claim, Hidden Treasury Claim, and Gold Crown No. 1 Claim.  
 DOI 1953  
 REF U.S. Bur. of Mines, 1977, (Unpubl.). U.S. A.E.C., 1966, Preliminary Reconnaissance Reports, Custer County, Colorado.

### Hardin Claim Group

LOCATION: sec. 30, T. 23 S., R. 69W.  
 QUAD Deer Peak 7 1/2'  
 MAP PUEBLO  
 DVEL There has been underground work done.  
 MNZ Uranium and vanadium were detected.  
 DOI 1975  
 REF U.S. Bur. of Mines, 1977, (Unpubl.).

### Horn Peak Claims (Little Horn Peak Claims, Reese Claims, Austin Claims)

LOCATION: sec. 19, T. 23 S., R. 73 W.  
 LCST UNSURVEYED  
 LCRM Also see sec. 30.  
 QUAD Horn Peak 7 1/2'  
 MAP PUEBLO  
 PROD A 50 lb sample shipped yielded 95% recovery of 1.70% U3O8, 6.90% CaCO3, and a U3O8:V2O5 ratio of 1:1. Average grade is 0.70% U3O8.  
 BKG 500 to 800 cpm  
 RNG To 35,000 cpm  
 HOST The host is Permian Sangre de Cristo Formation. It is a fine- to medium-grained, micaceous quartz sandstone. It ranges in color from green to grayish green to red, and where it is radioactive it becomes very dense, and black. The cement is primarily CaCO3, with some silica. Crinoids and brachiopods can be found in the beds.  
 STRC An anticline has uplifted the area. Its axis runs approximately northwest-southeast. A fault cuts the axis, producing jointed, slickensided bedding planes. The mineralized zone can be traced for more than 1,000 ft along the dip.  
 MNZ The ore-bearing units are confined to the upper and lower bedding planes. A black material (probably one of the primary uranium minerals) occurs between sand grains. Only minor occurrences of yellow-green, non-fluorescent secondary minerals occur. Sample sent for analysis ranges from 0.55% to 1.70% U3O8. Grab samples in the field register 0.4 to 1.10 mr/hr.  
 DOI 1956  
 REF U.S. Bur. of Mines, 1977, (Unpubl.). U.S. Geol. Survey, 1977, CRIB File. U.S. A.E.C., 1966, Preliminary Reconnaissance Reports, Custer County, Colorado.

### John Spalding

LOCATION: NE1/4NE1/4 sec. 13, T. 21 S., R. 71 W.  
 QUAD Mount Tyndall 7 1/2'  
 MAP PUEBLO

## CUSTER COUNTY

**DVEL** There is one forty ft shaft and three prospect pits.  
**BKG** .9 mr/hr  
**RNG** To 2.8 mr/hr  
**HOST** The deposit is in a quartz-barite mesothermal vein of unknown age, cutting microcline granite and injection gneiss. The wallrocks strike N45°E and dip 75°W.  
**STRC** The vein is reported to be 0.5 mile long, but was only observed for 150 ft. Its width is 18-24 in. and it cross cuts the foliation at a strike of N25°W, dipping 85°W.  
**MNZ** The primary minerals are barite, some galena and a black unknown substance. Gangue minerals include quartz, serpentine(?) chlorite(?), and hematite. The radioactive minerals appear to have been the last ones deposited. A grab sample assayed 0.008% eU, and 0.002% chemical U.  
**DOI** 1951  
**REF** U.S. Bur. of Mines, 1977, (Unpubl.). U.S. A.E.C., 1966, Preliminary Reconnaissance Reports, Custer County, Colorado.

### King Midas and Bonanza Claims (King Midas No. 8)

**LOCATION:** sec. 17, T. 24 S., R. 73 W.  
**LORM** Sec. 19, T. 23 S., R. 73 W., sec. 1, T. 45 N., R. 11 E.  
**QUAD** Horn Peak 7 1/2'  
**MAP** TRINIDAD  
**PROD** According to U.S. A.E.C. Records, in 1966, 0.22 tons of ore averaging 0.39% U308 and containing 2 lbs of U308 was produced from the King Midas No. 7 Claim.  
**BKG** Aver. .15 mr/hr  
**RNG** To 2.0 mr/hr  
**HOST** The host is the Permian Sangre de Cristo Formation.  
**MNZ** In slightly metamorphosed conglomerates, arkosic sandstones and shales - coiffinite and uranophane - richest nearest base of bed from 6 in. to 18 in. - Carbon associated with ore. One sample submitted for analysis assayed 1.17% U308. Some carnotite and tyuyamunite were detected.  
**DOI** 1977  
**REF** ARCO, 4/29/77, Personal Communication. U.S. Geol. Survey, 1977, CRIB File. U.S. Bur. of Mines, 1977, (Unpubl.) U.S. A.E.C., 1971, Production Records, Colorado.

### Lee Jones Ranch

**LOCATION:** SE1/4 sec. 34, T. 21 S., R. 71 W.  
**QUAD** Mount Tyndall 7 1/2'  
**MAP** PUEBLO  
**DVEL** There is one three ft prospect pit.  
**BKG** .90 mr/hr  
**RNG** To 11.0 mr/hr  
**HOST** The prospect pit is in microcline granite.  
**MNZ** No mineralization was visible except some iron minerals. A grab sample assayed 0.089% eU and 0.058% U.  
**DOI** 1951  
**REF** U.S. Bur. of Mines, 1977, (Unpubl.). U.S. A.E.C., 1966, Preliminary Reconnaissance Reports, Custer County, Colorado.

### Lucky Find (Lucky Strike)

**LOCATION:** NW1/4 sec. 33, T. 21 S., R. 71 W.  
**QUAD** Mount Tyndall 7 1/2'  
**MAP** PUEBLO  
**DVEL** Two 15 ft prospect shafts and several smaller pits are present on the property.  
**BKG** 1.0 mr/hr  
**RNG** 4.0 to 36.0 mr/hr  
**HOST** The host is an injection gneiss with pre - mineralization lamprophyre paralleling the vein. The mineralization lies in a Tertiary(?) barite vein.  
**STRC** The vein strikes roughly N70°W for 1,500 ft, dips vertically and is two to seven ft wide.  
**MNZ** Thorite, barite and chalcopryite in a quartz gangue are the ore minerals present. Samples assayed between 0.004% and 0.013% eU308 and 0.001% U308.  
**DOI** 1951  
**REF** U.S. Bur. of Mines, 1977, (Unpubl.). U.S. A.E.C., 1966, Preliminary Reconnaissance Reports, Custer County, Colorado.

### Mystery Lode

**LOCATION:** SE1/4SW1/4 sec. 26, T. 21 S., R. 71 W.  
**QUAD** Mount Tyndall 7 1/2'  
**MAP** PUEBLO  
**BKG** 5.0 mr/hr  
**RNG** 12.0 to 20.0 mr/hr  
**HOST** The wall rock is a Precambrian injection gneiss with foliation striking N60°E and dipping 85°NW.  
**STRC** A vein crosscuts the gneiss with a six in. shear zone on the east side. It strikes N15°W and dips 60°W, with a width of one to two ft.  
**MNZ** Primary ore minerals include barite, sphalerite, galena, chalcopryite and rhodochrosite. Gangue minerals are milky and smoky quartz. Grab samples from the dump assayed 0.036% to 0.097% eU, but only 0.001% chemical U.  
**DOI** 1951  
**REF** U.S. A.E.C., 1966, Preliminary Reconnaissance Reports, Custer County, Colorado.

### Nightengale Claim (Atomic Mountain Group, Nightingale, Thorium Mountain)

**LOCATION:** SW1/4SW1/4 sec. 15, T. 22 S., R. 71 W.  
**LORM** The CRIB File lists this in sec. 21 and 22.  
**QUAD** Mount Tyndall 7 1/2', Rosita 7 1/2'  
**MAP** PUEBLO  
**DVEL** There is one 6x8x6 prospect pit and several smaller pits.  
**BKG** .90 mr/hr  
**RNG** To 4.0 mr/hr  
**HOST** The host is a Precambrian amphibolitic granite gneiss, gabbro, migmatite and pegmatite cut by Tertiary(?) barite veins in a shear zone. The exposures are very poor.  
**STRC** The vein strikes N45°W for at least 500 ft, dips vertically, and is five ft wide.  
**MNZ** Thorite, galena, fluorite, and pyrite are present in a barite and quartz vein. One sample assayed 0.049% eU308 and 0.001% U308. Rare earths are present.



# CUSTER COUNTY

RMKS Several claims are in the same area. They include Mystery Claim, Lucky Find, Starbuck, General-like and Thorium Mountain Claims.

DOI 1972

REF U.S. Bur. of Mines, 1977, (Unpubl.). U.S. Geol. Survey, 1977, CRIB File. U.S. A.E.C., 1966, Preliminary Reconnaissance Reports, Custer County, Colorado. Christman, R. A., and others, 1953.

## Pennie Poker

LOCATION: NE1/4 sec. 7, T. 21 S., R. 71 W.

QUAD Mount Tyndall 7 1/2'

MAP PUEBLO

DVEL There is a 25 ft shaft and a tunnel. The shaft is cut in the gouge and shear zone.

BKG 5.0 mr/hr

RNG 30.0 mr/hr

HOST The deposit lies in a mesothermal vein of unknown age, cutting an injection gneiss that strikes N20°W and dips 80°N for a distance of 1,800 ft.

STRC The deposit is controlled by a 4.5 ft shear zone with 8 - 12 in. gouge on the footwall.

MNZ Galena and the unknown radioactive substance are the primary ore minerals. Quartz, hematite-ironite, barite, and iron carbonate are the secondary minerals. A grab sample from the dump assayed 0.064% eU and 0.001% chemical uranium.

DOI 1951

REF U.S. Bur. of Mines, 1977, (Unpubl.). U.S. A.E.C., 1966, Preliminary Reconnaissance Reports, Custer County, Colorado.

## Rare Earth Special 1, 2, 4

LOCATION: sec. 4, T. 22 S., R. 71 W.

LCRM Also listed in sec. 3 by U.S. Bur. of Mines.

QUAD Mount Tyndall 7 1/2'

MAP PUEBLO

DVEL There is one small shaft, and several prospect pits.

BKG .02 mr/hr

RNG 2.5 av., .1-.7 mr/hr

HOST The host is Precambrian microcline granite and hornblende-plagioclase gneiss trending N85°E and dipping 45°NW, cut by a Precambrian(?) thorium vein.

STRC The ore is in a three foot andesite dike trending N10°W filling a shear zone.

ALT The andesite dike is completely altered to a pisolitic-like rock.

MNZ Ore minerals include ilmonite, calcite, and iron oxides, and possibly some barite. Samples assayed ranged from 0.078% to 0.20% eU, 0.002% to 0.005% U, and 0.43% to 1.09% eThO2. The gangue is a red feldspar and quartz combination.

RMKS The claims also lie in sec. 3, T. 22 S., R. 71 W.

DOI 1953

REF U.S. Bur. of Mines, 1977, (Unpubl.). U.S. A.E.C., 1966, Preliminary Reconnaissance Reports, Custer County, Colorado. Christman, R. A., Brock, M. R., Pearson, R. C., and Singewald, Q. D., 1954.

## Sewell Ranch

LOCATION: N1/2 sec. 4, T. 22 S., R. 70 W.

QUAD Hardscrabble Mountin 7 1/2'

MAP PUEBLO

DVEL Two adits, one shaft, and several prospect pits were dug.

BKG .6 mr/hr

RNG To 2.4 mr/hr

HOST The occurrence is in a Tertiary thorium vein cutting Precambrian granite and hornblende gneiss.

STRC The mineralized vein strikes N45°W, and dips 80°E. It is roughly 1,000 ft long, averages 8 ft wide, and is at least 40 ft deep.

MNZ Thorite and a trace of galena could be visually identified, with quartz, barite, and ilmonite forming the gangue. The thorite appears to be more recent than the quartz and barite. Assays show eU ranging from 0.010% to 0.11%, chemical U ranging from 0.001% to 0.002%, eThO2 ranging from 0.051% to 0.516%, and chemical ThO2 ranging from 0.00 to 0.02%. Rare earths comprise from 0.03% to 0.06% of the vein, with Th, Y, La, Ce and Nd all present. Manganese account for 0.309% to 0.570% of the vein.

DOI 1952

REF U.S. Bur. of Mines, 1977, (Unpubl.). U.S. A.E.C., 1966, Preliminary Reconnaissance Reports, Custer County, Colorado.

## Sunshine Valley Lode

LOCATION: sec. 32, T. 22 S., R. 71 W.

LCST UNCERTAIN

LCRM Also see sec. 33. This should probably be T. 21 S., R. 71 W., sec. 32 or 33, because the deposit is described as being "north of Brush Hollow road".

QUAD Mount Tyndall 7 1/2' or Rosita 7 1/2'

MAP PUEBLO

DVEL There is one prospect pit.

BKG .02 mr/hr

RNG .15 to 1.8 mr/hr

HOST The host consists of metamorphic Precambrian gneisses, cut by Tertiary thorium veins.

MNZ Radioactive minerals are not visible, but are probably disseminated thorite primarily. The gangue is composed of quartz, red barite, and ilmonite.

DOI 1953

REF U.S. A.E.C., 1966, Preliminary Reconnaissance Reports, Custer County, Colorado. Christman, R. A., Brock, M. R., Pearson, R. C., and Singewald, Q. D., 1954.

## Swartz Ranch (Unnamed)

LOCATION: SW1/4 sec. 9, T. 22 S., R. 71 W.

LCRM The deposit is north of the Schwartz ranch buildings down Tyndall Gulch.

QUAD Mount Tyndall 7 1/2'

MAP PUEBLO

DVEL There are two prospect pits.

BKG .6 mr/hr.

RNG To 24.0 mr/hr

## CUSTER COUNTY

**HOST** The host is Precambrian metasediments and minor granite cut by Tertiary(?) veins. The mineralized area is in a silicified dike that fills the shear zone.  
**STRC** The shear zone (and dike) strikes N28°W for a length of 1,800 ft.  
**MNZ** The ore mineral is thorite(?), with a gangue of silicified dike rock, limonite, and hematite. Samples assayed between 0.40% and 1.2% eU, 0.005% U, and between 1.71% and 6.51% ThO<sub>2</sub>.  
**DOI** 1952  
**REF** U.S. A.E.C., 1966, Preliminary Reconnaissance Reports, Custer County, Colorado.

### Thorite Mother Lode 1, 4

**LOCATION:** sec. 34, T. 21 S., R. 71 W.  
**QUAD** Mount Tyndall 7 1/2'  
**MAP** PUEBLO  
**DVEL** There are several prospect pits.  
**BKG** .02 mr/hr  
**RNG** To 1.5 mr/hr  
**HOST** The host is a series of Precambrian metamorphics cut by a Tertiary thorium vein.  
**ALT** The vein appears to be a replacement of a syenite dike.  
**MNZ** No visible radioactive minerals are present, but probably occur as disseminated thorite(?). Barite, red feldspar, and iron oxides make up the gangue.  
**DOI** 1953  
**REF** U.S. A.E.C., 1966, Preliminary Reconnaissance Reports, Custer County, Colorado. Christman, R. A., Brock, M. R., Pearson, R. C., and Singewald, Q. D., 1954. Survey TEI-354.

## DELTA COUNTY

There has been no production of uranium from Delta County, and the potential for reserves within the county is small.

The county is largely underlain by Cretaceous and Tertiary sediments. A large portion is covered by three formations, the Upper Cretaceous Mancos Shale and Mesaverde Group, and the Tertiary Wasatch Formation. On the northern edge of the county volcanic rocks cover Grand Mesa.

Six of the eight occurrences in the county are radioactive springs. The other two occurrences are of the sandstone type, but the validity of one is

questionable. One reason for the low uranium potential is that most spring occurrences do not indicate ore bodies. Secondly, the Upper Cretaceous and Tertiary rock units in the county are not considered favorable hosts for uranium. Although host rocks that characterize the Uravan mineral belt are found in the subsurface of Delta County, the projected trends from that belt do not point to Delta County. One final point, however, is that some springs in the county are radioactive due to uranium. Most radioactive springs are anomalous due to radium and radon. This difference may indicate possible uranium mineralization at depth in the area of the springs.

## DELTA COUNTY

### Austin Springs

LOCATION: NW1/4SE1/4SE1/4 sec. 31, T. 14 S., R. 94 W.  
 LCRM NW1/4NE1/4NE1/4 sec. 6, T. 15 S., R. 94 W. - Southern Spring.  
 QUAD Orchard City 7 1/2'  
 MAP MONTROSE  
 HOST Radioactive spring deposit in Dakota Sandstone.  
 STRC N-S Fault with Dakota on eastern upthrown side.  
 MNZ 60 ppm, (eU).  
 RMKS Reportedly not as radioactive as springs to east.  
 DOI 1976  
 REF Cadigan, R. A., and others, 1976.

### Colonel Chinn Artesian Well

LOCATION: SW1/4NE1/4NE1/4 sec. 14, T. 14 S., R. 92 W.  
 QUAD Hotchkiss 7 1/2'  
 MAP MONTROSE  
 RMKS Cased oil test well filled with warm water (104°F) near farm house. Not anomalous in comparison to other water. However, the radium/uranium disequilibrium is high. Radium is enriched by a factor of 880 times.  
 DOI 1976  
 REF Cadigan, R. A., and others, 1976.

### Doughty Spring

LOCATION: NE1/4NW1/4NW1/4 sec. 11, T. 15 S., R. 93 W.  
 LCRM Small spring that drains into Bathtub Spring.  
 QUAD Lazear 7 1/2' and Hotchkiss 7 1/2'  
 MAP MONTROSE  
 HOST Radioactive spring deposit in Dakota Sandstone.  
 STRC Bedding planes (?)  
 MNZ Maximum of .55% (eU308). Probably due to radium. This measurement taken on travertine deposit around spring.  
 RMKS Area contains at least 7 springs over a length of 50 ft. These include Thorium, Drinking, Bathtub, Alum, and Black Springs, among others.  
 DOI 1976  
 REF Cadigan, R. A., and others, 1976.

### Geysers (Lucky Strike Claims 1 - 30)

LOCATION: SE1/4NW1/4 sec. 5, T. 15 S., R. 94 W.  
 LCRM South terrace of Gunnison River.  
 QUAD Orchard City 7 1/2'  
 MAP MONTROSE  
 HOST Radioactive spring deposits.  
 MNZ 90 ppm (eU).  
 RMKS Travertine is a bright rust color.  
 DOI 1976  
 REF Cadigan, R. A., and others, 1976. U.S. A.E.C., Preliminary Reconnaissance Reports, Delta County, Colorado (open-filed).

### Hotchkiss National Fish Hatchery

LOCATION: NE1/4SW1/4SE1/4 sec. 3, T. 15 S., R. 93 W.  
 LCRM Spring in old adit.  
 QUAD Lazear 7 1/2'  
 MAP MONTROSE  
 HOST Radioactive spring deposit in Cretaceous Dakota Sandstone.  
 MNZ 2500 ppm (eU).  
 DOI 1976  
 REF Cadigan, R. A., and others, 1976.

### L. B. Wyman Property

LOCATION: sec. 15, T. 51 N., R. 13 W.  
 LCRM "11 miles west of Delta on U.S. Highway 50, then 3.8 miles south to Gunnison River bridge, then 8 miles south of bridge up Escalante Canyon."  
 QUAD Good Point 7 1/2'  
 MAP MOAB  
 HOST Dinosaur bone in sandstone lens and mud galls in a basal conglomeratic lens of the Salt Wash Member of the Morrison Formation of Jurassic age.  
 STRC Channels.  
 MNZ Carnotita? Mineralized zone estimated to 5 ft by 10 ft.  
 DOI 1954  
 REF U.S. A.E.C., Preliminary Reconnaissance Reports, Delta County, Colorado (open-filed).

### Little U Claims

LOCATION:  
 LCST UNLOCATABLE  
 LCRM Original directions to occurrence are as follows: "Approximately 15 miles due east of Delta, off Ute trail up Gunnison Canyon, 1/2 mile from Montrose County line".  
 DVEL Claim owners were given as follows: E. L. Ensley, J. C. Ensley, Dave Bulligh, Kenneth Cole.  
 MNZ 1 sample described as float and submitted by owner had a value of .15% U308.  
 RMKS Location was not visited and all information is from owners. Only way to verify location would be to check Delta County Claim records.  
 DOI 1954  
 REF U.S. A.E.C., Preliminary Reconnaissance Report, Delta County, Colorado (open-filed).

### Sulfur Gulch

LOCATION: NE1/4SW1/4SE1/4 sec. 36, T. 14 S., R. 94 W.  
 QUAD Lazear 7 1/2'  
 MAP MONTROSE  
 HOST Radioactive Spring Deposit in Dakota Sandstone.  
 STRC Joint faces.  
 MNZ 60 ppm (eU).  
 RMKS Travertine accumulated as a cement of old gravel beds. Abundant Sulfur has resulted in rocks being quarried for soil conditioner.  
 DOI 1976  
 REF Cadigan, R. A., and others, 1976.

## DENVER COUNTY

Although no occurrences of uranium have been reported in the county, a slight possibility exists that occurrences may be found in the subsurface. However, the probability that they would ever be exploited is extremely small.

## DOLORES COUNTY

Production from the county has not been great. About 285 tons of uranium/vanadium ore were mined in the county as of 1971. Nearly half of that came from the South Barlow Mine, which produced ore from the Jurassic Entrada Sandstone. Several of the smaller mines were listed with production from the Jurassic Morrison Formation. Potential for reserves to be found in the county is favorable even though the county lies south of the Uravan belt.

Dolores County is in the southwestern part of the state in typical sedimentary terrane of the Colorado Plateau. The western part of the county is dominated by plateaus and mesas capped by Cretaceous Dakota Sandstone, with Pennsylvanian to Jurassic sediments exposed in the canyons between the mesas. The central part of the county is largely covered by the Upper Cretaceous Mancos Shale and the Mesaverde Group, with older formations exposed along the flanks of the drainages. The Rico Uplift and its associated features dominate the structural picture in the eastern part of the

county. The uplift was caused by laccolithic and sheet intrusion of magmas into the sediments and by vertical uplift. The Dolores River and its tributaries deeply dissect the uplifted rocks.

The two most important occurrences in the county are the Blue Eagle Mine and the South Barlow Mine. The Blue Eagle Mine produced ore from the Salt Wash Member of the Jurassic Morrison Formation. The South Barlow Mine produced from the Jurassic Entrada Sandstone. These mines, as well as the others, lie primarily in two areas, near Duntan, and along the Dolores River.

The county lies southeast of the primary uranium-producing areas of the Colorado Plateau, but carnotite deposits are found in many exposures of the Jurassic Morrison and Entrada Formations. Areas with potential for further reserves include exposures of these two formations, especially along the course of the Dolores River and along the county's northwestern borders where mining is still taking place.

# DOLORES COUNTY

## Arrow Head (Arrowhead Group)

LOCATION: sec. 18, T. 41 N., R. 17 W.  
 QUAD Secret Canyon 7 1/2'  
 MAP CORTEZ  
 PROD By 1971, 25 tons had been mined at a grade of 0.16% U3O8 and 2.62% V2O5, producing 78 lbs of U3O8 and 1,310 lbs of V2O5.  
 HOST The host is the Salt Wash Member of the Jurassic Morrison Formation.  
 MNZ Uranium mineralization with carnotite and tyuyamunite recognized.  
 DOI 1972  
 REF U.S. Geol. Survey, 1977, CRIB File. U.S. A.E.C., 1971, Production Records, Colorado. Shawe, D. R. and others, 1961, U.S. Geol. Survey Map MF-203.

## Barlow Group (Barlow Creek)

LOCATION: sec. 10, T. 40 N., R. 10 W.  
 QUAD Hermosa Peak 7 1/2'  
 MAP DURANGO  
 PROD By 1971, 38 tons of ore had been mined at grades of 0.07% U3O8 and 1.94% V2O5, producing 56 lbs of U3O8 and 1,477 lbs of V2O5.  
 HOST The host is the Jurassic Entrada Sandstone.  
 MNZ The principal mineral identified is roscoelite.  
 RMKS The outcrop of the Entrada Sandstone is reported to be continuous from the Graysill Mine.  
 DOI 1967  
 REF U.S. A.E.C., 1971, Production Records, Colorado. Finch, W. L., 1967, U.S. Geol. Survey Prof. Paper 538, p.14.

## Black Hat (Legion Group)

LOCATION:  
 LCST UNCERTAIN  
 PROD By 1971, there were 10 tons of ore mined at grades of 0.32% U3O8 and 0.65% V2O5, producing 65 lbs of U3O8 and 131 lbs of V2O5.  
 HOST Jurassic Morrison Formation, Salt Wash Member.  
 MNZ Uraninite and/or coffinite were recognized.  
 DOI 1971  
 REF U.S. A.E.C., 1971, Production Records, Colorado.

## Blue Eagle 1

LOCATION: sec. 7, T. 38 N., R. 19 W.  
 PROD There had been 62 tons mined by 1971, at grades of 0.18% U3O8 and 2.36% V2O5, producing 226 lbs of U3O8 and 2,929 lbs of V2O5.  
 HOST The host is the Jurassic Morrison Formation, Salt Wash Member.  
 MNZ Mineralization is of the carnotite - tyuyamunite type.  
 DOI 1971  
 REF U.S. A.E.C., 1971, Production Records, Colorado.

## Blue Eagle Mine

LOCATION: sec. 36, T. 41 N., R. 11 W.

QUAD Dolores Peak 7 1/2'  
 MAP CORTEZ  
 DVEL There had been 62 tons mined by 1971, at grades of 0.18% U3O8 and 2.36% V2O5, producing 226 lbs of U3O8 and 2,929 lbs of V2O5.  
 HOST The host is the Jurassic Morrison Formation.  
 MNZ Carnotite - tyuyamunite, uranium and vanadium are present.  
 DOI 1975  
 REF U.S. Bur. of Mines, 1977, (Unpubl.). U.S. A.E.C., 1971, Production Records, Colorado.

## Broken Thumb 2 (Bottle & Jug)

LOCATION: W1/2 sec. 19, T. 41 N., R. 17 W.  
 LCRM U.S. A.E.C. Production Records also show E1/2 sec. 4, T. 41 N., R. 78 W.  
 QUAD Secret Canyon 7 1/2'  
 MAP CORTEZ  
 DVEL Surface and underground workings are present.  
 PROD As of 1971, there had been 13 tons of ore mined at grades of 0.20% U3O8 and 2.48% V2O5, producing 53 lbs of U3O8 and 644 lbs of V2O5.  
 HOST The deposit occurs in the Salt Wash Member of the Jurassic Morrison Formation.  
 MNZ Uranium mineralization with carnotite and tyuyamunite identified.  
 DOI 1972  
 REF U.S. Geol. Survey, 1977, CRIB File. U.S. Bur. of Mines, 1977, (Unpubl.). U.S. A.E.C., 1971, Production Records, Colorado. Shawe, D. R. and others, 1961, U.S. Geol. Survey Map MF-203.

## Rainy Day (Pack Rat)

LOCATION: sec. 13, T. 41 N., R. 18 W.  
 LCRM The deposit also extends to sec. 14, 22, and 23. The main production was from sec. 22 (Rainy Day). It lies on the northwest side of the Dolores River.  
 QUAD Secret Canyon 7 1/2'  
 MAP CORTEZ  
 DVEL There were underground workings.  
 PROD As of 1971, the Rainy Day yielded 22 tons of ore at grades of 0.13% U3O8 and 3.09% V2O5, producing 55 lbs of U3O8 and 1,360 lbs of V2O5.  
 HOST The deposit lies in a vein cutting the Salt Wash Member of the Jurassic Morrison Formation.  
 MNZ Uranium and vanadium mineralization are present.  
 DOI 1972  
 REF U.S. Geol. Survey, 1977, CRIB File. U.S. Bur. of Mines, 1977, (Unpubl.). U.S. A.E.C., 1971, Production Records, Colorado. Shawe, D. R. and others, 1961, U.S. Geol. Survey Map MF-203.

Rico Argentine Mine (Rico Argentine Mining Company, Blaine Tunnel, Argentine Tunnel, Black Hawk Level, Mountain Springs Mine, Revenue Mine, Atlantic Cable Mine, Yellow Jacket Mine, Falcon Mine, Pro Patria Mine, Shamrock and Atlantic Cable Mine, Silver Swan Mine)

LOCATION: sec. 24, T. 40 N., R. 11 W.  
 LCST UNSURVEYED

## DOLORES COUNTY

LCRM About 3 miles north of Rico on east side of Dolores River.  
QUAD Rico 7 1/2'  
MAP CORTEZ  
DVEL The mine has extensive underground workings, including the Blaine Tunnel, Argentine Tunnel, and Black Hawk level.  
BKG .02 to .04 mr/hr  
RNG .1, .15, to .2 mr/hr  
HOST The workings at the Blaine Tunnel are in the Pennsylvanian Hermosa Formation.  
STRC The tunnel is cut by the Black Hawk vein, which strikes ESE, and dips nearly vertically.  
MNZ The radioactivity is associated with a pyrite-quartz aggregate, massive in character, in a sandstone adjacent to the Black Hawk vein in the Blaine tunnel. Other minerals present include galena, sphalerite, chalcopryite, silver, gold, secondary copper minerals, and pyrite crystals. A grab sample collected from the floor to the back in the area of highest radioactivity of the Blaine Tunnel assayed 0.017% eU and 0.009% U. This sample was taken in an area approximately 1,750 ft in from the portal.  
DOI 1953  
REF U.S. Bur. of Mines, 1977, (Unpubl.). U.S. A.E.C., 1966, Preliminary Reconnaissance Reports, Dolores County, Colorado (Two reports, Blaine Tunnel and Rico Argentine mine).

### Silver Swan

LOCATION: sec. 2, T. 39 N., R. 11 W.  
QUAD Rico 7 1/2'  
MAP CORTEZ  
DVEL Mining was carried out from underground workings, no record of uranium production.  
HOST The host is probably Jurassic Entrada Sandstone.  
MNZ Silver, gold, zinc and uranium mineralization are all present.  
DOI 1975  
REF U.S. Bur. of Mines, 1977, (Unpubl.).

### South Barlow

LOCATION: sec. 10, T. 40 N., R. 10 W.  
LCST UNCERTAIN  
LCRM The location assigned for this was the same as for the Barlow Group. It is assumed that they are close, although each had its own production figures.  
QUAD Hermosa Peak 7 1/2' (?)  
MAP DURANGO  
PROD 115 tons of ore were mined as of 1971 at grades of 0.11% U3O8 and 2.79% V2O5, producing 254 lbs of U3O8 and 6,419 lbs of V2O5.  
HOST The host is the Jurassic Entrada Sandstone.  
MNZ Mineralization is probably roscoelite.  
DOI 1971  
REF U.S. A.E.C., 1971, Production Records, Colorado.



## DOUGLAS COUNTY

There has been no production of uranium from Douglas County. Few occurrences have been reported within the county.

The county is divided into two geological terranes. The eastern part of the county is underlain by flat-lying Tertiary sediments. The western half is a complex area of Precambrian rocks, including the Pikes Peak Granite and gneisses, schists and quartzite of the Idaho Springs Formation. The northern end of the Woodland Park Graben extends into the southern part of the county.

Two occurrences are associated with shear zones and pegmatites in the Precambrian rocks. A third

occurrence is found in clay in the sediments of the Dawson Formation from the northeastern section of the county.

There is some potential for resources to be found in both geological environments. The eastern part of the county is in the Denver Basin. There has been considerable interest in the basin as a host for sandstone type occurrences, especially in the Tertiary Dawson Arkose. However, no commercial deposits are known within the formation. The Precambrian rocks of the Idaho Springs Formation are the hosts for uranium at the important Schwartzwalder Mine near Golden, and the potential exists for a similar type of deposit in Douglas County.

## DOUGLAS COUNTY

### Highland Ranch (Airborn Anomaly No. 1, Phipps Ranch)

LOCATION: sec. 12, T. 6 S., R. 68 W.

QUAD Highland Ranch 7 1/2'

MAP DENVER

BKG .03 mr/hr

RNG .03 to .4 mr/hr

HOST The host is a plastic clay in the Eocene Dawson Arkose.

MNZ A yellow mineral was found in small amounts. The zone of radioactivity is about 4 in. thick and lies 12 in. below the surface.

DOI 1955

REF U.S. A.E.C., 1966, Preliminary Reconnaissance Reports, Douglas County, Colorado.

### Kaminski Prospect

LOCATION: E1/2 sec. 23, T. 7 S., R. 69 W.

QUAD Kassler 7 1/2'

MAP DENVER

BKG .05 to .07 mr/hr

RNG .07 to 2 mr/hr

HOST Precambrian pegmatite in quartz mica schist of the Idaho Springs Formation.

MNZ Euxenite type in seams and pods in pegmatite.

DOI 1954

REF U.S. A.E.C., 1966, Preliminary Reconnaissance Reports, Jefferson County, Colorado.

### Penley No. 1 Lease

LOCATION: SW1/4 sec. 32, T. 7 S., R. 68 W.

QUAD Kassler 7 1/2'

MAP DENVER

DVEL One 120 ft shaft has been sunk. Four test pits and six holes were drilled.

BKG .017 mr/hr

RNG .017 to 1.0 mr/hr

HOST The host is Precambrian granite and the Pennsylvanian Fountain Formation.

STRC Radioactivity also occurs in the shear zone between the rock types.

ALT The granite is described as being altered and radioactive.

MNZ A yellow mineral thought to be carnotite was observed with iron oxides.

RMKS An outcrop north of the shaft also had anomalous radioactivity.

DOI 1955, 1975

REF U.S. Bur. of Mines, 1977, (Unpubl.). U.S. A.E.C., 1966, Preliminary Reconnaissance Reports, Douglas County, Colorado.

## EAGLE COUNTY

Production from Eagle County has been negligible. Records show that by 1971 5 tons of ore had been mined, producing 29 lb of  $U_3O_8$ . There is potential for more ore to be produced from Eagle County.

The geology of the county is complex. Rocks and structures of all types and ages are found within its boundaries. The four major structures in the county are the White River Uplift, the Sawatch Uplift, the Eagle Basin, and the Homestake Shear Zone. The Homestake Shear Zone is a major zone of dislocation in Precambrian rocks of the Sawatch Uplift. In southeastern Eagle County the uplift exposes Precambrian granite gneisses and migmatites. The Eagle Basin is a late Paleozoic depositional trough that contains large volumes of gypsum, anhydrite, and salt. Uranium occurrences are recorded in many of these rock types in or adjacent to Eagle County.

Of the 13 occurrences noted in the county, the only two that have recorded production are the Arrowhead 1 and Dorado Claims.

The Arrowhead 1 Claim, located on Red and White Mountain in the center of the county, produced ore from the

Triassic Chinle Formation. Another nonproducing occurrence lies in the same area.

The Dorado Claims, located 6 miles west of Vail Pass, produced from the Permo-Pennsylvanian Maroon Formation. Drilling was carried out on the property during the 1950's; however, the area where the drilling delineated some reserves is now covered by Interstate Highway 70.

Eagle County has some potential for uranium reserves. As noted before, many of the rock types contain occurrences within the county or adjoining counties. The Morrison Formation and the Chinle Formation show potential for sandstone-type deposits. Many occurrences in the northern part of the county that have no recorded production are all associated with the Cambrian Sawatch Quartzite and appear to be unconformity-related types of occurrences. A number of occurrences are found in the Tertiary Troublesome Formation and the North Park Formation in the counties to the north. This suggests some potential for similar deposits in the northeastern part of Eagle County.

# EAGLE COUNTY

## Arrowhead 1

LOCATION: NE1/4NE1/4 sec. 14, T. 4 S., R. 82 W.

QUAD Edwards 7 1/2'

MAP LEADVILLE

PROD In 1955, 3 tons were mined at a grade of 0.22% U308, and 0.15% V205, producing 13 lbs of U308 and 9 lbs of V205.

BKG .015 mr/hr

RNG .01 to 5.0 mr/hr

HOST Triassic Chinle Formation, conglomerate sandstone of the Shinarump Member.

MNZ Carnotite - type mineralization associated with carbon trash.

DOI 1954

REF U.S. Bur. of Mines, 1977, (Unpubl.). U.S. Geol. Survey, 1977, CRIB File. U.S. A.E.C., 1971, Production Records, Colorado. U.S. A.E.C., 1966, Preliminary Reconnaissance Reports, Eagle County, Colorado. Kuehnle, F. W., 1956.

## Blue-Bell (Lady Bell, Ground Hog 1, Black Eagle Lode, 6 Claims)

LOCATION: sec. 30, T. 5 S., R. 83 W.

LCRM On Horse Mountain.

QUAD Fulford 7 1/2'

MAP LEADVILLE

DVEL 3,500 ft of drifts, various shafts, winzes and cuts.

PROD Assay value of 0.5% U308.

BKG .05 mr/hr

RNG .05 to .7 mr/hr

HOST Jurassic Entrada Sandstone.

MNZ Secondary uranium minerals reported from dump of Ground Hog #1 Claim and Black Eagle Lode. Other minerals occurring at the site are chalcopryrite, azurite, malachite, chalcocite, roscoelite, cerargyrite, Au, V.

RMKS Any interested persons should read the Preliminary Reconnaissance Reports on the Brush Creek Mining District (especially the Black Eagle Lode) before visiting area.

DOI 1951

REF U.S. Bur. of Mines, 1977, (Unpubl.). U.S. Geol. Survey, 1977, CRIB File. U.S. A.E.C., 1966, Preliminary Reconnaissance Reports, Eagle County, Colorado. Hubert, J. F., 1954, Structure and stratigraphy of an area east of Brush Creek, Eagle County, Colorado, Thesis, Univ. of Colorado. Gableman, J. W., 1949, Geology of the Fulford and Brush Creek Mining Districts, Eagle County, Colorado School of Mines [Doctoral Thesis]. Vanderwilt, John W., 1947, Mineral Resources of Colorado, Colorado Mineral Resources Board Bulletin, p. 77. George, R. D., 1913, Geologic Relations in the Brush Creek Region, Colorado; Mining Sci., v. 67, pp. 148-149.

## Dorado Claims (Little Spring Claims, Golden Fleece, Gringo Claims)

LOCATION: sec. 21, T. 5 S., R. 79 W.

LCRM About 6 miles west of Vall Pass at the confluence

of Gore Creek and Miller Creek.

QUAD Red Cliff 7 1/2'

MAP LEADVILLE

DVEL Exploration of this area was carried out during the 1950's under a DMEA loan. Work, including drilling of 14 holes in 1957-1958, and the driving of an adit approximately 80 ft long, was carried out by the Gaddis Mining Company.

PROD In 1966, 2 tons were mined from the Dorado Claims at a grade of 0.40% U308 producing 16 lbs of U308.

BKG 130 to 180 cps

RNG 600 to 10,000 cps

HOST Permo-Pennsylvanian Maroon Formation, gray to reddish, fine- to medium-grained micaceous sandstone with interbedded limestone and shale.

STRC None apparent although the Gore Fault is nearby. The beds are on the east flank of an asymmetrical syncline.

ALT Sandstone appears to be more reddish in areas of mineralization.

MNZ Uranophane, torbernite, pyrite, uraniferous coal, azurite, malachite.

RMKS Interstate 70 now covers much of the area where drilling was carried out.

DOI 1976

REF Atlantic Richfield, 1977. U.S. Bur. of Mines, 1977, (Unpubl.). U.S. Geol. Survey, 1977, CRIB File. U.S. A.E.C., 1971, Production Records, Colorado. U.S. A.E.C., 1966, Preliminary Reconnaissance Reports, Eagle County, Colorado.

## Dortha 1

LOCATION: T. 2 S., R. 84 W.

LCST UNCERTAIN

LCRM On State highway 301 about 5 miles west of McCoy.

MAP LEADVILLE

BKG .02 mr/hr

RNG .1 to .25 mr/hr

HOST Triassic red beds and Paleozoic siltstone.

STRC Fault controlled.

MNZ No minerals identified.

RMKS Radioactivity follows fault zones and fractures. It is of unknown thickness.

DOI 1954

REF U.S. A.E.C., 1966, Preliminary Reconnaissance Report, Eagle County, Colorado.

## Horse Mountain Uranium Mines

LOCATION: sec. 25, T. 5 S., R. 84 W.

QUAD The Seven Hermits 7 1/2'

MAP LEADVILLE

MNZ Uranium, vanadium.

DOI 1975

REF U.S. Bur. of Mines, 1977, (Unpubl.).

## Lone Tree Claims

LOCATION: sec. 34, T. 4 S., R. 80 W.

LCST UNCERTAIN

LCRM Directions to occurrence are as follows: "From junction of US Highway 6 and 24 drive about five miles east on US Highway 6; turn left and drive for 3.9 miles on dirt road.

# EAGLE COUNTY

Walk 2,000 ft to the west where limestone is exposed."  
 MAP LEADVILLE  
 HOST Paleozoic limestone, black, fossiliferous, petroliferous.  
 STRC Major thrusts in area.  
 MNZ A green mineral was observed. A 2 ft channel sample had a value of 0.01% U308.  
 RMKS Occurrence appears to be in headwaters of Spreddle Creek under Bald Mountain.  
 DOI 1955  
 REF U.S. A.E.C., 1966, Preliminary Reconnaissance Reports, Eagle County, Colorado.

## Lucky Strike 1

LOCATION: SE1/4NW1/4 sec. 18, T. 4 S., R. 81 W.  
 LCST UNSURVEYED  
 LCRM Directions are as follows: "2.4 miles north of Walcott on Colo. 131. Take right fork for 5.8 miles, take left fork for 2.3 miles. Walk east to rim 400 yds to cut."  
 MAP LEADVILLE  
 BKG .015 mr/hr  
 RNG .01 to .5 mr/hr  
 HOST Triassic Chinle Formation, conglomerate sandstone in the Shinarump Member.  
 MNZ Carnotite.  
 RMKS Mineralization has been found on talus slope. None was found in place.  
 DOI 1954  
 REF U.S. A.E.C., 1966, Preliminary Reconnaissance Reports, Eagle County, Colorado. Kuehnle, F. W., 1956.

## Rock Hat Claim

LOCATION: sec. 7, T. 2 S., R. 82 W.  
 LCRM Directions to occurrence as follows: "At RR crossing on State Highway 11, 3.5 miles northeast of State Bridge; park car and follow RR 3/4 mile northeast to abandoned prospectors cabin on northwest side of track. Follow the arroyo past the cabin stay in main channel. Continue for 1/2 mile and you will come to workings."  
 MAP LEADVILLE  
 BKG .03 mr/hr  
 RNG .03 to .15 mr/hr  
 HOST Sawatch Formation, micaceous shale at base of formation composed of vermiculite, mica, silt, fine sand, possibly Cambrian in age.  
 STRC Angular unconformity.  
 MNZ Some carbonaceous material.  
 DOI 1954  
 REF U.S. Bur. of Mines, 1977, (Unpubl.). U.S. A.E.C., 1966, Preliminary Reconnaissance Reports, Eagle County, Colorado.

## Tipton Ranch

LOCATION: sec. 6, T. 2 S., R. 83 W.  
 MAP LEADVILLE  
 HOST Pennsylvanian shale that is carbonaceous and about 1 ft thick. It is overlain and underlain by red arkosic sandstones.  
 STRC The minerals were found along fractures and bedding planes in association with asphaltic material. The bluish gray shale is possibly

altered to red in area of mineralization.  
 MNZ Liebigite, limonite, manganese stains, asphaltite. Grab samples had values of 0.05 to 0.19% U308.  
 DOI 1955  
 REF U.S. Geol. Survey, 1977, CRIB File. U.S. Bur. of Mines, 1977, (Unpubl.). U.S. A.E.C., 1966, Preliminary Reconnaissance Reports, Eagle County, Colorado.

## Unnamed 1

LOCATION: T. 5 S., R. 79 W.  
 LCST UNCERTAIN  
 LCRM Directions to occurrence are as follows: "Roadcut U.S. Highway 6; 15.2 miles east of the highway bridge at Dowds."  
 MAP LEADVILLE  
 HOST Pennsylvanian Maroon Formation, 4 ft black shale zone in upper part of formation. Shale is gray micaceous and sandy with thin black carbonaceous layers and is interlayered with red arkosic sandstone.  
 MNZ 2 ft channel 0.09% U, 1.2 ft channel 0.21% U.  
 RMKS The upper part of the Maroon Formation was examined extensively up to 10 miles from this locality. No other radioactivity was found and it is thought the anomalous shale lies lenticular. Possible duplicate of the Dorado Claims.  
 DOI 1953  
 REF U.S. A.E.C., 1966, Preliminary Reconnaissance Reports, Eagle County, Colorado.

## Unnamed 2

LOCATION: sec. 1, T. 1 S., R. 84 W.  
 LCRM Location was given as near highway. The original location would be in Grand County. It was sec. 36, T. 2 S., R. 84 W.  
 MAP LEADVILLE  
 RNG 5 x bg  
 HOST Micaceous black shale lying below Sawatch Formation.  
 MNZ 0.003% U308 on analysis; no uranium minerals seen.  
 REF Charles Line, 1977, Personal Communication.

## Unnamed 3

LOCATION: S1/2N1/2 sec. 12, T. 2 S., R. 84 W.  
 LCST UNCERTAIN  
 LCRM Also sec. 13. Off jeep trail to east. Possibly same as PRR-DEB-(C-1523) #1761 Unnamed 34  
 MAP LEADVILLE  
 BKG 3 x bg  
 HOST Black limestone.  
 MNZ No uranium minerals were identified.  
 REF Charles Line, 1977, Personal Communication.

## Unnamed 4

LOCATION: sec. 12, T. 2 S., R. 84 W.  
 LCRM One mile west of McCoy on Colo. 131, thence one mile south into general area of outcrop of Sawatch Formation.  
 MAP LEADVILLE  
 BKG .03 mr/hr  
 RNG .03 to .15 mr/hr

## EAGLE COUNTY

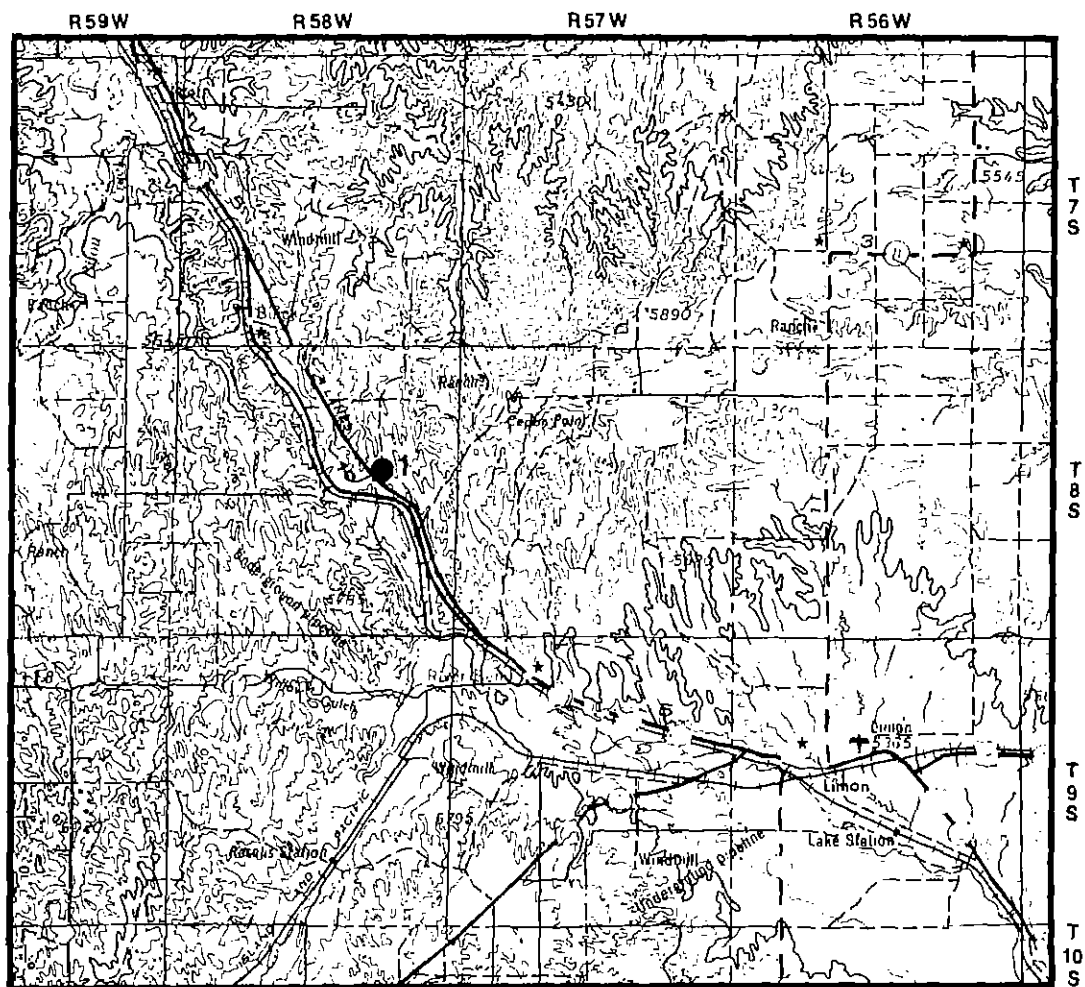
HOST A 12 ft micaceous shale at the bottom of  
the Cambrian Sawatch Formation composed  
of vermiculite, mica, silt, fine sand.  
STRC Angular unconformity on Precambrian rocks.  
MNZ No uranium minerals identified.  
DOI 1954  
REF U.S. A.E.C., 1966, Preliminary Reconnaissance  
Reports, Eagle County, Colorado.

## ELBERT COUNTY

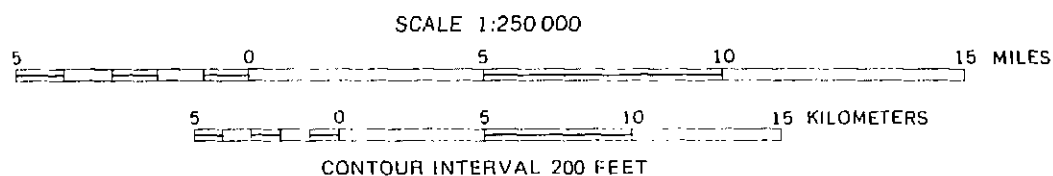
No production has been recorded from Elbert County, which lies in north-central Colorado on the Great Plains. Only one occurrence is reported.

The county is within the structural Denver Basin. The Tertiary Dawson Arkose, Denver Formation, and the Cretaceous Laramie Formations and Fox Hills Sandstone that crop out within the county dip gently toward the center of the basin. Exploration has been sporadic in the county. Although the Dawson Arkose has been a favorable exploration target, apparently no significant anomalies have been found.

The one radioactive occurrence in the county is of thorium and not uranium and consists of an ancient placer deposit of heavy-mineral black sand. The probability that this deposit will become economic is small. Potential uranium reserves could be found in sandstone-type deposits in the Tertiary Dawson Arkose and Cretaceous Laramie-Foxhills Formations host rocks. Much water sampling has identified anomalies in Douglas County and in El Paso.



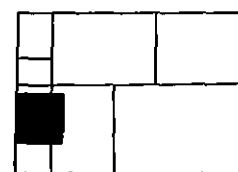
Base from U.S.G.S.



### EXPLANATION

- SANDSTONE, ARKOSE, CONGLOMERATE, SILTSTONE  
LAKE SEDIMENT HOST ROCKS FOR OCCURRENCE
- 7 OCCURRENCE NUMBER FROM TEXT

### LOCATION OF INSET



LIMON  
1° x 2° SHEET

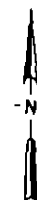


Figure 13. Radioactive mineral occurrences in Elbert County, Colorado.



## ELBERT COUNTY

### Limon Locality

LOCATION: sec. 14, T. 8 S., R. 58 W.

LCRM Also sec. 23 and 32.

DVEL The anomalies were located in 1956 as part of a U.S. A.E.C. airborne radiometric program. Some shallow drilling was carried out on one anomaly.

PROD No production.

HOST Brown to black friable sandstone of the lower part of the Upper Cretaceous Laramie Formation. This bed was deposited as a heavy minerals breach placer in a regressive sandstone series similar to placer deposits of the same age in New Mexico and southwest Colorado.

MNZ Minerals include garnet, zircon, and magnetite. These minerals are concentrated in thin bands separated by sandstone with lesser amounts of minerals. Drill cuttings had the following values: %U308 .014-.020; %U308 .005; %ThO2 .05-.07.

DOI 1959

REF R. C. Malan, 1978, Personal Communication.

## EL PASO COUNTY

Production from the county has been small with only 108 tons of recorded production containing 277 lb of  $U_3O_8$ . There is potential for more reserves to be found in the county.

El Paso County lies in the east-central part of the state. The geology is divided into Precambrian rocks in the Front Range and Rampart Range on the west and sedimentary rocks in the Denver Basin on the east. Through the center of the county lie steeply upturned beds along the western edge of the Denver Basin abutting the eastern margin of the mountains. A complete range of Paleozoic through Cenozoic rocks are exposed in the county.

Five hundred tons of ore yielding both uranium and thorium are reported to have come from the St. Peters Dome 1, a mine in the Precambrian Mt. Rosa Granite. However, no production for this mine was recorded in the AEC Production Records. The second (?) largest producer in the county was the Lucky Ben lease. The deposit, found in the Cretaceous Dakota Sandstone, yielded 108 tons of uranium ore containing 277 lb of  $U_3O_8$ .

Important radioactive occurrences within the county fall into two broad categories: uranium, thorium, and rare earths in the Precambrian rocks, and uranium in the sedimentary rocks along the front of the Rampart Range. The Precambrian rocks around St. Peters Dome and Mount Rosa area contain uranium, thorium, and rare earths in veins, stringers, and pegmatites, with some possible segregation of the various elements. Uranium occurrences have been reported in the Pennsylvanian Fountain Formation, Jurassic Morrison Formation, Lower Cretaceous Dakota Sandstone, Upper Cretaceous Fox Hills Sandstone, and the Tertiary Dawson Formation

and Ogallala Formation. The Dakota Sandstone on the east flank of the Turkey Creek anticline, southwestern El Paso County, contains coffinite and uraninite ore. The ore, approximately 80 ft deep, is concentrated in irregular but concordant bodies up to a few hundred tons in size. These are deposits similar to those found in the George Avery Mine in El Paso County, and are examples of the types of ore bodies being sought in the Dakota Sandstone.

Much exploration has taken place and is continuing in El Paso County. Uranium and radioactive occurrences have been found in many of the formations, but those with the most potential are the upturned continental sedimentary rocks along the front of the Rampart Range. These rocks have the best potential because the largest known and highest grade ore bodies found so far in the United States (95%) have occurred in sedimentary formations. Of these, particular attention should be paid to the Dakota Sandstone in the southwestern part of the county, where occurrences are found.

Another rock type with some potential is the Mount Rosa Granite. As mentioned before, it contains uranium and thorium in shears and veins. The granite is an alkaline granite, a rock type just now receiving attention as a new type of uranium host. A report on the subject of alkaline rocks was published as this report went to press. Those who are interested should consult Murphy, M., and others, 1978, Uranium in Alkaline Rocks, U.S. Department of Energy, Grand Junction Office, GJBX-(78)78, 185 p.

# EL PASO COUNTY

## 17, Airborne Anomaly

LOCATION: sec. 28, T. 12 S., R. 62 W.

LCRM From Calhan go west on U.S. 24 for 1.8 miles and turn left onto dirt road. Go for 1.0 mile and continue straight ahead at crossroad for 2.1 miles. Now turn right onto old dirt track road about 200 yds past house and go for 0.6 miles to the edge of the pit. The anomaly is in the pit.

QUAD Holcolm Hills 7 1/2'

MAP PUEBLO

DVEL There is an old pit that was mined for clay.

BKG .02 mr/hr

RNG To .05 mr/hr

HOST The deposit is in a sandstone of the Tertiary Ogallala Formation with intercalated multi-colored clay members and conglomerate. The sandstone is coarse-grained, loosely cemented, and white in color. A black, carbonaceous clay accounts for the radioactive anomaly.

MNZ Caliche, hardpan and iron staining.

RMKS Several small prospect pits were dug to determine if the radioactivity increases with depth, but the results were negative.

DOI 1954

REF U.S. A.E.C., 1966, Preliminary Reconnaissance Reports, El Paso County, Colorado.

## B. F. Reed Claim

LOCATION: NE1/4 sec. 8, T. 15 S., R. 67 W.

LCRM North of St. Peter's Dome.

QUAD Manitou Springs 7 1/2'

MAP PUEBLO

HOST The deposit occurs in pegmatite dikes of the Precambrian Pikes Peak Granite.

STRC Narrow fissures within the pegmatite dikes appear to control the radioactivity.

MNZ No radioactive minerals were visible, but radioactivity appears to be in a pegmatite dike. Quartz, fluorite and iron oxide stains and coatings are present.

DOI 1952

REF U.S. A.E.C., 1966, Preliminary Reconnaissance Reports, El Paso County, Colorado. Cross, Whitman, 1894.

## Bluebird

LOCATION: sec. 9, T. 15 S., R. 67 W.

QUAD Manitou Springs 7 1/2'

MAP PUEBLO

DVEL The prospect produced ore in the past.

HOST The host is Precambrian Idaho Springs Formation.

MNZ The uranium occurs in a pegmatite.

DOI 1971, 1975

REF U.S. Bur. of Mines, 1977, (Unpubl.). U.S. A.E.C., 1971, Production Records, Colorado.

## Burgess Claim

LOCATION: NE1/4 sec. 22, T. 12 S., R. 66 W.

LCRM The occurrence is at the Diamond J. Ranch.

QUAD Pikeview 7 1/2'

MAP PUEBLO

PROD A grade of 0.52% U3O8 has been reported.

HOST The host is the Eocene Dawson Arkose.

MNZ The ore occurs as a uraniferous ilmenite.

DOI 1973

REF U.S. Geol. Survey, 1977, CRIB File. Lovering, T. G., and Beroni, E. P., 1956, U.S. Geol. Survey, TEI-427.

## Dorothy O. Claim

LOCATION: sec. 8, T. 15 S., R. 67 W.

LCRM Northeast of St. Peter's Dome.

QUAD Manitou Springs 7 1/2'

MAP PUEBLO

DVEL There has been some underground mining carried out.

BKG .04 mr/hr

RNG To .5 mr/hr

MNZ Some uranium mineralization was found.

DOI 1975

REF U.S. Bur. of Mines, 1977, (Unpubl.).

## Duffields Property (Duffields Deposit, Leyte Claim)

LOCATION: NE1/4 sec. 20, T. 15 S., R. 67 W.

QUAD Mt. Big Chief 7 1/2'

MAP PUEBLO

DVEL Some underground mining has been carried out. Seven (?) tons of fluor spar and uranium ore were produced in 1945.

PROD The deposit is of a vein type in the Precambrian Pikes Peak Granite.

STRC A north-trending series of shear joints and minor faults cut across the area.

MNZ Fluorite and uranium minerals were both found.

DOI 1975

REF U.S. Bur. of Mines, 1977, (Unpubl.). U.S. Geol. Survey, 1977, CRIB File. U.S. Geol. Survey, 1962, Map, MR-21. Colo. Sci. Soc., 1949, Proceedings, V. 15, no. 6, p. 278-279.

## Folbre 2

LOCATION: sec. 15, T. 17 S., R. 67 W.

QUAD Mt. Big Chief 7 1/2'

MAP PUEBLO

DVEL One trench, 7 ft x 3 ft, has been opened in the side of the hill. It strikes S70°E.

HOST The radioactive zone is in a black shale about 12 in. thick and 5 ft wide at the top of the Jurassic Morrison Formation.

MNZ Uranium mineralization was detected.

DOI 1975

REF U.S. Bur. of Mines, 1977, (Unpubl.). U.S. A.E.C., 1966, Preliminary Reconnaissance Reports, El Paso County, Colorado.

## Mike Doyle Carnotite Deposit (Lucky Ben Lease)

LOCATION: SW1/4 sec. 2, T. 16 S., R. 67 W.

QUAD Cheyenne Mountain 7 1/2'

MAP PUEBLO

DVEL In 1955, 108 tons of ore were mined with an average grade of 0.13% U3O8 and containing 277 lbs of U3O8.

HOST The host is the Cretaceous Dakota Sandstone.

MNZ Carnotite was the principal mineral noted.

RMKS Ore was shipped under name "Lucky Ben Lease".

DOI 1975

REF U.S. Geol. Survey, 1977, CRIB Files. U.S.

# EL PASO COUNTY

Bur. of Mines, 1977, (Unpubl.). U.S. A.E.C., 1971, Production Records, Colorado. King, R. U., and others, 1953.

## Mobil Oil Corporation Drill Hole 2

LOCATION: SE1/4 sec. 12, T. 15 S., R. 62 W.  
 LCRM This is the main hole. There are offsets to the north, south, east, and west.  
 QUAD Big Springs Ranch 7 1/2'  
 MAP PUEBLO  
 DYEL Exploration holes have been drilled.  
 RNG To 2,050 cps  
 HOST The Upper Cretaceous Fox Hills Sandstone is the host. Mineralization is near the top of the formation, and coaly beds are generally associated with it.  
 ALT No alteration or oxidation is present.  
 MNZ A section of the formation about 6 ft thick is mineralized, with count to 2,050 cps (0.01 to 0.02% eu308).  
 RMKS This deposit appears to be an impounded playa or some similar feature, rather than a roll front deposit. It is thought that the mineralization is syngenetic.  
 DOI 1977  
 REF Ken Holmes, 1977, Personal Communication.

## Mobil Oil Corporation Drill Hole 1

LOCATION: NW1/4 sec. 22, T. 15 S., R. 62 W.  
 LCRM There are offsets to the main hole to the north, south, east, and west.  
 QUAD Hanover NE 7 1/2'  
 MAP PUEBLO  
 DYEL Exploration holes have been drilled.  
 RNG 600 to 900 cps  
 HOST The Upper Cretaceous Fox Hills Sandstone is the host. Mineralization is near the top of the formation and is generally associated with coaly beds.  
 ALT No alteration or oxidation is present.  
 MNZ Three to six ft of the formation gave a count of 600 to 900 cps.  
 RMKS This deposit appears to be an impounded playa or similar feature rather than a roll front. It appears that mineralization is syngenetic.  
 DOI 1977  
 REF Ken Holmes, 1977, Personal Communication.

## Morris Prospect (Antonita Valjean)

LOCATION: S1/2 sec. 17, T. 15 S., R. 67 W.  
 LCRM South of St. Peter's Dome.  
 QUAD Mount Big Chief 7 1/2'  
 MAP PUEBLO  
 HOST These are primarily thorium deposits in pegmatites of the Precambrian Pikes Peak Granite.  
 MNZ Thorite, hematite, feldspar, mica, riebeckite, and monazite are present. Assays of grab samples range from 0.001 to 0.025% U308.  
 DOI 1951  
 REF U.S. A.E.C., 1966, Preliminary Reconnaissance Reports, El Paso County, Colorado. Lovering, T. S. and Goddard, E. N., 1950.

## Rock View Claim

LOCATION: SW1/4 sec. 10, T. 16 S., R. 67 W.  
 QUAD Mount Big Chief 7 1/2'  
 MAP PUEBLO  
 BKG .005 mr/hr  
 RNG To .012 mr/hr  
 HOST The deposit lies in a shale unit near the base of a red arkosic conglomerate of the Pennsylvanian Fountain Formation. The Fountain directly overlies Cambrian and Precambrian rocks in this locality.  
 MNZ No mineralization was visible.  
 DOI 1954  
 REF U.S. A.E.C., 1966, Preliminary Reconnaissance Reports, El Paso County, Colorado.

## St. Peter's Dome 2

LOCATION: sec. 17, T. 15 S., R. 67 W.  
 LCST UNSURVEYED  
 QUAD Mount Big Chief 7 1/2'  
 MAP PUEBLO  
 HOST The host is Precambrian granite cut by pegmatites.  
 DOI 1977  
 REF U.S. Geol. Survey, 1977, CRIB File. U.S. Geol. Survey, 1960, Map 1-309.

## St. Peter's Dome 1

LOCATION: S1/2 sec. 7, T. 15 S., R. 67 W.  
 QUAD Manitou Springs 7 1/2'  
 MAP PUEBLO  
 PROD Five hundred tons were mined for thorium and uranium.  
 HOST The host is the Precambrian Mt. Rosa granite.  
 MNZ Thorium and uranium mineralization were found.  
 DOI 1977  
 REF U.S. Geol. Survey, 1977, CRIB File. Gross, 1962, Univ. of Michigan, Ph.D. Thesis.

## Unnamed 1

LOCATION: sec. 9, T. 15 S., R. 67 W.  
 LCRM Northeast of St. Peter's Dome.  
 QUAD Manitou Springs 7 1/2'  
 MAP PUEBLO  
 DYEL Several small, shallow pits have been dug in the area.  
 RNG 0.09 to 0.55% eU.  
 HOST The deposits lie in pegmatite dikes of the Precambrian Pikes Peak Granite.  
 MNZ Thorite with quartz, perthite, and muscovite are present. The uranium mineral is not known, but assays range from 0.006 to 0.04% U.  
 DOI 1952  
 REF U.S. A.E.C., 1966, Preliminary Reconnaissance Reports, El Paso County, Colorado.

## Unnamed 2

LOCATION: sec. 2, T. 15 S., R. 67 W.  
 LCST UNCERTAIN  
 MAP PUEBLO  
 RMKS Radioactivity reported where Morrison Formation overlies the Precambrian.  
 REF Lou Reimer, 1977, Personal Communication.

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Production of either uranium or thorium in the county has been largely limited to uranium from the Tallahassee Creek district. Of 93,949 tons of uranium ore mined and shipped from the county as of 1971, approximately 85,000 tons came from the Tallahassee Creek district. The average grade for the county was 0.25 percent  $U_3O_8$  and total production yielded 464,203 lb of concentrate.

Fremont County encompasses a broad variety of geologic terranes. In the eastern part of the county an extension of the Colorado plains section forms the Canon City Embayment. Here sedimentary rocks ranging from Cambrian to Upper Cretaceous are exposed. West and north of the embayment, Precambrian crystalline rocks of the Front Range and the Wet Mountains cross the county. The northwestern edge of the county borders the Tertiary sedimentary and volcanic sequences in southern South Park. Small, upland, Tertiary Intermontane basins found along the edges of the mountains are associated with the extensive Tertiary Intrusives and extrusives of the Thirtynine Mile volcanic field. Because of the geologic variety within the county, mineral resources are also varied, ranging from sand and gravel deposits to gemstones, petroleum, base and precious metals, coal, thorium, and uranium.

Besides the Tallahassee Creek area, small amounts of ore were mined from the High Park area, from the Dakota Sandstone in the Canon City Embayment, and from the shear zones in the Precambrian Granites near Cotopaxi.

The Tallahassee Creek mining district is located on the southeastern edge of the Thirtynine Mile volcanic field. The uranium deposits lie in fluvial arkosic and volcanic detritus of late Eocene age occupying paleodrainages in the pre-volcanic erosional surface. The deposits are generally stratiform and less than 200 ft deep. The primary ore is dominantly uraninite in unoxidized sediments, but some secondary, oxidized uranium minerals are also found. These basins and the sediments are nearly identical to those in Wyoming, where extremely large uranium deposits are mined.

The first deposits of this type in Fremont County were discovered in 1954 because of two strong radiometric anomalies. Many ore bodies lacked any surface expression, but further drilling and exploration revealed numerous ore deposits. The largest producing mines in the county are in this area and include the Colorado Lease 519, the Dickson-Snooper and Thorne 9 and 10, the First Chance and the Last Chance, the Mary L., Joan 2, Little Abner #1, the Picnic Tree, and Knob Hill. Extensive exploration and drilling have been carried on for the past several years with the result that recently, several larger ore bodies have been found with proven reserves of 30 million pounds of  $U_3O_8$ . The major discovery is the Hanson Ore Body belonging to Cyprus Mines. The companies involved in this exploration

effort believe that these deposits are the largest uranium deposits ever found in the Rocky Mountain province. This area should become the major uranium mining district of the state in future years.

Geologically similar to the Tallahassee Creek district is the High Park area. Only small prospects and developments are known within the area, but these are fairly numerous, and are currently being evaluated. The deposits lie in interbedded arkosic sandstone and conglomerate, shaly siltstone, and tuffaceous sediments. The deposits range from 4 to 13 ft in thickness and lie at depths of 4 to 80 ft. The average grade is generally less than 0.2 percent  $U_3O_8$ .

Other areas of interest include the Canon City Embayment, the Wet Mountain thorium district, and the Precambrian Granites near Cotopaxi. The uranium deposits in the Canon City Embayment are found in the Dakota Sandstone. Although they are fairly numerous, none large enough to warrant development have yet been found. The thorium occurrences of the Wet Mountains occur primarily to the south in Custer County, but some minor anomalies can be found in Fremont County. The Cotopaxi area contains small uraninite occurrences with minor autunite in veins in the mineralized shear zones in Precambrian granites. Some drilling has been done, but no development has followed.

The Texas Creek area is geographically close and geologically similar to the Cotopaxi area. There, the mineralization primarily occurs disseminated in the shear zones of both the Precambrian granites and Precambrian biotite gneisses. Uraninite, the primary uranium mineral, is found closely associated with fluorite and minor chalcopyrite. Although most of the mineralization is located in the shear zones, some minor anomalies and scattered uraninite grains can also be found disseminated throughout the nearby unshattered granite. Minor development work has taken place in this area, but no large ore bodies have been reported. The Lightning No. 2 is one of the larger prospects, and it is interesting to note that the mineralized zone plunges beneath a cover of volcanics that lie to the south.

The units with the most potential for uranium reserves within the county lie in the Tertiary fluvial arkosic and volcanic detritus of the Intermontane basins abutting the Thirtynine Mile volcanic field. The most promising of these lie in and adjacent to South Park and the Tallahassee Creek-High Park areas. These areas have produced in the past and have been shown to contain large reserves of uranium. The shear zones in the Precambrian granites and biotite gneisses near Cotopaxi, and the Dakota Sandstone in the Canon City area, however, should not be overlooked as potential areas, both because large deposits are known to occur in geologically similar strata in other parts of the state, and because proven uranium occurrences have already been found within these areas in this county.

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## A. E. Jones Claim (Taylor Soda Springs)

LOCATION: NW1/4 sec. 3, T. 17 S., R. 73 W.  
 QUAD Black Mountain 15'  
 MAP PUEBLO  
 DVEL There is a shallow pit with a maximum depth of four ft; now filled with water. Some underground work was carried out.  
 BKG .03 mr/hr  
 RNG To 3.0 mr/hr  
 HOST The deposit is in caliche, travertine, and iron deposited around mineral springs. One of the springs is still active, with gas continually bubbling up from it. The spring comes through the Tertiary Echo Park Alluvium.  
 MNZ Chip and grab samples range from 33 to 65 times background. The radioactive material which may be thorium, appears to be more concentrated in red streaks near the springs. Water analyses show 960 ppb U, 460 pc/l radium, and 13,000 pc/l radon.  
 DOI 1976  
 REF U.S. Bur. of Mines, 1977, (Unpubl.). Young, P., and Mickle, D. G., 1976. U.S. A.E.C., 1966, Preliminary Reconnaissance Reports, Fremont County, Colorado. Chapin, C. E., 1965.

## A. Griffin Ranch

LOCATION: NE1/4SW1/4 sec. 23, T. 20 S., R. 71 W.  
 LCST UNSURVEYED  
 QUAD Royal Gorge 15'  
 MAP PUEBLO  
 DVEL There are six prospect pits. Some underground mining has been carried out.  
 BKG 14.0 to 22.0 cps  
 HOST The host is a Precambrian injection gneiss with intruded paralleling lamprophyre. The lamprophyre is secondarily silicified and contains some pyrite. The rocks are cut by barite veins.  
 STRC There are two veins on the property. One strikes N80°W, and dips 75°S; the other strikes N67°W and dips vertically. They are long and narrow, and extend at least 600 ft along strike.  
 MNZ Barite, galena, and a red, radioactive mineral are the primary ore minerals, in a gangue of quartz, siderite, and specularite. Samples assayed between 0.005 and 0.089% eU, with between 0.001 and 0.058% U by chemical assay.  
 DOI 1951  
 REF U.S. Bur. of Mines, 1977, (Unpubl.). U.S. A.E.C., 1966, Preliminary Reconnaissance Reports, Fremont County, Colorado.

## Ant Claims

LOCATION: sec. 30, T. 17 S., R. 70 W.  
 LCST Sec. 30 extends into sec. 31. The property is located on the Dille Ranch.  
 QUAD Cover Mountain 15'  
 MAP PUEBLO  
 DVEL There is a 600 ft rim cut.

PROD The cut exposed a log replaced by carnotite, and 3.5 ft layer of sandstone with values of 0.10% U3O8, with pods up to 0.30% U3O8.  
 HOST The host is a sandstone of the Jurassic Ralston Creek Formation.  
 MNZ The mineralization is localized by carbonaceous trash in channel sands in fluvial sediments.  
 RMKS The property as of April, 1977, was leased by Minerals Engineering Company from Trites Exploration of Denver.  
 DOI 1977  
 REF Atlantic Richfield Company, 1977, Personal Communication.

## Barbara Claims (True Blue No. 1 Claim, Oliver No. 1 Claim)

LOCATION: NW1/4 sec. 5, T. 18 S., R. 72 W.  
 LCST This deposit may also be in the NE1/4 of sec. 6.  
 QUAD Cover Mountain 15'  
 MAP PUEBLO  
 DVEL Pits have been dug on a small ridge by bulldozer.  
 PROD There are no more than a few tons in place.  
 BKG .04 mr/hr  
 RNG .4 to 6.0 mr/hr  
 HOST The host is a very tuffaceous conglomerate; probably Tallahassee Creek Conglomerate, of Oligocene age. The radioactivity is concentrated in the petrified logs present in the formation.  
 ALT The deposit is oxidized except around a mineralized tree.  
 MNZ The main mineralization is in an opalized tree approximately 20 ft long. The grade of the tree is probably 1% + U3O8. The tree is embedded in a light yellow-white, limonitic, very tuffaceous conglomerate. Surrounding the tree the sediments contain some autunite mineralization, which was very low grade; probably less than .05% U3O8.  
 DOI 1977  
 REF U.S. Bur. of Mines, 1977, (Unpubl.). Gulf Mineral Resources, 1977, Personal Communication. Young, P., and Mickle, D. R., 1976. U.S. A.E.C., 1966, Preliminary Reconnaissance Reports, Fremont County, Colorado.

## Beaver Creek

LOCATION: sec. 17, T. 17 S., R. 68 W.  
 QUAD Phantom Canyon 7 1/2'  
 MAP PUEBLO  
 MNZ Uranium mineralization is present.  
 DOI 1973  
 REF U.S. Geol. Survey, 1977, CRIB File.

## Big Bear (Big Hole, Cactus Claims)

LOCATION: sec. 27, T. 18 S., R. 73 W.  
 LCST UNSURVEYED  
 LCST Occurrence extends from secs. 21 & 22 and extends into sec. 28. Directions are as follows: "From Echo Station of the D & RG W.R.R. turn north for one mile along road to claims."  
 QUAD Cotopaxi 15'  
 MAP PUEBLO

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DVEL Discovery pits were dug, and drilling was carried out in 1954.  
 BKG .015 to .05 mr/hr  
 RNG .1 to .27 mr/hr  
 HOST The radioactivity occurs in terrace and channel fillings in arkosic, carbonaceous, sandy siltstones and sandstones that are probably of early Tertiary age. There are late Miocene flows in the area, but no reworked ash material occurs in the radioactive beds, indicating that they are younger than the flows.  
 MNZ Schoepite was found associated with bedded carbonaceous material. Samples taken had values ranging from .05 to .3 mr/hr.  
 DOI 1955  
 REF U.S. Geol. Survey, 1977, CRIB File. U.S. Bur. of Mines, 1977, (Unpubl.). U.S. A.E.C., 1966, Preliminary Reconnaissance Reports, Fremont County, Colorado.

## Bill and Bud 2 and 4

LOCATION: sec. 34, T. 48 N., R. 11 E.  
 MAP PUEBLO  
 DVEL Small open cut.  
 PROD Between 1955 and 1960, a total of 12 tons of ore were mined at a grade of 0.09% U308, and 0.07% V205, producing 21 lbs of U308, and 16 lbs of V205.  
 HOST The host is a Precambrian pegmatite.  
 DOI 1971  
 REF U.S. A.E.C., 1971, Production Records, Colorado.

## Brandt Claims

LOCATION: sec. 31, T. 17 S., R. 68 W.  
 LCRM U.S. A.E.C. Production Records also show sec. 32 and sec. 5 and 6, T. 18 S., R. 68 W.  
 QUAD Phantom Canyon 7 1/2'  
 MAP PUEBLO  
 DVEL There are several exploration pits, and 16 ten ft drill holes, a small ore body was developed, no production.  
 BKG .03 mr/hr  
 RNG To .4 mr/hr  
 HOST The deposit occurs in the Cretaceous Dakota Sandstone.  
 ALT There is a cap of altered montmorillonite (?) over the Dakota Formation.  
 MNZ Carnotite and/or tyuyamunite are visible along joint planes and in iron stained zones in poorly consolidated sandstone. Samples taken range from 0.002 to 0.29% eU308 and from 0.12 to 0.34% U308. The drill cuttings showed between 0.0004 and 0.004% eU.  
 DOI 1950-1958?  
 REF U.S. Geol. Survey, 1977, CRIB File. U.S. Bur. of Mines, 1977, (Unpubl.). U.S. A.E.C., 1971, Production Records, Colorado U.S. A.E.C., 1966, Preliminary Reconnaissance Reports, Fremont County, Colorado.

## Brown Lava Lode (Pink Lady)

LOCATION: sec. 5, T. 20 S., R. 72 W.  
 QUAD Royal Gorge 15'  
 MAP PUEBLO

DVEL There are two shallow shafts on the property, and a shallow prospect pit.  
 BKG .4 to 2.0 mr/hr  
 RNG 2.4 to 11.0 mr/hr  
 HOST The rhyolitic host has been fractured and weathered to a brown earthy mass. Mineralization occurs in the fracture zones.  
 STRC The fracture zones strike N80°W and dip 80°S. They are narrow (about 2 ft) and their length is unknown.  
 ALT Limonitic alteration occurred in the rhyolite.  
 MNZ No uranium or thorium minerals could be identified. Samples assayed .019 and .045% eU, and .007 and .027% U.  
 DOI 1950  
 REF U.S. Bur. of Mines, 1977, (Unpubl.). U.S. A.E.C., 1966, Preliminary Reconnaissance Reports, Fremont County, Colorado. U.S. Geol. Survey, 1975, Misc. Inv. Ser. Map 1-869.

## Cap Rock Claims (Cap Rock 40)

LOCATION: NW1/4 sec. 29, T. 17 S., R. 72 W.  
 QUAD Cover Mountain 15'  
 MAP PUEBLO  
 DVEL There are several prospects and pits in the area, and drilling was reported in the area.  
 PROD In 1962, 30 tons of ore were mined at grades of 0.11% U308 and 0.02% V205, producing 68 lbs of U308 and 12 lbs of V205.  
 BKG 200 cps  
 RNG 200 to 5000 cps  
 HOST The host is volcanic tuffs and conglomerate in the Oligocene Tallahassee Creek conglomerate.  
 STRC Cracks in the flows below the conglomerate have a high count and some autunite occurring in them.  
 MNZ There is a small amount of autunite.  
 DOI 1977  
 REF E. P. Beroni, 1978, Personal Communication. U.S. Bur. of Mines, 1977, (Unpubl.). U.S. A.E.C., 1971, Production Records, Colorado. Western Nuclear Submittal file.

## Claim 2

LOCATION:  
 LCST UNLOCATABLE  
 MAP PUEBLO  
 PROD In 1955, one ton of ore averaging 0.40% U308 and 0.10% V205 and containing 8 lbs of U308 and 2 lbs of V205 were shipped to the mill at Rifle.  
 DOI 1971  
 REF U.S. A.E.C., 1971, Production Records, Colorado.

## Colexco No. 1-43 (Red Cliff 30)

LOCATION: sec. 18, T. 17 S., R. 70 W.  
 LCRM South of Red Canyon Park. This deposit also extends to sec. 7-8 and 17-18.  
 QUAD Cover Mountain 15'  
 MAP PUEBLO  
 DVEL Some prospecting and surface work have been carried out.

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PROD 1,407 tons were mined from the Red Cliff 30 during the period 1960-1967, at an average grade of 0.08% U308, producing 2,326 lbs of U308. Totals include 19 tons at 0.22% U308 mined in 1960.

BKG .05 mr/hr

RNG .10 to .60 mr/hr

HOST The radioactivity was found in a member of the Cretaceous Dakota Sandstone over an area 2,000 ft x 3,000 ft and 1 to 6 ft thick. Where the radioactive member outcrops, counts of 30 to 60 times background were observed.

STRC Silicified vertical fractures, later silicified localized or provided access for the mineralizing solutions.

MNZ The radioactivity is associated with silica, iron, and manganese. Uranophane and carnotite were identified. Assays show from .010 to .094% eU and 0.080 to 0.92% U. About 0.1% V2O5, and from 0.010 to 0.521% Mn was reported. The mineralization is often found in nodules and concretions in the sandstone.

RMKS Range of radioactivity averages .10 to .15 mr/hr with a maximum of .20 to .60 mr/hr.

DOI 1954

REF U.S. Geol. Survey, 1977, CRIB File. U.S. Bur. of Mines, 1977, (Unpubl.). U.S. A.E.C., 1971, Production Records, Colorado. U.S. A.E.C., 1971, Preliminary Reconnaissance Reports, Fremont County, Colorado.

## Conac Minerals, Inc. Mining Claims (Wagner-Grape Creek Lode)

LOCATION: SW1/4 sec. 7, T. 20 S., R. 71 W.

LCST UNSURVEYED

QUAD Royal Gorge 15'

MAP PUEBLO

DVEL Several old test pits, shallow mine shafts, and adits that were prospected for base metals, gold and silver.

RNG .30 to 1.60 mr/hr

HOST The host is Precambrian granite gneiss, and hornblende gneiss with granite pegmatites. Five moderate shear zones, two to five ft wide cut the the granite, with surface expressions traceable for 1/4 to 1/2 mile.

MNZ The oxide zone contains heavy iron oxide with abundant yellow ochre, hematite, limonite, and thorite. Also present in the vein zone are calcite, barite, siderite, galena, quartz, thorite, and copper minerals. The radioactivity is primarily due to thorium.

DOI 1954

REF U.S. A.E.C., 1966, Preliminary Reconnaissance Reports, Fremont County, Colorado. Singewald, Q. D., Christman, R. A., and Brock, M. R., 1953. Christman, R. A., and others, 1953, TEM-218. Christman, R. A., and others, 1953, U.S.G.S. Circular 290.

## Copper Gulch

LOCATION: sec. 25, T. 18 S., R. 72 W.

LCRM Also in sec. 27.

QUAD Royal Gorge 15'

MAP PUEBLO

PROD The average grade of the deposit is 0.28% U308.

STRC The deposit occurs along a fault zone that is approximately 20 ft wide and a mile long.

MNZ Ore minerals include autunite, meta-autunite, and tobernite.

DOI 1977

REF Atlantic Richfield Company, 1977, Personal Communication.

## D-C Claims (Owl Claims, Samargar No. 7 Claim of Karl Pinnet on Dilley Ranch.)

LOCATION: sec. 33, T. 17 S., R. 70 W.

LCRM These claims also extend to sec. 34, T. 17 S., R. 70 W., and sec. 3, 4, T. 18 S., R. 70 W.

QUAD Cooper Mountain 7 1/2'

MAP PUEBLO

OVEL Bennett Nuclear drilled seven holes. In 1952, three core holes were drilled, showing grades of 0.023% at 38.0 ft.

PROD Average grade ranged from 0.003 to 0.007% U308.

BKG 80 to 100 cps

RNG 200 to 7000 cps

HOST The host is the Cretaceous Dakota Sandstone. Mineralization was found in slump blocks downhill from the outcrop, and traced to the outcrop itself.

STRC The mineralization is localized along the numerous fractures in the sandstone.

ALT The fractures are surrounded by heavy iron staining with which the radioactivity is found.

MNZ The minerals are primarily oxidized. Samples submitted by the owner in the 1950's assayed 0.052% eU308 and 0.043% cU308.

RMKS As of April 1977, the property was being evaluated by Bennett Nuclear, Denver, Colorado. Part of it, at least, is owned by Trites Drilling and Exploration, Denver, Colorado.

DOI 1977

REF Atlantic Richfield Company, 1977, Personal Communication. Harry Granger, 1977, Personal Communication. U.S. A.E.C., 1966, Preliminary Reconnaissance Reports, Fremont County, Colorado.

## Deer Ridge Claim

LOCATION: sec. 33, T. 20 S., R. 71 W.

LCST UNSURVEYED

QUAD Royal Gorge 15'

MAP PUEBLO

DVEL Several prospect pits have been opened.

BKG .04 mr/hr

RNG .52 to 1.8 mr/hr

HOST The country rock is Precambrian granite and gneissic granite.

ALT The rock is weathered with limonitic alteration and kaolinization present and visible.

MNZ Limonite and kaolinite are the only identifiable minerals but the highest radioactive count is associated with them.

RMKS Also in the same area are the Billy Joe, Blue Ridge, and Red Bird Claims, which are only slightly radioactive.



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DOI 1954  
REF U.S. Bur. of Mines, 1977, (Unpubl.). U.S. Geol. Survey, 1975, Misc. Inv. Ser. Map 1-869. U.S. A.E.C., 1966, Preliminary Reconnaissance Reports, Fremont County, Colorado.

## Dickson-Snooper Mine (Ponderosa, Rainbow-Moose Ore Bodies)

LOCATION: NW1/4 sec. 26, T. 17 S., R. 73 W.  
LCRM Ben Dickson fee land and claims.  
QUAD Black Mountain 15'  
MAP PUEBLO  
DVEL Three open pits: Snooper, Dickson, Rainbow-Moose. Average depth to ore is 45 ft.  
PROD During the period 1956-1961, a total of 9,664 tons of ore averaging 0.22% U3O8 and containing 43,149 lbs U3O8 was mined from the Snooper and Dickson pits. Also, 2,247 lbs of V2O5 were recovered. In 1961, 1,071 tons averaging 0.20% U3O8 and containing 4,211 lbs U3O8 were mined from the Rainbow-Moose pit.  
HOST Arkosic carbonaceous conglomerate and tuffs in the Oligocene Tallahassee Creek Conglomerate.  
MNZ Autunite has been identified.  
DOI 1978  
REF E. P. Beroni, 1978, Personal Communication. U.S. Geol. Survey, 1977, CRIB File. U.S. Bur. of Mines, 1977, (Unpubl.). Young, P. and Mickle, D. G., 1976. U.S. A.E.C., 1971, Production Records, Colorado. McPherson, B. A., 1959.

## Dilley Lease (Dilley Ranch)

LOCATION: sec. 28, T. 17 S., R. 70 W.  
QUAD Cooper Mountain 7 1/2'  
MAP PUEBLO  
DVEL A 180 ft bench cut was made, and a 14 ft adit driven S85°E.  
PROD U.S. A.E.C. records show 19 tons mined at a grade of 0.10% U3O8, producing 232 lbs of U3O8 during 1959 and 1960.  
RNG .4 to 1.5 mr/hr  
HOST The mineralized area is near the base of the Jurassic Morrison Formation. The mineralized zone is a gypsiferous, carbonaceous, black shale bed approximately two ft thick and limonite or jarosite stained. The bed strikes N85°W, and dips 12°S. The coal and carbonaceous material appears to have localized the radioactivity.  
MNZ Channel and grab samples examined show .11 to .50 mr/hr radioactivity. Uraninite and coffinite were identified.  
DOI 1975  
REF Harry Granger, 1977, Personal Communication. U.S. Geol. Survey, 1977, CRIB File. U.S. Bur. of Mines, 1977, (Unpubl.). U.S. A.E.C., 1971, Production Records, Colorado. U.S. A.E.C., 1966, Preliminary Reconnaissance Reports, Fremont County, Colorado.

## East Big Wash (Sputnik No. 1)

LOCATION: sec. 27, T. 17 S., R. 73 W.  
QUAD Black Mountain 15'

MAP PUEBLO  
HOST The host is a late Tertiary sediment, possibly of the Tallahassee Creek Conglomerate.  
MNZ Uraninite and coffinite were identified.  
DOI 1971  
REF U.S. A.E.C., 1971, Production Records, Colorado.

## Felch Creek 1

LOCATION: sec. 26, T. 17 S., R. 70 W.  
QUAD Cooper Mountain 7 1/2'  
MAP PUEBLO  
BKG .05 mr/hr  
RNG To .17 mr/hr  
HOST The host is the Cretaceous Dakota Sandstone.  
MNZ Boulders of Dakota Sandstone have a manganese coating which is associated with the anomalous radioactivity.  
DOI 1954  
REF U.S. A.E.C., 1966, Preliminary Reconnaissance Reports, Fremont County, Colorado.

## First Chance

LOCATION: NW1/4 sec. 31, T. 17 S., R. 72 W.  
QUAD Black Mountain 15'  
MAP PUEBLO  
DVEL Small open pit. Average depth to ore is 45 ft.  
PROD During 1959 and 1960, a total of 606 tons of ore were mined having an average grade of 0.19% U3O8 and containing 2,303 lbs of U3O8.  
HOST Conglomerates and arkosic sandstone in the Oligocene Tallahassee Creek Conglomerate.  
MNZ Uraninite and autunite have both been identified here.  
DOI 1978  
REF E. P. Beroni, 1978, Personal Communication. U.S. Geol. Survey, 1977, CRIB File. Young, P. and Mickle, D. G., 1976. U.S. A.E.C., 1971, Production Records, Colorado.

## Good Hope Dreamer (Dreamer Mine, Dreamer, Delano No. 5-12, Minnesota No. 1)

LOCATION: S1/2 sec. 30, T. 18 S., R. 73 W.  
LCST UNCERTAIN  
LCRM The CRIB File lists this as being in sec. 2, T. 47 N.; R. 12 E., and in sec. 34, 35, T. 48 N., R. 12 E.  
QUAD Cotopaxi 15'  
MAP PUEBLO  
DVEL One small adit has been dug.  
PROD One ton of ore at a grade of 0.20% U3O8 was shipped to the mill at Canon City in 1959.  
BKG .01 mr/hr  
RNG .4 to 1.0 mr/hr  
HOST The host rocks are Precambrian mica schists & hornblende schists, with a siliceous reef cutting them at a steep angle. The schist dips 30°E at the ore occurrence.  
MNZ The radioactive mineral is black, probably uraninite or pitchblende, and is associated with pyrite, limonite, and hematite. Accessory minerals include mica, magnetite, fluorite, and secondary copper minerals. Assays show 0.032 and 0.053% U3O8.

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RMKS Other areas nearby in the wash are also radioactive, and drilling has shown mineralization at a depth of 6 to 8 ft.

DOI 1955.

REF U.S. Geol. Survey, 1977, CRIB File. U.S. Bur. of Mines, 1977, (Unpubl.) U.S. A.E.C., 1971, Production Records, Colorado. U.S. A.E.C., 1966, Preliminary Reconnaissance Reports, Fremont County, Colorado.

## Gunnison School Section Mine (Colorado Lease 519, Section 36 Mine)

LOCATION: NE1/4 sec. 36, T. 17 S., R. 73 W.

QUAD Black Mountain 15'

MAP PUEBLO

DVEL Surface and underground mining were carried out on this lease. Average depth to ore is 75 ft.

PROD Between 1957 and 1967, the cumulative total was 14,308 tons mined at a grade of 0.24% U3O8, producing 68,116 lbs of U3O8.

HOST The host is a volcanic, arkosic, conglomerate within the Oligocene Tallahassee Creek Conglomerate.

MNZ Mineralization is of the uraninite/coffinite type.

RMKS This was a state lease.

DOI 1976

REF U.S. Geol. Survey, 1977, CRIB File. U.S. Bur. of Mines, 1977, (Unpubl.) Young, P., and Mickle, D. G., 1976. U.S. A.E.C., 1971, Production Records, Colorado. U.S. A.E.C., 1959, (RME-141).

## Hanson Ore Body

LOCATION: E1/2 sec. 21, T. 17 S., R. 73 W.

DVEL As of 1978, this ore body had been drilled out with reserves at 30,000,000 lbs of U3O8. Area is an old uranium mining district (Tallahassee Creek). Production to date is from the same and similar horizons. See other occurrences in same area for more geologic information. Production is planned to begin in 1983.

HOST Eocene Echo Park Conglomerate.

MNZ Uraninite.

RMKS This mine will be an important producer in the state in the future. The property is being developed by Rampart Exploration Corp. It is owned by Cypress Mines Corp. Westinghouse Corp. has recently bought 49% interest in the property for approximately \$68.6 million.

DOI 1978

REF Cyprus Mines, 1978, Personal Communication. Nucleonic's Week, April 20, 1978.

## Hilltop Prospect

LOCATION: SE1/4 sec. 29, T. 17 S., R. 72 W.

MAP DENVER

DVEL There are two prospect pits.

HOST Conglomerate sand in the Oligocene Tallahassee Creek Conglomerate.

MNZ Uranium has been identified.

DOI 1978

REF E. P. Beroni, 1978, Personal Communication.

## Homestake 2 & 6 Claims

LOCATION: sec. 3, T. 20 S., R. 73 W.

LCRM Sec. 3 extends into sec. 4.

QUAD Cotopaxi 15'

MAP PUEBLO

DVEL There is a shaft at Homestake No. 2, and prospect pits at Homestake No. 6.

BKG .02 mr/hr

RNG .2 to .8 mr/hr

HOST The host is a Precambrian microcline granite cut by Tertiary shear zones.

STRC A shear zone localized the ore. The shears extend considerable distances but are poorly exposed and are irregularly radioactive.

MNZ The radioactivity appears to be associated with ilmonite, but siderite, barite, quartz, fluorite, galena and copper carbonates are also present. Grab samples show between 0.016 and 0.13% eU3O8, and 0.0004 and 0.0013% U3O8. The samples have calculated ranges of 0.086 to 0.72% eThO2. Spectrographic analyses showed the presence of Th, Be, Zr, P, La, Ce, Nd, Sm, Y, Yb, Ay, and Er.

DOI 1953

REF U.S. A.E.C., 1966, Preliminary Reconnaissance Reports, Fremont County, Colorado.

## Hoyt Adkins Ranch Anomaly 3

LOCATION: sec. 13, T. 18 S., R. 69 W.

LCRM Extends into sec. 14.

QUAD Florence 7 1/2'

MAP PUEBLO

BKG 20 cps

RNG To 1000 cps

HOST The radioactive material is found in a limestone which contains siliceous inclusions in the form of stringers and nodules.

MNZ No radioactive mineral is visible, but the radioactivity seems to be associated with travertine and caliche.

DOI 1953

REF U.S. A.E.C., 1966, Preliminary Reconnaissance Reports, Fremont County, Colorado.

## James-Taylor Lease (Spring Valley)

LOCATION: sec. 2, T. 17 S., R. 73 W.

QUAD Black Mountain 15'

MAP PUEBLO

PROD According to U.S. A.E.C. Records in 1956, six tons averaging 0.10% U3O8, 0.12% V2O5, and containing 12 lbs U3O8 and 14 lbs V2O5 were mined.

BKG .07 cps

RNG .4 to .7 cps

HOST The host is a series of lenses of black, carbonaceous, shaly sandstone in a ilmonite stained, medium- to coarse-grained arkosic sandstone of early Tertiary age. The beds strike north-south, and dip 11° to the east. The largest carbonaceous lens observed was 14 ft long and 2 ft thick.

MNZ No uranium minerals were identified, but primary uranium minerals may be present in the carbonaceous lenses.

DOI 1971

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REF U.S. Bur. of Mines, 1977, (Unpubl.). U.S. A.E.C., 1971, Production Records, Colorado. U.S. A.E.C., 1966, Preliminary Reconnaissance Reports, Fremont County, Colorado.

## Jesus Lode

LOCATION: sec. 28, T. 18 S., R. 72 W.

LCST UNSURVEYED

QUAD Royal Gorge 15'

MAP PUEBLO

DVEL Two bulldozer cuts are present on the property.

HOST The host is Cretaceous Dakota Sandstone.

STRC Joint planes appear to localize the mineralization.

MNZ Torbernite occurs sparsely disseminated as crystal aggregates on the joint planes. Samples assayed ranged from 0.004 to 0.037% eU and from 0.008 to 0.034% chemical U.

DOI 1950

REF U.S. Geol. Survey, 1975, Misc. Inv. Ser. Map 1-869. U.S. A.E.C., 1966, Preliminary Reconnaissance Reports, Fremont County, Colorado.

## Joan 2 Mine (Seattle Chief Mine)

LOCATION: SE1/4NE1/4 sec. 14, T. 17 S., R. 73 W.

LCRM Property adjoins the Smaller Lease and Little Abner Mine.

QUAD Black Mountain 15'

MAP PUEBLO

DVEL Open pit mine with underground workings off the walls of the pit. Average depth to ore is 125 ft.

PROD During the period 1958-1963, a total of 10,286 tons of ore averaging 0.23% U3O8 and containing 47,801 lbs of U3O8 were mined.

HOST Arkosic carbonaceous sandstone containing lenses of conglomerate and siltstone in the Eocene Echo Park Alluvium.

STRC The ore body is bounded on the east by the northwest trending Mary L thrust fault which dips 30° to the northeast. The highest grade ore bodies occur along northeast trending normal faults especially where they intersect the Mary L fault.

MNZ Uraninite replacing carbonized vegetated material has been identified. Limonite staining is abundant.

DOI 1978

REF E. P. Beroni, 1978, Personal Communication. U.S. Geol. Survey, 1977, CRIB File. U.S. Bur. of Mines, 1977, (Unpubl.). Young, P. and Mickle, D. G., 1976. U.S. A.E.C., 1971, Production Records, Colorado. McPherson, B. A., 1959. U.S. A.E.C., 1959. (RME-141).

## Knob Hill Mine (Dipper Mine, Knob Hill OS, Knob Hill Ore Body)

LOCATION: SW1/4S1/2 sec. 22, T. 17 S., R. 73 W.

LCRM Lease on Ben Dickson fee land.

QUAD Black Mountain 15'

MAP PUEBLO

DVEL Surface and underground mining has been carried out. Open pits with underground workings off the walls of the pits. Average depth to ore is 45 ft.

PROD From the Knob Hill Ore Body as of 1-1-67, 2,901 tons had been mined at a grade of 0.20% U3O8 and 0.01% V2O5, producing 11,681 lbs of U3O8 and 801 lbs. of V2O5. Between 1967 and 1971, Knob Hill produced 434 lbs of U3O8 from 146 tons of ore at a grade of 0.15% U3O8.

HOST Eocene Tallahassee Creek Conglomerate composed of andesite breccia, volcanic conglomerates and carbonaceous tuff beds.

STRC The mineralization occurs in lenticular shape masses.

MNZ Uraninite and autunite.

DOI 1978

REF E. P. Beroni, 1978, Personal Communication. U.S. A.E.C., 1971, Production Records, Colorado.

## Last Chance

LOCATION: NE1/4NE1/4 sec. 31, T. 17 S., R. 72 W.

LCRM Mined area extends into SE1/4SE1/4 sec. 30, T. 17 S., R. 72 W.

QUAD Black Mountain 15'

MAP PUEBLO

DVEL Open pit with underground workings extending off walls of pit. Average depth to ore is 90 ft.

PROD During the period 1958-1966, a total of 18,575 tons of ore averaging 0.31% U3O8 and containing 114,765 lbs of U3O8 were mined.

HOST Carbonaceous tuff and volcanic conglomerate of the Oligocene Tallahassee Creek Conglomerate.

MNZ Autunite has been identified. Uraninite is probably present in the deeper parts of the ore body.

DOI 1978

REF E. P. Beroni, 1978, Personal Communication. U.S. Geol. Survey, 1977, CRIB File. U.S. A.E.C., 1971, Production Records, Colorado.

## Lightning 2 (DAC Uranium, Lightning No. 1-8, Honest John No. 1-15)

LOCATION: sec. 11, T. 47 N., R. 11 E.

LCST UNSURVEYED

LCRM Directions given as follow: "From Cotopaxi go 3.2 mi. west on U.S. 50, turn left, go 0.2 mi., turn right, go 0.9 miles, turn left through gate and proceed through farmyard, go 0.2 mi., turn right, go 0.2 mi., turn right, go 0.1 mi., turn left, go 0.3 mi. to the claim." These claims also lie in sec. 14.

QUAD Cotopaxi 15'

MAP PUEBLO

DVEL The operators drilled 49 non-core holes to totalling 3,180 ft, one 120 ft core hole, and bulldozed about 1,000 cubic yds of material. An adit had been driven by June, 1956.

PROD In 1956, 102 tons of 0.09% U3O8 ore were mined, producing 193 lbs of U3O8.

BKG .03 mr/hr

RNG .6 to 3.0 mr/hr

HOST The host is Precambrian Pikes Peak Granite. It has been cut by a shear zone, which localized vein filling.

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**STRC** The altered shear zone trends northwest and may be related to two major faults in the area: one on the east flank of the Sangre de Cristos, trending NW-SE and terminating in the vicinity of the deposit; the other north of Cotopaxi; trending north-south and also terminating near the deposit. The fracturing and small cross faults in this shear zone appear to have localized the uranium ore.

**ALT** The rock has been altered along the shear zone. Kaolinization of the feldspars in the porphyritic granite has occurred.

**MNZ** The uranium mineral identified megascopically was autunite, which occurs as disseminations and fracture coatings. Individual samples range from .08 to .6 mr/hr when tested for radioactivity, or from 0.100 to 0.177% eU308.

**DOI** 1955

**REF** U.S. Geol. Survey, 1977, CRIB File. U.S. Bur. of Mines, 1977, (Unpubl.). U.S. A.E.C., 1971, Production Records, Colorado. U.S. A.E.C., 1966, Preliminary Reconnaissance Reports, Fremont County, Colorado.

## Little Abner Mine

**LOCATION:** SE1/4NE1/4 sec. 14, T. 17 S., R. 73 W.

**LCRM** Property adjoins Smaller Lease and Joan No. 2 Mine.

**QUAD** Black Mountain 15'

**MAP** PUEBLO

**DVEL** Open pits with underground workings off pit walls. Average depth to ore is 55 ft.

**PROD** During the period 1962-1963, a total of 1,647 tons averaging 0.36% U308 and containing 11,651 lbs U308 were mined. Mine was also active in 1968-1971 to produce uranium for outside sales by the Cotter Corporation.

**HOST** Carbonaceous arkosic sandstone and conglomerate in the Eocene Echo Park Alluvium.

**MNZ** Autunite has been identified in the shallow parts of the ore body and uraninite in the deeper portions.

**DOI** 1978

**REF** E. P. Beroni, 1978, Personal Communication. U.S. Geol. Survey, 1977, CRIB File. U.S. Bur. of Mines, 1977, (Unpubl.). U.S. A.E.C., 1971, Production Records, Colorado.

## Mary L. (Mary L. 1-6 Claims)

**LOCATION:** SW1/4NW1/4 sec. 13, T. 17 S., R. 73 W.

**QUAD** Black Mountain 15'

**MAP** PUEBLO

**DVEL** Open pit mine. Ore extends from the surface to a depth of 50 ft.

**PROD** During the period 1955-1962, a total of 2,402 tons of ore averaging 0.24% U308 and containing 11,610 lbs of U308 were mined.

**HOST** Arkosic carbonaceous sandstone and conglomerate in the Eocene Echo Park Alluvium.

**STRC** The Mary L. fault forms a structural trap thrusting the Precambrian granite over the Echo Park. Fault strikes N40-45°W and dips to the northeast. Numerous small faults and fractures have increased the permeability of the sediments.

**MNZ** Uraninite has been identified.

**DOI** 1978

**REF** E. P. Beroni, 1978, Personal Communication. U.S. Geol. Survey, 1977, CRIB File. U.S. Bur. of Mines, 1977, (Unpubl.). Young, P. and Mickle, D. G., 1976. U.S. A.E.C., 1971, Production Records, Colorado. McPherson, B. A., 1959.

## Misery Mines (Red Hill?, Tanner Boy Group?, Joe & Bob Claims, Satan Group, Misery Mine 7)

**LOCATION:** sec. 22, T. 18 S., R. 73 W.

**LCRM** These claims extend into parts of sec. 9-11, 13-16, 24-25, according to various references.

**QUAD** Cotopaxi 15' and/or Royal Gorge 15'

**MAP** PUEBLO

**DVEL** Surface mining has been carried out.

**PROD** In 1956, three tons of ore were mined from the Misery Mine 7, at an average grade of 0.17% U308 and 0.08% V205, producing 10 lbs of U308 and 5 lbs of V205.

**HOST** The host is a sandstone and mudstone probably in the Oligocene Tallahassee Creek Conglomerate. The mineralization occurs as disseminations within the beds, primarily in the carbonaceous areas.

**MNZ** Autunite was identified.

**DOI** 1973

**REF** U.S. Geol. Survey, 1977, CRIB File. U.S. Bur. of Mines, 1977, (Unpubl.). U.S. A.E.C., 1971, Production Records, Colorado.

## Navajo (Big Emma)

**LOCATION:** sec. 17, T. 19 S., R. 73 W.

**MAP** PUEBLO

**HOST** The host is a Precambrian biotite schist and gneissic granite cut by pegmatites.

**MNZ** Magnetite and uranium minerals have been found as accessories in a pegmatite. The magnetite itself shows anomalous radioactivity.

**DOI** 1973

**REF** U.S. Geol. Survey, 1977, CRIB File.

## Perry DeLeillis Claim

**LOCATION:** sec. 15, T. 47 N., R. 11 E.

**LCST** UNSURVEYED

**LCRM** The claim is about 300 yds up Butter Creek and about 30 ft up on the south side of the creek.

**QUAD** Cotopaxi 15'

**MAP** PUEBLO

**DVEL** A very small excavation was started in the side of the hill.

**BKG** .03 mr/hr

**RNG** .45 to .46 mr/hr

**HOST** The host rocks are arkosic sandstones of the Permian red beds. The sandstones vary from gray to brown to red.

**MNZ** The radioactivity, in the form of minute spots of carnotite, occurs in the black, carbonaceous, woody fragments in the sandstone. Minor amounts of copper minerals are present.

**DOI** 1954

**REF** U.S. Bur. of Mines, 1977, (Unpubl.). U.S. A.E.C., 1966, Preliminary Reconnaissance Reports, Fremont County, Colorado.

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### Picnic Tree Mine (Picnic Tree Claims - Hall Homestead)

LOCATION: SW1/4 sec. 26, T. 17 S., R. 73 W.  
 QUAD Black Mountain 15'  
 MAP PUEBLO  
 DVEL Open pits. Average depth to ore is 50 ft.  
 PROD During the period 1958-1967, a total of 13,525 tons of ore averaging 0.20% U3O8 and containing 52,776 lbs U3O8 were mined. Also, 2,222 lbs of V2O5 were recovered.  
 HOST Carbonaceous water laid tuffs and volcanic conglomerates in the Oligocene Tallahassee Creek Conglomerate.  
 MNZ Autunite has been identified. Uraninite (?) is also present.  
 DOI 1978  
 REF E. P. Beroni, 1978, Personal Communication. U.S. Geol. Survey, 1977, CRIB File. U.S. A.E.C., 1971, Production Records, Colorado.

### Pine Canyon Lode (Southmost Claim Group)

LOCATION: NW1/4 sec. 34, T. 49 N., R. 10 E.  
 LCRM The deposit is 100 ft south of the road in steeply dipping red beds. The CRIB file lists a deposit located on sec. 28, 29, 32, & 33, T. 49 N., R. 10 E. that occurs like this one. They are probably the same or connected occurrences.  
 QUAD Howard 15'  
 MAP PUEBLO  
 DVEL A 30 ft tunnel was driven along bedding. To 3 x background.  
 RNG The deposit lies in a black shale member of the Permian-Pennsylvanian red beds (possibly Maroon or Minturn Formations). The beds strike S8°E, and dip 42°NE. A volcanic intrusive lies about 100 ft off the radioactive prospect. Three radioactive black shale beds lie within 15 ft of the red bed section. A coal seam is also nearby.  
 HOST Malachite is associated with the radioactive black shales, along bedding planes and fractures. Assays of samples range from 0.006 to 0.016% eU3O8.  
 MNZ  
 DOI 1954  
 REF U.S. Geol. Survey, 1977, CRIB File. U.S. Bur. of Mines, 1977, (Unpubl.). U.S. A.E.C., 1966, Preliminary Reconnaissance Reports, Fremont County, Colorado.

### Rupp Property (Rupp Mine 39)

LOCATION: W1/2 sec. 18, T. 17 S., R. 70 W.  
 QUAD Cover Mountain 15'  
 MAP PUEBLO  
 DVEL There is one small open pit, approximately 100 x 70 x 30 ft; also, some drilling has been carried out.  
 PROD There is no record of production with the U.S. A.E.C.  
 BKG 150 cps  
 RNG 300 to 2000 cps  
 HOST The host is the Cretaceous Dakota Sandstone, primarily a lenticular layer high in the formation.

STRC There appears to be some relationship to fracturing and faulting. The deposit is on the west side of a shallow N-S striking anticline.  
 ALT There are abundant leached clay galls and ilmenite staining.  
 MNZ Autunite and carnotite occurs in clay seams and vugs, the vugs being the casts of plant debris. The uranium minerals are oxidized, and associated with manganese and iron oxide-stained, silicified fractures on the surface. The relationship of mineralization to the fractured rocks is not as obvious in the pit.  
 RMKS As of 1976, the property was being drilled by Rampart Exploration Company of Denver, Colorado.  
 DOI 1977  
 REF Maurice Brady, 1977, Personal Communication. Atlantic Richfield Company, 1977, Personal Communication. Harry Granger, 1977, Personal Communication.

### Sand Creek Claims

LOCATION: NE1/4 sec. 1, T. 16 S., R. 71 W.  
 QUAD Cover Mountain 15'  
 MAP PUEBLO  
 DVEL Small surface cut.  
 PROD In 1958, one ton of ore averaging 0.20% U3O8 and containing 44 lbs of U3O8 were produced from the Sand Creek No. 4 Claim.  
 HOST Carbonaceous tuffs in the Oligocene Tallahassee Creek Conglomerate.  
 MNZ Uraninite and autunite were both identified.  
 DOI 1978  
 REF E. P. Beroni, 1978, Personal Communication. U.S. A.E.C., 1971, Production Records, Colorado.

### School Section

LOCATION: sec. 16, T. 19 S., R. 71 W.  
 LCRM This may possibly be the same deposit as the Tanner Boy and Red Hill Groups.  
 QUAD Royal Gorge 15'  
 MAP PUEBLO  
 DVEL Small open cut.  
 PROD U.S. A.E.C. Records show one ton of ore averaging 0.36% U3O8, containing 7 lbs U3O8 produced in 1956.  
 HOST Vein in Precambrian granite.  
 MNZ Uraninite.  
 DOI 1971  
 REF U.S. Bur. of Mines, 1977, (Unpubl.). U.S. A.E.C., 1971, Production Records, Colorado.

### Section 36 Mine (Glen Williams Mine)

LOCATION: NE1/4NW1/4 sec. 36, T. 17 S., R. 73 W.  
 LCRM Lease includes S1/2 sec. 36.  
 QUAD Black Mountain 15'  
 MAP PUEBLO  
 DVEL Surface and underground mining has been carried out on this lease. Average depth to ore is 130 ft.  
 PROD Between 1959 and 1962, a total of 3,379 tons were mined averaging 0.28% U3O8. A total of 18,834 lbs have been produced by this mine.

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HOST Fine-grained volcanic clastic unit of the  
Oligocene Tallahassee Creek Conglomerate.  
MNZ Uraninite.  
RMKS This is a state lease.  
DOI 1971  
REF U.S. A.E.C., 1971, Production Records, Colorado.

### Sheila 1

LOCATION: sec. 21, T. 48 N., R. 12 E.  
QUAD Cotopaxi 15'  
MAP PUEBLO  
DYEL Exploration has developed a small ore body,  
no production.  
HOST The deposit lies in Precambrian meta-sediments.  
MNZ Uraninite and/or coffinite were identified.  
DOI 1971  
REF U.S. A.E.C., 1971, Production Records, Colorado.

### Smaller Lease

LOCATION: SE1/4NE1/4 sec. 14, T. 17 S., R. 73 W.  
LCRM Property adjoins the Little Abner and Joan  
No. 2 Mines.  
QUAD Black Mountain 15'  
MAP PUEBLO  
DYEL Open pit with underground workings off pit  
walls. Average depth to ore is 45 ft.  
PROD Between 1957 and 1961, a total of 4,871  
tons of ore averaging 0.30% U3O8 and containing  
29,322 lbs of U3O8 had been mined. In addition,  
113 lbs of V2O5 were recovered.  
HOST Conglomeratic arkosic sandstone in the Eocene  
Echo Park Alluvium.  
MNZ Uraninite has been identified.  
DOI 1976  
REF E. P. Beroni, 1977, Personal Communication.  
Young, P., and Mickle, D. G., 1976. U.S. A.E.C.,  
1971, Production Records, Colorado. McPherson,  
B. A., 1959.

### Sunrise Claims 1, 2, 3 (Stinkhole Claims)

LOCATION: sec. 20, T. 20 S., R. 71 W.  
LCST UNSURVEYED  
LCRM This also extends to sec. 21.  
QUAD Royal Gorge 15'  
MAP PUEBLO  
DYEL This is an old shaft and numerous small  
cuts and prospect pits.  
PROD No production according to U.S. A.E.C. records.  
BKG .6 mr/hr  
RNG 1.0 to 3.4 mr/hr  
HOST The deposit lies in a Tertiary vein cutting  
Precambrian granite, gneiss, and a silicified  
basalt dike.  
STRC The tabular vein can be traced more than  
1/2 mile, striking N33°-40°W, and dipping  
55°SW. It is 3 ft wide, more than 100 ft  
thick, and horsetails at depth.  
ALT The dike within the shear zone is partially  
altered to clay minerals.  
MNZ The vein contains barite, galena, and thorite,  
with minor amounts of quartz, siderite,  
hematite and ilmenite. Samples assayed showed

from 0.028 to 0.03% eU, 0.15 to 1.70% eThO2,  
and 0.001% eU3O8.

DOI 1951  
REF U.S. Geol. Survey, 1977, CRIB File. U.S.  
Geol. Survey, 1975. U.S. A.E.C., 1966, Preliminary  
Reconnaissance Reports, Fremont County,  
Colorado.

### Sunshine Claims

LOCATION: NE1/4SW1/4 sec. 30, T. 17 S., R. 72 W..  
LCRM Claims also extend to sec. 29, T. 17 S.,  
R. 72 W.  
QUAD Black Mountain 15'  
MAP PUEBLO  
DYEL Open pit mine. Average depth to ore is 90 ft.  
PROD During the period 1953 to 1955, a total  
of 1,145 tons of ore averaging 0.27% U3O8  
and containing 6,235 lbs of U3O8 were mined.  
Also, 46 lbs of V2O5 were recovered. All  
production is credited to the Sunshine No.  
2 Claim.  
HOST Rhyolite boulder conglomerate and carbonaceous  
ash beds in the Oligocene Tallahassee Creek  
Conglomerate.  
STRC The highest grade portion of the ore body  
is near a fault.  
MNZ Autunite has been identified. Uraninite  
probably occurs in the deeper parts of the  
ore body.  
DOI 1978  
REF E. P. Beroni, 1978, Personal Communication.  
U.S. Geol. Survey, 1977, CRIB File. Young,  
P., and Mickle, D. G., 1976. U.S. A.E.C.,  
1971, Production Records, Colorado. McPherson,  
B. A., 1959.

### Tanner Boy Group (Red Hills Group)

LOCATION: sec. 15, T. 19 S., R. 71 W.  
QUAD Royal Gorge 15'  
MAP PUEBLO  
HOST The host consists of Precambrian gneisses  
and granites cut by diabase dikes.  
DOI 1973  
REF U.S. Geol. Survey, 1977, CRIB File.

### Texas Creek

LOCATION: SE1/4 sec. 35, T. 49 N., R. 12 E.  
LCRM Also extends to T. 18 S., R. 73 W.  
QUAD Cotopaxi 15'  
MAP PUEBLO  
DYEL There is a shaft (less than 100 ft deep)  
in the east side of the wash.  
PROD A few tons of fluorite ore were produced.  
BKG 150 to 200 cps  
RNG 150 to 8000 cps  
HOST The host is a series of undifferentiated  
Precambrian hornblende and biotite gneisses  
with garnet and fluorite; possibly a quartz  
reef in gneiss.  
STRC Quartz veins and fractures have localized  
the mineralization.  
ALT Some ilmenite is present and the vein is  
highly weathered.  
MNZ Radioactivity in the area is associated  
with fluorite, with uraninite the only mineral

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identified. Assays of the vein material show 0.032, 0.083, and 0.10% eU308. Spectrographic analysis show 0.05% Thorium.

DOI 1977  
REF Maurice Brady, 1977, Personal Communication.  
Norman Bennette, 1977, Personal Communication.  
Ken Hodgason, 1977, Personal Communication.  
Western Nuclear, 1977, Company reports, 1977.

## Thome Claims (Thome 1-14)

LOCATION: SE1/4 sec. 26, T. 17 S., R. 73 W.  
QUAD Black Mountain 15'  
MAP PUEBLO  
DVEL Open pit. Average depth to ore is 70 ft.  
PROD During the period 1960 to 1965, a total of 2,593 tons averaging 0.27% U308 and containing 13,771 lbs of U308 were mined from the Thome 9 and 10 Claims. Also, 1,342 lbs of V205 were recovered.  
HOST Boulder and cobble conglomerates and carbonaceous tuffs in the Oligocene Tallahassee Creek Conglomerate.  
MNZ Uraninite.  
DOI 1978  
REF E. P. Baroni, 1978, Personal Communication.  
U.S. A.E.C., 1971, Production Records, Colorado.

## Unnamed 1

LOCATION: sec. 12, T. 19 S., R. 71 W.  
LCRM Directions given as follow: "About 2 mi. southwest of Canon City, follow right split in road along Grape Creek about 1 mi. out of Canon City to end of road. Walk on water pipe for about 1/2 mile. Large pegmatites, exposed just beyond contact of Precambrian and sediments in the Precambrian".  
QUAD Royal Gorge 15'  
MAP PUEBLO  
DVEL Some underground mining was done on this property.  
BKG .04 mr/hr  
RNG .08 to .12 mr/hr  
HOST The deposit lies in a large pegmatite located near the bottom of Grape Creek gulch. The dike cuts the Precambrian Idaho Springs Formation.  
MNZ The pegmatite is composed of pink feldspar, biotite mica, and minor quartz.  
DOI 1953  
REF U.S. Bur. of Mines, 1977, (Unpubl.). U.S. Geol. Survey, 1975. U.S. A.E.C., 1966, Preliminary Reconnaissance Reports, Fremont County, Colorado.

## Unnamed 2

LOCATION: sec. 9, T. 20 S., R. 71 W.  
LCST UNCERTAIN  
QUAD Royal Gorge 15'  
MAP PUEBLO  
RMKS Described as a "wide radioactive shear zone that trends slightly east of north, about 0.1 mile to the west-northwest locality "6" page 20-24 in Journal listed below.  
REF Singewald, Q. D., 1966.

## Unnamed 4

LOCATION: sec. 11, T. 47 N., R. 11 E.  
LCST UNCERTAIN  
QUAD Cotopaxi 15'  
MAP PUEBLO  
DVEL There are several small prospects.  
BKG 50 to 150 cpm  
RNG 600 average cpm  
HOST The host is a red sandstone, possibly of the Pennsylvanian-Permian Maroon Formation. The radioactive minerals are associated with carbonaceous debris in the sandstone.  
MNZ There are three unidentified radioactive minerals visible; one bright yellow, one yellow-green and one turquoise in color. They may be carnotite and volborthite. Samples read between 4 and 12 times background.  
DOI 1952  
REF U.S. A.E.C., 1966, Preliminary Reconnaissance Reports, Fremont County, Colorado.

## Unnamed 5

LOCATION: SW1/4 sec. 21, T. 49 N., R. 10 E.  
QUAD Howard 15'  
MAP PUEBLO  
DVEL There is an inclined adit about 70 ft down the dip of a coal bed.  
HOST The host is a Permian-Pennsylvanian coal.  
STRC The coal bed dips 35°N, with a thickness of 16 to 20 in.  
MNZ No minerals were noted, but assays showed 0.003 to 0.004% eU and 0.002% chemical U.  
DOI 1950  
REF U.S. A.E.C., 1966, Preliminary Reconnaissance Reports, Fremont County, Colorado.

## Willis Tuttle

LOCATION: NE1/4SW1/4 sec. 26, T. 20 S., R. 71 W.  
LCST UNSURVEYED  
QUAD Royal Gorge 15'  
MAP PUEBLO  
DVEL Four shallow pits have been dug.  
HOST The host is a Precambrian complex intruded by a granite dike which was faulted, fractured, and mineralized.  
MNZ Thorium is responsible for the radioactivity, with thorite and its secondary alteration products probably the major radioactive minerals. The gangue is of quartz. Samples assayed showed 0.007 to 0.31% eU, and 0.001 to 0.002% chemical U.  
DOI 1950  
REF U.S. A.E.C., 1966, Preliminary Reconnaissance Reports, Fremont County, Colorado.

## GARFIELD COUNTY

Production from Garfield County is large. The county is approximately fifth in production in the state. As of 1971, 394,134 tons of ore had been mined containing 553,444 lb of  $U_3O_8$ , and 11,928,419 lb of  $V_2O_5$ .

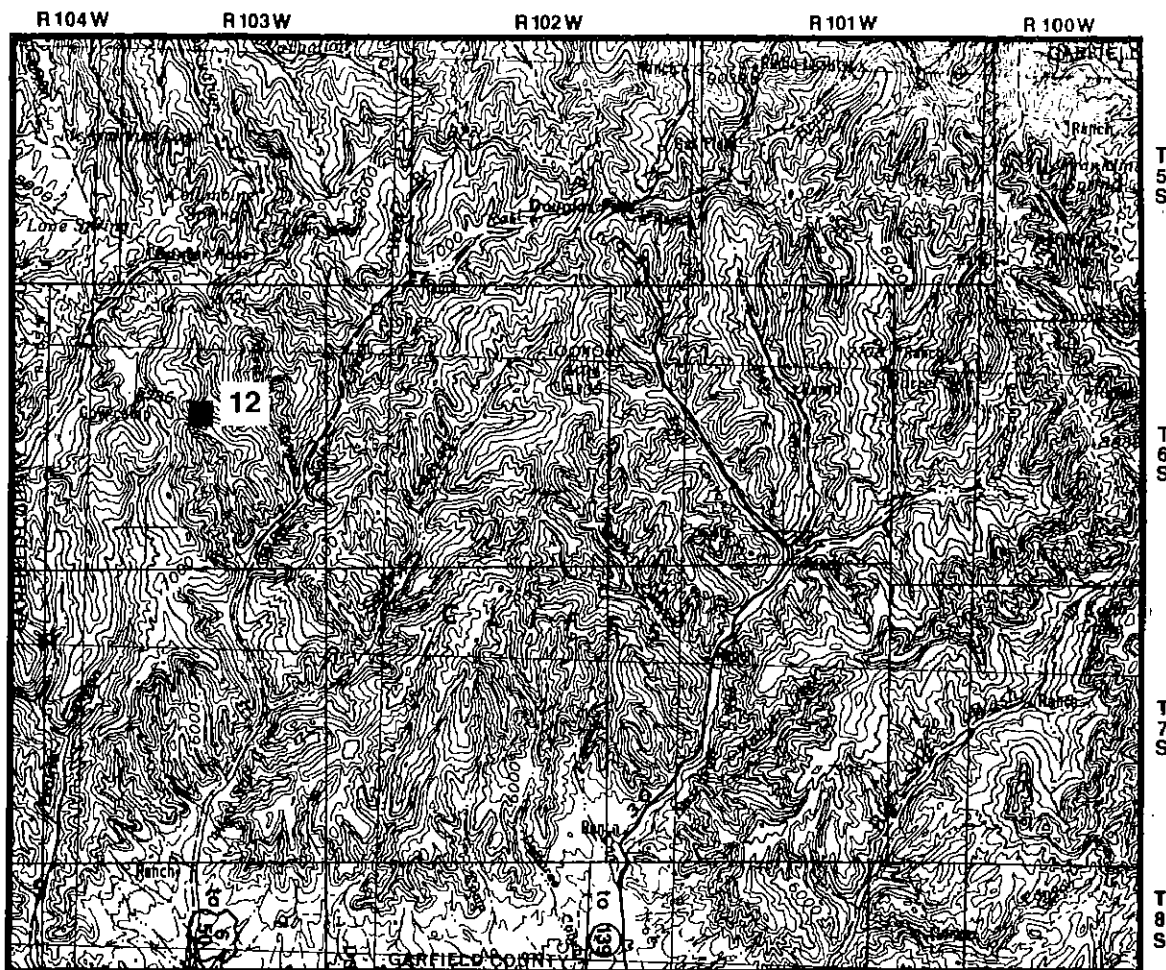
Garfield County, which lies in westernmost Colorado, typifies much of the Colorado Plateau terrane with relatively flat-lying sedimentary beds covering most of the county. The eastern third of the county is structurally more complex and is dominated by the Grand Hogback Monocline and the White River Uplift. The extreme northeastern part of the county is surfaced by Late Tertiary and Quaternary andesites and basalt flows that form the Flat Tops, a mountainous area now designated as Flat Tops Wilderness Area.

Nearly all the county's uranium production came before 1954. A total of about 394,000 tons of uranium-vanadium ore was mined, and most of that came from the Rifle and Garfield mines. The Rifle Mine yielded 387,613 tons of that ore, and the Garfield Mine produced 6,230 tons. Both mines are situated on extensions of the same ore body. One source estimates at least 50,000 tons of ore still are in reserve at the Rifle Mine. A mill at Rifle processed the ore from the mines and still operates as a secondary recovery system for vanadium from Uravan mineral belt ores. Plans are in progress to reactivate the plant as a uranium mill.

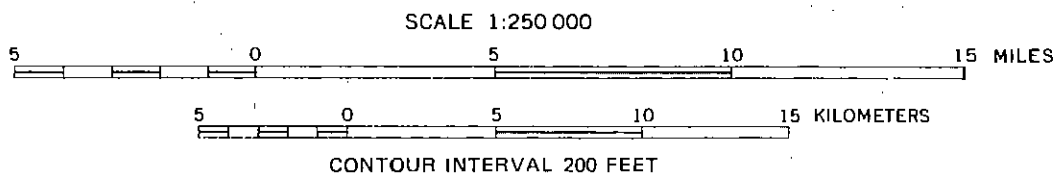
The Rifle Mine and the Garfield Mine are the most important occurrences in the county. Mines in the Rifle district and most other occurrences in the county lie in the Jurassic Morrison and Entrada Formations, and Triassic-Jurassic Navajo Sandstone, or the Triassic Chinle Formation. The largest mines (including the Rifle and Garfield mines) all produce from the Entrada Sandstone, with minor extensions into the Morrison Formation or the Navajo Sandstone. An interesting occurrence, different from any of the other known occurrences in the county, was discovered in a test well that was drilled for oil. The Schulte 1 occurrence is a highly radioactive black shale horizon in a 1-ft-thick alternating shale-quartzite zone near the base of the Cambrian Sawatch Quartzite. The major drawback, for this area at least, is that the deposit lies at a depth of 8,455 ft. However, it is similar to occurrences found near Burns and State Bridge in Eagle County. This enlarges the area of these unconformity-type occurrences and makes them more interesting exploration targets.

Favorable beds with high potential in the county include the Morrison Formation, the Entrada Sandstone, the Navajo Sandstone, and the Chinle Formation. These beds are all known to contain uranium and vanadium deposits, both in this county and in the Colorado Plateau in general.





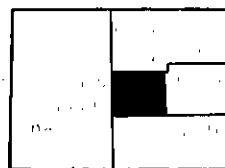
Base from U.S.G.S.



### EXPLANATION

- COAL, SHALE, LIMESTONE  
HOST ROCKS FOR OCCURRENCE
- 7 OCCURRENCE NUMBER FROM TEXT

### LOCATION OF INSET



GRAND JUNCTION  
1° x 2° SHEET

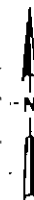


Figure 14. Radioactive mineral occurrences in part of Garfield County, Colorado.

# GARFIELD COUNTY

## Atlas Minerals Corporation Property

LOCATION: T. 5 S., R. 93 W.  
 LCST UNCERTAIN  
 QUAD Rifle 7 1/2' or Horse Mountain 7 1/2'  
 MAP LEADVILLE  
 DVEL There was some minor production with underground workings. As far as can be determined, no ore was shipped.  
 HOST The host is probably the Jurassic Entrada Sandstone.  
 MNZ Uranium and vanadium mineralization were found.  
 DOI 1975  
 REF U.S. Bur. of Mines, 1977 (Unpubl.).

## Elk Van Tunnel and UV Claims (UV and Elk Van Claims)

LOCATION: sec. 30, T. 4 S., R. 91 W.  
 LCRM The deposit extends to sec. 31 and 32. It lies 15 miles northeast of Rifle.  
 QUAD Rifle Falls 7 1/2'  
 MAP LEADVILLE  
 DVEL This was an underground mine.  
 PROD As of 1971, 22 tons had been mined at a grade of 0.16% U3O8 and 1.6% V2O5, producing 72 lbs of U3O8 and 737 lbs of V2O5.  
 HOST The host is uncertain. It is either the Jurassic Entrada Sandstone or the Morrison Formation. The deposit occurs as massive tabular bodies.  
 MNZ Uranium and vanadium mineralization are present, with carnotite and tyuyamunite as the main ore minerals.  
 DOI 1973  
 REF U.S. Geol. Survey, 1977, CRIB File. U.S. Bur. of Mines, 1977, (Unpubl.). U.S. A.E.C., 1971, Production Records, Colorado. Fischer, R. P., 1960. Finch, W. I., 1946, U.S. A.E.C. RMO-0442.

## End of Trail 1 & 2

LOCATION: sec. 10, T. 5 S., R. 91 W.  
 LCRM Also sec. 15. The mine lies 5 1/2 miles north of Newcastle on the east slope of Elk Creek Valley.  
 QUAD Deep Creek Point 7 1/2' or Newcastle 7 1/2'  
 MAP LEADVILLE  
 DVEL The End of Trail #1 had all of the production for these claims during 1953.  
 PROD As of 1971, a total of 200 tons of ore had been mined at a grade of 0.22% U3O8 and 1.96% V2O5, producing 891 lbs of U3O8 and 7,850 lbs of V2O5.  
 HOST The host rock is the Jurassic Morrison Formation.  
 MNZ Carnotite and tyuyamunite were recognized in the mine, associated with a carbonaceous material.  
 DOI 1960  
 REF U.S. Geol. Survey, 1977, CRIB File. U.S. Bur. of Mines, 1977, (Unpubl.). U.S. A.E.C., 1971, Production Records, Colorado. Fischer, R. P., 1960.

## Enterprise 1, 2, 3

LOCATION:  
 LCST UNLOCATABLE  
 LCRM This deposit lies in the Rifle area.  
 DVEL Eight tons of ore had been mined by 1971 at a grade of 0.09% U3O8 and 0.51% V2O5, producing 155 lbs of U3O8 and 81 lbs of V2O5.  
 HOST The host is probably the Jurassic Entrada Sandstone.  
 DOI 1971  
 REF U.S. A.E.C., 1971, Production Records, Colorado.

## Garfield Mine

LOCATION: NW1/4NE1/4SW1/4 sec. 34, T. 4 S., R. 92 W.  
 LCRM The deposit also extends to sec. 33. U.S. A.E.C. Production Records also show sec. 28, 33 and 35.  
 QUAD Rifle Falls 7 1/2'  
 MAP LEADVILLE  
 PROD As of 1971, 6,230 tons of ore had been mined at a grade of 0.05% U3O8 and 1.51% V2O5, producing 6,756 lbs of U3O8 and 188,498 lbs of V2O5.  
 HOST The host is primarily the Jurassic Entrada Sandstone, but in some places the ore also crosses into the Tertiary-Jurassic Navajo Sandstone. The deposit occurs as massive tabular ore bodies.  
 MNZ The mine was worked for uranium and vanadium, but lead, selenium, and chromium are also present in small amounts. The mineralization is distinctive because of the "fractionation" of these minor and the ore minerals roscoelite, montroselite, pascolite, carnotite, tyuyamunite, galena, mariposite and clausthalite are among the minerals recognized at the mine.  
 RMKS For more detail, see the "Rifle Mine", also in this county. They are spatially close and geologically nearly identical, being genetically related.  
 DOI 1951  
 REF U.S. Geol. Survey, 1977, CRIB File. U.S. A.E.C., 1971, Production Records, Colorado. U.S. A.E.C., 1966, Preliminary Reconnaissance Reports, Garfield County, Colorado. Fischer, R. P., 1960. Smith, C. T., 1946.

## Homestake Mine

LOCATION:  
 LCST UNLOCATABLE  
 LCRM This deposit lies in the Rifle district.  
 PROD As of 1971, 27 tons of ore had been mined at grades of 0.16% U3O8 and 2.70% V2O5, producing 88 lbs of U3O8 and 1,459 lbs of V2O5.  
 HOST The host is probably the Jurassic Morrison Formation.  
 DOI 1971  
 REF U.S. A.E.C., 1971, Production Records, Colorado.

## Incorporated 1, 2, 3 & 4

LOCATION:  
 LCST UNLOCATABLE

# GARFIELD COUNTY

LCRM This deposit lies in the Rifle district.  
 PROD As of 1971, five tons of ore had been mined at grades of 0.15% U308 and 2.28% V205, producing 15 lbs of U308 and 228 lbs of V205.  
 HOST The host is probably the Jurassic Morrison Formation.  
 DOI 1971  
 REF U.S. A.E.C., 1971, Production Records, Colorado.

## Lottl B (Lottl 1-3, Canary, Canary 2 & 3)

LOCATION: sec. 14, T. 5 S., R. 91 W.  
 LCRM Also sec. 13.  
 QUAD New Castle 7 1/2'  
 MAP LEADVILLE  
 PROD By 1971, six tons of ore had been mined at grades of 0.13% U308 and 0.43% V205, producing 151 lbs of U308 and 52 lbs of V205.  
 HOST The host is the Jurassic Morrison Formation.  
 MNZ Carnotite and tyuyamunite are the ore minerals.  
 DOI 1971  
 REF U.S. A.E.C., 1971, Production Records, Colorado.

## Marvola Lode 1-14 (Marvol)

LOCATION:  
 LCST UNLOCATABLE  
 LCRM This deposit lies in the Rifle district.  
 PROD By 1971, 20 tons of ore had been mined at grades of 0.13% U308 and 1.04% V205, producing 50 lbs of U308 and 418 lbs of V205.  
 HOST The host is the Jurassic Morrison Formation.  
 DOI 1971  
 REF U.S. A.E.C., 1971, Production Records, Colorado.

## Revelation Group

LOCATION: S1/2 sec. 35, T. 5 S., R. 90 W.  
 QUAD Storm King Mountain 7 1/2'  
 MAP LEADVILLE  
 DVEL A six ft adit was driven at the best exposure along the outcrop.  
 BKG .02 mr/hr  
 RNG To .25 mr/hr  
 HOST The host is the Salt Wash Member of the Jurassic Morrison Formation. It is a medium-grained sandstone both massive and cross-bedded in thin series. There are some carbon seams and siltstone pebble conglomerate. The deposit strikes N55°W., and dips 30°SW. It is about 125 ft long, with an average thickness of 8 in.  
 MNZ Radioactive mineralization occurs in the sandstone and in bone fragments. Sparse malachite is present, with calcite as a gangue minerals. Grab sample assays range from 0.12% to 0.33% eU, with one chemical assay of a bone being 0.20% U308.  
 DOI 1954  
 REF U.S. Bur. of Mines, 1977, (Unpubl.). U.S. A.E.C., 1966, Preliminary Reconnaissance Report, Garfield County, Colorado. MacQuown, W. C., 1945, Structure of the White River Plateau near Glenwood Springs, Colorado: Geol. Soc. Am. Bull. v. 56 no. 10.

## Rifle Mine (Rifle Creek Mine, Oriole Claims, and North Star Claims)

LOCATION: NW1/4NE1/4NW1/4 sec. 35, T. 4 S., R. 92 W.  
 QUAD Rifle Falls 7 1/2'  
 MAP LEADVILLE  
 DVEL The occurrence was discovered about 1909, and mining began around 1922. Little production has taken place since 1954, although the CRIB File estimates that there are probably at least 50,000 tons of ore still in reserve. The deposit was mined for 7,000 ft along the trend of the ore.  
 PROD As of 1971, 387,613 tons of ore had been mined at grades of 0.07% U308 and 1.51% V205, producing 545,260 lbs of U308 and 11,728,996 lbs of V205.  
 HOST The mineralization is primarily in the Jurassic Entrada Sandstone, and the Triassic-Jurassic Navajo Sandstone Formation.  
 STRC The Grand Hogback and several other sets of eastward and northwestward trending faults are prominent in the area, but these do not have any apparent control over the ore deposition. The faults are all post-ore, and offset the veins.  
 MNZ The primary minerals in the deposit are micaceous vanadium silicates (roscoelite) and montroselite, with some carnotite, tyuyamunite, galena-clausthalite, bayleyite, and mariposite. The ore occurs in three tabular layers (Nos. 1, 2, 3) each of which is bounded on one side by a thin (1/8 in.) layer of 4 galena-clausthalite, which is in turn bordered by a 11 to 2 ft layer of greenish sandstone containing a micaceous chromium - bearing mineral. These galena - clausthalite and chromium - bearing layers lie about No. 1 and No. 3 veins, but below No. 2 vein. If the veins were connected they would form an "S" shaped curve.  
 DOI 1960  
 REF U.S. Geol. Survey, 1977, CRIB File. U.S. Bur. of Mines, 1977, (Unpubl.). U.S. A.E.C., 1971, Production Records, Colorado. Fischer, R. P., 1960.

## Schulte 1 - SW1/4, Test Well

LOCATION: SW1/4 sec. 15, T. 6 S., R. 103 W.  
 LCST UNSURVEYED  
 QUAD Baxter Pass 7 1/2'  
 MAP GRAND JUNCTION  
 DVEL The radioactive horizon was discovered in the Schulte No. 1 test well for oil. The well was drilled at least to 8,455 ft.  
 RNG Average 0.1% (est.)  
 HOST A highly radioactive black shale occurs near the base of the Sawatch quartzite of upper Cambrian age. The black shale appears as thin 0.1 ft beds in a dolomitic quartzite. A zone of interbedded shale and quartzite about a foot thick at a depth of 8,455 ft in the well is radioactive, with the greatest count in the lowest 0.1 ft shale bed.  
 DOI 1954  
 REF U.S. A.E.C., 1966, Preliminary Reconnaissance Reports, Garfield County, Colorado. General Petroleum Company, Schulte No. 1, Gamma-ray

## GARFIELD COUNTY

log. Erdmann, C. E., 1934, Book Cliffs  
Coal Field: U.S. Geol. Surv. Bull. 851.

### Ward Gulch

#### LOCATION:

LCST UNLOCATABLE

PROD As of 1971, three tons of ore at grades  
of 0.10% U308 and 1.67% V205 had been mined,  
producing 6 lbs of U308 and 100 lbs of V205.

HOST The host is probably the Jurassic Morrison  
Formation.

DOI 1971

REF U.S. A.E.C., 1971, Production Records, Colorado.

## GILPIN COUNTY

Production of uranium from Gilpin County has been small in spite of the fact that the county was the first uranium mining district in the U.S. A little over 400 tons of ore was shipped between 1871 and 1960, and most of that was high-grade, hand-sorted ore mined for its radium content. Production noted after the AEC began to keep records amounted to 49.25 tons, which yielded 391 lb of  $U_3O_8$ .

Gilpin County is located in the north-central Colorado Front Range. Precambrian schists and gneisses of the Idaho Springs Formation are exposed throughout the county. Extensive bodies of granite, granite-gneiss, quartz-monzonite gneiss, and granite pegmatite intrude the Idaho Springs Formation.

The first pitchblende in the United States was found in Gilpin County on the dump of the Wood Mine in 1871. As a result of the Curies' work with this ore in Paris, the area attracted many uranium (radium) prospectors.

The uranium occurrences in Gilpin County are found in metal mines of the Front Range mineral belt in the Central City district, largely in the Quartz

Hill area. The two largest producers were the Wood Mine and the Carroll Mine. The mineralization occurs in Tertiary veins that cut Precambrian metasediments of the Idaho Springs Formation. In most, if not all, of the mines in the district, the pitchblende is concentrated in small, discontinuous pods and stringers in fissure veins. The uranium is subordinate to base- and precious-metals, which have been actively mined in the district. None of the known uranium occurrences are economically mineable for uranium under current market conditions.

Gilpin County probably does not have a great potential for future uranium mining in the known mining districts within the mineral belt. Major deposits of uranium ore are found outside but near to the mineral belt in veins cutting garnet biotite gneiss and quartz biotite schists. Most of these veins and productive ore deposits occur in northeastward- and eastward-trending faults or fault zones. One such deposit is the Schwartzwalder Mine in Jefferson County. There is some minor potential for discovering similar deposits in parts of Gilpin County.

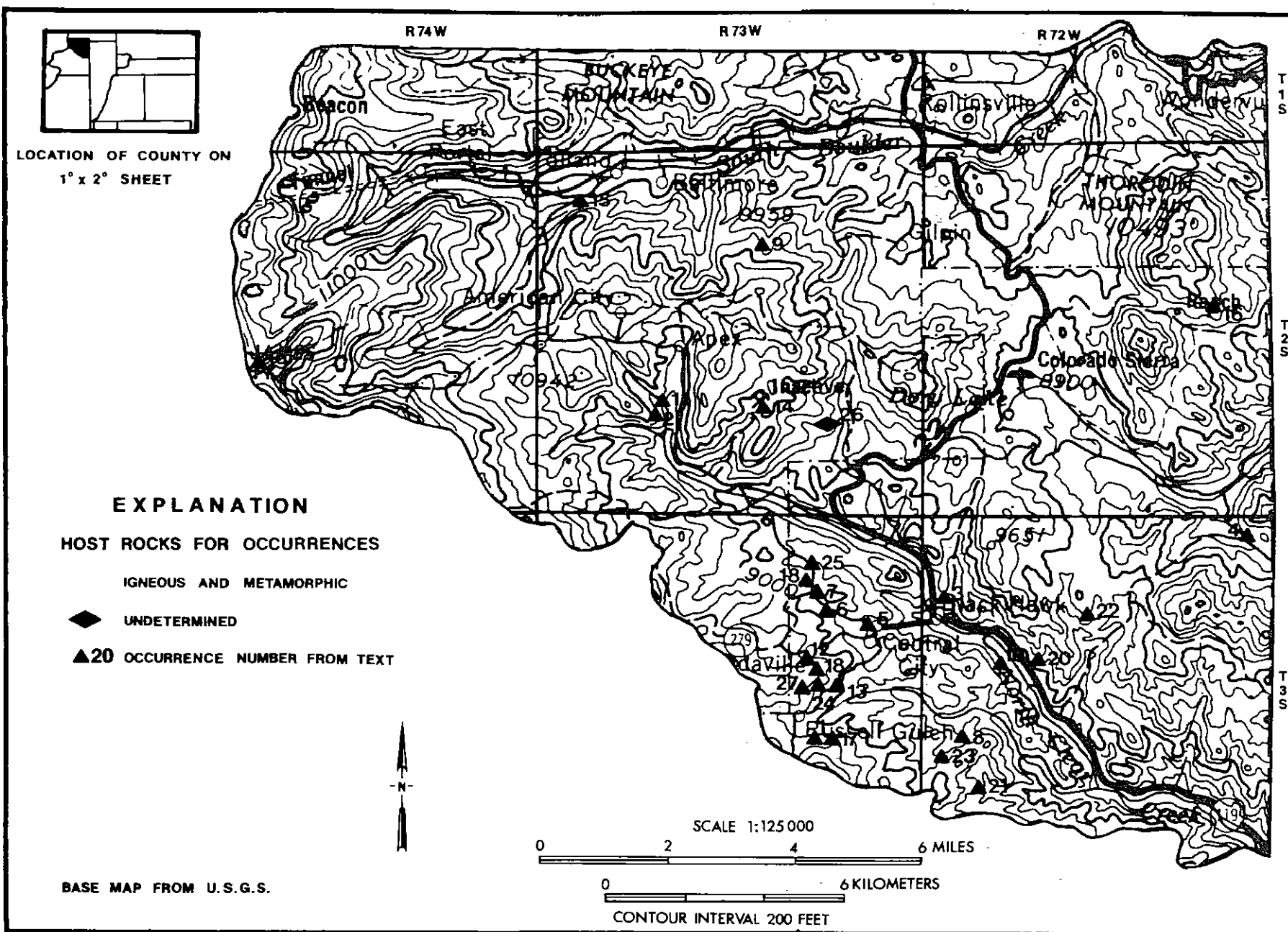


Figure 15. Radioactive mineral occurrences in Gilpin County, Colorado.

# GILPIN COUNTY

## Ashland Mine

LOCATION: sec. 23, T. 3 S., R. 73 W.

LCST UNCERTAIN

LCRM Location description is as follows: "Travel 4.1 miles south of Central City along upper Virginia Canyon road. Turn left at intersection of two Jeep roads and Gulch road. Take poorly defined Jeep road for a distance of 0.3 miles and park on old mine dump. Mine is located 2,000 ft due north and uphill."

QUAD Central City 7 1/2'

MAP DENVER

DVEL The mine was operative until 1942. There is a shaft 90 ft deep, an adit 200 ft long, and three pits above the mine.

BKG .03 mr/hr

RNG .076 to .3 mr/hr

HOST Precambrian schist and gneiss, of the Idaho Springs Formation, predominate in the area, with several north-south trending pegmatites in the proximity of the mine.

ALT The pegmatites are slightly altered.

MNZ Free milling gold occurs in the vein. Uranium mineralization occurs in the cracks and small vugs in the pegmatites. The principal uranium mineral is autunite, which impregnates the slightly altered pegmatites.

DOI 1955(?)

REF U.S. Bur. of Mines, 1977, (Unpubl.). U.S. A.E.C., 1966, Preliminary Reconnaissance Reports, Gilpin County, Colorado.

## Big Bertha Prospect

LOCATION: S1/2NE1/4 sec. 29, T. 2 S., R. 73 W.

LCST UNSURVEYED

QUAD Central City 7 1/2'

MAP DENVER

DVEL There is a single adit. Its portal is caved.

BKG .4 to 1.0 mr/hr

RNG 3.0 to 4.0 mr/hr

HOST The host is a pink to gray granite gneiss with local schlieren of biotite gneiss and amphibolite. It is a unit of the Idaho Springs Formation. It is cut by Tertiary veins, which contain the mineralization.

MNZ Primary ore minerals include pyrite (auriferous?), chalcopryrite, galena, and specularite. These are found as lenses, disseminated grains, veinlets, and local sheared aggregates in a gangue of milky to cherty quartz and creamy barite (?). A grab sample of radioactive material from the dump contains 0.017% eU, 0.0009% U, 0.03 oz/ton of gold, and 18.49 oz/ton of silver.

DOI 1952

REF U.S. Bur. of Mines, 1977 (Unpubl.). U.S. A.E.C., 1966, Preliminary Reconnaissance Reports, Gilpin County, Colorado.

## Black Hawk 2 Claim

LOCATION: NW1/4 sec. 7, T. 3 S., R. 72 W.

QUAD Black Hawk 7 1/2'

MAP DENVER

DVEL There is a partly caved adit, and numerous pits and dumps.

BKG .02 mr/hr

RNG To .3 mr/hr

HOST The host is a Precambrian biotite schist of the Idaho Springs Formation.

STRC The schist is cut by a Tertiary quartz vein that strikes N30 - 35°E and dips S8°W. Its length is 500 ft, width is 2 ft, and its general shape is tabular.

MNZ Quartz and limonite are present in the vein. Autunite(?) coats fracture surfaces and is sparsely disseminated through the biotite schist. Samples collected range from 0.08 to 0.15% eU.

DOI 1954

REF U.S. Bur. of Mines, 1977, (Unpubl.). U.S. A.E.C., 1966, Preliminary Reconnaissance Reports, Gilpin County, Colorado.

## Bowman Lease

LOCATION: NW1/4 sec. 1, T. 3 S., R. 72 W.

QUAD Black Hawk 7 1/2'

MAP DENVER

DVEL There are several old prospect pits in the area. This property had a pit 8 ft by 15 ft by 13 ft opened.

BKG .03 mr/hr

RNG To .6 mr/hr

HOST The host rock is a Precambrian granite gneiss of the Idaho Springs Formation. The rock in the pit is regolithic in appearance to a depth of 8 ft.

STRC A pronounced, iron-stained shear zone trends N70°W.

MNZ Limonite, hematite, and an unidentified black mineral (pyrolusite?) are present. The uranium mineral was not identified, but ore grade assays were obtained privately.

DOI 1955

REF U.S. Bur. of Mines, 1977, (Unpubl.). U.S. A.E.C., 1966, Preliminary Reconnaissance Reports, Gilpin County, Colorado.

# GILPIN COUNTY

## Buckley Mine

LOCATION: W1/2SW1/4 sec. 12, T. 3 S., R. 73 W.  
 LCST UNSURVEYED  
 LCRM The deposit extends to, or very near, sec. 11.  
 QUAD Central City 7 1/2'  
 MAP DENVER  
 DVEL The size of the dump indicates several hundred feet of workings.  
 BKG 65 cps  
 RNG 175 cps  
 HOST The Tertiary veins were intruded into Precambrian granite gneiss, amphibolite, and meta-sediments, probably of the Idaho Springs Formation.  
 STRC The mineralized vein strikes N70°E, and extends for 500 ft.  
 ALT Pyrite and pitchblende are both present, with quartz as a gangue material. The mine was worked for gold.  
 REF U.S. Geol. Survey, 1977, CRIB File. U.S. A.E.C., 1966, Preliminary Reconnaissance Reports, Gilpin County, Colorado. Sims, P. K., 1955. Sims, and others 1964. Bastin, E. S., and Hill, J. M., 1917, U.S. Geol. Survey Prof. Paper 94.

## Bullion

LOCATION: sec. 11, T. 3 S., R. 73 W.  
 LCST UNSURVEYED  
 QUAD Central City 7 1/2'  
 MAP DENVER  
 DVEL There is an inaccessible shaft on the property.  
 BKG .8 mr/hr  
 RNG 100 mr/hr  
 HOST The host is a Precambrian granite gneiss, with biotite-quartz - plagioclase gneiss, biotite gneiss, and pegmatite.  
 STRC Tertiary veins control the ore.  
 MNZ Sphalerite, galena, and pitchblende are present as the primary ores, and the gangue is quartz. A grab sample of the dump material assayed 6.7% eU, and 6.87% U.  
 DOI 1953  
 REF U.S. Bur. of Mines, 1977, (Unpubl.). U.S. A.E.C., 1966, Preliminary Reconnaissance Reports, Gilpin County, Colorado. Bastin, E. S., and Hill, J. M., 1917, U.S. Geol. Survey Prof. Paper 94, 379 p.

## Carrol Mine (Carrol, Spur-Daisy Group, Central City, Cherokee, Woodlree, Rara Avis)

LOCATION: NE1/4NW1/4 sec. 11, T. 3 S., R. 73 W.  
 LCST UNSURVEYED  
 LCRM This deposit extends to the N1/2S1/2 sec. 2  
 QUAD Central City 7 1/2'  
 MAP DENVER  
 DVEL There is one inaccessible shaft. The Carrol was worked for uranium. The other mines were worked for gold, silver, lead and zinc.  
 PROD During 1955, 16 tons of ore were mined at a grade of 0.68% U3O8 and 0.02% V2O5, producing 218 lbs of U3O8 and 5 lbs of V2O5.  
 BKG .8 mr/hr  
 RNG 36 to 100 mr/hr  
 HOST The host is a Precambrian granite gneiss, pegmatite, and biotite - quartz - plagioclase

gneiss, of the Idaho Springs Formation. It is cut by Tertiary bostonite porphyry dikes.  
 STRC Tertiary lead - zinc veins cut the Precambrian host rocks. One of these is the Rara Avis vein. The mineralization occurs in pods in the veins.  
 MNZ Sphalerite, pyrite, galena and pitchblende are present as primary mineralization, and quartz is the predominant gangue. Dump samples assayed between 0.17 and 1.7% eU, and between 0.03 and 0.94% U.  
 DOI 1953  
 REF U.S. Geol. Survey, 1977, CRIB File. U.S. A.E.C., 1971, Production Records, Colorado. U.S. A.E.C., 1966, Preliminary Reconnaissance Reports, Gilpin County, Colorado. Bastin, E. S., and Hill, J. M., 1917, U.S. Geol. Survey Prof. Paper 94, 379 p.

## Cherokee Mine

LOCATION: sec. 19, T. 3 S., R. 72 W.  
 LCST UNCERTAIN  
 LCRM This deposit may also extend into sec. 29.  
 QUAD Central City 7 1/2'  
 MAP DENVER  
 DVEL Some underground mining was carried out.  
 HOST The deposit lies in a quartz biotite schist of the Precambrian Idaho Springs Formation.  
 ALT The rock shows silicification and minor sericitization.  
 MNZ Pitchblende and Johannite are in association with galena, pyrite, sphalerite, copper sulfides, and minor silver minerals. The age of mineralization is probably Tertiary.  
 DOI 1955  
 REF U.S. Bur. of Mines, 1977 (Unpubl.). U.S. A.E.C., 1971, Production Records, Colorado. Page and others, 1956.

## Copper Queen (Copper King?)

LOCATION: sec. 10, T. 2 S., R. 73 W.  
 LCST UNCERTAIN  
 QUAD Nederland 7 1/2'  
 MAP DENVER  
 DVEL There is a 26 ft shaft.  
 BKG .01 to .05 mr/hr  
 RNG To .15 mr/hr  
 HOST The deposit is in a quartz vein with altered feldspar within the Precambrian biotite gneiss of the Idaho Springs Formation.  
 MNZ The mineralization lies in a quartz - pyrite vein, with small stringers of galena. The radioactive mineral was not identified, but may be pitchblende.  
 DOI 1953  
 REF U.S. Bur. of Mines, 1977 (Unpubl.). U.S. A.E.C., 1966, Preliminary Reconnaissance Reports, Gilpin County, Colorado.

## E & H-Jelly Roll Mine

LOCATION: NW1/4 sec. 17, T. 3 S., R. 72 W.  
 QUAD Black Hawk 7 1/2'  
 MAP DENVER  
 DVEL Underground work was carried out, but no actual production took place.



# GILPIN COUNTY

HOST The faults acted as a locus for ore deposition in veins.  
 MNZ Uranium mineralization was recognized, along with iron oxide.  
 DOI 1973  
 REF U.S. Bur. of Mines, 1977, (Unpubl.). U.S. Geol. Survey, 1977, CRIB File.

## Elliot Mine (Wealthy Lode Mining Claim, Wealthy Lode Claim)

LOCATION: NE1/4 sec. 29, T. 2 S., R. 73 W.  
 LCST UNSURVEYED  
 QUAD Central City 7 1/2'  
 MAP DENVER  
 DVEL There are 270 ft of drifting along a shear zone, with a few small stopes also developed.  
 BKG .6 to 1.4 mr/hr  
 RNG To 80 mr/hr  
 HOST The host rock is a sheared, locally altered granite pegmatite with diorite and an amphibolite also present. It is in the Precambrian Idaho Springs Formation.  
 STRC Tertiary veining cuts the granite pegmatite and localizes the ore.  
 MNZ Primary minerals include pyrite, chalcopryite, galena, and uraninite. Secondary copper stains are localized in small area. The gangue is quartz.  
 DOI 1952  
 REF U.S. Geol. Survey, 1977, CRIB File. U.S. A.E.C., 1966, Preliminary Reconnaissance Reports, Gilpin County, Colorado. Sims, P. K., and Sheridan, D. M., 1964.

## Flack No. 3 Mine (Kirk Mine)

LOCATION: NW 1/4 sec. 14, T. 3 S., R. 73 W.  
 LCST UNSURVEYED  
 LCRM This mine is about 800 ft south of the Gold Coin Mine.  
 QUAD Central City 7 1/2'  
 MAP DENVER  
 DVEL The size of the dump indicates several hundred ft of underground workings.  
 BKG 80 cps  
 RNG 175 cps average  
 HOST The host is a granite gneiss with pegmatite and meta-sediments of the Precambrian Idaho Springs Formation, cut by Tertiary bostonite dikes.  
 STRC A Tertiary vein cuts the host and strikes N80°E for 1,700 ft. The mineralization occurs in veins as pods and lenses.  
 MNZ Galena, sphalerite, pyrite, and pitchblende are all present in a quartz gangue. The mine was originally worked for gold, silver and lead.  
 DOI 1954  
 REF U.S. Geol. Survey, 1977, CRIB File. U.S. Bur. of Mines, 1977, (Unpubl.). U.S. A.E.C., 1966, Preliminary Reconnaissance Reports, Gilpin County, Colorado. Sims, P. K., and others, 1963. Bastin, E. S., and Hill, J. M., 1917, U.S. Geol. Survey Prof. Paper 94, 379 p. Hill, J. M., 1945, (RMO-47). Gullotte, G. B., 1944, (RMO-48).

## German and Belcher

LOCATION: sec. 14, T. 3 S., R. 73 W.  
 QUAD Central City 7 1/2'  
 MAP DENVER  
 DVEL There was reportedly some gold and silver production from these mines, but no uranium.  
 HOST The host is a Precambrian microcline gneiss with biotite and quartz - plagioclase. It is intruded by pegmatite and bostonite porphyry of Tertiary age.  
 STRC The deposit occurs as pockets and lenses in a vein.  
 MNZ Uranium, gold, silver and copper minerals were recognized with pitchblende, galena, pyrite, and sphalerite.  
 DOI 1977  
 REF U.S. Geol. Survey, 1977, CRIB File. Sims, P. K. and others, 1963. Gullotte, G. B., 1944, (RMO-48).

## Gold Chief Mine

LOCATION: NE1/4NW1/4 sec. 27, T. 2 S., R. 73 W.  
 LCST UNSURVEYED  
 QUAD Central City 7 1/2'  
 MAP DENVER  
 DVEL There is 1,000 ft of drifting with considerable stoping on the "We Got Em" vein. There is a winze to sublevels at 40 and 100 ft (now flooded to 65 ft). Some stoping is present on the Reform vein.  
 BKG .4 to .15 mr/hr  
 RNG To 20.0 mr/hr  
 HOST The host is a gray granite gneiss that is probably a unit of the Precambrian Idaho Springs Formation. Tertiary veining cuts this, and contains the mineralization.  
 STRC The radioactivity appears to be associated with cross fractures on the "We Got Em" vein, and is in the form of fracture coatings.  
 MNZ Pyrite, chalcopryite and some free copper have been reported. Secondary minerals include secondary copper minerals and the radioactive material. Grab and chip samples range from 0.002 to 0.051% eU and from 0.001 to 0.002% U. Other samples assay between a trace and 11.76 oz/ton of silver, and 0.0922% Mn, 0.16% Cu, 0.07% Pb, and 0.22% Zn.  
 DOI 1952  
 REF U.S. Bur. of Mines, 1977, (Unpubl.). U.S. A.E.C., 1966, Preliminary Reconnaissance Reports, Gilpin County, Colorado.

## Gold Spring Group

LOCATION: SW1/4SE1/4 sec. 6, T. 2 S., R. 73 W.  
 LCST UNSURVEYED  
 LCRM The U.S. A.E.C. P.R.R. location is incorrect.  
 QUAD Nederland 7 1/2'  
 MAP DENVER  
 DVEL The workings on the property consist of 550 ft of adit, and 15 ft of drifting that were opened around 1900.  
 BKG .01 mr/hr  
 RNG To .4 mr/hr  
 HOST The host is an older Precambrian quartz - biotite schist that strikes N45°W and

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dips N 33°. It is a member of the Idaho Springs Formation.

STRC There are three thin veins, all mineralized with uranium. The first vein is 100 ft south of the portal, striking N68°W and dipping N85°. The second is 200 ft from the portal and strikes N70°W and dips N86°. The third vein is 500 ft south of the portal and strikes N60° and dips 50°N.

ALT A propylitized zone extends 10 - 15 ft on both sides of the veins. Three types of alteration are present: silicification, epidotization, and pyritization, in that order.

MNZ The veins range up to three in. thick and contain the following minerals, in their order of deposition: pyrite, quartz, and pitchblende.

DOI 1956

REF U.S. Bur. of Mines, 1977 (Unpubl.). U.S. A.E.C., 1966, Preliminary Reconnaissance Reports, Gilpin County, Colorado. Lovering, T. S., and Goddard, E. N., 1950.

## Golder - Passarella Claims

LOCATION: sec. 14, T. 2 S., R. 72 W.

QUAD Black Hawk 7 1/2'

MAP DENVER

DVEL A 15 ft shaft has been dug.

BKG .035 mr/hr

RNG .5 to 1.3 mr/hr

HOST The country rock is Precambrian Boulder Creek granite and a granite-gneiss, also Precambrian.

STRC The shaft exposes an altered breccia in a northwest trending shear zone.

MNZ Minor amounts of torbernite are visible in the profusely iron-stained breccia.

DOI 1954

REF U.S. Bur. of Mines, 1977, (Unpubl.). U.S. A.E.C., 1966, Preliminary Reconnaissance Reports, Gilpin County, Colorado.

## Iron Mine (Pewabic-Iron)

LOCATION: sec. 23, T. 3 S., R. 73 W.

LCST UNSURVEYED

QUAD Central City 7 1/2'

MAP DENVER

DVEL There is a shaft and several hundred ft of drifts associated with the Iron Vein.

HOST The wall rock is quartz - biotite gneiss of the Precambrian Idaho Springs Formation. It is intruded by Tertiary quartz bostonite porphyry.

STRC The Iron Vein strikes N85°W and dips 75 - 80°N. It varies in width between 6 and 30 in.

MNZ Uranium mineralization occurs south of the Iron Vein, and on the hanging wall of the vein. The gangue is primarily galena, sphalerite, and marmatite. The hanging wall portion of the vein consists of a main streak 2 to 8 in. wide, containing quartz, pyrite, clay, sericite, and thin laminated streaks less than 1/4 in. wide of pitchblende. Samples taken from the mine range from 0.003 to 1.57% eU, 0.001 to 1.71% U, 0.0 to 10.31%

Pb, 0.08 to 8.96% Zn, 0.0 to 0.36 oz/ton Au, and 0.0 to 27.56 oz/ton Ag.

DOI 1957

REF U.S. Bur. of Mines, 1977, (Unpubl.). U.S. Geol. Survey, 1977, CRIB File. U.S. A.E.C., 1966, Preliminary Reconnaissance Reports, Gilpin County, Colorado. Sims, P. K., and others, 1963.

## J. P. Whitney

LOCATION: SE1/4NW1/4 sec. 11, T. 3 S., R. 73 W.

LCST UNSURVEYED

QUAD Central City 7 1/2'

DVEL The size of the dump indicates that there are probably several hundred ft of workings.

BKG 100 cps

RNG average of 400 cps

HOST The host is a Precambrian series of granite gneiss, pegmatite, and metasediments of the Idaho Springs Formation.

STRC A tertiary vein cuts the Precambrian host.

MNZ A quartz gangue contains galena - sphalerite, pyrite, and pitchblende.

DOI 1958

REF U.S. A.E.C., 1966, Preliminary Reconnaissance Reports, Gilpin County, Colorado. Bastin, E. S., and Hill, J. M., 1917, U.S. Geol. Survey Prof. Paper 94, 379 p.

## James Peak Anomaly (Tucker #1)

LOCATION: sec. 20, T. 2 S., R. 74 W.

LCST UNSURVEYED

LCRM Directions to occurrences are as follows: "follow the Ute Pack Trail northeast of Little Echo Lake for 500 yds. The entire slope is anomalously radioactive. The Tucker #1 prospect is at an elevation of about 11,500 ft and is within 1/4 mile of the Continental Divide."

QUAD Empire 7 1/2'

MAP DENVER

BKG .02 to .04 mr/hr

RNG .08 to 0.8 mr/hr

HOST The host is hard, banded Precambrian Idaho Springs Formation with numerous small pegmatites paralleling and cutting its foliation.

STRC The Tucker #1 prospect is located on a fault striking N64°E and dipping 60°N which cuts through the gneiss and the injected pegmatite.

ALT The pegmatites, in places, have been partially altered to orthoschist.

MNZ The predominant minerals are biotite, orthoclase, and plagioclase. Limonite staining is common on the weathered face of the gneiss. A minor amount of a green uranium secondary mineral occurs on the fractured face of the shattered rock near the fault.

RMKS The property was discovered by airborne reconnaissance in 1953.

DOI 1956

REF U.S. Bur. of Mines, 1977, (Unpubl.). U.S. A.E.C., 1966, Preliminary Reconnaissance Reports, Gilpin County, Colorado.

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## Priscilla Claim (Priscilla Group Claims, Priscilla, Dorothy, and Sunshine)

LOCATION: NE1/4 sec. 17, T. 3 S., R. 72 W.  
 QUAD Black Hawk 7 1/2'  
 MAP DENVER  
 DVEL There is an abandoned shaft 6 by 8 ft by 25 ft deep, and three trenches 20 ft long by 2 ft wide by 2 ft deep. There are several old caved adits.  
 BKG .03 mr/hr  
 RNG .04 to .7 mr/hr  
 HOST The occurrence is in a Tertiary breccia reef surrounded by Precambrian granite. It is roughly tabular in shape, with 500 ft exposed along its length, 25 ft of depth exposed, and a width of 6 ft.  
 STRC The breccia strikes N50°W with a vertical dip.  
 ALT Alteration is noticeable around the breccia reef.  
 MNZ Gangue minerals include pyrite and hematite. Grab samples from the dump contained an estimated 0.01% to 0.05% eU. Selected pieces also taken from the dump assayed at 0.278% U308. Possible uranophane coats the fractures at the Sunshine discovery cut.  
 DOI 1955  
 REF U.S. Bur. of Mines, 1977, (Unpubl.). U.S. A.E.C., 1966, Preliminary Reconnaissance Reports, Gilpin County, Colorado.

## Root Ranch Lease

LOCATION: NE1/4 sec. 30, T. 3 S., R. 72 W.  
 LCRM U.S. A.E.C. P.R.R. also show sec. 19, 20 and 29.  
 QUAD Black Hawk 7 1/2'  
 MAP DENVER  
 DVEL The deposit was worked as both a surface and an underground property.  
 PROD Eight tons were mined during 1959, at a grade of 0.17% U308 producing 29 lbs of U308.  
 HOST The deposit occurs in veins and pegmatites which cut the Precambrian Idaho Springs Formation.  
 MNZ Autunite was recognized, along with iron oxide.  
 DOI 1974  
 REF U.S. Bur. of Mines, 1977, (Unpubl.). U.S. Geol. Survey, 1977, CRIB File. U.S. A.E.C., 1971, Production Records, Colorado.

## Smith Hill Gulch Prospect

LOCATION: sec. 9, T. 3 S., R. 72 W.  
 QUAD Black Hawk 7 1/2'  
 MAP DENVER  
 DVEL These claims were staked by Western Nuclear within the last five years.  
 RNG 2-3 x bg  
 HOST The occurrence lies in a Tertiary(?) bostonite dike within a shear zone which cuts the Precambrian Idaho Springs Formation.  
 STRC The Ralston Shear zone has localized ore emplacement.  
 MNZ No visible uranium minerals were reported, but the anomalous radioactivity is associated with specular hematite and copper.  
 REF Alan Reid, 1977, Personal Communication.

## Spread Eagle (Queen)

LOCATION: SW1/4 sec. 19, T. 3 S., R. 72 W.  
 QUAD Black Hawk 7 1/2'  
 MAP DENVER  
 DVEL There is a shaft and an adit. The adit is open, and the shaft is in good condition, but filled with water to within 35-40 ft of the collar.  
 BKG .02 to .2 mr/hr  
 RNG 5.0 or above mr/hr  
 HOST The host rock is Precambrian Idaho Springs schist and gneiss with some megacrystic granite, and granite pegmatite.  
 STRC The host rock is cut by Tertiary veins which contain the mineralization. The main vein is possibly an extension of the Little Annie vein.  
 MNZ Primary ore minerals include pyrite, chalcopyrite, sphalerite, galena, minor gold and pitchblende. Gangue minerals are quartz and minor barite. There are parallel bands of ore and gangue minerals, with quartz bands and some pitchblende bands showing colloform textures to the unaided eye. Pitchblende is disseminated in the gangue, in other metallics, and in the altered wall rocks. Assays of grab samples range from 0.40% to 1.97% U308.  
 DOI 1952  
 REF U.S. Bur. of Mines, 1977, (Unpubl.). U.S. A.E.C., 1966, Preliminary Reconnaissance Reports, Gilpin County, Colorado. Lovering, T. S., and Goddard, E. H., 1950. Bastin, E. S., and Hill, J. M., 1917, U.S. Geol. Survey Prof. Paper 94.

## Telegraph Mine

LOCATION: sec. 14, T. 3 S., R. 73 W.  
 QUAD Central City 7 1/2'  
 MAP DENVER  
 DVEL The property was worked from a shaft which is now inaccessible.  
 BKG .03 mr/hr  
 RNG To .2 mr/hr  
 HOST The occurrence was a Tertiary vein deposit intruded into Precambrian granite gneiss.  
 MNZ The primary ore minerals are pyrite, gold, and pitchblende. The main gangue material is quartz.  
 DOI 1951  
 REF U.S. Bur. of Mines, 1977, (Unpubl.). U.S. A.E.C., 1966, Preliminary Reconnaissance Reports, Gilpin County, Colorado. Bastin, E. S., and Hill, J. M., 1917, U.S. Geol. Survey Prof. Paper 94, 379 p.

## Two Sisters Claim (Two Sisters Group)

LOCATION: N1/2 sec. 11, T. 3 S., R. 73 W.  
 QUAD Central City 7 1/2'  
 MAP DENVER  
 DVEL The size of the dumps indicates a total of about 500 ft of workings. The main(?) shaft is caved. The small shaft at the east end of the claim is 40 ft deep and connects with a 100 ft drift.

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PROD In 1954, 0.25 tons of ore were mined at a grade of 1.80% U3O8, producing 9 lbs of U3O8.

BKG 75 cps

RNG Average 300 cps

HOST The deposit is in Tertiary veins and bostonite porphyry dikes intruded into Precambrian mica - quartz schist, granite pegmatite, and granite gneiss of the Idaho Springs Formation.

STRC Tertiary veins provided the major ore control. They strike predominantly N80°E, with branching veins striking N80°W.

MNZ The mine was originally worked for gold, silver, and lead. Galena, sphalerite, chalcopryite, some pyrite, pitchblende and uraninite are present, with torbernite(?) and uranophane(?) as secondary minerals. The gangue mineralization is quartz. The torbernite(?) is in veinlets with quartz, disseminated in a mica schist, and coats fracture surfaces. The uranophane(?) coats vugs in a limonitic gossan on the dump. A vein sample assayed at 0.92% eU and 1.42% U. A grab sample assayed 0.027% eU and 0.017% U.

DOI 1954

REF U.S. Geol. Survey, 1977, CRIB File. U.S. Bur. of Mines, 1977, (Unpubl.). U.S. A.E.C., 1971, Production Records, Colorado. U.S. A.E.C., 1966, Preliminary Reconnaissance Reports, Gilpin County, Colorado. Sims, P. K., and others, 1963. Bastin, E. S., and Hill, J. M., 1917, U.S. Geol. Survey Prof. Paper 94, 379 p.

1957. Page, L. R., and others, 1956. King, R. U., 1951, U.S. Geol. Survey TEM-102A. Gulliotte, G. B., 1944, (RMO-48).

## Unnamed 1

LOCATION: sec. 26, T. 2 S., R. 73 W.

QUAD Central City 7 1/2'

MAP DENVER

DVEL No production occurred at this location.

MNZ Pitchblende was found at the occurrence.

DOI 1973

REF U.S. Geol. Survey, 1977, CRIB File. Sims, P. K., and Sheridan, D. M., 1964.

## Wood Mine (East Calhoun Mine, Calhoun-Wood)

LOCATION: NW1/4SW1/4 sec. 14, T. 3 S., R. 73 W.

QUAD Central City 7 1/2'

MAP DENVER

DVEL There was production for gold and silver.

PROD During 1953 and 1954, 18 tons were mined at a grade of 0.204% U3O8, containing 59 lbs U3O8.

HOST The host is a vein in Precambrian granite gneiss with quartz, biotite and microcline.

MNZ The mine was worked principally for gold and silver, and later on a smaller scale for uranium. Pitchblende, galena, and sphalerite were all found.

RMKS The first discovery of pitchblende in the U.S. was in 1871 on the dump of the Wood Mine.

DOI 1950

REF U.S. Bur. of Mines, 1977, (Unpubl.). U.S. Geol. Survey, 1977, CRIB File. U.S. A.E.C., 1971, Production Records, Colorado. Sims, D. K., and others, 1963. Drake, A. A., Jr.,

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Uranium production from the county has been limited. Records show that by 1971, 218 tons of ore had been mined, and 837 lb of  $U_3O_8$  were recovered. Excellent potential exists for more reserves to be found within the county.

The county is bounded on the west by the Park Range and on the east by the Front Range. Middle Park covers the rest of the county between the two ranges. Precambrian granites, gneisses, migmatites and minor basin rocks comprise the cores of the two ranges. Middle Park is an intermontane basin filled with recent sediments. The county lies north of the mineral belt, and uranium is the only mineral that has been produced in any quantity.

The three deposits that have produced uranium in Grand County are the Alaska-Humes Group, CPJ Claims, and Undecided Claims. The Alaska-Humes Group, located near Rabbit Ears Pass, produced ore from the Cretaceous Dakota Sandstone. The ore occurred as discontinuous pods or lenses of carnotite(?) in the sandstone, associated with carbonaceous layers.

The CPG Claims are located near the town of Hot Sulphur Springs. The property produced from the Coalmont Formation at the point where the formation rests on eroded Boulder Creek Granite and may be an unconformity-related type of occurrence.

The Undecided Claims, also known as the Beaver Group, lie near the town of Hot Sulphur Springs and are found in the Coalmont Formation. The mineralization, which is very similar to that at the CPG Claims, not only is associated with the contact between the Coalmont and the Boulder Creek Granite, but also is found in cracks and joints in the granite.

Potential for reserves to be found in the county is very good. Of the ten different rock types containing occurrences, those having the greatest potential are the Tertiary Troublesome Formation for sandstone-type occurrences; the basal Coalmont Formation, which may contain sandstone or unconformity-related types; and the Precambrian Idaho Springs Formation which contains occurrences that may be contact-metamorphic or anatectic.

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### Alaska-Humes Group

LOCATION: SE1/4 sec. 20, T. 5 N., R. 82 W.  
 LCRM Also in sec. 16, 21, 28, 29.  
 QUAD Mount Werner 7 1/2' and Rabbit Ears Peak 7 1/2'  
 MAP CRAIG  
 DYEL Small open pit and trenches. Voss Oil Co. has drilled an estimated 150 holes for a total of 7,500 ft in 1955 - 1956.  
 PROD In 1960 and 1964, a total of 47 tons of ore averaging 0.20% U308 and containing 192 lbs of U308 were produced. During 1963, 71 tons averaging 0.06% U308 and containing 81 lbs of U308 was also shipped but no payment was received.  
 RNG To 10 x bg  
 HOST Fine grained, upper sandstone member of the Cretaceous Dakota Sandstone.  
 MNZ Carnotite is concentrated along close spaced "varve-like" carbonaceous laminae. Autunite is locally present in the silicified Dakota near contact with Mancos shale.  
 RMKS Carbon is partly removed leaving layered vuggy casts. The mineralization is in these casts. Near the surface autunite is main mineral. 2.5 ft below surface only carnotite is present.  
 DOI 1956  
 REF U.S. Geol. Survey, 1977, CRIB File. U.S. A.E.C., 1971, Production Records, Colorado. U.S. A.E.C., 1966, Preliminary Reconnaissance Reports, Grand County, Colorado. Malan, R. C., 1957. Schlottmann, J. D., 1957 (DAO-5-TM-45).

### Corral Creek Occurrence

LOCATION: sec. 36, T. 2 N., R. 79 W.  
 QUAD Hot Sulphur Springs 15'  
 MAP CRAIG  
 DYEL There are numerous prospect pits in the area.  
 RNG To 4 x bg  
 HOST Miocene Troublesome Formation, white to brown, fine- to medium-grained, crossbedded, carbonaceous sandstone.  
 MNZ Abundant jarosite stains.  
 RMKS Source of radioactivity could not be determined.  
 DOI 1953  
 REF U.S. A.E.C., 1966, Preliminary Reconnaissance Reports, Grand County, Colorado.

### CPJ Claims (Lucky Jack Prospect)

LOCATION: S1/2SE1/4 sec. 15, T. 1 N., R. 78 W.  
 QUAD Hot Sulphur Springs 15'  
 MAP CRAIG  
 DYEL There are trenches and a 38 ft long tunnel. Property was explored by Newmont Exploration.  
 PROD 10 tons at a grade of 1.33% U308 is reported on the PRR. The Production Records show that in 1954, 10 tons mined at a grade of 0.35% U308 and 0.05% V205 producing 66 lbs of U308 and 10 lbs of V205.  
 HOST The host is Paleocene Coalmont Formation, carbonaceous arkose, sandstone and conglomerate.

STRC Mineralization occurs in the regolith of the Coalmont where it rests on the Boulder Creek granite. There is faulting in the area.  
 ALT Granite is shattered along fault and contains chlorite up to 2 ft away from the fault.  
 MNZ Autunite in small lens of coaly material.  
 RMKS Section was withdrawn from mineral entry by U.S. Dept. of Interior, Fish and Wildlife Service, October 1953 for a winter range for elk and moose.  
 DOI 1956  
 REF U.S. Geol. Survey, 1977, CRIB File. U.S. A.E.C., 1971, Production Records, Colorado. Izett, G. A., 1968. U.S. A.E.C., 1966, Preliminary Reconnaissance Reports, Grand County, Colorado. Malan, R. C., 1957.

### Engles-Yust Property (Engals Ranch)

LOCATION: sec. 26, T. 1 N., R. 81 W.  
 QUAD Kremming 7 1/2'  
 MAP CRAIG  
 DYEL There is a 40 ft tunnel.  
 HOST A basal black mudstone channel in the Cretaceous Dakota.  
 MNZ Carnotite, a grab sample, had a value of 0.21% U308, a 3 ft channel sample had a value of 0.037% U308. There is abundant carbonaceous coaly matter in the host.  
 DOI 1954  
 REF U.S. A.E.C., 1966, Preliminary Reconnaissance Reports, Grand County, Colorado.

### First Chance

LOCATION: sec. 16, T. 1 N., R. 74 W.  
 QUAD Monarch Lake 7 1/2'  
 MAP GREELEY  
 DYEL Small ore body developed, but no production.  
 HOST The host is a Precambrian Idaho Springs Formation.  
 MNZ Pitchblende or uraninite, scattered sulfides.  
 RMKS This may be the Wheeler Basin occurrence as the description is very general.  
 DOI 1971  
 REF U.S. A.E.C., 1971, Production Records, Colorado.

### Jerome Claims (Alkali Flat Spring)

LOCATION: NW1/4NE1/4 sec. 32, T. 2 N., R. 79 W.  
 LCRM Description notes a strong sulphur smell at the spring. This is probably Sulphur Spring noted on the topo map.  
 QUAD Junction Butte 7 1/2'  
 MAP CRAIG  
 BKG ?  
 RNG To 2.5 m/hr  
 HOST Spring in Cretaceous Dakota (?) Sandstone.  
 STRC Vertical fracture in sandstone strikes N30°E. Sandstone has been uplifted around a small Precambrian batholith 1/2 mile southeast of spring.  
 MNZ Black material is being precipitated on sandstone and is radioactive. Grab sample had a value of 0.113% U308.  
 RMKS Spring is warm, has strong sulphur smell, and a flow of 30 gal/min.  
 DOI 1958 (?)  
 REF U.S. A.E.C., 1966, Preliminary Reconnaissance Reports, Grand County, Colorado.

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## Julie Johnson 1

LOCATION: SE1/4 sec. 29, T. 1 N., R. 74 W.  
 QUAD Monarch Lake 7 1/2'  
 MAP GREELEY  
 RNG maximum of 0.2 mr/hr  
 HOST Schist and apilite pegmatite dike in Precambrian Idaho Springs Formation. Dike is 8 ft wide.  
 STRC Fractured zone along schist - pegmatite contact. Strike of dike is N70°E., dip 72°N.  
 MNZ Uranium secondaries were found on a schist boulder downslope from the prospect.  
 RMKS At the prospect radioactivity is confined to a fracture zone on the contact. Note occurrence in Wheeler Basin 3 miles to the northeast, and the Phillips #1 occurrence 1/4 mile to the west.  
 DOI 1956  
 REF U.S. A.E.C., 1956, Preliminary Reconnaissance Reports, Grand County, Colorado.

## Lease #011850

LOCATION: sec. 15, T. 1 N., R. 78 W.  
 LCRM Also sec. 21, 22.  
 QUAD Hot Sulphur Springs 7 1/2'  
 MAP CRAIG  
 MNZ Uranium.  
 RMKS Probably a similar occurrence to CPJ Claims.  
 DOI 1973  
 REF U.S. Geol. Survey, 1977, CRIB File.

## Limestone Occurrence

LOCATION: sec. 31, T. 1 S., R. 81 W.  
 QUAD Gore Pass 7 1/2'  
 MAP LEADVILLE  
 RNG 3 x bg  
 HOST Jurassic Morrison Formation, fracture petroliferous limestone, 2 - 4 ft thick.  
 MNZ Manganese and iron stains on fractures.  
 RMKS Outcrop traced for 400 yds, equally radioactive on all parts of the outcrop.  
 DOI 1953  
 REF U.S. A.E.C., 1966, Preliminary Reconnaissance Reports, Grand County, Colorado.

## Lucky Strike 5

LOCATION: sec. 29, T. 2 N., R. 79 W.  
 QUAD Junction Butte 7 1/2'  
 MAP CRAIG  
 DVEL There are 5 test pits.  
 BKG .03 mr/hr  
 RNG 5.0 max. mr/hr  
 HOST Miocene Troublesome Formation, fluvial clays and sands.  
 MNZ Autunite, carnotite, jarosite. Channel samples had values from 0.01% to 0.14% U308. A 0.5 channel sample from an ore pile had a value of 0.20% U308.  
 DOI 1954  
 REF U.S. A.E.C., 1966, Preliminary Reconnaissance Reports, Grand County, Colorado.

## Lucky Strike Claims

LOCATION: sec. 31, T. 2 N., R. 79 W.  
 LCRM Also sec. 32.

QUAD Junction Butte 7 1/2'  
 MAP CRAIG  
 DVEL There are some prospect pits.  
 HOST Cold spring water deposits of iron and manganese oxides on Tertiary North Park Formation, sandstone and shale.  
 MNZ Iron and manganese stains. Grab sample had a value of 0.11% eU.  
 DOI 1950  
 REF U.S. A.E.C., 1966, Preliminary Reconnaissance Reports, Grand County, Colorado.

## Lynn No. 1

LOCATION: sec. 1, T. 1 N., R. 79 W.  
 QUAD Parshall 7 1/2'  
 MAP CRAIG  
 DVEL There is a cut blasted in side of mountain.  
 BKG .03 mr/hr  
 RNG .03 to .1 mr/hr  
 HOST Precambrian pegmatite in Boulder Creek Granite.  
 STRC Pegmatite on upper thrust block of the Basques thrust fault system.  
 MNZ Biotite, quartz, and orthoclase, radiation coming from biotite.  
 DOI 1954  
 REF U.S. A.E.C., 1966, Preliminary Reconnaissance Reports, Grand County, Colorado.

## No Name Claims

LOCATION: T. 3 S., R. 76 W.  
 LCST UNSURVEYED  
 LCRM Prospect is 0.5 miles west of Jones Pass and consists of cut in road bank.  
 QUAD Byers Peak 7 1/2'  
 MAP DENVER  
 BKG .04 mr/hr  
 RNG .04 to .3 mr/hr  
 HOST Shear in Precambrian Silver Plume Granite.  
 STRC Shear zone strikes S85°E, dip 45°-60°N.  
 ALT Somewhat silicified and iron stained.  
 MNZ Autunite, uranophane, 3.5 ft horizontal channel across ore zone gave reading of 0.3 mr/hr.  
 DOI 1955  
 REF U.S. A.E.C., 1966, Preliminary Reconnaissance Reports, Grand County, Colorado. Lovering, T. S., and Goddard, E. N., 1950.

## Phillips 1

LOCATION: SW1/4 sec. 29, T. 1 N., R. 74 W.  
 QUAD Monarch Lake 7 1/2'  
 MAP GREELEY  
 BKG .03 mr/hr  
 RNG .03 to 1.0 mr/hr  
 HOST Coarse-grained Tertiary monzonite dike in Precambrian Idaho Springs Formation.  
 STRC Fracture.  
 MNZ Autunite in fractures.  
 RMKS All of dike gave readings of greater than 0.15 mr/hr.  
 DOI 1954  
 REF U.S. A.E.C., 1966, Preliminary Reconnaissance Reports, Grand County, Colorado.

## Phillip Stafford Property

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LOCATION: SW1/4 sec. 34, T. 1 S., R. 80 W.  
 LCRM Spring is at edge of the Blue River.  
 QUAD Mount Powell 15'  
 MAP LEADVILLE  
 RNG 4 x bg  
 HOST Spring in river bottom alluvium near the Cretaceous Mancos Shale outcrop.  
 RMKS Water has CO2 gas.  
 DOI 1953  
 REF U.S. A.E.C., 1966, Preliminary Reconnaissance Reports, Grand County, Colorado.

## Pickering

LOCATION: sec. 30, T. 2 N., R. 79 W.  
 QUAD Junction Butte 7 1/2'  
 MAP CRAIG  
 DVEL Auger drilling has been carried out behind outcrop. Little additional mineralization was found.  
 BKG .03 mr/hr  
 RNG 0.3 to 1.0 mr/hr  
 HOST Mineralization is in a fluvial arkosic sandstone interfingering with tuffaceous clay. The sandstone is approximately 20 ft thick.  
 STRC Impermeable clay occurs over sandstone containing mineralization.  
 MNZ Carnotite, gypsum, jarosite, abundant carbon trash. A 1.2 ft channel sample had a value of 0.04% U308.  
 RMKS Uranium occurs in rolls from 1 in. to 1 ft in size. The rolls cross lens of sandstone and clay.  
 DOI 1954  
 REF U.S. A.E.C., 1966, Preliminary Reconnaissance Reports, Grand County, Colorado.

## Tucker Mine

LOCATION: S1/2SW1/4 sec. 31, T. 2 N., R. 79 W.  
 LCST UNSURVEYED  
 QUAD Junction Butte 7 1/2'  
 MAP CRAIG  
 BKG .02 mr/hr  
 RNG .2 - .25 mr/hr  
 HOST The mineralization occurs in the Miocene North Park Formation, which is a white to tan, fine- to coarse-grained crossbedded sandstone.  
 MNZ There is carbonaceous material and marcasite concretions in the host rock but no uranium minerals were identified.  
 RMKS Ten other anomalies occur within 1/4 of a mile. Also a radioactive spring is 1/2 mile east, and 2 anomalies are two miles away.  
 DOI 1950-1958 (?)  
 REF U.S. A.E.C., 1966, Preliminary Reconnaissance Reports, Grand County, Colorado.

## Undecided Claims (Beaver Group 1-20)

LOCATION: sec. 15, T. 1 N., R. 78 W.  
 LCRM Also sec. 14, 21, 22.  
 QUAD Hot Sulphur Springs 7 1/2'  
 MAP CRAIG  
 DVEL Discovered in 1954. This property was explored by Newmont Explorations, Ltd., Montrose, Colorado. There are trenches, tunnels and one shaft.

PROD For the Undecided 4 the U.S. A.E.C. Production Records show that in 1957, 161 tons were mined at a grade of 0.18% U308 producing 579 lbs of U308.  
 BKG .1 mr/hr  
 RNG .1 - 4.0 mr/hr  
 HOST Paleocene Coalmont Formation, carbonaceous arkose and sandstone. Ore occurred in a regolith of the Coalmont where it rests on Precambrian granite.  
 STRC Radioactivity also occurs on joint planes in Precambrian granite below the unconformity.  
 MNZ Autunite, limonite, carbonaceous matter. Samples had values from 0.27 to 0.076% U308.  
 RMKS Area now closed to mineral entry by the U.S. Department of the Interior, Fish and Wildlife Service as a winter range for elk and moose.  
 DOI 1954  
 REF U.S. Geol. Survey, 1977, CRIB File, U.S. A.E.C., 1971, Production Records, Colorado. Izett, G. A., 1968. U.S. A.E.C., 1966, Preliminary Reconnaissance Reports, Grand County, Colorado. Malan, R. C., 1957.

## Unnamed 2

LOCATION: NW1/4 sec. 23, T. 1 S., R. 82 W.  
 LCRM Occurrence is near where the railroad crosses Blacktail Creek.  
 QUAD Radium 7 1/2'  
 MAP LEADVILLE  
 BKG .03 mr/hr  
 RNG .03 to .5 mr/hr  
 HOST Mineralization occurs in the Jurassic Morrison Formation, in a channel arkosic pebble conglomerate in fluvial sandstone.  
 MNZ Carnotite, brown carbon.  
 RMKS The occurrence is in a railroad cut.  
 DOI 1950-1958?  
 REF U.S. Geol. Survey, 1977, CRIB File, U.S. A.E.C., 1966, Preliminary Reconnaissance Reports, Grand County, Colorado.

## Unnamed 3

LOCATION: sec. 33, T. 1 1/2 N., R. 80 W.  
 QUAD Junction Butte 7 1/2'  
 MAP CRAIG  
 RNG Maximum of .25 mr/hr  
 HOST Miocene Troublesome Formation. An interbedded sandstone and clay with abundant carbonaceous material.  
 STRC Paleostream channel.  
 MNZ Jarosite, gypsum, iron sulfide, uranium?  
 RMKS Reported as high radioactivity, no uranium minerals reported.  
 DOI 1953  
 REF U.S. A.E.C., 1966, Preliminary Reconnaissance Reports, Grand County, Colorado.

## Unnamed 5

LOCATION: sec. 14, T. 1 N., R. 74 W.  
 LCRM Also sec. 28, 29, T. 1 N., R. 75 W.  
 QUAD Monarch Lake 7 1/2'  
 MAP GREELEY  
 HOST Vein in Precambrian metamorphics.  
 RMKS This is a very general description. It



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possibly covers the Wheeler Basin, Julie Johnson, and Phillips #1 occurrences.

DOI 1973  
REF U.S. Geol. Survey, 1977, CRIB File.

## Unnamed 7

LOCATION: sec. 1, T. 3 S., R. 75 W.  
LCST UNSURVEYED  
LCRM Also in sec. 11. Occurrence is near the Continental Divide and Clear Creek County line.  
QUAD Empire 7 1/2'  
MAP DENVER  
HOST Vein in Precambrian metamorphics.  
MNZ Uranium.  
DOI 1973  
REF U.S. Geol. Survey, 1977, CRIB File.

## Unnamed 8

LOCATION: sec. 32, T. 2 N., R. 76 W.  
QUAD Granby 7 1/2'  
MAP GREELEY  
HOST Bedded type of mineralization.  
MNZ Uranium.  
DOI 1973  
REF U.S. Geol. Survey, 1977, CRIB File.

## Unnamed 9

LOCATION: NE1/4SW1/4 sec. 26, T. 1 N., R. 81 W.  
LCRM This is near the Engles - Yust property.  
QUAD Kremmling 7 1/2'  
MAP CRAIG  
HOST Vein.  
MNZ Uranium.  
DOI 1973  
REF U.S. Geol. Survey, 1977, CRIB File.

## Unnamed 10

LOCATION: NW1/4NW1/4 sec. 1, T. 1 N., R. 79 W.  
LCRM At an elevation of 7,980-8,000 ft.  
QUAD Hot Sulphur Springs 15'  
MAP CRAIG  
HOST Miocene Troublesome Formation.  
MNZ Uranium.  
DOI 1973  
REF U.S. Geol. Survey, 1977, CRIB File. Malan, R. C., 1957.

## Unnamed 11

LOCATION: NW1/4 sec. 1, T. 1 N., R. 79 W.  
QUAD Junction Butte 7 1/2', Parshall 7 1/2'  
MAP CRAIG  
PROD Reported 700 lbs mined at a grade of 1.34% U308, and 3.25 V205, no record with U.S. A.E.C.  
MNZ Uranium, vanadium.  
RMKS This is a continuation of the Corral Creek mineralization.  
DOI 1973  
REF U.S. Geol. Survey, 1977, CRIB File. Schlottmann, J. D., and Smith, L. E., 1954, (RME-1042).

## Unnamed 14

LOCATION: N1/2S1/2SE1/4 sec. 21, T. 2 N., R. 79 W.  
QUAD Hot Sulphur Springs 15'  
MAP CRAIG  
HOST Miocene Troublesome Formation.  
MNZ Uranium.  
DOI 1973  
REF U.S. Geol. Survey, 1977, CRIB File. Malan, R. C., 1957.

## Unnamed 15

LOCATION: sec. 6, T. 2 S., R. 74 W.  
LCST UNSURVEYED  
LCRM The deposit lies 2 1/2 miles northwest of Apex.  
QUAD East Portal 7 1/2'  
MAP DENVER  
DYEL No production took place on this property.  
HOST The deposit lies in a vein cutting a Precambrian quartz biotite gneiss, probably of the Idaho Springs Formation.  
MNZ Pitchblende was discovered at the occurrence.  
DOI 1973  
REF U.S. Geol. Survey, 1977, CRIB File. Sims, P. K., and Sheridan, D. M., 1964.

## Wheeler Basin (Bennett Mine)

LOCATION: sec. 23, T. 1 N., R. 74 W.  
LCST UNSURVEYED  
QUAD Monarch Lake 7 1/2'  
MAP GREELEY  
DYEL One 32 foot adit was opened in 1956. Prospect has been evaluated by various companies, Texas Gulf Sulphur was mentioned in Young and Hauff, 1975.  
BKG 380 to 600 cps  
RNG 10,000 cps  
HOST Precambrian Idaho Springs Formation, migmatized gneiss, mixed gneiss and pegmatite, and pegmatite. All closely associated with the Silver Plume Granite.  
STRC The pegmatites do not conform to the regional foliation.  
MNZ Curite, fourmarierite, uranophane, monazite, uraninite, and zircon.  
RMKS Mineralization is concentrated in biotite rich areas. Wheeler Basin has been compared to the Rossing uranium deposit in S.W. Africa, and is an important type of occurrence to be found in Colorado.  
DOI 1977  
REF Nishimori, and others, 1977. Young, and Hauff, 1975. Ludwig, and Young, 1975.

## GUNNISON COUNTY

Uranium production from Gunnison County has been large relative to most other counties in the state. By 1971, 8,679 tons of ore had been mined that contained 72,557 lb of  $U_3O_8$ . Excellent potential exists for more reserves in the county.

The geology of the county is quite diverse. Extrusive and intrusive rocks of the Elk Mountains dominate the northern part of the area. The Sawatch Range with its Precambrian rocks, Tertiary Intrusives, and interspersed lower Paleozoic rocks lies along the eastern side. Precambrian, lower Paleozoic and Tertiary extrusives are found along the valley of the Gunnison River which flows generally westward through the center of the county. The San Juan Mountains extend into the southern panhandle of the county, exposing Precambrian alkalic rocks in the Powderhorn area and Tertiary extrusives farther south.

The three deposits in the county that have produced uranium include Big Red 22, Brown Derby Mine, and Little Indian 36. The most important producer (95 percent of total) within the county is the Little Indian 36 Mine. Production from this deposit totaled 8,679 tons of ore and 7,762 lb of  $U_3O_8$ . The Little Indian Mine, located in the Marshall Pass uranium

district, is associated with the Chester Fault and lies near the Pitch Mine in Saguache County. Production from the Little Indian was from a vertical dipping zone in the Ordovician Harding Quartzite. The most abundant ore mineral was uranophane.

Potential for more reserves to be found within the county is very good. The Cochetopa and Marshall Pass areas show favorable potential for new reserves, especially along extensions of ore bodies from the uranium-producing area in Saguache County. Another very important type of radioactive occurrence is found in the Powderhorn region where thorium, with uranium in subordinate amounts, is concentrated in veins within Precambrian rocks. Powderhorn is one of the two thorium districts in the state; the other is in Custer County. These are also two of the few thorium districts in the United States. If the demand for thorium increases drastically in the future, Powderhorn will become a major area of exploration for, if not production of, thorium. The alkaline rocks of this district are now being studied in conjunction with potential uranium resource rocks throughout the world. (See Murphy, M., and others, 1978, Uranium in Alkaline Rocks, U.S. Department of Energy, GJBX-(78)78, 185 p. which was published as this publication went to press).

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## Atlantic Richfield Drill Hole

LOCATION: sec. 28, T. 13 S., R. 90 W.  
 QUAD Somerset 7 1/2'  
 MAP MONTROSE  
 DVEL This was an anomaly from a core hole.  
 PROD Anomaly was reported to be 15.0 ft at a grade of 0.017% U308.  
 HOST The host is a sandstone in the Cretaceous Mesaverde Group.  
 MNZ The mineralization occurs within a gray, medium- to fine-grained sandstone above the lower coal and between two thin coal seams 200 ft above the Rollins Sandstone.  
 RMKS The core hole was drilled during a coal evaluation on Atlantic Richfield's properties.  
 DOI 1977  
 REF Atlantic Richfield, 1977.

## Badger 1

LOCATION: sec. 5, T. 47 N., R. 2 W.  
 LCST UNCERTAIN  
 LCRM Original directions are as follows: "From US 50, south on Colorado 149 10 miles, then northwest 2 miles to sec. 5 along Jeep road."  
 QUAD Powderhorn 7 1/2'  
 MAP MONTROSE  
 DVEL There is one small open cut reported.  
 BKG .04 mr/hr  
 RNG To .2 mr/hr  
 HOST Vein in Precambrian granite, schists and gneisses contains the anomalies.  
 STRC Structure trends northwest.  
 MNZ Abundant quartz, barite and hematite - ilmonite staining, some thorite(?) and rare earths. No sulfides were observed.  
 DOI 1954  
 REF U.S. A.E.C., 1966, Preliminary Reconnaissance Reports, Gunnison County, Colorado.

## Big Red 22

LOCATION: SW1/4 sec. 10, T. 49 N., R. 5 E.  
 QUAD Garfield 15'  
 MAP MONTROSE  
 DVEL Production at this property was from underground workings via an incline shaft.  
 PROD In 1959 and 1960, 127 tons were mined at a grade of 0.22% U308, and containing 557 lbs U308.  
 HOST Ordovician Harding Quartzite contains the mineralization. The quartzite is a remnant on a fault surrounded by Precambrian granite.  
 STRC The remnant occurs in the footwall of a reverse fault.  
 MNZ Autunite. One mile north, Paleozoic rocks on the same fault contain Pb-Zn deposits.  
 DOI 1972  
 REF R. C. Malan, 1978, Personal Communication. U.S. Geol. Survey, 1977, CRIB File. J. Olson, 1977, Personal Communication. U.S. A.E.C., 1971, Production Records, Colorado.

## Big Red 39

LOCATION: NW1/4 sec. 10, T. 49 N., R. 5 E.  
 QUAD Garfield 15'  
 DVEL No reported production to date.  
 HOST Cambrian Sawatch Quartzite Inlier surrounded by Precambrian granite of Boulder Creek granite age (1700 MY).  
 STRC The remnant lies on the footwall of a reverse fault.  
 MNZ Thorium is 3 times as abundant as uranium at this prospect. One-half mile south at Big Red 22 uranium was the only important mineral. One-half mile north Paleozoic rocks along the fault contain Pb-Zn deposits.  
 RMKS Big Red 22 and 39 are on separate remnants of Sawatch Quartzite.  
 DOI 1959  
 REF R. C. Malan, 1978, Personal Communication.

## Black Mica Company?

LOCATION: sec. 12, T. 46 N., R. 2 W.  
 LCST UNCERTAIN  
 QUAD Powderhorn 7 1/2'  
 MAP MONTROSE  
 DVEL Occurrence is a vermiculite mine.  
 HOST Mineralization occurs in carbonate vein in Precambrian pyroxenite.  
 MNZ Thorite? One sample had a value of 0.03% ThO2.  
 REF U.S. A.E.C., 1966, Preliminary Reconnaissance Reports, Gunnison County, Colorado. Larsen, E. S., 1942.

## Brown Derby Mine

LOCATION: NE1/4 sec. 3, T. 49 N., R. 3 E.  
 LCRM SE1/4 sec. 34, T. 49 N., R. 3 E. is also covered by claims. The mine is east of Quartz Creek.  
 DVEL An open cut with an inclined shaft and underground workings.  
 PROD In 1944, 400 tons of finished lepidolite and microlite containing 4,000 lbs of Ta2O5 and 238 lbs of U308 were produced.  
 HOST Large zoned pegmatite in a Precambrian meta-diorite. Three parallel dikes strike N10° - 45°E and dip 20°-30° to the southeast. Dikes are 11 ft wide and extend for as much as 1,300 ft. Average distance between dikes is 75 ft.  
 MNZ Quartz, microlite, lepidolite, topaz, albite, beryl tourmaline, muscovite, minor biotite, magnetite, monazite, and columbite. Uranium is associated with the microlite. Hand samples assayed 5.44% to 6.04% U308.  
 DOI 1945  
 REF Heinrich, E. W.; and others, 1958. Heinrich, E. W., and Dahlem, D. H., 1957. Guillotte, G. B., 1945.

## Brush Creek Group (Brush Creek Mining Co.)

LOCATION: sec. 13, T. 13 S., R. 85 W.  
 LCRM In the CRIB report, the location is noted as section 7, T. 12 S., R. 85 W.  
 QUAD Pearl Pass 7 1/2'  
 MAP MONTROSE  
 DVEL This is an explored prospect.

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MNZ Uranium, copper, lead, zinc, gold, silver, germanium were found at the prospect.  
 RMKS Patented claim.  
 DOI 1975  
 REF U.S. Bur. of Mines, 1977, (Unpubl.). U.S. Geol. Survey, 1977, CRIB File.

## Buzzard's Roost (Pento)

LOCATION: sec. 36, T. 48 N., R. 3 W.

LCST UNCERTAIN

LCRM Original directions are as follows: "From town of Ida, travel south on Colorado 149 for 9 miles, then west 3 miles down very steep jeep road. Deposit is on side of very steep stream valley." Location was given as sec. 12, T. 47 N., R. 3 W. Only mine on the map in the area is in section given above. There is a building located on Cabolla Creek in the SW1/4 sec. 7, T. 47 N., R. 2 W. which might be the occurrence also. The Pento property was described on a different reconnaissance report. However, the location and direction to the deposit are the same as the Buzzard's Roost. Three tunnels are reported from the Pento locality. Gateview 7 1/2'

QUAD

MAP MONTROSE

DVEL There are some old workings that are now caved. They were worked for gold.

BKG None reported.

RNG To .7 mr/hr

HOST Vein in Precambrian granite and schists.

MNZ Quartz, barite, abundant ilmonite, hematite, calcite.

RMKS Radioactivity probably due to thorium.

DOI 1954

REF U.S. A.E.C., 1966, Preliminary Reconnaissance Report, Gunnison County, Colorado.

## Czar 3

LOCATION: sec. 6, T. 47 N., R. 2 W.

LCST UNCERTAIN

QUAD Gateview 7 1/2'

MAP MONTROSE

DVEL There are no previous workings.

BKG .25 mr/hr

RNG To .5 mr/hr

HOST Vein in Precambrian granite, schist, and gneiss overlain by felsic volcanics.

MNZ Hematite, ilmonite, quartz, barite, and rare earths.

DOI 1954

REF U.S. A.E.C., 1966, Preliminary Reconnaissance Reports, Gunnison County, Colorado.

## Gray Jeep Group

LOCATION: NW1/4 sec. 19, T. 48 N., R. 2 W.

QUAD Big Mesa 7 1/2'

MAP MONTROSE

DVEL There are two shafts and several trenches.

BKG .02 mr/hr

RNG .08 to 2.0 mr/hr

HOST Vein in Precambrian biotite schist.

STRC Vein strikes N47°W and dips 38°SE.

ALT Mafic minerals have been altered and kaolinized near the vein.

MNZ Pyrolusite and a reddish brown mineral (thorite?).  
 DOI 1955  
 REF U.S. A.E.C., 1966, Preliminary Reconnaissance Report, Gunnison County, Colorado. Hunter, J. F., 1925.

## Jacks Cabin Area (North Star Claims)

LOCATION: SW1/4 sec. 17, T. 15 S., R. 84 W.

QUAD Almont 7 1/2'

MAP MONTROSE

DVEL There are several prospects and one adit.

HOST Paleozoic sedimentary rocks in fault contact with Precambrian granite and metasediments. Uranium occurs in both the sediments and the Precambrian rocks. Area was first prospected for copper.

STRC Fault or shear zone (thrust fault), North Star Fault.

MNZ A 0.015% U308 assay is reported.

RMKS Geology of this occurrence is very similar to Marshall Pass area. This area should not be confused with the "North Star Group" which is an occurrence in the Powderhorn area.

REF R. C. Malan, 1978, Personal Communication. David Wolf, 1977, Personal Communication. Maurice Brady, 1977, Personal Communication. U.S. A.E.C., 1971, Production Records, Colorado.

## Jeanie 6 & 2

LOCATION: sec. 16, T. 47 N., R. 2 W.

LCST UNCERTAIN

LCRM Probably in the center of the section, 1,000 ft west of the highway.

QUAD Powderhorn 7 1/2'

MAP MONTROSE

DVEL Area was most likely prospected for gold.

HOST The vein is in a pink quartzite. A 5-ft wide dike lies along one side of the vein for 400 ft.

MNZ Quartz, ilmonite, (thorite?). Two samples had values of eU308 of 0.014 and 0.018 but cU308 of 0.001.

RMKS Reported in two Preliminary Reconnaissance Reports.

DOI 1950

REF U.S. A.E.C., 1966, Preliminary Reconnaissance Reports, Gunnison County, Colorado.

## Jenny Claims

LOCATION: sec. 7, T. 12 S., R. 86 W.

LCRM Also reported in sec. 18.

QUAD Snowmass 7 1/2'

MAP LEADVILLE

HOST Bedded replacement in Cretaceous Mancos and Dakota Formations.

MNZ U, Pb, Zn, Cu.

DOI 1977

REF U.S. Geol. Survey, 1977, CRIB File.

## Lady in Red Shaft (Lady in Red No. 5)

LOCATION: SW1/4 sec. 8, T. 47 N., R. 2 W.

LCST UNCERTAIN

LCRM There are two reconnaissance reports, one

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location is in sec. 7, the other is given above.

QUAD Powderhorn 7 1/2'

MAP MONTROSE

BKG .05 mr/hr

RNG To .4 mr/hr

HOST Vein in Precambrian granite, schists and gneiss.

STRC Vein strikes N45°W.

MNZ Hematite, ilmonite, quartz, barite, rare earths, (thorite?).

DOI 1954

REF U.S. A.E.C., 1966, Preliminary Reconnaissance Reports, Gunnison County, Colorado.

## Little Indian No. 36

LOCATION: sec. 9, T. 48 N., R. 6 E.

QUAD Pahlone Peak 7 1/2'

MAP MONTROSE

PROD Prior to 1971, 8,152 tons had been mined at a grade of 0.44% U3O8 producing 71,762 lbs.

HOST The host is the Ordovician Harding Quartzite. The mineralization is contained in a 4.5 ft carbonaceous zone in a fossiliferous silty sandstone.

STRC The quartzite is very steeply dipping and the ore occurs in a vertical interval from surface to 250 ft.

MNZ The ore was mostly oxidized. Uranophane was the most abundant mineral. Other minerals found were autunite, gummite, boltwodite, and uraninite. The uraninite was tentatively dated at 40 to 60 million years in age.

DOI 1972

REF U.S. Geol. Survey, 1977, CRIB File. U.S. A.E.C., 1971, Production Records, Colorado. Malan, R. C., and others, 1961. Malan, R. C., 1959. Ranspot, H. W., 1958.

## Little Johnnie 1 and 2

LOCATION: sec. 15, T. 47 N., R. 2 W.

LCST UNCERTAIN

QUAD Powderhorn 7 1/2'

MAP MONTROSE

DVEL Area was originally prospected for gold.

HOST Vein in Precambrian schist.

MNZ Quartz, ilmonite. One sample had values of 2.29% ThO2, 0.50% rare earths 203.

DOI 1950

REF U.S. A.E.C., 1966, Preliminary Reconnaissance Reports, Gunnison County, Colorado.

## Matchless Group

LOCATION: sec. 19, T. 13 S., R. 82 W.

LCST UNSURVEYED

LCRM "Pits can be seen from road near Dinner Station Campground on the opposite side of the creek located in the center of sec. 19."

QUAD Pieplant 7 1/2'

MAP MONTROSE

BKG .02 mr/hr

RNG .04 to .45 mr/hr

HOST Quartz vein in Precambrian complex of igneous and metamorphic rocks.

STRC Vein is two ft thick and strikes N300°W and dips 37°- 57°E.

MNZ Abundant copper minerals (Chalcopyrite, malachite, azurite), autunite?. Owner reported values of 2% U and 6% Cu.

DOI 1956

REF U.S. Geol. Survey, 1977, CRIB File. U.S. A.E.C., 1966, Preliminary Reconnaissance Reports, Gunnison County, Colorado.

## May Queen

LOCATION: sec. 18, T. 47 N., R. 2 W.

LCST UNCERTAIN

QUAD Gateview 7 1/2'

MAP MONTROSE

DVEL Reported mined for lead.

BKG .05 mr/hr

RNG To .8 mr/hr

HOST Vein in Precambrian schists, gneiss, and granite.

MNZ Thorite?, galena in a quartz, barite gangue.

DOI 1954

REF U.S. A.E.C., 1966, Preliminary Reconnaissance Reports, Gunnison County, Colorado.

## Mrs. Roberts Deeded Land

LOCATION: NW1/4 sec. 15, T. 47 N., R. 2 W.

LCST UNCERTAIN

LCRM Original directions to deposit are as follows: "From the junction of US 50 and state highway 149, 10 miles west of Gunnison, go south on 147 for 10.5 miles; turn left and go 0.1 mile; take left fork and go 0.9 mile; proceed past ranch house on road trending south and go 0.1 mile to area of dozed trenches". The occurrence was originally located in sec. 10.

QUAD Powderhorn 7 1/2'

MAP MONTROSE

DVEL Dozing and trenching have been carried out over a distance of 250 ft.

BKG .02 mr/hr

RNG .5 to 1.5 mr/hr

HOST Shear zone in Precambrian biotite gneiss.

STRC Strike of shear zone is N72°E and dip is near vertical.

ALT Zone is reported to be heavily altered.

MNZ Thorite, no visible uranium minerals. Following is data on channel samples: sample 1.3 ft long, 1.0 mr/hr, 0.072% eU3O8, 0.048% U3O8, 0.11% eThO2; sample 1.1 ft long, 0.7 mr/hr, 0.119% eU3O8, 0.28% U3O8; sample 1.2 ft long, 2.0 mr/hr, 1.11% eU3O8, 0.002% U3O8, 5.35% eThO2, 4.77% ThO2; sample 1.7 ft long; 0.6 mr/hr, 0.097% eU3O8, 0.056% U3O8, 0.20% eThO2; sample 1.3 ft long, 1.6 mr/hr, 0.087% eU3O8, 0.078% U3O8, 0.046% eThO2; sample 1.1 ft long, 1.0 mr/hr, 0.17% eU3O8, 0.012% U3O8, 0.74% eThO2.

RMKS The radioactive highs are very localized and spotty along strike.

DOI 1955

REF U.S. A.E.C., 1966, Preliminary Reconnaissance Reports, Gunnison County, Colorado.

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## North Star Group

LOCATION: SW1/4 sec. 4, T. 48 N., R. 2 W.  
 LCRM Near Dutchman Gulch.  
 QUAD Big Mesa 7 1/2'  
 MAP MONTROSE  
 DVEL Pits.  
 HOST Quartz veins and granitic dikes in Precambrian schist and amphibolite gneiss.  
 RMKS Also mentioned as uranium occurrence in Colorado Bureau of Mines Annual Report for 1959 by G. A. Franz, Jr. on page 72.  
 DOI 1977  
 REF Maxwell, J. C., 1977, U.S. Geol. Survey, 1977, CRIB File.

## Saverne

LOCATION: NE1/4NW1/4 sec. 24, T. 14 S., R. 85 W.  
 QUAD Cement Mountain 7 1/2'  
 MAP MONTROSE  
 DVEL There has been reported a small amount of production of gold. There is one 150 ft tunnel and a 30 ft winze. There is another adit 600 ft uphill on the same fault.  
 BKG .12 mr/hr  
 RNG .12 to .35 mr/hr  
 HOST Fault in Precambrian granite.  
 ALT There is abundant kaolinization.  
 MNZ Quartz and carbonate gangue, purple fluorite, the radioactive materials are unidentified. There were no sulfides observed.  
 REF U.S. A.E.C., 1966, Preliminary Reconnaissance Reports, Gunnison County.

## Silent Friend

LOCATION: SW1/4 sec. 25, T. 51 N., R. 4 E.  
 LCRM Original directions to deposit as follows: "at point 3/4 miles south of Halls Gulch on Colorado State Highway 162 proceed due west up steep slope for 1,000 ft raise in elevation."  
 QUAD Garfield 15'  
 MAP MONTROSE  
 DVEL This is an old silver, gold mining district. There are an estimated 2,000 ft of underground workings in the mine.  
 RNG To 4 x bg  
 HOST Ordovician Fremont Formation, vein in dolomite with carbonaceous shale lenses.  
 MNZ Galena, sphalerite, chalcopyrite, pyrite, anglesite, cerussite, malachite, smithsonite, calcite, and quartz. Two samples had the following values: grab including country rock, 0.038% eU308, 0.038% U308, selected radioactive shale with minor dolomite country rock, 0.089% eU308, 0.067% U308.  
 RMKS Radioactivity is closely associated with ore and gangue.  
 DOI 1952  
 REF U.S. A.E.C., 1966, Preliminary Reconnaissance Reports, Gunnison County, Colorado.

## Sunset Claims

LOCATION: sec. 7, T. 47 N., R. 1 W.  
 QUAD Powderhorn 7 1/2'  
 MAP MONTROSE

HOST Vein fractures in Precambrian granite.  
 MNZ Uranium, thorium, gold, pyrite.  
 DOI 1977  
 REF U.S. Geol. Survey, 1977, CRIB File.

## Surefire Mining Claims

LOCATION: sec. 25, T. 49 N., R. 2 E.  
 LCRM The claims also cover sec. 30 N., R. 3 E.  
 QUAD Houston Gulch 7 1/2'  
 MAP MONTROSE  
 PROD Collected float samples had a va to 2.0% U308.  
 HOST Sandstone of the Jurassic Morrison  
 STRC Fractures.  
 MNZ Autunite.  
 REF Atlantic Richfield Co., 1977.

## Ten Mile Group (Claims 1, 2, 3, Holman Cla

LOCATION: sec. 22, T. 48 N., R. 3 W.  
 LCST UNCERTAIN  
 LCRM Original directions to deposit are: "From Blue Mesa service station near on US 50 turn south on dirt rd ml. Take right road fork 1.1 ml #3. Take left fork, from main #2 claim, continue 1.5 ml. on to #1 claim."  
 QUAD Carpenter Ridge 7 1/2'  
 MAP MONTROSE  
 DVEL Claim #1 is on site of an abandon mine.  
 BKG .02 mr/hr  
 RNG .02 to .15 mr/hr  
 HOST Silicified brecciated iron-sta in Precambrian schists. There are quartz dikes throughout the area.  
 STRC Vein is 5 ft wide and strikes N30°W.  
 MNZ Thorite?  
 DOI 1955  
 REF U.S. A.E.C., 1966, Preliminary Recon Reports, Gunnison County, Colorado J. F., 1925.

## Wayne Wright Prospect (Adair Group, Dubols I

LOCATION: sec. 2, T. 47 N., R. 3 W.  
 LCST UNCERTAIN  
 LCRM Original location was with R. 3 Included in this reconnaissance 3 and 10.  
 QUAD Gateview 7 1/2'  
 MAP MONTROSE  
 DVEL Gold mining area with limited p reported in the 1880's.  
 BKG .04 mr/h4  
 RNG To 2.5 mr/hr  
 HOST Vein zones in Precambrian schist and granite.  
 STRC Veins strike in a northerly direction  
 MNZ Veins are highly iron stained with ilmonite, quartz, barite, small of rare earth minerals, and thorite sulfides were observed.  
 RMKS Two Preliminary Reconnaissance Repor this area.

## GUNNISON COUNTY

DOI 1954  
REF U.S. A.E.C., 1966, Preliminary Reconnaissance  
Reports, Gunnison County, Colorado.

## HINSDALE COUNTY

Production from this county has been extremely small. Between 1958 and 1961, 18 tons of ore were mined that yielded 68 lb of  $U_3O_8$ . Potential for more reserves in the county is also small.

The county is entirely within the San Juan Mountains uplift. This uplift and the accompanying Tertiary volcanic activity resulted in extensive extrusive and intrusive rocks. Along the southern edge of the county Paleozoic and Mesozoic rocks dip away from the uplift and into the San Juan Basin. The volcanic activity created several large volcanic caldera systems that contain important producers of base and precious metals within the county.

The one producer of uranium in the county was the Beth Group, located in the northwestern part of the county north of Henson Creek. Production was

from veins and disseminations in a fractured rhyolite porphyry stock that had intruded the Tertiary volcanic rocks. This intrusive stock is one of a series that forms a belt 1.5 mile wide and 8 miles long. Fifteen uranium occurrences have been reported in this belt, but they are not documented.

The potential for uranium reserves within the county is low. The volcanic rocks that cover most of the county are not considered favorable hosts for uranium deposits. However, some deposits are known in volcanogenic rocks, but they will require more study. The belt of rhyolite intrusives that contain the Beth Group has the highest potential for reserves. A major company has explored the claims but has taken no action.



# HINSDALE COUNTY

## Bess

LOCATION: T. 44 N., R. 5 W.  
 LCST UNLOCATABLE  
 QUAD Uncompahgre Peak 7 1/2', Lake City 7 1/2'  
 MAP MONTROSE  
 MNZ Uranium.  
 RMKS Because of paucity of data and name, it is possible this is really the Beth Group.  
 DOI 1972  
 REF U.S. Geol. Survey, 1977, CRIB File. Franz, G. A., 1961.

## Beth Group

LOCATION: NW1/4 sec. 19, T. 44 N., R. 5 W.  
 LCST UNSURVEYED  
 LCRM Located on the south slope of Uncompahgre Peak. The location is further described as being 38°03'N, 107°27'W.  
 QUAD Uncompahgre Peak 7 1/2'  
 DVEL Exxon has carried out diamond drilling on the property in 1974-1975? A small amount of ore is reported shipped from the occurrence about 1960.  
 PROD In 1958 and 1961, a total of 18 tons had been mined at a grade of 0.20% U3O8, containing 68 lbs of U3O8.  
 HOST Veins and fractures in rhyolite porphyry intruded into Tertiary volcanics. The rhyolite is reported to be deficient in mafic minerals and almost an alaskite in composition.  
 STRC Rhyolite intrusions form a belt about 1/2 mile wide by 8 miles long. The mineralization is located in fractures or stockworks in the rhyolite near the margin of the intrusion.  
 MNZ Uranophane, pitchblende. It is reported there are 15 uranium prospects in this belt. Other prospect names mentioned for which we have no location data are El Paso and Red Rocks.  
 RMKS The claims are owned by Joe Hersey of Gunnison, Colorado as of 1977.  
 DOI 1977  
 REF R. C. Malan, 1978, Personal Communication. U.S. Geol. Survey, 1977, CRIB File. U.S. A.E.C.; 1971, Production Records, Colorado. Fischer, R. P., and others, 1968.

## Eagle Claims 1-5 (Eagle, Mary Alice)

LOCATION: sec. 33, T. 44 N., R. 6 W.  
 LCST UNSURVEYED  
 LCRM Directions to occurrences are as follows: "From Lake City go west up Henson Creek road for 10.7 miles, turn right (about 1/4 mile west of large brick bldg. at Capitol City) and follow main traveled road for 2.7 miles, the prospect lies 200 yds immediately ahead." The prospect is at an elevation of 11,000 ft on the steep slope on the north side of the north fork of Henson Creek.  
 QUAD Wetterhorn 7 1/2'  
 MAP MONTROSE  
 DVEL Access road and two small pits have been built by the American Uranium Corp. of Moab,

Utah. Also some shallow drilling has been reported.

BKG .02 mr/hr  
 RNG .02 to .3 mr/hr  
 HOST Breccia of intruded rhyolite porphyry and well rock.  
 MNZ At shallow depths the breccia contains local large irregular pockets of abundant uranophane.  
 DOI 1959  
 REF R. C. Malan, 1978, Personal Communication. U.S. A.E.C., 1966, Preliminary Reconnaissance Reports, Hinsdale County, Colorado.

## Golden Fleece

LOCATION: NE1/4SW1/4 sec. 15, T. 43 N., R. 4 W.  
 QUAD Lake San Cristobal 7 1/2'  
 MAP DURANGO  
 HOST Vein in Tertiary volcanics.  
 MNZ Gold, silver, copper, lead, zinc, and uranium.  
 RMKS "Wherever there was high count on the geiger counter gold and silver were found."  
 DOI 1977  
 REF U.S. Geol. Survey, 1977, CRIB File. Charles Maritz, 1977, Personal Communication. Franz, G. A., 1963, Colo. Bur. Mines Ann. Rept. Irving, J. D., and Bancroft, H., 1911.

## Jody Claims 1-5 (Belison-Gibfrey Claim, Ranger No. 2 Claim)

LOCATION: sec. 17, T. 44 N., R. 5 W.  
 LCST UNCERTAIN  
 LCRM The original directions are as follows: "Proceed west from Lake City on Henson Creek Road 6 miles to Uncompahgre Trail. Follow trail 5 miles to prospect". From the description it is possible the trail and occurrences are on or near Nellie Creek.  
 QUAD Uncompahgre Peak 7 1/2'  
 MAP MONTROSE  
 DVEL Small amount of ore developed, no production.  
 BKG .06 mr/hr  
 RNG .4 to 7.0 mr/hr  
 HOST Yug fillings and fracture fillings in the Burn Quartz Latite of Tertiary age.  
 STRC The mineralization occurs near the contact of the latite with a thin bedded sandy shale, a member of the Burn Quartz Latite.  
 MNZ Uranophane, no other minerals noted.  
 DOI 1956  
 REF U.S. A.E.C., 1971, Production Records, Colorado. U.S. A.E.C., 1966, Preliminary Reconnaissance Reports, Hinsdale County, Colorado. Larsen, E. S., Jr., Cross, Whitman, 1956.

## Nellie M Mine

LOCATION: SE1/4SW1/4 sec. 33, T. 44 N., R. 4 W.  
 LCST UNCERTAIN  
 LCRM Mine in above location is named the Fancy Fern Mine; however, there are two other prospects nearby.  
 QUAD Lake City 7 1/2'  
 MAP MONTROSE  
 HOST Vein in Tertiary volcanic rocks.  
 MNZ Merely noted as being an uranium occurrence, with zinc, copper, and silver.  
 RMKS Occurrence reported by Walter E. Scott,

# HINSDALE COUNTY

Jr. In Colorado Bureau of Mines Annual Report 1958, p. 24 and was owned by the Gunnison Mining Company.

DOI 1958

REF U.S. Geol. Survey, 1977, CRIB File. Franz, G. A., 1958, Colo. Bur. of Mines Ann. Rep1., p. 63. Burbank, W. S., 1947.

## Rio Grande Claims 1-10

LOCATION: sec. 35, T. 41 N., R. 5 W.

LCST UNSURVEYED

LCRM Directions to occurrence are as follows: "Travel on Colorado 149 for 20.0 miles west of Creede to road junction. Take left fork and follow improved dirt road past Rio Grande Reservoir for 2.1 miles to prospect. Prospect lies 100 yds south of road." A prospect which may be this one is shown near the Rio Grande River in the southwest corner of the Pole Creek Mountain map.

QUAD Pole Creek Mountain 7 1/2', Finger Mesa 7 1/2'

MAP DURANGO

DVEL There were two small pits at time of examination. Owner at time of reconnaissance report was C. C. Wetherill of the nearby Lost Trail Ranch.

BKG .05 mr/hr

RNG .2 to .3 mr/hr

HOST Fractures? In a small outcrop of Precambrian Eolus Granite which is surrounded on all sides by Tertiary volcanics.

MNZ Autunite.

DOI 1955

REF U.S. Geol. Survey, 1977, CRIB File. U.S. A.E.C., 1966, Preliminary Reconnaissance Reports, Hinsdale County, Colorado.

## HUERFANO COUNTY

Production in the county has been small. Records show that 517 tons of ore were mined, but only 33 lb of  $U_3O_8$  were produced. This low yield was due to the fact that a large amount of the mined ore was not amenable to processing methods at the time. Still the potential for reserves to be found in the county is high.

Complicated structures and varied rock types characterize the geology of the county. Precambrian rocks are exposed in the Sangre de Cristo and Culebra Ranges on the west side and in the Wet Mountains on the north side. A full section of Paleozoic through Cenozoic rocks are exposed on the sides of the ranges and in the Raton Basin. The famous Spanish Peaks, remnants of Middle Tertiary intrusives, lie on the border between Las Animas and Huerfano Counties.

The three deposits that have recorded production are Anal No. 1, Badito Cone, and Columbine Hills. The Anal No. 1 Deposit produced from beds within the

Tertiary Farasita Conglomerate. Although many occurrences are known in the Farasita Conglomerate, this is the only deposit that produced any uranium.

Badito Cone, or Stumbling Stud Pit as the mine is known, is on the south side of the Badito Cone phonolite intrusion. Production at the site has come from inliers of the Cretaceous Dakota and Jurassic Morrison Formations. The mined ore yielded no  $U_3O_8$  because the uranium was chemically bound to a refractory mineral. Dark purple fluorite and metallic zirconium are associated with the uranium.

The last producer is the Columbine Hills Property, for which no location is known. Only one ton of ore was mined from this property.

High potential exists for new reserves of uranium in this county. The Farasita Conglomerate is the most favorable unit in the county and would contain sandstone-type occurrences.

# HUERFANO COUNTY

Anal No. 1, (Security Exploration Company Claim, Buckhorn, Mitzy, M.P. Nos. 1-9)

LOCATION: sec. 17, T. 25 S., R. 70 W.

LCRM Other sections quoted in references were 4, 5, 8, 9, 10 and 16.

MAP TRINIDAD

PROD In 1955 and 1956, a total of 6 tons were mined at a grade of 0.28% U3O8, producing 33 lbs of U3O8 and 0.55% V2O5, producing 6 lbs V2O5.

BKG .03 mr/hr

RNG 2.5 to +5 mr/hr

HOST Grayish, ilmonite-stained, carbonaceous, medium-grained shale, interbedded with small lenses of medium- to coarse-grained, ilmonite-stained, quartzitic, arkosic sandstone in the Eocene Fortsita Conglomerate.

MNZ Autunite was the only uranium mineral identified.

DOI 1956

REF U.S. Bur. of Mines, 1977, (Unpubl.). U.S. Geol. Survey, 1977, CRIB File. U.S. A.E.C., 1971, Production Records, Colorado. U.S. A.E.C., 1966, Preliminary Reconnaissance Reports, Huerfano County, Colorado.

## Badito Cone (Stumbling Stud Mine)

LOCATION: sec. 20, T. 26 S., R. 68 W.

QUAD Badito Cone 7 1/2', Hayden Butte 7 1/2'

MAP TRINIDAD

DVEL Production was all from the Dakota Sandstone.

PROD The U.S. A.E.C. Preliminary Reconnaissance Reports show that 510 tons were mined at a grade of 0.13% U3O8 and 0.009% V2O5.

HOST The mineralization occurs as veins and disseminations in a Tertiary rhyolite intrusive and Cretaceous Dakota Sandstone and Jurassic Morrison Formation.

STRC The intrusion is in the crest of the Greenhorn anticline.

ALT The sandstone is baked and silicified and contains abundant fluorite.

MNZ The mineralization is associated with fluorite and metallic zirconium. Uranium mineral possibly coffinite. The rhyolite has an average value of 12 ppm (U).

DOI 1977

REF R. C. Maian, 1978, Personal Communication. U.S. Bur. of Mines, 1977, (Unpubl.). U.S. Geol. Survey, 1977, CRIB File. Atlantic Richfield Corporation, 1977. U.S. A.E.C., 1971, Production Records, Colorado. U.S. A.E.C., 1966, Preliminary Reconnaissance Reports, Huerfano County, Colorado. Boyer, R. E., 1961. Wright and Everhart, 1960, p. 362.

## Bel Aire Claims (Bel Aire 1-6)

LOCATION: sec. 21, T. 26 S., R. 68 W.

LCRM This deposit occurs 1/2 to one mile southeast of Badito Cone.

PROD Reserves, no production.

HOST Stratiform deposit similar to the Stumbling Stud Mine except the uranium occurs at the base of the Purgatoire Formation in unsilicified,

non-fluorite bearing sandstone.

MNZ Uraninite occurs in pods.

DOI 1971

REF R. C. Maian, 1978, Personal Communication. U.S. A.E.C., 1971, Production Records, Colorado.

## Black Jack 2 (Black Jack 1-9)

LOCATION: sec. 1, T. 32 S., R. 70 W.

LCRM Also in sec. 36, T. 31 S., R. 70 W.

PROD No production according to reference.

HOST Undivided Pennsylvanian red beds.

DOI 1971

REF U.S. A.E.C., 1971, Production Records, Colorado.

## City Slicker Claim

LOCATION: sec. 6, T. 29 S., R. 69 W.

LCST UNCERTAIN

QUAD La Veta Pass 7 1/2'

MAP TRINIDAD

DVEL Adit at least 100 ft in length.

PROD 40 tons of carbonaceous material is stockpiled. Composite sample of the stockpile has values of 0.046% eU3O8, 0.07% U3O8.

HOST The host is carbonaceous sandstone in Permian Sangre de Cristo Formation.

MNZ Carnotite or volborthite on surface changes to black uranium ore at face. 30 in. sample taken at face had values of 0.077% eU3O8, and 0.12% U3O8.

RMKS Background in adit is 0.13 mr/hr. A 2 1/2 ft bed in face had reading of 0.6 mr/hr.

DOI 1954

REF U.S. Geol. Survey, 1977, CRIB File. U.S. A.E.C., 1966, Preliminary Reconnaissance Reports, Huerfano County, Colorado. Emerson, J. F., 1943, (RMO-842).

## Columbine Hills

LOCATION:

LCST UNLOCATABLE

LCRM Small open pit.

DVEL U.S. A.E.C. Production Records show one ton of material averaging 0.06% U3O8 and 0.35% V2O5 was shipped to the VCA mill at Durango in 1953.

DOI 1971

REF U.S. A.E.C., 1971, Production Records, Colorado.

## Dallas Dottle

LOCATION: SW1/4 sec. 27, T. 30 S., R. 69 W.

MAP TRINIDAD

BKG 150 cps

RNG 150 to 2,000 cps

HOST Conglomerates in Permian Sangre de Cristo Formation.

STRC Beds dip 45°E

MNZ Carnotite, azurite, carbon trash and logs. Sample had the following values: 2.5 ft chip sample - 0.11% eU3O8, 0.20% U3O8, 3.69% V2O5, 0.94% Cu; 0.018% eU3O8, 0.94% Cu; 0.027% eU3O8, 0.94% Cu; 1.40% eU3O8, 0.74% U3O8, 4.0% V2O5, 7.50% Cu;

# HUERFANO COUNTY

DOI 1954  
REF U.S. A.E.C., 1966, Preliminary Reconnaissance Reports, Huerfano County, Colorado.

## Delz Ranch

LOCATION: sec. 7, T. 25 S., R. 70 W.  
MAP TRINIDAD  
BKG .02 mr/hr  
RNG .6 to 5.0 mr/hr  
HOST Carbonaceous, iron-stained, arkosic sandstone about 1.5 ft thick in the Eocene Farisita Conglomerate.  
DOI 1955  
REF U.S. A.E.C., 1966, Preliminary Reconnaissance Reports, Huerfano County, Colorado.

## Hall Property (School Section)

LOCATION: S1/2 sec. 36, T. 28 S., R. 70 W.  
LCST UNCERTAIN  
LCRM Directions to occurrence are as follows: "From western junction of Colo. 111 with U.S. 160 proceed west on U.S. 160 for 8.8 mi. Take a left turn on dirt road and cross cattleguard and Veta Creek going to fork in road (0.6 mi.) Take left fork in road and continue 0.7 mi. to fork in road. Take right fork and continue to trench."  
QUAD La Veta Pass 7 1/2'  
MAP TRINIDAD  
DVEL Two trenches.  
BKG .04 mr/hr  
RNG .12 to .2 mr/hr  
HOST Arkosic red sandstone in Permian Sangre de Cristo Formation.  
STRC Mineralized zone is 2 ft wide and trends S12°W.  
MNZ Carnotite, secondary copper and vanadium minerals. One sample had values of 0.017% eU, 0.013% U, 2.34% V2O5.  
DOI 1953  
REF U.S. A.E.C., 1966, Preliminary Reconnaissance Reports, Huerfano County, Colorado. Emerson, J. F., 1943, (RMO-842).

## Independent Claim

LOCATION: NE1/4SE1/4 sec. 9, T. 30 S., R. 69 W.  
QUAD Cuchara 7 1/2'  
MAP TRINIDAD  
DVEL Trench and shaft at occurrence. Vanadium Corporation of America carried out drilling on the property.  
RNG 3 x bg  
HOST Reddish sandstone in Permian Sangre de Cristo Formation.  
STRC Beds strike N10°W and dip 82°W.  
MNZ Thin coatings on fractures of yellow and chartreuse colored minerals, malachite, native copper.  
DOI 1952  
REF U.S. A.E.C., 1966, Preliminary Reconnaissance Reports, Huerfano County, Colorado.

## Isabell Group

LOCATION: sec. 5, T. 25 S., R. 70 W.  
QUAD Bear Creek 7 1/2'

MAP TRINIDAD  
BKG .02 mr/hr  
RNG .3 to 1.5 mr/hr  
HOST Medium- to coarse-grained black carbonaceous shale and conglomeratic sandstone of the Eocene Farisita Conglomerate.  
MNZ Pitchblende.  
DOI 1955  
REF U.S. Geol. Survey, 1977, CRIB File. U.S. A.E.C., 1966, Preliminary Reconnaissance Reports, Huerfano County, Colorado.

## McGuire

LOCATION: sec. 5, T. 29 S., R. 69 W.  
MAP TRINIDAD  
DVEL A sample is reported as having 0.19% U3O8, 1.23% V2O5, and 2.35% Cu.  
MNZ Calciovolborthite, malachite, uranium, (spotty chrome ore?).  
DOI 1972  
REF U.S. Geol. Survey, 1977, CRIB File.

## McGuire Lode (C.E. Wilson Property)

LOCATION: N1/2 sec. 9, T. 29 S., R. 69 W.  
QUAD La Veta 7 1/2'  
MAP TRINIDAD  
DVEL One pit. It was reported that once an 80 ft shaft was sunk on this property to prospect for silver, lead, and radium. This was not confirmed.  
PROD A grade is reported of 0.177% U3O8.  
BKG .04 mr/hr  
RNG To 10 x bg  
HOST Reddish brown arkosic sandstone of the Permian Sangre de Cristo Formation.  
MNZ No mineralized zone was found in place in the sandstone. A grab sample from dump had values of 0.153% eU3O8, 0.177% U3O8  
DOI 1953  
REF U.S. Geol. Survey, 1977, CRIB File. U.S. A.E.C., 1966, Preliminary Reconnaissance Reports, Huerfano County, Colorado. Emerson, J. F., 1943, (RMO-842).

## McIntire Property

LOCATION: sec. 19, T. 27 S., R. 70 W.  
LCST UNCERTAIN  
LCRM There is no description of directions to occurrence.  
QUAD Red Wing 7 1/2'  
MAP TRINIDAD  
DVEL Several small pits.  
HOST Red sandstone and shale in Permian Sangre de Cristo Formation.  
MNZ Carnotite - roscoelite type minerals and copper. Some assay values of up to 0.6% U3O8 are reported but location is questionable.  
DOI 1950  
REF U.S. Geol. Survey, 1977, CRIB File. U.S. A.E.C., 1966, Preliminary Reconnaissance Reports, Huerfano County, Colorado. King, R. U., and Beroni, E. P., 1950. Emerson, J. F., 1943, (RMO-842).

## Muleshoe (La Veta Pass)

## HUERFANO COUNTY

LOCATION: E1/2 sec. 13, T. 28 S., R. 70 W.  
 QUAD La Veta Pass 7 1/2'  
 MAP TRINIDAD  
 PROD Grade reported of 0.15% U308 and 1.95% V205.  
 HOST Sangre de Cristo Formation.  
 MNZ Uranium, vanadium.  
 DOI 1972  
 REF U.S. Geol. Survey, 1977, CRIB File. Emerson, J. F., 1943, (RMO-842).

### Parks Lode Claim

LOCATION: sec. 36, T. 29 S., R. 70 W.  
 LCST UNCERTAIN  
 LCRM Directions to occurrence are as follows:  
 "From south edge of La Veta take Colo. 111 south for 1.4 mi. and take dirt road on right going to Sulphur Springs. Go 5.2 mi. to Sulphur Springs, and continue through for .8 mi. Then take a left fork for 1.2 mi. and go straight ahead at intersection for .1 mi. Take a right fork for .2 mi. and another right fork for 4.8 mi. Leave jeep and go for 500 ft in direction S70°W to RR tracks. Go left along tracks for 3,775 ft and then go straight east for 300 ft to claim." From the sketch map on the Preliminary Reconnaissance Report, it is thought the occurrence is in the SW1/4 of sec. 31, T. 29 S., R. 69 W.  
 QUAD McCarty 7 1/2'  
 MAP TRINIDAD  
 DYEL 40 ft shaft which is now filled was sunk for copper near this occurrence.  
 BKG .01 mr/hr  
 RNG 40 x bg  
 HOST Arkosic sandstone in Permian Sangre de Cristo Formation.  
 STRC Beds strike N 11°W and dip 24°E. Radioactivity is in a small fracture zone.  
 MNZ The radioactivity is associated with yellow secondary mineral which occurs as small spots in a small fracture zone (possibly tyuyamunite). Malachite, azurite. A chip sample had values of 2.62% V205, 2.22% Cu, 0.80% eU308, 0.58% eU308.  
 DOI 1958  
 REF U.S. A.E.C., 1966, Preliminary Reconnaissance Reports, Huerfano County, Colorado.

### Red Canyon

LOCATION: sec. 18, T. 26 S., R. 68 W.  
 LCST UNCERTAIN  
 LCRM Directions to occurrence are to "south branch of Red Canyon." Initial location is given as sec. 7 which is the main Red Canyon and not the south branch.  
 QUAD Badito Cone 7 1/2'  
 MAP TRINIDAD  
 BKG .015 mr/hr  
 RNG .015 to .04 mr/hr  
 HOST Section in canyon starts in Precambrian schist and ends in Cretaceous Dakota Sandstone.  
 STRC West flank of Greenhorn anticline.  
 MNZ Following is mineralization description from the Preliminary Reconnaissance Report:  
 "No mineralization of any kind was observed, but some very high grade samples of carnotite

were said to have been found in Red Canyon. This seem improbable."

DOI 1954  
 REF U.S. A.E.C., 1966, Preliminary Reconnaissance Reports, Huerfano County, Colorado.

### Santa Rosa Claim

LOCATION: sec. 13, T. 27 S., R. 71 W.  
 LCST UNCERTAIN  
 LCRM Original direction to occurrence is as follows:  
 "Take U.S. 160 east from Ft. Garland for 18.6 mi. to junction Colo. 305. Make left turn and continue on Colo. 305 for 9.6 mi. Make left turn on road between creek and school and follow 2.4 mi. Take right fork and follow road for 1.1 mi. to deposit."  
 QUAD Red Wing 7 1/2'  
 MAP TRINIDAD  
 DYEL Prospect was first opened for copper.  
 PROD Grades of 0.3% to 0.36% U308 and 1% to 2% V205 are reported.  
 BKG .04 mr/hr  
 RNG 2 x bg  
 HOST Medium- to coarse-grained sandstone with carbonaceous trash in Permian Sangre de Cristo Formation.  
 MNZ Autunite, malachite, azurite. Commercial assays for ore from the prospect reported to have had values of 1% - 2% V.  
 DOI 1953  
 REF U.S. Geol. Survey, 1977, CRIB File. U.S. A.E.C., 1966, Preliminary Reconnaissance Reports, Huerfano County, Colorado. Wyant, D. G., Beroni, E. P., and Granger, H. C., 1952. King, R. U., 1951, U.S. Geol. Survey TEI-59, p. 206-207.

### Spanish Peaks

LOCATION: sec. 27, T. 30 S., R. 69 W.  
 MAP TRINIDAD  
 MNZ Uranium with values up to 0.2% U308.  
 DOI 1972  
 REF U.S. Geol. Survey, 1977, CRIB File.

### Virginia-Verna 1-6

LOCATION: sec. 17, T. 25 S., R. 70 W.  
 MAP TRINIDAD  
 BKG .03 mr/hr  
 RNG .3 to 4 mr/hr  
 HOST Grayish, ilmonite-stained, carbonaceous, medium-grained sandy shale interbedded with small lenses of arkosic sandstone of the Eocene Farisita Conglomerate.  
 MNZ Autunite was only mineral observed.  
 DOI 1956  
 REF U.S. A.E.C., 1966, Preliminary Reconnaissance Reports, Huerfano County, Colorado.

### Washout Claim (Price Ranch)

LOCATION: NE1/4NW1/4SE1/4 sec. 16, T. 30 S., R. 69 W.  
 QUAD Cuchara 7 1/2'  
 MAP TRINIDAD  
 DYEL Trenching and prospecting. Diamond drilling was carried out by the Vanadium Corporation

# HUERFANO COUNTY

of America in early 1950s.  
 RNG To 5 x bg.  
 HOST Reddish sandstone and black carbonaceous shale of Permian Sangre de Cristo Formation.  
 STRC Beds strike N14°W and dip 70°E.  
 MNZ Native copper reported, malachite, possibly cuprite, unidentified yellow and green minerals.  
 RMKS Radioactivity concentrated in 2 in. zone along hanging wall.  
 DOI 1952  
 REF U.S. A.E.C, 1966, Preliminary Reconnaissance Reports, Huerfano County, Colorado.

## Whitecliff 1-26

LOCATION: sec. 18, T. 25 S., R. 70 W.  
 QUAD Devils Gulch 7 1/2', Creager Reservoir 7 1/2'  
 MAP TRINIDAD  
 DVEL Several trenches have been bulldozed.  
 BKG .04 mr/hr  
 RNG .12 to .3 mr/hr  
 HOST Limonite-stained, crossbedded, medium-grained, arkosic cobble conglomerate in Eocene Farisita Conglomerate. The cobbles are mostly granite and granite gneiss.  
 MNZ No uranium minerals were observed.  
 DOI 1956  
 REF U.S. A.E.C, 1966, Preliminary Reconnaissance Reports, Huerfano County, Colorado.

## JACKSON COUNTY

The production of uranium from Jackson County has been small-- only one deposit has produced ore. The total production to 1971 is reported as 500 tons at a grade of 0.30 percent, producing 3,000 lb of  $U_3O_8$ .

The central part of the county is dominated by North Park, a large intermontane basin filled with Tertiary sediments and volcanics. North Park is bounded on its eastern and western edges by the Medicine Bow Mountains and the Park Range, respectively. Mesozoic and Paleozoic sediments flank the Precambrian granites and gneissic cores of the ranges.

The one producer in the county is the Pedad Claims, located in the northwestern part of the county near

Mount Ethel. They produced ore from a breccia zone in the Precambrian Mount Ethel Granite. A primary mineral associated with the uranium was dark purple fluorite.

It is interesting to note that all occurrences in the county are in the northwestern part of the county. Vein-type occurrences are the most abundant reported, and 11 of these lie in a small area. There is potential for more vein-type and sandstone-type reserves to be found within the county. The large area of the North Park basin could contain sandstone type occurrences of important size. Although exploration activity has been sporadically intense in North Park for a number of years, no occurrences are documented from these efforts.



# JACKSON COUNTY

## Bear Creek Mine

LOCATION: sec. 10, T. 9 N., R. 82 W.  
 LCRM North side Bear Creek Canyon, 2.2 miles from road in Lone Pine Campground.  
 QUAD Boettcher Lake 7 1/2'  
 MAP CRAIG  
 DVEL There are two tunnels. This is probably a gold or silver mine.  
 HOST Vein in unknown host.  
 MNZ Pyrite, galena, chalcopryite, fluorite.  
 RMKS Minor fluorite in the upper tunnel is lightly radioactive.  
 DOI 1950-58?  
 REF U.S. A.E.C., 1966, Preliminary Reconnaissance Reports, Jackson County, Colorado.

## Crystal Fluorspar Mine

LOCATION: sec. 10, T. 8 N., R. 82 W.  
 LCRM Mine is shown on topo map just north of Raspberry Creek.  
 QUAD Pitchpine Mountain 7 1/2'  
 DVEL The mine is an inactive fluorspar producer. Mining began in 1945.  
 HOST Vein in Precambrian quartz monzonite and granite rocks.  
 STRC Vein occurs in breccia zone that is NW trending (reverse fault?).  
 MNZ Fluorite, iron, quartz, uranium.  
 DOI 1975  
 REF U.S. Geol. Survey, 1977, CRIB File. David Wolf, 1977, Personal Communication. U.S. A.E.C., 1966, Preliminary Reconnaissance Reports, Jackson County, Colorado. Malan, R. C., 1957.

## Fleider Prospect

LOCATION: T. 8 N., R. 82 W.  
 LCST UNSURVEYED  
 LCRM The pegmatite is south of Aqua Fria Lake approximately 0.3 mile on the 10,240 ft contour.  
 QUAD Mount Ethel 7 1/2'  
 MAP CRAIG  
 HOST Pegmatite in Precambrian Mount Ethel granite.  
 MNZ Xenotime, zircon, bastnaesite. A sample had a value of 0.7% U, this from a spectrographic analysis of a rare earth mineral.  
 RMKS Mineral Identification by Jack W. Adams.  
 DOI 1966  
 REF George Snyder, 1977, Personal Communication.

## Fred Brad's Ranch (Spring Claims)

LOCATION: sec. 9, T. 9 N., R. 81 W.  
 LCRM Pit is 1.5 miles north of ranch on east slope at Sheep Mountain.  
 QUAD Boettcher Lake 7 1/2', Lake John 7 1/2'  
 MAP CRAIG  
 DVEL Claims are named Spring 1, 2.  
 BKG .01 mr/hr  
 RNG .01 to 2.5 mr/hr  
 HOST Uranium from spring waters (?) deposited in overlying the Jurassic Morrison Formation,

and Precambrian granite.

MNZ Fluorite, quartz, pyrite, black chert. One sample had a value of 0.15% U308.  
 RMKS There are two occurrence records in the CRIB File. The spring #1 claim is in sec. 10, and the Fred Brands Ranch occurrence is in sec. 9.  
 DOI 1957  
 REF U.S. Geol. Survey, 1977, CRIB File. U.S. A.E.C., 1971, Production Records, Colorado. U.S. A.E.C., 1966, Preliminary Reconnaissance Reports, Routt County, Colorado. Malan, R. C., 1957.

## James Bird Prospect

LOCATION: sec. 34, T. 9 N., R. 82 W.  
 LCST UNCERTAIN  
 LCRM Reported to be about 300 yds south of the southern rim of Red Canyon.  
 QUAD Pitchpine Mountain 7 1/2'  
 DVEL One prospect pit approximately 8 ft long, 2 ft wide, and 5 ft deep.  
 HOST Vein in Precambrian Granite.  
 STRC The vein is thought to be on the N-S fault which controls the Pedad occurrence mineralization. The vein strikes N70°E and dips vertically and is approximately 15 ft wide.  
 ALT At a depth of 4 ft the fluorite in the vein grades into altered granite.  
 MNZ The vein contains mainly dark purple radioactive fluorite. Other minerals observed are galena, chalcopryite, and malachite (?). No uranium minerals were observed.  
 DOI 1957  
 REF R. C. Malan, 1978, Personal Communication. Malan, R. C., 1957.

## Pedad Claims Nos. 1-5

LOCATION: sec. 27, T. 9 N., R. 82 W.  
 LCST UNSURVEYED  
 QUAD Pitch Pine Mountain 7 1/2'  
 MAP CRAIG  
 DVEL Two pits.  
 PROD As of 1971, 500 tons had been mined at a grade of 0.30% U308.  
 BKG 60 cps  
 RNG 250-950 cps  
 HOST Breccia in north trending fault cutting the Precambrian Mount Ethel Granite.  
 STRC Breccia zone approximately one ft wide. Strike N78°E, dips 77°NW.  
 ALT Wall rock and breccia fragments are intensely bleached and kaolinized.  
 MNZ Dark purple fluorite, fine grained pyrite (radioactive), white silica, iron oxides, sample value of 0.35% U308.  
 DOI 1957  
 REF U.S. A.E.C., 1966, Preliminary Reconnaissance Reports, Jackson County, Colorado. Malan, R. C., 1957.

## Sample No. 7

LOCATION: SW1/4 sec. 27, T. 9 N., R. 82 W.  
 LCST UNSURVEYED

## JACKSON COUNTY

LCRM From the area of the Pedad Claim occurrence.  
QUAD Pitchpine Mountain 7 1/2'  
MAP CRAIG  
HOST Rock sample.  
RMKS Sample data: 50 ppm Nb, 258 ppm U, 34 ppm Th.  
DOI 1977  
REF George Snyder, 1977, Personal Communication.

### Sheep Mountain Prospect

LOCATION: sec. 33, T. 10 N., R. 81 W.  
LCRM 1 1/2 mile south of Boettcher Lake on top  
of the Dakota Hogback.  
QUAD Boettcher Lake 7 1/2', Lake John 7 1/2'  
MAP CRAIG  
DYEL There are two prospect pits.  
BKG 110-120 cps  
RNG 500-750 cps  
HOST Sandstone and conglomerate in the Cretaceous  
Dakota Sandstone.  
STRC Highest radioactivity is on fractures of  
sandstone near a NW trending fault.  
MNZ Abundant ilmenite and manganese staining  
with values of 0.03% to 0.052% U3O8.  
DOI 1953  
REF U.S. A.E.C., 1966, Preliminary Reconnaissance  
Reports, Routt County, Colorado.

### Simmons

LOCATION: sec. 25, T. 12 N., R. 81 W.  
QUAD Independence Mountain 7 1/2'  
MAP CRAIG  
MNZ Uranium.  
DOI 1972  
REF U.S. Geol. Survey, 1977, CRIB File.

## JEFFERSON COUNTY

Jefferson County has been a major county for production of uranium in the state. The Schwartzwalder Mine, one of the major vein-type uranium mines in North America, has produced approximately 98 percent of all  $U_3O_8$  in the county. As of May 1978, total production from the mine has been reported as 10,500,000 lb of  $U_3O_8$  (J. Haley, 1978, pers. comm.), which makes the Schwartzwalder the largest uranium producing mine in the state. Twelve other mines in the county have produced uranium, but only a small percentage compared to the Schwartzwalder's total production. By 1971 these other mines had produced 39,781 tons of ore and 210,827 lb of  $U_3O_8$ . The potential for more reserves of uranium to be found in the county is excellent.

Two different terranes characterize the geology of Jefferson County. The northeastern quarter of the county is underlain by Paleozoic and Mesozoic sedimentary rocks, usually flat-lying, except near the mountain front. The rest of the county is composed of Precambrian granites, gneisses, and schists of the Front Range, mainly the Idaho Springs Formation and the Pikes Peak Granite, which are cut by many northwest-southeast-trending faults, fault zones, and/or breccia reef systems.

Many occurrences in the county can be considered important; however, only the following major producers are discussed: Ascension Mine, Aubrey Ladwig Mine, Grapevine Mine, Mann Ranch, Mena Mine, Leyden Coal Mine, Pallaora Lease, Schwartzwalder Mine, Stone Placer Mine, and Wright Lease.

Seven of the ten mines occur where a fault or breccia zone transects the Precambrian Idaho Springs Formation. With the exception of the Leyden Coal Mine, the Mann Ranch and the Pallaora Lease, these mines, including the Schwartzwalder, are all clustered along three northwest-trending faults or breccia reef systems within six miles of the fault system along the mountain front.

The Mann Ranch and the Pallaora Lease lie close to each other on the hogback of the Dakota Formation at Turkey Creek Canyon. Faulting in the Dakota Sandstone appears to have dammed up the mineralizing solutions that formed both deposits. Asphaltite and uraninite are the ore minerals.

The Leyden Coal Mine is the final type of important deposit in the county. At this mine the uranium occurs as uraninite in silica-filled cracks and fractures within the coal. During the 1950's the U.S. Geological Survey carried out a drilling program at the mine and reported an estimated reserve of 17,000 tons of ore at a grade of 0.2 percent  $U_3O_8$ .

As pointed out earlier the county has high potential for more reserves of uranium. The Precambrian fracture-controlled type of deposits, the most likely to be found, will be explored for in the foothills west of the mountain front. The sandstone type of deposit has less potential.

# JEFFERSON COUNTY

## Appel Lease

LOCATION: SW1/4 sec. 7, T. 4 S., R. 70 W.  
 QUAD Evergreen 7 1/2'  
 BKG .04 mr/hr  
 RNG .07 to .7 mr/hr.  
 HOST Pegmatites in quartz-biotite schist of the Precambrian Idaho Springs Formation.  
 STRC Shear zone striking N75°W and dipping 55°S and fractures.  
 MNZ Autunite, torbernite, and ilmonite.  
 DOI 1956  
 REF U.S. A.E.C., 1966, Preliminary Reconnaissance Reports, Jefferson County, Colorado. Lovering, T. S., and Goddard, E. N., 1950.

## Ascension Mine (Nair Prospect, Nare Lease)

LOCATION: NW1/4 sec. 24, T. 3 S., R. 71 W.  
 QUAD Ralston Buttes 7 1/2'  
 DVEL Radioactivity was discovered in 1955 and exploration began in 1956. There were at least two diamond drill holes drilled. Several adits were driven and trenching by bulldozing was carried out.  
 PROD During the period 1956-1963, a total of 3,996 tons averaging 0.29% U308 and containing 23,431 lbs of U308 were mined.  
 HOST Calc-silicate gneiss of the Precambrian Idaho Springs Formation.  
 STRC Fault breccias striking NW and dipping steeply easterly. Also a pegmatite dike cuts the prospect.  
 MNZ Pitchblende with sparse base metal sulfides. Uraninite disseminated in a carbonate breccia, composed of quartz, calcite, and ankerite.  
 RMKS There is possibility of confusion with the Ohman Mine, which is also called Nare Lease.  
 DOI 1967  
 REF R. C. Malan, 1978, Personal Communication. U.S. A.E.C., 1971, Production Records, Colorado. Sheridan, D. M., and others, 1967. U.S. A.E.C., 1966, Preliminary Reconnaissance Reports, Jefferson County, Colorado. U.S. A.E.C., 1959.

## Aubrey Ladwig Mine (Aubrey Ladwig Lease, Gary Mine)

LOCATION: SW1/4 sec. 18, T. 3 S., R. 70 W.  
 LCRM Access is from Colorado 93 via Cressmans Gulch.  
 QUAD Ralston Buttes 7 1/2'  
 DVEL Mineralization was discovered in 1954. Production began in 1955. Workings consist of an open pit, shaft with a crosscut and stope, and various exploration pits.  
 PROD During the period 1955-1956, 1,942 tons of ore were mined at a grade of 0.25% U308, producing 9,527 lbs of U308.  
 HOST Brecciated garnetiferous biotite-quartz gneiss and pegmatite of the Precambrian Idaho Springs Formation.  
 STRC Mineralization in fractures or coarse brecciation along or near the contact of the pegmatite and gneiss.

MNZ Lenses and pods of pitchblende up to 60 pounds in weight were mined in the open pit. Meta-autunite was also common. Metatorbernite, metazeunerite, and fourmarierite have also been identified from the mine. Pyrite is common but no base metal sulphides have been identified. Fluorite has been identified from the mine.

RMKS This occurrence is not on a breccia-reef fault, which makes it different from others in the area.

DOI 1967  
 REF U.S. A.E.C., 1971, Production Records, Colorado. Sheridan, D. M., and others, 1967. Derzay, R. C., and Bird, A. G., 1976. U.S. A.E.C., 1966, Preliminary Reconnaissance Reports, Jefferson County, Colorado. U.S. A.E.C., 1954.

## Babcock Prospect (Ralston Buttes Uranium Mining Co. Prospect)

LOCATION: SW1/4 sec. 24, T. 2 S., R. 71 W.  
 QUAD Ralston Buttes 7 1/2'  
 BKG .02 to .03 mr/hr  
 RNG .03 to .2 mr/hr  
 HOST Biotite gneiss of the Precambrian Idaho Springs Formation with narrow quartz lenses.  
 STRC Fracture zone striking N40°E dipping 70°NW.  
 ALT Gneiss is reported as being altered but no description.  
 MNZ Torbernite, chalcopryite, chrysocolla, malachite, pyrite, ilmonite, quartz, clay minerals.  
 DOI  
 REF Sheridan, D. M., and others, 1967. U.S. A.E.C., 1966, Preliminary Reconnaissance Reports, Jefferson County, Colorado.

## Bankers Lode Claim

LOCATION: SE1/4NW1/4 sec. 9, T. 2 S., R. 71 W.  
 QUAD Ralston Buttes 7 1/2'  
 BKG .03 mr/hr  
 RNG .03 to .1 mr/hr  
 HOST Tertiary breccia reef in granite gneiss and pegmatite of Precambrian Idaho Springs Formation and Precambrian Boulder Creek granite.  
 STRC Reef strikes N20°W and dips 90°. Post reef fault strikes N30°E, dips 50°E.  
 MNZ Schroeckingerite, chalcocite, malachite, cuprite, tenorite, hematite, fluorite.  
 RMKS All radioactivity occurs in post reef fault.  
 DOI 1954  
 REF Sheridan, D. M., and others, 1967. U.S. A.E.C., 1966, Preliminary Reconnaissance Reports, Jefferson County, Colorado. Lovering, T. S., and Goddard, E. N., 1950.

## Biliken Lode

LOCATION: SW1/4 sec. 3, T. 7 S., R. 70 W.  
 QUAD Pine 7 1/2'  
 DVEL Several inclines and adits. History unknown, apparently explored for copper.  
 BKG .04 mr/hr  
 RNG .04 mr/hr-off scale  
 HOST Precambrian Idaho Springs Formation.  
 STRC Thin shears and fractures.

# JEFFERSON COUNTY

MNZ Pitchblende, becquerelite, gummite, uranophane, cuprite, tenorite, copper secondaries.  
 RMKS Pitchblende occurs in thin shears, secondary minerals of uranium permeate fractures.  
 DOI 1955  
 REF U.S. A.E.C., 1966, Preliminary Reconnaissance Reports, Jefferson County, Colorado.

STRC Pegmatite strikes N40°W.  
 MNZ Torbernite, fluorite, feldspar. Grab sample had value of .01% eU.  
 DOI 1951  
 REF U.S. A.E.C., 1966, Preliminary Reconnaissance Reports, Jefferson County, Colorado. Lovering, T. S., and Goddard, E. N., 1950.

## Bonzo 1 - Seven Devils later

LOCATION: SE1/4 sec. 33, T. 6 S., R. 69 W.  
 LCRM On north side of river along road.  
 QUAD Kassler 7 1/2'  
 DYEL Adit and pits.  
 BKG .05 mr/hr  
 RNG .2 to 20  
 HOST Gneiss in the Precambrian Idaho Springs Formation.  
 MNZ Chalcopryite, malachite, pitchblende, analysis range from .16% U308 to 11.2% U308.  
 RMKS Gate on road is locked, contact Denver Water Board to gain entry.  
 REF Allen Reid, 1977, Personal Communication. U.S. A.E.C., 1966, Preliminary Reconnaissance Reports, Jefferson County, Colorado.

*see "Stone Place" for production (possible error here)*

## Buckman Property (Golden Gate Canyon No. 2)

LOCATION: NE1/4NE1/4 sec. 25, T. 3 S., R. 71 W.  
 LCRM About 15 ft east of the Golden Gate Canyon road.  
 QUAD Ralston Buttes 7 1/2'  
 DYEL Adit was operated in 1916. It is 86 ft long with a 25 ft winze.  
 HOST Quartz veins in shears of biotite gneiss of the Precambrian Idaho Springs Formation.  
 STRC The shear zones are NE trending. However, the Hurricane Hill fault system is about 300 ft west of the adit.  
 MNZ Pitchblende, uranophane, uranopilite, pyrite, chalcopryite, molybdenite, hematite, quartz. Samples range from .06 to .82% U.  
 DOI 1967  
 REF Derzay, R. C., and Bird, A. G., 1976. Sheridan, D. M., and others, 1967. U.S. A.E.C., 1966, Preliminary Reconnaissance Reports, Jefferson County, Colorado. Adams, J. W., and others, 1953. Lovering, T. S., and Goddard, E. N., 1950.

## Borazetti Property

LOCATION: sec. 33, T. 7 S., R. 70 W.  
 LCST UNCERTAIN  
 LCRM Prospect was reported to be in Douglas County. Also reported to be in sec. 32. More likely the description corresponds to SW1/2 sec. 33.  
 QUAD Platte Canyon 7 1/2'  
 DYEL Mine has produced about 200 tons of K feldspar during the 1940's.  
 HOST Pegmatite in Precambrian Pikes Peak Granite.  
 MNZ Mica lens in pegmatite had a value of 8 mr/hr while the K feldspar had a reading of .15 mr/hr.  
 DOI 1953  
 REF U.S. A.E.C., 1966, Preliminary Reconnaissance Reports, Douglas County, Colorado.

## Cervi Lease

LOCATION: NE1/4NW1/4NE1/4 sec. 24, T. 3 S., R. 71 W.  
 QUAD Ralston Buttes 7 1/2'  
 MAP DENVER  
 HOST The deposit occurs in a vein in Precambrian biotite-plagioclase quartz gneiss.  
 STRC The Hurricane Hill fault breccia may be an important ore control.  
 MNZ Uranium mineralization was recognized but specific minerals were not identified.  
 DOI 1955  
 REF U.S. Bur. of Mines, 1977, (Unpubl.). U.S. Geol. Survey, 1977, CRIB File.

## Bray Lease

LOCATION: NE1/4 sec. 12, T. 5 S., R. 70 W.  
 LCRM In Turkey Creek water gap through Dakota Hogback.  
 QUAD Morrison 7 1/2'  
 BKG .015 mr/hr  
 RNG .05 to .4 mr/hr  
 HOST Cretaceous Dakota Sandstone and Tertiary alluvium.  
 MNZ Carnotite?  
 RMKS Other anomalous prospects nearby in Dakota Sandstone.  
 REF U.S. A.E.C., 1966, Preliminary Reconnaissance Reports, Jefferson County, Colorado. Gottfried, David, 1956. Scott, B. C., 1957.

## Coors Pegmatite

LOCATION: sec. 18, T. 4 S., R. 71 W.  
 MAP DENVER  
 HOST Precambrian pegmatite in a hornblende gneiss of the Idaho Springs Formation.  
 STRC The pegmatite trends northeast.  
 MNZ Allanite - orthite, microcline, albite, cleavelandite, quartz, mica, magnetite, garnet.  
 DOI 1972  
 REF U.S. Geol. Survey, 1977, CRIB File.

## Brereton Prospect

LOCATION: NW1/4 sec. 17, T. 2 S., R. 71 W.  
 QUAD Eldorado Springs 7 1/2'  
 DYEL One 45 ft adit.  
 HOST Precambrian pegmatite in Precambrian fine-grained granite.

## F.M.D. Mine

LOCATION: NW1/4 sec. 25, T. 4 S., R. 71 W.  
 QUAD Evergreen 7 1/2'  
 BKG .005 mr/hr  
 RNG .005 to .1 mr/hr

# JEFFERSON COUNTY

HOST Precambrian Idaho Springs Formation, biotite and amphibolite schist.  
 STRC Shear zone striking N70°W, 10 ft wide and 1/2 mile long.  
 MNZ Chalcopyrite, malachite, azurite, pyrite, hematite, ilmonite, quartz.  
 DOI 1954  
 REF U.S. A.E.C., 1966, Preliminary Reconnaissance Reports, Jefferson County, Colorado. Lindgren, Waldemar, 1908.

## Fork Prospect

LOCATION: NE1/4NW1/4 sec. 19, T. 3 S., R. 70 W.  
 QUAD Ralston Buttes 7 1/2'  
 DVEL Surface cut.  
 PROD In 1964, 13 tons with an average grade of 0.14% U308 and containing 37 lbs of U308 were produced.  
 BKG .03 mr/hr  
 RNG .03 to 3 to +5 mr/hr  
 HOST Precambrian Idaho Springs Formation, layered calc - silicate gneiss.  
 STRC Fracture zone striking N60°E dipping near vertical, approximately 1 ft wide. Zone is considered part of Hurricane Hill fault system.  
 MNZ Sooty pitchblende, pyrite, asphaltite and rhodochrosite? A grab representative sample of a 1/2 ton pile had a value of 0.15% eU308.  
 DOI 1971  
 REF U.S. A.E.C., 1971, Production Records, Colorado. Sheridan, D. M., and others, 1967. U.S. A.E.C., 1966, Preliminary Reconnaissance Reports, Jefferson County, Colorado.

## Glipin Mine

LOCATION: SE1/4 sec. 33, T. 7 S., R. 70 W.  
 LCRM Reported as being in Douglas County.  
 QUAD Platte Canyon 7 1/2'  
 HOST Pegmatite in Precambrian Pikes Peak Granite.  
 MNZ Gummitz?, quartz, fluorite and blebs of primary radioactive minerals.  
 DOI 1952  
 REF U.S. A.E.C., 1966, Preliminary Reconnaissance Reports, Douglas County, Colorado.

## Grapevine Mine (Grapevine 1 and Grapevine Lease)

LOCATION: NE1/4SE1/4 sec. 29, T. 4 S., R. 70 W.  
 LCRM Near Idledale  
 QUAD Morrison 7 1/2'  
 PROD During the period 1955 - 1968, 3,753 tons with an average grade of 0.32% U308 and containing 23,830 lbs of U308 were produced.  
 HOST Hornblende gneiss of Precambrian Idaho Springs Formation.  
 STRC Major shear zones traverse the area and probably control mineralization.  
 MNZ Pitchblende occurs as sooty material coating fractures and as fissure fillings associated with pyrite, quartz, feldspar, ilmonite and hematite, and clay minerals.  
 DOI 1971  
 REF Norman Bennette, 1977, Personal Communication. U.S. A.E.C., 1971, Production Records, Colorado. Sheridan, D. M., and others, 1967. U.S.

A.E.C., 1966, Preliminary Reconnaissance Reports, Jefferson County, Colorado. U.S. A.E.C., 1959.

## Grosso

LOCATION: sec. 18, T. 3 S., R. 70 W.  
 QUAD Ralston Buttes 7 1/2'  
 MAP DENVER  
 DVEL This is an explored prospect.  
 MNZ Uranium.  
 DOI 1975  
 REF U.S. Bur. of Mines, 1977, (Unpubl.).

## Hidden Treasure Group

LOCATION: S1/2 sec. 24, T. 2 S., R. 71 W.  
 LCST UNCERTAIN  
 LCRM From North Star Mine approximately 1 mile southeast.  
 QUAD Ralston Buttes 7 1/2'  
 DVEL One trench.  
 BKG .03 mr/hr  
 RNG .1 to 3.0 mr/hr  
 HOST Fault in schist and gneiss of the Precambrian Idaho Springs Formation.  
 STRC Strike of reef not known.  
 MNZ Torbernite, malachite, azurite, tetrahedrite, pyrite, ilmonite, galena.  
 RMKS Fifteen anomalous zones were found in area.  
 DOI 1954  
 REF Sheridan, D. M., and others, 1967. U.S. A.E.C., 1966, Preliminary Reconnaissance Reports, Jefferson County, Colorado.

## Ladwig 1 (Ladwig 2 Prospect)

LOCATION: SE1/4SW1/4 sec. 19, T. 3 S., R. 70 W.  
 LCRM Same road to Swartzwalder Mine up Cressman Gulch.  
 QUAD Ralston Buttes 7 1/2'  
 PROD No production prior to 1971. A small shipment was made to the Canon City mill in 1971 for private uranium sales by the Cotter Corp.  
 HOST Carbonate breccia and hornblende gneiss of the Precambrian Idaho Springs Formation.  
 STRC NW trending breccia-reef fault with offset of approximately 100 ft.  
 MNZ Pitchblende, torbernite, uranophane?, secondary copper minerals.  
 RMKS An old shaft with copper mineralization is 500 ft S48°E. of this prospect. However, there is no anomalous radiation associated with it.  
 DOI 1977  
 REF Bennette, Norman, 1977. Sheridan, D. M., and others, 1967. U.S. A.E.C., 1966, Preliminary Reconnaissance Reports, Jefferson County, Colorado.

## Ladwig 2 & 3

LOCATION: SE1/4 sec. 19, T. 3 S., R. 70 W.  
 LCRM Approximately 1,500 ft ENE from Union Pacific prospect.  
 QUAD Ralston Buttes 7 1/2'  
 HOST Breccia in hornblende gneiss of the Precambrian Idaho Springs Formation.

# JEFFERSON COUNTY

STRC Fault breccias trending N or NW.  
 MNZ Pitchblende, copper secondaries, however mineralization is very spotty and nearby pits on the breccia zones are not radioactive.  
 DOI 1967  
 REF Sheridan, D. M., and others, 1967. U.S. A.E.C., 1966, Preliminary Reconnaissance Reports, Jefferson County, Colorado. Adams, J. W., and others, 1953.

## Lindsay Clay Mine

LOCATION: sec. 28, T. 2 S., R. 70 W.  
 QUAD Golden 7 1/2'  
 DVEL The mine has been worked for plastic clay.  
 BKG .04 mr/hr  
 RNG .13 to .5 mr/hr  
 HOST A small 20 ft long pod of gray claystone in the Tertiary Laramie Formation. It is underlain by a thin coal and overlain by a thick sandstone.  
 STRC The formation is north trending and vertically dipping.  
 MNZ A powdery carnyary-yellow uranium mineral forms thin films on plant fragments in the claystone. A 3.5 ft channel sample had a value of 0.02% U308.  
 DOI 1954  
 REF U.S. A.E.C., Preliminary Reconnaissance Reports, Jefferson County, Colorado.

## Little Patsy (Oregon 1 - 3?)

LOCATION: sec. 28, T. 7 S., R. 70 W.  
 LCRM Incorrectly located in Douglas County. Also Little Patsy quarry was reported as being in sec. 33.  
 QUAD Platte Canyon 7 1/2'  
 HOST Pegmatite in Precambrian Pikes Peak granite.  
 MNZ Fergusonite, samarskite, quartz, feldspar, biotite, autunite, torbernite. The rare earth minerals occur adjacent to the biotite - feldspar zone.  
 DOI 1951  
 REF U.S. A.E.C., 1966, Preliminary Reconnaissance Reports, Douglas County, Colorado.

## Mann Ranch (Mann Mine, Vanadium Queen)

LOCATION: SE1/4NE1/4 sec. 12, T. 5 S., R. 70 W.  
 QUAD Morrison 7 1/2'  
 MAP DENVER  
 PROD During the period 1955-1961, 2,893 tons were mined at a grade of 0.27% U308, producing 15,579 lbs of U308.  
 HOST Cretaceous Dakota Sandstone.  
 STRC A fault striking N40 to 45°W and dipping 50°SW appears to have acted as a dam to mineralizing solutions.  
 MNZ The ore is an asphaltic material containing finely divided uraninite, accompanied by pyrite.  
 DOI 1975  
 REF U.S. Geol. Survey, 1977, CRIB File. U.S. Bur. of Mines, 1977, (Unpubl.). U.S. A.E.C., 1971, Production Records, Colorado. Sims, P. K., and Sheridan, D. M., 1964. U.S. A.E.C., 1959.

## Mena Mine (Hoffmeister Homestead Prospect, Black Judge Shaft, Nigger Shaft)

LOCATION: NW1/4NE1/4 sec. 26, T. 2 S., R. 71 W.  
 QUAD Ralston Buttes 7 1/2'  
 DVEL Originally prospected as a copper prospect in 1912 by a Mr. Hoffmeister. Also reported as having been worked as a radium prospect.  
 PROD During the period 1956 - 1962, a total of 1,304 tons averaging 0.26% U308 and containing 6,676 lbs of U308 were mined.  
 HOST Brecciated hornblende gneiss, amphibolite, and biotite gneiss of the Precambrian Idaho Springs Formation.  
 STRC Fault in the Rogers breccia reef fault system. Breccia varies from 1 to 8 ft in width.  
 ALT The breccia fragments are highly altered with potassic alteration being prominent.  
 MNZ Pitchblende is the uranium mineral. Gangue is ankerite, quartz, calcite and potassium feldspar. Also pyrite, galena, chalcopryrite and other copper and nickel sulphides have been identified.  
 DOI 1977  
 REF Norman Bennette, 1977, Personal Communication. Derzay, R. C., and Bird, A. G., 1976. U.S. A.E.C., 1971, Production Records, Colorado. Sheridan, D. M., and others, 1967. U.S. A.E.C., 1966, Preliminary Reconnaissance Reports, Jefferson County, Colorado. U.S. A.E.C., 1959. Adams, J. W., and others, 1953.

## Morrison Lime

LOCATION: sec. 14, T. 4 S., R. 70 W.  
 LCST UNCERTAIN  
 QUAD Morrison 7 1/2'  
 HOST Gray sandy limestone in the Morrison Formation. Average thickness - 5 ft.  
 MNZ 0.018% U308 assay from chip sample.  
 DOI 1952  
 REF U.S. A.E.C., 1966, Preliminary Reconnaissance Reports, Jefferson County, Colorado.

## Noack Pegmatite

LOCATION: sec. 7, T. 4 S., R. 71 W.  
 LCST UNCERTAIN  
 QUAD Evergreen 7 1/2'  
 MAP DENVER  
 HOST Pegmatite in a schist of the Precambrian Idaho Springs Formation.  
 MNZ A few crystals of samarskite?, euxenite?.  
 RMKS The pegmatite is also in sec. 8.  
 DOI 1949  
 REF U.S. A.E.C., 1966, Preliminary Reconnaissance Reports, Jefferson County, Colorado.

## North Star Mine

LOCATION: SE1/4 sec. 23, T. 2 S., R. 71 W.  
 LCRM About 1/2 mile north of Ralston Creek.  
 QUAD Ralston Buttes 7 1/2'  
 DVEL It was reported that copper ore was shipped from the mine, 4 tons in 1894, and 12 tons in 1916. It was inactive when pitchblende was discovered there in 1952. Union Pacific Railroad Co. was last reported holder on mineral rights.

# JEFFERSON COUNTY

HOST Fault breccia in microcline gneiss of the Precambrian Idaho Springs Formation.

STRC Fault which is part of the Rogers breccia reef fault system. The fault strikes NW and dips 45°NE. Layering and foliation near the mine strike NE and dip 75 - 85°SE.

ALT The breccia fragments are reported as being altered.

MNZ Pitchblende, uranophane, bornite, chalcocite, covellite, malachite, azurite. A grab sample of pitchblende bearing breccia from dump assayed 20.3 ounces of silver per ton. Channel samples underground had values of 0.002% to 0.510% U.

DOI 1967

REF Sheridan, D. M., and others, 1967. Derzay, R. C., and Bird, A. G., 1976. U.S. A.E.C., 1966, Preliminary Reconnaissance Reports, Jefferson County, Colorado. Adams, J. W., and others, 1953.

## Ohman Mine (Nare Lease)

LOCATION: NE1/4 sec. 25, T. 3 S., R. 71 W.

LCST UNCERTAIN

LCRM Near the Buckman adit is the only location description given.

QUAD Ralston Buttes 7 1/2'

PROD Between 1957-1964, U.S. A.E.C. Production Records show production of 83 tons averaging 0.71% U308, containing 1,170 lbs of U308.

HOST Hornblende gneiss of the Precambrian Idaho Springs Formation.

STRC Along shear or fault zone.

MNZ Pitchblende.

DOI 1967

REF U.S. A.E.C., 1971, Production Records, Colorado. Sheridan, D. M., and others, 1967. U.S. A.E.C., 1966, Preliminary Reconnaissance Reports, Jefferson County, Colorado. Adams, J. W., and Stugard, F., Jr., 1956. Adams, J. W., and others, 1953.

## Old Leyden Mine (Old Leyden Coal Mine, Leyden Mine)

LOCATION: sec. 28, T. 2 S., R. 70 W.

QUAD Golden 7 1/2'

MAP DENVER

DVEL Past producing coal mine.

PROD Between 1954-1956, a total of 645 tons were mined at a grade of 0.35% U308, producing 4,533 lbs of U308. Drilling work published in a TEI estimated 17,500 tons of coal with a grade of 0.2% U308.

HOST Sandstone, coal, and carbonaceous claystone in the Cretaceous Laramie Formation. The mineralization occurs as uraninite in siliceous material filling cracks in the coal.

MNZ Metatyuyamunite, autunite, uranophane, coffinite, uraninite, pyrite, and marcasite.

DOI 1971

REF U.S. Geol. Survey, 1977, CRIB File. U.S. Bur. of Mines, 1977, (Unpubl.). U.S. A.E.C., 1971, Production Records, Colorado. Sims, P. K., and Sheridan, D. M., 1964. U.S. A.E.C., 1959. Gude, A. J., 3d, and McKeown, F. A., 1953. Bräger, I. A., and Deul, Maurice, 1952. Gott, G. B., 1950.

## Oregon 1, 2 & 3 (Little Patsy)

LOCATION: sec. 33, T. 7 S., R. 70 W.

QUAD Platte Canyon 7 1/2'

MAP DENVER

MNZ Uranium and rare earth metals are present.

DOI 1975

REF U.S. Bur. of Mines, 1977, (Unpubl.).

## Pallaora Lease (Morrison Mine, Four Corners)

LOCATION: S1/2 sec. 1, T. 5 S., R. 70 W.

LCRM Also N1/2NE1/4, sec. 12.

QUAD Morrison 7 1/2'

MAP DENVER

PROD During the period 1955-1960, 678 tons were mined at a grade of 0.20% U308 and 0.02% V2O5 producing 2,667 lbs of U308 and 256 lbs of V2O5.

HOST Lens in upper member of the Cretaceous Dakota Sandstone.

STRC A fault appears to have caused a damming of the ore fluids. The fault strikes N40°W and dips 30-55°SW.

MNZ The ore is an asphaltic material containing finely divided uraninite, accompanied by pyrite.

DOI 1972

REF U.S. Geol. Survey, 1977, CRIB File. U.S. Bur. of Mines, 1977, (Unpubl.). U.S. A.E.C., 1971, Production Records, Colorado. Sims, P. K., and Sheridan, D. M., 1964. U.S. A.E.C., 1959.

## Quatman Lease

LOCATION: NE1/4 sec. 29, T. 4 S., R. 70 W.

LCRM Leased fee ground.

MAP DENVER

DVEL One 130 ft long adit.

PROD In 1955 and 1960, a total of 12 tons were mined at a grade of 0.16% U308, producing 39 lbs of U308.

HOST Precambrian Idaho Springs Formation.

MNZ Pitchblende or uraninite, scattered sulfides.

DOI 1971

REF U.S. A.E.C., 1971, Production Records, Colorado.

## Schwartzwalder Mine (Ralston Creek Mine)

LOCATION: SW1/4 sec. 25, T. 2 S., R. 71 W.

QUAD Ralston Buttes 7 1/2'

DVEL Mine was discovered in 1949. Production began in 1953. The mine was sold to the Denver - Golden Oil and Uranium Co. and subsequently to the Cotter Corporation, the present owners. As of 1978, mining was being carried out on the 1600 level, and exploration was being done on the 1900 level of the mine. The Schwartzwalder Mine is one of the major producers of the uranium in North America from a vein type environment. Through 1966, the U.S. A.E.C. had purchased 137,267 tons averaging 0.79% U308, and containing 2,166,772 lbs of U308. In Young, 1977, total production to date (1977) is reported as approximately 9.6 million lbs of U308, with the grade of ore about 0.6% U308. As of



# JEFFERSON COUNTY

*Not seven devils  
May actually be from Bonzo!*

June, 1978 total production is reported as about 10,500,000 lbs of U3O8. Grade of ore being mined in 1978 is approximately .35% U3O8.

HOST The mineralization occurs in garnet biotite gneiss, quartz biotite schist and quartzite, all which are within the Precambrian Idaho Springs Formation (hornblende gneiss).

STRC Large NW trending faults adjacent to the NW Rogers breccia-reef fault system, especially horsetails or cymolds in these faults, controls the mineralization.

ALT Chloritic and potassic alterations are confined to the breccia fragments along with silification, and replacement by ankerite. Zoning has not been recognized.

MNZ Uraninite is the primary mineral in the deeper levels. Sooty pitchblend occurred in the upper levels. Other minerals present are pyrite, chalcopryite, tetrahedrite, bornite, galena, sphalerite, molybdenite in quartz, ankerite, calcite and potassic feldspar gangue.

RMKS For the best overview of the mine read Young, E. J., 1977, and Sheridan, D. M.; and others, 1967.

DOI 1977

REF E. J. Young, 1978, Personal Communication. J. Haley, 1978, Personal Communication. Young, E. J., 1977. Derzay, R. C., and Bird, A. G., 1957. U.S. A.E.C., 1971, Production Records, Colorado. Sheridan, D. M., and others, 1967. U.S. A.E.C., 1966, Preliminary Reconnaissance Reports, Jefferson County, Colorado. Downs, G. R., and Bird, A. G., 1965. U.S. A.E.C., 1959. Lovering, T. S., and Goddard, E. N., 1950.

## Shale Prospect

LOCATION: SE1/4 sec. 35, T. 4 S., R. 70 W.

QUAD Morrison 7 1/2'

HOST Black carboniferous shale in Cretaceous Dakota Sandstone.

MNZ Small yellow grains (carnotite?) are visible in shale. Analysis of 0.013% U.

RMKS Sandstone and shale are anomalous on both sides of gap of Bear Creek.

DOI 1954

REF U.S. A.E.C., 1966, Preliminary Reconnaissance Reports, Jefferson County, Colorado.

## Stevenson Prospect

LOCATION: sec. 2, T. 5 S., R. 70 W.

QUAD Morrison 7 1/2'

BKG .025 mr/hr

RNG .025 to 5 mr/hr

HOST Cretaceous Dakota Sandstone, fine- to medium-grained, buff colored with iron stains. Carbonaceous siltstone above and below.

MNZ Carnotite?

DOI 1954

REF U.S. A.E.C., 1966, Preliminary Reconnaissance Reports, Jefferson County, Colorado. Gottfried, David, 1956. Scott, B. C., 1957.

## Stone Placer ~~Seven Devils Prospect~~

LOCATION: sec. 5, T. 7 S., R. 69 W.

MAP DENVER-

PROD Between 1958 - 1960, a total of 1,143 tons were mined at a grade of 0.44% U3O8, producing 10,117 lbs of U3O8.

HOST Precambrian Idaho Springs Formation.

MNZ Pitchblende or uraninite, scattered sulfides.

DOI 1971

REF U.S. A.E.C., 1971, Production Records, Colorado.

## Sunrise Peak Pegmatite

LOCATION: SW1/4SW1/4SE1/4 sec. 22, T. 4 S., R. 71 W.

MAP DENVER

PROD The pegmatite has production as follows: Columbite - 10 lbs; samarskite - 500 lbs.

HOST Pegmatite in Precambrian gneiss.

STRC Pegmatite strikes N60° to 80°E and dips near vertical NW.

MNZ Xenotime, tantalite, samarskite, zircon, niobium, feldspar, beryl, topaz, microcline, rare earths.

DOI 1972

REF U.S. Geol. Survey, 1977, CRIB File.

## Union Pacific Prospect 2

LOCATION: S1/2 sec. 23, T. 2 S., R. 71 W.

QUAD Ralston Buttes 7 1/2'

BKG .03 mr/hr

RNG .03 to .7 mr/hr

HOST Precambrian Idaho Springs Formation hornblende gneiss.

STRC Fracture zones striking NW and dipping NE and SW.

MNZ Sooty pitchblende, malachite, tenorite, ilmonite.

DOI 1955

REF Sheridan, D. M., and others, 1967. U.S. A.E.C., 1966, Preliminary Reconnaissance Reports, Jefferson County, Colorado.

## Union Pacific Shaft (Union Pacific Prospect)

LOCATION: SW1/4SE1/4 sec. 19, T. 3 S., R. 70 W.

QUAD Ralston Buttes 7 1/2'

HOST Brecciated hornblende gneiss unit of the Precambrian Idaho Springs Formation.

STRC Brecciated fault zone 10 - 15 ft wide, striking N15°W and dipping 35°NE. Sheridan considered it to be part of the Hurricane Hill breccia - reef fault system.

ALT The fragments in the breccia are replaced by K feldspar or ankerite.

MNZ Pitchblende, hematite, tennantite, chalcopryite, bornite, chalcocite, covellite, sphalerite, emplectite, pyrite, ankerite, potassic feldspar, calcite. Sample values range from 0.11% U in a grab on the dump to 0.003 to 5.84% U in channel samples.

DOI 1967

REF Derzay, R. C., and Bird, A. G., 1976. Sheridan, D. M., and others, 1967. U.S. A.E.C., 1966, Preliminary Reconnaissance Reports, Jefferson County, Colorado. Adams, J. W., and Stugard, Frederick, Jr., 1956. Adams, J. W., and others, 1953.

# JEFFERSON COUNTY

## Unnamed 1

LOCATION: sec. 12, T. 5 S., R. 70 W.  
 LCRM Along Turkey Creek.  
 MAP DENVER  
 HOST Upper member of the Cretaceous Dakota Formation.  
 MNZ Uranium.  
 DOI 1972  
 REF U.S. Geol. Survey, 1977, CRIB File.

## Unnamed 2

LOCATION: sec. 2, T. 5 S., R. 70 W.  
 LCRM North end of Mt. Glennon near Bear Creek.  
 HOST Cretaceous Dakota Formation.  
 MNZ Uranium.  
 DOI 1972  
 REF U.S. Geol. Survey, 1977, CRIB File. Rocky Mountain Assoc. of Geologists, 1955, Field Conf. Guidebook, p. 68.

## Unnamed 3

LOCATION: sec. 32, T. 4 S., R. 70 W.  
 LCRM North side of Bear Creek, 1/2 mile west of Idledale.  
 MAP DENVER  
 HOST Vein in a breccia reef of Tertiary age.  
 STRC Shear zone?  
 MNZ Pitchblende.  
 DOI 1972  
 REF U.S. Geol. Survey, 1977, CRIB File. Rocky Mtn. Assoc. of Geol., 1955, Field Conf. Guidebook, p. 68.

## Unnamed 4

LOCATION: sec. 24, T. 2 S., R. 71 W.  
 MAP DENVER  
 HOST Precambrian gneisses and amphibolite.  
 DOI 1972  
 REF U.S. Geol. Survey, 1977, CRIB File. Sims, P. K., and Sheridan, D. M., 1964.

## Unnamed 5

LOCATION: SW1/4 sec. 36, T. 7 S., R. 70 W.  
 MAP DENVER  
 HOST Precambrian pegmatite.  
 MNZ Feldspar, quartz, mica, rare earths, uranium.  
 DOI 1972  
 REF U.S. Geol. Survey, 1977, CRIB File.  
 DOI 1975  
 REF U.S. Bur. of Mines, 1977, (Unpubl.).

## Unnamed 7

LOCATION: sec. 35, T. 3 S., R. 71 W.  
 LCRM Part of sec. 35 is in Ralston Buttes 7 1/2'.  
 QUAD Evergreen 7 1/2'  
 MAP DENVER  
 DVEL Explored prospect.  
 MNZ Uranium.  
 DOI 1975  
 REF U.S. Bur. of Mines, 1977, (Unpubl.).

## Unnamed 6

LOCATION: N1/2 sec. 36, T. 2 S., R. 71 W.  
 QUAD Ralston Buttes 7 1/2'  
 MAP DENVER  
 DVEL Explored prospect.  
 MNZ Uranium.

## Wright Lease (Foothills Mine)

LOCATION: NW1/4 sec. 32, T. 4 S., R. 70 W.  
 QUAD Morrison 7 1/2'  
 MAP DENVER  
 DVEL Adit with extensive underground workings including an interior shaft.  
 PROD During the period 1955 - 1964, a total of 23,319 tons with an average grade of 0.24% U308 and containing 113,221 lbs of U308 were mined.  
 HOST Uranium occurs in a breccia vein trending N50°W, and dipping an average of 70°NE, in schists, gneisses, and pegmatites of the Precambrian Idaho Springs Formation.  
 STRC Ore shoots are concentrated in wider zones where the vein is refracted to the north, and the vein pinches where it bends southward, indicating strike-slip movement with the footwall moved to the northwest in relation to the hanging wall. Wall rock along ore shoots is generally quartz-feldspar pegmatite.  
 MNZ The ore mineral is finely disseminated pitchblende intimately associated with ankerite. The gangue contains abundant calcite and potash feldspar as well as pyrite, chalcopyrite and galena.  
 DOI 1959  
 REF James Patlents, 1977, Personal Communication. U.S. A.E.C., 1971, Production Records, Colorado. U.S. A.E.C., 1959.

## KIOWA COUNTY

Kiowa County is situated in the eastern prairies of Colorado. Surface formations exposed are primarily the Miocene-Pliocene Ogallala Formation and the Upper Cretaceous Niobrara Group. Some Upper Cretaceous Pierre Shale crops out near the eastern borders of the county.

No production of uranium has taken place in this county, and no occurrences are known within the county.

Several wells in the county sampled by the U.S. Geological Survey, however, showed higher than average values of uranium in the water.

North of the Arkansas River, the Ogallala Formation, which generally had higher than average uranium values in water samples, may be an interesting area for further study and has some potential for uranium resources in a sandstone-type of occurrence.

## KIT CARSON COUNTY

Kit Carson County is located in extreme eastern Colorado and covered almost entirely by the rocks of the Miocene-Pliocene Ogallala Formation. Some small exposures of the Upper Cretaceous Pierre Shale are present along the upper course of the Republican River.

No uranium occurrences are known within the county, but favorable formations with uranium resource potential

are present. Water sampling in other parts of the eastern plains has shown higher than average uranium values in waters derived from the Ogallala Formation. The Sharon Springs Member of the Pierre Shale is also known to contain small occurrences of uranium in other parts of the state as well. Due to the flat topography of the county, water sampling would be the most desirable method of exploring for uranium.

## LAKE COUNTY

No uranium has been recorded from the county, and no important occurrences are known within the area.

Lake County lies in west-central Colorado in an area of rugged mountainous terrain. The basement rocks are primarily Precambrian schists, gneisses, and granite. Both the igneous-metamorphic rocks and the overlying Paleozoic sedimentary rocks are intensely folded and faulted, and are intruded by Late Cretaceous(?), Tertiary, and Pleistocene(?) sills, dikes, and plugs. Pleistocene glaciers have shaped the present stream valleys and mantled much of the area with thick surficial debris.

Small quantities of uranium minerals are nearly ubiquitous throughout the various metal deposits in the county, but the only concentrations found so far have been in the St. Kevin district. Many of the

old prospects and mines in that area show slightly higher than average background, but only a few show twice background or more. The radioactive minerals are not megascopically identifiable but are generally associated with limonite or other iron oxides that are found in a fine-grained, probably granitized and disintegrated schists. Torbernite is occasionally associated with turquoise in some of the turquoise mines in that district.

The county probably does not hold great potential as a uranium province. Underground exploration in existing mines and thorough surface prospecting have not resulted in any important discoveries. In the Alma mining district, just east of Lake County, uranium occurrences are present, but they, too, are scattered and weak. What uranium is present appears to be simply a minor constituent of metal-sulfide deposits.

## LAKE COUNTY

### Eclipse Mine

LOCATION: NW1/4NE1/4 sec. 28, T. 9 S., R. 79 W.  
 LCST UNSURVEYED  
 QUAD Mount Sherman 7 1/2'  
 MAP LEADVILLE  
 DVEL There are extensive drifts and crosscuts. The main shaft is 1,000 ft deep.  
 BKG .6 to 1.4 mr/hr  
 RNG 1.0 to 6.0 mr/hr  
 HOST The deposit occurs in shale seams of the Pennsylvanian Weber Formation.  
 STRC The seams sampled strike N12°W and N30°W and dip roughly S30°W.  
 ALT Hydrothermal alteration is present, and is probably Tertiary in age.  
 MNZ The radioactive minerals are too fine grained for megascopic determination, but occur in shale seams from one to several in. thick. One sample assayed 0.032% <sup>238</sup>U308 and 0.019% <sup>235</sup>U308.  
 DOI 1951  
 REF U.S. A.E.C., 1966, Preliminary Reconnaissance Reports, Lake County, Colorado. Emmons, S. F., Irving, J. D., and Loughlin, G. F., 1927, U.S. Geol. Survey Prof. Paper 148.

### Griffin Mines

LOCATION: SW1/4SW1/4 sec. 6, T. 9 S., R. 80 W.  
 QUAD Homestake Reservoir 7 1/2', Leadville North 7 1/2'  
 MAP LEADVILLE  
 DVEL There are several caved adits, and one shaft about 40 ft deep. There are also numerous small prospect pits and caved shafts.  
 BKG .4 to 1.2 mr/hr  
 RNG 3.0 to 8.0 mr/hr  
 HOST The host rock is Precambrian granite and schist.  
 STRC The host is cut by a Tertiary fracture zone. The main Griffin vein strikes N70°E and dips 70°SE, with branches extending off.  
 ALT The host is reported as often altered and silicified.  
 MNZ Gold, silver, galena, and sphalerite were all mined in the area. The radioactive minerals were not identified. Secondary minerals present include quartz, pyrite, brecciated chert, and ilmonite.  
 DOI 1951  
 REF U.S. A.E.C., 1966, Preliminary Reconnaissance Report, Lake County, Colorado. Singewald, Q. D., 1955, U.S. Geol. Survey Bull. 1027-E, p. 251-299. Pierson, C. T., and Singewald, Q. D., 1954.

### Huckleberry Mine

LOCATION: NW1/4NE1/4 sec. 6, T. 9 S., R. 80 W.  
 LCRM The mine is up Gleason Gulch Road.  
 QUAD Leadville North 7 1/2', Homestake Reservoir 7 1/2'  
 MAP LEADVILLE  
 DVEL The main shaft is inclined at an altitude of 10,163 ft. Two other workings, one above

the main shaft and one below, are represented by large dumps. All workings are inaccessible.  
 BKG .6 to 1.2 mr/hr  
 RNG 1.4 to 10 mr/hr  
 HOST The host consists of the local Precambrian granite and Precambrian granitized schist in an area composed largely of schist. The almost completely silicified wall rock is transected by veinlets of quartz with erratic sulfides - all partially oxidized.  
 STRC The host is cut by Tertiary fissure veins. The main vein appears to strike N55°E with a dip to the southeast.  
 ALT All of the rocks are sericitized and most are silicified.  
 MNZ The submarginal vein material consists of quartz with pyrite and very sparse galena. The uranium minerals apparently are intermixed in iron staining and are not megascopically identifiable.  
 DOI 1951  
 REF U.S. A.E.C., 1966, Preliminary Reconnaissance Report, Lake County, Colorado. Singewald, Q. D., 1955, U.S. Geol. Survey Bull. 1027-E, p. 251-299. Pierson, C. T.; and Singewald, Q. D., 1954.

### Josie May

LOCATION: SW1/4 sec. 7, T. 9 S., R. 80 W.  
 LCRM 3,200 ft S 37°W of the intersection of latitude 39°17'30"N and longitude 106°22'30"W.  
 QUAD Homestake Reservoir 7 1/2', Leadville North 7 1/2'  
 MAP LEADVILLE  
 DVEL There is one inclined shaft, partially flooded, and numerous surface pits and cuts.  
 BKG .4 to 2.0 mr/hr  
 RNG 20.0 mr/hr  
 HOST Tertiary fracture fillings and disseminations occur in Precambrian granite, schist, and hybrid rock. A Tertiary white, porphyry and a jasperoid occur nearby.  
 MNZ Torbernite is the main radioactive mineral present. Gangue minerals include turquoise and other secondary copper minerals, ilmonite, and altered wall rock minerals.  
 DOI 1951  
 REF U.S. A.E.C., 1966, Preliminary Reconnaissance Reports, Lake County, Colorado. Singewald, Q. D., 1955, U.S. Geol. Survey Bull. 1027-E, p. 251-299. Pierson, C. T., and Singewald, Q. D., 1954.

### Rosse Tunnel

LOCATION: SW1/4NE1/4 sec. 1, T. 9 S., R. 81 W.  
 LCST UNSURVEYED  
 QUAD Homestake Reservoir 7 1/2'  
 MAP LEADVILLE  
 DVEL Caved adits and a caved shaft are present on the property.  
 BKG .8 mr/hr  
 RNG 1.0 to 1.8 mr/hr  
 HOST The host rock is Precambrian granite and schist, cut by Tertiary fractures.  
 STRC Veins present appear to strike NE to SW.  
 ALT The veins are pyritized and silicified.  
 MNZ The radioactive minerals are not megascopically

# LAKE COUNTY

visible, but occur as fracture coatings and dissemination. The fracture surfaces are limonite stained.

DOI 1951  
REF U.S. A.E.C., 1966, Preliminary Reconnaissance Report, Lake County, Colorado. Singewald, Q. D., 1955, U.S. Geol. Survey Bull. 1027-E, p. 251-299. Pierson, C. T., and Singewald, Q. D., 1954, U.S. Geol. Survey Circ. 321, 17 p.

## Turquoise Chief (Poor Boy)

LOCATION: SW1/4 sec. 7, T. 9 S., R. 80 W.  
LCRM This deposit also extends into sec. 6.  
QUAD Homestake Reservoir 7 1/2', Leadville North 7 1/2'  
MAP LEADVILLE  
DVEL There is one caved adit, a caved incline, and a small open cut.  
BKG .4 to 2.0 mr/hr  
RNG 3.4 to 8 mr/hr  
HOST The host rock is a Precambrian granite (Silver Plume?, St. Kevin granite?)  
STRC The wall rock is cut by Tertiary fractures, which localized the ore deposition.  
ALT Granite reported to be altered.  
MNZ The primary ore mined was turquoise. Secondary minerals include green copper minerals and undetermined radioactive minerals. Limonite, quartz, and altered granitic minerals make up the gangue.  
DOI 1951  
REF U.S. A.E.C., 1966, Preliminary Reconnaissance Report, Lake County, Colorado. Eckel, E. B., 1961. Singewald, Q. D., 1955, U.S. Geol. Surv. Bull. 1027-E, p. 251-299. Pierson, C. T., and Singewald, Q. D., 1954.

## Unnamed 1

LOCATION: SE1/4SW1/4 sec. 32, T. 8 S., R. 80 W.  
LCRM The claim is about 0.1 mile east of the mouth of Temple Gulch.  
QUAD Leadville North 7 1/2'  
MAP LEADVILLE  
DVEL There are six shallow shafts and numerous prospect pits on both sides of the road.  
BKG .06 to .127 cps  
RNG .2 to 6.07 cps  
HOST The host is Precambrian granite cut by Tertiary fissure zones.  
ALT Granite ranges from relatively unaltered to moderately silicified and sericitized.  
MNZ The radioactive minerals were not determinable in hand specimen. In general, the radioactivity is strongest in the least altered granite. In the sample taken, a brown mineral seemed to be responsible for the greatest radioactivity. Freshly broken surfaces of the fine-grained, highly silicified rock exhibited almost as much radioactivity as did limonite-stained fracture surfaces. Samples taken from nearby range from 2 to 5 times background.  
RMKS 1951  
REF U.S. A.E.C., 1966, Preliminary Reconnaissance Report, Lake County, Colorado. Singewald, Q. D., 1955, U.S. Geol. Survey Bull. 1027-E, p. 251-299. Pierson, C. T., and Singewald, Q. D., 1954.

## Unnamed 2

LOCATION: sec. 12, T. 9 S., R. 81 W.  
LCRM The prospect is 2,270 ft N75°W from the southwest corner of sec. 7, T. 9 S., R. 80 W.  
QUAD Homestake Reservoir 7 1/2'  
MAP LEADVILLE  
DVEL There is one caved adit.  
BKG .6 to .8 cps  
RNG 16 to 100 cps  
HOST The host rock is Precambrian granite that has been fractured.  
STRC Faulting?  
MNZ Sooty pitchblende (?) coats the fracture surfaces of pyritic, siliceous vein material found on the dump. Unpyritized fissures are also anomalous, but are lower in radioactivity than the more fractured, pyritized samples.  
DOI 1951  
REF U.S. A.E.C., 1966, Preliminary Reconnaissance Report, Lake County, Colorado. Singewald, Q. D., 1955, U.S. Geol. Survey Bull. 1027-E, p. 251-299. Pierson, C. T., and Singewald, Q. D., 1954.

## Unnamed 3

LOCATION: NW1/4 sec. 6, T. 9 S., R. 80 W.  
QUAD Homestake Reservoir 7 1/2', Leadville North 7 1/2'  
MAP LEADVILLE  
DVEL There are three caved adits; one caved shaft, and one accessible shaft.  
BKG .6 to .8 cps  
RNG 1.6 to 3.2 cps  
HOST The host rock is Precambrian granite and schist with mineralization that is Tertiary in age.  
ALT Some of the granite is silicified. There is hydrothermal alteration reported.  
MNZ The radioactive minerals are not megascopically visible, but occur as disseminations and fracture coatings. The coatings are black and sooty, and have associated pyrite, quartz, galena, and sphalerite. The radioactivity does not seem to be greatly affected by alteration of the Precambrian rocks. Some limonite staining is present.  
DOI 1951  
REF U.S. A.E.C., 1966, Preliminary Reconnaissance Report, Lake County, Colorado. Singewald, Q. D., 1955, U.S. Geol. Survey Bull. 1027-E, p. 251-299. Pierson, C. T. and Singewald, Q. D., 1954.

## Unnamed 4

LOCATION: sec. 1, T. 9 S., R. 81 W.  
LCST UNSURVEYED  
LCRM The prospects lie between 2,230 and 2,950 ft in distance, and between N89°W and S59°W from sec. 7, T. 9 S., R. 80 W. The occurrence also extends into sec. 12.  
QUAD Homestake Reservoir 7 1/2'  
MAP LEADVILLE  
DVEL There are several shallow prospect pits and caved shafts.

# LAKE COUNTY

BKG .8 - 1.0 cps  
 RNG 1.4 to 4.0 cps  
 HOST The host rock is Precambrian granite, schist, and a jasperoid.  
 ALT Some of the granite is fresh, some is weathered. Two shallow pits have very slightly altered granite.  
 MNZ The radioactive minerals are not visible megascopically. They would appear to be disseminated, and associated with fracture coatings.  
 RMKS Five prospects were sampled. Their locations are: 2,575 ft N89°W; 2,260 ft S75°30'W; 2,405 ft S66°W; 2,590 ft S59°W; and 2,230 ft S66°W; all directions taken from the northwest corner of sec. 7, T. 9 S., R. 80 W.  
 DOI 1951  
 REF U.S. A.E.C., 1966, Preliminary Reconnaissance Report, Lake County, Colorado. Singewald, Q. D., 1955, U.S. Geol. Survey Bull. 1027-E, p. 251-299. Pierson, C. T. and Singewald, Q. D., 1954.

## Unnamed 5

LOCATION: W1/2 sec. 13, T. 9 S., R. 81 W.  
 QUAD Homestake Reservoir 7 1/2'  
 MAP LEADVILLE  
 DVEL There are three adits.  
 BKG .6 to 1.8 mr/hr  
 RNG 4 to 20 mr/hr  
 HOST The host rock is Precambrian granite, cut by Tertiary veins and disseminations.  
 STRC There are fissures and breccia zones present. The mineralized vein strikes N25°E, N80°E, and N5°W. Dips are generally 55° to 60°NW.  
 MNZ The radioactive minerals are not megascopically visible, but occur in pyritized, silicified granite in fissure zones.  
 DOI 1951  
 REF U.S. A.E.C., 1966, Preliminary Reconnaissance Report, Lake County, Colorado. Singewald, Q. D., 1955, U.S. Geol. Survey Bull. 1027-E, p. 251-299. Pierson, C. T. and Singewald, Q. D., 1954.

## Unnamed 6

LOCATION: sec. 12, T. 9 S., R. 81 W.  
 QUAD Homestake Reservoir 7 1/2'  
 MAP LEADVILLE  
 DVEL There are three caved adits and two caved shafts.  
 BKG .6 to 1.0 mr/hr  
 RNG 1.6 to 2/4 mr/hr  
 HOST The host rock is Precambrian granite and schist with Tertiary mineralization.  
 ALT The hosts are often silicified and pyritized.  
 MNZ The radioactive minerals are not megascopically determinable. They occur as disseminations and fracture coatings of hematite and ilmonite on granite and schist.  
 DOI 1951  
 REF U.S. A.E.C., 1966, Preliminary Reconnaissance Report, Lake County, Colorado. Singewald, Q. D., 1955, U.S. Geol. Survey Bull. 1027-E, p. 251-299. Pierson, C. T. and Singewald, Q. D., 1954.

## Unnamed 7

LOCATION: sec. 7, T. 9 S., R. 80 W.  
 LCRM 3842 ft S62°E from the northwest corner of sec. 7.  
 QUAD Leadville North 7 1/2', Homestake Reservoir 7 1/2'  
 MAP LEADVILLE  
 DVEL There is one small pit, about three ft deep.  
 BKG .6 to 1.2 mr/hr  
 RNG 6.0 mr/hr  
 HOST The host rock is a Precambrian schist, deeply permeated by iron-oxide stain.  
 STRC The host is cut by Tertiary veins.  
 MNZ The minerals are not megascopically identifiable because of their admixture with the iron oxide fracture coatings.  
 DOI 1951  
 REF U.S. A.E.C., 1966, Preliminary Reconnaissance Report, Lake County, Colorado.

## Unnamed 8

LOCATION: NW1/4 sec. 7, T. 9 S., R. 80 W.  
 LCRM 800 ft S5°W of the Josie May Mine (which is 3,200 ft S371/2°W of intersection of latitude 39°17'30"N and longitude 106°22'30"W.)  
 QUAD Homestake Reservoir 7 1/2', Leadville North 7 1/2'  
 MAP LEADVILLE  
 DVEL There is one small prospect pit.  
 BKG .4 - 1.6 mr/hr  
 RNG 8.0 mr/hr  
 HOST The host is Precambrian schist with some granite and pegmatite present.  
 STRC Tertiary fracture cut the host.  
 MNZ The radioactive minerals are not megascopically determinable, but occur as a film on fracture surfaces. Limonite is present, and specularite is present but scarce.  
 DOI 1951  
 REF U.S. A.E.C., 1966, Preliminary Reconnaissance Report, Lake County, Colorado. Singewald, Q. D., 1955, U.S. Geol. Survey Bull. 1027-E, p. 251-299. Pierson, C. T. and Singewald, Q. D., 1954.

## Wilkesbarre Mine (Wilkes Barre Tunnels)

LOCATION: S1/2NW1/4 sec. 6, T. 9 S., R. 80 W.  
 QUAD Homestake Reservoir 7 1/2', Leadville North 7 1/2'  
 MAP LEADVILLE  
 DVEL There are three adits (only the lowest of which was accessible), four caved shafts, and numerous prospect pits. The size of the dumps indicate fairly extensive underground workings.  
 BKG .6 to 1.2 mr/hr  
 RNG 1.8 to 4.0 mr/hr  
 HOST The wall rocks are Precambrian silicified and sericitized granite, some of which is manganese stained while some is ilmonite coated. They are cut by Tertiary veins.  
 STRC The main Wilkesbarre vein strikes N58°W and dips 70°SE.  
 ALT Sericitization and silicification are present in the mine.  
 MNZ The radioactivity is found in two types



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of dump material. The first is as a pyrite-bearing very fine-grained vein quartz and gouge. The second is an intensely sericitized, fine-grained, granular rock that may be granitized schist. The radioactive minerals are probably secondary, but are too fine-grained to be megascopically identified. Limonite is often associated with the radioactive minerals. Grab and chip samples assay between 0.009 and 0.018%  $\alpha$ U308 and 0.002 and 0.013% U308.

DOI  
REF

1951  
U.S. A.E.C., 1966, Preliminary Reconnaissance Report, Lake County, Colorado. Singewald, Q. D., 1955, U.S. Geol. Survey Bull. 1027-E, p. 251-299. Pierson, C. T. and Singewald, Q. D., 1954.

## LA PLATA COUNTY

Production of uranium from La Plata County has been very limited. Records show that by 1971, 687 tons had been mined that yielded 1,029 lb of  $U_3O_8$ . Potential is good that more reserves of uranium may be found in the county.

La Plata County is on the southwestern edge of the San Juan Mountains, and it falls into two geological structural areas--the San Juan Uplift on the north, and the San Juan Basin on the south. The San Juan Uplift has exposed Precambrian rocks in the northwestern area, such as the Needles Mountains. Associated with the uplift are the intrusive rocks of the La Plata Mountains complex, a small uplift in the northwestern corner of the county. Sheetlike igneous bodies and sills have intruded Upper Paleozoic sediments. The San Juan Basin is a large sediment-filled basin that extends into New Mexico wherein lie 50 percent of the uranium reserves of the United States. The Grants Mineral Belt contains sandstone-type deposits in the Jurassic Morrison Formation.

The four deposits which have produced uranium include Black Hawk, Good Hope-Nevada Group, Lucky

Lepracon, and Shorty Lode. Two of these producers, the Black Hawk and the Lucky Lepracon are unlocatable. The most important producer in the county is the Good Hope-Nevada Group, which accounts for 95 percent of all tonnage and produces ore from the Entrada Sandstone. The deposit is part of the Entrada roscoelite belt, which includes the Graysill Mine in San Juan County, the mines around Placerville, San Miguel County, and the Rifle Mine in Garfield County. Roscoelite occurrences in the Entrada Sandstone yield principally vanadium with uranium as a by-product.

The potential for more reserves to occur in the county is good. Uranium occurrences are reported over a 36-sq-mi area around Thunder Mountain in the Needle Mountains. This area has favorable potential for vein type occurrences, although environmental problems must be addressed. More reserves of the Entrada roscoelite-type may occur in the Entrada Sandstone in the northwestern part of the county. Lastly, the San Juan Basin in the southern part of the county has potential for sandstone-type occurrences.

## LA PLATA COUNTY

### Black Hawk

#### LOCATION:

LCST UNLOCATABLE

PROD As of 1971, 23 tons had been mined at a grade of 0.04% U3O8, producing 18 lbs of U3O8, and 0.02% V2O5, producing 9 lbs of V2O5.

HOST The host is Permian Cutler Formation.

RMKS Possibly a duplicate of one of the located occurrences in this county.

DOI 1971

REF U.S. A.E.C., 1971, Production Records, Colorado.

### Cape of Good Hope

LOCATION: W1/2 sec. 29, T. 38 N., R. 10 W.

LCST UNSURVEYED

LCRM Also W1/2E1/2 sec. 30, T. 38 N., R. 11 W.

QUAD Orphan Butte 7 1/2'

RNG 10 x bg

HOST The roscoelite type mineralization in the Jurassic Entrada Sandstone or base of the Salt Wash Member of the Jurassic Morrison Formation.

DOI 1977

REF Western Nuclear Submittal file, 1977.

### Good Hope-Nevada Group

LOCATION: NW1/4 sec. 29, T. 36 N., R. 10 W.

LCRM Claims are also in sec. 19, 20, & 30, T. 36 N., R. 10 W. This is part of the Lightner Creek district in the U.S. A.E.C. Production Reports.

QUAD Durango West 7 1/2'

MAP DURANGO

PROD There were 650 tons of ore mined by 1971, at grades of 0.07% U3O8 and 1.66% V2O5, producing 956 lbs of U3O8 and 21,578 lbs of V2O5.

HOST Bedded deposit in Entrada Sandstone.

MNZ Uranium, vanadium of the roscoelite type, with assays of 0.60% U3O8, and 20.4% V2O5.

DOI 1971

REF U.S. Geol. Survey, 1977, CRIB File. U.S. A.E.C., RMO-453, U.S. A.E.C., 1971, Production Records, Colorado.

### Lucky Leprecon

#### LOCATION:

LCST UNLOCATABLE

LCRM Reported to be in the Lightner Creek district.

PROD As of 1971, 8 tons had been mined at a grade of 0.24% U3O8 producing 39 lbs of U3O8, and 1.17% V2O5, producing 187 lbs of V2O5.

HOST Jurassic Entrada Sandstone.

MNZ Roscoelite type.

DOI 1971

REF U.S. A.E.C., 1971, Production Records, Colorado.

### Schafer Ranch

LOCATION: NE1/4 sec. 6, T. 35 N., R. 9 W.

LCRM Mine is shown on slope above Chapman Lake on topo map.

QUAD Durango West 7 1/2'

MAP CORTEZ

HOST Zones of asphaltite in a fine-grained, white to light gray sandstone in the middle of the Lower Cretaceous Burro Canyon Formation.

MNZ Asphaltite containing minute crystals of thorite and anatase. This is a heavy mineral stream deposit. A (channel?) sample of a 30 ton volume had a value of 1.52% ThO2.

DOI 1955

REF W. L. Chenoweth, 1978, Personal Communication. Houston, R. S., and Murphy, J. F., 1970. U.S. A.E.C., 1966, Preliminary Reconnaissance Reports, La Plata County, Colorado.

### Shorty Lode

LOCATION: sec. 5, T. 36 N., R. 11 W.

LCRM Also reported in sec. 6.

QUAD La Plata 7 1/2'

MAP CORTEZ

PROD As of 1971, 6 tons were mined at a grade of 0.13% U3O8, producing 16 lbs of U3O8 and 0.10% V2O5, producing 12 lbs of V2O5.

HOST Vein in Late Tertiary syenite stock.

MNZ Uranophane with Au, Ag, Pb, Zn.

DOI 1977

REF U.S. Geol. Survey, 1977, CRIB File. U.S. A.E.C., 1971, Production Records, Colorado. Eckel, E. B., 1949, U.S. Geol. Survey Prof. Paper 219.

### Texarado Oil Uranium Co.

LOCATION: sec. 5, T. 36 N., R. 11 W.

LCRM Also reported in sec. 6.

QUAD La Plata 7 1/2'

MAP CORTEZ

HOST Shear in syenite stock.

STRC Shear.

MNZ Uranium.

DOI 1972

REF U.S. Geol. Survey, 1977, CRIB File.

### Thunder Mountain (Florida Mountain)

LOCATION: sec. 3, T. 38 N., R. 7 W.

LCRM T. 38-39 N., R. 6-7 W.

QUAD Mountain View Crest 7 1/2', Columbine Pass 7 1/2'

MAP CORTEZ

BKG 100-300 cps

RNG to 50,000 cps

HOST Fractures in Precambrian granite, age - 1.35 B.Y.

STRC Faults and fractures sets.

ALT Zonal; chloritic - propylitic-argillic.

MNZ Uraninite, guminite, pyrite, fluorite, chalcedony.

RMKS It was reported that there are anomalies over an area of 10 square miles. Also that the mineralization is not Tertiary but 1.34 B.Y. old.

DOI 1977

REF Larry Milliken and Bill Carlson, 1977, Personal Communication. Field Investigation, 1977. Maxwell, J. C., 1977. Hemingway, B., 1976, Showdown on the Weminuche: Empire Magazine,

## LA PLATA COUNTY

The Denver Post, Nov. 7, 1976, Denver, CO,  
p. 10-18.

### Tomahawk Mine

LOCATION: sec. 28, T. 37 N., R. 11 W.  
LCST UNSURVEYED  
LCRM Located on the northeast slope of Basin  
Creek at an elevation of 10,800 ft.  
QUAD La Plata 7 1/2'  
MAP CORTEZ  
DVEL Inactive gold mine.  
HOST Vein in Tertiary diorite and breccia.  
ALT Silicification and decomposition.  
MNZ Pyrite, traces of other sulphides, quartz.  
No uranium minerals identified. Channel  
samples had values ranging from 0.02 to  
0.38% U3O8.  
RMKS It is reported that two miles southwest  
of the Tomahawk vein is another vein which  
shows equal uranium values.  
DOI 1954  
REF U.S. Geol. Survey, 1977, CRIB File. U.S.  
A.E.C., 1966, Preliminary Reconnaissance  
Reports, La Plata County, Colorado. Eckel,  
E. B., 1949, U.S. Geol. Survey Prof. Paper  
219.

### Tripp Gulch Property

LOCATION: S1/2 sec. 4, T. 36 N., R. 9 W.  
LCRM Original directions are as follows: "Travel  
north from Durango on US 550 for 8 miles.  
At Thompson home, near mouth of Tripp Gulch,  
turn west and follow unimproved road for  
about one mile to drilling area".  
QUAD Hermosa 7 1/2'  
MAP CORTEZ  
HOST Gray to black very fine-grained bedded to  
shaley carbonaceous sandstone of the Permo-  
Pennsylvanian Rico Formation.  
MNZ The mineralized bed is from 0.5 to 1 ft  
thick and extends for 150 ft. Uranium minerals  
are reported but are not identified.  
DOI 1955  
REF W. L. Chenoweth, 1978, Personal Communication.  
U.S. A.E.C., 1966, Preliminary Reconnaissance  
Reports, La Plata County, Colorado.

## LARIMER COUNTY

Minor production of uranium reported within the county totals about 791 tons that contained 4,144 lb of  $U_3O_8$ . A few tons came from rare-earth and uranium-bearing pegmatites and from small occurrences in the Dakota Sandstone. The rest, 633 tons, came from the Copper King Mine at an average grade of 0.30 percent  $U_3O_8$ , containing 3,771 lb of  $U_3O_8$ . Potential is moderate for more reserves to be found.

Larimer County lies in north-central Colorado, straddling the Rocky Mountain and Great Plains physiographic provinces. The western three-quarters of the county are dominated by the Precambrian mountains of the Front Range and the Medicine Bow Mountains. The Precambrian rocks are primarily metamorphosed sedimentary rocks, intruded by granites and other related igneous masses. In the eastern section of the county the formations range within a very short distance from Paleozoic to Late Cretaceous in age. The sedimentary formations are upturned along the edge of the Front Range, but are relatively flat-lying eastward onto the plains.

By far the most important known occurrence of uranium in Larimer County is at the Copper King mine, discovered to contain uranium ore in 1949. It was one of the initial vein-uranium discoveries in the Front Range outside the Colorado mineral belt. Two major types of mineral deposits are present at the mine: 1) a skarn containing pyrometasomatic massive sulfide-magnetite ore, and 2) uranium minerals in veins that cut the skarn. The sulfide ore is late Precambrian in age and includes pyrite, sphalerite, chalcopyrite, pyrrhotite, and some magnetite. The uranium ore is probably early Tertiary in age and includes uraninite, coffinite, and  $UO_3$ -rich pitchblende.

The rare-earth and uranium-bearing pegmatites are found in the Crystal Mountain district west of Loveland and Fort Collins, and in other areas of Precambrian terrane. The pegmatites are associated with late Precambrian granitic sills and dikes that intruded the older Precambrian metamorphics of the Front Range. Minor amounts of copper, beryl, mica, and gold were found in the Crystal Mountain district and have been mined sporadically since 1884. Uranium and rare-earth minerals were mined from the pegmatites during the late 1940's and early 1950's. A few small deposits of carnotite have also been found and mined to a small extent in the Dakota Sandstone along the Front Range.

Larimer County has potential for uranium reserves and resources both in Precambrian rocks and in sedimentary terrane. While uranium production from the pegmatites will probably remain small or nonexistent, other deposits in the Precambrian rocks similar to the Copper King Mine are likely to exist. Detection of these vein-type deposits is very difficult, and airborne scintillometer scans followed by ground reconnaissance are required to locate them. Because the Copper King vein was not exposed at the surface (the uranium ore was discovered on the dump of the old workings), similar undiscovered veins likely will lack surface expression. Complicating matters, the entire area is mantled by glacial deposits of generally unknown thickness. The Dakota Sandstone is the most likely sedimentary formation to contain uranium resources because small occurrences are known within it and because geologically similar deposits have been mined from the Dakota in other parts of the state.

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### A. L. Stein Ranch (Stein Ranch)

LOCATION: NW1/4SW1/4 sec. 15, T. 7 N., R. 70 W.  
 QUAD Horsetooth Reservoir 7 1/2'  
 MAP GREELEY  
 DVEL Three bench cuts were bulldozed. These varied in length from 80 to 200 ft, and went to a maximum eight ft deep.  
 BKG .015 mr/hr  
 RNG .3 to 1.0 mr/hr  
 HOST The host consists of small, irregular zones of relatively unaltered Precambrian pegmatite and coarse-grained granite. It has intruded biotite schist, and several of those contacts were investigated. No relation between those contacts and mineralization could be found.  
 STRC Joint sets trend N80°E and N52°E and dip nearly vertically. Locally, these joint planes delimit the mineralized zones, but in general there is a marked absence of persistence to the controlling structures and a lack of continuity of mineralized zones. The mineralized exposures are about 300 yds east of a NW trending fault which is more than 10 miles in length.  
 MNZ Oxidized uranium minerals (autunite and torbernite ?) appear as fracture and grain coatings.  
 RMKS Radioactivity was also reported along the nearby fault where it is mantled with overburden.  
 DOI 1956  
 REF U.S. A.E.C. 1966, Preliminary Reconnaissance Reports, Larimer County, Colorado.

### Batterson Lode

LOCATION: sec. 16, T. 9 N., R. 73 W.  
 QUAD Rustic 7 1/2'  
 MAP GREELEY  
 DVEL There is a 30 ft shaft.  
 BKG .05 mr/hr  
 RNG To .2 mr/hr  
 HOST The host is a medium-grained Precambrian granite.  
 STRC A quartz vein striking N70°E, and about 2 in. wide contains the mineralization.  
 MNZ Pyrite is disseminated in the granite matrix for a distance of several ft, adjacent to the quartz vein. A parallel 2 in. vein of specular hematite is exposed in the shaft. Sooty pitchblende is the only other visible mineral, and it occurs associated with the pyrite as blebs in fracture zones.  
 DOI 1954  
 REF U.S. Geol. Survey, 1977, CRIB File. U.S. A.E.C., 1966, Preliminary Reconnaissance Reports, Larimer County.

### Big Boulder Prospect (Boulder Rock)

LOCATION: SE1/4 sec. 36, T. 7 N., R. 72 W.  
 QUAD Crystal Mountain 7 1/2'  
 MAP GREELEY  
 PROD In 1941, 500 lbs of beryllium, feldspar, rare earths, spodumene and mica were mined.

U.S. A.E.C. Production Records show 6 tons of uranium ore mined at a grade of 0.10% U308, producing 12 lbs of U308 in 1951.

HOST The deposit is in a pegmatite cutting Precambrian mica schist. The pegmatite is concordant, striking N2-10°E, and dipping vertically.  
 MNZ Ore minerals of the pegmatite include beryl, tourmaline, apatite, garnet, spodumene, autunite, muscovite, perthite, and quartz.  
 DOI 1972  
 REF U.S. Geol. Survey, 1977, CRIB File. U.S. A.E.C., 1971, Production Records, Colorado. U.S. Bur. of Mines, 1966, I.C. 8298, p. 29. U.S. Geol. Survey, 1955, Bull. 1011, p. 88.

### Carter Lake

LOCATION: sec. 3, T. 4 N., R. 70 W.  
 QUAD Carter Lake Reservoir 7 1/2'  
 MAP GREELEY  
 MNZ Uranium minerals are present, with a sample value of 0.12% U308.  
 DOI 1972  
 REF U.S. Geol. Survey, 1977, CRIB File.

### Copper King Shaft (Cherokee Mines, Ismert Property, Black Hawk Claims, Black Hawk Mine E)

LOCATION: sec. 8, T. 10 N., R. 72 W.  
 QUAD Haystack Gulch 7 1/2'  
 MAP GREELEY  
 DVEL There is a two compartment, 60 ft shaft, 100 ft of drift, and a 14 ft winze on the 60 ft level.  
 PROD According to CRIB, 55 tons of zinc ore and 45 tons of uranium ore were mined during 1950-1951. The U.S. A.E.C. files show that 633 tons were mined at a grade of .30% U308, producing 3,771 lbs of U308 in 1951 through 1954. Thirteen lbs of V205 were recovered.  
 RNG 4 to 300 x bg  
 HOST The host is the Precambrian Sherman Granite in an area where late Precambrian pyrite-quartz veining has occurred. The ore body is tabular shaped, measuring roughly 2 x 20 x 50 ft.  
 STRC The ore body occurs in a steeply dipping vein located in a fracture zone.  
 ALT An altered zone surrounds the mineralization.  
 MNZ The primary ore minerals are pyrite, marmatite, chalcopryite, and pitchblende. Gangue minerals include biotite, amphibole, quartz, carbonate, and chlorite.  
 DOI 1971  
 REF U.S. Geol. Survey, 1977, CRIB File. U.S. A.E.C., 1971, Production Records, Colorado. U.S. A.E.C., 1966, Preliminary Reconnaissance Reports, Larimer County, Colorado. Sims, P. K., Phair, G., and Moench, R. H., 1958. U.S. Geol. Survey, 1952, TEI-311. U.S. Geol. Survey TEMR-128-A, Granger, H. C., and King, R. U., 1951. U.S. Geol. Survey TEMR-129, Granger, H. C., and King, R. U., 1950.

### Estes Bell (Hilltop)

LOCATION: sec. 16, T. 6 N., R. 71 W.  
 QUAD Drake 7 1/2'

# LARIMER COUNTY

MAP GREELEY  
 HOST The deposit lies in a vein cutting the Precambrian granite schist of the Idaho Springs Formation.  
 DOI 1977  
 REF U.S. Geol. Survey, 1977, CRIB File.

## Eureka Group

LOCATION: N1/2 sec. 14, T. 7 N., R. 72 W.  
 QUAD Crystal Mountain 7 1/2'  
 MAP GREELEY  
 PROD U.S. A.E.C. Production Records show 6 tons mined at a grade of .12% U3O8, producing 13 lbs of U3O8 in 1956.  
 BKG .05 mr/hr  
 RNG To 4.5 mr/hr  
 HOST The host rock is a quartz-biotite schist of the Idaho Springs Formation that has been intruded by pegmatite. The ore lies on the contact between the pegmatite and schist on the pegmatite side.  
 STRC The general strike of the pegmatite is N80°W. The contact is nearly vertical. There is a diamond mesh fracture pattern present. The individual rock fragments are a rough diamond shape and generally about 1 x 2 ft. Fracture surfaces show no evidence of movement.  
 MNZ Uranophane (?) and a green uranium mineral are impregnated through the pegmatite. Two channel samples assayed at 0.06 and 0.08% eU3O8. A chip sample assayed at 0.25% eU3O8. The secondary minerals are shown by U.S. A.E.C. Records to be autunite. CRIB lists torbernite as one of the secondaries.  
 DOI 1956  
 REF U.S. Geol. Survey, 1977, CRIB File. U.S. A.E.C., 1971, Production Records, Colorado. U.S. A.E.C., 1966, Preliminary Reconnaissance Reports, Larimer County, Colorado.

## Hide Above Lode

LOCATION: sec. 18, T. 6 N., R. 71 W.  
 QUAD Drake 7 1/2'  
 MAP GREELEY  
 DVEL There is at least one trench in the area, roughly 6 ft deep by 10 ft long.  
 PROD About 1 1/2 tons of triphylite were stockpiled.  
 RNG .5 to 1.0 mr/hr  
 HOST The operators are mining into pegmatite bodies.  
 MNZ Beryl, tourmaline, and triphylite are found in the uppermost trench, and secondary yellow and orange uranium minerals (gummite and autunite ?) are near the surface in specimen amounts. Some primary uraninite occurs in the pegmatites. One uranium sample assayed 0.046% eU3O8 and 0.045% U3O8.  
 DOI 1953  
 REF U.S. A.E.C., 1966, Preliminary Reconnaissance Reports, Larimer County, Colorado.

## Hyatt Ranch

LOCATION: NE1/4NW1/4 sec. 28, T. 6 N., R. 71 W.  
 QUAD Drake 7 1/2'  
 MAP GREELEY

PROD One hundred tons of beryllium ore were mined between 1936 and 1948.  
 HOST The deposit is in a pegmatite cutting Precambrian biotite granite and quartz mica schist. The pegmatite is zoned and is over 8,100 ft long.  
 MNZ Ore minerals include beryl, bismuthinite, and uraninite.  
 DOI 1972  
 REF U.S. Geol. Survey, 1977, CRIB File. U.S. Bur. of Mines, 1977, (Unpubl.). U.S. A.E.C., 1966, Preliminary Reconnaissance Reports, Larimer County, Colorado. U.S. Geol. Survey, 1955, Bull. 1011, p. 71. Guilloitte, G. B., 1944 (RMO-49).

## Lucky Strike Claims

LOCATION: sec. 10, T. 8 N., R. 75 W.  
 QUAD Boston Peak 7 1/2'  
 MAP GREELEY  
 HOST The deposit lies in pegmatites cutting Precambrian metamorphics and intruded by Silver Plume Granite.  
 DOI 1972  
 REF U.S. Geol. Survey, 1977, CRIB File.

## New Hope Claims

LOCATION: sec. 19, T. 6 N., R. 71 W.  
 QUAD Glen Haven 7 1/2'  
 MAP GREELEY  
 DVEL Some surface work has been carried out.  
 PROD The mine produced in the past, but no records are available.  
 MNZ Uranium mineralization is present.  
 DOI 1975  
 REF U.S. Bur. of Mines, 1977 (Unpubl.).

## Red Head Claim

LOCATION: NE1/4 sec. 33, T. 11 N., R. 72 W.  
 QUAD Cherokee Park 7 1/2'  
 MAP GREELEY  
 DVEL Beryl crystals were mined on the property.  
 HOST The host is a Precambrian granite with pegmatite bodies.  
 MNZ Beryl crystals 15 in. in diameter are associated with beryl-gummite, columbite-tantalite, cyrtolite-monazite, quartz, feldspar, and mica. The radioactivity is caused primarily by thorium and rare earth minerals. A chip sample assays 2.5% eU, 1.82% U, and 3.66 ThO2.  
 DOI 1951  
 REF U.S. Geol. Survey, 1977, CRIB File. U.S. A.E.C., 1966, Preliminary Reconnaissance Reports, Larimer County, Colorado.

## Robinson Ranch and Boy Scout Camp

LOCATION: sec. 13, T. 9 N., R. 73 W.  
 LCRM The deposit also extends to sec. 14, T. 9 N., R. 73 W. and to sec. 18, T. 9 N., R. 72 W.  
 QUAD Rustic 7 1/2'  
 MAP GREELEY  
 RNG To 10 x bg

# LARIMER COUNTY

RMKS Airborn anomalies with the ground anomalies being found in areas where there are vlenlets of hematitic ilmonite in a red granite.  
REF R. U. King, 1977, Personal Communication.

## Sheep Creek Prospect

LOCATION: sec. 6, T. 11 N., R. 74 W.  
LCRM Also in sec. 14, T. 11 N., R. 75 W.  
QUAD Eaton Reservoir 7 1/2'  
MAP GREELEY  
DVEL This prospect has not produced to date.  
HOST The radioactivity occurs in Precambrian (Sherman?) Granite, in pegmatitic segregations of hornblende material in a granite and quartz monzonite. Hornblende material from the most anomalous pit had the following petrographic description, microcline-hornblende granite, abundant sphene (?) and alteration (leucoxene) totaling 18% of sample.  
STRC Strike of the segregations is NW-SE. There is some jointing and shearing.  
ALT No secondary uranium mineral are visible.  
MNZ 0.01 to 0.03 eU308 with up to 0.83% eU308 reported. Also to 20% TiO2. The mineralization also includes monazite and thorite at less than 1%.  
RMKS This has been reported as radioactivity in Precambrian rock along decompression sheeting in granite.  
DOI 1975  
REF Roy Barkely, 1977, Personal Communication. Mike Wendell, 1977, Personal Communication. R. U. King, 1977, Personal Communication.

## Soda Springs Group (1-8)

LOCATION: N1/2 sec. 7, T. 8 N., R. 73 W.  
LCST UNSURVEYED  
QUAD Rustic Quad 7 1/2'  
MAP GREELEY  
DVEL One prospect pit.  
PROD 2 tons ore ? shipped in early 1950's.  
BKG 80 cps  
RNG 300 to 10,000 cps  
HOST The host is a 15 ft x 250 ft Precambrian pegmatite body in a layered quartz-feldspar amphibole gneiss with aplitic fine-grained to pegmatite stringers. The foliation trends N15°E, dips + 75°SE.  
MNZ The mineralization is in the central part of the pegmatite in the form of a yellow secondary uranium mineral. There are no primary minerals. The radioactivity is associated with smoky quartz. The uranium mineral(s) coat grains and fracture surfaces, permeating some of the mineral grains. The hottest spots appear to be associated with biotite segregations.  
RMKS The pegmatite is zoned: a 2 ft outer zone is feldspar-rich, with large nine in. blades & books of biotite; the borders have a slight hematite stain. The inner zone is quartzose, graphic granite, with some barren, bull quartz.  
REF Charles Line, 1977, Personal Communication.

## Spring Claim ( Revis Claim, Unnamed Claim, Spring 1 Claim)

LOCATION: SE1/4NE1/4 sec. 15, T. 8 N., R. 75 W.  
LCST UNSURVEYED  
LCRM The site is near the Sleeping Elephant camp site on U.S. Highway 287.  
QUAD Boston Peak 7 1/2'  
MAP GREELEY  
DVEL A 13 ft deep prospect pit was sunk over the radioactive high. An area above the radioactive spring has been bulldozed, leaving a 200 x 100 ft flat area.  
PROD Approximately 40 tons of ore grade material was stockpiled on the surface.  
BKG .02 mr/hr  
RNG .3 to 2.5 mr/hr  
HOST The deposit is located at the contact of a very acidic Precambrian granite with a Precambrian biotite schist of the Idaho Springs Formation. There are small acidic pegmatites of pink feldspar phenocrysts up to one inch across, and quartz.  
STRC The mineralization occurs along fracture faces in the granite associated with the small pegmatites. A large shear zone cuts the area.  
ALT The granite has been sericitized and ilmonitized above the mineralization.  
MNZ Autunite and ilmonite could be megascopically identified and a yellow-green non-fluorescent uranium mineral was associated with the autunite. Chip and channel samples collected ranged from 0.021 to 0.032% eU308. A ilmonite precipitate at the nearby spring contains 0.045% eU308 and an associated hematite deposit contains 0.021% eU308. Sooty pitchblende was discovered on fracture faces in the bottom of the prospect pit. Mineralization appears to strike ± 70° to the south.  
DOI 1954  
REF U.S. Geol. Survey, 1977, CRIB File. U.S. A.E.C., 1966, Preliminary Reconnaissance Reports, Larimer County, Colorado.

## Unnamed Radioactive Spring 1

LOCATION: NE1/4 sec. 7, T. 8 N., R. 73 W.  
LCST UNSURVEYED  
QUAD Rustic Quad 7 1/2'  
MAP GREELEY  
BKG 80 cps  
RNG To 800 cps  
HOST The host is a spring in Precambrian quartz-feldspar amphibole gneiss.  
RMKS This spring is 900 ft southeast and 500 ft lower in elevation than the Soda Springs Group Prospect. It is a slow seep of cold water surrounded by rotting vegetation.  
REF Charles Line, 1977, Personal Communication.

## Uranium Queen (Red Hill, Red Hill 1)

LOCATION: NW1/4SW1/4 sec. 13, T. 9 N., R. 73 W.  
QUAD Rustic 7 1/2'  
MAP GREELEY  
DVEL There is an old shaft that was dug for gold prospecting. Several small pits were dug



# LARIMER COUNTY

by E. C. Robinson for uranium exploration in 1954.

PROD According to the U.S. Bur. of Mines, during 1956, 100 tons of uranium ore at 0.17% U3O8 and 100 tons of 0.11% U3O8 were mined from Red Hill, with 50 tons of 0.48% U3O8 also mined from Uranium Queen. The U.S. A.E.C. Records show a total of 140 tons mined at a grade of 0.13% U3O8 and 0.01% V2O5, producing 340 lbs of U3O8 and 22 lbs of V2O5 prior to 1971.

BKG .1 mr/hr

RNG .2 to .3 mr/hr

HOST The host is Precambrian granite, porphyritic granite, and granite pegmatite.

STRC Vein structures are supposed to lie in the granite, but trenches have been cut along the structures and are filled with blasted rock. The radioactivity is associated with NW trending fractures. One fault which has been exposed by blasting strikes N35°E and dips S77 1/2°E.

MNZ Autunite, uranophane, gummite, uraninite, and pitchblende were found in both the stockpile and the dump. Values of samples taken range from 0.22 to 0.48% eU3O8. Along the fault lies a mylonitic zone which is mineralized with uranophane and autunite. Radioactivity count increases where the fault intersects the NW trending fractures.

DOI 1955

REF U.S. Geol. Survey, 1977, CRIB File. U.S. Bur. of Mines, 1977, (Unpubl.). U.S. A.E.C., 1971, Production Records, Colorado. U.S. A.E.C., 1966, Preliminary Reconnaissance Reports, Larimer County, Colorado.

DOI  
REF

1955

Warren I. Finch, 1977, Personal Communication. U.S. Geol. Survey, 1977, CRIB File. U.S. Bur. of Mines, 1977, (Unpubl.). U.S. A.E.C., 1971, Production Records, Colorado. U.S. A.E.C., 1966, Preliminary Reconnaissance Reports, Larimer County, Colorado.

## Wahketa Lease (Wahketa Mine)

LOCATION: sec. 18, T. 8 N., R. 69 W.

LCST UNCERTAIN

LCRM The P.R.R. indicates this is in sec. 13. The prospect is on the Dakota Sandstone rim, 1000 ft from the road across an irrigation ditch. The CRIB file lists this as sec. 13, T. 8 N., R. 70 W. A second CRIB reference verifies the location originally given above.

QUAD La Porte 7 1/2'

MAP GREELEY

DVEL The rim has been stripped at four places, with approximately 50 tons of rock broken.

PROD In 1955, six tons were mined at a grade of 0.07% U3O8, producing 8 lbs of U3O8, and 6 lbs of V2O5 at a grade of 0.05%.

RNG 0.06 to 0.7 mr/hr

HOST The deposit is in the lower Cretaceous Dakota Sandstone along the prominent hogback rim formed by the sandstone. The formation strikes northerly and dips 30° to the west.

STRC The hogback appears to be the west limb of an anticline, the center of which has been eroded away.

MNZ Mineralization of a carnotite type has been exposed at scattered points along the rim for approximately 0.2 miles. A weakly fluorescent mineral not distinguishable in ordinary light occurs in several of the pits.

RMKS An assay showed 0.16% U3O8. Autunite has also been identified.

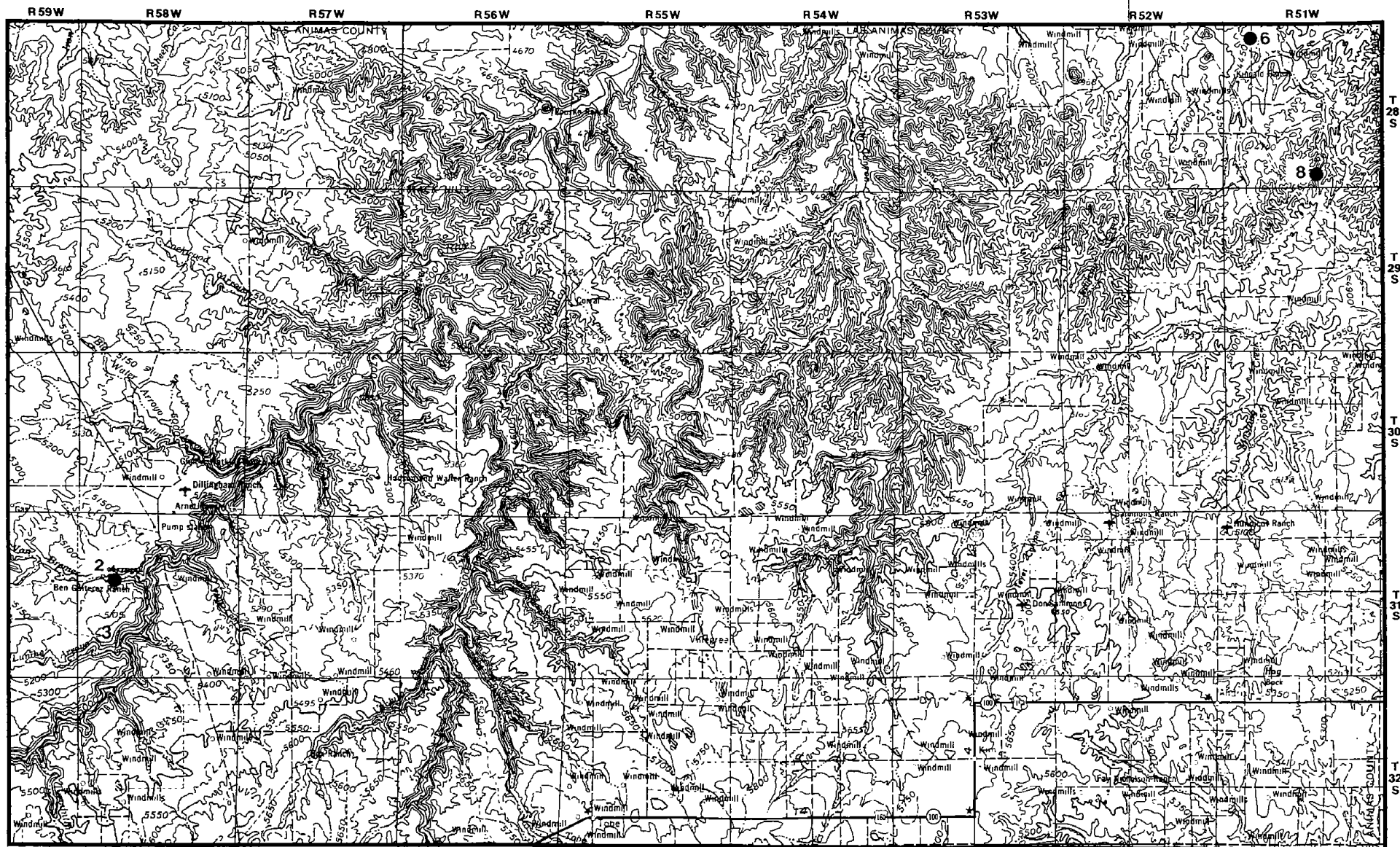
## LAS ANIMAS COUNTY

Production from the county was as small as could be achieved, 1 ton mined which contained 1 lb of  $U_{38}$ . Potential for more reserves is minor.

A large part of the eastern Las Animas County is covered by the Lower Cretaceous Dakota Sandstone. Outcrops of other sedimentary formations are also found in that area ranging from the Permo-Triassic Lykins Formation to Tertiary and Quaternary(?) lava flows. The western part of the county, which involves more complex geology, is bounded on the west by the slopes of the Culebra Range of the Sangre de Cristo Mountains. Pennsylvanian and Permian sedimentary formations about these ranges, and progressively younger formations are found to the east. Around the Spanish Peaks in the northern area early Tertiary intrusives are found in the form of dikes, sills, and stocks.

Extensive Tertiary and Quaternary(?) lava flows cap several mesas along the southern edge of the county. The structural Raton Basin extends from New Mexico northward through the center of the county.

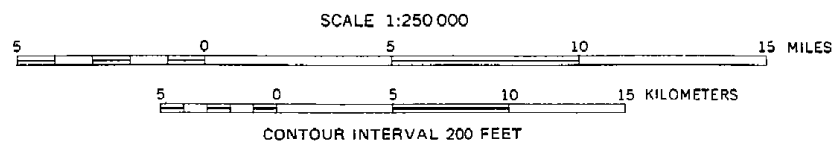
Several uranium occurrences are known within the county, predominantly around Trinchera Peak on the Costilla County line. One ton of ore was mined from the Virginia 14 Claim, but no other production has taken place within the county. Favorable units with potential include the Pennsylvanian and Permian continental sediments in the western part of the county, the Dakota Sandstone, the Morrison Formation, and the Purgatoire Formation. The majority of known prospects seem to lie in the Dakota Sandstone at its contact with the Purgatoire Formation. However, the potential of the county is very limited.



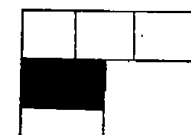
Base from U.S.G.S.

### EXPLANATION

LOCATION OF INSET

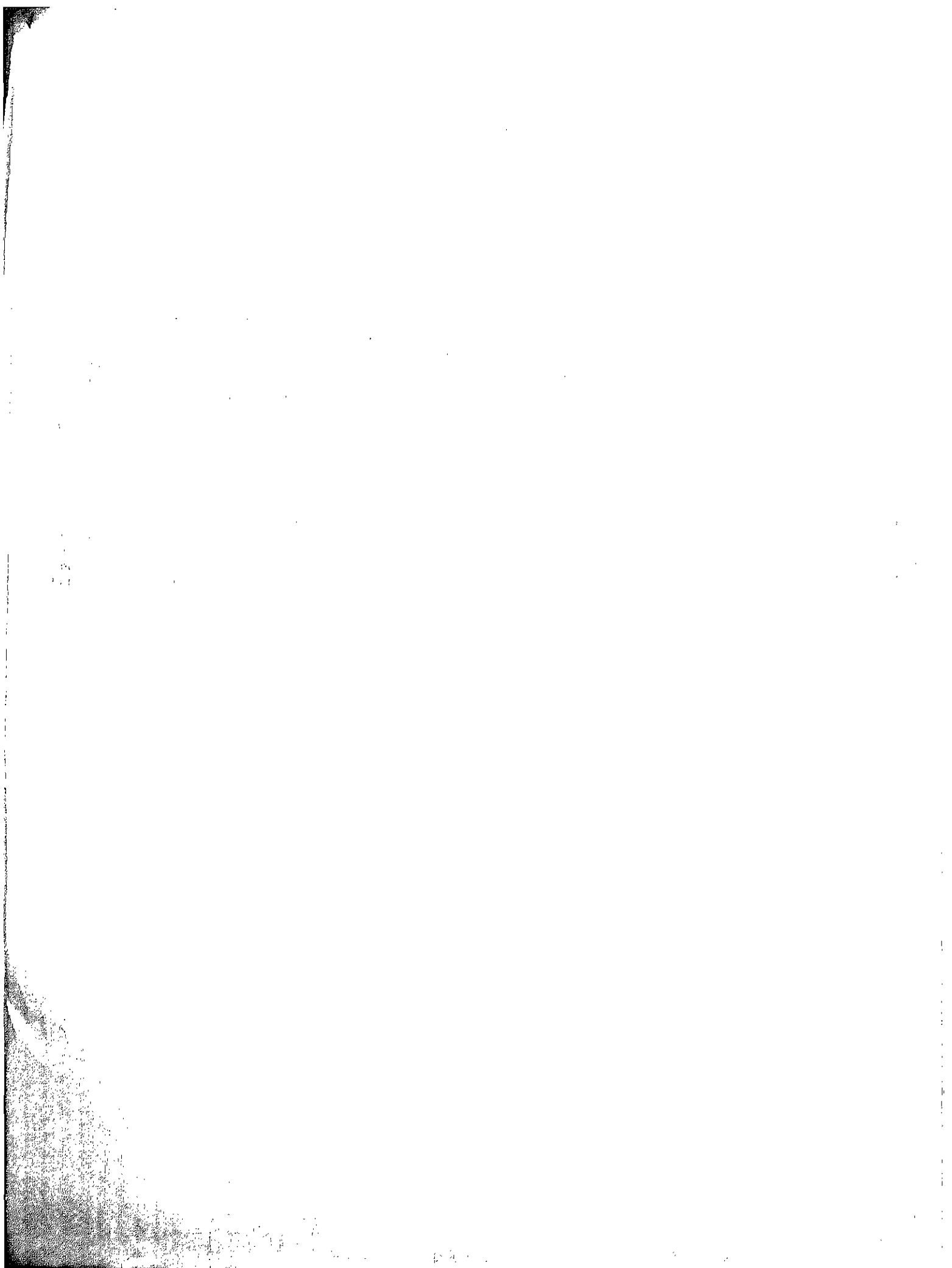


- SANDSTONE, ARKOSE, CONGLOMERATE, SILTSTONE  
LAKE SEDIMENT HOST ROCKS FOR OCCURRENCE
- 7 OCCURRENCE NUMBER FROM TEXT



LA JUNTA  
1° x 2° SHEET

Figure 15. Radioactive mineral occurrences in part of Las Animas County, Colorado.



## LAS ANIMAS COUNTY

### 16, Airborne Anomaly (B-4-1-1954)

LOCATION: sec. 20, T. 32 S., R. 61 W.  
 QUAD Mooney Hills 7 1/2'  
 MAP TRINIDAD  
 BKG .016 mr/hr  
 RNG maximum 0.26 mr/hr  
 HOST The radioactivity occurs in alluvium above the Cretaceous Pierre Shale.  
 MNZ No mineralization is visible but a grab sample registered 16 times background and assayed to 0.4% U308.  
 RMKS A 2 1/2 ft deep pit was dug in the alluvium but no better material was unearthed.  
 DOI 1954  
 REF U.S. A.E.C., 1966, Preliminary Reconnaissance Reports, Las Animas County, Colorado.

### Booster Claim 1

LOCATION: sec. 17, T. 31 S., R. 58 W.  
 LCRM From Model go east on US 350 for 0.6 mi. and turn right onto Canyon Station Road for 20.8 mi. Now take a right turn before the cattle guard for 0.5 mi. and then take a left turn and go through gate. Continue for 3.0 mi. Leave vehicle and go S12°W for 125 yds to edge of cliff and then down the side to the claim. It lies on the north side of Van Bremer Creek.  
 MAP LA JUNTA  
 DVEL Four shallow prospect pits have been dug in the radioactive material.  
 BKG .007 mr/hr  
 RNG To .7 maximum mr/hr  
 HOST The radioactive zone occurs in shale lens of the lower part of the Cretaceous Dakota Sandstone, at its contact with the Purgatoire Formation, and about 90 ft above the top of the Morrison Formation.  
 MNZ Limonite, hematite, specularite, and manganese are present. No uranium minerals are visible, but the radioactivity is associated with groundwater seeps near the base of the Dakota contact.  
 DOI 1955  
 REF U.S. A.E.C., 1966, Preliminary Reconnaissance Reports, Las Animas County, Colorado.

### Cliff Martin Claims

LOCATION: sec. 30, T. 31 S., R. 58 W.  
 LCRM Also see sec 31. From P.O. in Model go south on U.S. 350 for 0.4 mi. and take a left turn for 2.0 mi. Take a right turn for 0.9 mi. and a left turn for 3.0 mi. Now take a right turn for 0.9 mi. and a left turn for 7.0 mi. Here take a left fork for 4.6 mi. and a right fork onto a dirt track road. Go for 0.3 mi. and take a right fork. Now go 0.1 mi., park vehicle and descend into northwest slope of Luning Canyon to claim.  
 MAP LA JUNTA  
 DVEL A few small test pits have been dug into talus material on the slope of the canyon.

BKG 0.03 mr/hr  
 RNG 1.5 nr/hr max. count  
 HOST The Cretaceous Dakota Sandstone at its contact with the underlying Purgatoire Formation appears to be the host.  
 MNZ Chip samples range from 10 to 100 times background. Iron and manganese oxides are present. Uranium minerals are not visible, but radioactivity is associated with groundwater seeps near the iron and manganese staining.  
 RMKS Some water wells in the area are radioactive.  
 DOI 1955  
 REF U.S. A.E.C., 1966, Preliminary Reconnaissance Reports, Las Animas County, Colorado.

### Dave Welsh Claim

LOCATION: sec. 20, T. 32 S., R. 61 W.  
 QUAD Mooney Hills 7 1/2'  
 MAP TRINIDAD  
 DVEL A small (5 ft x 4 ft x 6 ft) pit has been dug on the edge of a 55 ft x 2 ft x 5 ft trench. The trench strikes N83°W.  
 BKG 0.05 mr/hr  
 RNG To 0.42 mr/hr  
 HOST Cretaceous Pierre Shale(?). The host is a gray to buff, calcareous and argillaceous shale which is gypsiferous in places.  
 MNZ Gypsum, limonite and possibly manganese are present in a seam and give the highest radioactivity count.  
 DOI 1954  
 REF U.S. A.E.C., 1966, Preliminary Reconnaissance Reports, Las Animas County, Colorado.

### Fan Dyke No. 1 (Fan Dyke 1-15, 17-22; Phebolite 1-8)

LOCATION: sec. 18, T. 32 S., R. 69 W.  
 LCRM Also sec. 13, 19, 24, T. 32 S., R. 70 W. Partly in Las Animas County.  
 DVEL Small reserves developed by drilling but no production.  
 HOST Permian Sangre de Cristo Formation.  
 MNZ Carnotite.  
 DOI 1971  
 REF U.S. A.E.C., 1971, Production Records, Colorado.

### Mike's Mine

LOCATION: sec. 32, T. 27 S., R. 51 W.  
 LCST UNCERTAIN  
 LCRM The location given by sec., T., R., above puts this mine in Bent County. If the directions given by the PRR are correct the mine is in Las Animas County, but on the border between sec. 5, 6, T. 28 S., R. 51 W.  
 QUAD Ninaview 7 1/2'  
 MAP LA JUNTA  
 DVEL A 13 ft prospect pit was sunk in the Purgatoire sandstone.  
 BKG .02 mr/hr  
 RNG To 2.0 mr/hr  
 HOST Sandstone of the Cretaceous Purgatoire Formation which is exposed in the pit is fine-grained, massive, and gray in color. The grains are fairly well cemented. A radioactive pocket about 2 1/2 ft wide and 1 ft thick is located on the east side of the pit about

## LAS ANIMAS COUNTY

7 ft below the surface.  
MNZ Limonitic and hematitic stains are present in addition to small tabular flakes of a green mineral resembling autunite. Some azurite is also present.  
RMKS The owner sent in cedar ash for analysis that was radioactive. Some cedar trees adjacent to the claim were also examined by the U.S. A.E.C. geologists, but they were not anomalously radioactive.  
DOI 1954  
REF U.S. A.E.C., 1966, Preliminary Reconnaissance Reports, Las Animas County, Colorado.

### Morning Star 1

LOCATION: T. 32 S., R. 69 W.  
LCST UNCERTAIN  
QUAD Trinchera Peak 7 1/2' & Cuchera Pass 7 1/2'  
MAP TRINIDAD  
HOST Permian-Sangre de Cristo Formation.  
DOI 1971  
REF U.S. A.E.C., 1971, Production Records, Colorado.

### Unnamed 1

LOCATION: sec. 34, T. 28 S., R. 51 W.  
MAP LA JUNTA  
RNG 2 x bg on outcrop.  
HOST Cretaceous Dakota Sandstone is the host. The radioactive water flows from a spring at the base of the massive sandstone where it contacts a 6 in. black shale unit and 10+ ft of massive carbonaceous sandstone.  
MNZ The sandstone contained 0.003 to 0.005% uranium. The water sample had 50 ppb uranium in it.  
DOI 1955  
REF U.S. A.E.C., 1966, Preliminary Reconnaissance Reports, Las Animas County, Colorado.

### Virginia 14

LOCATION: T. 32 S., R. 69 W.  
LCST UNCERTAIN  
LCRM On Trinchera Peak.  
QUAD Trinchera Pass 7 1/2'  
MAP TRINIDAD  
PROD In 1960, 1 ton was mined at a grade of 0.05% U3O8, producing 1 lb of U3O8.  
HOST Permian Sangre de Cristo Formation.  
MNZ Carnotite - tyuyamunite.  
DOI 1971  
REF U.S. A.E.C., 1971, Production Records, Las Animas County, Colorado.

## LINCOLN COUNTY

Lincoln County lies in the central Great Plains of Colorado. Stream courses and watersheds have, in places, eroded through the extensive Ogallala Formation to expose the Upper Cretaceous Pierre Shale. The only major structure within the county is the Las Animas Arch, lying in the southeastern part.

Although no uranium occurrences are known within the county, some structures and formations warrant

inspection as to potential. Water sampling by the U.S. Geological Survey has shown higher than average uranium values in waters originating from the Ogallala Formation and from the Sharon Springs Member of the Pierre Shale. In addition, higher than average uranium values have been found in waters draining the north side of the Las Animas Arch.

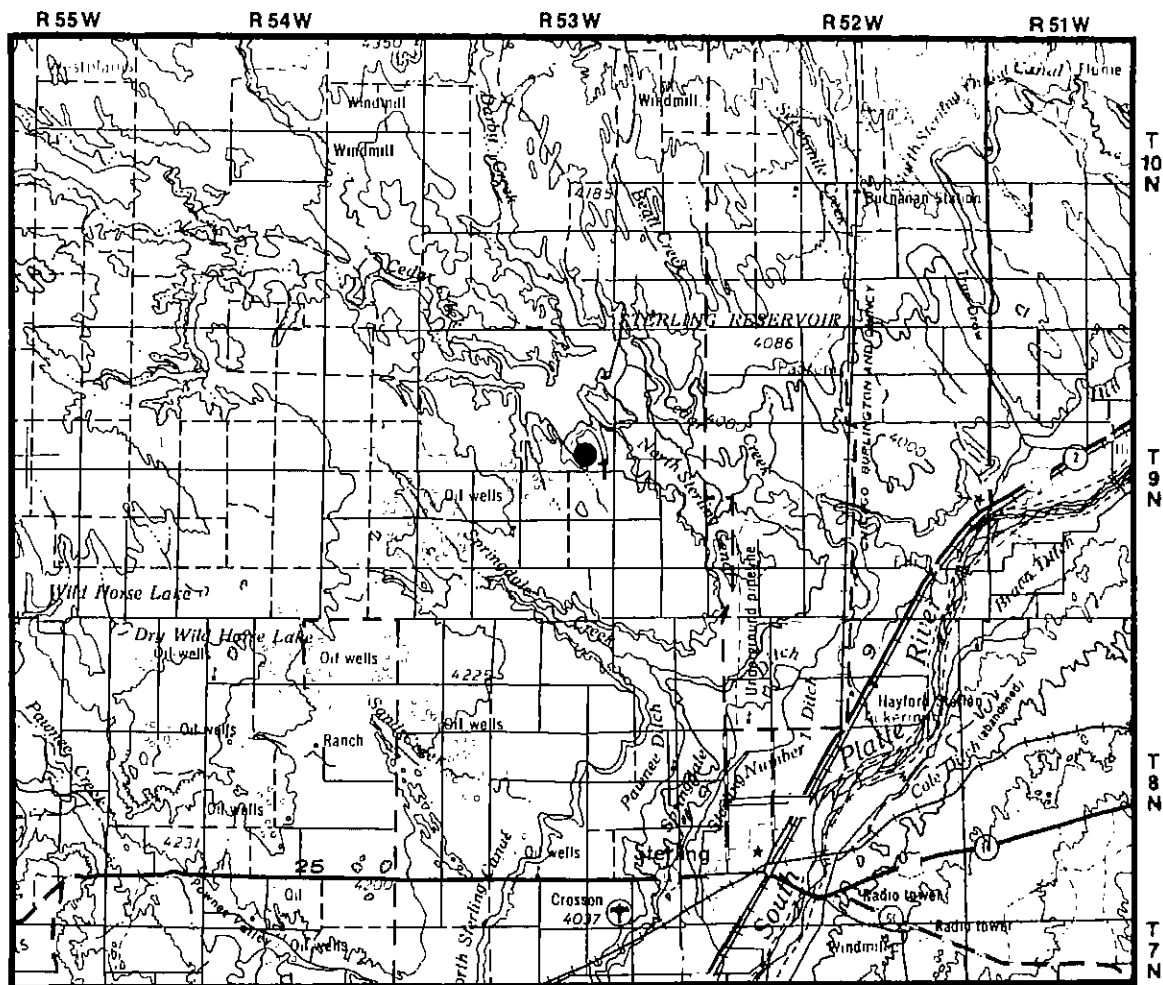
## LOGAN COUNTY

No uranium production has been recorded in Logan County. One reported occurrence in the county appears to be in the Cretaceous Pierre Shale.

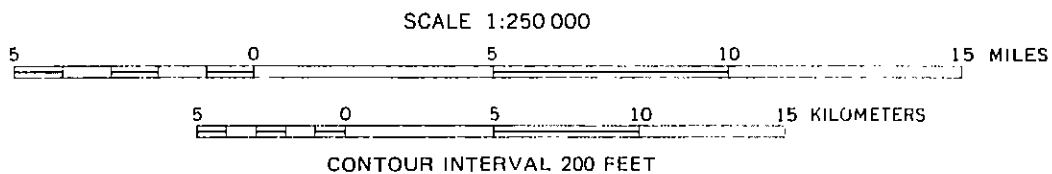
The county is underlain by a variety of flat-lying Quaternary, Tertiary and Cretaceous sediments of the Great Plains. Some slight potential for uranium resources within the county may be found in the outcropping

Tertiary Ogallala and White River Formations and in the subsurface Cretaceous Laramie Formation and Fox Hills Sandstone. These are all favorable for sandstone types of occurrences. Uranium deposits are being developed in the Laramie Formation in Weld County just west of Logan County, and these deposits could extend into Logan County.





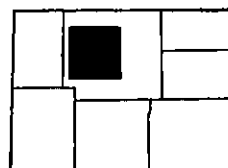
Base from U.S.G.S.



### EXPLANATION

- SANDSTONE, ARKOSE, CONGLOMERATE, SILTSTONE  
LAKE SEDIMENT HOST ROCKS FOR OCCURRENCE
- 7 OCCURRENCE NUMBER FROM TEXT

### LOCATION OF INSET



STERLING  
1° x 2° SHEET

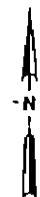


Figure 17. Radioactive mineral occurrences in Logan County, Colorado.

## LOGAN COUNTY

Unnamed 1

LOCATION: sec. 15, T. 9 N., R. 53 W.

LCRM The occurrence is at 40°44'N Latitude, and 103°17'W Longitude.

HOST The deposit is in terrestrial clastic rocks.

MNZ Uranium mineralization was noted.

DOI 1972

REF Butler, A. P., Finch, W. I., Twenhoeft (sic), 1977, Epigenetic uranium in the United States: U.S. Geol. Survey, Unpublished Report. U.S. Geol. Survey, 1977, CRIB File.

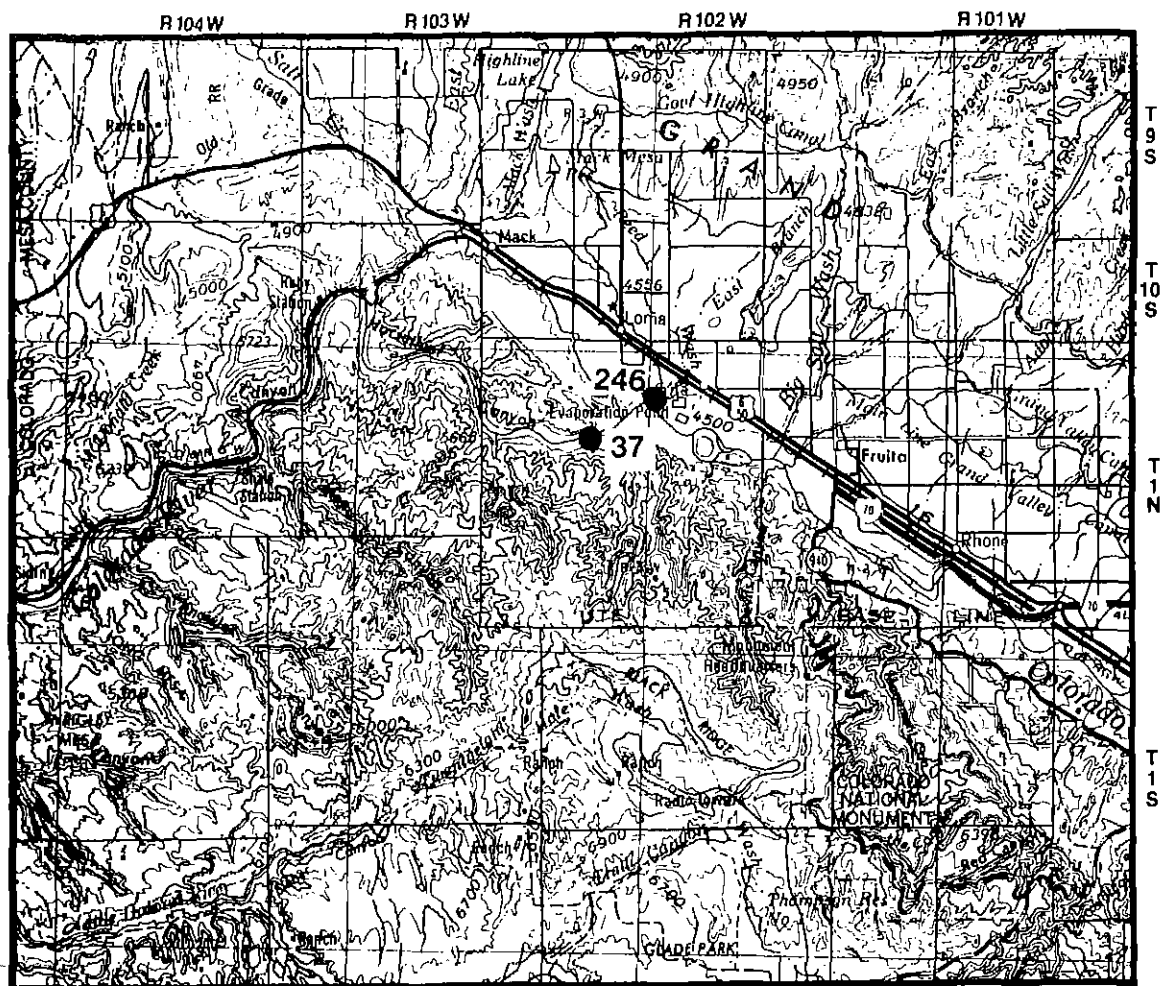
## MESA COUNTY

Mesa County falls within the Uravan mineral belt, which has produced uranium since 1881. Vanadium has been an important coproduct of the uranium of this area. Production from the county from January 1, 1948 to January 1, 1978 has been 2,271,000 tons of ore mined producing 13,180,000 lb of  $U_3O_8$  at a grade of 0.29 percent. From these tons mined 2,266,000 tons were processed for vanadium producing 41,811,000 lb of  $V_2O_5$  at a grade of 0.92 percent.

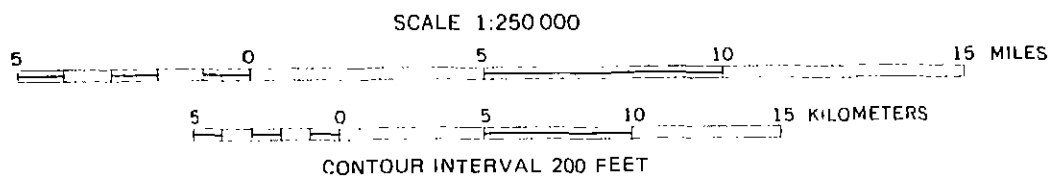
Mesa County is in the sedimentary terrane of the western slope of Colorado. Most of the county is covered by Cretaceous, Jurassic, and Triassic rocks. A large part of the northeastern area of the county is covered by Tertiary sediments and volcanics. The

Salt Wash Member of the Morrison Formation is the most important host rock for the uranium deposits within the county. Deposits occur within it as pods and "rolls" in channels within the sandstone.

Many active and inactive mines are located on mesas flanking the Dolores River. All of the production from the Uravan mineral belt comes from the southwestern part of the county, near the community of Gateway and farther south. Reserves in the county are large, and the potential for more to be found is excellent. It will be a major producer for years to come. Abundant literature has been written on this area, and those seeking more information are referred to the Mesa County cross-index in Volume 2.



Base from U.S.G.S.



### EXPLANATION

- SANDSTONE, ARKOSE, CONGLOMERATE, SILTSTONE  
LAKE SEDIMENT HOST ROCKS FOR OCCURRENCE
- 7 OCCURRENCE NUMBER FROM TEXT

### LOCATION OF INSET



GRAND JUNCTION  
1° x 2° SHEET

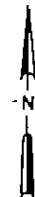


Figure 18. Radioactive mineral occurrences in part of Mesa County, Colorado.

# MESA COUNTY

## 31, AEC Mining Lease (Reserve Block 4, Blue Creek Mesa) (Big Seven)

LOCATION: NE1/4 sec. 32, T. 50 N., R. 17 W.  
 LCRM This deposit lies on the northeast end of Blue Creek Mesa, and extends to the SE1/4 sec. 29.  
 PROD As of 1953, 679 tons had been mined at an average grade of 0.60% U3O8 and 3.02% V2O5. Additional production has occurred since 1953 from the Big Seven Group.  
 HOST The host is the Jurassic Morrison Formation.  
 MNZ Uranium, vanadium.  
 RMKS U.S. A.E.C. withdrawn land was restored and restaked as Big Seven.  
 DOI 1975  
 REF U.S. D.O.E., 1977, Lease Production Records, Colorado. U.S. Bur. of Mines, 1977, (Unpubl.).

## 34, AEC Mining Lease (C-G-26A, DOE Lease Tract)

LOCATION: NE1/4 sec. 9, T. 50 N., R. 18 W.  
 LCRM This deposit adjoins the Small Spot Claim on the west, and is located in the Calamity Mesa area in the Gateway district.  
 PROD See C-G-26A, DOE Lease Tract.  
 HOST The host is the Jurassic Morrison Formation.  
 MNZ Uranium, vanadium.  
 DOI 1971  
 REF U.S. D.O.E., 1977, Lease Production Records, Colorado. U.S. Bur. of Mines, 1977, (Unpubl.). U.S. A.E.C., 1971, Production Records, Colorado.

## Ajax 1 Mine

LOCATION: sec. 19, T. 51 N., R. 19 W.  
 LCRM Also sec. 24.  
 QUAD Mount Waas 4 NE 7 1/2'  
 MAP MOAB  
 PROD As of 1971, 272 tons had been mined at a grade of 0.19% U3O8, producing 1,019 lbs of U3O8, and 1.15% V2O5, producing 6,265 lbs of V2O5.  
 HOST The host is the Jurassic Morrison Formation.  
 MNZ Uranium, vanadium.  
 DOI 1975  
 REF U.S. Bur. of Mines, 1977, (Unpubl.).

## Ajax Mine

LOCATION: E1/2 sec. 24, T. 51 N., R. 19 W.  
 DOI 1958  
 REF Hague, R. S., Goldenstein, S. J., and Blakey, E., Uranium - vanadium deposits of the Uravan Mineral Belt, 1958.

## Arrowhead 1 & 7 (Arrowhead No. 7)

LOCATION: sec. 3, T. 50 N., R. 18 W.  
 QUAD Calamity Mesa 7 1/2', Pine Mountain 7 1/2'  
 MAP MOAB  
 PROD As of 1971, 6,399 tons had been mined at a grade of 0.32% U3O8, producing 41,018 lbs of U3O8, producing 179,980 lbs of V2O5.  
 HOST Jurassic Morrison Formation, Salt Wash Member.

MNZ Carnotite - tyuyamunite, high vanadium, low lime.  
 DOI 1971  
 REF U.S. A.E.C., 1971, Production Records, Colorado.

## Arrowhead 4

LOCATION: sec. 3, T. 50 N., R. 18 W.  
 QUAD Calamity Mesa 7 1/2', Pine Mountain 7 1/2'  
 MAP MOAB  
 PROD As of 1971, 68 tons had been mined at a grade of 0.15% U3O8, producing 198 lbs of U3O8, and 0.84% V2O5, producing 1,147 lbs of V2O5.  
 HOST Jurassic Morrison Formation, Salt Wash Member.  
 MNZ Carnotite - tyuyamunite, high vanadium, low lime.  
 DOI 1971  
 REF U.S. A.E.C., 1971, Production Records, Colorado.

## Arrowhead 5

LOCATION: sec. 3, T. 50 N., R. 18 W.  
 QUAD Calamity Mesa 7 1/2', Pine Mountain 7 1/2'  
 MAP MOAB  
 PROD As of 1971, 1,682 tons had been mined at a grade of 0.35% U3O8, producing 11,914 lbs of U3O8, and 1.48% V2O5 producing 49,820 lbs of V2O5.  
 HOST Jurassic Morrison Formation, Salt Wash Member.  
 MNZ Carnotite - tyuyamunite, high vanadium, low lime.  
 DOI 1971  
 REF U.S. A.E.C., 1971, Production Records, Colorado.

## Arrowhead 8

LOCATION: sec. 2, T. 50 N., R. 18 W.  
 QUAD Pine Mountain 7 1/2'  
 MAP MOAB  
 HOST Jurassic Morrison Formation, Salt Wash Member.  
 MNZ Uranium, vanadium.  
 DOI 1975  
 REF U.S. Bur. of Mines, 1977, (Unpubl.).

## Arrowhead 10

LOCATION: sec. 10, T. 50 N., R. 18 W.  
 QUAD Calamity Mesa 7 1/2'  
 MAP MOAB  
 PROD As of 1971, 167 tons had been mined at a grade of 0.19% U3O8, producing 628 lbs of U3O8, and 1.03% V2O5, producing 341 lbs of V2O5.  
 HOST Jurassic Morrison Formation, Salt Wash Member.  
 MNZ Carnotite - tyuyamunite, high vanadium, low lime.  
 DOI 1971  
 REF U.S. A.E.C., 1971, Production Records, Colorado.

## Arrowhead 11

LOCATION: sec. 3, T. 50 N., R. 18 W.  
 LCRM The deposit also extends to sec. 10.  
 QUAD Calamity Mesa 7 1/2', Pine Mountain 7 1/2'  
 MAP MOAB

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PROD As of 1971, 1,846 tons had been mined at a grade of 0.34% U3O8, producing 12,573 lbs of U3O8, and 1.34% V2O5, producing 49,404 lbs of V2O5.  
 HOST Jurassic Morrison Formation, Salt Wash Member.  
 MNZ Carnotite - tyuyamunite, high vanadium, low ilme.  
 DOI 1971  
 REF U.S. A.E.C., 1971, Production Records, Colorado.

## Arrowhead 13 (Arrowhead No. 25)

LOCATION: sec. 3, T. 50 N., R. 18 W.  
 QUAD Calamity Mesa 7 1/2', Pine Mountain 7 1/2'  
 MAP MOAB  
 PROD As of 1971, 25 tons had been mined at a grade of 0.22% U3O8, producing 11 lbs of U3O8, and 1.05% V2O5, producing 523 lbs of V2O5.  
 HOST Jurassic Morrison Formation, Salt Wash Member.  
 DOI 1971  
 REF U.S. A.E.C., 1971, Production Records, Colorado.

## Arrowhead 14

LOCATION: S1/2SW1/4 sec. 2, T. 50 N., R. 18 W.  
 DOI 1958  
 REF Hague, R. S., Goldenstein, S. J., and Blakey, E., Uranium - vanadium deposits of the Uravan Mineral Belt, 1958.

## Arrowhead 16

LOCATION: - SE1/4 sec. 3, T. 50 N., R. 18 W.  
 DOI 1958  
 REF Hague, R. S., Goldenstein, S. J., and Blakey, E., Uranium - vanadium deposits of the Uravan Mineral Belt, 1958.

## Arrowhead 17

LOCATION: sec. 10, T. 50 N., R. 18 W.  
 PROD As of 1971, 131 tons had been mined at a grade of 0.27% U3O8, producing 719 lbs of U3O8, and 0.92% V2O5, producing 2,405 lbs of V2O5.  
 HOST Jurassic Morrison Formation, Salt Wash Member.  
 MNZ Carnotite - tyuyamunite, high vanadium, low ilme.  
 DOI 1971  
 REF U.S. A.E.C., 1971, Production Records, Colorado.

## Arrowhead 18

LOCATION: sec. 2, T. 50 N., R. 18 W.  
 LCRM The deposit is probably in either sec. 3 or sec. 10.  
 PROD As of 1971, 985 tons had been mined at a grade of 0.28% U3O8, producing 5,564 lbs of U3O8, and 1.12% V2O5, producing 22,034 lbs of V2O5.  
 HOST Jurassic Morrison Formation, Salt Wash Member.  
 MNZ Carnotite - tyuyamunite, high vanadium, low ilme.  
 DOI 1971  
 REF U.S. D.O.E., 1977, Lease Production Records,

Colorado. U.S. A.E.C., 1971, Production Records, Colorado.

## Arrowhead 19

LOCATION: sec. 2, T. 50 N., R. 18 W.  
 PROD As of 1971, 446 tons had been mined at a grade of 0.34% U3O8, producing 3,058 lbs of U3O8, and 1.32% V2O5, producing 11,785 lbs of V2O5.  
 HOST Jurassic Morrison Formation, Salt Wash Member.  
 MNZ Carnotite - tyuyamunite, high vanadium, low ilme.  
 DOI 1971  
 REF U.S. D.O.E., 1977, Lease Production Records, Colorado. U.S. A.E.C., 1971, Production Records, Colorado.

## Arrowhead 20 & 20 A

LOCATION: sec. 2, T. 50 N., R. 18 W.  
 PROD As of 1971, 2,512 tons had been mined at a grade of 0.43% U3O8, producing 21,379 lbs of U3O8, and 1.68% V2O5, producing 84,571 lbs of V2O5.  
 HOST Jurassic Morrison Formation, Salt Wash Member.  
 MNZ Carnotite - tyuyamunite, high vanadium, low ilme.  
 DOI 1971  
 REF U.S. D.O.E., 1977, Lease Production Records, Colorado. U.S. A.E.C., 1971, Production Records, Colorado.

## Arrowhead 21

LOCATION: sec. 2, T. 50 N., R. 18 W.  
 PROD As of 1971, 2,186 tons had been mined at a grade of 0.30% U3O8, producing 13,158 lbs of U3O8, and 1.25% V2O5, producing 52,822 lbs of V2O5.  
 HOST Jurassic Morrison Formation, Salt Wash Member.  
 MNZ Carnotite - tyuyamunite, high vanadium, low ilme.  
 DOI 1971  
 REF U.S. D.O.E., 1977, Lease Production Records, Colorado. U.S. A.E.C., 1971, Production Records, Colorado.

## Arrowhead 22

LOCATION: sec. 3, T. 50 N., R. 18 W.  
 QUAD Calamity Mesa 7 1/2' and Pine Mountain 7 1/2'  
 MAP MOAB  
 HOST Jurassic Morrison Formation, Salt Wash Member.  
 DOI 1971  
 REF U.S. D.O.E., 1977, Lease Production Records, Colorado. U.S. A.E.C., 1971, Production Records, Colorado.

## Arrowhead 25

LOCATION: sec. 3, T. 50 N., R. 18 W.  
 LCRM This deposit also lies in sec. 10.  
 PROD As of 1971, 314 tons had been mined at a grade of 0.20% U3O8, producing 1,284 lbs of U3O8, and 1.13% V2O5, producing 3,106 lbs of V2O5.  
 HOST Jurassic Morrison Formation, Salt Wash Member.

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MNZ Carnotite - tyuyamunite, high vanadium, low ilme.  
DOI 1971  
REF U.S. D.O.E., 1977, Lease Production Records, Colorado. U.S. A.E.C., 1971, Production Records, Colorado.

## Arrowhead 26

LOCATION: N1/2 sec. 10, T. 50 N., R. 18 W.  
DOI 1958  
REF Hague, R. S., Goldenstein, S. J., and Blakey, E., Uranium - vanadium deposits of the Uravan Mineral Belt, 1958.

## Arrowhead 27

LOCATION: sec. 10, T. 50 N., R. 18 W.  
QUAD Calamity Mesa 7 1/2'  
MAP MOAB  
PROD As of 1971, 546 tons had been mined at a grade of 0.37% U3O8, producing 4,005 lbs of U3O8, and 1.38% V2O5, producing 15,083 lbs of V2O5.  
HOST Jurassic Morrison Formation, Salt Wash Member.  
DOI 1971  
REF U.S. D.O.E., 1977, Lease Production Records, Colorado. U.S. A.E.C., 1971, Production Records, Colorado.

## Arrowhead 28

LOCATION: sec. 10, T. 50 N., R. 18 W.  
QUAD Calamity Mesa 7 1/2'  
MAP MOAB  
PROD As of 1972, 1,989 tons had been mined at a grade of 0.30% U3O8, producing 12,097 lbs of U3O8, and 1.25% V2O5, producing 49,783 lbs of V2O5.  
HOST Jurassic Morrison Formation, Salt Wash Member.  
MNZ Uranium, vanadium, carnotite - tyuyamunite, high vanadium, low ilme.  
DOI 1971  
REF U.S. D.O.E., 1977, Lease Production Records, Colorado. U.S. Bur. of Mines, 1977, (Unpubl.). U.S. A.E.C., 1971, Production Records, Colorado.

## Arrowhead 29 (OS)

LOCATION: sec. 10, T. 50 N., R. 18 W.  
LCRM OS is the notation on the ore reserve card to indicate "Outside Sales" - for ore sold in excess of the shipper's allocation in the 1961 - 1970 period.  
QUAD Calamity Mesa 7 1/2'  
PROD As of 1971, 619 tons had been mined at a grade of 0.49% U3O8, producing 6,115 lbs of U3O8, and 1.96% V2O5, producing 24,226 lbs of V2O5.  
HOST Jurassic Morrison Formation, Salt Wash Member.  
MNZ Uranium, vanadium, carnotite - tyuyamunite, high vanadium, low ilme.  
RMKS Part of sec. 33 in Calamity Mesa 7 1/2'  
DOI 1971  
REF U.S. D.O.E., 1977, Lease Production Records, Colorado. U.S. Bur. of Mines, 1977, (Unpubl.). U.S. A.E.C., 1971, Production Records, Colorado.

## Arrowhead 30

LOCATION: E1/2 sec. 3, T. 50 N., R. 18 W.  
DOI 1958  
REF Hague, R. S., Goldenstein, S. J., and Blakey, E., Uranium - vanadium deposits of the Uravan Mineral Belt, 1958.

## Arrowhead 33

LOCATION: sec. 3, T. 50 N., R. 18 W.  
DOI 1958  
REF Hague, R. S., Goldenstein, S. J., and Blakey, E., Uranium - vanadium deposits of the Uravan Mineral Belt, 1958.

## Arrowhead 34

LOCATION: S1/2 sec. 3, T. 50 N., R. 18 W.  
DOI 1958  
REF Hague, R. S., Goldenstein, S. J., and Blakey, E., Uranium - vanadium deposits of the Uravan Mineral Belt, 1958.

## Arrowhead Incline 6

LOCATION: sec. 10, T. 50 N., R. 18 W.  
QUAD Calamity Mesa 7 1/2'  
MAP MOAB  
PROD As of 1971, 3,758 tons had been mined at a grade of 0.49% U3O8, producing 36,523 lbs of U3O8, and 1.87% V2O5, producing 140,406 lbs of V2O5.  
HOST Jurassic Morrison Formation, Salt Wash Member.  
MNZ Carnotite - tyuyamunite, high vanadium, low ilme.  
DOI 1971  
REF U.S. A.E.C., 1971, Production Records, Colorado.

## Arrowhead Incline 2

LOCATION: sec. 3, T. 50 N., R. 18 W.  
LCST UNCERTAIN  
LCRM This deposit could also be in sec. 10. U.S. A.E.C. Production Records show sec. 10.  
QUAD Calamity Mesa 7 1/2', Pine Mountain 7 1/2'  
MAP MOAB  
PROD As of 1971, 13,124 tons had been mined at a grade of 0.33% U3O8, producing 86,006 lbs of U3O8, and 1.58% V2O5, producing 400,906 lbs of V2O5.  
HOST Jurassic Morrison Formation, Salt Wash Member.  
DOI 1971  
REF U.S. A.E.C., 1971, Production Records, Colorado.

## Arrowhead Incline 12 & 23 (Arrowhead Incline No. 23)

LOCATION: sec. 3, T. 50 N., R. 18 W.  
QUAD Calamity Mesa 7 1/2', Pine Mountain 7 1/2'  
MAP MOAB  
PROD As of 1971, 7,867 tons had been mined at a grade of 0.36% U3O8, producing 57,065 lbs of U3O8, and 1.64% V2O5, producing 257,706 lbs of V2O5.  
HOST Jurassic Morrison Formation, Salt Wash Member.  
MNZ Carnotite - tyuyamunite, high vanadium, low ilme.

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DOI 1971  
REF U.S. A.E.C., 1971, Production Records, Colorado.

## Arrowhead Incline 24

LOCATION: sec. 3, T. 50 N., R. 18 W.  
QUAD Calamity Mesa 7 1/2'  
PROD As of 1971, 1,560 tons had been mined at a grade of 0.35% U3O8, producing 11,009 lbs of U3O8, and 1.62% V2O5, producing 50,413 lbs of V2O5.  
HOST Jurassic Morrison Formation, Salt Wash Member.  
MNZ Carnotite - tyuyamunite, high vanadium, low ilme.  
DOI 1971  
REF U.S. A.E.C., 1971, Production Records, Colorado.

## AT (05-1)-526, AEC Mining Lease (C-G-27, DOE Lease Tract, and C-G-27A, Outlaw Mesa G-1 and G-2)

LOCATION: SE1/4 sec. 12, T. 50 N., R. 18 W.  
LCRM The deposit lies on Outlaw Mesa in the Gateway district. It extends to the NE1/4 sec. 13, T. 50 N., R. 18 W., and to the SW1/4 sec. 7; SW1/4 sec. 17, and sec. 18 of T. 50 N., R. 17 W.  
PROD See C-G-27 and C-G-27A, DOE Lease Tracts.  
HOST The host is the Jurassic Morrison Formation.  
MNZ Uranium and vanadium minerals were mined.  
DOI 1974  
REF U.S. D.O.E., 1977, Lease Production Records, Colorado.

## AT(05-1)-36, AEC Mining Lease (C-G-26A and C-G-27, DOE Lease Tracts, Matchless Mine, Queen of the Hills, Neglected, Calamity Claims, Maverick Group)

LOCATION: NE1/4SE1/4 sec. 4, T. 50 N., R. 18 W.  
LCRM The lease block lies on the Outlaw side of Calamity Mesa in the Gateway district. It extends to the W1/2 sec. 11 and the NE1/4 sec. 12.  
QUAD Gateway 7 1/2'  
PROD See C-G-26, C-G-26A and C-G-27, DOE Lease Tracts.  
HOST Jurassic Morrison Formation, Salt Wash Member.  
MNZ Uranium, vanadium, carnotite - tyuyamunite, high vanadium, low ilme.  
RMKS Southeast corner of sec. 4 is in Calamity Mesa 7 1/2'.  
DOI 1971  
REF U.S. D.O.E., 1977, Lease Production Records, Colorado. U.S. Bur. of Mines, 1977, (Unpubl.). U.S. A.E.C., 1971, Production Records, Colorado.

## Atlas 1,2,3 (Lone Mesa No. 7, Atlas-Lone Mesa No. 1)

LOCATION: NW1/4 sec. 6, T. 50 N., R. 19 W.  
LCRM The deposit also extends to E1/2, sec. 1, T. 50 N., R. 18 W. From original directions to the occurrence "Access is via Colo. highway 141 going 4 miles northeast from Gateway, then southeast via a steep, narrow road for 6 mi. to south end of Tenderfoot Mesa; adjacent mineral deposits are the Mammoth,

Liberty Bell".

QUAD Gateway 7 1/2'  
PROD As of 1971, 2,991 tons had been mined at a grade of 0.27% U3O8 and 0.87% V2O5, producing 16,168 lbs of U3O8 and 51,879 lbs of V2O5.  
HOST Jurassic Morrison Formation, light gray to tan, fine-grained Salt Wash Member with abundant fossil logs and carbon trash.  
MNZ Carnotite, tyuyamunite.  
RMKS Most occurs in replacement of logs and carbon trash.  
DOI 1955  
REF U.S. D.O.E., 1977, Lease Production Records, Colorado. U.S. Bur. of Mines, 1977, (Unpubl.). U.S. A.E.C., 1971, Production Records, Colorado. U.S. A.E.C., 1966, Preliminary Reconnaissance Reports, Mesa County, Colorado.

## Austin Mine (Austin and Austin Adit)

LOCATION: SW1/4 sec. 30, T. 51 N., R. 19 W.  
LCRM The deposit also extends to sec. 31, T. 51 N., R. 19 W., Beaver Mesa locality.  
QUAD Mount Waas 4 SE 7 1/2'  
MAP MOAB  
PROD As of 1971, 728 tons of ore had been mined at grades of 0.33% U3O8 and, 0.78% V2O5, producing 4,764 lbs U3O8 and 11,366 lbs of V2O5.  
HOST Jurassic Morrison Formation, Salt Wash Member.  
MNZ Uranium, vanadium.  
DOI 1971  
REF U.S. Bur. of Mines, 1977, (Unpubl.). U.S. A.E.C. 1971, Production Records, Colorado.

## Banco 1-7

LOCATION: sec. 17, T. 51 N., R. 18 W.  
QUAD Gateway 7 1/2'  
MAP MOAB  
PROD As of 1971, 15 tons had been mined at a grade of 0.31% U3O8, producing 94 lbs of U3O8, and 1.11% V2O5, producing 334 lbs of V2O5.  
HOST Jurassic Morrison Formation, Salt Wash Member.  
MNZ Carnotite - tyuyamunite, high vanadium, intermed. ilme.  
DOI 1971  
REF U.S. A.E.C., 1971, Production Records, Colorado.

## Bar-W-Bar Claims 1-16

LOCATION: SW1/4 sec. 9, T. 1 N., R. 3 W.  
LCST UNCERTAIN  
LCRM Original directions are "3 1/2 miles S. from Loma, on mesa capped by JMSW".  
QUAD Mack 7 1/2'  
HOST Jurassic Morrison Formation, Salt Wash Member, sandstone and mudstone with carbon flakes and carbonaceous debris.  
MNZ Abundant ilmonite, and hematite. A sample value of 0.06% U3O8 reported by owner.  
DOI 1954  
REF U.S. D.O.E., 1977, Lease Production Records, Colorado. U.S. A.E.C., Preliminary Reconnaissance Reports, Mesa County, Colorado (Unpubl.).



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## Belmont 1 & 2

LOCATION: sec. 3, T. 50 N., R. 18 W.  
 LCRM The deposit also extends to sec. 4.  
 QUAD Pine Mountain 7 1/2'  
 MAP MOAB  
 PROD As of 1971, 10,839 tons had been mined at a grade of 0.36% U308, producing 77,059 lbs of U308, and 1.58% V205, producing 341,434 lbs of V205.  
 HOST Jurassic Morrison Formation, Salt Wash Member.  
 MNZ Uranium, vanadium.  
 DOI 1971  
 REF U.S. Bur. of Mines, 1977, (Unpubl.). U.S. A.E.C., 1971, Production Records, Colorado.

## Bessie Group (Jerry Kay)

LOCATION: sec. 36, T. 50 N., R. 18 W.  
 LCRM The deposit also lies in sec. 30, T. 51 N., R. 18 W.  
 QUAD Calamity Mesa 7 1/2'  
 MAP MOAB  
 PROD As of 1971, 1 ton had been mined at a grade of 0.10% U308, producing 2 lbs of U308, and 0.30% V205, producing 6 lbs of V205.  
 HOST Jurassic Morrison Formation.  
 MNZ Uranium, vanadium.  
 DOI 1971  
 REF U.S. Bur. of Mines, 1977, (Unpubl.). U.S. A.E.C., 1971, Production Records, Colorado.

## Big Indian Lease

LOCATION: sec. 19, T. 50 N., R. 18 W.  
 LCRM Flat Top Mesa.  
 QUAD Juanita Arch 7 1/2'  
 MAP MOAB  
 PROD As of 1971, 16 tons had been mined at a grade of 0.34% U308, producing 113 lbs of U308, and 0.74% V205, producing 236 lbs of V205.  
 HOST Jurassic Morrison Formation, Salt Wash Member.  
 MNZ Uranium, vanadium.  
 DOI 1971  
 REF U.S. D.O.E., 1977, Lease Production Records, Colorado. U.S. Bur. of Mines, 1977, (Unpubl.). U.S. A.E.C., 1971, Production Records, Colorado.

## Big Maverick (Juanita Group)

LOCATION: sec. 20, T. 50 N., R. 18 W.  
 LCRM U.S. A.E.C. Production Records show sec. 18 and 19, Flat Top Mesa.  
 QUAD Juanita Arch 7 1/2'  
 MAP MOAB  
 PROD As of 1971, 42 tons had been mined at a grade of 0.54% U308, producing 450 lbs of U308, and 2.56% V205, producing 2,150 lbs of V205.  
 HOST Jurassic Morrison Formation, Salt Wash Member.  
 MNZ Uranium, vanadium.  
 DOI 1971  
 REF U.S. D.O.E., 1977, Lease Production Records, Colorado. U.S. Bur. of Mines, 1977, (Unpubl.). U.S. A.E.C., 1971, Production Records, Colorado.

## Big Seven (AEC Mining Lease 31, Reserve Block No. 4)

LOCATION: N1/2 sec. 32, T. 50 N., R. 17 W.  
 LCRM This deposit also extends to S1/2 sec. 29.  
 QUAD Calamity Mesa 7 1/2'  
 MAP MOAB  
 PROD As of 1971, 1,337 tons had been mined at a grade of 0.57% U308, producing 15,279 lbs of U308, and 2.78% V205, producing 74,358 lbs of V205.  
 HOST Jurassic Morrison Formation, Salt Wash Member.  
 MNZ Uranium, vanadium, carnotite - tyuyamunite, high vanadium, low lime.  
 RMKS The Big Seven Claims were located on ground restored from U.S. A.E.C. withdrawal. It is the same deposit as U.S. A.E.C. Mining Lease 31.  
 DOI 1971  
 REF U.S. D.O.E., 1977, Lease Production Records, Colorado. U.S. Bur. of Mines, 1977, (Unpubl.). U.S. A.E.C., 1971, Production Records, Colorado.

## Black Mama (Nigger Baby)

LOCATION: NW1/4 sec. 29, T. 51 N., R. 18 W.  
 LCRM The deposit also extends to sec. 19, 20, and 30.  
 QUAD Gateway 7 1/2'  
 MAP MOAB  
 PROD As of 1971, 18,557 tons had been mined at a grade of 0.28% U308, producing 103,607 lbs of U308, and 1.09% V205, producing 404,505 lbs of V205.  
 HOST The host is the Jurassic Morrison Formation, Salt Wash Member.  
 MNZ Uranium, vanadium, carnotite - tyuyamunite, high vanadium, low lime.  
 DOI 1971  
 REF U.S. Bur. of Mines, 1977 (Unpubl.). U.S. A.E.C., 1971, Production Records, Colorado.

## Black Mesa

LOCATION: UNLOCATABLE  
 LCST This deposit lies in the Gateway district.  
 LCRM As of 1971, 362 tons had been mined at a grade of 0.51% U308, producing 3,670 lbs of U308, and 1.58% V205, producing 11,436 lbs of V205.  
 PROD The host is the Jurassic Morrison Formation.  
 HOST The host is the Jurassic Morrison Formation.  
 DOI 1971  
 REF U.S. A.E.C., 1971, Production Records, Colorado.

## Black Rock 2 (Black Rock No. 1 - 20)

LOCATION: sec. 27, T. 50 N., R. 19 W.  
 LCRM The deposit extends to sec. 33 and 34.  
 QUAD Juanita Arch 7 1/2'  
 MAP MOAB  
 PROD As of 1971, 18 tons had been mined at a grade of 0.14% U308, producing 52 lbs of U308, and 2.39% V205, producing 862 lbs of V205.  
 HOST The host is the Jurassic Morrison Formation.  
 MNZ Uranium, vanadium.  
 DOI 1971

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REF U.S. Bur. of Mines, 1977, (Unpubl.). U.S. A.E.C., 1971, Production Records, Colorado.

## Black Streak (Black Streak - Yellow Bird, Black Jumbo)

LOCATION: sec. 31, T. 50 N., R. 17 W.  
 LCRM The deposit extends to sec. 29, 32, and 34.  
 QUAD Calamity Mesa 7 1/2'  
 MAP MOAB  
 PROD As of 1971, 5,076 tons had been mined at a grade of 0.27% U3O8, producing 27,826 lbs of U3O8, and 1.44% V2O5, producing 145,876 lbs of V2O5.  
 HOST The host is the Jurassic Morrison Formation, Salt Wash Member.  
 MNZ Uranium, vanadium.  
 DOI 1971  
 REF U.S. Bur. of Mines, 1977, (Unpubl.). U.S. A.E.C., 1971, Production Records, Colorado.

## Blackbird

LOCATION: W1/2 sec. 3, T. 49 N., R. 17 W.  
 DOI 1958  
 REF Hague, R. S., Goldenstein, S. J., and Blakey, E., Uranium - vanadium deposits of the Uravan Mineral Belt, 1958.

## Blue Canyon

LOCATION: sec. 20, T. 50 N., R. 17 W.  
 QUAD Calamity Mesa 7 1/2'  
 MAP MOAB  
 HOST The host is the Jurassic Morrison Formation.  
 MNZ Uranium, vanadium.  
 DOI 1975  
 REF U.S. Bur. of Mines, 1977, (Unpubl.).

## Blue Creek

LOCATION: sec. 19, T. 50 N., R. 17 W.  
 QUAD Calamity Mesa 7 1/2'  
 MAP MOAB  
 PROD As of 1971, 6 tons had been mined at a grade of 0.47% U3O8, producing 57 lbs of U3O8, and 1.73% V2O5, producing 208 lbs of V2O5.  
 HOST Jurassic Morrison Formation, Salt Wash Member.  
 MNZ Uranium, vanadium.  
 DOI 1971  
 REF U.S. Bur. of Mines, 1977, (Unpubl.). U.S. A.E.C., 1971, Production Records, Colorado.

## Blue Mesa View

LOCATION: sec. 30, T. 50 N., R. 17 W.  
 QUAD Calamity Mesa 7 1/2'  
 MAP MOAB  
 PROD As of 1971, 9 tons had been mined at a grade of 0.15% U3O8, producing 27 lbs of U3O8, and 1.51% V2O5, producing 271 lbs of V2O5.  
 HOST Jurassic Morrison Formation, Salt Wash Member.  
 MNZ Uranium, vanadium.  
 DOI 1975  
 REF U.S. Bur. of Mines, 1977, (Unpubl.). U.S. A.E.C., 1971, Production Records, Colorado.

## Blue Ribbon 1 Incline

LOCATION: sec. 3, T. 50 N., R. 18 W.  
 LCRM The deposit extends to sec. 10.  
 QUAD Pine Mountain 7 1/2'  
 MAP MOAB  
 PROD As of 1971, 779 tons had been mined at a grade of 0.40% U3O8, producing 6,277 lbs of U3O8, and 1.33% V2O5, producing 20,665 lbs of V2O5.  
 HOST Jurassic Morrison Formation, Salt Wash Member.  
 MNZ Uranium, vanadium, carnotite - tyuyamunite, high vanadium, Intermed. ilme.  
 DOI 1971  
 REF U.S. Bur. of Mines, 1977, (Unpubl.). U.S. A.E.C., 1971, Production Records, Colorado.

## Blue Ribbon 3

LOCATION: sec. 10, T. 50 N., R. 18 W.  
 LCRM The deposit extends to sec. 3.  
 QUAD Calamity Mesa 7 1/2'  
 MAP MOAB  
 PROD As of 1971, 2,187 tons had been mined at a grade of 0.30% U3O8, producing 13,113 lbs of U3O8, and 1.16% V2O5, producing 50,698 lbs of V2O5.  
 HOST Jurassic Morrison Formation, Salt Wash Member.  
 MNZ Uranium, vanadium, carnotite - tyuyamunite, high vanadium, low ilme.  
 DOI 1971  
 REF U.S. Bur. of Mines, 1977, (Unpubl.). U.S. A.E.C., 1971, Production Records, Colorado.

## Blue Ribbon #7

LOCATION: sec. 9, T. 50 N., R. 18 W.  
 DOI 1958  
 REF Hague, R. S., Goldenstein, S. J., and Blakey, E., Uranium - vanadium deposits of the Uravan Mineral Belt, 1958.

## Blue Ribbon 17

LOCATION: sec. 17, T. 50 N., R. 18 W.  
 QUAD Juanita Arch 7 1/2'  
 MAP MOAB  
 PROD As of 1971, 16 tons had been mined at a grade of 0.54% U3O8, producing 172 lbs of U3O8, and 2.64% V2O5, producing 844 lbs of V2O5.  
 HOST Jurassic Morrison Formation, Salt Wash Member.  
 MNZ Uranium, vanadium.  
 DOI 1971  
 REF U.S. Bur. of Mines, 1977, (Unpubl.). U.S. A.E.C., 1971, Production Records, Colorado.

## Blue Ribbon 32

LOCATION: sec. 16, T. 50 N., R. 18 W.  
 LCRM Part of sec. 16 is in Calamity Mesa 7 1/2'.  
 QUAD Juanita Arch 7 1/2'  
 MAP MOAB  
 PROD As of 1971, 68 tons had been mined at a grade of 0.13% U3O8, producing 170 lbs of U3O8, and 0.65% V2O5, producing 882 lbs of V2O5.  
 HOST Jurassic Morrison Formation, Salt Wash Member.

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MNZ Uranium, vanadium.  
DOI 1971  
REF U.S. Bur. of Mines, 1977, (Unpubl.). U.S. A.E.C., 1971, Production Records, Colorado.

## Blue Ribbon Group (Blue Ribbon No. 2)

LOCATION: sec. 3, T. 50 N., R. 18 W.  
LCRM The deposit extends to sec. 10. Part of sec. 3 is in Calamity Mesa 7 1/2'.  
QUAD Pine Mountain 7 1/2'  
MAP MOAB  
PROD As of 1971, 9,466 tons had been mined at a grade of 0.28% U3O8, producing 52,295 lbs of U3O8, and 1.18% V2O5, producing 223,257 lbs of V2O5.  
HOST Jurassic Morrison Formation, Salt Wash Member.  
MNZ Uranium, vanadium, carnotite - tyuyamunite, high vanadium, low ilme.  
DOI 1971  
REF U.S. Bur. of Mines, 1977, (Unpubl.). U.S. A.E.C., 1971, Production Records, Colorado.

## Bluebird (Blue Bird)

LOCATION: sec. 19, T. 50 N., R. 17 W.  
QUAD Calamity Mesa 7 1/2'  
PROD As of 1971, 863 tons had been mined at a grade of 0.29% U3O8, producing 5,047 lbs of U3O8, and 1.48% V2O5, producing 25,520 lbs of V2O5.  
HOST The host is the Jurassic Morrison Formation.  
MNZ Uranium, vanadium.  
DOI 1971  
REF U.S. Bur. of Mines, 1977, (Unpubl.). U.S. A.E.C., 1971, Production Records, Colorado.

## Bluebird Dump (Blue Bird Dump)

LOCATION: sec. 19, T. 50 N., R. 17 W.  
QUAD Calamity Mesa 7 1/2'  
MAP MOAB  
PROD As of 1971, 251 tons had been mined at a grade of 0.11% U3O8, producing 563 lbs of U3O8, and 0.62% V2O5, producing 3,126 lbs of V2O5.  
HOST The host is the Jurassic Morrison Formation.  
MNZ Uranium, vanadium, carnotite - tyuyamunite, high vanadium, low ilme.  
DOI 1971  
REF U.S. Bur. of Mines, 1977, (Unpubl.). U.S. A.E.C., 1971, Production Records, Colorado.

## Bonanza 2 (Bonanza No. 2 and 4, E 1/2)

LOCATION: sec. 26, T. 51 N., R. 20 W.  
LCRM The deposit extends to sec. 35.  
QUAD Mount Waas 4 NE 7 1/2'  
MAP MOAB  
PROD As of 1971, 159,183 tons had been mined at a grade of 0.31% U3O8, producing 981,486 lbs of U3O8, and 0.46% V2O5, producing 1,469,879 lbs of V2O5.  
HOST Jurassic Morrison Formation, Salt Wash Member.  
MNZ Uraninite (coffinite), high vanadium, low ilme.  
DOI 1971  
REF U.S. A.E.C., 1971, Production Records, Colorado.

## Bonanza 3

LOCATION: sec. 25, T. 51 N., R. 20 W.  
LCRM The deposit also extends to sec. 26 and 35.  
QUAD Mount Waas 4 NE 7 1/2'  
MAP MOAB  
PROD As of 1971, 41,310 tons had been mined at a grade of 0.29% U3O8, producing 238,404 lbs of U3O8, and 0.06% V2O5, producing 48,588 lbs of V2O5.  
HOST Jurassic Morrison Formation, Salt Wash Member.  
MNZ Uranium, vanadium, uraninite (coffinite), high vanadium, low ilme.  
DOI 1971  
REF U.S. Bur. of Mines, 1977, (Unpubl.). U.S. A.E.C., 1971, Production Records, Colorado.

## Bonanza 5 (Bonanza # 4, 5, 7)

LOCATION: sec. 26, T. 51 N., R. 20 W.  
LCRM The deposit extends to sec. 35.  
QUAD Mount Waas 4 NE 7 1/2'  
MAP MOAB  
PROD As of 1971, 17,236 tons had been mined at a grade of 0.31% U3O8, producing 106,434 lbs of U3O8, and 1.41% V2O5, producing 487,192 lbs of V2O5.  
HOST The host is the Jurassic Morrison Formation, Salt Wash Member.  
MNZ Uraninite (coffinite), high vanadium, low ilme.  
DOI 1971  
REF U.S. A.E.C., 1971, Production Records, Colorado.

## Bonanza 6

LOCATION: sec. 26, T. 51 N., R. 20 W.  
LCRM The deposit extends to sec. 35.  
QUAD Mount Waas 4 NE 7 1/2'  
MAP MOAB  
PROD As of 1971, 5,038 tons had been mined at a grade of 0.25% U3O8, producing 25,664 lbs U3O8, and 1.19% V2O5, producing 120,322 lbs of V2O5.  
HOST Jurassic Morrison Formation, Salt Wash Member.  
MNZ Uraninite (coffinite), high vanadium, low ilme.  
DOI 1971  
REF U.S. A.E.C., 1971, Production Records, Colorado.

## Bonanza Shaft

LOCATION: sec. 29, T. 51 N., R. 20 W.  
MNZ Uranium, vanadium.  
DOI 1975  
REF U.S. Bur. of Mines, 1977, (Unpubl.).

## Bonnie

LOCATION:  
LCST UNLOCATABLE  
LCRM This deposit lies in the Gateway district.  
PROD As of 1971, 1 ton had been mined at a grade of 2.05% U3O8, producing 41 lbs of U3O8, and 2.80% V2O5, producing 56 lbs of V2O5.  
HOST Jurassic Morrison Formation.

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DOI 1971  
REF U.S. A.E.C., 1971, Production Records, Colorado.

## Buckhorn Claims

### LOCATION:

LCST UNCERTAIN  
LCRM Original directions are as follows: "Eighteen miles southeast from Grand Junction on US 50, thence 3.3 miles on dirt road southwest to Gunnison Canyon, Morrison Formation 40 ft below Burro Canyon contact".  
QUAD Triangle Mesa 7 1/2', Dominguez 7 1/2'  
HOST Jurassic Morrison Formation, gray siltstone, conglomeratic in part consisting of small sub-angular quartz and jasperoid pebbles with brownish dolomitic nodules.  
MNZ Disseminated uraninite in dolomitic nodules which contain abundant carbonized plant debris. A grab sample had a value of 0.37% U3O8.  
RMKS An outcrop 1,000 ft east containing petrified bone had a sample value of about 0.11% U3O8.  
DOI 1954  
REF U.S. A.E.C., 1966, Preliminary Reconnaissance Reports, Mesa County, Colorado.

## Bud 1 (Outside Sales)

LOCATION: sec. 36, T. 50 N., R. 18 W.  
QUAD Calamity Mesa 7 1/2'  
MAP MOAB  
PROD As of 1971, 17 tons had been mined at a grade of 0.11% U3O8, producing 36 lbs of U3O8, and 0.96% V2O5, producing 327 lbs of V2O5.  
HOST Jurassic Morrison Formation.  
MNZ Uranium, vanadium.  
DOI 1971  
REF U.S. Bur. of Mines, 1977, (Unpubl.). U.S. A.E.C., 1971, Production Records, Colorado.

## Buena Vista

LOCATION: T. 51 N., R. 17 W.  
LCST UNCERTAIN  
QUAD Pine Mountain 7 1/2' or Casto Reservoir 7 1/2'  
MAP MOAB  
MNZ Uranium, vanadium.  
DOI 1975  
REF U.S. Bur. of Mines, 1977, (Unpubl.).

## Bulck (Bujan Mine)

LOCATION: sec. 31, T. 51 N., R. 18 W.  
LCRM This deposit is also located in sec. 30.  
QUAD Gateway 7 1/2'  
MAP MOAB  
PROD As of 1971, 2,853 tons had been mined at a grade of 0.18% U3O8, producing 10,305 lbs of U3O8, and 0.63% V2O5, producing 36,092 lbs of V2O5.  
HOST Jurassic Morrison Formation, Salt Wash Member.  
MNZ Uranium, vanadium, carnotite, tyuyamunite, low vanadium, low lime.  
DOI 1971

REF U.S. Bur. of Mines, 1977, (Unpubl.). U.S. A.E.C., 1971, Production Records, Colorado.

## Burcar Mines

### LOCATION:

LCRM This deposit lies in the Gateway district.  
DVEL Reserves, no production.  
HOST Jurassic Morrison Formation, Salt Wash Member.  
MNZ Carnotite.  
DOI 1971  
REF U.S. A.E.C., 1971, Production Records, Colorado.

## Calamity 1 (AT(05-1)-36), AEC Mining Lease)(C-G-26, DOE Lease Tract)

LOCATION: sec. 14, T. 50 N., R. 18 W.  
QUAD Calamity Mesa 7 1/2'  
MNZ Uranium, vanadium.  
DOI 1975  
REF U.S. D.O.E., 1977, Lease Production Records, Colorado. U.S. Bur. of Mines, 1977, (Unpubl.).

## Calamity 2 (AT(05-U-36), AEC Mining Lease) (C-G-26, DOE Lease Tract)

LOCATION: sec. 11, T. 50 N., R. 18 W.  
QUAD Calamity Mesa 7 1/2'  
MAP MOAB  
MNZ Uranium, vanadium.  
DOI 1975  
REF U.S. D.O.E., 1977, Lease Production Records, Colorado. U.S. Bur. of Mines, 1977, (Unpubl.).

## Calamity 6

LOCATION: sec. 11, T. 50 N., R. 18 W.  
DOI 1958  
REF Hague, R. S., Goldenstein, S. J., and Blakey, E., Uranium - vanadium deposits of the Uravan Mineral Belt, 1958.

## Calamity 7

LOCATION: N1/2 sec. 11, T. 50 N., R. 18 W.  
DOI 1958  
REF Hague, R. S., Goldenstein, S. J., and Blakey, E., Uranium - vanadium deposits of the Uravan Mineral Belt, 1958.

## Calamity 9

LOCATION: S1/2SE1/4 sec. 2, T. 50 N., R. 18 W.  
DOI 1958  
REF Hague, R. S., Goldenstein, S. J., and Blakey, E., Uranium - vanadium deposits of the Uravan Mineral Belt, 1958.

## Calamity 13

LOCATION: N1/2 sec. 11, T. 50 N., R. 18 W.  
DOI 1958  
REF Hague, R. S., Goldenstein, S. J., and Blakey, E., Uranium - vanadium deposits of the Uravan Mineral Belt, 1958.

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## Calamity 14 (AT(05-1)-36, AEC Mining Lease)(C-G-27, DOE Lease Tract)

LOCATION: N1/2 sec. 12, T. 50 N., R. 18 W.  
 QUAD Outlaw Mesa 7 1/2'  
 MNZ Uranium, vanadium.  
 DOI 1975  
 REF U.S. D.O.E., 1977, Lease Production Records, Colorado. U.S. Bur. of Mines, 1977, (Unpubl.).

## Calamity 15 (AT(05-1)-36), AEC Mining Lease)(C-G-27, DOE Lease Tract)

LOCATION: N1/2 sec. 12, T. 50 N., R. 18 W.  
 QUAD Outlaw Mesa 7 1/2'  
 MNZ Uranium, vanadium.  
 DOI 1975  
 REF U.S. D.O.E., 1977, Lease Production Records, Colorado. U.S. Bur. of Mines, 1977, (Unpubl.).

## Calamity 16

LOCATION: N1/2 sec. 11, T. 50 N., R. 18 W.  
 DOI 1958  
 REF Hague, R. S., Goldenstein, S. J., and Blakey, E., Uranium - vanadium deposits of the Uravan Mineral Belt, 1958.

## Calamity 17

LOCATION: N1/2 sec. 11, T. 50 N., R. 18 W.  
 DOI 1958  
 REF Hague, R. S., Goldenstein, S. J., and Blakey, E., Uranium - vanadium deposits of the Uravan Mineral Belt, 1958.

## Calamity 20

LOCATION: sec. 11, T. 50 N., R. 18 W.  
 DOI 1958  
 REF Hague, R. S., Goldenstein, S. J., and Blakey, E., Uranium - vanadium deposits of the Uravan Mineral Belt, 1958.

## Calamity 21

LOCATION: SW1/4 sec. 11, T. 50 N., R. 18 W.  
 DOI 1958  
 REF Hague, R. S., Goldenstein, S. J., and Blakey, E., Uranium - vanadium deposits of the Uravan Mineral Belt, 1958.

## Calamity 27

LOCATION: W1/2 sec. 11, T. 50 N., R. 18 W.  
 DOI 1958  
 REF Hague, R. S., Goldenstein, S. J., and Blakey, E., Uranium - vanadium deposits of the Uravan Mineral Belt, 1958.

## Calamity Homestead

LOCATION: SE1/4SE1/4 sec. 35, T. 50 N., R. 18 W.  
 PROD As of 1971, 52 tons had been mined at a grade of 0.10% U308, producing 106 lbs of U308, and 1.20% V205, producing 1,248 lbs of V205.  
 HOST Jurassic Morrison Formation, Salt Wash Member.

MNZ Carnotite - tyuyamunite, high vanadium, low ilme.

DOI 1971

REF U.S. D.O.E., 1977, Lease Production Records, Colorado. U.S. A.E.C., 1971, Production Records, Colorado.

## Calamity Mesa Dump (Queen of the Hills Dump)(AT(05-1)-36), AEC Mining Lease)(C-G-26A, DOE Lease Tract)

LOCATION: sec. 4, T. 50 N., R. 18 W.  
 PROD As of 1971, 339 tons had been mined at a grade of 0.14% U308, producing 922 lbs of U308, and 0.76% V205, producing 5,156 lbs of V205. This production is included in that for DOE Lease Tract C-G-26A.  
 HOST Jurassic Morrison Formation, Salt Wash Member.  
 MNZ Carnotite - tyuyamunite, high vanadium, low ilme.  
 DOI 1971  
 REF U.S. D.O.E., 1977, Lease Production Records, Colorado. U.S. A.E.C., 1971, Production Records, Colorado.

## Calco (Cedar Cliff Group)

LOCATION: sec. 23, T. 50 N., R. 18 W.  
 LCRM This deposit also listed as being in sec. 35.  
 QUAD Calamity Mesa 7 1/2'  
 MAP MOAB  
 PROD As of 1971, 245 tons had been mined at a grade of 0.32% U308, producing 1,548 lbs of U308, and 0.125% V205, producing 611 lbs of V205.  
 HOST Jurassic Morrison Formation, Salt Wash Member.  
 MNZ Uranium, vanadium, carnotite - tyuyamunite, high vanadium, low ilme.  
 DOI 1971  
 REF U.S. Bur. of Mines, 1977, (Unpubl.). U.S. A.E.C., 1971, Production Records, Colorado.

## Captain Jack

LOCATION: N1/2 sec. 32, T. 51 N., R. 19 W.  
 DOI 1958  
 REF Hague, R. S., Goldenstein, S. J., and Blakey, E., Uranium - vanadium deposits of the Uravan Mineral Belt, 1958.

## Captain Jinks (Lumsden Group)

LOCATION: sec. 29, T. 51 N., R. 18 W.  
 LCRM Also sec. 32. This deposit lies in the Beaver Mesa Gateway district.  
 QUAD Gateway 7 1/2'  
 MAP MOAB  
 PROD As of 1961, 63 tons of ore had been mined at a grade of 0.34% U308.  
 HOST Jurassic Morrison Formation, Salt Wash Member.  
 DOI 1971  
 REF U.S. A.E.C., 1971, Production Records, Colorado.

## Cave

LOCATION: sec. 4, T. 50 N., R. 19 W.  
 LCRM Part of sec. 4 is on Juanita Arch 7 1/2'.  
 QUAD Gateway 7 1/2'

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MAP MOAB  
MNZ Uranium, vanadium.  
DOI 1975  
REF U.S. Bur. of Mines, 1977, (Unpubl.).

## Cave Canyon Lode (Linda, Linda-Cave Canyon)

LOCATION: sec. 9, T. 50 N., R. 19 W.  
QUAD Juanita Arch 7 1/2'  
MAP MOAB  
PROD As of 1971, 195 tons had been mined at a grade of 0.43% U3O8, producing 1,686 lbs of U3O8, and 2.15% V2O5, producing 8,400 lbs of V2O5.  
HOST Jurassic Morrison Formation, Salt Wash Member.  
MNZ Uranium, vanadium.  
DOI 1975  
REF U.S. Bur. of Mines, 1977, (Unpubl.). U.S. A.E.C., 1971, Production Records, Colorado.

## Cedar Pt 3 (Little Chief)

LOCATION: sec. 23, T. 51 N., R. 19 W.  
LCRM The deposit is listed by U.S. A.E.C. Production Records as being in sec. 14 and 23, T. 50 N., R. 20 W.  
QUAD Gateway 7 1/2'  
MAP MOAB  
PROD As of 1971, 3,561 tons had been mined at a grade of 0.32% U3O8, producing 22,802 lbs of U3O8, and 1.38% V2O5, producing 98,190 lbs of V2O5.  
HOST Jurassic Morrison Formation, Salt Wash Member.  
MNZ Uraninite (coffinite), high vanadium, low lime.  
DOI 1971  
REF U.S. Bur. of Mines, 1977, (Unpubl.). U.S. A.E.C., 1971, Production Records, Colorado.

## Cherie 1 & 2

LOCATION: sec. 12, T. 50 N., R. 18 W.  
QUAD Calamity Mesa 7 1/2'  
MAP MOAB  
HOST Jurassic Morrison Formation, Salt Wash Member.  
MNZ Carnotite - tyuyamunite, high vanadium, low lime.  
DOI 1971  
REF U.S. A.E.C., 1971, Production Records, Colorado.

## Cherokee Shaft (JWL Fraction No. 1)

LOCATION: E1/2SW1/4 sec. 36, T. 51 N., R. 20 W.  
LCST UNLOCATABLE  
QUAD Mt. Waas 4 NE 7 1/2'  
MAP MOAB  
DVEL See JWL Fraction.  
MNZ Uranium, vanadium.  
DOI 1975  
REF U.S. D.O.E., 1977, Lease Production Records, Colorado. U.S. Bur. of Mines, 1977, (Unpubl.).

## Chico & Chico Fraction

LOCATION: sec. 36, T. 51 N., R. 19 W.  
LCRM The deposit extends across T. 50-51 N., R. 19, 18 W.

QUAD Gateway 7 1/2'  
MAP MOAB  
PROD As of 1971, 181 tons had been mined at a grade of 0.47% U3O8, producing 1,696 lbs of U3O8, and 1.60% V2O5, producing 5,791 lbs of V2O5.  
HOST Jurassic Morrison Formation, Salt Wash Member.  
MNZ Uranium, vanadium.  
DOI 1971  
REF U.S. Bur. of Mines, 1977, (Unpubl.). U.S. A.E.C., 1971, Production Records, Colorado.

## Cliff Dweller (Cliff Dweller 1 & 2; Cliff House 1 & 2; Norva Louise 1 & 2)

LOCATION: sec. 22, T. 50 N., R. 18 W.  
LCRM The deposit extends to sec. 23.  
QUAD Calamity Mesa 7 1/2'  
MAP MOAB  
PROD As of 1971, 1,209 tons had been mined at a grade of 0.32% U3O8, producing 7,800 lbs of U3O8, and 1.52% V2O5, producing 36,685 lbs of V2O5.  
HOST Jurassic Morrison Formation.  
MNZ Uranium, vanadium.  
DOI 1971  
REF U.S. Bur. of Mines, 1977, (Unpubl.). U.S. A.E.C., 1971, Production Records, Colorado.

## C-G-26, DOE Lease Tract (Contract No. AT[05-1] - 36 and 19, AEC Mining Lease)

LOCATION: sec. 11, T. 50 N., R. 18 W.  
LCRM The deposit lies within the Gateway district on Calamity Mesa. The lease includes E1/2 sec. 2; NE1/4 sec. 3; SE1/4 sec. 9; S1/2 sec. 10; and NW1/4 sec. 14.  
QUAD Calamity Mesa 7 1/2', Pine Mountain 7 1/2'  
MAP MOAB  
PROD From 1949 through 1960, production from former AT(05-1)-36, AEC Mining Lease was 44,220 tons averaging 0.42% U3O8 and 1.80% V2O5. During 1955, production from former 19, AEC Mining Lease was 97 tons averaging 0.26% U3O8 and 1.26% V2O5. From 1975 through 1977, production from C-G-27, DOE Lease Tract was 1,231 tons averaging 0.17% and 0.76% V2O5.  
HOST The host is the Jurassic Morrison Formation.  
MNZ Carnotite - tyuyamunite, high vanadium, low lime.  
DOI 1971  
REF U.S. D.O.E., 1977, Lease Production Records, Colorado. U.S. Bur. of Mines, 1977, (Unpubl.). U.S. A.E.C., 1971, Production Records, Colorado.

## C-G-26A, DOE Lease Tract (34, AEC Mining Lease) (AT[05-1] - 36, AEC Mining Lease) Matchless, Queen of the Hills, Calamity Claims [Maverick Group])

LOCATION: sec. 4, T. 50 N., R. 18 W.  
LCRM The southeast corner of sec. 4 is in Calamity Mesa 7 1/2'. The lease extends to NE1/4 sec. 9; and the NW1/4 sec. 3. It lies on Calamity Mesa in the Gateway district.  
QUAD Gateway 7 1/2' or Juanita Arch 7 1/2'

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MAP MOAB  
 PROD From 1949 through 1960, production from former AT(05-1)-36, AEC Mining Lease was 36,220 tons averaging 0.42% U308 and 1.80% V205. In 1953, production from former 34, AEC Mining Lease was 15 tons averaging 0.15% U308 and 0.69% V205. No production from 1960 through 1977.  
 HOST Jurassic Morrison Formation, Salt Wash Member.  
 MNZ Uranium, vanadium.  
 DOI 1975  
 REF U.S. D.O.E., 1977, Lease Production Records, Colorado. U.S. Bur. of Mines, 1977, (Unpubl.).

C-G-27, DOE Lease Tract (AT (05-1) - 36, AEC Mining Lease) (Neglected, [Calamity Mesa], Calamity 14 & 15) (G-1) (G-3) (G-4) (AT (05-1) - 526, AEC Mining Lease) (Outlaw Mesa)

LOCATION: sec. 12, T. 50 N., R. 18 W.  
 LCRM The lease extends to NE1/4 sec. 13, T. 50 N., R. 18 W.; and SW1/4 sec. 7, NW1/4 sec. 18; T. 50 N., R. 17 W. The deposits lie on Outlaw Mesa in the Gateway district.  
 QUAD Calamity Mesa 7 1/2'  
 MAP MOAB  
 DVEL From 1949 through 1960, production from former AT(05-1)-36, AEC Mining Lease, was 8,000 tons averaging 0.42% U308 and 1.80% V205. From 1950 through 1960, production from former AT(05-1)-526, AEC Mining Lease was 149,089 tons averaging 0.25% U308 and 1.09% V205. From 1975 through 1977, production from C-G-27, DOE Lease Tract was 2,379 tons of ore averaging 0.34% U308 and 1.57% V205.  
 HOST The host is the Jurassic Morrison Formation.  
 MNZ Carnotite - tyuyamunite, high vanadium, low lime.  
 DOI 1971  
 REF U.S. D.O.E., 1977, Lease Production Records, Colorado. U.S. Bur. of Mines, 1977, (Unpubl.). U.S. A.E.C., 1971, Production Records, Colorado.

C-G-27A, DOE Lease Tract (AT[05-1] - 526, AEC Mining Lease) Outlaw Mesa) (G-2)

LOCATION: SW1/4 sec. 17, T. 50 N., R. 17 W.  
 LCRM The deposit extends to SW1/4 sec. 7; and sec. 18. The lease lies on Outlaw Mesa in the Gateway district.  
 QUAD Calamity Mesa 7 1/2'  
 MAP MOAB  
 DVEL From 1950 through 1960, production from former AT(05-1)-526, AEC Mining Lease was 16,308 tons averaging 0.20% U308 and 1.14% V205. No production from 1960 through 1977.  
 HOST The host is the Jurassic Morrison Formation.  
 MNZ Uranium, vanadium.  
 DOI 1975  
 REF U.S. D.O.E., 1977, Lease Production Records, Colorado. U.S. Bur. of Mines, 1977, (Unpubl.).

## Cave No. 1 Adit

LOCATION: SE1/4 sec. 4, T. 50 N., R. 19 W.  
 LCRM This deposit lies in the Gateway district, South Beaver Mesa, Cave Canyon.  
 QUAD Juanita Arch 7 1/2'

MAP MOAB  
 PROD As of 1971, 17 tons had been mined at a grade of 0.39% U308, producing 134 lbs of U308, and 1.48% V205, producing 504 lbs of V205.  
 HOST Jurassic Morrison Formation, Salt Wash Member.  
 DOI 1971  
 REF U.S. D.O.E., 1977, Lease Production Records, Colorado. U.S. A.E.C., 1971, Production Records, Colorado.

## Climax

LOCATION: NE1/4NE1/4 sec. 36, T. 50 N., R. 18 W.  
 PROD As of 1971, 43 tons had been mined at a grade of 0.26% U308, producing 227 lbs of U308, and 1.78% V205, producing 1,534 lbs of V205.  
 HOST Jurassic Morrison Formation, Salt Wash Member.  
 DOI 1971  
 REF U.S. D.O.E., 1977, Lease Production Records, Colorado. U.S. A.E.C., 1971, Production Records, Colorado. C-244 (Circular 6).

## Climax Residue

LOCATION:  
 PROD As of 1971, 3,027 tons had been recovered at a grade of 0.60% U308, producing 36,382 lbs of U308, and 3.31% V205, producing 200,287 lbs of V205.  
 MNZ This material was recovered from residue from the Climax mill at Grand Junction.  
 DOI 1971  
 REF U.S. D.O.E., 1977, Lease Production Records, Colorado. U.S. A.E.C., 1971, Production Records, Colorado.

## Coal Town Citation

LOCATION:  
 LCRM This deposit lies in the Gateway district.  
 PROD As of 1971, 1 ton had been mined at a grade of 1.60% U308, producing 32 lbs of U308, and 2.50% V205, producing 50 lbs of V205.  
 HOST Jurassic Morrison Formation, Salt Wash Member.  
 DOI 1971  
 REF U.S. A.E.C., 1971, Production Records, Colorado.

## Cottonwood 3 & 5 (Little Girl, Pretty Boy)

LOCATION: sec. 14, T. 50 N., R. 18 W.  
 LCRM The deposit extends to sec. 15, 22, and 23.  
 QUAD Calamity Mesa 7 1/2'  
 MAP MOAB  
 PROD As of 1971, 1,583 tons had been mined at a grade of 0.20% U308, producing 6,309 lbs of U308, and 1.57% V205, producing 49,701 lbs of V205.  
 HOST Jurassic Morrison Formation, Salt Wash Member.  
 MNZ Carnotite - tyuyamunite, high vanadium, low lime.  
 DOI 1971  
 REF U.S. D.O.E., 1977, Lease Production Records, Colorado. U.S. A.E.C., 1971, Production Records, Colorado.

# MESA COUNTY

## Crescent

### LOCATION:

LCST UNLOCATABLE

LCRM This deposit lies in the Gateway district.

PROD As of 1971, 96 tons had been mined at a grade of 0.22% U3O8, producing 413 lbs of U3O8, and 1.13% V2O5, producing 2,177 lbs of V2O5.

HOST Jurassic Morrison Formation, Salt Wash Member.

DOI 1971

REF U.S. A.E.C., 1971, Production Records, Colorado.

## Grows Nest (Mineral Channel Group)(Rainbow)

LOCATION: sec. 11, T. 50 N., R. 18 W.

PROD As of 1971, 1,722 tons had been mined at a grade of 0.30% U3O8, producing 10,421 lbs of U3O8, and 1.43% V2O5, producing 49,369 lbs of V2O5.

HOST Jurassic Morrison Formation, Salt Wash Member.

MNZ Carnotite - tyuyamunite, high vanadium, low ilme.

DOI 1971

REF U.S. A.E.C., 1971, Production Records, Colorado.

## Cub

LOCATION: sec. 5, T. 50 N., R. 18 W.

LCRM Part of sec. 5 is in Juanita Arch 7 1/2'.

QUAD Gateway 7 1/2'

PROD As of 1971, 10 tons had been mined at a grade of 0.27% U3O8, producing 54 lbs of U3O8, and 0.98% V2O5, producing 197 lbs of V2O5.

HOST Jurassic Morrison Formation.

MNZ Uranium, vanadium, carnotite - tyuyamunite, high vanadium, low ilme.

DOI 1971

REF U.S. Bur. of Mines, 1977, (Unpubl.). U.S. A.E.C., 1971, Production Records, Colorado.

## Dallu-Yellowbird

LOCATION: sec. 4, T. 25 S.

LCST UNLOCATABLE.

LCRM This was noted in R. 26 E. No such range exists.

PROD As of 1971, 307 tons had been mined at a grade of 0.49% U3O8, producing 3,022 lbs of U3O8, and 1.91% V2O5, producing 11,706 lbs of V2O5.

HOST Jurassic Morrison Formation.

MNZ Uranium, vanadium, carnotite - tyuyamunite, high vanadium, intermed ilme.

DOI 1971

REF U.S. Bur. of Mines, 1977, (Unpubl.) U.S. A.E.C., 1971, Production Records, Colorado.

## Deal Group (Last Chance 1-2, Black Jumbo 1, 2, and 3)

LOCATION: S1/2 sec. 4, T. 49 N., R. 17 W.

QUAD Calamity Mesa 7 1/2'

MAP MOAB

PROD As of 1971, 7 tons had been mined at a grade of 0.59% U3O8, producing 83 lbs of U3O8, and 1.58% V2O5, producing 221 lbs of V2O5.

HOST Jurassic Morrison Formation, Salt Wash Member.

MNZ Uranium, vanadium.

DOI 1971

REF U.S. D.O.E., 1977, Lease Production Records, Colorado. U.S. Bur. of Mines, 1977, (Unpubl.). U.S. A.E.C., 1971, Production Records, Colorado.

## Depression Group

LOCATION: sec. 18, T. 50 N., R. 18 W.

QUAD Juanita Arch 7 1/2'

MAP MOAB

PROD As of 1971, 526 tons had been mined at a grade of 0.58% U3O8, producing 6,125 lbs of U3O8, and 3.08% V2O5, producing 32,391 lbs of V2O5.

HOST Jurassic Morrison Formation, Salt Wash Member.

MNZ Uranium, vanadium.

DOI 1971

REF U.S. D.O.E., 1977, Lease Production Records, Colorado. U.S. Bur. of Mines, 1977, (Unpubl.). U.S. A.E.C., 1971, Production Records, Colorado.

## Depression No. 6

LOCATION: sec. 15, T. 50 N., R. 18 W.

LCRM The deposit is listed by the U.S. A.E.C. as being in sec. 17.

QUAD Calamity Mesa 7 1/2'

MAP MOAB

PROD As of 1971, 12,338 tons had been mined at a grade of 0.36% U3O8, producing 89,870 lbs of U3O8, and 1.89% V2O5, 465,691 lbs of V2O5.

HOST Jurassic Morrison Formation, Salt Wash Member.

MNZ Uranium, vanadium, carnotite - tyuyamunite, high vanadium low ilme.

DOI 1975, 1-1-71

REF U.S. D.O.E., 1977, Lease Production Records, Colorado. U.S. Bur. of Mines, 1977, (Unpubl.). U.S. A.E.C., 1971, Production Records, Colorado.

## Depression No. 2 & 3

LOCATION: sec. 18, T. 50 N., R. 18 W.

QUAD Juanita Arch 7 1/2'

PROD As of 1971, 530 tons had been mined at a grade of 0.35% U3O8, producing 3,685 lbs of U3O8, and 1.88% V2O5, producing 19,973 lbs of V2O5.

HOST Jurassic Morrison Formation, Salt Wash Member.

MNZ Uranium, vanadium, carnotite - tyuyamunite, high vanadium, low ilme.

DOI 1971

REF U.S. Bur. of Mines, 1977, (Unpubl.). U.S. A.E.C., 1971, Production Records, Colorado.

## Depression No. 4 & 5

LOCATION: sec. 18, T. 50 N., R. 18 W.

QUAD Juanita Arch 7 1/2'

PROD As of 1971, 4,025 tons had been mined at a grade of 0.39% U3O8, producing 31,137 lbs of U3O8, and 1.65% V2O5, producing 132,976 lbs of V2O5.

HOST Jurassic Morrison Formation, Salt Wash Member.



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MNZ Uranium, vanadium, carnotite - tyuyamunite, high vanadium, low lime.  
DOI 1971  
REF U.S. Bur. of Mines, 1977, (Unpubl.). U.S. A.E.C., 1971, Production Records, Colorado.

## Drum Dust

LOCATION:  
PROD As of 1971, 121 tons were recovered at a grade of 4.04% U3O8, producing 9,769 lbs of U3O8.  
RMKS Material collected from residue of Yellow Cake Drums.  
DOI 1971  
REF U.S. A.E.C., 1971, Production Records, Colorado.

## Durango No. 2

LOCATION: sec. 34, T. 51 N., R. 19 W.  
QUAD Gateway 7 1/2'  
PROD As of 1971, 69 tons had been mined at a grade of 0.23% U3O8, producing 322 lbs of U3O8, and 0.85% V2O5, producing 1,174 lbs of V2O5.  
HOST Jurassic Morrison Formation, Salt Wash Member.  
MNZ Uranium, vanadium, carnotite - tyuyamunite, high vanadium, intermed. lime.  
DOI 1971  
REF U.S. Bur. of Mines, 1977, (Unpubl.). U.S. A.E.C., 1971, Production Records, Colorado.

## Economy

LOCATION: sec. 24, T. 50 N., R. 18 W.  
QUAD Calamity Mesa 7 1/2'  
MNZ Uranium, vanadium.  
DOI 1975  
REF U.S. Bur. of Mines, 1977, (Unpubl.).

## Elizabeth 17 & 18

LOCATION: sec. 29, T. 50 N., R. 17 W.  
LCRM The deposit extends to sec. 32.  
QUAD Calamity Mesa 7 1/2'  
PROD As of 1971, 2,589 tons had been mined at a grade of 0.37% U3O8, producing 19,350 lbs of U3O8, and 2.02% V2O5, producing 104,756 lbs of V2O5.  
HOST Jurassic Morrison Formation, Salt Wash Member.  
MNZ Uranium, vanadium, carnotite - tyuyamunite, high vanadium, intermed. lime.  
DOI 1971  
REF U.S. Bur. of Mines, 1977, (Unpubl.). U.S. A.E.C., 1971, Production Records, Colorado.

## Elizabeth No. 7, 8, 9, 10

LOCATION: sec. 4, T. 49 N., R. 17 W.  
LCRM The deposit extends to sec. 32, 33, T. 50 N., R. 17 W. and sec. 5, T. 49 N., R. 17 W.  
PROD As of 1971, 4,652 tons had been mined at a grade of 0.19% U3O8, producing 17,990 lbs of U3O8, and 1.76% V2O5, producing 163,967 lbs of V2O5.  
HOST Jurassic Morrison Formation, Salt Wash Member.  
MNZ Uranium, vanadium, carnotite - tyuyamunite,

high vanadium, intermed. lime.

DOI 1971  
REF U.S. Bur. of Mines, 1977, (Unpubl.). U.S. A.E.C., 1971, Production Records, Colorado.

## Emerson (Blair, Bluebird, Jumbo)

LOCATION: sec. 19, T. 50 N., R. 17 W.  
LCRM U.S. A.E.C. Production Records also show sec. 30.  
QUAD Calamity Mesa 7 1/2'  
PROD As of 1971, 266 tons had been mined at a grade of 0.36% U3O8, producing 1,906 lbs of U3O8, and 1.25% V2O5, producing 6,660 lbs of V2O5.  
HOST Jurassic Morrison Formation, Salt Wash Member.  
MNZ Uranium, vanadium.  
DOI 1971  
REF U.S. Bur. of Mines, 1977, (Unpubl.). U.S. A.E.C., 1971, Production Records, Colorado.

## Flat Top

LOCATION: sec. 17, T. 50 N., R. 18 W.  
QUAD Juanita Arch 7 1/2'  
PROD As of 1971, 90 tons had been mined at a grade of 0.59% U3O8, producing 1,060 lbs of U3O8, and 3.12% V2O5, producing 5,614 lbs of V2O5.  
MNZ Uranium, vanadium.  
DOI 1971  
REF U.S. Bur. of Mines, 1977, (Unpubl.). U.S. A.E.C., 1971, Production Records, Colorado.

## Ford & Fordo Claim Group (Cat Track) (Fordo 6)

LOCATION: sec. 24, T. 51 N., R. 19 W.  
LCRM The deposit extends to sec. 19 and 20, T. 51 N., R. 18 W.  
QUAD Gateway 7 1/2'  
PROD As of 1971, 980 tons had been mined at a grade of 0.28% U3O8, producing 5,467 lbs of U3O8, and 0.78% V2O5, producing 15,335 lbs of V2O5.  
HOST Jurassic Morrison Formation, Salt Wash Member.  
MNZ Uranium, vanadium, carnotite - tyuyamunite, high vanadium, low lime.  
DOI 1971  
REF U.S. Bur. of Mines, 1977, (Unpubl.). U.S. A.E.C., 1971, Production Records, Colorado.

## Fountain of Youth

LOCATION: sec. 31, T. 51 N., R. 18 W.  
QUAD Gateway 7 1/2'  
PROD As of 1971, 298 tons had been mined at a grade of 0.17% U3O8, producing 1,022 lbs of U3O8, and 0.78% V2O5, producing 4,654 lbs of V2O5.  
HOST Jurassic Morrison Formation, Salt Wash Member.  
MNZ Uranium, vanadium.  
DOI 1971  
REF U.S. Bur. of Mines, 1977, (Unpubl.). U.S. A.E.C., 1971, Production Records, Colorado.

## Fraction

LOCATION: sec. 12, T. 50 N., R. 18 W.

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QUAD Calamity Mesa 7 1/2'  
 PROD As of 1971, 188 tons had been mined at a grade of 0.35% U308, producing 1,325 lbs of U308, and 2.18% V205, producing 8,192 lbs of V205.  
 HOST Jurassic Morrison Formation, Salt Wash Member.  
 MNZ Uranium, vanadium.  
 DOI 1971  
 REF U.S. Bur. of Mines, 1977, (Unpubl.). U.S. A.E.C., 1971, Production Records, Colorado.

## G-1

LOCATION: sec. 7, T. 50 N., R. 17 W.  
 QUAD Calamity Mesa 7 1/2'  
 MNZ Uranium, vanadium.  
 DOI 1975  
 REF U.S. Bur. of Mines, 1977, (Unpubl.).

## Gateway Tailings

LOCATION: sec. 10, T. 51 N., R. 18 W.  
 QUAD Pine Mountain 7 1/2'  
 PROD As of 1971, 1,429 tons had been mined at a grade of 0.26% U308, producing 7,360 lbs of U308, and 0.69% V205, producing 19,842 lbs of V205.  
 HOST Jurassic Morrison Formation, Salt Wash Member.  
 MNZ Uranium, vanadium.  
 DOI 1971  
 REF U.S. Bur. of Mines, 1977, (Unpubl.). U.S. A.E.C., 1971, Production Records, Colorado.

## Gilmore Lode (Lumsden Group)

LOCATION: sec. 36, T. 51 N., R. 20 W.  
 QUAD Polar Mesa 15'  
 PROD As of 1971, 445 tons had been mined a grade of 0.33% U308, producing 2,920 lbs of U308, and 1.35% V205, producing 12,042 lbs of V205.  
 HOST Jurassic Morrison Formation, Salt Wash Member.  
 MNZ Uranium, vanadium.  
 DOI 1971  
 REF U.S. Bur. of Mines, 1977, (Unpubl.).

## Gladys 1-4

LOCATION: sec. 19, T. 51 N., R. 18 W.  
 QUAD Gateway 7 1/2'  
 PROD As of 1971, 25 tons had been mined at a grade of 0.34% U308, producing 170 lbs of U308, and 1.83% V205, producing 917 lbs of V205.  
 HOST Jurassic Morrison Formation, Salt Wash Member.  
 MNZ Uranium, vanadium, carnotite - tyuyamunite, high vanadium, Intermed. lime.  
 DOI 1971  
 REF U.S. Bur. of Mines, 1977, (Unpubl.). U.S. A.E.C., 1971, Production Records, Colorado.

## Great Hesper (AT(05-1-36), AEC Mining Lease)(C-G-26A, DOE Lease Tract)

LOCATION: SW1/4 sec. 9, T. 50 N., R. 18 W.  
 LCRM This deposit lies in the Gateway district, Calamity Mesa.  
 DVEL See 16A, DOE Lease Tract.  
 HOST Jurassic Morrison Formation, Salt Wash Member.  
 DOI 1971

REF U.S. D.O.E., 1977, Lease Production Records, Colorado. U.S. A.E.C., 1971, Production Records, Colorado.

## Hanson-Negus (Hanson Dump)(C-G-27A, DOE Lease Tract)

LOCATION: sec. 17, T. 50 N., R. 17 W.  
 QUAD Calamity Mesa 7 1/2'  
 PROD As of 1971, 8,325 tons had been mined at a grade of 0.14% U308, producing 23,511 lbs of U308, and 1.12% V205, producing 185,867 lbs of V205. (Most of this is included in C-G-27A, DOE Lease Tract production.)  
 HOST Jurassic Morrison Formation.  
 MNZ Uranium, vanadium, carnotite - tyuyamunite, high vanadium, low lime.  
 DOI 1971  
 REF U.S. D.O.E., 1977, Lease Production Records, Colorado. U.S. Bur. of Mines, 1977, (Unpubl.). U.S. A.E.C., 1971, Production Records, Colorado.

## Harvey-Pick & Shovel

LOCATION: sec. 28, T. 51 N., R. 18 W.  
 LCRM The deposit extends to sec. 29. Part of sec. 28 is in Pine Mountain 7 1/2'.  
 QUAD Gateway 7 1/2'  
 PROD As of 1971, 765 tons had been mined at a grade of 0.39% U308, producing 6,005 lbs of U308, and 1.14% V205, producing 17,632 lbs of V205.  
 HOST Jurassic Morrison Formation, Salt Wash Member.  
 MNZ Uranium, vanadium.  
 DOI 1971  
 REF U.S. Bur. of Mines, 1977, (Unpubl.). U.S. A.E.C., 1971, Production Records, Colorado.

## Hidden Treasure Shaft (AT-05-1)-36, AEC Mining Lease) and (C-G-26A, DOE Lease Tract)

LOCATION: SE1/4 sec. 4, T. 50 N., R. 18 W.  
 LCST UNLOCATABLE  
 PROD Included in production for C-G-26A, DOE Lease Tract.  
 MNZ Uranium, vanadium.  
 DOI 1975  
 REF U.S. D.O.E., 1977, Lease Production Records, Colorado. U.S. Bur. of Mines, 1977, (Unpubl.).

## Hole 24

LOCATION:  
 LCST UNLOCATABLE  
 LCRM This deposit occurs in the Gateway district.  
 PROD As of 1971, 7 tons had been mined at a grade of 0.12% U308, producing 17 lbs of U308, and 1.44% V205, producing 201 lbs of V205.  
 DOI 1971  
 REF U.S. A.E.C., 1971, Production Records, Colorado.

## Homestead Patent

LOCATION: sec. 30, T. 50 N., R. 17 W.  
 LCRM Also sec. 31, Gateway district, Blue Creek locality.  
 QUAD Calamity Mesa 7 1/2'

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PROD As of 1971, 171 tons have been mined at a grade of 0.23% U3O8.  
DOI 1971  
REF U.S. D.O.E., 1977, Lease Production Records, Colorado. U.S. A.E.C., 1971, Production Records, Colorado.

## Hope 1 to 4

LOCATION: S1/2 sec. 29, T. 50 N., R. 17 W.  
LCRM The deposit extends to the W1/2 sec. 28.  
QUAD Calamity Mesa 7 1/2'  
PROD As of 1971, 899 tons had been mined at a grade of 0.28% U3O8, producing 5,101 lbs of U3O8, and 1.88% V2O5, producing 33,778 lbs of V2O5.  
HOST Morrison Formation, Salt Wash Member.  
MNZ Uranium, vanadium, carnotite - tyuyamunite, high vanadium, low lime.  
DOI 1971  
REF U.S. Bur. of Mines, 1977, (Unpubl.). U.S. A.E.C., 1971, Production Records, Colorado.

## Hubbard Homestead and Pack Rat (Shakin Quakie)

LOCATION: sec. 35, T. 51 N., R. 20 W.  
LCRM The deposit also lies in sec. 36.  
PROD As of 1971, 84,121 tons had been mined at a grade of 0.32% U3O8, producing 532,183 lbs of U3O8, and 1.35% V2O5, producing 2,269,086 lbs of V2O5.  
HOST Jurassic Morrison Formation, Salt Wash Member.  
MNZ Uranium, vanadium, uraninite (coffinite), high vanadium, low lime.  
DOI 1971  
REF U.S. Bur. of Mines, 1977, (Unpubl.). U.S. A.E.C., 1971, Production Records, Colorado.

## Humdinger

LOCATION: NW1/4 sec. 5, T. 50 N., R. 18 W.  
QUAD Gateway 7 1/2'  
PROD As of 1971, 45 tons had been mined at a grade of 0.26% U3O8, producing 232 lbs of U3O8, and 1.68% V2O5, producing 1,469 lbs of V2O5.  
HOST Jurassic Morrison Formation, Salt Wash Member.  
MNZ Uranium, vanadium.  
DOI 1971  
REF U.S. D.O.E., 1977, Lease Production Records, Colorado. U.S. Bur. of Mines, 1977, (Unpubl.). U.S. A.E.C., 1971, Production Records, Colorado.

## Hummer (AT(05-1)-36), AEC Mining Lease) and (C-G-26A, DOE Lease Tract)

LOCATION: sec. 9, T. 50 N., R. 18 W.  
LCST UNLOCATABLE  
MNZ Uranium, vanadium.  
DOI 1975  
REF U.S. D.O.E., 1977, Lease Production Records, Colorado. U.S. Bur. of Mines, 1977, (Unpubl.).

## Incline 1 G 1 (AT(05-1)-526, AEC Mining Lease; now C-G-27, DOE Lease Tract)

LOCATION: sec. 13, T. 50 N., R. 18 W.

QUAD Calamity Mesa 7 1/2'  
PROD This production is included in production for C-G-27, DOE Lease Tract.  
HOST Jurassic Morrison Formation.  
MNZ Uranium, vanadium, carnotite - tyuyamunite, high vanadium low lime.  
DOI 1971  
REF U.S. Bur. of Mines, 1977, (Unpubl.). U.S. A.E.C., 1971, Production Records, Colorado.

## Incline 2 G 2 (Now C-G-27A, DOE Lease Tract)

LOCATION: SE1/4 sec. 18, T. 50 N., R. 17 W.  
QUAD Calamity Mesa 7 1/2'  
PROD As of 1971, 8,998 tons had been mined at a grade of 0.26% U3O8, producing 46,208 lbs of U3O8, and 1.15% V2O5, producing 207,836 lbs of V2O5. This production is included in the production of C-G-27A, DOE Lease Tract.  
HOST Jurassic Morrison Formation.  
MNZ Uranium, vanadium, carnotite - tyuyamunite, high vanadium, low lime.  
DOI 1971  
REF U.S. Bur. of Mines, 1977, (Unpubl.). U.S. A.E.C., 1971, Production Records, Colorado.

## Incline 3 G 3 (Now C-G-27, DOE Lease Tract)

LOCATION: NE1/4 sec. 13, T. 50 N., R. 18 W.  
QUAD Calamity Mesa 7 1/2'  
PROD As of 1971, 29,008 tons had been mined at a grade of 0.19% U3O8, producing 108,622 lbs of U3O8, and 0.89% V2O5, producing 515,489 lbs of V2O5. This production is included in the production of C-G-27.  
HOST Jurassic Morrison Formation.  
MNZ Uranium, vanadium, carnotite - tyuyamunite, high vanadium, low lime.  
DOI 1971  
REF U.S. Bur. of Mines, 1977, (Unpubl.). U.S. A.E.C., 1971, Production Records, Colorado.

## Incline 4 G 4 (Now C-G-27, DOE Lease Tract)

LOCATION: NE1/4 sec. 13, T. 50 N., R. 18 W.  
QUAD Calamity Mesa 7 1/2'  
PROD As of 1971, 6,702 tons had been mined at a grade of 0.23% U3O8, producing 31,149 lbs of U3O8, and 1.06% V2O5, producing 141,874 lbs of V2O5. This production is included in the production of C-G-27.  
HOST Jurassic Morrison Formation.  
MNZ Uranium, vanadium, carnotite - tyuyamunite, high vanadium, low lime.  
DOI 1971  
REF U.S. Bur. of Mines, 1977, (Unpubl.). U.S. A.E.C., 1971, Production Records, Colorado.

## J. W. Lewis (Larsen 1-13, Sampson 1-9)

LOCATION: sec. 1, T. 15 S., R. 104 W.  
LCRM 6th PM. This deposit lies in Pinion Mesa.  
PROD As of 1971, 6 tons of ore had been mined at a grade of 0.10% U3O8 and 0.29% V2O5.  
HOST Jurassic Morrison Formation, Salt Wash Member.  
MNZ Carnotite.  
DOI 1971  
REF U.S. A.E.C., 1971, Production Records, Colorado.

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## J.W.L. Fraction 2

LOCATION: SE1/4 sec. 25, T. 51 N., R. 20 W.  
 QUAD Mt. Waas 4 NE 7 1/2'  
 MNZ Uranium, vanadium.  
 DOI 1975  
 REF U.S. D.O.E., 1977, Lease Production Records, Colorado. U.S. Bur. of Mines, 1977, (Unpubl.).

## J.W.L. Fraction 3

LOCATION: SE1/4 sec. 26, T. 51 N., R. 20 W.  
 QUAD Mt. Waas 4 NE 7 1/2'  
 MAP MOAB  
 MNZ Uranium, vanadium.  
 DOI 1975  
 REF U.S. D.O.E., 1977, Lease Production Records, Colorado. U.S. Bur. of Mines, 1977, (Unpubl.).

## J.W.L. Fraction (Cherokee Shaft)

LOCATION: SW1/4 sec. 36, T. 51 N., R. 20 W.  
 QUAD Mt. Waas 4 NE 7 1/2'  
 PROD As of 1971, 15,896 tons had been mined at a grade of 0.37% U3O8, producing 119,183 lbs of U3O8, and 1.46% V2O5, producing 464,107 lbs of V2O5.  
 HOST Jurassic Morrison Formation.  
 MNZ Uranium, vanadium, uraninite (coffinite), high vanadium, low ilme.  
 DOI 1971  
 REF U.S. D.O.E., 1977, Lease Production Records, Colorado. U.S. Bur. of Mines, 1977, (Unpubl.). U.S. A.E.C., 1971, Production Records, Colorado.

## Jean 1, 2, & 3

LOCATION: sec. 30, T. 50 N., R. 17 W.  
 LCST UNLOCATABLE  
 PROD As of 1971, 98 tons had been mined at a grade of 0.18% U3O8, producing 360 lbs of U3O8, and 1.12% V2O5, producing 2,203 lbs of V2O5.  
 HOST Jurassic Morrison Formation, Salt Wash Member.  
 DOI 1971  
 REF U.S. A.E.C., 1971, Production Records, Colorado.

## Jody Group

LOCATION: sec. 33, T. 50 N., R. 17 W.  
 QUAD Calamity Mesa 7 1/2'  
 PROD As of 1971, 1,833 tons had been mined at a grade of 0.21% U3O8, producing 7,643 lbs of U3O8, and 1.88% V2O5, producing 68,790 lbs of V2O5.  
 HOST Jurassic Morrison Formation, Salt Wash Member.  
 MNZ Uranium, vanadium, carnotite - tyuyamunite, high vanadium, low ilme.  
 DOI 1971  
 REF U.S. Bur. of Mines, 1977, (Unpubl.). U.S. A.E.C., 1971, Production Records, Colorado.

## Joe

LOCATION: sec. 31, T. 51 N., R. 18 W.  
 LCRM The deposit extends to sec. 24, T. 51 N., R. 19 W.

QUAD Gateway 7 1/2'  
 PROD As of 1971, 2,486 tons had been mined at a grade of 0.27% U3O8, producing 13,184 lbs of U3O8, and 1.01% V2O5, producing 50,286 lbs of V2O5.  
 HOST Jurassic Morrison Formation, Salt Wash Member.  
 MNZ Uranium, vanadium, carnotite - tyuyamunite, high vanadium, low ilme.  
 DOI 1971  
 REF U.S. Bur. of Mines, 1977, (Unpubl.). U.S. A.E.C., 1971, Production Records, Colorado.

## John Brown

LOCATION: sec. 7, T. 50 N., R. 19 W.  
 QUAD Polar Mesa 15'  
 PROD As of 1971, 6 tons had been mined at a grade of 0.45% U3O8, producing 54 lbs of U3O8, and 1.42% V2O5, producing 171 lbs of V2O5.  
 HOST Jurassic Morrison Formation, Salt Wash Member.  
 MNZ Uranium, vanadium.  
 DOI 1971  
 REF U.S. Bur. of Mines, 1977, (Unpubl.). U.S. A.E.C., 1971, Production Records, Colorado.

## John Brown 14 & 15 (John Brown Extension, Duffy, Duffy Extension)

LOCATION: sec. 1, T. 50 N., R. 20 W.  
 PROD As of 1971, 12,206 tons had been mined at a grade of 0.23% U3O8, producing 55,627 lbs of U3O8, and 0.73% V2O5, producing 178,282 lbs of V2O5.  
 HOST Jurassic Morrison Formation, Salt Wash Member.  
 MNZ Uraninite (coffinite), high vanadium, low ilme.  
 DOI 1971  
 REF U.S. A.E.C., 1971, Production Records, Colorado.

## John Brown No. 18 (John Brown 16-19; John Brown Annex)

LOCATION: sec. 6, T. 50 N., R. 19 W.  
 LCRM This deposit lies in Beaver Mesa, Gateway district.  
 DYEL Reserves, no production.  
 HOST Jurassic Morrison Formation, Salt Wash Member.  
 MNZ Uraninite.  
 DOI 1971  
 REF U.S. A.E.C., 1971, Production Records, Colorado.

## John Brown No. 21

LOCATION: sec. 31, T. 51 N., R. 19 W.  
 LCRM This deposit lies in Beaver Mesa, Gateway district.  
 DYEL Reserves, no production.  
 HOST Jurassic Morrison Formation, Salt Wash Member.  
 MNZ Uraninite.  
 DOI 1971  
 REF U.S. A.E.C., 1971, Production Records, Colorado.

## Johnnie Mae 2

LOCATION: sec. 36, T. 51 N., R. 20 W.  
 MNZ Uranium, vanadium.

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DOI 1975  
REF U.S. Bur. of Mines, 1977, (Unpubl.).

## Johnnie Mae 3

LOCATION: sec. 36, T. 51 N., R. 20 W.  
LCRM The deposit extends to sec. 25.  
PROD As of 1971, 4,745 tons had been mined at a grade of 0.51% U3O8, producing 47,966 lbs of U3O8, and 2.04% V2O5, producing 193,349 lbs of V2O5.  
HOST Jurassic Morrison Formation, Salt Wash Member.  
MNZ Uranium, vanadium, uraninite (coffinite), high vanadium, low lime.  
DOI 1971  
REF U.S. Bur. of Mines, 1977, (Unpubl.). U.S. A.E.C., 1971, Production Records, Colorado.

## Ju Dee 1

LOCATION:  
LCRM This deposit lies in the Gateway district on Calamity Mesa.  
PROD As of 1971, 1 ton had been mined at a grade of 0.45% U3O8, producing 9 lbs of U3O8, and 1.05% V2O5, producing 21 lbs of V2O5.  
HOST Jurassic Morrison Formation.  
DOI 1971  
REF U.S. A.E.C., 1971, Production Records, Colorado.

## July

LOCATION: sec. 12, T. 50 N., R. 18 W.  
PROD As of 1971, 6,739 tons had been mined at a grade of 0.39% U3O8, producing 52,995 lbs of U3O8, and 1.60% V2O5, producing 215,045 lbs of V2O5.  
HOST Jurassic Morrison Formation, Salt Wash Member.  
MNZ Uranium, vanadium, carnotite - tyuyamunite, high vanadium, low lime.  
DOI 1971  
REF U.S. Bur. of Mines, 1977, (Unpubl.). U.S. A.E.C., 1971, Production Records, Colorado.

## Jumbo 1

LOCATION: sec. 19, T. 50 N., R. 17 W.  
LCRM This deposit lies in the Long Park district.  
QUAD Calamity Mesa 7 1/2'  
PROD As of 1971, 844 tons had been mined at a grade of 0.25% U3O8, producing 4,239 lbs of U3O8, and 1.71% V2O5, producing 28,816 lbs of V2O5.  
HOST Jurassic Morrison Formation, Salt Wash Member.  
MNZ Uranium, vanadium.  
DOI 1971  
REF U.S. Bur. of Mines, 1977, (Unpubl.). U.S. A.E.C., 1971, Production Records, Colorado.

## Kanarado 3

LOCATION: sec. 33, T. 50 N., R. 18 W.  
QUAD Juanita Arch-7 1/2'  
PROD As of 1971, 3 tons had been mined at a grade of 0.30% U3O8, producing 18 lbs of U3O8, and 1.65% V2O5, producing 99 lbs of V2O5.

HOST Jurassic Morrison Formation, Salt Wash Member.  
MNZ Uranium, vanadium.  
DOI 1971  
REF U.S. Bur. of Mines, 1977, (Unpubl.). U.S. A.E.C., 1971, Production Records, Colorado.

## Karns Incline

LOCATION: sec. 12, T. 50 N., R. 20 W.  
PROD As of 1971, 6,532 tons had been mined at a grade of 0.46% U3O8, producing 59,456 lbs of U3O8, and 1.93% V2O5, producing 251,974 lbs of V2O5.  
HOST Jurassic Morrison Formation, Salt Wash Member.  
MNZ Uraninite (coffinite), high vanadium, low lime.  
DOI 1971  
REF U.S. A.E.C., 1971, Production Records, Colorado.

## King Solomon

LOCATION:  
LCST UNLOCATABLE  
QUAD Red Canyon 7 1/2'  
PROD As of 1971, 209 tons had been mined at a grade of 0.22% U3O8, producing 938 lbs of U3O8, and 0.64% V2O5, producing 2,670 lbs of V2O5.  
HOST Jurassic Morrison Formation, Salt Wash Member.  
MNZ Uranium, vanadium, carnotite - tyuyamunite, low vanadium, low lime.  
DOI 1971  
REF A. S. J. Taylor, 1978, Personal Communication. U.S. Bur. of Mines, 1977, (Unpubl.). U.S. A.E.C., 1971, Production Records, Colorado.

## Klondike

LOCATION: SE1/4 sec. 25, T. 50 N., R. 18 W.  
QUAD Calamity Mesa 7 1/2'  
PROD As of 1971, 63 tons had been mined at a grade of 0.25% U3O8, producing 315 lbs of U3O8, and 1.82% V2O5, producing 2,295 lbs of V2O5.  
HOST Jurassic Morrison Formation, Salt Wash Member.  
MNZ Uranium, vanadium.  
DOI 1971  
REF U.S. Bur. of Mines, 1977, (Unpubl.). U.S. A.E.C., 1971, Production Records, Colorado.

## La Plaz 1

LOCATION: sec. 22, T. 50 N., R. 19 W.  
QUAD Juanita Arch 7 1/2'  
PROD As of 1971, 222 tons had been mined at a grade of 0.28% U3O8, producing 1,240 lbs of U3O8, and 1.14% V2O5, producing 5,052 lbs of V2O5.  
HOST Jurassic Morrison Formation, Salt Wash Member.  
MNZ Uranium, vanadium.  
DOI 1971  
REF U.S. Bur. of Mines, 1977, (Unpubl.). U.S. A.E.C., 1971, Production Records, Colorado.

## La Sal

LOCATION: sec. 25, T. 50 N., R. 20 W.

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PROD By 1971, 17,263 tons had been mined at a grade of 0.33% U3O8, 112,646 lbs of U3O8, and 1.20% V2O5, producing producing 415,796 lbs of V2O5.  
 HOST Jurassic Morrison Formation, Salt Wash Member.  
 MNZ Uranium, vanadium, carnotite - tyuyamunite, high vanadium, low lime.  
 DOI 1-1-71  
 REF U.S. Bur. of Mines, 1977, (Unpubl.). U.S. A.E.C., 1971, Production Records, Colorado.

## La Sal Group (La Salle Group)

LOCATION: sec. 36, T. 51 N., R. 20 W.  
 PROD By 1971, 57,543 tons had been mined at a grade of 0.33% U3O8, producing 383,735 lbs of U3O8, and 1.14% V2O5, producing 1,309,922 lbs of V2O5.  
 HOST Jurassic Morrison Formation, Salt Wash Member.  
 MNZ Uranium, vanadium, uraninite (coffinite), high vanadium, low lime.  
 DOI 1971  
 REF U.S. Bur. of Mines, 1977, (Unpubl.). U.S. A.E.C., 1971, Production Records, Colorado.

## La Sal No. 1 & 2

LOCATION: sec. 36, T. 51 N., R. 20 W.  
 PROD By 1971, 1706 tons had been mined at a grade of 0.39% U3O8, producing 13,458 lbs of U3O8, and 1.31% V2O5, producing 44,629 lbs of V2O5.  
 HOST Jurassic Morrison Formation, Salt Wash Member.  
 MNZ Uranium, vanadium, carnotite - tyuyamunite, high vanadium, low lime.  
 DOI 1-1-71  
 REF U.S. Bur. of Mines, 1977, (Unpubl.). U.S. A.E.C., 1971, Production Records, Colorado.

## La Sal No. 4

LOCATION: sec. 36, T. 51 N., R. 20 W.  
 PROD By 1971, 12,773 tons had been mined at a grade of 0.35% U3O8, producing 88,151 lbs of U3O8, and 1.29% V2O5, producing 330,429 lbs of V2O5.  
 HOST Jurassic Morrison Formation, Salt Wash Member.  
 MNZ Uranium, vanadium, carnotite - tyuyamunite, high vanadium, low lime.  
 DOI 1971  
 REF U.S. Bur. of Mines, 1977, (Unpubl.). U.S. A.E.C., 1971, Production Records, Colorado.

## La Sal No. 5 & 7

LOCATION: sec. 36, T. 51 N., R. 20 W.  
 PROD By 1971, 11,615 tons had been mined at a grade of 0.33% U3O8, producing 77,511 lbs of U3O8, and 1.23% V2O5, producing 286,667 lbs of V2O5.  
 HOST Jurassic Morrison Formation, Salt Wash Member.  
 MNZ Uranium, vanadium, carnotite - tyuyamunite, high vanadium, low lime.  
 DOI 1971  
 REF U.S. Bur. of Mines, 1977, (Unpubl.). U.S. A.E.C., 1971, Production Records, Colorado.

## Larry & Leslie Claim Group

LOCATION: sec. 5, T. 50 N., R. 19 W.

LCRM Part of sec. 5 is on Juanita Arch 7 1/2'.  
 QUAD Polar Mesa 15'  
 MNZ Uranium, vanadium.  
 DOI 1975  
 REF U.S. Bur. of Mines, 1977, (Unpubl.).

## Lavada (Lavada 2-7, Mineral Jack 1-3)

LOCATION: sec. 23, T. 50 N., R. 18 W.  
 LCRM The deposit extends to sec. 14.  
 QUAD Calamity Mesa 7 1/2'  
 PROD By 1971, 51 tons had been mined at a grade of 0.47% U3O8, producing 479 lbs of U3O8, and 2.06% V2O5, producing 2,104 lbs of V2O5.  
 HOST Jurassic Morrison Formation, Salt Wash Member.  
 MNZ Uranium, vanadium.  
 DOI 1971  
 REF U.S. Bur. of Mines, 1977, (Unpubl.). U.S. A.E.C., 1971, Production Records, Colorado.

## Lee 1-6

LOCATION: sec. 21, T. 50 N., R. 18 W.  
 LCRM Part of sec. 21 is in Calamity Mesa 7 1/2'.  
 QUAD Juanita Arch 7 1/2'  
 PROD By 1971, 66 tons had been mined at a grade of 0.37% U3O8, producing 492 lbs of U3O8, and 2.00% V2O5, producing 2643 lbs of V2O5.  
 HOST Jurassic Morrison Formation, Salt Wash Member.  
 MNZ Uranium, vanadium.  
 DOI 1971  
 REF U.S. Bur. of Mines, 1977, (Unpubl.). U.S. A.E.C., 1971, Production Records, Colorado.

## Legal & Lucky Day

LOCATION: sec. 7, T. 50 N., R. 19 W.  
 QUAD Polar Mesa 15'  
 PROD By 1971, 5 tons had been mined at a grade of 0.20% U3O8, producing 20 lbs of U3O8, and 3.72% V2O5, producing 372 lbs of V2O5.  
 HOST Jurassic Morrison Formation, Salt Wash Member.  
 MNZ Uranium, vanadium.  
 DOI 1971  
 REF U.S. Bur. of Mines, 1977, (Unpubl.). U.S. A.E.C., 1971, Production Records, Colorado.

## Liberty Bell

LOCATION: sec. 36, T. 51 N., R. 19 W.  
 QUAD Gateway 7 1/2'  
 PROD By 1971, 10,355 tons had been mined at a grade of 0.29% U3O8, producing 60,260 lbs of U3O8, and 0.99% V2O5, producing 204,241 lbs of V2O5.  
 HOST Jurassic Morrison Formation.  
 MNZ Uranium, vanadium, carnotite - tyuyamunite, low vanadium, low lime.  
 DOI 1971  
 REF U.S. Bur. of Mines, 1977, (Unpubl.). U.S. A.E.C., 1971, Production Records, Colorado.

## Lincoln

LOCATION: sec. 31, T. 51 N., R. 18 W.  
 QUAD Gateway 7 1/2'  
 PROD By 1971, 77,18 tons had been mined at a grade of 0.24% U3O8, producing 35,157 lbs

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of U308, and 0.79% V205, producing 116,043 lbs of V205.

HOST Jurassic Morrison Formation.  
MNZ Uranium, vanadium, carnotite - tyuyamunite, high vanadium, low ilme.  
DOI 1-1-71  
REF U.S. Bur. of Mines, 1977, (Unpubl.). U.S. A.E.C., 1971, Production Records, Colorado.

## Little Johnny

LOCATION: sec. 31, T. 51 N., R. 18 W.  
QUAD Gateway 7 1/2'  
PROD By 1971, 2,270 tons had been mined at a grade of 0.18% U308, producing 8,193 lbs of U308, and 0.78% V205, producing 35,558 lbs of V205.  
HOST Jurassic Morrison Formation.  
MNZ Uranium, vanadium, carnotite - tyuyamunite, high vanadium, low ilme.  
DOI 1-1-71  
REF U.S. Bur. of Mines, 1977, (Unpubl.). U.S. A.E.C., 1971, Production Records, Colorado.

## Little Maverick 1, 4, 5 & 6

LOCATION: sec. 21, T. 50 N., R. 18 W.  
LCRM U.S. A.E.C. Production Records also show sec. 28.  
QUAD Juanita Arch 7 1/2'  
PROD By 1971, 72 tons had been mined at a grade of 0.37% U308, producing 527 lbs of U308, and 1.85% V205, producing 2,658 lbs of V205.  
HOST Jurassic Morrison Formation, Salt Wash Member.  
MNZ Uranium, vanadium.  
DOI 1-1-71  
REF U.S. Bur. of Mines, 1977, (Unpubl.). U.S. A.E.C., 1971, Production Records, Colorado.

## Locus 1, 2, & 3

LOCATION: sec. 28, T. 50 N., R. 18 W.  
LCRM Part of sec. 28 is on Calamity Mesa 7 1/2'.  
QUAD Juanita Arch 7 1/2'  
PROD By 1971, 2 tons had been mined at a grade of 0.13% U308, producing 5 lbs of U308, and 0.75% V205, producing 30 lbs of V205.  
HOST Jurassic Morrison Formation.  
MNZ Uranium, vanadium, carnotite - tyuyamunite, high vanadium, Intermed. ilme.  
DOI 1-1-71  
REF U.S. Bur. of Mines, 1977, (Unpubl.). U.S. A.E.C., 1971, Production Records, Colorado.

## Lode Claim

LOCATION: sec. 32, T. 15 S., R. 104W, 6 PM.  
LCST UNLOCATABLE  
PROD By 1971, 63 tons had been mined at a grade of 0.28% U308, producing 356 lbs of U308, and 1.42% V205, producing 1795 lbs of V205.  
HOST Jurassic Morrison Formation, Salt Wash Member.  
DOI 1-1-71  
REF A. S. J. Taylor, 1978, Personal Communication. U.S. A.E.C., 1971, Production Records, Colorado.

## Log Cabin (Homestead)

LOCATION: SE 1/4 sec. 30, T. 51 N., R. 18 W, NMPM.  
LCRM This lease lies in the Gateway district, Tenderfoot Mesa.  
QUAD Gateway 7 1/2'  
MAP MOAB  
PROD By 1971, 156 tons had been mined at a grade of 0.20% U308, producing 611 lbs of U308, and 1.27% V205, producing 3,972 lbs of V205.  
MNZ Uranium, vanadium.  
DOI 1-1-71  
REF A. S. J. Taylor, 1978, Personal Communication. U.S. Bur. of Mines, 1977, (Unpubl.). U.S. A.E.C., 1971, Production Records, Colorado.

## Lone Peak

LOCATION: sec. 31, T. 51 N., R. 19 W.  
QUAD Gateway 7 1/2'  
PROD By 1971, 2 tons had been mined at a grade of 1.20% U308, producing 48 lbs of U308, and 2.25% V205, producing 90 lbs of V205.  
MNZ Uranium, vanadium.  
DOI 1971  
REF U.S. Bur. of Mines, 1977, (Unpubl.). U.S. A.E.C., 1971, Production Records, Colorado.

## Look Out

LOCATION: sec. 19, T. 50 N., R. 18 W.  
QUAD Juanita Arch 7 1/2'  
PROD By 1971, 13 tons had been mined at a grade of 0.97% U308, producing 253 lbs of U308, and 4.34% V205, producing 1,128 lbs of V205.  
HOST Jurassic Morrison Formation Salt Wash Member.  
MNZ Uranium, vanadium, carnotite - tyuyamunite, high vanadium, low ilme.  
DOI 1971  
REF U.S. Bur. of Mines, 1977, (Unpubl.). U.S. A.E.C., 1971, Production Records, Colorado.

## Lost Dutchman 17

LOCATION: sec. 25, T. 51 N., R. 20 W.  
LCRM The deposit extends to sec. 26.  
PROD By 1971, 61,738 tons had been mined at a grade of 0.26% U308, producing 322,250 lbs of U308, and 1.05% V205, producing 1,293,825 lbs of V205.  
HOST Jurassic Morrison Formation, Salt Wash Member.  
MNZ Carnotite - tyuyamunite, high vanadium, low ilme.  
DOI 1971  
REF U.S. A.E.C., 1971, Production Records, Colorado.

## Lost Indian (Last Indian)

LOCATION: T. 51 N., R. 19 W.  
LCST UNCERTAIN  
LCRM This deposit lies in the Gateway district, Beaver Mesa.  
PROD As of 1971, 35 tons of ore had been mined at a grade of 0.342% U308.  
HOST Jurassic Morrison Formation, Salt Wash Member.  
DOI 1971  
REF U.S. A.E.C., 1971, Production Records, Colorado.

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## Lucky Day

LOCATION: sec. 7, T. 50 N., R. 19 W.

LCRM U.S. A.E.C. Production Records also show sec. 6.

QUAD Polar Mesa 15'

PROD By 1971, 138 tons had been mined at a grade of 0.11% U308, producing 302 lbs of U308, and 0.97% V205, producing 2,686 lbs of V205.

MNZ Uranium, vanadium.

DOI 1971

REF U.S. Bur. of Mines, 1977, (Unpubl.). U.S. A.E.C., 1971, Production Records, Colorado.

## Lucky Hole

LOCATION:

LCST UNLOCATABLE

PROD By 1971, 2 tons had been mined at a grade of 0.50% U308, producing 20 lbs of U308, and 3.92% V205, producing 157 lbs of V205.

HOST Jurassic Morrison Formation, Salt Wash Member.

DOI 1971

REF U.S. A.E.C., 1971, Production Records, Colorado.

## Lucky K

LOCATION: sec. 23, T. 50 N., R. 18 W.

QUAD Calamity Mesa 7 1/2'

MNZ Uranium, vanadium.

DOI 1975

REF U.S. Bur. of Mines, 1977, (Unpubl.).

## Lucky Strike

LOCATION: sec. 32, T. 50 N., R. 18 W.

QUAD Juanita Arch 7 1/2'

PROD By 1971, 43 tons had been mined at a grade of 0.16% U308, producing 134 lbs of U308, and 0.79% V205, producing 678 lbs of V205.

HOST Jurassic Morrison Formation.

MNZ Uranium, vanadium, carnotite - tyuyamunite, low vanadium, Intermed. lime.

DOI 1971

REF U.S. Bur. of Mines, 1977, (Unpubl.). U.S. A.E.C., 1971, Production Records, Colorado.

## Lumsden No. 2 & 6

LOCATION: sec. 36, T. 51 N., R. 20 W.

PROD By 1971, 47,282 tons had been mined at a grade of 0.36% U308, producing 336,008 lbs of U308, and 1.40% V205, producing 1,325,897 lbs of V205.

HOST Jurassic Morrison Formation, Salt Wash Member.

MNZ Uranium, vanadium, carnotite - tyuyamunite, high vanadium, low lime.

DOI 1971

REF U.S. Bur. of Mines, 1977, (Unpubl.). U.S. A.E.C., 1971, Production Records, Colorado.

## Lumson 1 (Lumsden 1)

LOCATION: sec. 36, T. 51 N., R. 20 W.

PROD By 1971, 5,330 tons had been mined at a grade of 0.32% U308, producing 33,764 lbs of U308, and 1.66% V205, producing 177,103 lbs of V205.

HOST Jurassic Morrison Formation, Salt Wash Member.

MNZ Uranium, vanadium, carnotite - tyuyamunite, high vanadium, low lime.

DOI 1971

REF U.S. Bur. of Mines, 1977, (Unpubl.). U.S. A.E.C., 1971, Production Records, Colorado.

## Mammoth

LOCATION: sec. 31, T. 51 N., R. 18 W.

QUAD Gateway 7 1/2'

PROD By 1971, 5,124 tons were mined at a grade of .15% U308, producing 15,018 lbs of U308, and 0.69% V205, producing 70,291 lbs of V205.

MNZ Uranium, vanadium.

DOI 1971

REF U.S. Bur. of Mines, 1977, (Unpubl.). U.S. A.E.C., 1971, Production Records, Colorado.

## Mammoth-Lincoln

LOCATION: sec. 31, T. 51 N., R. 18 W.

QUAD Gateway 7 1/2'

PROD By 1971, 1,833 tons were mined at a grade of 0.16% U308, producing 6,023 lbs of U308, and 0.70% V205, producing 25,613 lbs of V205.

MNZ Uranium, vanadium.

DOI 1971

REF U.S. Bur. of Mines, 1977, (Unpubl.). U.S. A.E.C., 1971, Production Records, Colorado.

## Mark 2

LOCATION: sec. 1, T. 50 N., R. 20 W.

LCRM The deposit extends to sec. 16, T. 25 S., R. 26 E. (Utah).

PROD By 1971, 97,019 tons were mined at a grade of 0.28% U308, producing 537,893 lbs of U308, and 0.85% V205, producing 1,653,150 lbs of V205.

HOST Jurassic Morrison Formation, Salt Wash Member.

MNZ Uranium, vanadium, carnotite - tyuyamunite, high vanadium, low lime.

DOI 1971

REF U.S. Bur. of Mines, 1977, (Unpubl.). U.S. A.E.C., 1971, Production Records, Colorado.

## Matchless (AT(05-1)-36, AEC Mining Lease)(C-G-26A, DOE Lease Tract)

LOCATION: sec. 9, T. 50 N., R. 18 W.

LCRM Part of sec. 9 is in Calamity Mesa 7 1/2'.

QUAD Juanita Arch 7 1/2'

MNZ Uranium, vanadium.

DOI 1975

REF A. S. J. Taylor, 1978, Personal Communication. U.S. Bur. of Mines, 1977, (Unpubl.).

## Maverick

LOCATION: sec. 3, T. 50 N., R. 18 W.

QUAD Gateway 7 1/2'

PROD As of 1971, 9 tons were mined at a grade of 0.53% U308, producing 96 lbs of U308, and 3.94% V205, producing 709 lbs of V205.

MNZ Uranium, vanadium.

DOI 1971

REF U.S. Bur. of Mines, 1977, (Unpubl.). U.S. A.E.C., 1971, Production Records, Colorado.



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## Maverick 6

LOCATION: sec. 3, T. 50 N., R. 18 W.  
 LCRM Part of sec. 3 is in Calamity Mesa 7 1/2'  
 QUAD Gateway 7 1/2'  
 PROD As of 1971, 38 tons had been mined at a grade of 0.28% U308, producing 215 lbs of U308, and 1.34% V205, producing 1.34% V205.  
 HOST Jurassic Morrison Formation, Salt Wash Member.  
 MNZ Uranium, vanadium, carnotite - tyuyamunite, high vanadium, low lime.  
 DOI 1971  
 REF U.S. Bur. of Mines, 1977, (Unpubl.). U.S. A.E.C., 1971, Production Records, Colorado.

## Mesa 8

LOCATION: sec. 12, T. 50 N., R. 18 W.  
 LCRM Calamity Mesa 7 1/2'  
 PROD As of 1971, 51,434 tons had been mined at a grade of 0.21% U308, producing 216,548 lbs of U308, and 1.02% V205, producing 1,053,868 lbs of V205.  
 HOST The host is Jurassic Morrison Formation, Salt Wash Member.  
 MNZ Uranium, vanadium, carnotite - tyuyamunite, high vanadium, low lime.  
 DOI 1971  
 REF U.S. A.E.C., 1971, Production Records, Colorado.

## Mesa No. 5 (Outlaw Mesa)

LOCATION: E1/2 sec. 12, T. 50 N., R. 18 W.  
 LCRM The deposit extends to sec. 7, T. 50 N., R. 17 W.  
 PROD As of 1971, 23,100 tons had been mined at a grade of 0.23% U308, producing 114,816 lbs of V205.  
 HOST The host is the Jurassic Morrison Formation, Salt Wash Member.  
 MNZ Uranium, vanadium, carnotite - tyuyamunite, high vanadium, low lime.  
 DOI 1971  
 REF U.S. A.E.C., 1971, Production Records, Colorado.

## Mill Site Lode (June)

LOCATION: sec. 13, T. 50 N., R. 18 W.  
 QUAD Calamity Mesa 7 1/2'  
 PROD As of 1971, 82 tons had been mined at a grade of 0.22% U308, producing 369 lbs of U308, and 0.99% V205, producing 1,622 lbs of V205.  
 MNZ Uranium, vanadium.  
 DOI 1971  
 REF U.S. Bur. of Mines, 1977, (Unpubl.). U.S. A.E.C., 1971, Production Records, Colorado.

## Mineral Channel 10 & 12

LOCATION: sec. 7, T. 50 N., R. 17 W.  
 LCRM The deposit extends to sec. 12, T. 50 N., R. 18 W.  
 QUAD Calamity Mesa 7 1/2'  
 PROD As of 1971, 4,662 tons had been mined at a grade of 0.21% U308, producing 19,562

lbs of U308, and 0.96% V205, producing 89,072 lbs of V205.

HOST The host is the Jurassic Morrison Formation, Salt Wash Member.  
 MNZ Uranium, vanadium, carnotite - tyuyamunite, high vanadium, low lime.  
 DOI 1971  
 REF U.S. Bur. of Mines, 1977, (Unpubl.). U.S. A.E.C., 1971, Production Records, Colorado.

## Mineral Channel 3

LOCATION: sec. 12, T. 50 N., R. 18 W.  
 QUAD Calamity Mesa 7 1/2'  
 PROD As of 1971, 827 tons had been mined at a grade of 0.43% U308, producing 7,039 lbs of U308, and 1.64% V205, producing 27,065 lbs of V205.  
 HOST Jurassic Morrison Formation, Salt Wash Member.  
 MNZ Uranium, vanadium.  
 DOI 1971  
 REF U.S. Bur. of Mines, 1977, (Unpubl.). U.S. A.E.C., 1971, Production Records, Colorado.

## Mineral Channel 5

LOCATION: sec. 12, T. 50 N., R. 18 W.  
 QUAD Calamity Mesa 7 1/2'  
 PROD As of 1971, 84 tons had been mined at a grade of 0.74% U308, producing 1,236 lbs of U308, and 2.30% V205, producing 3,869 lbs of V205.  
 HOST Jurassic Morrison Formation, Salt Wash Member.  
 MNZ Uranium, vanadium, carnotite - tyuyamunite, high vanadium, low lime.  
 DOI 1971  
 REF U.S. Bur. of Mines, 1977, (Unpubl.). U.S. A.E.C., 1971, Production Records, Colorado.

## Monroe 18

LOCATION: sec. 36, T. 50 N., R. 18 W.  
 LCRM The deposit extends to sec. 25.  
 QUAD Calamity Mesa 7 1/2'  
 PROD As of 1971, 149 tons had been mined at a grade of 0.22% U308, producing 660 lbs of U308, and 1.58% V205, producing 4,712 lbs of V205.  
 HOST The host is the Jurassic Morrison Formation.  
 MNZ Uranium, vanadium, carnotite - tyuyamunite, high vanadium, intermed. lime.  
 DOI 1971  
 REF U.S. Bur. of Mines, 1977, (Unpubl.). U.S. A.E.C., 1971, Production Records, Colorado.

## Montezuma

LOCATION: sec. 10, T. 50 N., R. 19 W.  
 QUAD Juanita Arch 7 1/2'  
 PROD As of 1971, 4 tons had been mined at a grade of 0.40% U308, producing 32 lbs of U308, and 3.14% V205, producing 251 lbs of V205.  
 MNZ Uranium, vanadium.  
 DOI 1971  
 REF U.S. Bur. of Mines, 1977, (Unpubl.). U.S. A.E.C., 1971, Production Records, Colorado.

# MESA COUNTY

## Neglected (AT(05-1)-36, AEC Mining Lease)(C-G-27, DOE Lease Tract)

LOCATION: sec. 12, T. 50 N., R. 18 W.  
 QUAD Calamity Mesa 7 1/2'  
 MNZ Uranium, vanadium.  
 DOI 1975  
 REF U.S. D.O.E., 1977, Lease Production Records, Colorado. U.S. Bur. of Mines, 1977, (Unpubl.).

## Nelson

LOCATION: sec. 10, T. 50 N., R. 19 W.  
 QUAD Juanita Arch 7 1/2'  
 PROD As of 1971, 7 tons had been mined at a grade of 0.48% U3O8, producing 67 lbs of U3O8, and 2.14% V2O5, producing 299 lbs of V2O5.  
 HOST Jurassic Morrison Formation, Salt Wash Member.  
 MNZ Uranium, vanadium.  
 DOI 1971  
 REF U.S. Bur. of Mines, 1977, (Unpubl.). U.S. A.E.C., 1971, Production Records, Colorado.

## Nelson Mother Dee

LOCATION: sec. 10, T. 50 N., R. 19 W.  
 QUAD Juanita Arch 7 1/2'  
 PROD As of 1971, 43 tons had been mined at a grade of 0.35% U3O8, producing 295 lbs of U3O8, and 1.78% V2O5, producing 1,534 lbs of V2O5.  
 HOST Jurassic Morrison Formation, Salt Wash Member.  
 MNZ Uranium, vanadium.  
 DOI 1971  
 REF U.S. Bur. of Mines, 1977, (Unpubl.). U.S. A.E.C., 1971, Production Records, Colorado.

## New Verde (Horn Group)

LOCATION: sec. 15, T. 50 N., R. 18 W.  
 LCRM The deposit extends to sec. 16, 21, 22, 27, 28, 33, and 34.  
 QUAD Calamity Mesa 7 1/2'  
 PROD As of 1971, 72,100 tons had been mined at a grade of 0.32% U3O8, producing 465,920 lbs of U3O8, and 1.35% V2O5, producing 1,951,777 lbs of V2O5.  
 HOST The host is the Jurassic Morrison Formation, Salt Wash Member.  
 MNZ Uranium, vanadium, carnotite - tyuyamunite, high vanadium, low lime.  
 DOI 1971  
 REF U.S. Bur. of Mines, 1977, (Unpubl.). U.S. A.E.C., 1971, Production Records, Colorado.

## Newhiesel

LOCATION: sec. 31, T. 51 N., R. 19 W.  
 LCRM Beaver Mesa  
 QUAD Polar Mesa 15'  
 PROD As of 1971, 4,516 tons had been mined at a grade of 0.28% U3O8, producing 25,643 lbs of U3O8.  
 HOST The host is the Jurassic Morrison Formation.  
 MNZ Uranium, vanadium, carnotite - tyuyamunite, high vanadium, low lime.  
 DOI 1971  
 REF U.S. Bur. of Mines, 1977, (Unpubl.). U.S. A.E.C., 1971, Production Records, Colorado.

## October Adit

LOCATION: S1/2 sec. 4, T. 50 N., R. 19 W.  
 LCRM The deposit extends to N1/2 sec. 8 and 9.  
 QUAD Gateway 7 1/2'  
 PROD As of 1971, 53,411 tons had been mined at a grade of 0.31% U3O8, producing 331,194 lbs of U3O8, and 0.91% V2O5, producing 970,686 lbs of V2O5.  
 HOST Jurassic Morrison Formation, Salt Wash Member.  
 MNZ Uranium, vanadium, uraninite (coffinite), high vanadium, low lime.  
 DOI 1971  
 REF U.S. Bur. of Mines, 1977, (Unpubl.). U.S. A.E.C., 1971, Production Records, Colorado.

## Okan

LOCATION: sec. 31, T. 51 N., R. 18 W.  
 DOI 1958  
 REF Hague, R. S., Goldenstein, S. J., and Blakey, E., Uranium - vanadium deposits of the Uravan Mineral Belt, 1958.

## Outlaw-Economy

LOCATION: sec. 12, T. 50 N., R. 18 W.  
 LCRM The deposit extends to sec. 19, T. 50 N., R. 17 W., and sec. 24, 25, T. 50 N., R. 18 W.  
 QUAD Calamity Mesa 7 1/2'  
 PROD As of 1971, 6,368 tons had been mined at a grade of 0.33% U3O8, producing 41,921 lbs of U3O8, and 1.45% V2O5, producing 185,281 lbs of V2O5.  
 HOST Jurassic Morrison Formation, Salt Wash Member.  
 MNZ Uranium, vanadium, carnotite - tyuyamunite, high vanadium, low lime.  
 DOI 1971  
 REF U.S. Bur. of Mines, 1977, (Unpubl.). U.S. A.E.C., 1971, Production Records, Colorado.

## Pack Rat 1 & 2

LOCATION: sec. 35, T. 51 N., R. 20 W.  
 LCRM The deposit extends to sec. 25 and 36.  
 PROD As of 1971, 46,993 tons had been mined at a grade of 0.32% U3O8, producing 300,994 lbs of U3O8, and 1.46% V2O5, producing 1,373,280 lbs of V2O5.  
 HOST Jurassic Morrison Formation, Salt Wash Member.  
 MNZ Uranium, vanadium, uraninite (coffinite), high vanadium, low lime.  
 DOI 1971  
 REF U.S. Bur. of Mines, 1977, (Unpubl.). U.S. A.E.C., 1971, Production Records, Colorado.

## Pay Lode (Pay Rock Group)

LOCATION: sec. 19, T. 51 N., R. 18 W.  
 QUAD Gateway 7 1/2'  
 PROD As of 1971, 180 tons had been mined at a grade of 0.21% U3O8, producing 757 lbs of U3O8, and 1.23% V2O5, producing 4,414 lbs of V2O5.  
 HOST Jurassic Morrison Formation, Salt Wash Member.  
 MNZ Uranium, vanadium.  
 DOI 1971

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REF U.S. Bur. of Mines, 1977, (Unpubl.). U.S. A.E.C., 1971, Production Records, Colorado.

## Payday 1-7

LOCATION: sec. 2, T. 50 N., R. 19 W.  
 LCRM Part of sec. 2 is in Juanita Arch 7 1/2'  
 QUAD Gateway 7 1/2'  
 PROD As of 1971, 12 tons had been mined at a grade of 0.11% U308, producing 27 lbs of U308, and 1.09% V205, producing 261 lbs of V205.  
 HOST Jurassic Morrison Formation, Salt Wash Member.  
 MNZ Uranium, vanadium, carnotite - tyuyamunite, high vanadium, low lime.  
 DOI 1971  
 REF U.S. Bur. of Mines, 1977, (Unpubl.). U.S. A.E.C., 1971, Production Records, Colorado.

## Payrock Group (Payrock No. 14 & 16, Payrock Mines)

LOCATION: sec. 17, T. 51 N., R. 18 W.  
 LCRM Also sec. 18-20.  
 QUAD Gateway 7 1/2'  
 PROD As of 1971, 761 tons had been mined at a grade of 0.25% U308, producing 3,812 lbs of U308, and 1.35% V205, producing 20,497 lbs of V205.  
 HOST Jurassic Morrison Formation, Salt Wash Member.  
 MNZ Uranium, vanadium, carnotite - tyuyamunite, high vanadium, low lime.  
 DOI 1971  
 REF U.S. Bur. of Mines, 1977, (Unpubl.). U.S. A.E.C., 1971, Production Records, Colorado.

## Peach 10 Incline 1 & 2 (Peach 7)

LOCATION: sec. 25, T. 50 N., R. 18 W.  
 QUAD Calamity Mesa 7 1/2'  
 PROD As of 1971, 3,469 tons had been mined at a grade of 0.28% U308, producing 19,473 lbs of U308, and 2.04% V205, producing 141,224 lbs of V205.  
 HOST Jurassic Morrison Formation, Salt Wash Member.  
 MNZ Uranium, vanadium, carnotite - tyuyamunite, high vanadium, low lime.  
 DOI 1971  
 REF U.S. Bur. of Mines, 1977, (Unpubl.). U.S. A.E.C., 1971, Production Records, Colorado.

## Pond & Schubert Group

LOCATION: sec. 4, T. 25 S., R. 26 E.  
 LCRM Also sec. 5, 6, 8, 17, 18, 19.  
 DOI 1971  
 REF U.S. A.E.C., 1971, Production Records, Colorado.

## Powder Horn Incline

LOCATION: sec. 15, T. 50 N., R. 18 W.  
 QUAD Calamity Mesa 7 1/2'  
 MNZ Uranium, vanadium.  
 DOI 1975  
 REF U.S. Bur. of Mines, 1977, (Unpubl.).

## PPT, Concentrate

LOCATION: sec. 10, T. 51 N., R. 19 W.  
 QUAD Gateway 7 1/2'  
 PROD As of 1971, 10 tons had been mined at a grade of 0.68% U308, producing 137 lbs of U308, and 1.73% V205, producing 346 lbs of V205.  
 MNZ Uranium, vanadium.  
 DOI 1971  
 REF U.S. Bur. of Mines, 1977, (Unpubl.). U.S. A.E.C., 1971, Production Records, Colorado.

## Protector

LOCATION: sec. 31, T. 51 N., R. 18 W.  
 QUAD Gateway 7 1/2'  
 PROD As of 1971, 6,291 tons had been mined at a grade of 0.29% U308, producing 36,293 lbs of U308, and 1.06% V205, producing 133,065 lbs of V205.  
 HOST Jurassic Morrison Formation, Salt Wash Member.  
 MNZ Uranium, vanadium, carnotite - tyuyamunite, high vanadium, low lime.  
 DOI 1971  
 REF U.S. Bur. of Mines, 1977, (Unpubl.). U.S. A.E.C., 1971, Production Records, Colorado.

## Purple Heart

LOCATION:  
 LCST UNLOCATABLE  
 PROD As of 1971, 9 tons had been mined at a grade of 0.18% U308, producing 33 lbs of U308, and 0.09% V205, producing 17 lbs of V205.  
 DOI 1971  
 REF U.S. A.E.C., 1971, Production Records, Colorado.

## Queen of the Hills (AT(05-1)-36, AEC Mining Lease) (C-G-26A, DOE Lease Tract)

LOCATION: sec. 9, T. 50 N., R. 18 W.  
 LCRM Part of sec. 9 is in Calamity Mesa 7 1/2'  
 QUAD Juanita Arch 7 1/2'  
 PROD Production included in AT(05-U-36), AEC Mining Lease.  
 MNZ Uranium, vanadium.  
 DOI 1975  
 REF U.S. Bur. of Mines, 1977, (Unpubl.).

## Radium 7

LOCATION: sec. 9, T. 50 N., R. 18 W.  
 LCRM The deposit extends to sec. 3 and 10. Part of sec. 9 is in Calamity Mesa 7 1/2'.  
 PROD As of 1971, 16 tons had been mined at a grade of 0.35% U308, producing 113 lbs of U308, and 2.53% V205, producing 811 lbs of V205.  
 HOST Jurassic Morrison Formation, Salt Wash Member.  
 MNZ Uranium, vanadium, carnotite - tyuyamunite, high vanadium, low lime.  
 DOI 1971  
 REF U.S. Bur. of Mines, 1977, (Unpubl.). U.S. A.E.C., 1971, Production Records, Colorado.

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## Rae Marie (Rae Marie No. 3)

LOCATION: sec. 18, T. 51 N., R. 104 W.  
 LCRM This deposit extends to sec. 28-33, T. 24 S., R. 26 E. (In Utah).  
 QUAD Polar Mesa 15'  
 PROD As of 1971, 586 tons had been mined at a grade of 0.39% U3O8, producing 4,525 lbs of U3O8, and 1.14% V2O5, producing 13,369 lbs of V2O5.  
 HOST Jurassic Morrison Formation, Salt Wash Member.  
 MNZ Uranium, vanadium, carnotite - tyuyamunite, high vanadium, low lime.  
 DOI 1971  
 REF U.S. Bur. of Mines, 1977, (Unpubl.). U.S. A.E.C., 1971, Production Records, Colorado.

## Rae Marie Group

LOCATION: sec. 33, T. 24 S., R. 26 E.  
 LCRM The deposit extends to sec. 28 and to sec. 13, 14, 23, and 24, T. 51 N., R. 20 W.  
 PROD As of 1971, 4,449 tons had been mined at a grade of 0.35% U3O8, producing 31,138 lbs of U3O8, and 1.24% V2O5, producing 110,284 lbs of V2O5.  
 HOST Jurassic Morrison Formation.  
 MNZ Uranium, vanadium, carnotite - tyuyamunite, high vanadium, low lime.  
 DOI 1971  
 REF U.S. Bur. of Mines, 1977, (Unpubl.). U.S. A.E.C., 1971, Production Records, Colorado.

## Rainbow

LOCATION: sec. 18, T. 50 N., R. 18 W.  
 QUAD Juanita Arch 7 1/2'  
 PROD As of 1971, 191 tons had been mined at a grade of 0.29% U3O8, producing 1,124 lbs of U3O8, and 1.38% V2O5, producing 5,259 lbs of V2O5.  
 HOST Jurassic Morrison Formation, Salt Wash Member.  
 MNZ Uranium, vanadium.  
 DOI 1971  
 REF U.S. Bur. of Mines, 1977, (Unpubl.). U.S. A.E.C., 1971, Production Records, Colorado.

## Rajah 1

LOCATION: sec. 36, T. 51 N., R. 20 W.  
 PROD As of 1971, 880 tons had been mined at a grade of 0.19% U3O8, producing 3,364 lbs of U3O8, and 0.59% V2O5, producing 10,367 lbs of V2O5.  
 HOST Jurassic Morrison Formation, Salt Wash Member.  
 MNZ Uranium, vanadium, uraninite (coffinite), high vanadium, low lime.  
 DOI 1971  
 REF U.S. Bur. of Mines, 1977, (Unpubl.). U.S. A.E.C., 1971, Production Records, Colorado.

## Rajah 11 & 63

LOCATION: sec. 35, T. 51 N., R. 20 W.  
 LCRM The deposit extends to sec. 36  
 QUAD Polar Mesa 15'  
 PROD As of 1971, 34,233 tons had been mined at a grade of 0.28% U3O8, producing 190,243

lbs of U3O8, and 1.06% V2O5, producing 728,209 lbs of V2O5.

HOST Jurassic Morrison Formation, Salt Wash Member.  
 MNZ Uranium, vanadium, uraninite (coffinite), high vanadium, low lime.  
 DOI 1971  
 REF U.S. Bur. of Mines, 1977, (Unpubl.). U.S. A.E.C., 1971, Production Records, Colorado.

## Rajah 30 (Rajah 30 Incline) (Rajah 30 Shaft)

LOCATION: sec. 1, T. 50 N., R. 20 W.  
 LCRM The deposit extends to sec. 36, T. 51 N., R. 20 W.  
 PROD As of 1971, 292,647 tons had been mined at a grade of 0.25% U3O8, producing 1,484,991 lbs of U3O8, and 0.78% V2O5, producing 4,538,721 lbs of V2O5.  
 HOST Jurassic Morrison Formation, Salt Wash Member.  
 MNZ Uranium, vanadium, uraninite (coffinite), high vanadium, low lime.  
 DOI 1971  
 REF U.S. Bur. of Mines, 1977, (Unpubl.). U.S. A.E.C., 1971, Production Records, Colorado.

## Rajah 49

LOCATION: sec. 30, T. 51 N., R. 19 W.  
 QUAD Polar Mesa 15'  
 MNZ Uranium, vanadium.  
 DOI 1975  
 REF U.S. Bur. of Mines, 1977, (Unpubl.).

## Rajah 67 & 68, 61, 62, and 63

LOCATION: sec. 36, T. 51 N., R. 20 W.  
 LCRM The deposit extends to sec. 35.  
 QUAD Polar Mesa 15'  
 PROD As of 1971, 112,673 tons had been mined at a grade of 0.27% U3O8, producing 598,010 lbs of U3O8, and 1.13% V2O5, producing 2,555,105 lbs of V2O5.  
 HOST Jurassic Morrison Formation, Salt Wash Member.  
 MNZ Uranium, vanadium, uraninite (coffinite), high vanadium, low lime.  
 DOI 1971  
 REF U.S. Bur. of Mines, 1977, (Unpubl.). U.S. A.E.C., 1971, Production Records, Colorado.

## Rajah 72

LOCATION: sec. 36, T. 51 N., R. 20 W.  
 PROD As of 1971, 114 tons had been mined at a grade of 0.31% U3O8, producing 711 lbs of U3O8, and 1.80% V2O5, producing 4,104 lbs of V2O5.  
 HOST Jurassic Morrison Formation, Salt Wash Member.  
 MNZ Uranium, vanadium, uraninite (coffinite), high vanadium, low lime.  
 DOI 1971  
 REF U.S. Bur. of Mines, 1977, (Unpubl.). U.S. A.E.C., 1971, Production Records, Colorado.

## Rajah No. 2

LOCATION: sec. 1, T. 50 N., R. 20 W.  
 PROD No production.  
 DOI 1971  
 REF U.S. A.E.C., 1971, Production Records, Colorado.

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## Rajah No. 4

LOCATION: sec. 11, T. 50 N., R. 19 W.  
 PROD No production.  
 DOI 1971  
 REF U.S. A.E.C., 1971, Production Records, Colorado.

## Rajah No. 9

LOCATION: sec. 6, T. 50 N., R. 19 W.  
 PROD No production.  
 DOI 1971  
 REF U.S. A.E.C., 1971, Production Records, Colorado.

## Ranch View

LOCATION: sec. 30, T. 50 N., R. 17 W.  
 QUAD Calamity Mesa 7 1/2'  
 PROD As of 1971, 15 tons had been mined at a grade of 0.50% U308, producing 149 lbs of U308, and 1.55% V205, producing 465 lbs of V205.  
 HOST Jurassic Morrison Formation, Salt Wash Member.  
 MNZ Uranium, vanadium.  
 DOI 1971  
 REF U.S. Bur. of Mines, 1977, (Unpubl.). U.S. A.E.C., 1971, Production Records, Colorado.

## Raven 3

LOCATION: sec. 32, T. 50 N., R. 17 W.  
 LCRM The deposit extends to sec. 31.  
 QUAD Calamity Mesa 7 1/2'  
 PROD As of 1971, 685 tons had been mined at a grade of 0.34% U308, producing 4,694 lbs of U308, and 1.56% V205, producing 21,426 lbs of V205.  
 HOST Jurassic Morrison Formation.  
 MNZ Uranium, vanadium, carnotite - tyuyamunite, high vanadium, low ilme.  
 DOI 1971  
 REF U.S. Bur. of Mines, 1977, (Unpubl.). U.S. A.E.C., 1971, Production Records, Colorado.

## Rena (Lost Marble)

LOCATION: sec. 19, T. 51 N., R. 18 W.  
 LCRM The deposit extends to sec. 18.  
 QUAD Gateway 7 1/2'  
 PROD As of 1971, 269 tons had been mined at a grade of 0.30% U308, producing 1,640 lbs of U308, and 1.34% V205, producing 7,224 lbs of V205.  
 HOST Jurassic Morrison Formation.  
 MNZ Uranium, vanadium, carnotite - tyuyamunite, high vanadium, low ilme.  
 DOI 1971  
 REF U.S. Bur. of Mines, 1977, (Unpubl.). U.S. A.E.C., 1971, Production Records, Colorado.

## Roger, Mike, et al claims

LOCATION: sec. 20, T. 51 N., R. 18 W.  
 QUAD Gateway 7 1/2'  
 MNZ Uranium, vanadium.  
 DOI 1975  
 REF U.S. Bur. of Mines, 1977, (Unpubl.).

## Ronnie 1 (C-G-27, DOE Lease Tract)

LOCATION: sec. 12, T. 50 N., R. 18 W.  
 LCRM The deposit extends to sec. 12.  
 QUAD Calamity Mesa 7 1/2'  
 PROD As of 1971, 11,817 tons had been mined at a grade of 0.31% U308, producing 73,215 lbs of U308, and 1.32% V205, producing 311,640 lbs of V205.  
 HOST Jurassic Morrison Formation, Salt Wash Member.  
 MNZ Uranium, vanadium.  
 DOI 1971  
 REF U.S. D.O.E., 1977, Lease Production Records, Colorado. U.S. Bur. of Mines, 1977, (Unpubl.). U.S. A.E.C., 1971, Production Records, Colorado.

## Ronnie 2 (C-G-27, DOE Lease Tract)

LOCATION: sec. 13, T. 50 N., R. 18 W.  
 LCRM The deposit extends to sec. 13.  
 QUAD Calamity Mesa 7 1/2'  
 PROD As of 1971, 1,606 tons had been mined at a grade of 0.30% U308, producing 9,576 lbs of U308, and 1.38% V205, producing 44,427 lbs of V205.  
 HOST Jurassic Morrison Formation, Salt Wash Member.  
 MNZ Uranium, vanadium, carnotite - tyuyamunite, high vanadium, low ilme.  
 DOI 1971  
 REF U.S. D.O.E., 1977, Lease Production Records, Colorado. U.S. Bur. of Mines, 1977, (Unpubl.). U.S. A.E.C., 1971, Production Records, Colorado.

## Rosebud

LOCATION: sec. 36, T. 51 N., R. 19 W.  
 QUAD Gateway 7 1/2'  
 PROD As of 1971, 519 tons had been mined at a grade of 0.41% U308, producing 4,254 lbs of U308, and 1.16% V205, producing 12,076 lbs of V205.  
 HOST Jurassic Morrison Formation.  
 MNZ Uranium, vanadium, carnotite - tyuyamunite, high vanadium, low ilme.  
 DOI 1971  
 REF U.S. Bur. of Mines, 1977, (Unpubl.). U.S. A.E.C., 1971, Production Records, Colorado.

## Rudot 1

LOCATION: sec. 34, T. 51 N., R. 19 W.  
 LCRM The deposit extends to sec. 33.  
 QUAD Gateway 7 1/2'  
 PROD As of 1971, 259 tons had been mined at a grade of 0.28% U308, producing 1,449 lbs of U308, and 1.28% V205, producing 6,614 lbs of V205.  
 HOST Jurassic Morrison Formation.  
 MNZ Uranium, vanadium, carnotite - tyuyamunite, high vanadium, low ilme.  
 DOI 1971  
 REF U.S. Bur. of Mines, 1977, (Unpubl.). U.S. A.E.C., 1971, Production Records, Colorado.

## Salute 3

LOCATION: sec. 25, T. 50 N., R. 18 W.

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QUAD Calamity Mesa 7 1/2'  
 PROD As of 1971, 13 tons had been mined at a grade of 0.24% U308, producing 63 lbs of U308, and 0.64% V205, producing 167 lbs of V205.  
 HOST Jurassic Morrison Formation, Salt Wash Member.  
 MNZ Uranium, vanadium.  
 DOI 1971  
 REF U.S. Bur. of Mines, 1977, (Unpubl.). U.S. A.E.C., 1971, Production Records, Colorado.

## Scott 2

LOCATION: sec. 27, T. 50 N., R. 18 W.  
 QUAD Calamity Mesa 7 1/2'  
 PROD As of 1971, 7 tons had been mined at a grade of 0.26% U308, producing 36 lbs of U308, and 1.37% V205, producing 192 lbs of V205.  
 HOST Jurassic Morrison Formation, Salt Wash Member.  
 MNZ Uranium, vanadium.  
 DOI 1971  
 REF U.S. Bur. of Mines, 1977, (Unpubl.). U.S. A.E.C., 1971, Production Records, Colorado.

## Shakin Quakie

LOCATION: sec. 35, T. 51 N., R. 20 W.  
 MNZ Uranium, vanadium.  
 DOI 1975  
 REF U.S. Bur. of Mines, 1977, (Unpubl.).

## Shelby Dean 2

LOCATION: sec. 34, T. 51 N., R. 19 W.  
 QUAD Gateway 7 1/2'  
 PROD As of 1971, 8 tons had been mined at a grade of 0.42% U308, producing 67 lbs of U308, and 2.71% V205, producing 434 lbs of V205.  
 HOST Jurassic Morrison Formation, Salt Wash Member.  
 MNZ Uranium, vanadium.  
 DOI 1971  
 REF U.S. Bur. of Mines, 1977, (Unpubl.). U.S. A.E.C., 1971, Production Records, Colorado.

## Silver Moon

LOCATION: NE1/4NE1/4 sec. 10, T. 1 N., R. 3 W.  
 LCRM This occurrence is in the Ute Meridian, and lies in the Rifle district near Loma, Colorado.  
 PROD As of 1971, 4 tons had been mined at a grade of 0.09% U308, producing 7 lbs of U308, and 0.57% V205, producing 46 lbs of V205.  
 MNZ This ore is residue from a vanadium ore buying station that operated in the 1940-1945 period.  
 DOI 1971  
 REF U.S. D.O.E., 1977, Lease Production Records, Colorado. U.S. A.E.C., 1971, Production Records, Colorado.

## Small Spot

LOCATION: sec. 9, T. 50 N., R. 18 W.  
 LCRM The deposit extends across sec. 4-9. Part of sec. 9 is in Calamity Mesa 7 1/2'.  
 PROD As of 1971, 2,616 tons had been mined at a grade of 0.68% U308, producing 35,372 lbs of U308, and 2.78% V205, producing 145,438

lbs of V205.

MNZ Uranium, vanadium.  
 DOI 1971  
 REF U.S. Bur. of Mines, 1977, (Unpubl.). U.S. A.E.C., 1971, Production Records, Colorado.

## Snow Shoe

LOCATION: sec. 12, T. 50 N., R. 18 W.  
 QUAD Calamity Mesa 7 1/2'  
 PROD As of 1971, 1,493 tons had been mined at a grade of 0.34% U308, producing 10,023 lbs of U308, and 1.33% V205, producing 39,669 lbs of V205.  
 HOST Jurassic Morrison Formation.  
 MNZ Uranium, vanadium, carnotite - tyuyamunite, high vanadium, low ilme.  
 DOI 1971  
 REF U.S. Bur. of Mines, 1977, (Unpubl.). U.S. A.E.C., 1971, Production Records, Colorado.

## Spring

LOCATION: sec. 12, T. 50 N., R. 18 W.  
 QUAD Calamity Mesa 7 1/2'  
 PROD As of 1971, 2,757 tons had been mined at a grade of 0.45% U308, producing 24,592 lbs of U308, and 1.99% V205, producing 109,535 lbs of V205.  
 HOST Jurassic Morrison Formation, Salt Wash Member.  
 MNZ Uranium, vanadium, carnotite - tyuyamunite, high vanadium, low ilme.  
 DOI 1971  
 REF U.S. Bur. of Mines, 1977, (Unpubl.). U.S. A.E.C., 1971, Production Records, Colorado.

## Stormy Treasure

LOCATION: sec. 35, T. 50 N., R. 18 W.  
 LCRM The deposit is located on Blue Mesa.  
 QUAD Calamity Mesa 7 1/2'  
 PROD As of 1971, 5 tons had been mined at a grade of 0.17% U308, producing 17 lbs of U308, and 0.82% V205, producing 82 lbs of V205.  
 HOST Jurassic Morrison Formation, Salt Wash Member.  
 MNZ Uranium, vanadium, carnotite - tyuyamunite, high vanadium, low ilme.  
 DOI 1971  
 REF U.S. Bur. of Mines, 1977, (Unpubl.). U.S. A.E.C., 1971, Production Records, Colorado.

## Strode 1

LOCATION:  
 LCST UNLOCATABLE  
 LCRM This deposit lies in the Gateway district.  
 PROD As of 1971, 3 tons had been mined at a grade of 0.93% U308, producing 56 lbs of U308, and 2.90% V205, producing 174 lbs of V205.  
 HOST Jurassic Morrison Formation, Salt Wash Member.  
 DOI 1971  
 REF U.S. A.E.C., 1971, Production Records, Colorado.

## Sun

LOCATION: sec. 12, T. 50 N., R. 18 W.  
 LCRM U.S. A.E.C. Production Records show location as Sec. 7, T. 50 N., R. 17 W.

# MESA COUNTY

QUAD Calamity Mesa 7 1/2'  
 PROD As of 1971, 309 tons had been mined at a grade of 0.51% U308, producing 3,130 lbs of U308, and 2.35% V205, producing 14,493 lbs of V205.  
 HOST Jurassic Morrison Formation, Salt Wash Member.  
 MNZ Uranium, vanadium, carnotite - tyuyamunite, high vanadium, low lime.  
 DOI 1971  
 REF U.S. Bur. of Mines, 1977, (Unpubl.). U.S. A.E.C., 1971, Production Records, Colorado.

## Sunflower (AT(05-1)-36), AEC Mining Lease)(C-G-26A, DOE Lease Tract)

LOCATION: sec. 4, T. 50 N., R. 18 W.  
 LCRM This deposit lies in the Gateway district, Calamity Mesa.  
 PROD As of 1971, 2,375 tons of ore had been mined at a grade of 0.21% U308. This production is included in the total for C-G-26A, DOE Lease Tract.  
 HOST Jurassic Morrison Formation, Salt Wash Member.  
 DOI 1971  
 REF U.S. D.O.E., 1977, Lease Production Records, Colorado. U.S. A.E.C., 1971, Production Records, Colorado.

## Sunspot, Cloud 1, Thundercloud

LOCATION: sec. 32, T. 51 N., R. 19 W.  
 LCRM U.S. A.E.C. Production Records list this deposit in sec. 22.  
 QUAD Polar Mesa 15'  
 PROD As of 1971, 10,044 tons had been mined at a grade of 0.29% U308, producing 57,627 lbs of U308, and 1.13% V205, producing 227,496 lbs of V205.  
 HOST Jurassic Morrison Formation.  
 MNZ Uranium, vanadium, carnotite - tyuyamunite, high vanadium, low lime.  
 DOI 1971  
 REF U.S. Bur. of Mines, 1977, (Unpubl.). U.S. A.E.C., 1971, Production Records, Colorado.

## Supply 11

LOCATION: sec. 35, T. 50 N., R. 18 W.  
 QUAD Calamity Mesa 7 1/2'  
 PROD As of 1971, 15 tons had been mined at a grade of 0.29% U308, producing 86 lbs of U308, and 1.29% V205, producing 386 lbs of V205.  
 HOST Jurassic Morrison Formation, Salt Wash Member.  
 MNZ Uranium, vanadium.  
 DOI 1971  
 REF U.S. Bur. of Mines, 1977, (Unpubl.). U.S. A.E.C., 1971, Production Records, Colorado.

## Supply 14

LOCATION: sec. 35, T. 50 N., R. 18 W.  
 QUAD Calamity Mesa 7 1/2'  
 PROD As of 1971, 14 tons had been mined at a grade of 0.11% U308, producing 31 lbs of U308, and 1.29% V205, producing 360 lbs of V205.  
 HOST Jurassic Morrison Formation, Salt Wash Member.

MNZ Uranium, vanadium, carnotite - tyuyamunite, high vanadium, low lime.  
 DOI 1971  
 REF U.S. Bur. of Mines, 1977, (Unpubl.). U.S. A.E.C., 1971, Production Records, Colorado.

## Surprise Group (Surprise No. 1-3)

### LOCATION:

LCST UNLOCATABLE  
 LCRM This deposit lies in the Gateway district.  
 PROD As of 1971, 142 tons had been mined at a grade of 0.20% U308, producing 576 lbs of U308, and 1.41% V205, producing 3,992 lbs of V205.  
 HOST Jurassic Morrison Formation, Salt Wash Member.  
 DOI 1971  
 REF U.S. A.E.C., 1971, Production Records, Colorado.

## Tespee Pole

LOCATION: sec. 36, T. 50 N., R. 18 W.  
 LCRM Calamity Mesa 7 1/2'  
 QUAD MOAB  
 PROD As of 1971, 7 tons had been mined at a grade of 0.10% U308, producing 33,710 lbs of U308, and 1.06% V205, producing 194,464 lbs of V205.  
 HOST Jurassic Morrison Formation, Salt Wash Member.  
 MNZ Uranium, vanadium, carnotite - tyuyamunite, high vanadium, low lime.  
 DOI 1971  
 REF U.S. Bur. of Mines, 1977, (Unpubl.). U.S. A.E.C., 1971, Production Records, Colorado.

## Tenderfoot Group (Payrock Group)

LOCATION: sec. 19, T. 51 N., R. 18 W.  
 QUAD Gateway 7 1/2'  
 PROD As of 1971, 8 tons had been mined at a grade of 0.21% U308, producing 34 lbs of U308, and 1.67% V205, producing 267 lbs of V205.  
 HOST Jurassic Morrison Formation, Salt Wash Member.  
 MNZ Uranium, vanadium.  
 DOI 1971  
 REF U.S. Bur. of Mines, 1977, (Unpubl.). U.S. A.E.C., 1971, Production Records, Colorado.

## The Cave

LOCATION: sec. 4, T. 50 N., R. 19 W.  
 LCRM Part of sec. 4 lies on Juanita Arch 7 1/2'.  
 QUAD Gateway 7 1/2'  
 MNZ Uranium and vanadium were mined.  
 DOI 1975  
 REF U.S. Bur. of Mines, 1977, (Unpubl.).

## The Duke

LOCATION: sec. 32, T. 51 N., R. 19 W.  
 LCRM This deposit lies in the Gateway district, Beaver Mesa.  
 QUAD Polar Mesa 15'  
 PROD As of 1971, 270 tons had been mined at a grade of 0.28% U308, producing 1,539 lbs of U308, and 1.20% V205, producing 6,465 lbs of V205.  
 HOST Jurassic Morrison Formation.

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DOI 1971  
REF U.S. A.E.C., 1971, Production Records, Colorado.

## Thorton Tunnel (Zee Lease)

LOCATION: sec. 31, T. 51 N., R. 19 W.  
LCRM The deposit extends to sec. 36, T 51 N,  
R 20 W.  
QUAD Polar Mesa 15'  
PROD As of 1971, 13,777 tons had been mined at  
a grade of 0.27% U308, producing 74,848  
lbs of U308, and 0.85% V205, producing 233,769  
lbs of V205.  
HOST Jurassic Morrison Formation, Salt Wash Member.  
MNZ Uranium, vanadium, carnotite - tyuyamunite,  
high vanadium, low lime.  
DOI 1971  
REF U.S. Bur. of Mines, 1977, (Unpubl.). U.S.  
A.E.C., 1971, Production Records, Colorado.

## Thunder Cloud No. 1 Mine

LOCATION: sec. 32, T. 51 N., R. 19 W.  
QUAD Polar Mesa 15'  
MNZ Uranium and vanadium were mined.  
DOI 1975  
REF U.S. Bur. of Mines, 1977, (Unpubl.).

## Trojan 18 & 20

LOCATION: sec. 23, T. 50 N., R. 18 W.  
QUAD Calamity Mesa 7 1/2'  
PROD As of 1971, 616 tons had been mined at a  
grade of 0.60% U308, producing 7,430 lbs  
of U308, and 2.11% V205, producing 25,988  
lbs of V205.  
HOST Jurassic Morrison Formation, Salt Wash Member.  
MNZ Uranium, vanadium.  
DOI 1971  
REF U.S. Bur. of Mines, 1977, (Unpubl.). U.S.  
A.E.C., 1971, Production Records, Colorado.

## Turner

LOCATION: S1/2S1/2 sec. 29, T. 50 N., R. 17 W.  
DOI 1958  
REF Hague, R. S., Goldenstein, S. J., and Blakey,  
E., Uranium - vanadium deposits of the Uravan  
Mineral Belt, 1958.

## Vanadium King 1 (Vana King No. 1)

LOCATION: sec. 19, T. 51 N., R. 18 W.  
QUAD Gateway 7 1/2'  
PROD As of 1971, 17 tons had been mined at a  
grade of 0.19% U308, producing 65 lbs of  
U308, and 1.40% V205, producing 476 lbs  
of V205.  
HOST Jurassic Morrison Formation, Salt Wash Sandstone  
Member.  
MNZ Uranium, vanadium.  
DOI 1971  
REF U.S. Bur. of Mines, 1977, (Unpubl.). U.S.  
A.E.C., 1971, Production Records, Colorado.

## Vanadium King 2 (Vana King No. 2)

LOCATION: sec. 19, T. 51 N., R. 18 W.

QUAD Gateway 7 1/2'  
PROD As of 1971, 48 tons had been mined at a  
grade of 0.46% U308, producing 439 lbs of  
U308, and 1.66% V205, producing 1,589 lbs  
of V205.  
HOST Jurassic Morrison Formation, Salt Wash Member.  
MNZ Uranium, vanadium.  
DOI 1971  
REF U.S. Bur. of Mines, 1977, (Unpubl.). U.S.  
A.E.C., 1971, Production Records, Colorado.

## Wasp 1

LOCATION: sec. 18, T. 50 N., R. 18 W.  
QUAD Juanita Arch 7 1/2'  
PROD As of 1971, 485 tons had been mined at a  
grade of 0.46% U308, producing 4,509 lbs  
of U308, and 2.11% V205, producing 20,512  
lbs of V205.  
HOST Jurassic Morrison Formation, Salt Wash Member.  
MNZ Uranium, vanadium, carnotite - tyuyamunite,  
high vanadium, intermed. lime.  
DOI 1971  
REF U.S. Bur. of Mines, 1977, (Unpubl.).

## Yellow Jacket 9

LOCATION: sec. 3, T. 50 N., R. 18 W.  
LCRM Part of sec. 3 is in Calamity Mesa 7 1/2'  
QUAD Gateway 7 1/2'  
PROD As of 1971, 194 tons had been mined at a  
grade of 0.34% U308, producing 1,324 lbs  
of U308, and 1.50% V205, producing 5,806  
lbs of V205.  
HOST Jurassic Morrison Formation, Salt Wash Member.  
MNZ Uranium, vanadium, carnotite - tyuyamunite,  
high vanadium, low lime.  
DOI 1971  
REF U.S. Bur. of Mines, 1977, (Unpubl.). U.S.  
A.E.C., 1971, Production Records, Colorado.

## Yellow Jacket 2

LOCATION: sec. 3, T. 50 N., R. 18 W.  
PROD As of 1971, 2,386 tons had been mined at  
a grade of 0.37% U308, producing 17,471  
lbs of U308, and 1.46% V205, producing 69,481  
lbs of V205.  
HOST Jurassic Morrison Formation, Salt Wash Member.  
DOI 1971  
REF U.S. A.E.C., 1971, Production Records, Colorado.

## Yellow Jacket 15

LOCATION: sec. 3, T. 50 N., R. 18 W.  
LCRM Part of sec. 3 is in Calamity Mesa 7 1/2'.  
QUAD Gateway 7 1/2'  
MNZ Uranium, vanadium.  
DOI 1975  
REF U.S. Bur. of Mines, 1977, (Unpubl.).

## Yellow Jacket Incline 1

LOCATION: sec. 3, T. 50 N., R. 18 W.  
LCRM Part of sec. 3 is in Calamity Mesa 7 1/2'.  
QUAD Gateway 7 1/2'



# MESA COUNTY

PROD As of 1971, 4,110 tons had been mined at a grade of 0.31% U3O8, producing 25,626 lbs of U3O8, and 1.34% V2O5, producing 110,433 lbs of V2O5.  
 HOST Jurassic Morrison Formation, Salt Wash Member.  
 MNZ Uranium, vanadium, carnotite - tyuyamunite, high vanadium, low lime.  
 DOI 1971  
 REF U.S. Bur. of Mines, 1977, (Unpubl.). U.S. A.E.C., 1971, Production Records, Colorado.

QUAD Polar Mesa 15'  
 PROD As of 1971, 101,285 tons had been mined at a grade of 0.25% U3O8, producing 510,449 lbs of U3O8, and 0.87% V2O5, producing 1,765,306 lbs of V2O5.  
 HOST Jurassic Morrison Formation, Salt Wash Member.  
 MNZ Uranium, vanadium, uraninite (coffinite), high vanadium, low lime.  
 DOI 1971  
 REF U.S. Bur. of Mines, 1977, (Unpubl.). U.S. A.E.C., 1971, Production Records, Colorado.

## Yellow Spot Group

LOCATION: sec. 12, T. 49 N., R. 20 W.  
 LCRM Also sec. 7, T. 47 N., R. 19 W.  
 QUAD Mount Waas 4 SE 7 1/2'  
 MAP MOAB  
 PROD No production.  
 DOI 1971  
 REF U.S. A.E.C., 1971, Production Records, Colorado.

## Yellowbird 1

LOCATION: N1/2NW1/4 sec. 32, T. 50 N., R. 17 W.  
 DOI 1958  
 REF Hague, R. S., Goldenstein, S. J., and Blakey, E., Uranium - vanadium deposits of the Uravan Mineral Belt, 1958.

## Yellowbird 2

LOCATION: N1/2 sec. 32, T. 50 N., R. 17 W.  
 DOI 1958  
 REF Hague, R. S., Goldenstein, S. J., and Blakey, E., Uranium - vanadium deposits of the Uravan Mineral Belt, 1958.

## Yellowbird 3

LOCATION: NW1/4NW1/4 sec. 32, T. 50 N., R. 17 W.  
 DOI 1958  
 REF Hague, R. S., Goldenstein, S. J., and Blakey, E., Uranium - vanadium deposits of the Uravan Mineral Belt, 1958.

## Yellowbird 5

LOCATION: NE1/4NE1/4 sec. 31, T. 50 N., R. 17 W.  
 DOI 1958  
 REF Hague, R. S., Goldenstein, S. J., and Blakey, E., Uranium - vanadium deposits of the Uravan Mineral Belt, 1958.

## Yellowbird 6

LOCATION: SE1/4NE1/4 sec. 31, T. 50 N., R. 17 W.  
 DOI 1958  
 REF Hague, R. S., Goldenstein, S. J., and Blakey, E., Uranium - vanadium deposits of the Uravan Mineral Belt, 1958.

## Zee Lease Rajah 49

LOCATION: sec. 6, T. 50 N., R. 19 W.  
 LCRM This deposit is listed by U.S. A.E.C. as also lying in sec. 36, T. 51 N., R. 20 W., and in sec. 30, 31, T. 51 N., R. 19 W.

## MINERAL COUNTY

No reported occurrences of uranium have been noted in Mineral County. The potential for reserves to be located within the county is small.

The county is almost entirely underlain by Tertiary volcanic rocks of the San Juan Mountain Uplift. These rocks are related to the volcanic calderas in and near the county, including the Bachelor, Creede, La Garita, and San Luis Calderas.

There is little probability that uranium reserves will be found in the county. However, the type that is the most probable to be found is associated with sediments or tuff in and around caldera systems. This type of occurrence is important in Mexico, but more research needs to be done on them.

## MOFFAT COUNTY

Uranium production from the county totals about 1,627,354 tons of ore, with an average grade of 0.13 percent  $U_3O_8$ , making it one of the largest producing counties in the state. The potential is very good for more reserves to be found.

Moffat County is situated in the northwestern corner of Colorado. Much of the county is topographically relatively flat, with two major exceptions. The first are the Elkhead Mountains, which represent erosional remnants of a Tertiary volcanic field that once covered the northeastern part of the county. Secondly the Uinta Mountains, with their Precambrian core, extend into the northwestern corner from Utah. The Uinta Arch and the Axial Basin Anticline traverse the county diagonally from northwest to southeast, dividing it nearly in half. Although other formations ranging in age from Cambrian to Pliocene are exposed locally, the Eocene Wasatch Formation and the Miocene Browns Park Formation mantle the majority of the county. Those formations directly overlie a regional unconformity and are the hosts for most of the uranium deposits and occurrences within the county.

The most important uranium occurrences are found in the Maybell district in the Browns Park Formation, a tuffaceous sandstone of continental origin. The major deposits in this district lie on the flanks of the Lay syncline, a large, shallow, east-trending structure. The largest deposits are found in sandstone, but a conglomerate at the base of the Browns Park Formation is also anomalously radioactive throughout the area. Small faults common within the district appear to have localized the ore to some degree. Both oxidized and unoxidized rocks contain ore. In the oxidized sandstones the ore is yellow, primarily due to iron oxides. The most common uranium minerals of oxidized ore are meta-autunite and uranophane. The unoxidized ore is gray or bluish due to finely divided pyrite, and the dominant uranium minerals are coffinite and uraninite. The five largest producing mines of this district are the Rob Rollo Mine, the Marge Mine, the Gertrude Mine, the Sage-Buella Mine, and the Johnson Lease, in that order.

The five properties in the Maybell district produced 1,621,780 tons of ore from the Browns Park Formation. The remainder was reported from other properties in the Maybell district and from the Skull Creek district. Although the Maybell district was inactive for many years, a number of the old mine workings have been reactivated, and additional new development is now taking place. The ore is now being heap-leached, and about 200,000 lb of  $U_3O_8$  ore is being produced yearly. The Skull Creek district is not presently active.

Areas with potential within the county will be those mantled by Browns Park Formation because of the size and features of the known deposits in that formation. Small occurrences are also reported from the Morrison Formation, Wasatch Formation, Entrada Sandstone, Curtis Formation, Carmel Formation, Iles Formation, Weber Formation, and Chinle Formation. Of those, the Wasatch Formation, because of its areal extent and numerous reported small occurrences, would appear to be the next most potential unit for uranium reserves. It should be noted, however, that large deposits are known within some of the other formations mentioned, but in other parts of the state and in Utah. The nearest and most important of those include deposits in the Morrison Formation, the Entrada Sandstone, and the Chinle Formation. These, plus several of the other formations containing occurrences are exposed along the scarp of the breached Skull Creek Anticline. This anticline, lying on the southeast edge of the Uinta Uplift, shows marked geochemical anomalies of several economic minerals, including uranium. The Skull Creek district lies on the southeast edge of the anticline and probably represents one area of concentrated mineralization. Based on the extensive geochemical anomaly and alteration of rock units, other such mineralized areas could exist along the flanks of the anticline or at depth. The area near the Tertiary Intrusives in the northeast could also be favorable.

# MOFFAT COUNTY

## 56- 1, Airborne Anomaly

LOCATION: sec. 13, T. 10 N., R. 101 W.

LCRM Directions to the deposit are given as follows:  
"Go 0.5 mile west of Maybell on Highway 40 to Highway 318. Follow Highway 318 for 51.2 miles to where it leaves Irish Canyon. Turn right onto a dry lake bed and go 0.3 mile, take left fork and go 0.1 mile to right fork. Continue straight 1.5 miles following a gully through sandstone and shale hogbacks to fork. Go left 0.3 mile to the top of the hogback, continue for 0.8 mile. The anomaly is on the south side of a wash, 400 ft east of the road."

QUAD Irish Canyon 7 1/2'

MAP VERNAL

DVEL Underground mining was carried out.

BKG .03 mr/hr

RNG To .25 mr/hr

HOST The host, probably the Jurassic Morrison Formation, is a light to medium gray, very fine-grained, cross-bedded sandstone. A one-ft bed of gray, carbonaceous siltstone and coal overlies the host sandstone.

MNZ Uranium mineralization were visible, but no uranium minerals were noted. There is sparse ilmonite staining and some CaCO<sub>3</sub> streaks in the radioactive horizon.

DOI 1955

REF U.S. Bur. of Mines, 1977, (Unpubl.). U.S. A.E.C., 1966, Preliminary Reconnaissance Reports, Moffat County, Colorado.

## 56- 2, Airborne Anomaly

LOCATION: NE1/4 sec. 2, T. 10 N., R. 100 W.

LCRM Directions to the deposit are given as follows:  
"Go 0.5 mile west of Maybell on Highway 318. Follow Highway 318 for 51.1 miles to where it leaves Irish Canyon. Continue 6.3 miles, turn right and go 5.5 miles to creek crossing. Continue 1.4 mile and turn right. Go 2.4 miles and turn right. Go 3.4 miles to creek crossing. 0.6 mile beyond creek, turn right off the road. The anomaly is approximately 600 ft ahead on the top of the hill."

QUAD G Spring 7 1/2'

MAP VERNAL

DVEL No production had taken place as of 1955.

RNG To .08 mr/hr

HOST The anomalous readings were taken on a buff to brown, silty mudstone. The surface beds are mapped as being the Eocene Wasatch Formation, with silty, red and brown variation mudstones and clays, and small lenses of white to gray, fine- to medium-grained, poorly-consolidated sandstones.

MNZ Gypsum and ilmonite stain are present in the rock, with CaCO<sub>3</sub> cement. There were no visible uranium minerals.

DOI 1955

REF U.S. A.E.C., 1966, Preliminary Reconnaissance Reports, Moffat County, Colorado.

## 56- 9, Airborne Anomaly

LOCATION: sec. 12, T. 10 N., R. 103 W.

LCRM Directions to the deposit are given as follows:  
"Go 0.5 mile west of Maybell, Colorado on US Hwy 40 to State Hwy 318. Follow Hwy 318 northwest 43.5 miles to State Hwy 10. Turn left and go 12.3 miles, turn right off of Hwy 10 and go 0.15 mile. Turn right and go 1.4 mile, turn left, go 0.3 mile, turn right off the road, go 0.3 mile north. The anomalous area is 600 ft east."

QUAD Lodore School 7 1/2'

MAP VERNAL

DVEL Underground mining was carried out.

BKG .01 mr/hr

RNG .03 to .1 mr/hr

HOST The host rock is the Miocene Browns Park Formation. It consists of white to buff sandstone and siltstone beds.

MNZ Uranium mineralization was detected, but there were no visible uranium minerals.

DOI 1954

REF U.S. Bur. of Mines, 1977, (Unpubl.). U.S. A.E.C., 1966, Preliminary Reconnaissance Reports, Moffat County, Colorado.

## 56-10, Airborne Anomaly

LOCATION: sec. 12, T. 10 N., R. 103 W.

LCRM Directions to the deposit are given as follows:  
"Go 0.5 mile west of Maybell, Colorado on US Hwy 40 to Colorado Hwy 318. Follow Hwy 318 northwest 43.5 miles to Hwy 10. Turn left and go 12.3 miles, turn right off of Hwy 10 and go 0.15 mile, turn right and go 1.5 mile to ranch buildings. The anomaly is on the southeast side of the ridge 1,500 ft S45°E of the ranch buildings."

QUAD Lodore School 7 1/2'

MAP VERNAL

DVEL Underground mining was carried out.

BKG .015 mr/hr

RNG .04 to .08 mr/hr

HOST The host is the Miocene Browns Park Formation. It consists of white to buff sandstone and siltstone beds with light gray shale beds. Brown to red, hard sandstone and quartzite pebbles and cobbles are abundant in the surface mantle.

MNZ Uranium mineralization was detected, but no uranium minerals were seen.

DOI 1955

REF U.S. Bur. of Mines, 1977, (Unpubl.). U.S. A.E.C., 1966, Preliminary Reconnaissance Reports, Moffat County, Colorado.

## 56-11, Airborne Anomaly

LOCATION: NW1/4 sec. 27, T. 10 N., R. 102 W.

LCRM Directions to the deposit are given as follows:  
"Go 0.5 mile west of Maybell, Colorado on US Hwy 40 to Colorado Hwy 318. Follow Hwy 318 northwest 43.5 miles to Hwy 10, turn left, go 6.0 miles, turn right off of Hwy 10. Go 0.9 mile to ranch buildings. Continue northwest on trail through barnyard. Go 1.7 mile. The anomalous area is 700 ft

# MOFFAT COUNTY

N22°E from this point."  
 QUAD Big Joe Basin 7 1/2'  
 MAP VERNAL  
 DVEL Underground mining was carried out.  
 BKG .01-.025 mr/hr  
 RNG .02 to .10 mr/hr  
 HOST The anomalous radioactive chert bed ranges from a few in. to three ft thick and is exposed on the surface of a hogback ridge. The chert bed has been eroded in places, leaving angular pebbles and boulders on the surface. Light gray, fine-grained, thin-bedded siliceous sandstones overlie and underlie the chert bed. CaCO<sub>3</sub> cement and fracture fillings are found locally in these sandstones. Surface beds are mapped as Miocene Browns Park Formation.  
 MNZ Uranium mineralization was detected, but there were no visible uranium minerals.  
 DOI 1955  
 REF U.S. Bur. of Mines, 1977, (Unpubl.). U.S. A.E.C., 1966, Preliminary Reconnaissance Reports, Moffat County, Colorado.

## 56-12, Airborne Anomaly

LOCATION: sec. 24, T. 9 N., R. 92 W.  
 LCRM Directions to the deposit are given as follows: "Start at Baggs, Wyoming and go 10 miles south following Colorado Highway 13 to Colorado Highway 3, turn right on Highway 3 and go 15.6 miles. Turn right off of Highway 3 onto a trail and go 0.6 mile west along the north side of a gully and a small reservoir. The center of the anomalous area is 300 ft north."  
 QUAD Craig NW 7 1/2'  
 MAP CRAIG  
 DVEL Underground mining was carried out.  
 BKG .02 mr/hr  
 RNG .03 to .08 mr/hr  
 HOST The surface beds in the vicinity are mapped as Eocene Wasatch Formation. No rock outcrops are visible in the anomalous area.  
 MNZ Uranium mineralization was detected, but no uranium minerals were seen.  
 DOI 1955  
 REF U.S. Bur. of Mines, 1977, (Unpubl.). U.S. A.E.C., 1966, Preliminary Reconnaissance Reports, Moffat County, Colorado.

## 56-13, Airborne Anomaly

LOCATION: sec. 18, T. 7 N., R. 92 W.  
 LCRM This anomaly is approximately 2,000 ft northwest of 56-14, Airborne Anomaly. Directions to the deposit are given as follows: "Beginning at Craig, Colorado, go 12.5 miles west on U.S. Highway 40. Turn right off Highway 40 onto Moffat County Road #15 and go 0.8 mile, turn left, go 1.8 mile. The anomalous area is 600 ft east."  
 QUAD Lay SE 7 1/2'  
 MAP CRAIG  
 DVEL Some underground mining was carried out, and a shallow pit was dug.  
 BKG .015 mr/hr  
 RNG .025 to .07 mr/hr

HOST The host is the Miocene Browns Park Formation. The anomalous area is covered by a mantle of light gray, to buff, to brown, fine- to medium-grained sand with sparse to locally abundant limonitic staining. A friable buff colored conglomerate was observed nearby.  
 MNZ Uranium mineralization was found, although no minerals were megascopically visible.  
 DOI 1955  
 REF U.S. Bur. of Mines, 1977, (Unpubl.). U.S. A.E.C., 1966, Preliminary Reconnaissance Reports, Moffat County, Colorado.

## 56-15, Airborne Anomaly

LOCATION: sec. 10, T. 6 N., R. 95 W.  
 LCRM This deposit is approximately 1,000 ft southeast of 56-16, Airborne Anomaly. Directions to the deposit are given as follows: "Begin at the Standard Gas Station in Maybell, Colorado. Go east on US Highway 40 for 2.6 miles. Turn right off Highway 40 onto a dirt road."  
 QUAD Citadel Plateau 15'  
 MAP VERNAL  
 DVEL Some underground mining was carried out, according to the U.S. Bur. of Mines.  
 BKG .01 mr/hr  
 RNG .03 to .25 mr/hr  
 HOST The host is the Miocene Browns Park Formation. The anomalous radioactivity occurs in a light gray siltstone bed with very thin streaks of limonite stain and what appears to be jarosite.  
 MNZ Uranium mineralization was found, although no minerals were megascopically identified.  
 DOI 1955  
 REF U.S. Bur. of Mines, 1977, (Unpubl.). U.S. A.E.C., 1966, Preliminary Reconnaissance Reports, Moffat County, Colorado.

## 56-16, Airborne Anomaly

LOCATION: sec. 10, T. 6 N., R. 95 W.  
 LCRM The deposit is approximately 1,000 ft northwest of 56-15, Airborne Anomaly. Directions to the deposit are given as follows: "Begin at the Standard Gas Station in Maybell, Colorado. Go east on US Highway 40 for 2.6 miles. Turn right off Highway 40 onto a dirt road."  
 QUAD Citadel Plateau 15'  
 MAP VERNAL  
 DVEL There is a small pit.  
 BKG .01 to .02 mr/hr  
 RNG .04 to .25 mr/hr  
 HOST The host rock is reported to be undivided Paleozoics, bounded by the Miocene Browns Park Formation. The anomalous radioactivity occurs in a buff to medium brown, muddy siltstone bed with some CaCO<sub>3</sub> and limonite staining. It also occurs in a surface mantle of limestone pebbles and cobbles in a silt and fine sand matrix.  
 MNZ Uranium mineralization was found, but no uranium minerals were megascopically visible.  
 DOI 1955

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REF U.S. Bur. of Mines, 1977 (Unpubl.). U.S. A.E.C., 1966, Preliminary Reconnaissance Reports, Moffat County, Colorado.

## 56-17, Airborne Anomaly

LOCATION: sec. 4, T. 5 N., R. 95 W.

LORM Directions to the deposit are given as follows: "Start at Maybell, Colorado and go 1.8 mile east on US Highway 40. Turn right off Highway 40 onto Moffat County Road 57 and go 5.3 miles to Moffat County Road 32. Turn left and go 1.5 miles."

QUAD Citadel Plateau 15'

MAP VERNAL

BKG .015 mr/hr

RNG .02 to .17 mr/hr

HOST The host is the Miocene Browns Park Formation. It is a series of sandstones, siltstones and claystones, with the radioactivity occurring in a very light gray siltstone bed. Some limonite staining is present.

STRC Two small faults cut the siltstone in the area of highest radioactivity. They strike N30°W and dip 65°SW.

MNZ There are no megascopically visible uranium minerals.

DOI 1955

REF U.S. A.E.C., 1966, Preliminary Reconnaissance Reports, Moffat County, Colorado.

## 57-10, Airborne Anomaly

LOCATION: SW1/4 sec. 24, T. 12 N., R. 102 W.

LORM Directions to the deposit are given as follows: "Beginning at the coal tipple in south Rock Springs, Wyoming, go south on oil surfaced State Highway 430 for 54.7 miles. Turn west for 1.7 miles, then turn south for 0.7 mile. Then turn west again for 0.5 mile. At this point you will be at the 1/4 corner between sec. 24 and 19. Then continue west for 0.8 mile. The anomaly lies about 1/4 mile to the southwest."

QUAD Sparks 7 1/2'

MAP VERNAL

DVEL Surface mining was carried out.

BKG .02 mr/hr

RNG .1 to .30 mr/hr

HOST The host rock is mapped as the Wasatch Formation but may be the Tipton Tongue of the Green River Formation, both of Eocene age. The radioactivity occurs in two, 250-ft square surface remnants, comprised of very hard, iron-stained, buff, fine-grained sandstone. The radioactivity is located in a dark, blue-black mineral band in the upper 1/4 in. of the sandstone.

STRC The anomalous area lies on the west flank of the small Haymower dome, which is a slightly elongated anticline trending north-south. The beds dip greatly to the west and strike approximately N10°E. The Uinta overthrust belt lies 3 to 4 miles south of this area.

MNZ Uranium mineralization was detected, but no visible uranium minerals or fluorescence were observed in the samples examined.

DOI 1956

REF U.S. Bur. of Mines, 1977, (Unpubl.). U.S. A.E.C., 1966, Preliminary Reconnaissance Reports, Moffat County, Colorado.

## Agnes No. 7 Claims

LOCATION: sec. 35, T. 7 N., R. 94 W.

LORM Directions to the deposit are given as follows: "From Maybell, Colorado go 10.0 miles east on Highway US 40. Radioactive anomaly is 3,700 ft due south of highway on south side of brown-colored hill."

QUAD Lay 7 1/2'

DVEL Some underground mining was carried out. Four 10 ft deep pits were dug and 10 holes were drilled in an area 100 ft by 100 ft.

BKG .02 mr/hr

RNG .05 to .12 mr/hr

HOST The radioactive zone is about 100 ft long and lies in the Miocene Browns Park Formation. The mineralization occurs in the basal conglomerate in a medium- to coarse-grained sandstone layer two ft thick. The highest radioactivity is in asphaltic and limonitic stained sandstone concretions. The entire hill in which the radioactive anomaly occurs shows a uniform brown limonitic color that is not characteristic of the area.

STRC A northwest trending fault lies 150 ft south of the anomaly.

MNZ There was some uranium mineralization detected, but no visible uranium minerals. There is abundant limonite staining in the mineralized zone and there is some petroliferous residue in some of the concretions.

DOI 1955

REF U.S. Bur. of Mines, 1977, (Unpubl.). U.S. A.E.C., 1966, Preliminary Reconnaissance Reports, Moffat County, Colorado.

## Airborne Anomaly

LOCATION: sec. 23, T. 9 N., R. 93 W.

QUAD Iron Springs 7 1/2'

MAP CRAIG

DVEL Some underground mining took place.

MNZ Uranium mineralization was detected.

DOI 1975

REF U.S. Bur. of Mines, 1977, (Unpubl.).

## B17- 15, Airborne Anomaly

LOCATION: sec. 19, T. 12 N., R. 94 W.

LORM Directions to the deposit are given as follows: "From stoplight in Baggs, Wyoming, go south on Highway 789 for 4.9 miles; turn right and go 30.0 miles on Moffat County Road 4; turn right and continue on Route 4 for 0.7 miles; turn right and go 3.2 miles; turn right and go 5.3 miles; turn right and go 0.06 miles; turn right and go 2.1 miles, turn left and go 1.2 miles; anomaly lies 1/2 mile to the west."

QUAD Bighole Butte 7 1/2'

MAP CRAIG

DVEL No exploration or production had taken place as of August 1954.

BKG .035 mr/hr

RNG .06 to .07 mr/hr

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HOST The sandstone bed containing the slightly abnormal radioactivity is eight ft thick and lies in the Tertiary Wasatch Formation. The sandstone is fine-grained, buff colored, poorly-consolidated, and is overlain and underlain by shale.

STRC Strata in this area have a gentle regional dip to the north.

MNZ No visible mineralization was observed.

DOI 1954

REF U.S. A.E.C., 1966, Preliminary Reconnaissance Reports, Moffat County, Colorado.

## B17- 89, Airborne Anomaly

LOCATION: sec. 14, T. 6 N., R. 94 W.

LCRM Directions to the deposit are given as follows: "Begin log at Standard Station in Maybell, Colorado. Go east on US Highway 40 for 8.2 miles and turn right on Moffat County Road 53; go 4.0 miles and turn left on Moffat County Road 118. Go 2.5 miles, turn left on Moffat County Road 17; go 0.7 mile; anomaly lies 0.7 mile to left across main north-south drainage in a small northwest-southwest tributary drainage."

QUAD Juniper Hot Springs 7 1/2'

MAP CRAIG

DVEL An underground operation was located at this site.

BKG .02 mr/hr

RNG .10 to .15 mr/hr

HOST The host is the Miocene Browns Park Formation. The radioactive beds are highly cross-bedded, lemon-yellow, fine- to coarse-grained, poorly-consolidated sandstones, with thin irregular stringers cemented by  $\text{CaCO}_3$ . Two to six in. layers of iron-cemented and stained sandstone with coatings and finely disseminated flakes of carbon were also noted. Interbedded with the sandstone are thin, irregular lenses of conglomerates of varied size and composition.

MNZ Uranium minerals were detected but none were visible.

DOI 1954

REF U.S. Bur. of Mines, 1977, (Unpubl.). U.S. A.E.C., 1966, Preliminary Reconnaissance Reports, Moffat County, Colorado.

## B17- 90, Airborne Anomaly

LOCATION: sec. 14, T. 6 N., R. 94 W.

LCRM B17-91, Airborne Anomaly lies about 1/4 mile south of B17-90, Airborne Anomaly, in sec. 15. Directions to the deposits are given as follows: "Begin log at Maybell, Colorado at the Standard Gas Station and Cafe. Go east on US Highway 40 for 8.2 miles, turn right on Moffat County Road 53; go 4.0 miles, take left fork on Moffat County Road 118; go 0.7 mile turn left on trail to north; go 0.6 mile. B17-90, Airborne Anomaly lies 0.5 mile to right on top of the next ridge. B17-91, Airborne Anomaly lies about 1/4 mile south of B17-90, Airborne Anomaly, closer to the point of the ridge."

QUAD Juniper Hot Springs 7 1/2'

MAP CRAIG

DVEL An underground operation was located at this site.

BKG .01 mr/hr

RNG .025 to .4 mr/hr

HOST The host is Miocene Browns Park Formation. The bed showing maximum radioactivity is ten in. thick and a reddish-brown, fine- to medium-grained, iron-stained ferruginous cemented, calcareous sandstone containing thin layers, and finely disseminated, flakes of carbon (hydrocarbon?). This bed is underlain by lemon-yellow, fine-grained, poorly-cemented, cross-bedded sandstone showing some abnormal radioactivity.

MNZ Uranium mineralization was detected but no uranium minerals were visible.

DOI 1954

REF U.S. Bur. of Mines, 1977, (Unpubl.). U.S. A.E.C., 1966, Preliminary Reconnaissance Reports, Moffat County, Colorado.

## B17- 93, Airborne Anomaly

LOCATION: sec. 10, T. 6 N., R. 94 W.

LCRM This deposit lies 300 yds north of B17-94, Airborne Anomaly. Directions to the deposit are given as follows: "Begin log at Standard Gas Stations and Cafe in Maybell, Colorado. Go east on US Highway 40 for 8.3 miles, then turn right on Moffat County Road 53; go 4.0 miles, take left fork on Moffat County Road 118; go 0.7 mile, turn left on trail to north; go 0.6 mile, B17-94 Anomaly lies 30 yds to right; go 0.1 mile; B17-93 Anomaly lies 20 yds to right in small drainage."

QUAD Juniper Hot Springs 7 1/2'

MAP CRAIG

DVEL Underground mining took place.

BKG .02 mr/hr

RNG .025 to .4 mr/hr

HOST The host is the Miocene Browns Park Formation. The maximum radioactivity occurs in a gray to yellow, fine- to coarse-grained, poorly-consolidated sandstone. Alteration bands of gray and yellow color, and minor amounts of limonite staining were noted. A three-ft sandstone strata underlying the radioactive horizon exhibits black staining and may contain minor amounts of asphaltic material or hydrocarbon minerals.

MNZ Uranium mineralization was found in the form of small grains of green to yellow unidentified uranium minerals disseminated through the sandstone.

DOI 1954

REF U.S. Bur. of Mines, 1977, (Unpubl.). U.S. A.E.C., 1966, Preliminary Reconnaissance Reports, Moffat County, Colorado.

## B17- 94, Airborne Anomaly

LOCATION: sec. 15, T. 6 N., R. 94 W.

LCRM This deposit lies 300 yds south of Airborne Anomaly B17-93. Directions to the deposit are given as follows: "Begin log at Standard Gas Station and Cafe at Maybell, Colorado. Go east on US Highway 40 for 8.2 miles, then turn right on Moffat County Road 53; to 4.0 miles and take left fork on Moffat

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County Road 118; go 0.7 mile and turn left on trail to north; go 0.6 mile; anomaly lies 30 yds to right in small tributary drainage."

QUAD Juniper Hot Springs 7 1/2'

MAP CRAIG

DVEL Underground operations were located on this site.

BKG .02 mr/hr

RNG .03 to 4.5 mr/hr

HOST The host is the Miocene Browns Park Formation. The beds are lemon-yellow, fine- to coarse-grained, cross-bedded, poorly-consolidated sandstone lenses with occasional thin, iron-stained layers. These sandstone lenses are interbedded with lenses of reddish-brown to gray, poorly-consolidated conglomerate. The reddish-brown conglomerate lenses are iron-cemented and have thin layers of carbon in them. All of the conglomerate lenses are of varying size and composition.

MNZ A bright green (copper silicate?) mineral is finely disseminated through a two-ft thick gray sandstone bed. Small black grains of carbon (asphaltic material) are abundant in the sandstone bed just below the horizon of maximum radioactivity. No uranium minerals are visible.

DOI 1954

REF U.S. Bur. of Mines, 1977, (Unpubl.). U.S. A.E.C., 1966, Preliminary Reconnaissance Reports, Moffat County, Colorado.

## B17-101, Airborne Anomaly

LOCATION: sec. 16, T. 7 N., R. 94 W.

LCRM Directions to the deposit are given as follows: "Begin log at Junction of Moffat County Road 53 with US Highway 40 about 8 miles east of Maybell, Colorado. Go west on US Highway 40 for 0.1 mile and turn right through fence gate; go 0.7 mile and turn left through fence; go 0.5 mile and take right fork through fence; go 1.4 miles; anomaly lies on round hill 100 ft to right."

QUAD Lay 7 1/2'

MAP CRAIG

DVEL Underground mining was carried out.

BKG .015 mr/hr

RNG To .07 mr/hr

HOST The host is the Miocene Browns Park Formation. The anomalous radioactivity is found in a white, fine- to coarse-grained, hard, calcium carbonate-cemented, slightly cross-bedded, iron-stained sandstone.

MNZ Uranium mineralization was detected but no uranium minerals were visible. Small amounts of "water-worn, black minerals" were noted, and these appeared to be thorium or rare-earth minerals.

DOI 1954

REF U.S. Bur. of Mines, 1977, (Unpubl.). U.S. A.E.C., 1966, Preliminary Reconnaissance Reports, Moffat County, Colorado.

## B17-102, Airborne Anomaly

LOCATION: sec. 16, T. 7 N., R. 93 W.

LCRM Directions to the deposit are given as follows: "Begin log at Texaco Station at Lay, Colorado. Go east on US Highway 40 for three miles. Turn left through gate 100 ft east of Chevron sign; go 0.5 mile north to tar paper shack; go north to east-west fence; follow fence to northwest around base of hill to stock dam about 0.7 mile; anomaly lies at east end of stock dam.

QUAD Lay SE 7 1/2'

MAP CRAIG

DVEL Underground mining was carried out.

BKG .025 mr/hr

RNG .08 to .12 mr/hr

HOST The host is the Miocene Browns Park Formation. The bed showing maximum radioactivity is a gray to reddish-brown, fine-grained, well-cemented sandstone, with thin coatings of carbon and calcium carbonate on the joint surfaces. This bed is overlain and underlain by several ft of alternating blue-gray to yellow, fine- to medium-grained, poorly-cemented, calcareous beds of sandstone.

MNZ Uranium mineralization was detected, but no uranium minerals were visible.

DOI 1954

REF U.S. Bur. of Mines, 1977, (Unpubl.). U.S. A.E.C., 1966, Preliminary Reconnaissance Reports, Moffat County, Colorado.

## B17-103, Airborne Anomaly

LOCATION: sec. 34, T. 9 N., R. 93 W.

LCRM Directions to the deposit are given as follows: "Begin log at Texaco Station at Lay, Colorado. Go east on US Highway 40 for 0.5 mile and turn left on Moffat County Road 17. Go 10 miles and turn left on Moffat County Road 7; go 3.5 miles turn right up faint trail on west side of northeast-southwest trending drainage. Go 0.5 mile; B17-103, Airborne Anomaly lies 20 yds to the right."

QUAD Iron Springs 7 1/2'

MAP CRAIG

DVEL Underground operations were located at this site.

BKG .02 mr/hr

RNG .03 to .22 mr/hr

HOST The host is reported to be the Tertiary Wasatch Formation. The maximum radioactivity occurs in a reddish-brown, poorly-consolidated, limonite-stained conglomerate lens of mixed composition. This lens is interbedded with lenses of iron-stained, poorly-bedded, poorly-consolidated, fine- to coarse-grained sandstone.

MNZ Uranium mineralization was found, but no uranium minerals were visible.

DOI 1954

REF U.S. Bur. of Mines, 1977 (Unpubl.). U.S. A.E.C., 1966, Preliminary Reconnaissance Reports, Moffat County, Colorado.

## B17-104, Airborne Anomaly

LOCATION: sec. 33, T. 9 N., R. 93 W.

LCRM Directions to the deposit are given as follows: "Begin log at Texaco Station at Lay, Colorado. Go east on US Highway 40 for 0.5 mile and



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turn left on Moffat County Road 17; go 10 miles and turn left on Moffat County Road 7; go 3.5 miles turn right on faint trail on west side of northeast-southwest drainage; go 0.3 mile; anomaly lies 60 yds to right across drainage."

QUAD Iron Springs 7 1/2'  
 MAP CRAIG  
 DVEL Surface and underground workings are present.  
 BKG .02 mr/hr  
 RNG .03 to .08 mr/hr  
 HOST The host is mapped as the Tertiary Wasatch Formation. The radioactive beds are lenses of brown, limonite stained, poorly-consolidated arkosic conglomerate, interbedded with fine- to coarse-grained, limonite-stained, cross-bedded, poorly-cemented lenses and beds of sandstone.  
 MNZ Uranium mineralization was detected, but no uranium minerals were visible.  
 DOI 1954  
 REF U.S. Bur. of Mines, 1977 (Unpubl.). U.S. A.E.C., 1966, Preliminary Reconnaissance Reports, Moffat County, Colorado.

## B17-105, Airborne Anomaly

LOCATION: sec. 33, T. 9 N., R. 93 W.

LCRM Directions to the deposit are given as follows: "Begin log at Texaco station in Lay, Colorado. Go east on U.S. Highway 40 for 0.5 mile and turn left on Moffat County road 17; go 9.9 miles and turn left on Moffat County road 7; go 3.5 miles, turn right off county road up faint trail on west side of north-south drainage; go 0.1 mile; anomaly lies 20 yds to right across drainage."

QUAD Iron Springs 7 1/2'  
 MAP CRAIG  
 BKG .02 mr/hr  
 RNG .07 to .12 mr/hr  
 HOST The host is mapped as being the Tertiary Wasatch Formation. The maximum radiation is found in a buff to reddish-brown, poorly-consolidated, limonite-stained, arkosic conglomerate.  
 MNZ Uranium mineralization was detected, but no uranium minerals were visible.  
 DOI 1954  
 REF U.S. Bur. of Mines, 1977, (Unpubl.). U.S. A.E.C., 1966, Preliminary Reconnaissance Reports, Moffat County, Colorado.

## B17-106, Airborne Anomaly

LOCATION: sec. 34, T. 9 N., R. 93 W.

LCRM This anomaly lies about 1/4 mile southwest of B17-107, Airborne Anomaly and about 3/4 miles south of B17-108, Airborne Anomaly. Directions to the deposit are given as follows: "Begin log at Texaco station in Lay, Colorado. Go east on U.S. Highway 40 for 0.5 mile, turn left on Moffat County road 17; go 9.9 miles and turn left on Moffat County road 7; go 5.3 miles, turn right through fence gate at tar paper shack; go 1.3 miles to edge of wheat field, keep to south edge of field for 0.1 mile, turn right on trail down small southeast trending drainage;

go 0.2 miles; anomaly lies 20 yds to left on point of north-south spur."

QUAD Iron Springs 7 1/2'  
 MAP CRAIG  
 BKG .02 mr/hr  
 RNG .04 to .15 mr/hr  
 HOST The host is mapped as the Tertiary Wasatch Formation. The anomaly occurs in interbedded lenses of yellow to brown, fine- to medium-grained, silty, moderately gray, silty arkosic conglomerate. These lenses are underlain by flat lying, light brown, silty, medium-grained, well-cemented sandstone beds containing thin lenses of gray, medium-grained, carbonaceous and micaceous sands.  
 MNZ Uranium mineralization was detected, but no uranium minerals were visible.  
 DOI 1954  
 REF U.S. Bur. of Mines, 1977, (Unpubl.). U.S. A.E.C., 1966, Preliminary Reconnaissance Reports, Moffat County, Colorado.

## B17-107, Airborne Anomaly

LOCATION: sec. 34, T. 9 N., R. 93 W.

LCRM This location lies about 3/4 mile southeast of B17-108, Airborne Anomaly, and about 1/4 mile northeast of B17-106, Airborne Anomaly. Directions to the deposit are given as follows: "Begin log at Texaco station in Lay, Colorado. Go east on U.S. Highway 40 for 0.5 mile, turn left on Moffat County road 17; go 9.9 miles and turn left on Moffat County road 7; go 5.3 miles, turn right through fence gate at tar paper shack; go 1.3 miles to edge of wheat field; keep to south edge of field for 0.1 mile, turn right on trail down small drainage; go 0.2 mile; Anomaly 106 lies 20 yds to left; Anomaly 107 lies 100 yds northeast on another small spur."

QUAD Iron Springs 7 1/2'  
 MAP CRAIG  
 BKG .02 mr/hr  
 RNG .04 to .12 mr/hr  
 HOST The host is the Tertiary Wasatch Formation. The anomaly occurs in interbedded lenses of yellow to brown, fine- to medium-grained, silty, moderately well-cemented sandstone and buff to gray, silty arkosic conglomerate.  
 MNZ Uranium mineralization was detected, but no uranium minerals were visible.  
 DOI 1954  
 REF U.S. Bur. of Mines, 1977, (Unpubl.). U.S. A.E.C., 1966, Preliminary Reconnaissance Reports, Moffat County, Colorado.

## B17-108, Airborne Anomaly

LOCATION: sec. 27, T. 9 N., R. 93 W.

LCRM B17-106 and B17-107, Airborne Anomaly, lie to the southeast of this anomaly. Directions to the deposit are given as follows: "Begin log at Texaco Station in Lay, Colorado. Go east on US Highway 40 for 0.5 mile; turn left on Moffat County Road 17; to 9.9 miles, turn left on Moffat County Road 7; go 5.3 miles, turn right through fence gate at

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tar paper shack; go 1.3 miles to edge of wheat field; anomaly lies 0.2 mile to northeast on small knoll in center of wheat field." Iron Springs 7 1/2'

QUAD  
MAP CRAIG  
BKG .02 mr/hr  
RNG .04 to .05 mr/hr  
HOST The host is the Tertiary Wasatch Formation. The maximum radioactivity occurs in a gray to buff, silty, sandy, arkosic conglomerate.  
MNZ No uranium minerals are visible.  
DOI 1954  
REF U.S. A.E.C., 1966, Preliminary Reconnaissance Reports, Moffat County, Colorado.

## B17-109, Airborne Anomaly

LOCATION: sec. 32, T. 9 N., R. 94 W.

LCRM Directions to the deposit are given as follows: "Begin log at Victory Hotel in Maybell, Colorado. Go north on Moffat County Road 19 for 13 miles, take right fork on Moffat County Road 6; go 2.8 miles, take right fork on Moffat County Road 8. Go 2.5 miles, turn left a fence gate at corner of wheat field; go 0.3 mile; anomaly lies on knoll to left between wheat field and road."

QUAD Adobe Springs 7 1/2'

MAP CRAIG  
DVEL Surface workings are present.

BKG .015 mr/hr

RNG .03 to .045 mr/hr

HOST The host is the Tertiary Wasatch Formation. The abnormal radioactivity occurs in a weathered, iron-stained, brown to gray, poorly-sorted, fine- to coarse-grained sand.

MNZ Uranium mineralization was detected, but no uranium minerals were visible.

DOI 1954

REF U.S. Bur. of Mines, 1977, (Unpubl.). U.S. A.E.C., 1966, Preliminary Reconnaissance Reports, Moffat County, Colorado.

## B17-110, Airborne Anomaly

LOCATION: sec. 23, T. 9 N., R. 94 W.

LCRM Directions to the deposit are given as follows: "Begin log at Victory Hotel in Maybell, Colorado. Go north on Moffat County Road 19 for 13.0 miles and take right fork on Moffat County Road 6; go 2.8 miles, take right fork on Moffat County Road 8; go 6.2 miles, turn left on Moffat County Road 11; go 2.0 miles across drainage. Go 0.1 mile, take right fork; go 0.4 mile, take faint trail to right; go 0.1 mile, cross small drainage; anomaly lies on low ridge straight ahead."

QUAD Adobe Spring 7 1/2'

MAP CRAIG

BKG .015 mr/hr

RNG .025 to .045 mr/hr

HOST The host is mapped as the Tertiary Wasatch Formation. The anomaly occurs in a brown, poorly-consolidated, slightly arkosic, fine- to coarse-grained sandstone.

MNZ No uranium minerals were visible.

DOI 1954

REF U.S. A.E.C., 1966, Preliminary Reconnaissance Reports, Moffat County, Colorado.

## B17-111, Airborne Anomaly

LOCATION: sec. 10, T. 9 N., R. 93 W.

LCRM Directions to deposit are given as follows: "Begin log at Texaco Station at Lay, Colorado. Go east on US Highway 40 for 0.5 mile; turn left on Moffat County Road 17; go 10.0 miles, turn left on Moffat County Road 7; go 10.0 miles to settlement of Great Divide, turn right at Conoco gas pump; go 3.2 miles turn right off main road; go 1.0 mile take right fork and follow main road; go 1.4 mile take right fork; go 0.6 mile, turn right and follow intermittent trail along north-south ridge; go 0.6 mile; anomaly lies 50 ft to west of dim trail just off crest of ridge." Great Divide 7 1/2' or Iron Springs 7 1/2'

QUAD

MAP CRAIG

DVEL Surface mining was carried out.

BKG .02 mr/hr

RNG To .07 mr/hr

HOST The host is mapped as the Tertiary Wasatch Formation. This anomaly occurs in a brown, weathered, slightly arkosic, poorly-sorted sand.

MNZ Uranium mineralization was detected, but no uranium minerals were identified.

DOI 1954

REF U.S. Bur. of Mines, 1977, (Unpubl.). U.S. A.E.C., 1966, Preliminary Reconnaissance Reports, Moffat County, Colorado.

## B17-112, Airborne Anomaly

LOCATION: sec. 3, T. 9 N., R. 93 W.

LCRM B17-113, Airborne Anomaly lies approximately 1/4 mile north of this anomaly, while B17-114, Airborne Anomaly lies approximately 1/4 mile south of this anomaly. Directions to the deposit are given as follows: "Begin log at Texaco Station in Lay, Colorado; go east on US Highway 40; 0.5 mile; turn left on Moffat County Road 17; go 10.0 miles, turn left on Moffat County Road 7; go 10.0 miles to Great Divide settlement; turn right at Conoco gas pump; go 1.2 miles to drainage with large drain pipe under road; anomaly lies 3/4 mile to the right on a north-south trending ridge."

QUAD Great Divide 7 1/2'

MAP CRAIG

DVEL Surface and underground mining was carried out.

BKG .02 mr/hr

RNG .03 to .05 mr/hr

HOST The host is mapped as the Tertiary Wasatch Formation. The anomaly occurs in a weathered, brown, moderately well-cemented, arkosic conglomerate.

MNZ Uranium mineralization was detected, but no uranium minerals were found.

DOI 1954

REF U.S. Bur. of Mines, 1977, (Unpubl.). U.S. A.E.C., 1966, Preliminary Reconnaissance Reports, Moffat County, Colorado.

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## B17-113, Airborne Anomaly

LOCATION: sec. 3, T. 9 N., R. 93 W.

LCRM B17-112, Airborne Anomaly lies approximately 1/4 mile south of this anomaly and B17-114, Airborne Anomaly lies approximately 1/2 mile south of this anomaly. Directions to the deposit are given as follows: "Begin log at Texaco station at Lay, Colorado; go east on U.S. Highway 40, 0.5 mile and turn left on Moffat County road 17. Go 10 miles and turn left on Moffat County road 7; go 10.0 miles to the Great Divide Settlement and turn right at Conoco gas pump; go 1.2 miles to drainage with large drain pipe under road. Anomaly lies 1/2 mile to right on north-south trending ridge." Great Divide 7 1/2'

QUAD  
MAP CRAIG

DVEL Several small holes have been dug.

BKG .02 mr/hr

RNG .03 to .04 mr/hr

HOST The host is mapped as the Tertiary Wasatch Formation. The abnormal radioactivity occurs in a weathered, brown, silty, fine- to coarse-grained, moderately well- cemented sandstone. This bed is overlain by a thin bed of arkosic conglomerate.

MNZ No uranium minerals were visible.

DOI 1954

REF U.S. A.E.C., 1966, Preliminary Reconnaissance Reports, Moffat County, Colorado.

## B17-114, Airborne Anomaly

LOCATION: sec. 3, T. 9 N., R. 93 W.

LCRM B17-113, Airborne Anomaly lies approximately 1/2 mile north of the anomaly and B17-112, Airborne Anomaly lies approximately 1/4 mile north. Directions to the deposit are given as follows: "Begin log at Lay, Colorado at Texaco station; go east on U.S. Highway 40 for 0.5 mile; turn left on Moffat County Road No. 17; go 10.0 miles, turn left on Moffat County road No. 7; Go 10.0 miles to Great Divide Settlement; turn right at Conoco gas pump. Go 1.2 miles to drainage with large drain pipe under road. Anomaly lies one mile to right on north-south trending ridge." Great Divide 7 1/2'

QUAD

MAP CRAIG

BKG .02 mr/hr

RNG .025 to .23 mr/hr

HOST The host is reported to be the Tertiary Wasatch Formation. The abnormal radioactivity occurs in a weathered, brown, intensely iron-stained, moderately well-cemented, arkosic conglomerate.

MNZ Uranium mineralization was found, but no uranium minerals were visible.

DOI 1954

REF U.S. Bur. of Mines; 1977, (Unpubl.). U.S. A.E.C., 1966, Preliminary Reconnaissance Reports, Moffat County, Colorado.

## B17-115, Airborne Anomaly

LOCATION: sec. 14, T. 9 N., R. 93 W.

LCRM Directions to the deposit are given as follows: "Begin log at Texaco Station at Lay, Colorado. Go east on US Highway 40 for 0.5 mile and turn left on Moffat County Road 17; go 10 miles and turn left on Moffat County Road 7; continue to junction of Moffat County Roads 7 and 6. Return 0.1 mile south of this junction; take road to east; go 0.7 mile, take right fork; go 0.7 mile; make left turn; go 1.0 mile to road angling to right. Anomaly lies 100 ft to left on a low, east-west ridge." Iron Springs 7 1/2'

QUAD

MAP CRAIG

DVEL Surface and underground workings are present. A small three ft pit was dug.

BKG .02 mr/hr

RNG .04 to .18 mr/hr

HOST The host is mapped as the Tertiary Wasatch Formation. The maximum radioactivity occurs in a brown to yellow, iron-stained, poorly-cemented, arkosic conglomerate.

MNZ Uranium mineralization was found, but no uranium minerals were visible.

DOI 1954

REF U.S. Bur. of Mines, 1977 (Unpubl.). U.S. A.E.C., 1966, Preliminary Reconnaissance Reports, Moffat County, Colorado.

## B17-117, Airborne Anomaly

LOCATION: sec. 24, T. 9 N., R. 93 W.

LCRM Directions to the deposit are given as follows: "Begin log at Lay, Colorado at Texaco Station. Go east on US Highway 40 for 0.5 mile and turn on Moffat County Road 17. Go 10.0 miles and turn left on Moffat County Road 7; go 0.8 mile; take road angling to right just north of farm house; go 2.4 miles, take left fork; go 2.0 miles, take left fork; go 0.8 mile, take trail to left toward stock dam; follow trail up drainage for 0.3 miles to major fork in drainage; go 0.1 mile. Anomaly lies to left on point of ridge in fork of drainage." Iron Springs 7 1/2'

QUAD

MAP CRAIG

DVEL Surface and underground workings are present.

BKG .015 mr/hr

RNG To .035 mr/hr

HOST The host is mapped as Tertiary Wasatch Formation. The abnormal radioactivity occurs in a 20 ft thickness of yellow-brown to brown, poorly-cemented, silty, fine-grained sandstone.

MNZ Uranium mineralization was found, but no uranium minerals are visible. Small amounts of mica and abundant limonite were noted.

DOI 1954

REF U.S. Bur. of Mines, 1977, (Unpubl.). U.S. A.E.C., 1966, Preliminary Reconnaissance Reports, Moffat County, Colorado.

## B17-118, Airborne Anomaly

LOCATION: sec. 32, T. 10 N., R. 93 W.

LCRM Directions to the deposit are given as follows: "Begin log at Lay, Colorado at Texaco Station. Go east on US Highway 40 for 0.5 mile and

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turn left on Moffat County Road 17. Go 10.0 miles, turn left on Moffat County Road 7; go 11.1 miles, take left fork at bridge; go 1.9 miles, turn left at cattle guard; go 0.5 mile; turn sharp left; go 0.6 mile to corral; go 0.2 mile to end of road; turn up dim trail on north-south drainage bank; go to fence. Anomaly lies 1/2 mile southeast on top of hill."

QUAD Great Divide 7 1/2'  
MAP CRAIG  
DYEL Surface and underground workings are present.  
BKG .02 mr/hr  
RNG .03 to .07 mr/hr  
HOST The host is mapped as being the Tertiary Wasatch Formation. The anomaly occurs in a moderately well-consolidated, slightly arkosic, buff to brown conglomerate.  
MNZ Uranium mineralization was detected, but no uranium minerals were visible.  
DOI 1954  
REF U.S. Bur. of Mines, 1977, (Unpubl.). U.S. A.E.C., 1966, Preliminary Reconnaissance Reports, Moffat County, Colorado.

## B17-119, Airborne Anomaly

LOCATION: sec. 32, T. 10 N., R. 93 W.

LCRM This anomaly lies approximately 1/4 mile north of B17-120, Airborne Anomaly. Directions to the deposit are given as follows: "Begin log at Texaco station in Lay, Colorado. Go east on U.S. Highway 40 for 0.5 miles and turn left on Moffat County road No. 17; Go 10.0 miles, turn left on Moffat County road No. 7; Go 11.1 miles through settlement of Great Divide and take left fork at bridge; go 1.9 miles, turn left at cattle guard; go 0.3 mile, make sharp left turn; go 0.6 mile to corral at fence gate; go 0.3 mile to road end; Anomaly lies 175 ft to southeast on east bank of north-south drainage."

QUAD Great Divide 7 1/2'  
MAP CRAIG  
BKG .02 mr/hr  
RNG .03 to .07 mr/hr  
HOST The host is mapped as the Tertiary Wasatch Formation. The anomaly occurs in a yellow to buff to brown, fine- to coarse-grained, cross-bedded, moderately well-cemented, limonite-stained, slightly arkosic sandstone. Some thin lenses of conglomerate are present.  
MNZ Uranium mineralization was detected, but no uranium minerals were visible.  
DOI 1954  
REF U.S. Bur. of Mines, 1977, (Unpubl.). U.S. A.E.C., 1966, Preliminary Reconnaissance Reports, Moffat County, Colorado.

## B17-120, Airborne Anomaly

LOCATION: sec. 32, T. 10 N., R. 93 W.

LCRM This anomaly lies approximately 1/4 mile south of B17-119, Airborne Anomaly. Directions to the deposit are given as follows: "Begin log at Texaco station at Lay, Colorado; go east on U.S. Highway 40 for 0.5 mile; turn left on Moffat County road 17; go 10.0

miles, turn left on Moffat County road 7; go 11.1 miles through the settlement of Great Divide and take left fork at the bridge and go 1.9 miles; turn left at cattle guard; go 0.3 mile, make sharp left turn; go 0.6 mile to corral at fence gate; go 0.2 mile to end of road; anomaly lies 300 ft southeast on east side of north-south drainage."

QUAD Great Divide 7 1/2'  
MAP CRAIG  
BKG .02 mr/hr  
RNG .03 to .07 mr/hr  
HOST The host is mapped as the Tertiary Wasatch Formation. The anomaly occurs in a yellow, buff to brown, fine- to coarse-grained, cross-bedded, moderately well-cemented, limonite-stained, slightly arkosic sandstone. Some thin lenses of conglomerate are present.  
MNZ Uranium mineralization was detected, but no uranium minerals were visible.  
DOI 1954  
REF U.S. Bur. of Mines, 1977, (Unpubl.). U.S. A.E.C., 1966, Preliminary Reconnaissance Reports, Moffat County, Colorado.

## B17-121, Airborne Anomaly

LOCATION: sec. 32, T. 10 N., R. 93 W.

LCRM Directions to the deposit are given as follows: "Begin log at Lay, Colorado at Texaco station. Go east on U.S. Highway 40 for 0.5 mile and turn left on Moffat County road 17. Go 10 miles and turn left on Moffat County road 7; go 11.1 miles through small settlement of Great Divide and take left fork at small bridge; go 1.9 miles, turn left at cattle guard; go 0.2 mile, cross drainage; go 0.3 mile and make sharp left turn; go 0.6 mile to corral at fence gate; go 0.2 mile to road's end. Anomaly lies 30 yds to right on small hill."

QUAD Great Divide 7 1/2'  
MAP CRAIG  
BKG .02 mr/hr  
RNG .04 to .07 mr/hr  
HOST The host is mapped as the Tertiary Wasatch Formation. The main anomaly occurs in a light buff to brown, weathered sandstone containing arkosic and quartzitic pebbles. Considerable limonite and hematite is present as products of weathering. Maximum size of the contained pebbles is one half inch in diameter. The thickness of the anomalous bed is 10 ft.  
MNZ Uranium mineralization was detected, but no uranium minerals were visible.  
DOI 1954  
REF U.S. Bur. of Mines, 1977, (Unpubl.). U.S. A.E.C., 1966, Preliminary Reconnaissance Reports, Moffat County, Colorado.

## B17-122, Airborne Anomaly

LOCATION: sec. 29, T. 10 N., R. 93 W.

LCRM Directions to the deposit are given as follows: "Begin log at Texaco Station at Lay, Colorado; go east on US Highway 40 for 0.5 mile; turn left on Moffat County Road 17; go 10.0 miles,

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turn left on Moffat County Road 7; to 11.1 miles through settlement of Great Divide and take left fork at bridge. Go 1.9 miles, turn left at cattle guard; go 0.5 miles, make sharp left turn; go 0.8 mile to end of road. Anomaly lies 150 yds to left on east side of small tributary with northeast-southwest drainage."

QUAD Great Divide 7 1/2'  
MAP CRAIG  
DVEL Surface and underground workings are present.  
BKG .02 mr/hr  
RNG .03 to .07 mr/hr  
HOST The anomaly occurs in what appears to be a stream deposited sand. It could possibly be a part of the Tertiary Wasatch Formation. The sand is light brown, unconsolidated, alluvial and micaceous. A considerable quantity of heavy, black mineral grains was noted. The sand is about 20 ft thick.  
MNZ Uranium mineralization was detected, but no minerals were visible.  
DOI 1954  
REF U.S. Bur. of Mines, 1977, (Unpubl.). U.S. A.E.C., 1966, Preliminary Reconnaissance Reports, Moffat County, Colorado.

## B17-123, Airborne Anomaly

LOCATION: sec. 32, T. 10 N., R. 93 W.

LCRM Directions to the deposit are given as follows: "Begin log at Texaco station in Lay, Colorado. Go east 0.5 mile, turn left off of U.S. Highway 40 on Moffat County road 17; go 10 miles, turn left on Moffat County road No. 7; go 11.1 miles through settlement of Great Divide; take left fork at bridge; go 1.9 miles, turn left at cattle guard; go 0.2 miles across drainage; go 0.3 mile, take sharp left turn; go 0.6 mile to corral and fence gate; go 0.2 mile to north-south trending drainage; turn right up west side of drainage; go 0.4 mile to fence, continue 0.3 mile; anomaly lies 150 ft to right on low ridge."

QUAD Great Divide 7 1/2'  
MAP CRAIG  
BKG .02 mr/hr  
RNG .03 to .045 mr/hr  
HOST The host is the Tertiary Wasatch Formation. Abnormal radiation occurs in a yellow-brown, fine- to coarse-grained, moderately well-cemented, limonite-stained sandstone.  
MNZ No uranium mineralization was visible.  
DOI 1954  
REF U.S. A.E.C., 1966, Preliminary Reconnaissance Reports, Moffat County, Colorado.

## B17-124, Airborne Anomaly

LOCATION: sec. 19, T. 9 N., R. 93 W.

LCRM Directions to the deposit are given as follows: "Begin log at Texaco station at Lay, Colorado; go east on U.S. Highway 40 for 0.5 mile and turn left on Moffat County road 17; Go 10.0 miles and turn left on Moffat County road 7; go 4.5 miles, turn left on Moffat County road 6; go 2.4 miles, turn left at row of trees; go 1.2 miles, turn left at

end of trees parallel to fence; go 0.1 mile, turn right through fence in front of farm house; anomaly lies on point of low ridge on east side of north-south trending drainage."

QUAD Adobe Springs 7 1/2' or Iron Springs 7 1/2'  
MAP CRAIG  
BKG .015 mr/hr  
RNG .05 to .08 mr/hr  
HOST The host is mapped as the Tertiary Wasatch Formation. The anomaly occurs in a poorly-consolidated, brown, poorly-sorted, slightly arkosic sandstone.  
MNZ Uranium mineralization was detected but no uranium minerals were visible.  
DOI 1954  
REF U.S. Bur. of Mines, 1977, (Unpubl.). U.S. A.E.C., 1966, Preliminary Reconnaissance Reports, Moffat County, Colorado.

## B17-125, Airborne Anomaly

LOCATION: sec. 26, T. 11 N., R. 93 W.

LCRM Directions to the deposit are given as follows: "Begin log at Texaco station in Lay, Colorado. Go east on U.S. Highway 40 for 0.5 miles, turn left on Moffat County road 17. Go 10.0 miles, turn left on Moffat County road 7; go 11.0 miles through settlement of Great Divide, turn right on Moffat County road 9; go 8 miles on main road; anomaly lies 800 ft to left on top of low ridge."

QUAD Thornburgh Gulch 7 1/2'  
MAP CRAIG  
BKG .015 mr/hr  
RNG .045 to .06 mr/hr  
HOST The host is mapped as the Tertiary Wasatch Formation. The main anomaly occurs in a thin surface mantle of buff to light brown, slightly arkosic gravel. This mantle covers beds of white to red to brown, iron-stained, fine-grained sandstone. Radiometric readings increase with depth.  
MNZ Uranium mineralization was detected, but no uranium minerals are visible.  
DOI 1954  
REF U.S. Bur. of Mines, 1977, (Unpubl.). U.S. A.E.C., 1966, Preliminary Reconnaissance Reports, Moffat County, Colorado.

## B17-126, Airborne Anomaly

LOCATION: sec. 9, T. 10 N., R. 94 W.

LCRM Directions to the deposit are given as follows: "Begin log at Lay, Colorado at Texaco station. Go east on U.S. Highway 40 for 0.5 mile, turn left on Moffat County road 17; go 10 miles, turn left on Moffat County road 7; go 11 miles, take left fork at small bridge just north of settlement of Great Divide; go 6 miles to old windmill on right, turn left up trail on west side of drainage. Go 2.5 miles, turn right on very faint trail for 0.4 mile. Turn left off trail and keep on top of ridge. Go 0.8 mile to major fork in drainage; anomaly lies 300 ft to northeast."

QUAD Mayberry Spring 7 1/2'  
MAP CRAIG  
BKG .015 mr/hr

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RNG .04 to .045 mr/hr  
 HOST The host is mapped as the Tertiary Wasatch Formation. The occurrence lies in a gray, weathered, fine- to coarse-grained sandstone.  
 MNZ Uranium mineralization was detected, but no uranium minerals were visible.  
 DOI 1954  
 REF U.S. Bur. of Mines, 1977, (Unpubl.). U.S. A.E.C., 1966, Preliminary Reconnaissance Reports, Moffat County, Colorado.

## B17-127, Airborne Anomaly

LOCATION: sec. 4, T. 9 N., R. 94 W.

LCRM Directions to the deposit are given as follows: "Begin log at Victory Hotel in Maybell, Colorado. Go north on Moffat County road 19 for 13 miles, take right fork on Moffat County road 6; go 5.8 miles, take left fork; go 1 mile, take left fork; go 3.1 miles to farm buildings, turn left on faint trail on south side of creek; go 0.8 mile to fence gate; go 0.2 mile, cross drainage of shack; anomaly lies on low ridge next to drainage 1/2 mile to the northwest."

QUAD Mayberry Spring 7 1/2'

MAP CRAIG

BKG .015 mr/hr

RNG .03 to .07 mr/hr

HOST The host is mapped as the Tertiary Wasatch Formation. The anomaly occurs in a brown, coarse-grained, iron-stained, slightly arkosic, placer sand. Small amounts of heavy black minerals are present.

MNZ Uranium mineralization was detected, but no uranium minerals were visible.

DOI 1954

REF U.S. Bur. of Mines, 1977, (Unpubl.). U.S. A.E.C., 1966, Preliminary Reconnaissance Reports, Moffat County, Colorado.

## B17-128, Airborne Anomaly

LOCATION: sec. 4, T. 9 N., R. 94 W.

LCRM Directions to the deposit are given as follows: "Begin log at Victory Hotel in Maybell, Colorado. Go north on Moffat County road 19 for 13 miles, take right fork on Moffat County road 6; go 5.8 miles, take left fork; go 1 mile, take left fork; go 3.1 miles to farm buildings, turn left on faint trail along south side of creek; go 0.6 mile; anomaly lies 1/2 mile to right across drainage on top of terrace."

QUAD Mayberry Spring 7 1/2'

MAP CRAIG

BKG .015 mr/hr

RNG .03 to .045 mr/hr

HOST The host is mapped as the Tertiary Wasatch Formation. The anomaly occurs in a brown, coarse-grained, iron-stained, slightly arkosic placer sand deposit.

MNZ Uranium mineralization was detected but no uranium minerals were visible.

DOI 1954

REF U.S. Bur. of Mines, 1977, (Unpubl.). U.S. A.E.C., 1966, Preliminary Reconnaissance Reports, Moffat County, Colorado.

## B17-129, Airborne Anomaly

LOCATION: sec. 8, T. 10 N., R. 93 W.

LCRM Directions to the deposit are given as follows: "Begin log at Texaco station in Lay, Colorado. Go east on U.S. Highway 40 for 0.5 mile and turn left on Moffat County road 17; go 10 miles and turn left on Moffat County road 7; go 11.1 miles through settlement of Great Divide, take left fork at bridge; go 1.9 miles, turn right at cattle guard; go 4 miles; at farm house take trail south along east side of wheat field for 0.4 mile; anomaly lies on low north-south trending ridge 600 ft to left."

QUAD Great Divide 7 1/2'

MAP CRAIG

BKG .015 mr/hr

RNG .025 to .07 mr/hr

HOST The host is mapped as the Tertiary Wasatch Formation. The anomaly is confined to a slightly arkosic sand and coarse gravel which mantles the area. Underlying this mantle are thin beds of gray to iron-brown, fine- to coarse-grained sandstone.

MNZ Uranium mineralization was detected, but no uranium minerals were visible.

DOI 1954

REF U.S. Bur. of Mines, 1977, (Unpubl.). U.S. A.E.C., 1966, Preliminary Reconnaissance Reports, Moffat County, Colorado.

## B17-130, Airborne Anomaly

LOCATION: sec. 22, T. 8 N., R. 96 W.

LCRM Directions to the deposit are given as follows: "Begin log at Victory Hotel in Maybell, Colorado; go north on Moffat County road 19 for 8.4 miles; turn left on trail just past old farm house; go 1.8 miles; turn right and cross drainage; go 0.3 mile, take left fork; go 0.4 mile, turn left and cross drainage; go 0.3 mile, turn left on caterpillar road to top of hill; go 0.7 mile, take left fork and follow caterpillar road; go 1.4 miles. Anomaly lies 350 ft to left among trees on side of ridge."

QUAD Maybell 15'

MAP VERNAL

BKG .01 mr/hr

RNG .03 to .045 mr/hr

HOST The host is the Tertiary Wasatch Formation. The maximum radiometric readings occur in a brown, fine-grained, well-cemented, silty sandstone. Small amounts of carbonaceous trash lie along the bedding planes.

MNZ Uranium mineralization was detected, but no uranium minerals were visible.

DOI 1954

REF U.S. Bur. of Mines, 1977, (Unpubl.). U.S. A.E.C., 1966, Preliminary Reconnaissance Reports, Moffat County, Colorado.

## B17-95, Airborne Anomaly (Cedars Mining Company Claim No. 11)

LOCATION: NW1/4NE1/4NW1/4 sec. 9, T. 6 N., R. 94 W.

LCRM This anomaly lies approximately 1/4 mile north of B17-96, Airborne Anomaly (Cedars

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Mining Company property). Directions to the deposit are given as follows: "Begin log at Standard Station and Cafe at Maybell, Colorado. Go east 8.2 miles on U.S. Hwy 40, turn right on Moffat County road 53 and go 2.7 miles; turn left on caterpillar road at exploration trench; go 0.3 mile; anomaly lies 20 yds to right in small drainage." Juniper Hot Springs 7 1/2'

QUAD MAP BKG RRG HOST  
CRAIG  
.02 mr/hr  
.15 to .4 mr/hr  
The host is the Miocene Browns Park Formation. The maximum radioactivity was found in a two ft thick bed of reddish-brown, fine-grained, iron-stained, ferruginous-cemented, slightly calcareous sandstone. Beds above and below the radioactive horizon are gray to yellow, fine-grained, poorly-consolidated, calcareous sandstones.  
MNZ Uranium mineralization was detected, but no uranium minerals were visible.  
DOI 1954  
REF U.S. Bur. of Mines, 1977, (Unpubl.). U.S. A.E.C., 1966, Preliminary Reconnaissance Reports, Moffat County, Colorado.

## B17-96, Airborne Anomaly (Cedars Prospect, Cedars Mining Company Claim No. 1, No. 10)

LOCATION: SW1/4NE1/4NW1/4 sec. 9, T. 6 N., R. 94 W.  
LCRM This anomaly lies approximately 1/4 mile south of B17-95, Airborne Anomaly. Directions to the deposit are given as follows: "Begin log at Standard gas station and cafe at Maybell, Colorado. Go east on U.S. Highway 40 for 8.2 miles; turn right on Moffat County road 53; go 3.1 miles. Anomaly lies 60 yds to left in small drainage. This is Claim No. 10. To get to Claim No. 1, start at the post office in Lay, Colorado, and drive 3.6 miles west on U.S. Hwy 40. Turn south on the Juniper Springs road and drive 2.6 miles; turn right and drive 0.1 mile to the discovery area."

QUAD MAP PROD  
CRAIG  
As of 1971, one ton of ore was mined from Cedars Claim No. 1 at grades of 0.20% U3O8 and 0.05% V2O5, which produced four lbs of U3O8 and one lb of V2O5.

BKG .02 mr/hr  
RRG .05 to 1.2 mr/hr  
HOST The host is the Miocene Browns Park Formation. The maximum radioactivity (1.2 mr/hr) was found in a ten in. bed of gray to yellow, fine- to coarse-grained, poorly-cemented sandstone. Thin layers of ilmonite-stained sand showing disseminated flakes of carbon (hydrocarbons?) were noted. A few ft below the radioactivity horizon a bed of sandstone with a thin layer of gypsum was noted. A few thin lenses of conglomerate of varied size, composition and stratigraphic position occur in the area. Most of these beds exhibit cross bedding of varied intensity.

STRC The anomalous radioactivity is found in a northwest-southeast-trending breccia zone. It averages three ft wide.

MNZ There are abundant yellow unidentified uranium minerals coating the sandstone and quartzite fragments.

DOI 1956  
REF U.S. Geol. Survey, 1977, CRIB File. U.S. Bur. of Mines, 1977, (Unpubl.). U.S. A.E.C., 1971, Production Records, Colorado. Finch, W. I., 1967. U.S. A.E.C., 1966, Preliminary Reconnaissance Reports, Moffat County, Colorado. U.S. Geol. Survey, 1956, TEI-423, p. 29.

## Biles' Shaft

LOCATION: sec. 31, T. 4 N., R. 100 W.

LCRM Directions to the deposit are given as follow: "From Vernal, Utah, at intersection of U.S. Highway 40 and Utah State Highway 44, drive east on U.S. Highway 40 for 57.2 miles; turn left through steel gate and drive 0.3 mile, right 0.4 mile to Biles' Shaft."

QUAD DVEL  
Skull Creek 7 1/2'  
A ten-ft shaft was sunk for exploratory purposes at the site of a drill hole that encountered weak mineralization.

HOST The mineralization occurs near the Jurassic Curtis-Entrada contact, and probably lies in the upper part of the Entrada Sandstone. The host is a gray, medium-grained, friable sandstone containing carbon less than one in. thick along some bedding planes. There is some ilmonite staining on fractures and bedding planes.

STRC The prospect is on the south flank of the Red Wash anticline. The beds strike N47°W and dip 60°S. There is a conspicuous fracture that cuts the bedding at approximately 90°, but it has no obvious relationship to mineralization.

MNZ The mineralization is associated with the carbonaceous material in the sandstone, but no uranium minerals are megascopically visible.

DOI 1955  
REF U.S. A.E.C., 1966, Preliminary Reconnaissance Reports, Moffat County, Colorado.

## Bimbo 1

LOCATION:

LCST UNLOCATABLE  
LCRM This deposit is located in the Sand Wash Basin.  
PROD By 1971, one ton of ore had been mined at a grade of 0.05% U3O8, producing one lb of U3O8.

HOST The host is the early Tertiary Wasatch Formation. Uranophane was present.

MNZ 1971  
DOI 1971  
REF U.S. A.E.C., 1971, Production Records, Colorado.

## Blue Mountain Group (Blue Mountains 4, Skull Creek Carnotite Deposit)

LOCATION: N1/2NE1/4 sec. 35, T. 4 N., R. 101 W.

QUAD Gilliam Draw 7 1/2'  
PROD From the Blue Mountains 4, as of 1971, 254 tons had been mined at grades of 0.21% U3O8 and 1.02% V2O5, producing 1,084 lbs of U3O8 and 5,158 lbs of V2O5.

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HOST The hosts are the lower part of the Jurassic Curtis Formation and the upper part of Jurassic Entrada Sandstone.

MNZ Carnotite, volborthite, malachite, azurite and brochantite are associated with clay galls, carbonaceous clay lenses, and carbonized and silicified wood. Pitchblende was also found associated with a silicified log. The center of the log approximately one-half in. in diameter showed a replacement of the cell walls by pitchblende. The pitchblende in turn was ringed by secondary uranium and vanadium minerals, probably carnotite and volborthite (?). The remainder of the log was completely silicified, with malachite staining along the bark. Samples assayed showed 0.004% to 0.16% eU, from 0.006 to 0.16% U, from 0.59% to 1.89% V2O5, and from 0.29% to 2.35% Cu.

RMKS This deposit lies in the Skull Creek district.

DOI 1972

REF U.S. Geol. Survey, 1977, CRIB File. U.S. A.E.C., 1971, Production Records, Colorado. Finch, W. I., 1967. RMAG-AAPG Guidebook, 1955, p. 124. McDougald, W. D., 1955.

## Bob Cat Group

LOCATION: S1/2 sec. 2, T. 7 N., R. 93 W.

QUAD Lay SE 7 1/2'

HOST The deposit lies in the Miocene Browns Park Formation.

MNZ Uranium mineralization was noted.

RMKS This deposit is located in the Maybell mining district.

DOI 1973

REF U.S. Geol. Survey, 1977, CRIB File. U.S. Geol. Survey, 1959, Open-file map 31.

## Bozo No. 1 (CRIB Unnamed)

LOCATION: sec. 35, T. 4 N., R. 101 W.

LCRM The deposit is located in the Skull Creek mining district.

QUAD Skull Creek 7 1/2'

DVEL There was no production from this property as of 1972.

HOST The deposit lies in the Jurassic Curtis Formation.

MNZ Uranium and copper mineralization were noted.

DOI 1972

REF U.S. Geol. Survey, 1977, CRIB File. U.S. Geol. Survey, 1952, TEI-308, p. 20. U.S. Geol. Survey, 1948, TEM-60.

## Breadline

LOCATION: UNLOCATABLE

LCRM As of 1971, 8 tons of ore were mined at grades of 0.09% U3O8 and 3.38% V2O5, producing 15 lbs of U3O8 and 541 lbs of V2O5.

DOI 1971

REF U.S. A.E.C., 1971, Production Records, Colorado.

## Buffalo Head Prospect (Buffalo Head Mining Co. Claim No. 6)

LOCATION: NE1/4SW1/4 sec. 29, T. 7 N., R. 94 W.

LCRM Directions to the deposit are given as follow: "Drive east on U.S. Highway 40 for 7.7 miles from the Maybell, Colorado store. Turn left through a gate and go 1.2 miles. Turn left and drive 0.1 mile. Turn left and go 0.3 mile. Turn left and drive 1.0 miles, take a trail going left 0.3 mile. The deposit lies 300 yds to the southeast on a foot path."

QUAD Lay 7 1/2'

DVEL The mine was an underground operation. There is at least one trench, and some drilling was done in 1954.

PROD As of 1971, 96 tons had been mined at grades of 0.11% U3O8, producing 206 lbs of U3O8, and 0.01% V2O5, producing 10 lbs of V2O5.

BKG .04 mr/hr

RNG .16 to .4 mr/hr

HOST The host is the Miocene Browns Park Formation. It is composed of white to gray to buff, interbedded sandstones and siltstones. A 24-in. bed of fine-grained, massive sandstone contains most of the radioactivity.

ALT Moderate alteration shows along fracture and joint planes, and heavy iron staining is present. The alteration has caused the sand grains to be a green color.

MNZ Uranium mineralization was noted, and uranophane was identified.

RMKS This deposit lies in the Maybell mining district.

DOI 1954

REF U.S. Geol. Survey, 1977, CRIB File. U.S. Bur. of Mines, 1977, (Unpubl.). U.S. A.E.C., 1971, Production Records, Colorado. Finch, W. I., 1967. U.S. A.E.C., 1966, Preliminary Reconnaissance Reports, Moffat County, Colorado.

## Butler Lease

LOCATION: SW1/4SW1/4 sec. 30, T. 8 N., R. 91 W.

DVEL The mining was done in by shallow open pit. The average depth of ore was six ft.

PROD As of 1971, 1,085 tons of ore were mined at a grade of 0.20% U3O8, producing 4,392 lbs of U3O8.

HOST The host is the early Tertiary Wasatch Formation.

MNZ Uranophane was recognized.

DOI 1971

REF U.S. A.E.C., 1971, Production Records, Colorado.

## Cacey Machelheny Claims

LOCATION: sec. 12, T. 10 N., R. 101 W.

LCRM The deposit extends to sec. 11-14.

QUAD Irish Canyon 7 1/2'

DVEL The mining was primarily done by underground workings. A few bulldozer cuts were made.

BKG .015 mr/hr

RNG .05 to .08 mr/hr

HOST The host is described as being a sandstone in the Jurassic Morrison Formation. The beds strike N30°W, and dip 80°E.



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STRC The beds were uplifted on the flanks of the Cold Springs Mountains.

MNZ Uranium mineralization was noted but no visible uranium minerals were seen. Grab samples showed up to three times background radioactivity, increasing in the presence of fossils and other carbonaceous trash. Iron and manganese concretions are present.

DOI 1954

REF U.S. Bur. of Mines, 1977, (Unpubl.). U.S. A.E.C., 1966, Preliminary Reconnaissance Reports, Moffat County, Colorado.

## Carol J. Claims

LOCATION: sec. 2, T. 5 N., R. 96 W.

LCRM Directions to the deposit are given as follow: "Beginning at Maybell, Colorado, go 1.8 mile east on Highway U.S. 40; turn right onto county road 57 and go 10.4 miles, turn right on poor dirt road and go 0.1 mile to creek crossing and continue on the same road 1.1 mile, turn right at fork and go 0.3 mile; turn right and go 0.5 mile to west property line of Carol J. Claims."

QUAD Citadel Plateau 15'

BKG .02 to .04 mr/hr

RNG .10 to .20 mr/hr

HOST The host is the Miocene Browns Park Formation. The radioactivity occurs in a series of interbedded, hard, buff, very fine-grained, rounded grained, calcareous sandstones, and soft, friable, buff to gray, non-calcerous siltstone beds. The highest radioactivity readings were in a siltstone that showed abundant ilmonite staining.

MNZ Uranium mineralization was noted, but no visible uranium minerals were seen.

DOI 1955

REF U.S. Bur. of Mines, 1977, (Unpubl.). U.S. A.E.C., 1966, Preliminary Reconnaissance Reports, Moffat County, Colorado.

## Claim 1

LOCATION:

LCST UNLOCATABLE

LCRM This deposit is located in the Washakie Basin.

PROD As of 1971, one ton of ore was mined at grades of 0.15% U308 and 0.20% V205, producing 3 lbs of U308 and 4 lbs of V205.

HOST The host is the Wasatch Formation.

DOI 1971

REF U.S. A.E.C., 1971, Production Records, Colorado.

## Cleta Group

LOCATION: sec. 26, T. 4 N., R. 101 W.

LCRM This deposit is located in the Skull Creek area.

PROD As of 1971, 19 tons of ore had been mined at a grade of 0.11% U308, producing 42 lbs of U308.

HOST The host is the Jurassic Carmel Formation.

DOI 1971

REF U.S. A.E.C., 1971, Production Records, Colorado.

## Coal Ridge

LOCATION: T. 4 N., R. 101 W.

LCST UNCERTAIN

QUAD Skull Creek 7 1/2' or Lazy Y Point 7 1/2'

HOST The radioactivity occurs in a lignite bed of the Upper Cretaceous Lower Lies Formation of the Mesaverde Group.

MNZ Samples averaging 0.081% U308, with maximums to 0.40% U308 were taken.

DOI 1977

REF Atlantic Richfield Corporation, 1977, Personal Communication.

## Doc Armor Mine

LOCATION: S1/2N1/2 sec. 33, T. 8 N., R. 91 W.

DVEL This was a shallow open pit mine.

PROD As of 1971, 784 tons of ore had been mined at grades of 0.13% U308 and 0.01% V205, producing 2,016 lbs of U308 and 131 lbs of V205.

HOST The deposit lies in the Eocene Wasatch Formation.

MNZ Carnotite - tyuyamunite - type mineralization was recognized.

DOI 1971

REF U.S. A.E.C., 1971, Production Records, Colorado.

## Epsilon Claims No. 3, (56-14, Airborne Anomaly)

LOCATION: sec. 18, T. 7 N., R. 92 W.

LCRM This anomaly is approximately 2,000 ft southeast of Airborne Anomaly 56-13. Directions to the deposit are given as follows: "Beginning at Craig, Colorado, go 12.5 miles west on US Highway 40. Turn right off Highway 40 onto Moffat County Road 15 and go 0.8 miles, turn left and go 1.7 miles. The anomalous area is on top of a rounded ridge 0.7 mile east."

QUAD Lay SE 7 1/2'

MAP CRAIG

DVEL Underground mining was carried out. Two small open pits are located on Epsilon Claim No. 3.

BKG .015 mr/hr

RNG .03 to .10 mr/hr

HOST The host rock is Miocene Browns Park Formation. It is a gray to buff, fine- to medium-grained sandstone and siltstone with locally abundant ilmonite staining, and some CaCO3 cementation.

MNZ Uranium mineralization was found, although it was not megascopically visible. It appears to be associated with the ilmonite staining.

DOI 1955

REF U.S. Bur. of Mines, 1977 (Unpubl.). U.S. A.E.C., 1966, Preliminary Reconnaissance Reports, Moffat County, Colorado.

## Eskridge Property

LOCATION: sec. 22, T. 7 N., R. 93 W.

QUAD Lay SE 7 1/2'

DVEL There was no production on this property.

HOST The host is the Miocene Browns Park Formation.

MNZ Uranium mineralization was recognized.

RMKS The property lies in the Lay mining district.

DOI 1973

REF U.S. Geol. Survey, 1977, CRIB File.

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## Farnsworth Uranium Deposit (Housel Gulch Placer, Pardner, Friendship, Magpie, Sage Hen, Housel Gold Placer Mine, Pal, Grey Hound Leases)

LOCATION: sec. 9, T. 9 N., R. 92 W.  
 LCRM The deposit also extends to sec. 4.  
 QUAD East Timberlake Creek 7 1/2'  
 HOST The host is the Eocene Watsatch Formation.  
 MNZ Uranium, thorium and vanadium mineralization is present, with ilmenite and monazite recognized in black sands on the property.  
 DOI 1975  
 REF U.S. Bur. of Mines, 1977, (Unpubl.). U.S. Geol. Survey, 1977, CRIB File.

## Fly Claims (Iles Formation)

LOCATION: NE1/4NW1/4 sec. 17, T. 3 N., R. 101 W.  
 LCRM There are also claims in sec. 7, 8, 16, and 18, all on or near Coal Ridge.  
 QUAD Rangely NE 7 1/2'  
 RNG 2,000 to 5,000 cps  
 HOST The host is a fine-grained sandstone and thinly bedded lignite of the Upper Cretaceous Iles Formation. The mineralization occurs in the lignite near contacts with the sandstone. The lignite becomes barren as the distance from that contact increases.  
 STRC The beds dip 58° to 65°S, and strike N65°W.  
 ALT The sandstone has been bleached.  
 MNZ There is irregular secondary mineralization with visible carnotite or autunite in the sandstones. Assays show values of 0.034% U3O8 in the sandstones and 0.051% U3O8 in the lignite.  
 DOI 1977  
 REF Atlantic Richfield Corp., 1977, Personal Communication. Western Nuclear, Inc., 1977, Personal Communication.

## Gertrude Mine (Gertrude No. 5 and No. 6 Claims)

LOCATION: NW1/4NE1/4 sec. 17, T. 7 N., R. 94 W.  
 LCRM Directions to the deposit are given as follows: "Drive 3.7 miles west of Lay, Colorado on U.S. Hwy 40. Turn right on to a trail, go through a gate, and drive 2.8 miles to a fork in the road. Take the left fork and drive 1.1 miles to the deposit."  
 QUAD Lay 7 1/2'  
 PROD As of 1971, 355,332 tons of ore were mined at a grade of 0.12% U3O8, producing 785,329 lbs of U3O8.  
 BKG .02 mr/hr  
 RNG .05 to 4.5 mr/hr  
 HOST The mine lies in the Miocene Browns Park Formation. The host is a light gray to buff, friable, fine- to medium-grained sandstone. It is more than 700 ft thick at this point, and rests with an angular unconformity on the older sediments. The ore occurs in flat, irregular lenses ranging in depth from 6 to 200 ft.  
 STRC The beds strike N60°E and dip 10°SE. Four faults, showing displacements ranging from 1 to 2 ft, strike N50° - 70°W.  
 MNZ Uranophane and meta-autunite are the important ore minerals in the oxidized zone. Coffinite

was the only mineral identified in the unoxidized zone. Channel samples assayed 0.212% to 0.236% eU3O8 and between 0.212% and 0.543% U3O8.

DOI 1956  
 REF U.S. Geol. Survey, 1977, CRIB File. U.S. Bur. of Mines, 1977, (Unpubl.). U.S. A.E.C., 1971, Production Records, Colorado. Finch, W. I., 1967, p. 9. U.S. A.E.C., 1966, Preliminary Reconnaissance Reports, Moffat County, Colorado.

## Glory Bee

LOCATION: sec. 5, T. 3 N., R. 101 W.  
 LCRM This deposit lies in the Skull Creek district.  
 PROD As of 1971, 17 tons of ore were mined at grades of 0.04% U3O8 and 0.16% Y2O5, producing 15 lbs of U3O8 and 16 lbs of Y2O5.  
 HOST The host is the Jurassic Curtis Formation.  
 MNZ Copper minerals and brown iron oxide minerals were found associated with carbonaceous material and uranium minerals in the radioactive zone.  
 DOI 1971  
 REF U.S. A.E.C., 1971, Production Records, Colorado.

## Golden Grain Claims

LOCATION: sec. 30, T. 8 N., R. 91 W.  
 LCRM Directions to the deposit are given as follows: "From the junction of US Hwy 40 and State Secondary road 355 west of Craig, Colorado, drive north on the main travelled road 8.5 miles to the Butler Ranch. Turn left through the Butler Ranch and follow a winding road through a wheat field 1.5 miles to the Golden Grain Claims. The anomaly is located on Claim No. 2."  
 QUAD Pine Ridge 7 1/2' or Craig NW 7 1/2'  
 BKG .05 mr/hr  
 RNG .08 to 10.0 mr/hr  
 HOST The host is an outlier of the Miocene Browns Park Formation. The anomalous radioactivity occurs in a dark buff to brown, medium-grained, iron-stained, poorly consolidated member of the formation.  
 MNZ Uranium mineralization was recognized. A light green to yellow fluorescent uranium mineral coats sand grains and is disseminated throughout the sandstone.  
 DOI 1955  
 REF U.S. Bur. of Mines, 1977, (Unpubl.). U.S. A.E.C., 1966, Preliminary Reconnaissance Reports, Moffat County, Colorado.

## Hazel Whetstone Property

LOCATION: sec. 27, T. 7 N., R. 94 W.  
 LCRM Directions to the deposit are given as follows: "Begin log at junction of Moffat County Road 53 and US Hwy 40, 8.0 miles east of Maybell, Colorado. Go east on U.S. Hwy 40 for 0.6 miles. The property lies in a narrow gulch trending north and south. A bladed road and some mine workings may be seen at the head of the gulch. The gulch lies one-quarter of a mile north of the highway."

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QUAD Lay 7 1/2'  
 BKG .015 mr/hr  
 RNG .03 to .2 mr/hr  
 HOST The host is the Miocene Browns Park Formation. The maximum radioactivity occurs in a six ft bed of blue, fine- to medium-grained quartzite. The rock is intensely iron stained along fracture surfaces.  
 ALT Alteration has taken place along the fractures.  
 MNZ Very thin, irregular stringers of green to yellow uranium minerals were irregularly deposited in the rock. These stringers are found near the contact line between the altered and unaltered portions of the rock.  
 DOI 1954  
 REF U.S. Bur. of Mines, 1977, (Unpubl.). U.S. A.E.C., 1966, Preliminary Reconnaissance Reports, Moffat County, Colorado.

## Hex Claims

LOCATION: sec. 22, T. 8 N., R. 98 W.  
 LCRM Directions to the deposit are given as follows: "From Maybell, Colorado go 0.5 mile west on US 40; turn right and go 19.8 miles on State Highway 318 to the west side of the bridge over Sand Wash Creek."  
 QUAD Lone Mountain 15'  
 BKG .02 mr/hr  
 RNG .05-.08 mr/hr  
 HOST The host is the Miocene Browns Park Formation. The anomalous radioactivity occurs in a petrified log (4 ft in diameter and 10 ft long) in a medium-grained sandstone horizon at the base of a conglomerate composed of red sandstone and quartzite boulders and pebbles. The petrified log is less than five ft above a flat-lying green sandstone of an older formation.  
 STRC The conglomerate dips 17°S and was deposited above an angular unconformity. The beds on the lower side of the unconformity are nearly flat lying.  
 MNZ Uranium mineralization was recognized, but no uranium minerals were seen.  
 DOI 1955  
 REF U.S. Bur. of Mines, 1977, (Unpubl.). U.S. A.E.C., 1966, Preliminary Reconnaissance Reports, Moffat County, Colorado.

## Hudson Claim Group

LOCATION: sec. 8, T. 7 N., R. 95 W.  
 LCRM Directions to the deposit are given as follows: "Begin log at Victory Hotel in Maybell, Colorado. Go north on Moffat County Road 19 for 3.5 miles; turn right at wrecked car body; go 0.2 miles, turn left on trail to north; go 1.2 miles, turn left at pile of tin cans; go 0.4 miles, take right fork; go 0.1 mile; anomaly lies here."  
 QUAD Maybell 15'  
 BKG .015 mr/hr  
 RNG .05 to .07 mr/hr  
 HOST The host is the Miocene Browns Park Formation. The anomaly occurs in an iron cemented, brown conglomerate. Slightly abnormal radioactivity

was noted in thin, irregular lenses of green to yellow sandstones which underlie the conglomerate bed.

MNZ Uranium mineralization was recognized, but no uranium minerals were visible. Thin, irregular stringers of gypsum and calcite occur through the beds.  
 DOI 1954  
 REF U.S. Bur. of Mines, 1977, (Unpubl.). U.S. A.E.C., 1966, Preliminary Reconnaissance Reports, Moffat County, Colorado.

## Humming Bird Claim (B17-100, Airborne Anomaly)

LOCATION: NW1/4SE1/4 sec. 15, T. 7 N., R. 94 W.  
 LCRM The directions to the deposit are given as follows: "Begin log at junction of U.S. Hwy 40 and Moffat County road 53 west of Lay, Colorado. Go west on U.S. Hwy 40 for 0.1 mile, turn right through fence gate; go 0.7 mile, turn left through fence; go 0.5 mile, take right fork through fence; go 1.0 mile, turn right on faint trail along fence; go 0.5 mile to fence corner, turn left along fence for 0.2 mile; anomaly lies one-half mile to the right at the base of Sugar Loaf Mountain."  
 QUAD Lay 7 1/2'  
 BKG .015 mr/hr  
 RNG .025 to .045 mr/hr  
 HOST The host is the Miocene Browns Park Formation. The deposit occurs in a brown to white, fine- to coarse-grained, calcareous, alluvial sand. This alluvium is underlain by a flat-lying white, calcareous, fine- to coarse-grained sandstone.  
 MNZ Uranium mineralization was noted, but no uranium minerals were visible.  
 DOI 1954  
 REF U.S. Bur. of Mines, 1977, (Unpubl.). U.S. A.E.C., 1966, Preliminary Reconnaissance Reports, Moffat County, Colorado.

## Iron and Copper Claims

LOCATION: sec. 14, T. 7 N., R. 94 W.  
 LCRM Directions to the property are given as follows: "From the Standard service station in Maybell, Colorado, drive north on a county road 1.6 miles; turn right and go 1.4 miles; turn left and drive 1.0 mile, turn right and go 1.3 mile to a wash, follow the bottom of the wash north 1.6 mile to the discovery area."  
 QUAD Lay 7 1/2'  
 BKG .04 mr/hr  
 RNG .35 mr/hr  
 HOST The host is the basal conglomerate of the Miocene Browns Park Formation. The maximum radioactivity occurred in a fine-grained sand lens within the igneous pebble conglomerate.  
 MNZ Uranium mineralization was recognized, but no visible uranium minerals were seen.  
 DOI 1955  
 REF U.S. Bur. of Mines, 1977, (Unpubl.). U.S. A.E.C., 1966, Preliminary Reconnaissance Reports, Moffat County, Colorado.

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## John D. 11 & 12

### LOCATION:

LCST UNLOCATABLE  
 PROD No production was reported for these claims.  
 HOST The deposit lies in the Miocene Browns Park Formation.  
 MNZ Mineralization of the uraninite (coffinite) type was recognized.  
 DOI 1971  
 REF U.S. A.E.C., 1971, Production Records, Colorado.

## John D. 8 & 9

### LOCATION:

PROD No production was reported for these claims.  
 HOST The host is the Miocene Browns Park Formation.  
 MNZ Uraninite (coffinite) type mineralization is present.  
 DOI 1971  
 REF U.S. A.E.C., 1971, Production Records, Colorado.

## Johnson Lease (Johnson MCS)

LOCATION: sec. 19, T. 7 N., R. 94 W.

QUAD Lay 7 1/2'  
 PROD As of 1971, 16,984 tons of ore were mined at grades of 0.25% U3O8 and 0.00% V2O5, yielding 85,046 lbs of U3O8 and 109 lbs of V2O5.  
 HOST The deposit lies in the Miocene Browns Park Formation.  
 MNZ Uranium/vanadium minerals are present, and uraninite and/or coffinite.  
 DOI 1973  
 REF U.S. Geol. Survey, 1977, CRIB File. U.S. Bur. of Mines, 1977, (Unpubl.). U.S. A.E.C., 1971, Production Records, Colorado.

## Lay-Governor Groups

LOCATION: sec. 11, T. 7 N., R. 94 W.

QUAD Lay 7 1/2'  
 MNZ Uranium mineralization was found.  
 DOI 1975  
 REF U.S. Bur. of Mines, 1977, (Unpubl.).

## Leon Claims

LOCATION: sec. 8, T. 6 N., R. 91 W.

LCRM Directions to the deposit are given as follows: "From Maybell, Colorado, go 3.9 miles east on US 40; turn right and go 3.2 miles on Axial trail to anomaly."  
 QUAD Round Bottom 7 1/2' or Castor Gulch 7 1/2'  
 BKG .04 mr/hr  
 RNG .3 to 2.5 mr/hr  
 HOST The anomalous area is located in the Miocene Browns Park Formation. The mineralization occurs in a fine- to medium-grained, poorly sorted, calcareous, buff sandstone member of the Basal Conglomerate. Hematite staining is dominant in a zone 6 in. above the mineralization.  
 STRC The formation strikes N45°W and dips 13°NE.

MNZ A yellow uranium mineral was observed as a coating on and a filling between sand grains.

DOI 1955  
 REF U.S. Bur. of Mines, 1977, (Unpubl.). U.S. A.E.C., 1966, Preliminary Reconnaissance Reports, Moffat County, Colorado.

## Little Snake No. 2 (B17-36, Airborne Anomaly)

LOCATION: sec. 1, T. 11 N., R. 95 W.

LCRM The deposit may also extend to sec. 12. Directions to the deposit are given as follows: "From Baggs, Wyoming, drive south on Wyoming and Colorado State Highway 789 for 4.7 miles, turn right onto graded Moffat County Highway 4 and continue on this road for 22.8 miles; turn sharply left and follow dirt road for 1.1 mile."

QUAD Nipple NE 7 1/2'  
 BKG .01 to .018 mr/hr  
 RNG .03 to .15 mr/hr

HOST Slight anomalous radioactivity was detected in a black to brown, iron-stained sandstone layer in the Eocene Wasatch Formation. The formation is comprised of interbedded gray to purple siltstones and mudstones with a few thin, fine- to medium-grained sandstone layers. Siliceous, iron stained fracture coatings and concretions are abundant.  
 MNZ Uranium mineralization was recognized, but no visible uranium minerals could be found. Abundant limonite and hematite staining was noted in the area.

DOI 1955  
 REF U.S. Bur. of Mines, 1977, (Unpubl.). U.S. A.E.C., 1966, Preliminary Reconnaissance Reports, Moffat County, Colorado.

## Little Star (Little Star Claims, CRIB Unnamed)

LOCATION: NW1/4SE1/4SW1/4 sec. 27, T. 5 N., R. 100 W.

LCRM Directions to the deposit are given as follows: "From Elk Springs, Colorado, drive west on U.S. Hwy 40 for 8.1 miles. Turn right and drive 6.9 miles on Moffat County 16. Turn left and drive 0.4 miles to discovery area."

QUAD M F Mountain 7 1/2'  
 PROD As of 1971, 1,671 tons of ore had been mined at grades of 0.23% U3O8 and 0.21% V2O5, producing 7,597 lbs of U3O8 and 7,017 lbs of V2O5.

RNG .6 to 4.0 mr/hr  
 HOST The deposit occurs in the Permian-Pennsylvanian Weber Formation. A highly fractured, mineralized sandstone roll contains abundant carnotite grains disseminated in the sandstone. Vanadium content increases and radioactivity decreases with increasing distance from the face of the roll.

STRC A sharp reversal in the attitude of the bedding one-half mile south of this occurrence indicates the presence of large scale faulting. The beds here dip 40°SW and strike N68°W.  
 MNZ Carnotite and/or tyuyamunite was identified. A close relationship between mineralization

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and silicification was noted. Assays submitted by the owners reportedly ran as high as 4.0% U308.

DOI 1954  
REF U.S. Geol. Survey, 1977, CRIB File. U.S. Bur. of Mines, 1977, (Unpubl.). U.S. Bur. of Mines Production Records. U.S. A.E.C., 1971, Production Records, Colorado. U.S. A.E.C., 1966, Preliminary Reconnaissance Reports, Moffat County, Colorado.

## Lucky Boy (Lucky Claim)

LOCATION: sec. 13, T. 7 N., R. 96 W.  
LCRM Directions to the deposit are listed as follows: "Drive north of Maybell, Colorado on Moffat County road 19, 4.1 miles. Turn left on the old Oregon Trail and drive 1.9 miles to the bottom of a short steep hill. The discovery pit lies 300 yds east across a wash." The deposit lies in the Maybell-Lay area.  
QUAD Maybell 15'  
PROD One ton of ore had been mined as of 1971, at grades of 0.20% U308 and 1.00% V205, producing four lbs of U308 and 20 lbs of V205.  
BKG .03 mr/hr  
RNG .05 to 1.0 mr/hr  
HOST The host is the Miocene Browns Park Formation. The white to gray ore-bearing sandstone is medium-grained and contains numerous semi-rounded black grains.  
MNZ Uranium mineralization was recognized, but no visible uranium minerals were observed.  
DOI 1954  
REF U.S. Bur. of Mines, 1977, (Unpubl.). U.S. A.E.C., 1971, Production Records, Colorado. U.S. A.E.C., 1966, Preliminary Reconnaissance Reports, Moffat County, Colorado.

## Magpie Mine

LOCATION: sec. 9, T. 9 N., R. 92 W.  
LCRM Directions to the deposit are given as follows: "Drive 10.9 miles south of Baggs, Wyoming on Wyoming Highway 330. Turn right on county road (not numbered) and follow main traveled road 5.5 miles to a junction. Take the right road at this junction and drive 2.8 miles; thence follow trail going to the left for 4.9 miles to a fork. Take the left fork of this trail 0.7 miles to a cabin on the property."  
QUAD East Timberlake Creek 7 1/2' or Craig NW 7 1/2'  
BKG .03 mr/hr  
RNG .5 to 2.0 mr/hr  
HOST The host is mapped as the Tertiary Wasatch Formation. This buff, fine-grained, crossbedded, ilmonite-stained, mineralized sandstone bed contains an 18-in. tabular layer of manganese which is not abnormally radioactive.  
MNZ Uranium, gold, and tungsten minerals are all present. The placer sands include grains of garnet, pyrolusite, gold, and orange and black grains of an unidentified radioactive mineral.  
DOI 1954

REF U.S. Bur. of Mines, 1977, (Unpubl.). U.S. A.E.C., 1966, Preliminary Reconnaissance Reports, Moffat County, Colorado.

## Marge Mine (Marge 1-5, Maybell 1 & 2, Baba 1-3, Bessie 1-3, Marge Group, Margie Mine, Marge #1 Claim, Bertha)

LOCATION: W1/2NW1/4NW1/4 sec. 19, T. 7 N., R. 94 W.  
LCRM The deposit also extends to sec. 13 and NE1/4NE1/4 sec. 24, T. 7 N., R. 95 W. This deposit is located in the Maybell mining district.  
QUAD Maybell 15'  
PROD As of 1971, 455,054 tons were mined at a grade of 0.16% U308, producing 1,480,027 lbs of U308.  
BKG .02 mr/hr  
RNG .05 to 2.0 mr/hr  
HOST The deposit lies in the Miocene Browns Park Formation. It is a friable, gray to buff, very fine- to medium-grained sandstone, and is more than 700 ft thick in this area. The sandstone has extensive crossbedding and a few thin clay seams. The ore occurs in flat lenses up to 8 ft thick and ranging in depth from 10 to 70 ft below the surface. The host sandstone rests with an angular unconformity upon the older sediments.  
STRC The beds strike N70°E and dip 30°N. A major fault crosses the deposit and strikes N30°W, dipping 80°W. Several smaller faults with displacements up to one ft strike N60°W.  
MNZ The mineralization is of the uraninite (coffinite) type in the unoxidized zone, with meta-autunite and uranophane in the oxidized zone.  
DOI 1956  
REF U.S. Geol. Survey, 1977, CRIB File. U.S. Bur. of Mines, 1977, (Unpubl.). U.S. A.E.C., 1971, Production Records, Colorado. Finch, W. I., 1967, p. 10. U.S. A.E.C., 1966, Preliminary Reconnaissance Reports, Moffat County, Colorado. Mineral Resources of Colorado, 1960, p. 344. U.S. Geol. Survey, 1959, Open-file Map 31.

## Olds Claim Group (Olds Group of Claims)

LOCATION: sec. 21, T. 11 N., R. 99 W.  
LCRM The deposit also extends to sec. 22. Directions to the deposit are given as follows: "South Rock Springs on Highway 430 to Hiawatha, Colorado. Continue on county road toward Craig, Colorado 8.4 miles to the Gutierrez ranch. Continue past ranch 1.2 miles and turn right at grain bin. Continue 1.7 mile and bear right at grain bin. Continue on main road 3.1 miles and bear left at haystack. Continue 2.6 miles on main road to stream bed and northwest corner of Claim 23."  
QUAD Hiawatha 7 1/2'  
BKG .02 mr/hr  
RNG To .10 mr/hr  
HOST The host is described as a buff to brown sandstone in the Cathedral Bluffs Tongue of the Tertiary Wasatch Formation.  
MNZ Uranium mineralization was recognized, but no visible uranium minerals were observed.

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DOI 1954  
REF U.S. Bur. of Mines, 1977, (Unpubl.). U.S. A.E.C., 1966, Preliminary Reconnaissance Reports, Moffat County, Colorado.

### Orr Claims (Orr and I and L Claims, Orr Et Al Claims)

LOCATION: sec. 18, T. 7 N., R. 95 W.

LCRM The claims also extend to sec. 17, 19, 20 and 21.

QUAD Maybell 15'

HOST The host is the Miocene Browns Park Formation. The deposit occurs in lenticular ore bodies in a sandstone.

MNZ Uranophane and meta-autunite were identified.

DOI 1977

REF U.S. Geol. Survey, 1977, CRIB File. U.S. Bur. of Mines, 1977, (Unpubl.).

### Uscar No. 1 Claim

LOCATION: sec. 5, T. 3 N., R. 101 W.

LCRM This deposit lies in the Skull Creek district.

QUAD Lazy Y Point 7 1/2' or Skull Creek 7 1/2'

HOST The deposit lies in the Jurassic Entrada Sandstone within forty ft of the Curtis-Entrada contact. The Entrada is a light gray, medium-to coarse-grained, cross bedded, massive sandstone, heavily limonite stained along fractures, and carbonaceous in places. The mineralization occurs as coatings on fracture planes, associated with carbon trash and secondary copper minerals. Spotty mineralization was observed over a ten-ft square face.

STRC The deposit is located on the south flank of the Red Wash anticline. The beds dip approximately 55°S 30°W. Orientation of the fractures is approximately N70°E.

MNZ No uranium minerals were megascopically visible. The radioactivity is associated with malachite, azurite, and limonite. A grab sample assayed 0.04% eU308 and cU308, with 0.02% V2O5 and 0.5% CaCO3.

DOI 1955

REF U.S. A.E.C., 1966, Preliminary Reconnaissance Reports, Moffat County, Colorado.

### Owl Group

LOCATION:

HOST The host is the Miocene Browns Park Formation.

MNZ The mineralization is of the uraninite (coffinite) type.

DOI 1971

REF U.S. A.E.C., 1971, Production Records, Colorado.

### Rob Rollo

LOCATION: sec. 19, T. 7 N., R. 94 W.

LCRM This deposit extends to sec. 24, T. 7 N., R. 95 W.

DVEL The mine is a large open pit.

PROD As of 1971, 596,701 tons of ore were mined at a grade of 0.11% U308, producing 1,347,892 lbs of U308. The average depth to ore was 170 ft.

HOST The host is the Miocene Browns Park Formation. Mineralization is of the uraninite (coffinite) type.

DOI 1971

REF U.S. A.E.C., 1971, Production Records, Colorado.

### Sage-Buella

LOCATION: sec. 8, T. 7 N., R. 94 W.

QUAD Lay 7 1/2'

PROD As of 1971, 197,709 tons of ore were mined at a grade of 0.10% U308, producing 406,910 lbs of U308.

HOST The host is the Miocene Browns Park Formation.

MNZ The mineralization of the uraninite (coffinite) type.

DOI 1971

REF U.S. Bur. of Mines, 1977, (Unpubl.). U.S. A.E.C., 1971, Production Records, Colorado.

### Sec. 16, T. 6 N., R. 94 W.

LOCATION: N1/2 sec. 16, T. 6 N., R. 94 W.

LCRM The deposit extends to S1/2 sec. 9, T. 6 N., R. 94 W.

QUAD Juniper Hot Springs 7 1/2'

DVEL The average depth of ore was 30 ft. It was developed as an open pit mine.

PROD As of 1971, 535 tons of ore had been mined at a grade of 0.11% U308, producing 1,141 lbs.

HOST The host is the Miocene-Pliocene Browns Park Formation.

MNZ Uraninite, coffinite, uranophane and autunite were recognized.

RMKS This was a state lease.

DOI 1973

REF U.S. Geol. Survey, 1977, CRIB File. U.S. Bur. of Mines, 1977, (Unpubl.). U.S. A.E.C., 1971, Production Records, Colorado.

### Sec. 16, T. 7 N., R. 93 W.

LOCATION: sec. 16, T. 7 N., R. 93 W.

QUAD Lay SE 7 1/2'

HOST The deposit lies in the Miocene-Pliocene Browns Park Formation.

MNZ Uranophane was recognized at the deposit.

DOI 1971

REF U.S. Bur. of Mines, 1977, (Unpubl.). U.S. A.E.C., 1971, Production Records, Colorado.

### Sec. 16, T. 7 N., R. 94 W.

LOCATION: sec. 16, T. 7 N., R. 94 W.

QUAD Lay 7 1/2'

HOST The host is the Miocene-Pliocene Browns Park Formation.

MNZ Mineralization of the uraninite (coffinite) type was noted.

DOI 1971

REF U.S. Bur. of Mines, 1977, (Unpubl.). U.S. A.E.C., 1971, Production Records, Colorado.

### September Morn Claims

LOCATION: sec. 3, T. 5 N., R. 96 W.

LCRM Directions to the deposit are given as follows: "Beginning at Maybell, Colorado, go 1.8

# MOFFAT COUNTY

miles east on US 40, turn south and go 10.4 miles on County road."

QUAD Citadel Plateau 15'

BKG .02 to .04 mr/hr

RNG .5 to 3.0 mr/hr

HOST The anomaly is located in the Miocene Browns Park Formation. The radioactivity is found in a fine-grained sandy siltstone showing heavy limonite and hematite staining.

STRC The anomalous radioactivity is located on a steep west facing slope in a fault zone striking N50°W and dipping 60°S. The formation strikes N60°W and dips 7°NW.

MNZ Uranium mineralization was recognized, but no uranium minerals were seen. A petrolierous residue not directly associated with the radioactivity is present in several spots along the fault.

DOI 1955

REF U.S. Bur. of Mines, 1977, (Unpubl.). U.S. A.E.C., 1966, Preliminary Reconnaissance Reports, Moffat County, Colorado.

## Shell Group (Shell Group, Claim No. 1)

LOCATION: S1/2 sec. 7, T. 7 N., R. 95 W.

LCRM The deposit also extends to sec. 8. Directions to the deposit are given as follows: "Begin log at Victory hotel in Maybell, Colorado. Go north on Moffat County road 19 for 3.5 miles, turn right at old car body; go 0.2 mile turn left at north-trending trail; go 0.6 mile; deposit lies to left on west side of a small ridge."

QUAD Maybell 15'

BKG .02 mr/hr

RNG .08 to .7 mr/hr

HOST The host is the Miocene Browns Park Formation. The anomaly occurs in a white to brown, thin-bedded, fine- to medium-grained sandstone. Intense iron staining is apparent in many beds and some of those beds are iron cemented.

MNZ Uranium mineralization was discovered, but no uranium minerals were visible. Thin stringers of gypsum and calcite were noted.

DOI 1954

REF U.S. Geol. Survey, 1977, CRIB File. U.S. Bur. of Mines, 1977, (Unpubl.). U.S. A.E.C., 1966, Preliminary Reconnaissance Reports, Moffat County, Colorado.

## Star Prospect (Front Range Star Group)

LOCATION: NW1/4NE1/4 sec. 13, T. 7 N., R. 95 W.

QUAD Maybell 15'

PROD As of 1971, there had been no production from this prospect.

HOST The host is the Miocene Browns Park Formation.

MNZ Uranium mineralization was noted, of the uraninite (coffinite) type..

DOI 1973

REF U.S. Geol. Survey, 1977, CRIB File. U.S. A.E.C., 1971, Production Records, Colorado. Del Rio, S. M., 1960, p. 344.

## Sugarloaf (Sugarloaf No. 1, 2, 3, 4, 9, Sugar Loaf Claim No. 1)

LOCATION: sec. 27, T. 7 N., R. 94 W.

LCRM The deposit also extends to sec. 22. Directions to the deposit area given as follows: "Drive 9.3 miles east of Irene's cafe in Maybell, Colorado, on U.S. Hwy 40. Turn left, through a gate and go right around sheep shearing pens and drive 0.3 miles. Turn left and follow the main traveled road 3.9 miles to the discovery area."

QUAD Lay 7 1/2'

PROD As of 1971, 357 tons had been mined at grades of 0.15% U3O8 and 0.07% V2O5, producing 1,070 lbs of U3O8 and 533 lbs of V2O5.

BKG .04 mr/hr

RNG .5 to 2.0 mr/hr

HOST The host is the Miocene Browns Park Formation. The anomalous readings come from a blue-gray quartzite derived from the local siltstone, interbedded with fine-grained sandstones.

STRC The anomalous radioactivity occurs in a shear zone and in the flat lying sediments on the hanging wall of this zone. The shear zone strikes north-south and dips 75°W.

ALT Alteration caused the fusion of the siltstones to produce the blue-gray quartzite.

MNZ Uranium and vanadium minerals were noted, with uranophane identified. Iron staining is common. Assays reportedly are in excess of 0.10% U3O8, over a wide area. Selenite, molybdenite, gold, and silver were also found.

DOI 1954

REF U.S. Geol. Survey, 1977, CRIB File. U.S. Bur. of Mines, 1977, (Unpubl.). U.S. A.E.C., 1971, Production Records, Colorado. U.S. A.E.C., 1966, Preliminary Reconnaissance Reports, Moffat County, Colorado. Del Rio, S. M., 1960, p. 344.

## Three Sisters (Three Sisters No. 11)

LOCATION: sec. 32, T. 5 N., R. 93 W.

QUAD Axial 7 1/2'

PROD As of 1971, 744 tons had been mined at grades of 0.19% U3O8 and 0.00X% V2O5, producing 2,897 lbs of U3O8 and 66 lbs of V2O5.

HOST The host is the Miocene Browns Park Formation. Uranophane was identified.

MNZ

DOI 1971

REF U.S. Geol. Survey, 1977, CRIB File. U.S. A.E.C., 1971, Production Records, Colorado.

## Trevenen Claims

LOCATION: sec. 20, T. 7 N., R. 95 W.

LCRM Directions to the deposit are given as follows: "Drive 1.8 miles north of Maybell, Colorado on Moffat County Road 19 to a junction. Take right road 0.9 mile to area of anomalous radioactivity. The discovery pit lies 100 yds north of the road."

QUAD Maybell 15'

BKG .03 mr/hr

RNG To .15 mr/hr

HOST The host is the Miocene Browns Park Formation. The radioactive readings occur in gray-white, medium-grained sandstone concretions found on the surface and in the top 12 in. of soil.

ALT Alteration of exposures suggests large scale solution movement in the sandstone.

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MNZ Uranium mineralization was noted, but no minerals were identified.  
DOI 1954  
REF U.S. Bur. of Mines, 1977, (Unpubl.). U.S. A.E.C., 1966, Preliminary Reconnaissance Reports, Moffat County, Colorado.

## Unnamed No. 1

LOCATION: SW1/4NE1/4 sec. 30, T. 8 N., R. 91 W.  
QUAD Pine Ridge 7 1/2' or Craig NW 7 1/2'  
HOST The host is the Miocene Browns Park Formation.  
MNZ Uranium minerals were recognized.  
DOI 1973  
REF U.S. Geol. Survey, 1977, CRIB File. U.S. Geol. Survey, 1959, Open-File Map 31.

## Unnamed No. 2

LOCATION: NW1/4 sec. 30, T. 8 N., R. 91 W.  
QUAD Craig NW or Pine Ridge 7 1/2'  
HOST The host is the Miocene Browns Park Formation.  
MNZ Uranium minerals were recognized.  
DOI 1973  
REF U.S. Geol. Survey, 1977, CRIB File. U.S. Geol. Survey, 1959, Open-File Map 31.

## Unnamed No. 3

LOCATION: S1/2 sec. 3, T. 7 N., R. 93 W.  
QUAD Lay SE 7 1/2'  
HOST The host is the Miocene Browns Park Formation.  
MNZ Uranium mineralization was noted.  
DOI 1973  
REF U.S. Geol. Survey, 1977, CRIB File. U.S. Geol. Survey, 1959, Open-file Map 31.

## Unnamed No. 4

LOCATION: SW1/4SE1/4 sec. 8, T. 6 N., R. 94 W.  
QUAD Juniper Hot Springs 7 1/2'  
HOST The host is the Miocene Browns Park Formation.  
MNZ Uranium mineralization was noted.  
DOI 1973  
REF U.S. Geol. Survey, 1977, CRIB File. U.S. Geol. Survey, 1955, TEI-423, p. 30.

## Unnamed No. 5

LOCATION: sec. 18, T. 7 N., R. 94 W.  
QUAD Lay 7 1/2'  
HOST The host is probably the Miocene Browns Park Formation.  
MNZ Uranium mineralization is present.  
DOI 1973  
REF U.S. Geol. Survey, 1977, CRIB File.

## Unnamed No. 6

LOCATION: sec. 30, T. 7 N., R. 94 W.  
LCRM The deposit also extends to sec. 31.  
QUAD Lay 7 1/2'  
HOST The host is probably the Miocene Browns Park Formation.  
MNZ Uranium and vanadium minerals were recognized.  
DOI 1973  
REF U.S. Geol. Survey, 1977, CRIB File.

## Unnamed No. 7

LOCATION: sec. 25, T. 7 N., R. 95 W.  
QUAD Maybell 15'  
HOST The host is probably the Miocene Browns Park Formation.  
MNZ Uranium and vanadium minerals were recognized.  
DOI 1973  
REF U.S. Geol. Survey, 1977, CRIB File.

## Unnamed No. 8

LOCATION: NW1/4 sec. 27, T. 5 N., R. 98 W.  
QUAD Elk Springs 15'  
HOST The host is the Miocene Browns Park Formation.  
MNZ Uranium mineralization was recognized.  
DOI 1973  
REF U.S. Geol. Survey, 1977, CRIB File. U.S. Geol. Survey, 1968, Map GQ-702.

## Unnamed No. 9

LOCATION: sec. 28, T. 5 N., R. 98 W.  
QUAD Elk Springs 15'  
HOST The host is the Miocene Browns Park Formation.  
MNZ Uranium mineralization was recognized.  
DOI 1973  
REF U.S. Geol. Survey, 1977, CRIB File. U.S. Geol. Survey, 1968, Map GQ-702.

## Unnamed No. 10

LOCATION: sec. 29, T. 5 N., R. 98 W.  
LCRM The deposit lies east of Elk Springs.  
QUAD Elk Springs 15'  
HOST The host is the Miocene Browns Park Formation.  
MNZ Uranium mineralization was recognized.  
DOI 1973  
REF U.S. Geol. Survey, 1977, CRIB File. U.S. Geol. Survey, 1968, Map GQ-702.

## Unnamed No. 11

LOCATION: sec. 30, T. 5 N., R. 98 W.  
QUAD Elk Springs 15'  
HOST The host is the Miocene Browns Park Formation.  
MNZ Uranium minerals were recognized.  
DOI 1973  
REF U.S. Geol. Survey, 1977, CRIB File. U.S. Geol. Survey, 1968, Map GQ-702.

## Unnamed No. 12

LOCATION: NE1/4SE1/4 sec. 21, T. 5 N., R. 99 W.  
QUAD M F Mountain 7 1/2'  
MNZ Uranium mineralization was noted.  
DOI 1973  
REF U.S. Geol. Survey, 1977, CRIB File. U.S. Geol. Survey, 1968, Map GQ-702.

## Unnamed No. 13

LOCATION: NE1/4NE1/4NW1/4 sec. 16, T. 7 N., R. 101 W.  
QUAD Zenobia Peak 7 1/2'  
MNZ Uranium minerals were recognized.  
DOI 1973  
REF U.S. Geol. Survey, 1977, CRIB File.



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### Unnamed No. 14

LOCATION: sec. 14, T. 9 N., R. 96 W.

QUAD Maybell 15'

RMKS Drilling was carried out by the Cleveland Cliffs Iron Company in 1968. The holes were on 3 mile centers. 23 of 125 holes were mineralized, most in the location given above.

DOI 1977

REF Western Nuclear, 1977, Submittal Files.

### Woodpile No. 1

LOCATION: sec. 11, T. 4 N., R. 101 W.

LCST UNCERTAIN

LCRM The deposit also extends to sec. 12. Directions to the deposit are given as follows: "From Vernal, Utah, at intersection of U.S. Hwy 40 and Utah State Hwy 44, drive east on U.S. Hwy 40 for 57.2 miles to Skull Creek, Colorado; turn left at steel gate for 1.7 miles; right 0.2 mile; right 1.4 miles to discovery of Woodpile No. 1."

HOST The deposit lies near the base of the Shinarump Member of the Triassic Chinle Formation. It is a white, conglomeratic, cross-bedded, poorly sorted sandstone containing red and green mudstone galls and partings. There are numerous minor scours along the rim of the outcrop. The mineralized sandstone unit overlain by mudstone is at the base of the Shinarump and probably occupies shallow scours in the Moenkopi Formation. The weakly radioactive pyritized sandstone is less than one ft thick and is exposed for an outcrop thickness of about 5 ft.

STRC The property is located on the east flank of the Red Wash anticline. The dip is about 8°E.

MNZ Weak mineralization is apparently associated with pyrite masses and nodules. Pyrite is in places interstitial, and in places completely replaces the sand grains. Uranium minerals are not megascopically visible. A grab sample assay showed 0.01% eU308, 0.04% V205 and 2.6% CaCO3.

DOI 1955

REF U.S. A.E.C., 1966, Preliminary Reconnaissance Reports, Moffat County, Colorado.

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Production in the county to 1971 was 455 tons of ore mined that contained 1,449 lb of  $U_3O_8$ , and 14,343 lb of  $V_2O_5$ . There is excellent potential for more reserves to be found in the county.

Montezuma County is situated in the Four Corners region of southwestern Colorado. It is mesa country, with the mesas capped primarily by Upper Cretaceous rocks, including the Dakota Sandstone and the Mancos Shale. Older sedimentary formations are exposed locally in the many canyon walls. The Tertiary La Plata Mountains of the San Juan Uplift straddle the eastern border, and the Ute Mountains, also Tertiary in age, dominate the west-central part of the county. Older sedimentary strata are exposed around the flanks of the La Plata Mountains in the northeast.

Two types of radioactive deposits are found in the county. The most important of the two is the Colorado Plateau-type tabular deposit, located predominantly in the Jurassic Morrison Formation, but also found occasionally in the Entrada Sandstone or in the Navajo Sandstone. The Morrison Formation in this area is an interbedded sandstone and mudstone unit. The sandstones are generally white, light gray, yellow, or pale brown, and the mudstones are variegated red and green. In the Salt Wash Member of the Morrison Formation, where most deposits lie, the mudstones are predominantly red. In Montezuma County these deposits are concentrated around McElmo Dome on the northwest flanks of the Ute Mountains. The Roberta Jean Mine, located on the flanks of the McElmo Dome, is the largest uranium mine of this type in the county.

Heavy-mineral concentrations in the Point Lookout Sandstone Member of the Mesaverde Group form the second type of radioactive deposit. These deposits, discovered by airborne reconnaissance surveys during the 1950's, are found along the outer northwest edge of the San Juan Basin.

The majority of the ore shipped from the county was from the Roberta Jean Mine. All of the reported production in the county has been from the Morrison Formation, and most of that was from the Salt Wash Member.

Montezuma County was heavily prospected during the uranium boom of the early 1950's, and any large, easily found deposits should have been discovered at that time. Several formations and areas, however, have further potential. Because of the known prospects and minor production in the area, the Morrison Formation along the flanks of McElmo Dome probably offers the best potential for uranium resources. The Morrison Formation is known to be a favorable host rock for this general area of the Colorado Plateau, and the McElmo Dome appears to have acted as a structural trap for uranium and other minerals. In addition to the occurrences listed in this report, small, scattered anomalies, also reported in the Morrison Formation, are found in Cross Canyon south of Dove Creek. Channel sandstones within the Upper Cretaceous Fruitland Formation in the San Juan Basin are also known to host uranium. The Fruitland could be a potential producer where it extends into Montezuma County on the southeast. At least one occurrence in the county is found within the Jurassic Entrada Sandstone. This occurrence contains some micaceous minerals and a relatively high ratio of vanadium to uranium. Large uranium-vanadium deposits in the Entrada Sandstone have been mined north of Montezuma County at the Graysill Mine in San Juan County and at Placerville, San Miguel County. Those within the county could be genetically similar to these roscoelite types. The final area of interest lies on the northwest edge of the San Juan Basin, where ancient heavy-mineral placers are found in the black sands of the Point Lookout Sandstone (Mesaverde Group) and Picture Cliffs Sandstone. These placers probably do not have much economic potential for uranium, but may be of some importance as rare-earth or titanium concentration.

# MONTEZUMA COUNTY

## 25, Airborne Anomaly

LOCATION: SW1/4 sec. 15, T. 32 N., R. 17 W.

LCST UNSURVEYED

LCRM "Turn east from U.S. Highway 666 onto a dirt road 11.5 miles north of Shiprock, N.M., and drive along the main road for 8.4 miles to the top of Palmer Mesa. Turn left at a group of hogans and drive northeast for 2.4 miles to the Ute Reservation fence. Continue northeast for 2.2 miles. Turn left and drive 0.7 mile to a small reservoir, then turn right and go 1.7 miles along a little-used road. Anomaly is 0.4 mile to the northeast across the valley." This lies in the northwestern part of the San Juan Basin.

QUAD Tanner Mesa 7 1/2'

DVEL There are three small prospect pits (1 ft x 1 ft x 1 ft) found at the north end of the anomaly.

HOST The anomaly lies in the upper part of the massive member of the Point Lookout Sandstone, of the Upper Cretaceous Mesaverde Group. Mineralization occurs in a dark, yellowish-brown, brownish-yellow to dark brownish-gray, very fine-grained, hard, well-cemented sandstone with abundant limonite. The iron impregnated zone occurs in a light gray, massive, cross-bedded, medium- to fine-grained sandstone.

STRC The anomaly is located on the northeast flank of the North Chimney Rock Dome.

MNZ Radioactivity is associated with detrital heavy mineral grains. Chip samples show 0.03 to 0.04% eU308 and 0.000% U308.

RMKS Airborne Anomalies No. 26 and 27 are within a quarter mile away. Anomalies 30 and 31 are about a mile southeast across the canyon.

DOI 1955

REF W. L. Chenoweth, 1978, Personal Communication. U.S. A.E.C., 1966, Preliminary Reconnaissance Reports, Montezuma County, Colorado. Chenoweth, W.L., and Stehle, F.T., 1957.

## 26, Airborne Anomaly

LOCATION: NE1/4SW1/4 sec. 15, T. 32 N., R. 17 W.

LCST UNSURVEYED

LCRM "Turn east from U.S. Highway 666 onto dirt road 11.5 miles north of Shiprock, N.M. and drive along the main road for 8.4 miles to top of Palmer Mesa. Turn left at a group of hogans and drive northeast for 2.4 miles to the Ute Reservation fence; continue northeast for 2.2 miles. Turn left and drive 0.7 mile to reservoir, then turn right and proceed 1.7 miles along unimproved road to the anomaly." This lies in the northwestern San Juan Basin.

QUAD Moqui Canyon 7 1/2'

MAP CORTEZ

HOST The anomaly occurs in the upper part of the upper massive member of the Point Lookout Sandstone, of the Upper Cretaceous Mesaverde Group. Mineralization occurs in a brownish-yellow, yellowish-reddish-brown to dark brownish-black, very fine-grained, hard, well-cemented sandstone

with limonite, jarosite, some carbon trash, and some hematite. This iron-impregnated zone occurs in a light-gray, massive, very fine-grained, cross-bedded sandstone.

STRC The anomaly is located on the northeast flank of the North Chimney Rock Dome.

MNZ Mineralogy is masked by limonite, but uraniferous zircon and monazite causes the radioactivity. The anomalous area is 1,125 ft long, averages 15 ft wide (exposed) and is 2 to 3 ft thick. Grab samples taken from this zone range from 0.04 to 0.06% eU308 and 0.00% U308.

RMKS Airborne Anomalies No. 25 and 27 are within a quarter of a mile to the southwest and west. Airborne Anomalies 30 and 31 are across the canyon about one mile to the southeast.

DOI 1955

REF W. L. Chenoweth, 1978, Personal Communication. U.S. A.E.C., 1966, Preliminary Reconnaissance Reports, Montezuma County, Colorado. Chenoweth, W.L., and Stehle, F. T., 1957.

## 27, Airborne Anomaly

LOCATION: SE1/4SW1/4 sec. 15, T. 32 N., R. 17 W.

LCST UNSURVEYED

LCRM "Turn east from U.S. Highway 666 onto dirt road 11.5 miles north of Shiprock, N.M. and drive along the main road for 8.4 miles to the top of Palmer Mesa. Turn left at a group of hogans and drive for 2.4 miles to the Ute Res. fence; continue northeast for 2.2 miles. Turn left and drive for 0.7 miles to a small reservoir. Turn right onto an unimproved road and drive for 1.7 miles. Anomaly is 1/4 mile southwest across the valley." This lies in the northwestern San Juan Basin.

QUAD Tanner Mesa 7 1/2'

MAP CORTEZ

HOST The anomaly is located in the upper part of the Point Lookout Sandstone of the Upper Cretaceous Mesaverde Group. The radioactivity occurs in a yellowish-brown to light brownish-yellow, very fine-grained, blocky sandstone with abundant limonite and some hematite. This iron impregnated zone occurs in a light-gray, massive, medium- to fine-grained, cross-bedded sandstone.

STRC The anomaly is located on the northeast flank of the North Chimney Rock dome.

MNZ Radioactivity is associated with detrital heavy mineral grains. The main anomalous zone is 450 ft long, averages 40 ft wide, and is 2 to 3 ft thick. Several smaller zones (100 x 35 ft) lie to the north and west. Chip channel and grab samples range from 0.01 to 0.03% eU308.

RMKS Airborne Anomalies No. 25 and 26 are nearby; Airborne Anomalies No. 30 and 31 are a mile to the southeast, across the canyon.

DOI 1955

REF W. L. Chenoweth, 1978, Personal Communication. U.S. A.E.C., 1966, Preliminary Reconnaissance Reports, Montezuma County, Colorado. Chenoweth, W.L., and Stehle, F.T., 1957.

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## 28, Airborne Anomaly

LOCATION: SW1/4NE1/4 sec. 33, T. 33 N., R. 16 W.  
 LCST UNSURVEYED  
 LCRM "Drive north from Mancos Creek Trading Post on U.S. Highway 666 for 2.2 miles, then turn east and drive 10.9 miles up Mancos River Canyon. Turn left onto little used road and drive 1.7 miles. Anomaly is on an isolated knob littered with brown sandstone debris 1/3 mile southwest of the road." This anomaly lies in the northwestern San Juan Basin.  
 QUAD Moqui Canyon 7 1/2'  
 MAP CORTEZ  
 HOST The deposit is in a tongue of the Point Lookout Sandstone within the basal Menefee Formation of the Upper Cretaceous Mesaverde Group. The rock is a yellowish-brown, very fine-grained sandstone, well-cemented with limonite. This blocky sandstone forms a zone 2 to 5 ft thick in a light-gray, massive, cross-bedded sandstone.  
 MNZ Radioactivity is associated with detrital heavy mineral grain, probably uraniferous zircon and monazite. The anomalous area trends northeast and is roughly 300 ft long and 100 feet wide, with a thickness of 2 to 5 ft. Chip and channel samples range from 0.01 to 0.02% eU308 and one sample assayed 0.06% V205.  
 RMKS Airborne Anomaly No. 29 is 3.5 miles northeast.  
 DOI 1955  
 REF W. L. Chenoweth, 1978, Personal Communication. U.S. A.E.C., 1966, Preliminary Reconnaissance Reports, Montezuma County, Colorado. Chenoweth, W. L., and Stehle, F. T., 1957.

## 29, Airborne Anomaly

LOCATION: SE1/4SE1/4 sec. 24, T. 33 N., R. 17 W.  
 LCST UNSURVEYED  
 LCRM "Drive north from Mancos Creek Trading Post on U.S. Highway 666 for 2.2 miles, then turn east and drive 10.9 miles up Mancos River Canyon. Turn left onto little used road and drive 2 miles northwest to a small, dried up reservoir. Walk northwest 3 1/4 miles cross country to the anomaly." This anomaly lies in the northwestern San Juan Basin.  
 QUAD Tanner Mesa 7 1/2'  
 MAP CORTEZ  
 HOST The deposit is in a tongue of the Point Lookout Sandstone with the basal Menefee Formation of the Upper Cretaceous Mesaverde Group. The mineralization occurs in a yellowish-brown, very fine to fine-grained, blocky sandstone well-cemented with limonite. This limonite-stained zone occurs in a light-gray, massive, very fine- to fine-grained, cross-bedded sandstone.  
 MNZ Radioactivity is associated with detrital heavy mineral grains, probably uraniferous zircon and monazite. The anomalous area trends northeast and is roughly 300 ft long and 100 ft wide, with a thickness of 2 to 5 ft. Chip and channel samples range from

0.01 to 0.02% eU308 and one sample assayed 0.06% V205.

RMKS Airborne Anomaly No. 28 is 3 1/4 miles to the southeast.  
 DOI 1955  
 REF W. L. Chenoweth, 1978, Personal Communication. U.S. A.E.C., 1966, Preliminary Reconnaissance Reports, Montezuma County, Colorado. Chenoweth, W. L., and Stehle, F. T., 1957.

## 31, Airborne Anomaly

LOCATION: SE1/4NW1/4 sec. 23, T. 32 N., R. 17 W.  
 LCST UNSURVEYED  
 LCRM "Turn east from U.S. Highway 666 onto dirt road 11.5 miles north of Shiprock, N.M. Drive along well-travelled road to top of Palmer Mesa. Turn left at a group of hogans 8.4 miles from the junction with Route 666 and proceed northeast 2.4 miles to the Ute Res. fence; continue for 0.4 mile, then turn west and drive for 2 miles. Anomaly is a long drainage to left of the road." This anomaly lies in the northwestern San Juan Basin.  
 QUAD Tanner Mesa 7 1/2'  
 MAP CORTEZ  
 HOST The anomaly is located in the upper part of the Point Lookout Sandstone of the Upper Cretaceous Mesaverde Group. The radioactivity occurs in a dark brown to dark yellowish-brown, very fine-grained blocky sandstone that is well-cemented with limonite. This limonite zone occurs in a light gray, massive, cross-bedded sandstone. Some blotches of reddish-brown friable sandstone with hematite and jarosite occur at the contact with the massive and mineralized sandstone.  
 STRC The deposit is located on the northeast flank of the North Chimney Rock dome.  
 MNZ Mineralization is not megascopically visible but is due to detrital heavy minerals such as uraniferous zircon or monazite. The mineralized sandstone occurs as a brown colored zone which is exposed for 800 ft along the outcrop for a width of 50 to 100 ft and a thickness of 2-3 ft. Chip channel samples had values between 0.01 and 0.06%  
 RMKS Anomaly No. 30 is 1/4 mile to the northwest. Anomalies numbered 25, 26, and 27 are across the canyon about one mile to the north.  
 DOI 1955  
 REF W. L. Chenoweth, 1978, Personal Communication. U.S. A.E.C., 1966, Preliminary Reconnaissance Reports, Montezuma County, Colorado. Chenoweth, W. L., and Stehle, F. T., 1957.

## 38, Airborne Anomaly

LOCATION: E1/2NW1/4 sec. 12, T. 33 N., R. 17 W.  
 LCST UNSURVEYED  
 LCRM "Turn east from U.S. Highway 666 at a point 9.6 miles north of Mancos River Trading Post. Drive 2.7 miles past two reservoirs to the end of the road. Climb the mesa via the horse trail at the right. The Anomaly is about 2 miles across the top of the mesa from the top of the trail." This anomaly lies in the northwestern San Juan Basin.

# MONTEZUMA COUNTY

QUAD Towaoc 7 1/2'  
 MAP CORTEZ  
 HOST The host rock is the Upper Cretaceous Mesaverde Group. Mineralization occurs in the upper massive member of the Point Lookout Sandstone at or near the contact with the overlying Menefee Formation. The radioactivity is located in a dark, yellowish-brown, dark brown, to dark reddish-brown, very fine-grained, well-cemented, blocky sandstone. The mineralized rock is a distinctive brown color which is diagnostic of anomalies in this area. The mineralized zone is exposed for about 400 ft along the outcrop for a width of 75 ft and a thickness of 2-3 ft.

MNZ Mineralization is not megascopically visible, but probably occurs in detrital heavy minerals such as uraniferous zircon and monazite.

RMKS Anomalies 38, 39, and 41 to 44 are all believed to represent the same "shoestring" sand, now separated by canyons and cover.

DOI 1955  
 REF W. L. Chenoweth, 1978, Personal Communication. U.S. A.E.C., 1966, Preliminary Reconnaissance Reports, Montezuma County, Colorado. Chenoweth, W. L., and Stehle, F. T., 1957.

## 39, Airborne Anomaly

LOCATION: SW1/4SW1/4 sec. 1, T. 33 N., R. 17 W.  
 LCST UNSURVEYED  
 LCRM "Turn east from U.S. Highway 666 at a point 9.6 miles north of Mancos River Trading Post. Drive 2.7 miles past two reservoirs to the end of the road. Climb the mesa via the horse trail at the right. Anomaly is about 1 1/2 miles across the mesa from the top of the trail." The anomaly lies in the northwestern San Juan Basin.

QUAD Towaoc 7 1/2'  
 MAP CORTEZ  
 HOST The host rock is the Upper Cretaceous Mesaverde Group. Mineralization occurs in the upper massive member of the Point Lookout Sandstone at or near the contact with the overlying Menefee Formation. The radioactivity occurs in a dark, yellowish-brown, dark brown, to dark reddish-brown, very fine-grained, well-cemented blocky sandstone. This sandstone forms a zone in a light gray to light yellowish-gray, massive cross-bedded, medium- to fine-grained sandstone. The mineralized rock is a distinctive brown color which is diagnostic of anomalies in this area. The mineralized zone is exposed for about 600 ft along the outcrop, for a width of 75 ft and a thickness of 2-3 ft.

MNZ Mineralization is not megascopically visible, but probably occurs in detrital heavy minerals such as uraniferous zircon and monazite. Analyses of grab samples show 0.01% U308.

RMKS Anomalies 38, 39, and 41 to 44 are all believed to represent the same "shoestring" sand, now separated by canyons and cover.

DOI 1955  
 REF W. L. Chenoweth, 1978, Personal Communication. U.S. A.E.C., 1966, Preliminary Reconnaissance Reports, Montezuma County, Colorado. Chenoweth, W. L., and Stehle, F. T., 1957.

## 40, Airborne Anomaly

LOCATION: NE1/4 sec. 11, T. 33 N., R. 17 W.  
 LCST UNSURVEYED  
 LCRM "Turn east from U.S. Highway 666 at a point 9.6 miles north of Mancos River Trading Post. Drive 2.7 miles past two reservoirs to the end of the road. Climb the mesa via the horse trail at the right. The anomaly is about 1.5 miles across the top of the mesa from the top of the trail." This anomaly lies in the northwestern San Juan Basin.

QUAD Towaoc 7 1/2'  
 MAP CORTEZ  
 HOST The host rock is the Upper Cretaceous Mesaverde Group. Mineralization occurs in the upper massive member of the Point Lookout Sandstone at or near the contact with the overlying Menefee Formation. The radioactivity occurs in a dark, yellowish-brown, dark brown, to dark reddish-brown, very fine-grained sandstone. The mineralized rock is a distinctive brown color which is diagnostic of anomalies in this area. The mineralized zone is exposed for about 1,300 ft, with a width of 100 ft and a thickness of 2-3 ft.

MNZ Mineralization is not megascopically visible, but probably occurs in detrital heavy minerals such as uraniferous zircon and monazite.

RMKS Anomalies 38, 39, and 41 to 44 are all believed to represent the same "shoestring" sand, now separated by canyons and cover.

DOI 1955  
 REF W. L. Chenoweth, 1978, Personal Communication. U.S. A.E.C., 1966, Preliminary Reconnaissance Reports, Montezuma County, Colorado. Chenoweth, W. L., and Stehle, F. T., 1957.

## 41, Airborne Anomaly

LOCATION: SE1/4 sec. 2, T. 33 N., R. 17 W.  
 LCST UNSURVEYED  
 LCRM "Turn east from U.S. Highway 666 at a point 9.6 miles north of Mancos River Trading Post and drive for 2.7 miles past two small reservoirs to end of road. Climb mesa via the horse trail at right of road. Anomaly is about 1.5 miles south of top of horse trail across the top of the mesa." This anomaly lies in the northwestern San Juan Basin.

QUAD Towaoc 7 1/2'  
 MAP CORTEZ  
 HOST The host rock is the Upper Cretaceous Mesaverde Group. Mineralization occurs in the upper massive member of the Point Lookout Sandstone, at or near the contact with the overlying Menefee Formation. The radioactivity occurs in a dark yellowish-brown, dark brown to a dark reddish-brown, very fine-grained, well-cemented, blocky sandstone. This sandstone forms a zone in a light gray to light yellowish gray massive cross-bedded, medium-to fine-grained sandstone. The mineralized zone is exposed for about 450 ft along the outcrop, for about 50 ft in width and 2 to 3 ft in thickness. The mineralized rock possesses a distinctive brown color which is diagnostic of anomalies in this area.

# MONTEZUMA COUNTY

MNZ Mineralization is not megascopically visible, but probably occurs in detrital heavy minerals such as uraniferous zircon and monzite. Grab samples taken from here contain 0.01% eU308.

RMKS Anomalies No. 44, 43, 42, 41, 39 and 38 are believed to represent the same "shoestring" sand, now separated by canyons and cover.

DOI 1955

REF W. L. Chenoweth, 1978, Personal Communication. U.S. A.E.C., 1966, Preliminary Reconnaissance Reports, Montezuma County, Colorado. Chenoweth, W. L., and Stehle, F. T. 1957

## 42, Airborne Anomaly

LOCATION: sec. 2, T. 33 N., R. 17 W.

LCST UNSURVEYED

LORM "Turn east from U.S. Highway 666 at a point 9.6 miles north of Mancos River Trading Post. Drive 2.7 miles past two reservoirs to the end of the road. Climb the mesa via the horse trail at the right. The anomaly is about 1.5 miles south of the top of the trail across the top of the mesa." This anomaly lies in the northwestern San Juan Basin.

QUAD Towaoc 7 1/2'

MAP CORTEZ

HOST The host rock is the Upper Cretaceous Mesaverde Group. Mineralization occurs in the upper massive member of the Point Lookout Sandstone at or near the contact with the overlying Menefee Formation. The radioactivity occurs in a dark, yellowish-brown, dark brown, to dark reddish-brown, very fine-grained, well-cemented, blocky sandstone. This sandstone forms a zone in a light gray to light yellowish gray, massive cross-bedded, medium- to fine-grained sandstone. The mineralized rock is a distinctive brown color which is diagnostic of anomalies in this area. The mineralized zone is exposed along about 1,800 ft of outcrop for a width of 100 ft and a 2-3 ft thickness.

MNZ Mineralization is not megascopically visible, but probably occurs in detrital heavy minerals such as uraniferous zircon and monazite. Grab samples taken assayed 0.01% eU308.

RMKS Anomalies 38, 39, and 41 to 44 are all believed to represent the same "shoestring" sand, now separated by canyons and cover.

DOI 1955

REF W. L. Chenoweth, 1978, Personal Communication. U.S. A.E.C., 1966, Preliminary Reconnaissance Reports, Montezuma County, Colorado. Chenoweth, W. L., and Stehle, F. T., 1957.

## 43, Airborne Anomaly

LOCATION: SW1/4NW1/4 sec. 2, T. 33 N., R. 17 W.

LCST UNSURVEYED

LORM "Turn east from U.S. Highway 666 at a point 9.6 miles north of Mancos River Trading Post. Drive 2.7 miles past two reservoirs to the end of the road. Climb the mesa via the horse trail at the right. The anomaly is about 1 mile southwest of the top of the trails across the mesa top." This anomaly lies in the northwestern San Juan Basin.

QUAD Towaoc 7 1/2'

MAP CORTEZ

HOST The host rock is the Upper Cretaceous Mesaverde Group. Mineralization occurs in the upper massive member of the Point Lookout Sandstone at or near the contact with the overlying Menefee Formation. The radioactivity occurs in a dark, yellowish-brown, dark brown, to dark reddish-brown, very fine-grained, well-cemented, blocky sandstone. This sandstone forms a zone in a light gray to light yellowish gray, massive, cross-bedded, medium- to fine-grained sandstone. The mineralized rock is a distinctive brown color which is diagnostic of anomalies in this area. The mineralized zone is exposed along about 1,800 ft of the outcrop for a width of 75 ft and a thickness of 2-3 ft.

MNZ Mineralization is not megascopically visible, but probably occurs in detrital heavy minerals such as uraniferous zircon and monazite. Assays of grab samples taken range from 0.01 to 0.02% eU308.

RMKS Anomalies 38, 39, and 41 to 44 are all believed to represent the same "shoestring" sand, now separated by canyons and cover.

DOI 1955

REF W. L. Chenoweth, 1978, Personal Communication. U.S. A.E.C., 1966, Preliminary Reconnaissance Reports, Montezuma County, Colorado. Chenoweth, W. L., and Stehle, F. T., 1957.

## 44, Airborne Anomaly

LOCATION: N1/2NE1/4 sec. 3, T. 33 N., R. 17 W.

LCST UNSURVEYED

LORM "Turn east from U.S. Highway 666 at a point 9.6 miles north of Mancos River Trading Post. Drive 2.7 miles past two reservoirs to the end of the road. Climb the mesa via the horse trail at the right. The anomaly is about one mile from the top of the trail, southwest across the mesa." This anomaly lies in the northwestern San Juan Basin. Location of this anomaly extends to S1/2 sec. 34, T. 33 1/2 N., R. 17 W.

QUAD Towaoc 7 1/2'

MAP CORTEZ

HOST The host rock is the Upper Cretaceous Mesaverde Group. Mineralization occurs in the upper massive member of the Point Lookout Sandstone at or near the contact with the overlying Menefee Formation. The radioactivity occurs in a dark, yellowish-brown, dark brown, to dark reddish-brown, very fine-grained, well-cemented, blocky sandstone. This sandstone forms a zone in a light gray to light yellowish-gray, massive cross-bedded, medium- to fine-grained sandstone. The mineralized rock is a distinctive brown color which is diagnostic of anomalies in this area. The mineralized zone is exposed for about 2,000 ft along the outcrop, for a width of 75 to 100 ft, and a thickness of 2-3 ft.

MNZ Mineralization is not megascopically visible, but probably occurs in detrital heavy minerals such as uraniferous zircon and monazite. Assays of grab samples taken range from 0.01 to 0.02% eU308.

## MONTEZUMA COUNTY

RMKS Anomalies 38, 39, and 41 to 44 are all believed to represent the same "shoestring" sand, now separated by canyons and cover.  
 DOI 1955  
 REF W. L. Chenoweth, 1978, Personal Communication. U.S. A.E.C., 1966, Preliminary Reconnaissance Reports, Montezuma County, Colorado. Chenoweth, W. L., and Stehle, F. T., 1957.

### 45, Airborne Anomaly

LOCATION: SE1/4SE1/4 sec. 23, T. 34 N., R. 17 W.  
 LCST UNSURVEYED  
 LCRM "Turn east from U.S. Highway 666 at a point north of Mancos River Trading Post. Drive 2.7 miles past two reservoirs to the end of the road. Climb the mesa via the horse trail at the right. Anomaly is about 2 1/4 miles to the north along the mesa rim from the top of the trails." This anomaly lies in the northwestern San Juan Basin.  
 QUAD Towaco 7 1/2'  
 MAP CORTEZ  
 HOST The host rock is the Upper Cretaceous Mesaverde Group. Mineralization occurs in the upper massive member of the Point Lookout Sandstone at or near the contact with the overlying Menefee Formation. The radioactivity occurs in a dark, yellowish-brown, dark brown, to dark reddish-brown, very fine-grained, well-cemented, blocky sandstone. This sandstone forms a zone in a light gray to light yellowish-gray, massive, crossbedded, medium- to fine-grained sandstone. The mineralized rock is a distinctive brown color which is diagnostic of anomalies in this area. The mineralized zone is exposed for about 300 ft; 500 ft wide and 2-3 ft thick.  
 MNZ Mineralization is not megascopically visible, but probably occurs in detrital heavy minerals such as uraniferous zircon and monazite. Assays range between 0.01 and 0.02% eU3O8.  
 RMKS Anomalies 38, 39, and 41 to 44 are all believed to represent the same "shoestring" sand, now separated by canyons and cover.  
 DOI 1955  
 REF W. L. Chenoweth, 1978, Personal Communication. U.S. A.E.C., 1966, Preliminary Reconnaissance Reports, Montezuma County, Colorado. Chenoweth, W. L., and Stehle, F. T., 1957.

### Broken Bow

LOCATION:  
 LCST UNLOCATABLE  
 PROD There had been 12 tons of ore mined by 1971, at grades of 0.11% U3O8 and 1.30% V2O5, producing 26 lbs of U3O8 and 313 lbs of V2O5.  
 HOST The host is the Jurassic Morrison Formation, Salt Wash Member.  
 MNZ Mineralization is of the carnotite - tyuyamunite type.  
 DOI 1971  
 REF W. L. Chenoweth, 1978, Personal Communication. U.S. A.E.C., 1971, Production Records, Colorado.

### CB Claims

LOCATION: sec. 16, T. 37 N., R. 18 W.  
 LCRM Also sec. 21.  
 PROD One ton of ore had been mined by 1971, at grades of 0.05% U3O8 and 0.10% V2O5, producing 1 lb of U3O8 and 21 lbs of V2O5.  
 HOST The host is the Jurassic Morrison Formation, Brushy Basin Member.  
 DOI 1971  
 REF W. L. Chenoweth, 1978, Personal Communication. U.S. A.E.C., 1971, Production Records, Colorado.

### Cliff House

LOCATION: sec. 22, T. 36 N., R. 18 W.  
 LCRM The deposit also extends to sec. 27.  
 QUAD Moqui SE 7 1/2'  
 MAP CORTEZ  
 DVEL Some underground work had been carried out, but there is no record of any uranium production.  
 BKG .004 mr/hr  
 RNG .006 to .02 mr/hr  
 HOST The host is a white, medium-grained sandstone that is reported as either Jurassic upper Navajo or lower Carmel. It outcrops in varying degrees for a distance of one mile.  
 MNZ Grab samples show weak to moderate radioactivity. The radioactivity originates from a brownish-red limonite gossan. Veins of pyrolusite, crusts of barite, and stains of copper are also associated with the uranium mineralization.  
 DOI 1951  
 REF W. L. Chenoweth, 1978, Personal Communication. U.S. Bur. of Mines, 1977, (Unpubl.). U.S. A.E.C., 1966, Preliminary Reconnaissance Reports, Montezuma County, Colorado. Metzger, O. H., 1944.

### Coffin's Prospect

LOCATION: sec. 34, T. 36 N., R. 18 W.  
 LCRM The prospect lies a few feet north of Colorado Highway 32 on the John Meadows Ranch.  
 QUAD Moqui SE 7 1/2'  
 MAP CORTEZ  
 DVEL A pit was opened in 1913, but no ore was shipped from this prospect. The pit is now filled with alluvium.  
 HOST The deposit lies in the Entrada Sandstone.  
 STRC The prospect lies near the Ute Mountains, and many fractures and faults cross the area. These fractures do not seem to have controlled mineralization.  
 MNZ The mineralized zone is about 6 inches thick and is exposed along an outcrop that is 130 ft by 40 ft wide. There are uranium-vanadium minerals and traces of malachite present, concentrated along bedding planes. Within the mineralized zone, a dark gray, 1-inch seam is higher grade than the rest of the zone. The dark gray mineral is believed to be a vanadium mica. Samples taken in 1921 assayed more than 1.0% V2O5 and 0.09% U3O8. Samples taken in the early 1960's assayed .004 to .008% eU3O8 and .52 to .93% V2O5.

# MONTEZUMA COUNTY

DOI 1965  
REF Ekren, E. B., and Houser, F. N., 1965.

## Karla Kay

LOCATION: sec. 29, T. 36 N., R. 18 W.

QUAD Moqui SE 7 1/2'

MAP CORTEZ

PROD A sample shipment of ore consisted of 4 tons of 0.19% U308. By 1971, 12 tons had been mined at grades of 0.08% U308 and 0.45% V205, producing 19 lbs of U308 and 109 lbs of V205.

BKG .004 mr/hr

RNG .016 to .02 mr/hr

HOST The host is the Brushy Basin Member of the Upper Jurassic Morrison Formation.

STRC Clay zones and fractures appear to control and concentrate mineralization.

MNZ Four ft of mineralization occur in a brown stained, trashy, medium-and-angular-grained sandstone. It contains conglomerate and clay lenses and numerous fractures associated with gypsum crustifications. No uranium or vanadium minerals were megascopically visible, but silicified bones were present in the mineralized zone. Radioactivity of grab samples was moderate.

DOI 1971

REF W. L. Chenoweth, 1978, Personal Communication. U.S. Geol. Survey, 1977, CRIB File. U.S. Bur. of Mines, 1977, (Unpubl.). U.S. A.E.C., 1971, Production Records, Colorado. Finch, W. L., 1967. U.S. A.E.C., 1966, Preliminary Reconnaissance Report, Montezuma County, Colorado. Metzger, O. H., 1944.

## Pay Day (?)

LOCATION: T. 34 N., R. 18 W.

LCST UNSURVEYED

QUAD Sentinel Peak NE 7 1/2'

MAP CORTEZ

PROD Two truckloads of material were shipped, but none were accepted due to the low grade.

RNG Weak.

HOST The mineralization occurs near the contact of the Brushy Basin and Salt Wash Members of the Upper Jurassic Morrison Formation.

MNZ Carnotite stains are present on the fracture surfaces of silicified logs. There is very little replacement of the sandstone and conglomerate.

RMKS Radioactivity was measured by a Detectron, and was recorded as "weak".

DOI 1951

REF W. L. Chenoweth, 1978, Personal Communication. U.S. A.E.C., 1966, Preliminary Reconnaissance Reports, Montezuma County, Colorado.

## Roberta Jean

LOCATION: sec. 8, T. 38 N., R. 19 W.

PROD By 1971, 387 tons of ore had been mined at grades of 0.17% U308 and 1.65% V205, producing 1,309 lbs of U308 and 12,770 lbs of V205.

HOST The host is the Jurassic Morrison Formation, Salt Wash Member.

MNZ Carnotite and tyuyamunite were recognized.

DOI 1971

REF W. L. Chenoweth, 1978, Personal Communication. U.S. A.E.C., 1971, Production Records, Colorado.

## Surprise

LOCATION: T. 36 N., R. 16 W.

LCST UNSURVEYED

QUAD Arriola 7 1/2'

MAP CORTEZ

DVEL Some underground mining has been carried out.

BKG .004 mr/hr

RNG To .02 mr/hr

HOST The host rock is a brown, trashy sandstone which is probably a unit of the Salt Wash Member of the upper Jurassic Morrison Formation. Grab samples show moderate radioactivity in the brown sandstone associated with carbonaceous trash. Fragments of trees, reeds, and bones outcrop in a zone 3 to 5 ft width and 1,000 ft in length. The trees are mostly silicified with sparse carnotite paint.

DOI 1951

REF W. L. Chenoweth, 1978, Personal Communication. U.S. Bur. of Mines, 1977, (Unpubl.). U.S. A.E.C., 1966, Preliminary Reconnaissance Reports, Montezuma County, Colorado. Metzger, O. H., 1944.

## Swallow 1

LOCATION:

PROD One ton had been mined by 1971, at grades of 0.15% U308 and 1.45% V205, producing 3 lbs of U308 and 29 lbs of V205.

HOST The host is the Jurassic Morrison Formation, Salt Wash Member.

MNZ Carnotite and/or tyuyamunite were recognized.

DOI 1971

REF W. L. Chenoweth, 1978, Personal Communication. U.S. A.E.C., 1971, Production Records, Colorado.

## Veatch

LOCATION:

PROD By 1971, 11 tons of ore had been mined at grades of 0.03% U308 and 0.18% V205, producing 6 lbs of U308 and 39 lbs of V205.

HOST The host is probably the Jurassic Morrison Formation.

DOI 1971

REF W. L. Chenoweth, 1978, Personal Communication. U.S. A.E.C., 1971, Production Records, Colorado.

## Virginia Ann

LOCATION:

PROD By 1971, 31 tons had been mined at grades of 0.14% U308 and 1.71% V205, producing 85 lbs of U308 and 1,062 lbs of V205.

HOST The host is the Jurassic Morrison Formation, Salt Wash Member.

DOI 1971

REF W. L. Chenoweth, 1978, Personal Communication. U.S. A.E.C., 1971, Production Records, Colorado.



## MONTROSE COUNTY

Montrose County lies within the Uravan mineral belt and is the most important producing county in the belt and the state. Production in the county from January 1, 1948 to January 1, 1978 was 7,369,000 tons of ore mined at a grade of 0.25 percent  $U_3O_8$  producing 36,428,000 lb of  $U_3O_8$ . Of the ore mined, 7,321,000 tons were processed for vanadium, producing 187,104,000 lb of  $V_2O_5$  at a grade of 1.28 percent of  $V_2O_5$ .

The county is situated on the western slope of Colorado, and it lies within typical Colorado Plateau terrane. The county is covered by Cretaceous, Jurassic, and Tertiary sediments. These rocks are exposed on mesas and plateaus or in valleys along the San Miguel and Dolores Rivers. Salt anticlines in Paradox Valley and the Sinbad Valley expose the Pennsylvanian Paradox

Formation, which consists of salt, gypsum, and anhydrite in a thick evaporite sequence. Some Precambrian rocks are exposed on the Uncompahgre Plateau in the northeastern part of the county.

The Brushy Basin Member of the Morrison Formation is the most important host of uranium deposits in the county. The ore is contained within tabular or roll-type bodies in stream-channel sands. The Morrison contains large amounts of organic matter that is regarded as a favorable criterion for ore.

The county will remain a producer of ore for years to come. Much has been written about the county and the belt in particular. These references can be found in the cross-index of the bibliography and should be consulted for more information.

# MONTROSE COUNTY

30-30

LOCATION: sec. 1, T. 45 N., R. 18 W, NMPM.  
 LCST UNLOCATABLE  
 LCRM Bull Canyon district, Fawn Springs locality.  
 QUAD Bull Canyon 7 1/2'  
 MAP MOAB  
 PROD By 1971, 1,289 tons had been mined at a grade of 0.20% U308, producing 5,184 lbs of U308, and 2.04% V205, producing 52,481 lbs of V205.  
 HOST Salt Wash Member, Jurassic Morrison Formation.  
 MNZ Uranium, vanadium.  
 DOI 1971  
 REF U.S. A.E.C., 1971, Production Records, Colorado.

## 45-90 (Julian Group) (Mineral Survey #20473)

LOCATION: sec. 10, T. 47 N., R. 17 W.  
 QUAD Davis Mesa 7 1/2'  
 MAP MOAB  
 PROD As of 1971, 952 tons had been mined at a grade of 0.21% U308, producing 4,048 lbs of U308, and 1.40% V205, producing 26,721 lbs of V205.  
 HOST Salt Wash Member of the Jurassic Morrison Formation.  
 MNZ Uranium, vanadium.  
 DOI 1971  
 REF U.S. Bur. of Mines, 1977, (Unpubl.). U.S. A.E.C., 1971, Production Records, Colorado.

## 10, AEC Mining Lease (C-CM-25, DOE Lease Tract)

LOCATION: S1/2NE1/4 sec. 5, T. 47 N., R. 17 W.  
 LCRM This lease was adjacent to Mill No. 4, and lies on Club Mesa.  
 QUAD Davis Mesa 7 1/2'  
 MAP MOAB  
 PROD See C-CM-25, DOE Lease Tract.  
 HOST Jurassic Morrison Formation, Salt Wash Member.  
 MNZ Uranium, vanadium, carnotite - tyuyamunite, high vanadium, low ilme.  
 DOI 1971  
 REF U.S. Bur. of Mines, 1977, (Unpubl.). U.S. A.E.C., 1971, Production Records, Colorado.

## 11, AEC Mining Lease (C-CM-25, DOE Lease Tract) (Reserve Blocks 3 & 4)

LOCATION: N1/2NE1/4 sec. 5, T. 47 N., R. 17 W.  
 LCRM This lease is adjacent to Mill No. 2 and lies on Club Mesa.  
 QUAD Davis Mesa 7 1/2'  
 MAP MOAB  
 PROD See C-CM-25, DOE Lease Tract.  
 HOST Jurassic Morrison Formation, Salt Wash Member.  
 MNZ Uranium, vanadium, carnotite - tyuyamunite, high vanadium, low ilme.  
 DOI 1971  
 REF U.S. Bur. of Mines, 1977, (Unpubl.). U.S. A.E.C., 1971, Production Records, Colorado.

## 13, AEC Mining Lease (Reserve Block 1)

LOCATION: NW1/4 sec. 31, T. 48 N., R. 17 W.  
 LCRM This lease lies on Club Mesa.  
 QUAD Red Canyon 7 1/2', Davis Mesa 7 1/2'  
 MAP MOAB  
 PROD As of 1971, 24,731 tons had been mined at a grade of 0.25% U308 and 1.43% V205.  
 HOST Jurassic Morrison Formation, Salt Wash Member.  
 MNZ Uranium, vanadium, carnotite - tyuyamunite, high vanadium, low ilme.  
 DOI 1971  
 REF U.S. Bur. of Mines, 1977, (Unpubl.). U.S. A.E.C., 1971, Production Records, Colorado.

## 14, AEC Mining Lease (C-LP-21, DOE Lease Tract) (Reserve Block B) (Virgin Shaft)

LOCATION: S1/2SW1/4 sec. 22, T. 47 N., R. 17 W.  
 LCRM This lease lies in Long Park.  
 QUAD Uravan 7 1/2'  
 MAP MOAB  
 PROD See C-LP-21, DOE Lease Tract.  
 HOST Jurassic Morrison Formation, Salt Wash Member.  
 MNZ Uranium, vanadium, carnotite - tyuyamunite, high vanadium, low ilme.  
 DOI 1971  
 REF U.S. Bur. of Mines, 1977, (Unpubl.). U.S. A.E.C., 1971, Production Records, Colorado.

## 15, AEC Mining Lease (Reserve Block A) (C-LP-22A, DOE Lease Tract)

LOCATION: NW1/4 sec. 21, T. 47 N., R. 17 W.  
 LCRM Reserve Block A is adjacent to TNT No. 3, and lies in the Long Park district.  
 QUAD Davis Mesa 7 1/2'  
 MAP MOAB  
 PROD See C-LP-22A, DOE Lease Tract.  
 HOST Jurassic Morrison Formation, Salt Wash Member.  
 MNZ Uranium, vanadium, carnotite - tyuyamunite, high vanadium, low ilme.  
 DOI 1971, 1974  
 REF U.S. Bur. of Mines, 1977, (Unpubl.). At Taylor, U.S. A.E.C., 1974, Personal Notes. U.S. A.E.C., 1971, Production Records, Colorado.

## 23, AEC Mining Lease (C-LP-22A, DOE Lease Tract)

LOCATION: E1/2 sec. 20, T. 47 N., R. 17 W.  
 LCRM This lease block lies in the Long Park district, adjacent to the "Dusty" and "TNT No. 1 & 2" properties. The lease itself extends to the W1/2 sec. 21.  
 QUAD Davis Mesa 7 1/2'  
 MAP MOAB  
 PROD See C-LP-22A, DOE Lease Tract.  
 HOST Jurassic Morrison Formation, Salt Wash Member.  
 MNZ Uranium, vanadium, carnotite - tyuyamunite, high vanadium, low ilme.  
 DOI 1971  
 REF U.S. Bur. of Mines, 1977, (Unpubl.). U.S. A.E.C., 1971, Production Records, Colorado.

## 24, AEC Mining Lease (C-CM-25, DOE Lease Tract) (Reserve Block No. 6)

LOCATION: NE1/4NW1/4 sec. 5, T. 47 N., R. 17 W.  
 LCRM The deposit lies on Club Mesa.

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QUAD Davis Mesa 7 1/2'  
 MAP MOAB  
 PROD See C-CM-25, DOE Lease Tract.  
 HOST Jurassic Morrison Formation, Salt Wash Member.  
 MNZ Uranium, vanadium, carnotite - tyuyamunite, high vanadium, low lime.  
 DOI 1971  
 REF U.S. Bur. of Mines, 1977, (Unpubl.). U.S. A.E.C., 1971, Production Records, Colorado.

## 37, AEC Mining Lease (C-CM-25, DOE Lease Tract) (Block 8 - Club Mesa)

LOCATION: E1/2E1/2 sec. 6, T. 47 N., R. 17 W.  
 LCRM The lease lies on Club Mesa, and extends to W1/2W1/2 sec. 5.  
 QUAD Davis Mesa 7 1/2'  
 MAP MOAB  
 PROD See C-CM-25, DOE Lease Tract.  
 HOST Jurassic Morrison Formation, Salt Wash Member.  
 MNZ Uranium, vanadium, carnotite - tyuyamunite, high vanadium, low lime.  
 DOI 1971  
 REF U.S. Bur. of Mines, 1977, (Unpubl.). U.S. A.E.C., 1971, Production Records, Colorado.

## 39, AEC Mining Lease (C-AM-19, DOE Lease Tract) (Block A - Atkinson Mesa)

LOCATION: E1/2NE1/4 sec. 24, T. 48 N., R. 18 W.  
 LCRM This lease lies on Atkinson Mesa.  
 MAP MOAB  
 PROD See C-AM-19, DOE Lease Tract.  
 HOST Jurassic Morrison Formation, Salt Wash Member.  
 MNZ Carnotite - tyuyamunite, high vanadium, low lime.  
 RMKS This lease was held by the Golden Cycle Corporation.  
 DOI 1971  
 REF U.S. A.E.C., 1971, Production Records, Colorado.

## 41, AEC Mining Lease (C-CM-24, DOE Lease Tract) (Reserve Block 2)

LOCATION: South 670 ft of SE1/4 sec. 29, T. 48 N., R. 17 W.  
 LCRM This lease lies on Club Mesa.  
 MAP MOAB  
 PROD See C-CM-24, DOE Lease Tract.  
 HOST The host is the Jurassic Morrison Formation, Salt Wash Member.  
 MNZ Uranium and vanadium were mined.  
 RMKS This lease was originally issued as 26, AEC Mining Lease, which had no production.  
 DOI 1971  
 REF Al Taylor, U.S. A.E.C., 1974, Personal Notes. U.S. A.E.C., 1971, Production Records, Colorado.

## 47, AEC Mining Lease (C-AM-19, DOE Lease Tract)

LOCATION: W1/2NE1/4 sec. 24, T. 48 N., R. 18 W.  
 LCRM This lease lies on the Dolores Bench in the Uravan district.  
 QUAD Red Canyon 7 1/2'  
 MAP MOAB

PROD See C-AM-19, DOE Lease Tract.  
 HOST Jurassic Morrison Formation, Salt Wash Member.  
 MNZ Uranium, vanadium, carnotite - tyuyamunite, high vanadium, low lime.  
 DOI 1971  
 REF U.S. Bur. of Mines, 1977, (Unpubl.). U.S. A.E.C., 1971, Production Records, Colorado.

## Abajo 1-5 (Laura, Mustard)

LOCATION: sec. 19, T. 48 N., R. 17 W.  
 QUAD Atkinson Creek 7 1/2'  
 MAP MOAB  
 PROD By 1971, 42,921 tons had been mined at a grade of 0.25% U3O8, producing 212,693 lbs of U3O8, and 1.28% V2O5 producing 1,185,001 lbs of V2O5.  
 HOST The host is the Jurassic Morrison Formation, Salt Wash Member.  
 MNZ Carnotite - tyuyamunite.  
 DOI 1971  
 REF U.S. Bur. of Mines, 1977, (Unpubl.). U.S. A.E.C., 1971, Production Records, Colorado.

## Adak

LOCATION: sec. 11, T. 48 N., R. 18 W.  
 LCRM U.S. A.E.C. Production Records only show sec. 12.  
 QUAD Red Canyon 7 1/2'  
 MAP MOAB  
 PROD By 1971, 16,722 tons had been mined at a grade of 0.22% U3O8, producing 73,113 lbs of U3O8, and 0.84% V2O5, producing 282,281 lbs of V2O5.  
 HOST Jurassic Morrison Formation.  
 MNZ Uranium, vanadium, carnotite - tyuyamunite, high vanadium, low lime.  
 DOI 1971  
 REF U.S. Bur. of Mines, 1977, (Unpubl.). U.S. A.E.C., 1971, Production Records, Colorado.

## All Stars - Evening Star

LOCATION: sec. 28, T. 48 N., R. 17 W.  
 QUAD Red Canyon 7 1/2' & Atkinson Creek 7 1/2'  
 MAP MOAB  
 PROD As of 1971, 7,592 tons had been mined at a grade of 0.29% U3O8, producing 44,102 lbs of U3O8, and 1.38% V2O5, producing 209,267 lbs of V2O5.  
 HOST The host is the Jurassic Morrison Formation, Salt Wash Member.  
 MNZ Uranium, vanadium, carnotite - tyuyamunite.  
 DOI 1971  
 REF U.S. Bur. of Mines, 1977, (Unpubl.). U.S. A.E.C., 1971, Production Records, Colorado.

## Alta

LOCATION: sec. 23, T. 48 N., R. 18 W.  
 QUAD Red Canyon 7 1/2'  
 MAP MOAB  
 PROD By 1971, 472 tons had been mined at a grade of 0.31% U3O8, producing 2,891 lbs of U3O8, and 1.85% V2O5, producing 17,465 lbs of V2O5.  
 MNZ Uranium, vanadium, carnotite - tyuyamunite.  
 DOI 1971  
 REF U.S. Bur. of Mines, 1977, (Unpubl.). U.S. A.E.C., 1971, Production Records, Colorado.

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## Altair Capella Vega

LOCATION: sec. 13, T. 46 N., R. 18 W.  
 QUAD Bull Canyon 7 1/2'  
 MAP MOAB  
 PROD By 1971, 41,011 tons had been mined at a grade of 0.29% U3O8, producing 237,726 lbs of U3O8, and 1.34% V2O5, producing 1,102,476 lbs of V2O5.  
 HOST The host is the Jurassic Morrison Formation.  
 MNZ Uranium, vanadium, uraninite (coffinite).  
 DOI 1971  
 REF U.S. Bur. of Mines, 1977, (Unpubl.). U.S. A.E.C., 1971, Production Records, Colorado.

## American Eagle Group

LOCATION: W1/2 sec. 10, T. 45 N., R. 19 W.  
 QUAD Anderson Mesa 7 1/2'  
 MAP MOAB  
 PROD By 1971, 19,701 tons had been mined at a grade of 0.22% U3O8, producing 87,787 lbs of U3O8, and 2.34% V2O5, producing 923,681 lbs of V2O5.  
 HOST The host is the Jurassic Morrison Formation.  
 MNZ Uranium, vanadium, carnotite - tyuyamunite.  
 DOI 1971  
 REF U.S. Bur. of Mines, 1977, (Unpubl.). U.S. A.E.C., 1971, Production Records, Colorado.

## American Eagle No. 4

LOCATION: sec. 3, T. 45 N., R. 19 W.  
 QUAD Anderson Mesa 7 1/2'  
 MAP MOAB  
 PROD By 1971, 2,989 tons had been mined at a grade of 0.26% U3O8, producing 15,816 lbs of U3O8, and 2.26% V2O5, producing 135,011 lbs of V2O5.  
 HOST The host is the Jurassic Morrison Formation.  
 MNZ Uranium, vanadium, carnotite - tyuyamunite.  
 DOI 1971  
 REF U.S. Bur. of Mines, 1977, (Unpubl.). U.S. A.E.C., 1971, Production Records, Colorado.

## Anchor (Invincible)

LOCATION: sec. 3, T. 48 N., R. 18 W.  
 QUAD Red Canyon 7 1/2'  
 MAP MOAB  
 PROD By 1971, 319 tons had been mined at a grade of 0.22% U3O8, producing 1,379 lbs of U3O8, and 1.23% V2O5, producing 7,836 lbs of V2O5.  
 HOST The host is the Jurassic Morrison Formation.  
 MNZ Uranium, vanadium, carnotite - tyuyamunite.  
 DOI 1971  
 REF U.S. Bur. of Mines, 1977, (Unpubl.). U.S. A.E.C., 1977, Production Records, Colorado.

## Andrews and Andrews Claims

LOCATION: sec. 23, T. 48 N., R. 18 W.  
 QUAD Red Canyon 7 1/2'  
 MNZ Uranium, vanadium.  
 DOI 1975  
 REF U.S. Bur. of Mines, 1977, (Unpubl.).

## Angle Mine

LOCATION: sec. 1, T. 47 N., R. 20 W.  
 LCRM U.S. A.E.C. Production Records show sec. 12.  
 QUAD Mount Peale 1 SE 7 1/2'  
 MAP MOAB  
 PROD By 1971, 22 tons had been mined at a grade of 0.77% U3O8, producing 339 lbs of U3O8, and 2.64% V2O5, producing 1,163 lbs of V2O5.  
 HOST Jurassic Morrison Formation, Salt Wash Member.  
 MNZ Uranium, vanadium.  
 DOI 1971  
 REF U.S. Bur. of Mines, 1977, (Unpubl.). U.S. A.E.C., 1971, Production Records, Colorado.

## Anna May 1 (Monogram Group, Bobtail)

LOCATION: sec. 17, T. 46 N., R. 17 W.  
 PROD By 1971, 40,873 tons had been mined at a grade of 0.33% U3O8, producing 273,047 lbs of U3O8, and 0.98% V2O5, producing 803,292 lbs of V2O5.  
 HOST The host is the Jurassic Morrison Formation.  
 MNZ Carnotite - tyuyamunite.  
 DOI 1971  
 REF U.S. A.E.C., 1971, Production Records, Colorado.

## Anna May 1 Dumps (Happy Thoughts)

LOCATION: sec. 18, T. 46 N., R. 17 W.  
 QUAD Bull Canyon 7 1/2'  
 PROD Prior to 1971, 11,523 tons had been recovered from the Anna May No. 1 Mine dump at a grade of 0.08% U3O8, producing 19,304 lbs of U3O8, and 0.28% V2O5, producing 65,575 lbs of V2O5.  
 HOST The host is the Jurassic Morrison Formation.  
 MNZ Uranium, vanadium, carnotite - tyuyamunite.  
 DOI 1971  
 REF U.S. Bur. of Mines, 1977, (Unpubl.). U.S. A.E.C., 1971, Production Records, Colorado.

## Annex (Saucer Basin Group)

LOCATION: sec. 1, T. 47 N., R. 18 W.  
 LCRM This deposit lies in Club Mesa. Also sec. 6, 7, T. 47 N., R. 17 W.  
 QUAD Davis Mesa 7 1/2'  
 PROD By 1971, 5 tons had been mined at a grade of 0.15% U3O8, producing 15 lbs of U3O8, and 1.20% V2O5, producing 120 lbs of V2O5.  
 HOST Jurassic Morrison Formation, Salt Wash Member.  
 MNZ Uranium, vanadium.  
 DOI 1971  
 REF U.S. Bur. of Mines, 1977, (Unpubl.). U.S. A.E.C., 1971, Production Records, Colorado.

## Anomaly 18

LOCATION: sec. 10, T. 46 N., R. 18 W.  
 LCRM Part of sec. 10 is in Bull Canyon 7 1/2'.  
 QUAD Davis Mesa 7 1/2'  
 HOST The host is the Jurassic Morrison Formation.  
 MNZ Uranium, vanadium.  
 DOI 1975  
 REF U.S. Bur. of Mines, 1977, (Unpubl.).

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## April (April Group)

LOCATION: sec. 10, T. 45 N., R. 18 W.  
 QUAD Bull Canyon 7 1/2'  
 PROD By 1971, 490 tons had been mined at a grade of 0.24% U3O8, producing 2,385 lbs of U3O8, and 1.61% V2O5, producing 15,826 lbs of V2O5.  
 HOST The host is the Jurassic Morrison Formation.  
 MNZ Uranium, vanadium, carnotite - tyuyamunite.  
 DOI 1971  
 REF U.S. Bur. of Mines, 1977, (Unpubl.). U.S. A.E.C., 1971, Production Records, Colorado.

## Arcturus

LOCATION: sec. 18, T. 46 N., R. 17 W.  
 QUAD Bull Canyon 7 1/2'  
 PROD By 1971, 10,581 tons had been mined at a grade of 0.25% U3O8, producing 52,006 lbs of U3O8, and 1.10% V2O5, producing 233,631 lbs of V2O5.  
 HOST The host is the Jurassic Morrison Formation.  
 MNZ Uranium, vanadium, carnotite - tyuyamunite.  
 DOI 1971  
 REF U.S. Bur. of Mines, 1977, (Unpubl.). U.S. A.E.C., 1971, Production Records, Colorado.

## Arrowhead (Colorado Group)

LOCATION: sec. 28, T. 47 N., R. 17 W.  
 LCRM U.S. Bur. of Mines shows location as T. 46 N.  
 QUAD Bull Canyon 7 1/2', Naturita 7 1/2'  
 PROD By 1971, 7,987 tons had been mined at a grade of 0.16% U3O8, producing 25,567 lbs of U3O8, and 0.95% V2O5, producing 152,442 lbs of V2O5.  
 HOST The host is the Jurassic Morrison Formation.  
 MNZ Uranium, vanadium, carnotite - tyuyamunite.  
 DOI 1971  
 REF U.S. Bur. of Mines, 1977, (Unpubl.). U.S. A.E.C., 1971, Production Records, Colorado.

## Austin (Dolores)

LOCATION: sec. 21, T. 48 N., R. 17 W.  
 QUAD Red Canyon 7 1/2', Atkinson Creek 7 1/2'  
 PROD By 1971, 9,796 tons had been mined at a grade of 0.24% U3O8, producing 46,436 lbs of U3O8, and 1.15% V2O5, producing 226,243 lbs of V2O5.  
 HOST The host is the Jurassic Morrison Formation.  
 MNZ Carnotite - tyuyamunite.  
 DOI 1971  
 REF U.S. Bur. of Mines, 1977, (Unpubl.). U.S. A.E.C., 1971, Production Records, Colorado.

## AWOL and Pet (AWOL 1-20, Pet 1-20)

LOCATION: sec. 15, T. 48 N., R. 17 W.  
 LCRM Also sec. 16, 21, 22. This deposit lies in Atkinson Mesa.  
 PROD Reserves, no production.  
 HOST Jurassic Morrison Formation.  
 MNZ Carnotite.  
 DOI 1971  
 REF U.S. A.E.C., 1971, Production Records, Colorado.

## Aztec (1)

LOCATION: sec. 20, T. 46 N., R. 17 W.  
 QUAD Bull Canyon 7 1/2'  
 PROD By 1971, 23,081 tons had been mined at a grade of 0.35% U3O8, producing 159,496 lbs of U3O8, and 1.40% V2O5, producing 644,367 lbs of V2O5.  
 HOST The host is the Jurassic Morrison Formation.  
 MNZ Carnotite - tyuyamunite.  
 DOI 1971  
 REF U.S. Bur. of Mines, 1977, (Unpubl.). U.S. A.E.C., 1971, Production Records, Colorado.

## Aztec (Slivery, Silvia Group)

LOCATION: sec. 33, T. 46 N., R. 19 W.  
 LCRM Also sec. 4, T. 45 N., R. 19 W.  
 QUAD Anderson Mesa 7 1/2'  
 PROD By 1971, 123 tons had been mined at a grade of 0.26% U3O8, producing 631 lbs of U3O8, and 1.86% V2O5, producing 4,587 lbs of V2O5.  
 HOST The host is the Jurassic Morrison Formation.  
 MNZ Carnotite - tyuyamunite.  
 DOI 1971  
 REF U.S. Bur. of Mines, 1977, (Unpubl.). U.S. A.E.C., 1971, Production Records, Colorado.

## B.T.M. Claim Group

LOCATION: sec. 1, T. 45 N., R. 17 W.  
 QUAD Naturita NW 7 1/2'  
 MAP MOAB  
 MNZ Uranium, vanadium.  
 DOI 1975  
 REF U.S. Bur. of Mines, 1977, (Unpubl.).

## Babe Ruth (Mitchell - Archer Group)

LOCATION: NW1/4 sec. 14, T. 45 N., R. 18 W.  
 QUAD Bull Canyon 7 1/2'  
 MAP MOAB  
 PROD By 1971, 9,873 tons had been mined at a grade of 0.18% U3O8, producing 36,188 lbs of U3O8, and 1.79% V2O5, producing 353,271 lbs of V2O5.  
 HOST The host is the Jurassic Morrison Formation.  
 MNZ Carnotite - tyuyamunite.  
 DOI 1971  
 REF U.S. Bur. of Mines, 1977, (Unpubl.). U.S. A.E.C., 1971, Production Records, Colorado.

## Baby Fawn (Big Fawn, Joker)

LOCATION: sec. 6, T. 45 N., R. 17 W.  
 QUAD Bull Canyon 7 1/2'  
 MAP MOAB  
 PROD By 1971, 1,633 tons had been mined at a grade of 0.28% U3O8, producing 9,052 lbs of U3O8, and 1.98% V2O5, producing 64,521 lbs of V2O5.  
 HOST The host is the Jurassic Morrison Formation.  
 MNZ Carnotite - tyuyamunite.  
 DOI 1971  
 REF U.S. Bur. of Mines, 1977, (Unpubl.). U.S. A.E.C., 1971, Production Records, Colorado.

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## Badger

LOCATION: sec. 19, T. 47 N., R. 17 W.  
 QUAD Davis Mesa 7 1/2'  
 MAP MOAB  
 PROD By 1971, 1,323 tons had been mined at a grade of 0.32% U308, producing 8,362 lbs of U308, and 1.76% V205, producing 46,441 lbs of V205.  
 HOST The host is the Jurassic Morrison Formation.  
 MNZ Carnotite - tyuyamunite.  
 DOI 1971  
 REF U.S. Bur. of Mines, 1977, (Unpubl.). U.S. A.E.C., 1971, Production Records, Colorado.

## Badger 1 (Badger #3)

LOCATION: sec. 19, T. 47 N., R. 17 W.  
 MAP MOAB  
 PROD By 1971, 230 tons had been mined at a grade of 0.34% U308, producing 1,560 lbs of U308, and 1.82% V205, producing 8,391 lbs of V205.  
 HOST The host is the Jurassic Morrison Formation.  
 DOI 1971  
 REF U.S. A.E.C., 1971, Production Records, Colorado.

## Badger 2 Dump

LOCATION: sec. 17, T. 47 N., R. 17 W.  
 MAP MOAB  
 PROD Prior to 1971, 119 tons had been recovered from the Badger 2 Mine dump at a grade of 0.20% U308, producing 467 lbs of U308, and 1.39% V205, producing 3,305 lbs of V205.  
 HOST The host is the Jurassic Morrison Formation.  
 MNZ Uranium, vanadium.  
 DOI 1971  
 REF U.S. Bur. of Mines, 1977, (Unpubl.). U.S. A.E.C., 1971, Production Records, Colorado.

## Badger and Crown Prince

LOCATION: sec. 23, T. 48 N., R. 18 W.  
 MAP MOAB  
 PROD By 1971, 4,538 tons had been mined at a grade of 0.46% U308, producing 41,358 lbs of U308, and 2.36% V205, producing 213,862 lbs of V205.  
 HOST The host is the Jurassic Morrison Formation.  
 DOI 1971  
 REF U.S. A.E.C., 1971, Production Records, Colorado.

## Badger Dump

LOCATION: sec. 19, T. 47 N., R. 17 W.  
 QUAD Davis Mesa 7 1/2'  
 PROD Prior to 1971, 109 tons had been recovered from the Badger Mine dump at a grade of 0.69% U308, producing 135 lbs of U308, and 0.54% V205, producing 1,179 lbs of V205.  
 HOST The host is the Jurassic Morrison Formation.  
 MNZ Carnotite - tyuyamunite.  
 DOI 1971  
 REF U.S. Bur. of Mines, 1977, (Unpubl.). U.S. A.E.C., 1971, Production Records, Colorado.

## Bagger

LOCATION: sec. 20, T. 47 N., R. 17 W.  
 QUAD Davis Mesa 7 1/2'  
 MAP MOAB  
 PROD By 1971, 1,434 tons had been mined at a grade of 0.26% U308, producing 7,314 lbs of U308, and 1.48% V205, producing 42,582 lbs of V205.  
 HOST The host is the Jurassic Morrison Formation.  
 MNZ Carnotite - tyuyamunite.  
 DOI 1971  
 REF U.S. Bur. of Mines, 1977, (Unpubl.). U.S. A.E.C., 1971, Production Records, Colorado.

## Ball Point

LOCATION: sec. 11, T. 46 N., R. 18 W.  
 LCRM This deposit lies in Bull Canyon district, Wild Steer Mesa.  
 QUAD Davis Mesa 7 1/2', Bull Canyon 7 1/2'  
 MAP MOAB  
 PROD By 1971, 16 tons had been mined at a grade of 2.48% U308, producing 795 lbs of U308, and 4.23% V205, producing lbs of V205.  
 HOST Jurassic Morrison Formation.  
 MNZ Uranium, vanadium.  
 DOI 1971  
 REF U.S. Bur. of Mines, 1977, (Unpubl.). U.S. A.E.C., 1971, Production Records, Colorado.

## Banner

LOCATION: sec. 12, T. 46 N., R. 18 W.  
 LCRM This deposit lies in Bull Canyon district, Monogram Mesa.  
 QUAD Davis Mesa 7 1/2', Bull Canyon 7 1/2'  
 MAP MOAB  
 PROD By 1971, 7 tons had been mined at a grade of 0.28% U308, producing 39 lbs of U308, and 2.01% V205, producing 281 lbs of V205.  
 MNZ Uranium, vanadium.  
 DOI 1971  
 REF U.S. Bur. of Mines, 1977, (Unpubl.). U.S. A.E.C., 1971, Production Records, Colorado.

## Basin Group (Club Mine)

LOCATION: sec. 32, T. 48 N., R. 17 W.  
 PROD Reserves, no production.  
 HOST Jurassic Morrison Formation, Salt Wash Member.  
 MNZ Carnotite.  
 DOI 1971  
 REF U.S. A.E.C., 1971, Production Records, Colorado.

## Batty (Batty 1-4) (Franklin 1-3 & 5, Ben Frac., Ralph 1 & 2)

LOCATION:  
 PROD Reserves not developed, no production.  
 HOST Jurassic Morrison Formation, Salt Wash Member.  
 MNZ Carnotite.  
 DOI 1971  
 REF U.S. A.E.C., 1971, Production Records, Colorado.

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## Beaver

LOCATION: sec. 32, T. 48 N., R. 17 W.  
 QUAD Davis Mesa 7 1/2', Bull Canyon 7 1/2'  
 MAP MOAB  
 PROD By 1971, 6,216 tons had been mined at a grade of 0.23% U3O8, producing 28,917 lbs of U3O8, and 1.48% V2O5, producing 183,818 lbs of V2O5.  
 HOST Jurassic Morrison Formation, Salt Wash Member.  
 MNZ Uranium, vanadium.  
 DOI 1971  
 REF U.S. Bur. of Mines, 1977, (Unpubl.). U.S. A.E.C., 1971, Production Records, Colorado.

## Bed Rock (Red Canyon Claim?)

LOCATION:  
 LCST UNLOCATABLE  
 MAP MOAB  
 PROD By 1971, 1 ton had been mined at a grade of 0.55% U3O8, producing 11 lbs of U3O8, and 2.75% V2O5, producing 55 lbs of V2O5.  
 HOST Jurassic Morrison Formation, Salt Wash Member.  
 DOI 1971  
 REF U.S. A.E.C., 1971, Production Records, Colorado.

## Bernard

LOCATION: sec. 20, T. 47 N., R. 17 W.  
 QUAD Davis Mesa 7 1/2'  
 MAP MOAB  
 PROD By 1971, 4,608 tons had been mined at a grade of 0.27% U3O8, producing 25,040 lbs of U3O8, and 1.44% V2O5, producing 133,096 lbs of V2O5.  
 HOST The host is the Jurassic Morrison Formation.  
 MNZ Uranium, vanadium.  
 DOI 1971  
 REF U.S. Bur. of Mines, 1977, (Unpubl.). U.S. A.E.C., 1971, Production Records, Colorado.

## Bertles Beauty Claims 1 - 24 (Hard Rock 1 - 3)

LOCATION: sec. 8, T. 46 N., R. 16 W.  
 QUAD Naturita NW 7 1/2' & Uravan 7 1/2'  
 MAP MOAB  
 PROD By 1971, 82 tons had been mined at a grade of 0.22% U3O8, producing 360 lbs of U3O8, and 1.05% V2O5, producing 1,670 lbs of V2O5.  
 HOST Burro Canyon Formation; conglomeratic sandstone and green mudstone with abundant carbonized trash and sparse silicified logs. Lower Cretaceous.  
 MNZ Uranium, vanadium.  
 DOI 1971  
 REF U.S. Bur. of Mines, 1977, (Unpubl.). U.S. A.E.C., 1971, Production Records, Colorado. Finch, W.L., 1967.

## Beta Wonder

LOCATION: sec. 33, T. 48 N., R. 17 W.  
 QUAD Uravan, Davis Mesa, and Red Canyon 7 1/2'  
 MAP MOAB  
 MNZ Uranium, vanadium.  
 DOI 1977  
 REF U.S. Bur. of Mines, 1977, (Unpubl.).

## Better B #7 (Better B)

LOCATION: W1/2 sec. 31, T. 48 N., R. 17 W.  
 QUAD Red Canyon 7 1/2'  
 MAP MOAB  
 PROD By 1971, 6,070 tons had been mined at a grade of 0.27% U3O8, producing 33,170 lbs of U3O8, and 1.39% V2O5, producing 168,692 lbs of V2O5.  
 HOST The host is the Jurassic Morrison Formation.  
 MNZ Uranium, vanadium.  
 DOI 1971  
 REF U.S. Bur. of Mines, 1977, (Unpubl.). U.S. A.E.C., 1971, Production Records, Colorado.

## Betty Jean (Farmer Girl, Hope #1, Monogram 4-7)

LOCATION: SE1/4 sec. 22, T. 48 N., R. 18 W.  
 QUAD Red Canyon 7 1/2'  
 MAP MOAB  
 PROD By 1971, 9,285 tons had been mined at a grade of 0.24% U3O8, producing 44,437 lbs of U3O8, and 1.16% V2O5, producing 214,538 lbs of V2O5.  
 HOST The host is the Jurassic Morrison Formation.  
 MNZ Uranium, vanadium.  
 DOI 1971  
 REF U.S. Bur. of Mines, 1977, (Unpubl.). U.S. A.E.C., 1971, Production Records, Colorado.

## Big Bull

LOCATION: sec. 12, T. 45 N., R. 18 W.  
 QUAD Bull Canyon 7 1/2'  
 MAP MOAB  
 PROD By 1971, 1,179 tons had been mined at a grade of 0.21% U3O8, producing 4,990 lbs of U3O8, and 1.71% V2O5, producing 40,360 lbs of V2O5.  
 HOST The host is the Jurassic Morrison Formation.  
 MNZ Uranium, vanadium.  
 DOI 1971  
 REF U.S. Bur. of Mines, 1977, (Unpubl.). U.S. A.E.C., 1971, Production Records, Colorado.

## Big Dick (Dolores)

LOCATION: sec. 19, T. 48 N., R. 17 W.  
 QUAD Red Canyon 7 1/2'  
 MAP MOAB  
 PROD By 1971, 11,264 tons had been mined at a grade of 0.23% U3O8, producing 51,703 lbs of U3O8, and 1.38% V2O5, producing 311,507 lbs of V2O5.  
 HOST The host is the Jurassic Morrison Formation.  
 MNZ Uranium, vanadium.  
 DOI 1971  
 REF U.S. Bur. of Mines, 1977, (Unpubl.). U.S. A.E.C., 1971, Production Records, Colorado.

## Big Mitt

LOCATION: sec. 21, T. 48 N., R. 17 W.  
 LCRM Also sec. 28  
 QUAD Atkinson Creek 7 1/2', Red Canyon 7 1/2'  
 MAP MOAB  
 PROD By 1971, 2,978 tons had been mined at a grade of 0.26% U3O8, producing 15,529 lbs

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of U308, and 1.21% V205, producing 72,297 lbs of V205.

HOST The host is the Jurassic Morrison Formation.  
MNZ Uranium, vanadium.  
DOI 1971  
REF U.S. Bur. of Mines, 1977, (Unpubl.). U.S. A.E.C., 1971, Production Records, Colorado.

## Big Rock (Starlight) (Wedding Bell Group)

LOCATION: sec. 33, T. 46 N., R. 18 W.  
LCRM This deposit lies in the Bull Canyon district.  
QUAD Bull Canyon 7 1/2'  
MAP MOAB  
PROD By 1971, 192 tons had been mined at a grade of 0.16% U308, producing 610 lbs of U308, and 1.23% V205, producing 4,707 lbs of V205.  
HOST Jurassic Morrison Formation, Salt Wash Member.  
MNZ Uranium, vanadium.  
DOI 1971  
REF U.S. Bur. of Mines, 1977, (Unpubl.). U.S. A.E.C., 1971, Production Records, Colorado.

## Big Shot

LOCATION: sec. 6, T. 47 N., R. 17 W.  
LCRM This deposit lies in Club Mesa. U.S. A.E.C. Production Records show location as being sec. 31, T. 48 N., R. 17 W.  
QUAD Davis Mesa 7 1/2'  
MAP MOAB  
PROD By 1971, 4 tons had been mined at a grade of 0.45% U308, producing 36 lbs of U308, and 2.13% V205, producing 170 lbs of V205.  
HOST Jurassic Morrison Formation, Salt Wash Member.  
MNZ Uranium, vanadium.  
DOI 1971  
REF U.S. Bur. of Mines, 1977, (Unpubl.). U.S. A.E.C., 1971, Production Records, Colorado.

## Bill Bady - Lucky Boy

LOCATION: sec. 18, T. 46 N., R. 17 W.  
QUAD Bull Canyon 7 1/2'  
MAP MOAB  
PROD By 1971, 5,877 tons had been mined at a grade of 0.27% U308, producing 32,095 lbs of U308, and 1.27% V205, producing 148,719 lbs of V205.  
HOST The host is the Jurassic Morrison Formation.  
MNZ Uranium, vanadium, carnotite - tyuyamunite.  
DOI 1971  
REF U.S. Bur. of Mines, 1977, (Unpubl.). U.S. A.E.C., 1971, Production Records, Colorado.

## Binder Group

LOCATION: sec. 33, T. 46 N., R. 19 W.  
QUAD Anderson Mesa 7 1/2'  
MAP MOAB  
MNZ Uranium, vanadium.  
DOI 1975  
REF U.S. Bur. of Mines, 1977, (Unpubl.).

## Birthday 1 (Big Bug, Birthday, Morning Star #1 Group)

LOCATION: sec. 2, T. 46 N., R. 17 W.  
LCRM U.S. A.E.C. Production Records show location as sec. 12, T. 47 N., R. 20 W.

QUAD Uravan 7 1/2'  
MAP MOAB  
PROD By 1971, 6 tons had been mined at a grade of 0.17% U308, producing 20 lbs of U308, and 2.08% V205, producing 250 lbs of V205.  
MNZ Uranium, vanadium.  
DOI 1971  
REF U.S. Bur. of Mines, 1977, (Unpubl.). U.S. A.E.C., 1971, Production Records, Colorado.

## Bismark

LOCATION: sec. 29, T. 47 N., R. 17 W.  
LCRM This deposit lies in Long Park.  
QUAD Davis Mesa 7 1/2'  
MAP MOAB  
PROD By 1971, 94 tons had been mined at a grade of 0.20% U308, producing 376 lbs of U308, and 1.30% V205, producing 2,447 lbs of V205.  
HOST Jurassic Morrison Formation, Salt Wash Member.  
MNZ Uranium, vanadium.  
DOI 1971  
REF U.S. Bur. of Mines, 1977, (Unpubl.). U.S. A.E.C., 1971, Production Records, Colorado.

## Bitter Creek (Radium King) (Easy)

LOCATION: sec. 12, T. 46 N., R. 17 W.  
QUAD Uravan 7 1/2'  
MAP MOAB  
PROD By 1971, 60,738 tons had been mined at a grade of 0.22% U308, producing 263,746 lbs of U308, and 2.07% V205, producing 2,508,873 lbs of V205.  
HOST Jurassic Morrison Formation, Salt Wash Member.  
MNZ Uranium, vanadium, carnotite - tyuyamunite.  
DOI 1971  
REF U.S. Bur. of Mines, 1977, (Unpubl.). U.S. A.E.C., 1971, Production Records, Colorado. Finch, W. L., 1967.

## Black Bess 2

LOCATION: sec. 17, T. 47 N., R. 17 W.  
LCRM This deposit lies in Atkinson Mesa.  
QUAD Davis Mesa 7 1/2'  
MAP MOAB  
PROD By 1971, 53 tons had been mined at a grade of 0.20% U308, producing 210 lbs of U308, and 1.42% V205, producing 1,503 lbs of V205.  
HOST Jurassic Morrison Formation, Salt Wash Member.  
MNZ Uranium, vanadium.  
DOI 1971  
REF U.S. Bur. of Mines, 1977, (Unpubl.). U.S. A.E.C., 1971, Production Records, Colorado.

## Black Dinah

LOCATION: sec. 28, T. 47 N., R. 17 W.  
QUAD Davis Mesa 7 1/2', Uravan 7 1/2'  
MAP MOAB  
PROD By 1971, 6,334 tons had been mined at a grade of 0.22% U308, producing 28,275 lbs of U308, and 1.62% V205, producing 205,085 lbs of V205.  
HOST Jurassic Morrison Formation.  
MNZ Uranium, vanadium, carnotite - tyuyamunite.  
DOI 1971



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REF U.S. Bur. of Mines, 1977, (Unpubl.). U.S. A.E.C., 1971, Production Records, Colorado.

## Black Eagle Group

LOCATION: sec. 4, T. 45 N., R. 16 W.

QUAD Naturita NW 7 1/2'

MAP MOAB

PROD By 1971, 11 tons had been mined at a grade of 0.22% U3O8, producing 49 lbs of U3O8, and 1.27% V2O5, producing 280 lbs of V2O5.

HOST Jurassic Morrison Formation, Salt Wash Member.

MNZ Uranium, vanadium.

DOI 1971

REF U.S. Bur. of Mines, 1977, (Unpubl.). U.S. A.E.C., 1971, Production Records, Colorado.

## Black Gnat

LOCATION:

LCST UNLOCATABLE

LCRM This deposit lies in the Uravan district.

MAP MOAB

PROD By 1971, 5 tons had been mined at a grade of 0.08% U3O8, producing 8 lbs of U3O8, and 0.55% V2O5, producing 124 lbs of V2O5.

MNZ Uranium.

DOI 1971

REF U.S. A.E.C., 1971, Production Records, Colorado.

## Black Hawk

LOCATION: sec. 27, T. 49 N., R. 18 W.

LCRM This deposit lies in the Paradox district.

QUAD Red Canyon 7 1/2'

MAP MOAB

PROD As of 1971, 4 tons had been mined at a grade of 0.45% U3O8, producing 36 lbs of U3O8, and 2.36% V2O5, producing 189 lbs of V2O5.

HOST Jurassic Morrison Formation, Salt Wash Member.

MNZ Uranium, vanadium.

DOI 1975

REF U.S. Bur. of Mines, 1977, (Unpubl.). U.S. A.E.C., 1971, Production Records, Colorado.

## Black Jack (Joker, Log Cabin, West)

LOCATION: sec. 2, T. 45 N., R. 18 W.

LCRM U.S. A.E.C. Production Records show location as being sec. 35, T. 46 N., R. 18 W.

QUAD Bull Canyon 7 1/2'

MAP MOAB

PROD As of 1971, 88 tons had been mined at a grade of 0.15% U3O8, producing 398 lbs of U3O8, and 1.60% V2O5, producing 2,817 lbs of V2O5.

HOST Jurassic Morrison Formation, Salt Wash Member.

MNZ Uranium, vanadium, carnotite - tyuyamunite, high vanadium, low lime.

DOI 1975, 1971.

REF U.S. Bur. of Mines, 1977, (Unpubl.). U.S. A.E.C., 1971, Production Records, Colorado.

## Black Point

LOCATION: sec. 13, T. 46 N., R. 18 W.

QUAD Bull Canyon 7 1/2'

MAP MOAB

PROD As of 1971, 397 tons had been mined at a grade of 0.25% U3O8, producing 1,507 lbs of U3O8, and 1.17% V2O5, producing 7,188 lbs of V2O5.

MNZ Uranium, vanadium.

DOI 1975, 1971.

REF U.S. Bur. of Mines, 1977, (Unpubl.). U.S. A.E.C., 1971, Production Records, Colorado.

## Black Prince (John C., Morning Star, Midnight)

LOCATION: sec. 28, T. 46 N., R. 19 W.

LCRM Also sec. 33 and 34.

QUAD Anderson Mesa 7 1/2'

MAP MOAB

PROD As of 1971, 246 tons had been mined at a grade of 0.22% U3O8, producing 1,096 lbs of U3O8, and 1.71% V2O5, producing 8,413 lbs of V2O5.

HOST Jurassic Morrison Formation.

MNZ Carnotite - tyuyamunite, high vanadium, low lime.

DOI 1971

REF U.S. A.E.C., 1971, Production Records, Colorado.

## Black Rock

LOCATION: sec. 23, T. 48 N., R. 18 W.

QUAD Red Canyon 7 1/2'

MAP MOAB

PROD As of 1971, 290 tons had been mined at a grade of 0.24% U3O8, producing 1,416 lbs of U3O8, and 1.88% V2O5, producing 10,908 lbs of V2O5.

HOST Jurassic Morrison Formation.

MNZ Uranium, vanadium, carnotite - tyuyamunite, high vanadium, low lime.

DOI 1975, 1971.

REF U.S. Bur. of Mines, 1977, (Unpubl.). U.S. A.E.C., 1971, Production Records, Colorado.

## Black Tom (Westpart Blackburn)

LOCATION: sec. 20, T. 46 N., R. 17 W.

QUAD Bull Canyon 7 1/2'

MAP MOAB

PROD As of 1971, 8,058 tons had been mined at a grade of 0.33% U3O8, producing 52,641 lbs of U3O8, and 1.27% V2O5, producing 205,293 lbs of V2O5.

HOST Jurassic Morrison Formation.

MNZ Uranium, vanadium, carnotite - tyuyamunite, high vanadium, low lime.

DOI 1975, 1971.

REF U.S. Bur. of Mines, 1977, (Unpubl.). U.S. A.E.C., 1971, Production Records, Colorado.

## Blackburn (Joe Dandy Group)

LOCATION: sec. 21, T. 46 N., R. 17 W.

QUAD Naturita 7 1/2', Bull Canyon 7 1/2'

MAP MOAB

PROD By 1971, 35,216 tons had been mined at a grade of 0.26% U3O8, producing 179,953 lbs of U3O8, and 1.28% V2O5, producing 901,494 lbs of V2O5.

HOST Jurassic Morrison Formation.

MNZ Uranium, vanadium, carnotite - tyuyamunite.

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DOI 1971  
REF U.S. Bur. of Mines, 1977, (Unpubl.). U.S. A.E.C., 1971, Production Records, Colorado.

## Blackfoot Rattlesnake

LOCATION: sec. 11, T. 47 N., R. 17 W.  
LCRM U.S. A.E.C. Production Records also show sec. 2, 3 and 10.  
QUAD Uravan 7 1/2'  
MAP MOAB  
PROD As of 1971, 8,567 tons had been mined at a grade of 0.26% U308, producing 44,515 lbs of U308, and 1.42% V205, producing 243,301 lbs of V205.  
HOST Jurassic Morrison Formation.  
MNZ Uranium, vanadium, carnotite - tyuyamunite, high vanadium, low lime.  
DOI 1975, 1971.  
REF U.S. Bur. of Mines, 1977, (Unpubl.). U.S. A.E.C., 1971, Production Records, Colorado.

## Bliss Mine

LOCATION: sec. 20, T. 47 N., R. 17 W.  
QUAD Davis Mesa 7 1/2'  
MAP MOAB  
PROD As of 1971, 817 tons had been mined at a grade of 0.15% U308, producing 2,508 lbs of U308, and 0.84% V205, V205.  
HOST Jurassic Morrison Formation.  
MNZ Uranium, vanadium, carnotite - tyuyamunite, high vanadium, low lime.  
DOI 1975, 1971.  
REF U.S. Bur. of Mines, 1977, (Unpubl.). U.S. A.E.C., 1971, Production Records, Colorado.

## Blonda

LOCATION:  
LCST UNLOCATABLE  
LCRM This deposit lies in Gypsum Valley.  
PROD As of 1971, 7 tons had been mined at a grade of 0.14% U308, producing 20 lbs of U308, and 2.11% V205, producing 295 lbs of V205.  
HOST Jurassic Morrison Formation, Salt Wash Member.  
DOI 1971  
REF U.S. A.E.C., 1971, Production Records, Colorado.

## Blondy (ESA, Martin Mesa)

LOCATION: SE1/4 sec. 26, T. 48 N., R. 18 W.  
QUAD Red Canyon 7 1/2'  
MAP MOAB  
PROD As of 1971, 64 tons had been mined at a grade of 0.14% U308, producing 179 lbs of U308, and 1.09% V205, producing 1,396 lbs of V205.  
HOST Jurassic Morrison Formation.  
MNZ Uranium, vanadium, carnotite - tyuyamunite, high vanadium, low lime.  
DOI 1975, 1971.  
REF U.S. Bur. of Mines, 1977, (Unpubl.). U.S. A.E.C., 1971, Production Records, Colorado.

## Blue Bell

LOCATION: sec. 35, T. 47 N., R. 17 W.

QUAD Uravan 7 1/2'  
MAP MOAB  
PROD As of 1971, 6,332 tons had been mined at a grade of 0.25% U308, producing 32,275 lbs of U308, and 1.53% V205, producing 193,600 lbs of V205.  
HOST Jurassic Morrison Formation.  
MNZ Uranium, vanadium, carnotite - tyuyamunite, high vanadium, low lime.  
DOI 1971  
REF U.S. Bur. of Mines, 1977, (Unpubl.). U.S. A.E.C., 1971, Production Records, Colorado.

## Blue Bird Dump

LOCATION: sec. 25, T. 48 N., R. 18 W.  
QUAD Red Canyon 7 1/2'  
MAP MOAB  
PROD Prior to 1971, 394 tons had been recovered from the Blue Bird Mine dump at a grade of 0.06% U308, producing 511 lbs of U308, and 0.51% V205, producing 4,020 lbs of V205.  
HOST Jurassic Morrison Formation, Salt Wash Sandstone Member.  
MNZ Uranium, vanadium, carnotite - tyuyamunite, high vanadium, low lime.  
DOI 1971  
REF U.S. Bur. of Mines, 1977, (Unpubl.). U.S. A.E.C., 1971, Production Records, Colorado.

## Blue Cap (North Crowley Group)

LOCATION:  
LCST UNLOCATABLE  
PROD As of 1971, 44,550 tons of ore had been mined at a grade of 0.23% U308, producing 207,061 lbs of U308, and 1.91% V205, producing 1,700,433 lbs of V205.  
DOI 1971  
REF U.S. A.E.C., 1971, Production Records, Colorado.

## Blue-Atkin Mesa

LOCATION: sec. 21, T. 48 N., R. 17 W.  
QUAD Red Canyon 7 1/2', Atkinson Creek 7 1/2'  
MAP MOAB  
MNZ Uranium, vanadium.  
DOI 1975  
REF U.S. A.E.C., 1971, Production Records, Colorado.

## Bluebird

LOCATION: sec. 25, T. 48 N., R. 18 W.  
QUAD Red Canyon 7 1/2'  
MAP MOAB  
PROD As of 1971, 109 tons had been mined at a grade of 0.20% U308, producing 438 lbs of U308, and 1.43 V205, producing 3,108 lbs of V205.  
HOST Jurassic Morrison Formation, Salt Wash Member. Brown, medium-grained sandstone with abundant carbonized logs and trash pockets.  
MNZ Uranium, vanadium, carnotite - tyuyamunite, high vanadium, low lime.  
DOI 1971

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REF U.S. Bur. of Mines, 1977, (Unpubl.). U.S. A.E.C., 1971, Production Records, Colorado. Finch, W. I., 1967, U.S. Geol. Survey Prof. Paper 538, p. 11.

## Bob 6-7-8

LOCATION: sec. 5, T. 45 N., R. 17 W.  
LCRM U.S. A.E.C. Production Records show sec. 29-32, T. 46 N., R. 17 W.  
QUAD Bull Canyon 7 1/2'  
MAP MOAB  
PROD As of 1971, 38,296 tons had been mined at a grade of 0.18% U308, producing 139,862 lbs of U308, and 1.48% V205, producing 1,135,701 lbs of V205.  
HOST Jurassic Morrison Formation.  
MNZ Carnotite - tyuyamunite, high vanadium, low lime.  
DOI 1971  
REF U.S. A.E.C., 1971, Production Records, Colorado.

## Bob 9

LOCATION: sec. 5, T. 45 N., R. 17 W.  
QUAD Bull Canyon 7 1/2'  
MAP MOAB  
PROD As of 1971, 13 tons had been mined at a grade of 0.12% U308, producing 32 lbs of U308, and 2.42% V205, producing 628 lbs of V205.  
HOST Jurassic Morrison Formation.  
MNZ Uranium, vanadium.  
DOI 1971  
REF U.S. Bur. of Mines, 1977, (Unpubl.). U.S. A.E.C., 1971, Production Records, Colorado.

## Bobcat

LOCATION: sec. 19, T. 47 N., R. 17 W.  
QUAD Davis Mesa 7 1/2'  
MAP MOAB  
PROD As of 1971, 16,487 tons had been mined at a grade of 0.19% U308, producing 62,460 lbs of U308, and 1.04% V205, producing 342,129 lbs of V205.  
HOST Jurassic Morrison Formation.  
MNZ Uranium, vanadium, carnotite - tyuyamunite, high vanadium, low lime.  
DOI 1971  
REF U.S. Bur. of Mines, 1977, (Unpubl.). U.S. A.E.C., Production Records, Colorado.

## Bobcat (La Porte, Wild Horse)

LOCATION: sec. 1, T. 47 N., R. 20 W.  
LCRM U.S. A.E.C. Production Records show location as sec. 29 and 30, T. 28 S., R. 27 E.  
QUAD Mount Peale 1 SE 7 1/2'  
PROD As of 1971, 7 tons had been mined at a grade of 0.53% U308, producing 74 lbs of U308, and 2.29% V205, producing 320 lbs of V205.  
HOST Jurassic Morrison Formation.  
MNZ Uranium, vanadium.  
DOI 1971  
REF U.S. Bur. of Mines, 1977, (Unpubl.). U.S. A.E.C., 1971, Production Records, Colorado.

## Bonanza

LOCATION:  
LCST UNLOCATABLE  
LCRM This deposit lies in the Empire Group, Slick Rock district.  
PROD As of 1971, 10 tons had been mined at a grade of 0.14% U308, producing 29 lbs of U308, and 1.26% V205, producing 252 lbs of V205.  
HOST Jurassic Morrison Formation.  
MNZ Carnotite - tyuyamunite, high vanadium, intermediate lime.  
DOI 1971  
REF U.S. A.E.C., 1971, Production Records, Colorado.

## Bonita 1 (Bonito)

LOCATION: sec. 32, T. 49 N., R. 17 W.  
LCRM U.S. A.E.C. Production Records show location as sec. 4 & 5, T. 49 N., R. 17 W.  
QUAD Calamity Mesa 7 1/2'  
MAP MOAB  
DVEL As of 1971, 80 tons had been mined at a grade of 0.10% U308, producing 162 lbs of U308, and 1.02% V205, producing 1,634 lbs of V205.  
HOST Jurassic Morrison Formation.  
MNZ Uranium, vanadium, carnotite - tyuyamunite, high vanadium, intermed. lime.  
DOI 1975  
REF U.S. Bur. of Mines, 1977, (Unpubl.). U.S. A.E.C., 1971, Production Records, Colorado.

## BP 1

LOCATION:  
LCST UNLOCATABLE  
LCRM This deposit lies in the Martin Mesa area.  
PROD By 1971, 4 tons had been mined at a grade of 0.38% U308, producing 30 lbs of U308, and 1.98% V205, producing 158 lbs of V205.  
HOST Jurassic Morrison Formation, Salt Wash Member.  
MNZ Carnotite - tyuyamunite.  
DOI 1971  
REF U.S. A.E.C., 1971, Production Records, Colorado.

## Breezy (Wedding Bell Group)

LOCATION:  
LCST UNLOCATABLE  
LCRM This deposit lies in the Bull Canyon district.  
PROD As of 1971, 244 tons of ore had been mined at a grade of 0.25% U308, producing 1,207 lbs of U308, and 6,692 lbs of V205, producing 188 lbs of V205.  
HOST Jurassic Morrison Formation.  
DOI 1971  
REF U.S. A.E.C., 1971, Production Records, Colorado.

## Brooke 1, 2 (Brooks)

LOCATION: sec. 10, T. 45 N., R. 19 W.  
QUAD Anderson Mesa 7 1/2'  
MAP MOAB

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PROD As of 1971, 3,335 tons of ore had been mined at a grade of 0.16% U3O8, yielding 10,690 lbs of U3O8, and a grade of 1.95% V2O5, yielding 130,211 lbs of V2O5.  
 HOST Jurassic Morrison Formation.  
 MNZ Uranium, vanadium.  
 DOI 1971  
 REF U.S. Bur. of Mines, 1977, (Unpubl.). U.S. A.E.C., 1971, Production Records, Colorado.

## Broomstick

LOCATION: sec. 6, T. 45 N., R. 18 W.  
 QUAD Anderson Mesa 7 1/2'  
 MAP MOAB  
 PROD As of 1971, 28 tons had been mined at a grade of 0.15% U3O8, producing 86 lbs of U3O8, and 0.73% V2O5, producing 408 lbs of V2O5.  
 HOST Jurassic Morrison Formation.  
 DOI 1971  
 REF U.S. A.E.C., 1971, Production Records, Colorado.

## Brown Derby

LOCATION:  
 LCST UNLOCATABLE  
 LCRM This deposit lies in the Bull Canyon district.  
 PROD As of 1971, 11 tons had been mined at a grade of 0.28% U3O8, producing 61 lbs of U3O8, and 0.89% V2O5, producing 196 lbs of V2O5.  
 HOST Jurassic Morrison Formation, Salt Wash Member.  
 DOI 1971  
 REF U.S. A.E.C., 1971, Production Records, Colorado.

## Brushy Basin

LOCATION: sec. 11, T. 46 N., R. 20 W.  
 LCRM U.S. A.E.C. Production Records also show sec. 12, 14, 28, 33, T. 29 S., R. 26 E.  
 PROD As of 1971, 636 tons of ore had been mined at a grade of 0.21% U3O8, producing 2,725 lbs of U3O8, and 1.27% V2O5, producing 16,216 lbs of V2O5.  
 HOST Jurassic Morrison Formation, Brushy Basin Member.  
 DOI 1971  
 REF U.S. A.E.C., 1971, Production Records, Colorado.

## Buckeye 4

LOCATION: sec. 1, T. 46 N., R. 17 W.  
 LCST UNLOCATABLE  
 PROD As of 1971, 8 tons had been mined at a grade of 0.41% U3O8, producing 66 lbs of U3O8, and 1.86% V2O5, producing 297 lbs of V2O5.  
 HOST Jurassic Morrison Formation, Salt Wash Member.  
 DOI 1971  
 REF U.S. A.E.C., 1971, Production Records, Colorado.

## Buckhorn - Ureka (Applejack, Shuffle)

LOCATION: sec. 10, T. 48 N., R. 19 W.  
 QUAD Roc Creek 7 1/2'

MAP MOAB  
 PROD As of 1971, 12,852 tons had been mined at a grade of 0.24% U3O8, producing 62,309 lbs of U3O8, and 0.95% V2O5, producing 244,192 lbs of V2O5.  
 HOST Jurassic Morrison Formation, Salt Wash Member. Gray, fine- to-medium grained sandstone and shaly sandstone with abundant carbonized plant remains.  
 MNZ Uranium, vanadium, carnotite - tyuyamunite, high vanadium, low lime.  
 DOI 1971  
 REF U.S. Bur. of Mines, 1977, (Unpubl.). U.S. A.E.C., 1971, Production Records, Colorado. Finch, W. L., 1967.

## Buckhorn 1

LOCATION: sec. 21, T. 48 N., R. 18 W.  
 QUAD Red Canyon 7 1/2'  
 MAP MOAB  
 PROD As of 1971, 5 tons had been mined at a grade of 0.28% U3O8, producing 28 lbs of U3O8, and 1.94% V2O5, producing 194 lbs of V2O5.  
 MNZ Uranium, vanadium.  
 DOI 1971  
 REF U.S. Bur. of Mines, 1977, (Unpubl.). U.S. A.E.C., 1971, Production Records, Colorado.

## Buckhorn No. 2

LOCATION: sec. 21, T. 48 N., R. 18 W.  
 LCRM This deposit lies in the Carpenter Flat area, Paradox district.  
 PROD As of 1971, 16 tons had been mined at a grade of 0.27% U3O8.  
 HOST Jurassic Morrison Formation, Salt Wash Member.  
 MNZ Carnotite.  
 DOI 1971  
 REF U.S. A.E.C., 1971, Production Records, Colorado.

## Buckshot (Saucer Basin Group)

LOCATION: sec. 31, T. 48 N., R. 17 W.  
 QUAD Doris Mesa 7 1/2'  
 MAP MOAB  
 PROD As of 1971, 10,094 tons had been mined at a grade of 0.22% U3O8, producing 44,447 lbs of U3O8, and 1.21% V2O5, producing 245,088 lbs of V2O5.  
 HOST Jurassic Morrison Formation.  
 MNZ Uranium, vanadium, carnotite - tyuyamunite, high vanadium, low lime.  
 DOI 1971  
 REF U.S. Bur. of Mines, 1977, (Unpubl.). U.S. A.E.C., 1971, Production Records, Colorado.

## Buckskin

LOCATION: sec. 35, T. 46 N., R. 18 W.  
 LCRM This deposit lies in the Bull Canyon district, Bachelor Draw area.  
 QUAD Bull Canyon 7 1/2'  
 MAP MOAB  
 PROD As of 1971, 35 tons had been mined at a grade of 0.10% U3O8, producing 70 lbs of U3O8, and 0.56% V2O5, producing 391 lbs of V2O5.

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HOST Jurassic Morrison Formation, Salt Wash Member.  
 MNZ Uranium, vanadium, carnotite - tyuyamunite, high vanadium, low ilme.  
 DOI 1971  
 REF U.S. Bur. of Mines, 1977, (Unpubl.). U.S. A.E.C., 1971, Production Records, Colorado.

## Butterfly

LOCATION: sec. 10, T. 47 N., R. 17 W.  
 DOI 1958  
 REF Hague, R. S., Goldenstein, S. J., and Blakey, E., 1958, Uranium - vanadium deposits of the Uravan Mineral Belt.

## Butterfly (Wat Nos. 1, 3, 5, 7, 16; Prayer 13-19)

LOCATION: sec. 13, T. 47 N., R. 20 W.  
 LCRM U.S. A.E.C. Production Records show location as sec. 13, T. 47 N., R. 20 W., La Sal Creek area.  
 QUAD Mount Peale 1 SE 7 1/2'  
 MAP MOAB  
 PROD As of 1971, 6,737 tons had been mined at a grade of 0.26% U3O8, producing 35,673 lbs of U3O8, and 1.69% V2O5, producing 227,898 lbs of V2O5.  
 HOST Jurassic Morrison Formation.  
 MNZ Uranium, vanadium, carnotite - tyuyamunite, high vanadium, low ilme.  
 DOI 1971  
 REF U.S. Bur. of Mines, 1977, (Unpubl.). U.S. A.E.C., 1971, Production Records, Colorado.

## C-AM-19, DOE Lease Tract (38, AEC Mining Lease) (Block C - Dolores Bench) (47, AEC Mining Lease) (39, AEC Mining Lease) (Block A - Atkinson Mesa)

LOCATION: NE1/4 sec. 24, T. 48 N., R. 18 W.  
 LCRM These leases lie in the Atkinson Mesa district.  
 QUAD Red Canyon 7 1/2'  
 MAP MOAB  
 PROD From 1954 to 1962, 135,003 tons of ore averaging 0.28% U3O8 and 1.61% V2O5 were produced from 39, AEC Mining Lease. During the same period, 132,884 tons of ore averaging 0.30% U3O8 and 1.43% V2O5 were produced from 47, AEC Mining Lease. From July, 1974 through December, 1977, production from C-AM-19, DOE Lease Tract was 248,720 tons of ore averaging 0.21% U3O8 and 1.06% V2O5.  
 HOST The host is the Jurassic Morrison Formation, Salt Wash Member.  
 MNZ Carnotite - tyuyamunite, high vanadium, low ilme.  
 DOI 1978  
 REF U.S. D.O.E., 1978, files. U.S. Bur. of Mines, 1977, (Unpubl.). U.S. A.E.C., 1971, Production Records, Colorado.

## C-AM-19A, DOE Lease Tract

LOCATION: sec. 18, T. 48 N., R. 17 W.  
 LCRM Also sec. 19. This lease lies on Atkinson Mesa.  
 QUAD Red Canyon 7 1/2'  
 MAP MOAB

PROD No production prior to 1978.  
 HOST The host is the Jurassic Morrison Formation, Salt Wash Member.  
 MNZ Uranium, vanadium.  
 DOI 1978  
 REF U.S. D.O.E., 1978, files. U.S. Bur. of Mines, 1977, (Unpubl.).

## C-AM-20, DOE Lease Tract

LOCATION: sec. 20, T. 48 N., R. 17 W.  
 LCRM This lease lies on Atkinson Mesa in the Uravan district.  
 QUAD Red Canyon 7 1/2'  
 MAP MOAB  
 PROD No production prior to 1978.  
 HOST Jurassic Morrison Formation, Salt Wash Member.  
 MNZ Uraninite (coffinite), high vanadium, low ilme.  
 DOI 1978  
 REF U.S. D.O.E., 1978, files. U.S. Bur. of Mines, 1977, (Unpubl.). U.S. A.E.C., 1971, Production Records, Colorado.

## C-BL-23A, DOE Lease Tract

LOCATION: sec. 35, T. 47 N., R. 17 W.  
 QUAD Uravan 7 1/2'  
 MAP MOAB  
 PROD No production prior to 1978.  
 HOST The host is the Jurassic Morrison Formation, Salt Wash Member.  
 MNZ Uranium, vanadium.  
 DOI 1978  
 REF U.S. D.O.E., 1978, files. U.S. Bur. of Mines, 1977, (Unpubl.).

## C-BL-23B, DOE Lease Tract

LOCATION: sec. 12, T. 46 N., R. 17 W.  
 LCRM Also sec. 1.  
 QUAD Uravan 7 1/2', Naturita NW 7 1/2'  
 MAP MOAB  
 PROD No production prior to 1978.  
 HOST The host is the Jurassic Morrison Formation, Salt Wash Member.  
 MNZ Uranium, vanadium.  
 DOI 1978  
 REF U.S. D.O.E., 1978, files. U.S. Bur. of Mines, 1977, (Unpubl.).

## C-CM-24, DOE Lease Tract (26, AEC Mining Lease) (41, AEC Mining Lease)

LOCATION: NE1/4 sec. 32, T. 48 N., R. 17 W.  
 LCRM The lease lies on Club Mesa near the Shamrock Group.  
 QUAD Red Canyon 7 1/2' & Davis Mesa 7 1/2'  
 MAP MOAB  
 PROD As of 1955, 1,828 tons of ore had been mined at average grades of 0.21% U3O8 and 1.31% V2O5. No production from 1955 through 1977.  
 HOST Jurassic Morrison Formation, Salt Wash Member.  
 MNZ Carnotite - tyuyamunite, high vanadium, low ilme.  
 DOI 1971  
 REF U.S. D.O.E., 1978, files. U.S. Bur. of Mines, 1977, (Unpubl.). U.S. A.E.C., 1971, Production Records, Colorado.

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C-CM-25, DOE Lease Tract (10, AEC Mining Lease) [Lease Block, adjacent to Mill No. 4] (11, AEC Mining Lease) [Lease Blocks 3 & 4, adjacent to Mill No. 2] (24, AEC Mining Lease) [Reserve Block, No. 6] (37, AEC Mining Lease) [Block 8 - Club Mesa]

LOCATION: NE1/4 sec. 5, T. 47 N., R. 17 W.  
 LCRM Also sec. 6. This lease lies in the Club Mesa district.  
 QUAD Davis Mesa 7 1/2'  
 MAP MOAB  
 PROD From 1951 through 1961, production from the four former AEC Mining Leases included in this DOE Lease Tract totaled 138,279 tons of ore averaging 0.28% U3O8 and 1.68% V2O5. This includes, from 10, AEC Mining Lease, 125,221 tons at 0.24% U3O8 and 1.63% V2O5; from 11, AEC Mining Lease, 17,270 tons at 0.42% U3O8 and 1.79% V2O5; from 24, AEC Mining Lease, 6,383 tons at 0.26% U3O8 1.86% V2O5; from 37, AEC Mining Lease, 39,405 tons at 0.35% U3O8 and 1.76% V2O5, for a total of 188,279 tons of ore. There has been no production from 1971 through 1977.  
 HOST Jurassic Morrison Formation, Salt Wash Member.  
 MNZ Carnotite - tyuyamunite, high vanadium, low lime.  
 DOI 1978  
 REF U.S. D.O.E., 1978, files. U.S. A.E.C., 1971, Production Records, Colorado.

## C-JD-5, DOE Lease Tract (Jo Dandy Area)

LOCATION: sec. 21, T. 46 N., R. 17 W.  
 LCRM Also sec. 22. This lease lies on Monogram Mesa in the Jo Dandy area.  
 QUAD Naturita NW 7 1/2'  
 MAP MOAB  
 PROD No production prior to May, 1977. From May, 1977 through December, 1977, production from C-JD-5, DOE Lease Tract was 22,244 tons of ore averaging 0.20% U3O8 and 0.94% V2O5.  
 HOST Jurassic Morrison Formation, Salt Wash Member.  
 MNZ Carnotite - tyuyamunite, high vanadium, low lime.  
 RMKS This lease includes Reserve Block USGB-1-JDGS and Reserve Block USGB-6-JDGS.  
 DOI 1978  
 REF U.S. D.O.E., 1978, files. U.S. Bur. of Mines, 1977, (Unpubl.). U.S. A.E.C., 1971, Production Records, Colorado.

## C-JD-5A, DOE Lease Tract

LOCATION: sec. 22, T. 46 N., R. 17 W.  
 LCRM This lease lies in the Jo Dandy area.  
 QUAD Naturita NW 7 1/2'  
 MAP MOAB  
 DVEL No production prior to 1978.  
 HOST The host is the Jurassic Morrison Formation, Salt Wash Member.  
 MNZ Uranium, vanadium.  
 DOI 1978  
 REF U.S. D.O.E., 1978, files. U.S. Bur. of Mines, 1977, (Unpubl.).

## C-JD-6, DOE Lease Tract

LOCATION: sec. 21, T. 46 N., R. 17 W.  
 LCRM Also sec. 22. This lease lies on Monogram Mesa in the Jo Dandy area.  
 QUAD Bull Canyon 7 1/2', Naturita 7 1/2'  
 MAP MOAB  
 PROD No production prior to May, 1976. From May, 1976 through December, 1977, production from C-JD-6, DOE Lease Tract was 726 tons of ore averaging 0.16% U3O8 and 0.98% V2O5.  
 HOST Jurassic Morrison Formation, Salt Wash Member.  
 MNZ Carnotite - tyuyamunite, high vanadium, low lime.  
 RMKS This property was formerly covered by Reserve Block USGB-4-JDGS and by Reserve Block USGB-5-JDGS.  
 DOI 1978  
 REF U.S. D.O.E., 1978, files. U.S. Bur. of Mines, 1977, (Unpubl.). U.S. A.E.C., 1971, Production Records, Colorado.

## C-JD-7, DOE Lease Tract

LOCATION: SE1/4 sec. 16, T. 46 N., R. 17 W.  
 LCRM Also sec. 21, 22. This lease lies on Monogram Mesa in the Jo Dandy area.  
 QUAD Bull Canyon 7 1/2', Naturita NW 7 1/2'  
 MAP MOAB  
 PROD No production prior to 1977.  
 HOST Jurassic Morrison Formation, Salt Wash Member.  
 MNZ Carnotite - tyuyamunite, high vanadium, low lime.  
 RMKS This property was formerly covered by the following Reserve Blocks USGB-2-JDGS, USGB-3-JDGS, USGB-9-JDOR, USGB-10-JDOR, USGB-11-JDOR, and USGB-12-JDOR.  
 DOI 1978  
 REF U.S. D.O.E., 1978, files. U.S. Bur. of Mines, 1977, (Unpubl.). U.S. A.E.C., 1971, Production Records, Colorado.

## C-JD-7A, DOE Lease Tract

LOCATION: sec. 16, T. 46 N., R. 17 W.  
 LCRM This lease lies in the Joe Dandy area.  
 QUAD Bull Canyon 7 1/2'  
 MAP MOAB  
 PROD No production prior to 1978.  
 HOST The host is the Jurassic Morrison Formation, Salt Wash Member.  
 MNZ Uranium, vanadium.  
 DOI 1978  
 REF U.S. D.O.E., 1978, files. U.S. Bur. of Mines, 1977, (Unpubl.).

## C-JD-8A, DOE Lease Tract

LOCATION: sec. 17, T. 46 N., R. 17 W.  
 LCRM This lease lies in the Jo Dandy area.  
 QUAD Bull Canyon 7 1/2'  
 MAP MOAB  
 PROD No production prior to 1978.  
 HOST The host is the Jurassic Morrison Formation, Salt Wash Member.  
 MNZ Uranium, vanadium.  
 DOI 1978  
 REF U.S. D.O.E., 1978, files. U.S. Bur. of Mines, 1977, (Unpubl.).

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## C-JD-9, DOE Lease Tract

LOCATION: SE1/4 sec. 30, T. 46 N., R. 17 W.  
 LCRM Also sec. 19, 29. This lease lies on Monogram Mesa in the Jo Dandy area.  
 QUAD Bull Canyon 7 1/2'  
 MAP MOAB  
 PROD No production prior to 1978.  
 HOST Jurassic Morrison Formation, Salt Wash Member.  
 MNZ Carnotite - tyuyamunite, high vanadium, low ilme.  
 RMKS This property was formerly covered by Reserve Block USGB-7-JDGS.  
 DOI 1978  
 REF U.S. D.O.E., 1978, files. U.S. Bur. of Mines, 1977, (Unpubl.). U.S. A.E.C., 1971, Production Records, Colorado.

## C-LP-21, DOE Lease Tract (14, AEC Mining Lease) (Reserve Block B) (Virgin Shaft)

LOCATION: S1/2SW1/4 sec. 22, T. 47 N., R. 17 W.  
 LCRM Also sec. 27. This lease lies in the Long Park area.  
 QUAD Uravan 7 1/2'  
 MAP MOAB  
 PROD As of 1961, 33,746 tons of ore had been mined at an average grade of 0.28% U3O8 and 2.14% V2O5. No production from 1961 through 1977.  
 HOST Jurassic Morrison Formation, Salt Wash Member.  
 MNZ Carnotite - tyuyamunite, high vanadium, low ilme.  
 DOI 1971  
 REF U.S. Bur. of Mines, 1977, (Unpubl.). U.S. A.E.C., 1971, Production Records, Colorado.

## C-LP-22, DOE Lease Tract

LOCATION: sec. 21, T. 47 N., R. 17 W.  
 LCRM This deposit lies in the Long Park area of the Uravan district.  
 QUAD Davis Mesa 7 1/2', Uravan 7 1/2'  
 MAP MOAB  
 PROD No production prior to March, 1977. From March, 1977 through December, 1977, production from C-LP-22, DOE Lease Tract was 2,224 tons of ore averaging 0.21% U3O8 and 0.95% V2O5.  
 HOST Jurassic Morrison Formation.  
 MNZ Carnotite - tyuyamunite, high vanadium, low ilme.  
 DOI 1978  
 REF U.S. D.O.E., 1978, files. U.S. Bur. of Mines, 1977, (Unpubl.). U.S. A.E.C., 1971, Production Records, Colorado.

## C-LP-22A, DOE Lease Tract (15, AEC Mining Lease) (Reserve Block A) (23, AEC Mining Lease)

LOCATION: NW1/4 sec. 21, T. 47 N., R. 17 W.  
 LCRM This lease tract lies in the Long Park district. It also extends to E1/2 sec. 20.  
 QUAD Davis Mesa 7 1/2'  
 MAP MOAB  
 PROD From 1953 through 1961, production from 15, AEC Mining Lease was 3,248 tons of ore at an average grade of 0.32% U3O8 and 1.63% V2O5. From 1952 through 1961, production

from 23, AEC Mining Lease was 22,842 tons of ore at an average grade of 0.32% U3O8 and 1.68% V2O5. There has been no production from 1961 through 1977.

HOST The host is the Jurassic Morrison Formation, Salt Wash Member.  
 MNZ Uranium, vanadium.  
 DOI 1978  
 REF U.S. D.O.E., 1978, files. U.S. Bur. of Mines, 1977, (Unpubl.).

## C-LP-23, DOE Lease Tract

LOCATION: N1/2 sec. 1, T. 46 N., R. 17 W.  
 LCRM Also S1/2S1/2 sec. 36, T. 47 N., R. 17 W.  
 QUAD Uravan 7 1/2'  
 MAP MOAB  
 PROD No production prior to May, 1977. From May, 1977, through December, 1977, production from C-LP-23, DOE Lease Tract was 4,782 tons of ore averaging 0.14% U3O8 and 0.74% V2O5.  
 HOST Jurassic Morrison Formation, Salt Wash Member.  
 MNZ Carnotite - tyuyamunite, high vanadium, low ilme.  
 DOI 1978  
 REF U.S. D.O.E., 1978, files. U.S. Bur. of Mines, 1977, (Unpubl.). U.S. A.E.C., 1971, Production Records, Colorado.

## C-SM-18, DOE Lease Tract

LOCATION: NE1/4 sec. 21, T. 48 N., R. 17 W.  
 LCRM Also sec. 22, 26, 27, 28. This deposit lies in the Spring Creek Mesa area of the Uravan district.  
 QUAD Atkinson Creek 7 1/2'  
 MAP MOAB  
 PROD No production prior to 1978.  
 HOST Jurassic Morrison Formation, Salt Wash Member.  
 MNZ Carnotite - tyuyamunite, high vanadium, low ilme.  
 DOI 1978  
 REF U.S. D.O.E., 1978, files. U.S. Bur. of Mines, 1977, (Unpubl.). U.S. A.E.C., 1971, Production Records, Colorado.

## C-WM-17, DOE Lease Tract

LOCATION: S1/2N1/2N1/2S1/2 sec. 14, T. 45 N., R. 18 W, NMPM.  
 LCRM S1/2N1/2 sec. 14 is in Montrose County; N1/2S1/2 sec. 14 is in San Miguel County, Bull Canyon district, Bachelor Draw and Radium Mountain areas.  
 QUAD Bull Canyon 7 1/2'  
 MAP MOAB  
 PROD No production prior to 1978.  
 HOST The host is the Jurassic Morrison Formation.  
 MNZ Uranium, vanadium.  
 DOI 1977  
 REF U.S. Bur. of Mines, 1977, (Unpubl.). U.S. D.O.E., 1977, Lease Production Records, Colorado.

## C-WM-17A, DOE Lease Tract

LOCATION: sec. 15, T. 45 N., R. 18 W.

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LCRM This lease is on Wedding Bell Mountain in the Bull Canyon district.  
 QUAD Bull Canyon 7 1/2'  
 MAP MOAB  
 PROD No production prior to 1970.  
 HOST The host is the Jurassic Morrison Formation, Salt Wash Member.  
 MNZ Uranium, vanadium.  
 DOI 1975  
 REF U.S. Bur. of Mines, 1977, (Unpubl.).

## Cabin View

LOCATION: sec. 33, T. 46 N., R. 18 W.  
 LCRM This deposit lies in Fawn Springs, Bull Canyon district.  
 QUAD Bull Canyon 7 1/2'  
 MAP MOAB  
 PROD As of 1971, 21 tons had been mined at a grade of 0.25% U308, producing 107 lbs of U308, and 1.91% V205, producing 804 lbs of V205.  
 MNZ Uranium, vanadium.  
 DOI 1971  
 REF U.S. Bur. of Mines, 1977, (Unpubl.). U.S. A.E.C., 1971, Production Records, Colorado.

## Calvert 2 (Calvert 3)

LOCATION: sec. 10, T. 45 N., R. 18 W.  
 LCRM U.S. A.E.C. Production Records also show sec. 3.  
 QUAD Bull Canyon 7 1/2'  
 MAP MOAB  
 PROD As of 1971, 3,157 tons had been mined at a grade of 0.24% U308, producing 15,327 lbs of U308, and 1.18% V205, producing 74,758 lbs of V205.  
 HOST Jurassic Morrison Formation.  
 MNZ Uranium, vanadium, carnotite - tyuyamunite, high vanadium, low lime.  
 DOI 1971  
 REF U.S. Bur. of Mines, 1977, (Unpubl.). U.S. A.E.C., 1971, Production Records, Colorado.

## Camel (Camel Group, Leighton-Camel Group)

LOCATION: sec. 11, T. 45 N., R. 18 W.  
 QUAD Bull Canyon 7 1/2'  
 MAP MOAB  
 PROD As of 1971, 334 tons had been mined at a grade of 0.14% U308, producing 936 lbs of U308, and 1.06% V205, producing 7,081 lbs of V205.  
 HOST Jurassic Morrison Formation.  
 MNZ Uranium, vanadium, carnotite-tyuyamunite, high vanadium, low lime.  
 DOI 1971  
 REF U.S. Bur. of Mines, 1977, (Unpubl.). U.S. A.E.C., 1971, Production Records, Colorado.

## Canon 4, 5, 7

LOCATION: sec. 21, T. 48 N., R. 18 W.  
 QUAD Red Canyon 7 1/2'  
 MAP MOAB  
 PROD As of 1971, 3,377 tons had been mined at a grade of 0.21% U308, producing 14,444

lbs of U308, and 1.31% V205, producing 88,306 lbs of V205.

HOST Jurassic Morrison Formation.  
 MNZ Uranium, vanadium, carnotite - tyuyamunite, high vanadium, low lime.  
 DOI 1971  
 REF U.S. Bur. of Mines, 1977, (Unpubl.). U.S. A.E.C., 1971, Production Records, Colorado.

## Canon 738 (Canon 1, 2, 5-9; Wilson 1-3)

LOCATION: sec. 21, T. 48 N., R. 18 W.  
 QUAD Red Canyon 7 1/2'  
 MAP MOAB  
 PROD As of 1971, 129 tons had been mined at a grade of 0.23% U308, producing 604 lbs of U308, and 1.16% V205, producing 2,990 lbs of V205.  
 HOST Jurassic Morrison Formation.  
 MNZ Carnotite - tyuyamunite, high vanadium, low lime.  
 DOI 1971  
 REF U.S. A.E.C., 1971, Production Records, Colorado.

## Canopus (Monogram Group, Sirius)

LOCATION: sec. 18, T. 46 N., R. 17 W.  
 LCRM U.S. A.E.C. Production Records show location as sec. 13, T. 46 N., R. 18 W.  
 QUAD Bull Canyon 7 1/2'  
 MAP MOAB  
 PROD As of 1971, 9,630 tons had been mined at a grade of 0.40% U308, producing 77,657 lbs of U308, and 1.72% V205, producing 331,875 lbs of V205.  
 HOST Jurassic Morrison Formation.  
 MNZ Uranium, vanadium, carnotite - tyuyamunite, high vanadium, low lime.  
 DOI 1971  
 REF U.S. Bur. of Mines, 1977, (Unpubl.). U.S. A.E.C., 1971, Production Records, Colorado.

## Canyon 2 (Sylvey's Pocket Group)

LOCATION: UNLOCATABLE  
 LCST UNLOCATABLE  
 LCRM This deposit lies in Gypsum Valley.  
 PROD As of 1971, 28 tons had been mined at a grade of 0.44% U308, producing 245 lbs of U308, and 1.81% V205, producing 1,014 lbs of V205.  
 HOST Jurassic Morrison Formation, Salt Wash Member.  
 DOI 1971  
 REF U.S. A.E.C., 1971, Production Records, Colorado.

## Canyon View

LOCATION: sec. 4, T. 45 N., R. 19 W.  
 LCRM U.S. A.E.C. Production Records show location as being sec. 19, T. 45 N., R. 18 W.  
 QUAD Anderson Mesa 7 1/2'  
 MAP MOAB  
 PROD As of 1971, 109 tons had been mined at a grade of 0.26% U308, producing 569 lbs of U308, and 2.24% V205, producing 4,873 lbs of V205.  
 HOST Jurassic Morrison Formation, Salt Wash Member.



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MNZ Uranium, vanadium.  
DOI 1971  
REF U.S. Bur. of Mines, 1977, (Unpubl.). U.S. A.E.C., 1971, Production Records, Colorado.

## Carpathia

LOCATION: sec. 18, T. 47 N., R. 17 W.  
QUAD Davis Mesa 7 1/2'  
MAP MOAB  
PROD As of 1971, 3,376 tons had been mined at a grade of 0.24% U3O8, producing 16,258 lbs of U3O8, and 0.94% V2O5, producing 63,142 lbs of V2O5.  
HOST Jurassic Morrison Formation.  
MNZ Uranium, vanadium, carnotite - tyuyamunite, high vanadium, low lime.  
DOI 1971  
REF U.S. Bur. of Mines, 1977, (Unpubl.). U.S. A.E.C., 1971, Production Records, Colorado.

## Carpenter Ridge

LOCATION:  
LCST UNLOCATABLE  
PROD As of 1971, 14 tons had been mined at a grade of 0.24% U3O8, producing 66 lbs of U3O8, and 2.14% V2O5, producing 598 lbs of V2O5.  
DOI 1971  
REF U.S. A.E.C., 1971, Production Records, Colorado.

## Cashin Mill

LOCATION: sec. 22, T. 47 N., R. 19 W.  
QUAD Paradox 7 1/2'  
MAP MOAB  
PROD Prior to 1971, 14 tons had been recovered from the old copper mill tailings at a grade of 0.99% U3O8, producing 278 lbs of U3O8, and 0.91% V2O5, producing 256 lbs of V2O5.  
HOST Wingate Sandstone, Chinle Formation; massive, fine-grained quartzose sandstone, breccia, and siltstone with sparse asphaltite.  
STRC Mineralized fault zones.  
MNZ Uranium, vanadium, uraninite, malachite, azurite.  
DOI 1971  
REF U.S. Bur. of Mines, 1977, (Unpubl.). U.S. A.E.C., 1971, Production Records, Colorado. Finch, W. I., 1967.

## Cedar Ridge #2 - Brushy Basin Member

LOCATION: S1/2 sec. 33, T. 46 N., R. 19 W.  
DOI 1958  
REF Hague, R. S., Goldenstein, S. J., and Blakey, E., 1958, Uranium - vanadium deposits of the Uravan Mineral Belt.

## Cedar Ridge - Brushy Basin Member

LOCATION: N1/2 sec. 4, T. 45 N., R. 19 W.  
DOI 1958  
REF Hague, R. S., Goldenstein, S. J., and Blakey, E., 1958, Uranium - vanadium deposits of the Uravan Mineral Belt.

## Cedars Ridge Group (Cedar Ridge Bill #1-3)

LOCATION: sec. 34, T. 46 N., R. 18 W.  
QUAD Bull Canyon 7 1/2'  
MAP MOAB  
PROD By 1971, 13 tons had been mined at a grade of 0.11% U3O8, producing 29 lbs of U3O8, and 1.01% V2O5, producing 263 lbs of V2O5.  
HOST Jurassic Morrison Formation.  
DOI 1971  
REF U.S. A.E.C., 1971, Production Records, Colorado.

## CFC

LOCATION: sec. 20, T. 47 N., R. 17 W.  
QUAD Davis Mesa 7 1/2'  
MAP MOAB  
PROD As of 1971, 680 tons had been mined at a grade of 0.50% U3O8, producing 6,852 lbs of U3O8, and 2.18% V2O5, producing 29,646 lbs of V2O5.  
HOST Jurassic Morrison Formation.  
MNZ Uranium, vanadium, carnotite - tyuyamunite, high vanadium, low lime.  
DOI 1971  
REF U.S. Bur. of Mines, 1977, (Unpubl.). U.S. A.E.C., 1971, Production Records, Colorado.

## Checker

LOCATION: sec. 30, T. 47 N., R. 17 W.  
QUAD Davis Mesa 7 1/2'  
MAP MOAB  
PROD As of 1971, 4 tons had been mined at a grade of 0.32% U3O8, producing 26 lbs of U3O8, and 0.72% V2O5, producing 58 lbs of V2O5.  
HOST Jurassic Morrison Formation.  
MNZ Uranium, vanadium, carnotite - tyuyamunite, high vanadium, low lime.  
DOI 1971  
REF U.S. Bur. of Mines, 1977, (Unpubl.). U.S. A.E.C., 1971, Production Records, Colorado.

## Chesterfield Trespass (Pluto, Saturn)

LOCATION: NE1/4 sec. 13, T. 46 N., R. 18 W.  
PROD As of 1971, 931 tons had been mined at a grade of 0.18% U3O8, producing 3,327 lbs of U3O8, and 0.87% V2O5, producing 16,264 lbs of V2O5.  
HOST Jurassic Morrison Formation.  
DOI 1971  
REF U.S. A.E.C., 1971, Production Records, Colorado.

## Chipmonk 1

LOCATION: sec. 4, T. 45 N., R. 19 W.  
QUAD Anderson Mesa 7 1/2'  
MAP MOAB  
PROD As of 1971, 51 tons had been mined at a grade of 0.10% U3O8, producing 98 lbs of U3O8, and 1.33% V2O5, producing 1,357 lbs of V2O5.  
MNZ Uranium, vanadium.  
DOI 1971  
REF U.S. Bur. of Mines, 1977, (Unpubl.). U.S. A.E.C., 1971, Production Records, Colorado.

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## Christie

### LOCATION:

LCST UNLOCATABLE

PROD As of 1971, 15 tons had been mined at a grade of 0.32% U308, producing 97 lbs of U308, and 2.00% V205, producing 599 lbs of V205.

HOST Jurassic Morrison Formation, Salt Wash Member.

DOI 1971

REF U.S. A.E.C., 1971, Production Records, Colorado.

## Christmas Lode

### LOCATION:

LCST UNLOCATABLE

PROD As of 1971, 44 tons had been mined at a grade of 0.11% U308, producing 98 lbs of U308, and 1.42% V205, producing 1,248 lbs of V205.

HOST Jurassic Morrison Formation.

MNZ Carnotite - tyuyamunite, high vanadium, low lime.

DOI 1971

REF U.S. A.E.C., 1971, Production Records, Colorado.

## Cliffdweller 2

LOCATION: sec. 34, T. 46 N., R. 19 W.

LCRM U.S. A.E.C. Production Records also show location as sec. 3, T. 45 N., R. 19 W.

QUAD Red Canyon 7 1/2'

MAP MOAB

PROD As of 1971, 144 tons had been mined at a grade of 0.58% U308, producing 1,659 lbs of U308, and 2.52% V205, producing 7,254 lbs of V205.

HOST Jurassic Morrison Formation.

MNZ Uranium, vanadium, carnotite - tyuyamunite, high vanadium, low lime.

DOI 1971

REF U.S. Bur. of Mines, 1977, (Unpubl.). U.S. A.E.C., 1971, Production Records, Colorado.

## Cliffdweller

LOCATION: sec. 24, T. 48 N., R. 18 W.

QUAD Red Canyon 7 1/2'

MAP MOAB

PROD As of 1971, 15,658 tons had been mined at a grade of 0.34% U308, producing 107,411 lbs of U308, and 1.80% V205, producing 565,205 lbs of V205.

HOST Jurassic Morrison Formation.

MNZ Uranium, vanadium.

DOI 1971

REF U.S. Bur. of Mines, 1977, (Unpubl.). U.S. A.E.C., 1971, Production Records, Colorado.

## Club 2

LOCATION: sec. 29, T. 48 N., R. 17 W.

LCRM U.S. A.E.C. Production Records also show sec. 29.

QUAD Red Canyon 7 1/2'

MAP MOAB

PROD As of 1971, 5,251 tons had been mined at a grade of 0.25% U308, producing 26,633 lbs of U308, and 1.21% V205, producing 127,388 lbs of V205.

HOST Jurassic Morrison Formation, Salt Wash Member. A buff, massive medium-grained sandstone and thinly laminated sandstone and mudstone with sparse to abundant carbonized logs and other plant remains.

MNZ Uranium, vanadium, carnotite - tyuyamunite, high vanadium, low lime, coffinite.

DOI 1971

REF U.S. Bur. of Mines, 1977, (Unpubl.). U.S. A.E.C., 1971, Production Records, Colorado. Finch, W. I., 1967.

## Club Group (Club Sandwich)

LOCATION: sec. 19, T. 48 N., R. 17 W.

LCRM Also sec. 29, 30, 32

QUAD Red Canyon 7 1/2'

MAP MOAB

PROD As of 1971, 9,900 tons had been mined at a grade of 0.31% U308, producing 61,790 lbs of U308, and 1.58% V205, producing 312,272 lbs of V205.

HOST Salt Wash Member of the Jurassic Morrison Formation. A buff, massive, medium-grained sandstone and thinly laminated sandstone and mudstone with sparse to abundant carbonized logs and other plant remains.

MNZ Coffinite, carnotite, tyuyamunite.

DOI 1971

REF U.S. Bur. of Mines, 1977, (Unpubl.). U.S. A.E.C., 1971, Production Records, Colorado. Finch, W. I., 1967.

## Clyde J. Wright (Pinlon and Cedar Groups)

LOCATION: sec. 24, T. 48 N., R. 19 W.

QUAD Roc Creek 7 1/2'

MAP MOAB

MNZ Uranium, vanadium.

REF U.S. Bur. of Mines, 1977, (Unpubl.).

## Coloradum

LOCATION: sec. 21, T. 47 N., R. 17 W.

QUAD Davis Mesa 7 1/2', Uravan 7 1/2'

PROD As of 1971, 26,665 tons had been mined at a grade of 0.30% U308, producing 159,598 lbs of U308, and 1.62% V205, producing 864,208 lbs of V205.

HOST Jurassic Morrison Formation.

MNZ Uranium, vanadium, carnotite - tyuyamunite, high vanadium, low lime.

DOI 1971

REF U.S. Bur. of Mines, 1977, (Unpubl.). U.S. A.E.C., 1971, Production Records, Colorado.

## Columbus

LOCATION: sec. 2, T. 46 N., R. 17 W.

LCRM U.S. A.E.C. Production Records also show location as sec. 6, 7, T. 46 N., R. 16 W.

QUAD Uravan 7 1/2'

PROD As of 1971, 96 tons had been mined at a

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grade of 0.10% U3O8, producing 193 lbs of U3O8, and 0.32% V2O5, producing 605 lbs of V2O5.

MNZ Uranium, vanadium.  
DOI 1971  
REF U.S. Bur. of Mines, 1977, (Unpubl.). U.S. A.E.C., 1971, Production Records, Colorado.

## Confusion Mine (Angle)

LOCATION: sec. 1, T. 47 N., R. 20 W.

QUAD Mount Peale 1 SE 7 1/2'

PROD As of 1971, 821 tons had been mined at a grade of 0.41% U3O8, producing 6,755 lbs of U3O8, and 2.17% V2O5, producing 35,641 lbs of V2O5.

HOST Jurassic Morrison Formation.

MNZ Uranium, vanadium.

DOI 1971

REF U.S. Bur. of Mines, 1977, (Unpubl.). U.S. A.E.C., 1971, Production Records, Colorado.

## Copper Jack (Radium King)

LOCATION: sec. 19, T. 48 N., R. 18 W.

QUAD Roc Creek 7 1/2'

PROD As of 1971, 399 tons had been mined at a grade of 0.21% U3O8, producing 1,654 lbs of U3O8, and 1.72% V2O5, producing 13,693 lbs of V2O5.

HOST Jurassic Morrison Formation, Salt Wash Member.

MNZ Uranium, vanadium.

DOI 1971

REF U.S. Bur. of Mines, 1977, (Unpubl.). U.S. A.E.C., 1971, Production Records, Colorado.

## Corporation (Lease)

LOCATION: sec. 16, T. 47 N., R. 17 W.

LCRM U.S. A.E.C. Production Records also show sec. 21.

QUAD Davis Mesa 7 1/2', Uravan 7 1/2'

PROD As of 1971, 651 tons had been mined at a grade of 0.58% U3O8, producing 7,552 lbs of U3O8, and 1.88% V2O5, producing 24,507 lbs of V2O5.

HOST Jurassic Morrison Formation.

MNZ Uranium, vanadium, uraninite (coffinite), high vanadium, low lime.

DOI 1971

REF U.S. Bur. of Mines, 1977, (Unpubl.). U.S. A.E.C., 1971, Production Records, Colorado.

## Correct

LOCATION: sec. 28, T. 47 N., R. 17 W.

LCST UNLOCATABLE

LCRM Also sec. 29.

PROD As of 1971, 38 tons had been mined at a grade of 0.16% U3O8, producing 122 lbs of U3O8, and 1.28% V2O5, producing 972 lbs of V2O5.

HOST Jurassic Morrison Formation, Salt Wash Member.

DOI 1971

REF U.S. A.E.C., 1971, Production Records, Colorado.

## Cottonwood 1, 2, 3 (Red Bird Group)

LOCATION: SW1/4 sec. 33, T. 46 N., R. 19 W.

QUAD Anderson Mesa 7 1/2'

PROD As of 1971, 323 tons had been mined at a grade of 0.38% U3O8, producing 2,459 lbs of U3O8, and 2.16% V2O5, producing 13,943 lbs of V2O5.

HOST Jurassic Morrison Formation, Salt Wash Member.

MNZ Uranium, vanadium.

DOI 1971

REF U.S. Bur. of Mines, 1977, (Unpubl.). U.S. A.E.C., 1971, Production Records, Colorado.

## Cougar (Cougar 1-11, Bobcat 1-4)

LOCATION: sec. 27, T. 46 N., R. 18 W.

LCRM Also sec. 28, 33, 34.

QUAD Bull Canyon 7 1/2'

PROD As of 1971, 9 tons had been mined at a grade of 0.11% U3O8, producing 20 lbs of U3O8, and 2.32% V2O5, producing 418 lbs of V2O5.

HOST Cretaceous Dakota Sandstone.

DOI 1971

REF U.S. A.E.C., 1971, Production Records, Colorado.

## Crab Orchard

LOCATION: sec. 11, T. 45 N., R. 18 W.

QUAD Bull Canyon 7 1/2'

MNZ Uranium, vanadium.

DOI 1975

REF U.S. Bur. of Mines, 1977, (Unpubl.).

## Cripple Creek 2

LOCATION: sec. 21, T. 47 N., R. 17 W.

QUAD Davis Mesa 7 1/2', Uravan 7 1/2'

MAP MOAB

PROD As of 1971, 30,986 tons had been mined at a grade of 0.30% U3O8, producing 184,216 lbs of U3O8, and 1.45% V2O5, producing 898,578 lbs of V2O5.

HOST Jurassic Morrison Formation.

MNZ Uranium, vanadium, uraninite (coffinite), high vanadium, low lime.

DOI 1971

REF U.S. Bur. of Mines, 1977, (Unpubl.). U.S. A.E.C., 1971, Production Records, Colorado.

## Cripple Creek 2 Dump

LOCATION: sec. 21, T. 47 N., R. 17 W.

LCRM Extends to sec. 28.

QUAD Davis Mesa 7 1/2', Uravan 7 1/2'

MAP MOAB

PROD Prior to 1971, 2,876 tons had been recovered from the Cripple Creek 2 Mine dump at a grade of 0.08% U3O8, producing 4,536 lbs of U3O8, and 0.58% V2O5, producing 33,333 lbs of V2O5.

HOST Jurassic Morrison Formation.

MNZ Uranium, vanadium, carnotite - tyuyamunite, high vanadium, low lime.

DOI 1971

REF U.S. Bur. of Mines, 1977, (Unpubl.). U.S. A.E.C., 1971, Production Records, Colorado.

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## Cripple Creek (Cripple Creek No. 1)

LOCATION: sec. 21, T. 47 N., R. 17 W.

LCRM U.S. A.E.C. Production Records also show sec. 28.

QUAD Davis Mesa 7 1/2', Uravan 7 1/2'

MAP MOAB

PROD As of 1971, 4,789 tons had been mined at a grade of 0.20% U308, producing 19,115 lbs of U308, and 1.27% V205, producing 121,461 lbs of V205.

HOST Jurassic Morrison Formation.

MNZ Uranium, vanadium, carnotite - tyuyamunite, high vanadium, low lime.

DOI 1971

REF U.S. Bur. of Mines, 1977, (Unpubl.). U.S. A.E.C., 1971, Production Records, Colorado.

## Crown Prince

LOCATION: sec. 27, T. 48 N., R. 18 W.

DOI 1958

REF Hague, R. S., Goldenstein, S. J., and Blakey, E., 1958, Uranium - vanadium deposits of the Uravan Mineral Belt.

## Cue Ball

LOCATION: sec. 3, T. 47 N., R. 17 W.

QUAD Uravan 7 1/2'

PROD As of 1971, 60 tons had been mined at a grade of 0.34% U308, producing 411 lbs of U308, and 2.82% V205, producing 3,382 lbs of V205.

HOST Jurassic Morrison Formation, Salt Wash Member.

MNZ Uranium, vanadium.

DOI 1971

REF U.S. Bur. of Mines, 1977, (Unpubl.). U.S. A.E.C., 1971, Production Records, Colorado.

## Cycle 3

LOCATION:

LCST UNLOCATABLE

PROD As of 1971, 16 tons had been mined at a grade of 0.46% U308, producing 147 lbs of U308, and 2.16% V205, producing 692 lbs of V205.

DOI 1971

REF U.S. A.E.C., 1971, Production Records, Colorado.

## D & D 3

LOCATION: sec. 25, T. 48 N., R. 18 W.

QUAD Red Canyon 7 1/2'

PROD As of 1971, 23 tons had been mined at a grade of 0.09% U308, producing 42 lbs of U308, and 0.57% V205, producing 260 lbs of V205.

HOST Jurassic Morrison Formation, Salt Wash Member.

DOI 1971

REF U.S. A.E.C., 1971, Production Records, Colorado.

## D & D 5

LOCATION: sec. 30, T. 48 N., R. 17 W.

QUAD Red Canyon 7 1/2'

PROD As of 1971, 14 tons had been mined at a grade of 0.20% U308, producing 55 lbs of U308, and 1.80% V205, producing 503 lbs of V205.

HOST Jurassic Morrison Formation.

DOI 1971

REF U.S. A.E.C., 1971, Production Records, Colorado.

## Dads (Carbon King, Shamrock 1-7, Piper 1-3, Kingpin 1-8, Runrock, Eclipse, A & H)

LOCATION: sec. 14, T. 48 N., R. 18 W.

QUAD Red Canyon 7 1/2'

PROD As of 1971, 3,842 tons had been mined at a grade of 0.28% U308, producing 21,670 lbs of U308, and 1.58% V205, producing 121,689 lbs of V205.

HOST Jurassic Morrison Formation, Salt Wash Member.

MNZ Uranium, vanadium.

DOI 1971

REF U.S. Bur. of Mines, 1977, (Unpubl.). U.S. A.E.C., 1971, Production Records, Colorado.

## Dan Patch

LOCATION: sec. 35, T. 47 N., R. 17 W.

LCRM U.S. A.E.C. Production Records also show sec. 34.

QUAD Uravan 7 1/2'

PROD As of 1971, 1,963 tons had been mined at a grade of 0.28% U308, producing 11,018 lbs of U308, and 1.44% V205, producing 56,345 lbs of V205.

HOST Jurassic Morrison Formation.

MNZ Uranium, vanadium, carnotite - tyuyamunite, high vanadium, low lime.

DOI 1971

REF U.S. Bur. of Mines, 1977, (Unpubl.). U.S. A.E.C., 1971, Production Records, Colorado.

## Dawn (Down)(Echo Group)

LOCATION: sec. 3, T. 45 N., R. 18 W.

LCST UNLOCATABLE

PROD As of 1971, 7 tons had been mined at a grade of 0.16% U308, producing 23 lbs of U308, and 2.16% V205, producing 302 lbs of V205.

HOST Jurassic Morrison Formation, Salt Wash Member.

DOI 1971

REF U.S. A.E.C., 1971, Production Records, Colorado.

## Deer (July, Silm)

LOCATION: sec. 28, T. 46 N., R. 17 W.

LCRM U.S. A.E.C. Production Records show sec. 27.

QUAD Bull Canyon 7 1/2', Naturita NW 7 1/2'

PROD As of 1971, 151,404 tons had been mined at a grade of 0.26% U308, producing 779,926 lbs of U308, and 1.53% V205, producing 4,633,542 lbs of V205.

HOST Jurassic Morrison Formation.

MNZ Uranium, vanadium, uraninite (coffinite), high vanadium, low lime.

DOI 1971

REF U.S. Bur. of Mines, 1977, (Unpubl.). U.S. A.E.C., 1971, Production Records, Colorado.

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## Deer Shaft

LOCATION: sec. 27, T. 46 N., R. 17 W.  
 QUAD Naturlita NW 7 1/2'  
 MNZ Uranium, vanadium.  
 DOI 1975  
 REF U.S. Bur. of Mines, 1977, (Unpubl.).

## Diana (Mitchell-Archer Group)

LOCATION: sec. 14, T. 45 N., R. 18 W.  
 LCRM U.S. A.E.C. Production Records also show sec. 11 and 16.  
 QUAD Bull Canyon 7 1/2'  
 PROD As of 1971, 16,362 tons had been mined at a grade of 0.27% U3O8, producing 88,728 lbs of U3O8, and 2.18% V2O5, producing 712,389 lbs of V2O5.  
 HOST Jurassic Morrison Formation.  
 MNZ Uranium, vanadium, carnotite - tyuyamunite, high vanadium, low lime.  
 DOI 1971  
 REF U.S. Bur. of Mines, 1977, (Unpubl.). U.S. A.E.C., 1971, Production Records, Colorado.

## Doctor Mine (Yellowbird)

LOCATION: sec. 16, T. 46 N., R. 17 W.  
 QUAD Bull Canyon 7 1/2', Naturlita 7 1/2'  
 MNZ Uranium, vanadium.  
 DOI 1975  
 REF U.S. Bur. of Mines, 1977, (Unpubl.).

## Dola

LOCATION:  
 LCST UNLOCATABLE  
 MAP MOAB  
 PROD As of 1971, 186 tons had been mined at a grade of 0.42% U3O8, producing 1,563 lbs of U3O8, and 1.17% V2O5, producing 4,353 lbs of V2O5.  
 DOI 1971  
 REF U.S. A.E.C., 1971, Production Records, Colorado.

## Dolores Mine (Pippy)

LOCATION: sec. 19, T. 48 N., R. 17 W.  
 QUAD Red Canyon 7 1/2'  
 PROD As of 1971, 10,224 tons had been mined at a grade of 0.33% U3O8, producing 66,974 lbs of U3O8, and 1.62% V2O5, producing 331,045 lbs of V2O5.  
 HOST Jurassic Morrison Formation.  
 MNZ Uranium, vanadium, carnotite - tyuyamunite, high vanadium, low lime.  
 DOI 1971  
 REF U.S. Bur. of Mines, 1977, (Unpubl.). U.S. A.E.C., 1971, Production Records, Colorado.

## Donald L

LOCATION: sec. 21, T. 47 N., R. 17 W.  
 LCRM U.S. A.E.C. Production Records also show sec. 28.  
 QUAD Davis Mesa 7 1/2', Uravan 7 1/2'  
 PROD As of 1971, 47,279 tons had been mined at a grade of 0.35% U3O8, producing 328,987

lbs of U3O8, and 1.85% V2O5, producing 1,747,779 lbs of V2O5.

HOST Jurassic Morrison Formation.  
 MNZ Uranium, vanadium, uraninite (coffinite), high vanadium, low lime.  
 DOI 1971  
 REF U.S. Bur. of Mines, 1977, (Unpubl.). U.S. A.E.C., 1971, Production Records, Colorado.

## Donald L Dump

LOCATION: sec. 27, T. 47 N., R. 17 W.  
 QUAD Uravan 7 1/2'  
 MNZ Uranium, vanadium.  
 DOI 1975  
 REF U.S. Bur. of Mines, 1977, (Unpubl.).

## Donna K

LOCATION: sec. 30, T. 47 N., R. 16 W.  
 LCRM U.S. A.E.C. Production Records show sec. 31.  
 QUAD Uravan 7 1/2'  
 PROD As of 1971, 2,050 tons had been mined at a grade of 0.26% U3O8, producing 10,542 lbs of U3O8, and 0.50% V2O5, producing 20,385 lbs of V2O5.  
 HOST Jurassic Morrison Formation.  
 MNZ Uraninite (coffinite), high vanadium, low lime.  
 DOI 1971  
 REF U.S. Bur. of Mines, 1977, (Unpubl.). U.S. A.E.C., 1971, Production Records, Colorado.

## Dorothy (M.U. #141, Grace Chato)

LOCATION: sec. 17, T. 47 N., R. 17 W.  
 LCRM U.S. A.E.C. Production Records also show sec. 20.  
 QUAD Davis Mesa 7 1/2'  
 PROD As of 1971, 5,951 tons had been mined at a grade of 0.23% U3O8, producing 26,886 lbs of U3O8, and 1.13% V2O5, producing 134,250 lbs of V2O5.  
 HOST Jurassic Morrison Formation.  
 MNZ Uranium, vanadium, carnotite - tyuyamunite, high vanadium, low lime.  
 DOI 1971  
 REF U.S. Bur. of Mines, 1977, (Unpubl.). U.S. A.E.C., 1971, Production Records, Colorado.

## Dorothy E

LOCATION: sec. 18, T. 48 N., R. 18 W.  
 LCRM This deposit lies in the Carpenter Ridge area.  
 QUAD Roc Creek 7 1/2'  
 PROD As of 1971, 22 tons had been mined at a grade of 0.18% U3O8, producing 79 lbs of U3O8, and 1.19% V2O5, producing 522 lbs of V2O5.  
 HOST Jurassic Morrison Formation, Salt Wash Member.  
 MNZ Uranium, vanadium, carnotite - tyuyamunite, high vanadium, Intermed. lime.  
 DOI 1971  
 REF U.S. Bur. of Mines, 1977, (Unpubl.). U.S. A.E.C., 1971, Production Records, Colorado.

## Dorothy Jean No. 1

LOCATION: sec. 18, T. 46 N., R. 17 W.

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QUAD Bull Canyon 7 1/2'  
MNZ Uranium, vanadium.  
DOI 1975  
REF U.S. Bur. of Mines, 1977, (Unpubl.).

## Double Jack

LOCATION: sec. 30, T. 47 N., R. 16 W.  
QUAD Uravan 7 1/2'  
PROD As of 1971, 445 tons had been mined at a grade of 0.22% U3O8, producing 1,936 lbs of U3O8, and 1.52% V2O5, producing 13,499 lbs of V2O5.  
HOST Jurassic Morrison Formation, Salt Wash Member.  
MNZ Uranium, vanadium.  
DOI 1971  
REF U.S. Bur. of Mines, 1977, (Unpubl.). U.S. A.E.C., 1971, Production Records, Colorado.

## Dry Creek Prospect

LOCATION: sec. 4, T. 48 N., R. 11 W.  
QUAD Dry Creek Basin 7 1/2'  
MNZ Uranium, vanadium.  
DOI 1975  
REF U.S. Bur. of Mines, 1977, (Unpubl.).

## Duchess 2, 3 (Duchess Group, Dutchess, Duke 1-3, Persistence 1-5, Phantom 1-5, Bald Eagle, Red Dog)

LOCATION: sec. 34, T. 48 N., R. 18 W.  
LCRM U.S. A.E.C. Production Records also show sec. 26, 27, 33, and 35.  
QUAD Davis Mesa 7 1/2', Red Canyon 7 1/2'  
PROD As of 1971, 2,143 tons had been mined at a grade of 0.22% U3O8, producing 9,580 lbs of U3O8, and 1.53% V2O5, producing 65,689 lbs of V2O5.  
HOST Jurassic Morrison Formation.  
MNZ Uranium, vanadium, carnotite - tyuyamunite, high vanadium, low ilme.  
DOI 1971  
REF U.S. Bur. of Mines, 1977, (Unpubl.). U.S. A.E.C., 1971, Production Records, Colorado.

## Duggan Adit

LOCATION: sec. 20, T. 46 N., R. 17 W.  
QUAD Bull Canyon 7 1/2'  
MNZ Uranium, vanadium.  
RMKS This is an alternate mine entry that serves the Mineral Joe Group and also C-JD-6, DOE Lease Tract.  
DOI 1975  
REF U.S. D.O.E., 1978, files. U.S. Bur. of Mines, 1977, (Unpubl.).

## Dusty Dump

LOCATION: sec. 20, T. 47 N., R. 17 W.  
QUAD Davis Mesa 7 1/2'  
MNZ Uranium, vanadium.  
DOI 1975  
REF U.S. Bur. of Mines, 1977, (Unpubl.).

## Eagle Rock 1

LOCATION:

LCST UNLOCATABLE  
MAP MOAB  
PROD As of 1971, 28 tons had been mined at a grade of 0.15% U3O8, producing 85 lbs of U3O8, and 1.33% V2O5, producing 745 lbs of V2O5.  
HOST Jurassic Morrison Formation.  
DOI 1971  
REF U.S. A.E.C., 1971, Production Records, Colorado.

## Echo 2 & 3 (Hatch 1-8, Echo 1-3)

LOCATION: sec. 3, T. 45 N., R. 18 W.  
LCRM U.S. A.E.C. Production Records also show sec. 10.  
QUAD Bull Canyon 7 1/2'  
MAP MOAB  
PROD As of 1971, 459 tons had been mined at a grade of 0.23% U3O8, producing 2,092 lbs of U3O8, and 1.63% V2O5, producing 14,929 lbs of V2O5.  
HOST Jurassic Morrison Formation.  
MNZ Uranium, vanadium, carnotite - tyuyamunite, high vanadium, low ilme.  
DOI 1971  
REF U.S. Bur. of Mines, 1977, (Unpubl.). U.S. A.E.C., 1971, Production Records, Colorado.

## Echo 6 (Echo 4-6, Jackrabbit, Dawn)

LOCATION: sec. 3, T. 45 N., R. 18 W.  
LCRM U.S. A.E.C. Production Records also show sec. 10 as being in Bull Canyon 7 1/2'.  
MAP MOAB  
PROD As of 1971, 1,396 tons had been mined at a grade of 0.24% U3O8, producing 6,813 lbs of U3O8, and 1.88% V2O5, producing 52,566 lbs of V2O5.  
HOST Jurassic Morrison Formation.  
MNZ Uranium, vanadium, carnotite - tyuyamunite, high vanadium, low ilme.  
DOI 1971  
REF U.S. Bur. of Mines, 1977, (Unpubl.). U.S. A.E.C., 1971, Production Records, Colorado.

## Eclipse

LOCATION: S1/2 sec. 15, T. 48 N., R. 18 W.  
DOI 1958  
REF Hague, R. S., Goldenstein, S. J., and Blakey, E., 1958, Uranium - vanadium deposits of the Uravan Mineral Belt.

## Edith Irene (Gypsy Queen)

LOCATION: sec. 11, T. 45 N., R. 19 W.  
QUAD Anderson Mesa 7 1/2'  
MAP MOAB  
PROD As of 1971, 27 tons had been mined at a grade of 0.11% U3O8, producing 59 lbs of U3O8, and 0.43% V2O5, producing 230 lbs of V2O5.  
HOST Jurassic Morrison Formation.  
MNZ Uranium, vanadium, carnotite - tyuyamunite, high vanadium, low ilme.  
DOI 1971  
REF U.S. Bur. of Mines, 1977, (Unpubl.). U.S. A.E.C., 1971, Production Records, Colorado.

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## Eight Ball (Julian Group, Eagle Basin)

LOCATION: sec. 3, T. 47 N., R. 17 W.  
 LCRM U.S. A.E.C. Production Records also show sec. 4 in Uravan 7 1/2'.  
 MAP MOAB  
 PROD As of 1971, 582 tons had been mined at a grade of 0.24% U3O8, producing 2,771 lbs of U3O8, and 1.76% V2O5, producing 20,514 lbs of V2O5.  
 HOST Salt Wash Member of the Jurassic Morrison Formation.  
 MNZ Uranium, vanadium.  
 DOI 1971  
 REF U.S. Bur. of Mines, 1977, (Unpubl.). U.S. A.E.C., 1971, Production Records, Colorado.

## Eight O Clock

LOCATION: sec. 33, T. 46 N., R. 18 W.  
 LCRM This deposit lies in the Bull Canyon district.  
 QUAD Bull Canyon 7 1/2'  
 MAP MOAB  
 PROD As of 1971, 5 tons had been mined at a grade of 0.21% U3O8, producing 21 lbs of U3O8, and 2.23% V2O5, producing 223 lbs of V2O5.  
 HOST Jurassic Morrison Formation, Salt Wash Member.  
 MNZ Uranium, vanadium.  
 DOI 1971  
 REF U.S. Bur. of Mines, 1977, (Unpubl.). U.S. A.E.C., 1971, Production Records, Colorado.

## Elizabeth Ann 1 & 2

LOCATION:  
 LCST UNLOCATABLE  
 LCRM This deposit lies in the Long Park district.  
 MAP MOAB  
 PROD As of 1971, 20 tons had been mined at a grade of 0.31% U3O8, producing 125 lbs of U3O8, and 1.59% V2O5, producing 636 lbs of V2O5.  
 HOST Jurassic Morrison Formation.  
 DOI 1971  
 REF U.S. A.E.C., 1971, Production Records, Colorado.

## Elray Mine

LOCATION: sec. 30, T. 47 N., R. 19 W.  
 QUAD Mount Peale 1 SE 7 1/2'  
 MAP MOAB  
 MNZ Uranium, vanadium.  
 DOI 1975  
 REF U.S. Bur. of Mines, 1977, (Unpubl.).

## Equinox

LOCATION: sec. 11, T. 48 N., R. 18 W.  
 LCRM U.S. A.E.C. Production Records also show sec. 12.  
 QUAD Red Canyon 7 1/2'  
 MAP MOAB  
 PROD As of 1971, 8,844 tons had been mined at a grade of 0.19% U3O8, producing 32,902 lbs of U3O8, and 0.81% V2O5, producing 143,245 lbs of V2O5.  
 HOST Jurassic Morrison Formation.

MNZ Uranium, vanadium, carnotite - tyuyamunite, high vanadium, low lime.  
 DOI 1971  
 REF U.S. Bur. of Mines, 1977, (Unpubl.). U.S. A.E.C., 1971, Production Records, Colorado.

## Eula Belle Craig

LOCATION: sec. 31, T. 49 N., R. 17 W.  
 LCRM Also sec. 32.  
 QUAD Red Canyon 7 1/2'  
 MAP MOAB  
 PROD As of 1971, 319,597 tons had been mined at a grade of 0.25% U3O8, producing 1,576,435 lbs of U3O8, and 0.87% V2O5, producing 5,591,420 lbs of V2O5.  
 HOST Jurassic Morrison Formation.  
 MNZ Uraninite (coffinite), high vanadium, low lime.  
 DOI 1971  
 REF U.S. Bur. of Mines, 1977, (Unpubl.). U.S. A.E.C., 1971, Production Records, Colorado.

## Eva Group (Eva Lode, Yellowbird Group)

LOCATION: sec. 13, T. 47 N., R. 20 W.  
 PROD As of 1971, 3,445 tons had been mined at a grade of 0.19% U3O8.  
 HOST Jurassic Morrison Formation, Salt Wash Member.  
 MNZ Carnotite.  
 DOI 1971  
 REF U.S. A.E.C., 1971, Production Records, Colorado.

## Evening Star Mine (Lion Creek Group)(Incline 2, Slick Rock, September, Soldier Boy)

LOCATION: sec. 11, T. 47 N., R. 20 W.  
 LCRM U.S. A.E.C. Production Records also show location as being sec. 13, T. 46 N., R. 18 W.  
 QUAD Mount Peale 1 SE 7 1/2'  
 MAP MOAB  
 PROD As of 1971, 16,449 tons had been mined at a grade of 0.21% U3O8, producing 69,141 lbs of U3O8, and 1.57% V2O5, producing 515,629 lbs of V2O5.  
 HOST Jurassic Morrison Formation.  
 MNZ Uranium, vanadium, carnotite - tyuyamunite, high vanadium, low lime.  
 DOI 1971  
 REF U.S. Bur. of Mines, 1977, (Unpubl.). U.S. A.E.C., 1971, Production Records, Colorado.

## Expectant 1 (Rambler)

LOCATION: sec. 3, T. 45 N., R. 19 W.  
 QUAD Anderson Mesa 7 1/2'  
 MAP MOAB  
 PROD As of 1971, 2 tons had been mined at a grade of 0.28% U3O8, producing 11 lbs of U3O8, and 1.27% V2O5, producing 51 lbs of V2O5.  
 HOST Salt Wash Member of the Jurassic Morrison Formation.  
 MNZ Uranium, vanadium.  
 DOI 1971  
 REF U.S. Bur. of Mines, 1977, (Unpubl.). U.S. A.E.C., 1971, Production Records, Colorado.

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## Fairy Queen (Fairy King & Fairy Queen)

LOCATION: sec. 10, T. 47 N., R. 17 W.  
 QUAD Uravan 7 1/2'  
 MAP MOAB  
 PROD As of 1971, 822 tons had been mined at a grade of 0.24% U3O8, producing 3,956 lbs of U3O8, and 0.83% V2O5, producing 13,635 lbs of V2O5.  
 HOST Jurassic Morrison Formation.  
 MNZ Uranium, vanadium, carnotite - tyuyamunite, high vanadium, low ilme.  
 DOI 1971  
 REF U.S. Bur. of Mines, 1977, (Unpubl.). U.S. A.E.C., 1971, Production Records, Colorado.

## Farmer Boy

LOCATION:  
 LCST UNLOCATABLE  
 MAP MOAB  
 PROD As of 1971, 3 tons had been mined at a grade of 0.32% U3O8, producing 19 lbs of U3O8, and 2.00% V2O5, producing 120 lbs of V2O5.  
 HOST Jurassic Morrison Formation, Salt Wash Member.  
 DOI 1971  
 REF U.S. A.E.C., 1971, Production Records, Colorado.

## Farmer Girl

LOCATION: sec. 22, T. 48 N., R. 18 W.  
 QUAD Red Canyon 7 1/2'  
 MAP MOAB  
 PROD As of 1971, 3,189 tons had been mined at a grade of 0.27% U3O8, producing 17,513 lbs of U3O8, and 1.51% V2O5, producing 96,253 lbs of V2O5.  
 MNZ Uranium, vanadium.  
 DOI 1971  
 REF U.S. Bur. of Mines, 1977, (Unpubl.). U.S. A.E.C., 1971, Production Records, Colorado.

## Fawn Springs 3

LOCATION: sec. 6, T. 45 N., R. 17 W.  
 LCST UNLOCATABLE  
 PROD As of 1971, 532 tons had been mined at a grade of 0.18% U3O8, producing 1,934 lbs of U3O8, and 1.61% V2O5, producing 17,079 lbs of V2O5.  
 HOST Jurassic Morrison Formation.  
 MNZ Carnotite - tyuyamunite, high vanadium, low ilme.  
 DOI 1971  
 REF U.S. A.E.C., 1971, Production Records, Colorado.

## Fawn Springs 4, 10

LOCATION: sec. 6, T. 45 N., R. 17 W.  
 QUAD Bull Canyon 7 1/2'  
 MAP MOAB  
 PROD As of 1971, 4,142 tons had been mined at a grade of 0.27% U3O8, producing 21,956 lbs of U3O8, and 1.72% V2O5, producing 142,716 lbs of V2O5.  
 HOST Jurassic Morrison Formation.

MNZ Carnotite - tyuyamunite, high vanadium, low ilme.  
 DOI 1971  
 REF U.S. A.E.C., 1971, Production Records, Colorado.

## Fawn Springs 5

LOCATION: sec. 6, T. 45 N., R. 17 W.  
 QUAD Bull Canyon 7 1/2'  
 MAP MOAB  
 PROD As of 1971, 22,457 tons had been mined at a grade of 0.27% U3O8, producing 121,897 lbs of U3O8, and 1.48% V2O5, producing 663,946 lbs of V2O5.  
 HOST Jurassic Morrison Formation.  
 MNZ Carnotite - tyuyamunite, high vanadium, low ilme.  
 DOI 1971  
 REF U.S. A.E.C., 1971, Production Records, Colorado.

## Fawn Springs 9

LOCATION: sec. 6, T. 45 N., R. 17 W.  
 QUAD Bull Canyon 7 1/2'  
 MAP MOAB  
 PROD As of 1971, 45,701 tons had been mined at a grade of 0.19% U3O8, producing 172,390 lbs of U3O8, and 1.34% V2O5, producing 1,220,873 lbs of V2O5.  
 HOST Jurassic Morrison Formation.  
 MNZ Carnotite - tyuyamunite, high vanadium, low ilme.  
 DOI 1971  
 REF U.S. A.E.C., 1971, Production Records, Colorado.

## Fawn Springs 15

LOCATION: sec. 6, T. 45 N., R. 17 W.  
 MAP MOAB  
 PROD As of 1971, 2,356 tons had been mined at a grade of 0.21% U3O8, producing 10,026 lbs of U3O8, and 1.27% V2O5, producing 59,922 lbs of V2O5.  
 HOST Jurassic Morrison Formation, Salt Wash Member.  
 MNZ Carnotite - tyuyamunite, high vanadium, low ilme.  
 DOI 1971  
 REF U.S. A.E.C., 1971, Production Records, Colorado.

## Fawn Springs 13

LOCATION: sec. 6, T. 45 N., R. 17 W.  
 QUAD Bull Canyon 7 1/2'  
 MAP MOAB  
 PROD As of 1971, 4,416 tons had been mined at a grade of 0.23% U3O8, producing 19,930 lbs of U3O8, and 1.21% V2O5, producing 106,972 lbs of V2O5.  
 HOST Jurassic Morrison Formation.  
 MNZ Carnotite - tyuyamunite, high vanadium, low ilme.  
 DOI 1971  
 REF U.S. A.E.C., 1971, Production Records, Colorado.



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## Fawn Springs 18

LOCATION: sec. 6, T. 45 N., R. 17 W.  
 QUAD Bull Canyon 7 1/2'  
 MAP MOAB  
 PROD As of 1971, 10,988 tons had been mined at a grade of 0.21% U3O8, producing 45,493 lbs of U3O8, and 1.68% V2O5, producing 370,115 lbs of V2O5.  
 HOST Jurassic Morrison Formation.  
 MNZ Carnotite - tyuyamunite, high vanadium, low lime.  
 DOI 1971  
 REF U.S. A.E.C., 1971, Production Records, Colorado.

## Fawn Springs 11

LOCATION: sec. 31, T. 46 N., R. 17 W.  
 QUAD Bull Canyon 7 1/2'  
 MAP MOAB  
 PROD As of 1971, 15,821 tons had been mined at a grade of 0.21% U3O8, producing 66,246 lbs of U3O8, and 1.41% V2O5, producing 446,943 lbs of V2O5.  
 HOST Jurassic Morrison Formation.  
 MNZ Carnotite - tyuyamunite, high vanadium, low lime.  
 DOI 1971  
 REF U.S. A.E.C., 1971, Production Records, Colorado.

## Fawn Springs 12

LOCATION: sec. 31, T. 46 N., R. 17 W.  
 QUAD Bull Canyon 7 1/2'  
 MAP MOAB  
 PROD As of 1971, 24,239 tons had been mined at a grade of 0.21% U3O8, producing 103,992 lbs of U3O8, and 1.44% V2O5, producing 69,730 lbs of V2O5.  
 HOST Jurassic Morrison Formation.  
 MNZ Carnotite - tyuyamunite, high vanadium, low lime.  
 DOI 1971  
 REF U.S. A.E.C., 1971, Production Records, Colorado.

## Fawn Springs 29

LOCATION: sec. 6, T. 45 N., R. 17 W.  
 QUAD Bull Canyon 7 1/2'  
 MAP MOAB  
 PROD As of 1971, 350 tons had been mined at a grade of 0.20% U3O8, producing 1,378 lbs of U3O8, and 1.82% V2O5, producing 12,768 lbs of V2O5.  
 HOST Jurassic Morrison Formation.  
 MNZ Carnotite - tyuyamunite, high vanadium, low lime.  
 DOI 1971  
 REF U.S. A.E.C., 1971, Production Records, Colorado.

## Fawn Springs 21

LOCATION: SE1/4 sec. 6, T. 46 N., R. 17 W.  
 QUAD Bull Canyon 7 1/2'  
 MAP MOAB

PROD As of 1971, 1,401 tons had been mined at a grade of 0.18% U3O8, producing 4,939 lbs of U3O8, and 1.24% V2O5, producing 34,859 lbs of V2O5.  
 HOST Jurassic Morrison Formation.  
 MNZ Carnotite - tyuyamunite, high vanadium, low lime.  
 DOI 1971  
 REF U.S. A.E.C., 1971, Production Records, Colorado.

## Fawn Springs 30

LOCATION: sec. 5, T. 45 N., R. 17 W.  
 QUAD Bull Canyon 7 1/2'  
 MAP MOAB  
 PROD As of 1971, 813 tons had been mined at a grade of 0.16% U3O8, producing 2,525 lbs of U3O8, and 1.28% V2O5, producing 20,884 lbs V2O5.  
 HOST Jurassic Morrison Formation.  
 MNZ Carnotite - tyuyamunite, high vanadium, low lime.  
 DOI 1971  
 REF U.S. A.E.C., 1971, Production Records, Colorado.

## Fifth National Bank

LOCATION: sec. 28, T. 47 N., R. 17 W.  
 QUAD Davis Mesa 7 1/2', Uravan 7 1/2'  
 PROD As of 1971, 764 tons had been mined at a grade of 0.28% U3O8, producing 4,217 lbs of U3O8, and 1.98% V2O5, producing 30,307 lbs of V2O5.  
 HOST Jurassic Morrison Formation.  
 MNZ Uranium, vanadium, carnotite - tyuyamunite, high vanadium, low lime.  
 DOI 1971  
 REF U.S. Bur. of Mines, 1977, (Unpubl.). U.S. A.E.C., 1971, Production Records, Colorado.

## Firebird Mine

LOCATION: sec. 20, T. 47 N., R. 17 W.  
 QUAD Davis Mesa 7 1/2'  
 MAP MOAB  
 PROD As of 1971, 5,386 tons had been mined at a grade of 0.30% U3O8, producing 32,247 lbs of U3O8, and 1.29% V2O5, producing 138,720 lbs of V2O5.  
 HOST Jurassic Morrison Formation.  
 MNZ Uranium, vanadium, carnotite - tyuyamunite, high vanadium, low lime.  
 DOI 1971  
 REF U.S. Bur. of Mines, 1977, (Unpubl.). U.S. A.E.C., 1971, Production Records, Colorado.

## Firecracker

LOCATION: sec. 35, T. 47 N., R. 17 W.  
 QUAD Uravan 7 1/2'  
 MAP MOAB  
 PROD As of 1971, 35,984 tons had been mined at a grade of 0.30% U3O8, producing 216,841 lbs of U3O8, and 1.81% V2O5, producing 1,301,741 lbs of V2O5.  
 HOST Jurassic Morrison Formation.

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MNZ Uranium, vanadium, carnotite - tyuyamunite, high vanadium, low lime.  
 DOI 1971  
 REF U.S. Bur. of Mines, 1977, (Unpubl.). U.S. A.E.C., 1971, Production Records, Colorado.

## First National Bank

LOCATION: sec. 20, T. 47 N., R. 17 W.  
 LCRM U.S. A.E.C. Production Records also show this as being in sec. 21, 28.  
 QUAD Davis Mesa 7 1/2'  
 MAP MOAB  
 PROD As of 1971, 24,074 tons had been mined at a grade of 0.28% U3O8, producing 136,068 lbs of U3O8, and 1.34% V2O5, producing 643,215 lbs of V2O5.  
 HOST Jurassic Morrison Formation, Salt Wash Member.  
 MNZ Uranium, vanadium, carnotite - tyuyamunite, high vanadium, low lime.  
 DOI 1971  
 REF U.S. Bur. of Mines, 1977, (Unpubl.). U.S. A.E.C., 1971, Production Records, Colorado.

## Flat Top

LOCATION:  
 LCST UNLOCATABLE  
 LCRM This deposit lies in Gypsum Valley.  
 MAP MOAB  
 PROD As of 1971, 14 tons had been at a grade of 0.21% U3O8, producing 60 lbs of U3O8, and 1.33% V2O5, producing 372 lbs of V2O5.  
 DOI 1971  
 REF U.S. A.E.C., 1971, Production Records, Colorado.

## Florence Nellie, 75 50, 50 50, 25 50, 10 50

LOCATION: S 1/2 sec. 9, T. 47 N., R. 17 W.  
 QUAD Davis Mesa 7 1/2' and Uruvan 7 1/2'  
 MAP MOAB  
 PROD As of 1971, 6,774 tons had been mined at a grade of 0.20% U3O8 and 0.91% V2O5, producing 26,728 lbs of U3O8 and 123,122 lbs of V2O5.  
 HOST Jurassic Morrison Formation.  
 MNZ Uranium, vanadium, carnotite - tyuyamunite.  
 DOI 1971  
 REF U.S. Bur. of Mines, 1977, (Unpubl.). U.S. A.E.C., 1971, Production Records, Colorado.

## Fossil

LOCATION: sec. 7, T. 45 N., R. 17 W.  
 LCRM U.S. A.E.C. Production Records also show sec. 6.  
 QUAD Bull Canyon 7 1/2'  
 MAP MOAB  
 PROD As of 1971, 220 tons had been mined at a grade of 0.17% U3O8, producing 746 lbs of U3O8, and 1.33% V2O5, producing 5,853 lbs of V2O5.  
 HOST Jurassic Morrison Formation.  
 MNZ Uranium, vanadium, carnotite - tyuyamunite, high vanadium, low lime.  
 DOI 1971  
 REF U.S. Bur. of Mines, 1977, (Unpubl.). U.S. A.E.C., 1971, Production Records, Colorado.

## Fourth National Bank

LOCATION: sec. 28, T. 47 N., R. 17 W.  
 QUAD Davis Mesa 7 1/2', Uruvan 7 1/2'  
 MAP MOAB  
 PROD As of 1971, 433 tons had been mined at a grade of 0.25% U3O8, producing 2,181 lbs of U3O8, and 1.65% V2O5, producing 14,417 lbs of V2O5.  
 HOST Jurassic Morrison Formation.  
 MNZ Uranium, vanadium, carnotite - tyuyamunite, high vanadium, low lime.  
 DOI 1971  
 REF U.S. Bur. of Mines, 1977, (Unpubl.). U.S. A.E.C., 1971, Production Records, Colorado.

## Fox (Little Dick)

LOCATION: sec. 30, T. 48 N., R. 17 W.  
 QUAD Red Canyon 7 1/2'  
 MAP MOAB  
 PROD As of 1971, 351 tons had been mined at a grade of 0.36% U3O8, producing 6,060 lbs of U3O8, and 1.49% V2O5, producing 10,458 lbs of V2O5.  
 HOST Jurassic Morrison Formation, Salt Wash Member. Brown, medium-grained sandstone with abundant carbonized logs and trash pockets.  
 MNZ Uranium, vanadium, carnotite - tyuyamunite, high vanadium, low lime.  
 DOI 1971  
 REF U.S. Bur. of Mines, 1977, (Unpubl.). U.S. A.E.C., 1971, Production Records, Colorado. Finch, W. L., 1967.

## Fox Cistern

LOCATION: sec. 30, T. 48 N., R. 17 W.  
 LCRM U.S. A.E.C. Production Records also show sec. 19.  
 QUAD Red Canyon 7 1/2'  
 MAP MOAB  
 PROD As of 1971, 15,791 tons had been mined at a grade of 0.23% U3O8, producing 73,245 lbs of U3O8, and 1.33% V2O5, producing 421,279 lbs of V2O5.  
 HOST Jurassic Morrison Formation.  
 MNZ Uranium, vanadium, carnotite - tyuyamunite, high vanadium, low lime.  
 DOI 1971  
 REF U.S. Bur. of Mines, 1977, (Unpubl.). U.S. A.E.C., 1971, Production Records, Colorado.

## Fraction (Fraction South)

LOCATION: sec. 19, T. 48 N., R. 17 W.  
 QUAD Red Canyon 7 1/2'  
 MAP MOAB  
 PROD As of 1971, 7,500 tons had been mined at a grade of 0.20% U3O8, producing 30,329 lbs of U3O8, and 0.95% V2O5, producing 142,377 lbs of V2O5.  
 HOST Jurassic Morrison Formation.  
 MNZ Uranium, vanadium, carnotite - tyuyamunite, high vanadium, low lime.  
 DOI 1971  
 REF U.S. Bur. of Mines, 1977, (Unpubl.). U.S. A.E.C., 1971, Production Records, Colorado.

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## Franklin

LOCATION: sec. 11, T. 45 N., R. 19 W.  
DOI 1958  
REF Hague, R. S., Goldenstein, S. J., and Blakey, E., 1958, Uranium - vanadium deposits of the Uravan Mineral Belt.

## Franklin 1, 2 (Red Bird Group)

LOCATION: sec. 33, T. 46 N., R. 19 W.  
QUAD Anderson Mesa 7 1/2'  
MAP MOAB  
PROD By 1971, 175 tons had been mined at a grade of 0.18% U308, producing 626 lbs of U308, and 1.72% V205, producing 6,028 lbs of V205.  
MNZ Uranium, vanadium.  
DOI 1971  
REF U.S. Bur. of Mines, 1977, (Unpubl.). U.S. A.E.C., 1971, Production Records, Colorado.

## Gilbert

LOCATION: sec. 32, T. 46 N., R. 17 W.  
QUAD Bull Canyon 7 1/2'  
MAP MOAB  
PROD As of 1971, 5,598 tons had been mined at a grade of 0.17% U308, producing 19,246 lbs of U308, and 1.63% V205, producing 183,015 lbs of V205.  
HOST Jurassic Morrison Formation.  
MNZ Uranium, vanadium, carnotite - tyuyamunite, high vanadium, low lime.  
DOI 1971  
REF U.S. Bur. of Mines, 1977, (Unpubl.). U.S. A.E.C., 1971, Production Records, Colorado.

## Gnome

LOCATION: sec. 17, T. 47 N., R. 17 W.  
LCRM This deposit lies in the Long Park district.  
QUAD Davis Mesa 7 1/2'  
MAP MOAB  
PROD As of 1971, 26 tons had been mined at a grade of 0.78% U308, producing 407 lbs of U308, and 2.52% V205, producing 1,310 lbs of V205.  
HOST Jurassic Morrison Formation, Salt Wash Member.  
MNZ Uranium, vanadium.  
DOI 1971  
REF U.S. Bur. of Mines, 1977, (Unpubl.). U.S. A.E.C., 1971, Production Records, Colorado.

## Golden Eagle

LOCATION: S1/2 sec. 10, T. 47 N., R. 17 W.  
DOI 1958  
REF Hague, R. S., Goldenstein, S. J., and Blakey, E., 1958, Uranium - vanadium deposits of the Uravan Mineral Belt.

## Golden Eagle 14 & 16

LOCATION: sec. 9, T. 45 N., R. 19 W.  
QUAD Anderson Mesa 7 1/2'  
MAP MOAB  
HOST Salt Wash Member of the Jurassic Morrison Formation.  
MNZ Uranium, vanadium.

DOI 1975  
REF U.S. Bur. of Mines, 1977, (Unpubl.).

## Golden Eagle 23

LOCATION: sec. 9, T. 45 N., R. 19 W.  
QUAD Anderson Mesa 7 1/2'  
MAP MOAB  
PROD As of 1971, 593 tons had been mined at a grade of 0.29% U308, producing 3,478 lbs of U308, and 2.01% V205, producing 24,047 lbs of V205.  
HOST Jurassic Morrison Formation.  
MNZ Uranium, vanadium, carnotite - tyuyamunite, high vanadium, low lime.  
DOI 1971  
REF U.S. Bur. of Mines, 1977, (Unpubl.). U.S. A.E.C., 1971, Production Records, Colorado.

## Good Hope Red Fox

LOCATION: sec. 10, T. 47 N., R. 17 W.  
QUAD Uravan 7 1/2'  
MAP MOAB  
PROD As of 1971, 9 tons had been mined at a grade of .19% U308, producing 34 lbs of U308, and 1.25% V205, producing 225 lbs of V205.  
MNZ Uranium, vanadium.  
DOI 1971  
REF U.S. Bur. of Mines, 1977, (Unpubl.). U.S. A.E.C., 1971, Production Records, Colorado.

## Gramlich Group

LOCATION: W1/2 sec. 1, T. 47 N., R. 20 W.  
DOI 1958  
REF Hague, R. S., Goldenstein, S. J., and Blakey, E., 1958, Uranium - vanadium deposits of the Uravan Mineral Belt.

## Grand Dad

LOCATION:  
LCST UNLOCATABLE  
LCRM This deposit lies in the Carpenter Ridge area.  
MAP MOAB  
PROD As of 1971, 7 tons had been mined at a grade of 0.33% U308, producing 46 lbs of U308, and 2.36% V205, producing 331 lbs of V205.  
HOST Jurassic Morrison Formation, Salt Wash Member.  
MNZ Carnotite - tyuyamunite, high vanadium, low lime.  
DOI 1971  
REF U.S. A.E.C., 1971, Production Records, Colorado.

## Grass Roots

LOCATION: sec. 27, T. 48 N., R. 17 W.  
LCRM U.S. A.E.C. Production Records also show sec. 34.  
QUAD Uravan 7 1/2'  
MAP MOAB  
PROD As of 1971, 2,169 tons had been mined at a grade of 0.21% U308, producing 9,203 lbs of U308, and 1.00% V205, producing 43,448 lbs of V205.  
MNZ Uranium, vanadium.  
DOI 1971

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REF U.S. Bur. of Mines, 1977, (Unpubl.). U.S. A.E.C., 1971, Production Records, Colorado.

## Grass Roots Dump

LOCATION: sec. 27, T. 48 N., R. 17 W.  
 LCRM U.S. A.E.C. Production Records also show sec. 34.  
 QUAD Red Canyon 7 1/2'  
 MAP MOAB  
 PROD Prior to 1971, 598 tons had been recovered from the Grass Roots mine dump at a grade of 0.10% U308, producing 1,172 lbs of U308, and 0.56% V205, producing 6,641 lbs of V205.  
 HOST Jurassic Morrison Formation.  
 MNZ Uranium, vanadium, carnotite - tyuyamunite, high vanadium, low ilme.  
 DOI 1971  
 REF U.S. Bur. of Mines, 1977, (Unpubl.). U.S. A.E.C., 1971, Production Records, Colorado.

## Gray

LOCATION: sec. 13, T. 46 N., R. 18 W.  
 LCRM U.S. A.E.C. Production Records show location as sec. 18, T. 46 N., R. 17 W.  
 QUAD Bull Canyon 7 1/2'  
 MAP MOAB  
 PROD As of 1971, 1,292 tons had been mined at a grade of 0.16% U308, producing 4,221 lbs of U308. 0.74% V205, producing 19,105 lbs of V205.  
 HOST Jurassic Morrison Formation, Brushy Basin Member.  
 MNZ Uranium, vanadium, carnotite - tyuyamunite, low vanadium, low ilme.  
 DOI 1971  
 REF U.S. Bur. of Mines, 1977, (Unpubl.). U.S. A.E.C., 1971, Production Records, Colorado.

## Gray Dump

LOCATION: sec. 13, T. 46 N., R. 18 W.  
 LCRM U.S. A.E.C. Production Records show sec. 18, T. 46 N., R. 17 W.  
 QUAD Bull Canyon 7 1/2'  
 MAP MOAB  
 PROD Prior to 1971, 90 tons had been recovered from the Gray Mine dump at a grade of 0.15% U308, producing 267 lbs of U308, and 0.63% V205, producing 1,136 lbs of V205.  
 HOST Jurassic Morrison Formation, Brushy Basin Member; mostly fine-grained sandstone, locally coarse-grained and conglomeratic, with abundant carbonized logs and plant trash.  
 MNZ Uranium, vanadium, carnotite.  
 DOI 1971  
 REF U.S. Bur. of Mines, 1977, (Unpubl.). U.S. A.E.C., 1971, Production Records, Colorado.

## Gray Fox

LOCATION: sec. 11, T. 47 N., R. 17 W.  
 LCRM U.S. A.E.C. Production Records also show sec. 10. This deposit lies in Eagle Basin.  
 QUAD Uravan 7 1/2'  
 MAP MOAB  
 PROD As of 1971, 117 tons had been mined at a grade of 0.26% U308, producing 620 lbs of

U308, and 1.16% V205, producing 2,724 lbs of V205.

HOST Jurassic Morrison Formation, Salt Wash Member.  
 MNZ Uranium, vanadium.  
 DOI 1971  
 REF U.S. Bur. of Mines, 1977, (Unpubl.). U.S. A.E.C., 1971, Production Records, Colorado.

## Greagor Group

LOCATION: sec. 4, T. 45 N., R. 18 W.  
 LCRM U.S. A.E.C. Production Records show sec. 4, 5, T. 45 N., R. 18 W. and sec. 29, 32, 33, T. 46 N., R. 18 W.  
 QUAD Bull Canyon 7 1/2'  
 MAP MOAB  
 PROD As of 1971, 18,717 tons had been mined at a grade of 0.25% U308, producing 92,244 lbs of U308, and 1.58% V205, producing 591,588 lbs of V205.  
 HOST Jurassic Morrison Formation.  
 MNZ Uranium, vanadium, carnotite - tyuyamunite, high vanadium, low ilme.  
 DOI 1971  
 REF U.S. Bur. of Mines, 1977, (Unpubl.). U.S. A.E.C., Production Records, Colorado.

## Greasy Spoon (Geo No. 7)

LOCATION: sec. 23, T. 29 S., R. 20 W.  
 LCRM Also sec. 24, 25, 26.  
 PROD Reserves, no production prior to 1971.  
 HOST Jurassic Morrison Formation, Salt Wash Member.  
 MNZ Carnotite.  
 DOI 1971  
 REF U.S. A.E.C., 1971, Production Records, Colorado.

## Great Western Dump

LOCATION: sec. 20, T. 47 N., R. 17 W.  
 QUAD Davis Mesa 7 1/2'  
 MAP MOAB  
 PROD Prior to 1971, 212 tons had been recovered from the Great Western Mine dump at a grade of 0.17% U308, producing 732 lbs of U308, and 0.92% V205, producing 3,886 lbs of V205.  
 HOST Jurassic Morrison Formation.  
 MNZ Carnotite - tyuyamunite, high vanadium, low ilme.  
 DOI 1971  
 REF U.S. A.E.C., 1971, Production Records, Colorado.

## Great Western (Mineral Survey 20184)

LOCATION: SW1/4 sec. 20, T. 47 N., R. 17 W.  
 LCRM U.S. A.E.C. Production Records show sec. 20.  
 QUAD Davis Mesa 7 1/2'  
 MAP MOAB  
 PROD As of 1971, 10,117 tons had been mined at a grade of 0.28% U308, producing 56,234 lbs of U308, and 1.32% V205, producing 266,706 lbs of V205.  
 HOST Jurassic Morrison Formation.  
 MNZ Uranium, vanadium, carnotite - tyuyamunite, high vanadium, low ilme.  
 DOI 1971  
 REF U.S. Bur. of Mines, 1977, (Unpubl.). U.S. A.E.C., 1971, Production Records, Colorado. Mineral Survey 20184.

## MONTROSE COUNTY

### Green Back (Mineral Survey 20233)

LOCATION: sec. 13, T. 46 N., R. 17 W.  
 QUAD Bull Canyon 7 1/2'  
 MAP MOAB  
 PROD As of 1971, 2,303 tons had been mined at a grade of 0.26% U308, producing 12,117 lbs of U308, and 0.86% V205, producing 39,705 lbs of V205.  
 HOST Jurassic Morrison Formation.  
 MNZ Uranium, vanadium, carnotite - tyuyamunite, high vanadium, low lime.  
 DOI 1971  
 REF U.S. Bur. of Mines, 1977, (Unpubl.). U.S. A.E.C., 1971, Production Records, Colorado. Mineral Survey 20233.

### Ground Hog Mine

LOCATION: sec. 20, T. 47 N., R. 17 W.  
 LCRM U.S. A.E.C. Production Records also show sec. 17.  
 QUAD Davis Mesa 7 1/2'  
 MAP MOAB  
 PROD As of 1971, 6,192 tons had been mined at a grade of 0.29% U308, producing 35,832 lbs of U308, and 1.31% V205, producing 152,050 lbs of V205.  
 HOST Jurassic Morrison Formation, Brushy Basin Member. Mostly fine-grained sandstone, locally coarse-grained and conglomeratic, with abundant carbonized logs and plant trash.  
 MNZ Uranium, vanadium, carnotite - tyuyamunite, high vanadium, low lime.  
 DOI 1971  
 REF U.S. Bur. of Mines, 1977, (Unpubl.). U.S. A.E.C., 1971, Production Records, Colorado. Finch, W. L., 1967, U.S. Geol. Survey Prof. Paper 538, p. 12.

### Groundhog

LOCATION: sec. 20, T. 47 N., R. 17 W.  
 LCRM U.S. A.E.C. Production Records also show sec. 17.  
 QUAD Davis Mesa 7 1/2'  
 MAP MOAB  
 HOST Jurassic Morrison Formation, Brushy Basin Member. Mostly fine-grained sandstone, locally coarse-grained and conglomeratic, with abundant carbonized logs and plant trash.  
 MNZ Uranium, vanadium, carnotite - tyuyamunite, high vanadium, low lime.  
 DOI 1971  
 REF U.S. Bur. of Mines, 1977, (Unpubl.). U.S. A.E.C., 1971, Production Records, Colorado. Finch, W. L., 1967, U.S.G.S. Prof. Paper 538, p. 12.

### Groundhog #2

LOCATION: NE1/4 sec. 16, T. 48 N., R. 19 W.  
 DOI 1958  
 REF Hague, R. S., Goldenstein, S. J., and Blakey, E., 1958, Uranium - vanadium deposits of the Uravan Mineral Belt.

### Guadalcanal Mine (Long Park 17, Tumia)

LOCATION: sec. 27, T. 47 N., R. 17 W.  
 QUAD Uravan 7 1/2'  
 MAP MOAB  
 PROD As of 1971, 53,740 tons had been mined at a grade of 0.30% U308, producing 327,358 lbs of U308, and 1.71% V205, producing 1,838,335 lbs of V205.  
 HOST Jurassic Morrison Formation.  
 MNZ Uranium, vanadium, uraninite (coffinite), high vanadium, low lime.  
 DOI 1971  
 REF U.S. Bur. of Mines, 1977, (Unpubl.). U.S. A.E.C., 1971, Production Records, Colorado.

### Gyp Lease (Gyp 1-3, Surprise)

LOCATION: sec. 10, T. 45 N., R. 19 W.  
 LCRM U.S. A.E.C. Production Records also show sec. 3 & 10.  
 QUAD Anderson Mesa 7 1/2'  
 MAP MOAB  
 PROD As of 1971, 4,470 tons had been mined at a grade of 0.23% U308, producing 20,403 lbs of U308, and 1.48% V205, producing 132,296 lbs of V205.  
 HOST Jurassic Morrison Formation, Salt Wash Member: a fine- to medium- fine-grained sandstone with abundant carbonized plant remains and some logs.  
 MNZ Uranium, vanadium, carnotite - tyuyamunite, high vanadium, low lime.  
 DOI 1971  
 REF U.S. Bur. of Mines, 1977, (Unpubl.). U.S. A.E.C., 1971, Production Records, Colorado. Finch, W. L., 1957.

### Happy Jack (Robert Lee #3)

LOCATION: sec. 4, T. 45 N., R. 19 W.  
 QUAD Anderson Mesa 7 1/2'  
 MAP MOAB  
 PROD By 1971, 1,364 tons had been mined at a grade of 0.30% U308, producing 8,070 lbs of U308, and 1.44% V205, producing 39,315 lbs of V205.  
 MNZ Uranium, vanadium.  
 DOI 1971  
 REF U.S. Bur. of Mines, 1977, (Unpubl.). U.S. A.E.C., 1971, Production Records, Colorado.

### Happy Joe (Happy Joe No. 1, Miracle)

LOCATION: sec. 2, T. 45 N., R. 19 W.  
 LCRM U.S. A.E.C. Production Records also show sec. 3, 10, and 11.  
 QUAD Anderson Mesa 7 1/2'  
 MAP MOAB  
 PROD As of 1971, 63 tons had been mined at a grade of 0.74% U308, producing 929 lbs of U308, and 3.20% V205, producing 4,037 lbs. of V205.  
 HOST Salt Wash Member of the Jurassic Morrison Formation.  
 MNZ Uranium, vanadium.  
 DOI 1971  
 REF U.S. Bur. of Mines, 1977, (Unpubl.). U.S. A.E.C., 1971, Production Records, Colorado.

# MONTROSE COUNTY

## Happy St.

LOCATION: sec. 20, T. 47 N., R. 17 W.

LCRM Also sec. 21.

QUAD Davis Mesa 7 1/2'

MAP MOAB

PROD As of 1971, 29,782 tons had been mined at a grade of 0.21% U3O8, producing 127,542 lbs of U3O8, and 1.09% V2O5, producing 648,668 lbs of V2O5.

HOST Jurassic Morrison Formation.

MNZ Carnotite - tyuyamunite, high vanadium, low lime.

DOI 1971

REF U.S. A.E.C., 1971, Production Records, Colorado.

## Happy Thought

LOCATION: sec. 18, T. 46 N., R. 17 W.

LCRM U.S. A.E.C. Production Records also show sec. 17.

QUAD Bull Canyon 7 1/2'

MAP MOAB

PROD As of 1971, 15,258 tons had been mined at a grade of 0.52% U3O8, producing 157,484 lbs of U3O8, and 1.46% V2O5, producing 466,977 lbs of V2O5.

HOST Jurassic Morrison Formation, Salt Wash Member: Fine- to medium- fine-grained sandstone, with abundant carbonized plant remains and with logs common.

MNZ Uranium, vanadium, carnotite - tyuyamunite, uraninite, coffinite, high vanadium, low lime.

DOI 1971

REF U.S. Bur. of Mines, 1977, (Unpubl.). U.S. A.E.C., 1971, Production Records, Colorado. Finch, W. L., 1967.

## Happy, Happy West, Happy No. 1

LOCATION: sec. 21, T. 47 N., R. 17 W.

QUAD Davis Mesa 7 1/2' and Uravan 7 1/2'

MAP MOAB

MNZ Uranium, vanadium.

DOI 1975

REF U.S. Bur. of Mines, 1977, (Unpubl.).

## Hard Luck (Hot Dog, Hard Luck 1-5)

LOCATION: sec. 3, T. 48 N., R. 18 W.

QUAD Red Canyon 7 1/2'

MAP MOAB

PROD As of 1971, 25 tons had been mined at a grade of 0.13% U3O8, producing 64 lbs of U3O8, and 0.51% V2O5, producing 256 lbs of V2O5.

DOI 1971

REF U.S. A.E.C., 1971, Production Records, Colorado.

## Hardrock

LOCATION: sec. 18, T. 46 N., R. 16 W.

QUAD Naturita NW 7 1/2'

MAP MOAB

PROD As of 1971, 192 tons had been mined at a grade of 0.18% U3O8, producing 687 lbs of U3O8, and 0.80% V2O5, producing 3,074 lbs of V2O5.

HOST Jurassic Morrison Formation.

MNZ Uranium, vanadium, carnotite - tyuyamunite, high vanadium, low lime.

DOI 1971

REF U.S. Bur. of Mines, 1977, (Unpubl.). U.S. A.E.C., 1971, Production Records, Colorado.

## Harold (Gilbert Claim)

LOCATION: sec. 32, T. 46 N., R. 17 W.

LCRM U.S. A.E.C. Production Records show sec. 31.

QUAD Bull Canyon 7 1/2'

MAP MOAB

PROD As of 1971, 650 tons had been mined at a grade of 0.20% U3O8, producing 2,603 lbs of U3O8, and 1.70% V2O5, producing 22,117 lbs of V2O5.

HOST Jurassic Morrison Formation, Salt Wash Member.

MNZ Uranium, vanadium, carnotite - tyuyamunite, high vanadium, low lime.

DOI 1971

REF U.S. Bur. of Mines, 1977, (Unpubl.). U.S. A.E.C., 1971, Production Records, Colorado.

## Harrison-Burnett and Small-Lee

LOCATION: sec. 6, T. 45 N., R. 16 W.

QUAD Naturita NW 7 1/2'

MAP MOAB

MNZ Uranium, vanadium.

DOI 1975

REF U.S. Bur. of Mines, 1977, (Unpubl.).

## Hatch No. 8 (Echo Group)

LOCATION: sec. 2, T. 45 N., R. 18 W.

LCRM This deposit lies in the Bull Canyon district.

PROD There are reserves, but there was no production.

HOST Jurassic Morrison Formation, Salt Wash Member.

DOI 1971

REF U.S. A.E.C., 1971, Production Records, Colorado.

## Henry Clay Dumps

LOCATION: sec. 29, T. 47 N., R. 17 W.

QUAD Davis Mesa 7 1/2'

MAP MOAB

PROD Prior to 1971, 2,588 tons had been recovered at a grade of 0.06% U3O8, producing 3,346 lbs of U3O8, and 0.39% V2O5, producing 20,379 lbs of V2O5.

HOST Jurassic Morrison Formation.

MNZ Uranium, vanadium, uraninite (coffinite), high vanadium, low lime.

DOI 1971

REF U.S. Bur. of Mines, 1977, (Unpubl.). U.S. A.E.C., 1971, Production Records, Colorado.

## Henry Clay Mine

LOCATION: sec. 29, T. 47 N., R. 17 W.

QUAD Davis Mesa 7 1/2'

MAP MOAB

PROD As of 1971, 18,023 tons had been mined at a grade of 0.31% U3O8, producing 110,195 lbs of U3O8, and 1.51% V2O5, producing 542,676 lbs of V2O5.

# MONTROSE COUNTY

HOST Salt Wash Member of the Jurassic Morrison Formation.  
 MNZ Uranium, vanadium, carnotite - tyuyamunite, high vanadium, low lime.  
 DOI 1971  
 REF U.S. Bur. of Mines, 1977, (Unpubl.). U.S. A.E.C., 1971, Production Records, Colorado.

## Hidden Basin

LOCATION: sec. 20, T. 47 N., R. 17 W.  
 LCRM U.S. A.E.C. Production Records also show sec. 16, 21.  
 QUAD Davis Mesa 7 1/2'  
 MAP MOAB  
 PROD As of 1971, 29,289 tons had been mined at a grade of 0.29% U3O8, producing 167,598 lbs of U3O8, and 1.35% V2O5, producing 788,756 lbs of V2O5.  
 HOST Jurassic Morrison Formation.  
 MNZ Uranium, vanadium, uraninite (coffinite), high vanadium, low lime.  
 DOI 1971  
 REF U.S. Bur. of Mines, 1977, (Unpubl.). U.S. A.E.C., 1971, Production Records, Colorado.

## High Ball 5

LOCATION: sec. 26, T. 46 N., R. 18 W.  
 LCRM U.S. A.E.C. Production Records also show sec. 35.  
 QUAD Bull Canyon 7 1/2'  
 MAP MOAB  
 PROD As of 1971, 613 tons had been mined at a grade of 0.24% U3O8, producing 2,917 lbs of U3O8, and 1.03% V2O5, producing 12,573 lbs of V2O5.  
 HOST Jurassic Morrison Formation.  
 MNZ Uranium, vanadium, carnotite - tyuyamunite, high vanadium, low lime.  
 DOI 1971  
 REF U.S. Bur. of Mines, 1977, (Unpubl.). U.S. A.E.C., 1971, Production Records, Colorado.

## Hobo

LOCATION: sec. 32, T. 46 N., R. 18 W.  
 DOI 1958  
 REF Hague, R. S., Goldenstein, S. J., and Blakey, E., 1958, Uranium - vanadium deposits of the Uravan Mineral Belt.

## Homestead

LOCATION:  
 LCST UNLOCATABLE  
 MAP MOAB  
 PROD As of 1971, 7 tons had been mined at a grade of 0.21% U3O8, producing 30 lbs of U3O8, and 1.95% V2O5, producing 273 lbs of V2O5.  
 DOI 1971  
 REF U.S. A.E.C., 1971, Production Records, Colorado.

## Honeymoon (Phonograph)

LOCATION: sec. 20, T. 47 N., R. 17 W.  
 QUAD Davis Mesa 7 1/2'  
 MAP MOAB

PROD As of 1971, 38,548 tons had been mined at a grade of 0.22% U3O8, producing 170,310 lbs of U3O8, and 0.47% V2O5, producing 363,055 lbs of V2O5.  
 HOST Jurassic Morrison Formation.  
 MNZ Uranium, vanadium, carnotite - tyuyamunite, high vanadium, low lime.  
 DOI 1971  
 REF U.S. Bur. of Mines, 1977, (Unpubl.). U.S. A.E.C., 1971, Production Records, Colorado.

## Honeymoon Dumps

LOCATION: sec. 20, T. 47 N., R. 17 W.  
 QUAD Davis Mesa 7 1/2'  
 MAP MOAB  
 PROD Prior to 1971, 11,655 tons had been recovered from the Honeymoon Mine dump at a grade of 0.09% U3O8, producing 21,017 lbs of U3O8.  
 HOST Jurassic Morrison Formation.  
 MNZ Uranium, vanadium, carnotite - tyuyamunite, high vanadium, low lime.  
 DOI 1971  
 REF U.S. Bur. of Mines, 1977, (Unpubl.). U.S. A.E.C., 1971, Production Records, Colorado.

## Horsehair 1

LOCATION: sec. 1, T. 45 N., R. 18 W.  
 LCRM U.S. A.E.C. Production Records show location as sec. 36, T. 46 N., R. 18 W.  
 QUAD Bull Canyon 7 1/2'  
 MAP MOAB  
 PROD As of 1971, 1,837 tons had been mined at a grade of 0.19% U3O8, producing 7,092 lbs of U3O8, and 1.27% V2O5, producing 46,620 lbs of V2O5.  
 HOST Jurassic Morrison Formation.  
 MNZ Uranium, vanadium, carnotite - tyuyamunite, high vanadium, low lime.  
 DOI 1971  
 REF U.S. Bur. of Mines, 1977, (Unpubl.). U.S. A.E.C., 1971, Production Records, Colorado.

## Horsehair Group (Horsehair 2-5)

LOCATION: sec. 2, T. 45 N., R. 18 W.  
 LCRM U.S. A.E.C. Production Records show location as sec. 36, T. 46 N., R. 18 W.  
 QUAD Bull Canyon 7 1/2'  
 MAP MOAB  
 PROD As of 1971, 191 tons had been mined at a grade of 0.31% U3O8, producing 1,182 lbs of U3O8, and 1.74% V2O5, producing 6,629 lbs of V2O5.  
 HOST Salt Wash Member of the Jurassic Morrison Formation.  
 MNZ Uranium, vanadium.  
 DOI 1971  
 REF U.S. Bur. of Mines, 1977, (Unpubl.). U.S. A.E.C., 1971, Production Records, Colorado.

## Hot Rocks, Boomer and Pole Cat (Hot Rock 1-5)

LOCATION: sec. 9, T. 46 N., R. 19 W.  
 LCRM U.S. A.E.C. Production Records show location as sec. 12, T. 46 N., R. 17 W.  
 QUAD Paradox 7 1/2' or Anderson Mesa 7 1/2'

# MONTROSE COUNTY

MAP MOAB  
 PROD As of 1971, 1 ton had been mined at a grade of 0.15% U3O8, producing 3 lbs of U3O8, and 0.80% V2O5, producing 15 lbs of V2O5.  
 HOST Salt Wash Member of the Jurassic Morrison Formation.  
 MNZ Uranium, vanadium.  
 DOI 1971  
 REF U.S. Bur. of Mines, 1977, (Unpubl.). U.S. A.E.C., 1971, Production Records, Colorado.

## Hot Shot No. 3 (Wedding Bell Group)

LOCATION: sec. 16, T. 45 N., R. 18 W.  
 LCRM This deposit lies in the Bull Canyon district.  
 QUAD Bull Canyon 7 1/2'  
 HOST Jurassic Morrison Formation, Salt Wash Member.  
 DOI 1971  
 REF U.S. A.E.C., 1971, Production Records, Colorado. U.S.G.S. TEM 268-A.

## Hot Spot

LOCATION:  
 LCST UNLOCATABLE  
 LCRM This deposit lies in the Paradox area.  
 MAP MOAB  
 PROD As of 1971, 31 tons had been mined at a grade of 0.20% U3O8, producing 122 lbs of U3O8, and 2.58% V2O5, producing 1,601 lbs of V2O5.  
 HOST Jurassic Morrison Formation.  
 DOI 1971  
 REF U.S. A.E.C., 1971, Production Records, Colorado.

## Howling Coyote

LOCATION: sec. 33, T. 47 N., R. 19 W.  
 LCRM This deposit lies in the Paradox district, Wray Mesa locality.  
 QUAD Paradox 7 1/2'  
 MAP MOAB  
 PROD As of 1971, 23 tons had been mined at a grade of 0.14% U3O8, producing 66 lbs of U3O8, and 1.05% V2O5, producing 481 lbs of V2O5.  
 HOST Jurassic Morrison Formation, Brushy Basin Member.  
 MNZ Uranium, vanadium.  
 DOI 1971  
 REF U.S. Bur. of Mines, 1977, (Unpubl.). U.S. A.E.C., 1971, Production Records, Colorado.

## Hummer

LOCATION: NW1/4 sec. 21, T. 46 N., R. 17 W.  
 QUAD Bull Canyon 7 1/2'  
 MAP MOAB  
 PROD As of 1971, 229,685 tons had been mined at a grade of 0.30% U3O8, producing 1,387,715 lbs of U3O8, and 1.49% V2O5, producing 6,855,673 lbs of V2O5.  
 HOST Jurassic Morrison Formation, Salt Wash Member: Light gray and brown, fine- to medium-grained sandstone, shaly sandstone, and shale-pebble conglomerate. It contains abundant carbonized remains and sparse carbonized logs.

MNZ Uranium, vanadium, carnotite - tyuyamunite, bayleite, uraninite, coffinite, meta-tyuyamunite, rautite, high vanadium, low lime.  
 DOI 1971  
 REF U.S. Bur. of Mines, 1977, (Unpubl.). U.S. A.E.C., 1971, Production Records, Colorado.

## Hummer Dumps (Joe Dandy Dump)

LOCATION: sec. 21, T. 46 N., R. 17 W.  
 QUAD Bull Canyon 7 1/2'  
 MAP MOAB  
 PROD Prior to 1971, 834 tons had been recovered from the Hummer Mine dumps at a grade of 0.08% U3O8, producing 1,396 lbs of U3O8, and 0.43% V2O5, producing 7,195 lbs of V2O5.  
 HOST Jurassic Morrison Formation, Salt Wash Member: fine- to medium-grained sandstone, shaly sandstone and shale-pebble conglomerate. It contains abundant carbonized plant remains and sparse carbonized logs.  
 MNZ Uranium, vanadium, carnotite - tyuyamunite, high vanadium, low lime.  
 DOI 1971  
 REF U.S. Bur. of Mines, 1977, (Unpubl.). U.S. A.E.C., 1971, Production Records, Colorado.

## Ilene (Mexico Group)

LOCATION:  
 LCST UNLOCATABLE  
 MAP MOAB  
 PROD As of 1971, 24 tons had been mined at a grade of 0.06% U3O8, producing 29 lbs of U3O8, and 0.67% V2O5, producing 329 lbs of V2O5.  
 HOST Jurassic Morrison Formation, Salt Wash Member.  
 MNZ Carnotite - tyuyamunite, high vanadium, low lime.  
 DOI 1971  
 REF U.S. A.E.C., 1971, Production Records, Colorado.

## Independence

LOCATION: sec. 12, T. 47 N., R. 20 W.  
 LCRM This deposit lies in the La Sal area, Paradox district.  
 QUAD Mount Peale 1 SE 7 1/2'  
 MAP MOAB  
 HOST Jurassic Morrison Formation.  
 MNZ Uranium, vanadium.  
 DOI 1971  
 REF U.S. Bur. of Mines, 1977, (Unpubl.). U.S. A.E.C., 1971, Production Records, Colorado.

## Index

LOCATION: sec. 2, T. 48 N., R. 18 W.  
 LCRM U.S. A.E.C. Production Records also show sec. 11 and 14.  
 QUAD Red Canyon 7 1/2'  
 MAP MOAB  
 PROD As of 1971, 106 tons had been mined at a grade of 0.13% U3O8, producing 284 lbs of U3O8, and 0.88% V2O5, producing 1,865 lbs of V2O5.  
 HOST Jurassic Morrison Formation.  
 MNZ Uranium, vanadium.



# MONTROSE COUNTY

DOI 1971  
REF U.S. Bur. of Mines, 1977, (Unpubl.). U.S. A.E.C., 1971, Production Records, Colorado.

## Indians

LOCATION: sec. 24, T. 48 N., R. 18 W.  
DOI 1958  
REF Hague, R. S., Goldenstein, S. J., and Blakey, E., 1958, Uranium - vanadium deposits of the Uravan Mineral Belt.

## Invincible

LOCATION: sec. 3, T. 48 N., R. 17 W.  
QUAD Atkinson Creek 7 1/2'  
MAP MOAB  
MNZ Uranium, vanadium.  
DOI 1975  
REF U.S. Bur. of Mines, 1977, (Unpubl.).

## Irene

LOCATION: sec. 29, T. 48 N., R. 17 W.  
QUAD Red Canyon 7 1/2'  
MAP MOAB  
PROD As of 1971, 1,483 tons had been mined at a grade of 0.34% U3O8, producing 10,087 lbs of U3O8, and 1.17% V2O5, producing 34,596 lbs of V2O5.  
HOST Jurassic Morrison Formation.  
MNZ Uranium, vanadium, carnotite - tyuyamunite, high vanadium, low ilme.  
DOI 1971  
REF U.S. Bur. of Mines, 1977, (Unpubl.). U.S. A.E.C., 1971, Production Records, Colorado.

## Island View 1-7 (Island View 2)

LOCATION: sec. 11, T. 45 N., R. 19 W.  
LCRM U.S. A.E.C. Production Records also show sec. 12.  
QUAD Anderson Mesa 7 1/2'  
MAP MOAB  
PROD As of 1971, 21 tons had been mined at a grade of 0.20% U3O8, producing 85 lbs of U3O8, and 1.50% V2O5, producing 630 lbs of V2O5.  
HOST Jurassic Morrison Formation.  
MNZ Uranium, vanadium, carnotite - tyuyamunite, high vanadium, low ilme.  
DOI 1971  
REF U.S. Bur. of Mines, 1977, (Unpubl.). U.S. A.E.C., 1971, Production Records, Colorado.

## J M

LOCATION: sec. 32, T. 48 N., R. 17 W.  
QUAD Davis Mesa 7 1/2'  
MAP MOAB  
MNZ Uranium, vanadium.  
DOI 1975  
REF U.S. Bur. of Mines, 1977, (Unpubl.).

## J. B. Group

LOCATION: sec. 3, T. 47 N., R. 17 W.  
QUAD Uravan 7 1/2'

MAP MOAB  
PROD As of 1971, 1,420 tons had been mined at a grade of 0.12% U3O8, producing 3,441 lbs of U3O8, and 0.76% V2O5, producing 21,663 lbs of V2O5.  
HOST Jurassic Morrison Formation.  
MNZ Carnotite - tyuyamunite, high vanadium, low ilme.  
DOI 1971  
REF U.S. A.E.C., 1971, Production Records, Colorado.

## J. J.

LOCATION: sec. 26, T. 46 N., R. 17 W.  
QUAD Naturita NW 7 1/2'  
MAP MOAB  
PROD As of 1971, 24,107 tons had been mined at a grade of 0.26% U3O8, producing 127,740 lbs of U3O8, and 1.55% V2O5, producing 749,492 lbs of V2O5.  
HOST Jurassic Morrison Formation, Salt Wash Member; light-gray and brown fine- to medium-fine-grained sandstone, shaly sandstone, and shale-pebble conglomerate. Abundant carbonized plant remains, and sparse carbonized logs.  
MNZ Uranium, vanadium, uraninite (coffinite), high vanadium, low ilme. Bayleyite, tyuyamunite, metatyuyamunite, rauvite.  
DOI 1971  
REF U.S. Bur. of Mines, 1977, (Unpubl.). U.S. A.E.C., 1971, Production Records, Colorado.

## Jack No. 8-13

LOCATION: sec. 12, T. 46 N., R. 17 W.  
LCRM This deposit lies in Bitter Creek.  
PROD Reserves, no production.  
HOST Jurassic Morrison Formation, Salt Wash Member.  
MNZ Carnotite.  
DOI 1971  
REF U.S. A.E.C., 1971, Production Records, Colorado.

## Jack Rabbit (Echo Group)

LOCATION: sec. 11, T. 45 N., R. 18 W.  
LCRM U.S. A.E.C. Production Records show sec. 2.  
QUAD Bull Canyon 7 1/2'  
MAP MOAB  
PROD As of 1971, 93 tons had been mined at a grade of 0.45% U3O8, producing 840 lbs of U3O8, and 2.48% V2O5, producing 4,614 lbs of V2O5.  
HOST Jurassic Morrison Formation, Salt Wash Member.  
MNZ Uranium, vanadium.  
DOI 1971  
REF U.S. Bur. of Mines, 1977, (Unpubl.). U.S. A.E.C., 1971, Production Records, Colorado.

## Jackpot Mines No. 2 & 5 (Jackpot Group)

LOCATION: sec. 2, T. 48 N., R. 20 W.  
QUAD Mount Peale 1 NE 7 1/2'  
MAP MOAB  
PROD As of 1971, 19 tons had been mined at a grade of 0.15% U3O8, producing 56 lbs of U3O8, and 1.27% V2O5, producing 482 lbs of V2O5.  
HOST Jurassic Morrison Formation.

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MNZ Uranium, vanadium.  
DOI 1971  
REF U.S. Bur. of Mines, 1977, (Unpubl.). U.S. A.E.C., 1971, Production Records, Colorado.

## Jeep

LOCATION: sec. 18, T. 47 N., R. 17 W.  
LCRM This deposit lies in the Uravan district. The claim was staked over the patented Monitor Claim, MS 20214.  
QUAD Davis Mesa 7 1/2'  
MAP MOAB  
PROD As of 1971, 15 tons had been mined at a grade of 0.24% U3O8, producing 72 lbs of U3O8, and 1.15% V2O5, producing 344 lbs of V2O5.  
HOST Jurassic Morrison Formation, Salt Wash Member.  
MNZ Uranium, vanadium.  
DOI 1971  
REF U.S. Bur. of Mines, 1977, (Unpubl.). U.S. A.E.C., 1971, Production Records, Colorado.

## Jitterbug

LOCATION: sec. 21, T. 48 N., R. 18 W.  
QUAD Red Canyon 7 1/2'  
MAP MOAB  
PROD As of 1971, 191 tons had been mined at a grade of 0.17% U3O8, producing 652 lbs of U3O8, and 2.51% V2O5, producing 9,580 lbs of V2O5.  
HOST Salt Wash Member of the Jurassic Morrison Formation.  
MNZ Uranium, vanadium.  
DOI 1971  
REF U.S. Bur. of Mines, 1977, (Unpubl.). U.S. A.E.C., 1971, Production Records, Colorado.

## Joanne Group (Jo Ann 1-7)

LOCATION: sec. 25, T. 48 N., R. 18 W.  
QUAD Red Canyon 7 1/2'  
MAP MOAB  
PROD As of 1971, 529 tons had been mined at a grade of 0.14% U3O8, producing 1,445 lbs of U3O8, and 1.04% V2O5, producing 11,016 lbs of V2O5.  
HOST Jurassic Morrison Formation.  
MNZ Uranium, vanadium, carnotite - tyuyamunite, high vanadium, low lime.  
DOI 1971  
REF U.S. Bur. of Mines, 1977, (Unpubl.). U.S. A.E.C., 1971, Production Records, Colorado.

## Joe

LOCATION: sec. 20, T. 48 N., R. 17 W.  
QUAD Red Canyon 7 1/2'  
MAP MOAB  
PROD As of 1971, 15,052 tons had been mined at a grade of 0.24% U3O8, producing 23,904 lbs of U3O8, and 1.27% V2O5, producing 127,867 lbs of V2O5.  
HOST Jurassic Morrison Formation.  
MNZ Uranium, vanadium, carnotite - tyuyamunite, high vanadium, low lime.

DOI 1971  
REF U.S. Bur. of Mines, 1977, (Unpubl.). U.S. A.E.C., 1971, Production Records, Colorado.

## Joe Ann

LOCATION:  
LCST UNLOCATABLE  
MAP MOAB  
PROD As of 1971, 11 tons had been mined at a grade of 0.28% U3O8, producing 61 lbs of U3O8, and 2.35% V2O5, producing 516 lbs of V2O5.  
HOST Jurassic Morrison Formation.  
DOI 1971  
REF U.S. A.E.C., 1971, Production Records, Colorado.

## Joe Dandy Mine

LOCATION: sec. 21, T. 46 N., R. 17 W.  
QUAD Bull Canyon 7 1/2' or Naturita NW 7 1/2'  
MAP MOAB  
PROD As of 1971, 19,861 tons had been mined at a grade of 0.23% U3O8, producing 90,763 lbs of U3O8, and 1.09% V2O5, producing 431,462 lbs of V2O5.  
HOST Jurassic Morrison Formation, Salt Wash Member. The rock is a light-gray and brown fine-to medium-grained sandstone, shaly sandstone and shale-pebble conglomerate. It contains abundant carbonized plant remains and sparse carbonized logs.  
MNZ Uranium, vanadium, carnotite - tyuyamunite, high vanadium, low lime, meta - tyuyamunite, coffinite, uraninite, rauvite, bayleyite.  
DOI 1971  
REF U.S. Bur. of Mines, 1977, (Unpubl.). U.S. A.E.C., 1971, Production Records, Colorado. Finch, W. L., 1967, U.S. Geol. Survey Prof. Paper 538, p. 12.

## Joe Jr.

LOCATION: SW1/4 sec. 33, T. 48 N., R. 17 W.  
DOI 1958  
REF Hague, R. S., Goldenstein, S. J., and Blakey, E., 1958, Uranium - vanadium deposits of the Uravan Mineral Belt.

## Joe Pete

LOCATION: sec. 13, T. 46 N., R. 18 W.  
QUAD Bull Canyon 7 1/2'  
MAP MOAB  
MNZ Uranium, vanadium.  
DOI 1975  
REF U.S. Bur. of Mines, 1977, (Unpubl.).

## Joe Riverside, Joe (Skalla) Mine, Joe

LOCATION: sec. 29, T. 48 N., R. 17 W.  
LCRM U.S. A.E.C. Production Records show only sec. 20 and 24.  
QUAD Red Canyon 7 1/2'  
MAP MOAB  
PROD As of 1971, 19,761 tons had been mined at a grade of 0.24% U3O8, producing 95,761 lbs of U3O8, and 1.06% V2O5, producing 420,434 lbs of V2O5.

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HOST Jurassic Morrison Formation.  
MNZ Uranium, vanadium, carnotite - tyuyamunite, high vanadium, low lime.  
DOI 1971  
REF U.S. Bur. of Mines, 1977, (Unpubl.). U.S. A.E.C., 1971, Production Records, Colorado.

## John Z

LOCATION: sec. 10, T. 46 N., R. 18 W.  
LCRM U.S. A.E.C. Production Records also show sec. 11, 14 and 15.  
QUAD Davis Mesa 7 1/2' and Bull Canyon 7 1/2'  
MAP MOAB  
PROD As of 1971, 565 tons had been mined at a grade of 0.30% U3O8, producing 3,379 lbs of U3O8, and 1.49% V2O5, producing 16,803 lbs of V2O5.  
HOST Jurassic Morrison Formation.  
MNZ Uranium, vanadium, carnotite - tyuyamunite, high vanadium, low lime.  
DOI 1971  
REF U.S. Bur. of Mines, 1977, (Unpubl.). U.S. A.E.C., 1971, Production Records, Colorado.

## Joker

LOCATION: NW1/4 sec. 24, T. 48 N., R. 18 W.  
LCRM Uravan district, Dolores Bench area.  
QUAD Red Canyon 7 1/2'  
MAP MOAB  
PROD 441 tons at 0.32% U3O8 and 1.50% V2O5 had been produced by 1971.  
HOST Jurassic Morrison Formation, Salt Wash Member.  
MNZ Uranium, vanadium, carnotite - tyuyamunite, high vanadium, low lime.  
DOI 1971  
REF U.S. A.E.C., 1971, Production Records, Colorado.

## Joker (Black Jack, Log Cabin, West)

LOCATION: sec. 35, T. 46 N., R. 18 W.  
LCRM Also sec. 34 - Bull Canyon district, Corral Group locality.  
QUAD Bull Canyon 7 1/2'  
MAP MOAB  
PROD As of 1971, 633 tons had been mined at a grade of 0.31% U3O8, producing 3,969 lbs of U3O8, and 1.48% V2O5, producing 18,708 lbs of V2O5.  
HOST Jurassic Morrison Formation, Salt Wash Member.  
MNZ Uranium, vanadium, carnotite.  
DOI 1971  
REF U.S. Bur. of Mines, 1977, (Unpubl.). U.S. A.E.C., 1971, Production Records, Colorado. Finch, W. J., 1967, U.S. Geol. Survey Prof. Paper 538, p. 12.

## Joker (Joker 1-3)

LOCATION: sec. 11, T. 45 N., R. 19 W.  
LCRM Also sec. 10 and 14. Gypsum Valley district, Little Gyp locality.  
QUAD Anderson Mesa 7 1/2'  
MAP MOAB  
PROD As of 1971, 302 tons had been mined at a grade of 0.25% U3O8, producing 1,486 lbs of U3O8, and 1.12% V2O5, producing 6,760 lbs of V2O5.

HOST Jurassic Morrison Formation, Salt Wash Member.  
MNZ Uranium, vanadium, carnotite - tyuyamunite, high vanadium, low lime.  
DOI 1971  
REF U.S. Bur. of Mines, 1977, (Unpubl.). U.S. A.E.C., 1971, Production Records, Colorado. Finch, W. J., 1967, U.S. Geol. Survey Prof. Paper 538, p. 12.

## Judy Ann (Patterson Springs No. 2, Patterson Springs Group)

LOCATION: sec. 18, T. 48 N., R. 18 W.  
LCRM U.S. A.E.C. Production Records also show sec. 19.  
QUAD Roc Creek 7 1/2'  
MAP MOAB  
PROD As of 1971, 29 tons had been mined at a grade of 0.18% U3O8, producing 102 lbs of U3O8, and 0.98% V2O5, producing 559 lbs of V2O5.  
HOST Jurassic Morrison Formation.  
MNZ Uranium, vanadium, carnotite - tyuyamunite, high vanadium, low lime.  
DOI 1971  
REF U.S. Bur. of Mines, 1977, (Unpubl.). U.S. A.E.C., 1971, Production Records, Colorado.

## Jumbo

LOCATION: sec. 11, T. 45 N., R. 19 W.  
LCRM U.S. A.E.C. Production Records also show sec. 10.  
QUAD Anderson Mesa 7 1/2'  
MAP MOAB  
PROD As of 1971, 48 tons had been mined at a grade of 0.25% U3O8, producing 242 lbs of U3O8, and 1.82% V2O5, producing 1,744 lbs of V2O5.  
HOST Jurassic Morrison Formation, Salt Wash Member.  
MNZ Uranium, vanadium.  
DOI 1971  
REF U.S. Bur. of Mines, 1977, (Unpubl.). U.S. A.E.C., 1971, Production Records, Colorado.

## Jungle Basin (Lone Cedar, Vanadium Bar, Tip Top)

LOCATION: SW1/4 sec. 35, T. 46 N., R. 17 W.  
LCST UNLOCATABLE  
LCRM Bull Canyon district.  
QUAD Naturita NW 7 1/2'  
MAP MOAB  
PROD As of 1971, 10 tons had been mined at a grade of 0.03% U3O8, producing 6 lbs of U3O8, and 0.21% V2O5, producing 43 lbs of V2O5.  
DOI 1971  
REF U.S. A.E.C., 1971, Production Records, Colorado.

## Just Right

LOCATION: sec. 31, T. 48 N., R. 17 W.  
QUAD Red Canyon 7 1/2', Davis Mesa 7 1/2'  
MAP MOAB  
PROD As of 1971, 3,647 tons had been mined at a grade of 0.22% U3O8, producing 16,074 lbs of U3O8, and 1.36% V2O5, producing 99,416 lbs of V2O5.

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HOST Jurassic Morrison Formation.  
MNZ Uranium, vanadium, carnotite - tyuyamunite, high vanadium, low ilme.  
DOI 1971  
REF U.S. Bur. of Mines, 1977, (Unpubl.). U.S. A.E.C., 1971, Production Records, Colorado.

## Keystone Claims

LOCATION: sec. 6, T. 48 N., R. 19 W.  
QUAD Mount Peale 1 NE 7 1/2'  
MAP MOAB  
MNZ Uranium, vanadium.  
DOI 1975  
REF U.S. Bur. of Mines, 1977, (Unpubl.).

## King

LOCATION: sec. 36, T. 48 N., R. 18 W.  
QUAD Red Canyon 7 1/2', Davis Mesa 7 1/2'  
MAP MOAB  
HOST The host is the Jurassic Morrison Formation.  
MNZ Carnotite - tyuyamunite, high vanadium, low ilme.  
DOI 1971  
REF U.S. A.E.C., 1971, Production Records, Colorado.

## King of Lodes

LOCATION: sec. 19, T. 47 N., R. 17 W.  
QUAD Davis Mesa 7 1/2'  
MAP MOAB  
PROD As of 1971, 242 tons had been mined at a grade of 0.20% U308, producing 965 lbs of U308, and 1.26% V205, producing 6,108 lbs of V205.  
MNZ Uranium, vanadium.  
DOI 1971  
REF U.S. Bur. of Mines, 1977, (Unpubl.). U.S. A.E.C., 1971, Production Records, Colorado.

## King Solomon #5

LOCATION: sec. 24, T. 48 N., R. 18 W.  
DOI 1958  
REF Hague, R. S., Goldenstein, S. J., and Blakey, E., 1953, Uranium - vanadium deposits of the Uravan Mineral Belt.

## La Salle Mine, La Salle Group (10, AEC Mining Lease) (C-CM-25, DOE Lease Tract)

LOCATION: sec. 5, T. 47 N., R. 17 W.  
QUAD Davis Mesa 7 1/2'  
MAP MOAB  
MNZ Uranium, vanadium.  
RMKS See C-CM-25, DOE Lease Tract.  
DOI 1975  
REF U.S. Bur. of Mines, 1977, (Unpubl.).

## Lark 7 & 8, 2

LOCATION: sec. 11, T. 45 N., R. 18 W.  
QUAD Bull Canyon 7 1/2'  
MAP MOAB  
PROD As of 1971, 24,135 tons had been mined at a grade of 0.19% U308, producing 92,760

lbs of U308, and 1.44% V205, producing 694,466 lbs of V205.

HOST The host is the Jurassic Morrison Formation.  
MNZ Uranium, vanadium, carnotite - tyuyamunite, high vanadium, intermed. ilme.  
DOI 1971  
REF U.S. Bur. of Mines, 1977, (Unpubl.). U.S. A.E.C., 1971, Production Records, Colorado.

## Last Chance

LOCATION: SW1/4 sec. 19, T. 48 N., R. 17 W.  
DOI 1958  
REF Hague, R. S., Goldenstein, S. J., and Blakey, E., 1953, Uranium - vanadium deposits of the Uravan Mineral Belt.

## Last Chance 1 (Last Chance #1-10)

LOCATION: sec. 9, T. 48 N., R. 19 W.  
LCRM U.S. A.E.C. Production Records show location as sec. 14 and 23, T. 47 N., R. 17 W.  
QUAD Roc Creek 7 1/2'  
MAP MOAB  
PROD As of 1971, 852 tons had been mined at a grade of 0.28% U308, producing 4,706 lbs of U308, and 1.55% V205, producing 26,433 lbs of V205.  
HOST The host is the Jurassic Morrison Formation.  
MNZ Uranium, vanadium, carnotite - tyuyamunite, low vanadium, low ilme.  
DOI 1971  
REF U.S. Bur. of Mines, 1977, (Unpubl.). U.S. A.E.C., 1971, Production Records, Colorado.

## Last Chance No. 4

LOCATION: sec. 9, T. 48 N., R. 19 W.  
LCRM Also sec. 10.  
PROD As of 1971, 206 tons of ore had been mined at a grade of 0.26% U308, and 1.72% V205, producing 1,101 lbs of U308 and 7,051 lbs of V205.  
HOST Jurassic Morrison Formation, Salt Wash Member.  
MNZ Carnotite.  
DOI 1971  
REF U.S. A.E.C., 1971, Production Records, Colorado.

## Last Chance-Long Shot

LOCATION:  
LCST UNLOCATABLE  
MAP MOAB  
MNZ Uranium, vanadium.  
DOI 1975  
REF U.S. Bur. of Mines, 1977, (Unpubl.).

## Last Dollar

LOCATION: sec. 17, T. 46 N., R. 17 W.  
QUAD Bull Canyon 7 1/2'  
MAP MOAB  
PROD As of 1971, 32 tons had been mined at a grade of 0.10% U308, producing 62 lbs of U308, and 0.66% V205, producing 425 lbs of V205.  
MNZ Uranium, vanadium.  
DOI 1971

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REF U.S. Bur. of Mines, 1977, (Unpubl.). U.S. A.E.C., 1971, Production Records, Colorado.

## Last Dollar (Doagy 2)

LOCATION: sec. 20, T. 46 N., R. 17 W.

QUAD Bull Canyon 7 1/2'

PROD As of 1971, 20,094 tons had been mined at a grade of 0.28% U308, producing 113,547 lbs of U308, and 1.14% V205, producing 457,951 lbs of V205.

HOST Jurassic Morrison Formation.

MNZ Uranium, vanadium, carnotite - tyuyamunite, high vanadium, low ilme.

DOI 1975, 1971.

REF U.S. Bur. of Mines, 1977, (Unpubl.). U.S. A.E.C., 1971, Production Records, Colorado.

## Last Hope

LOCATION: sec. 22, T. 48 N., R. 18 W.

QUAD Red Canyon 7 1/2'

MAP MOAB

PROD As of 1971, 3 tons had been mined at a grade of 0.10% U308, producing 6 lbs of U308, and 3.13% V205, producing 188 lbs of V205.

MNZ Uranium, vanadium.

DOI 1971

REF U.S. Bur. of Mines, 1977, (Unpubl.). U.S. A.E.C., 1971, Production Records, Colorado.

## Last Load (Red Rose Group, Lost Lode)

LOCATION: sec. 8, T. 48 N., R. 19 W.

LCRM U.S. A.E.C. Production Records also show sec. 5-7.

QUAD Roc Creek 7 1/2'

MAP MOAB

PROD As of 1971, 5 tons had been mined at a grade of 0.28% U308, producing 28 lbs of U308, and 1.13% V205, producing 113 lbs of V205.

HOST Salt Wash Member of the Jurassic Morrison Formation.

MNZ Uranium, vanadium.

DOI 1971

REF U.S. Bur. of Mines, 1977, (Unpubl.). U.S. A.E.C., 1971, Production Records, Colorado.

## Laura

LOCATION: SW1/4 sec. 20, T. 48 N., R. 17 W.

LCRM Also NW1/4 sec. 29, T. 48 N., R. 17 W. Located on Atkinson Mesa.

QUAD Red Canyon 7 1/2'

MAP MOAB

PROD Reserves, no production.

HOST Jurassic Morrison Formation.

MNZ Carnotite - tyuyamunite, high vanadium, low ilme.

DOI 1971

REF U.S. A.E.C., 1971, Production Records, Colorado.

## Lazy Three

LOCATION: sec. 25, T. 48 N., R. 18 W.

QUAD Red Canyon 7 1/2'

MAP MOAB

PROD As of 1971, 109 tons had been mined at a grade of 0.28% U308, producing 610 lbs of

U308, and 1.64% V205, producing 3,566 lbs of V205.

HOST Jurassic Morrison Formation.

MNZ Uranium, vanadium, carnotite - tyuyamunite, high vanadium, low ilme.

DOI 1971

REF U.S. Bur. of Mines, 1977, (Unpubl.). U.S. A.E.C., 1971, Production Records, Colorado.

## Levi

LOCATION: sec. 9, T. 45 N., R. 13 W.

QUAD Bull Canyon 7 1/2'

MAP MOAB

PROD As of 1971, 230 tons had been mined at a grade of 0.25% U308, producing 675 lbs of U308, and 1.48% V205, producing 6,817 lbs of V205.

HOST Jurassic Morrison Formation.

MNZ Uranium, vanadium, carnotite - tyuyamunite, high vanadium, low ilme.

DOI 1971

REF U.S. Bur. of Mines, 1977, (Unpubl.). U.S. A.E.C., 1971, Production Records, Colorado.

## Lilly Love

LOCATION: sec. 32, T. 47 N., R. 19 W.

DOI 1958

REF Hague, R. S., Goldenstein, S. J., and Blakey, E., 1958, Uranium - vanadium deposits of the Uravan Mineral Belt.

## Little Alice

LOCATION: sec. 13, T. 46 N., R. 18 W.

QUAD Bull Canyon 7 1/2'

MAP MOAB

MNZ Uranium, vanadium.

DOI 1975

REF U.S. Bur. of Mines, 1977, (Unpubl.).

## Little Basin (Grass Roots)

LOCATION: sec. 27, T. 48 N., R. 17 W.

LCRM U.S. A.E.C. Production Records also show sec. 34.

QUAD Atkinson Creek 7 1/2'

MAP MOAB

PROD As of 1971, 14,853 tons had been mined at a grade of 0.28% U308, producing 81,956 lbs of U308, and 1.08% V205, producing 321,314 lbs of V205.

HOST Salt Wash Member of the Jurassic Morrison Formation.

MNZ Uranium, vanadium.

DOI 1971

REF U.S. Bur. of Mines, 1977, (Unpubl.). U.S. A.E.C., 1971, Production Records, Colorado.

## Little Buckhorn Group (Termite 1-12)

LOCATION: sec. 10, T. 48 N., R. 19 W.

LCRM U.S. A.E.C. Production Records show only sec. 20-22, 29.

QUAD Roc Creek 7 1/2'

MAP MOAB

PROD As of 1971, 3,968 tons had been mined at a grade of 0.30% U308, producing 24,053

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lbs of U308, and 1.76% V205, producing 139,481 lbs of V205.  
 HOST Jurassic Morrison Formation.  
 MNZ Uranium, vanadium, carnotite - tyuyamunite, high vanadium, low lime.  
 DOI 1971  
 REF U.S. Bur. of Mines, 1977, (Unpubl.). U.S. A.E.C., 1971, Production Records, Colorado.

## Little Chlet

LOCATION: sec. 13, T. 47 N., R. 18 W.  
 LCRM U.S. A.E.C. Production Records also show sec. 24, 23, T. 50 N., R. 20 W.  
 QUAD Davis Mesa 7 1/2'  
 MAP MOAB  
 PROD As of 1971, 7 tons had been mined at a grade of 0.06% U308, producing 9 lbs of U308, and 0.57% V205, producing 80 lbs of V205.  
 HOST Jurassic Morrison Formation, Salt Wash Member.  
 MNZ Uranium, vanadium.  
 DOI 1971  
 REF U.S. Bur. of Mines, 1977, (Unpubl.). U.S. A.E.C., 1971, Production Records, Colorado.

## Little Dick

LOCATION: sec. 30, T. 48 N., R. 17 W.  
 LCRM U.S. A.E.C. Production Records show only sec. 19.  
 QUAD Red Canyon 7 1/2'  
 MAP MOAB  
 PROD As of 1971, 29,729 tons had been mined at a grade of 0.24% U308, producing 140,672 lbs of U308, and 1.29% V205, producing 766,852 lbs of V205.  
 HOST Jurassic Morrison Formation, Salt Wash Member; brown, medium-grained sandstone with abundant carbonized logs and trash pockets.  
 MNZ Uranium, vanadium, carnotite - tyuyamunite, high vanadium, low lime.  
 DOI 1971  
 REF U.S. Bur. of Mines, 1977, (Unpubl.). U.S. A.E.C., 1971, Production Records, Colorado.

## Little Dick Dumps

LOCATION: sec. 30, T. 48 N., R. 17 W.  
 LCRM U.S. A.E.C. Production Records show only sec. 19.  
 QUAD Red Canyon 7 1/2'  
 MAP MOAB  
 PROD Prior to 1971, 95 tons had been recovered from the Little Dick Mine dumps at a grade of 0.06% U308, producing 116 lbs of U308, and 0.34% V205, producing 645 lbs of V205.  
 HOST Jurassic Morrison Formation, Salt Wash Member; brown, medium-grained sandstone with abundant carbonized logs and trash pockets.  
 MNZ Uranium, vanadium, carnotite - tyuyamunite, high vanadium, low lime.  
 DOI 1971  
 REF U.S. Bur. of Mines, 1977, (Unpubl.). U.S. A.E.C., 1971, Production Records, Colorado.

## Little Jewel (Black Gem Group)

LOCATION: sec. 3, T. 45 N., R. 19 W.  
 QUAD Anderson Mesa 7 1/2'

MAP MOAB  
 PROD As of 1971, 292 tons had been mined at a grade of 0.39% U308, producing 2,303 lbs of U308, and 2.23% V205, producing 13,030 lbs of V205.  
 HOST Jurassic Morrison Formation.  
 MNZ Uranium, vanadium.  
 DOI 1971  
 REF U.S. Bur. of Mines, 1977, (Unpubl.). U.S. A.E.C., 1971, Production Records, Colorado.

## Little Joe

LOCATION: sec. 14, T. 48 N., R. 18 W.  
 QUAD Red Canyon 7 1/2'  
 MAP MOAB  
 PROD As of 1971, 9 tons had been mined at a grade of 0.22% U308, producing 40 lbs of U308, and 1.74% V205, producing 313 lbs of V205.  
 HOST Jurassic Morrison Formation, Salt Wash Member.  
 MNZ Uranium, vanadium.  
 DOI 1971  
 REF U.S. Bur. of Mines, 1977, (Unpubl.). U.S. A.E.C., 1971, Production Records, Colorado.

## Little Slip 1

LOCATION:  
 LCST UNLOCATABLE  
 MAP MOAB  
 PROD As of 1971, one ton had been mined at a grade of 2.90% U308, producing 58 lbs of U308, and 6.00% V205, producing 120 lbs of U308.  
 HOST Jurassic Morrison Formation, Salt Wash Member.  
 DOI 1971  
 REF U.S. A.E.C., 1971, Production Records, Colorado.

## Lo High (Lohl)

LOCATION: sec. 17, T. 46 N., R. 17 W.  
 QUAD Uravan  
 MAP MOAB  
 PROD As of 1971, 25 tons had been mined at a grade of 0.82% U308, producing 408 lbs of U308, and 3.20% V205, producing 1,601 lbs of V205.  
 HOST Jurassic Morrison Formation, Salt Wash Member.  
 RMKS Lohl is correct spelling, as recorded in county records.  
 DOI 1971  
 REF U.S. A.E.C., 1971, Production Records, Colorado.

## Log Cabin

LOCATION: sec. 35, T. 46 N., R. 18 W.  
 LCRM U.S. A.E.C. Production Records show only sec. 33.  
 QUAD Bull Canyon 7 1/2'  
 MAP MOAB  
 PROD As of 1971, 2,152 tons had been mined at a grade of 0.27% U308, producing 11,505 lbs of U308, and 1.82% V205, producing 78,196 lbs of V205.  
 HOST Jurassic Morrison Formation.  
 MNZ Uranium, vanadium, carnotite - tyuyamunite, high vanadium, low lime.  
 DOI 1971

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REF U.S. Bur. of Mines, 1977, (Unpubl.). U.S. A.E.C., 1971, Production Records, Colorado.

Lone Cedar (Jungle Basin 1-14, Vanadium Bor, Tip Top, Rose 1-8, Dry Basin 1-9, Jumbo 1-10, Speck 1-10)

LOCATION: sec. 34, T. 46 N., R. 17 W.

LCRM U.S. A.E.C. Production Records also show sec. 35, T. 46 N. R. 17 W. and sec. 2, 3, T. 45 N., R. 17 W.

QUAD Naturita 7 1/2'

MAP MOAB

PROD As of 1971, 33 tons had been mined at a grade of 0.44% U3O8, producing 291 lbs of U3O8, and 1.78% V2O5, producing 1,174 lbs of V2O5.

HOST Dakota Sandstone (?)

MNZ Uranium, vanadium.

DOI 1971

REF U.S. Bur. of Mines, 1977, (Unpubl.). U.S. A.E.C., 1971, Production Records, Colorado.

Lone Pine (Big Spruce 1-2, Golo)

LOCATION: sec. 5, T. 48 N., R. 19 W.

QUAD Rac Creek 7 1/2'

MAP MOAB

PROD As of 1971, 2,813 tons had been mined at a grade of 0.27% U3O8, producing 15,281 lbs of U3O8, and 1.03% V2O5, producing 58,031 lbs of V2O5.

HOST Jurassic Morrison Formation.

MNZ Uranium, vanadium, carnotite - tyuyamunite, high vanadium, low lime.

DOI 1971

REF U.S. Bur. of Mines, 1977, (Unpubl.). U.S. A.E.C., 1971, Production Records, Colorado.

Lone Pine No. 2

LOCATION: sec. 21, T. 24 S., R. 26 W.

LCRM Also sec. 22.

PROD Reserves developed, no production.

HOST Jurassic Morrison Formation.

DOI 1971

REF U.S. A.E.C., 1971, Production Records, Colorado.

Long John

LOCATION: W1/2NW1/4SW1/4 sec. 4, T. 46 N., R. 19 W.

DOI 1958

REF Hague, R. S., Goldenstein, S. J., and Blakey, E., 1958, Uranium - vanadium deposits of the Uravan Mineral Belt.

Long Park 1

LOCATION: sec. 27, T. 47 N., R. 17 W.

LCRM Also sec. 34.

QUAD Uravan 7 1/2'

MAP MOAB

PROD As of 1971, 38,448 tons had been mined at a grade of 0.27% U3O8, producing 208,485 lbs of U3O8, and 2.10% V2O5, producing 1,613,025 lbs of V2O5.

HOST Jurassic Morrison Formation, Salt Wash Member. Gray and buff medium-grained sandstone and

mudstone with abundant carbonized logs and plant trash pockets.

MNZ Carnotite - tyuyamunite, high vanadium, low lime, uraninite, coffinite, meta - tyuyamunite.

DOI 1971

REF U.S. A.E.C., 1971, Production Records, Colorado. Finch, W. I., 1967, U.S. Geol. Survey Prof. Paper 533, p. 12.

Long Park 2

LOCATION: sec. 28, T. 47 N., R. 17 W.

QUAD Davis Mesa 7 1/2', Uravan 7 1/2'

MAP MOAB

PROD As of 1971, 3,583 tons had been mined at a grade of 0.34% U3O8, producing 24,362 lbs of U3O8, and 1.62% V2O5, producing 115,765 lbs of V2O5.

HOST Jurassic Morrison Formation, Salt Wash Member. Gray and buff medium-grained sandstone and mudstone with abundant carbonized logs and plant trash pockets.

MNZ Carnotite - tyuyamunite, high vanadium, low lime, uraninite, coffinite, meta-tyuyamunite.

DOI 1971

REF U.S. A.E.C., 1971, Production Records, Colorado. Finch, W. I., 1967, U.S. Geol. Survey Prof. Paper 538.

Long Park 3

LOCATION: sec. 28, T. 47 N., R. 17 W.

QUAD Davis Mesa 7 1/2', Uravan 7 1/2'

MAP MOAB

PROD As of 1971, 9,454 tons had been mined at a grade of 0.23% U3O8, producing 44,290 lbs of U3O8, and 1.05% V2O5, producing 197,610 lbs of V2O5.

HOST Jurassic Morrison Formation, Salt Wash Member. Gray and buff medium-grained sandstone and mudstone with abundant carbonized logs and plant trash pockets.

MNZ Carnotite - tyuyamunite, high vanadium, low lime.

DOI 1971

REF U.S. A.E.C., 1971, Production Records, Colorado.

Long Park 4

LOCATION: sec. 28, T. 47 N., R. 17 W.

QUAD Davis Mesa 7 1/2', Uravan 7 1/2'

MAP MOAB

PROD As of 1971, 7,386 tons had been mined at a grade of 0.23% U3O8, producing 34,447 lbs of U3O8, and 1.22% V2O5, producing 180,714 lbs of V2O5.

HOST Jurassic Morrison Formation, Salt Wash Member. Gray and buff medium-grained sandstone and mudstone with abundant carbonized logs and plant trash pockets.

MNZ Carnotite - tyuyamunite, high vanadium, low lime.

DOI 1971

REF U.S. A.E.C., 1971, Production Records, Colorado.

Long Park 5 (Black Dinah Group)

LOCATION: sec. 28, T. 47 N., R. 17 W.

# MONTROSE COUNTY

QUAD Davis Mesa 7 1/2', Uravan 7 1/2'  
 MAP MOAB  
 PROD As of 1971, 849 tons had been mined at a grade of 0.16% U308, producing 2,663 lbs of U308, and 1.34% V205, producing 22,762 lbs of V205.  
 HOST Jurassic Morrison Formation, Salt Wash Member. Gray and buff medium-grained sandstone and mudstone with abundant carbonized logs and plant trash pockets.  
 MNZ Carnotite - tyuyamunite, high vanadium, low lime.  
 DOI 1971  
 REF U.S. A.E.C., 1971, Production Records, Colorado.

## Long Park 6

LOCATION: sec. 27, T. 47 N., R. 17 W.  
 LCRM Also sec. 28.  
 QUAD Uravan 7 1/2'  
 MAP MOAB  
 PROD As of 1971, 50,692 tons had been mined at a grade of 0.33% U308, producing 330,133 lbs of U308, and 1.50% V205, producing 1,522,917 lbs of V205.  
 HOST Jurassic Morrison Formation, Salt Wash Member. Gray and buff medium-grained sandstone and mudstone with abundant carbonized logs and plant trash pockets.  
 MNZ Carnotite - tyuyamunite, high vanadium, low lime.  
 DOI 1971  
 REF U.S. A.E.C., 1971, Production Records, Colorado.

## Long Park 6 Dumps

LOCATION: sec. 27, T. 47 N., R. 17 W.  
 LCRM Also sec. 28.  
 QUAD Uravan 7 1/2'  
 MAP MOAB  
 PROD Prior to 1971, 6,732 tons had been recovered from the Long Park 6 mine dumps at a grade of 0.09% U308, producing 11,507 lbs of U308, and 0.43% V205, producing 58,237 lbs of V205.  
 HOST Jurassic Morrison Formation, Salt Wash Member. Gray and buff medium-grained sandstone and mudstone with abundant carbonized logs and plant trash pockets.  
 MNZ Carnotite - tyuyamunite, high vanadium, low lime.  
 DOI 1971  
 REF U.S. A.E.C., 1971, Production Records, Colorado.

## Long Park 9

LOCATION: sec. 27, T. 47 N., R. 17 W.  
 LCRM Also sec. 28.  
 QUAD Uravan 7 1/2'  
 MAP MOAB  
 PROD As of 1971, 6,086 tons had been mined at a grade of 0.22% U308, producing 26,506 lbs of U308, and 1.03% V205, producing 124,919 lbs of V205.  
 HOST Jurassic Morrison Formation, Salt Wash Member. Gray and buff medium-grained sandstone and mudstone with abundant carbonized logs and plant trash pockets.  
 MNZ Carnotite - tyuyamunite, high vanadium, low lime.

DOI 1971  
 REF U.S. A.E.C., 1971, Production Records, Colorado.

## Long Park 10

LOCATION: sec. 27, T. 47 N., R. 17 W.  
 QUAD Uravan 7 1/2'  
 MAP MOAB  
 PROD As of 1971, 9,541 tons had been mined at a grade of 0.29% U308, producing 55,035 lbs of U308, and 1.67% V205, producing 318,195 lbs of V205.  
 HOST Jurassic Morrison Formation, Salt Wash Member. Gray and buff mudstone with abundant carbonized logs and plant trash pockets.  
 MNZ Carnotite - tyuyamunite, high vanadium, low lime.  
 DOI 1971  
 REF U.S. A.E.C., 1971, Production Records, Colorado.

## Long Park 11

LOCATION: sec. 27, T. 47 N., R. 17 W.  
 QUAD Uravan 7 1/2'  
 MAP MOAB  
 PROD As of 1971, 738 tons had been mined at a grade of 0.26% U308, producing 3,887 lbs of U308, and 1.58% V205, producing 23,354 lbs of V205.  
 HOST Jurassic Morrison Formation, Salt Wash Member. Gray and buff medium-grained sandstone and mudstone with abundant carbonized logs and plant trash pockets.  
 DOI 1971  
 REF U.S. A.E.C., 1971, Production Records, Colorado.

## Long Park 12

LOCATION: sec. 27, T. 47 N., R. 17 W.  
 QUAD Uravan 7 1/2'  
 MAP MOAB  
 PROD As of 1971, 31,315 tons had been mined at a grade of 0.30% U308, producing 189,960 lbs of U308, and 1.47% V205, producing 919,564 lbs of V205.  
 HOST Jurassic Morrison Formation, Salt Wash Member. Gray and buff medium-grained sandstone and mudstone with abundant carbonized logs and plant trash pockets.  
 MNZ Carnotite - tyuyamunite, high vanadium, low lime.  
 DOI 1971  
 REF U.S. A.E.C., 1971, Production Records, Colorado.

## Long Park 13

LOCATION: sec. 27, T. 47 N., R. 17 W.  
 LCRM Also sec. 34.  
 QUAD Uravan 7 1/2'  
 MAP MOAB  
 PROD As of 1971, 4,228 tons had been mined at a grade of 0.28% U308, producing 23,416 lbs of U308, and 1.94% V205, producing 164,088 lbs of V205.  
 HOST Jurassic Morrison Formation, Salt Wash Member. Gray and buff medium-grained sandstone and mudstone with abundant carbonized logs and plant trash pockets.



# MONTROSE COUNTY

MNZ Carnotite - tyuyamunite, high vanadium, low ilme.  
 DOI 1971  
 REF U.S. A.E.C., 1971, Production Records, Colorado.

## Long Park 16

LOCATION: sec. 27, T. 47 N., R. 17 W.  
 QUAD Uravan 7 1/2'  
 MAP MOAB  
 PROD As of 1971, 6,783 tons had been mined at a grade of 0.25% U3O8, producing 33,629 lbs of U3O8, and 1.89% V2O5, producing 255,867 lbs of V2O5.  
 HOST Jurassic Morrison Formation, Salt Wash Member. Gray and buff medium-grained sandstone and mudstone with abundant carbonized logs and plant trash pockets.  
 MNZ Carnotite - tyuyamunite, high vanadium, low ilme.  
 DOI 1971  
 REF U.S. A.E.C., 1971, Production Records, Colorado.

## Lost Horse (Shamrock Group)

LOCATION: sec. 29, T. 48 N., R. 17 W.  
 LCRM This deposit lies in Club Mesa.  
 HOST Jurassic Morrison Formation, Salt Wash Member.  
 MNZ Carnotite.  
 DOI 1971  
 REF U.S. A.E.C., 1971, Production Records, Colorado.

## Lower Valley View

LOCATION:  
 LCST UNLOCATABLE  
 MAP MOAB  
 PROD By 1971, 155 tons had been mined at a grade of 0.25% U3O8, producing 777 lbs of U3O8, and 0.87% V2O5, producing 2,700 lbs of V2O5.  
 DOI 1971  
 REF U.S. A.E.C., 1971, Production Records, Colorado.

## Lucky Blunder

LOCATION: sec. 18, T. 47 N., R. 17 W.  
 LCRM U.S. A.E.C. Production Records show only sec. 13.  
 QUAD Davis Mesa 7 1/2'  
 MAP MOAB  
 PROD As of 1971, 2,200 tons had been mined at a grade of 0.18% U3O8, producing 7,816 lbs of U3O8, and 0.80% V2O5, producing 35,149 lbs of V2O5.  
 HOST Jurassic Morrison Formation.  
 MNZ Uranium, vanadium, carnotite - tyuyamunite, high vanadium, low ilme.  
 DOI 1971  
 REF U.S. Bur. of Mines, 1977, (Unpubl.). U.S. A.E.C., 1971, Production Records, Colorado.

## Lucky Day

LOCATION: sec. 2, T. 45 N., R. 18 W.  
 LCRM This deposit lies in the Bull Canyon district.  
 QUAD Bull Canyon 7 1/2'

MAP MOAB  
 PROD As of 1971, 11 tons had been mined at a grade of 0.24% U3O8, producing 53 lbs of U3O8, and 1.47% V2O5, producing 323 lbs of V2O5.  
 HOST Jurassic Morrison Formation, Salt Wash Member.  
 MNZ Uranium, vanadium, carnotite - tyuyamunite, high vanadium, low ilme.  
 DOI 1971  
 REF U.S. Bur. of Mines, 1977, (Unpubl.). U.S. A.E.C., 1971, Production Records, Colorado.

## Lucky Day

LOCATION: sec. 29, T. 48 N., R. 17 W.  
 QUAD Rad Canyon 7 1/2'  
 MAP MOAB  
 PROD As of 1971, 18,104 tons had been mined at a grade of 0.26% producing 92,379 lbs of U3O8, and 1.33% V2O5, producing 480,287 lbs of V2O5.  
 HOST Jurassic Morrison Formation.  
 MNZ Uranium, vanadium, carnotite - tyuyamunite, high vanadium, low ilme.  
 DOI 1971  
 REF U.S. Bur. of Mines, 1977, (Unpubl.). U.S. A.E.C., 1971, Production Records, Colorado.

## Lucky Group (Lucky No. 1-14, Wray Mesa)

LOCATION: sec. 30, T. 47 N., R. 19 W.  
 LCRM U.S. A.E.C. Production Records also show sec. 19, R. 4 N., E. 19 W. and sec. 24, 25, T. 47 N., R. 20 W.  
 QUAD Mount Peale 1 SE 7 1/2'  
 MAP MOAB  
 PROD As of 1971, 135 tons had been mined at a grade of 0.24% U3O8, producing 637 lbs of U3O8, and 1.87% V2O5, producing 5,047 lbs of V2O5.  
 HOST Jurassic Morrison Formation, Brushy Basin Member; conglomerate, mudstone, and fine-grained and medium- to coarse-grained sandstone with carbonized plant remains.  
 MNZ Uranium, vanadium, carnotite - tyuyamunite, schroechingerite, uranophane, high vanadium, intermed. ilme.  
 DOI 1971  
 REF U.S. Bur. of Mines, 1977, (Unpubl.). U.S. A.E.C., 1971, Production Records, Colorado. Finch, W. L., 1967, U.S. Geol. Survey Prof. Paper, 538, p. 12.

## Lucky Marx

LOCATION:  
 LCST UNLOCATABLE  
 QUAD Uravan 7 1/2'  
 MAP MOAB  
 PROD As of 1971, 8 tons had been mined at a grade of 0.21% U3O8, producing 34 lbs of U3O8, and 1.05% V2O5, producing 168 lbs of V2O5.  
 HOST Jurassic Morrison Formation, Salt Wash Member.  
 DOI 1971  
 REF U.S. A.E.C., 1971, Production Records, Colorado.

# MONTROSE COUNTY

## Lucky Strike 4

### LOCATION:

LCST UNLOCATABLE

MAP MOAB

PROD As of 1971, 7 tons had been mined at a grade of 0.24% U3O8, producing 33 lbs of U3O8, and 1.96% V2O5, producing 275 lbs of V2O5.

DOI 1971

REF U.S. A.E.C., 1971, Production Records, Colorado.

## Lucky Strike

LOCATION: sec. 29, T. 48 N., R. 17 W.

LCRM U.S. A.E.C. Production Records show location as being sec. 6, T. 48 N., R. 18 W. This deposit lies in the Carpenter Flat area.

QUAD Red Canyon 7 1/2'

MAP MOAB

PROD As of 1971, 16 tons had been mined at a grade of 0.40% U3O8, producing 128 lbs of U3O8, and 1.21% V2O5, producing 388 lbs of V2O5.

HOST Jurassic Morrison Formation, Salt Wash Member.  
MNZ Uranium, vanadium, carnotite - tyuyamunite, high vanadium, low lime.

DOI 1971

REF U.S. Bur. of Mines, 1977, (Unpubl.). U.S. A.E.C., 1971, Production Records, Colorado.

## Lynx

LOCATION: sec. 29, T. 48 N., R. 17 W.

LCRM U.S. A.E.C. Production Records show only sec. 20.

QUAD Red Canyon 7 1/2'

MAP MOAB

PROD As of 1971, 20,373 tons had been mined at a grade of 0.27% U3O8, producing 110,525 lbs of U3O8, and 1.28% V2O5, producing 520,980 lbs of V2O5.

HOST Jurassic Morrison Formation.

MNZ Uranium, vanadium, carnotite - tyuyamunite, high vanadium, low lime.

DOI 1971

REF U.S. Bur. of Mines, 1977, (Unpubl.). U.S. A.E.C., 1971, Production Records, Colorado.

## Maggie C

LOCATION: sec. 21, T. 47 N., R. 17 W.

QUAD Davis Mesa 7 1/2', Uravan 7 1/2'

MAP MOAB

PROD As of 1971, 4,399 tons had been mined at a grade of 0.42% U3O8, producing 36,961 lbs of U3O8, and 2.13% V2O5, producing 187,230 lbs of V2O5.

HOST Jurassic Morrison Formation.

MNZ Uranium, vanadium, carnotite - tyuyamunite, high vanadium, low lime.

DOI 1971

REF U.S. Bur. of Mines, 1977, (Unpubl.). U.S. A.E.C., 1971, Production Records, Colorado.

## Maggie C Dump

LOCATION: sec. 28, T. 47 N., R. 17 W.

QUAD Davis Mesa 7 1/2', Uravan 7 1/2'

MAP MOAB

PROD Prior to 1971, 487 tons had been recovered from the Maggie C Mine dump, producing 881 lbs of U3O8, and 0.63% V2O5, producing 6,112 lbs of V2O5.

HOST Jurassic Morrison Formation.

MNZ Uranium, vanadium, carnotite - tyuyamunite, high vanadium, low lime.

DOI 1971

REF U.S. Bur. of Mines, 1977, (Unpubl.). U.S. A.E.C., 1971, Production Records, Colorado.

## Margie 2

LOCATION: sec. 30, T. 48 N., R. 17 W.

QUAD Red Canyon 7 1/2'

MAP MOAB

PROD As of 1971, one ton had been mined at a grade of 0.35% U3O8, producing 7 lbs of U3O8, and 1.80% V2O5, producing 36 lbs of V2O5.

HOST Jurassic Morrison Formation.

MNZ Uranium, vanadium.

DOI 1971

REF U.S. Bur. of Mines, 1977, (Unpubl.). U.S. A.E.C., 1971, Production Records, Colorado.

## Margie Group

LOCATION: sec. 30, T. 48 N., R. 17 W.

LCRM U.S. A.E.C. Production Records also show sec. 29, 31, and 32.

QUAD Red Canyon 7 1/2'

MAP MOAB

PROD As of 1971, 1,267 tons had been mined at a grade of 0.49% U3O8, producing 12,410 lbs of U3O8, and 2.35% V2O5, producing 59,583 lbs of V2O5.

HOST Jurassic Morrison Formation.

MNZ Uranium, vanadium, carnotite - tyuyamunite, high vanadium, low lime.

DOI 1971

REF U.S. Bur. of Mines, 1977, (Unpubl.). U.S. A.E.C., 1971, Production Records, Colorado.

## Marjorie Ann Mine

LOCATION: sec. 11, T. 47 N., R. 20 W.

LCRM U.S. A.E.C. Production Records show only sec. 12.

QUAD Mount Peale 1 SE 7 1/2'

MAP MOAB

PROD As of 1971, 12,422 tons had been mined at a grade of 0.25% U3O8, producing 62,795 lbs of U3O8, and 1.33% V2O5, producing 351,624 lbs of V2O5.

HOST Jurassic Morrison Formation.

MNZ Uranium, vanadium, carnotite - tyuyamunite, high vanadium, low lime.

DOI 1971

REF U.S. Bur. of Mines, 1977, (Unpubl.). U.S. A.E.C., 1971, Production Records, Colorado.

## Martha Belle (Martha Belle East)

LOCATION: sec. 6, T. 48 N., R. 17 W.

QUAD Red Canyon 7 1/2'

MAP MOAB

# MONTROSE COUNTY

FROD As of 1971, 84,067 tons had been mined at a grade of 0.28% U3O8, producing 78,161 lbs of U3O8, and 0.65% V2O5, producing 1,086,905 lbs of V2O5.  
 HOST Jurassic Morrison Formation.  
 MNZ Uranium, vanadium, uraninite (coffinite), high vanadium, low lime.  
 DOI 1971  
 REF U.S. Bur. of Mines, 1977, (Unpubl.). U.S. A.E.C., 1971, Production Records, Colorado.

## Mary Ann 4 (Dorothy Jean 2)

LOCATION: sec. 18, T. 46 N., R. 17 W.  
 QUAD Bull Canyon 7 1/2'  
 MAP MOAB  
 PROD As of 1971, 41,363 tons had been mined at a grade of 0.42% U3O8, producing 346,801 lbs of U3O8, and 1.60% V2O5, producing 1,322,766 lbs of V2O5.  
 HOST Jurassic Morrison Formation.  
 MNZ Uranium, vanadium, carnotite - tyuyamunite, high vanadium, low lime.  
 DOI 1971  
 REF U.S. Bur. of Mines, 1977, (Unpubl.). U.S. A.E.C., 1971, Production Records, Colorado.

## Maud Mine

LOCATION: sec. 14, T. 47 N., R. 20 W.  
 LCRM U.S. A.E.C. Production Records show location as sec. 14, 15, T. 47 N., R. 20 W. and sec. 33, T. 28 S., R. 26 E.  
 QUAD Mount Peale 7 1/2'  
 MAP MOAB  
 PROD As of 1971, 121 tons had been mined at a grade of 0.43% U3O8, producing 1,052 lbs of U3O8, and 3.01% V2O5, producing 7,279 lbs of V2O5.  
 HOST Jurassic Morrison Formation.  
 MNZ Uranium, vanadium, carnotite - tyuyamunite, high vanadium, low lime.  
 DOI 1971  
 REF U.S. Bur. of Mines, 1977, (Unpubl.). U.S. A.E.C., 1971, Production Records, Colorado.

## Maybe 1, 2

LOCATION: sec. 26, T. 46 N., R. 17 W.  
 QUAD Naturita NW 7 1/2'  
 MAP MOAB  
 PROD By 1971, 58 tons had been mined at a grade of 0.26% U3O8, producing 301 lbs of U3O8, and 1.60% V2O5, producing 1,853 lbs of V2O5.  
 HOST Jurassic Morrison Formation.  
 MNZ Uranium, vanadium, carnotite - tyuyamunite, high vanadium, low lime.  
 DOI 1971  
 REF U.S. Bur. of Mines, 1977, (Unpubl.). U.S. A.E.C., 1971, Production Records, Colorado.

## Maybe 5 & 6

LOCATION: sec. 26, T. 46 N., R. 17 W.  
 QUAD Naturita NW 7 1/2'  
 MAP MOAB  
 PROD As of 1971, 8,715 tons had been mined at a grade of 0.15% U3O8, producing 50,421 lbs of U3O8 and 50,421 lbs of V2O5.

HOST Jurassic Morrison Formation.  
 MNZ Carnotite - tyuyamunite, high vanadium, low lime.  
 DOI 1971  
 REF U.S. A.E.C., 1971, Production Records, Colorado.

## Maybe Dumps

LOCATION: sec. 35, T. 46 N., R. 17 W.  
 QUAD Naturita NW 7 1/2'  
 MAP MOAB  
 PROD Prior to 1971, 198 tons had been recovered from the Maybe Mine dumps at a grade of 0.07% U3O8, producing 260 lbs of U3O8, and 0.30% V2O5, producing 1,190 lbs of V2O5.  
 HOST Jurassic Morrison Formation.  
 MNZ Uranium, vanadium, carnotite - tyuyamunite, high vanadium, low lime.  
 DOI 1971  
 REF U.S. Bur. of Mines, 1977, (Unpubl.). U.S. A.E.C., 1971, Production Records, Colorado.

## Media (Group)

LOCATION: sec. 34, T. 47 N., R. 17 W.  
 QUAD Uravan 7 1/2'  
 MAP MOAB  
 PROD As of 1971, 4,946 tons had been mined at a grade of 0.26% U3O8, producing 25,523 lbs of U3O8, and 1.59% V2O5, producing 157,441 lbs of V2O5.  
 HOST Jurassic Morrison Formation.  
 MNZ Uranium, vanadium, carnotite - tyuyamunite, high vanadium, low lime.  
 DOI 1971  
 REF U.S. Bur. of Mines, 1977, (Unpubl.). U.S. A.E.C., 1971, Production Records, Colorado.

## Merry Christmas (Mesa Creek)

LOCATION: sec. 2, T. 48 N., R. 18 W.  
 QUAD Red Canyon 7 1/2'  
 MAP MOAB  
 PROD As of 1971, 25 tons had been mined at a grade of 0.28% U3O8, producing 189 lbs of U3O8, and 1.39% V2O5, producing 697 lbs of V2O5.  
 HOST Jurassic Morrison Formation, Salt Wash Member.  
 MNZ Uranium, vanadium.  
 DOI 1971  
 REF U.S. Bur. of Mines, 1977, (Unpubl.). U.S. A.E.C., 1971, Production Records, Colorado.

## Merry Widow

LOCATION: sec. 10, T. 47 N., R. 17 W.  
 LCRM U.S. A.E.C. Production Records also show sec. 3.  
 QUAD Uravan 7 1/2'  
 MAP MOAB  
 PROD As of 1971, 21,586 tons had been mined at a grade of 0.31% U3O8, producing 133,038 lbs of U3O8, and 1.81% V2O5, producing 783,129 lbs of U3O8.  
 HOST Jurassic Morrison Formation.  
 MNZ Uranium, vanadium, uraninite (coffinite), high vanadium, low lime.  
 DOI 1971

# MONTROSE COUNTY

REF U.S. Bur. of Mines, 1977, (Unpubl.). U.S. A.E.C., 1971, Production Records, Colorado.

## Mesa

LOCATION: sec. 33, T. 46 N., R. 19 W.

LCRM U.S. A.E.C. Production Records show location as sec. 6, T. 45 N., R. 19 W.

QUAD Anderson Mesa 7 1/2'

MAP MOAB

PROD As of 1971, 2,876 tons had been mined at a grade of 0.23% U3O8, producing 13,453 lbs of U3O8, 2.04% V2O5, producing 117,587 lbs of V2O5.

HOST Jurassic Morrison Formation.

MNZ Uranium, vanadium, carnotite - tyuyamunite, high vanadium, low ilme.

DOI 1971

REF U.S. Bur. of Mines, 1977, (Unpubl.). U.S. A.E.C., 1971, Production Records, Colorado.

## Mesa 2

LOCATION: sec. 34, T. 46 N., R. 19 W.

LCRM U.S. A.E.C. Production Records show only sec. 33.

QUAD Anderson Mesa 7 1/2'

MAP MOAB

PROD As of 1971, 1,244 tons had been mined at a grade of .21% U3O8, producing 5,125 lbs of U3O8, and 1.36% V2O5, producing 33,782 lbs of V2O5.

MNZ Uranium, vanadium.

DOI 1971

REF U.S. Bur. of Mines, 1977, (Unpubl.). U.S. A.E.C., 1971, Production Records, Colorado.

## Mesa 3

LOCATION: sec. 33, T. 46 N., R. 19 W.

QUAD Anderson Mesa 7 1/2'

MAP MOAB

PROD As of 1971, 7 tons had been mined at a grade of 0.56% U3O8, producing 79 lbs of U3O8, and 3.09% V2O5, producing 432 lbs of V2O5.

HOST Jurassic Morrison Formation, Salt Wash Member.

MNZ Uranium, vanadium.

DOI 1971

REF U.S. Bur. of Mines, 1977, (Unpubl.). U.S. A.E.C., 1971, Production Records, Colorado.

## Mesa Creek

LOCATION: sec. 2, T. 48 N., R. 18 W.

LCRM This deposit lies in the Gateway district.

PROD As of 1971, 41 tons had been mined at a grade of 0.28% U3O8, producing 185 lbs of U3O8, and 0.89% V2O5, producing 733 lbs of V2O5.

HOST Jurassic Morrison Formation, Salt Wash Member.

DOI 1971

REF U.S. A.E.C., 1971, Production Records, Colorado.

## Midas

LOCATION:

LCST UNLOCATABLE

QUAD Uravan 7 1/2'

MAP MOAB

PROD As of 1971, 14 tons had been mined at a grade of 0.55% U3O8, producing 153 lbs of U3O8, and 3.00% V2O5, producing 841 lbs of V2O5.

HOST Jurassic Morrison Formation, Salt Wash Member.

DOI 1971

REF U.S. A.E.C., 1971, Production Records, Colorado.

## Mike 1

LOCATION:

LCST UNLOCATABLE

PROD As of 1971, 1 ton had been mined at a grade of 0.95% U3O8, producing 19 lbs of U3O8, and 5.90% V2O5, producing 118 lbs of V2O5.

HOST Jurassic Morrison Formation, Salt Wash Member.

DOI 1971

REF U.S. A.E.C., 1971, Production Records, Colorado.

## Mill 4

LOCATION: sec. 4, T. 47 N., R. 17 W.

LCRM U.S. A.E.C. Production Records show location as sec. 32, T. 48 N., R. 17 W.

QUAD Davis Mesa 7 1/2' & Uravan 7 1/2'

MAP MOAB

PROD As of 1971, 11,943 tons had been mined at a grade of 0.22% U3O8, producing 51,625 lbs of U3O8, and 0.23% V2O5, producing 55,770 lbs of V2O5.

HOST Jurassic Morrison Formation, Salt Wash Member.

MNZ Uranium, vanadium, carnotite - tyuyamunite; high vanadium, low ilme.

DOI 1971

REF U.S. Bur. of Mines, 1977, (Unpubl.). U.S. A.E.C., 1971, Production Records, Colorado.

## Mill No. 1

LOCATION: sec. 32, T. 48 N., R. 18 W.

QUAD Roc Creek 7 1/2', Paradox 7 1/2'

MAP MOAB

MNZ Uranium, vanadium.

DOI 1975

REF U.S. Bur. of Mines, 1977, (Unpubl.).

## Mill No. 2 (Mill No. 2 Incline)

LOCATION: sec. 32, T. 47 N., R. 17 W.

QUAD Davis Mesa 7 1/2'

MAP MOAB

PROD As of 1971, 76,181 tons had been mined at a grade of 0.28% U3O8, producing 424,025 lbs of U3O8, and 0.08% V2O5, producing 128,458 lbs of V2O5.

HOST Jurassic Morrison Formation.

MNZ Uranium, vanadium, carnotite - tyuyamunite, high vanadium, low ilme.

DOI 1971

REF U.S. Bur. of Mines, 1977, (Unpubl.). U.S. A.E.C., 1971, Production Records, Colorado.

## Mineral Joe Group (Mineral Joe 1-12)

LOCATION: sec. 26, T. 46 N., R. 17 W.

# MONTROSE COUNTY

LCRM U.S. A.E.C. Production Records also show sec. 21, 22 & 27.  
 QUAD Naturita NW 7 1/2'  
 MAP MOAB  
 PROD As of 1971, 585,275 tons had been mined at a grade of 0.26% U308, producing 3,009,912 lbs of U308, and 1.40% V205, producing 16,370,261 lbs of V205.  
 HOST Jurassic Morrison Formation.  
 MNZ Uranium, vanadium, uraninite (coffinite), high vanadium, low ilme.  
 DOI 1971  
 REF U.S. Bur. of Mines, 1977, (Unpubl.). U.S. A.E.C., 1971, Production Records, Colorado.

## Mineral Park 2

LOCATION: sec. 27, T. 47 N., R. 17 W.  
 LCRM U.S. A.E.C. Production Records also show sec. 34.  
 QUAD Uravan 7 1/2'  
 MAP MOAB  
 PROD As of 1971, 11,676 tons had been mined at a grade of 0.27% U308, producing 62,254 lbs of U308, and 1.96% V205, producing 457,191 lbs of V205.  
 HOST Jurassic Morrison Formation.  
 MNZ Uranium, vanadium, carnotite - tyuyamunite, high vanadium, low ilme.  
 DOI 1971  
 REF U.S. Bur. of Mines, 1977, (Unpubl.). U.S. A.E.C., 1971, Production Records, Colorado.

## Mineral Park 3

LOCATION: sec. 27, T. 47 N., R. 17 W.  
 QUAD Uravan 7 1/2'  
 MAP MOAB  
 PROD As of 1971, 82 tons had been mined at a grade of 0.58% U308, producing 950 lbs of U308, and 4.03 V205, producing 6,602 lbs of V205.  
 HOST Jurassic Morrison Formation.  
 MNZ Uranium, vanadium, carnotite - tyuyamunite, high vanadium, low ilme.  
 DOI 1971  
 REF U.S. Bur. of Mines, 1977, (Unpubl.). U.S. A.E.C., 1971, Production Records, Colorado.

## Mineral Park 4, 5, 6

LOCATION: sec. 35, T. 47 N., R. 17 W.  
 LCRM U.S. A.E.C. Production Records show only sec. 26.  
 QUAD Uravan 7 1/2'  
 MAP MOAB  
 PROD As of 1971, 5,525 tons had been mined at a grade of 0.29% U308, producing 31,920 lbs of U308, and 2.08% V205, producing 230,233 lbs of V205.  
 HOST Jurassic Morrison Formation.  
 MNZ Uranium, vanadium, uraninite (coffinite); high vanadium, low ilme.  
 DOI 1971  
 REF U.S. Bur. of Mines, 1977, (Unpubl.). U.S. A.E.C., 1971, Production Records, Colorado.

## Mineral Park 2-6

LOCATION: sec. 35, T. 47 N., R. 17 W.  
 QUAD Uravan 7 1/2'  
 MAP MOAB  
 MNZ Uranium, vanadium.  
 DOI 1975  
 REF U.S. Bur. of Mines, 1977, (Unpubl.).

## MLB-C-JD-8, DOE Lease Tract

LOCATION: sec. 20, T. 46 N., R. 17 W.  
 LCRM Also sec. 18, 19. This lease lies on Monogram Mesa in the Jo Dandy area.  
 QUAD Bull Canyon 7 1/2'  
 MAP MOAB  
 PROD No production prior to 1978.  
 HOST Jurassic Morrison Formation, Salt Wash Member.  
 MNZ Carnotite - tyuyamunite, high vanadium, low ilme.  
 RMKS This property was formerly covered by Reserve Block USGB-8.  
 DOI 1978  
 REF U.S. D.O.E., 1978, files. U.S. Bur. of Mines, 1977, (Unpubl.). U.S. A.E.C., 1971, Production Records, Colorado.

## Modeen

LOCATION: sec. 33, T. 46 N., R. 19 W.  
 QUAD Anderson Mesa 7 1/2'  
 MAP MOAB  
 PROD As of 1971, 1,511 tons had been mined at a grade of 0.23% U308, producing 6,804 lbs of U308, and 1.45% V205, producing 43,793 lbs of V205.  
 HOST Jurassic Morrison Formation.  
 MNZ Uranium, vanadium.  
 DOI 1971  
 REF U.S. Bur. of Mines, 1977, (Unpubl.). U.S. A.E.C., 1971, Production Records, Colorado.

## Modeen 2

LOCATION: sec. 33, T. 46 N., R. 19 W.  
 QUAD Anderson Mesa 7 1/2'  
 MAP MOAB  
 PROD Produced 1,169 lbs of V205.  
 HOST Jurassic Morrison Formation, Salt Wash Member.  
 MNZ Uranium, vanadium, uraninite (coffinite), high vanadium, Intermed. ilme.  
 DOI 1975, 1971  
 REF U.S. Bur. of Mines, 1977, (Unpubl.). U.S. A.E.C., 1971, Production Records, Colorado.

## Monogram 5, Farmer Girl

LOCATION: sec. 22, T. 48 N., R. 18 W.  
 QUAD Red Canyon 7 1/2'  
 MAP MOAB  
 PROD As of 1971, 28,981 tons had been mined at a grade of 0.23% U308, producing 133,647 lbs of U308, and 1.19% V205, producing 688,069 lbs of V205.  
 HOST Jurassic Morrison Formation, Salt Wash Sandstone Member, fine- to medium-fine-grained sandstone; abundant carbonized plant remains; logs common.

## MONTROSE COUNTY

MNZ Uranium, vanadium, carnotite - tyuyamunite, high vanadium, low lime. Uraninite (coffinite).  
DOI 1971  
REF U.S. Bur. of Mines, 1977, (Unpubl.). U.S. A.E.C., 1971, Production Records, Colorado, Finch, W. L., 1967, U.S. Geol. Survey Prof. Paper 538, p. 12.

### Monogram 12

LOCATION: sec. 27, T. 48 N., R. 18 W.  
LCRM U.S. A.E.C. Production Records also show sec. 22.  
QUAD Red Canyon 7 1/2'  
MAP MOAB  
PROD As of 1971, 2,070 tons had been mined at a grade of 0.26% U3O8, producing 10,756 lbs of U3O8, and 1.25% V2O5, producing 51,901 lbs of V2O5.  
HOST Jurassic Morrison Formation, Salt Wash Sandstone Member, fine- to medium-fine-grained sandstone; abundant carbonized plant remains; logs common.  
MNZ Uranium, vanadium, carnotite - tyuyamunite, high vanadium, low lime.  
DOI 1971  
REF U.S. Bur. of Mines, 1977, (Unpubl.). U.S. A.E.C., 1971, Production Records, Colorado.

### Monogram Claim

LOCATION: sec. 18, T. 46 N., R. 17 W.  
QUAD Bull Canyon 7 1/2'  
MAP MOAB  
PROD As of 1971, 23,302 tons had been mined at a grade of 0.30% U3O8, producing 139,584 lbs of U3O8, and 0.92% V2O5, producing 427,456 lbs of V2O5.  
HOST Jurassic Morrison Formation, Salt Wash Sandstone Member; fine- to medium-fine-grained sandstone; abundant carbonized plant remains; logs common.  
MNZ Uranium, vanadium, carnotite - tyuyamunite, high vanadium, low lime, uraninite (coffinite).  
DOI 1971  
REF U.S. Bur. of Mines, 1977, (Unpubl.). U.S. A.E.C., 1971, Production Records, Colorado.

### Moonbeam

LOCATION: sec. 20, T. 47 N., R. 17 W.  
LCRM U.S. A.E.C. Production Records also show sec. 17.  
QUAD Davis Mesa 7 1/2'  
MAP MOAB  
PROD As of 1971, 21,646 tons had been mined at a grade of 0.25% U3O8, producing 110,246 lbs of U3O8, and 1.56% V2O5, producing 674,043 lbs of V2O5.  
HOST Jurassic Morrison Formation.  
MNZ Uranium, vanadium, carnotite - tyuyamunite, high vanadium, low lime.  
DOI 1971  
REF U.S. Bur. of Mines, 1977, (Unpubl.). U.S. A.E.C., 1971, Production Records, Colorado.

### Morning Glory 2

LOCATION: sec. 28, T. 47 N., R. 19 W.

LCRM U.S. A.E.C. Production Records show location as sec. 20, 21, 28, 29, 30, T. 47 N., R. 20 W.  
QUAD Paradox 7 1/2'  
MAP MOAB  
PROD As of 1971, 39 tons had been mined at a grade of 0.26% U3O8, producing 206 lbs of U3O8, and 2.56% V2O5, producing 1,999 lbs of V2O5.  
HOST The host is the Jurassic Morrison Formation, Brushy Basin Member, conglomerate (?).  
MNZ Uranium, vanadium.  
DOI 1971  
REF U.S. Bur. of Mines, 1977, (Unpubl.). U.S. A.E.C., 1971, Production Records, Colorado, Finch, W.L., 1967, U.S. Geol. Survey Prof. Paper 538, p. 12.

### Morning No. 2

LOCATION: sec. 32, T. 46 N., R. 18 W.  
LCST UNLOCATABLE  
PROD As of 1971, 16 tons of ore had been mined at a grade of 0.13% U3O8.  
DOI 1971  
REF U.S. A.E.C., 1971, Production Records, Colorado.

### Morning Star Mine

LOCATION: sec. 28, T. 46 N., R. 19 W.  
LCRM Gypsum Valley district, Silvey's Pocket locality.  
QUAD Anderson Mesa 7 1/2'  
MAP MOAB  
PROD 46 tons at 0.64% U3O8 and 4.15% V2O5.  
MNZ Uranium, vanadium.  
DOI 1975  
REF U.S. Bur. of Mines, 1977, (Unpubl.).

### Morning Star-Moonlite

LOCATION: sec. 12, T. 47 N., R. 20 W.  
LCRM Paradox district, Lion Creek locality.  
QUAD Mt. Peale 1 SE 7 1/2'  
MAP MOAB  
PROD As of 1971, 1,275 tons had been mined at a grade of 0.22% U3O8, producing 5,631 lbs of U3O8, and 1.57% V2O5, producing 40,025 lbs of V2O5.  
HOST The host is the Jurassic Morrison Formation.  
MNZ Uranium, vanadium, carnotite - tyuyamunite, high vanadium, low lime.  
DOI 1971  
REF U.S. Bur. of Mines, 1977, (Unpubl.). U.S. A.E.C., Production Records, Colorado.

### Movie Star

LOCATION: sec. 22, T. 48 N., R. 17 W.  
LCRM U.S. A.E.C. Production Records show sec. 28.  
QUAD Atkinson Creek 7 1/2'  
MAP MOAB  
PROD As of 1971, 398 tons had been mined at a grade of 0.18% U3O8, producing 1,414 lbs of U3O8, and 0.33% V2O5, producing 2,608 lbs of V2O5.  
HOST The host is the Jurassic Morrison Formation.  
MNZ Uranium, vanadium, carnotite - tyuyamunite, high vanadium, low lime.

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DOI 1971  
REF U.S. Bur. of Mines, 1977, (Unpubl.). U.S. A.E.C., Production Records, Colorado.

## Mueker

LOCATION: sec. 28, T. 47 N., R. 17 W.  
LCRM U.S. A.E.C. Production Records also show sec. 20, 21, 29.  
QUAD Davis Mesa 7 1/2' and Uravan 7 1/2'  
MAP MOAB  
PROD As of 1971, 1,852 tons had been mined at a grade of 0.47% U3O8, producing 17,587 lbs of U3O8, and 1.90% V2O5, producing 70,302 lbs of V2O5.  
HOST The host is the Jurassic Morrison Formation.  
MNZ Uranium, vanadium, carnotite - tyuyamunite, high vanadium, low lime.  
DOI 1971  
REF U.S. Bur. of Mines, 1977, (Unpubl.). U.S. A.E.C., Production Records, Colorado.

## Mum

LOCATION: sec. 36, T. 47 N., R. 17 W.  
QUAD Uravan 7 1/2'  
MAP MOAB  
PROD Reserves, no production.  
MNZ Uranium, vanadium.  
DOI 1975  
REF U.S. Bur. of Mines, 1977, (Unpubl.).

## Mustard

LOCATION: sec. 30, T. 48 N., R. 17 W.  
QUAD Red Canyon 7 1/2'  
MAP MOAB  
PROD As of 1971, 8,345 tons had been mined at a grade of 0.31% U3O8, producing 51,773 lbs of U3O8, and 1.43% V2O5, producing 247,442 lbs of V2O5.  
HOST The host is the Jurassic Morrison Formation.  
MNZ Uranium, vanadium, carnotite - tyuyamunite, high vanadium, low lime.  
DOI 1971  
REF U.S. Bur. of Mines, 1977, (Unpubl.). U.S. A.E.C., 1971, Production Records, Colorado.

## Nat Group

LOCATION:  
LCST UNLOCATABLE  
LCRM This deposit lies in Spring Creek Mesa.  
MAP MOAB  
PROD As of 1971, two tons had been mined at a grade of 0.05% U3O8, producing two lbs of U3O8, and 0.30% V2O5, producing 12 lbs of V2O5.  
HOST Jurassic Morrison Formation, Salt Wash Member.  
MNZ Carnotite - tyuyamunite, high vanadium, low lime.  
DOI 1971  
REF U.S. A.E.C., 1971, Production Records, Colorado.

## Naturita 4

LOCATION: sec. 33, T. 47 N., R. 16 W.  
QUAD Uravan 7 1/2'

MAP MOAB  
PROD As of 1971, 15 tons had been mined at a grade of 0.13% U3O8, producing 40 lbs of U3O8, and 1.38% V2O5, producing 413 lbs of V2O5.  
HOST Jurassic Morrison Formation, Salt Wash Member.  
MNZ Uranium, vanadium, carnotite - tyuyamunite, high vanadium, low lime.  
DOI 1971  
REF U.S. Bur. of Mines, 1977, (Unpubl.). U.S. A.E.C., 1971, Production Records, Colorado.

## Naturita 24

LOCATION: sec. 29, T. 47 N., R. 16 W.  
QUAD Uravan 7 1/2'  
MAP MOAB  
PROD As of 1971, 37 tons had been mined at a grade of 0.08% U3O8, producing 58 lbs of U3O8, and 0.86% V2O5, producing 635 lbs of V2O5.  
HOST The host is the Jurassic Morrison Formation.  
MNZ Uranium, vanadium, carnotite - tyuyamunite, high vanadium, low lime.  
DOI 1971  
REF U.S. Bur. of Mines, 1977, (Unpubl.). U.S. A.E.C., 1971, Production Records, Colorado.

## Navajo (Lark 7 & 8 Mine)

LOCATION: sec. 11, T. 45 N., R. 18 W.  
QUAD Bull Canyon 7 1/2'  
MAP MOAB  
PROD As of 1971, 119 tons had been mined at a grade of 0.24% U3O8, producing 578 lbs of U3O8, and 1.42% V2O5, producing 3,370 lbs of V2O5.  
HOST Jurassic Morrison Formation, Salt Wash Member.  
MNZ Uranium, vanadium, carnotite - tyuyamunite, high vanadium, low lime.  
DOI 1971  
REF U.S. Bur. of Mines, 1977, (Unpubl.). U.S. A.E.C., 1971, Production Records, Colorado.

## New Camp Bird (Starlight Group)

LOCATION: sec. 33, T. 46 N., R. 18 W.  
QUAD Bull Canyon 7 1/2'  
MAP MOAB  
PROD As of 1971, 31 tons had been mined at a grade of 0.27% U3O8, producing 167 lbs of U3O8, and 1.86% V2O5, producing 1,151 lbs of V2O5.  
HOST Jurassic Morrison Formation, Salt Wash Member.  
MNZ Uranium, vanadium.  
DOI 1971  
REF U.S. Bur. of Mines, 1977, (Unpubl.). U.S. A.E.C., 1971, Production Records, Colorado.

## Newton (Bull Canyon Group)

LOCATION: sec. 31, T. 46 N., R. 17 W.  
QUAD Bull Canyon 7 1/2'  
MAP MOAB  
PROD No production.  
DOI 1971  
REF U.S. A.E.C., 1971, Production Records, Colorado.

# MONTROSE COUNTY

## NII No. 2 (and Dump)

LOCATION: sec. 26, T. 46 N., R. 17 W.  
 QUAD Naturita NW 7 1/2'  
 MAP MOAB  
 PROD As of 1971, 572 tons had been mined at a grade of 0.07% U308, producing 819 lbs of U308, and 0.43% V205, producing 4,872 lbs of V205.  
 HOST The host is the Jurassic Morrison Formation.  
 MNZ Uranium, vanadium, uraninite (coffinite), high vanadium, low lime.  
 DOI 1971  
 REF U.S. Bur. of Mines, 1977, (Unpubl.). U.S. A.E.C., 1971, Production Records, Colorado.

## NII Trace

LOCATION: sec. 16, T. 46 N., R. 17 W.  
 LCRM Also sec. 27.  
 QUAD Davis Mesa 7 1/2'  
 MAP MOAB  
 PROD As of 1971, 190,104 tons had been mined at a grade of 0.18% U308 producing 690,015 lbs of U308, and 0.80% V205, producing 3,652,891 lbs of V205.  
 HOST Jurassic Morrison Formation.  
 MNZ Uraninite (coffinite), high vanadium, low lime.  
 DOI 1971  
 REF U.S. A.E.C., 1971, Production Records, Colorado.

## No Name

LOCATION: sec. 10, T. 48 N., R. 19 W.  
 QUAD Roc Creek 7 1/2'  
 MAP MOAB  
 MNZ Uranium, vanadium.  
 DOI 1975  
 REF U.S. Bur. of Mines, 1977, (Unpubl.).

## Noel

LOCATION: sec. 13, T. 46 N., R. 19 W.  
 PROD No production.  
 DOI 1971  
 REF U.S. A.E.C., 1971, Production Records, Colorado.

## Nora L. Claims

LOCATION: sec. 25, T. 46 N., R. 17 W.  
 QUAD Naturita 7 1/2'  
 MAP MOAB  
 MNZ Uranium, vanadium.  
 DOI 1975  
 REF U.S. Bur. of Mines, 1977, (Unpubl.).

## North Star Dump (Mineral Survey 19793)

LOCATION: sec. 20, T. 47 N., R. 17 W.  
 LCRM This mine dump is in the Long Park locality, Uravan district.  
 QUAD Davis Mesa 7 1/2'  
 MAP MOAB  
 PROD Prior to 1971, 333 tons had been mined at a grade of 0.13% U308, producing 890 lbs

of U308, and 0.47% V205, producing 3,159 lbs of V205.  
 HOST Jurassic Morrison Formation.  
 MNZ Carnotite - tyuyamunite, high vanadium, low lime.  
 DOI 1971  
 REF U.S. A.E.C., 1971, Production Records, Colorado.

## North Star-Unaweeep

LOCATION: sec. 14, T. 48 N., R. 18 W.  
 LCRM The North Star-Unaweeep Group extends into sec. 13. The mine is on Atkinson Mesa, Uravan district.  
 QUAD Red Canyon 7 1/2'  
 MAP MOAB  
 PROD As of 1971, 54,357 tons had been mined at a grade of 0.15% U308, producing 162,385 lbs of U308, and 1.45% V205, producing 1,571,906 lbs of V205.  
 HOST Jurassic Morrison Formation, Salt Wash Sandstone Member; sandstone with some carbonized plant trash.  
 MNZ Uranium, vanadium, carnotite - tyuyamunite, high vanadium, low lime.  
 DOI 1971  
 REF U.S. Bur. of Mines, 1977, (Unpubl.). U.S. A.E.C., 1971, Production Records, Colorado. Mineral Survey No. 19606.

## Nucila (Mineral Survey 19790)

LOCATION: NE1/4 sec. 29, T. 47 N., R. 17 W.  
 LCRM Long Park locality, Uravan district.  
 QUAD Davis Mesa 7 1/2'  
 MAP MOAB  
 PROD As of 1971, 496 tons had been mined at a grade of 0.40% U308, producing 4,012 lbs of U308, and 2.20% V205, producing 21,798 lbs of V205.  
 HOST Jurassic Morrison Formation.  
 MNZ Uranium, vanadium, carnotite - tyuyamunite, high vanadium, low lime.  
 DOI 1971  
 REF U.S. Bur. of Mines, 1977, (Unpubl.). U.S. A.E.C., 1971, Production Records, Colorado. Mineral Survey No. 19606.

## Nucila (VCA)

LOCATION: sec. 24, T. 48 N., R. 18 W.  
 LCRM Atkinson Mesa, Uravan district.  
 QUAD Red Canyon 7 1/2'  
 MAP MOAB  
 PROD As of 1971, 2,153 tons had been mined at a grade of 0.27% U308, producing 11,666 lbs of U308, and 1.03% V205, producing 44,466 lbs of V205.  
 HOST Jurassic Morrison Formation.  
 MNZ Uranium, vanadium, carnotite - tyuyamunite, high vanadium, low lime.  
 DOI 1971  
 REF U.S. Bur. of Mines, 1977, (Unpubl.). U.S. A.E.C., 1971, Production Records, Colorado.

## Old Crow 1 (Greagor Group)

LOCATION: sec. 4, T. 45 N., R. 18 W.



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LCRM This deposit lies in the Fawn Spring area, East Greagor Group.  
 QUAD Bull Canyon 7 1/2'  
 MAP MOAB  
 PROD As of 1971, 92 tons had been mined at a grade of 0.23% U3O8, producing 432 lbs of U3O8, and 1.53% V2O5, producing 2,814 lbs of V2O5.  
 HOST Jurassic Morrison Formation, Salt Wash Member.  
 DOI 1971  
 REF U.S. A.E.C., 1971, Production Records, Colorado.

## Old Grandad

LOCATION: sec. 6, T. 45 N., R. 17 W.  
 QUAD Bull Canyon 7 1/2'  
 MAP MOAB  
 PROD As of 1971, 4,531 tons had been mined at a grade of 0.22% U3O8, producing 20,231 lbs of U3O8, and 2.01% V2O5, producing 182,459 lbs of V2O5.  
 HOST Jurassic Morrison Formation.  
 MNZ Uranium, vanadium, carnotite - tyuyamunite, high vanadium, low ilme.  
 DOI 1971  
 REF U.S. Bur. of Mines, 1977, (Unpubl.). U.S. A.E.C., 1971, Production Records, Colorado.

## Old Quaker

LOCATION: W1/2 sec. 18, T. 45 N., R. 17 W.  
 QUAD Bull Canyon 7 1/2'  
 MAP MOAB  
 PROD As of 1971, 163 tons had been mined at a grade of 0.25% U3O8, producing 822 lbs of U3O8, and 1.76% V2O5, producing 5,726 lbs of V2O5.  
 HOST Jurassic Morrison Formation, Salt Wash Member.  
 MNZ Uranium, vanadium.  
 DOI 1971  
 REF U.S. Bur. of Mines, 1977, (Unpubl.). U.S. A.E.C., 1971, Production Records, Colorado.

## Old Salt Lick, (Old Salt Lick Extension, Shamrock Group)

LOCATION: sec. 29, T. 48 N., R. 17 W.  
 QUAD Red Canyon 7 1/2'  
 MAP MOAB  
 PROD As of 1971, 4,116 tons had been mined at a grade of 0.22% U3O8, producing 17,728 lbs of U3O8, and 1.19% V2O5, producing 97,907 lbs of V2O5.  
 HOST Jurassic Morrison Formation.  
 MNZ Uranium, vanadium, carnotite - tyuyamunite, high vanadium, low ilme.  
 DOI 1971  
 REF U.S. Bur. of Mines, 1977, (Unpubl.). U.S. A.E.C., 1971, Production Records, Colorado.

## Opera Box

LOCATION: sec. 20, T. 46 N., R. 17 W.  
 QUAD Bull Canyon 7 1/2'  
 MAP MOAB  
 PROD As of 1971, 160,496 tons had been mined at a grade of 0.21% U3O8, producing 684,856

lbs of U3O8, and 0.89% V2O5, producing 2,867,666 lbs of V2O5.  
 HOST Jurassic Morrison Formation.  
 MNZ Uranium, vanadium, carnotite - tyuyamunite, high vanadium, low ilme.  
 DOI 1971  
 REF U.S. Bur. of Mines, 1977, (Unpubl.). U.S. A.E.C., 1971, Production Records, Colorado.

## Ophir

LOCATION: SE1/4 sec. 24, T. 48 N., R. 18 W.  
 LCST UNLOCATABLE  
 LCRM Extends into NE1/4 sec. 25, T. 48 N., R. 18 W.  
 QUAD Red Canyon 7 1/2'  
 MAP MOAB  
 PROD As of 1971, 2,849 tons had been mined at a grade of 0.20% U3O8, producing 11,192 lbs of U3O8, and 1.17% V2O5, producing 66,532 lbs of V2O5.  
 HOST Jurassic Morrison Formation, Salt Wash Member; brown, medium-grained sandstone with abundant carbonized logs and trash pockets.  
 MNZ Carnotite - tyuyamunite, high vanadium, low ilme.  
 RMKS Same deposit as Ophir Bluebird. Two mine entries.  
 DOI 1971  
 REF U.S. A.E.C., 1971, Production Records, Colorado. Finch, W. I., 1967. Mineral Survey 20263.

## Ophir Bluebird (Ophir)

LOCATION: sec. 24, T. 48 N., R. 18 W.  
 QUAD Red Canyon 7 1/2'  
 MAP MOAB  
 PROD As of 1971, 74,703 tons had been mined at a grade of 0.27% U3O8, producing 400,380 lbs of U3O8, and 1.41% V2O5, producing 2,106,655 lbs of V2O5.  
 HOST Jurassic Morrison Formation, Salt Wash Member; brown, medium-grained sandstone with abundant carbonized logs and trash pockets.  
 MNZ Uranium, vanadium, carnotite - tyuyamunite, high vanadium, low ilme.  
 DOI 1971  
 REF U.S. Bur. of Mines, 1977, (Unpubl.). U.S. A.E.C., 1971, Production Records, Colorado. Finch, W. I., 1967.

## Ophir Dump

LOCATION: sec. 24, T. 48 N., R. 18 W.  
 LCRM Also sec. 25.  
 QUAD Red Canyon 7 1/2'  
 MAP MOAB  
 PROD Prior to 1971, 3,065 tons had been recovered from the Ophir Mine dump at a grade of 0.7% U3O8, producing 4,578 lbs of U3O8, and 0.51% V2O5, producing 31,303 lbs of V2O5.  
 HOST Jurassic Morrison Formation.  
 MNZ Carnotite - tyuyamunite, high vanadium, low ilme.  
 DOI 1971  
 REF U.S. A.E.C., 1971, Production Records, Colorado.

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## Oregon

LOCATION: sec. 11, T. 48 N., R. 18 W.

QUAD Red Canyon 7 1/2'

MAP MOAB

PROD As of 1971, 10,945 tons had been mined at a grade of 0.17% U3O8, producing 36,180 lbs of U3O8, and 0.55% V2O5, producing 120,188 lbs of V2O5.

HOST Jurassic Morrison Formation.

MNZ Uranium, vanadium, carnotite - tyuyamunite, high vanadium, low ilme.

DOI 1971

REF U.S. Bur. of Mines, 1977, (Unpubl.). U.S. A.E.C., 1971, Production Records, Colorado.

## Oversight Mine

LOCATION: sec. 21, T. 46 N., R. 17 W.

QUAD Bull Canyon 7 1/2', Naturita NW 7 1/2'

MAP MOAB

PROD As of 1971, 72,107 tons had been mined at a grade of 0.29% U3O8, producing 419,566 lbs of U3O8, and 0.51% V2O5, producing 2,180,524 lbs of V2O5.

HOST Jurassic Morrison Formation.

MNZ Uranium, vanadium, carnotite - tyuyamunite, high vanadium, low ilme.

DOI 1971

REF U.S. Bur. of Mines, 1977, (Unpubl.). U.S. A.E.C., 1971, Production Records, Colorado.

## Pablo 4 & 5

LOCATION: sec. 13, T. 46 N., R. 18 W.

LCRM Also sec. 24.

QUAD Red Canyon 7 1/2'

MAP MOAB

PROD Reserves, no production.

HOST Jurassic Morrison Formation.

MNZ Carnotite - tyuyamunite, high vanadium, low ilme.

DOI 1971

REF U.S. A.E.C., 1971, Production Records, Colorado.

## Pain-Obnoxious

LOCATION: sec. 32, T. 46 N., R. 17 W.

QUAD Bull Canyon 7 1/2'

MAP MOAB

PROD As of 1971, 17,841 tons had been mined at a grade of 0.15% U3O8, producing 52,624 lbs of U3O8, and 1.39% V2O5, producing 494,290 lbs of V2O5.

HOST Jurassic Morrison Formation.

MNZ Uranium, vanadium, carnotite - tyuyamunite, high vanadium, low ilme.

DOI 1971

REF U.S. Bur. of Mines, 1977, (Unpubl.). U.S. A.E.C., 1971, Production Records, Colorado.

## Paradox 4, 5 & 6

LOCATION: sec. 15, T. 46 N., R. 17 W.

LCRM U.S. A.E.C. Production Records show sec. 21.

QUAD Naturita NW 7 1/2'

MAP MOAB

PROD As of 1971, 198,306 tons had been mined at a grade of 0.26% U3O8, producing 1,011,495 lbs of U3O8, and 0.91% V2O5, producing 3,625,731 lbs of V2O5.

HOST Jurassic Morrison Formation.

MNZ Uranium, vanadium, uraninite (coffinite), high vanadium, low ilme.

DOI 1971

REF U.S. Bur. of Mines, 1977, (Unpubl.). U.S. A.E.C., 1971, Production Records, Colorado.

## Paradox Belle

LOCATION: sec. 30, T. 47 N., R. 17 W.

LCRM U.S. A.E.C. Production Records also show sec. 20 and 29.

QUAD Davis Mesa 7 1/2'

MAP MOAB

PROD As of 1971, 16 tons had been mined at a grade of 0.57% U3O8, producing 181 lbs of U3O8, and 1.92% V2O5, producing 615 lbs of V2O5.

HOST Jurassic Morrison Formation.

MNZ Uranium, vanadium, carnotite - tyuyamunite, high vanadium, low ilme.

DOI 1971

REF U.S. Bur. of Mines, 1977, (Unpubl.). U.S. A.E.C., 1971, Production Records, Colorado.

## Paradox C

LOCATION: sec. 22, T. 46 N., R. 17 W.

QUAD Naturita NW 7 1/2'

MAP MOAB

PROD As of 1971, 3,999 tons had been mined at a grade of 0.17% U3O8, producing 13,839 lbs of U3O8, and 0.52% V2O5, producing 41,660 lbs of V2O5.

HOST Jurassic Morrison Formation.

MNZ Uranium, vanadium, carnotite - tyuyamunite, high vanadium, low ilme.

DOI 1971

REF U.S. Bur. of Mines, 1977, (Unpubl.). U.S. A.E.C., Production Records, Colorado.

## Paradox D (Reserve Block A)

LOCATION: NE1/4 sec. 21, T. 46 N., R. 17 W.

QUAD Naturita NW 7 1/2'

MAP MOAB

PROD As of 1971, 193,529 tons had been mined at a grade of 0.21% U3O8, producing 800,895 lbs of U3O8, and 0.98% V2O5, producing 3,793,285 lbs of V2O5.

HOST Jurassic Morrison Formation.

MNZ Uranium, vanadium, uraninite (coffinite), high vanadium, low ilme.

DOI 1971

REF U.S. Bur. of Mines, 1977, (Unpubl.). U.S. A.E.C., 1971, Production Records, Colorado.

## Paradox Right Of Way (Doe Lease Tract C-JD-7)

LOCATION: NW1/4NW1/4 sec. 22, T. 46 N., R. 17 W.

LCST UNLOCATABLE

LCRM This is ore encountered in a right-of-way easement drift to connect the Paradox "C" Mine with the Paradox 5 & 6 Mine.

QUAD Naturita NW 7 1/2'

# MONTROSE COUNTY

MAP MOAB  
 PROD As of 1971, 395 tons had been mined at a grade of 0.18% U3O8, producing 1,411 lbs of U3O8, and 1.20% V2O5, producing 9,475 lbs of V2O5.  
 HOST Jurassic Morrison Formation.  
 DOI 1971  
 REF U.S. A.E.C., 1971, Production Record, Colorado.

## Paradox View

LOCATION: sec. 2, T. 46 N., R. 17 W.  
 QUAD Uravan 7 1/2'  
 MAP MOAB  
 PROD As of 1971, 117 tons had been mined at a grade of 0.37% U3O8, producing 872 lbs of U3O8, and 2.14% V2O5, producing 5,000 lbs of V2O5.  
 MNZ Uranium, vanadium.  
 DOI 1971  
 REF U.S. Bur. of Mines, 1977, (Unpubl.). U.S. A.E.C., 1971, Production Records, Colorado.

## Patterson Seep

LOCATION: sec. 18, T. 48 N., R. 18 W.  
 LCRM U.S. A.E.C. Production Records also show sec. 19.  
 QUAD Roc Creek 7 1/2'  
 MAP MOAB  
 PROD As of 1971, 8 tons had been mined at a grade of 0.40% U3O8, producing 64 lbs of U3O8, and 2.71% V2O5, producing 434 lbs of V2O5.  
 MNZ Uranium, vanadium.  
 DOI 1971  
 REF U.S. Bur. of Mines, 1977, (Unpubl.). U.S. A.E.C., 1971, Production Records, Colorado.

## Patty 4

LOCATION: sec. 34, T. 46 N., R. 18 W.  
 QUAD Bull Canyon 6 1/2'  
 MAP MOAB  
 PROD As of 1971, 501 tons had been mined at a grade of 0.26% U3O8, producing 2,632 lbs of U3O8, and 1.33% V2O5, producing 13,320 lbs of V2O5.  
 MNZ Uranium, vanadium.  
 DOI 1971  
 REF U.S. Bur. of Mines, 1977, (Unpubl.). U.S. A.E.C., 1971, Production Records, Colorado.

## Patty 5

LOCATION: sec. 3, T. 45 N., R. 18 W.  
 LCRM U.S. A.E.C. Production Records show location as sec. 34, T. 46 N., R. 18 W.  
 QUAD Bull Canyon 7 1/2'  
 MAP MOAB  
 PROD As of 1971, 1,732 tons had been mined at a grade of 0.33% U3O8, producing 11,411 lbs of U3O8, and 1.78% V2O5, producing 61,629 lbs of V2O5.  
 HOST Jurassic Morrison Formation.  
 MNZ Uranium, vanadium, carnotite - tyuyamunite, high vanadium, low lime.  
 DOI 1971  
 REF U.S. Bur. of Mines, 1977, (Unpubl.). U.S. A.E.C., 1971, Production Records, Colorado.

## Patty No. 2

LOCATION: sec. 34, T. 46 N., R. 18 W.  
 PROD As of 1971, 10.17 tons of ore were mined at a grade of 0.20% U3O8.  
 HOST Jurassic Morrison Formation, Salt Wash Member.  
 DOI 1971  
 REF U.S. A.E.C., 1971, Production Records, Colorado.

## Pay day

LOCATION: sec. 22, T. 48 N., R. 18 W.  
 LCRM U.S. A.E.C. Production Records also show sec. 23.  
 QUAD Red Canyon 7 1/2'  
 MAP MOAB  
 PROD As of 1971, 7,165 tons had been mined at a grade of 0.28% U3O8, producing 39,503 lbs of U3O8, and 1.25% V2O5, producing 183,481 lbs of V2O5.  
 HOST Jurassic Morrison Formation.  
 MNZ Uranium, vanadium, carnotite - tyuyamunite, high vanadium, low lime.  
 DOI 1971  
 REF U.S. Bur. of Mines, 1977, (Unpubl.). U.S. A.E.C., 1971, Production Records, Colorado.

## Peanut No. 19

LOCATION: sec. 6, T. 45 N., R. 17 W.  
 QUAD Bull Canyon 7 1/2'  
 MAP MOAB  
 PROD No production.  
 DOI 1971  
 REF U.S. A.E.C., 1971, Production Records, Colorado.

## Peg Leg 2

LOCATION: sec. 19, T. 47 N., R. 17 W.  
 QUAD Davis Mesa 7 1/2'  
 MAP MOAB  
 PROD As of 1971, 661 tons had been mined at a grade of 0.21% U3O8, producing 2,827 lbs of U3O8, and 1.19% V2O5, producing 15,792 lbs of V2O5.  
 HOST Jurassic Morrison Formation.  
 MNZ Uranium, vanadium, carnotite - tyuyamunite, high vanadium, low lime.  
 DOI 1971  
 REF U.S. Bur. of Mines, 1977, (Unpubl.). U.S. A.E.C., 1971, Production Records, Colorado.

## Peggy

LOCATION: sec. 6, T. 47 N., R. 17 W.  
 LCRM Saucer Basin locality, Uravan district.  
 QUAD Davis Mesa 7 1/2'  
 MAP MOAB  
 PROD As of 1971, 85 tons had been mined at a grade of 0.34% U3O8, producing 583 lbs of U3O8, and 1.13% V2O5, producing 1,922 lbs of V2O5.  
 HOST Jurassic Morrison Formation.  
 MNZ Uranium, vanadium, carnotite - tyuyamunite, high vanadium, low lime.  
 DOI 1971

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REF U.S. Bur. of Mines, 1977, (Unpubl.). U.S. A.E.C., 1971, Production Records, Colorado.

## Picket Corral

LOCATION: SW1/4 sec. 34, T. 46 N., R. 18 W.

QUAD Bull Canyon 7 1/2'

MAP MOAB

PROD As of 1971, 51,495 tons had been mined at a grade of 0.29% U3O8, producing 293,985 lbs of U3O8, and 1.92% V2O5, producing 1,981,225 lbs of V2O5.

HOST Jurassic Morrison Formation.

MNZ Uranium, vanadium, carnotite - tyuyamunite, high vanadium, low lime.

DOI 1971

REF U.S. Bur. of Mines, 1977, (Unpubl.). U.S. A.E.C., 1971, Production Records, Colorado.

## Pie Face 1

LOCATION: sec. 2, T. 46 N., R. 17 W.

QUAD Uravan 7 1/2'

DVEL As of 1971, 118 tons had been mined at a grade of 0.18% U3O8, producing 431 lbs of U3O8, and 1.00% V2O5, producing 2,363 lbs of V2O5.

HOST Jurassic Morrison Formation, Salt Wash Member.

MNZ Uranium, vanadium.

DOI 1971

REF U.S. Bur. of Mines, 1977, (Unpubl.). U.S. A.E.C., 1971, Production Records, Colorado.

## Pine Face 1

LOCATION: sec. 2, T. 46 N., R. 17 W.

QUAD Uravan 7 1/2'

MAP MOAB

PROD As of 1971, 118 tons had been mined at a grade of 0.18% U3O8, producing 431 lbs of U3O8, and 1.00% V2O5, producing 2,363 lbs of V2O5.

HOST Jurassic Morrison Formation, Salt Wash Member.

MNZ Uranium, vanadium.

DOI 1971

REF U.S. Bur. of Mines, 1977, (Unpubl.). U.S. A.E.C., 1971, Production Records, Colorado.

## Pinon-Cedar Group

LOCATION: sec. 24, T. 48 N., R. 19 W.

QUAD Bull Canyon 7 1/2'

MAP MOAB

PROD As of 1971, 6 tons had been mined at a grade of 0.28% U3O8, producing 34 lbs of U3O8, and 2.97% V2O5, producing 357 lbs of V2O5.

MNZ Uranium, vanadium.

DOI 1971

REF U.S. Bur. of Mines, 1977, (Unpubl.). U.S. A.E.C., 1971, Production Records, Colorado.

## Pluto (Pluto-Saturn)

LOCATION: sec. 12, T. 46 N., R. 18 W.

LCRM U.S. A.E.C. Production Records also show sec. 13.

QUAD Day's Mesa 7 1/2'

MAP MOAB

PROD As of 1971, 17,104 tons had been mined at a grade of 0.19% U3O8, producing 63,656 lbs of U3O8, and 0.89% V2O5, producing 304,895 lbs of V2O5.

HOST Jurassic Morrison Formation.

MNZ Uranium, vanadium, carnotite - tyuyamunite, high vanadium, low lime.

DOI 1971

REF U.S. Bur. of Mines, 1977, (Unpubl.). U.S. A.E.C., 1971, Production Records, Colorado.

## Point-Empire

LOCATION: sec. 23, T. 48 N., R. 18 W.

LCRM U.S. A.E.C. Production Records also show sec. 14 and 22.

QUAD Red Canyon 7 1/2'

MAP MOAB

PROD As of 1971, 3,765 tons had been mined at a grade of 0.32% U3O8, producing 23,740 lbs of U3O8, and 1.13% V2O5, producing 85,344 lbs of V2O5.

HOST Jurassic Morrison Formation.

MNZ Uranium, vanadium, carnotite - tyuyamunite, high vanadium, low lime.

DOI 1971

REF U.S. Bur. of Mines, 1977, (Unpubl.). U.S. A.E.C., 1971, Production Records, Colorado.

## Pooch & Pooch 1

LOCATION: sec. 9, T. 45 N., R. 19 W.

LCRM U.S. A.E.C. Production Records also show sec. 3, 4 and 10.

QUAD Anderson Mesa 7 1/2'

MAP MOAB

PROD As of 1971, 90 tons had been mined at a grade of 0.11% U3O8, producing 200 lbs of U3O8, and 1.23% V2O5, producing 2,218 lbs of V2O5.

HOST Jurassic Morrison Formation.

MNZ Uranium, vanadium.

DOI 1971

REF U.S. Bur. of Mines, 1977, (Unpubl.). U.S. A.E.C., 1971, Production Records, Colorado.

## Poor Boy

LOCATION: sec. 3, T. 48 N., R. 18 W.

QUAD Red Canyon 7 1/2'

MAP MOAB

PROD As of 1971, 16 tons had been mined at a grade of 0.16% U3O8, producing 52 lbs of U3O8, and 1.02% V2O5, producing 325 lbs of V2O5.

MNZ Uranium, vanadium.

DOI 1971

REF U.S. Bur. of Mines, 1977, (Unpubl.). U.S. A.E.C., 1971, Production Records, Colorado.

## Prayer 11

LOCATION: sec. 13, T. 47 N., R. 20 W.

QUAD Mount Peale 1 SE 7 1/2'

MAP MOAB

PROD No production.

HOST Jurassic Morrison Formation.

DOI 1971

REF U.S. A.E.C., 1971, Production Records, Colorado.

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## Prayer No. 8 & 9

LOCATION: sec. 14, T. 47 N., R. 20 W.  
 QUAD Mount Peale 1 SE 7 1/2'  
 MAP MOAB  
 PROD As of 1971, 16,754 tons had been mined at a grade of 0.23% U3O8, producing 76,846 lbs of U3O8, and 1.14% V2O5, producing 383,298 lbs of V2O5.  
 HOST Brushy Basin Member of the Morrison Formation.  
 MNZ Uranium, vanadium, carnotite - tyuyamunite, high vanadium, low ilme.  
 DOI 1971  
 REF U.S. Bur. of Mines, 1977, (Unpubl.). U.S. A.E.C., 1971, Production Records, Colorado.

## Princess

LOCATION: sec. 27, T. 48 N., R. 18 W.  
 QUAD Red Canyon 7 1/2'  
 MAP MOAB  
 PROD As of 1971, 456 tons had been mined at a grade of 0.37% U3O8, producing 3,416 lbs of U3O8, and 2.02% V2O5, producing 18,393 lbs of V2O5.  
 HOST Jurassic Morrison Formation.  
 MNZ Carnotite - tyuyamunite, uranium, vanadium, high vanadium, low ilme.  
 DOI 1971  
 REF U.S. Bur. of Mines, 1977, (Unpubl.). U.S. A.E.C., 1971, Production Records, Colorado.

## Princess Pat

LOCATION:  
 LCST UNLOCATABLE  
 MAP MOAB  
 PROD As of 1971, 13 tons had been mined at a grade of 0.38% U3O8, producing 98 lbs of U3O8, and 2.25% V2O5, producing 584 lbs of V2O5.  
 DOI 1971  
 REF U.S. A.E.C., 1971, Production Records, Colorado.

## Probable

LOCATION: sec. 4, T. 45 N., R. 19 W.  
 LCRM U.S. A.E.C. Production Records show location as sec. 33, T. 46 N., R. 19 W.  
 QUAD Anderson Mesa 7 1/2'  
 MAP MOAB  
 PROD As of 1971, 55 tons had been mined at a grade of 0.39% U3O8, producing 426 lbs of U3O8, and 2.92% V2O5, producing 3,210 lbs of V2O5.  
 HOST Jurassic Morrison Formation.  
 MNZ Uranium, vanadium, carnotite - tyuyamunite, high vanadium, intermed. ilme.  
 DOI 1971  
 REF U.S. Bur. of Mines, 1977, (Unpubl.). U.S. A.E.C., 1971, Production Records, Colorado.

## Production Dumps

LOCATION: sec. 20, T. 47 N., R. 17 W.  
 LCRM U.S. A.E.C. Production Records also show sec. 21.

QUAD Davis Mesa 7 1/2'  
 MAP MOAB  
 PROD Prior to 1971, 91 tons had been recovered from the Production Mine dumps at a grade of 0.05% U3O8, producing 85 lbs of U3O8, and 0.32% V2O5, producing 577 lbs of V2O5.  
 HOST Jurassic Morrison Formation.  
 MNZ Uranium, vanadium, carnotite - tyuyamunite, high vanadium, low ilme.  
 DOI 1971  
 REF U.S. Bur. of Mines, 1977, (Unpubl.). U.S. A.E.C., 1971, Production Records, Colorado.

## Production West (Production)

LOCATION: sec. 20, T. 47 N., R. 17 W.  
 LCRM U.S. A.E.C. Production Records also show sec. 21.  
 QUAD Davis Mesa 7 1/2'  
 MAP MOAB  
 PROD As of 1971, 31,586 tons had been mined at a grade of 0.29% U3O8, producing 182,342 lbs of U3O8, and 1.43% V2O5, producing 901,591 lbs of V2O5.  
 HOST Jurassic Morrison Formation.  
 MNZ Uranium, vanadium, carnotite - tyuyamunite, high vanadium, low ilme.  
 DOI 1971  
 REF U.S. Bur. of Mines, 1977, (Unpubl.). U.S. A.E.C., 1971, Production Records, Colorado.

## Prohibition (American Eagle MS 19852)

LOCATION: sec. 8, T. 48 N., R. 18 W.  
 LCRM Also sec. 5, 6, 7. This deposit is the same as the American Eagle, Mineral Survey 19852.  
 QUAD Roc Creek 7 1/2'  
 MAP MOAB  
 PROD As of 1971, 100 tons had been mined at a grade of 0.22% U3O8, producing 437 lbs of U3O8, and 0.76% V2O5, producing 1,526 lbs of V2O5. (Mined in trespass).  
 MNZ Uranium, vanadium.  
 DOI 1971  
 REF U.S. Bur. of Mines, 1977, (Unpubl.). U.S. A.E.C., 1971, Production Records, Colorado.

## Quarrel Group

LOCATION: sec. 12, T. 45 N., R. 18 W.  
 QUAD Bull Canyon 7 1/2'  
 MAP MOAB  
 PROD As of 1971, 542 tons had been mined at a grade of 0.57% U3O8, producing 6,214 lbs of U3O8, and 3.28% V2O5, producing 35,552 lbs of V2O5.  
 HOST Jurassic Morrison Formation.  
 MNZ Uranium, vanadium.  
 DOI 1971  
 REF U.S. Bur. of Mines, 1977, (Unpubl.). U.S. A.E.C., 1971, Production Records, Colorado.

## Quo Vadis

LOCATION: sec. 3, T. 48 N., R. 18 W.  
 QUAD Red Canyon 7 1/2'  
 MAP MOAB

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PROD As of 1971, 8 tons had been mined at a grade of 0.84% U3O8, producing 134 lbs of U3O8, and 3.38% V2O5, producing 540 lbs of V2O5.  
 HOST Jurassic Morrison Formation.  
 MNZ Uranium, vanadium, carnotite - tyuyamunite, high vanadium, low lime.  
 DOI 191  
 REF U.S. Bur. of Mines, 1977, (Unpubl.). U.S. A.E.C., 1971, Production Records, Colorado.

## R.A.L. 1 & 2

LOCATION: sec. 23, T. 48 N., R. 18 W.  
 LCRM U.S. A.E.C. Production Records show N1/2 sec. 24.  
 QUAD Red Canyon 7 1/2'  
 MAP MOAB  
 PROD As of 1971, 1,297 tons had been mined at a grade of 0.20% U3O8, producing 5,203 lbs of U3O8, and 1.16% V2O5, producing 30,009 lbs of V2O5.  
 MNZ Uranium, vanadium.  
 DOI 1971  
 REF U.S. Bur. of Mines, 1977, (Unpubl.). U.S. A.E.C., 1971, Production Records, Colorado.

## R.A.M.

LOCATION: sec. 33, T. 48 N., R. 17 W.  
 LCRM U.S. A.E.C. Production Records also show sec. 32.  
 QUAD Davis Mesa 7 1/2' & Uravan 7 1/2'  
 MAP MOAB  
 PROD As of 1971, 129,534 tons had been mined at a grade of 0.19% U3O8, producing 498,876 lbs of U3O8, and 0.18% V2O5, producing 455,556 lbs of V2O5.  
 HOST Jurassic Morrison Formation.  
 MNZ Uranium, vanadium, carnotite - tyuyamunite, high vanadium, low lime.  
 DOI 1971  
 REF U.S. Bur. of Mines, 1977, (Unpubl.). U.S. A.E.C., 1971, Production Records, Colorado.

## R.A.M. Dump

LOCATION: sec. 33, T. 48 N., R. 17 W.  
 QUAD Davis Mesa 7 1/2', Uravan 7 1/2'  
 MAP MOAB  
 PROD Prior to 1971, 36,247 tons had been recovered from the R.A.M. Mine dump at a grade of 0.09% U3O8, producing 64,134 lbs of U3O8.  
 HOST Jurassic Morrison Formation.  
 MNZ Uranium, vanadium, carnotite - tyuyamunite, high vanadium, low lime.  
 DOI 1971  
 REF U.S. Bur. of Mines, 1977, (Unpubl.). U.S. A.E.C., 1971, Production Records, Colorado.

## Rabbit Foot 2 (Rimrock Blues Group)

LOCATION: sec. 2, T. 45 N., R. 18 W.  
 QUAD Bull Canyon 7 1/2'  
 MAP MOAB  
 PROD As of 1971, 21 tons had been mined at a grade of 0.24% U3O8, producing 100 lbs of U3O8, and 1.71% V2O5, producing 720 lbs of V2O5.  
 MNZ Uranium, vanadium.

DOI 1971  
 REF U.S. Bur. of Mines, 1977, (Unpubl.). U.S. A.E.C., 1971, Production Records, Colorado.

## Radium Cycle

LOCATION: sec. 8, T. 48 N., R. 19 W.  
 QUAD Roc Creek 7 1/2'  
 MAP MOAB  
 PROD As of 1971, 2,142 tons had been mined at a grade of 0.33% U3O8, producing 14,157 lbs of U3O8, and 1.55% V2O5, producing 66,574 lbs of V2O5.  
 HOST Salt Wash Member of the Jurassic Morrison Formation.  
 MNZ Uranium, vanadium.  
 DOI 1971  
 REF U.S. Bur. of Mines, 1977, (Unpubl.). U.S. A.E.C., 1971, Production Records, Colorado.

## Radium Hill 7

LOCATION: sec. 10, T. 45 N., R. 18 W.  
 QUAD Bull Canyon 7 1/2'  
 MAP MOAB  
 PROD As of 1971, 3,398 tons had been mined at a grade of 0.18% U3O8, producing 12,408 lbs of U3O8, and 1.18% V2O5, producing 80,278 lbs of V2O5.  
 HOST Jurassic Morrison Formation.  
 MNZ Uraninite (coffinite), high vanadium, low lime.  
 DOI 1971  
 REF U.S. A.E.C., 1971, Production Records, Colorado.

## Radium Hill 10

LOCATION: sec. 10, T. 45 N., R. 18 W.  
 QUAD Bull Canyon 7 1/2'  
 MAP MOAB  
 PROD As of 1971, 29,072 tons had been mined at a grade of 0.22% U3O8, producing 127,666 lbs of U3O8, and 1.34% V2O5, producing 780,439 lbs of V2O5.  
 HOST Jurassic Morrison Formation.  
 MNZ Uraninite (coffinite), high vanadium, low lime.  
 DOI 1971  
 REF U.S. A.E.C., 1971, Production Records, Colorado.

## Radium Hill 31

LOCATION: sec. 9, T. 48 N., R. 18 W.  
 QUAD Red Canyon 7 1/2'  
 MAP MOAB  
 PROD As of 1971, 6,447 tons had been mined at a grade of 0.21% U3O8, producing 26,947 lbs of U3O8, and 1.88% V2O5, producing 242,007 lbs of V2O5.  
 HOST Jurassic Morrison Formation.  
 MNZ Carnotite - tyuyamunite, high vanadium, low lime.  
 DOI 1971  
 REF U.S. A.E.C., 1971, Production Records, Colorado.

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## Radium Hill Group

LOCATION: sec. 15, T. 45 N., R. 18 W.  
PROD As of 1971, 560 tons of ore had been mined at a grade of 0.50% U3O8.  
HOST Jurassic Morrison Formation, Salt Wash Member.  
DOI 1971  
REF U.S. A.E.C., 1971, Production Records, Colorado.

## Radium King (Bitter Creek Group)

LOCATION: sec. 1, T. 46 N., R. 17 W.  
LCRM Also sec. 12. Bitter Creek locality of the Uravan district.  
QUAD Uravan 7 1/2'  
MAP MOAB  
PROD As of 1971, 41 tons had been mined at a grade of 0.11% U3O8, producing 89 lbs of U3O8, and 1.00% V2O5, producing 819 lbs of V2O5.  
HOST Jurassic Morrison Formation, Salt Wash Sandstone Member; gray fine- to medium-grained sandstone and shaly sandstone with abundant carbonized plant remains.  
MNZ Carnotite.  
DOI 1971  
REF U.S. A.E.C., 1971, Production Records, Colorado. Finch, W. I., 1967, U.S. Geol. Survey Prof. Paper 538, p. 11.

## Radium Queen 13

LOCATION: sec. 16, T. 48 N., R. 18 W.  
LCRM Also sec. 17, 20, 21.  
QUAD Red Canyon 7 1/2'  
MAP MOAB  
PROD As of 1971, 1,002 tons had been mined at a grade of 0.35% U3O8, producing 31,138 lbs of U3O8, and 1.24% V2O5, producing 110,284 lbs of V2O5.  
HOST Jurassic Morrison Formation.  
MNZ Carnotite - tyuyamunite, high vanadium, low lime.  
DOI 1971  
REF U.S. A.E.C., 1971, Production Records, Colorado.

## Rainbow

LOCATION: sec. 27, T. 47 N., R. 19 W.  
QUAD Paradox 7 1/2'  
MAP MOAB  
PROD As of 1971, 18 tons had been mined at a grade of 0.28% U3O8, producing 100 lbs of U3O8, and 2.39% V2O5, producing 860 lbs of V2O5.  
HOST Jurassic Morrison Formation, Salt Wash Member.  
MNZ Uranium, vanadium.  
DOI 1971  
REF U.S. Bur. of Mines, 1977, (Unpubl.). U.S. A.E.C., 1971, Production Records, Colorado.

## Rainy Day

LOCATION: sec. 35, T. 45 N., R. 18 W.  
QUAD Hamm Canyon 7 1/2'  
PROD As of 1971, 3,264 tons had been mined at a grade of 0.20% U3O8, producing 12,981

lbs of U3O8, and 1.33% V2O5, producing 86,738 lbs of V2O5.

HOST Jurassic Morrison Formation.  
MNZ Uranium, vanadium, carnotite - tyuyamunite, high vanadium, low lime.  
DOI 1971  
REF U.S. Bur. of Mines, 1977, (Unpubl.). U.S. A.E.C., 1971, Production Records, Colorado.

## Rajah (Big Chief 2) (Mineral Survey 19851A and 20019)

LOCATION: sec. 6, T. 48 N., R. 18 W.  
LCRM Also sec. 7, T. 48 N., R. 18 W., and sec. 1 and 12, T. 48 N., R. 19 W.  
QUAD Roc Creek 7 1/2'  
MAP MOAB  
PROD As of 1971, 7,012 tons had been mined at a grade of 0.19% U3O8, producing 27,103 lbs of U3O8, and 0.45% V2O5, producing 62,670 lbs of V2O5.  
HOST Upper Triassic Kayenta and/or Wingate, light-gray fine- to medium-grained sandstone and fault breccia and gouge.  
STRC Vein deposit.  
MNZ Uranium, vanadium, carnotite.  
DOI 1971  
REF U.S. Bur. of Mines, 1977, (Unpubl.). U.S. A.E.C., 1971, Production Records, Colorado. Finch, W. I., 1967, U.S. Geol. Survey Prof. Paper 538, p. 11. Note: The Bur. of Mines or U.S.G.S. references may refer to the Rajah property on Beaver Mesa,

## Rajah Dump Ore (Roc Creek)

LOCATION: sec. 7, T. 48 N., R. 18 W.  
QUAD Roc Creek 7 1/2'  
MAP MOAB  
PROD As of 1971, 9 tons had been mined at a grade of 0.10% U3O8, producing 18 lbs of U3O8, and 0.22% V2O5, producing 39 lbs of V2O5 (about 6,000 tons of Rajah dump ore is included in the Rajah (Big Chief 2) production).  
HOST Upper Triassic/Lower Jurassic Kayenta Formation.  
MNZ Uranium, vanadium, carnotite - tyuyamunite, high vanadium, low lime.  
DOI 1971  
REF U.S. Bur. of Mines, 1977, (Unpubl.). U.S. A.E.C., 1971, Production Records, Colorado. Finch, W. I., 1967, U.S. Geol. Survey Prof. Paper 538, p. 11.

## Rambler Dumps

LOCATION: sec. 33, T. 48 N., R. 17 W.  
QUAD Davis Mesa 7 1/2', Uravan 7 1/2'  
MAP MOAB  
PROD Prior to 1971, 9,677 tons had been recovered from the Rambler Mine dumps at a grade of 0.10% U3O8, producing 18,768 lbs of U3O8, and 0.53% V2O5, producing 101,697 lbs of V2O5.  
HOST Jurassic Morrison Formation.  
MNZ Uranium, vanadium, carnotite - tyuyamunite, high vanadium, low lime.  
DOI 1971  
REF U.S. Bur. of Mines, 1977, (Unpubl.). U.S. A.E.C., 1971, Production Records, Colorado.

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## Ratex

LOCATION: sec. 7; T. 47 N., R. 17 W.  
 QUAD Davis Mesa 7 1/2'  
 MAP MOAB  
 PROD As of 1971, 10 tons had been mined at a grade of 0.19% U3O8, producing 38 lbs of U3O8, and 1.88% V2O5, producing 375 lbs of V2O5.  
 MNZ Uranium, vanadium.  
 DOI 1971  
 REF U.S. Bur. of Mines, 1977, (Unpubl.). U.S. A.E.C., 1971, Production Records, Colorado.

## Rattler 1

LOCATION:  
 LCST UNLOCATABLE  
 MAP MOAB  
 PROD As of 1971, 63 tons had been mined at a grade of 0.21% U3O8, producing 269 lbs of U3O8, and 1.46% V2O5, producing 1,837 lbs of V2O5.  
 DOI 1971  
 REF U.S. A.E.C., 1971, Production Records, Colorado.

## Rattlesnake 1 (Lower Group)

LOCATION: sec. 4, T. 45 N., R. 19 W.  
 QUAD Anderson Mesa 7 1/2'  
 MAP MOAB  
 PROD As of 1971, 11 tons had been mined at a grade of 0.07% U3O8, producing 15 lbs of U3O8, and 1.56% V2O5, producing 348 lbs of V2O5.  
 HOST Jurassic Morrison Formation, Salt Wash Member.  
 MNZ Uranium, vanadium, carnotite - tyuyamunite, high vanadium, low ilme.  
 DOI 1971  
 REF U.S. Bur. of Mines, 1977, (Unpubl.). U.S. A.E.C., 1971, Production Records, Colorado.

## Rattlesnake (Rattlesnake-David)

LOCATION: sec. 2, T. 47 N., R. 20 W.  
 LCRM U.S. A.E.C. Production Records also show sec. 1.  
 QUAD Mount Peale 1 SE 7 1/2'  
 MAP MOAB  
 PROD As of 1971, 1,826 tons had been mined at a grade of 0.31% U3O8, producing 11,184 lbs of U3O8, and 1.34% V2O5, producing 48,811 lbs of V2O5.  
 HOST Jurassic Morrison Formation.  
 MNZ Uranium, vanadium, carnotite - tyuyamunite, high vanadium, low ilme.  
 DOI 1971  
 REF U.S. Bur. of Mines, 1977, (Unpubl.). U.S. A.E.C., 1971, Production Records, Colorado.

## Rattlesnake Turnover

LOCATION: sec. 13, T. 47 N., R. 18 W.  
 LCRM Also sec. 24.  
 QUAD Davis Mesa 7 1/2'  
 MAP MOAB  
 PROD As of 1971, 2,552 tons had been mined at a grade of 0.24% U3O8, producing 12,194

lbs of U3O8, and 0.62% V2O5, producing 31,558 lbs of V2O5.

HOST Jurassic Morrison Formation.  
 MNZ Carnotite - tyuyamunite, low vanadium, low ilme.  
 DOI 1971  
 REF U.S. A.E.C., 1971, Production Records, Colorado.

## Raven

LOCATION: sec. 3, T. 45 N., R. 19 W.  
 LCRM U.S. A.E.C. Production Records also show sec. 10.  
 QUAD Anderson Mesa 7 1/2'  
 MAP MOAB  
 PROD As of 1971, 26,083 tons had been mined at a grade of 0.29% U3O8, producing 151,376 lbs of U3O8, and 1.84% V2O5, producing 960,590 lbs of V2O5.  
 HOST Jurassic Morrison Formation.  
 MNZ Uranium, vanadium, carnotite - tyuyamunite, high vanadium, low ilme.  
 DOI 1971  
 REF U.S. Bur. of Mines, 1977, (Unpubl.). U.S. A.E.C., 1971, Production Records, Colorado.

## Raven

LOCATION: sec. 30, T. 48 N., R. 17 W.  
 LCRM Location is from U.S. A.E.C. Production Records.  
 QUAD Red Canyon 7 1/2'  
 MAP MOAB  
 PROD As of 1971, 4,651 tons had been mined at a grade of 0.21% U3O8, producing 19,521 lbs of U3O8, and 1.19% V2O5, producing 111,017 lbs of V2O5.  
 HOST Jurassic Morrison Formation.  
 MNZ Uranium, vanadium, carnotite - tyuyamunite, high vanadium, low ilme.  
 DOI 1971  
 REF U.S. Bur. of Mines, 1977, (Unpubl.). U.S. A.E.C., 1971, Production Records, Colorado.

## Red Beds

LOCATION: sec. 25, T. 48 N., R. 19 W.  
 QUAD Roc Creek 7 1/2'  
 PROD As of 1971, 35 tons had been mined at a grade of 0.11% U3O8, producing 76 lbs of U3O8, and 0.33% V2O5, producing 228 lbs of V2O5.  
 HOST Triassic Chinle Formation.  
 MNZ Uranium, vanadium.  
 DOI 1971  
 REF U.S. Bur. of Mines, 1977, (Unpubl.). U.S. A.E.C., 1971, Production Records, Colorado.

## Red Bird No. 1, 2

LOCATION: sec. 9, T. 48 N., R. 19 W.  
 LCRM U.S. A.E.C. Production Records also show sec. 4 and 5.  
 QUAD Roc Creek 7 1/2'  
 MAP MOAB  
 PROD As of 1971, 1,097 tons had been mined at a grade of 0.25% U3O8, producing 5,543 lbs



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of U308, and 0.95% V205, producing 20,939 lbs of V205.  
 HOST Jurassic Morrison Formation.  
 MNZ Carnotite - tyuyamunite, uranium, vanadium, high vanadium, low lime.  
 DOI 1971  
 REF U.S. Bur. of Mines, 1977, (Unpubl.). U.S. A.E.C., 1971, Production Records, Colorado.

## Red Bird No. 20

LOCATION: sec. 5, T. 48 N., R. 19 W.  
 LCRM U.S. A.E.C. Production Records only show sec. 24 and 25.  
 QUAD Roc Creek 7 1/2'  
 MAP MOAB  
 PROD As of 1971, 2,418 tons had been mined at a grade of 0.26% U308, producing 12,512 lbs of U308, and 0.87% V205, producing 42,107 lbs of V205.  
 HOST Jurassic Morrison Formation.  
 MNZ Uranium, vanadium, carnotite - tyuyamunite, high vanadium, low lime.  
 DOI 1971  
 REF U.S. Bur. of Mines, 1977, (Unpubl.). U.S. A.E.C., 1971, Production Records, Colorado.

## Red Cow (Wild Horse Group)

LOCATION: S1/2 sec. 2, T. 48 N., R. 18 W.  
 QUAD Red Canyon 7 1/2'  
 MAP MOAB  
 PROD As of 1971, 10 tons had been mined at a grade of 0.16% U308, producing 33 lbs of U308, and 0.76% V205, producing 152 lbs of V205.  
 HOST Jurassic Morrison Formation, Salt Wash Member.  
 MNZ Uranium, vanadium.  
 DOI 1971  
 REF U.S. Bur. of Mines, 1977, (Unpubl.). U.S. A.E.C., 1971, Production Records, Colorado.

## Red Head 1

LOCATION:  
 LCST UNLOCATABLE  
 MAP MOAB  
 PROD As of 1971, one ton had been mined at a grade of 0.10% U308, producing 2 lbs of U308, and 0.60% V205, producing 12 lbs of V205.  
 DOI 1971  
 REF U.S. A.E.C., 1971, Production Records, Colorado.

## Red Hill Group

LOCATION: sec. 35, T. 48 N., R. 20 W.  
 QUAD Mount Peale 1 NE 7 1/2', Mount Peale 1 SE 7 1/2'  
 MAP MOAB  
 MNZ Uranium, vanadium.  
 DOI 1975  
 REF U.S. Bur. of Mines, 1977, (Unpubl.).

## Red Rock

LOCATION:  
 LCST UNLOCATABLE

MAP MOAB  
 PROD As of 1971, 96 tons had been mined at a grade of 0.31% U308, producing 589 lbs of U308, and 2.31% V205, producing 4,441 lbs of V205.  
 HOST Jurassic Morrison Formation.  
 MNZ Carnotite - tyuyamunite, high vanadium, low lime.  
 DOI 1971  
 REF U.S. A.E.C., 1971, Production Records, Colorado.

## Red Rock 2

LOCATION: sec. 28, T. 48 N., R. 18 W.  
 LCRM U.S. A.E.C. Production Records also show sec. 33.  
 QUAD Red Canyon 7 1/2'  
 MAP MOAB  
 PROD As of 1971, 60 tons had been mined at a grade of 0.19% U308, producing 230 lbs of U308, and 1.58% V205, producing 1,897 lbs of V205.  
 HOST Jurassic Morrison Formation.  
 MNZ Carnotite - tyuyamunite, uranium, vanadium, high vanadium, low lime.  
 DOI 1971  
 REF U.S. Bur. of Mines, 1977, (Unpubl.). U.S. A.E.C., 1971, Production Records, Colorado.

## Red Rock 5

LOCATION: sec. 26, T. 48 N., R. 18 W.  
 QUAD Red Canyon 7 1/2'  
 MAP MOAB  
 PROD As of 1971, 496 tons had been mined at a grade of 0.24% U308, producing 2,365 lbs of U308, and 1.83% V205, producing 18,192 lbs of V205.  
 HOST Jurassic Morrison Formation.  
 MNZ Uranium, vanadium, carnotite - tyuyamunite, low vanadium, intermed. lime.  
 DOI 1971  
 REF U.S. Bur. of Mines, 1977, (Unpubl.). U.S. A.E.C., 1971, Production Records, Colorado.

## Red Sox, Yankees

LOCATION: sec. 23, T. 48 N., R. 18 W.  
 LCRM U.S. A.E.C. Production Records also show sec. 24.  
 QUAD Red Canyon 7 1/2'  
 MAP MOAB  
 PROD As of 1971, 23,153 tons had been mined at a grade of 0.22% U308, producing 103,752 lbs of U308, and 1.45% V205, producing 672,727 lbs of V205.  
 HOST Jurassic Morrison Formation.  
 MNZ Uranium, vanadium, carnotite - tyuyamunite, high vanadium, low lime.  
 DOI 1971  
 REF U.S. Bur. of Mines, 1977, (Unpubl.). U.S. A.E.C., 1971, Production Records, Colorado.

## Redbird

LOCATION: N1/2 sec. 4, T. 45 N., R. 18 W.  
 DOI 1958

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REF Hague, R. S., Goldenstein, S. J., and Blakey, E., 1958, Uranium - vanadium deposits of the Uravan Mineral Belt.

## Redbird, Yellowbird

LOCATION: sec. 33, T. 46 N., R. 19 W.  
 QUAD Anderson Mesa 7 1/2'  
 MAP MOAB  
 PROD As of 1971, 1,238 tons had been mined at a grade of 0.24% U3O8, producing 5,867 lbs of U3O8, and 1.23% V2O5, producing 30,515 lbs of V2O5.  
 HOST Jurassic Morrison Formation, Salt Wash Member; brown, fine- to coarse-grained sandstone and green mudstone with some carbonized plant remains and sparse logs.  
 MNZ Uranium, vanadium, carnotite.  
 DOI 1971  
 REF U.S. Bur. of Mines, 1977, (Unpubl.). U.S. A.E.C., 1971, Production Records, Colorado. Finch, W. I., 1967.

## Remanent 1

LOCATION: sec. 7, T. 48 N., R. 18 W.  
 LCRM U.S. A.E.C. Production Records only show sec. 6.  
 QUAD Roc Creek 7 1/2'  
 MAP MOAB  
 PROD As of 1971, 18 tons had been mined at a grade of 0.30% U3O8, producing 109 lbs of U3O8, and 0.38% V2O5, producing 137 lbs of V2O5.  
 HOST Wingate Sandstone, Triassic.  
 MNZ Uranium, vanadium, carnotite - tyuyamunite, low vanadium, low lime.  
 DOI 1971  
 REF U.S. Bur. of Mines, 1977, (Unpubl.). U.S. A.E.C., 1971, Production Records, Colorado.

## Renegade Group

LOCATION: sec. 12, T. 48 N., R. 18 W.  
 QUAD Red Canyon 7 1/2'  
 MAP MOAB  
 PROD As of 1971, 7,703 tons had been mined at a grade of 0.19% U3O8, producing 29,527 lbs of U3O8, and 0.47% V2O5, producing 73,178 lbs of V2O5.  
 HOST Jurassic Morrison Formation.  
 MNZ Uranium, vanadium, carnotite - tyuyamunite, high vanadium, intermed. lime.  
 DOI 1971  
 REF U.S. Bur. of Mines, 1977, (Unpubl.). U.S. A.E.C., 1971, Production Records, Colorado.

## Republican (Republican-Dusty, Republican and Dusty)

LOCATION: sec. 20, T. 47 N., R. 17 W.  
 QUAD Davis Mesa 7 1/2'  
 MAP MOAB  
 PROD As of 1971, 66,981 tons had been mined at a grade of 0.28% U3O8, producing 381,742 lbs of U3O8, and 1.33% V2O5, producing 1,776,238 lbs of V2O5.  
 HOST Jurassic Morrison Formation.  
 MNZ Uranium, vanadium, uraninite (coffinite), high vanadium, low lime.

DOI 1971  
 REF U.S. Bur. of Mines, 1977, (Unpubl.). U.S. A.E.C., 1971, Production Records, Colorado.

## Republican Dump

LOCATION: sec. 20, T. 47 N., R. 17 W.  
 QUAD Davis Mesa 7 1/2'  
 MAP MOAB  
 PROD Prior to 1971, 284 tons had been recovered from the Republican Mine dump at a grade of 0.06% U3O8, producing 351 lbs of U3O8, and 0.39% V2O5, producing 2,236 lbs of V2O5.  
 HOST Jurassic Morrison Formation.  
 MNZ Uranium, vanadium, uraninite (coffinite), high vanadium, low lime.  
 DOI 1971  
 REF U.S. Bur. of Mines, 1977, (Unpubl.). U.S. A.E.C., 1971, Production Records, Colorado.

## Rex Mine

LOCATION: sec. 10, T. 47 N., R. 17 W.  
 LCRM U.S. A.E.C. Production Records also show sec. 3, 4, 9.  
 QUAD Uravan 7 1/2'  
 MAP MOAB  
 PROD As of 1971, 50,141 tons had been mined at a grade of 0.27% U3O8, producing 267,387 lbs of U3O8, and 1.46% V2O5, producing 1,466,032 lbs of V2O5.  
 HOST Jurassic Morrison Formation.  
 MNZ Uranium, vanadium, carnotite - tyuyamunite, high vanadium, low lime.  
 DOI 1971  
 REF U.S. Bur. of Mines, 1977, (Unpubl.). U.S. A.E.C., 1971, Production Records, Colorado.

## Rigel Mine

LOCATION: sec. 13, T. 46 N., R. 18 W.  
 LCRM U.S. A.E.C. Production Records also show location as sec. 18, T. 46 N., R. 17 W.  
 QUAD Bull Canyon 7 1/2'  
 MAP MOAB  
 PROD As of 1971, 28,273 tons had been mined at a grade of 0.25% U3O8, producing 141,899 lbs of U3O8, and 1.16% V2O5, producing 653,559 lbs of V2O5.  
 HOST Jurassic Morrison Formation.  
 MNZ Uranium, vanadium, carnotite - tyuyamunite, high vanadium, low lime.  
 DOI 1971  
 REF U.S. Bur. of Mines, 1977, (Unpubl.). U.S. A.E.C., 1971, Production Records, Colorado.

## Rim Claims

LOCATION: sec. 23, T. 48 N., R. 18 W.  
 QUAD Red Canyon 7 1/2'  
 PROD As of 1971, 37 tons had been mined at a grade of 0.21% U3O8, producing 152 lbs of U3O8, and 2.08% V2O5, producing 1,537 lbs of V2O5.  
 MNZ Uranium, vanadium.  
 DOI 1971  
 REF U.S. Bur. of Mines, 1977, (Unpubl.). U.S. A.E.C., 1971, Production Records, Colorado.

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## Rim Rock

LOCATION: sec. 15, T. 48 N., R. 18 W.

QUAD Red Canyon 7 1/2'

MAP MOAB

PROD As of 1971, 192 tons had been mined at a grade of 0.52% U3O8, producing 1,989 lbs of U3O8, and 2.54% V2O5, producing 9,741 lbs of V2O5.

MNZ Uranium, vanadium.

DOI 1971

REF U.S. Bur. of Mines, 1977, (Unpubl.). U.S. A.E.C., 1971, Production Records, Colorado.

## Rimrock 15-17

LOCATION: sec. 2, T. 45 N., R. 18 W.

LCRM U.S. A.E.C. Production Records only show sec. 35 and 36.

QUAD Bull Canyon 7 1/2'

MAP MOAB

PROD As of 1971, 21,116 tons had been mined at a grade of 0.15% U3O8, producing 64,680 lbs of U3O8, and 1.23% V2O5, producing 519,904 lbs of V2O5.

HOST Jurassic Morrison Formation.

MNZ Uranium, vanadium, carnotite - tyuyamunite, high vanadium, low lime.

DOI 1971

REF U.S. Bur. of Mines, 1977, (Unpubl.). U.S. A.E.C., 1971, Production Records, Colorado.

## Rimrock Blues 2

LOCATION: sec. 2, T. 45 N., R. 18 W.

QUAD Bull Canyon 7 1/2'

MAP MOAB

PROD As of 1971, 795 tons had been mined at a grade of 0.08% U3O8, producing 1,202 lbs of U3O8, and 1.00% V2O5, producing 15,974 lbs of V2O5.

HOST Jurassic Morrison Formation.

MNZ Uranium, vanadium, carnotite - tyuyamunite, high vanadium, low lime.

DOI 1971

REF U.S. Bur. of Mines, 1977, (Unpubl.). U.S. A.E.C., 1971, Production Records, Colorado.

## Rimrock Blues 5

LOCATION: sec. 2, T. 45 N., R. 18 W.

QUAD Bull Canyon 7 1/2'

MAP MOAB

PROD As of 1971, 1,155 tons had been mined at a grade of 0.14% U3O8, producing 85,251 lbs of U3O8, and 1.35% V2O5, producing 30,528 lbs of V2O5.

HOST Jurassic Morrison Formation.

MNZ Uranium, vanadium, carnotite - tyuyamunite, high vanadium, low lime.

DOI 1971

REF U.S. Bur. of Mines, 1977, (Unpubl.). U.S. A.E.C., 1971, Production Records, Colorado.

## Rimrock Blues 6E

LOCATION: sec. 2, T. 45 N., R. 18 W.

LCRM U.S. A.E.C. Production Records only shows sec. 1.

QUAD Bull Canyon 7 1/2'

MAP MOAB

PROD As of 1971, 626 tons had been mined at a grade of 0.15% U3O8, producing 1,925 lbs of U3O8, and 1.15% V2O5, producing 14,453 lbs of V2O5.

HOST Jurassic Morrison Formation.

MNZ Uranium, vanadium, carnotite - tyuyamunite, high vanadium, low lime.

DOI 1971

REF U.S. Bur. of Mines, 1977, (Unpubl.). U.S. A.E.C., 1971, Production Records, Colorado.

## Rimrock Blues 9

LOCATION: sec. 2, T. 45 N., R. 18 W.

LCRM U.S. A.E.C. Production Records only show NW1/4 of sec. 1.

QUAD Bull Canyon 7 1/2'

MAP MOAB

PROD As of 1971, 5,183 tons had been mined at a grade of 0.11% U3O8, producing 11,684 lbs of U3O8, and 1.10% V2O5, producing 113,807 lbs of V2O5.

HOST Jurassic Morrison Formation.

MNZ Uranium, vanadium, carnotite - tyuyamunite, high vanadium, low lime.

DOI 1971

REF U.S. Bur. of Mines, 1977, (Unpubl.). U.S. A.E.C., 1971, Production Records, Colorado.

## Rimrock Blues 12

LOCATION: sec. 2, T. 45 N., R. 18 W.

LCRM U.S. A.E.C. Production Records also show sec. 1.

QUAD Bull Canyon 7 1/2'

MAP MOAB

HOST Jurassic Morrison Formation.

MNZ Uranium, vanadium, carnotite - tyuyamunite, high vanadium, low lime.

DOI 1971

REF U.S. Bur. of Mines, 1977, (Unpubl.). U.S. A.E.C., 1971, Production Records, Colorado.

## Rimrock Blues 20

LOCATION: sec. 2, T. 45 N., R. 18 W.

LCRM U.S. A.E.C. Production Records only show location as being T. 46 N., R. 18 W.

QUAD Bull Canyon 7 1/2'

MAP MOAB

PROD As of 1971, 268 tons had been mined at a grade of 0.12% U3O8, producing 663 lbs of U3O8, and 0.75% U3O8, producing 3,996 lbs of V2O5.

HOST Jurassic Morrison Formation.

MNZ Uranium, vanadium, carnotite - tyuyamunite, high vanadium, low lime.

DOI 1971

REF U.S. Bur. of Mines, 1977, (Unpubl.). U.S. A.E.C., 1971, Production Records, Colorado.

## Rimrock Blues 6, 14

LOCATION: sec. 3, T. 45 N., R. 18 W.

LCRM U.S. A.E.C. Production Records only show sec. 1.

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QUAD Bull Canyon 7 1/2'  
 MAP MOAB  
 PROD As of 1971, 9,166 tons had been mined at a grade of 0.19% U3O8, producing 35,376 lbs of U3O8, and 1.31% V2O5, producing 239,865 lbs of V2O5.  
 HOST Jurassic Morrison Formation.  
 MNZ Uranium, vanadium, carnotite - tyuyamunite, high vanadium, low lime.  
 DOI 1971  
 REF U.S. Bur. of Mines, 1977, (Unpubl.). U.S. A.E.C., 1971, Production Records, Colorado.

## Rimrock Group

LOCATION: sec. 16, T. 45 N., R. 18 W.  
 QUAD Bull Canyon 7 1/2'  
 MAP MOAB  
 PROD As of 1971, 63,977 tons had been mined at a grade of 0.22% U3O8, producing 279,921 lbs of U3O8, and 1.26% V2O5, producing 1,608,119 lbs of V2O5.  
 HOST Jurassic Morrison Formation.  
 MNZ Uranium, vanadium, carnotite - tyuyamunite, high vanadium, low lime.  
 DOI 1971  
 REF U.S. Bur. of Mines, 1977, (Unpubl.). U.S. A.E.C., 1971, Production Records, Colorado.

## Rimrock No. 5

LOCATION: sec. 15, T. 45 N., R. 18 W.  
 QUAD Bull Canyon 7 1/2'  
 MAP MOAB  
 PROD As of 1971, 26,905 tons had been mined at a grade of 0.16% U3O8, producing 85,251 lbs of U3O8, and 1.35% V2O5, producing 723,837 lbs of V2O5.  
 HOST Jurassic Morrison Formation.  
 MNZ Uranium, vanadium, carnotite - tyuyamunite, high vanadium, low lime.  
 DOI 1971  
 REF U.S. Bur. of Mines, 1977, (Unpubl.). U.S. A.E.C., 1971, Production Records, Colorado.

## Riverside

LOCATION: SW1/4 sec. 20, T. 48 N., R. 17 W.  
 DOI 1958  
 REF Hague, R. S., Goldenstein, S. J., and Blakey, E., 1958, Uranium - vanadium deposits of the Uravan Mineral Belt.

## Rock Raven

LOCATION: sec. 35, T. 48 N., R. 17 W.  
 QUAD Uravan 7 1/2'  
 MAP MOAB  
 PROD As of 1971, 4,190 tons had been mined at a grade of 0.18% U3O8, producing 15,221 lbs of U3O8, and 1.66% V2O5, producing 139,119 lbs of V2O5.  
 HOST Brushy Basin Member of the Jurassic Morrison Formation.  
 MNZ Uranium, vanadium, carnotite - tyuyamunite, high vanadium, low lime.  
 DOI 1971  
 REF U.S. Bur. of Mines, 1977, (Unpubl.). U.S. A.E.C., 1971, Production Records, Colorado.

## Rodman No. 8

LOCATION: SE1/4 sec. 29, T. 46 N., R. 17 W.  
 QUAD Bull Canyon 7 1/2'  
 MAP MOAB  
 PROD Drillhole (no production).  
 RMKS See TEM-882.  
 DOI 1971  
 REF U.S. A.E.C., 1971, Production Records, Colorado.

## Roosevelt

LOCATION: sec. 3, T. 45 N., R. 19 W.  
 DOI 1958  
 REF Hague, R. S., Goldenstein, S. J., and Blakey, E., 1958, Uranium - vanadium deposits of the Uravan Mineral Belt.

## Rosebud

LOCATION: sec. 13, T. 48 N., R. 18 W.  
 QUAD Red Canyon 7 1/2'  
 MAP MOAB  
 PROD As of 1971, 23 tons had been mined at a grade of 0.13% U3O8, producing 61 lbs of U3O8, and 0.73% V2O5, producing 336 lbs of V2O5.  
 HOST Jurassic Morrison Formation.  
 MNZ Uranium, vanadium.  
 DOI 1971  
 REF U.S. Bur. of Mines, 1977, (Unpubl.). U.S. A.E.C., 1971, Production Records, Colorado.

## Royal Oak

LOCATION: sec. 10, T. 45 N., R. 18 W.  
 QUAD Bull Canyon 7 1/2'  
 MAP MOAB  
 PROD As of 1971, 17 tons had been mined at a grade of 0.07% U3O8, producing 24 lbs of U3O8, and 0.77% V2O5, producing 263 lbs of V2O5.  
 HOST Jurassic Morrison Formation.  
 MNZ Uranium, vanadium.  
 DOI 1971  
 REF U.S. Bur. of Mines, 1977, (Unpubl.). U.S. A.E.C., 1971, Production Records, Colorado.

## Rubadale (Rubedale)

LOCATION: sec. 28, T. 47 N., R. 17 W.  
 LCRM U.S. A.E.C. Production Records also show sec. 33, T. 47 N., R. 17 W.  
 QUAD Davis Mesa 7 1/2' and Uravan 7 12'  
 MAP MOAB  
 PROD As of 1971, 125 tons had been mined at a grade of 0.13% U3O8, producing 332 lbs of U3O8, and 1.34% V2O5, producing 3,348 lbs of V2O5.  
 HOST Jurassic Morrison Formation.  
 MNZ Uranium, vanadium, carnotite - tyuyamunite, high vanadium, low lime.  
 DOI 1971  
 REF U.S. Bur. of Mines, 1977, (Unpubl.). U.S. A.E.C., 1971, Production Records, Colorado.

# MONTROSE COUNTY

## Rusty 5

LOCATION: sec. 6, T. 47 N., R. 17 W.  
 QUAD Davis Mesa 7 1/2'  
 MAP MOAB  
 PROD As of 1971, 3 tons had been mined at a grade of 0.40% U3O8, producing 24 lbs of U3O8, and 2.82% V2O5, producing 169 lbs of V2O5.  
 MNZ Uranium, vanadium.  
 DOI 1971  
 REF U.S. Bur. of Mines, 1977, (Unpubl.). U.S. A.E.C., 1971, Production Records, Colorado.

## Ruth K (Pine Group)

LOCATION: sec. 36, T. 47 N., R. 17 W.  
 QUAD Uravan 7 1/2'  
 MAP MOAB  
 MNZ Uranium, vanadium.  
 DOI 1975  
 REF U.S. Bur. of Mines, 1977, (Unpubl.).

## Rye (Rye No. 8)

LOCATION: sec. 32, T. 46 N., R. 18 W.  
 QUAD Anderson Mesa 7 1/2'  
 MAP MOAB  
 MNZ Uranium, vanadium.  
 DOI 1975  
 REF U.S. Bur. of Mines, 1977, (Unpubl.).

## Salt Lake Extension

LOCATION: sec. 28, T. 48 N., R. 17 W.  
 LCRM Also sec. 29 and 32. Club Mesa locality, Uravan district.  
 QUAD Red Canyon 7 1/2', Atkinson Creek 7 1/2'  
 MAP MOAB  
 MNZ Uranium, vanadium.  
 DOI 1975  
 REF U.S. Bur. of Mines, 1977, (Unpubl.).

## Sam

LOCATION: sec. 36, T. 46 N., R. 18 W.  
 LCRM U.S. A.E.C. Production Records also show sec. 31, T. 46 N., R. 17 W.  
 QUAD Bull Canyon 7 1/2'  
 MAP MOAB  
 PROD As of 1971, 6,648 tons had been mined at a grade of 0.15% U3O8, producing 19,299 lbs of U3O8, and 0.15% V2O5, producing 138,744 lbs of V2O5.  
 HOST Jurassic Morrison Formation, Salt Wash Member.  
 MNZ Uranium, vanadium, carnotite - tyuyamunite, high vanadium, low lime.  
 DOI 1971  
 REF U.S. Bur. of Mines, 1977, (Unpubl.). U.S. A.E.C., 1971, Production Records, Colorado.

## Sandy

LOCATION: sec. 20, T. 48 N., R. 17 W.  
 LCRM U.S. A.E.C. Production Records also show sec. 29.  
 QUAD Red Canyon 7 1/2'  
 MAP MOAB  
 PROD As of 1971, 38,129 tons had been mined at a grade of 0.26% U3O8, producing 197,673

lbs of U3O8, and 1.21% V2O5, producing 921,623 lbs of V2O5.

HOST Jurassic Morrison Formation.  
 MNZ Uranium, vanadium, carnotite - tyuyamunite, high vanadium, low lime.  
 DOI 1971  
 REF U.S. Bur. of Mines, 1977, (Unpubl.). U.S. A.E.C., 1971, Production Records, Colorado.

## Saturn (Pluto - Saturn)

LOCATION: N1/2 sec. 13, T. 46 N., R. 18 W.  
 LCST UNLOCATABLE  
 LCRM Monogram Mesa, Bull Canyon district.  
 MAP MOAB  
 PROD As of 1971, 11,156 tons had been mined at a grade of 0.18% U3O8, producing 40,301 lbs of U3O8, and 0.86% V2O5, producing 192,354 lbs of V2O5.  
 HOST Jurassic Morrison Formation.  
 MNZ Uraninite (coffinite), high vanadium, low lime.  
 RMKS (See PRRs under "Planet Group")  
 DOI 1971  
 REF U.S. A.E.C., 1971, Production Records, Colorado.

## Saucer Basin Group (Rust 3, Peggy)

LOCATION: sec. 6, T. 47 N., R. 17 W.  
 LCRM U.S. A.E.C. Production Records also show sec. 7.  
 QUAD Davis Mesa 7 1/2'  
 MAP MOAB  
 PROD As of 1971, 2,139 tons had been mined at a grade of 0.24% U3O8, producing 10,425 lbs of U3O8, and 1.30% V2O5, producing 55,554 lbs of V2O5.  
 MNZ Uranium, vanadium.  
 DOI 1971  
 REF U.S. Bur. of Mines, 1977, (Unpubl.). U.S. A.E.C., 1971, Production Records, Colorado.

## School Marm

LOCATION: sec. 2, T. 45 N., R. 18 W.  
 QUAD Bull Canyon 7 1/2'  
 MAP MOAB  
 PROD As of 1971, 342 tons had been mined at a grade of 0.20% U3O8, producing 1,340 lbs of U3O8, and 1.38% V2O5, producing 9,425 lbs of V2O5.  
 HOST Jurassic Morrison Formation.  
 MNZ Uranium, vanadium, carnotite - tyuyamunite, high vanadium, low lime.  
 DOI 1971  
 REF U.S. Bur. of Mines, 1977, (Unpubl.). U.S. A.E.C., 1971, Production Records, Colorado.

## Second National Bank

LOCATION: sec. 28, T. 47 N., R. 17 W.  
 LCRM U.S. A.E.C. Production Records also show sec. 21.  
 QUAD Davis Mesa 7 1/2', Uravan 7 1/2'  
 MAP MOAB  
 PROD By 1971, 696 tons had been mined at a grade of 0.24% U3O8, producing 3,348 lbs of U3O8, and 0.82% V2O5, producing 11,466 lbs of V2O5.

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MNZ Uranium, vanadium.  
DOI 1971  
REF U.S. Bur. of Mines, 1977, (Unpubl.). U.S. A.E.C., 1971, Production Records, Colorado.

## Sego Lily Lou

LOCATION: sec. 32, T. 47 N., R. 19 W.  
LCRM U.S. A.E.C. Production Records also show sec. 28 and 33, Wray Mesa, Paradox district.  
QUAD Paradox 7 1/2'  
PROD 34 tons mined at a grade of .17% U3O8, producing 115 lbs of U3O8, 1.50% V2O5, producing 1,023 lbs of V2O5.  
MNZ Uranium, vanadium.  
DOI 1971  
REF U.S. Bur. of Mines, 1977, (Unpubl.). U.S. A.E.C., 1971, Production Records, Colorado.

## September Morn

LOCATION: sec. 14, T. 45 N., R. 18 W.  
LCRM U.S. A.E.C. Production Records also show sec. 11 and 16.  
QUAD Bull Canyon 7 1/2'  
MAP MOAB  
PROD By 1971, 10,503 tons had been mined at a grade of 0.23% U3O8, producing 49,120 lbs of U3O8, and 2.06% V2O5, producing 433,324 lbs of V2O5.  
HOST Jurassic Morrison Formation.  
MNZ Uranium, vanadium, carnotite - tyuyamunite, high vanadium, low lime.  
DOI 1971  
REF U.S. Bur. of Mines, 1977, (Unpubl.). U.S. A.E.C., 1971, Production Records, Colorado.

## Sesmo

LOCATION: NE1/4 sec. 24, T. 47 N., R. 18 W.  
LCRM U.S. A.E.C. Production Records also show locations as NW1/4 sec. 19, T. 47 N., R. 18 W. and SW1/4 sec. 18, S1/2 sec. 13, T. 47 N., R. 17 W.  
QUAD Davis Mesa 7 1/2'  
MAP MOAB  
PROD By 1971, 2,054 tons had been mined at a grade of 0.20% U3O8, producing 8,231 lbs of U3O8, and 0.93% V2O5, producing 38,204 lbs of V2O5.  
HOST Jurassic Morrison Formation.  
MNZ Uranium, vanadium, carnotite - tyuyamunite, high vanadium, low lime.  
DOI 1971  
REF U.S. Bur. of Mines, 1977, (Unpubl.). U.S. A.E.C., 1971, Production Records, Colorado.

## Shadow

LOCATION: sec. 20, T. 48 N., R. 18 W.  
LCRM Also sec. 21.  
QUAD Roc Creek 7 1/2' and Red Canyon 7 1/2'  
MAP MOAB  
PROD By 1971, 8 tons had been mined at a grade of 0.32% U3O8, producing 52 lbs of U3O8, and 0.64% V2O5, producing 102 lbs of V2O5.  
HOST Jurassic Morrison Formation, Salt Wash Member.  
MNZ Uranium, vanadium.

DOI 1971  
REF U.S. Bur. of Mines, 1977, (Unpubl.). U.S. A.E.C., 1971, Production Records, Colorado.

## Shadow Rock

LOCATION: sec. 1, T. 48 N., R. 19 W.  
QUAD Roc Creek 7 1/2'  
MAP MOAB  
PROD By 1971, 485 tons had been mined at a grade of 0.40% U3O8, producing 3,910 lbs of U3O8, and 0.59% V2O5, producing 5,678 lbs of V2O5.  
MNZ Uranium, vanadium.  
DOI 1971  
REF U.S. Bur. of Mines, 1977, (Unpubl.). U.S. A.E.C., 1971, Production Records, Colorado.

## Shamrock

LOCATION: sec. 29, T. 48 N., R. 17 W.  
QUAD Red Canyon 7 1/2'  
MAP MOAB  
PROD By 1971, 6,761 tons had been mined at a grade of 0.26% U3O8, producing 35,339 lbs of U3O8, and 1.25% V2O5, producing 168,530 lbs of V2O5.  
HOST Jurassic Morrison Formation.  
MNZ Uranium, vanadium, carnotite - tyuyamunite, high vanadium, low lime.  
DOI 1971  
REF U.S. Bur. of Mines, 1977, (Unpubl.). U.S. A.E.C., 1971, Production Records, Colorado. Finch, W. I., 1967, p. 11.

## Shamrock (Shamrock and Roadside)

LOCATION: sec. 35, T. 46 N., R. 18 W.  
LCRM U.S. A.E.C. Production Records also show sec. 25, 26 and 36.  
QUAD Bull Canyon 7 1/2'  
MAP MOAB  
PROD By 1971, 25 tons had been mined at a grade of 0.55% U3O8, producing 267 lbs of U3O8, and 2.25% V2O5, producing 1,125 lbs of V2O5.  
HOST Jurassic Morrison Formation.  
MNZ Uranium, vanadium, carnotite - tyuyamunite, high vanadium, low lime.  
DOI 1971  
REF U.S. Bur. of Mines, 1977, (Unpubl.). U.S. A.E.C., 1971, Production Records, Colorado.

## Sharkey

LOCATION: sec. 20, T. 47 N., R. 17 W.  
QUAD Davis Mesa 7 1/2'  
MAP MOAB  
PROD By 1971, 3,004 tons had been mined at a grade of 0.16% U3O8, producing 9,815 lbs of U3O8, and 0.82% V2O5, producing 49,097 lbs of V2O5.  
HOST Jurassic Morrison Formation.  
MNZ Uranium, vanadium, carnotite - tyuyamunite, high vanadium, low lime.  
DOI 1971  
REF U.S. Bur. of Mines, 1977, (Unpubl.). U.S. A.E.C., 1971, Production Records, Colorado.

## Shooting Star

LOCATION: sec. 25, T. 48 N., R. 18 W.

# MONTROSE COUNTY

QUAD Red Canyon 7 1/2'  
 MAP MOAB  
 PROD By 1971, 18 tons had been mined at a grade of 0.37% U308, producing 134 lbs of U308, and 2.12% V205, producing 764 lbs of V205.  
 HOST Jurassic Morrison Formation.  
 MNZ Uranium, vanadium, carnotite - tyuyamunite, high vanadium, low lime.  
 DOI 1971  
 REF U.S. Bur. of Mines, 1977, (Unpubl.). U.S. A.E.C., 1971, Production Records, Colorado.

## Shriver

LOCATION:  
 LCST UNLOCATABLE  
 LCRM U.S. A.E.C. Production Records show this located in Bull Canyon quadrangle.  
 QUAD Bull Canyon 7 1/2'  
 MAP MOAB  
 PROD By 1971, 193 tons had been mined at a grade of 0.13% U308, producing 496 lbs of U308, and 1.29% V205, producing 4,984 lbs of V205.  
 HOST Jurassic Morrison Formation.  
 DOI 1971  
 REF U.S. A.E.C., 1971, Production Records, Colorado.

## Slim Chance

LOCATION:  
 LCST UNLOCATABLE  
 MAP MOAB  
 PROD By 1971, 28 tons had been mined at a grade of 0.22% U308, producing 126 lbs of U308, and 2.24% V205, producing 1,252 lbs of V205.  
 HOST Jurassic Morrison Formation, Salt Wash Member.  
 DOI 1971  
 REF U.S. A.E.C., 1971, Production Records, Colorado.

## Smoky (Starlight Group)

LOCATION: sec. 8, T. 47 N., R. 17 W.  
 LCRM This deposit lies in the Bull Canyon district.  
 QUAD Davis Mesa 7 1/2'  
 MAP MOAB  
 PROD By 1971, 2 tons had been mined at a grade of 0.22% U308, producing 9 lbs of U308, and 0.15% V205, producing 6 lbs of V205.  
 HOST Jurassic Morrison Formation, Salt Wash Member.  
 MNZ Uranium, vanadium, carnotite - tyuyamunite, high vanadium, intermed. lime.  
 DOI 1971  
 REF U.S. Bur. of Mines, 1977, (Unpubl.). U.S. A.E.C., 1971, Production Records, Colorado.

## Socket

LOCATION: sec. 1, T. 48 N., R. 19 W.  
 QUAD Red Creek 7 1/2'  
 MAP MOAB  
 PROD By 1971, one ton had been mined at a grade of 0.45% U308, producing 9 lbs of U308, and 1.65% V205, producing 33 lbs of V205.  
 HOST Jurassic Morrison Formation, Salt Wash Member.  
 MNZ Uranium, vanadium  
 DOI 1971  
 REF U.S. Bur. of Mines, 1977, (Unpubl.). U.S. A.E.C., 1971, Production Records, Colorado.

## Soldier Boy

LOCATION: sec. 11, T. 47 N., R. 20 W.  
 LCRM The deposit extends to sec. 12.  
 QUAD Mount Peale 1 SE 7 1/2'  
 MAP MOAB  
 PROD As of 1971, 883 tons had been mined at a grade of 0.28% U308, producing 4,910 lbs of U308, and 2.06% V205, producing 36,295 lbs of V205.  
 MNZ Uranium, vanadium.  
 DOI 1971  
 REF U.S. Bur. of Mines, 1977, (Unpubl.). U.S. A.E.C., 1971, Production Records, Colorado.

## Spencer-Fairy Princess

LOCATION: sec. 10, T. 47 N., R. 17 W.  
 QUAD Uravan 7 1/2'  
 MAP MOAB  
 PROD No production.  
 DOI 1971  
 REF U.S. A.E.C., 1971, Production Records, Colorado.

## Sphinx

LOCATION: sec. 20, T. 47 N., R. 17 W.  
 QUAD Davis Mesa 7 1/2'  
 MAP MOAB  
 PROD By 1971, 14,934 tons had been mined at a grade of 0.33% U308, producing 97,813 lbs of U308, and 1.64% V205, producing 489,691 lbs of V205.  
 HOST Jurassic Morrison Formation.  
 MNZ Uranium, vanadium, carnotite - tyuyamunite, high vanadium, low lime.  
 DOI 1971  
 REF U.S. Bur. of Mines, 1977, (Unpubl.). U.S. A.E.C., 1971, Production Records, Colorado.

## Sphinx Dump

LOCATION: sec. 20, T. 47 N., R. 17 W.  
 QUAD Davis Mesa 7 1/2'  
 MAP MOAB  
 PROD Prior to 1971, 335 tons had been recovered from the Sphinx Mine dump at a grade of 0.07% U308, producing 447 lbs of U308, and 0.45% V205, producing 3,019 lbs of V205.  
 HOST Jurassic Morrison Formation.  
 MNZ Uranium, vanadium, carnotite - tyuyamunite, high vanadium, low lime.  
 DOI 1971  
 REF U.S. Bur. of Mines, 1977, (Unpubl.). U.S. A.E.C., 1971, Production Records, Colorado.

## St. Patrick

LOCATION: sec. 20, T. 47 N., R. 17 W.  
 QUAD Davis Mesa 7 1/2'  
 MAP MOAB  
 PROD By 1971, 9,471 tons had been mined at a grade of 0.29% U308, producing 54,918 lbs of U308, and 1.26% V205, producing 238,920 lbs of V205.  
 HOST Jurassic Morrison Formation.  
 MNZ Uranium, vanadium, carnotite - tyuyamunite, high vanadium, low lime.

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DOI 1971  
REF U.S. Bur. of Mines, 1977, (Unpubl.). U.S. A.E.C., 1971, Production Records, Colorado.

## St. Patrick 9

LOCATION: sec. 10, T. 47 N., R. 20 W.  
LCRM Also sec. 11.  
QUAD Mount Peale 1 SE 7 1/2'  
MAP MOAB  
PROD By 1971, 8,462 tons had been mined at a grade of 0.21% U3O8, producing 34,779 lbs of U3O8, and 1.27% V2O5 producing 215,536 lbs of V2O5.  
HOST Jurassic Morrison Formation.  
MNZ Carnotite - tyuyamunite, low vanadium, low lime.  
DOI 1971  
REF U.S. A.E.C., 1971, Production Records, Colorado.

## St. Patrick No. 7

LOCATION: sec. 11, T. 47 N., R. 20 W.  
QUAD Mount Peale 1 SE 7 1/2'  
MAP MOAB  
MNZ Uranium, vanadium.  
DOI 1975  
REF U.S. Bur. of Mines, 1977, (Unpubl.).

## Star 3, 4 (Wright Group)

LOCATION: sec. 28, T. 48 N., R. 17 W.  
QUAD Red Canyon 7 1/2' and Atkinson Creek 7 1/2'  
MAP MOAB  
PROD By 1971, 13,021 tons had been mined at a grade of 0.32% U3O8, producing 84,071 lbs of U3O8, and 1.70% V2O5, producing 442,217 lbs of V2O5.  
HOST Jurassic Morrison Formation.  
MNZ Uranium, vanadium, carnotite - tyuyamunite, high vanadium, low lime.  
DOI 1971  
REF U.S. Bur. of Mines, 1977, (Unpubl.). U.S. A.E.C., 1971, Production Records, Colorado.

## Star No. 3 Dump

LOCATION: sec. 28, T. 48 N., R. 17 W.  
QUAD Red Canyon 7 1/2' and Atkinson Creek 7 1/2'  
MAP MOAB  
PROD By 1971, 98 tons had been mined at a grade of 0.08% U3O8, producing 158 lbs of U3O8, and 0.84% V2O5, producing 1,642 lbs of V2O5.  
HOST Jurassic Morrison Formation.  
MNZ Uranium, vanadium, carnotite - tyuyamunite, high vanadium, low lime.  
DOI 1971  
REF U.S. Bur. of Mines, 1977, (Unpubl.). U.S. A.E.C., 1971, Production Records, Colorado.

## Star No. 5 (Star No. 5 & 6, Movie Star, Polar Star)

LOCATION: sec. 21, T. 48 N., R. 17 W.  
LCRM U.S. A.E.C. Production Records show only sec. 28.  
QUAD Red Canyon 7 1/2' and Atkinson Creek 7 1/2'  
MAP MOAB

PROD By 1971, 31,766 tons had been mined at a grade of 0.24% U3O8, producing 154,374 lbs of U3O8, and 1.04% V2O5, producing 663,681 lbs of V2O5.

HOST Jurassic Morrison Formation.  
MNZ Uranium, vanadium, carnotite - tyuyamunite, high vanadium, low lime.

DOI 1971  
REF U.S. Bur. of Mines, 1977, (Unpubl.). U.S. A.E.C., 1971, Production Records, Colorado.

## Star No. 10

LOCATION: sec. 27, T. 48 N., R. 17 W.  
LCRM Also sec. 28.  
QUAD Atkinson Creek 7 1/2' and Red Canyon 7 1/2'  
MAP MOAB  
HOST Jurassic Morrison Formation.  
MNZ Uranium, vanadium, carnotite - tyuyamunite, high vanadium, low lime.  
DOI 1971  
REF U.S. Bur. of Mines, 1977, (Unpubl.). U.S. A.E.C., 1971, Production Records, Colorado.

## Star No. 13, 14 (Wright Group)

LOCATION: N1/2 sec. 28, T. 48 N., R. 17 W.  
QUAD Red Canyon 7 1/2' and Atkinson Creek 7 1/2'  
MAP MOAB  
PROD By 1971, 13,377 tons had been mined at a grade of 0.21% U3O8, producing 56,362 lbs of U3O8, and 0.97% V2O5, producing 258,901 lbs of V2O5.  
HOST Jurassic Morrison Formation.  
MNZ Uranium, vanadium, carnotite - tyuyamunite, high vanadium, low lime.  
DOI 1971  
REF U.S. Bur. of Mines, 1977, (Unpubl.). U.S. A.E.C., 1971, Production Records, Colorado.

## Starlight

LOCATION: sec. 33, T. 46 N., R. 18 W.  
QUAD Bull Canyon 7 1/2'  
MAP MOAB  
PROD By 1971, 1,162 tons had been mined at a grade of 0.22% U3O8, producing 5,139 lbs of U3O8, and 1.57% V2O5, producing 36,526 lbs of V2O5.  
MNZ Uranium, vanadium.  
DOI 1971  
REF U.S. Bur. of Mines, 1977, (Unpubl.). U.S. A.E.C., 1971, Production Records, Colorado.

## Starlight 1

LOCATION: sec. 33, T. 46 N., R. 18 W.  
QUAD Bull Canyon 7 1/2'  
MAP MOAB  
PROD By 1971, 129 tons had been mined at a grade of 0.14% U3O8, producing 355 lbs of U3O8, and 1.45% V2O5, producing 3,749 lbs of V2O5.  
MNZ Uranium, vanadium.  
DOI 1971  
REF U.S. Bur. of Mines, 1977, (Unpubl.). U.S. A.E.C., 1971, Production Records, Colorado.



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## Starlight 2

LOCATION: sec. 33, T. 46 N., R. 18 W.

QUAD Bull Canyon 7 1/2'

MAP MOAB

PROD By 1971, 65 tons had been mined at a grade of 0.36% U3O8, producing 468 lbs of U3O8, and 3.04% V2O5, producing 3,954 lbs of V2O5.

MNZ Uranium, vanadium.

DOI 1971

REF U.S. Bur. of Mines, 1977, (Unpubl.). U.S. A.E.C., 1971, Production Records, Colorado.

## Starlight 4

LOCATION: sec. 32, T. 46 N., R. 18 W.

QUAD Anderson Mesa 7 1/2'

MAP MOAB

PROD By 1971, 5 tons had been mined at a grade of 0.17% U3O8, producing 17 lbs of U3O8, and 1.38% V2O5, producing 138 lbs of V2O5.

MNZ Uranium, vanadium.

DOI 1971

REF U.S. Bur. of Mines, 1977, (Unpubl.). U.S. A.E.C., 1971, Production Records, Colorado.

## Starlight 8

LOCATION: sec. 33, T. 46 N., R. 18 W.

QUAD Bull Canyon 7 1/2'

MAP MOAB

PROD By 1971, 339 tons had been mined at a grade of 0.33% U3O8, producing 2,246 lbs of U3O8, and 1.71% V2O5, producing 11,620 lbs of V2O5.

MNZ Uranium, vanadium.

DOI 1971

REF U.S. Bur. of Mines, 1977, (Unpubl.). U.S. A.E.C., 1971, Production Records, Colorado.

## Steer 1, 8

LOCATION: sec. 14, T. 46 N., R. 18 W.

LCRM Also sec. 15, 21, 29 and 20.

QUAD Bull Canyon 7 1/2'

MAP MOAB

PROD By 1971, 6,911 tons had been mined at a grade of 0.33% U3O8, producing 45,784 lbs of U3O8, and 1.59% V2O5, producing 219,512 lbs of V2O5.

HUST Jurassic Morrison Formation.

MNZ Carnotite - tyuyamunite, high vanadium, Intermed. lime.

DOI 1971

REF U.S. A.E.C., 1971, Production Records, Colorado.

## Straight Arrow

LOCATION: sec. 3, T. 46 N., R. 17 W.

LCRM U.S. A.E.C. Production Records show location as sec. 34, T. 47 N., R. 17 W.

QUAD Uravan 7 1/2'

MAP MOAB

PROD By 1971, 50 tons had been mined at a grade of 0.17% U3O8, producing 170 lbs of U3O8, and 1.08% V2O5, producing 1,076 lbs of V2O5.

HUST Jurassic Morrison Formation.

MNZ Uranium, vanadium.

DOI 1971

REF U.S. Bur. of Mines, 1977, (Unpubl.). U.S. A.E.C., 1971, Production Records, Colorado.

## Summer Mine

LOCATION: sec. 2, T. 47 N., R. 20 W.

LCRM This deposit lies in the La Sal Creek area.

QUAD Mount Peale 1 SE 7 1/2'

MAP MOAB

PROD By 1971, 8 tons had been mined at a grade of 0.07% U3O8, producing 11 lbs of U3O8, and 0.99% V2O5, producing 159 lbs of V2O5.

HUST Jurassic Morrison Formation, Brushy Basin Member.

MNZ Uranium, vanadium.

DOI 1971

REF U.S. Bur. of Mines, 1977, (Unpubl.). U.S. A.E.C., 1971, Production Records, Colorado.

## Sunbeam Group

LOCATION: sec. 10, T. 47 N., R. 17 W.

LCRM U.S. A.E.C. Production Records also show sec. 9, 15 and 15.

QUAD Uravan 7 1/2'

MAP MOAB

PROD As of 1971, 29,673 tons had been mined at a grade of 0.34% U3O8, producing 199,515 lbs of U3O8, and 2.01% V2O5, producing 1,193,320 lbs of V2O5.

HUST Jurassic Morrison Formation.

MNZ Uranium, vanadium, uraninite (coffinite), high vanadium, low lime.

DOI 1971

REF U.S. Bur. of Mines, 1977, (Unpubl.). U.S. A.E.C., 1971, Production Records, Colorado.

## Sunflower (Sunflower 2, Brammer Group)

LOCATION: sec. 16, T. 47 N., R. 17 W.

LCRM U.S. A.E.C. Production Records also show sec. 15.

QUAD Davis Mesa 7 1/2' and Uravan 7 1/2'

MAP MOAB

PROD By 1971, 5,455 tons had been mined at a grade of 0.28% U3O8, producing 30,617 lbs of U3O8, and 1.02% V2O5, producing 110,853 lbs of V2O5.

HUST Jurassic Morrison Formation.

MNZ Uranium, vanadium, carnotite - tyuyamunite, high vanadium, low lime.

DOI 1971

REF U.S. Bur. of Mines, 1977, (Unpubl.). U.S. A.E.C., 1971, Production Records, Colorado.

## Sunnyside

LOCATION: sec. 24, T. 46 N., R. 18 W.

LCRM This deposit lies in Monogram Mesa, Bull Canyon district.

QUAD Bull Canyon 7 1/2'

MAP MOAB

PROD By 1971, 7 tons had been mined at a grade of 0.61% U3O8, producing 85 lbs of U3O8, and 2.40% V2O5, producing 336 lbs of V2O5.

HUST Jurassic Morrison Formation, Salt Wash Member.

MNZ Uranium, vanadium.

# MONTROSE COUNTY

DOI 1971  
REF U.S. Bur. of Mines, 1977, (Unpubl.). U.S. A.E.C., 1971, Production Records, Colorado.

## Sunrise Group (Sunrise No. 2, 3, 4, 5)

LOCATION: sec. 34, T. 46 N., R. 18 W.  
QUAD Bull Canyon 7 1/2'  
MAP MOAB  
PROD By 1971, 8,269 tons had been mined at a grade of 0.37% U308, producing 61,623 lbs of U308, and 1.92% V205, producing 317,193 lbs of V205.  
HOST Jurassic Morrison Formation.  
MNZ Uranium, vanadium, carnotite - tyuyamunite, high vanadium, low lime.  
DOI 1971  
REF U.S. Bur. of Mines, 1977, (Unpubl.). U.S. A.E.C., 1971, Production Records, Colorado.

## Sunset

LOCATION: sec. 32, T. 46 N., R. 18 W.  
LCRM Bull Canyon district, Starlight Group area.  
QUAD Anderson Mesa 7 1/2'  
MAP MOAB  
PROD By 1971, 136 tons had been mined at a grade of 0.27% U308, producing 734 lbs of U308, and 1.96% V205, producing 5,324 lbs of V205.  
HOST Jurassic Morrison Formation, Salt Wash Member.  
MNZ Uranium, vanadium.  
DOI 1971  
REF U.S. Bur. of Mines, 1977, (Unpubl.). U.S. A.E.C., 1971, Production Records, Colorado.

## Surprise (Joe Jr.)

LOCATION: sec. 4, T. 47 N., R. 17 W.  
LCRM U.S. A.E.C. Production Records show location as sec. 33 and 34, T. 47 N., R. 17 W.  
QUAD Davis Mesa 7 1/2', Uravan 7 1/2'  
MAP MOAB  
PROD By 1971, 10 tons had been mined at a grade of 0.43% U308, producing 86 lbs of U308, and 2.59% V205, producing 518 lbs of V205.  
HOST Jurassic Morrison Formation, Salt Wash Member.  
MNZ Uranium, vanadium.  
DOI 1971  
REF U.S. Bur. of Mines, 1977, (Unpubl.). U.S. A.E.C., 1971, Production Records, Colorado.

## Swindler Dump

LOCATION:  
PROD Prior to 1971, 78 tons were recovered from the Swindler Mine dump at a grade of 0.08% U308.  
DOI 1971  
REF U.S. A.E.C., 1971, Production Records, Colorado.

## Sylveys Pocket (Sylvia's Pocket)

LOCATION: UNLOCATABLE  
LCRM This deposit lies in Gypsum Valley.  
MAP MOAB  
PROD By 1971, 37 tons had been mined at a grade of 0.23% U308, producing 172 lbs of U308, and 1.90% V205, producing 1,408 lbs of V205.

HUST Jurassic Morrison Formation, Salt Wash Member.  
DOI 1971  
REF U.S. A.E.C., 1971, Production Records, Colorado.

## Tango

LOCATION: sec. 18, T. 46 N., R. 17 W.  
QUAD Bull Canyon 7 1/2'  
MAP MOAB  
PROD By 1971, 534 tons had been mined at a grade of 0.28% U308, producing 2,992 lbs of U308, and 1.12% V205, producing 11,952 lbs of V205.  
MNZ Uranium, vanadium.  
DOI 1971  
REF U.S. Bur. of Mines, 1977, (Unpubl.). U.S. A.E.C., 1971, Production Records, Colorado.

## Teapot Dome 2, 3

LOCATION: sec. 6, T. 45 N., R. 17 W.  
QUAD Naturita NW 7 1/2'  
MAP MOAB  
PROD By 1971, 9,161 tons had been mined at a grade of 0.18% U308, producing 33,710 lbs of U308, and 1.06% V205, producing 194,464 lbs of V205.  
HUST Jurassic Morrison Formation, Salt Wash Sandstone Member; gray, very fine- to medium-grained sandstone with abundant carbonized plant remains.  
MNZ Uranium, vanadium, carnotite - tyuyamunite, coffinite, uraninite, high vanadium, low lime.  
DOI 1971  
REF U.S. Bur. of Mines, 1977, (Unpubl.). U.S. A.E.C., 1971, Production Records, Colorado. Finch, W. I., 1967, U.S. Geol. Survey Prof. Paper 538, p. 12.

## Terrible

LOCATION: N1/2 sec. 10, T. 45 N., R. 19 W.  
QUAD Anderson Mesa 7 1/2'  
MAP MOAB  
PROD As of 1971, 1,067 tons had been mined at a grade of 0.19% U308, producing 4,143 lbs of U308, and 1.26% V205, producing 26,906 lbs of V205.  
MNZ Uranium, vanadium.  
DOI 1971  
REF U.S. Bur. of Mines, 1977, (Unpubl.). U.S. A.E.C., 1971, Production Records, Colorado. Hague, R. S., Goldenstein, S. J., and Blakey, E., 1958, Uranium - vanadium deposits of the Uravan Mineral Belt.

## Three Jacks (Yellow Bird)

LOCATION: sec. 14, T. 47 N., R. 20 W.  
QUAD Mount Peale 1 SE 7 1/2'  
MAP MOAB  
PROD By 1971, 24,317 tons had been mined at a grade of 0.39% U308, producing 188,156 lbs of U308, and 1.85% V205, producing 902,125 lbs of V205.  
HUST Jurassic Morrison Formation.  
MNZ Uranium, vanadium, carnotite - tyuyamunite, high vanadium, low lime.

# MONTROSE COUNTY

DOI 1971  
REF U.S. Bur. of Mines, 1977, (Unpubl.). U.S. A.E.C., 1971, Production Records, Colorado.

## Three Musketeers

LOCATION: sec. 8, T. 48 N., R. 18 W.  
LCRM Also sec. 7.  
QUAD Roc Creek 7 1/2'  
MAP MOAB  
PROD By 1971, 62 tons had been mined at a grade of 0.36% U308, producing 448 lbs of U308, and 0.34% V205, producing 422 lbs of V205.  
HOST Jurassic Morrison Formation, Salt Wash Member.  
MNZ Uranium, vanadium, carnotite - tyuyamunite, high vanadium, intermed. lime.  
DOI 1971  
REF U.S. Bur. of Mines, 1977, (Unpubl.). U.S. A.E.C., 1971, Production Records, Colorado.

## Thunderbolt

LOCATION: sec. 23, T. 46 N., R. 17 W.  
LCRM U.S. A.E.C. Production Records show only sec. 22.  
QUAD Naturita NW 7 1/2'  
MAP MOAB  
PROD By 1971, 15,361 tons had been mined at a grade of 0.29% U308, producing 90,269 lbs of U308, and 1.65% V205, producing 507,053 lbs of V205.  
HOST Jurassic Morrison Formation.  
MNZ Uranium, vanadium, uraninite (coffinite), high vanadium, low lime.  
DOI 1971  
REF U.S. Bur. of Mines, 1977, (Unpubl.). U.S. A.E.C., 1971, Production Records, Colorado.

## TNT 1, 2

LOCATION: sec. 21, T. 47 N., R. 17 W.  
QUAD Davis Mesa 7 1/2', Uravan 7 1/2'  
MAP MOAB  
PROD By 1971, 274 tons had been mined at a grade of 0.19% U308, producing 1,059 lbs of U308, and 0.65% V205, producing 3,555 lbs of V205.  
HOST Jurassic Morrison Formation.  
MNZ Uranium, vanadium, carnotite - tyuyamunite, high vanadium, low lime.  
DOI 1971  
REF U.S. Bur. of Mines, 1977, (Unpubl.). U.S. A.E.C., 1971, Production Records, Colorado.

## TNT 3

LOCATION: sec. 21, T. 47 N., R. 17 W.  
QUAD Davis Mesa 7 1/2', Uravan 7 1/2'  
MAP MOAB  
PROD By 1971, 2,645 tons had been mined at a grade of 0.29% U308, producing 15,262 lbs of U308, and 1.64% V205, producing 86,506 lbs of V205.  
HOST Jurassic Morrison Formation.  
MNZ Uranium, vanadium, carnotite - tyuyamunite, high vanadium, low lime.  
DOI 1971  
REF U.S. Bur. of Mines, 1977, (Unpubl.). U.S. A.E.C., 1971, Production Records, Colorado.

## Too High Mine 2

LOCATION: sec. 36, T. 47 N., R. 20 W.  
LCRM U.S. A.E.C. Production Records also show location as sec. 31, T. 47 N., R. 19 W., Wray Mesa, Paradox district.  
QUAD Mount Peale 1 SE 7 1/2'  
MAP MOAB  
PROD By 1971, 1,307 tons had been mined at a grade of 0.39% U308, producing 10,190 lbs of U308, and 2.85% V205, producing 74,434 lbs of V205.  
HOST Brushy Basin Member of the Jurassic Morrison Formation.  
MNZ Uranium, vanadium, carnotite - tyuyamunite, high vanadium, low lime.  
DOI 1971  
REF U.S. Bur. of Mines, 1977, (Unpubl.). U.S. A.E.C., 1971, Production Records, Colorado.

## Top Notch

LOCATION:  
LCST UNLOCATABLE  
LCRM This deposit lies in the Paradox district.  
MAP MOAB  
PROD By 1971, 11 tons had been mined at a grade of 0.20% U308, producing 45 lbs of U308, and 1.98% V205, producing 435 lbs of V205.  
HOST Jurassic Morrison Formation, Salt Wash Member.  
DOI 1971  
REF U.S. A.E.C., 1971, Production Records, Colorado.

## Tornado No. 5 & 6

LOCATION: sec. 3, T. 45 N., R. 19 W.  
LCRM U.S. A.E.C. Production Records show location as sec. 22, T. 44 N., R. 19 W.  
QUAD Anderson Mesa 7 1/2'  
MAP MOAB  
PROD As of 1971, 873 tons had been mined at a grade of 0.23% U308, producing 4,041 lbs of U308, and 1.66% V205, producing 28,933 lbs of V205.  
HOST The host is the Jurassic Morrison Formation.  
MNZ Uranium, vanadium, uraninite (coffinite), high vanadium, low lime.  
DOI 1971  
REF U.S. Bur. of Mines, 1977, (Unpubl.). U.S. A.E.C., 1971, Production Records, Colorado.

## Town House (Dolores Group)

LOCATION: sec. 20, T. 48 N., R. 17 W.  
QUAD Red Canyon 7 1/2'  
MAP MOAB  
PROD By 1971, 17,190 tons had been mined at a grade of 0.26% U308, producing 90,711 lbs of U308, and 1.24% V205, producing 425,785 lbs of V205.  
HOST Jurassic Morrison Formation.  
MNZ Uranium, vanadium, carnotite - tyuyamunite, high vanadium, low lime.  
DOI 1971  
REF U.S. Bur. of Mines, 1977, (Unpubl.). U.S. A.E.C., 1971, Production Records, Colorado.

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## Tramp 2

LOCATION: sec. 6, T. 47 N., R. 17 W.  
 QUAD Davis Mesa 7 1/2'  
 MAP MOAB  
 PROD By 1971, 24,368 tons had been mined at a grade of 0.27% U3O8, producing 130,679 lbs of U3O8, and 1.19% V2O5, producing 561,897 lbs of V2O5.  
 HOST Jurassic Morrison Formation.  
 MNZ Uranium, vanadium, carnotite - tyuyamunite, high vanadium, low ilme.  
 DOI 1971  
 REF U.S. Bur. of Mines, 1977, (Unpubl.). U.S. A.E.C., 1971, Production Records, Colorado.

## Tramp Dumps

LOCATION: sec. 6, T. 47 N., R. 17 W.  
 QUAD Davis Mesa 7 1/2'  
 MAP MOAB  
 PROD By 1971, 10,410 tons had been mined at a grade of 0.09% U3O8, producing 17,768 lbs of U3O8, and 0.36% V2O5, producing 74,388 lbs of V2O5.  
 HOST Jurassic Morrison Formation.  
 MNZ Uranium, vanadium, carnotite - tyuyamunite, high vanadium, low ilme.  
 DOI 1971  
 REF U.S. Bur. of Mines, 1977, (Unpubl.). U.S. A.E.C., 1971, Production Records, Colorado.

## Triangulation

LOCATION: sec. 34, T. 47 N., R. 17 W.  
 QUAD Uravan 7 1/2'  
 MAP MOAB  
 PROD By 1971, 6,686 tons had been mined at a grade of 0.33% U3O8, producing 43,565 lbs of U3O8, and 2.26% V2O5, producing 302,869 lbs of V2O5.  
 HOST Jurassic Morrison Formation.  
 MNZ Uranium, vanadium, carnotite - tyuyamunite, high vanadium, low ilme.  
 DOI 1971  
 REF U.S. Bur. of Mines, 1977, (Unpubl.). U.S. A.E.C., 1971, Production Records, Colorado.

## Tripod

LOCATION: sec. 20, T. 47 N., R. 17 W.  
 QUAD Davis Mesa 7 1/2'  
 MAP MOAB  
 PROD By 1971, 3,010 tons had been mined at a grade of 0.22% U3O8, producing 13,119 lbs of U3O8, and 1.37% V2O5, producing 82,245 lbs of V2O5.  
 HOST Jurassic Morrison Formation.  
 MNZ Uranium, vanadium, carnotite - tyuyamunite, high vanadium, low ilme.  
 DOI 1971  
 REF U.S. Bur. of Mines, 1977, (Unpubl.). U.S. A.E.C., 1971, Production Records, Colorado.

## Tripod Low Grade (Tripod Dumps)

LOCATION: NW1/4 sec. 20, T. 47 N., R. 17 W.  
 QUAD Davis Mesa 7 1/2'  
 MAP MOAB

PROD Prior to 1971, 15,189 tons had been recovered from the Tripod Mine dumps at a grade of 0.07% U3O8, producing 21,118 lbs of U3O8, and 0.36% V2O5, producing 108,760 lbs of V2O5.  
 HOST Jurassic Morrison Formation.  
 MNZ Uranium, vanadium, carnotite - tyuyamunite, high vanadium, low ilme.  
 DOI 1971  
 REF U.S. Bur. of Mines, 1977, (Unpubl.). U.S. A.E.C., 1971, Production Records, Colorado.

## Truscott

LOCATION: sec. 28, T. 48 N., R. 17 W.  
 LCRM U.S. A.E.C. Production Records show only sec. 32 and 33.  
 QUAD Red Canyon 7 1/2', Atkinson Creek 7 1/2'  
 MAP MOAB  
 PROD By 1971, 494 tons had been mined at a grade of 0.17% U3O8, producing 1,714 lbs of U3O8, and 0.74% V2O5, producing 7,354 lbs of V2O5.  
 HOST Jurassic Morrison Formation.  
 MNZ Uranium, vanadium, carnotite - tyuyamunite, high vanadium, low ilme.  
 DOI 1971  
 REF U.S. Bur. of Mines, 1977, (Unpubl.). U.S. A.E.C., 1971, Production Records, Colorado.

## Twilight 1-2

LOCATION: sec. 2, T. 48 N., R. 18 W.  
 QUAD Red Canyon 7 1/2'  
 MAP MOAB  
 PROD By 1971, 3,621 tons had been mined at a grade of 0.19% U3O8, producing 13,728 lbs of U3O8, and 0.60% V2O5, producing 43,219 lbs of V2O5.  
 MNZ Uranium, vanadium.  
 DOI 1971  
 REF U.S. Bur. of Mines, 1977, (Unpubl.). U.S. A.E.C., 1971, Production Records, Colorado.

## Twin Sisters

LOCATION: sec. 19, T. 48 N., R. 18 W.  
 QUAD Roc Creek 7 1/2'  
 MAP MOAB  
 PROD By 1971, 122 tons had been mined at a grade of 0.35% U3O8, producing 854 lbs of U3O8, and 2.92% V2O5, producing 7,134 lbs of V2O5.  
 MNZ Uranium, vanadium.  
 DOI 1971  
 REF U.S. Bur. of Mines, 1977, (Unpubl.). U.S. A.E.C., 1971, Production Records, Colorado.

## Two Bits (Joker Group)

LOCATION: sec. 34, T. 46 N., R. 18 W.  
 LCRM Also sec. 35.  
 QUAD Bull Canyon 7 1/2'  
 MAP MOAB  
 PROD By 1971, 42 tons had been mined at a grade of 0.25% U3O8, producing 209 lbs of U3O8, and 1.90% V2O5, producing 1,593 lbs of V2O5.  
 HOST Jurassic Morrison Formation, Salt Wash Member.  
 MNZ Uranium, vanadium, carnotite - tyuyamunite, high vanadium, low ilme.  
 DOI 1971  
 REF U.S. Bur. of Mines, 1977, (Unpubl.). U.S. A.E.C., 1971, Production Records, Colorado.

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## Two Shovel

LOCATION: sec. 18, T. 47 N., R. 17 W.

LCRM U.S. A.E.C. Production Records also show sec. 17.

QUAD Paradox 7 1/2'

MAP MOAB

PROD By 1971, 62 tons had been mined at a grade of 0.17% U3O8, producing 211 lbs of U3O8, and 0.96% V2O5, producing 1,194 lbs of V2O5

HOST Jurassic Morrison Formation.

MNZ Uranium, vanadium.

DOI 1971

REF U.S. Bur. of Mines, 1977, (Unpubl.). U.S. A.E.C., 1971, Production Records, Colorado.

## U.S. Grant

LOCATION: sec. 8, T. 47 N., R. 17 W.

LCRM U.S. A.E.C. Production Records only show sec. 7

QUAD Davis Mesa 7 1/2'

MAP MOAB

PROD By 1971, 5,798 tons had been mined at a grade of 0.37% U3O8, producing 42,803 lbs of U3O8, and 1.70% V2O5, producing 197,251 lbs of V2O5.

HOST Jurassic Morrison Formation.

MNZ Uranium, vanadium, carnotite - tyuyamunite, high vanadium, low lime.

DOI 1971

REF U.S. Bur. of Mines, 1977, (Unpubl.). U.S. A.E.C., 1971, Production Records, Colorado.

## Uncle Sam

LOCATION: sec. 13, T. 48 N., R. 18 W.

QUAD Red Canyon 7 1/2'

MAP MOAB

PROD By 1971, 166 tons had been mined at a grade of 0.15% U3O8, producing 513 lbs of U3O8, and 0.86% V2O5, producing 2,859 lbs of V2O5.

HOST Jurassic Morrison Formation.

MNZ Uranium, vanadium, carnotite - tyuyamunite, high vanadium, low lime.

DOI 1971

REF U.S. Bur. of Mines, 1977, (Unpubl.). U.S. A.E.C., 1971, Production Records, Colorado.

## Upper Valley View

LOCATION:

LCST UNLOCATABLE

MAP MOAB

PROD By 1971, 177 tons had been mined at a grade of 0.37% U3O8, producing 1,326 lbs of U3O8, and 1.18% V2O5, producing 4,190 lbs of V2O5.

DOI 1971

REF U.S. A.E.C., 1971, Production Records, Colorado.

## URA

LOCATION: sec. 29, T. 46 N., R. 17 W.

QUAD Bull Canyon 7 1/2'

MAP MOAB

PROD By 1971, 118,005 tons had been mined at a grade of 0.17% U3O8, producing 401,335

lbs of U3O8, and 0.72% V2O5, producing 1,695,866 lbs of V2O5.

HUST Jurassic Morrison Formation.

MNZ Uranium, vanadium, uraninite (carnotite), high vanadium, low lime.

DOI 1971

REF U.S. Bur. of Mines, 1977, (Unpubl.). U.S. A.E.C., 1971, Production Records, Colorado.

## Uranium Girl (Emergency Claim)

LOCATION: sec. 14, T. 47 N., R. 20 W.

QUAD Mount Peale 1 SE 7 1/2'

MAP MOAB

PROD By 1971, 2,211 tons had been mined at a grade of 0.38% U3O8, producing 15,683 lbs of U3O8, and 1.79% V2O5, producing 79,314 lbs of V2O5.

HUST Jurassic Morrison Formation.

MNZ Carnotite - tyuyamunite, uranium, vanadium, high vanadium, low lime.

DOI 1971

REF U.S. Bur. of Mines, 1977, (Unpubl.). U.S. A.E.C., 1971, Production Records, Colorado.

## Uranus (Dorothy Jean)

LOCATION: sec. 18, T. 46 N., R. 17 W.

QUAD Bull Canyon 7 1/2'

MAP MOAB

PROD By 1971, 29,584 tons had been mined at a grade of 0.56% U3O8, producing 328,443 lbs of U3O8, and 1.61% V2O5, producing 949,861 lbs of V2O5.

HUST Jurassic Morrison Formation.

MNZ Uranium, vanadium, carnotite - tyuyamunite, high vanadium, low lime.

DOI 1971

REF U.S. Bur. of Mines, 1977, (Unpubl.). U.S. A.E.C., 1971, Production Records, Colorado.

## Uravan Group No. 5

LOCATION: sec. 3, T. 47 N., R. 17 W.

QUAD Uravan 7 1/2'

MNZ Uranium, vanadium.

REF U.S. Bur. of Mines, 1977, (Unpubl.).

## Uravan No. 2

LOCATION: SE 1/4 sec. 4, T. 47 N., R. 17 W.

QUAD Davis Mesa 7 1/2'

MAP MOAB

PROD By 1971, 7,519 tons had been mined at a grade of 0.18% U3O8, producing 26,636 lbs of U3O8, and 0.88% V2O5, producing 132,855 lbs of V2O5.

HUST Jurassic Morrison Formation.

MNZ Uranium, vanadium, carnotite - tyuyamunite, high vanadium, low lime.

DOI 1971

REF U.S. Bur. of Mines, 1977, (Unpubl.). U.S. A.E.C., 1971, Production Records, Colorado.

## Ureka (Carpenter Ridge)

LOCATION: sec. 10, T. 48 N., R. 19 W.

QUAD Roc Creek 7 1/2'

MAP MOAB

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PROD By 1971, 346 tons had been mined at a grade of 0.09% U3O8, producing 626 lbs of U3O8, and 0.95% V2O5, producing 6,576 lbs of V2O5.  
 MNZ Uranium, vanadium.  
 DOI 1971  
 REF U.S. Bur. of Mines, 1977, (Unpubl.). U.S. A.E.C., 1971, Production Records, Colorado.

## Uriah

LOCATION: sec. 31, T. 46 N., R. 17 W.  
 QUAD Bull Canyon 7 1/2'  
 MAP MOAB  
 PROD No production.  
 DOI 1971  
 REF U.S. A.E.C., 1971, Production Records, Colorado.

## Ute 4

LOCATION: sec. 4, T. 45 N., R. 19 W.  
 LCRM This deposit lies in Gypsum Valley.  
 QUAD Anderson Mesa 7 1/2'  
 MAP MOAB  
 DYEL As of 1971, 59 tons had been mined at a grade of 0.07% U3O8, producing 80 lbs of U3O8, and 0.62% V2O5, producing 729 lbs of V2O5.  
 HOST Jurassic Morrison Formation, Salt Wash Member.  
 MNZ Uranium, vanadium.  
 DOI 1971  
 REF U.S. Bur. of Mines, 1977, (Unpubl.). U.S. A.E.C., 1971, Production Records, Colorado.

## Vaden View

LOCATION: sec. 13, T. 46 N., R. 18 W.  
 LCRM U.S. A.E.C. Production Records also show sec. 11, 12, and 14.  
 QUAD Bull Canyon 7 1/2'  
 MAP MOAB  
 PROD By 1971, 27,550 tons had been mined at a grade of 0.23% U3O8, producing 127,818 lbs of U3O8, and 0.01% V2O5, producing 7,310 lbs of V2O5.  
 HOST Jurassic Morrison Formation.  
 MNZ Uranium, vanadium, carnotite - tyuyamunite, high vanadium, low lime.  
 DOI 1971  
 REF U.S. Bur. of Mines, 1977, (Unpubl.). U.S. A.E.C., 1971, Production Records, Colorado.

## Valentine

LOCATION: NE1/4NE1/4 sec. 24, T. 47 N., R. 18 W.  
 QUAD Davis Mesa 7 1/2'  
 MAP MOAB  
 PROD By 1971, 58 tons had been mined at a grade of 0.22% U3O8, producing 257 lbs of U3O8, and 1.52% V2O5, producing 1,766 lbs of V2O5.  
 HOST Jurassic Morrison Formation, Salt Wash Member.  
 MNZ Uranium, vanadium.  
 DOI 1971  
 REF U.S. Bur. of Mines, 1977, (Unpubl.). U.S. A.E.C., 1971, Production Records, Colorado.

## Valley View (N. Star)

LOCATION: sec. 20, T. 47 N., R. 17 W.

LCRM U.S. A.E.C. Production Records show sec. 7 and 8, T. 48 N., R. 19 W. as location.  
 QUAD Davis Mesa 7 1/2'

MAP MOAB  
 PROD By 1971, 9,205 tons had been mined at a grade of 0.27% U3O8, producing 50,366 lbs of U3O8, and 1.13% V2O5, producing 208,090 lbs of V2O5.

MNZ Uranium, vanadium.  
 DOI 1971  
 REF U.S. Bur. of Mines, 1977, (Unpubl.). U.S. A.E.C., 1971, Production Records, Colorado.

## Van

LOCATION: sec. 12, T. 46 N., R. 17 W.  
 QUAD Uravan 7 1/2', Naturita NW 7 1/2'  
 MAP MOAB  
 PROD By 1971, 860 tons had been mined at a grade of 0.24% U3O8, producing 4,067 lbs of U3O8, and 1.07% V2O5, producing 18,441 lbs of V2O5.  
 MNZ Uranium, vanadium.  
 DOI 1971  
 REF U.S. Bur. of Mines, 1977, (Unpubl.). U.S. A.E.C., 1971, Production Records, Colorado.

## Van 1-3 (Tulla 1,3)

LOCATION: sec. 14, T. 46 N., R. 17 W.  
 QUAD Naturita NW 7 1/2'  
 MAP MOAB  
 MNZ Uranium, vanadium.  
 REF U.S. Bur. of Mines, 1977, (Unpubl.).

## Vanablend 47

LOCATION: sec. 29, T. 48 N., R. 16 W.  
 LCRM U.S. A.E.C. Production Records show location as sec. 22, 26, 35 and 36, T. 48 N., R. 17 W.  
 QUAD Atkinson Creek 7 1/2'  
 MAP MOAB  
 PROD By 1971, 21 tons had been mined at a grade of 0.15% U3O8, producing 63 lbs of U3O8, and 2.11% V2O5, producing 887 lbs of V2O5.  
 HOST Jurassic Morrison Formation.  
 MNZ Carnotite - tyuyamunite, uranium, vanadium, high vanadium, low lime.  
 DOI 1971  
 REF U.S. Bur. of Mines, 1977, (Unpubl.). U.S. A.E.C., 1971, Production Records, Colorado.

## Vanadite

LOCATION: sec. 29, T. 47 N., R. 17 W.  
 QUAD Davis Mesa 7 1/2'  
 MAP MOAB  
 PROD By 1971, 2,150 tons had been mined at a grade of 0.35% U3O8, producing 14,935 lbs of U3O8, and 1.61% V2O5, producing 69,423 lbs of V2O5.  
 MNZ Uranium, vanadium.  
 DOI 1971  
 REF U.S. Bur. of Mines, 1977, (Unpubl.). U.S. A.E.C., 1971, Production Records, Colorado.

## Vanadium King 1-8

LOCATION: sec. 22, T. 47 N., R. 17 W.  
 QUAD Uravan 7 1/2'

# MONTROSE COUNTY

MAP MOAB  
 PROD By 1971, 13,933 tons had been mined at a grade of 0.33% U3O8, producing 95,196 lbs of U3O8, and 3.49% V2O5, producing 973,602 lbs of V2O5.  
 HOST Jurassic Morrison Formation.  
 MNZ Uranium, vanadium, uraninite (coffinite), high vanadium, low lime.  
 DOI 1971  
 REF U.S. Bur. of Mines, 1977, (Unpubl.). U.S. A.E.C., 1971, Production Records, Colorado.

## Venture Lode (Venture Lode)

LOCATION: sec. 31, T. 46 N., R. 17 W.  
 LCRM U.S. A.E.C. Production Records also show location as sec. 36, T. 46 N., R. 18 W.  
 QUAD Bull Canyon 7 1/2'  
 MAP MOAB  
 PROD By 1971, 75 tons had been mined at a grade of 0.10% U3O8, producing 147 lbs of U3O8, and 1.00% V2O5, producing 1,498 lbs of V2O5.  
 MNZ Uranium, vanadium.  
 DOI 1971  
 REF U.S. Bur. of Mines, 1977, (Unpubl.). U.S. A.E.C., 1971, Production Records, Colorado.

## Vernita

LOCATION: sec. 27, T. 46 N., R. 18 W.  
 LCRM U.S. A.E.C. Production Records also show sec. 26, 34, and 35.  
 QUAD Bull Canyon 7 1/2'  
 MAP MOAB  
 PROD By 1971, one ton had been mined at a grade of 0.05% U3O8, producing one lb of U3O8, and 1.55% V2O5, producing 31 lbs of V2O5.  
 MNZ Uranium, vanadium.  
 DOI 1971  
 REF U.S. Bur. of Mines, 1977, (Unpubl.). U.S. A.E.C., 1971, Production Records, Colorado.

## Victory 2

LOCATION:  
 LCST UNLOCATABLE  
 LCRM This deposit lies in the Atkinson Mesa district.  
 MAP MOAB  
 PROD By 1971, three tons had been mined at a grade of 0.10% U3O8, producing six lbs of U3O8.  
 HOST Jurassic Morrison Formation, Salt Wash Member.  
 MNZ Carnotite - tyuyamunite, high vanadium, low lime.  
 DOI 1971  
 REF U.S. A.E.C., 1971, Production Records, Colorado.

## Virgin Mine 3

LOCATION: sec. 22, T. 47 N., R. 17 W.  
 QUAD Uravan 7 1/2'  
 MAP MOAB  
 PROD By 1971, 24,044 tons had been mined at a grade of 0.28% U3O8, producing 134,668 lbs of U3O8, and 1.89% V2O5, producing 907,933 lbs of V2O5.  
 HOST Jurassic Morrison Formation, Salt Wash Sandstone Member; gray and buff medium-grained sandstone

and mudstone with abundant carbonized logs and plant trash pockets.  
 MNZ Uranium, vanadium, coffinite, uraninite, carnotite - tyuyamunite, high vanadium, low lime.  
 DOI 1971  
 REF U.S. Bur. of Mines, 1977, (Unpubl.). U.S. A.E.C., 1971, Production Records, Colorado. Finch, W. L., 1967, U.S. Geol. Survey Prof. Paper 533, p. 12.

## Vista Grande Mine (Lion Creek)

LOCATION: SE1/4NE1/4SE1/4 sec. 2, T. 47 N., R. 20 W.  
 LCRM Also sec. 12.  
 QUAD Mount Peale 1 SE 7 1/2'  
 MAP MOAB  
 PROD By 1971, 69 tons had been mined at a grade of 0.50% U3O8, producing 690 lbs of U3O8, and 2.58% V2O5, producing 3,563 lbs of V2O5.  
 HOST Jurassic Morrison Formation, Salt Wash Member.  
 MNZ Uranium, vanadium.  
 DOI 1971  
 REF U.S. Bur. of Mines, 1977, (Unpubl.). U.S. A.E.C., 1971, Production Records, Colorado.

## Vonnie 5

LOCATION:  
 LCRM U.S. A.E.C. Production Records show location as Nyswonger Mesa.  
 QUAD Paradox 7 1/2'  
 MAP MOAB  
 PROD By 1971, 8 tons had been mined at a grade of .023% U3O8, producing 37 lbs of U3O8, and 1.45% V2O5, producing 232 lbs of V2O5.  
 HOST Jurassic Morrison Formation.  
 MNZ Carnotite - tyuyamunite, high vanadium, low lime.  
 DOI 1971  
 REF U.S. A.E.C., 1971, Production Records, Colorado.

## Wamba

LOCATION: sec. 1, T. 45 N., R. 18 W.  
 LCRM Also sec. 6, T. 45 N., R. 17 W. and sec. 36, T. 46 N., R. 18 W.  
 QUAD Bull Canyon 7 1/2'  
 MAP MOAB  
 PROD No production.  
 DOI 1971  
 REF U.S. A.E.C., 1971, Production Records, Colorado.

## Wanda 3

LOCATION: sec. 28, T. 47 W., R. 17 W.  
 LCRM U.S. A.E.C. Production Records also show sec. 8, 17, 18, 19, 29, 30, 33.  
 QUAD Davis Mesa 7 1/2', Uravan 7 1/2'  
 MAP MOAB  
 PROD By 1971, 314 tons had been mined at a grade of 0.18% U3O8, producing 1,148 lbs of U3O8, and 1.47% V2O5, producing 9,247 lbs of V2O5.  
 HOST Jurassic Morrison Formation.  
 MNZ Uranium, vanadium, carnotite - tyuyamunite, high vanadium, low lime.

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DOI 1971  
REF U.S. Bur. of Mines, 1977, (Unpubl.). U.S. A.E.C., 1971, Production Records, Colorado.

## Watchman

LOCATION: sec. 34, T. 46 N., R. 19 W.  
LCRM U.S. A.E.C. Production Records also show location as sec. 3, T. 45 N., R. 19 W.  
QUAD Anderson Mesa 7 1/2'  
MAP MOAB  
PROD By 1971, 99 tons had been mined at a grade of 0.18% U3O8, producing 347 lbs of U3O8, and 0.88% V2O5, producing 1,740 lbs of V2O5.  
HOST Jurassic Morrison Formation.  
MNZ Uranium, vanadium, carnotite - tyuyamunite, high vanadium, low ilme.  
DOI 1971  
REF U.S. Bur. of Mines, 1977, (Unpubl.). U.S. A.E.C., 1971, Production Records, Colorado.

## Waterloo

LOCATION: sec. 20, T. 48 N., R. 18 W.  
LCRM This deposit lies in the Carpenter Flats area.  
QUAD Roc Creek 7 1/2'  
MAP MOAB  
PROD By 1971, 6 tons had been mined at a grade of 0.31% U3O8, producing 37 lbs of U3O8, and 2.97% V2O5, producing 357 lbs of V2O5.  
HOST Jurassic Morrison Formation, Salt Wash Member.  
MNZ Uranium, vanadium.  
DOI 1971  
REF U.S. Bur. of Mines, 1977, (Unpubl.). U.S. A.E.C., 1971, Production Records, Colorado.

## Wedge 1

LOCATION: sec. 10, T. 47 N., R. 17 W.  
LCRM U.S. A.E.C. Production Records also show sec. 9.  
QUAD Uravan 7 1/2'  
MAP MUAB  
PROD By 1971, 18,803 tons had been mined at a grade of 0.28% U3O8, producing 104,467 lbs of U3O8, and 0.94% V2O5, producing 352,505 lbs of V2O5.  
HOST Jurassic Morrison Formation.  
MNZ Uranium, vanadium, carnotite - tyuyamunite, low vanadium, intermed. ilme.  
DOI 1971  
REF U.S. Bur. of Mines, 1977, (Unpubl.). U.S. A.E.C., 1971, Production Records, Colorado.

## Wedge Mine (PI Warren Mine)

LOCATION: SE 1/4 sec. 2, T. 47 N., R. 20 W.  
LCRM U.S. A.E.C. Production Records also show sec. 11 and 12.  
QUAD Mount Peale SE 7 1/2'  
MAP MOAB  
PROD By 1971, 10,622 tons had been mined at a grade of 0.25% U3O8, producing 52,282 lbs of U3O8, and 1.25% V2O5, producing 265,401 lbs of V2O5.  
HOST Jurassic Morrison Formation.  
MNZ Uranium, vanadium, carnotite - tyuyamunite, high vanadium, low ilme.

DOI 1971  
REF U.S. Bur. of Mines, 1977, (Unpubl.). U.S. A.E.C., 1971, Production Records, Colorado.

## Wednesday & Thursday

LOCATION: sec. 22, T. 47 N., R. 17 W.  
QUAD Uravan 7 1/2'  
MAP MOAB  
PROD By 1971, 28,141 tons had been mined at a grade of 0.30% U3O8, producing 166,157 lbs of U3O8, and 2.63% V2O5, producing 1,477,980 lbs of V2O5.  
HOST Jurassic Morrison Formation.  
MNZ Uranium, vanadium, carnotite - tyuyamunite, high vanadium, low ilme.  
DOI 1971  
REF U.S. Bur. of Mines, 1977, (Unpubl.). U.S. A.E.C., 1971, Production Records, Colorado.

## West

LOCATION: sec. 35, T. 46 N., R. 18 W.  
LCRM U.S. A.E.C. Production Records show location as sec. 2, T. 45 N., R. 18 W.  
QUAD Bull Canyon 7 1/2'  
MAP MOAB  
PROD By 1971, 36 tons had been mined at a grade of 0.55% U3O8, producing 394 lbs of U3O8, and 2.54% V2O5, producing 1,828 lbs of V2O5.  
HOST Jurassic Morrison Formation.  
MNZ Uranium, vanadium, carnotite - tyuyamunite, high vanadium, low ilme.  
DOI 1971  
REF U.S. Bur. of Mines, 1977, (Unpubl.). U.S. A.E.C., 1971, Production Records, Colorado.

## West Lode

LOCATION:  
LCST UNLOCATABLE  
MAP MOAB  
PROD By 1971, 131 tons had been mined at a grade of 0.24% U3O8, producing 634 lbs of U3O8, and 1.44% V2O5, producing 3,769 lbs of V2O5.  
HOST Jurassic Morrison Formation.  
MNZ Carnotite - tyuyamunite, high vanadium, low ilme.  
DOI 1971  
REF U.S. A.E.C., 1971, Production Records, Colorado.

## West Martha Belle

LOCATION: sec. 31, T. 49 N., R. 17 W.  
QUAD Red Canyon 7 1/2'  
MAP MOAB  
PROD By 1971, 6,557 tons had been mined at a grade of 0.21% U3O8, producing 27,512 lbs of U3O8, and 1.00% V2O5, producing 130,824 lbs of V2O5.  
HOST Jurassic Morrison Formation.  
MNZ Uranium, vanadium, uraninite (coffinite), high vanadium, low ilme.  
DOI 1971  
REF U.S. Bur. of Mines, 1977, (Unpubl.). U.S. A.E.C., 1971, Production Records, Colorado.



# MONTORSE COUNTY

## Whang Doodle

LOCATION: NW1/4 sec. 13, T. 46 N., R. 18 W.  
 LCRM Monogram Mesa area, Bull Canyon district.  
 QUAD Bull Canyon 7 1/2'  
 MAP MOAB  
 PROD By 1971, 131 tons were produced at grades of 0.19% U308 and 1.24% V205.  
 HOST Jurassic Morrison Formation, Salt Wash Member.  
 MNZ Uranium, vanadium.  
 DOI 1977  
 REF U.S. Bur. of Mines, 1977, (Unpubl.). U.S. A.E.C., 1971, Production Records, Colorado.

## White Cow

LOCATION: sec. 1, T. 45 N., R. 20 W.  
 LCRM U.S. A.E.C. Production Records also show sec. 2.  
 QUAD Mount Peale 4 SE 7 1/2'  
 MAP MUAB  
 PROD By 1971, 73 tons had been mined at a grade of 0.24% U308, producing 349 lbs of U308, and 1.85% V205, producing 2,698 lbs of V205.  
 MNZ Uranium, vanadium.  
 DOI 1971  
 REF U.S. Bur. of Mines, 1977, (Unpubl.). U.S. A.E.C., 1971, Production Records, Colorado.

## White Crow

LOCATION: sec. 3, T. 45 N., R. 19 W.  
 QUAD Anderson Mesa 7 1/2'  
 MAP MOAB  
 PROD By 1971, 9 tons had been mined at a grade of 0.23% U308, producing 42 lbs of U308, and 1.79% V205, producing 322 lbs of V205.  
 HOST Jurassic Morrison Formation.  
 MNZ Carnotite - tyuyamunite, high vanadium, low ilme.  
 DOI 1971  
 REF U.S. A.E.C., 1971, Production Records, Colorado.

## White Face

LOCATION: sec. 34, T. 47 N., R. 17 W.  
 LCRM U.S. A.E.C. Production Records also show sec. 28.  
 QUAD Uravan 7 1/2'  
 MAP MOAB  
 PROD By 1971, 14,859 tons had been mined at a grade of 0.27% U308, producing 79,351 lbs of U308, and 2.08% V205, producing 619,270 lbs of V205.  
 HOST Jurassic Morrison Formation.  
 MNZ Uranium, vanadium, carnotite - tyuyamunite, high vanadium, low ilme.  
 DOI 1971  
 REF U.S. Bur. of Mines, 1977, (Unpubl.). U.S. A.E.C., 1971, Production Records, Colorado.

## Whitney

LOCATION: sec. 35, T. 47 N., R. 17 W.  
 QUAD Uravan 7 1/2'  
 MAP MOAB  
 PROD By 1971, 27,329 tons had been mined at a grade of 0.22% U308, producing 121,783 lbs

of U308, and 1.63% V205, producing 890,445 lbs of V205.

HOST Jurassic Morrison Formation.  
 MNZ Uranium, vanadium, carnotite - tyuyamunite, high vanadium, low ilme.  
 DOI 1971  
 REF U.S. Bur. of Mines, 1977, (Unpubl.). U.S. A.E.C., 1971, Production Records, Colorado.

## Whiz Bang

LOCATION: S1/2SE1/4 sec. 4, T. 45 N., R. 19 W.  
 QUAD Anderson Mesa 7 1/2'  
 MAP MOAB  
 PROD As of 1971, 32 tons had been mined at a grade of 0.19% U308, producing 122 lbs of U308, and 1.50% V205, producing 957 lbs of V205.  
 MNZ Uranium, vanadium.  
 DOI 1971  
 REF U.S. Bur. of Mines, 1977, (Unpubl.). U.S. A.E.C., 1971, Production Records, Colorado. Hague, R. S., Goldenstein, S. J., and Blakey, E., 1958, Uranium - vanadium deposits of the Uravan Mineral Belt.

## Wild Cat 2

LOCATION: sec. 28, T. 48 N., R. 18 W.  
 LCRM This deposit lies in the Uravan district.  
 QUAD Red Canyon 7 1/2'  
 MAP MOAB  
 PROD By 1971, 4 tons had been mined at a grade of 0.55% U308, producing 44 lbs of U308, and 3.47% V205, producing 278 lbs of V205.  
 HOST Jurassic Morrison Formation, Salt Wash Member.  
 MNZ Uranium, vanadium.  
 DOI 1971  
 REF U.S. Bur. of Mines, 1977, (Unpubl.). U.S. A.E.C., 1971, Production Records, Colorado.

## Wild Horse (Adak, Colorado)

LOCATION: E1/2 sec. 11, T. 48 N., R. 18 W.  
 QUAD Red Canyon 7 1/2'  
 MAP MOAB  
 PROD By 1971, 11,242 tons had been mined at a grade of 0.22% U308, producing 49,464 lbs of U308, and 0.73% V205, producing 163,418 lbs of V205.  
 HOST Jurassic Morrison Formation.  
 MNZ Uranium, vanadium, carnotite - tyuyamunite, high vanadium, low ilme.  
 DOI 1971  
 REF U.S. Bur. of Mines, 1977, (Unpubl.). U.S. A.E.C., 1971, Production Records, Colorado.

## Wildcat 3

LOCATION: sec. 28, T. 48 N., R. 18 W.  
 LCRM U.S. A.E.C. Production Records also show sec. 27.  
 QUAD Red Canyon 7 1/2'  
 MAP MOAB  
 PROD By 1971, 426 tons had been mined at a grade of 0.16% U308, producing 1,351 lbs of U308, and 1.36% V205, producing 11,604 lbs of V205.  
 MNZ Uranium, vanadium.

# MONTROSE COUNTY

DOI 1971  
REF U.S. Bur. of Mines, 1977, (Unpubl.). U.S. A.E.C., 1971, Production Records, Colorado.

## Wildcat 8

LOCATION: sec. 27, T. 48 N., R. 18 W.  
QUAD Rad Canyon 7 1/2'  
MAP MOAB  
PROD By 1971, 376 tons had been mined at a grade of 0.27% U3O8, producing 2,060 lbs of U3O8, and 1.59% V2O5, producing 11,987 lbs of V2O5.  
HOST Jurassic Morrison Formation.  
MNZ Uranium, vanadium.  
DOI 1971  
REF U.S. Bur. of Mines, 1977, (Unpubl.). U.S. A.E.C., 1971, Production Records, Colorado.

## Willie Dee

LOCATION: sec. 21, T. 48 N., R. 18 W.  
QUAD Rad Canyon 7 1/2'  
MAP MOAB  
PROD By 1971, one ton had been mined at a grade of 0.05% U3O8, producing one lbs of U3O8, and 1.95% V2O5, producing 39 lbs of V2O5.  
MNZ Uranium, vanadium.  
DOI 1971  
REF U.S. Bur. of Mines, 1977, (Unpubl.). U.S. A.E.C., 1971, Production Records, Colorado.

## Windy Day

LOCATION: sec. 3, T. 47 N., R. 17 W.  
LCRM U.S. A.E.C. Production Records also show sec. 10.  
QUAD Uravan 7 1/2'  
MAP MOAB  
PROD By 1971, 245 tons had been mined at a grade of 0.33% U3O8, producing 1,603 lbs of U3O8, and 1.88% V2O5, producing 9,214 lbs of V2O5.  
HOST Jurassic Morrison Formation.  
MNZ Uranium, vanadium, carnotite - tyuyamunite; high vanadium, low lime.  
DOI 1971  
REF U.S. Bur. of Mines, 1977, (Unpubl.). U.S. A.E.C., 1971, Production Records, Colorado.

## Woodchuck

LOCATION: sec. 23, T. 48 N., R. 19 W.  
LCRM This deposit lies in the Carpenter Flat area.  
QUAD Rock Creek 7 1/2'  
MAP MOAB  
PROD By 1971, 9 tons had been mined at a grade of 0.13% U3O8, producing 23 lbs of U3O8, and 1.19% V2O5, producing 214 lbs of V2O5.  
HOST Jurassic Morrison Formation, Salt Wash Member.  
MNZ Uranium, vanadium, carnotite - tyuyamunite; high vanadium, low lime.  
DOI 1971  
REF U.S. Bur. of Mines, 1977, (Unpubl.). U.S. A.E.C., 1971, Production Records, Colorado.

## Woodward

LOCATION: sec. 41, T. 45 N., R. 18 W.  
LCRM This deposit lies in the Bull Canyon district.  
QUAD Bull Canyon 7 1/2'

MAP MOAB  
PROD By 1971, one ton had been mined at a grade of 0.30% U3O8, producing 6 lbs of U3O8, and 2.60% V2O5, producing 52 lbs of V2O5.  
HOST Jurassic Morrison Formation, Salt Wash Member.  
MNZ Uranium, vanadium.  
DOI 1971  
REF U.S. Bur. of Mines, 1977, (Unpubl.). U.S. A.E.C., 1971, Production Records, Colorado.

## Wray Mesa

LOCATION: sec. 30, T. 47 N., R. 19 W.  
QUAD Mount Peale 1 SE 7 1/2'  
MAP MOAB  
PROD As of 1971, 61 tons had been mined at a grade of 0.24% U3O8, producing 295 lbs of U3O8, and 2.21% V2O5, producing 2,697 lbs of V2O5.  
HOST Jurassic Morrison Formation.  
MNZ Uranium, vanadium, carnotite - tyuyamunite, high vanadium, low lime.  
DOI 1971  
REF U.S. Bur. of Mines, 1977, (Unpubl.). U.S. A.E.C., 1971, Production Records, Colorado.

## Wright

LOCATION: sec. 27, T. 48 N., R. 17 W.  
QUAD Atkinson Creek 7 1/2'  
MAP MOAB  
PROD By 1971, 2,695 tons had been mined at a grade of 0.39% U3O8, producing 20,861 lbs of U3O8, and 1.36% V2O5, producing 73,304 lbs of V2O5.  
HOST Jurassic Morrison Formation.  
MNZ Uranium, vanadium, carnotite - tyuyamunite, high vanadium, low lime.  
DOI 1971  
REF U.S. Bur. of Mines, 1977, (Unpubl.). U.S. A.E.C., 1971, Production Records, Colorado.

## Yellow Bird 1 (Deer Run)

LOCATION: sec. 35, T. 47 N., R. 17 W.  
LCRM U.S. A.E.C. Production Records also show sec. 28.  
QUAD Davis Mesa 7 1/2', Uravan 7 1/2'  
MAP MOAB  
DYEL By 1971, 540 tons had been mined at a grade of 0.22% U3O8, producing 2,425 lbs of U3O8, and 0.13% V2O5, producing 1,390 lbs of V2O5.  
HOST Jurassic Morrison Formation.  
MNZ Uranium, vanadium.  
DOI 1971  
REF U.S. Bur. of Mines, 1977, (Unpubl.). U.S. A.E.C., 1971, Production Records, Colorado.

## Yellow Bird Mines (Center)

LOCATION: sec. 13, T. 47 N., R. 20 W.  
QUAD Mount Peale 1 SE 7 1/2'  
MAP MOAB  
PROD By 1971, 2,704 tons had been mined at a grade of 0.21% U3O8, producing 11,338 lbs of U3O8, and 1.65% V2O5, producing 89,095 lbs of V2O5.

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HOST Jurassic Morrison Formation, Salt Wash Sandstone Member; brown, fine- to coarse-grained sandstone and green mudstone with some carbonized plant remains and sparse logs.  
 MNZ Uranium, vanadium, carnotite.  
 DOI 1971  
 REF U.S. Bur. of Mines, 1977, (Unpubl.). U.S. A.E.C., 1971, Production Records, Colorado. Finch, W. I., 1967, U.S. Geol. Survey Prof. Paper 538, 121 p. (p. 12).

## Yellow Jacket

LOCATION: sec. 33, T. 48 N., R. 17 W.  
 LCRM U.S. A.E.C. Production Records also show T. 47 N.  
 QUAD Davis Mesa 7 1/2', Uravan 7 1/2'  
 MAP MOAB  
 PROD By 1971, 2,581 tons had been mined at a grade of 0.17% U3O8, producing 9,018 lbs of U3O8, and 0.71% V2O5, producing 36,932 lbs of V2O5.  
 HOST Jurassic Morrison Formation, Salt Wash Member.  
 MNZ Uranium, vanadium.  
 DOI 1971  
 REF U.S. Bur. of Mines, 1977, (Unpubl.). U.S. A.E.C., 1971, Production Records, Colorado.

## Yellow Spot Group (New Yellow Spot Mine)

LOCATION: SW1/4SW1/4 sec. 6, T. 47 N., R. 19 W.  
 QUAD Mount Peale 1 SE 7 1/2'  
 MAP MOAB  
 MNZ Uranium, vanadium.  
 REF U.S. Bur. of Mines, 1977, (Unpubl.).

## Yellowbird D

LOCATION: SE1/4 sec. 13, T. 47 N., R. 20 W.  
 LCRM Same as Butterfly, Yellowbird and Yellowbird D. (refer to original mine name). Area now covered by the Wat 16 and Prayer 12, La Sal Creek area, Paradox district.  
 QUAD Mount Peale SE 7 1/2'  
 MAP MOAB  
 PROD By 1971, 120 tons had been mined at a grade of 0.45% U3O8, producing 1,089 lbs of U3O8, and 2.07% V2O5, producing 4,966 lbs of V2O5.  
 HOST Jurassic Morrison Formation.  
 DOI 1971  
 REF U.S. A.E.C., 1971, Production Records, Colorado.

## Yip Yip

LOCATION: sec. 1, T. 47 N., R. 20 W.  
 LCRM Also reported as sec. 2, 11, 12, T. 46 N.  
 QUAD Mount Peale 1 SE 7 1/2'  
 MAP MOAB  
 PROD As of 1971, 582 tons had been mined at a grade of 0.204% U3O8.  
 HOST Brushy Basin Member of the Jurassic Morrison Formation.  
 DOI 1971  
 REF U.S. A.E.C., 1971, Production Records, Colorado.

## Yucca

LOCATION: S1/2SW1/4 sec. 31, T. 47 N., R. 19 W.  
 DOI 1958  
 REF Hague, R. S., Goldenstein, S. J., and Blakey, E., 1958, Uranium - vanadium deposits of the Uravan Mineral Belt.

## Zebra

LOCATION: sec. 31, T. 46 N., R. 17 W.  
 QUAD Bull Canyon 7 1/2'  
 MAP MOAB  
 PROD By 1971, 466 tons had been mined at a grade of 0.19% U3O8, producing 1,767 lbs of U3O8, and 1.67% V2O5, producing 15,597 lbs of V2O5.  
 MNZ Uranium, vanadium.  
 DOI 1971  
 REF U.S. Bur. of Mines, 1977, (Unpubl.). U.S. A.E.C., 1971, Production Records, Colorado.

## Zell Group (Zella Group)

LOCATION: sec. 16, T. 48 N., R. 18 W.  
 LCRM U.S. A.E.C. Production Records also show sec. 10 and 15.  
 QUAD Red Canyon 7 1/2'  
 MAP MOAB  
 PROD By 1971, 184 tons had been mined at a grade of 0.34% U3O8, producing 1,238 lbs of U3O8, and 1.39% V2O5, producing 5,101 lbs of V2O5.  
 HOST Jurassic Morrison Formation.  
 MNZ Uranium, vanadium, carnotite - tyuyamunite, high vanadium, intermed. lime.  
 DOI 1971  
 REF U.S. Bur. of Mines, 1977, (Unpubl.). U.S. A.E.C., 1971, Production Records, Colorado.

## MORGAN COUNTY

There are no recorded occurrences of uranium in the county. The potential for resources to be found in the county is poor.

The county is largely covered by Quaternary eolian deposits, and in some places Cretaceous Pierre Shale

is exposed. Recent gravels and alluvium fill the river valley of the South Platte River.

None of the rocks that outcrop in the county are considered to be favorable host rocks for uranium. This makes the potential for resources of uranium to be found in the county very small.

## OTERO COUNTY

No uranium occurrences have been found in the county to date, and the potential is fairly low for discovering any. The surrounding counties have very minor occurrences but none that would indicate any extension into Otero County.

Otero County lies in the southeastern part of the state in sedimentary terrane, primarily of Late Cretaceous age. The Niobrara Formation is exposed over much of the county, with Dakota Sandstone, and Benton Shale also covering large areas. A few exposures of the Lower Cretaceous Purgatoire Formation and the

Jurassic Morrison Formation are found, with alluvium covering much of the Arkansas River Valley floor.

Uranium deposits in the Lower Cretaceous Dakota Sandstone and in the Jurassic Morrison Formation have proved economic in the past in other parts of the state, and it is conceivable that resources could also exist in these units within Otero County. The Dockum Group (Upper Triassic) has shown limited potential in certain southeastern areas of the state, and exploration drilling could possibly discover some mineralization in that formation at depth.

## OURAY COUNTY

No production of uranium from Ouray County has been reported. The potential for known occurrences to become reserves is small.

The county lies on the northern edge of the San Juan Uplift and is partially covered by the Tertiary volcanic rocks associated with the uplift. The northern half of the county is largely covered by Cretaceous rocks, including the Mancos Shale and the Dakota Sandstone. These sediments dip away from the uplift and quickly become flat-lying in the northern part of the county.

Almost all of the occurrences in Ouray County are associated with some type of hydrothermal activity. They are associated with veins whose primary values are for silver, gold, lead, and zinc. None of the occurrences have potential for developable uranium reserves. The one exception is a group of occurrences in the Uncompaghe slates and quartzites near Bear Creek Falls. These occurrences are reported to contain only uranium as the primary metal, with associated minor pyrite. Although these rocks show some potential for some developable reserves, the area of outcrop of the Uncompaghe is limited in the county.

## OURAY COUNTY

### Bear Creek Falls

LOCATION: T. 43 N., R. 7 W.  
 LCST UNSURVEYED  
 LCRM The occurrence is 300 ft west of Bear Creek Falls, about 1 mile south of Ouray on Highway 550.  
 QUAD Ironton 7 1/2'  
 HOST Shear zone in slate of the Precambrian Uncompahgre Formation.  
 STRC Shear zone is approximately 6 ft wide and strikes about (E-W?).  
 MNZ A chip sample of the slate had a value of .099% U. Four channel samples across the shear had values of .003 to .014% U. Pyrite is associated with uranium in the shear and is absent outside. Also the slate away from the shear is not radiometrically anomalous.  
 DOI 1958  
 REF U.S. Geol. Survey, 1977, CRIB File. U.S. A.E.C., 1966, Preliminary Reconnaissance Reports, Ouray County, Colorado. Pierson, C. T.; and others, 1958. Burbank, W. S.; and others, 1953. Kelly, V. C., 1946, Geology, ore deposits and mines of the Mineral Point, Poughkeepsie, and Upper Uncompahgre districts, Ouray, San Juan and Hinsdale Counties, Colorado, Colorado Sci. Soc., Proc., v. 14, no. 7, p. 287-311. Burbank, W. S., 1930, Revisions of geologic structure and stratigraphy in the Ouray district of Colorado and its bearing on ore deposition, Colo. Sci. Soc., Proc., v. 12, no. 6, p. 151-232, illus. (incl. geol. map).

### Bear Creek Mine

LOCATION: T. 43 N., R. 7 W.  
 LCST UNCERTAIN  
 LCRM Original directions are as follows: "From town of Ouray travel south 2.1 mi. on US 550. Mine is just off road on east side".  
 QUAD Ouray 7 1/2' & Ironton 7 1/2'  
 DVEL There are about 100 ft of old workings.  
 BKG .05 mr/hr  
 RNG .05 to .30 mr/hr  
 HOST Vein in Precambrian schists and quartzite of the Uncompahgre Formation.  
 MNZ Pitchblende, calcite, barite, quartz and pyrite. Samples values ranged from .003 to .099% U.  
 RMKS See U.S. Geol. Survey Circ. 236, p. 3, 10.  
 DOI 1958  
 REF U.S. A.E.C., 1966, Preliminary Reconnaissance Reports, Ouray County, Colorado. Pierson, C. T.; and others, 1958. Burbank, W. S.; and Pierson, C. T., 1953.

### Campbird Mine

LOCATION: T. 43 N., R. 8 W.  
 LCST UNSURVEYED  
 LCRM Mine is shown on topo map.  
 QUAD Ironton 7 1/2'  
 DVEL Active base metal and gold mine.  
 BKG .04 mr/hr

RNG .04 to 1.0 mr/hr  
 HOST Veins in late Tertiary volcanics.  
 MNZ Gold, silver, lead, copper, zinc.  
 RMKS Radioactivity was found in small areas, locations were: 1) NW of vein; 14th level, approximately 760 ft west of vein crosscut. 2) HW and FW of vein; 14th level, approximately 700 ft west of main crosscut. 3) HW and FW of vein; 5th level, approximately 223 ft west of main winze. 4) FW of vein, 5th level, approximately 288 ft east of main winze.  
 DOI 1953  
 REF U.S. A.E.C., 1966, Preliminary Reconnaissance Reports, Ouray County, Colorado.

### Carbonate King Mine

LOCATION: T. 47 N., R. 7 W.  
 LCST UNSURVEYED  
 LCRM Shown on topo map just east of Red Mountain No. 2.  
 QUAD Ironton 7 1/2'  
 DVEL Inactive gold-silver mine with extensive workings.  
 HOST Hydrothermal chimney and veins in Tertiary volcanics.  
 MNZ Galena, sphalerite, pyrite, silver, gold, enargite, tennantite, pitchblende. An ore sample had a value of .017% U.  
 DOI 1958  
 REF Pierson, C. T.; and others, 1958. Burbank, W. S.; and others, 1953.

### Dunmore Mine

LOCATION: T. 43 N., R. 7 W.  
 LCST UNCERTAIN  
 LCRM Original directions to occurrence are as follows: "about 1/4 mile southwest of junction of Red Mountain Creek with Uncompahgre River".  
 QUAD Ironton 7 1/2'  
 DVEL Two adits, each with about 1,000 ft of workings.  
 HOST Disseminations, veins, and chimney in Precambrian slate and quartzite of the Uncompahgre Formation.  
 STRC Slate has been dragged against the quartzite by the Dunmore Fault.  
 MNZ Pitchblende?, chalcopryrite, huebnerite, gold, silver, and aikinite, in a gangue of quartz, limonite, hematite, chlorite, biotite, and pyrite.  
 RMKS Pitchblende is disseminated in minute amounts in the quartzite near the slate-quartzite contact. The anomalous quartzite occurs in an area of about 300 square ft in the lower adit, 350 ft S78°W from the portal.  
 DOI 1958  
 REF U.S. A.E.C., 1966, Preliminary Reconnaissance Reports, Ouray County, Colorado. Pierson, C. T.; and others, 1958. Burbank, W. S.; and Pierson, C. T., 1953. Kelly, V. C., 1946.

### Genessee Tunnel

LOCATION: T. 42 N., R. 8 W.  
 LCST UNSURVEYED  
 LCRM Mine is shown on topo map just east of the Idarado Mine which is adjacent to US 550.  
 QUAD Ironton 7 1/2'

## OURAY COUNTY

DVEL Inactive gold-silver mine with extensive workings.  
 HOST Hydrothermal chimney in Tertiary volcanics.  
 MNZ Galena, sphalerite, pyrite, silver, gold, enargite, tennantite. An ore sample had a value of .13% U.  
 DOI 1958  
 REF U.S. A.E.C., 1966, Preliminary Reconnaissance Reports, Ouray County, Colorado. Pierson, C. T.; and others, 1958. Burbank, W. S., 1953.

### Guston Mine

LOCATION: T. 42 N., R. 8 W.  
 LCST UNSURVEYED  
 LCRM Shown on topo map just east of the Idarado mine which is adjacent to US 550.  
 QUAD Ironton 7 1/2'  
 DVEL Inactive gold-silver mine with extensive workings.  
 HOST Hydrothermal chimney in Tertiary volcanics.  
 MNZ Galena, sphalerite, pyrite, silver, gold, enargite, tennantite. Samples had values ranging from .023 to .078% U.  
 DOI 1958  
 REF U.S. A.E.C., 1966, Preliminary Reconnaissance Reports, Ouray County, Colorado. Pierson, C. T.; and others, 1958. Burbank, W. S., 1958.

### Larson Property

LOCATION: T. 43 N., R. 8 W.  
 LCST UNSURVEYED  
 LCRM Approximately 1/4 mile northwest of Ironton.  
 QUAD Ironton 7 1/2'  
 DVEL An inactive gold mine.  
 HOST Vein in Tertiary latite.  
 MNZ Pyrite, chalcopryite, ilmonite, quartz, sericite, sooty pitchblende. A chip sample had a value of .034% U.  
 RMKS Radioactive material disseminated in country rock and veins.  
 DOI 1958  
 REF U.S. A.E.C., 1966, Preliminary Reconnaissance Reports, Ouray County, Colorado. Pierson, C. T.; and others, 1958. Burbank, W. S., 1953. Colorado Sci. Soc. Proc., 1941, v.14, no. 5.

### Michael Breen Mine

LOCATION: sec. 21, T. 43 N., R. 7 W.  
 LCST UNSURVEYED  
 LCRM On the Uncompahgre River approximately 1.4 miles upstream from point where US 550 crosses river.  
 QUAD Ironton 7 1/2'  
 DVEL An old lead-zinc mine with over 3,000 ft of workings.  
 BKG .02 m/hr  
 RNG To 240 m/hr  
 HOST Vein in Tertiary San Juan Tuff.  
 STRC Vein strikes N20°W and dips 85°S.  
 ALT Wall rock has color changes from dark grey to pink or cream color up to 1/2 in. from vein.  
 MNZ Galena, sphalerite, quartz, pyrite, chalcopryite, native bismuth, hematite. Pitchblende is present in arborescent and botryoidal masses.

RMKS Radioactivity was found in two places: on level 9 of the mine and on surface outcrop above the level 9 occurrence.  
 DOI 1958  
 REF U.S. Geol. Survey, 1977, CRIB File. U.S. A.E.C., 1966, Preliminary Reconnaissance Reports, Ouray County, Colorado. Pierson, C. T.; and others, 1958. Burbank, W. S.; and Pierson, C. T., 1953.

### National Bell

#### LOCATION:

LCST UNSURVEYED  
 LCRM The property is 1,000 ft east of US 550, 1/2 mile north of Red Mountain Pass, and shown on topo map.  
 QUAD Ironton 7 1/2'  
 DVEL Inactive gold-silver mine with extensive workings.  
 BKG .03 to .06 m/hr  
 RNG To .18 m/hr  
 HOST Hydrothermal chimney deposit in Tertiary volcanic latites.  
 MNZ Pyrite, enargite, chalcopryite, galena, sphalerite, cerrussite, and ilmonite in a gangue of quartz, dickite, zunyite, sericite, and clays. The radioactive material is in a mixed sulphide mass with galena and in granular pyritic material. One sample of friable granular pyritic lead-sulfide ore from dump at shaft had values of .028% U and .002% U.  
 DOI 1958  
 REF U.S. A.E.C., 1966, Preliminary Reconnaissance Reports, Ouray County, Colorado. Pierson, C. T.; and others, 1958. Burbank, W. S., 1953. Colo. Sci. Soc. Readings, 1941, v. 14, no. 5.

### Ouray Hot Springs

LOCATION: sec. 31, T. 44 N., R. 7 W.  
 LCST UNSURVEYED  
 LCRM 500 ft west of main street in town of Ouray.  
 QUAD Ouray 7 1/2'  
 HOST Calcareous tufa of a hot spring deposit.  
 STRC Located near the Ouray Fault which strikes NW-SE.  
 MNZ Sample of the tufa had a value of .11% eU and .001% U.  
 DOI 1958  
 REF U.S. A.E.C., 1966, Preliminary Reconnaissance Reports, Ouray County, Colorado. Pierson, C. T.; and others, 1958. Burbank, W. S.; and others, 1953. George, R. D.; and others, 1920. Mineral Waters of Colorado, Colo. Geol. Survey Bull. 11, illus. incl. geol. map, 474 p.

### Pony Express Mine

LOCATION: NW1/4 sec. 19, T. 44 N., R. 7 W.  
 LCST UNSURVEYED  
 LCRM Approximately 1,000 ft east of Lake Lenore.  
 QUAD Ouray 7 1/2'  
 DVEL Inactive silver mine with extensive workings.  
 HOST Vein and mantos in Jurassic Entrada Sandstone and limestone and shale in Pony Express



## OURAY COUNTY

Member of the Wanakha Formation.

STRC Vein strikes N80°E and the dip is nearly vertical.

MNZ Pyrite, galena, sphalerite, chalcopryite, silver minerals, ilmonite, malachite, and manganese oxides in a gangue of quartz, barite, calcite and manganocalcite. A 1 ft channel sample taken on some dipping shale beds near the vein had a value of .010% U3O8 and may be indicative of normal uranium values in the shales.

DOI 1951

REF U.S. A.E.C., 1966, Preliminary Reconnaissance Reports, Ouray County, Colorado. Burbank, W. S., 1940, Structural controls of ore deposition in the Uncompahgre district, Ouray County, Colorado, with suggestion for prospecting. U.S. Geol. Survey Bull. 906-E, p. 189-265.

DOI 1951

REF U.S. A.E.C., 1966, Preliminary Reconnaissance Reports, Ouray County, Colorado. Burbank, W. S., 1940, Structural controls of ore deposition in the Uncompahgre district, Ouray County, Colorado, with suggestion for prospecting. U.S. Geol. Survey Bull. 906-E, p. 189-265.

### Robinson Mine

LOCATION: T. 42 N., R. 8 W.

LCST UNSURVEYED

LCRM 8,100 ft northeast of Red Mountain Pass.

QUAD Ironton 7 1/2'

DVEL Inactive gold-silver mine with extensive workings.

HOST Hydrothermal chimney in Tertiary volcanics.

MNZ Galena, sphalerite, pyrite, silver, gold, enargite, tennantite. An ore sample had a value of .06% U.

DOI 1958

REF U.S. Geol. Survey, 1977, CRIB File. U.S. A.E.C., 1966, Preliminary Reconnaissance Reports, Ouray County, Colorado. Pierson, C. T.; and others, 1958.

### Yankee Girl Shaft

LOCATION: T. 42 N., R. 8 W.

QUAD Ironton 7 1/2'

DVEL Inactive gold-silver mine with extensive workings.

HOST Hydrothermal chimney in Tertiary volcanics.

MNZ Galena, sphalerite, pyrite, silver, gold, enargite, tennantite. A sample had a value of .16% U.

DOI 1958

REF U.S. A.E.C., 1966, Preliminary Reconnaissance Reports, Ouray County, Colorado. Pierson, C. T.; and others, 1958. Burbank, W. S., 1953.

## PARK COUNTY

Production from Park County has been small. Records show that by 1971, 1,579 tons of ore had been mined, producing 5,532 lb of  $U_3O_8$ . Excellent potential exists for uranium reserves to be found within the county.

The geology of the county is quite complex. Rocks of many ages and types are juxtaposed by Tertiary intrusions and a series of northwest-southeast-trending faults and fault zones.

A large part of the county lies within South Park, an Intermontane basin ranging from 9,000 to 10,000 feet in elevation. Mesozoic and Upper Paleozoic rocks crop out in the basin.

The Park Range bounds the county on the west, and mountains of the Front Range bound it on the east. Precambrian rocks comprise most of the Front Range, and lower Paleozoic rocks and Tertiary intrusions form the Park Range. Uranium occurrences in the county are found in many of these rock types and structures.

The most important occurrences in the county include Garo Deposit-Shirley May Mine, Gem Dandy, Lucky Jim, and Tedco and Mac George. These mines account for over 90 percent of the uranium production within the county. The Tedco-Mac George and Gem Dandy prospects are located within a mile of each other near Kenosha Pass. The uranium in these prospects occurs as pods and lenses of autunite and uraninite in northwest-trending shear zones within Precambrian granite and biotite gneiss.

The Shirley May Mine near Garo has been explored for various metals since 1900 and was operated as early as 1919 for radium ore. In 1952 the mine was evaluated by the U.S. Geological Survey for uranium and vanadium resources. Uranium, vanadium, and copper are found in faulted sandstone blocks of the Permo-Pennsylvanian Minturn Formation at the deposit. The ore bodies are small, and reserve potential at the site appears to be limited. However, this type of occurrence is common in the Minturn Formation from the area of Vail Pass south to the southern Sangre de Cristo Range, and other prospects of this type may have better uranium potential.

The Lucky Jim Mine is approximately 14 miles north of the community of Hartsel. Forty-seven percent of all production from the county came from this mine. The uranium occurs in lake beds of the Tertiary Antero Formation east of the Elkhorn Thrust Fault. The fault separates the Antero Formation from Precambrian granitic rocks. Autunite, found along fractures and bedding planes, is reported to be the primary ore mineral.

Tertiary lacustrine sediments such as the Antero Formation and the Florissant lake beds have high potential for uranium reserves. Shear zones in Precambrian also have very good reserve potential. These are the two most extensively explored geologic environments in the county because they have been the hosts for a large amount of uranium produced. Uranium occurs in other geologic environments, and the possibility of uranium resources at these sites or in similar environments should not be discounted.

# PARK COUNTY

## Amrine and Perrique Claims (Lady Elk No. 1)

LOCATION: sec. 26, T. 12 S., R. 78 W.  
 LCST UNCERTAIN  
 LCRM Location also included sec. 27, 34, 35. Original directions to occurrence are as follows: "From Buena Vista take highway 24, 7 miles toward Antero Junction, turn left off highway. Go 2.6 miles, take right fork, go 1.9 miles, take left fork, go 0.4 miles take left fork, go 0.6 miles take right fork, go 0.8 miles to Lady Elk No. 1." Also reported as on south slope of Buffalo Peaks.  
 QUAD Buena Vista 15'  
 MAP MONTROSE  
 DVEL There was one shallow open pit on the claims.  
 PROD As of 1971, 45 tons had been mined at a grade of 0.12% U308, and 0.20% V205, containing 108 lbs of U308 and 180 lbs of V205.  
 BKG .01 mr/hr  
 RNG .01 to 1 mr/hr  
 HOST Silicified, carbonaceous, iron-stained, fine-grained quartzite, thought to be the Ordovician Harding Quartzite, is the host. The mineralized horizon is four ft thick in places.  
 MNZ No uranium minerals were identified. Manganosiderite fills vug and fractures in the quartzite, opal filled vugs are common. The host where mineralized is dark colored.  
 DOI 1971  
 REF R. C. Malan, 1978, Personal Communication. U.S. Geol. Survey, 1977, CRIB File. U.S. A.E.C., 1971, Production Records, Colorado. U.S. A.E.C., 1966, Preliminary Reconnaissance Reports, Park County, Colorado.

## Balfour Mines

LOCATION: SW 1/4 sec. 8, T. 13 S., R. 74 W. 77  
 LCST UNCERTAIN  
 LCRM The directions to the location in the original PRR describes the location above. However, the location was given as sec. 6-18, T. 13 S., R. 7 W.; and sec 19-36, T. 12 S., R. 7 W.  
 QUAD Guffey 7 1/2'  
 MAP PUEBLO  
 DVEL The area is reportedly an old gold mining district.  
 BKG 0.01 mr/hr  
 RNG 0.02 to 0.05 mr/hr  
 HOST There are many different rock types in the area of the occurrence. They are a variety of extrusive rocks, and the Morrison, Dakota, Benton, Pierre and Florissant Formations.  
 RMKS The reconnaissance appears to cover a large area and the location of the 5 x bg anomaly is very uncertain.  
 DOI 1956  
 REF U.S. A.E.C., 1966, Preliminary Reconnaissance Reports, Park County, Colorado.

## Blue Bull Claim

LOCATION: sec. 35, T. 12 S., R. 78 W.  
 LCST UNCERTAIN  
 LCRM Reported to be about one mile southeast of Lady Elk Lode.  
 DVEL A coal prospect adit.  
 RNG 2 to 3 x bg.  
 HOST Lignite in the Belden Shale of Pennsylvanian age.  
 DOI 1959  
 REF R. C. Malan, 1978, Personal Communication.

## Boomer Mine (Shamrock-Irish Group)

LOCATION: sec. 21, T. 11 S., R. 72 W.  
 QUAD Tarryall 7 1/2'  
 MAP DENVER  
 DVEL The mine was developed before 1895 as a silver prospect. A small amount of lead-silver ore was shipped. Later about 1917 the mine was prospected for molybdenum. Uraninite was discovered on the dump in the early 50's and in 1955 the mine was partly reopened as a uranium prospect. Little uranium was found but beryl was noted and the mine was a beryllium producer from 1956 to 1965.  
 PROD It has been reported (Hawley and Wobus, 1977) "that it is likely the mine has produced more beryllium than any other mine in the U.S." The estimated amount is 3,000 tons of ore at a grade of approximately 5% BeO.  
 BKG 0.05 mr/hr  
 RNG 0.06 to 1.2 mr/hr  
 HOST The deposit is contained in a greisen pipe in gneiss of the Precambrian Idaho Springs Formation, Boulder Creek Granodiorite and Silver Plume Granite.  
 MNZ Beryl, bertrandite, galena, sphalerite, arsenopyrite, and uraninite were found in a muscovite quartz gangue. Grab samples had values of 0.02% to 0.74% U308.  
 DOI 1969  
 REF U.S. Bur. of Mines, 1977, (Unpubl.). Hawley, C. C., and Wobus, R. A., 1977. Gallagher, G. L., 1976. U.S. A.E.C., 1966, Preliminary Reconnaissance Reports, Park County, Colorado.

## Buckskin Joe Mine (Phillips Mine)

LOCATION: SW1/4SE1/4 sec. 3, T. 9 S., R. 78 W.  
 QUAD Alma 7 1/2'  
 MAP LEADVILLE  
 DVEL There are extensive workings, with over 7,000 ft of crosscuts and drifts. The mine was worked during the 19th century for gold. After 1941, the mine was worked for zinc.  
 RNG To 10 x bg.  
 HOST Replacement bodies in the Cambrian Sawatch Quartzite and Peerless shale.  
 STRC Vein strikes N20°E, dips 80°NW.  
 MNZ Gold, silver, zinc, galena, pyrite. Grab sample had a value of .033% U308. No uranium minerals were identified.  
 DOI 1951  
 REF U.S. Bur. of Mines, 1977, (Unpubl.). U.S. A.E.C., 1966, Preliminary Reconnaissance Reports, Park County, Colorado. Singewald,

# PARK COUNTY

Q. D., and Butler, B. S., 1941, Ore deposits in the vicinity of the London fault of Colorado, U.S. Geol. Survey Bull. 911, 74 p.

## Carson Mining and Development (Nina No. 7)

LOCATION: sec. 19, T. 13 S., R. 76 W.  
 LCST UNCERTAIN  
 LCRM Occurrence extends into sec. 20 and 21. Tailings? and prospect pits are shown in south half of sec. 20.  
 QUAD Antero Reservoir 7 1/2'  
 MAP PUEBLO  
 DVEL Work reported consists of four bulldozer trenches and eight drill holes.  
 BKG .01 mr/hr  
 RNG .01 to 1 mr/hr  
 HOST There is a question as to the host of this occurrence. Malan reports it is a trachyte flow, whereas the Preliminary Reconnaissance Report reports it as the following: fine-grained, gray, tuffaceous, bedded sandstone of the Oligocene Tallahassee Creek Conglomerate. Mineralization occurs along small fractures. Autunite.  
 STRC  
 MNZ  
 DOI 1955  
 REF R. C. Malan, 1978, Personal Communication. U.S. Bur. of Mines, 1977, (Unpubl.). Young, P., and Mickle, D. G., 1976. U.S. A.E.C., 1966, Preliminary Reconnaissance Reports, Park County, Colorado.

## Champaign Mine (Treasury Vault)

LOCATION: sec. 6, T. 9 S., R. 78 W.  
 LCST UNSURVEYED  
 QUAD Climax 7 1/2'  
 MAP LEADVILLE  
 DVEL There are a series of adits and prospects along vein.  
 HOST Vein in Precambrian granite and Tertiary porphyry.  
 MNZ Quartz, pyrite, ilmonite. No uranium minerals are identified.  
 RMKS Values of 0.06 eU308 in radon gas were encountered in the mine, and 25,000 pico curies/l were measured after the tunnel was sealed all winter by snow.  
 DOI 1951  
 REF Robert U. King, 1977, Personal Communication. U.S. Bur. of Mines, 1977, (Unpubl.). U.S. A.E.C., 1966, Preliminary Reconnaissance Reports, Park County, Colorado. Singewald, Q. D., and Butler, B. S., 1941.

## Chumway Park

LOCATION: sec. 19, T. 15 S., R. 73 W.  
 MAP PUEBLO  
 MNZ Uranium, vanadium.  
 DOI 1975  
 REF U.S. Bur. of Mines, 1977, (Unpubl.).

## Garo Deposit (DuVall Discovery, Shirley May Mine)

LOCATION: sec. 16, T. 11 S., R. 76 W.  
 LCRM One mile south of Garo. Also sec. 6, 7, 8, and 17.  
 MAP DENVER

DVEL Shallow shafts, pits, and trenches. Prospect was open in 1917. One carload of ore was shipped to the Radium Company of Colorado in 1919 which had a value of about 1% U308.  
 PROD U.S. A.E.C. Production Records show that in 1952, 180 tons were mined at a grade of 0.16% U308 and 0.71% V205, containing 593 lbs of U308.  
 HOST Permo-Pennsylvanian red beds, micaceous sandstone and shale with thin limestone layers of the Jurassic Morrison Formation.  
 STRC Beds strike N30°W and dip 50°NE.  
 MNZ Copper-uranium vanadium minerals. Carnotite, torbernite-volborthite. Various samples range in value from 0.008 to 0.93% U, and 1.26 V205.  
 RMKS The deposit was drilled by the U.S. Bur. of Mines and the report by Wilmarth, 1959, describes the geology.  
 DOI 1951  
 REF U.S. Bur. of Mines, 1977, (Unpubl.). U.S. Geol. Survey, 1977, CRIB File. Young, P., and Mickle, D. G., 1976. U.S. A.E.C., 1966, Preliminary Reconnaissance Reports, Park County, Colorado. Wilmarth, V. R., 1959. Stark, and others, 1949, Geology and origin of South Park, Colorado, Memoir 33, Geol. Soc. of Am. Riley, L. B., 1946. Gulliotte, G. B., 1944, (RMO-49).

## Gem Dandy (Jim Dandy)

LOCATION: sec. 9, T. 7 S., R. 75 W.  
 LCST UNSURVEYED  
 LCRM From Conoco station in Jefferson go east on U.S. 285 6.0 miles. Turn left; go 1.5 miles, turn right off main dirt road; go 0.8 mile, take left fork, follow trail for 0.3 mile to workings.  
 QUAD Jefferson 7 1/2'  
 MAP DENVER  
 PROD By 1971, 372 tons had been mined at a grade of 0.21% U308, 0.01% V205, producing 1,570 lbs of U308, and 43 lbs of V205.  
 BKG .3 mr/hr  
 RNG 2-7 mr/hr  
 HOST Precambrian Pikes Peaks Granite.  
 STRC Mineralization appears to be in a shear or fault zone.  
 MNZ Autunite and meta-uranocerite.  
 DOI 1956  
 REF U.S. A.E.C., 1977, Production Records, Colorado. Gallager, G. L., 1976. U.S. A.E.C., 1966, Preliminary Reconnaissance Reports, Park County, Colorado. U.S. A.E.C., 1959, Guidebook, p. 4-28.

## Goerner Lease

LOCATION: N1/2SW1/4 sec. 19, T. 15 S., R. 73 W.  
 PROD In 1966, 0.3 tons were mined at a grade of 0.28% U308, producing 2 lbs of U308, and 0.59% V205, producing 4 lbs of V205.  
 HOST Pennsylvanian Minturn Formation.  
 MNZ Autunite.  
 DOI 1975  
 REF U.S. Bur. of Mines, 1977, (Unpubl.). U.S. A.E.C., 1971, Production Records, Colorado.

## PARK COUNTY

### Gold Star

LOCATION: sec. 23, T. 11 S., R. 72 W.  
 MAP DENVER  
 DYEL There is one small pit, and a reported grade of 0.25% U308.  
 HOST The mineralization is found in a weathered and decomposed light brown circular breccia body. The mineralization appears in an igneous environment, but it is possibly due to secondary enrichment.  
 STRC The anomaly occurs in a circular pipe-like structure.  
 ALT The rock is intensely altered to an earthy material.  
 MNZ Identified minerals are: Uraninite [UO2] Schoepite [UO3 2H2O] Curite [3PbO8 UO3 5H2O] Soddyite [(UO2)5 (SiO4)2 5H2O] plus 4 ppm Ag, 441 ppm Pb, and 128 ppm Zn.  
 RMKS Alteration, structure, and mineralization indicate a secondary enrichment, possibly of a greisen pipe which are abundant in the area. See USGS Prof. Paper 608-A for description of the pipes.  
 REF Gallagher, G. L., 1976. Hawley, C. C., 1969.

### Hartsel Ranch (Airborne Anomaly No. 6)

LOCATION: NW 1/4 sec. 14, T. 13 S., R. 74 W.  
 LCST UNCERTAIN  
 LCRM "From Hartsel go south on Colo. 9 for 8.75 miles, go left for 3.5 miles. Anomaly is just right of road."  
 QUAD Guffey NW 7 1/2'  
 MAP PUEBLO  
 BKG .016 mr/hr  
 RNG .016 to .032 mr/hr  
 HOST Precambrian granite.  
 MNZ No visible minerals.  
 DOI 1954  
 REF Young P., and Mickle, D. G., 1976. Gallagher, D. G., 1976. U.S. A.E.C., 1966, Preliminary Reconnaissance Reports, Park County, Colorado.

### Hass 1-12

LOCATION: sec. 9, T. 15 S., R. 74 W.  
 LCST UNCERTAIN  
 LCRM Also sec. 10.  
 PROD According to U.S. A.E.C. Production Records in 1960, 16 tons of ore averaging 0.10% U308 and containing 32 lbs of U308 was produced from the Hass No. 1 Claim.  
 HOST Oligocene Tallahassee Creek Conglomerate.  
 MNZ Autunite.  
 DOI 1971  
 REF U.S. A.E.C., 1971, Production Records, Colorado.

### Hill Top Claims

LOCATION: SE 1/4 sec. 12, T. 12 S., R. 72 W.  
 LCST UNCERTAIN  
 LCRM Directions as given are as follows: "From Lake George, 1 mile west on highway 24, 3 miles north on Colo. 77, 2 miles southwest

on mine road to claims." These directions indicate prospect could be in SE 1/4 sec. 2 instead of sec. 12.

QUAD Tarryall 7 1/2'  
 MAP DENVER  
 DYEL There is one pit and one cut.  
 BKG .03 mr/hr  
 RNG .03 to .15 mr/hr  
 HOST Zoned pegmatite in Precambrian Pikes Peak Granite.  
 MNZ Quartz, biotite, muscovite, plagioclase, orthoclase, autunite.  
 DOI 1954  
 REF U.S. Bur. of Mines, 1977, (Unpubl.). Gallagher, G. L., 1976. U.S. A.E.C., 1966, Preliminary Reconnaissance Reports, Park County, Colorado.

### Horn Property

LOCATION: sec. 7, T. 7 S., R. 76 W.  
 LCST UNSURVEYED  
 LCRM The occurrence extends from sec. 7 into sec. 8.  
 MAP DENVER  
 DYEL There are several pits, and three adits in area.  
 BKG 150 cps  
 RNG 150-1200 cps  
 HOST Cretaceous Dakota Sandstone and Precambrian granite.  
 STRC Joints in the Dakota and granite control the mineralization.  
 MNZ Autunite and rare earth type mineral?  
 RMKS Autunite seen on cracks in Dakota Sandstone. Also along fractures and joints in granite. Granite approximately one mile southeast of pass has abundant crystals of a dark rare earth type mineral.  
 DOI 1977  
 REF Western Nuclear Submittals file, 1977.

### Kentucky Belle Mine

LOCATION: T. 8 S., R. 78 W.  
 LCST UNSURVEYED  
 LCRM Mine located about 1000 ft north-northwest of Kite Lake.  
 QUAD Climax 7 1/2'  
 DYEL There are a number of adits and prospects.  
 RNG To 10 x bg.  
 HOST Vein in Precambrian and Tertiary Later White Porphyry.  
 MNZ Chalcopyrite, gold? No uranium mineral identified.  
 DOI 1951  
 REF U.S. A.E.C., 1966, Preliminary Reconnaissance Reports, Park County, Colorado. Singewald, Q. D., and Butler, B. S., 1941, Ore deposits in the vicinity of the London fault of Colorado., U.S. Geol. Surv. Bull. 911, 74 p.

### Last Chance

LOCATION: SW 1/4 sec. 30, T. 11 S., R. 72 W.  
 LCRM Also occurs in sec. 31, and in T. 11 S., R. 73 W., sec. 25, 26.  
 MAP DENVER

# PARK COUNTY

PROD According to U.S. A.E.C. Records, in 1959, 1 ton of ore averaging 0.25% U3O8 and containing 5 lbs of U3O8 was produced.  
 HOST Vein in Precambrian Pikes Peak Granite and metasediments.  
 STRC Vein strikes N50°W and dips 80-85° to the SW.  
 MNZ Autunite.  
 DOI 1972  
 REF E. P. Beroni, 1978, Personal Communication. U.S. Bur. Mines, 1977, (Unpubl.), U.S. Geol. Survey, 1977, CRIB File. Gallagher, G. L., 1976. U.S. A.E.C., 1971, Production Records, Colorado.

## London Butte Tunnel

LOCATION: NW1/4 sec. 18, T. 9 S., R. 78 W.  
 MAP LEADVILLE  
 RNG 10 x bg.  
 MNZ Value of 0.005% eU3O8 reported.  
 RMKS Radiation due to radon in mine?  
 REF Robert U. King, 1977, Personal Communication.

## London Extension Mine

LOCATION: NW1/4NE1/4 sec. 18, T. 9 S., R. 78 W.  
 QUAD Climax 7 1/2'  
 MAP LEADVILLE  
 DVEL There are extensive workings. The mine, a gold-silver producer, was shut down about 1943.  
 HOST Vein material from mine dump contains the mineralization.  
 MNZ Pitchblende was found in the vein material as was galena, sphalerite, silver, and gold.  
 DOI 1951  
 REF U.S. A.E.C., 1966, Preliminary Reconnaissance Reports, Park County, Colorado. Singewald, Q. D., and Butler, B. S., 1941, Ore deposits in the vicinity of the London fault of Colorado, U.S. Geol. Survey Bull. 911, 74 p.

## Lone Star Claim

LOCATION: SE1/4 sec. 36, T. 8 S., R. 79 W.  
 LCST UNCERTAIN  
 QUAD Climax 7 1/2'  
 MAP LEADVILLE  
 DVEL There are a shaft and a cut. They are thought to be on the General Canby vein. The district is a gold-silver mining district.  
 BKG .02 mc/hr  
 RNG .04-.08 mc/hr  
 HOST Vein in Precambrian granite and pegmatite.  
 STRC The vein strikes N50°E.  
 MNZ No uranium minerals were observed. There is an estimated value of 0.01% U3O8 from a grab sample of the dump.  
 DOI 1953  
 REF U.S. A.E.C., 1966, Preliminary Reconnaissance Reports, Park County, Colorado. Singewald and Butler, 1941.

## Lucky Jim Claims

LOCATION: NW1/4 sec. 26, T. 10 S., R. 75 W.  
 LCRM The occurrence is 14 miles northeast of Hartsel.

MAP DENVER  
 DVEL There is a 30 ft x 60 ft pit, 50 holes were drilled in the area surrounding the pit.  
 PROD U.S. A.E.C. Production Records show that between 1958 and 1963, 741 tons averaging 0.18% U3O8 and containing 2,267 lbs of U3O8 had been produced.  
 HOST The mineralization occurs in lakebeds, and tuffaceous siltstones of the Oligocene Antero Formation.  
 STRC The prospect is on the east side of Elk Horn Thrust Fault.  
 MNZ Autunite is found in lenses and pods in carbonaceous laminations parallel to bedding in altered micaceous and argillaceous tuffaceous siltstone.  
 DOI 1971  
 REF R. C. Malan, 1978, Personal Communication. Atlantic Richfield Co., 1977. U.S. Geol. Survey, 1977, CRIB File. Young, P., and Mickle, D. G., 1976. U.S. A.E.C., 1971, Production Records, Colorado.

## Mud Claims

LOCATION: sec. 20, T. 11 S., R. 74 W.  
 LCRM Also sec. 21.  
 DVEL Mineralized body drilled out on Mud 59, 75 and 77 claims. Average depth to ore is 45 ft.  
 HOST Oligocene Florissant Lakebeds, similar to Lucky Jim deposit.  
 MNZ Uraninite, coffinite.  
 DOI 1971  
 REF R. C. Malan, 1978, Personal Communication. U.S. A.E.C., 1971, Production Records, Colorado.

## Muley Gulch

LOCATION: sec. 11, T. 11 S., R. 75 W.  
 LCRM The occurrence also extends into sec. 12.  
 QUAD Hartsel 7 1/2'  
 MAP DENVER  
 DVEL Four pits were noted in NE1/4 of sec. 14. The trenches were dug in the 1950's.  
 PROD Grade of 0.28% U3O8 reported.  
 RNG To 50 x bg.  
 HOST Vein in fractures in Precambrian granite.  
 STRC In fractures on upthrown side of Elk Horn Fault.  
 DOI 1977  
 REF Atlantic Richfield Corp., 1977.

## Orphan Boy Mine

LOCATION: SE1/4 sec. 10, T. 9 S., R. 78 W.  
 QUAD Alma 7 1/2'  
 MAP LEADVILLE  
 DVEL Large mine with 3,450 ft of underground development.  
 RNG To 10 x bg.  
 HOST Vein in Cambrian Sawatch Quartzite and Tertiary gray porphyry.  
 MNZ Gold, pyrite, sphalerite, galena, chalcopryrite and dolomite are reported.  
 RMKS No uranium minerals were observed. It is reported that "Radioactive minerals not determinable megascopically occur in vein

## PARK COUNTY

flissures at top of ore shoots, within or immediately below gray porphyry sill. (U.S. A.E.C., 1966).

DOI 1951  
REF U.S. A.E.C., 1966, Preliminary Reconnaissance Reports, Park County, Colorado. Singewald, Q. D., and Butler, B. S., 1941, Ore deposits in the vicinity of the London fault of Colorado, U.S. Geol. Survey Bull. 911, 74 p.

### Pegmatite Prospect

LOCATION: sec. 3, T. 12 S., R. 73 W.

LCST UNCERTAIN

QUAD Glentivar 7 1/2'

MAP DENVER

DVEL There is one pit 57 ft long, 15 ft wide, and up to 15 ft deep.

HOST Pegmatite in Precambrian biotite granite.

STRC Pegmatite strikes N60°E.

MNZ Samarskite (euxenite?), possibly thorite, tourmaline, and garnet.

DOI 1952

REF U.S. A.E.C., 1966, Preliminary Reconnaissance Reports, Park County, Colorado.

### Redskin Claim

LOCATION: NW1/4 sec. 15, T. 11 S., R. 72 W.

LCRM Note there is also a Redskin Mine in Park County.

QUAD Tarryall 7 1/2'

MAP DENVER

DVEL Mine was originally worked for molybdenum around 1920. It was abandoned until uraninite was discovered in 1954. In 1959, beryllium was found at the mine and a small amount of low-grade beryllium ore was produced.

PROD There has been no recorded production of uranium.

BKG .04 mc/hr

RNG 1 to 15 mc/hr

HOST Greisen pipe in porphyritic Precambrian Pikes Peak granite.

MNZ Uranophane and sooty pitchblende is present in pockets of high grade and in small fissures lined with smoky quartz crystals. Also chalcopryite, molybdenite, sphalerite.

RMKS Best reference at this time is Hawley, 1969.

DOI 1976

REF U.S. Bur. of Mines, 1977, (Unpubl.). Hawley, C. C., and Wobus, R. A., 1977. Gallagher, G. L., 1976. Hawley, C. C., 1969. U.S. A.E.C., 1966, Preliminary Reconnaissance Reports, Park County, Colorado.

### Redskin Mines (Shawnee No. 1 and Redskin 1A, 1B, 2A, 2B & 3 Claims)

LOCATION: N1/2N1/2 sec. 27, T. 7 S., R. 73 W.

LCRM Note there is also a Redskin Claim in Park Co.

QUAD Shawnee 7 1/2'

MAP DENVER

DVEL Small underground mine.

PROD U.S. A.E.C. Production Records indicate that in 1963, 48 tons of ore averaging 0.15% U3O8 and containing 141 lbs of U3O8 were mined.

HOST Shear zone in Precambrian Idaho Springs Formation.

STRC Shear zone 1.5 ft wide.

MNZ Thin coatings of secondary uranium minerals, probably uranophane.

DOI 1973

REF U.S. Geol. Surv., 1977, CRIB File. U.S. A.E.C., 1971, Production Records, Colorado.

### Rogers Publishing Co. (Katydid Mine)

LOCATION: NW1/4 sec. 2, T. 12 S., R. 73 W.

LCRM The deposit also extends to sec. 3 in this township and range, and into sec. 34, T. 11 S., R. 73 W.

QUAD Glentivar 7 1/2'

MAP DENVER

DVEL The mine has been worked since about 1920 for mica and feldspar. There are six bulldozed pits on property, and 800 ft of diamond drilling is reported.

BKG .03 mc/hr

RNG .15 to .60 mc/hr

HOST Precambrian Pikes Peak Granite. Pegmatite dikes and quartz veins have intruded the granite in the area.

STRC Fracture zone.

MNZ Autunite and samarskite.

DOI 1956

REF U.S. A.E.C., 1966, Preliminary Reconnaissance Reports, Park County, Colorado.

### South London House

LOCATION: NE1/4SW1/4 sec. 7, T. 9 S., R. 78 W.

QUAD Climax 7 1/2'

MAP LEADVILLE

HOST Tertiary fault gouge from mine dump.

MNZ Chalcopryite and quartz are reported. One grab sample was reported as being a "rock fragment coated with particles of uranium bloom"

DOI 1951

REF U.S. A.E.C., 1966, Preliminary Reconnaissance Reports, Park County, Colorado. Singewald, Q. D., and Butler, B. S., 1941.

### Spring Claim

LOCATION: sec. 4, T. 11 S., R. 74 W.

LCRM The occurrence also covers sec. 5, 8, 9, and 17.

MAP DENVER

HOST Lacustrine tertiary tuffs.

MNZ Carnotite in volcanic tuff ridge lying on granite bedrock.

DOI 1977

REF Atlantic Richfield Corp., 1977.

### Sweet Home Mine

LOCATION: W1/2NW1/4SE1/4 sec. 33, T. 8 S., R. 78 W.

MAP LEADVILLE

MNZ Uranium.

DOI 1975

REF U.S. Bur. of Mines, 1977, (Unpubl.).

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### Tedco and MacGeorge (Mac George 4)

LOCATION: sec. 16, T. 7 S., R. 75 W.  
LCRM Also sec. 17, 20, 21.  
MAP DENVER  
PROD U.S. A.E.C. Production Records show that, in 1956, 176 tons were mined at a grade of 0.23% U308, producing 814 lbs of U308, and 36 lbs of V205 were also recovered from the ore.  
HOST Thin fracture fillings in Precambrian Silver Plume Granite.  
STRC Host described as being highly broken.  
MNZ Autunite is present.  
DOI 1973  
REF U.S. Geol. Survey, 1977, CRIB File. Gallagher, G. H., 1976. U. S. A.E.C., 1971, Production Records, Colorado.

### Wyandotte Mine

LOCATION: SW1/4NW1/4 sec. 21, T. 8 S., R. 78 W.  
MAP LEADVILLE  
MNZ Uranium.  
DOI 1975  
REF U.S. Bur of Mines, 1977, (Unpubl.).

### Two Bit Claims

LOCATION: NE1/4 sec. 7, T. 12 S., R. 71 W.  
MAP DENVER  
MNZ Uranium.  
DOI 1975  
REF U.S. Bur. of Mines, 1977, (Unpubl.).

### Unnamed No. 1

LOCATION: sec. 1, T. 12 S., R. 73 W.  
MAP DENVER  
HOST Intrusive in quartz monzonite. The radioactivity occurs in a pegmatite.  
DOI 1977  
REF Lou Reimer, 1977, Personal Communication.

### Unnamed No. 2

LOCATION: sec. 16, T. 7 S., R. 75 W.  
LCRM The mineralization also extends into sec. 17, 20, 21.  
MAP DENVER  
HOST Granite.  
STRC Fracture zone.  
MNZ Autunite occurs in a "weathered" granite in or along a fracture zone.  
DOI 1977  
REF Western Nuclear Submitted file, 1977.

### Wheel of Fortune Claim

LOCATION: sec. 25, T. 11 S., R. 72 W.  
MAP DENVER  
MNZ Uranium.  
DOI 1975  
REF U.S. Bur. of Mines, 1977, (Unpubl.).

### Willow Claims (Bell Property)

LOCATION: sec. 9, T. 15 S., R. 74 W.  
DVEL One bulldozer cut and two prospect pits.  
HOST Uranium occurs in a chalcedonized opal and with volcanic rock fragments in a clay matrix in the Oligocene Wall Mountain Tuff.  
MNZ Autunite.  
DOI 1978  
REF B. P. Beroni, 1978, Personal Communication.



## PHILLIPS COUNTY

No uranium occurrences are reported in Phillips County. The county is underlain by flat-lying Tertiary Ogallala Formation with some minor Quaternary sediments. Potential for uranium resources in the county are small. Sandstone-type uranium occurrences in the Ogallala Formation are the most likely to be found.

## PITKIN COUNTY

The only recorded uranium production from the county as of 1971 was from the Frying Pan Claims, which produced 62 tons at an average grade of 0.14 percent  $U_3O_8$ . Potential for more reserves to be found is very limited.

The seat of Pitkin County is the city of Aspen--one of the oldest and richest silver mining camps in Colorado. It is located in west-central Colorado and includes some of the state's most rugged mountains. The Elk Mountains and the Sawatch Range dominate with mountain peaks towering over 14,000 feet. Precambrian rocks are found in the Sawatch Range, and Pennsylvanian-Permian formations are dramatically exposed in the Elk Mountains. The southern extension of the Grand Hogback Monocline crosses the western part of the county from north to south. Roughly paralleling the Grand Hogback but cutting the center of the county is the Castle Creek Fault, which forms the eastern border of the Elk Mountains. Trending northwest to southeast between the Grand Hogback and Castle Creek Fault is the Roaring Fork Syncline. The Sawatch Range Anticline and the Homestake Shear Zone lie in the northeastern corner of the county, and the Grizzly Caldera is directly south of them on the southern border. Precambrian rocks in the Grizzly Mountains are overlain by Tertiary intrusives and extrusives. Sedimentary formations ranging in age from Cambrian to Late Cretaceous cover much of the rest of the county.

The Frying Pan Claims, because of their production, are the most important known uranium occurrences in the county. They are similar in nature to the other uranium occurrences found in the county, all of which lie in fault breccias that host the silver and lead ores found in the old mines near Aspen. Most of these fault breccias cut the Pennsylvanian-Permian Weber Shale and the Mississippian Leadville Limestone, but some are found in the Precambrian granites as well. In all cases the Precambrian rocks and Tertiary intrusives are intimately associated with the mineralization.

Based on known occurrences, the Aspen district appears most favorable for additional uranium occurrences. However, the potential for reserves to be developed is small. Uranium mineralization found in the Aspen district is associated with silver and lead ores from the old mines. If any of the mines were reopened for silver and lead, the uranium could possibly be extracted as a by-product. The other potential area in the county is the Grizzly Caldera in the southeastern part of the county. There, Tertiary intrusives are exposed within the caldera, and related extrusives lie around the borders. This caldera could be the host for volcanogenic deposits such as are found in other parts of the world.

# PITKIN COUNTY

## Frying Pan Claims 1-16 (Frying Pan Group, Frying Pan Claims)

LOCATION: sec. 7, T. 9 S., R. 83 W.  
 LCST UNSURVEYED  
 LCRM The deposit also extends to sec. 12-13, T. 9 S., R. 84 W.  
 QUAD Meredith 7 1/2'  
 MAP LEADVILLE  
 DVEL There is an adit with underground workings. 2,000 ft of drilling were carried out on the property.  
 PROD In 1958 and 1960, a total of 62 tons of ore had been mined at a grade of 0.14% U308, producing 174 lbs of U308.  
 HOST The deposit occurs in a silicified breccia vein that cuts a Precambrian granite and schist.  
 STRC A fault zone controlled the emplacement of the mineralization.  
 MNZ Autunite and torbernite are present in the vein.  
 DOI 1974  
 REF E. P. Beroni, 1978, Personal Communication. U.S. Geol. Survey, 1977, CRIB File. U.S. Bur. of Mines, 1977, (Unpubl.). U.S. A.E.C., 1971, Production Records.

## Silver King

LOCATION: sec. 7, T. 10 S., R. 84 W.  
 LCST UNSURVEYED  
 LCRM May be in sec. 8. Near Smuggler, Mollie Gibson and J. C. Johnson Mines.  
 QUAD Aspen 7 1/2'  
 MAP LEADVILLE  
 RNG 2 to 3 x bg  
 HOST The deposit occurs in a fault breccia between the Pennsylvanian-Permian Weber Shale and the Mississippian Leadville Limestone. It appears to be associated with black to gray carbonaceous shale and gray dolomitic limestone. Upper Devonian Harding Quartzite and a Tertiary quartz porphyry are also present.  
 MNZ Galena, sphalerite, argentite, pyrite, chalcopryrite, calcite and barite are all present in the veins, but no uranium minerals were found.  
 DOI 1952  
 REF U.S. A.E.C., 1966, Preliminary Reconnaissance Reports, Pitkin County, Colorado.

## Smuggler Mine, (Nos. 1 & 2 Tunnels)

LOCATION: sec. 7, T. 10 S., R. 84 W.  
 LCST UNSURVEYED  
 LCRM This deposit lies 1/2 mile east of Aspen.  
 QUAD Aspen 7 1/2'  
 MAP LEADVILLE  
 DVEL There has been production for silver, lead and zinc. Examination of dump by U.S. A.E.C. geologists in 1954 indicated a small amount of uraniferous material existed.  
 BKG 0.5 mr/hr  
 RNG To 8.0 mr/hr

HOST The deposit is located at the fault contact between the Pennsylvanian-Permian Weber Shale and the Mississippian Leadville Limestone in a black carbonaceous shale.  
 STRC The silver fault appears to control the radioactivity. All anomalies are within the fault breccia.  
 MNZ Galena, sphalerite, argentite, polybasite, native silver, chalcopryrite, pyrite, barite, and calcite are all present, with no visible uranium minerals.  
 DOI 1952  
 REF U.S. Bur. of Mines, 1977, (Unpubl.). U.S. Geol. Survey, 1977, CRIB File. U.S. A.E.C., 1971, Production Records, Colorado. U.S. A.E.C., 1966, Preliminary Reconnaissance Reports, Pitkin County, Colorado. Boyd, F. S., Jr., and Bromley, C. P., 1953. Bastin, E. S., 1925, U.S. Geol. Survey Bull. 750-C, p. 48. Spurr, J. E., 1898, U.S. Geol. Survey Monograph XXXI.

## Tower Durant Tunnel and Dump

LOCATION: sec. 19, T. 10 S., R. 84 W.  
 LCST UNSURVEYED  
 LCRM The U.S. Bur. of Mines source lists this as being in sec. 10.  
 QUAD Aspen 7 1/2'  
 MAP LEADVILLE  
 RNG To 2.5 to 3 x bg  
 HOST The host rocks in the area are Pennsylvanian Weber Shale, Mississippian Leadville Limestone, a Tertiary quartz porphyry and a Precambrian granite. The radioactivity is found associated with the decomposed quartz porphyry.  
 MNZ Pyrite, chalcopryrite, barite, and calcite are present. No uranium minerals were visible.  
 DOI 1952  
 REF U.S. Bur. of Mines, 1977, (Unpubl.). U.S. A.E.C., 1966, Preliminary Reconnaissance Reports, Pitkin County, Colorado. Spurr, J. E., 1898, U.S. Geol. Surv. Monograph XXXI.

## Unnamed Dump

LOCATION: sec. 27, T. 9 S., R. 84 W.  
 LCST UNCERTAIN  
 LCRM The adit is near the town of Lenado.  
 QUAD Aspen 7 1/2'  
 MAP LEADVILLE  
 BKG 60 cps  
 RNG 120 to 300 cps  
 HOST The tunnel portal is in Mississippian Leadville Limestone, and the dump material consists of Leadville Limestone and Pennsylvanian Weber Shale. The anomalous radioactivity occurs in the black mud near the portal and in the dark shale on the dump.  
 MNZ No visible minerals were noted.  
 DOI 1952  
 REF U.S. A.E.C., 1966, Preliminary Reconnaissance Reports, Pitkin County, Colorado.

## PROWERS COUNTY

Neither production nor occurrences are reported from the county. The potential for any uranium resources to be found is very limited.

Prowers County lies on the southern flank of the Las Animas Arch in the southeastern corner of Colorado. The terrane is almost entirely sedimentary, with nearly equal proportions of Cretaceous Niobrara Formation, Benton Group, and Dakota Sandstone, and Miocene-Pliocene Ogallala Formation covering the county. A few small early Tertiary intrusives are found in the extreme southern part of the county along Two Butte Creek, with older formations locally exposed by the uplift associated with the intrusions.

No uranium occurrences are known within the county. In other areas of the state the Dakota Sandstone and the Jurassic Morrison Formation are favorable hosts for uranium deposits. The Dockum Group also shows interesting anomalies in other parts of the state, and exploration drilling could possibly detect some mineralization at depth. Water sampling done by the U.S. Geological Survey has shown higher than average readings of uranium from waters draining the Ogallala Formation north of the Arkansas River. Some exposures of Ogallala are found in the extreme northeastern section of the county, and these also have some potential.

## PUEBLO COUNTY

Production appears to have been limited to one deposit, the George Avery Ranch Mine, which shipped 10,553 tons of ore at an average grade of 0.15 percent  $U_3O_8$ , producing 32,213 lb of  $U_3O_8$  by 1971. Most of this production came in the late 1950's; no recent work is known to have taken place. Potential for more reserves to be found in the county is small.

Pueblo County, located in the south-central part of the state, is dominantly covered with sedimentary rocks ranging in age from Cambrian to Quaternary. A small portion of southwestern Pueblo County contains Precambrian crystalline rocks of the Wet Mountains. In general, the youngest rocks lie in the northeastern quarter of the county, and become progressively older toward the southwest.

The George Avery Ranch contains what are probably the most important occurrences in the county. They are tabular deposits within the Cretaceous Dakota Sandstone and are associated with carbonaceous material. The deposits lie on the eastern flank of the Turkey Creek Anticline in the northwestern corner of the county and are related to occurrences nearby in El Paso County. This and two other occurrences lie within the Fort Carson military reservation, and access to them is limited.

Additional small, scattered ore bodies will probably be found in the Dakota Sandstone within the county. Known isolated occurrences are associated with fossils in the Jurassic Morrison Formation. Further exploration in both formations could develop further reserves in them; however, the potential is limited for the county.

# PUEBLO COUNTY

## Dinosaur No. 1 Claim (John Gatley Ranch)

LOCATION: sec. 10, T. 18 S., R. 67 W.

LCRM Directions to the deposit are as follow:  
"From the Penrose monument in Penrose, Colorado go north 0.4 miles on dirt road; continue north on Colorado 115 for 1.2 miles. Turn right on dirt road; continue 3.3 miles, cross Red Creek, go 4.1 miles, cross wooden bridge over gulch, go 1.2 miles; take right fork for 1.1 miles then left fork for 0.3 miles. Go straight ahead for 0.8 miles, through a red gate; turn right on dirt track road for 0.5 miles. Prospect 400 yds further on the foot trail".

MAP PUEBLO

DVEL Several small, shallow prospect pits are present.

BKG .03 mr/hr

RNG To .36 mr/hr

HOST Morrison Formation; shales and clays 100 ft below the contact with the Dakota Sandstone. The shales are green, gray, brown, and contain dinosaur bones.

MNZ Mineralization is present with the dinosaur bones. Calcite, quartz, and minor gypsum are present.

DOI 1954

REF U.S. Bur. of Mines, 1977, (Unpubl.). U.S. A.E.C., 1954, Preliminary Reconnaissance Reports, Pueblo County, Colorado.

RMKS The carnotite-bearing bed was traced along the top of the mesa and was found to be radioactive along its entire length.

DOI 1973

REF U.S. Geol. Survey, 1977, CRIB File. U.S. Bur. of Mines, 1977, (Unpubl.). U.S. A.E.C., 1971, Production Records, Colorado. Finch, W. I., 1967, U.S. A.E.C., 1966, Preliminary Reconnaissance Reports, Pueblo County, Colorado. Colo. Bur. of Mines, 1960, Annual Report.

## George Avery Ranch (George Avery Mine, Kathryn No. 2 Incline Mineral Rights Mine)

LOCATION: SW1/4 sec. 6, T. 18 S., R. 66 W.

LCRM Directions to the deposit are as follow:  
"Take Colo. 115 south 15.9 miles from Colorado Springs to dirt road (Lytle Road) on left. Go 2.2 miles, take left fork on main road. Proceed 7.3 miles to dirt track on right; go 0.3 miles through gate to ranch; deposit on hill 150-200 yds west of house".

QUAD Timber Mountain 7 1/2'

MAP PUEBLO

DVEL A test pit 5 ft deep by 5 ft long was sunk along a vertical fracture (2/54), 100 ft tunnel with 45 ft shaft and 12 ft crosscuts completed 10/55.

PROD By 1971, 10,553 tons of ore had been mined at an average grade of 0.15% U308, producing 32,213 lbs of U308.

BKG .02 mr/hr

RNG 1.0 to 5.0 mr/hr

HOST The host is Cretaceous Dakota Sandstone(?); gray to buff, fine-grained sandstone with carbonaceous fragments.

STRC A vertical fracture 0.4 ft wide is present but is not radiometrically anomalous.

MNZ There is a yellow coating (carnotite?) on the sandstone, in small solution cavities, and as minor fracture filling. Some uraninite is also present. Chip assays covered the range of 0.03-0.23% U308, with one assaying at .063% U308, a 0.4 ft channel sample had a value of 0.103% U308.

## RIO BLANCO COUNTY

As of 1971 production from the county totaled 36,637 tons mined which produced 223,679 lb of  $U_3O_8$ , and 832,933 lb  $V_2O_5$ . The county is one of the major producers in the state, and potential for more reserves to be found is excellent. Small-scale mining will continue in the Coal Creek district as long as the price remains at its present value.

Rio Blanco County is situated in the northwestern part of the state. Most of the county lies within the Piceance Creek Basin, an elongate, northwest-trending structure. The north-trending Grand Hogback Monocline forms the boundary between Cretaceous and Tertiary sediments in the Piceance Creek Basin and Paleozoic sediments and Tertiary volcanics in the White River Plateau. At the north end of the Grand Hogback, about 15 miles northeast of Meeker, lies the Coal Creek Anticline, a small uranium district. Uranium mineralization is found where the Morrison Formation is exposed around the nose of the anticline. The ore is of the carnotite-type and concentrated in the Salt Wash Member of the Morrison Formation. This belt of mineralization is less than a mile wide and six miles long.

Most of the deposits in the county are small, commonly less than 500 tons, and were mined by small strip operations and underground methods.

The largest producing mine in the county is in the Midnight Group of claims, where over 12,000 tons of ore were mined and shipped. This and all other large producers--Burrell 1, 2, 3, and the Burrell 5, the Butterfly Group, and the Shylo Group are located in the Coal Creek district. The Burrell Mines and the Butterfly Group are separate mines all lying within the same claim group. The Salt Wash Member of the Morrison Formation was the host for these deposits and for most other mines in the county.

Additional small occurrences or deposits will probably be found in the Salt Wash Member of the Morrison Formation near the Coal Creek Anticline. Small occurrences have been reported on the White River Plateau where older sedimentary rocks are exposed along the Grand Hogback. Any study of potential within the county should include those rocks of the hogback, with emphasis on the Triassic Chinle Formation and the undivided Pennsylvanian-Permian section. They all host uranium deposits either in this county or in nearby counties. Of the younger rocks to the east, the Lower Cretaceous Dakota Sandstone, the Upper Cretaceous Iles Formation, and the Tertiary Wasatch Formation may be potential hosts as these, too, are known to contain uranium deposits in this or neighboring counties.

# RIO BLANCO COUNTY

## Allen

### LOCATION:

LCRM This deposit is located in the Coal Creek area, also known as Uranium Peak area.  
 PROD As of 1971, 9 tons of ore had been mined at grades of 0.11% U3O8 and 0.68% V2O5, producing 19 lbs of U3O8 and 122 lbs of V2O5.  
 HOST Jurassic Morrison Formation, Salt Wash Member.  
 MNZ Mineralization is probably in the form of tyuyamunite and/or carnotite.  
 DOI 1971  
 REF U.S. A.E.C., 1971, Production Records, Colorado.

## Brown Group (Brown 2)

LOCATION: sec. 25, T. 2 N., R. 92 W.  
 QUAD Sawmill Mountain 7 1/2'  
 MAP CRAIG  
 PROD As of 1971, 206 tons of ore had been mined at a grade of 0.53% U3O8, producing 2,168 lbs of U3O8, and 1.41% V2O5, producing 5,797 lbs of V2O5. The Brown 5 added 20 tons of ore from these claims by 1971, at a grade of 0.21% U3O8 and 0.95% V2O5, producing 85 lbs of U3O8 and 381 lbs of V2O5.  
 HOST Jurassic Morrison Formation, Salt Wash Member.  
 DOI 1971  
 REF U.S. A.E.C., 1971, Production Records, Colorado.

## Burrell 1, 2 and 3 (Last Day?)

LOCATION: NW1/4NW1/4 sec. 25, T. 2 N., R. 92 W.  
 LCRM This deposit is located in the Coal Creek area. Also in sec. 24 & 26.  
 QUAD Sawmill Mountain 7 1/2'  
 MAP CRAIG  
 PROD As of 1971, 6,443 tons had been mined at grades of 0.35% U3O8 and 1.07% V2O5, producing 45,435 lbs of U3O8 and 138,487 lbs of V2O5.  
 HOST The host is the Salt Wash Member of the Jurassic Morrison Formation. It is a light gray, medium-grained sandstone and mudstone, with abundant coalified and silicified plant remains.  
 MNZ The primary minerals are carnotite and/or tyuyamunite.  
 DOI 1971  
 REF U.S. A.E.C., 1971, Production Records, Colorado. Finch, W. L., 1967.

## Burrell 5

LOCATION: sec. 25, T. 2 N., R. 92 W.  
 QUAD Sawmill Mountain 7 1/2'  
 MAP CRAIG  
 PROD As of 1971, 597 tons of ore had been mined at a grade of 0.61% U3O8, producing 7,334 lbs of U3O8. 14,348 lbs of V2O5 had been produced with ore grades at 1.20% V2O5.  
 HOST The host is the Jurassic Morrison Formation, Salt Wash Member.  
 MNZ Carnotite and tyuyamunite were the principal ore minerals.

DOI 1971

REF U.S. A.E.C., 1971, Production Records, Colorado.

## Butterfly Group (Butterfly No. 1)

LOCATION: SE1/4SE1/4 sec. 23, T. 2 N., R. 92 W.  
 LCRM Also in NE1/4NE1/4 sec. 26.  
 QUAD Sawmill Mountain 7 1/2'  
 MAP CRAIG  
 DVEL This was primarily an underground mine, with production as shown through 1971.  
 PROD By 1971, 6,457 tons had been mined at grades of 0.29% U3O8 and 0.90% V2O5, producing 37,485 lbs of U3O8 and 115,596 lbs of V2O5.  
 HOST The host is the Jurassic Morrison Formation, Salt Wash Member.  
 MNZ Carnotite and/or tyuyamunite were the main ore minerals.  
 RMKS The Butterfly and Burrell are in the same claim group, but are different mines.  
 DOI 1971  
 REF U.S. Bur. of Mines, 1977, (Unpubl.). U.S. A.E.C., 1971, Production Records, Colorado.

## Chris

LOCATION:  
 LCST UNLOCATABLE  
 LCRM This deposit is located in the Coal Creek area.  
 PROD As of 1971, two tons of ore had been mined at grades of 0.25% U3O8, and 1.48% V2O5, producing 10 lbs of U3O8 and 59 lbs of V2O5.  
 HOST The host is the Jurassic Morrison Formation, probably the Salt Wash Member.  
 MNZ Carnotite and tyuyamunite are the principal ore minerals.  
 DOI 1971  
 REF U.S. A.E.C., 1971, Production Records, Colorado.

## Coal Creek 1

LOCATION: sec. 25, T. 2 N., R. 92 W.  
 QUAD Sawmill Mountain 7 1/2'  
 MAP CRAIG  
 PROD 5,105 tons of ore had been mined by 1971, at grades of 0.29% U3O8 and 0.76% V2O5, producing 29,405 lbs of U3O8 and 77,942 lbs of V2O5.  
 HOST The host is the Jurassic Morrison Formation, probably the Salt Wash Member.  
 MNZ Carnotite and tyuyamunite are the principal ore minerals.  
 DOI 1971  
 REF U.S. A.E.C., 1971, Production Records, Colorado.

## Columbine 1 - 4

LOCATION: sec. 26, T. 2 N., R. 92 W.  
 QUAD Sawmill Mountain 7 1/2'  
 MAP CRAIG  
 PROD 298 tons of ore had been mined by 1971, at grades of 0.52% U3O8 and 1.44% V2O5, producing 3,084 lbs of U3O8 and 8,577 lbs of V2O5.  
 HOST The host is probably the Salt Wash Member



## RIO BLANCO COUNTY

of the Jurassic Morrison Formation.  
 MNZ Mineralization is of the carnotite and tyuyamunite type.  
 DOI 1971  
 REF U.S. A.E.C., 1971, Production Records, Colorado.

### Evening Star

LOCATION: T. 1 N., R. 91 W.  
 LCRM This deposit is located in the Coal Creek area.  
 PROD As of 1971, 32 tons of ore had been mined at grades of 0.44% U3O8 and 0.54% V2O5, producing 279 lbs of U3O8 and 347 lbs of V2O5.  
 HOST The host is reported as being the Triassic Chinle Formation.  
 MNZ Mineralization is of the carnotite - tyuyamunite type.  
 DOI 1971  
 REF U.S. A.E.C., 1971, Production Records, Colorado.

### Fawn Springs Group

LOCATION: T. 1 N., R. 90-91 W.  
 LCST UNLOCATABLE  
 LCRM Near Coal Creek.  
 QUAD Fawn Creek 7 1/2' & Lost Park 7 1/2'  
 MAP CRAIG  
 HOST Shinarump Member of the Triassic Chinle Formation.  
 MNZ Carnotite.  
 DOI 1971  
 REF U.S. A.E.C., 1971, Production Records, Colorado.

### Frying Pan 1

LOCATION:  
 LCST UNLOCATABLE  
 PROD As of 1971, 2 tons had been mined at grades of 0.25% U3O8 and 0.82% V2O5, producing 10 lbs of U3O8 and 33 lbs of V2O5.  
 HOST The host is probably the Jurassic Morrison Formation.  
 MNZ Carnotite and/or tyuyamunite were recognized.  
 DOI 1971  
 REF U.S. A.E.C., 1971, Production Records, Colorado.

### Iles Formation

LOCATION: sec. 24, T. 3 N., R. 103 W.  
 QUAD Mellen Hill 7 1/2'  
 MAP VERNAL  
 DYEL There is one 30 ft x 10 ft x 10 ft cut and numerous smaller pits.  
 RNG To 1600 cps  
 HOST The host rock is an Upper Cretaceous, fine-grained sandstone with carbonaceous debris.  
 STRC The ore-bearing beds have a dip of 75°S.  
 ALT Iron staining is common on the outcrop.  
 MNZ The deposit shows irregular secondary uranium mineralization in the outcrop of the sandstone. A selected outcrop sample assayed 0.035% U3O8.  
 DOI 1977  
 REF Atlantic Richfield Corp. 1977, Personal Communication.

### Jerry Zochol (Red Doe Claim)

LOCATION: W21/2 sec. 21, T. 2 N., R. 92 W.  
 LCRM There are many prospects in this section.  
 QUAD Thornburgh 7 1/2'  
 MAP CRAIG  
 DYEL There was no production on these claims.  
 HOST The host is probably the Salt Wash Member of the Jurassic Morrison Formation.  
 MNZ Tyuyamunite is probably the principal ore mineral.  
 DOI 1973  
 REF U.S. Geol. Survey, 1977, CRIB File.

### Last Day (Urin Mining Claim)

LOCATION: sec. 22, T. 2 N., R. 92 W.  
 LCRM There are numerous prospects in this section. This deposit is located in the Coal Creek area.  
 QUAD Thornburgh 7 1/2'  
 MAP CRAIG  
 PROD The Last Day mine, as of 1971, had yielded 1,040 tons of ore at grades of 0.28% U3O8 and 1.13% V2O5, producing 5,836 lbs of U3O8 and 23,581 lbs of V2O5.  
 HOST The deposit lies in the Salt Wash Member of the Jurassic Morrison Formation. It is a gray and brown, medium-grained sandstone with abundant coalified and silicified plant remains.  
 MNZ Tyuyamunite was the principle mineral mined.  
 DOI 1975, 1974, 1971  
 REF U.S. Geol. Survey, 1977, CRIB File. U.S. Bur. of Mines, 1977, (Unpubl.), U.S. A.E.C., 1971, Production Records, Colorado. Finch, W. I., 1967. Gale, H. S., 1907.

### Lucil 106

LOCATION:  
 LCST UNLOCATABLE  
 PROD By 1971, one ton of ore had been mined at grades of 0.30% U3O8 and 1.25% V2O5, producing 6 lbs of U3O8 and 25 lbs of V2O5.  
 HOST The host is probably the Jurassic Morrison Formation.  
 DOI 1971  
 REF U.S. A.E.C., 1971, Production Records, Colorado.

### M & G

LOCATION:  
 LCST UNLOCATABLE  
 LCRM This deposit is located in the Coal Creek area.  
 PROD 6 tons of ore were mined from this property by 1971, at grades of 0.35% U3O8 and 1.52% V2O5, producing 42 lbs of U3O8 and 183 lbs of V2O5.  
 HOST The host is the Salt Wash Member of the Jurassic Morrison Formation.  
 DOI 1971  
 REF U.S. A.E.C., 1971, Production Records, Colorado.

### Marvine View 10

# RIO BLANCO COUNTY

LOCATION: sec. 26, T. 2 N., R. 92 W.  
 LCST UNLOCATABLE  
 LCRM Also sec. 25. This deposit is located in the Coal Creek area.  
 PROD 147 tons of ore were mined by 1971, at grades of 0.56% U3O8 and 1.25% V2O5, producing 1,647 lbs of U3O8 and 3,668 lbs of V2O5.  
 HOST The host is probably the Jurassic Morrison Formation.  
 DOI 1971  
 REF U.S. A.E.C., 1971, Production Records, Colorado.

## Midnight Group (Midnight Mine, Midnight NH, Caywood No. 1 and No. 2, Sleep Cat Uranium Mine, No Name)

LOCATION: NE1/4NW1/4 sec. 28, T. 2 N., R. 92 W.  
 LCRM The claim group also extends to sec. 21.  
 QUAD Sawmill Mountain 7 1/2'  
 MAP CRAIG  
 PROD The Midnight Group, as of 1971, had 12,108 tons of ore mined at grades of 0.29% U3O8 and 1.49% V2O5, producing 70,605 lbs of U3O8 and 360,179 lbs of V2O5. The Midnight NH by the same time had yielded 1,046 tons of ore at grades of 0.17% U3O8 and 1.02% V2O5, producing 3,521 lbs of U3O8 and 21,382 lbs of V2O5.  
 HOST The host is the Salt Wash Member of the Jurassic Morrison Formation. It is a gray to brown, medium-grained sandstone with abundant coalified and silicified plant remains.  
 MNZ Carnotite and/or tyuyamunite are the principal ore minerals. They are often closely associated with the carbonaceous remains and silicified wood fragments.  
 DOI 1973  
 REF U.S. Geol. Survey, 1977, CRIB File. U.S. Bur. of Mines, 1977, (Unpubl.). Vandersiels, G. D., 1977, Personal Communication. U.S. A.E.C., 1971, Production Records, Colorado. Finch, W. L., 1967, Gale, H. S., 1907.

## Naomi Ann

LOCATION: sec. 21, T. 2 N., R. 92 W.  
 LCRM This deposit is located in the Coal Creek area.  
 QUAD Thornburgh 7 1/2'  
 MAP CRAIG  
 PROD As of 1971, 738 tons had been mined at a grade of 0.29% U3O8, producing 4,237 lbs of U3O8, and 1.10% V2O5, producing 16,246 lbs of V2O5.  
 HOST The host is the Jurassic Morrison Formation, Salt Wash Member.  
 DOI 1971  
 REF U.S. A.E.C., 1971, Production Records, Colorado.

## Rio Blanco

LOCATION: sec. 21, T. 2 N., R. 92 W.  
 LCST UNLOCATABLE  
 LCRM This deposit is located in the Coal Creek area.  
 DVEL Production on this property involved some

underground workings.  
 PROD 27 tons of ore had been mined by 1971, at grades of 0.84% U3O8 and 2.34% V2O5, producing 452 lbs of U3O8 and 1,264 lbs of V2O5.  
 HOST The host is the Salt Wash Member of the Jurassic Morrison Formation.  
 MNZ Carnotite and/or tyuyamunite were recognized.  
 DOI 1971  
 REF U.S. Bur. of Mines, 1977, (Unpubl.). U.S. A.E.C., 1971, Production Records, Colorado.

## S & G 4

LOCATION: sec. 1, T. 1 N., R. 91 W.  
 QUAD Fawn Creek 7 1/2'  
 MAP CRAIG  
 PROD By 1971, 59 tons of ore had been mined at grades of 0.45% U3O8 and 2.21% V2O5, producing 527 lbs of U3O8 and 2,609 lbs of V2O5.  
 HOST The host is the Salt Wash Member of the Jurassic Morrison Formation.  
 MNZ Mineralization is of the carnotite - tyuyamunite type.  
 DOI 1971  
 REF U.S. A.E.C., 1971, Production Records, Colorado.

## Shylo Group (Brown 2, Brown 5)

LOCATION: sec. 25, T. 2 N., R. 92 W.  
 QUAD Ninemile Gap 7 1/2'  
 MAP CRAIG  
 DVEL All these mines had underground operations.  
 PROD The Shylo Group as of 1971 had yielded 3,060 tons of ore at a grade of 0.22% U3O8 and 0.87% V2O5, producing 13,340 lbs of U3O8 and 53,291 lbs of V2O5.  
 HOST The mineralization occurs in the Jurassic Morrison Formation, Salt Wash Member, as reported by U.S. A.E.C. Production Records. According to Rehels, the oldest formation exposed is the Upper Cretaceous Iles Formation.  
 MNZ Carnotite and/or tyuyamunite are the primary ore minerals.  
 DOI 1971  
 REF Marlith Rehels, 1978, Personal Communication. U.S. Bur. of Mines, 1977, (Unpubl.). U.S. A.E.C., 1971, Production Records, Colorado.

## St. Lue

LOCATION: sec. 1, T. 1 N., R. 91 W.  
 LCST UNLOCATABLE  
 PROD As of 1971, 2 tons of ore had been mined at grades of 0.17% U3O8 and 1.27% V2O5, producing 7 lbs of U3O8 and 52 lbs of V2O5.  
 HOST The host is probably the Jurassic Morrison Formation or the Jurassic Entrada Sandstone.  
 DOI 1971  
 REF U.S. A.E.C., 1971, Production Records, Colorado.

## Stealy Claims (Guy Stealy Claims, James I. Riland Mine, Stanley Claims, James J. Hilland Mine)

LOCATION: NE1/4SE1/4 sec. 12, T. 1 N., R. 91 W.  
 LCRM These claims extend slightly into SW1/4E1/2 sec. 7, T. 1 N., R. 90 W. and into sec. 13, T. 1 N., R. 91 W.

# RIO BLANCO COUNTY

QUAD Fawn Creek 7 1/2'  
 MAP CRAIG  
 OVEL These were three bulldozer cuts along about 175 ft of rim.  
 BKG .018 mr/hr  
 RNG .3 to .5 mr/hr  
 HOST The host is a sandstone of the Triassic Chinle Formation. It consists of what appear to be sandstone channels with interbedded limestone pebble conglomerate lenses. The deposit is about 4 ft wide, 175 ft long, 30 ft thick, and is probably lenticular.  
 STRC There is a NW dip of less than 10°.  
 MNZ The ore mineral is dull black, & highly radioactive. It is probably uraninite. It replaces fragments in the conglomerate, forming highly radioactive pods less than 10 ft long. Tyuyamunite (?) appears along fracture surfaces and disseminated in the sandstone. Channel and grab samples range from 0.02 to 0.28% eU.  
 DOI 1954  
 REF U.S. Bur. of Mines, 1977, (Unpubl.). U.S. Geol. Survey, 1977, CRIB File. U.S. A.E.C., 1966, Preliminary Reconnaissance Reports, Rio Blanco County, Colorado.

## TB

### LOCATION:

LCST UNLOCATABLE  
 LCRM This deposit lies in the Coal Creek area.  
 PROD As of 1971, 72 tons had been mined at grades of 0.24% U3O8 and 1.01% V2O5, producing 347 lbs of U3O8 and 1,456 lbs of V2O5.  
 HOST The host is probably the Jurassic Morrison Formation or the Jurassic Entrada Sandstone.  
 DOI 1971  
 REF U.S. A.E.C., 1971, Production Records, Colorado.

## Twin Star 500

### LOCATION:

LCST UNLOCATABLE  
 LCRM This deposit is located in the Coal Creek area.  
 PROD As of 1971, 7 tons of ore had been mined at grades of 0.64% U3O8 and 3.36% V2O5, producing 89 lbs of U3O8 and 470 lbs of V2O5.  
 HOST The host is the Salt Wash Sandstone Member of the Jurassic Morrison Formation.  
 MNZ Mineralization is of the carnotite - tyuyamunite type.  
 DOI 1971  
 REF U.S. A.E.C., 1971, Production Records, Colorado

## Unnamed No. 1

### LOCATION: sec. 19, T. 2 N., R. 91 W.

QUAD Thornburgh 7 1/2'  
 MAP CRAIG  
 HOST The host is probably a sandstone of the Cretaceous Dakota Sandstone.  
 MNZ Uranium and vanadium mineralization are present, probably in the form of carnotite and/or tyuyamunite.  
 DOI 1973

REF Marith Rehels, 1978, Personal Communication. U.S. Geol. Survey, 1977, CRIB File. U.S. A.E.C., RME-90.

## Ute Group (Blue Dish Group)

### LOCATION: T. 2 N., R. 92 W.

LCST UNCERTAIN  
 QUAD Sawmill Mountain 7 1/2' or Thornburgh 7 1/2'  
 MAP CRAIG  
 PROD Two tons of ore had been mined as of 1971, at grades of 0.57% U3O8 and 2.60% V2O5, producing 23 lbs of U3O8 and 104 lbs of V2O5.  
 HOST The host is the Salt Wash Member of the Jurassic Morrison Formation.  
 MNZ Uraninite and/or coffinite were found on the property.  
 DOI 1971  
 REF U.S. A.E.C., 1971, Production Records, Colorado.

## Windy Point 1

### LOCATION: sec. 22, T. 2 N., R. 92 W.

LCRM There are numerous prospects in this section.  
 QUAD Thornburgh 7 1/2'  
 MAP CRAIG  
 PROD 197 tons of ore at grades of 0.31% U3O8 and 2.06% V2O5 had been mined as of 1971, producing 1,207 lbs of U3O8 and 8,116 lbs of V2O5.  
 MNZ Tyuyamunite is probably the principal ore mineral.  
 DOI 1971, 1975  
 REF U.S. Bur. of Mines, 1977, (Unpubl.). U.S. A.E.C., 1971, Production Records, Colorado.

## RIO GRANDE COUNTY

There is no production of uranium from this county, nor are there any reported occurrences.

The county has two geologic terranes. One is the San Luis Valley Graben, which is a downdropped block filled with thick Quaternary sediments. The other terrane, in the western part of the county, is dominated by Tertiary volcanic rocks.

Although no uranium occurrences are reported, some potential exists for uranium resources to be found within the county. In the volcanic terrain is the possibility of uranium mineralization emplaced during several periods of volcanogenic development. The area around the edges of the caldera near Summitville has good potential for this type of occurrence. The sediments of the San Luis Valley have small potential for sandstone-type of occurrences in the subsurface.

## ROUTT COUNTY

No production of uranium has been reported from Routt County to date. Geologically, the county is dominated by relative flat-lying Cretaceous and Tertiary sediments. The exception is the Park Range on the eastern edge of the county where the uplift has exposed Precambrian rocks.

The potential of the county to contain uranium reserves appears to be limited. Many of the rock types that crop out in the county are not considered favorable hosts for uranium mineralization. Examples are the extensive outcrops of the Mancos and Lance

Shales in the western part of the county, and large areas of gneiss in the Park Range on the eastern area of the county.

The Browns Park Formation and Iles Formation have the potential to contain important sandstone-type occurrences similar to those found near Maybell in Moffat County. Granitic rocks, such as the Sherman and Mount Ethel Granites that are exposed in the Park Range could contain uranium occurrences, although not much is known about uranium in these rocks.

# ROUTT COUNTY

## Dead Horse Claims

LOCATION: sec. 3, T. 11 N., R. 86 W.  
 LCST UNCERTAIN  
 LCRM Sec. 4, 9, 10 also.  
 MAP CRAIG  
 DVEL No previous mining or production records. Workings consist of one 250 ft long trench, 12 ft wide and a maximum of 12 ft deep.  
 BKG .04 mr/hr  
 RNG To just above bg  
 HOST Mesaverde Formation(?). A fine-grained, well sorted sandstone. The major concentration of uranium is found adjacent to a rhyolite dike cutting the sandstone. Sandstone is Cretaceous. Dike is probably Tertiary.  
 STRC Dike appears to have localized the uranium mineralization.  
 MNZ Autunite?  
 RMKS The amount of autunite observed decreases away from the dike.  
 DOI 1955  
 REF U.S. A.E.C., 1966, Preliminary Reconnaissance Reports, Routt County, Colorado. Gale, H. S., 1906, U.S. Geol. Survey Bull. 285.

## Dennis D. Claims

LOCATION: sec. 16, T. 10 N., R. 83 W.  
 LCRM Also sec. 17, 20, 21.  
 MAP CRAIG  
 PROD No production.  
 HOST Pegmatite.  
 MNZ Uranium.  
 DOI 1972  
 REF U.S. Geol. Survey, 1977, CRIB File.

## E. C. Ellis Property

LOCATION: T. 10 N., R. 83 W.  
 LCST UNCERTAIN  
 LCRM 3 miles from Slavonia.  
 MAP CRAIG  
 DVEL 4 prospect pits.  
 HOST Pegmatite in Precambrian granite gneiss, hornblende and biotite schist.  
 STRC Pegmatites follow foliation of gneiss.  
 MNZ Uraninite, euxenite and gummite are reported from the pegmatite with hematite, and magnetite.  
 DOI 1950  
 REF U.S. A.E.C., 1966, Preliminary Reconnaissance Reports, Routt County, Colorado.

## Fair U Claims (Fish Creek Claims)

LOCATION: sec. 12, T. 6 N., R. 84 W.  
 MAP CRAIG  
 DVEL One tunnel (100?) ft long. Several prospect pits.  
 RNG .2 to .5 mr/hr  
 HOST Precambrian hornblende gneiss with pegmatites intrusions.  
 STRC Foliation is vertical, striking east-west. Pegmatites follow foliation.  
 MNZ Gummite?, autunite?, pitchblende? The biotite pods are radioactive.

DOI 1953  
 REF U.S. Geol. Survey, 1977, CRIB File. U.S. A.E.C., 1966, Preliminary Reconnaissance Reports, Routt County, Colorado. U.S. Geol. Survey, 1953, TEI-308, p. 24.

## Marth Uransich (Gillpin Falls No. 1 and 2)

LOCATION: sec. 32, T. 10 N., R. 83 W.  
 LCST UNSURVEYED  
 LCRM 1/2 mile northeast of Slavonia on east side of Gillpin Creek.  
 MAP CRAIG  
 DVEL There is a 200 ft tunnel and one prospect pit on outcrop. This was a lead prospect that was worked in early 1900's.  
 HOST Precambrian gneiss, lime schist, and pegmatite.  
 STRC Shear zone striking N70°W dipping 77°N.  
 MNZ Galena, sphalerite, chalcopryrite, uraninite, gummite, hematite.  
 RMKS Radioactive pegmatites have been sheared and then sulfide mineralization introduced.  
 DOI 1953(?)  
 REF U.S. A.E.C., 1966, Preliminary Reconnaissance Reports, Routt County, Colorado. Colo. Geol. Survey, 1st Report, 1908, p. 227.

## Sample No. 1

LOCATION:  
 LCST UNSURVEYED  
 LCRM Sample from the Encampment River approximately 25 miles below where Big Creek Trail joins Main Fork Trail.  
 QUAD Davis Peak 7 1/2'  
 HOST Stream sediment sample.  
 RMKS Sample data: 20 ppm Nb, 18 ppm U, 20 ppm Th.  
 DOI 1977  
 REF George Snyder, 1977, Personal Communication.

## Sample No. 2

LOCATION: NW1/4 sec. 25, T. 7 N., R. 84 W.  
 LCST UNSURVEYED  
 LCRM Where trail crosses South Fork Soda Creek.  
 QUAD Rocky Peak 7 1/2'  
 MAP CRAIG  
 HOST Stream sediment sample.  
 RMKS Sample data: 20 ppm Nb, 17 ppm U, 31 ppm Th.  
 DOI 1977  
 REF George Snyder, 1977, Personal Communication.

## Sample No. 3

LOCATION: NW1/4SE1/4 sec. 22, T. 7 N., R. 84 W.  
 LCST UNSURVEYED  
 QUAD Rocky Peak 7 1/2'  
 MAP CRAIG  
 HOST Stream sediment.  
 RMKS Sample data: 20 ppm Nb, 10 ppm U, 26 ppm Th.  
 DOI 1977  
 REF George Snyder, 1977, Personal Communication.

## Sample No. 4

LOCATION: NW1/4 sec. 16, T. 7 N., R. 84 W.  
 LCRM Point where pack trail crosses Bear Creek.  
 QUAD Rocky Peak 7 1/2'  
 MAP CRAIG

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HOST Stream sediment sample.  
 RMKS Sample data: 20 ppm Nb, 4 ppm U, 52 ppm Th.  
 DOI 1977  
 REF George Snyder, 1977, Personal Communication.

## Sample No. 5

LOCATION: SE1/4NW1/4 sec. 9, T. 7 N., R. 84 W.  
 LCRM Taken just below small lake.  
 QUAD Rocky Peak 7 1/2'  
 MAP CRAIG  
 HOST Stream sediment.  
 RMKS Sample data: 20 ppm Nb, 10 ppm U, 47 ppm Th.  
 DOI 1977  
 REF George Snyder, 1977, Personal Communication.

## Sample No. 6

LOCATION: E1/2NW1/4 sec. 11, T. 10 N., R. 85 W.  
 LCRM Area west of Farwell Mine.  
 QUAD Hahns Peak 7 1/2'  
 MAP CRAIG  
 HOST Rock sample, probably Precambrian hornblende gneiss.  
 RMKS Sample data: 150 ppm Nb, 3 ppm U, 19 ppm Th.  
 DOI 1977  
 REF George Snyder, 1977, Personal Communication.

## Sample No. 8

LOCATION: NW1/4 sec. 17, T. 7 N., R. 83 W.  
 LCST UNSURVEYED  
 LCRM North side of Soda Creek.  
 QUAD Buffalo Pass 7 1/2'  
 MAP CRAIG  
 HOST Rock sample of Precambrian Mount Ethel granite.  
 RMKS Sample data: 20 ppm Nb, 34 ppm U, 13 ppm Th.  
 DOI 1977  
 REF George Snyder, 1977, Personal Communication.

## Sample No. 9

LOCATION: NW1/4NE1/4SW1/4 sec. 10, T. 7 N., R. 84 W.  
 LCST UNSURVEYED  
 QUAD Rocky Peak 7 1/2'  
 MAP CRAIG  
 HOST Rock sample of Precambrian Mount Ethel granite.  
 RMKS Sample data: 30 ppm Nb, 5 ppm U, 46 ppm Th.  
 DOI 1977  
 REF George Snyder, 1977, Personal Communication.

## Sample No. 10

LOCATION: NE1/4NE1/4SE1/4 sec. 29, T. 7 N., R. 84 W.  
 LCRM Small unnamed creek that enters Gunn Creek.  
 QUAD Rocky Peak 7 1/2'  
 MAP CRAIG  
 HOST Stream sediment sample.  
 RMKS Sample data: 20 ppm Nb, 9 ppm U, 30 ppm Th.  
 DOI 1977  
 REF George Snyder, 1977, Personal Communication.

## Sample No. 11

LOCATION: NE1/4NE1/4NE1/4 sec. 29, T. 7 N., R. 84 W.  
 LCRM In Gunn Creek.  
 QUAD Rocky Peak 7 1/2'  
 MAP CRAIG  
 HOST Stream sediment sample.

RMKS Sample data: 30 ppm Nb, 9 ppm U, 53 ppm Th.  
 DOI 1977  
 REF George Snyder, 1977, Personal Communication.

## Sample No. 12

LOCATION: NW1/4NW1/4NW1/4 sec. 33, T. 7 N., R. 84 W.  
 LCRM Point where road crosses stream.  
 QUAD Rocky Peak 7 1/2'  
 MAP CRAIG  
 HOST Stream sediment sample.  
 RMKS Sample data: 30 ppm Nb, 14 ppm U, 48 ppm Th.  
 DOI 1977  
 REF George Snyder, 1977, Personal Communication.

## Sample No. 13

LOCATION: SW1/4SW1/4 sec. 32, T. 8 N., R. 84 W.  
 LCRM Point where trail crosses South Fork.  
 QUAD Rocky Peak 7 1/2'  
 MAP CRAIG  
 HOST Stream sediment sample.  
 RMKS Sample data: 100 ppm Nb, 25 ppm U, 146 ppm Th.  
 DOI 1977  
 REF George Snyder, 1977, Personal Communication.

## Sample No. 14

LOCATION: NW1/4NE1/4SW1/4 sec. 32, T. 8 N., R. 84 W.  
 QUAD Rocky Peak 7 1/2'  
 MAP CRAIG  
 HOST Stream sediment sample.  
 RMKS Sample data: 30 ppm Nb, 21 ppm U, 26 ppm Th.  
 DOI 1977  
 REF George Snyder, 1977, Personal Communication.

## Twenty Mile Park

LOCATION: T. 5 N., R. 86 W.  
 LCST UNCERTAIN  
 MAP CRAIG  
 PROD Maximum of 2.5 ft of 0.25% eU308, depth range from surface to 50 ft.  
 RNG Max. 2000 cps  
 HOST Minor secondary tabular type mineralization beneath Fish Creek Coal seam in the Holderness Sandstone Member of the Upper Cretaceous Williams Fork Formation.  
 STRC 5° to 7° dip.  
 ALT Hematite and ilmonite stain.  
 MNZ Eight wells had mineralization ranging from 0.010% to 0.025% eU308.  
 RMKS 29 exploration wells were drilled in sec. 10, 14, 22, 27 and 28.  
 REF Atlantic Richfield Co., 1977.

## Willow Creek Claims

LOCATION: sec. 12, T. 10 N., R. 86 W.  
 LCRM Claims are 2.5 miles south of Columbine on Colorado 128 and approximately 1,000 ft west along Jeep trail.  
 MAP CRAIG  
 DYEL One 250 ft long trench. Numerous prospect pits.  
 BKG .03 to .05 mr/hr  
 RNG .2 to .8 mr/hr  
 HOST Jurassic Morrison Formation(?). Badly fractured,

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weathered and carbonaceous mudstone.  
Dip is  $46^{\circ}$  southwardly.  
Autunite is principal mineral, some occasional  
pitchblende. Sample had value of 0.08% eU.  
1955  
U.S. A.E.C., 1966, Preliminary Reconnaissance  
Reports, Routt County, Colorado. Gale, Hoyt  
S., 1905. Barnwell, William W., (?), Thesis,  
Univ. of Wyoming.



## SAGUACHE COUNTY

Uranium production from the county as of 1971 totaled 596,494 tons of ore at an average grade of 0.22 percent  $U_3O_8$ . Development is beginning on a major mine with excellent possibility of more reserves being found in the county.

Igneous rocks of the Miocene Potosi Volcanic Series cover much of Saguache County, located in south-central Colorado. Paleozoic sediments and Precambrian rocks are found along the Sangre de Cristo Range on the eastern edge of the county. These two areas are separated by the valley of the San Luis Graben, which is filled with thousands of feet of recent sediments. Paleozoic and younger rocks crop out in scattered locations around the county. In the Sargents-Marshall Pass-Bonanza area is an extensive field of late Tertiary volcanic flows, known as the Bonanza volcanic field.

Most of the production in the county came from mines in the Cochetopa district and in the Marshall Pass area. No production is currently taking place in these areas, but reserves are large, and at least one major mine, the Pitch, will begin operations soon.

Three mines produced 99 percent of the ore mined in the county--the Los Ochos Mine, the Pitch Mine, and the T-2 Mine. The Los Ochos Group and the T-2 Mine lie on the Los Ochos Fault in the Cochetopa district. Here the mineralization occurs where the Los Ochos Fault brecciates the Morrison Formation, the Dakota Sandstone, and the Mancos Shale, which all overlie Precambrian rocks. Morrison Formation sandstones appear to be the most favorable host, but the Dakota Sandstone should not be overlooked.

The Pitch Mine is the important past producer in the Marshall Pass district. The mine has been inactive for many years, but is currently being readied for strip-mining operations. The uranium at the Pitch Mine occurs in the Pennsylvanian Belden Formation. The Pitch Mine and all other occurrences in this area lie on or near the Chester Fault, which displaces Precambrian rocks against remnants of Paleozoic rocks. Although the Belden Formation is mineralized at the Pitch Mine, nearly any of the Paleozoic formations can act as a host. Some of the occurrences, such as the Little Indian No. 36, are found in Harding Quartzite, while others are found in the Leadville Limestone or in the Chaffee Formation.

Saguache County shows excellent potential for the discovery of relatively large ore bodies. The known deposits in this county primarily lie in the Cochetopa district, the Marshall Pass area, and in the Kerber Creek district. The Kerber Creek area's geology is nearly identical to that of the Marshall Pass area. These are the areas with the major potential in the county. In the Cochetopa district, emphasis should be placed on locations where major faults have brecciated the Dakota Sandstone and the Morrison Formation. Mineralization in both the Marshall Pass area and in the Kerber Creek district is found where such structures as the Chester Fault intersect remnants of the Paleozoic section. Similar stratigraphic and structural conditions in Saguache and adjacent counties could yield similar types of deposits.

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## Anna Claim

LOCATION: sec. 27, T. 47 N., R. 3 E.  
 QUAD Razor Creek Dome 7 1/2'  
 MAP MONTROSE  
 DVEL Two trenches, 60 to 75 ft long and 2 to 6 ft deep were bulldozed. A 10 ft deep shaft was sunk.  
 BKG .015 mr/hr  
 RNG .07 to .4 mr/hr  
 HOST The country rock is Precambrian granite and Tertiary andesite flows. Although mineralization occurs in the granite, the contact between granite and volcanics is only about 10 to 15 ft from the mineralization and runs parallel to the trend of mineralization.  
 STRC Shear zones, which are highly fractured and contain the mineralization, cut the granite. The trends range between S35°W and S65°W and dips lie between 65° and 70°E.  
 ALT Alteration is common and intense in the shear zones.  
 MNZ The shear zones are characterized by abundant ilmenite, hematite, and minor manganese staining. No specific uranium mineral was identified, but traverses reveal radioactivity of from 3 to 15 times background. Channel samples range as high as 27 times background.  
 DOI 1955  
 REF U.S. A.E.C., 1966, Preliminary Reconnaissance Reports, Saguache County, Colorado.

## Apache No. 4

LOCATION: sec. 19, T. 48 N., R. 6 E.  
 LCRM This claim also extends to sec. 30. It lies 1/4 mile west of Indian Creek.  
 QUAD Pahlone Peak 7 1/2'  
 MAP MONTROSE  
 DVEL There has been no production from the claim. 40 diamond drill holes were completed. A small reserve at an average depth of 100 ft has been developed.  
 HOST The deposit occurs as a bedded deposit in the Ordovician Harding Quartzite. A 4.5 ft thick carbonaceous zone localized the radioactivity.  
 STRC The mineralized area lies on the Indian Creek anticline.  
 MNZ The mineralization averaged 0.24% U3O8. Uraninite or pitchblende and scattered sulfides were noted.  
 DOI 1972  
 REF U.S. Geol. Survey, 1977, CRIB File. U.S. A.E.C., 1971, Production Records, Colorado. Ranspot, H. W., 1958.

## Barium Lode

LOCATION: sec. 4, T. 46 N., R. 6 E.  
 LCST UNCERTAIN  
 QUAD Lake Mountain NE 7 1/2'  
 MAP MONTROSE  
 BKG .05 mr/hr  
 RNG .15 to 0.5 mr/hr  
 HOST The country rock is principally a hornblende-biotite

schist.

STRC The radioactive material occurs in a pegmatitic vein of hematitic jasperoid material about two to three ft wide.  
 MNZ The radioactive mineral was not determined, but it is associated with jasper, hematite, specularite and garnet. One sample assayed 0.087% eU, 0.044% U, 0.031% Th, and contained some radium.  
 DOI 1953  
 REF U.S. A.E.C., 1966, Preliminary Reconnaissance Reports, Saguache County, Colorado.

## Beginner's Luck Claim (Beginner's Luck 3)

LOCATION: NE 1/4 sec. 33, T. 45 N., R. 11 E.  
 LCST UNSURVEYED  
 LCRM Claims also extend into sec. 3, T. 44 N., R. 11 W. An access road (trail) was bulldozed to the claim. The claim is approximately 1 1/2 miles up this trail from the buildings where vehicles need to be parked.  
 QUAD Mirage 7 1/2'  
 MAP PUEBLO  
 PROD Nine tons were mined in 1955 at a grade of 0.15% U3O8 and 0.09% V2O5, producing 26 lbs of U3O8 and 16 lbs of V2O5.  
 BKG .04 mr/hr  
 RNG To 1.3 mr/hr  
 HOST The host rock is compact, gray, Ordovician Harding Quartzite which weathers dark gray or buff.  
 STRC Small, discontinuous fractures contain the radioactivity. They vary from 1 to 5 ft in length and have a maximum thickness of several inches. They trend N41°W and dip 56°SW. The average depth to ore was five ft.  
 MNZ A small amount of autunite is visible. Mineralization of the uraninite - coffinite type was also reported.  
 DOI 1955  
 REF U.S. A.E.C., 1971, Production Records, Colorado. U.S. A.E.C., 1966, Preliminary Reconnaissance Reports, Saguache County, Colorado.

## Belle Lode (Balls Lode, Freeman Claims)

LOCATION: sec. 28, T. 48 N., R. 2 E.  
 LCRM The deposit also extends to sec. 33.  
 QUAD Iris 7 1/2' and Houston Gulch 7 1/2'.  
 MAP MONTROSE  
 BKG .02 mr/hr  
 RNG 2.00 mr/hr  
 HOST The host is primarily Precambrian granite cut by Tertiary quartz-lalite dikes.  
 STRC Fault fissures appear to control and localize the ore.  
 MNZ Malachite and azurite are abundant in a quartz-carbonate-barite gangue. No visible uranium minerals were originally noted, but pitchblende was later found.  
 DOI 1954  
 REF U.S. Geol. Survey, 1977, CRIB File. U.S. Bur. of Mines, 1977, (Unpubl.). U.S. A.E.C., 1966, Preliminary Reconnaissance Reports, Saguache County, Colorado.

## Big Indian Group of Claims

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LOCATION: sec. 20, T. 48 N., R. 6 E.

LCST UNSURVEYED  
LCRM This deposit also extends to sec. 19, 20, & 30, and to sec. 24, 25, T. 48 N., R. 5 E.  
QUAD Pahlone Peak 7 1/2'  
MAP MONTROSE  
DVEL Two open adits, 15 ft in length have been opened up with access roads to each. Numerous test pits along the mineralized horizon have been dug, but there has been no production.  
BKG .003 mr/hr  
RNG .1 to .3 mr/hr  
HOST Mineralization has taken place in a 5 ft section of fine- to medium-grained fossiliferous, locally carbonaceous, asphalt pellet bearing, iron stained, rather porous sandstone of the Ordovician Harding Quartzite. The formation is 18 to 20 ft thick and the mineralized zone is both overlain and underlain by a dense quartzitic sandstone with minor iron staining and no asphaltic or carbonaceous material.  
STRC The beds have been folded into an anticlinal fold with Indian Creek roughly bisecting the axis at right angles.  
MNZ Select and channel samples ranged between 0.07 and 0.10 mr/hr. Assay results by a private assayer indicate considerable disequilibrium in favor of chemical uranium. Samples assayed averaged 0.10% U3O8. The primary uranium mineral is pitchblende, or uraninite, but gummite, autunite and zippelite were also found.  
DOI 1955  
REF U.S. Bur. of Mines, 1977, (Unpubl.). U.S. Geol. Survey, 1977, CRIB File. Finch, W. I., 1967. U.S. A.E.C., 1966, Preliminary Reconnaissance Reports, Saguache County, Colorado. Guner, J. W., and Knot, J. A., 1957.

## Bob Cat

LOCATION: sec. 26, T. 44 N., R. 11 E.

DVEL Discovered in 1953, working consists of open cuts and pits.  
PROD A total of 46 tons of 0.14% U3O8 and 0.08% V2O5 were mined in 1953-1954, producing 131 lbs of U3O8 and 78 lbs of V2O5.  
HOST The host is a zone pegmatite in a Precambrian granite. This pegmatite is one of a series of dikes that cut Precambrian schist, gneiss, and granite in a northwest trending belt 3 miles wide and 25 miles long.  
STRC Near vertical and strikes northwest.  
MNZ Uranium, thorium, and rare earth minerals.  
DOI 1971  
REF R. C. Malan, 1978, Personal Communication. U.S. A.E.C., 1971, Production Records, Colorado.

## Bonita Nos. 1 & 2 Claims (Bonita Claim, Bonita Group)

LOCATION: sec. 23, T. 48 N., R. 7 E.

LCST UNSURVEYED  
LCRM The mine is adjacent to the road. It also extends to sec. 14.  
QUAD Bonanza 15'  
MAP MONTROSE  
DVEL Drifting on the mineralized structure began

In the fall of 1954. Workings as of November 1, 1955 consisted of 375 ft of underground work.

PROD In 1955-1958, a total of 163 tons had been mined at a grade of 0.144% U3O8, producing 472 lbs of U3O8 and 5 lbs of V2O5.  
BKG .08 to .10 mr/hr  
RNG .2 to 1.0 mr/hr  
HOST The host is a carbonaceous regolith of possible Eocene age which rests on Precambrian granite and is overlain by Miocene Potosi Volcanic Series.  
STRC A major fault, which branches out to several faults and steepens where it branches, appears to control the mineralization.  
ALT Heavy wallrock alteration to sericite and kaolinite is present. Heavy hematite alteration exists in the faults.  
MNZ The mineralization appears at one point as minor visible autunite (?) and non-visible minerals in the rhyolitic footwall of the fault. Where the fault branches into vertical trends the mineralization is not megascopically visible, but is associated with the heavy hematite alteration in the faults. Radiometric assays range from 0.008 to 0.35% U3O8, and chemical assays are between 0.026 and 0.526% U3O8. The majority of ore comes from an eight in. seam of black, carbonaceous material which dips 25 ft to the west. The seam occurs between Precambrian granite below and a Tertiary trachyte porphyry above. The primary mineralization is probably of the uraninite - coffinite type with minor pyrite.

DOI 1955  
REF R. C. Malan, 1978, Personal Communication. U.S. Geol. Survey, 1977, CRIB File. U.S. Bur. of Mines, 1977, (Unpubl.). U.S. A.E.C., 1971, Production Records, Colorado. U.S. A.E.C., 1966, Preliminary Reconnaissance Reports, Saguache County, Colorado. Malan, R. C., 1959.

## Dependable Group (Snowshoe Claim)

LOCATION: sec. 28, T. 47 N., R. 2 E.

QUAD Sawtooth Mountain and Razor Creek Dome 7 1/2'  
MAP MONTROSE  
DVEL Numerous discovery cuts and an elongated open cut exposing a 15 ft face were made. One 75 ft core hole was drilled.  
BKG .01 to .03 mr/hr  
RNG .03 to .2 mr/hr  
HOST The host rock is Precambrian granite cut by pegmatite. It is unconformably overlain by the Salt Wash Member of the Jurassic Morrison Formation.  
STRC Sub-parallel east-west to N70°E trending shear zones cut the Precambrian and Jurassic rocks, and are weakly mineralized in the Precambrian rocks. Intense brecciation and profuse iron-staining are present in the shear zones.  
ALT Moderate kaolinization of the feldspars of the Precambrian rocks is present in the shear zone.  
MNZ No visible mineralization was noted. The radioactivity appears to be confined to

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the shear zones in the Precambrian. Fluorite was noted in the sandstone in the footwall of the shear.

DOI 1955  
REF U.S. Bur. of Mines, 1977, (Unpubl.). U.S. A.E.C., 1966, Preliminary Reconnaissance Reports, Saguache County, Colorado. Cross, Whitman and Larsen, E. S., 1935, U.S. Geol. Survey Bull. 843.

### DNG 1, 2, 3, and 4

LOCATION: sec. 35, T. 47 N., R. 1 E.

LCST UNCERTAIN

QUAD Iris 7 1/2' or Sawtooth Mountain 7 1/2'

MAP MONTROSE

BKG .04 mr/hr

RNG .50 mr/hr

HOST The country rock consists of Precambrian in fault contact with Paleozoic sediments.

STRC A fault zone cuts through the Precambrian and Paleozoic rocks.

MNZ A highly fluorescent mineral (autunite?) is disseminated throughout the sandstone and granite host rock.

DOI 1954

REF U.S. A.E.C., 1966, Preliminary Reconnaissance Reports, Saguache County, Colorado.

### Erie No. 33

LOCATION: SW1/4 sec. 15, T. 48 N., R. 6 E.

QUAD Pahlone Peak 7 1/2'

MAP MONTROSE

DVEL There was no production from this claim.

HOST The deposit consists of a jasperoid in an iron-rich limestone within the Ordovician Harding Quartzite.

MNZ Uranium mineralization was present, assaying 0.14% U3O8.

DOI 1972

REF U.S. Geol. Survey, 1977, CRIB File. Ranspot, H. W., 1958.

### Green Cliff Group

LOCATION:

LCST UNLOCATABLE

DVEL This was reported as a past producer; but no figures could be located for a deposit with this name.

DOI 1975

REF U.S. Bur. of Mines, 1977, (Unpubl.).

### J. Kreiner

LOCATION: NE1/4 sec. 23, T. 44 N., R. 11 E.

LCST UNSURVEYED

QUAD Electric Peak 15'

MAP PUEBLO

DVEL The quartz and feldspar zones of the pegmatite dike were quarried in the past.

BKG .04 mr/hr

RNG to 1.5 to 10.0 mr/hr

HOST The host is a vein in a pegmatite zone of a dike. This is one of a series of dikes which cut Precambrian rocks in a belt 3 miles wide by 25 miles long.

STRC A two ft pegmatitic vein is exposed for

40 ft. The vein appears to be zoned in this area, with the radioactive zone adjacent to a five ft section of feldspar. Next to the feldspar on its other side is a massive milky quartz zone.

MNZ The radioactive mineral is a dark red to brown, and is found disseminated through the pegmatite and concentrated in the vein. It is concentrated in places, but with no uniformity. Dodecahedral crystals are observed in the radioactive zone. Mica pockets are found in the pegmatite, with mica, tourmaline, beryl, specularite, and a red, highly radioactive mineral occurring together.

DOI 1953

REF U.S. A.E.C., 1966, Preliminary Reconnaissance Reports, Saguache County, Colorado.

### Judith Claim

LOCATION: sec. 14, T. 44 N., R. 11 E.

LCST UNCERTAIN

HOST Northwest trending pegmatite which has intruded a Precambrian granite. This is one of a series of pegmatite dikes which cuts the Precambrian rocks in a belt 25 miles long by 3 miles wide.

MNZ 0.499% U3O8 on a 7 ft channel cut. The mineral is samarskite.

RMKS Also see the I. Kreiner property which is nearby and which a Western Nuclear report said was euxenite mineralization.

DOI 1977

REF Western Nuclear Submittal file.

### Kerber Creek Prospect

LOCATION: sec. 36, T. 46 N., R. 8 E.

DVEL Prospects.

HOST Upper part of Ordovician Harding Quartzite. A well-indurated fine-grained sandstone with carbonaceous trash.

STRC Reverse faults with Precambrian rocks faulted against sediments.

ALT Some silicification, there are also some iron oxides.

MNZ 0.01 to 3% U3O8 (usually 0.1%), spotty autunite and uranophane. Average thickness of mineralization is 5 ft.

DOI 1977

REF Roger Malan, 1978, Personal Communication. Norman Bennette, Personal Communication.

### La Rue Claims (Elisha Group, Elisha-LaRue, La Rue 2, La Rue 22)

LOCATION: S1/2NE1/4 sec. 29, T. 47 N., R. 2 E.

LCRM The trenches are 200 ft east of the old Mercury Mine. U.S. A.E.C. Records also show sec. 30.

QUAD Sawtooth Mountain 7 1/2'.

MAP MONTROSE

DVEL In 1937, exploration for mercury took place. At that time several trenches, pits, drift, and shaft were dug.

PROD 7 tons of ore were mined during 1954-1960 at a grade of 0.20% U3O8 and 0.11% V2O5, producing 28 lbs of U3O8 and 16 lbs of V2O5.

BKG .03 mr/hr

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RNG .3 to 1.5 mr/hr  
 HOST The old workings were in the Brushy Basin Member of the the Morrison Formation, Cretaceous Dakota Formation, and also the Salt Wash Member of the Jurassic Morrison Formation.  
 STRC There is a northwest trending shear zone with abundant brecciation of the sandstone. The shear zone appears to control mineralization as at the Los Ochos property.  
 MNZ Mineralization appears to be, in part at least, associated with overlying fine-grained, silicified Dakota Sandstone boulders. Marcasite (?) was noted, and uranophane, autunite, torbernite, and sparse asphaltite are present in the boulders. A selected sample had a value of 0.23% U3O8 and 0.26% U3O8.  
 DOI 1959  
 REF R. C. Malan, 1978, Personal Communication. U.S. Geol. Survey, 1977, CRIB File. U.S. Bur. of Mines, 1977, (Unpubl.). Finch, W. I., 1967, p. 13. U.S. A.E.C., 1971, Production Records, Colorado. Malan, R. C., 1959.

Bur. of Mines, 1977, (Unpubl.). U.S. A.E.C., 1971, Production Records, Colorado. Ranspot, H. W., 1958.

## Los Ochos Group (Kathy Jo, East Mine, Thornburg Mine, T-1, Irishman's Dream)

LOCATION: NE1/4 sec. 4, T. 47 N., R. 2 E.  
 LCRM These properties lie in the NE1/4 sec. 4, T. 47 N., R. 2 E.; SE1/4 sec. 33, T. 48 N., R. 2 E.; SW1/4 sec. 34, T. 48 N., R. 2 E.; and NW1/4 sec. 3, T. 47 N., R. 2 E.  
 QUAD Razor Creek Dome 7 1/2'  
 MAP MONTROSE  
 DYEL Numerous claims and prospects were located in 1954. One property had over 355 ft of underground workings, while the owner of the Los Ocho Group developed over 2,500 ft of drifting and did 6,200 ft of core drilling. Drilling has resulted in the discovery of at least two significant ore bodies.

PROD Prior to 1971, 448,685 tons of ore at a grade of 0.14% U3O8 had been mined, producing 1,253,513 lbs of U3O8.

BKG .04 mr/hr

RNG .05 - .5 mr/hr

HOST The deposits occur along a fault where Precambrian granite and schists have been faulted against Jurassic Morrison Formation (Brushy Basin Member). One ore body is in the altered Precambrian schists, while another is in a brecciated, silicified mudstone of the Brushy Basin Member. Most of the ore was mined from sandstone and shale of the Morrison Formation. Mineralization has been found for about a mile along the fault, with most of the ore being in the fault breccia or immediately adjacent rocks. Some ore bodies did extend to as much as 200 ft from the fault into the Morrison Formation.

STRC The Los Ochos Fault is the dominant structure in the area; it is about 3 1/2 miles long. All of the ore deposits are closely related to it spatially. Veins cut the Precambrian rocks. They are one to two ft in width, and were originally mined for gold.

ALT Alteration is reported to be intense in the area of the deposits. The Precambrian rocks are kaolinized, chloritized, and sericitized. The sediments are highly silicified.

MNZ The veins are bound by clay minerals. Autunite is found coating fractures with abundant hematite and ilmenite staining. The radioactive minerals primarily occur in the broken and cemented breccia and include uraninite, autunite, uranophane, torbernite, johannite, uranopilite, and zippelite. Uranium was the principal ore mineral. The gangue minerals were chalcadony, barite, clay minerals, marcasite, and quartz. The uraninite occurred in veinlets of marcasite and clay minerals.

DOI 1959

REF R. C. Malan, 1978, Personal Communication. U.S. Bur. of Mines, 1977, (Unpubl.). U.S. Geol. Survey, 1977, CRIB File. Olson, J. C., 1976, U.S. A.E.C., 1971, Production Records, Colorado. Finch, W. I., 1967, U.S. A.E.C., 1966, Preliminary Reconnaissance

## Little Indian No. 6 (Indian Creek Group)

LOCATION: sec. 17, T. 48 N., R. 6 E.  
 LCRM This deposit lies 1/2 mile east of Indian Creek and also extends to sec. 20.  
 QUAD Pahlone 7 1/2'  
 MAP MONTROSE  
 DYEL There was some diamond core drilling completed.  
 HOST The host is the Ordovician Harding Quartzite or the sandstone which contains a 4.5 ft thick carbonaceous zone in a fossiliferous, silty sandstone.  
 MNZ Autunite and uranophane have been identified. The mineralized zone assays 0.14 % U3O8.  
 DOI 1972  
 REF U.S. Geol. Survey, 1977, CRIB File. U.S. A.E.C., 1971, Production Records, Colorado. Finch, W. I., 1967. Ranspot, H. W., 1958. Gruner, J. W. ;and Knox, J. A., 1957.

## Lookout Claims ( Lookout Group, Lookout No. 15-34)

LOCATION: NE1/4 sec. 27, T. 48 N., R. 6 E.  
 LCRM This occurrence extends to sec. 22.  
 QUAD Pahlone Peak 7 1/2'  
 MAP MONTROSE  
 PROD During the period 1956 through 1960, a total of 514 tons averaging 1.17% U3O8 and containing 13,500 lbs of U3O8 were produced from the Lookout #22 Claim. From 1954 to 1961, other claims in the Lookout Group (#24, #33) produced a total of 63 tons averaging .25% U3O8 and producing 371 lbs of U3O8.  
 HOST A vein at the faulted contact of Precambrian pegmatite and schist. At Lookout #22 several hundred tons of high grade ore were produced from the colluvium overlying a weakly mineralized contact of pegmatite and schist.  
 MNZ Pitchblende, uraninite, and uranophane are present in the vein, with assays of 1.0 % U3O8. The high grade pitchblende was surrounded by orange alteration products, becquerelite and schoepite.  
 DOI 1972  
 REF R. C. Malan, 1978, Personal Communication. U.S. Geol. Survey, 1977, CRIB File. U.S.

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Reports, Saguache County, Colorado. Eckel, E. B., 1961. Malan, R. C., and Ranspot, H. W., 1959. U.S. A.E.C., 1959, (RME-141). Derzay, R. C., 1956.

A.E.C., 1966, Preliminary Reconnaissance Reports, Saguache County, Colorado. Wright, R. J. and Everhart, D. L., 1960. Malan, R. C., and Ranspot, H. W., 1959.

### M & W Group

LOCATION: SW1/4 sec. 20, T. 47 N., R. 2 E.  
 QUAD Sawtooth Mountain 7 1/2'  
 MAP MONTROSE  
 DVEL Four discovery trenches were dug.  
 BKG .015 - .025 mr/hr  
 RNG .15 mr/hr  
 HOST The rocks in the area consist of Precambrian granite gneiss and the Salt Wash Member of the Jurassic Morrison Formation. The anomalous radioactivity occurs in the Precambrian rocks.  
 STRC A nearly vertical shear zone, striking S55°E, trends through exposures of Precambrian granite gneiss and Jurassic Morrison Formation.  
 MNZ Radioactivity is associated with the intensely sheared, hematite stained Precambrian rocks. A minor amount of disseminated fluorite is present in the sandstone. No visible uranium mineral was noted.  
 DOI 1955  
 REF U.S. Bur. of Mines, 1977, (Unpubl.). U.S. A.E.C., 1966, Preliminary Reconnaissance Reports, Saguache County, Colorado. Cross, Whitman, and Larsen, E. S., 1935, U.S. Geol. Survey Bull. 843, 138 p.

### Marshall Pass Group Nos. 1-58

LOCATION: sec. 27, T. 48 N., R. 6 E.  
 LCST UNSURVEYED  
 QUAD Pahlone Peak 7 1/2'  
 MAP MONTROSE  
 DVEL The prospect consists of a small pit 10 ft x 10 ft x 6 ft. Two to three tons of ore were stockpiled.  
 PROD In 1956, 18 tons of ore were mined at a grade of 1.06% U3O8 and 0.06% V2O5, producing 380 lbs of U3O8 and 22 lbs of V2O5 from the Marshall Pass No. 5 Claim.  
 BKG .07 mr/hr  
 RNG 20.0 + mr/hr  
 HOST The prospect is in a coarse-grained Precambrian granite that has intruded biotite and muscovite schist. Limestones and quartzites and the Pennsylvanian Belden Shale are all associated with the area. Ore production came from a regolith developed on the Precambrian rocks.  
 STRC The Chester Fault has thrown younger sediments against Precambrian igneous and metamorphic rocks. The mineralization is intimately related to the faulting as at the Pitch Mine northwest of this occurrence. Other north-trending faults occur in this area.  
 MNZ Two samples sent in by the owners assayed 21.40 and 30.0+ % U3O8. The uranium mineral is pitchblende with minor amounts of uranophane (?) and gummite. A minor amount of galena was present in the pitchblende.  
 RMKS This is in the area of the Pitch Mine.  
 DOI 1956  
 REF U.S. Geol. Survey, 1977, CRIB File. U.S. Bur. of Mines, 1977, (Unpubl.). U.S. A.E.C., 1971, Production Records, Colorado. U.S.

### Mercury - Alpine Claims

LOCATION: sec. 33, T. 44 N., R. 12 E.  
 LCRM The deposit also extends to sec. 5, T. 42 N., R. 12 W.  
 QUAD Electric Peak 15'  
 MAP PUEBLO  
 DVEL Open cuts, average depth to ore was 5 ft. Shallow jackhammer drilling done at property.  
 PROD During 1958-1962, a total of 25 tons had been mined at a grade of 0.31% U3O8, producing 155 lbs of U3O8.  
 HOST Permian Sangre de Cristo Formation, Carbonaceous Sandstone.  
 MNZ Uraninite occurs in pockets in silty arkosic beds.  
 DOI 1971  
 REF E. P. Beroni, 1978, Personal Communication. U.S. Geol. Survey, 1977, CRIB File. U.S. A.E.C., 1971, Production Records, Colorado.

### Mercury Mine

LOCATION: SW1/4NE1/4 sec. 29, T. 47 N., R. 2 E.  
 QUAD Sawtooth Mountain 7 1/2'  
 MAP MONTROSE  
 PROD No production recorded.  
 HOST The deposit occurs where the Jurassic Morrison Formation has been faulted against Precambrian rocks.  
 STRC A fault controls the area of mineral deposition.  
 DOI 1972  
 REF U.S. Geol. Survey, 1977, CRIB File. U.S. Bur. of Mines, 1962, Minerals Yearbook, v. 222, p. 264. Malan, R. C., and Ranspot, H. W., 1959.

### Millie Luna (Sylvia, Faith Groups)

LOCATION: sec. 16, T. 45 N., R. 11 E.  
 QUAD Valley View Hot Springs 7 1/2'  
 MAP PUEBLO  
 DVEL Some underground mining was completed on the prospect.  
 HOST The deposit lies in Pennsylvanian limestones and sandstones where the bedding planes have shears within them.  
 STRC Shearing?  
 MNZ Uranium mineralization was recognized, but no uranium minerals were visible.  
 DOI 1975  
 REF U.S. Bur. of Mines, 1977, (Unpubl.). U.S. Geol. Survey, 1977, CRIB File.

### Mocking Bird Claim

LOCATION: sec. 4, T. 46 N., R. 10 E.  
 LCST UNCERTAIN  
 LCRM Possibly in sec. 3 also.  
 QUAD Howard 15'  
 MAP PUEBLO  
 DVEL Several development cuts and pits were made.  
 PROD In 1954, six tons of 0.20% U3O8 ore were mined, yielding 24 lbs of U3O8.

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BKG .04 mr/hr  
 RNG .4 to 4.0 + mr/hr  
 HOST Precambrian hornblende gneiss and granite gneiss cut by a zoned pegmatite dike which contains the mineralization. This is one of a series of these dikes which cut Precambrian rocks in a belt 3 miles wide and 25 miles long.  
 MNZ The radioactive mineral is black, heavy, and appears massive. It was described as a "euxenite-type" ore. One sample assayed 0.366% eU308, 0.271% U308 with 0.68% Nb and 0.5% Ta. Other samples assayed ranged in value from 0.015 to 0.032% eU, 0.006 to 0.20% U, 0.031% Th, with minor radium. Minerals are xenotime, monazite, samarskite, garnet and cyrtolite.  
 DOI 1953  
 REF Malan, R. C., 1978, Personal Communication. U.S. Bur. of Mines, 1977, (Unpubl.). U.S. A.E.C., 1971, Production Records, Colorado. U.S. A.E.C., 1966, Preliminary Reconnaissance Reports, Saguache County, Colorado.

## Old Rawley Mine

LOCATION: SW1/4 sec. 18, T. 47 N., R. 8 E.  
 HOST The host is a quartz barite vein in Tertiary volcanics.  
 STRC Veins form along fault fissures or along subsidiary tension fissures in walls of large faults.  
 MNZ 0.25% U. Uranium identified as sooty pitchblende and uraninite.  
 RMKS Pitchblende was also found in the drainage tunnel of the mine. Also in the Whale Mine just south of the Rawley.  
 DOI 1977  
 REF Pierson, C. T.; and others, 1958.

## Pitch Mine (Erie No. 28)

LOCATION: NE1/4NE1/4 sec. 21, T. 48 N., R. 6 E.  
 LCRM The deposit also extends to the NW1/4NW1/4 sec. 22, T. 48 N., R. 6 E.  
 QUAD Pahlone Peak 7 1/2  
 MAP MONTROSE  
 DYEL The mine was first established as an underground mine in the 1950's. Later work has been done on the surface. Homestake Mining Company is in the process of developing an open pit mine on property as of 1977.  
 PROD 104,520 tons were mined prior to 1971 at a grade of 0.58% U308, producing 1,206,112 lbs of U308. In a paper given at the American Institute of Mining Engineers Meeting, Denver 1978, reserves were reported as 2.1 million tons of ore at a grade of 0.17% U308. This would be equivalent to 1.74 million lbs of U308. The pit will be approximately 5,000 ft long by 400 ft deep. It is to be elongated along the Chester Fault with the fault being the axis of the pit.  
 HOST The deposit occurs in the Pennsylvanian Belden shale and limestones where they have been faulted into contact with Precambrian rocks.  
 STRC The Chester Thrust Fault controlled ore deposition in the vein.

ALT Rocks are altered near the fault. Swelling ground necessitated the use of arched steel sets in areas of highly altered Precambrian rocks.  
 MNZ Uraninite, pitchblende, uranophane, and pyrite are found at the mine.  
 REF Ward, J. M., 1978, AIME Conference, Denver. U.S. Geol. Survey, 1977, CRIB File. U.S. Bur. of Mines, 1977, (Unpubl.). Mining Journal, August 1976. U.S. A.E.C., 1971, Production Records, Colorado. U.S. A.E.C., 1959. Malan, R. C., and Ranspot, H. W., 1959. Ranspot, H. W., 1957.

## Rainbow's End

LOCATION: S1/2NE1/4 sec. 33, T. 46 N., R. 9 E.  
 QUAD Villa Grove 7 1/2  
 MAP PUEBLO  
 DYEL The property has no history of production. Workings consist of a few small pits 1-2 ft deep.  
 BKG .02 - .09 mr/hr  
 RNG .18 mr/hr  
 HOST The host rock is Ordovician Harding Quartzite. The Harding Quartzite strikes N60°E and dips N22°W.  
 MNZ The mineralized zone is confined to a 4.5 ft thick carbonaceous bed within the Upper Harding Quartzite. No uranium minerals were visible but radioactivity appears to be associated with limonite staining and carbonaceous matter in the form of fish scales and asphaltic pellets. An unidentified copper mineral was present in places.  
 DOI 1956  
 REF U.S. A.E.C., 1966, Preliminary Reconnaissance Reports, Saguache County, Colorado. Burbank, W. S., 1932, Geology and ore deposits of the Bonanza mining district, Colorado, with a section on history and production by C. W. Henderson: U.S. Geol. Survey Prof. Paper 169, 166 p.

## Ram Lode and Pam Lode (Ram Lode 1)

LOCATION: sec. 3, T. 44 N., R. 11 E.  
 LCRM Also sec. 4. This lease also extends into sec. 33, 34, T. 45 N., R. 11 E.  
 DYEL Shallow open cuts.  
 PROD From Pam Lode 10 tons had been mined in 1955, at a grade of 0.06% U308 and 0.04% V205, producing 12 lbs of U308 and 8 lbs. of V205. From Ram Lode 1, 19 tons had been mined in 1955 at a grade of 0.16% U308 and 0.09% V205, producing 61 lbs of U308 and 34 lbs of V205.  
 HOST The host is a zoned pegmatite in a Precambrian granite or metasediment. This is one of a series of pegmatite dikes which cut the Precambrian rocks in a belt 3 miles wide by 25 miles long.  
 MNZ Autunite, xenotime, monazite, samarskite, garnet.  
 DOI 1971  
 REF R. C. Malan, 1978, Personal Communication. U.S. A.E.C., 1971, Production Records, Colorado.

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## Ridgeway No. 3 Claim

LOCATION: NW1/4NW1/4 sec. 8, T. 47 N., R. 2 E.  
 QUAD Sawtooth Mountain Quadrangle 7 1/2'  
 MAP MONTROSE  
 DVEL Two small (2 to 4 ft deep) prospect pits were dug.  
 BKG .01 to .015 mr/hr  
 RNG .05 to .3 mr/hr  
 HOST The mineralized area lies in Precambrian granite surrounded by Precambrian biotite schist and granite gneiss cut by stringers and irregular bodies of pegmatite.  
 STRC The mineralization lies in shear zones trending N55°E and N70°W with an apparent intersection at or near the upper prospect pit.  
 ALT The shear zones are heavily altered.  
 MNZ The only mineralization seen was hematite staining. Uranium minerals were not visible.  
 RMKS Other claims in the group did not show abnormal radioactivity.  
 DOI 1955  
 REF U.S. Bur. of Mines, 1977, (Unpubl.). U.S. A.E.C., 1966, Preliminary Reconnaissance Reports, Saguache County, Colorado.

## Sage Hen (Friendly Neighbor)

LOCATION: sec. 34, T. 48 N., R. 2 E.  
 LCRM This also extends to sec. 35, and to sec. 2, 3, T. 47 N., R. 2 E.  
 QUAD Houston Gulch 7 1/2'  
 MAP MONTROSE  
 DVEL The area was explored and some underground mining was carried out.  
 PROD Drilling developed on small ore body at an average depth of 475 ft. No uranium production on record with the U.S. A.E.C. According to CRIB, 4,800 tons of ore were mined at a grade of 0.15% U3O8 from the 370 ft level.  
 HOST The deposit lies in the Jurassic Morrison Formation, Salt Wash Member, silicified sandstones and mudstones in fault contact with Precambrian rocks.  
 MNZ Uranium mineralization was found, in the form of pitchblende or uraninite. Scattered sulfides are also present.  
 DOI 1972  
 REF R. C. Malan, 1978, Personal Communication. U.S. Geol. Survey, 1977, CRIB File. U.S. Bur. of Mines, 1977, (Unpubl.). U.S. A.E.C., 1971, Production Records, Colorado.

## Shurshot Claims

LOCATION: T. 47 N., R. 1 E.  
 QUAD Sawtooth Mountain 7 1/2'  
 MAP MONTROSE  
 HOST The deposit occurs where Precambrian metamorphics contact the Jurassic Morrison Formation.  
 STRC A fault contact controlled the ore emplacement.  
 MNZ Pitchblende is present.  
 DOI 1972  
 REF U.S. Geol. Survey, 1977, CRIB File.

## T-2 Mine (Sec. 3 Mine)

LOCATION: N1/2NE1/4 sec. 3, T. 47 N., R. 2 E.

LCRM N1/2 of sec. 3 is patented land.  
 QUAD Razor Creek Dome 7 1/2'  
 MAP MONTROSE  
 DVEL There was an incline entry with extensive underground workings extending 900 ft along the Los Ochos fault, and 50 to 250 ft in width on the north side of the fault. Average depth to ore was 70 ft.  
 PROD During the period 1959 through 1962, a total of 37,565 tons of ore were produced with an average grade of 0.13% U3O8 and containing 97,618 lbs of U3O8.  
 HOST Ore bodies occurred in brecciated and fractured sandstone of the Salt Wash Member of the Morrison Formation on the north side of the Los Ochos Fault.  
 STRC E-W Los Ochos Fault.  
 ALT The rocks on either side of fault are altered (see Los Ochos Group).  
 MNZ Uraninite is the only uranium mineral reported.  
 DOI 1971  
 REF R. C. Malan, 1978, Personal Communication. U.S. A.E.C., 1971, Production Records, Colorado. Malan, R. C., and Ramspot, H. W., 1959.

## Unnamed No. 1

LOCATION: T. 48 N., R. 2 E.  
 QUAD Houston Gulch 7 1/2' or Iris 7 1/2'  
 MAP MONTROSE  
 DVEL This was a small gold mine, with production begun in 1905.  
 HOST The deposit is in the Jurassic Morrison Formation and/or Cretaceous Dakota Sandstone, in fault contact with Precambrian granites.  
 STRC A fault brought the sedimentary units into contact with the Precambrian rocks.  
 MNZ Uranium and gold mineralization is present.  
 DOI 1972  
 REF U.S. Geol. Survey, 1977, CRIB File. Malan, R. C., and Ranspot, H. W., 1959.

## Unnamed No. 2

LOCATION: sec. 17, T. 48 N., R. 3 E.  
 LCRM This deposit also extends to sec. 19 through 22 and 28.  
 QUAD Houston Gulch 7 1/2'  
 MAP MONTROSE  
 DVEL There has been some production.  
 HOST The deposit lies in Cretaceous rocks overlain by the Miocene Potosi Volcanic Series.  
 MNZ Uranium mineralization was found.  
 DOI 1972  
 REF U.S. Geol. Survey, 1977, CRIB File. Malan, R. C., and Ranspot, H. W., 1959.

## Unnamed No. 3

LOCATION: sec. 29, T. 48 N., R. 3 E.  
 LCRM This deposit also extends to sec. 30-34.  
 QUAD Houston Gulch 7 1/2'  
 MAP MONTROSE  
 HOST The deposit lies in Cretaceous rocks overlain by Miocene Potosi Volcanic Series.  
 MNZ Uranium mineralization was discovered.  
 DOI 1972  
 REF U.S. Geol. Survey, 1977, CRIB File. Malan, R. C., and Ranspot, H. W., 1959.



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## Unnamed No. 4

LOCATION: NE1/4SW1/4 sec. 13, T. 48 N., R. 6 E.  
 QUAD Pahlone Peak 7 1/2'  
 MAP MONTROSE  
 HOST The deposit lies in the Miocene Potosi Volcanic Series.  
 MNZ Uranium mineralization was detected.  
 DOI 1972  
 REF U.S. Geol. Survey, 1977, CRIB File.

## Unnamed No. 5

LOCATION: sec. 15, T. 48 N., R. 4 E.  
 LCRM This deposit also extends to sec. 20, 21, 28, 29, and 32.  
 QUAD Doyleville 7 1/2'  
 MAP MONTROSE  
 HOST The deposit occurs in the Jurassic Morrison Formation and/or the Cretaceous Dakota Group.  
 MNZ Uranium mineralization was recognized.  
 DOI 1972  
 REF U.S. Geol. Survey, 1977, CRIB File.

## Unnamed No. 6

LOCATION: sec. 1, T. 45 N., R. 2 E.  
 LCRM This occurrence also extends to sec. 13.  
 QUAD Cochetopa Park 7 1/2'  
 MAP MONTROSE  
 HOST The deposit lies in the Miocene Potosi Volcanic Series.  
 MNZ Uranium mineralization was found.  
 DOI 1972  
 REF U.S. Geol. Survey, 1977, CRIB File.

## Unnamed No. 7

LOCATION: NW1/4NW1/4NE1/4 sec. 6, T. 45 N., R. 3 E.  
 QUAD Cochetopa Park 7 1/2'  
 MAP MONTROSE  
 HOST The deposit is in the Miocene Potosi Volcanic Series.  
 MNZ Uranium mineralization was recognized.  
 DOI 1972  
 REF U.S. Geol. Survey, 1977, CRIB File.

## Unnamed No. 8

LOCATION: sec. 4, T. 45 N., R. 5 E.  
 LCRM The deposit extends to parts of sec. 5, 8, 10, 16, and 17. It lies north of Saguache Creek.  
 QUAD Trickle Mountain 7 1/2'  
 MAP MONTROSE  
 HOST The deposit lies in Miocene Potosi Volcanic Series.  
 MNZ Gold and uranium mineralization were both found.  
 DOI 1972  
 REF U.S. Geol. Survey, 1977, CRIB File.

## Unnamed No. 9

LOCATION: sec. 1, T. 46 N., R. 2 E.  
 LCRM The deposit extends to sec. 3, 10, 11, and 15.  
 QUAD Razor Creek Dome 7 1/2'  
 MAP MONTROSE  
 HOST The deposit lies in the Miocene Potosi Volcanic

Series.  
 MNZ Uranium mineralization was detected.  
 DOI 1972  
 REF U.S. Geol. Survey, 1977, CRIB File.

## Unnamed No. 10

LOCATION: sec. 4, T. 47 N., R. 3 E.  
 LCRM The occurrence extends to sec. 7, 17, 18, 31 and 33.  
 QUAD Razor Creek Dome 7 1/2'  
 MAP MONTROSE  
 HOST The deposit occurs in Cretaceous rocks overlain by the Miocene Potosi Volcanic Series.  
 MNZ Uranium mineralization was detected.  
 DOI 1972  
 REF U.S. Geol. Survey, 1977, CRIB File.

## Unnamed No. 11

LOCATION: sec. 1, T. 47 N., R. 1 E.  
 LCRM The occurrence extends to sec. 2, 12, 24, 25, and 36.  
 QUAD Sawtooth Mountain 7 1/2'  
 MAP MONTROSE  
 HOST The deposit occurs in the Jurassic Morrison Formation, overlain by the Miocene Potosi Volcanic Series.  
 MNZ Uranium mineralization was discovered.  
 DOI 1972  
 REF U.S. Geol. Survey, 1977, CRIB File. Malan, R. C., and Ranspot, H. W., 1959.

## Unnamed No. 12

LOCATION: S1/2SE1/4 sec. 25, T. 48 N., R. 1 E.  
 LCRM The deposit extends to SW1/4NE1/4SE1/4 sec. 36.  
 QUAD Iris 7 1/2'  
 MAP MONTROSE  
 HOST The deposit occurs in the Jurassic Morrison Formation.  
 DOI 1972  
 REF U.S. Geol. Survey, 1977, CRIB File. Malan, R. C., and Ranspot, H. W., 1959.

## Unnamed No. 13

LOCATION: sec. 5, T. 46 N., R. 3 E.  
 LCRM The occurrence extends to sec. 6, 7, 16, 17, and 18.  
 QUAD Razor Creek Dome 7 1/2'  
 MAP MONTROSE  
 DVEL There has been no production at this site.  
 HOST The host is the Miocene Potosi Volcanic Series.  
 MNZ Uranium mineralization was detected.  
 DOI 1972  
 REF U.S. Geol. Survey, 1977, CRIB File.

## Unnamed No. 14

LOCATION: UNLOCATABLE  
 LCST UNLOCATABLE  
 PROD U.S. A.E.C. Records show that in 1955 Wycol Minerals shipped 44 tons averaging .05% U308 and containing 44 lbs. of U308 to the Kerr McGee mill at Shiprock, N.M. from an unnamed property in Saguache County, Colorado.

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DOI 1955  
REF U.S. A.E.C., 1971, Production Records, Colorado.

### Venus 14 (Venus 1-14)

LOCATION: T. 44 N., R. 12 E.  
LCST UNCERTAIN  
LCRM Located near the Mercury-Alpine Claims.  
DVEL A small part of ore was developed at an average depth of 9 ft. No production to date.  
HOST The deposit occurs in a carbonaceous sandstone of the Sangre de Cristo Formation.  
MNZ Uraninite - coffinite type mineralization was discovered.  
DOI 1971  
REF U.S. A.E.C., 1971, Production Records, Colorado.

### Whale Mine

LOCATION: NW1/4NE1/4 sec. 19, T. 47 N., R. 8 E.  
LCRM The deposit also extends to sec. 18.  
QUAD Bonanza 15'  
MAP MONTROSE  
DVEL There are several old shafts and adits that were inaccessible in 1953. The workings were reopened in 1955. The main drift is 800 ft long with several small cross cuts and raises.  
BKG .03 to .06 mr/hr  
RNG .06 to 20.0 mr/hr  
HOST The deposit is a vein deposit in Tertiary Rawley Andesite. The vein is 1,200 ft long, five ft wide, and tabular in shape.  
STRC The Michigan Vein is the primary control. It strikes N15°E and dips 70°E. The pitchblende is localized where a small fault intersects the Michigan Vein. It's strike parallels the Michigan Vein's strike, but it dips 35°E.  
MNZ Primary ore minerals are pitchblende(?), galena, silver, sphalerite, and chalcopyrite. Malachite is present as a secondary mineral. Gangue minerals include limonite, barite, and quartz. The pitchblende(?) occurs as veinlets and coatings in mixtures of sulfides and gangue. A grab sample of lead silver ore taken from the dump registered 2.0 mr/hr.  
DOI 1955  
REF U.S. Bur. of Mines, 1977, (Unpubl.) U.S. A.E.C., 1966, Preliminary Reconnaissance Reports, Saguache County, Colorado. Pierson, C. T., Weeks, W. F., and Kleinhampl, F. J., 1958. Burbank, W. S., 1932, U.S. Geol. Survey Prof. Paper 169, p. 134-135.

### Wild Cherry Creek Area (Beginners Luck Claims)

LOCATION: T. 44 N., R. 11 E.  
PROD An average value of 0.25% U3O8 is reported.  
HOST The host is a vein in a rhyolite porphyry of Tertiary age.  
MNZ Mineralization is in a 1 ft to 3 ft zone along steeply dipping rhyolite porphyry hogback 700 ft long.  
REF Atlantic-Richfield Co., 1977.

### Willow Creek Group (Beta Group)

LOCATION: sec. 4, T. 46 N., R. 1 W.  
LCRM This deposit extends to sec. 2, 3, 5, and 6 as well, which overlap very slightly into Gunnison County.  
QUAD Spring Hill Creek 7 1/2' and Powderhorn 7 1/2'.  
MAP MONTROSE  
DVEL There are no mines, but there are a few prospect pits in the area.  
MNZ Uranium mineralization was recognized in the area.  
DOI 1972  
REF U.S. Geol. Survey, 1977, CRIB File.

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The production of uranium from the county has been relatively large. However, it has been from only one mine. The Graysill Mine produced 31,494 tons of ore that contained 51,012 lb of  $U_3O_8$ . The potential for more reserves of uranium to be found in the county is limited.

The county is in the center of the San Juan Mountains in the southwestern part of the state. Paleozoic and Precambrian rocks crop out in the southern part of the county. A majority of the county is covered by Tertiary volcanic rocks associated with the San Juan Mountain Uplift. Large caldera systems are associated with the volcanic activity. These systems are important because of the base- and precious-metal mining associated with them. Mining for silver and gold has been important in the county since the late 1800's.

Two mines in the county have produced  $U_3O_8$  -- the Elk Park Prospect and the Graysill Mines. Although Elk Park Mine is a very minor producer of uranium, it is important from the standpoint of being a polymetallic type of uranium occurrence. Cobalt, silver and arsenic are associated with uranium in

the mine, making this one of the few mines of this type in Colorado. The Graysill Mine is a sandstone-type of uranium occurrence. The ore occurs in the Jurassic Entrada Sandstone. This is one of the Entrada roscoelite-type deposits that form a north-south belt from the Rifle Mine in Garfield County to the Good Hope-Nevada Group in La Plata County. This type of deposit is typified by primary vanadium and uranium as its by-product. The vanadium mica roscoelite is always in abundance at these deposits, and the Entrada Sandstone is the main host.

The potential for more reserves to be found in the county is small. The Graysill Mine has been closed for a number of years. The majority of the county is covered by volcanics, and, to date, these types of rocks have not been uranium producers, although uranium mineralization has been noted in volcanogenic rocks in other areas. Studies are now being carried out on this type of mineralization. Areas near calderas such as the Silverton could someday become potential host rocks after more research into this type of uranium occurrence. Also, the mineralization at the Elk Park is extremely interesting but appears to be limited.

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### Black Hawk Mine

LOCATION: sec. 22, T. 42 N., R. 7 W.  
 LCRM Original directions to mine are as follows:  
 "North from Silverton, on road to Gladstone.  
 Continue past mill site at Gladstone to  
 well-defined branch of road, take right."  
 DYEL This is an inactive precious metal mine  
 with extensive workings.  
 HOST Vein in Tertiary volcanics.  
 STRC Shear zone of varying thickness.  
 RMKS On traverse from portal to face the background  
 went 0.02 to .18 mr/hr. Radon gas was suspected.  
 DOI 1953  
 REF U.S. A.E.C., 1966, Preliminary Reconnaissance  
 Reports, San Juan County, Colorado.

### Bushwacker (B & B No. 1 & 2)

LOCATION: sec. 26, T. 40 N., R. 10 W.  
 LCRM Near Hermosa Creek.  
 HOST Entrada Sandstone of Jurassic age.  
 MNZ Roscoelite.  
 DOI 1971  
 REF U.S. A.E.C., 1971, Production Records, Colorado.

### Carbon Lake Shaft

LOCATION: T. 42 N., R. 8 W.  
 LCST UNSURVEYED  
 QUAD Ironton 7 1/2'  
 DYEL This is an inactive gold-silver mine with  
 extensive workings.  
 HOST Hydrothermal chimney in Tertiary volcanics.  
 MNZ Galena, sphalerite, pyrite, silver, gold,  
 enargite, tennantite. One sample had a  
 value of 0.013% U.  
 DOI 1958  
 REF U.S. A.E.C., 1966, Preliminary Reconnaissance  
 Reports, Ouray County, Colorado. Pierson,  
 C. T.; and others, 1958. Burbank, W. S.,  
 and Pierson, C. T., 1953. Burbank, W. S.,  
 and Pierson, C. T., 1952.

### Elk Park (Surprise Claims, Clyde Long Property)

LOCATION: sec. 20, T. 40 N., R. 7 W.  
 LCST UNSURVEYED  
 LCRM Mine is located about 1,000 ft west of the  
 Animas River at point where the railroad  
 crosses river just below Elk Park.  
 QUAD Snowden Peak 7 1/2'  
 PROD By 1971, 33 tons had been mined at a grade  
 of 0.45% U3O8 producing 2,972 lbs of U3O8.  
 BKG 150 cps  
 RNG 150 to 10,000 cps  
 HOST Shears and faults in quartzite and schist  
 of the Precambrian Uncompaghe Formation.  
 STRC Faults?  
 MNZ Uraninite, autunite, meta-torbernite, and  
 erythrite, plus other uranium (?) oxides.  
 DOI 1977  
 REF R. G. Malan, 1978, Personal Communication.  
 Atlantic Richfield Company, 1977, Maxwell,  
 J. W., 1977. Stevens, T. A.; and others,

1969. Mineral Resources of the San Juan  
 Primitive Area, Colorado. U.S. Geol. Survey  
 Bull. 1261-F, p. 88.

### Graysill Mine

LOCATION: T. 40 N., R. 10 W.  
 LCST UNSURVEYED  
 LCRM Located near the San Juan-Dolores county  
 line near Bolam Pass.  
 QUAD Hermosa Peak 7 1/2'  
 DYEL There are numerous adits.  
 PROD By 1971, 171 tons had been mined at grades  
 of 0.049% U3O8 and 1.907, V2O5 at the Graysill  
 No. 1 Mine. At the Graysill No. 2 Mine,  
 31,778 tons had been mined at grades of  
 0.08% U3O8 and 2.41% V2O5. These separations  
 are listed in the U.S. A.E.C. Production  
 Records.  
 HOST Jurassic Entrada Sandstone with rhyolite  
 sills at base or top.  
 STRC Sills and faults.  
 ALT Bleached host.  
 MNZ Mineralization is of the roscoelite type.  
 The concentration seems to be related to  
 the proximity of the rhyolite sills. Also,  
 mineralization is localized around carbon  
 trash.  
 REF U.S. A.E.C., 1971, Production Records, Colorado.  
 Finch, W. I., 1967. Bain, G. W., 1952b.

### Henrietta Mine

LOCATION:  
 LCST UNCERTAIN  
 LCRM Original directions are as follows: "Start  
 at Silverton, and take road to Gladstone  
 for 6.4 miles. Take sharp left turn for  
 7.9 miles. Henrietta Mine southwest of  
 road. Mine located at elevation of 11,500  
 ft, on west slope near head of Prospect  
 Gulch."  
 QUAD Ironton 7 1/2'  
 DYEL Inactive gold-silver mine with extensive  
 workings.  
 BKG .02 to .05 mr/hr  
 RNG .02 to .1 mr/hr  
 HOST Vein in Tertiary volcanics.  
 MNZ Galena, sphalerite, bornite, chalcopryite,  
 pyrite, quartz. Rough table concentrates  
 had reading of 1.2 mr/hr. The washed concentrates  
 had a reading of .1 mr/hr.  
 DOI 1953  
 REF U.S. A.E.C., 1966, Preliminary Reconnaissance  
 Reports, San Juan County, Colorado.

### Hercules

LOCATION:  
 LCST UNCERTAIN  
 LCRM Directions to mine are as follows: "Start  
 from Silverton on road to Gladstone 6.4  
 miles - take sharp left turn, 8.5 miles.  
 First mine is Hercules and second is Galena  
 Queen. Mine is located at 12,000 ft in west  
 end of Prospect Gulch, south of Red Mountain  
 #3."  
 QUAD Ironton 7 1/2'  
 BKG .03 to .05 mr/hr

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RNG .03 to .08 mr/hr  
 HOST Chimney in Tertiary volcanics.  
 MNZ Galena, sphalerite, pyrite.  
 RMKS The tabled concentrates from the tailings of the ore had a reading of .04 to .4 mr/hr.  
 DOI 1953  
 REF U.S. A.E.C., 1966, Preliminary Reconnaissance Reports, San Juan County, Colorado.

### Koehler Tunnel

LOCATION:  
 LCST UNSURVEYED  
 LCRM Located about 1,500 ft southeast of Red Mountain Pass on US 550.  
 QUAD Ironton 7 1/2'  
 DVEL This is an inactive silver-gold mine with extensive workings.  
 RNG To 6 x bg  
 HOST Chimney deposit in Tertiary latite volcanics.  
 MNZ Pyrite, enargite, galena, sphalerite, and ilmonite in gangue quartz, dickite, sericite, fluorite, and carbonates. Radioactive material was found chiefly in mixed sulphide and gangue material mainly in galena bearing samples.  
 DOI 1951  
 REF U.S. A.E.C., 1966, Preliminary Reconnaissance Reports, San Juan County, Colorado.

### Lark Tunnel

LOCATION: T. 42 N., R. 8 W.  
 LCST UNSURVEYED  
 DVEL An inactive gold-silver mine with extensive workings.  
 HOST Hydrothermal chimney in Tertiary volcanics.  
 MNZ Galena, sphalerite, pyrite, silver, gold, enargite, and tennantite. A sample had a value of 0.35% U. Tabled tailings of the ore are reported to have been anomalous by as much as 10 x bg.  
 DOI 1958  
 REF U.S. A.E.C., 1966, Preliminary Reconnaissance Reports, Ouray County, Colorado. Pierson, C. T.; and others, 1958. Burbank, W. S., 1953. Varnes, D. J.; and others, 1945, Lark Mine, Cement Creek area, San Juan County, Colorado. Colo. Min. Assoc. Mining Yearbook, p. 36.

### Longfellow Mine

LOCATION: T. 42 N., R. 8 W.  
 LCST UNCERTAIN  
 LCRM Reported to be about 200 yds north of Koehler Tunnel, but small sketch map shows the anomaly as being on the north side of a pond which would be north of the Longfellow Mine.  
 QUAD Ironton 7 1/2'  
 DVEL This is an inactive silver-gold mine.  
 BKG .02 to .05 mr/hr  
 RNG .07 to .2 mr/hr  
 HOST Chimney deposit in Tertiary volcanics.  
 MNZ Galena, sphalerite, and hydrothermal clay.  
 DOI 1953  
 REF U.S. A.E.C., 1966, Preliminary Reconnaissance Reports, San Juan County, Colorado. Pierson,

C. T.; and others, 1958. Burbank, W. S.; and others, 1953.

### Mighty Monarch Mine

LOCATION: T. 41 N., R. 7 W.  
 LCST UNCERTAIN  
 LCRM Original directions to occurrence are as follows: "Near base northwest slope of Mount Kendall adjacent to Silverton townsite".  
 HOST Vein in Tertiary volcanics.  
 MNZ Lead, zinc, copper, and uranium.  
 DOI 1973  
 REF U.S. Geol. Survey, 1977, CRIB File.

### Surprise

LOCATION: sec. 18, T. 40 N., R. 7 W.  
 LCRM Also reported in sec. 17, 19, 20, 30, 29.  
 MNZ Uranium.  
 DOI 1972  
 REF U.S. Geol. Survey, 1977, CRIB File.

### Syracuse Pride

LOCATION: T. 43 N., R. 7 W.  
 LCST UNSURVEYED  
 LCRM Original direction to mine are as follows: "On road to Engineer Mountain at about 12,500 ft elevation. .7 mile east of Engineer Mountain and 2.17 miles north of Animas Forks." Possibly in Ouray County.  
 QUAD Handies Peak 7 1/2'  
 HOST Vein in Tertiary volcanics.  
 MNZ Sphalerite, galena, chalcopryrite, pyrite, quartz, kaolinite. A grab sample from dump had a value of 0.051% U.  
 DOI 1952  
 REF U.S. A.E.C., 1966, Preliminary Reconnaissance Reports, San Juan County, Colorado. Pierson, C. T.; and others, 1958. Burbank, W. S.; and others, 1953. Kelly, V. C., 1946, Geology, ore deposits and mines of the Mineral Point, Poughkeepsie and Upper Uncompaghe districts, Ouray, San Juan, Hinsdale Counties, Colorado, Colo. Sci. Soc., Proc., v. 14, no. 7.

## SAN MIGUEL COUNTY

San Miguel County lies within the Uravan mineral belt. Production from the county has been large and will continue to be so.

Production from January 1, 1948 to January 1, 1978 was 3,722,900 tons mined with 15,889,200 lb of  $U_3O_8$  produced at a grade of 0.21 percent  $U_3O_8$ . Of the tons mined, 3,720,000 tons were processed for vanadium and produced 177,416,000 lb  $V_2O_5$  at a grade of 1.58 percent  $V_2O_5$ .

The county lies on the Utah-Colorado border in southwestern Colorado and is underlain by flat-lying Cretaceous and Jurassic sediments. Volcanic rocks associated with the San Juan Mountain Uplift cover much of the eastern panhandle. The major structure in the county is the Big Gypsum Valley Anticline, a breached salt uplift.

Because of the production from the Uravan belt, the county is a major uranium producer in the state.

However, a second district separate from the Uravan district has produced uranium. This is the Placerville district in the eastern part of the county. Around the town of Placerville, uranium is associated as a by-product with vanadium in bedded deposits within the Jurassic Entrada Sandstone. This district is part of a large roscoelite belt that stretches from the Rifle Mine in Garfield County to the Good Hope-Nevada Group of claims in La Plata County. All along this belt the Entrada Sandstone contains tabular ore bodies in which roscoelite is always associated with uranium and vanadium minerals. The uranium in these deposits has a grade of about 0.05 percent  $U_3O_8$  and vanadium averages 1 to 1.5 percent  $V_2O_5$ . Mining is not being carried out at this time.

Reserves in the county are fairly large, and the potential is excellent for more to be found. Production in the county will continue for years to come.

# SAN MIGUEL COUNTY

## SAN MIGUEL COUNTY

### 1, AEC Mining Lease (C-SR-10\*, DOE Lease Tract) (King No. 2, Sam [Legin Group])

LOCATION: SW1/4NW1/4 sec. 28, T. 43 N., R. 19 W.  
LCRM These deposits lie in the Slick Rock district.  
QUAD Egnar 7 1/2'  
MAP CORTEZ  
DVEL See C-SR-10, DOE Lease Tract.  
HOST The host is the Jurassic Morrison Formation.  
MNZ Uranium, vanadium.  
RMKS \*Only parts of C-SR-10, AEC Mining Lease were included in 1, AEC Mining Lease.  
DOI 1971  
REF U.S. D.O.E., 1977, Lease Production Records, Colorado. U.S. Bur. of Mines, 1977, (Unpubl.). U.S. A.E.C., 1971, Production Records, Colorado.

### 4, AEC Mining Lease (C-SR-11, DOE Lease Tract) [Tomboy, Beth Emma Lou, Teller, Mercantile, Independence, Avoca, Ike Nos. 1-6, Sibley, Park, and Brighton] (C-SR-16, DOE Lease Tract) [Nucleus, Easton B, Michael Bray, Michael Bray No. 1, Ann No. 1 & 2 & Fraction adjacent to Ann No. 2, and Frankie No. 2] (C-SR-10, DOE Lease Tract) [Blk 32 (Black Jack Strip)]

LOCATION: S1/2 sec. 8, T. 43 N., R. 19 W.  
LCRM Also sec. 16, 17 & 18. This deposit lies in the Slick Rock district.  
QUAD Egnar 7 1/2' & Horse Range Mesa 7 1/2'  
MAP CORTEZ & MOAB  
DVEL See C-SR-11, DOE Lease Tract.  
HOST The host is the Jurassic Morrison Formation.  
MNZ Uranium, vanadium.  
DOI 1971  
REF U.S. D.O.E., 1977, Lease Production Records, Colorado. U.S. Bur. of Mines, 1977, (Unpubl.). U.S. A.E.C., 1971, Production Records, Colorado.

### 6, AEC Mining Lease (C-SR-15, DOE Lease Tract) [Lower Group] (Cougar, Last Chance, Rainbow, Little Marie I, Chico, Lower Fraction)

LOCATION: NW1/4SE1/4 and NE1/4SW1/4 sec. 23, T. 44 N., R. 19 W.  
LCRM This lease lies in the Slick Rock district.  
QUAD Horse Range Mesa 7 1/2'  
MAP MOAB  
DVEL See C-SR-15, DOE Lease Tract.  
HOST The host is the Jurassic Morrison Formation.  
MNZ Uranium, vanadium.  
DOI 1971  
REF U.S. D.O.E., 1977, Lease Production Records, Colorado. U.S. Bur. of Mines, 1977, (Unpubl.). U.S. A.E.C., 1971, Production Records, Colorado.

### 7, AEC Mining Lease (C-SR-16A, DOE Lease Tract) (Golden Rod Mine, Fraction 3 Mine) (Golden Rod Group)

LOCATION: E1/2NE1/4 sec. 14, T. 43 N., R. 19 W.  
LCRM These deposits are all part of the Golden Rod Group in the Slick Rock district.

QUAD Egnar 7 1/2'  
MAP CORTEZ  
PROD See C-SR-16A, DOE Lease Tract.  
HOST The host is the Jurassic Morrison Formation.  
MNZ Uranium, vanadium.  
DOI 1971  
REF U.S. D.O.E., 1977, Lease Production Records, Colorado. U.S. Bur. of Mines, 1977, (Unpubl.). U.S. A.E.C., 1971, Production Records, Colorado.

### 8, AEC Mining Lease (C-SR-16, DOE Lease Tract) (Fraction No. 1, Summit, Charles T. No. 1, Fraction No. 5, Benny T. No. 1 & 2)

LOCATION: sec. 10, T. 43 N., R. 19 W.  
LCRM These deposits lie in the Slick Rock district and are part of Ram Lode (Pam Lode, Ram Lode 1)  
QUAD Egnar 7 1/2'  
MAP CORTEZ  
DVEL See C-SR-16, DOE Lease Tract.  
HOST Jurassic Morrison Formation, Salt Wash Member, gray and brown shaly sandstone and fine-to medium-grained sandstone with abundant carbonized logs and other plant remains.  
MNZ Carnotite - tyuyamunite, vanadium and uranium.  
DOI 1971  
REF U.S. D.O.E., 1977, Lease Production Records, Colorado.

### 16, AEC Mining Lease

LOCATION: SE1/4SE1/4 sec. 20, T. 43 N., R. 19 W.  
LCRM This was a lease block adjacent to the Falcon Claim, lying in the Slick Rock district.  
PROD As of 1955, 281 tons of ore had been mined at an average grade of 0.23% U3O8 and 2.35% V2O5. Lease expired 1955.  
HOST The host is the Jurassic Morrison Formation.  
MNZ Uranium and vanadium minerals were mined.  
DOI 1974  
REF U.S. D.O.E., 1977, Lease Production Records, Colorado.

### 17, AEC Mining Lease (C-SR-13A, DOE Lease Tract) (Georgeto Claim)

LOCATION: S1/2NW1/4 sec. 30, T. 44 N., R. 18 W.  
LCRM This lease was located in the Slick Rock district.  
QUAD Horse Range Mesa 7 1/2'  
MAP MOAB  
DVEL See C-SR-13A, DOE Lease Tract.  
HOST Jurassic Morrison Formation.  
MNZ Uranium, vanadium, carnotite - tyuyamunite, high vanadium, low lime.  
DOI 1971  
REF U.S. D.O.E., 1977, Lease Production Records, Colorado. U.S. Bur. of Mines, 1977, (Unpubl.). U.S. A.E.C., 1971, Production Records, Colorado.

### 18, AEC Mining Lease (C-SR-10, DOE Lease Tract) [Legin Group], Eloisa Claims, Otero Claims)

LOCATION: NW1/4 sec. 28, T. 43 N., R. 19 W.  
LCRM This lease lies in the Slick Rock district.  
QUAD Egnar 7 1/2'

# SAN MIGUEL COUNTY

MAP CORTEZ  
DVEL See C-SR-10, DOE Lease Tract.  
HOST Jurassic Morrison Formation.  
MNZ Uranium, vanadium, carnotite - tyuyamunite, high vanadium, low lime.  
DOI 1971  
REF U.S. D.O.E., 1977, Lease Production Records, Colorado. U.S. Bur. of Mines, 1977, (Unpubl.). U.S. A.E.C., 1971, Production Records, Colorado.

## 20, AEC Mining Lease (C-SR-15, DOE Lease Tract) (Knoll, Helen, Cacti, Alice [Lower Group])

LOCATION: SW1/4SW1/4 sec. 23, T. 44 N., R. 19 W.  
LCRM The deposit extends to sec. 26. It lies in the Slick Rock district.  
QUAD Horse Range Mesa 7 1/2'  
MAP MOAB  
DVEL See C-SR-15, DOE Lease Tract.  
HOST Jurassic Morrison Formation.  
MNZ Uranium, vanadium, carnotite - tyuyamunite, high vanadium, low lime.  
DOI 1971  
REF U.S. D.O.E., 1977, Lease Production Records, Colorado. U.S. Bur. of Mines, 1977, (Unpubl.). U.S. A.E.C., 1971, Production Records, Colorado.

## 21, AEC Mining Lease (C-SR-14, DOE Lease Tract) [Upper Group] (Sunnyside, Grant, Big Four)

LOCATION: SE1/4NW1/4 sec. 5, T. 43 N., R. 18 W., NMPM.  
LCRM This lease is located in the Slick Rock district.  
QUAD Horse Range Mesa 7 1/2' & Hamm Canyon 7 1/2'  
MAP MOAB  
DVEL See C-SR-14, DOE Lease Tract.  
HOST The host is the Jurassic Morrison formation.  
MNZ Uranium, vanadium.  
DOI 1971  
REF U.S. D.O.E., 1977, Lease Production Records, Colorado. U.S. Bur. of Mines, 1977, (Unpubl.). U.S. A.E.C., 1971, Production Records, Colorado.

## 22, AEC Mining Lease (C-SR-16A, DOE Lease Tract) [Golden Rod Group] (Golden Rod No. 1 & 2, Fraction No. 4)

LOCATION: SE1/4 sec. 11, T. 43 N., R. 19 W.  
LCRM The lease area lies in the Slick Rock district.  
QUAD Egnar 7 1/2'  
MAP CORTEZ  
DVEL See C-SR-16A, DOE Lease Tract.  
HOST The host is the Jurassic Morrison Formation.  
MNZ Uranium and vanadium minerals were found.  
RMKS The lease was terminated in 1954. The claims adjoin 48, AEC Mining Lease.  
DOI 1974  
REF U.S. D.O.E., 1977, Lease Production Records, Colorado.

## 25, AEC Mining Lease (C-SR-16A, DOE Lease Tract) (Golden Rod No. 5)

LOCATION: NE1/4NW1/4 sec. 14, T. 43 N., R. 19 W.  
LCRM The lease lies in the Slick Rock district.  
DVEL See C-SR-16A, DOE Lease Tract.

HOST The host is the Jurassic Morrison Formation.  
MNZ Uranium and vanadium minerals were mined.  
DOI 1974  
REF U.S. D.O.E., 1977, Lease Production Records, Colorado.

## 28, AEC Mining Lease (C-SR-13, DOE Lease Tract) (Hawkeye)

LOCATION: W1/2SW1/4 sec. 32, T. 44 N., R. 18 W.  
LCRM The deposit lies in the Slick Rock district.  
QUAD Horse Range Mesa 7 1/2' & Hamm Canyon 7 1/2'  
MAP MOAB  
DVEL See C-SR-13, DOE Lease Tract.  
HOST The host is the Jurassic Morrison Formation.  
MNZ Uranium, vanadium.  
DOI 1971  
REF U.S. D.O.E., 1977, Lease Production Records, Colorado. U.S. Bur. of Mines, 1977, (Unpubl.). U.S. A.E.C., 1971, Production Records, Colorado.

## 29, AEC Mining Lease (C-SR-10, DOE Lease Tract) [Legin Group] (Frenchy, King, May, Cowgirl)

LOCATION: NE1/4 sec. 29, T. 43 N., R. 19 W.  
LCRM These deposits lie in the Slick Rock district.  
QUAD Egnar 7 1/2'  
MAP CORTEZ  
DVEL See C-SR-10, DOE Lease Tract.  
HOST The host is the Jurassic Morrison Formation.  
MNZ Uranium, vanadium.  
RMKS \*This lease was originally 2, AEC Mining Lease. It became 29, AEC Mining Lease on 7/1/52. Only parts of C-SR-10, AEC Mining Lease were included in 29, AEC Mining Lease.  
DOI 1971  
REF U.S. D.O.E., 1977, Lease Production Records, Colorado. U.S. Bur. of Mines, 1977, (Unpubl.). U.S. A.E.C., 1971, Production Records, Colorado.

## 30, AEC Mining Lease (C-SR-13, DOE Lease Tract) [Middle Group] (Little Yolande, Herbert, Vanadium, Ocumpaugh)

LOCATION: W1/2NE1/4 sec. 31, T. 44 N., R. 18 W.  
LCRM This lease lies in the Slick Rock district.  
QUAD Horse Range Mesa 7 1/2'  
MAP MOAB  
DVEL See C-SR-13, DOE Lease Tract.  
HOST Jurassic Morrison Formation.  
MNZ Uranium, vanadium, carnotite - tyuyamunite, high vanadium, low lime.  
DOI 1971  
REF U.S. D.O.E., 1977, Lease Production Records, Colorado. U.S. Bur. of Mines, 1977, (Unpubl.). U.S. A.E.C., 1971, Production Records, Colorado.

## 32, AEC Mining Lease (C-SR-13, DOE Lease Tract) [Middle Group] (Ellison, Burro)

LOCATION: NE1/4NE1/4 sec. 31, T. 44 N., R. 18 W.  
LCRM The deposit lies in the Slick Rock district.  
QUAD Horse Range Mesa 7 1/2'  
MAP MOAB  
DVEL See C-SR-13, DOE Lease Tract.  
HOST Jurassic Morrison Formation.



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MNZ Carnotite - tyuyamunite, high vanadium, low lime.  
DOI 1971  
REF U.S. D.O.E., 1977, Lease Production Records, Colorado. U.S. A.E.C., 1971, Production Records, Colorado.

## 42, AEC Mining Lease (C-SR-13, DOE Lease Tract) (Dan)

LOCATION: SW1/4 sec. 30, T. 44 N., R. 18 W.  
LCRM This lease lies in the Slick Rock district.  
QUAD Horse Range Mesa 7 1/2'  
MAP MOAB  
PROD See C-SR-13, DOE Lease Tract.  
HOST The host is the Jurassic Morrison Formation.  
MNZ Uranium, vanadium.  
DOI 1971  
REF U.S. D.O.E., 1977, Lease Production Records, Colorado. U.S. Bur. of Mines, 1977, (Unpubl.). U.S. A.E.C., 1971, Production Records, Colorado.

## 43, AEC Mining Lease (C-SR-16, DOE Lease Tract) (Charles T. No. 2 & 4)

LOCATION: SW1/4 sec. 10, T. 43 N., R. 19 W.  
LCRM This lease lies in the Slick Rock district.  
QUAD Horse Range Mesa 7 1/2' & Egnar 7 1/2'  
MAP MOAB & CORTEZ  
PROD See C-SR-16, DOE Lease Tract.  
HOST Jurassic Morrison Formation.  
MNZ Uranium, vanadium, carnotite - tyuyamunite, high vanadium, low lime.  
DOI 1971  
REF U.S. D.O.E., 1977, Lease Production Records, Colorado. U.S. Bur. of Mines, 1977, (Unpubl.). U.S. A.E.C., 1971, Production Records, Colorado.

## 44, AEC Mining Lease (C-SR-14, DOE Lease Tract) (Canyon View, Grants, Black Fox [Upper Group])

LOCATION: SW1/4 sec. 5, T. 43 N., R. 18 W.  
LCRM This lease lies in the Slick Rock district.  
QUAD Horse Range Mesa 7 1/2' & Hamm Canyon 7 1/2'  
MAP MOAB  
PROD See C-SR-14, DOE Lease Tract.  
HOST Jurassic Morrison Formation.  
MNZ Uranium, vanadium, carnotite - tyuyamunite, high vanadium, low lime.  
DOI 1971  
REF U.S. D.O.E., 1977, Lease Production Records, Colorado. U.S. Bur. of Mines, 1977, (Unpubl.). U.S. A.E.C., 1971, Production Records, Colorado.

## 45, AEC Mining Lease (C-SR-16, C-SR-16A, DOE Lease Tracts) (Sunflower, Pretty Boy [Charles T. Group], Bush Nos. 6 & 7)

LOCATION: NE1/4NE1/4 sec. 15, T. 43 N., R. 19 W.  
LCRM The lease extends to the SW1/4 sec. 10 and the NW1/4 sec. 14. Since 1974, it is included in C-SR-16 and C-SR-16A, DOE Lease Tracts. It lies in the Slick Rock district, near the Golden Rod Group.  
QUAD Egnar 7 1/2'  
MAP CORTEZ  
DVEL See C-SR-16A, DOE Lease Tracts.

HOST The host is the Jurassic Morrison Formation.  
MNZ Uranium, vanadium.  
RMKS Part of this lease was originally 5, AEC Mining Lease, which terminated 11/12/52.  
DOI 1971  
REF U.S. D.O.E., 1977, Lease Production Records, Colorado. U.S. Bur. of Mines, 1977, (Unpubl.). U.S. A.E.C., 1971, Production Records, Colorado.

## 46, AEC Mining Lease (C-SR-13A, DOE Lease Tract) (Georgetown Group, Veta Mad, Veta Glad)

LOCATION: NW1/4NW1/4 sec. 30, T. 44 N., R. 18 W.  
LCRM This lease lies in the Slick Rock district.  
QUAD Horse Range Mesa 7 1/2'  
MAP MOAB  
DVEL See C-SR-13A, DOE Lease Tract.  
HOST Jurassic Morrison Formation.  
MNZ Uranium, vanadium, carnotite - tyuyamunite, high vanadium, low lime.  
RMKS This lease was originally issued as 12, AEC Mining Lease.  
DOI 1971  
REF U.S. D.O.E., 1977, Lease Production Records, Colorado. U.S. Bur. of Mines, 1977, (Unpubl.). U.S. A.E.C., 1971, Production Records, Colorado.

## 48, AEC Mining Lease (C-SR-16A, DOE Lease Tract) (Neonle D., Neonle D. Angle, Fraction No. 1)

LOCATION: SW1/4 sec. 11, T. 43 N., R. 19 W.  
LCRM The lease area lies in the Slick Rock district, just west of the Golden Rod Group. The deposit also extends to the NW1/4 sec. 14.  
QUAD Egnar 7 1/2'  
MAP CORTEZ  
DVEL See C-SR-16A, DOE Lease Tract.  
HOST The host is the Jurassic Morrison Formation, Salt Wash Member.  
MNZ Uranium and vanadium minerals were found.  
RMKS 22, AEC Mining Lease adjoins this lease.  
DOI 1974  
REF U.S. D.O.E., 1977, Lease Production Records, Colorado.

## Ada Bell

LOCATION: sec. 16, T. 45 N., R. 19 W., NMPM.  
LCRM U.S. A.E.C. Production Records show location as sec. 9 and 15, T. 45 N., R. 16 W.  
QUAD Anderson Mesa 7 1/2'  
MAP MOAB  
PROD By 1971, 47 tons had been mined at a grade of 0.24% U3O8, producing 223 lbs of U3O8, and 2.91% V2O5, producing 2,740 lbs of V2O5.  
HOST Jurassic Salt Wash Member of the Morrison Formation.  
MNZ Uranium, vanadium.  
DOI 1971  
REF U.S. D.O.E., 1977, Lease Production Records, Colorado. U.S. Bur. of Mines, 1977, (Unpubl.). U.S. A.E.C., 1971, Production Records, Colorado.

# SAN MIGUEL COUNTY

## Ajax Lease (Thomas, Richard; Robin B. 9, 12; Susan 3 and 4)

LOCATION: sec. 31, T. 44 N., R. 19 W.  
 LORM Also sec. 6, 7, T. 43 N. This deposit lies in the Slick Rock district.  
 QUAD Mt. Peale 4 SE 7 1/2'  
 MAP MOAB  
 DYEL No production to 1978.  
 HOST The host is the Brushy Basin Member.  
 MNZ Carnotite.  
 DOI 1971  
 REF U.S. D.O.E., 1977, Lease Production Records, Colorado. U.S. A.E.C., 1971, Production Records, Colorado.

## Alchemist (Alchemist #1)

LOCATION: SW1/4 sec. 33, T. 43 N., R. 10 W, NMPM.  
 LORM Placerville district, Leopard Crock locality.  
 MAP MOAB  
 PROD By 1971, 136 tons had been mined at a grade of 0.13% U3O8, producing 341 lbs of U3O8, and 3.15% V2O5, producing 8,570 lbs of V2O5.  
 HOST Jurassic Entrada Formation.  
 MNZ Roscoelite.  
 DOI 1971  
 REF U.S. D.O.E., 1977, Lease Production Records, Colorado. U.S. A.E.C., 1971, Production Records, Colorado.

## April (April 1-13, Rio Grande)

LOCATION: sec. 27, T. 44 N., R. 19 W.  
 LORM U.S. A.E.C. Production Records also show Sec. 28.  
 QUAD Horse Range Mesa 7 1/2'  
 MAP MOAB  
 PROD By 1971, 1,327 tons had been mined at a grade of 0.29% U3O8, producing 7,710 lbs of U3O8, and 1.72% V2O5, producing 45,733 lbs of V2O5.  
 HOST Jurassic Morrison Formation.  
 DOI 1971  
 REF U.S. D.O.E., 1977, Lease Production Records, Colorado. U.S. A.E.C., 1971, Production Records, Colorado.

## Ava Jay Group (Chinese, Four Fingers, Lost Dutchman, Ava Jay)

LOCATION: sec. 25, T. 44 N., R. 20 W.  
 LORM U.S. A.E.C. Production Records also show sec. 36.  
 QUAD Mount Peale 4 SE 7 1/2'  
 MAP MOAB  
 PROD By 1971, 1,503 tons had been mined at a grade of 0.39% U3O8, producing 11,597 lbs of U3O8, and 2.05% V2O5, producing 61,484 lbs of V2O5.  
 HOST Jurassic Morrison Formation.  
 MNZ Carnotite - tyuyamunite.  
 DOI 1971  
 REF U.S. D.O.E., 1977, Lease Production Records, Colorado. U.S. Bur. of Mines, 1977, (Unpubl.). U.S. A.E.C., 1971, Production Records, Colorado.

## Babe 1-4

LOCATION:  
 LCST UNLOCATABLE  
 PROD By 1971, 8 tons had been mined at a grade of 0.29% U3O8, producing 46 lbs of U3O8, and 1.82% V2O5, producing 291 lbs of V2O5.  
 MNZ Carnotite - tyuyamunite.  
 DOI 1971  
 REF U.S. A.E.C., 1971, Production Records, Colorado.

## Bachelor Mine (Bachelor #3)

LOCATION: S1/2 sec. 15, T. 45 N., R. 18 W.  
 QUAD Bull Canyon 7 1/2'  
 MAP MOAB  
 PROD By 1971, 30,600 tons had been mined at a grade of 0.29% U3O8, producing 179,983 lbs of U3O8, and 1.76% V2O5, producing 1,074,635 lbs of V2O5.  
 HOST Jurassic Morrison Formation.  
 MNZ Carnotite - tyuyamunite.  
 DOI 1971  
 REF U.S. D.O.E., 1977, Lease Production Records, Colorado. U.S. Bur. of Mines, 1977, (Unpubl.). U.S. A.E.C., 1971, Production Records, Colorado.

## Bald Eagle (Uravan #1, Morning Glory, Keystone #1)

LOCATION: sec. 30, T. 44 N., R. 16 W.  
 QUAD Gypsum Gap 7 1/2'  
 MAP MOAB  
 PROD By 1971, 6,657 tons had been mined at a grade of 0.18% U3O8, producing 24,337 lbs of U3O8, and 1.72% V2O5, producing 229,430 lbs of V2O5.  
 HOST Pennsylvanian Hermosa Formation.  
 MNZ Carnotite - tyuyamunite.  
 DOI 1971  
 REF U.S. Bur. of Mines, 1977, (Unpubl.). U.S. A.E.C., 1971, Production Records, Colorado.

## Bay Mule

LOCATION:  
 LCST UNLOCATABLE  
 LORM This deposit lies in Gypsum Valley.  
 PROD By 1971, 14 tons had been mined at a grade of 0.12% U3O8, producing 34 lbs of U3O8, and 1.07% V2O5, producing 301 lbs of V2O5.  
 HOST Jurassic Morrison Formation, Salt Wash Member.  
 DOI 1971  
 REF U.S. A.E.C., 1971, Production Records, Colorado.

## Bean 2 and 3

LOCATION: sec. 5, T. 43 N., R. 19 W.  
 LORM U.S. A.E.C. Production Records also show sec. 4.  
 QUAD Horse Range Mesa 7 1/2'  
 MAP MOAB  
 PROD By 1971, 5,328 tons had been mined at a grade of 0.27% U3O8, producing 28,723 lbs of U3O8, and 1.61% V2O5, producing 171,890 lbs of V2O5.  
 HOST Jurassic Morrison Formation.

# SAN MIGUEL COUNTY

MNZ Uranium, vanadium, carnotite - tyuyamunite.  
DOI 1971  
REF U.S. Bur. of Mines, 1977, (Unpubl.). U.S. A.E.C., 1971, Production Records, Colorado.

## Bean 4, 5 (Bean 4, Parker Lease)

LOCATION: sec. 5, T. 43 N., R. 19 W.  
LCRM U.S. A.E.C. Production Records also show sec. 8 and 9.  
QUAD Horse Range Mesa 7 1/2'  
MAP MOAB  
PROD By 1971, 4,020 tons had been mined at a grade of 0.26% U3O8, producing 20,666 lbs of U3O8, and 1.46% V2O5, producing 120,087 lbs of V2O5.  
HOST Jurassic Morrison Formation.  
MNZ Uranium, vanadium, carnotite - tyuyamunite.  
DOI 1971  
REF U.S. Bur. of Mines, 1977, (Unpubl.). U.S. A.E.C., 1971, Production Records, Colorado.

## Bean 6

LOCATION: sec. 5, T. 43 N., R. 19 W.  
QUAD Horse Range Mesa 7 1/2'  
MAP MOAB  
PROD By 1971, 272 tons had been mined at a grade of 0.41% U3O8, producing 2,223 lbs of U3O8, and 2.40% V2O5, producing 13,068 lbs of V2O5.  
HOST Jurassic Morrison Formation.  
MNZ Uranium, vanadium.  
DOI 1971  
REF U.S. Bur. of Mines, 1977, (Unpubl.). U.S. A.E.C., 1971, Production Records, Colorado.

## Bean 8, 9 (North Slope #2 [E1/2])

LOCATION: NW1/4 sec. 5, T. 43 N., R. 19 W.  
LCRM U.S. A.E.C. Production Records give location as sec. 32, T. 44 N., R. 19 W.  
QUAD Horse Range Mesa 7 1/2'  
MAP MOAB  
HOST Jurassic Morrison Formation.  
MNZ Uranium, vanadium.  
DOI 1971  
REF U.S. Bur. of Mines, 1977, (Unpubl.). U.S. A.E.C., 1971, Production Records, Colorado.

## Bean 10

LOCATION: sec. 32, T. 44 N., R. 19 W.  
QUAD Horse Range Mesa 7 1/2'  
MAP MOAB  
PROD By 1971, 5,821 tons had been mined at a grade of 0.23% U3O8, producing 26,206 lbs of U3O8, and 1.51% V2O5, producing 175,634 lbs of V2O5.  
HOST Jurassic Morrison Formation.  
MNZ Uranium, vanadium.  
DOI 1971  
REF U.S. Bur. of Mines, 1977, (Unpubl.). U.S. A.E.C., 1971, Production Records, Colorado.

## Bean 15, 16, 17

LOCATION: sec. 31, T. 44 N., R. 19 W.  
QUAD Mount Peale 4 SE 7 1/2' & Horse Range Mesa 7 1/2'

MAP MOAB  
PROD By 1971, 15 tons had been mined at a grade of 0.14% U3O8, producing 42 lbs of U3O8, and 0.80% V2O5, producing 241 lbs of V2O5.  
HOST Jurassic Morrison Formation.  
MNZ Uranium, vanadium.  
DOI 1971  
REF U.S. Bur. of Mines, 1977, (Unpubl.). U.S. A.E.C., 1971, Production Records, Colorado.

## Bean No. 1 (Radium No. 9) (Radium Group)

LOCATION: sec. 4, T. 43 N., R. 19 W.  
LCRM This deposit lies in the Slick Rock district.  
PROD As of 1971, 15,000 tons had been mined at a grade of 0.49% U3O8.  
HOST Jurassic Morrison Formation, Salt Wash Member.  
MNZ Carnotite.  
DOI 1971  
REF U.S. A.E.C., 1971, Production Records, Colorado.

## Bean Patch (Parker Lease, Bean Patch Incline 3 and 4)

LOCATION: sec. 5, T. 43 N., R. 19 W.  
LCRM U.S. A.E.C. Production Records show location as sec. 4, T. 42 N., R. 10 W.  
QUAD Horse Range Mesa 7 1/2'  
MAP MOAB  
PROD By 1971, 24,047 tons had been mined at a grade of 0.33% U3O8, producing 159,675 lbs of U3O8, and 1.79% V2O5, producing 861,275 lbs of V2O5.  
HOST Jurassic Morrison Formation.  
MNZ Uranium, vanadium.  
DOI 1971  
REF U.S. Bur. of Mines, 1977, (Unpubl.). U.S. A.E.C., 1971, Production Records, Colorado.

## Bear Creek

LOCATION: sec. 4, T. 42 N., R. 10 W.  
QUAD Gray Head 7 1/2'  
MAP CURTEZ  
PROD By 1971, 14,919 tons had been mined at a grade of 0.05% U3O8, producing 15,302 lbs of U3O8, and 2.01% V2O5, producing 600,070 lbs of V2O5.  
HOST Jurassic Entrada Sandstone; white to buff, fine-grained sandstone.  
MNZ Uranium, vanadium.  
DOI 1971  
REF U.S. Bur. of Mines, 1977, (Unpubl.). U.S. A.E.C., 1971, Production Records, Colorado. Finch, W. I., 1967, U.S. Geol. Survey Prof. Paper 538, p. 13.

## Belle

LOCATION:  
LCST UNLOCATABLE  
LCRM Near Lower Group of claims.  
PROD As of 1971, five tons of ore have been mined at a grade of 0.46% U3O8, producing 4.23% V2O5, and 46 lbs of U3O8.  
DOI 1971  
REF U.S. A.E.C., 1971, Production Records, Colorado.

# SAN MIGUEL COUNTY

## Bench

### LOCATION:

LCST UNLOCATABLE

LCRM This deposit lies in the Slick Rock district.

MAP MOAB

PROD By 1971, 5 tons had been mined at a grade of 0.59% U308, producing 59 lbs of U308, and 5.92% V205, producing 592 lbs of V205.

DOI 1971

REF U.S. A.E.C., 1971, Production Records, Colorado.

## Betty Jane 2

LOCATION: sec. 24, T. 45 N., R. 19 W.

PROD By 1971, 10 tons had been mined at a grade of 0.38% U308, producing 75 lbs of U308, and 1.73% V205, producing 345 lbs of V205.

DOI 1971

REF U.S. A.E.C., 1971, Production Records, Colorado.

## Betty Ruth

LOCATION: sec. 28, T. 43 N., R. 18 W.

LCRM This deposit lies in the Spud Patch area, Slick Rock district. U.S. A.E.C. Production Records also show sec. 33.

PROD As of 1971, 0.91 tons had been mined at a grade of 0.85% U308.

HOST Jurassic Morrison Formation, Salt Wash Member.

MNZ Carnotite.

DOI 1971

REF U.S. D.O.E., 1977, Lease Production Records, Colorado. U.S. A.E.C., 1971, Production Records, Colorado.

## Big Buck 1 (Little Buck, Jackie)

LOCATION: sec. 26, T. 44 N., R. 20 W.

QUAD Mount Peale 4 SE 7 1/2'

MAP MOAB

PROD By 1971, 6 tons had been mined at a grade of 0.02% U308, producing 2 lbs of U308, and 1.56% V205, producing 187 lbs of V205.

MNZ Uranium, vanadium.

DOI 1971

REF U.S. D.O.E., 1977, Lease Production Records, Colorado. U.S. Bur. of Mines, 1977, (Unpubl.). U.S. A.E.C., 1971, Production Records, Colorado.

## Big Chief (Mineral Survey #20580)

LOCATION: sec. 27, T. 44 N., R. 17 W.

LCRM This deposit lies in Gypsum Valley. U.S. A.E.C. Production Records also show sec. 34.

PROD As of 1971, 564 tons had been mined at a grade of 0.32% U308 and 0.78% V205.

HOST Jurassic Morrison Formation, Salt Wash Member.

DOI 1971

REF U.S. D.O.E., 1977, Lease Production Records, Colorado. U.S. A.E.C., 1971, Production Records, Colorado, C-1070 Circular 6 Records.

## Big Chief (Spud Patch Group)

LOCATION: sec. 29, T. 43 N., R. 18 W.

LCRM This deposit lies in the Slick Rock district.

PROD No production prior to 1977.

HOST Jurassic Morrison Formation, Salt Wash Member.

DOI 1971

REF U.S. D.O.E., 1977, Lease Production Records, Colorado. U.S. A.E.C., 1971, Production Records, Colorado.

## Big Gyp 1-8

LOCATION: N1/2 sec. 33, T. 45 N., R. 18 W.

LCRM This deposit lies in Silvey's Pocket area, Gypsum Valley.

QUAD Hamm Canyon 7 1/2'

MAP MOAB

PROD As of 1971, 35 tons had been mined at a grade of 0.08% U308.

HOST Jurassic Morrison Formation, Salt Wash Member.

DOI 1971

REF U.S. D.O.E., 1977, Lease Production Records, Colorado. U.S. A.E.C., 1971, Production Records, Colorado.

## Big Medicine

LOCATION:

PROD As of 1971, 149 tons of ore had been mined at a grade of 0.40% U308, producing 1,199 lbs of U308, and 1.74% V205, producing 5,197 lbs of V205.

HOST Jurassic Morrison Formation, Salt Wash Member.

DOI 1971

REF U.S. A.E.C., 1971, Production Records, Colorado.

## Big S

LOCATION: sec. 32, T. 44 N., R. 18 W.

PROD As of 1971, 13 tons of ore had been mined at a grade of 0.03% U308, producing 9 lbs of U308, and 0.34% V205, producing 89 lbs of V205.

HOST Jurassic Morrison Formation.

DOI 1971

REF U.S. A.E.C., 1971, Production Records, Colorado.

## Black Fox (Upper Group Claims)(44, AEC Mining Lease) C-SR-14, DOE Lease Tract)

LOCATION: sec. 5, T. 43 N., R. 18 W.

DVEL See C-SR-14, DOE Lease Tract.

HOST Jurassic Morrison Formation, Salt Wash Member.

DOI 1971

REF U.S. D.O.E., 1977, Lease Production Records, Colorado. U.S. A.E.C., 1971, Production Records, Colorado.

## Black Jack (Hot Rock)

LOCATION: sec. 28, T. 43 N., R. 19 W.

QUAD Egnar 7 1/2'

MAP CORTEZ

PROD By 1971, 12,758 tons had been mined at a grade of 0.24% U308, producing 62,287 lbs of U308, and 1.51% V205, producing 384,929 lbs of V205.

HOST Jurassic Morrison Formation.

# SAN MIGUEL COUNTY

MNZ Uranium, vanadium, carnotite - tyuyamunite, high vanadium, low ilme.  
DOI 1971  
REF U.S. Bur. of Mines, 1977, (Unpubl.). U.S. A.E.C., 1971, Production Records, Colorado.

## Black King 5 (Weatherly)

LOCATION: sec. 27, T. 44 N., R. 11 W.  
QUAD Placerville 7 1/2'  
MAP MOAB  
PROD By 1971, 3 tons had been mined at a grade of 1.35% U3O8, producing 81 lbs of U3O8, and 0.05% V2O5, producing 3 lbs of V2O5.  
HOST Permian Cutler and Triassic Dolores; fault breccias and gangue in quartz conglomerate and sandy shale with abundant hard "hydrocarbon" and sparse viscous asphalt.  
MNZ Uraninite, autunite, torbernite, coffinite, uranophane.  
DOI 1971  
REF U.S. A.E.C., 1971, Production Records, Colorado. Finch, W. I., 1967, U.S. Geol. Survey Prof. Paper 538, p. 13.

## Black Spider (Red Ant)

LOCATION: NW1/4 sec. 30, T. 43 N., R. 19 W.  
LCRM U.S. A.E.C. Production Records also show location as sec. 25, T. 43 N., R. 20 W.  
QUAD Verdure 1 NE 7 1/2' and Egnar 7 1/2'  
MAP CORTEZ  
PROD By 1971, 4,054 tons had been mined at a grade of 0.23% U3O8, producing 18,398 lbs of U3O8, and 0.71% V2O5, producing 57,960 lbs of V2O5.  
HOST Jurassic Morrison Formation.  
MNZ Uranium, vanadium, carnotite - tyuyamunite, high vanadium, low ilme.  
DOI 1971  
REF U.S. Bur. of Mines, 1977, (Unpubl.). U.S. A.E.C., 1971, Production Records, Colorado.

## Blue Horse & Nancy

LOCATION:  
LCST UNLOCATABLE  
LCRM This deposit lies in the Slick Rock district.  
PROD As of 1971, there were 6 tons mined at a grade of 0.12% U3O8, producing 14 lbs of U3O8. 1.12% V2O5, producing 134 lbs of V2O5.  
HOST Jurassic Morrison Formation.  
DOI January 1, 1971.  
REF U.S. A.E.C., 1971, Production Records, Colorado.

## Blue Moon (Lucky #1, 2)

LOCATION: sec. 16, T. 45 N., R. 18 W.  
LCRM U.S. A.E.C. Production Records show location as sec. 20, T. 45 N., R. 18 W.  
QUAD Bull Canyon 7 1/2'  
MAP MOAB  
PROD By 1971, 211 tons had been mined at a grade of 0.20% U3O8, producing 856 lbs of U3O8, and 1.105% V2O5, producing 4,647 lbs of V2O5.  
HOST Jurassic Morrison Formation.  
MNZ Uranium, vanadium.

DOI 1971  
REF U.S. Bur. of Mines, 1977, (Unpubl.). U.S. A.E.C., 1971, Production Records, Colorado.

## Bluebird (Radium Group)

LOCATION: sec. 24, T. 43 N., R. 20 W.  
LCRM U.S. A.E.C. Production Records show location as being sec. 36, T. 44 N., R. 20 W.  
QUAD Verdure 1 NE 7 1/2'  
MAP CORTEZ  
PROD By 1971, 19 tons had been mined at a grade of 0.29% U3O8, producing 110 lbs of U3O8, and 1.75% V2O5, producing 666 lbs of V2O5.  
HOST Jurassic Morrison Formation, Salt Wash Member.  
MNZ Uranium, vanadium.  
DOI 1971  
REF U.S. Bur. of Mines, 1977, (Unpubl.). U.S. A.E.C., 1971, Production Records, Colorado.

## Bluff (Mexico Group)

LOCATION: sec. 35, T. 45 N., R. 18 W.  
QUAD Hamm Canyon 7 1/2'  
MAP MOAB  
PROD By 1971, 100 tons mined at a grade of 0.22% U3O8, producing 435 lbs of U3O8, and 0.95% V2O5, producing 1,906 lbs of V2O5.  
HOST Jurassic Morrison Formation, Salt Wash Member.  
MNZ Uranium, vanadium.  
DOI 1971  
REF U.S. Bur. of Mines, 1977, (Unpubl.). U.S. A.E.C., 1971, Production Records, Colorado.

## Bobtail

LOCATION: sec. 33, T. 44 N., R. 16 W.  
LCST UNLOCATABLE  
HOST Jurassic Morrison Formation, Salt Wash Member.  
MNZ Uranium, vanadium, carnotite.  
DOI 1975  
REF U.S. Bur. of Mines, 1977, (Unpubl.).

## Breezy

LOCATION: sec. 25, T. 45 N., R. 18 W.  
QUAD Hamm Canyon 7 1/2'  
MAP MOAB  
PROD As of 1971, 244 tons had been mined at a grade of 0.25% U3O8, producing 1,207 lbs of U3O8, and 1.37% V2O5, producing 6,692 lbs of V2O5.  
MNZ Uranium, vanadium.  
DOI 1971  
REF U.S. Bur. of Mines, 1977, (Unpubl.). U.S. A.E.C., 1971, Production Records, Colorado.

## Bretton & Norcott

LOCATION:  
LCRM This deposit lies in the Georgetown area.  
PROD As of 1971, 11 tons had been mined at a grade of 0.04% U3O8, producing 9 lbs of U3O8, and 0.27% V2O5, producing 60 lbs of V2O5.  
HOST Jurassic Morrison Formation, Salt Wash Member.  
MNZ Carnotite - tyuyamunite, high vanadium, low ilme.

# SAN MIGUEL COUNTY

DOI 1971  
REF U.S. A.E.C., 1971, Production Records, Colorado.

## Brown Mule

LOCATION: sec. 7, T. 43 N., R. 16 W.  
LCRM U.S. A.E.C. Production Records show location as being sec. 6, 7; T. 44 N., R. 17 W.  
QUAD Gypsum Gap 7 1/2'  
MAP MOAB  
PROD As of 1971, 50 tons had been mined at a grade of 0.18% U3O8, producing 177 lbs of U3O8, and 2.31% V2O5, producing 2,310 lbs of V2O5.  
HOST Jurassic Morrison Formation, Salt Wash Member.  
MNZ Uranium, vanadium.  
DOI 1971  
REF U.S. D.O.E., 1977, Lease Production Records, Colorado. U.S. Bur. of Mines, 1977, Production Records, Colorado. U.S. A.E.C., 1971, Production Records, Colorado.

## Buck Horn

LOCATION: sec. 30, T. 44 N., R. 19 W.  
DOI 1958  
REF Hague, R. S., Goldenstein, S. J., and Blakey, E., Uranium - vanadium deposits of the Uravan Mineral Belt, 1958.

## Buckhorn (Lone Star 1 & 2, Canary Bird No. 1, Rim, Humming Bird)

LOCATION: sec. 34, T. 43 N., R. 18 W.  
LCRM U.S. A.E.C. Production Records show location as sec. 26, 27, 34-36; T. 43 N., R. 18 W.; sec. 1, 2, T. 42 N., R. 18 W.  
QUAD Joe Davis Hill 7 1/2'  
MAP CORTEZ  
PROD As of 1971, 318 tons had been mined at a grade of 0.25% U3O8, producing 1,615 lbs of U3O8, and 2.05% V2O5, producing 13,032 lbs of V2O5.  
MNZ Uranium, vanadium.  
DOI 1971  
REF U.S. Bur. of Mines, 1977, (Unpubl.). U.S. A.E.C., 1971, Production Records, Colorado.

## Bugline (Empire Group)

LOCATION: sec. 1, T. 44 N., R. 20 W.  
LCRM U.S. A.E.C. Production Records show location as being sec. 1, T. 44 N., R. 19 W., Slick Rock district, McIntire Canyon.  
QUAD Mount Peale 4 SE 7 1/2'  
MAP MOAB  
PROD As of 1971, 297 tons had been mined at a grade of 0.27% U3O8, producing 1,592 lbs of U3O8, and 1.22% V2O5, producing 7,242 lbs of V2O5.  
HOST Jurassic Morrison Formation, Salt Wash Member.  
MNZ Uranium, vanadium.  
DOI 1971  
REF U.S. D.O.E., 1977, Lease Production Records, Colorado. U.S. Bur. of Mines, 1977, (Unpubl.). U.S. A.E.C., 1971, Production Records, Colorado.

## Bull Moose

LOCATION: sec. 32, T. 43 N., R. 19 W.  
QUAD Egnar 7 1/2'  
MAP CORTEZ  
PROD As of 1971, 56 tons had been mined at a grade of 0.27% U3O8, producing 305 lbs of U3O8, and 3.46% V2O5, producing 3,878 lbs. of V2O5.  
HOST Jurassic Morrison Formation.  
MNZ Uranium, vanadium.  
DOI 1971  
REF U.S. Bur. of Mines, 1977, (Unpubl.). U.S. A.E.C., 1971, Production Records, Colorado.

## Bull Snake No. 1 and No. 2 Claims

LOCATION: sec. 1, T. 42 N., R. 18 W.  
LCRM U.S. A.E.C. Production Records also show sec. 2, 11 & 12.  
QUAD Joe Davis Hill 7 1/2'  
MAP CORTEZ  
PROD As of 1971, 157 tons had been mined at a grade of 0.21% U3O8, producing 665 lbs of U3O8, and 3.39% V2O5, producing 10,795 lbs of V2O5.  
HOST Upper Triassic Wingate Sandstone or Chinle Formation.  
MNZ Uranium, vanadium, carnotite - tyuyamunite, high vanadium, intermed. lime.  
DOI 1971  
REF U.S. Bur. of Mines, 1977, (Unpubl.). U.S. A.E.C., 1971, Production Records, Colorado.

## Burro Point

LOCATION: sec. 16, T. 45 N., R. 18 W.  
LCRM U.S. A.E.C. Production Records only show sec. 21.  
QUAD Bull Canyon 7 1/2'  
MAP MOAB  
PROD As of 1971, 2,879 tons had been mined at a grade of 0.35% U3O8, producing 29,118 lbs of U3O8, and 1.80% V2O5, producing 103,411 lbs of V2O5.  
HOST Jurassic Morrison Formation.  
MNZ Uranium, vanadium, carnotite - tyuyamunite, high vanadium, low lime.  
DOI 1971  
REF U.S. Bur. of Mines, 1977, (Unpubl.). U.S. A.E.C., 1971, Production Records, Colorado.

## Burro Tunnel (Burro 1-10, Jack 1-5)

LOCATION: sec. 30, T. 44 N., R. 18 W.  
LCRM U.S. A.E.C. Production Records also show sec. 29.  
QUAD Horse Range Mesa 7 1/2'  
DYEL As of 1971, 404,804 tons had been mined at a grade of 0.25% producing 1,992,898 lbs of U3O8, and 1.50% V2O5, producing 12,149,659 lbs of V2O5.  
HOST The host is the Jurassic Morrison Formation.  
MNZ Uranium, vanadium, uraninite (coffinite), high vanadium, low lime.  
DOI 1971  
REF U.S. Bur. of Mines, 1977 (Unpubl.). U.S. A.E.C., 1971, Production Records, Colorado.

# SAN MIGUEL COUNTY

## Butterfly

LOCATION: sec. 32, T. 42 N., R. 9 W.  
 QUAD Mount Wilson 7 1/2'  
 MAP CORTEZ  
 MNZ Uranium, vanadium.  
 DOI 1975  
 REF U.S. Bur. of Mines, 1977 (Unpubl.).

C-SR-10, DOE Lease Tract (1, AEC Mining Lease)  
[King No. 2, Sam] (Legin Group) (2, AEC  
Mining Lease) [Frenchy, King, May, and Cowgirl]  
(Legin Group) (4, AEC Mining Lease) [Bik  
32] (Black Jack Strip) (18, AEC Mining Lease)  
[Eloisa and Otero] (Legin Group) (29, AEC  
Mining Lease) [Cowgirl, King, Frenchy, and  
May] (Legin Group)

LOCATION: W1/2 sec. 28, T. 43 N., R. 19 W.  
 LCRM Also E1/2 sec. 29. These deposits all lie  
 in the Slick Rock district, Legin Group area.  
 QUAD Egnar 7 1/2'  
 MAP CORTEZ  
 DVEL From 1949-1962, production from the four  
 former AEC Mining Leases included in this  
 DOE Lease Tract totaled 127,944 tons at  
 0.28% U3O8 and 1.99% V2O5. This includes,  
 from 1, AEC Mining Lease, 48,727 tons at  
 0.31% U3O8, 2.20% V2O5; 2, AEC Mining Lease,  
 11,132 tons at 0.32% U3O8, 2.33% V2O5; 18,  
 AEC Mining Lease, 9,926 tons at 0.29% U3O8,  
 1.75% V2O5; 29, AEC Mining Lease, 58,162  
 tons at 0.25% U3O8, 1.80% V2O5. In addition,  
 a nominal amount was produced under 4, AEC  
 Mining Lease, Black Jack Strip, which cannot  
 be accurately separated, and is included  
 in production from 11, DOE Lease Tract (4,  
 AEC Mining Lease). From May 1975 through  
 December 1977, production from C-SR-10,  
 DOE Lease Tract was 1,201 tons at 0.15%  
 U3O8 and 0.74% V2O5.  
 HOST Jurassic Morrison Formation.  
 MNZ Carnotite - tyuyamunite, high vanadium,  
 low ilme.  
 DOI 1971  
 REF U.S. D.O.E., 1977, Lease Production Records,  
 Colorado.

C-SR-11, DOE Lease Tract (4, AEC Mining Lease)  
(Tomboy, Beth Emma Lou, Teller, Mercantile,  
Independence, Avoca, Ike Nos. 1-6, Sibley,  
Park, Brighton [Mercantile Group])

LOCATION: E1/2SW1/4S1/2NW1/4 sec. 18, T. 43 N.,  
 R. 19 W.  
 LCRM Also S1/2 sec. 8 & sec. 17. This property  
 lies in the Slick Rock district.  
 QUAD Egnar, Verdure 1 NE, & Horse Range Mesa 7 1/2'  
 MAP CORTEZ & MOAB  
 DVEL The majority of the production attributed  
 to former 4, AEC Mining Lease came from the  
 area included in this DOE lease: 112,974  
 tons at 0.32% U3O8 and 1.59% V2O5. In addition,  
 production from C-SR-11, DOE Lease Tract  
 from September 1975 through December 1977  
 was 24,624 tons at 0.18% U3O8 and 0.95% V2O5.  
 HOST Jurassic Morrison Formation.  
 MNZ Carnotite - tyuyamunite, high vanadium,  
 low ilme.

DOI 1971  
 REF U.S. D.O.E., 1977, Lease Production Records,  
 Colorado. U.S. A.E.C., 1971, Production  
 Records, Colorado.

## C-SR-12, DOE Lease Tract

LOCATION: sec. 32, T. 43 N., R. 18 W, NMPM.  
 LCRM This lease lies in the Slick Rock district,  
 Spud Patch area.  
 QUAD Egnar 7 1/2' and Joe Davis Hill 7 1/2'  
 MAP CORTEZ  
 PROD No production prior to August 1977. Production  
 to 12/31/77 was 1,204 tons at 0.14% U3O8  
 and 1.31% V2O5.  
 HOST Jurassic Morrison Formation.  
 MNZ Carnotite - tyuyamunite, high vanadium,  
 low ilme.  
 DOI 1977  
 REF U.S. D.O.E., 1977, Lease Production Records,  
 Colorado.

C-SR-13, DOE Lease Tract (28, AEC Mining Lease)  
(Hawkeye) (30, AEC Mining Lease) (Little  
Yolande, Herbert, Vanadium, Ocumpaugh, [Middle  
Group]) (32, AEC Mining Lease) (Ellison  
Claim, Burro Claim) (42, AEC Mining Lease)  
(Dan Claim)

LOCATION: W1/2, and lots 1-4 sec. 32, T. 44 N.,  
 R. 18 W.  
 LCRM Also SW1/4 sec. 29, SE1/4 and SE1/4SW1/4  
 sec. 30, NE1/4 and NE1/4SE1/4 sec. 31; T.  
 44 N., R. 18 W. This lease lies in the  
 Slick Rock district, Middle Group area.  
 QUAD Hamm Canyon 7 1/2' & Horse Range Mesa 7 1/2'  
 MAP MOAB  
 PROD From 1952-1958, 18,529 tons had been mined  
 from the four mining leases, at average  
 grades of 0.26% U3O8 and 1.21% V2O5. This  
 was 1,456 tons at 0.33% U3O8 and 1.12% V2O5  
 from 28, AEC Mining Lease; 15,308 tons at  
 0.24% U3O8 and 1.17% V2O5 from 30, AEC Mining  
 Lease; 1,741 tons at 0.36% U3O8 and 1.67%  
 V2O5 from 32, AEC Mining Lease; and 14 tons  
 at 0.23% U3O8 and 1.45% V2O5 from 42, AEC  
 Mining Lease. From June 1975 through December  
 1977, production from C-SR-13, DOE Lease  
 Tract was 30,895 tons at 0.20% U3O8 and  
 1.40% V2O5.  
 HOST Jurassic Morrison Formation.  
 MNZ Carnotite - tyuyamunite, high vanadium,  
 low ilme.  
 DOI 1977  
 REF U.S. D.O.E., 1977, Lease Production Records,  
 Colorado. U.S. A.E.C., 1971, Production  
 Records, Colorado.

C-SR-13A, DOE Lease Tract (12, AEC Mining Lease)  
(Veta Mad, Veta Glad, Georgetown Group) (17,  
AEC Mining Lease) (Georgetown Mine) (46, AEC  
Mining Lease)

LOCATION: NW1/4 sec. 30, T. 44 N., R. 18 W.  
 LCRM Also SW1/4 sec. 19, T. 44 N., R. 18 W.;  
 SE1/4SE1/4 and E1/2NE1/4SE1/4 sec. 24 and  
 NE1/4NE1/4 sec. 25, T. 44 N., R. 19 W.  
 These deposits lie in the Slick Rock district.

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DVEL These was production from each of the mining leases.

PROD From 1951-1962, production from the three former AEC mining leases included in this lease had totaled 59,991 tons at average grades of 0.33% U3O8 and 1.65% V2O5. This was 4,246 tons at 0.50% U3O8 and 2.37% V2O5 from 12, AEC Mining Lease; 13,415 tons at 0.36% U3O8 and 1.75% V2O5 from 17, AEC Mining Lease; 42,330 tons at 0.30% U3O8 and 1.55% V2O5 from 46, AEC Mining Lease. From December 1975 through December 1977, production from DC-SR-13A, DOE Lease Tract was 4,485 tons at 0.19% U3O8 and 0.97% V2O5.

HOST The host is the Jurassic Morrison Formation.

MNZ Uranium and vanadium minerals were mined.

DOI 1977

REF U.S. D.O.E., 1977, Lease Production Records, Colorado.

C-SR-14, DOE Lease Tract (21, AEC Mining Lease)  
(Sunnyside, Grant, Big Four [Upper Group])  
(4, AEC Mining Lease,) (Canyon View, Grants, Black Fox)

LOCATION: Sec. 5 E1/2 sec. 6, T. 43 N., R. 18 W.

LCRM This lease lies in the Slick Rock district, Upper Group area.

QUAD Hamm Canyon 7 1/2' & Horse Range Mesa 7 1/2'

MAP MOAB

PROD As of 1977, all production was from the two former AEC mining leases included in this lease and had totalled 9,488 tons at average grades of 0.28% U3O8 and 1.82% V2O5. This includes 1,798 tons from 21, AEC Mining Lease at 0.26% U3O8 and 1.79% V2O5 and 7,690 tons at 0.30% U3O8 and 1.86% V2O5 from 44, AEC Mining Lease.

HOST Jurassic Morrison Formation.

MNZ Carnotite - tyuyamunite, high vanadium, low lime.

DOI 1977

REF U.S. D.O.E., 1977, Lease Production Records, Colorado.

C-SR-14A, DOE Lease Tract (27, AEC Mining Lease)  
(Ned Claim)

LOCATION: NW1/4NE1/4 sec. 1, T. 43 N., R. 19 W.

LCRM This lease lies in the Slick Rock district. It extends to sec. 36, T. 44 N., R. 19 W. The lease boundaries are identical with former 27, AEC Mining Lease.

QUAD Horse Range Mesa 7 1/2'

MAP MOAB

DVEL No production since 1954 to December 1977.

PROD From 1952 to 1954, 970 tons were mined from the former 27, AEC Mining Lease at a grade of 0.20% U3O8, producing 3,841 lbs of U3O8, and 1.23% V2O5, producing 23,814 lbs of V2O5.

HOST Jurassic Morrison Formation.

MNZ Uranium, vanadium, carnotite - tyuyamunite, high vanadium, low lime.

DOI 1977

REF U.S. Bur. of Mines, 1977, (Unpubl.). U.S. D.O.E., 1977, Lease Production Records, Colorado. U.S. A.E.C., 1971, Production Records, Colorado.

C-SR-15, DOE Lease Tract (6, AEC Mining Lease)  
(Lower Group, Cougar, Last Chance, Rainbow, Little Marie 1, Chico, Lower Fraction) (20, AEC Mining Lease) (Knoll, Helen, Cacti and Alice)

LOCATION: S1/2 sec. 23, T. 44 N., R. 19 W.

LCRM This lease extends into the N1/2 sec. 23 and the NW1/4 NW1/4 sec. 26, T. 44 N., R. 19 W. district.

QUAD Horse Range Mesa 7 1/2'

MAP MOAB

PROD From 1949 to 1959, production from the two former AEC mining leases making up this lease had totaled 40,435 tons at average grades of 0.38% U3O8 and 2.18% V2O5. This was 25,638 tons at 0.42% U3O8 and 2.44% V2O5 from 6, AEC Mining Lease; 14,799 tons at 0.32% U3O8 and 1.74% V2O5 from 20, AEC Mining Lease. Also from Sept. 1976 to Dec. 1977, production from C-SR-15, DOE Lease Tract was 2,447 tons at 0.18% U3O8 and 1.11% V2O5.

HOST Jurassic Morrison Formation.

MNZ Carnotite - tyuyamunite, high vanadium, low lime.

DOI 1977

REF U.S. D.O.E., 1977, Lease Production Records, Colorado.

C-SR-16, DOE Lease Tract (43, AEC Mining Lease)  
(Nucleus, Easton B., Michael Bray No. 1 & 2.) [see 4, AEC Mining Lease] (4, AEC Mining Lease) [Nucleus, Easton B., Michael Bray No. 1, Ann No. 1 & 2, Fraction adjacent to Ann No. 2, Hawk 2, Frankie 2] (5, AEC Mining Lease) [Charles T. No. 2 & 4, Sunflower] (8, AEC Mining Lease) [Fraction No. 1, Summit, Charles T. No. 1, Fraction No. 5, Benny T. No. 1 & 2] (9, AEC Mining Lease) [Fraction No. 1, Summit, Bennie T. No. 1, Fraction No. 5, Bennie T. No. 2. (see 8, AEC Mining Lease)] (43, AEC Mining Lease) [Charles T. No. 2 & 4] (45, AEC Mining Lease)

LOCATION: sec. 10, T. 43 N., R. 19 W.

LCRM This lease extends into N1/2SE1/2 and W1/2SE1/4 sec. 15 and E1/2SW1/4 and E1/2NW1/4 sec. 16. These deposits lie in the Slick Rock district.

QUAD Horse Range Mesa 7 1/2' & Egnar 7 1/2'

MAP MOAB & CORTEZ

DVEL From 1949, production from five former AEC leases included in this lease amounted to 30,998 tons at 0.34% U3O8 and 1.92% V2O5. Additional ore mined from the area included in 4, AEC Mining Lease cannot be determined from records available and is included in production from C-SR-11, DOE Lease Tract (4, AEC Mining Lease). The 30,998 tons includes, from 3, AEC Mining Lease, 1,862 tons at 0.26% U3O8 and 1.89% V2O5; 5, AEC Mining Lease, 9,490 tons at 0.34% U3O8 & 1.44% V2O5; 8, AEC Mining Lease, 33,536 tons at 0.37% U3O8 & 2.15% V2O5; 9, AEC Mining Lease, 3,555 tons at 0.36% U3O8 & 2.62% V2O5; 43, AEC Mining Lease, 2,555 tons at 0.23% U3O8 & 1.54% V2O5. From December 1976 through



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December 1977, production from C-SR-16, DOE Lease Tract was 2,021 tons at 0.25% U308 & 1.29% V205.  
 HOST Jurassic Morrison Formation.  
 MNZ Carnotite - tyuyamunite, high vanadium, low ilme.  
 RMKS Map name is MOAB (Horse Range Mesa), and CORTEZ (mostly CORTEZ, Egnar Quad.).  
 DOI 1977  
 REF U.S. D.O.E., 1977, Lease Production Records, Colorado. U.S. A.E.C., 1971, Production Records, Colorado.

C-SR-16A, DOE Lease Tract (5, AEC Mining Lease) [Pretty Boy Claim] (Charles T. Group) (7, AEC Mining Lease) [Golden Rod, Fraction 3], Golden Rod Group (22, AEC Mining Lease) [Golden Rod No. 1 & 2, Fraction No. 4 (see 48, Mining Lease)] (25, AEC Mining Lease) [Golden Rod No. 5] (45, AEC Mining Lease) [Pretty Boy, Bush Nos. 6 & 7] (48, AEC Mining Lease) [Neomie D., Neomie D. Angle, Fraction No. 1])

LOCATION: N1/2E1/2SE1/4 sec. 14, T. 43 N., R. 19 W.  
 LCRM Also S1/2 sec. 11. This lease lies in the Slick Rock district, Goldenrod area.  
 QUAD Horse Range Mesa 7 1/2' & Egnar 7 1/2'  
 MAP CORTEZ  
 DVEL From 1950-1955, production from five former AEC leases included in this DOE Lease Tract amounted to 14,299 tons at 0.26% U308 and 2.51% V205. This includes, from 7, AEC Mining Lease, 7,220 tons at 0.24% U308 and 2.44% V205; 22, AEC Mining Lease, 2,058 tons at 0.26% U308 and 2.35% V205; 25, AEC Mining Lease, 4,482 tons at 0.29% U308 and 2.77% V205; 45, AEC Mining Lease, 346 tons at 0.15% U308 and 1.45% V205; 48, AEC Mining Lease, 203 tons at 0.21% U308 and 2.56% V205. From August 1975 through December 1977 production from C-SR-16A, DOE Lease Tract was 2,898 tons at 0.18% U308 and 1.40% V205.  
 HOST The host is the Jurassic Morrison Formation.  
 MNZ Uranium and vanadium minerals were mined.  
 DOI 1977  
 REF U.S. D.O.E., 1977, Lease Production Records, Colorado.

## Canyon Group (Snyder Dunning Group)

LOCATION: sec. 29, T. 43 N., R. 18 W.  
 QUAD Egnar 7 1/2' and Joe Davis Hill 7 1/2'  
 MAP CORTEZ  
 DVEL As of 1971, 411 tons had been mined at a grade of 0.28% U308, producing 2,297 lbs of U308, and 2.70% V205, producing 22,215 lbs of V205.  
 HOST The host is the Jurassic Morrison Formation.  
 MNZ Carnotite - tyuyamunite, high vanadium, low ilme.  
 DOI 1971  
 REF U.S. A.E.C., 1971, Production Records, Colorado.

## Canyon View

LOCATION: sec. 5, T. 43 N., R. 18 W.

LCRM This deposit lies in the Slick Rock district.  
 MAP MOAB  
 PROD As of 1971, 349 tons had been mined at a grade of 0.35% U308, producing 2,459 lbs of U308, and 2.08% V205, producing 14,542 lbs of V205.  
 HOST The host is the Jurassic Morrison Formation.  
 MNZ Carnotite - tyuyamunite, high vanadium, low ilme.  
 DOI 1971  
 REF U.S. D.O.E., 1977, Lease Production Records, Colorado. U.S. A.E.C., 1971, Production Records, Colorado.

## Cape Malrs

### LOCATION:

LCST UNLOCATABLE  
 LCRM This deposit lies in the Slick Rock district.  
 PROD As of 1971, 14 tons had been mined at a grade of 0.04% U308, producing 11 lbs of U308, and 0.87% V205, producing 243 lbs of V205.  
 HOST Jurassic Morrison Formation, Salt Wash Member.  
 DOI 1971  
 REF U.S. D.O.E., 1977, Lease Production Records, Colorado. U.S. A.E.C., 1971, Production Records, Colorado.

## Cardinal No. 2

LOCATION: sec. 28, T. 44 N., R. 16 W.  
 LCRM Also sec. 29, 32, 33. This deposit lies in Long Ridge.  
 HOST Jurassic Morrison Formation.  
 MNZ Carnotite.  
 DOI 1971  
 REF U.S. A.E.C., 1971, Production Records, Colorado.

## Carnation Mine (Carnation 1-5, St. Jude)

LOCATION: SW1/4 sec. 13, T. 44 N., R. 18 W.  
 LCRM Also sec. 14.  
 PROD As of 1971, 62,894 tons had been mined at a grade of 0.24% U308, producing 296,304 lbs of U308, and 1.49% V205, producing 1,871,748 lbs of V205.  
 HOST Jurassic Morrison Formation.  
 MNZ Uranium, vanadium, carnotite - tyuyamunite, high vanadium, low ilme.  
 DOI 1971  
 REF U.S. Bur. of Mines, 1977, (Unpubl.). U.S. A.E.C., 1971, Production Records, Colorado.

## Charles T1 (8, AEC Mining Lease)(C-SR-16, DOE Lease Tract)

LOCATION: sec. 10, T. 43 N., R. 19 W.  
 DVEL See C-SR-16, DOE Lease Tract.  
 HOST The host is Jurassic Morrison Formation, Salt Wash Sandstone Member, gray and brown shaly sandstone and fine- to medium-grained sandstone with abundant carbonized logs and other plant remains.  
 MNZ Carnotite - tyuyamunite.  
 DOI 1971  
 REF U.S. D.O.E., 1977, Lease Production Records, Colorado. U.S. A.E.C., 1971, Production

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Records, Colorado. Finch, W. L., 1967, U.S. Geol. Survey Prof. Paper 538, p. 12.

## Charlotte 1

LOCATION: sec. 23, T. 44 N., R. 19 W.  
 QUAD Horse Range Mesa 7 1/2'  
 MAP MOAB  
 PROD As of 1971, 53 tons had been mined at a grade of 0.63% U3O8, producing 670 lbs of U3O8, and 3.55% V2O5, producing 3,762 lbs of V2O5.  
 MNZ Carnotite - tyuyamunite, high vanadium, low lime.  
 DOI 1971  
 REF U.S. A.E.C., 1971, Production Records, Colorado.

## Chesta (Mexico Group)

LOCATION: sec. 26, T. 45 N., R. 18 W.  
 QUAD Hamm Canyon 7 1/2' and Bull Canyon 7 1/2'  
 MAP MOAB  
 PROD As of 1971, 247 tons had been mined at a grade of 0.04% U3O8, producing 208 lbs of U3O8, and 0.60% V2O5, producing 2,959 lbs of V2O5.  
 MNZ Uranium, vanadium.  
 DOI 1971  
 REF U.S. Bur. of Mines, 1977, (Unpubl.). U.S. A.E.C., 1971, Production Records, Colorado.

## Chief 1 & 3

LOCATION: NW1/4 sec. 21, T. 43 N., R. 19 W.  
 QUAD Egnar 7 1/2'  
 MAP CORTEZ  
 PROD As of 1971, 6,396 tons had been mined at a grade of 0.26% U3O8, producing 33,309 lbs of U3O8, and 1.91% V2O5, producing 244,302 lbs of V2O5.  
 HOST The host is the Jurassic Morrison Formation.  
 MNZ Uranium, vanadium, carnotite - tyuyamunite, high vanadium, low lime.  
 DOI 1971  
 REF U.S. Bur. of Mines, 1977, (Unpubl.). U.S. A.E.C., 1971, Production Records, Colorado.

## Chile 5 (Old Mexico, New Mexico, Breezy)

LOCATION: sec. 25, T. 45 N., R. 18 W.  
 LCRM U.S. A.E.C. Production Records also show sec. 26.  
 QUAD Hamm Canyon 7 1/2'  
 MAP MOAB  
 PROD As of 1971, 8,477 tons had been mined at a grade of 0.25% U3O8, producing 42,964 lbs of U3O8, and 1.44% V2O5, producing 243,736 lbs of V2O5.  
 HOST Jurassic Morrison Formation.  
 MNZ Uranium, vanadium, carnotite - tyuyamunite, high vanadium, low lime.  
 DOI 1971  
 REF U.S. Bur. of Mines, 1977, (Unpubl.). U.S. A.E.C., 1971, Production Records, Colorado.

## Chinnase (Ava Jay Group)

LOCATION: sec. 25, T. 44 N., R. 20 W.

LCRM This deposit lies in the Slick Rock district.  
 DOI 1971  
 REF U.S. D.O.E., 1977, Lease Production Records, Colorado. U.S. A.E.C., 1971, Production Records, Colorado.

## Chipmonk

LOCATION: sec. 16, T. 45 N., R. 18 W.  
 LCRM U.S. A.E.C. Production Records show location as sec. 23-27, T. 45 N., R. 18 W.; sec. 1, 6, 7, 12, T. 44 N., R. 18 W.  
 QUAD Bull Canyon 7 1/2'  
 MAP MOAB  
 PROD As of 1971, 630 tons had been mined at a grade of 0.19% U3O8, producing 2,407 lbs of U3O8, and 2.21% V2O5, producing 27,904 lbs of V2O5.  
 HOST Jurassic Morrison Formation.  
 MNZ Uranium, vanadium.  
 DOI 1971  
 REF U.S. Bur. of Mines, 1977, (Unpubl.). U.S. A.E.C., 1971, Production Records, Colorado.

## Chipmunk

LOCATION: W1/2 sec. 22, T. 45 N., R. 19 W.  
 DOI 1958  
 REF Hague, R. S., Goldenstein, S. J., and Blakey, E., Uranium - vanadium deposits of the Uravan Mineral Belt, 1958.

## Chipmunk 1

LOCATION: sec. 34, T. 45 N., R. 19 W.  
 LCRM Also sec. 35.  
 QUAD Horse Range Mesa 7 1/2'  
 MAP MOAB  
 PROD As of 1971, 178 tons had been mined at a grade of 0.57% U3O8, producing 2,028 lbs of U3O8, and 2.89% V2O5, producing 10,284 lbs of V2O5.  
 HOST Jurassic Morrison Formation.  
 MNZ Carnotite - tyuyamunite, high vanadium, low lime.  
 DOI 1971  
 REF U.S. A.E.C., 1971, Production Records, Colorado.

## Civet Cat Group (Vanadium Queen)

LOCATION: sec. 36, T. 45 N., R. 20 W.  
 LCRM U.S. A.E.C. Production Records show location as sec. 1-2, T. 44 N., R. 20 W.  
 QUAD Mount Peale 4 SE 7 1/2'  
 PROD As of 1971, 895 tons had been mined at a grade of 0.32% U3O8, producing 5,775 lbs of U3O8, and 1.16% V2O5, producing 20,682 lbs of V2O5.  
 HOST Jurassic Morrison Formation.  
 MNZ Uranium, vanadium, carnotite - tyuyamunite, high vanadium, low lime.  
 DOI 1971  
 REF U.S. Bur. of Mines, 1977, (Unpubl.). U.S. A.E.C., 1971, Production Records, Colorado.

## Clear Creek

LOCATION:

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LCST UNLOCATABLE  
 LCRM This deposit lies in the Slick Rock district.  
 PROD As of 1971, 11 tons had been mined at a grade of 0.14% U3O8, producing 30 lbs of U3O8, and 0.55% V2O5, producing 122 lbs of V2O5.  
 HOST Jurassic Morrison Formation, Salt Wash Member.  
 DOI 1971  
 REF U.S. A.E.C., 1971, Production Records, Colorado.

## Clear View

LOCATION:  
 LCST UNLOCATABLE  
 PROD As of 1971, 77 tons had been mined at a grade of 0.25% U3O8, producing 384 lbs of U3O8, and 1.88% V2O5, producing 2,895 lbs of V2O5.  
 DOI 1971  
 REF U.S. A.E.C., 1971, Production Records, Colorado.

## Clear View Claims (Horseshoe Group)

LOCATION: sec. 6, T. 42 N., R. 17 W.  
 QUAD Joe Davis Hill 7 1/2'  
 MAP CORTEZ  
 MNZ Uranium, vanadium.  
 DOI 1975  
 REF U.S. Bur. of Mines, 1977, (Unpubl.).

## Cliff Dweller (Cliff Dweller Nail)

LOCATION: sec. 9, T. 44 N., R. 17 W.  
 LCRM U.S. A.E.C. Production Records also show sec. 8.  
 QUAD Hamm Canyon 7 1/2' and Gypsum Gap 7 1/2'  
 MAP MOAB  
 PROD As of 1971, 917 tons had been mined at a grade of 0.33% U3O8, producing 6,041 lbs of U3O8 and 2.02% V2O5.  
 HOST Jurassic Morrison Formation, Salt Wash Sandstone Member; fine- to medium-grained sandstone.  
 MNZ Uranium, vanadium, carnotite.  
 DOI 1971  
 REF U.S. Bur. of Mines, 1977, (Unpubl.). U.S. A.E.C., 1971, Production Records, Colorado. Finch, W. I., 1967, U.S.G.S. Prof. Paper 538, (p. 12).

## Colorado Cat

LOCATION: sec. 15, T. 44 N., R. 19 W.  
 QUAD Horse Range Mesa 7 1/2'  
 MAP MOAB  
 PROD As of 1971, 16 tons had been mined at a grade of 0.53% U3O8, producing 171 lbs of U3O8, and 2.89% V2O5, producing 926 lbs of V2O5.  
 HOST Brushy Basin Member of the Jurassic Morrison Formation.  
 MNZ Uranium, vanadium.  
 DOI 1971  
 REF U.S. Bur. of Mines, 1977, (Unpubl.). U.S. A.E.C., 1971, Production Records, Colorado.

## Cone 1-6

LOCATION: sec. 30, T. 44 N., R. 19 W.  
 QUAD Mount Peale 4 SE 7 1/2' & Horse Range Mesa 7 1/2'  
 MAP MOAB  
 PROD As of 1971, 1,821 tons had been mined at a grade of 0.23% U3O8, producing 8,334 lbs of U3O8, and 1.62% V2O5, producing 59,115 lbs of V2O5.  
 HOST Jurassic Morrison Formation.  
 MNZ Uranium, vanadium, carnotite - tyuyamunite, high vanadium, low lime.  
 DOI 1971  
 REF U.S. Bur. of Mines, 1977, (Unpubl.). U.S. A.E.C., 1971, Production Records, Colorado.

## Cone No. 14

LOCATION: sec. 30, T. 44 N., R. 19 W.  
 PROD Reserves, no production.  
 HOST Jurassic Morrison Formation.  
 MNZ Carnotite.  
 DOI 1971  
 REF U.S. A.E.C., 1971, Production Records, Colorado.

## Cowhand 2

LOCATION: sec. 31, T. 45 N., R. 19 W.  
 LCRM U.S. A.E.C. Production Records show location as being sec. 1-12, 6-7; T. 44 N., R. 19 & 20 W.  
 QUAD Mount Peale 4 SE 7 1/2'  
 MAP MOAB  
 PROD As of 1971, 54 tons had been mined at a grade of 0.20% U3O8, producing 216 lbs of U3O8, and 1.07% V2O5, producing 1,159 lbs of V2O5.  
 HOST Jurassic Morrison Formation, Salt Wash Member.  
 MNZ Uranium, vanadium.  
 DOI 1971  
 REF U.S. Bur. of Mines, 1977, (Unpubl.). U.S. A.E.C., 1971, Production Records, Colorado.

## Crucible

LOCATION: sec. 7, T. 43 N., R. 10 W.  
 LCRM U.S. A.E.C. Production Records also show sec. 8.  
 QUAD Placerville 7 1/2'  
 MAP MOAB  
 PROD As of 1971, 13 tons had been mined at a grade of 0.07% U3O8, producing 17 lbs of U3O8, and 1.58% V2O5, producing 410 lbs of V2O5.  
 MNZ Uranium, vanadium.  
 DOI 1971  
 REF U.S. Bur. of Mines, 1977, (Unpubl.). U.S. A.E.C., 1971, Production Records, Colorado.

## Cub 1

LOCATION:  
 LCST UNLOCATABLE  
 LCRM This deposit lies in the Slick Rock district.  
 PROD As of 1971, 32 tons had been mined at a grade of 0.26% U3O8, producing 164 lbs of

# SAN MIGUEL COUNTY

U308, and 2.49% V205, producing 1,594 lbs of V205.  
 HOST Jurassic Morrison Formation, Salt Wash Member.  
 DOI 1971  
 REF U.S. A.E.C., 1971, Production Records, Colorado.

## Curtis

LOCATION: sec. 28, T. 43 N., R. 18 W.  
 LCRM Also sec. 27.  
 QUAD Joe Davis Hill 7 1/2'  
 MAP CORTEZ  
 PROD As of 1971, 220 tons had been mined at a grade of 0.43% U308, producing 18,893 lbs of U308, and 2.11% V205, producing 9,281 lbs of V205.  
 HOST Jurassic Morrison Formation, Salt Wash Member.  
 MNZ Uranium, vanadium.  
 DOI 1971  
 REF U.S. Bur. of Mines, 1977, (Unpubl.). U.S. A.E.C., 1971, Production Records, Colorado.

## Cusco

LOCATION:  
 LCST UNLOCATABLE  
 LCRM This deposit lies in the Slick Rock district.  
 PROD As of 1971, 10 tons had been mined at a grade of 0.13% U308, producing 26 lbs of U308, and 1.59% V205, producing 318 lbs of V205.  
 DOI 1971  
 REF U.S. A.E.C., 1971, Production Records, Colorado.

## D.U. and Vanderwalker Groups

LOCATION: sec. 26, T. 44 N., R. 18 W.  
 QUAD Hamm Canyon 7 1/2'  
 MAP MOAB  
 MNZ Uranium, vanadium.  
 DOI 1975  
 REF U.S. Bur. of Mines, 1977, (Unpubl.).

## Dalpaz

LOCATION:  
 LCST UNLOCATABLE  
 PROD AS of 1971, 1 182 tons had been mined at a grade of 0.14% U308, producing 518 lbs of U308, and 2.18% V205, producing 7,948 lbs of V205.  
 HOST Jurassic Morrison Formation.  
 MNZ Carnotite - tyuyamunite, high vanadium, low ilme.  
 DOI 1971  
 REF U.S. A.E.C., 1971, Production Records, Colorado.

## Deluxe & Master Deluxe

LOCATION: sec. 22, T. 44 N., R. 19 W.  
 LCRM Also sec. 23-27.  
 QUAD Horse Range Mesa 7 1/2'  
 PROD As of 1971, 3,674 tons had been mined at a grade of 0.22% U308, producing 16,135 lbs of U308, and 1.58% V205, producing 116,446 lbs of V205.

HOST Jurassic Morrison Formation.  
 MNZ Carnotite - tyuyamunite, high vanadium, low ilme.  
 DOI 1971  
 REF U.S. A.E.C., 1971, Production Records, Colorado.

## Deremo (Bigler Shaft, Pup No. 1, W. B. Snyder, Bigler, Geisinger Leases)

LOCATION: NE1/4N1/2 sec. 2, T. 42 N., R. 20 W.  
 LCRM U.S. A.E.C. Production Records also show sec. 35 & 36, T. 43 N., R. 20 W.  
 QUAD Verdure 1 NE 7 1/2'  
 MAP CORTEZ  
 PROD As of 1971, 794,810 tons had been mined at a grade of 0.20% U308, producing 3,218,079 lbs of U308, and 1.97% V205, producing 31,240,735 lbs of V205.  
 HOST Jurassic Morrison Formation.  
 MNZ Uranium, vanadium, uraninite (coffinite), high vanadium, low ilme.  
 DOI 1971  
 REF U.S. A.E.C., 1971, Production Records, Colorado.

## Deremo Dumps

LOCATION: NE1/4N1/2 sec. 2, T. 42 N., R. 20 W.  
 QUAD Verdure 1 NE 7 1/2'  
 MAP CORTEZ  
 PROD As of 1971, 87 tons had been mined at a grade of 0.20% U308, producing 355 lbs of U308, and 2.91% V205, producing 5,070 lbs of V205.  
 HOST Jurassic Morrison Formation.  
 MNZ Uranium, vanadium, uraninite (coffinite), high vanadium, low ilme.  
 DOI 1971  
 REF U.S. Bur. of Mines, 1977, (Unpubl.). U.S. A.E.C., 1971, Production Records, Colorado.

## Deremo No. 2

LOCATION: SE1/4 sec. 2, T. 42 N., R. 20 W.  
 QUAD Verdure 1 NE 7 1/2'  
 MAP CORTEZ  
 MNZ Uranium, vanadium.  
 DOI 1975  
 REF U.S. Bur. of Mines, 1977, (Unpubl.).

## Dickie 1 & 3 (Dickie Group)

LOCATION: sec. 12, T. 42 N., R. 18 W.  
 LCRM Also sec. 13.  
 QUAD Joe Davis Hill 7 1/2'  
 MAP CORTEZ  
 PROD As of 1971, 35 tons had been mined at a grade of 0.11% U308, producing 75 lbs of U308, and 1.20% V205, producing 838 lbs of V205.  
 DOI 1971  
 REF U.S. A.E.C., 1971, Production Records, Colorado.

## Dolores River (Horseshoe Group)

LOCATION: NE1/4 sec. 1, T. 42 N., R. 18 W.  
 LCRM This deposit lies in the Slick Rock district.

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QUAD Joe Davis Hill 7 1/2'  
 MAP CORTEZ  
 PROD As of 1971, 15 tons had been mined at a grade of 0.20% U308, producing 60 lbs of U308, and 2.25% V205, producing 675 lbs of V205.  
 HOST Jurassic Morrison Formation, Salt Wash Member.  
 MNZ Uranium, vanadium.  
 DOI 1971  
 REF U.S. Bur. of Mines, 1977, (Unpubl.). U.S. A.E.C., 1971, Production Records, Colorado.

## Dolores Uranium (Monument Valley, Red Canyon, Deer, Bush Creek, Slick Claims, Northeastern Slick Rock Claims, Valley, Faults, Cedar Flat)

LOCATION: sec. 18, T. 43 N., R. 18 W.  
 QUAD Egnar 7 1/2'  
 MAP CORTEZ  
 MNZ Uranium, vanadium.  
 DOI 1975  
 REF U.S. Bur. of Mines, 1977, (Unpubl.).

## Donald Hill

LOCATION: sec. 15, T. 44 N., R. 18 W.  
 LCRM Also sec. 10-14.  
 QUAD Hamm Canyon 7 1/2'  
 MAP MOAB  
 PROD As of 1971, 8 tons had been mined at a grade of 0.17% U308, producing 28 lbs of U308, and 1.56% V205, producing 250 lbs of V205.  
 HOST Jurassic Morrison Formation, Salt Wash Member.  
 MNZ Uranium, vanadium.  
 DOI 1971  
 REF U.S. Bur. of Mines, 1977, (Unpubl.). U.S. A.E.C., 1971, Production Records, Colorado.

## Donagan Lease

LOCATION: sec. 8, T. 43 N., R. 10 W.  
 LCRM This deposit lies in the Slick Rock district.  
 QUAD Sams 7 1/2'  
 MAP MOAB  
 PROD As of 1971, 78 tons had been mined at a grade of 0.04% U308, producing 66 lbs of U308, and 2.51% V205, producing 3,923 lbs of V205.  
 HOST Jurassic Entrada Sandstone; white to buff, fine-grained sandstone.  
 MNZ Uranium, vanadium.  
 DOI 1971  
 REF U.S. Bur. of Mines, 1977, (Unpubl.). U.S. A.E.C., 1971, Production Records, Colorado.  
 Finch, W. I., 1967, U.S.G.S. Prof. Paper 538, (p. 13).

## Doss Claim Group

LOCATION: sec. 9, T. 43 N., R. 18 W.  
 QUAD Hamm Canyon 7 1/2'  
 MAP MOAB  
 MNZ Uranium, vanadium.  
 DOI 1975  
 REF U.S. Bur. of Mines, 1977, (Unpubl.).

## Dragon

LOCATION:

LCST UNLOCATABLE  
 PROD As of 1971, 498 tons had been mined at a grade of 0.10% U308, producing 1,044 lbs of U308, and 1.63% V205, producing 16,260 lbs of V205.  
 DOI 1971  
 REF U.S. A.E.C., 1971, Production Records, Colorado.

## Duncan (Mexico Group)

LOCATION: sec. 26, T. 45 N., R. 18 W.  
 LCRM U.S. A.E.C. Production Records also show sec. 35.  
 QUAD Hamm Canyon 7 1/2'  
 MAP MOAB  
 PROD As of 1971, 33 tons had been mined at a grade of 0.14% U308, producing 93 lbs of U308, and 0.815 V205, producing 535 lbs of V205.  
 HOST Jurassic Morrison Formation, Salt Wash Member.  
 MNZ Uranium, vanadium.  
 DOI 1971  
 REF U.S. Bur. of Mines, 1977, (Unpubl.). U.S. A.E.C., 1971, Production Records, Colorado.

## Durango and Las Animas

LOCATION: sec. 33, T. 44 N., R. 19 W.  
 LCRM U.S. A.E.C. Production Records also show sec. 28.  
 QUAD Horse Range Mesa 7 1/2'  
 MAP MOAB  
 PROD As of 1971, 97 tons had been mined at a grade of 0.25% U308, producing 476 lbs of U308, and 2.64% V205, producing 5,119 lbs of V205.  
 MNZ Uranium, vanadium.  
 DOI 1971  
 REF U.S. D.O.E., 1977, Lease Production Records, Colorado. U.S. Bur. of Mines, 1977, (Unpubl.). U.S. A.E.C., 1971, Production Records, Colorado.

## Early Morn Group

LOCATION: sec. 24, T. 44 N., R. 17 W.  
 QUAD Gypsum Gap 7 1/2'  
 MAP MOAB  
 PROD As of 1971, 854 tons had been mined at a grade of 0.14% U308, producing 2,375 lbs of U308, and 1.6% V205, producing 28,553 lbs of V205.  
 MNZ Uranium, vanadium.  
 DOI 1971  
 REF U.S. Bur. of Mines, 1977, (Unpubl.). U.S. A.E.C., 1971, Production Records, Colorado.

## Eaverson Lease

LOCATION: sec. 26, T. 43 N., R. 19 W.  
 QUAD Egnar 7 1/2'  
 MAP CORTEZ  
 MNZ Uranium, vanadium.  
 DOI 1975  
 REF U.S. Bur. of Mines, 1977, (Unpubl.).

## Eclipse

LOCATION: sec. 10, T. 44 N., R. 18 W.  
 LCRM This deposit lies in the Uravan district.

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QUAD Hamm Canyon 7 1/2'  
 MAP MOAB  
 PROD As of 1971, 9 tons had been mined at a grade of 0.22% U3O8, producing 40 lbs of U3O8, and 1.22% V2O5, producing 219 lbs of V2O5.  
 HOST The host is the Jurassic Morrison Formation.  
 MNZ Uranium, vanadium.  
 DOI 1971  
 REF U.S. Bur. of Mines, 1977, (Unpubl.). U.S. A.E.C., 1971, Production Records, Colorado.

## Edna Mae

LOCATION: sec. 21, T. 45 N., R. 18 W.  
 QUAD Bull Canyon 7 1/2'  
 MAP MOAB  
 PROD As of 1971, 468 tons had been mined at a grade of 0.16% U3O8, producing 1,532 lbs of U3O8, and 1.96% V2O5, producing 18,390 lbs of V2O5.  
 MNZ Uranium, vanadium.  
 DOI 1971  
 REF U.S. Bur. of Mines, 1977, (Unpubl.). U.S. A.E.C., 1971, Production Records, Colorado.

## Empire Group (Tunis, Libia, Sudan, Algiers, Bugwine, Cowhand)

LOCATION: sec. 1, T. 44 N., R. 20 W.  
 LCRM This deposit lies in the Slick Rock district, McIntire Canyon. Also sec. 11 and 12, T. 44 N., R. 20 W. and sec. 6, T. 44 N., R. 19 W.  
 PROD As of 1971, 12 tons had been mined at a grade of 0.41% U3O8, producing 98 lbs of U3O8, and 1.60% V2O5, producing 384 lbs of V2O5.  
 HOST Jurassic Morrison Formation, Salt Wash Member.  
 DOI 1971  
 REF U.S. D.O.E., 1977, Lease Production Records, Colorado. U.S. A.E.C., 1971, Production Records, Colorado.

## Fair View

LOCATION:  
 LCST UNLOCATABLE  
 LCRM This deposit lies in the Slick Rock district.  
 PROD As of 1971, 9 tons had been mined at a grade of 0.31% U3O8, producing 56 lbs of U3O8, and 2.61% V2O5, producing 469 lbs of V2O5.  
 HOST Jurassic Morrison Formation, Salt Wash Member.  
 DOI 1971  
 REF U.S. A.E.C., 1971, Production Records, Colorado.

## Falcon (Boy Ayla, Bob Incline)

LOCATION: SW1/4 sec. 21, T. 43 N., R. 19 W.  
 LCRM U.S. A.E.C. Production Records also show sec. 20 & 28.  
 QUAD Egner 7 1/2'  
 MAP CORTEZ  
 PROD As of 1971, 7,240 tons had been mined at a grade of 0.24% U3O8, producing 35,266 lbs of U3O8, and 2.15% V2O5, producing 310,855 lbs of V2O5.  
 HOST Jurassic Morrison Formation.  
 MNZ Uranium, vanadium, uraninite (coffinite), high vanadium, low lime.

DOI 1971  
 REF U.S. Bur. of Mines, 1977, (Unpubl.). U.S. A.E.C., 1971, Production Records, Colorado.

## Fall Creek Group

LOCATION: sec. 18, T. 43 N., R. 10 W.  
 LCRM U.S. A.E.C. Production Records only show sec. 7.  
 QUAD Little Cone 7 1/2' & Gray Head 7 1/2'  
 MAP CORTEZ  
 PROD As of 1971, 8,232 tons had been mined at a grade of 0.07% U3O8, producing 11,804 lbs of U3O8, and 1.91% V2O5, producing 314,084 lbs of V2O5.  
 HOST Jurassic Morrison Formation.  
 MNZ Uranium, vanadium, roscoelite.  
 DOI 1971  
 REF U.S. Bur. of Mines, 1977, (Unpubl.). U.S. A.E.C., 1971, Production Records, Colorado.

## Faultless (Faultless Group, Blue Bird Fraction, Faultless #1, New Moon)

LOCATION: sec. 24, T. 45 N., R. 19 W.  
 QUAD Anderson Mesa 7 1/2'  
 MAP MOAB  
 PROD As of 1971, 99 tons had been mined at a grade of 0.23% U3O8, producing 455 lbs of U3O8, and 1.63% V2O5, producing 3,221 lbs of V2O5.  
 HOST Salt Wash Member of the Jurassic Morrison Formation.  
 MNZ Uranium, vanadium.  
 DOI 1971  
 REF U.S. Bur. Mines, 1977, (Unpubl.). U.S. A.E.C., 1971, Production Records, Colorado.

## Federal

LOCATION: S1/2SE1/4 sec. 14, T. 44 N., R. 20 W.  
 DOI 1958  
 REF Hague, R. S., Goldenstein, S. J., and Blakey, E., Uranium - vanadium deposits of the Uravan Mineral Belt, 1958.

## Fervanite

LOCATION: sec. 7, T. 43 N., R. 16 W.  
 DOI 1958  
 REF Hague, R. S., Goldenstein, S. J., and Blakey, E., Uranium - vanadium deposits of the Uravan Mineral Belt, 1958.

## Firefly 3 (Firefly Mine)

LOCATION: sec. 21, T. 43 N., R. 19 W.  
 QUAD Egner 7 1/2'  
 MAP CORTEZ  
 PROD As of 1971, 1,523 tons had been mined at a grade of 0.28% U3O8, producing 8,436 lbs of U3O8, and 2.51% V2O5, producing 76,432 lbs of V2O5.  
 HOST Jurassic Morrison Formation.  
 MNZ Carnotite - tyuyamunite, high vanadium, low lime.  
 DOI 1971  
 REF U.S. A.E.C., 1971, Production Records, Colorado.

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## Five Points (Five Points No. 1-3, 5, 6 and Oneta 2 & 3)

LOCATION: sec. 36, T. 44 N., R. 19 W.  
 LCRM Also sec. 31, T. 44 N., R. 18 W.  
 QUAD Horse Range Mesa 7 1/2'  
 MAP MOAB  
 PROD As of 1971, 42 tons had been mined at a grade of 0.10% U3O8, producing 84 lbs of U3O8, and 1.21% V2O5, producing 1,015 lbs of V2O5.  
 HOST Jurassic Morrison Formation.  
 MNZ Carnotite - tyuyamunite, high vanadium, low ilme.  
 DOI 1971  
 REF U.S. A.E.C., 1971, Production Records, Colorado.

## Florence (Radium Group)

LOCATION: sec. 5, T. 43 N., R. 19 W.  
 LCST UNLOCATABLE  
 LCRM U.S. A.E.C. Production Records also show location as being sec. 36, T. 44 N., R. 19 W.  
 PROD As of 1972, 382 tons had been mined at a grade of 0.34% U3O8, producing 22,64 lbs of U3O8, and 1.84% V2O5, producing 14,137 lbs of V2O5.  
 HOST Jurassic Morrison Formation, Salt Wash Member.  
 MNZ Uranium, vanadium.  
 DOI 1971  
 REF U.S. Bur. of Mines, 1977, (Unpubl.). U.S. A.E.C., 1971, Production Records, Colorado.

## Fort Knox Claims

LOCATION: sec. 19, T. 45 N., R. 18 W.  
 QUAD Anderson Mesa 7 1/2'  
 MAP MOAB  
 MNZ Uranium, vanadium.  
 DOI 1975  
 REF U.S. Bur. of Mines, 1977, (Unpubl.).

## Fox Group

LOCATION: sec. 26, T. 43 N., R. 18 W.  
 LCRM Also sec. 13, 24; 18, 19; T. 44 N., R. 19 W., 18 W.  
 QUAD Horse Range Mesa 7 1/2'  
 MAP MOAB  
 PROD As of 1971, 355 tons had been mined at a grade of 0.12% U3O8, producing 863 lbs of U3O8, and 1.65% V2O5, producing 11,695 lbs of V2O5.  
 HOST Jurassic Morrison Formation.  
 MNZ Carnotite - tyuyamunite, high vanadium, low ilme.  
 DOI 1971  
 REF U.S. A.E.C., 1971, Production Records, Colorado.

## Fraction

LOCATION: sec. 8, T. 43 N., R. 19 W.  
 QUAD Horse Range Mesa 7 1/2'  
 MAP MOAB  
 PROD As of 1971, 303 tons had been mined at a grade of 0.32% U3O8, producing 1,945 lbs of U3O8, and 1.63% V2O5, producing 9,902 lbs of V2O5.

HOST Jurassic Morrison Formation, Salt Wash Member.  
 MNZ Uranium, vanadium.  
 DOI 1971  
 REF U.S. Bur. of Mines, 1977, (Unpubl.). U.S. A.E.C., 1971, Production Records, Colorado.

## Fraction 1 (one)

LOCATION: sec. 10, T. 43 N., R. 19 W.  
 LCRM Map name is also CORTEZ.  
 QUAD Horse Range Mesa 7 1/2' & Egner 7 1/2'  
 MAP MOAB  
 PROD As of 1971, 110 tons had been mined at a grade of 0.44% U3O8, producing 972 lbs of U3O8, and 2.40% V2O5, producing 5,279 lbs of V2O5.  
 MNZ Uranium, vanadium.  
 DOI 1971  
 REF U.S. Bur. of Mines, 1977, (Unpubl.). U.S. A.E.C., 1971, Production Records, Colorado.

## France

LOCATION: sec. 20, T. 43 N., R. 19 W.  
 LCRM U.S. A.E.C. Production Records also show sec. 19.  
 QUAD Egner 7 1/2'  
 MAP CORTEZ  
 PROD As of 1971, 1,436 tons had been mined at a grade of 0.27% U3O8, producing 7,644 lbs of U3O8, and 1.56% V2O5, producing 44,861 lbs of V2O5.  
 HOST Jurassic Morrison Formation.  
 MNZ Uranium, vanadium, carnotite - tyuyamunite, high vanadium, low ilme.  
 DOI 1971  
 REF U.S. Bur. of Mines, 1977, (Unpubl.). U.S. A.E.C., 1971, Production Records, Colorado.

## Frances (Speed Patch Group)

LOCATION: sec. 29, T. 43 N., R. 18 W.  
 HOST Jurassic Morrison Formation.  
 MNZ Carnotite.  
 DOI 1971  
 REF U.S. A.E.C., 1971, Production Records, Colorado.

## Frazier (Vanadium No. 1-3, Belvedere)

LOCATION: sec. 24, T. 43 N., R. 11 W.  
 LCRM U.S. A.E.C. Production Records show location as sec. 24, T. 44 N., R. 11 W. (Denver, Belvedere MS)  
 QUAD Little Cone 7 1/2'  
 MAP CORTEZ  
 PROD As of 1971, 671 tons had been mined at a grade of 0.17% U3O8, producing 2,216 lbs of U3O8, and 2.92% V2O5, producing 39,234 lbs of V2O5.  
 MNZ Uranium, vanadium.  
 DOI 1971  
 REF U.S. Bur. of Mines, 1977, (Unpubl.). U.S. A.E.C., 1971, Production Records, Colorado.

## Frazier Mine (Fall Creek Mine)

LOCATION:  
 LCST UNLOCATABLE

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HOST Jurassic Morrison Formation; white to buff fine-grained sandstone.  
 MNZ Uranium, vanadium.  
 DOI 1975  
 REF U.S. Bur. of Mines, 1977, (Unpubl.). Finch, W. I., 1967, U.S.G.S. Prof. Paper 538, 121 p. (p. 13).

## Frenchy 2

LOCATION: sec. 29, T. 43 N., R. 19 W.  
 QUAD Egnar 7 1/2'  
 MAP CORTEZ  
 PROD As of 1971, 2,365 tons had been mined at a grade of 0.36% U308, producing 17,239 lbs of U308, and 2.38% V205, producing 112,578 lbs of V205.  
 HOST Jurassic Morrison Formation, Salt Wash Sandstone Member; light brown fine- to medium-grained sandstone & gray & green mudstone with abundant carbonized plant remains and sparse logs.  
 MNZ Uranium, vanadium, carnotite - tyuyamunite, high vanadium, low lime.  
 DOI 1971  
 REF U.S. Bur. of Mines, 1977, (Unpubl.). U.S. A.E.C., 1971, Production Records, Colorado. Finch, W. I., 1967, U.S.G.S. Prof. Paper 538, (p. 12).

## Full Property

LOCATION: sec. 4, T. 43 N., R. 10 W.  
 QUAD Sams 7 1/2'  
 MAP MOAB  
 MNZ Uranium, vanadium.  
 DOI 1975  
 REF U.S. Bur. of Mines, 1977, (Unpubl.).

## Full Moon Group (Full Moon #4, Full Moon #7)

LOCATION: sec. 5, T. 43 N., R. 18 W.  
 LCRM Also E1/2, sec. 8 & 16  
 QUAD Horse Range Mesa 7 1/2' & Hamm Canyon 7 1/2'  
 MAP MOAB  
 PROD As of 1971, 9,425 tons had been mined at a grade of 0.20% U308, producing 36,825 lbs of U308, and 1.18% of V205, producing 221,640 lbs of V205.  
 HOST Brushy Basin Member of the Jurassic Morrison Formation.  
 MNZ Uranium, vanadium, carnotite - tyuyamunite, high vanadium, low lime.  
 DOI 1971  
 REF Hague, R. S., Goldenstein, S. J., and Blakey, E., Uranium - vanadium deposits of the Uravan Mineral Belt, 1958. U.S. Bur. of Mines, 1977, (Unpubl.). U.S. A.E.C., 1971, Production Records, Colorado.

## G M D 1 (Little Gyp Group)

LOCATION:  
 LCRM This deposit lies in Gypsum Valley.  
 PROD As of 1971, 13 tons had been mined at a grade of 0.14% U308, producing 36 lbs of U308, and 0.96% V205, producing 250 lbs of V205.  
 HOST Jurassic Morrison Formation, Salt Wash Member.

DOI 1971  
 REF U.S. A.E.C., 1971, Production Records, Colorado.

## Gap

LOCATION: sec. 16, T. 43 N., R. 16 W.  
 LCRM This deposit lies in the Slick Rock district.  
 QUAD Dawson Draw 7 1/2'  
 MAP CORTEZ  
 PROD As of 1971, 17 tons had been mined at a grade of 0.16% U308, producing 56 lbs of U308, and 1.60% V205, producing 545 lbs of V205.  
 HOST Jurassic Morrison Formation, Salt Wash Member.  
 MNZ Uranium, vanadium.  
 DOI 1971  
 REF U.S. Bur. of Mines, 1977, (Unpubl.). U.S. A.E.C., 1971, Production Records, Colorado.

## Geisinger

LOCATION: sec. 6, T. 42 N., R. 19 W.  
 QUAD Verdure 1 NE 7 1/2' & Egnar 7 1/2'  
 MAP CORTEZ  
 MNZ Uranium, vanadium.  
 DOI 1975  
 REF U.S. Bur. of Mines, 1977, (Unpubl.).

## Gerald T.

LOCATION: sec. 19, T. 44 N., R. 18 W.  
 LCRM U.S. A.E.C. Production Records also show sec. 24, T. 44 N., R. 19 W.  
 QUAD Horse Range Mesa 7 1/2'  
 MAP MOAB  
 PROD As of 1971, 728 tons had been mined at a grade of 0.21% U308, producing 53,384 lbs of U308, and 0.75% V205, producing 10,944 lbs of V205.  
 HOST Jurassic Morrison Formation.  
 MNZ Uranium, vanadium, carnotite - tyuyamunite, high vanadium, low lime.  
 DOI 1971  
 REF U.S. Bur. of Mines, 1977, (Unpubl.). U.S. A.E.C., 1971, Production Records, Colorado.

## Giant (Giant No. 2)

LOCATION: sec. 24, T. 45 N., R. 19 W.  
 QUAD Anderson Mesa 7 1/2'  
 MAP MOAB  
 PROD As of 1971, 407 tons had been mined at a grade of 0.12% U308, producing 1,005 lbs of U308, and 1.13% V205, producing 9,171 lbs of U308.  
 HOST Jurassic Morrison Formation, Salt Wash Member.  
 MNZ Uranium, vanadium.  
 DOI 1971  
 REF U.S. Bur. of Mines, 1977, (Unpubl.). U.S. A.E.C., 1971, Production Records, Colorado.

## Glen 24 (Dowdy Lease)

LOCATION: sec. 28, T. 44 N., R. 18 W.  
 LCRM U.S. A.E.C. Production Records show locations as sec. 30 & 31, T. 45 N., R. 18 W.; sec. 29, 26, 6 & 7, T. 44 N., R. 19 W.  
 QUAD Hamm Canyon 7 1/2'



# SAN MIGUEL COUNTY

MAP MOAB  
 PROD As of 1971, 288 tons had been mined at a grade of 0.23% U308, producing 1,313 lbs of U308, and 1.33% V205, producing 7,671 lbs of V205.  
 MNZ Uranium, vanadium.  
 DOI 1971  
 REF U.S. Bur. of Mines, 1977, (Unpubl.). U.S. A.E.C., 1971, Production Records, Colorado.

## GMG (GMG 4-7, 10-13; GMG South 6 & 7)

LOCATION: sec. 13, T. 44 N., R. 18 W.  
 LCRM U.S. A.E.C. Production Records show location as sec. 13 & 24, T. 44 N., R. 18 W.; sec. 18 & 19, T. 44 N., R. 17 W.  
 QUAD Hamm Canyon 7 1/2'  
 MAP MOAB  
 PROD As of 1971, 27,777 tons had been mined at a grade of 0.24% U308, producing 133,053 lbs of U308, and 1.47% V205, producing 818,713 lbs of V205  
 HOST Jurassic Morrison Formation.  
 MNZ Uranium, vanadium, carnotite - tyuyamunite, high vanadium, low lime.  
 DOI 1971  
 REF U.S. Bur. of Mines, 1977, (Unpubl.). U.S. A.E.C., 1971, Production Records, Colorado.

## Goforth Homestead

LOCATION: sec. 15, T. 43 N., R. 19 W.  
 QUAD Egnar 7 1/2'  
 MAP CORTEZ  
 PROD As of 1971, 36 tons had been mined at a grade of 0.10% U308, producing 75 lbs of U308, and 1.11% V205, producing 797 lbs of V205.  
 HOST Jurassic Morrison Formation.  
 MNZ Uranium, vanadium.  
 DOI 1971  
 REF U.S. Bur. of Mines, 1977, (Unpubl.). U.S. A.E.C., 1971, Production Records, Colorado.

## Golden Eagle No. 14-16

LOCATION: sec. 18, T. 45 N., R. 18 W.  
 LCRM Also sec. 19.  
 PROD As of 1971, 407 tons had been mined at an average grade of 0.29% U308, yielding 2,164 lbs of U308.  
 HOST Jurassic Morrison Formation, Salt Wash Member.  
 MNZ Carnotite.  
 DOI 1971  
 REF U.S. A.E.C., 1971, Production Records, Colorado.

## Golden Rod 1

LOCATION: sec. 11, T. 43 N., R. 19 W.  
 QUAD Horse Range Mesa 7 1/2'  
 MAP MOAB  
 PROD As of 1971, 639 tons had been mined at a grade of 0.26% U308, producing 3,332 lbs of U308, and 2.15% V205, producing 27,529 lbs of V205.  
 HOST Jurassic Morrison Formation, Salt Wash Sandstone Member; gray and brown shaly sandstone and

fine- to medium-grained sandstone, with abundant carbonized logs and other plant remains.

MNZ Uranium, vanadium, carnotite - tyuyamunite.  
 DOI 1971  
 REF U.S. Bur. of Mines, 1977, (Unpubl.). U.S. A.E.C., 1971, Production Records, Colorado. Finch, W. I., 1967, U.S.G.S. Prof. Paper 538, (p. 12).

## Golden Rod 2

LOCATION: sec. 14, T. 43 N., R. 19 W.  
 QUAD Egnar 7 1/2'  
 MAP CORTEZ  
 PROD As of 1971, 1,638 tons had been mined at a grade of 0.25% U308, producing 8,259 lbs of U308, and 2.45% V205, producing 8,310 lbs of V205.  
 HOST Jurassic Morrison Formation.  
 MNZ Uranium, vanadium, carnotite - tyuyamunite, high vanadium, low lime.  
 DOI 1971  
 REF U.S. Bur. of Mines, 1977, (Unpubl.). U.S. A.E.C., 1971, Production Records, Colorado.

## Golden Rod 4

LOCATION: sec. 14, T. 43 N., R. 19 W.  
 QUAD Egnar 7 1/2'  
 MAP CORTEZ  
 PROD As of 1971, 4,483 tons had been mined at a grade of 0.29% U308, producing 26,113 lbs of U308, and 2.77% V205, producing 248,541 lbs of V205.  
 HOST Jurassic Morrison Formation.  
 MNZ Uranium, vanadium, carnotite - tyuyamunite, high vanadium, low lime.  
 DOI 1971  
 REF U.S. Bur. of Mines, 1977, (Unpubl.). U.S. A.E.C., 1971, Production Records, Colorado.

## Gopher (Wedding Bell Group)

LOCATION: sec. 21, T. 45 N., R. 18 W.  
 QUAD Bull Canyon 7 1/2'  
 MAP MOAB  
 PROD As of 1971, 1,366 tons had been mined at a grade of 0.25% U308, producing 6,944 lbs of U308, and 1.62% V205, producing 44,292 lbs of V205.  
 HOST Jurassic Morrison Formation.  
 MNZ Uranium, vanadium, carnotite - tyuyamunite, high vanadium, low lime.  
 DOI 1971  
 REF U.S. Bur. of Mines, 1977, (Unpubl.). U.S. A.E.C., 1971, Production Records, Colorado.

## Governor Mine

LOCATION: sec. 29, T. 43 N., R. 19 W.  
 LCRM U.S. A.E.C. Production Records also show sec. 30.  
 QUAD Egnar 7 1/2'  
 MAP CORTEZ  
 PROD As of 1971, 207 tons had been mined at a grade of 0.23% U308, producing 963 lbs of U308, and 2.08% V205, producing 8,267 lbs of V205.

# SAN MIGUEL COUNTY

HOST Jurassic Morrison Formation.  
MNZ Uranium, vanadium, carnotite - tyuyamunite, high vanadium, low lime.  
DOI 1971  
REF U.S. Bur. of Mines, 1977, (Unpubl.). U.S. A.E.C., 1971, Production Records, Colorado.

## Grass Flats (Phillura Group)

LOCATION: sec. 32, T. 44 N., R. 18 W.  
LCRM U.S. A.E.C. Production Records also show sec. 32.  
QUAD Horse Range Mesa 7 1/2' and Hamm Canyon 7 1/2'  
MAP MOAB  
PROD As of 1971, 3,513 tons had been mined at a grade of 0.18% U3O8, producing 12,866 lbs of U3O8, and 0.79% V2O5, producing 55,696 lbs of V2O5.  
HOST The host is the Jurassic Morrison Formation.  
MNZ Uranium, vanadium, carnotite - tyuyamunite, high vanadium, low lime.  
DOI 1971  
REF U.S. Bur. of Mines, 1977, (Unpubl.). U.S. A.E.C., 1971, Production Records, Colorado.

## Grassy Hill

LOCATION: sec. 24, T. 45 N., R. 19 W.  
QUAD Anderson Mesa 7 1/2'  
MAP MOAB  
PROD As of 1971, 31 tons had been mined at a grade of 0.12% U3O8, producing 75 lbs of U3O8, and 0.78% V2O5, producing 486 lbs of V2O5.  
HOST The host is the Jurassic Morrison Formation.  
MNZ Uranium, vanadium.  
DOI 1971  
REF U.S. Bur. of Mines, 1977, (Unpubl.). U.S. A.E.C., 1971, Production Records, Colorado.

## Green Arrow

LOCATION: This deposit lies in Gypsum Valley.  
LCRM As of 1971, 4 tons had been mined at a grade of 0.06% U3O8, producing 5 lbs of U3O8, and 3.15% V2O5, producing 252 lbs of V2O5.  
PROD  
HOST Jurassic Morrison Formation, Salt Wash Member.  
DOI 1971  
REF U.S. A.E.C., 1971, Production Records, Colorado.

## Ground Hog

LOCATION: sec. 21, T. 45 N., R. 18 W.  
QUAD Bull Canyon 7 1/2'  
MAP MOAB  
PROD As of 1971, 9,563 tons had been mined at a grade of 0.22% U3O8, producing 42,003 lbs of U3O8, and 1.02% V2O5, producing 195,388 lbs of V2O5.  
HOST Brushy Basin Member of the Jurassic Morrison Formation.  
MNZ Uranium, vanadium, carnotite - tyuyamunite, high vanadium, intermed. lime.  
DOI 1971  
REF U.S. Bur. of Mines, 1977, (Unpubl.). U.S. A.E.C., 1971, Production Records, Colorado.

## Ground Hog Dump

LOCATION: sec. 21, T. 45 N., R. 18 W.  
QUAD Bull Canyon 7 1/2'  
MAP MOAB  
PROD As of 1971, 1,111 tons had been mined at a grade of 0.21% U3O8, producing 4,631 lbs of U3O8, and 1.18% V2O5, producing 26,153 lbs of V2O5.  
HOST The host is the Jurassic Morrison Formation.  
MNZ Uranium, vanadium, carnotite - tyuyamunite, high vanadium, low lime.  
DOI 1971  
REF U.S. Bur. of Mines, 1977, (Unpubl.). U.S. A.E.C., 1971, Production Records, Colorado.

## Grub Stake

LOCATION: sec. 23, T. 44 N., R. 19 W.  
QUAD Horse Range Mesa 7 1/2'  
MAP MOAB  
PROD As of 1971, 7 tons had been mined at a grade of 0.28% U3O8, producing 39 lbs of U3O8, and 1.46% V2O5, producing 205 lbs of V2O5.  
HOST Jurassic Morrison Formation, Salt Wash Member.  
MNZ Uranium, vanadium.  
DOI 1971  
REF U.S. Bur. of Mines, 1977, (Unpubl.). U.S. A.E.C., 1971, Production Records, Colorado.

## Gypsum Homestead (Big Gyp Homestead)

LOCATION: sec. 33, T. 45 N., R. 18 W.  
QUAD Hamm Canyon 7 1/2'  
MAP MOAB  
PROD As of 1971, 1,569 tons had been mined at a grade of 0.18% U3O8, producing 5,668 lbs of U3O8, and 1.52% V2O5, producing 47,601 lbs of V2O5.  
MNZ Uranium, vanadium.  
DOI 1971  
REF U.S. Bur. of Mines, 1977, (Unpubl.). U.S. A.E.C., 1971, Production Records, Colorado.

## Gypsum Valley Claims

LOCATION: sec. 33, T. 44 N., R. 16 W.  
QUAD Gypsum Gap 7 1/2'  
MAP MOAB  
PROD As of 1971, 1,318 tons of ore were mined at an average grade of 0.14% U3O8, yielding 4,435 lbs of U3O8.  
MNZ Uranium, vanadium.  
DOI 1975  
REF U.S. Bur. of Mines, 1977, (Unpubl.).

## Hackett

LOCATION: E1/2NW1/4 sec. 20, T. 43 N., R. 19 W.  
DOI 1958  
REF Hague, R. S., Goldenstein, S. J., and Blakey, E., Uranium - vanadium deposits of the Uravan Mineral Belt, 1958.

## Halloween

LOCATION: This deposit lies in Gypsum Valley.

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PROD As of 1971, 23 tons had been mined at a grade of 0.07% U3O8, producing 31 lbs of U3O8, and 1.75% V2O5, producing 805 lbs of V2O5.  
DOI 1971  
REF U.S. A.E.C., 1971, Production Records, Colorado.

## Hangover (Hangover No. 3)

LOCATION: NW1/4 sec. 21, T. 43 N., R. 19 W.  
QUAD Egnar 7 1/2'  
MAP CORTEZ  
PROD As of 1971, 10,989 tons had been mined at a grade of 0.25% U3O8, producing 56,001 lbs of U3O8, and 2.62% V2O5, producing 576,525 lbs of V2O5.  
HOST The host is the Jurassic Morrison Formation.  
MNZ Uranium, vanadium, carnotite - tyuyamunite, high vanadium, low ilme.  
DOI 1971  
REF U.S. Bur. of Mines, 1977, (Unpubl.). U.S. A.E.C., 1971, Production Records, Colorado.

## Happy Jack (Gypsy Rose)

LOCATION: sec. 36, T. 44 N., R. 20 W.  
LCRM U.S. A.E.C. Production Records show location as sec. 4, T. 43 N., R. 19 W.  
QUAD Mount Peale SE 7 1/2'  
MAP MOAB  
PROD As of 1971, 243 tons had been mined at a grade of 0.37% U3O8, producing 1,810 lbs of U3O8, and 2.40% V2O5, producing 11,685 lbs of V2O5.  
HOST The host is the Jurassic Morrison Formation.  
MNZ Uranium, vanadium, carnotite - tyuyamunite, high vanadium, low ilme.  
DOI 1971  
REF U.S. Bur. of Mines, 1977, (Unpubl.). U.S. A.E.C., 1971, Production Records, Colorado.

## Hawk - Frankie

LOCATION: sec. 16, T. 43 N., R. 19 W.  
QUAD Egnar 7 1/2'  
MAP CORTEZ  
PROD As of 1971, 9,681 tons had been mined at a grade of 0.22% U3O8, producing 41,745 lbs of U3O8, and 1.61% V2O5, producing 310,900 lbs of V2O5.  
HOST The host is the Jurassic Morrison Formation.  
MNZ Uranium, vanadium, carnotite - tyuyamunite, high vanadium, low ilme.  
DOI 1971  
REF U.S. Bur. of Mines, 1977, (Unpubl.). U.S. A.E.C., 1971, Production Records, Colorado.

## Haymaker - Sunset (Sunset, Susan H.)

LOCATION: sec. 29, T. 45 N., R. 18 W.  
LCRM U.S. A.E.C. Production Records also show sec. 32.  
QUAD Anderson Mesa 7 1/2' and Horse Range Mesa 7 1/2'  
MAP MOAB  
PROD As of 1971, 230 tons had been mined at a grade of 0.24% U3O8, producing 1,111 lbs

of U3O8, and 1.70% V2O5, producing 7,809 lbs of V2O5.

MNZ Uranium, vanadium.  
DOI 1971  
REF U.S. Bur. of Mines, 1977, (Unpubl.). U.S. A.E.C., 1971, Production Records, Colorado.

## Hazel (Hazel #3, 4, and 5)

LOCATION: sec. 19, T. 43 N., R. 19 W.  
QUAD Verdure 1 NE 7 1/2' and Egnar 7 1/2'  
MAP CORTEZ  
PROD As of 1971, 119 tons had been mined at a grade of 0.20% U3O8, producing 483 lbs of U3O8, and 2.25% V2O5, producing 5,364 lbs of V2O5.  
DOI 1971  
REF U.S. A.E.C., 1971, Production Records, Colorado.

## Hogback

LOCATION: sec. 19, T. 43 N., R. 19 W.  
LCRM U.S. A.E.C. Production Records also show sec. 20.  
QUAD Verdure 1 NE 7 1/2' and Egnar 7 1/2'  
MAP CORTEZ  
PROD As of 1971, 909 tons have been mined at a grade of 0.20% U3O8, producing 3,600 lbs of U3O8, and 1.74% V2O5, producing 31,605 lbs of V2O5.  
HOST The host is the Salt Wash Member.  
MNZ Uranium, vanadium, carnotite - tyuyamunite, high vanadium, low ilme.  
DOI 1971  
REF U.S. Bur. of Mines, 1977, (Unpubl.). U.S. A.E.C., 1971, Production Records, Colorado.

## Horseshoe 1

LOCATION: sec. 6, T. 42 N., R. 17 W.  
QUAD Joe Davis Hill 7 1/2'  
PROD As of 1971, 799 tons had been mined at a grade of 0.20% U3O8, producing 3,254 lbs of U3O8, and 1.77% V2O5, producing 28,355 lbs of V2O5.  
HOST The host is the Jurassic Morrison Formation, Salt Wash Sandstone Member, sandstone and mudstone with abundant carbonized plant remains and sparse logs.  
MNZ Uranium, vanadium, carnotite.  
DOI 1971  
REF U.S. Bur. of Mines, 1977, (Unpubl.). U.S. A.E.C., 1971, Production Records, Colorado. Finch, W.L., 1967, U.S. Geol. Survey Prof. Paper 538, (p. 12).

## Horseshoe 2

LOCATION: sec. 6, T. 42 N., R. 17 W.  
QUAD Joe Davis Hill 7 1/2'  
MAP CORTEZ  
PROD As of 1971, 152 tons had been mined at a grade of 0.17% U3O8, producing 519 lbs of U3O8, and 1.21% V2O5, producing 3,686 lbs of V2O5.  
HOST The host is the Jurassic Morrison Formation, Salt Wash Member.

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MNZ Uranium, vanadium, carnotite - tyuyamunite, high vanadium, intermed. ilme.  
DOI 1971  
REF U.S. Bur. of Mines, 1977, (Unpubl.). U.S. A.E.C., 1971, Production Records, Colorado.

## Horseshoe 3

LOCATION: sec. 6, T. 42 N., R. 17 W.  
QUAD Joe Davis Hill 7 1/2'  
MAP CORTEZ  
PROD As of 1971, 235 tons had been mined at a grade of 0.15% U3O8, producing 720 lbs of U3O8, and 1.26% V2O5, producing 5,934 lbs of V2O5.  
HOST The host is the Jurassic Morrison Formation, Salt Wash Member.  
MNZ Uranium, vanadium, carnotite - tyuyamunite, high vanadium, low ilme.  
DOI 1971  
REF U.S. Bur. of Mines, 1977, (Unpubl.). U.S. A.E.C., 1971, Production Records, Colorado.

## Horseshoe 4

LOCATION: sec. 6, T. 42 N., R. 17 W.  
QUAD Joe Davis Hill 7 1/2'  
MAP CORTEZ  
PROD As of 1971, 12 tons had been mined at a grade of 0.30% U3O8, producing 71 lbs of U3O8, and 2.96% V2O5, producing 710 lbs of V2O5.  
HOST Jurassic Morrison Formation, Salt Wash Member.  
MNZ Uranium, vanadium.  
DOI 1971  
REF U.S. Bur. of Mines, 1977, (Unpubl.). U.S. A.E.C., 1971, Production Records, Colorado.

## Horseshoe 5

LOCATION: sec. 6, T. 42 N., R. 17 W.  
LCRM U.S. A.E.C. Production Records also show sec. 31, T. 43 N., R. 17 W.  
QUAD Joe Davis Hill 7 1/2'  
MAP CORTEZ  
PROD As of 1971, 1,857 tons had been mined at a grade of 0.26% U3O8, producing 9,481 lbs of U3O8, and 2.22% V2O5, producing 82,481 lbs of V2O5.  
HOST Jurassic Morrison Formation, Salt Wash Member.  
MNZ Uranium, vanadium.  
DOI 1971  
REF U.S. Bur. of Mines, 1977, (Unpubl.). U.S. A.E.C., 1971, Production Records, Colorado.

## Horseshoe 6

LOCATION: sec. 6, T. 42 N., R. 17 W.  
QUAD Joe Davis Hill 7 1/2'  
MAP CORTEZ  
PROD As of 1971, 155 tons had been mined at a grade of 0.20% U3O8, producing 618 lbs of U3O8, and 1.56% V2O5, producing 4,850 lbs of V2O5.  
HOST Jurassic Morrison Formation, Salt Wash Member.  
MNZ Uranium, vanadium, carnotite - tyuyamunite, high vanadium, low ilme.  
DOI 1971

REF U.S. Bur. of Mines, 1977, (Unpubl.). U.S. A.E.C., 1971, Production Records, Colorado.

## Horseshoe 7

LOCATION: sec. 6, T. 42 N., R. 17 W.  
LCRM U.S. A.E.C. Production Records also show sec. 31, T. 43 N., R. 17 W.  
QUAD Joe Davis Hill 7 1/2'  
MAP CORTEZ  
PROD As of 1971, 696 tons had been mined at a grade of 0.20% U3O8, producing 2,823 lbs of U3O8, 1.75% V2O5, producing 24,414 lbs of V2O5.  
HOST Jurassic Morrison Formation, Salt Wash Member.  
MNZ Uranium, vanadium, carnotite - tyuyamunite, high vanadium, low ilme.  
DOI 1971  
REF U.S. Bur. of Mines, 1977, (Unpubl.). U.S. A.E.C., 1971, Production Records, Colorado.

## Horseshoe Bend 1

LOCATION:  
PROD As of 1971, 1,638 tons have been mined at a grade of 0.30% U3O8, producing 9,915 lbs of U3O8, and 2.76% V2O5, producing 90,519 lbs of V2O5.  
HOST Jurassic Morrison Formation.  
MNZ Carnotite - tyuyamunite, high vanadium, low ilme.  
DOI 1971  
REF U.S. A.E.C., 1971, Production Records, Colorado.

## Hot Drill 11

LOCATION: sec. 11, T. 42 N., R. 18 W.  
LCRM This deposit lies in the Slick Rock district (overlaps S. B. Group).  
QUAD Joe Davis Hill 7 1/2'  
MAP CORTEZ  
PROD As of 1971, 38 tons had been mined at a grade of 0.07% U3O8, producing 53 lbs of U3O8, and 0.61% V2O5, producing 465 lbs of V2O5.  
HOST Triassic Wingate or Chinle Formation.  
MNZ Uranium, vanadium, uraninite (coffinite), low vanadium, high ilme.  
DOI 1971  
REF U.S. Bur. of Mines, 1977, (Unpubl.). U.S. A.E.C., 1971, Production Records, Colorado.

## Hot Shot

LOCATION: sec. 16, T. 45 N., R. 18 W.  
QUAD Bull Canyon 7 1/2'  
MAP MOAB  
PROD As of 1971, 2,297 tons had been mined at a grade of 0.33% U3O8, producing 15,223 lbs of U3O8, and 1.77% V2O5, producing 81,323 lbs of V2O5.  
MNZ Uranium, vanadium, carnotite, tyuyamunite, high vanadium, intermed. ilme.  
DOI 1971  
REF U.S. Bur. of Mines, 1977, (Unpubl.). U.S. A.E.C., 1971, Production Records, Colorado.

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## Hot Spot

LOCATION: sec. 17, T. 44 N., R. 17 W.  
 LCRM This deposit lies in Gypsum Valley.  
 PROD As of 1971, 53 tons had been mined at a grade of 0.16% U308, producing 170 lbs of U308, and 2.12% V205, producing 2,248 lbs of V205.  
 HOST Jurassic Morrison Formation, Salt Wash Member.  
 DOI 1971  
 REF U.S. A.E.C., 1971, Production Records, Colorado.

## Hoyman Lease (Gravy Claims, West Group)

LOCATION: sec. 27, T. 44 N., R. 18 W.  
 LCRM Also sec. 28, 29, 32, 33, 34.  
 QUAD Hamm Canyon 7 1/2'  
 MAP MOAB  
 PROD As of 1971, 4,651 tons had been mined at a grade of 0.21% U308, producing 19,579 lbs of U308, and 1.26% V205, producing 116,860 lbs of V205.  
 HOST Jurassic Morrison Formation.  
 MNZ Uraninite (coffinite), high vanadium, low lime.  
 DOI 1971  
 REF U.S. A.E.C., 1971, Production Records, Colorado.

## I.V.

LOCATION: sec. 15, T. 43 N., R. 19 W.  
 QUAD Egnar 7 1/2'  
 MAP CORTEZ  
 PROD As of 1971, 29 tons had been mined at a grade of 0.18% U308, producing 106 lbs of U308, and 1.24% V205, producing 721 lbs of V205.  
 MNZ Uranium, vanadium.  
 DOI 1971  
 REF U.S. Bur. of Mines, 1977, (Unpubl.). U.S. A.E.C., 1971, Production Records, Colorado.

## Independence (Lower Group)

LOCATION: sec. 17, T. 43 N., R. 19 W.  
 LCRM This deposit lies in the Slick Rock district.  
 QUAD Egnar 7 1/2'  
 MAP CORTEZ  
 PROD As of 1971, 13 tons had been mined at a grade of 0.25% U308, producing 64 lbs of U308, and 0.69% V205, producing 179 lbs of V205.  
 HOST Jurassic Morrison Formation.  
 MNZ Uranium, vanadium.  
 DOI 1971  
 REF U.S. Bur. of Mines, 1977, (Unpubl.). U.S. A.E.C., 1971, Production Records, Colorado.

## Inspiration 1 (Lost Group)

LOCATION: sec. 33, T. 45 N., R. 18 W.  
 LCRM U.S. A.E.C. Production Records also show sec. 34.  
 QUAD Hamm Canyon 7 1/2'  
 MAP MOAB  
 PROD As of 1971, 110 tons had been mined at a grade of 0.06% U308, producing 124 lbs of

U308, and 0.93% V205, producing 2,053 lbs of V205.

HOST Jurassic Morrison Formation.  
 MNZ Uranium, vanadium.  
 DOI 1971  
 REF U.S. Bur. of Mines, 1977, (Unpubl.). U.S. A.E.C., 1971, Production Records, Colorado.

## Inspiration 15

LOCATION: sec. 33, T. 45 N., R. 18 W.  
 LCRM This deposit lies in Gypsum Valley.  
 QUAD Hamm Canyon 7 1/2'  
 MAP MOAB  
 PROD As of 1971, 16 tons had been mined at a grade of 0.06% U308, producing 19 lbs of U308, and 1.08% V205, producing 346 lbs of V205.  
 HOST Jurassic Morrison Formation, Salt Wash Member.  
 MNZ Uranium, vanadium.  
 DOI 1971  
 REF U.S. Bur. of Mines, 1977, (Unpubl.). U.S. A.E.C., 1971, Production Records, Colorado.

## J V Eavenson Lease

LOCATION: sec. 27, T. 43 N., R. 19 W.  
 LCRM U.S. A.E.C. Production Records also show sec. 26.  
 QUAD Egnar 7 1/2'  
 MAP CORTEZ  
 PROD As of 1971, 30 tons had been mined at a grade of 0.18% U308, producing 107 lbs of U308, and 1.73% V205, producing 1,035 lbs of V205.  
 HOST Jurassic Morrison Formation, Salt Wash Member.  
 MNZ Uranium, vanadium.  
 DOI 1971  
 REF U.S. Bur. of Mines, 1977, (Unpubl.). U.S. A.E.C., 1971, Production Records, Colorado.

## J.J.Z.

LOCATION: sec. 33, T. 43 N., R. 18 W.  
 QUAD Joe Davis Hill 7 1/2'  
 MAP CORTEZ  
 PROD As of 1971, 6 tons had been mined at a grade of 0.28% U308, producing 33 lbs of U308, 1.17% V205, producing 140 lbs of U308.  
 HOST Salt Wash Member of the Jurassic Morrison Formation.  
 DOI 1971  
 REF U.S. A.E.C., 1971, Production Records, Colorado.

## Jack Knife (Jack Knife No. 1, Wedding Bell Group)

LOCATION: sec. 21, T. 45 N., R. 18 W.  
 QUAD Bull Canyon 7 1/2'  
 MAP MOAB  
 PROD As of 1971, 2,517 tons had been mined at a grade of 0.22% U308, producing 11,296 lbs of U308, and 1.38% V205, producing 69,467 lbs of V205.  
 HOST Jurassic Morrison Formation.  
 MNZ Uranium, vanadium, carnotite - tyuyamunite, high vanadium, low lime.  
 DOI 1971  
 REF U.S. Bur. Mines, 1977, (Unpubl.). U.S. A.E.C., 1971, Production Records, Colorado.

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## Jack Knife No. 3 (Wedding Bell Group)

LOCATION: sec. 21, T. 45 N., R. 18 W.  
 PROD As of 1971, 13,766 tons of ore had been mined at a grade of 0.29% U3O8, producing 78,751 lbs of U3O8, and 1.58% V2O5, producing 435,458 lbs of V2O5.  
 HOST Jurassic Morrison Formation, Salt Wash Member.  
 DOI 1971  
 REF U.S. A.E.C., 1971, Production Records, Colorado.

## Jack-o-lantern

LOCATION: sec. 32, T. 44 N., R. 18 W.  
 QUAD Horse Range Mesa 7 1/2' & Hamm Canyon 7 1/2'  
 MAP MOAB  
 PROD As of 1971, 21 tons had been mined at a grade of 0.29% U3O8, producing 123 lbs of U3O8, and 2.50% V2O5, producing 1,051 lbs of V2O5.  
 HOST Jurassic Morrison Formation, Salt Wash Member.  
 MNZ Uranium, vanadium.  
 DOI 1971  
 REF U.S. Bur. of Mines, 1977, (Unpubl.). U.S. A.E.C., 1971, Production Records, Colorado.

## Jackie L

LOCATION: sec. 8, T. 43 N., R. 19 W.  
 QUAD Horse Range Mesa 7 1/2'  
 MAP MOAB  
 PROD As of 1977, 48 tons had been mined at a grade of 0.04% U3O8, producing 36 lbs of U3O8, and 1.82% V2O5, producing 1,744 lbs of V2O5.  
 HOST Jurassic Morrison Formation, Salt Wash Member.  
 MNZ Uranium, vanadium.  
 DOI 1971  
 REF U.S. Bur. of Mines, 1977, (Unpubl.). U.S. A.E.C., 1971, Production Records, Colorado.

## Jackie Walls 3

LOCATION: sec. 36, T. 44 N., R. 20 W.  
 QUAD Mount Peale 4 SE 7 1/2'  
 MAP MOAB  
 PROD As of 1971, 1,039 tons had been mined at a grade of 0.22% U3O8, producing 4,588 lbs of U3O8, and 1.61% V2O5, producing 33,379 lbs of V2O5.  
 HOST Jurassic Morrison Formation.  
 MNZ Uranium, vanadium, carnotite - tyuyamunite, high vanadium, low lime.  
 DOI 1971  
 REF U.S. Bur. of Mines, 1977, (Unpubl.). U.S. A.E.C., 1971, Production Records, Colorado.

## Jackknife 3 East E

LOCATION: sec. 16, T. 45 N., R. 18 W.  
 QUAD Bull Canyon 7 1/2'  
 MAP MOAB  
 HOST Jurassic Morrison Formation.  
 MNZ Carnotite - tyuyamunite, high vanadium, low lime.  
 DOI 1971  
 REF U.S. A.E.C., 1971, Production Records, Colorado.

## Jackknife 3 West W

LOCATION: sec. 16, T. 45 N., R. 18 W.  
 LCRM U.S. A.E.C. Production Records show sec. 21.  
 QUAD Bull Canyon 7 1/2'  
 MAP MOAB  
 PROD As of 1971, 199 tons had been mined at a grade of 0.06% U3O8, producing 247 lbs of U3O8, and 0.32% V2O5, producing 1,271 lbs of V2O5.  
 HOST Jurassic Morrison Formation.  
 MNZ Uranium, vanadium, carnotite - tyuyamunite, high vanadium, intermed. lime.  
 DOI 1971  
 REF U.S. Bur. of Mines, 1977, (Unpubl.). U.S. A.E.C., 1971, Production Records, Colorado.

## Jackknife No. 2

LOCATION: sec. 16, T. 45 N., R. 18 W.  
 QUAD Bull Canyon 7 1/2'  
 MAP MOAB  
 MNZ Uranium, vanadium.  
 DOI 1975  
 REF U.S. Bur. of Mines, 1977, (Unpubl.).

## Jackpot Group (Long Ridge Group, Jackpot No. 1-3)

LOCATION: sec. 16, T. 44 N., R. 17 W.  
 LCRM U.S. A.E.C. Production Records also show sec. 17.  
 QUAD Hamm Canyon 7 1/2' & Gypsum Gap 7 1/2'  
 MAP MOAB  
 PROD As of 1971, 182 tons had been mined at a grade of 0.16% U3O8, producing 582 lbs of U3O8, and 1.23% V2O5, producing 4,492 lbs of V2O5.  
 MNZ Uranium, vanadium.  
 DOI 1971  
 REF U.S. Bur. of Mines, 1977, (Unpubl.). U.S. A.E.C., 1971, Production Records, Colorado.

## Jim 2

LOCATION: sec. 11, T. 42 N., R. 18 W.  
 LCRM U.S. A.E.C. Production Records also show sec. 2, 3, 10.  
 QUAD Joe Davis Hill 7 1/2'  
 MAP CORTEZ  
 PROD As of 1971, 330 tons had been mined at a grade of 0.19% U3O8, producing 1,251 lbs of U3O8, and 2.59% V2O5, producing 17,098 lbs of V2O5.  
 MNZ Uranium, vanadium.  
 DOI 1971  
 REF U.S. Bur. of Mines, 1977, (Unpubl.). U.S. A.E.C., 1971, Production Records, Colorado.

## Joe Dandy Group (Edward, Wesley, Lone Wolf)

LOCATION: sec. 8, T. 43 N., R. 10 W.  
 QUAD Sams 7 1/2'  
 MAP MOAB  
 PROD As of 1971, 686 tons had been mined at a grade of 0.06% U3O8, producing 867 lbs of U3O8, and 1.68% V2O5, producing 23,063 lbs of V2O5.  
 HOST Jurassic Entrada Sandstone; white to buff fine-grained sandstone.

# SAN MIGUEL COUNTY

MNZ Uranium, vanadium.  
DOI 1971  
REF U.S. Bur. of Mines, 1977, (Unpubl.). U.S. A.E.C., 1971, Production Records, Colorado. Finch, W. I., 1967, U.S.G.S. Prof. Paper 538, 121 p. (p. 13).

## Jungle Basin

LOCATION: sec. 35, T. 45 N., R. 17 W.  
QUAD Gypsum Gap 7 1/2'  
MAP MOAB  
PROD As of 1971, 10 tons had been mined at a grade of 0.03% U308, producing 6 lbs of U308, and 0.21% V205, producing 43 lbs of V205.  
HOST Jurassic Morrison Formation.  
MNZ Uranium, vanadium.  
DOI 1971  
REF U.S. Bur. of Mines, 1977, (Unpubl.). U.S. A.E.C., 1971, Production Records, Colorado.

## Jupiter

LOCATION: sec. 32, T. 43 N., R. 18 W.  
QUAD Egnar 7 1/2' & Joe Davis Hill 7 1/2'  
MAP CORTEZ  
PROD As of 1971, 269 tons had been mined at a grade of 0.26% U308, producing 1,372 lbs of U308, and 2.40% V205, producing 12,929 lbs of V205.  
HOST Jurassic Morrison Formation.  
MNZ Uranium, vanadium, carnotite - tyuyamunite, high vanadium, low lime.  
DOI 1971  
REF U.S. Bur. of Mines, 1977, (Unpubl.). U.S. A.E.C., 1971, Production Records, Colorado.

## Kate Meyers

LOCATION:  
LCRM This deposit lies in the Slick Rock district.  
PROD As of 1971, 23 tons had been mined at a grade of 0.11% U308, producing 51 lbs of U308, and 0.72% V205, producing 330 lbs of V205.  
HOST Jurassic Morrison Formation, Salt Wash Member.  
DOI 1971  
REF U.S. A.E.C., 1971, Production Records, Colorado.

## Katie

LOCATION: sec. 24, T. 43 N., R. 19 W.  
QUAD Egnar 7 1/2'  
MAP CORTEZ  
PROD As of 1971, 91 tons had been mined at a grade of 0.21% U308, producing 384 lbs of U308, and 2.74% V205, producing 4,978 lbs of V205.  
HOST Jurassic Morrison Formation.  
MNZ Uranium, vanadium, carnotite - tyuyamunite, high vanadium, low lime.  
DOI 1971  
REF U.S. Bur. of Mines, 1977, (Unpubl.). U.S. A.E.C., 1971, Production Records, Colorado.

## Keystone

LOCATION: sec. 14, T. 43 N., R. 19 W.  
LCRM U.S. A.E.C. Production Records only show sec 26.  
QUAD Egnar 7 1/2'  
MAP CORTEZ  
PROD As of 1971, 437 tons had been mined at a grade of 0.13% U308, producing 1,691 lbs of U308, and 1.94% V205, producing 16,952 lbs of V205.  
MNZ Uranium, vanadium.  
DOI 1971  
REF U.S. Bur. of Mines, 1977, (Unpubl.). U.S. A.E.C., 1971, Production Records, Colorado.

## Klondike (Lower Group)

LOCATION: sec. 1, T. 43 N., R. 17 W.  
LCRM This deposit lies in the Slick Rock district.  
QUAD Gypsum Gap 7 1/2'  
MAP MOAB  
PROD As of 1971, 2 tons had been mined at a grade of 0.10% U308, producing 4 lbs of U308, and 0.90% V205, producing 36 lbs of V205.  
HOST Jurassic Morrison Formation, Salt Wash Member.  
MNZ Uranium, vanadium, carnotite - tyuyamunite, high vanadium, low lime.  
DOI 1971  
REF U.S. Bur. of Mines, 1977, (Unpubl.). U.S. A.E.C., 1971, Production Records, Colorado.

## La Salle

LOCATION: sec. 30, T. 44 N., R. 19 W.  
QUAD Mount Peale 4 SE 7 1/2'  
MAP MOAB  
PROD As of 1971, 1,407 tons had been mined at a grade of 0.12% U308, producing 3,260 lbs of U308, and 0.59% V205, producing 16,671 lbs of V205.  
HOST Jurassic Morrison Formation, Salt Wash Member.  
MNZ Uranium, vanadium.  
DOI 1971  
REF U.S. Bur. of Mines, 1977, (Unpubl.). U.S. A.E.C., 1971, Production Records, Colorado.

## Lara's Pengent

LOCATION: E1/2SE1/4NW1/4 sec. 29, T. 43 N., R. 19 W.  
DOI 1958  
REF Hague, R. S., Goldenstein, S. J., and Blakey, E., Uranium - vanadium deposits of the Uravan Mineral Belt, 1958.

## Larimer Street

LOCATION: sec. 16, T. 45 N., R. 18 W.  
QUAD Bull Canyon 7 1/2'  
MAP MOAB  
HOST Jurassic Morrison Formation.  
MNZ Carnotite - tyuyamunite, high vanadium, low lime.  
DOI 1971  
REF U.S. A.E.C., 1971, Production Records, Colorado.

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## Last Chance

LOCATION: sec. 23, T. 44 N., R. 19 W.  
 QUAD Horse Range Mesa 7 1/2'  
 MAP MOAB  
 PROD As of 1971, 36 tons had been mined at a grade of 0.36% U308, producing 261 lbs of U308, and 1.49% V205, producing 1,076 lbs of V205.  
 HOST Jurassic Morrison Formation.  
 MNZ Uranium, vanadium, carnotite - tyuyamunite, high vanadium, intermed. ilme.  
 DOI 1971  
 REF U.S. Bur. of Mines, 1977, (Unpubl.). U.S. A.E.C., 1971, Production Records, Colorado.

## Last Chance

LOCATION: sec. 32, T. 45 N., R. 19 W.  
 LCRM Also sec. 35.  
 QUAD Horse Range Mesa 7 1/2'  
 MAP MOAB  
 PROD As of 1971, 10 tons had been mined at a grade of 0.11% U308, producing 22 lbs of U308, and 0.94% V205, producing 188 lbs of V205.  
 HOST Jurassic Morrison Formation.  
 MNZ Uranium, vanadium, carnotite - tyuyamunite, high vanadium, low ilme.  
 DOI 1971  
 REF U.S. Bur. of Mines, 1977, (Unpubl.). U.S. A.E.C., 1971, Production Records, Colorado.

## Last Hope

LOCATION: sec. 24, T. 43 N., R. 20 W.  
 QUAD Verdura 1 NE 7 1/2'  
 MAP CORTEZ  
 PROD As of 1971, 419 tons had been mined at a grade of 0.21% U308, producing 1,731 lbs of U308, and 2.26% V205, producing 19,969 lbs of V205.  
 MNZ Uranium, vanadium.  
 DOI 1971  
 REF U.S. Bur. of Mines, 1977, (Unpubl.). U.S. A.E.C., 1971, Production Records, Colorado.

## Latricia

LOCATION: sec. 20, T. 43 N., R. 19 W.  
 QUAD Egnar 7 1/2'  
 MAP CORTEZ  
 PROD As of 1971, 959 tons had been mined at a grade of 0.20% U308, producing 3,796 lbs of U308, and 1.08% V205, producing 20,640 lbs of V205.  
 HOST Jurassic Morrison Formation.  
 MNZ Uranium, vanadium, carnotite - tyuyamunite, high vanadium, intermed. ilme.  
 DOI 1971  
 REF U.S. Bur. of Mines, 1977, (Unpubl.). U.S. A.E.C., 1971, Production Records, Colorado.

## Lawton (Fall Creek Group)

LOCATION: sec. 1, T. 43 N., R. 11 W.  
 QUAD Placerville 7 1/2'  
 MAP MOAB  
 HOST Jurassic Morrison Formation.

MNZ Roscoelite.  
 DOI 1971  
 REF U.S. A.E.C., 1971, Production Records, Colorado.

## Lease 875 N W 16

LOCATION:  
 LCRM This deposit lies in the Slick Rock district.  
 PROD As of 1971, 6 tons had been mined at a grade of 0.53% U308, producing 64 lbs of U308, and 1.23% V205, producing 147 lbs of V205.  
 HOST Jurassic Morrison Formation, Salt Wash Member.  
 DOI 1971  
 REF U.S. A.E.C., 1971, Production Records, Colorado.

## Lee C

LOCATION: NE1/4NE1/4 sec. 8, T. 43 N., R. 19 W.  
 DOI 1958  
 REF Hague, R. S., Goldenstein, S. J., and Blakey, E., Uranium - vanadium deposits of the Uravan Mineral Belt, 1958.

## Lee Mack (Lemack)

LOCATION: sec. 1, T. 43 N., R. 19 W.  
 QUAD Horse Range Mesa 7 1/2'  
 MAP MOAB  
 PROD As of 1971, 6 tons had been mined at a grade of 0.18% U308, producing 22 lbs of U308, and 1.82% V205, producing 218 lbs of V205.  
 HOST Jurassic Morrison Formation, Salt Wash Member.  
 MNZ Uranium, vanadium.  
 DOI 1971  
 REF U.S. Bur. of Mines, 1977, (Unpubl.). U.S. A.E.C., 1971, Production Records, Colorado.

## Leopard Vanadium 2 & 3

LOCATION: sec. 26, T. 44 N., R. 11 W.  
 QUAD Placerville 7 1/2'  
 MAP MOAB  
 PROD As of 1971, 150 tons had been mined at a grade of 0.14% U308, producing 430 lbs of U308, and 2.54% V205, producing 7,610 lbs of V205.  
 HOST Jurassic Entrada Sandstone; light gray to buff, fine-grained sandstone.  
 MNZ Uranium, vanadium.  
 DOI 1971  
 REF U.S. Bur. of Mines, 1977, (Unpubl.). U.S. A.E.C., 1971, Production Records, Colorado. Finch, W. I., 1967, U.S.G.S. Prof. Paper 538, (p.13).

## Letty Jones (Letty Jones Lease)

LOCATION: sec. 1, T. 43 N., R. 20 W.  
 LCRM Also NE1/4 sec. 6, 7, 12, 13, 14, 18, T. 43 N., R. 19 W & 20 W.  
 DYEL Reserves, no production.  
 HOST Brushy Basin Member of the Jurassic Morrison Formation.  
 MNZ Uraninite.  
 DOI 1971  
 REF U.S. A.E.C., 1971, Production Records, Colorado. Hague, R. S., Goldenstein, S. J., and Blakey,



## SAN MIGUEL COUNTY

E., 1958, Uranium - vanadium deposits of the Uravan Mineral Belt.

### Liberty Bell

#### LOCATION:

LCRM This deposit lies in the Slick Rock district.  
 PROD As of 1971, 7 tons had been mined at a grade of 0.15% U308, producing 21 lbs of U308, and 1.17% V205, producing 164 lbs of V205.  
 HOST Jurassic Morrison Formation, Salt Wash Member.  
 DOI 1971  
 REF U.S. A.E.C., 1971, Production Records, Colorado.

### Little Chief

#### LOCATION:

LCRM This deposit lies in the Slick Rock district.  
 PROD As of 1971, 21 tons had been mined at a grade of 0.11% U308, producing 47 lbs of U308, and 0.97% V205, producing 409 lbs of V205.  
 HOST Jurassic Morrison Formation, Salt Wash Member.  
 MNZ Carnotite - tyuyamunite, high vanadium, low lime.  
 DOI 1971  
 REF U.S. A.E.C., 1971, Production Records, Colorado.

### Little Helen

LOCATION: sec. 18, T. 43 N., R. 18 W.

QUAD Egnar 7 1/2'  
 MAP CORTEZ  
 PROD As of 1971, 31 tons had been mined at a grade of 0.25% U308, producing 157 lbs of U308, and 2.29% V205, producing 1,419 lbs of V205.  
 HOST Jurassic Morrison Formation, Salt Wash Member.  
 MNZ Uranium, vanadium.  
 DOI 1971  
 REF U.S. Bur. of Mines, 1977, (Unpubl.). U.S. A.E.C., 1971, Production Records, Colorado.

### Little Marle

LOCATION: sec. 23, T. 44 N., R. 19 W.

LCRM This deposit lies in the Slick Rock district.  
 QUAD Horse Range Mesa 7 1/2'  
 MAP MOAB  
 PROD As of 1971, 5 tons had been mined at a grade of 0.33% U308, producing 33 lbs of U308, and 2.36% V205, producing 236 lbs of V205.  
 HOST Jurassic Morrison Formation, Salt Wash Member.  
 MNZ Uranium, vanadium.  
 DOI 1971  
 REF U.S. Bur. of Mines, 1977, (Unpubl.). U.S. A.E.C., 1971, Production Records, Colorado.

### Little Max

LOCATION: sec. 28, T. 43 N., R. 18 W.

QUAD Joe Davis Hill 7 1/2'  
 MAP CORTEZ  
 PROD As of 1971, 326 tons had been mined at a grade of 0.21% U308, producing 1,342 lbs of U308, and 1.84% V205, producing 11,977 lbs of V205.

HOST Jurassic Morrison Formation, Salt Wash Member.  
 MNZ Uranium, vanadium.  
 DOI 1971  
 REF U.S. Bur. of Mines, 1977, (Unpubl.). U.S. A.E.C., 1971, Production Records, Colorado.

### Little Roy

LOCATION: sec. 28, T. 43 N., R. 18 W.

LCRM U.S. A.E.C. Production Records also show sec. 27.  
 QUAD Joe Davis Hill 7 1/2'  
 MAP CORTEZ  
 PROD As of 1971, 22 tons had been mined at a grade of 0.14% U308, producing 60 lbs of U308, and 2.67% V205, producing 1,175 lbs of V205.  
 HOST Jurassic Morrison Formation, Salt Wash Member.  
 MNZ Uranium, vanadium.  
 DOI 1971  
 REF U.S. Bur. of Mines, 1977, (Unpubl.). U.S. A.E.C., 1971, Production Records, Colorado.

### Lizzie Group (Lizzie OS)

LOCATION: sec. 8, T. 43 N., R. 10 W.

QUAD Sams 7 1/2' & Gray Head 7 1/2'  
 MAP MOAB  
 PROD As of 1971, 398 tons had been mined at a grade of 0.05% U308, producing 374 lbs of U308, and 1.47% V205, producing 11,699 lbs of V205.  
 DOI 1971  
 REF U.S. A.E.C., 1971, Production Records, Colorado.

### Lone Peak 1-3

LOCATION: sec. 32, T. 43 N., R. 18 W.

QUAD Egnar 7 1/2' & Joe Davis Hill 7 1/2'  
 MAP CORTEZ  
 PROD As of 1971, 755 tons had been mined at a grade of 0.17% U308, producing 2,605 lbs of U308, and 1.66% V205, producing 25,006 lbs of V205.  
 HOST Jurassic Morrison Formation.  
 MNZ Uranium, vanadium, carnotite - tyuyamunite, high vanadium, low lime.  
 DOI 1971  
 REF U.S. Bur. of Mines, 1977, (Unpubl.). U.S. A.E.C., 1971, Production Records, Colorado.

### Lone Star Group

LOCATION: sec. 4, T. 43 N., R. 19 W.

LCRM U.S. A.E.C. Production Records only show sec. 8.  
 QUAD Horse Range Mesa 7 1/2'  
 MAP MOAB  
 PROD As of 1971, 483 tons had been mined at a grade of 0.20% U308, producing 1,912 lbs of U308, and 1.20% V205, producing 11,555 lbs of V205.  
 HOST Jurassic Morrison Formation.  
 MNZ Uranium, vanadium, carnotite - tyuyamunite, high vanadium, low lime.  
 DOI 1971  
 REF U.S. Bur. of Mines, 1977, (Unpubl.). U.S. A.E.C., 1971, Production Records, Colorado.

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## Lonesome 34

LOCATION: sec. 36, T. 45 N., R. 18 W.

QUAD Hamm Canyon 7 1/2'

MAP MOAB

PROD As of 1971, 5,195 tons had been mined at a grade of 0.17% U3O8, producing 17,549 lbs of U3O8, and 0.90% V2O5, producing 93,908 lbs of V2O5.

HOST Jurassic Morrison Formation.

MNZ Carnotite - tyuyamunite, high vanadium, low lime.

DOI 1971

REF U.S. A.E.C., 1971, Production Records, Colorado.

## Long Ridge and Long Ridge 2 (Mist)

LOCATION: sec. 23, T. 44 N., R. 17 W.

QUAD Gypsum Gap 7 1/2'

MAP MOAB

PROD As of 1971, 7,903 tons had been mined at a grade of 0.31% U3O8, producing 49,641 lbs of U3O8, and 1.85% V2O5, producing 292,060 lbs of V2O5.

HOST Jurassic Morrison Formation, Salt Wash Member. Fine- to medium-grained sandstone.

MNZ Uranium, vanadium, carnotite.

DOI 1971

REF U.S. Bur. of Mines, 1977, (Unpubl.). U.S. A.E.C., 1971, Production Records, Colorado. Finch, W. I., 1967, U.S.G.S. Prof. Paper 538, p. 12.

## Lookout

LOCATION: NW1/4 sec. 36, T. 45 N., R. 18 W.

QUAD Hamm Canyon 7 1/2'

MAP MOAB

PROD As of 1971, 76,345 tons had been mined at a grade of 0.13% U3O8, producing 15,848 lbs of U3O8, and 2.12% V2O5, producing 268,647 lbs of V2O5.

HOST Jurassic Morrison Formation, Salt Wash Sandstone Member; light gray, fine- to medium-grained sandstone with sparse to abundant carbonized logs and other plant remains.

MNZ Uranium, vanadium, carnotite.

DOI 1971

REF U.S. Bur. of Mines, 1977, (Unpubl.). U.S. A.E.C., 1971, Production Records, Colorado. Finch, W. I., 1967, U.S.G.S. Prof. Paper 538, p. 12.

## Lost

LOCATION: sec. 33, T. 45 N., R. 18 W.

QUAD Hamm Canyon 7 1/2'

MAP MOAB

PROD As of 1971, 815 tons had been mined at a grade of 0.21% U3O8, producing 3,452 lbs of U3O8, and 1.61% V2O5, producing 26,272 lbs of V2O5.

HOST Jurassic Morrison Formation, Salt Wash Sandstone Member; red-brown, fine-grained sandstone, shaly sandstone, and carbonaceous shale with some carbonized plant remains.

MNZ Uranium, vanadium, carnotite.

DOI 1971

REF U.S. Bur. of Mines, 1977, (Unpubl.). U.S. A.E.C., 1971, Production Records, Colorado. Finch, W. I., 1967, U.S.G.S. Prof. Paper 538, p. 12.

## Lost Brothers

LOCATION: sec. 27, T. 45 N., R. 18 W.

QUAD Bull Canyon 7 1/2' & Hamm Canyon 7 1/2'

MAP MOAB

PROD As of 1971, 166 tons had been mined at a grade of 0.32% U3O8, producing 1,063 lbs of U3O8, and 2.77% V2O5, producing 9,210 lbs of V2O5.

HOST Jurassic Morrison Formation.

MNZ Uranium, vanadium, carnotite - tyuyamunite, high vanadium, low lime.

DOI 1971

REF U.S. Bur. of Mines, 1977, (Unpubl.). U.S. A.E.C., 1971, Production Records, Colorado.

## Lost Dog

LOCATION: sec. 16, T. 43 N., R. 19 W.

LCRM U.S. A.E.C. Production Records only show sec. 21, 22, & 27.

QUAD Egnar 7 1/2'

MAP CORTEZ

PROD As of 1971, 189 tons had been mined at a grade of 0.25% U3O8, producing 928 lbs of U3O8, and 2.21% V2O5, producing 8,367 lbs of V2O5.

HOST Jurassic Morrison Formation.

MNZ Uranium, vanadium, carnotite - tyuyamunite, high vanadium, low lime.

DOI 1971

REF U.S. Bur. of Mines, 1977, (Unpubl.). U.S. A.E.C., 1971, Production Records, Colorado.

## Lucky 1 and Joe Ray 1

LOCATION: sec. 8, T. 43 N., R. 18 W.

LCRM This deposit lies in the Silck Rock district.

QUAD Horse Range Mesa 7 1/2' & Hamm Canyon 7 1/2'

MAP MOAB

PROD As of 1971, 13 tons had been mined at a grade of 0.26% U3O8, producing 67 lbs of U3O8, and 1.61% V2O5, producing 418 lbs of V2O5.

HOST Jurassic Morrison Formation, Salt Wash Member.

MNZ Uranium, vanadium, carnotite - tyuyamunite, high vanadium, low lime.

DOI 1971

REF U.S. Bur. of Mines, 1977, (Unpubl.). U.S. A.E.C., 1971, Production Records, Colorado.

## Lucky B (Rowena, Nancy 1-4, Blue Horse)

LOCATION: sec. 15, T. 44 N., R. 19 W.

QUAD Horse Range Mesa 7 1/2'

MAP MOAB

PROD As of 1971, 57 tons had been mined at a grade of 0.26% U3O8, producing 292 lbs of U3O8, and 2.22% V2O5, producing 2,527 lbs of V2O5.

HOST Jurassic Morrison Formation.

DOI 1971

REF U.S. A.E.C., 1971, Production Records, Colorado.

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## Lucky Day

LOCATION: sec. 24, T. 43 N., R. 19 W.  
 QUAD Egnar 7 1/2'  
 MAP CORTEZ  
 PROD As of 1971, 883 tons had been mined at a grade of 0.23% U3O8, producing 3,997 lbs of U3O8, and 2.79% V2O5, producing 49,328 lbs of V2O5.  
 HOST Jurassic Morrison Formation.  
 MNZ Uranium, vanadium, carnotite - tyuyamunite, high vanadium, low lime.  
 DOI 1971  
 REF U.S. Bur. of Mines, 1977, (Unpubl.). U.S. A.E.C., 1971, Production Records, Colorado.

## Lucky Strike

LOCATION: sec. 19, T. 43 N., R. 19 W.  
 LCRM U.S. A.E.C. Production Records also show sec. 38.  
 QUAD Verdure 1 NE 7 1/2' & Egnar 7 1/2'  
 MAP CORTEZ  
 PROD As of 1971, 223 tons had been mined at a grade of 0.14% U3O8, producing 637 lbs of U3O8, and 0.79% V2O5, producing 3,524 lbs of V2O5.  
 HOST Jurassic Morrison Formation.  
 MNZ Uranium, vanadium, carnotite - tyuyamunite, high vanadium, low lime.  
 DOI 1971  
 REF U.S. Bur. of Mines, 1977, (Unpubl.). U.S. A.E.C., 1971, Production Records, Colorado.

## Mac Intyre Claims

LOCATION:  
 LCRM This deposit lies in the Slick Rock district.  
 PROD As of 1971, 8 tons had been mined at a grade of 0.28% U3O8, producing 44 lbs of U3O8, and 1.04% V2O5, producing 166 lbs of V2O5.  
 HOST Jurassic Morrison Formation, Salt Wash Member.  
 DOI 1971  
 REF U.S. A.E.C., 1971, Production Records, Colorado.

## Magpie 2

LOCATION: sec. 25, T. 45 N., R. 18 W.  
 LCRM U.S. A.E.C. Production Records only show sec. 36.  
 QUAD Bull Canyon 7 1/2' & Hamm Canyon 7 1/2'  
 MAP MOAB  
 PROD As of 1971, 28,330 tons had been mined at a grade of 0.20% U3O8, producing 113,528 lbs of U3O8, and 0.99% V2O5, producing 559,171 lbs of V2O5.  
 HOST Jurassic Morrison Formation.  
 MNZ Uranium, vanadium, uraninite (coffinite), high vanadium, low lime.  
 DOI 1971  
 REF U.S. Bur. of Mines, 1977, (Unpubl.). U.S. A.E.C., Production Records, Colorado.

## Magpie (Mine)

LOCATION: sec. 10, T. 44 N., R. 18 W.  
 QUAD Hamm Canyon 7 1/2'  
 MAP MOAB

PROD As of 1971, 9,352 tons had been mined at a grade of 0.22% U3O8, producing 40,328 lbs of U3O8, and 1.24% V2O5, producing 231,726 lbs of V2O5.  
 HOST Jurassic Morrison Formation.  
 MNZ Uranium, vanadium, carnotite - tyuyamunite, high vanadium, low lime.  
 DOI 1971  
 REF U.S. Bur. of Mines, 1977, (Unpubl.). U.S. A.E.C., 1971, Production Records, Colorado.

## Mainstreet (Almon Street)

LOCATION: sec. 16, T. 45 N., R. 18 W.  
 QUAD Bull Canyon 7 1/2'  
 MAP MOAB  
 PROD As of 1971, 10,306 tons had been mined at a grade of 0.28% U3O8, producing 57,698 lbs of U3O8, and 1.45% V2O5, producing 297,964 lbs of V2O5.  
 HOST Jurassic Morrison Formation.  
 MNZ Uranium, vanadium, carnotite - tyuyamunite, high vanadium, low lime.  
 DOI 1971  
 REF U.S. Bur. of Mines, 1977, (Unpubl.). U.S. A.E.C., 1971, Production Records, Colorado.

## Margaret C. 1-6

LOCATION: sec. 7, T. 43 N., R. 16 W.  
 LCRM U.S. A.E.C. Production Records show location as sec. 21, T. 44 N., R. 17 W.  
 QUAD Dawson Draw 7 1/2'  
 MAP MOAB  
 PROD As of 1971, 24 tons had been mined at a grade of 0.23% U3O8, producing 110 lbs of U3O8, and 1.30% V2O5, producing 625 lbs of V2O5.  
 HOST Salt Wash Member of the Jurassic Morrison Formation.  
 MNZ Uranium, vanadium.  
 DOI 1971  
 REF U.S. Bur. of Mines, 1977, (Unpubl.). U.S. A.E.C., 1971, Production Records, Colorado.

## Marie

LOCATION: sec. 19, T. 43 N., R. 19 W.  
 LCRM U.S. A.E.C. Production Records only show sec. 29.  
 QUAD Verdure 1 NE 7 1/2' & Egnar 7 1/2'  
 MAP CORTEZ  
 PROD As of 1971, 535 tons had been mined at a grade of 0.20% U3O8, producing 2,185 lbs of U3O8, and 1.33% V2O5, producing 14,284 lbs of V2O5.  
 HOST Salt Wash Member of the Jurassic Morrison Formation.  
 MNZ Uranium, vanadium.  
 DOI 1971  
 REF U.S. Bur. of Mines, 1977, (Unpubl.). U.S. A.E.C., 1971, Production Records, Colorado.

## Marie 1 (Legin Group)

LOCATION: sec. 29, T. 43 N., R. 19 W.  
 LCRM U.S. A.E.C. Production Records also show R. 19 E.  
 QUAD Egnar 7 1/2'

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## MAP CORTEZ

PROD As of 1971, 790 tons had been mined at a grade of 0.16% U3O8, producing 2,543 lbs of U3O8, and 1.20% V2O5, producing 18,903 lbs of V2O5.

HOST Jurassic Morrison Formation, Salt Wash Member.  
MNZ Uranium, vanadium.

DOI 1971

REF U.S. Bur. of Mines, 1977, (Unpubl.). U.S. A.E.C., 1971, Production Records, Colorado.

## Marne Group

LOCATION: sec. 32, T. 43 N., R. 18 W.

QUAD Egnar 7 1/2' & Joe Davis Hill 7 1/2'

MAP CORTEZ

PROD As of 1971, 3,032 tons had been mined at a grade of 0.24% U3O8, producing 14,698 lbs of U3O8, and 2.11% V2O5, producing 128,036 lbs of V2O5.

HOST Jurassic Morrison Formation.

MNZ Uranium, vanadium, carnotite - tyuyamunite, high vanadium, intermed. lime.

DOI 1971

REF U.S. Bur. of Mines, 1977, (Unpubl.). U.S. A.E.C., 1971, Production Records, Colorado.

## Martha Sue

LOCATION: sec. 11, T. 43 N., R. 19 W.

LCRM This deposit lies in the Slick Rock district.

QUAD Horse Range Mesa 7 1/2'

MAP MOAB

PROD As of 1971, 8 tons had been mined at a grade of 0.34% U3O8, producing 54 lbs of U3O8, and 3.65% V2O5, producing 584 lbs of V2O5.

HOST Jurassic Morrison Formation, Salt Wash Member.  
MNZ Uranium, vanadium.

DOI 1971

REF U.S. Bur. of Mines, 1977, (Unpubl.). U.S. A.E.C., 1971, Production Records, Colorado.

## Mary Jane (Broadway)

LOCATION: sec. 22, T. 45 N., R. 18 W.

QUAD Bull Canyon 7 1/2'

MAP MOAB

PROD As of 1971, 3,929 tons had been mined at a grade of 0.19% U3O8, producing 15,295 lbs of U3O8, and 1.86% V2O5, producing 146,074 lbs of V2O5.

MNZ Uranium, vanadium.

DOI 1971

REF U.S. Bur. of Mines, 1977, (Unpubl.). U.S. A.E.C., 1971, Production Records, Colorado.

## Mary M

LOCATION:

LCRM This deposit lies in the Slick Rock district.

PROD As of 1971, 8 tons had been mined at a grade of 0.05% U3O8, producing 8 lbs of U3O8, and 0.76% V2O5, producing 122 lbs of V2O5.

HOST Jurassic Morrison Formation.

DOI 1971

REF U.S. A.E.C., 1971, Production Records, Colorado.

## May Day (Speed Patch Group)

LOCATION: sec. 32, T. 43 N., R. 18 W.

LCRM U.S. A.E.C. Production Records only show sec. 29.

QUAD Egnar 7 1/2' & Joe Davis Hill 7 1/2'

MAP CORTEZ

PROD As of 1971, 6 tons had been mined at a grade of 0.13% U3O8, producing 16 lbs of U3O8, and 0.99% V2O5, producing 119 lbs of V2O5.

MNZ Uranium, vanadium.

DOI 1971

REF U.S. Bur. of Mines, 1977, (Unpubl.). U.S. A.E.C., 1971, Production Records, Colorado.

## Maybe 1 & 2 (Mercantile Group)

LOCATION:

LCST UNLOCATABLE

PROD As of 1971, 58 tons had been mined at a grade of 0.26% U3O8, producing 301 lbs of U3O8, and 1.60% V2O5, producing 1,853 lbs of V2O5.

HOST Jurassic Morrison Formation, Salt Wash Member.

DOI 1971

REF U.S. A.E.C., 1971, Production Records, Colorado.

## Mayflower

LOCATION: sec. 33, T. 44 N., R. 19 W.

LCRM U.S. A.E.C. Production Records also show sec. 32.

QUAD Horse Range Mesa 7 1/2'

MAP MOAB

PROD As of 1971, 15 tons had been mined at a grade of 0.07% U3O8, producing 20 lbs of U3O8, and 1.25% V2O5, producing 374 lbs of V2O5.

HOST Jurassic Morrison Formation, Salt Wash Member.

MNZ Uranium, vanadium.

DOI 1971

REF U.S. Bur. of Mines, 1977, (Unpubl.). U.S. A.E.C., 1971, Production Records, Colorado.

## Mc Kee Group

LOCATION: sec. 22, T. 45 N., R. 18 W.

LCRM U.S. A.E.C. Production Records also show sec. 23.

QUAD Bull Canyon 7 1/2'

MAP MUAB

PROD As of 1971, 28 tons had been mined at a grade of 0.37% U3O8, producing 208 lbs of U3O8, and 2.83% V2O5, producing 1,582 lbs of V2O5.

HOST Jurassic Morrison Formation, Salt Wash Member.

MNZ Uranium, vanadium.

DOI 1975, 1971

REF U.S. Bur. of Mines, 1977, (Unpubl.). U.S. A.E.C., 1971, Production Records, Colorado.

## Mc Millan

LOCATION:

LCST UNLOCATABLE

LCRM This deposit lies in Gypsum Valley.

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PROD As of 1971, 6 tons had been mined at a grade of 0.08% U3O8, producing 10 lbs of U3O8, and 1.65% V2O5, producing 198 lbs of V2O5.  
 HOST Jurassic Morrison Formation, Salt Wash Member.  
 DOI 1971  
 REF U.S. A.E.C., 1971, Production Records, Colorado.

## Memphis 1 & 2

LOCATION: sec. 29, T. 45 N., R. 18 W.  
 LCRM U.S. A.E.C. Production Records also show sec. 30, 31, 32.  
 QUAD Horse Range Mesa 7 1/2' & Anderson Mesa 7 1/2'  
 MAP MOAB  
 PROD As of 1971, 32 tons had been mined at a grade of 0.14% U3O8, producing 92 lbs of U3O8, and 1.79% V2O5, producing 1,146 lbs of V2O5.  
 HOST Jurassic Morrison Formation.  
 MNZ Uranium, vanadium, carnotite - tyuyamunite, high vanadium, low lime.  
 DOI 1971  
 REF U.S. Bur. of Mines, 1977, (Unpubl.). U.S. A.E.C., 1971, Production Records, Colorado.

## Mercantile (4, AEC Mining Lease) (C-SR-11, DOE Lease Tract)

LOCATION: sec. 18, T. 43 N., R. 19 W.  
 QUAD Verdure 1 NE 7 1/2' & Egnar 7 1/2'  
 MAP CORTEZ  
 PROD See C-SR-11, DOE Lease Tract.  
 HOST Jurassic Morrison Formation, Salt Wash Member; light brown, fine- to medium-grained sandstone, and gray and green mudstone with abundant carbonized plant remains and sparse logs.  
 MNZ Uranium, vanadium, uraninite, carnotite - tyuyamunite.  
 DOI 1971  
 REF U.S. D.O.E., 1977, Lease Production Records, Colorado. U.S. Bur. of Mines, 1977, (Unpubl.). U.S. A.E.C., 1971, Production Records, Colorado. Finch, W. J., 1967, U.S.G.S. Prof. Paper 538, 121 p. (p. 12).

## Mesa 7

LOCATION: sec. 31, T. 44 N., R. 17 W.  
 LCRM U.S. A.E.C. Production Records show location as sec. 33, T. 46 N., R. 19 W.  
 QUAD Hamm Canyon 7 1/2'  
 MAP MOAB  
 PROD As of 1971, 23 tons had been mined at a grade of 0.08% U3O8, producing 38 lbs of U3O8, and 1.45% V2O5, producing 668 lbs of V2O5.  
 MNZ Uranium, vanadium.  
 DOI 1971  
 REF U.S. Bur. of Mines, 1977, (Unpubl.). U.S. A.E.C., 1971, Production Records, Colorado.

## Mesa Mill

LOCATION:  
 LCST UNLOCATABLE  
 LCRM This deposit lies in the Slick Rock district.

PROD As of 1971, 125 tons had been mined at a grade of 0.28% U3O8, producing 708 lbs of U3O8, and 1.35% V2O5, producing 3,314 lbs of V2O5.  
 HOST Jurassic Morrison Formation, Salt Wash Member.  
 DOI 1971  
 REF U.S. A.E.C., 1971, Production Records, Colorado.

## Mickey 3 (Mickey Group)

LOCATION: sec. 20, T. 43 N., R. 19 W.  
 QUAD Egnar 7 1/2'  
 MAP CORTEZ  
 PROD As of 1971, 14 tons had been mined at a grade of 0.08% U3O8, producing 22 lbs of U3O8, and 0.52% V2O5, producing 147 lbs of V2O5.  
 MNZ Uranium, vanadium.  
 DOI 1971  
 REF U.S. Bur. of Mines, 1977, (Unpubl.). U.S. A.E.C., 1971, Production Records, Colorado.

## Midnight

LOCATION:  
 LCST UNLOCATABLE  
 PROD As of 1971, 1,372 tons had been mined at a grade of 0.18% U3O8, producing 4,889 lbs of U3O8, and 1.36% V2O5, producing 37,359 lbs of V2O5.  
 DOI 1971  
 REF U.S. A.E.C., 1971, Production Records, Colorado.

## Midnight

LOCATION: NE1/4 sec. 27, T. 44 N., R. 19 W.  
 QUAD Horse Range Mesa 7 1/2'  
 MAP MOAB  
 PROD As of 1971, 589 tons had been mined at a grade of 0.17% U3O8, producing 2,061 lbs of U3O8, and 1.38% V2O5, producing 16,296 lbs of V2O5.  
 HOST Jurassic Morrison Formation.  
 MNZ Uranium, vanadium, carnotite - tyuyamunite, high vanadium, low lime.  
 DOI 1971  
 REF U.S. D.O.E., 1977, Lease Production Records, Colorado. U.S. Bur. of Mines, 1977, (Unpubl.). U.S. A.E.C., 1971, Production Records, Colorado.

## Midnight

LOCATION: NE1/4 sec. 27, T. 44 N., R. 19 W.  
 QUAD Horse Range Mesa 7 1/2'  
 MAP MOAB  
 PROD As of 1971, 1,097 tons had been mined at a grade of 0.16% U3O8, producing 3,545 lbs of U3O8, and 1.22% V2O5, producing 26,664 lbs of V2O5.  
 HOST Jurassic Morrison Formation.  
 MNZ Carnotite - tyuyamunite, high vanadium, low lime.  
 DOI 1971  
 REF U.S. D.O.E., 1977, Lease Production Records, Colorado. U.S. A.E.C., 1971, Production Records, Colorado.

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## Mike 1

LOCATION: sec. 36, T. 44 N., R. 17 W.

QUAD Hamm Canyon 7 1/2'

MAP MOAB

PROD As of 1971, 1 ton had been mined at a grade of 0.95% U3O8, producing 19 lbs of U3O8, and 5.90% V2O5, producing 118 lbs of V2O5.

HUST Jurassic Morrison Formation.

MNZ Uranium, vanadium, carnotite - tyuyamunite, high vanadium, low lime.

DOI 1971

REF U.S. Bur. of Mines, 1977, (Unpubl.). U.S. A.E.C., 1971, Production Records, Colorado.

## Mineral Mines

LOCATION:

LCST UNLOCATABLE

LCRM This deposit lies in the Slick Rock district.

PROD As of 1971, 556 tons had been mined at a grade of 0.28% U3O8, producing 3,166 lbs of U3O8, and 2.83% V2O5, producing 31,486 lbs of V2O5.

HUST Jurassic Morrison Formation, Salt Wash Member.

DOI 1971

REF U.S. A.E.C., 1971, Production Records, Colorado.

## Mineral Mountain 3

LOCATION:

LCST UNLOCATABLE

PROD As of 1971, 242 tons had been mined at a grade of 0.18% U3O8, producing 890 lbs of U3O8, and 1.68% V2O5, producing 8,120 lbs of V2O5.

DOI 1971

REF U.S. A.E.C., 1971, Production Records, Colorado.

## Mineral Mountain 3 & 4

LOCATION:

LCST UNLOCATABLE

PROD As of 1971, 29 tons had been mined at a grade of 0.8% U3O8, producing 46 lbs of U3O8, and 1.16% V2O5, producing 675 lbs of V2O5.

DOI 1971

REF U.S. A.E.C., 1971, Production Records, Colorado.

## Mineral Mountain 4

LOCATION:

LCST UNLOCATABLE

PROD As of 1971, 79 tons had been mined at a grade of 0.39% U3O8, producing 623 lbs of U3O8, and 3.15% V2O5, producing 4,976 lbs of V2O5.

DOI 1971

REF U.S. A.E.C., 1971, Production Records, Colorado.

## Mineral Mountain 5

LOCATION:

LCST UNLOCATABLE

PROD As of 1971, 339 tons had been mined at a grade of 0.22% U3O8, producing 1,514 lbs of U3O8, and 1.89% V2O5, producing 12,835 lbs of V2O5.

DOI 1971

REF U.S. A.E.C., 1971, Production Records, Colorado.

## Mineral Mountain 6

LOCATION:

LCST UNLOCATABLE

PROD As of 1971, 84 tons had been mined at a grade of 0.23% U3O8, producing 379 lbs of U3O8, and 1.68% V2O5, producing 2,829 lbs of V2O5.

DOI 1971

REF U.S. A.E.C., 1971, Production Records, Colorado.

## Mineral Mountain 7

LOCATION:

LCST UNLOCATABLE

PROD As of 1971, 243 tons had been mined at a grade of 0.19% U3O8, producing 944 lbs of U3O8, and 1.73% V2O5, producing 8,397 lbs of V2O5.

DOI 1971

REF U.S. A.E.C., 1971, Production Records, Colorado.

## Mint #1

LOCATION: S1/2NE1/4 sec. 35, T. 45 N., R. 20 W.

DOI 1958

REF Hague, R. S., Goldenstein, S. J., and Blakey, E., Uranium - vanadium deposits of the Uravan Mineral Belt, 1958.

## Mint #13

LOCATION: E1/2SW1/4 sec. 36, T. 45 N., R. 20 W.

DOI 1958

REF Hague, R. S., Goldenstein, S. J., and Blakey, E., Uranium - vanadium deposits of the Uravan Mineral Belt, 1958.

## Mitchel and Archer Group (Baby Ruth, September Horn, Diana)

LOCATION: sec. 14, T. 45 N., R. 18 W.

QUAD Bull Canyon 7 1/2'

MAP MOAB

PROD As of 1971, 427 tons had been mined at a grade of 0.17% U3O8, producing 1,469 lbs of U3O8, and 1.91% V2O5, producing 16,332 lbs of V2O5.

HUST Jurassic Morrison Formation, Salt Wash Member.

MNZ Uranium, vanadium.

DOI 1971

REF U.S. Bur. of Mines, 1977, (Unpubl.). U.S. A.E.C., 1971, Production Records, Colorado.

## Montezuma

LOCATION: sec. 19, T. 43 N., R. 18 W.

LCRM This deposit lies in the Speed Patch area, Slick Rock district.

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QUAD Egnar 7 1/2'  
 MAP CORTEZ  
 PROD As of 1971, 4 tons had been mined at a grade of 0.21% U3O8, producing 17 lbs of U3O8, and 2.29% V2O5, producing 183 lbs of V2O5.  
 HOST Jurassic Morrison Formation, Salt Wash Member.  
 MNZ Uranium, vanadium.  
 DOI 1971  
 REF U.S. Bur. of Mines, 1977, (Unpubl.). U.S. A.E.C., 1971, Production Records, Colorado.

## Monument 4

LOCATION:  
 LCST UNLOCATABLE  
 LCRM This deposit lies in the Slick Rock district.  
 PROD As of 1971, 14 tons had been mined at a grade of 0.12% U3O8, producing 33 lbs of U3O8, and 1.83% V2O5, producing 513 lbs of V2O5.  
 HOST Jurassic Morrison Formation, Salt Wash Member.  
 DOI 1971  
 REF U.S. A.E.C., 1971, Production Records, Colorado.

## Moqui Jug (Depression, Dorothy May)

LOCATION: W1/2 sec. 29, T. 43 N., R. 18 W.  
 LCRM This deposit lies in the Speed Patch area.  
 QUAD Egnar 7 1/2' and Joe Davis Hill 7 1/2'  
 MAP CORTEZ  
 PROD As of 1971, 12,389 tons had been mined at a grade of 0.09% U3O8, producing 23,275 lbs of U3O8, and 1.94% V2O5, producing 481,677 lbs of V2O5.  
 HOST The host is the Jurassic Morrison Formation.  
 MNZ Uranium, vanadium, carnotite - tyuyamunite, high vanadium, low lime.  
 DOI 1971  
 REF U.S. A.E.C., 1971, Production Records, Colorado.

## Mortgage Lifter (Radium Group)

LOCATION: sec. 4, T. 43 N., R. 19 W.  
 LCRM Also sec. 9. This deposit lies in the Slick Rock district.  
 QUAD Horse Range Mesa 7 1/2'  
 MAP MOAB  
 PROD As of 1971, 25 tons had been mined at a grade of 0.28% U3O8, producing 139 lbs of U3O8, and 1.54% V2O5, producing 772 lbs of V2O5.  
 HOST Jurassic Morrison Formation, Salt Wash Member.  
 MNZ Uranium, vanadium.  
 DOI 1971  
 REF U.S. Bur. of Mines, 1977, (Unpubl.). U.S. A.E.C., 1971, Production Records, Colorado.

## Mucho (Grande)

LOCATION: sec. 1, T. 42 N., R. 18 W.  
 QUAD Joe Davis Hill 7 1/2'  
 MAP CORTEZ  
 PROD As of 1971, 724 tons had been mined at a grade of 0.19% U3O8, producing 2,743 lbs of U3O8, and 2.00% V2O5, producing 29,018 lbs of V2O5.  
 HOST Jurassic Morrison Formation.

MNZ Uranium, vanadium, carnotite - tyuyamunite, high vanadium, low lime.  
 DOI 1971  
 REF U.S. Bur. of Mines, 1977, (Unpubl.). U.S. A.E.C., 1971, Production Records, Colorado.

## Mule Group (Horseshoe Group)

LOCATION: T. 43 N., R. 18 W.  
 LCST UNLOCATABLE  
 LCRM This deposit lies in the Slick Rock district.  
 PROD As of 1971, 4 tons had been mined at a grade of 0.13% U3O8, producing 10 lbs of U3O8, and 1.80% V2O5, producing 144 lbs of V2O5.  
 HOST Jurassic Morrison Formation, Salt Wash Member.  
 DOI 1971  
 REF U.S. A.E.C., 1971, Production Records, Colorado.

## Muleshoe 6

LOCATION: sec. 22, T. 43 N., R. 18 W.  
 QUAD Joe Davis Hill 7 1/2'  
 MAP CORTEZ  
 PROD As of 1971, 20 tons had been mined at a grade of 0.14% U3O8, producing 57 lbs of U3O8, and 1.31% V2O5, producing 524 lbs of V2O5.  
 MNZ Uranium, vanadium.  
 DOI 1971  
 REF U.S. Bur. of Mines, 1977, (Unpubl.). U.S. A.E.C., 1971, Production Records, Colorado.

## Murietta

LOCATION: sec. 25, T. 45 N., R. 18 W.  
 LCRM U.S. A.E.C. Production Records also show sec. 26 & 36.  
 QUAD Bull Canyon 7 1/2' & Hamm Canyon 7 1/2'  
 MAP MOAB  
 PROD As of 1971, 877 tons had been mined at a grade of 0.19% U3O8, producing 3,328 lbs of U3O8, and 0.88% V2O5, producing 15,469 lbs of V2O5.  
 HOST Jurassic Morrison Formation.  
 MNZ Uranium, vanadium, carnotite - tyuyamunite, high vanadium, low lime.  
 DOI 1971  
 REF U.S. Bur. of Mines, 1977, (Unpubl.). U.S. A.E.C., 1971, Production Records, Colorado.

## Mystery (Muleshoe Group)

LOCATION: sec. 26, T. 43 N., R. 18 W.  
 LCRM This deposit lies in the Slick Rock district.  
 QUAD Joe Davis Hill 7 1/2'  
 MAP CORTEZ  
 PROD As of 1971, 115 tons had been mined at a grade of 0.14% U3O8, producing 330 lbs of U3O8, and 1.58% V2O5, producing 3,625 lbs of V2O5.  
 HOST Jurassic Morrison Formation, Salt Wash Member.  
 MNZ Uranium, vanadium.  
 DOI 1971  
 REF U.S. Bur. of Mines, 1977, (Unpubl.). U.S. A.E.C., 1971, Production Records, Colorado.

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## National

### LOCATION:

LCST UNLOCATABLE  
LCRM This deposit lies in the Slick Rock district.  
PROD As of 1971, 7 tons had been mined at a grade of 0.09% U3O8, producing 13 lbs of U3O8, and 2.86% V2O5, producing 400 lbs of V2O5.  
HOST Jurassic Morrison Formation.  
DOI 1971  
REF U.S. A.E.C., 1971, Production Records, Colorado.

## Nava Jo

LOCATION: sec. 22, T. 45 N., R. 18 W.  
PROD As of 1971, 41 tons had been mined at a grade of 0.41% U3O8, and 1.491% V2O5.  
HOST Brushy Basin Member of the Jurassic Morrison Formation.  
DOI 1971  
REF U.S. A.E.C., 1971, Production Records, Colorado.

## Nave Jo

LOCATION: sec. 19, T. 45 N., R. 18 W.  
QUAD Anderson Mesa 7 1/2'  
MAP MOAB  
PROD As of 1971, 1 ton had been mined at a grade of 0.20% U3O8, producing 4 lbs of U3O8, and 0.50% V2O5, producing 10 lbs of V2O5.  
HOST Jurassic Morrison Formation.  
MNZ Uranium, vanadium.  
DOI 1971  
REF U.S. Bur. of Mines, 1977, (Unpubl.). U.S. A.E.C., 1971, Production Records, Colorado.

## Nellie Gray

LOCATION:  
LCST UNLOCATABLE  
LCRM This deposit lies in the Slick Rock district.  
PROD As of 1971, 5 tons had been mined at a grade of 0.20% U3O8, producing 20 lbs of U3O8, and 2.23% V2O5, producing 223 lbs of V2O5.  
HOST Jurassic Morrison Formation, Salt Wash Member.  
DOI 1971  
REF U.S. A.E.C., 1971, Production Records, Colorado.

## New Deal

LOCATION: sec. 26, T. 45 N., R. 18 W.  
LCST UNLOCATABLE  
PROD As of 1971, 259 tons had been mined at a grade of 0.17% U3O8, producing 902 lbs of U3O8, and 1.36% V2O5, producing 7,033 lbs of V2O5.  
HOST Jurassic Morrison Formation, Salt Wash Member.  
DOI 1971  
REF U.S. A.E.C., 1971, Production Records, Colorado.

## New Discovery (Barbara Jo Claim, White Spur)

LOCATION: sec. 35, T. 43 N., R. 11 W.  
QUAD Little Cone 7 1/2'  
MAP CORTEZ

MNZ Uranium, vanadium.  
DOI 1975  
REF U.S. Bur. of Mines, 1977, (Unpubl.).

## Nigger Head (Radium Group)

LOCATION: sec. 36, T. 44 N., R. 20 W.  
LCRM This deposit lies in the Slick Rock district, west of Horse Range Mesa.  
QUAD Mount Peale 4 SE 7 1/2'  
MAP MOAB  
PROD As of 1971, 21 tons had been mined at a grade of 0.12% U3O8, producing 51 lbs of U3O8, and 1.54% V2O5, producing 646 lbs of V2O5.  
HOST Jurassic Morrison Formation, Salt Wash Member.  
MNZ Uranium, vanadium.  
DOI 1971  
REF U.S. Bur. of Mines, 1977, (Unpubl.). U.S. A.E.C., 1971, Production Records, Colorado.

## Norma Jean No. 1 & 2

LOCATION: sec. 29, T. 43 N., R. 18 W.  
QUAD Egnar 7 1/2' & Joe Davis Hill 7 1/2'  
MAP CORTEZ  
PROD As of 1971, 4,793 tons had been mined at a grade of 0.33% U3O8, producing 31,356 lbs of U3O8, and 1.82% V2O5, producing 174,384 lbs of V2O5.  
HOST Jurassic Morrison Formation.  
MNZ Uranium, vanadium, carnotite - tyuyamunite, high vanadium, low lime.  
DOI 1971  
REF U.S. Bur. of Mines, 1977, (Unpubl.). U.S. A.E.C., 1971, Production Records, Colorado.

## North Continent Mill (C-SR-13, DOE Lease Tract)

LOCATION: SW1/4SE1/4 sec. 30, T. 44 N., R. 16 W.  
PROD As of 1971, 6 tons had been mined at a grade of 0.11% U3O8, producing 13 lbs of U3O8, and 0.79% V2O5, producing 95 lbs of V2O5. This ore came from stockpile cleanup at the North Continent Mill at Slick Rock, Colorado, in 1952.  
HOST Jurassic Morrison Formation, Salt Wash Member.  
DOI 1971  
REF U.S. D.O.E., 1977, Lease Production Records, Colorado. U.S. A.E.C., 1971, Production Records, Colorado.

## North Slope 2

LOCATION: sec. 5, T. 43 N., R. 19 W.  
QUAD Horse Range Mesa 7 1/2'  
MAP MOAB  
PROD As of 1971, 1,025 tons had been mined at a grade of 0.17% U3O8, producing 3,426 lbs of U3O8, and 0.97% V2O5, producing 19,985 lbs of V2O5.  
HOST Jurassic Morrison Formation.  
MNZ Uranium, vanadium.  
DOI 1971  
REF U.S. Bur. of Mines, 1977, (Unpubl.). U.S. A.E.C., 1971, Production Records, Colorado.



# SAN MIGUEL COUNTY

## Northern 5 & 6

LOCATION: sec. 22, T. 44 N., R. 19 W.  
 QUAD Horse Range Mesa 7 1/2'  
 MAP MOAB  
 PROD As of 1971, 31,936 tons had been mined at a grade of 0.23% U3O8, producing 144,724 lbs of U3O8, and 1.64% V2O5, producing 1,044,613 lbs of V2O5.  
 HOST Jurassic Morrison Formation.  
 MNZ Uranium, vanadium, uraninite (coffinite), high vanadium, low lime.  
 DOI 1971  
 REF U.S. Bur. of Mines, 1977, (Unpubl.). U.S. A.E.C., 1971, Production Records, Colorado.

## Northern Light

LOCATION: SW1/4 sec. 19, T. 44 N., R. 18 W.  
 QUAD Horse Range Mesa 7 1/2'  
 MAP MOAB  
 PROD As of 1971, 338 tons had been mined at a grade of 0.41% U3O8, producing 2,786 lbs of U3O8, and 2.00% V2O5, producing 13,547 lbs of V2O5.  
 HOST Jurassic Morrison Formation.  
 MNZ Uranium, vanadium, carnotite - tyuyamunite, high vanadium, low lime.  
 DOI 1971  
 REF U.S. Bur. of Mines, 1977, (Unpubl.). U.S. A.E.C., 1971, Production Records, Colorado.

## Old Mexico

LOCATION: SW1/4 sec. 25, T. 45 N., R. 18 W.  
 LCRM Mexico Group, Bull Canyon district.  
 QUAD Hamm Canyon 7 1/2'  
 MAP MOAB  
 PROD As of 1971, 9 tons had been mined at a grade of 0.17% U3O8, producing 30 lbs of U3O8, and 0.78% V2O5, producing 140 lbs of V2O5.  
 DOI 1971  
 REF U.S. A.E.C., 1971, Production Records, Colorado.

## Omega

LOCATION: sec. 35, T. 44 N., R. 11 W.  
 QUAD Placerville 7 1/2'  
 MAP MOAB  
 PROD As of 1971, 8 tons had been mined at a grade of 0.09% U3O8, producing 14 lbs of U3O8, and 1.68% V2O5, producing 269 lbs of V2O5.  
 HOST Jurassic Entrada Sandstone; light gray to buff, fine-grained sandstone.  
 MNZ Uranium, vanadium.  
 DOI 1971  
 REF U.S. Bur. of Mines, 1977, (Unpubl.). U.S. A.E.C., 1971, Production Records, Colorado.

## Owensby

LOCATION: sec. 16, T. 43 N., R. 19 W.  
 QUAD Egnar 7 1/2'  
 MAP CORTEZ  
 PROD As of 1971, 69 tons had been mined at a grade of 0.16% U3O8, producing 221 lbs of U3O8, and 1.67% V2O5, producing 2,300 lbs of V2O5.

MNZ Uranium, vanadium.  
 RMKS Possibly also known as Ownbey Group (Finch, 1967, U.S.G.S. Prof. Paper 538, p. 12).  
 DOI 1971  
 REF U.S. Bur. of Mines, 1977, (Unpubl.). U.S. A.E.C., 1971, Production Records, Colorado.

## Painted Rock

LOCATION: sec. 31, T. 44 N., R. 18 W.  
 QUAD Horse Range Mesa 7 1/2'  
 MAP MOAB  
 PROD As of 1971, 4 tons had been mined at a grade of 0.30% U3O8, producing 24 lbs of U3O8, and 1.48% V2O5, producing 118 lbs of V2O5.  
 MNZ Uranium, vanadium.  
 DOI 1971  
 REF U.S. Bur. of Mines, 1977, (Unpubl.). U.S. A.E.C., 1971, Production Records, Colorado.

## Parrot Group

LOCATION: SW1/4 sec. 26, T. 43 N., R. 18 W.  
 LCRM U.S. A.E.C. Production Records also show sec. 27, 34 & 35.  
 QUAD Joe Davis Hill 7 1/2'  
 MAP CORTEZ  
 PROD As of 1971, 5,298 tons had been mined at a grade of 0.20% U3O8, producing 21,247 lbs of U3O8, and 1.55% V2O5, producing 164,202 lbs of V2O5.  
 HOST Jurassic Morrison Formation.  
 MNZ Uranium, vanadium, carnotite - tyuyamunite, high vanadium, low lime.  
 DOI 1971  
 REF U.S. Bur. of Mines, 1977, (Unpubl.). U.S. A.E.C., 1971, Production Records, Colorado.

## Payday

LOCATION: sec. 34, T. 45 N., R. 18 W.  
 LCRM Location from U.S. A.E.C. Production Records.  
 QUAD Hamm Canyon 7 1/2'  
 MAP MOAB  
 PROD As of 1971, 21 tons had been mined at a grade of 0.06% U3O8, producing 27 lbs of U3O8, and 0.92% V2O5, producing 387 lbs of V2O5.  
 HOST Jurassic Morrison Formation.  
 MNZ Uranium, vanadium.  
 DOI 1971  
 REF U.S. Bur. of Mines, 1977, (Unpubl.). U.S. A.E.C., 1971, Production Records, Colorado.

## Paystreak No. 3

LOCATION: sec. 30, T. 43 N., R. 18 W.  
 LCRM This deposit lies in the Speed Patch area, Slick Rock district.  
 QUAD Egnar 7 1/2'  
 MAP CORTEZ  
 PROD As of 1971, 290 tons had been mined at a grade of 0.15% U3O8, producing 844 lbs of U3O8, and 1.95% V2O5, producing 11,329 lbs of V2O5.  
 HOST Jurassic Morrison Formation, Salt Wash Member.  
 MNZ Uranium, vanadium.  
 DOI 1971  
 REF U.S. Bur. of Mines, 1977, (Unpubl.). U.S. A.E.C., 1971, Production Records, Colorado.

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## Peanut Group (Mines)

LOCATION: sec. 31, T. 45 N., R. 17 W.  
 LCRM U.S. A.E.C. Production Records also show sec. 32.  
 QUAD Hamm Canyon 7 1/2'  
 MAP MOAB  
 PROD As of 1971, 61,920 tons had been mined at a grade of 0.26% U3O8, producing 316,061 lbs of U3O8, and 2.30% V2O5, producing 2,851,891 lbs of V2O5.  
 HOST Jurassic Morrison Formation, Salt Wash Member; gray, very fine- to medium-grained sandstone with abundant carbonized plant remains.  
 MNZ Uranium, vanadium, uraninite (coffinite), high vanadium, low lime.  
 DOI 1971  
 REF U.S. Bur. of Mines, 1977, (Unpubl.). U.S. A.E.C., 1971, Production Records, Colorado. Finch, W. L., 1967, U.S.G.S. Prof. Paper 538, (p. 12).

## Pecas No. 1

LOCATION:  
 LCST UNLOCATABLE  
 PROD As of 1971, 6 tons had been mined at a grade of 0.03% U3O8, producing 3 lbs of U3O8, and 0.45% V2O5, producing 54 lbs of V2O5.  
 HOST Jurassic Morrison Formation.  
 DOI 1971  
 REF U.S. A.E.C., 1971, Production Records, Colorado.

## Penlga

LOCATION: sec. 24, T. 43 N., R. 19 W.  
 QUAD Egnar 7 1/2'  
 MAP CORTEZ  
 PROD As of 1971, 1,044 tons had been mined at a grade of 0.29% U3O8, producing 6,067 lbs of U3O8, and 2.99% V2O5, producing 62,429 lbs of V2O5.  
 HOST The host is the Jurassic Morrison Formation.  
 MNZ Uranium, vanadium, carnotite - tyuyamunite, high vanadium, low lime.  
 DOI 1971  
 REF U.S. Bur. of Mines, 1977, (Unpubl.). U.S. A.E.C., 1971, Production Records, Colorado.

## Penju

LOCATION: sec. 7, T. 43 N., R. 16 W.  
 LCRM U.S. A.E.C. Production Records also show sec. 6.  
 QUAD Gypsum Gap 7 1/2'  
 MAP MOAB  
 PROD As of 1971, 625 tons had been mined at a grade of 0.20% U3O8, producing 2,439 lbs of U3O8, and 1.39% V2O5, producing 17,421 lbs of V2O5.  
 MNZ Uranium, vanadium.  
 DOI 1971  
 REF U.S. Bur. of Mines, 1977, (Unpubl.). U.S. A.E.C., 1971, Production Records, Colorado.

## Phillips 66 1 (one)

LOCATION: sec. 24, T. 44 N., R. 17 W.  
 QUAD Gypsum Gap 7 1/2'  
 MAP MOAB  
 PROD As of 1971, 110 tons had been mined at a grade of 0.12% U3O8, producing 266 lbs of U3O8, and 1.96% V2O5, producing 4,319 lbs of V2O5.  
 MNZ Uranium, vanadium.  
 DOI 1971  
 REF U.S. Bur. of Mines, 1977, (Unpubl.). U.S. A.E.C., 1971, Production Records, Colorado.

## Phillura Group

LOCATION: sec. 10, T. 43 N., R. 18 W.  
 QUAD Hamm Canyon 7 1/2' and Joe Davis Hill 7 1/2'  
 MAP MOAB  
 MNZ Uranium, vanadium.  
 DOI 1975  
 REF U.S. Bur. of Mines, 1977, (Unpubl.).

## Pine Bug (Legin Group, Pine Berg)

LOCATION: sec. 29, T. 43 N., R. 19 W.  
 QUAD Egnar 7 1/2'  
 MAP CORTEZ  
 PROD As of 1971, 8 tons had been mined at a grade of 0.37% U3O8, producing 59 lbs of U3O8, and 3.16% V2O5, producing 505 lbs of V2O5.  
 MNZ Uranium, vanadium.  
 DOI 1971  
 REF U.S. Bur. of Mines, 1977, (Unpubl.). U.S. A.E.C., 1971, Production Records, Colorado.

## Pinto #1

LOCATION: S1/2 sec. 30, T. 44 N., R. 19 W.  
 DOI 1958  
 REF Hague, R. S., Goldenstein, S. J., and Blakey, E., Uranium - vanadium deposits of the Uravan Mineral Belt, 1958.

## Pioneer

LOCATION: sec. 20, T. 44 N., R. 17 W.  
 QUAD Gypsum Gap 7 1/2'  
 PROD No production.  
 DOI 1971  
 REF U.S. A.E.C., 1971, Production Records, Colorado.

## Pitchfork

LOCATION: sec. 32, T. 44 N., R. 16 W.  
 LCRM U.S. A.E.C. Production Records show only sec. 33.  
 QUAD Gypsum Gap 7 1/2'  
 MAP MOAB  
 PROD As of 1971, 19,080 tons had been mined at a grade of 0.21% U3O8, producing 79,510 lbs of U3O8, and 1.13% V2O5, producing 432,650 lbs of V2O5.  
 HOST The host is the Jurassic Morrison Formation, Salt Wash Sandstone Member; light brown and gray sandstone.  
 MNZ Uranium, vanadium, carnotite - tyuyamunite, high vanadium, low lime.

# SAN MIGUEL COUNTY

DOI 1971  
REF U.S. Bur. of Mines, 1977, (Unpubl.). U.S. A.E.C., 1971, Production Records, Colorado.

## Pointed Rock

LOCATION: sec. 31, T. 44 N., R. 18 W.  
LCRM Also sec. 32.  
DOI 1971  
REF U.S. A.E.C., 1971, Production Records, Colorado.

## Polaris 1

LOCATION: UNLOCATABLE  
LCST  
PROD As of 1971, 50 tons had been mined at a grade of 0.10% U308, producing 99 lbs of U308, and 2.61% V205, producing 2,613 lbs of V205.  
DOI 1971  
REF U.S. A.E.C., 1971, Production Records, Colorado.

## Pond

LOCATION: sec. 23, T. 44 N., R. 17 W.  
QUAD Gypsum Gap 7 1/2'  
MAP MOAB  
PROD As of 1971, 21,543 tons had been mined at a grade of 0.17% U308, producing 74,360 lbs of U308, and 1.38% V205, producing 592,547 lbs of V205.  
HOST The host is the Jurassic Morrison Formation.  
MNZ Uranium, vanadium, carnotite - tyuyamunite, high vanadium, low lime.  
DOI 1971  
REF U.S. Bur. of Mines, 1977, (Unpubl.). U.S. A.E.C., 1971, Production Records, Colorado.

## Pour Off

LOCATION:  
PROD As of 1971, 10 tons had been mined at a grade of 0.46% U308, producing 92 lbs of U308, and 2.96% V205, producing 593 lbs of V205.  
DOI 1971  
REF U.S. A.E.C., 1971, Production Records, Colorado.

## Prospectors Fortune Group

LOCATION: sec. 25, T. 45 N., R. 19 W.  
LCRM U.S. A.E.C. Production Records show sec. 22 - 27 and 36.  
QUAD Horse Range Mesa 7 1/2' and Anderson Mesa 7 1/2'  
MAP MOAB  
PROD As of 1971, 1,912 tons had been mined at a grade of 0.21% U308, producing 8,040 lbs of U308, and 0.63% V205, producing 24,060 lbs of V205.  
MNZ Uranium, vanadium.  
DOI 1971  
REF U.S. Bur. of Mines, 1977, (Unpubl.). U.S. A.E.C., 1971, Production Records, Colorado.

## Queen of Spades

LOCATION: sec. 18, T. 43 N., R. 18 W.  
QUAD Egnar 7 1/2'  
MAP CORTEZ  
PROD As of 1971, 85 tons had been mined at a grade of 0.21% U308, producing 364 lbs of U308, and 2.26% V205, producing 3,841 lbs of V205.  
MNZ Uranium, vanadium.  
DOI 1971  
REF U.S. Bur. of Mines, 1977, (Unpubl.). U.S. A.E.C., 1971, Production Records, Colorado.

## R. L. Duncan Mining Property

LOCATION: sec. 5, T. 43 N., R. 18 W.  
QUAD Horse Range Mesa 7 1/2'  
MAP MOAB  
MNZ Uranium, vanadium.  
DOI 1975  
REF U.S. Bur. of Mines, 1977, (Unpubl.).

## Radar, Early Morning

LOCATION: sec. 24, T. 45 N., R. 19 W.  
LCRM U.S. A.E.C. Production Records also show sec. 9 & 30, T. 45 N., R. 18 W.  
QUAD Anderson Mesa 7 1/2'  
MAP MOAB  
PROD As of 1971, 6 tons had been mined at a grade of 0.23% U308, producing 28 lbs of U308, and 1.42% V205, producing 170 lbs of V205.  
HOST Jurassic Morrison Formation.  
MNZ Uranium, vanadium, carnotite - tyuyamunite, high vanadium, low lime.  
DOI 1971  
REF U.S. Bur. of Mines, 1977, (Unpubl.). U.S. A.E.C., 1971, Production Records, Colorado.

## Radio

LOCATION: sec. 10, T. 44 N., R. 18 W.  
LCRM Also sec. 11, 14, 15. This deposit lies in Gypsum Valley.  
PROD No production.  
DOI 1971  
REF U.S. A.E.C., 1971, Production Records, Colorado.

## Radium

LOCATION: sec. 5, T. 43 N., R. 19 W.  
QUAD Horse Range Mesa 7 1/2'  
MAP MOAB  
PROD As of 1971, 10,035 tons had been mined at a grade of 0.22% U308, producing 43,284 lbs of U308, and 1.55% V205, producing 311,146 lbs of V205.  
MNZ Uranium, vanadium.  
DOI 1971  
REF U.S. Bur. of Mines, 1977, (Unpubl.). U.S. A.E.C., 1971, Production Records, Colorado.

## Radium 1 (one)

LOCATION: sec. 5, T. 43 N., R. 19 W.  
QUAD Horse Range Mesa 7 1/2'  
MAP MOAB

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PROD As of 1971, 11 tons had been mined at a grade of 0.06% U3O8, producing 14 lbs of U3O8, and 0.64% V2O5, producing 141 lbs of V2O5.  
 MNZ Uranium, vanadium.  
 DOI 1971  
 REF U.S. Bur. of Mines, 1977, (Unpubl.). U.S. A.E.C., 1971, Production Records, Colorado.

## Radium 3

LOCATION: sec. 4, T. 43 N., R. 19 W.  
 QUAD Horse Range Mesa 7 1/2'  
 MAP MOAB  
 PROD As of 1971, 431 tons had been mined at a grade of 0.20% U3O8, producing 1,739 lbs of U3O8, and 1.40% V2O5, producing 12,035 lbs of V2O5.  
 MNZ Uranium, vanadium.  
 DOI 1971  
 REF U.S. Bur. of Mines, 1977, (Unpubl.). U.S. A.E.C., 1971, Production Records, Colorado.

## Radium 4

LOCATION: sec. 4, T. 43 N., R. 19 W.  
 QUAD Horse Range Mesa 7 1/2'  
 MAP MOAB  
 PROD As of 1971, 2,776 tons had been mined at a grade of 0.35% U3O8, producing 191,717 lbs of U3O8, and 1.84% V2O5, producing 1,021,190 lbs of V2O5.  
 HOST Jurassic Morrison Formation.  
 MNZ Uranium, vanadium, carnotite - tyuyamunite, high vanadium, low lime.  
 DOI 1971  
 REF U.S. Bur. of Mines, 1977, (Unpubl.). U.S. A.E.C., 1971, Production Records, Colorado.

## Radium 5 & 6

LOCATION: sec. 8, T. 43 N., R. 19 W.  
 LCRM U.S. A.E.C. Production Records also show sec. 7.  
 QUAD Horse Range Mesa 7 1/2'  
 MAP MOAB  
 PROD As of 1971, 35,727 tons had been mined at a grade of 0.37% U3O8, producing 264,194 lbs of U3O8, and 1.96% V2O5, producing 1,400,954 lbs of V2O5.  
 HOST Jurassic Morrison Formation.  
 MNZ Uranium, vanadium, carnotite - tyuyamunite, high vanadium, low lime.  
 DOI 1971  
 REF U.S. Bur. of Mines, 1977, (Unpubl.). U.S. A.E.C., 1971, Production Records, Colorado.

## Radium 6

LOCATION: sec. 9, T. 43 N., R. 19 W.  
 QUAD Horse Range Mesa 7 1/2'  
 MAP MOAB  
 PROD As of 1971, 55 tons had been mined at a grade of 0.10% U3O8, producing 113 lbs of U3O8, and 1.02% V2O5, producing 1,125 lbs of V2O5.  
 MNZ Uranium, vanadium.  
 DOI 1971  
 REF U.S. Bur. of Mines, 1977, (Unpubl.). U.S. A.E.C., 1971, Production Records, Colorado.

## Radium 7

LOCATION: sec. 8, T. 43 N., R. 19 W.  
 QUAD Horse Range Mesa 7 1/2'  
 MAP MOAB  
 PROD As of 1971, 2,810 tons had been mined at a grade of 0.16% U3O8, producing 9,192 lbs of U3O8, and 1.19% V2O5, producing 66,638 lbs of V2O5.  
 HOST Jurassic Morrison Formation.  
 MNZ Uranium, vanadium, carnotite - tyuyamunite, high vanadium, low lime.  
 DOI 1971  
 REF U.S. Bur. of Mines, 1977, (Unpubl.). U.S. A.E.C., 1971, Production Records, Colorado.

## Radium 8

LOCATION: sec. 9, T. 43 N., R. 19 W.  
 QUAD Horse Range Mesa 7 1/2'  
 MAP MOAB  
 PROD As of 1971, 10,695 tons had been mined at a grade of 0.21% U3O8, producing 44,790 lbs of U3O8, and 1.06% V2O5, producing 226,580 lbs of V2O5.  
 MNZ Uranium, vanadium.  
 DOI 1971  
 REF U.S. Bur. of Mines, 1977, (Unpubl.). U.S. A.E.C., 1971, Production Records, Colorado.

## Radium 9, 10 & 11

LOCATION: sec. 4, T. 43 N., R. 19 W.  
 QUAD Horse Range Mesa 7 1/2'  
 MAP MOAB  
 PROD As of 1971, 52,723 tons had been mined at a grade of 0.33% U3O8, producing 52,132 lbs of U3O8, and 1.73% V2O5, producing 1,819,985 lbs of V2O5.  
 HOST Jurassic Morrison Formation.  
 MNZ Uranium, vanadium, carnotite - tyuyamunite, high vanadium, low lime.  
 DOI 1971  
 REF U.S. Bur. of Mines, 1977, (Unpubl.). U.S. A.E.C., 1971, Production Records, Colorado.

## Radium 12

LOCATION: sec. 4, T. 43 N., R. 19 W.  
 QUAD Horse Range Mesa 7 1/2'  
 MAP MOAB  
 PROD As of 1971, 2,547 tons had been mined at a grade of 0.28% U3O8, producing 14,404 lbs of U3O8, and 1.61% V2O5, producing 82,135 lbs of V2O5.  
 HOST Jurassic Morrison Formation.  
 MNZ Uranium, vanadium, carnotite - tyuyamunite, high vanadium, intermed. lime.  
 DOI 1971  
 REF U.S. Bur. of Mines, 1977, (Unpubl.). U.S. A.E.C., 1971, Production Records, Colorado.

## Radium 19

LOCATION: sec. 5, T. 43 N., R. 19 W.  
 LCRM U.S. A.E.C. Production Records also show sec. 4.  
 QUAD Horse Range Mesa 7 1/2'  
 MAP MOAB

# SAN MIGUEL COUNTY

PROD As of 1971, 285 tons had been mined at a grade of 0.27% U3O8, producing 1,513 lbs of U3O8, and 1.25% V2O5, producing 7,117 lbs of V2O5.  
 HOST Jurassic Morrison Formation.  
 MNZ Uranium, vanadium, carnotite - tyuyamunite, high vanadium, low ilme.  
 DOI 1971  
 REF U.S. Bur. of Mines, 1977, (Unpubl.). U.S. A.E.C., 1971, Production Records, Colorado.

## Radium 22

LOCATION: sec. 32, T. 44 N., R. 19 W.  
 QUAD Horse Range Mesa 7 1/2'  
 MAP MOAB  
 PROD As of 1971, 97 tons had been mined at a grade of 0.15% U3O8, producing 292 lbs of U3O8, and 0.77% V2O5, producing 1,503 lbs of V2O5.  
 HOST Jurassic Morrison Formation.  
 MNZ Uranium, vanadium, carnotite - tyuyamunite, high vanadium, low ilme.  
 DOI 1971  
 REF U.S. Bur. of Mines, 1977, (Unpubl.). U.S. A.E.C., 1971, Production Records, Colorado.

## Radium 24

LOCATION: sec. 5, T. 43 N., R. 19 W.  
 LCRM U.S. A.E.C. Production Records only show sec. 4.  
 QUAD Horse Range Mesa 7 1/2'  
 MAP MOAB  
 PROD As of 1971, 2,473 tons had been mined at a grade of 0.23% U3O8, producing 11,352 lbs of U3O8, and 1.53% V2O5, producing 75,519 lbs of V2O5.  
 HOST Jurassic Morrison Formation.  
 MNZ Uranium, vanadium, carnotite - tyuyamunite, high vanadium, low ilme.  
 DOI 1971  
 REF U.S. Bur. of Mines, 1977, (Unpubl.). U.S. A.E.C., 1971, Production Records, Colorado.

## Radium 25

LOCATION: sec. 5, T. 43 N., R. 19 W.  
 QUAD Horse Range Mesa 7 1/2'  
 MAP MOAB  
 PROD As of 1971, 8 tons had been mined at a grade of 0.02% U3O8, producing 3 lbs of U3O8, and 0.69% V2O5, producing 111 lbs of V2O5.  
 MNZ Uranium, vanadium.  
 DOI 1971  
 REF U.S. Bur. of Mines, 1977, (Unpubl.). U.S. A.E.C., 1971, Production Records, Colorado.

## Radium 26 & 27

LOCATION: sec. 5, T. 43 N., R. 19 W.  
 QUAD Horse Range Mesa 7 1/2'  
 MAP MOAB  
 PROD As of 1971, 950 tons had been mined at a grade of 0.18% U3O8, producing 3,497 lbs of U3O8, and 1.20% V2O5, producing 22,763 lbs of V2O5.  
 HOST Jurassic Morrison Formation.

MNZ Uranium, vanadium, carnotite - tyuyamunite, high vanadium, low ilme.  
 DOI 1971  
 REF U.S. Bur. of Mines, 1977, (Unpubl.). U.S. A.E.C., 1971, Production Records, Colorado.

## Radium GP (Blackbird)

LOCATION: sec. 32, T. 44 N., R. 19 W.  
 QUAD Horse Range Mesa 7 1/2'  
 MAP MOAB  
 PROD As of 1971, 285 tons had been mined at a grade of 0.23% U3O8, producing 1,304 lbs of U3O8, and 1.77% V2O5, producing 10,067 lbs of V2O5.  
 MNZ Uranium, vanadium.  
 DOI 1971  
 REF U.S. Bur. of Mines, 1977, (Unpubl.). U.S. A.E.C., 1971, Production Records, Colorado.

## Radium Hills

LOCATION: sec. 16, T. 45 N., R. 18 W.  
 QUAD Bull Canyon 7 1/2'  
 MAP MOAB  
 MNZ Uranium, vanadium.  
 DOI 1975  
 REF U.S. Bur. of Mines, 1977, (Unpubl.).

## Radium No. 29

LOCATION: NE1/4 sec. 8, T. 43 N., R. 19 W.  
 LCRM U.S. A.E.C. Production Records also show sec. 5.  
 QUAD Horse Range Mesa 7 1/2'  
 MAP MOAB  
 PROD As of 1971, 2,358 tons had been mined at a grade of 0.29% U3O8, producing 13,653 lbs of U3O8, and 1.62% V2O5, producing 76,270 lbs of V2O5.  
 HOST Jurassic Morrison Formation.  
 MNZ Uranium, vanadium, carnotite - tyuyamunite, high vanadium, low ilme.  
 DOI 1971  
 REF U.S. Bur. of Mines, 1977, (Unpubl.). U.S. A.E.C., 1971, Production Records, Colorado.

## Rainy Day

LOCATION: sec. 25, T. 45 N., R. 18 W.  
 LCRM Also sec. 26.  
 PROD As of 1971, 11,013 tons had been mined.  
 DOI 1971  
 REF U.S. A.E.C., 1971, Production Records, Colorado.

## Rainy Day

LOCATION: sec. 35, T. 45 N., R. 18 W.  
 QUAD Hamm Canyon 7 1/2'  
 MAP MOAB  
 PROD As of 1971, 7,870 tons had been mined at a grade of 0.14% U3O8, producing 22,223 lbs of U3O8, and 0.83% V2O5, producing 129,952 lbs of V2O5.  
 HOST Jurassic Morrison Formation.  
 MNZ Uranium, vanadium, carnotite - tyuyamunite, high vanadium, low ilme.  
 DOI 1971

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REF U.S. Bur. of Mines, 1977, (Unpubl.). U.S. A.E.C., 1971, Production Records, Colorado.

## Rambler

LOCATION: SW1/4 sec. 9, T. 44 N., R. 17 W.  
 QUAD Hamm Canyon 7 1/2' & Gypsum Gap 7 1/2'  
 MAP MOAB  
 PROD As of 1971, 2,900 tons had been mined at a grade of 0.17% U3O8, producing 10,119 lbs of U3O8, and 1.11% V2O5, producing 64,139 lbs of V2O5.  
 MNZ Uranium, vanadium.  
 DOI 1971  
 REF U.S. Bur. of Mines, 1977, (Unpubl.). U.S. A.E.C., 1971, Production Records, Colorado.

## Rambler

LOCATION: sec. 23, T. 45 N., R. 19 W.  
 LCRM Location from U.S. A.E.C. Production Records.  
 QUAD Anderson Mesa 7 1/2'  
 MAP MOAB  
 PROD As of 1971, 21 tons had been mined at a grade of 1.57% U3O8, producing 658 lbs of U3O8, and 6.98% V2O5, producing 2,932 lbs of V2O5.  
 HOST Jurassic Morrison Formation.  
 MNZ Uranium, vanadium, carnotite - tyuyamunite, high vanadium, low ilme.  
 DOI 1971  
 REF U.S. Bur. of Mines, 1977, (Unpubl.). U.S. A.E.C., 1971, Production Records, Colorado.

## Rat Hole

LOCATION:  
 LCST UNLOCATABLE  
 LCRM This deposit lies in the Georgetown area, Stick Rock district.  
 PROD As of 1971, 5 tons had been mined at a grade of 0.11% U3O8, producing 11 lbs of U3O8, and 1.82% V2O5, producing 182 lbs of V2O5.  
 HOST Jurassic Morrison Formation, Salt Wash Member.  
 DOI 1971  
 REF U.S. A.E.C., 1971, Production Records, Colorado.

## Rattlesnake 2

LOCATION: sec. 19, T. 43 N., R. 18 W.  
 QUAD Egnar 7 1/2'  
 MAP CORTEZ  
 PROD As of 1971, 37 tons had been mined at a grade of 0.04% U3O8, producing 27 lbs of U3O8, and 0.09% V2O5, producing 69 lbs of V2O5.  
 HOST Jurassic Morrison Formation, Salt Wash Member.  
 MNZ Uranium, vanadium.  
 DOI 1971  
 REF U.S. Bur. of Mines, 1977, (Unpubl.). U.S. A.E.C., 1971, Production Records, Colorado.

## Rattlesnake 2

LOCATION: sec. 33, T. 45 N., R. 18 W.  
 QUAD Hamm Canyon 7 1/2'  
 MAP MOAB

PROD As of 1971, 8 tons had been mined at a grade of 0.05% U3O8, producing 8 lbs of U3O8, and 1.32% V2O5, producing 211 lbs of V2O5.

MNZ Uranium, vanadium.  
 DOI 1971

REF U.S. Bur. of Mines, 1977, (Unpubl.). U.S. A.E.C., 1971, Production Records, Colorado.

## Red Ant

LOCATION: sec. 30, T. 43 N., R. 19 W.  
 QUAD Verdure 1 NE 7 1/2' & Egnar 7 1/2'  
 MAP CORTEZ  
 PROD As of 1971, 28 tons had been mined at a grade of 0.21% U3O8, producing 118 lbs of U3O8, and 1.34% V2O5, producing 750 lbs of V2O5.  
 HOST Jurassic Morrison Formation.  
 MNZ Uranium, vanadium, carnotite - tyuyamunite, high vanadium, intermed. ilme.  
 DOI 1971  
 REF U.S. Bur. of Mines, 1977, (Unpubl.). U.S. A.E.C., 1971, Production Records, Colorado.

## Red Horse

LOCATION: SE1/4 sec. 26, T. 45 N., R. 18 W.  
 QUAD Hamm Canyon 7 1/2' & Bull Canyon 7 1/2'  
 MAP MOAB  
 PROD As of 1971, 3,176 tons had been mined at a grade of 0.18% U3O8, producing 11,164 lbs of U3O8, and 0.97% V2O5, producing 61,504 lbs of V2O5.  
 MNZ Uranium, vanadium.  
 DOI 1971  
 REF U.S. Bur. of Mines, 1977, (Unpubl.). U.S. A.E.C., 1971, Production Records, Colorado.

## Red Rock 4

LOCATION: sec. 35, T. 43 N., R. 18 W.  
 QUAD Joe Davis Hill 7 1/2'  
 MAP CORTEZ  
 PROD As of 1971, 4,023 tons had been mined at a grade of 0.22% U3O8, producing 17,622 lbs of U3O8, and 1.34% V2O5, producing 107,861 lbs of V2O5.  
 HOST Jurassic Morrison Formation.  
 MNZ Uranium, vanadium, carnotite - tyuyamunite, high vanadium, low ilme.  
 DOI 1971  
 REF U.S. Bur. of Mines, 1977, (Unpubl.). U.S. A.E.C., 1971, Production Records, Colorado.

## Red Rock 5

LOCATION: sec. 35, T. 43 N., R. 18 W.  
 QUAD Joe Davis Hill 7 1/2'  
 MAP CORTEZ  
 PROD As of 1971, 6,693 tons had been mined at a grade of 0.27% U3O8, producing 35,880 lbs of U3O8, and 1.94% V2O5, producing 259,640 lbs of V2O5.  
 HOST Jurassic Morrison Formation.  
 MNZ Uranium, vanadium, carnotite - tyuyamunite, high vanadium, low ilme.  
 DOI 1971  
 REF U.S. Bur. of Mines, 1977, (Unpubl.). U.S. A.E.C., 1971, Production Records, Colorado.

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## Red Snake

### LOCATION:

LCST UNLOCATABLE

LCRM This deposit lies in Gypsum Valley, Little Gyp area.

PROD As of 1971, 6 tons had been mined at a grade of 0.13% U3O8, producing 16 lbs of U3O8, and 2.67% V2O5, producing 320 lbs of V2O5.

HOST Jurassic Morrison Formation, Salt Wash Member.

MNZ Carnotite - tyuyamunite, high vanadium, low lime.

DOI 1971

REF U.S. D.O.E., 1977, Lease Production Records, Colorado. U.S. A.E.C., 1971, Production Records, Colorado.

## Red Top 1 (Horseshoe Group)

LOCATION: sec. 9, T. 44 N., R. 18 W.

LCRM U.S. A.E.C. Production Records show location as sec. 6, T. 42 N., R. 17 W.

QUAD Hamm Canyon 7 1/2'

MAP MOAB

PROD As of 1971, 24 tons had been mined at a grade of 0.15% U3O8, producing 74 lbs of U3O8, and 1.38% V2O5, producing 662 lbs of V2O5.

HOST Jurassic Morrison Formation, Salt Wash Member.

MNZ Uranium, vanadium.

DOI 1971

REF U.S. Bur. of Mines, 1977, (Unpubl.). U.S. A.E.C., 1971, Production Records, Colorado.

## Red Top 2

LOCATION: sec. 6, T. 42 N., R. 17 W.

LCRM U.S. A.E.C. Production Records show location as sec. 9, T. 44 N., R. 18 W.

QUAD Joe Davis Hill 7 1/2'

MAP CORTEZ

PROD As of 1971, 42 tons had been mined at a grade of 0.02% U3O8, producing 19 lbs of U3O8, and 0.17% V2O5, producing lbs of V2O5.

HOST Jurassic Morrison Formation, Salt Wash Member.

MNZ Uranium, vanadium, carnotite - tyuyamunite, high vanadium, low lime.

DOI 1971

REF U.S. Bur. of Mines, 1977, (Unpubl.). U.S. A.E.C., 1971, Production Records, Colorado.

## Red Wing

LOCATION: sec. 23, T. 44 N., R. 17 W.

QUAD Gypsum Gap 7 1/2'

MAP MOAB

PROD As of 1971, 14 tons had been mined at a grade of 0.09% U3O8, producing 25 lbs of U3O8, and 0.93% V2O5, producing 261 lbs of V2O5.

HOST Jurassic Morrison Formation, Salt Wash Member.

MNZ Uranium, vanadium.

DOI 1971

REF U.S. Bur. of Mines, 1977, (Unpubl.). U.S. A.E.C., 1971, Production Records, Colorado.

## Retribution

LOCATION: SE 1/4 sec. 9, T. 44 N., R. 17 W.

QUAD Hamm Canyon 7 1/2' & Gypsum Gap 7 1/2'

MAP MOAB

MNZ Uranium, vanadium.

DOI 1975

REF U.S. Bur. of Mines, 1977, (Unpubl.).

## Rex Claim

### LOCATION:

LCST UNLOCATABLE

LCRM This deposit lies in the Bull Canyon district.

PROD As of 1971, 12 tons had been mined at a grade of 0.12% U3O8, producing 29 lbs of U3O8, and 2.24% V2O5, producing 537 lbs of V2O5.

HOST Jurassic Morrison Formation, Salt Wash Member.

DOI 1971

REF U.S. A.E.C., 1971, Production Records, Colorado.

## Rim (Buckhorn, et al)

LOCATION: sec. 1, T. 42 N., R. 18 W.

QUAD Joe Davis Hill 7 1/2'

MAP CORTEZ

PROD As of 1971, 12 tons had been mined at a grade of 0.43% U3O8, producing 102 lbs of U3O8, and 4.95% V2O5, producing 1,189 lbs of V2O5.

HOST Jurassic Morrison Formation, Salt Wash Member.

MNZ Uranium, vanadium.

RMKS May be same as "Shinarump Rim" Group mentioned in Finch, 1967, U.S.G.S. Prof. Paper 538, p. 12.

DOI 1971

REF U.S. Bur. of Mines, 1977, (Unpubl.). U.S. A.E.C., 1971, Production Records, Colorado.

## Riverview

LOCATION: sec. 33, T. 45 N., R. 18 W.

QUAD Hamm Canyon 7 1/2'

MAP MOAB

PROD As of 1971, 264 tons had been mined at a grade of 0.21% U3O8, producing 1,097 lbs of U3O8, and 1.42% V2O5, producing 7,520 lbs of V2O5.

HOST Jurassic Morrison Formation.

MNZ Uranium, vanadium, carnotite - tyuyamunite, high vanadium, low lime.

DOI 1971

REF U.S. Bur. of Mines, 1977, (Unpubl.). U.S. A.E.C., 1971, Production Records, Colorado.

## Robert M

LOCATION: sec. 16, T. 44 N., R. 17 W.

QUAD Hamm Canyon 7 1/2' & Gypsum Gap 7 1/2'

MAP MOAB

PROD As of 1971, 44 tons had been mined at a grade of 0.16% U3O8, producing 144 lbs of U3O8, and 1.99% V2O5, producing 1,754 lbs of V2O5.

HOST Jurassic Morrison Formation, Salt Wash Member.

MNZ Uranium, vanadium.

DOI 1971

REF U.S. Bur. of Mines, 1977, (Unpubl.). U.S. A.E.C., 1971, Production Records, Colorado.

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## Roberta Jean

### LOCATION:

LCST UNLOCATABLE  
 PROD As of 1971, 21 tons had been mined at a grade of 0.16% U308, producing 67 lbs of U308, and 1.69% V205, producing 709 lbs of V205.  
 HOST Jurassic Morrison Formation, Salt Wash Member.  
 DOI 1971  
 REF U.S. A.E.C., 1971, Production Records, Colorado.

## Rosa L

LOCATION: N1/2 sec. 15, T. 43 N., R. 18 W.

DOI 1958  
 REF Hague, R. S., Goldenstein, S. J., and Blakey, E., Uranium - vanadium deposits of the Uravan Mineral Belt, 1958.

## Rose June

LOCATION: sec. 16, T. 44 N., R. 17 W.

LCRM Also sec. 17.  
 QUAD Hamm Canyon 7 1/2' & Gypsum Gap 7 1/2'  
 MAP MOAB  
 PROD As of 1971, 31 tons had been mined at a grade of 0.42% U308, producing 258 lbs of U308, and 1.32% V205, producing 81 lbs of V205.  
 HOST Jurassic Morrison Formation, Salt Wash Member.  
 MNZ Uranium, vanadium.  
 DOI 1971  
 REF U.S. Bur. of Mines, 1977, (Unpubl.). U.S. A.E.C., 1971, Production Records, Colorado.

## Roy Lee

LOCATION: sec. 34, T. 43 N., R. 18 W.

LCRM U.S. A.E.C. Production Records also show sec. 35.  
 QUAD Joe Davis Hill 7 1/2'  
 MAP CORTEZ  
 PROD As of 1971, 2,486 tons had been mined at a grade of 0.24% U308, producing 11,778 lbs of U308, and 1.52% V205, producing 75,791 lbs of V205.  
 HOST Jurassic Morrison Formation.  
 MNZ Uranium, vanadium, carnotite - tyuyamunite, high vanadium, Intermed. lime.  
 DOI 1971  
 REF U.S. Bur. of Mines, 1977, (Unpubl.). U.S. A.E.C., 1971, Production Records, Colorado.

## S. B. Group

LOCATION: sec. 11, T. 42 N., R. 18 W.

LCRM U.S. A.E.C. Production Records also show sec. 10, 12 & 14.  
 QUAD Joe Davis Hill 7 1/2'  
 MAP CORTEZ  
 PROD As of 1971, 5,224 tons had been mined at a grade of 0.15% U308, producing 16,036 lbs of U308, and 2.01% V205, producing 210,119 lbs of V205.  
 HOST Jurassic Morrison Formation.  
 MNZ Uranium, vanadium, carnotite - tyuyamunite, high vanadium, low lime.

DOI 1971  
 REF U.S. Bur. of Mines, 1977, (Unpubl.). U.S. A.E.C., 1971, Production Records, Colorado.

## Sage II

LOCATION: sec. 32, T. 43 N., R. 19 W.

LCRM U.S. A.E.C. Production Records only show sec. 34.  
 QUAD Egnar 7 1/2'  
 MAP CORTEZ  
 PROD As of 1971, 7,622 tons had been mined at a grade of 0.30% U308, producing 45,635 lbs of U308, and 2.80% V205, producing 427,497 lbs of V205.  
 HOST Jurassic Morrison Formation.  
 MNZ Uranium, vanadium, carnotite - tyuyamunite, high vanadium, low lime.  
 DOI 1971  
 REF U.S. Bur. of Mines, 1977, (Unpubl.). U.S. A.E.C., 1971, Production Records, Colorado.

## Saint Jude

LOCATION: S1/2 sec. 13, T. 44 N., R. 18 W.

QUAD Hamm Canyon 7 1/2'  
 MAP MOAB  
 MNZ Uranium, vanadium.  
 DOI 1975  
 REF U.S. Bur. of Mines, 1977, (Unpubl.).

## San Miguel (Radium Group)

LOCATION: sec. 8, T. 43 N., R. 19 W.

QUAD Horse Range Mesa 7 1/2'  
 MAP MOAB  
 PROD As of 1971, 3,679 tons had been mined at a grade of 0.28% U308, producing 20,532 lbs of U308, and 1.27% V205, producing 93,550 lbs of V205.  
 HOST Jurassic Morrison Formation.  
 MNZ Uranium, vanadium, carnotite - tyuyamunite, high vanadium, low lime.  
 DOI 1971  
 REF U.S. Bur. of Mines, 1977, (Unpubl.). U.S. A.E.C., 1971, Production Records, Colorado.

## Santa Maria (Charles I and Golden Rod Group)

LOCATION: sec. 14, T. 43 N., R. 19 W.

LCRM U.S. A.E.C. Production Records also show sec. 26.  
 QUAD Egnar 7 1/2'  
 MAP CORTEZ  
 PROD As of 1971, 47 tons had been mined at a grade of 0.17% U308, producing 157 lbs of U308, and 2.75% V205, producing 2,587 lbs of V205.  
 HOST Jurassic Morrison Formation, Salt Wash Member.  
 MNZ Uranium, vanadium.  
 DOI 1971  
 REF U.S. Bur. of Mines, 1977, (Unpubl.). U.S. A.E.C., 1971, Production Records, Colorado.



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## Sarah Ellen (Muleshoe Group)

LOCATION: W1/2 sec. 26, T. 43 N., R. 18 W.  
 LCRM U.S. A.E.C. Production Records also show sec. 13, 14, 22, and 23.  
 QUAD Joe Davis Hill 7 1/2'  
 MAP CORTEZ  
 PROD As of 1971, 396 tons had been mined at a grade of 0.18% U3O8, producing 1,389 lbs of U3O8, and 1.76% V2O5, producing 13,962 lbs of V2O5.  
 MNZ Uranium, vanadium.  
 DOI 1971  
 REF U.S. Bur. of Mines, 1977, (Unpubl.). U.S. A.E.C., 1971, Production Records, Colorado.

## Sarah Jane

LOCATION:  
 LCST UNLOCATABLE  
 PROD As of 1971, 24 tons had been mined at a grade of 0.24% U3O8, producing 113 lbs of U3O8, and 2.34% V2O5, producing 1,121 lbs of V2O5.  
 DOI 1971  
 REF U.S. A.E.C., 1971, Production Records, Colorado.

## Sarah M. (Muleshoe Group, Mystery Group)

LOCATION: sec. 26, T. 43 N., R. 18 W.  
 QUAD Joe Davis Hill 7 1/2'  
 MAP CORTEZ  
 PROD As of 1971, 382 tons had been mined at a grade of 0.15% U3O8, producing 1,112 lbs of U3O8, and 2.26% V2O5, producing 17,233 lbs of V2O5.  
 MNZ Uranium, vanadium.  
 DOI 1971  
 REF U.S. Bur. of Mines, 1977, (Unpubl.). U.S. A.E.C., 1971, Production Records, Colorado.

## Schlee (Golden Rod Group)

LOCATION: sec. 26, T. 43 N., R. 19 W.  
 LCRM U.S. A.E.C. Production Records also show R. 18 W.  
 QUAD Egnar 7 1/2'  
 MAP CORTEZ  
 PROD As of 1971, 14 tons had been mined at a grade of 0.19% U3O8, producing 54 lbs of U3O8, and 2.90% V2O5, producing 812 lbs of V2O5.  
 HOST Jurassic Morrison Formation, Salt Wash Member.  
 MNZ Uranium, vanadium.  
 DOI 1971  
 REF U.S. Bur. of Mines, 1977, (Unpubl.). U.S. A.E.C., 1971, Production Records, Colorado.

## Sibley

LOCATION: sec. 17, T. 43 N., R. 19 W.  
 QUAD Egnar 7 1/2'  
 MAP CORTEZ  
 PROD As of 1971, 223 tons had been mined at a grade of 0.22% U3O8, producing 977 lbs of U3O8, and 2.83% V2O5, producing 12,609 lbs of V2O5.  
 MNZ Uranium, vanadium.

DOI 1971  
 REF U.S. Bur. of Mines, 1977, (Unpubl.). U.S. A.E.C., 1971, Production Records, Colorado.

## Silver Chief

LOCATION: sec. 12, T. 42 N., R. 9 W.  
 QUAD Telluride 7 1/2'  
 MAP CORTEZ  
 MNZ Uranium, vanadium.  
 DOI 1975  
 REF U.S. Bur. of Mines, 1977, (Unpubl.).

## Single Jack

LOCATION: sec. 26, T. 44 N., R. 11 W.  
 LCRM This deposit lies in the Slick Rock district.  
 QUAD Placerville 7 1/2'  
 MAP MOAB  
 PROD As of 1971, 34 tons had been mined at a grade of 0.09% U3O8, producing 60 lbs of U3O8, and 3.23% V2O5, producing 2,193 lbs of V2O5.  
 HOST Jurassic Morrison Formation, Salt Wash Member.  
 MNZ Uranium, vanadium.  
 DOI 1971  
 REF U.S. Bur. of Mines, 1977, (Unpubl.). U.S. A.E.C., 1971, Production Records, Colorado.

## Slick Rim

LOCATION: sec. 16, T. 45 N., R. 18 W.  
 QUAD Bull Canyon 7 1/2'  
 MAP MOAB  
 PROD As of 1971, 55 tons had been mined at a grade of 0.29% U3O8, producing 314 lbs of U3O8, and 1.91% V2O5, producing 2,098 lbs of V2O5.  
 HOST The host is the Jurassic Morrison Formation.  
 MNZ Uranium, vanadium, carnotite - tyuyamunite, high vanadium, low lime.  
 DOI 1971  
 REF U.S. Bur. of Mines, 1977, (Unpubl.). U.S. A.E.C., 1971, Production Records, Colorado.

## Slick Rock Mill

LOCATION: SE1/4 sec. 25, T. 44 N., R. 19 W.  
 QUAD Horse Range Mesa 7 1/2'  
 MAP MOAB  
 PROD As of 1971, 137 tons had been mined at a grade of 0.45% U3O8, producing 1,225 lbs of U3O8, and 1.89% V2O5, producing 5,179 lbs of V2O5.  
 MNZ Uranium, vanadium.  
 DOI 1971  
 REF U.S. Bur. of Mines, 1977, (Unpubl.). U.S. A.E.C., 1971, Production Records, Colorado.

## Snyder (Snyder and Peterson)

LOCATION: SE1/4 sec. 2, T. 42 N., R. 20 W.  
 LCRM U.S. A.E.C. Production Records also show sec. 11.  
 QUAD Verdure 1 NE 7 1/2'  
 MAP CORTEZ  
 PROD As of 1971, 97,727 tons had been mined at a grade of 0.17% U3O8, producing 334,770

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lbs of U308, and 1.22% V205, producing 2,392,738 lbs of V205.

HUST The host is the Jurassic Morrison Formation.  
 MNZ Uranium, vanadium, carnotite - tyuyamunite, high vanadium, low lime.  
 DOI 1971  
 REF U.S. Bur. of Mines, 1977, (Unpubl.). U.S. A.E.C., 1971, Production Records, Colorado.

## Spring

### LOCATION:

LCRM This deposit lies in the Long Ridge area, Gypsum Valley.  
 PROD As of 1971, 34 tons had been mined at a grade of 0.10% U308, producing 69 lbs of U308, and 1.00% V205, producing 681 lbs of V205.  
 DOI 1971  
 REF U.S. A.E.C., 1971, Production Records, Colorado.

## Spud Patch

LOCATION: sec. 29, T. 43 N., R. 18 W.

LCRM U.S. A.E.C. Production Records show location as Silk Rock district.  
 PROD As of 1971, 1,525 tons had been mined at a grade of 0.16% U308, producing 4,992 lbs of U308, and 2.03% V205, producing 62,048 lbs of V205.  
 HUST The host is the Jurassic Morrison Formation, Salt Wash Sandstone Member, buff and gray medium-grained sandstone, shaly sandstone, grit, and conglomerate, with abundant carbonized plant remains and sparse logs.  
 MNZ Uranium, vanadium, carnotite - tyuyamunite, high vanadium, low lime.  
 DOI 1971  
 REF U.S. Bur. of Mines, 1977, (Unpubl.). U.S. A.E.C., 1971, Production Records, Colorado.

## Star

LOCATION: sec. 30, T. 43 N., R. 18 W.

LCRM This deposit lies in the Speed Patch area.  
 PROD As of 1971, 7 tons had been mined at a grade of 0.14% U308, producing 19 lbs of U308, and 1.19% V205, producing 167 lbs of V205.  
 HUST Jurassic Morrison Formation, Salt Wash Member.  
 DOI 1971  
 REF U.S. A.E.C., 1971, Production Records, Colorado.

## Start

LOCATION: sec. 30, T. 43 N., R. 18 W.

QUAD Egnar 7 1/2'  
 MAP CORTEZ  
 PROD As of 1971, 7 tons had been mined at a grade of 0.14% U308, producing 19 lbs of U308, and 1.19% V205, producing 167 lbs of V205.  
 MNZ Uranium, vanadium.  
 DOI 1971  
 REF U.S. Bur. of Mines, 1977, (Unpubl.). U.S. A.E.C., 1971, Production Records, Colorado.

## State Line

LOCATION: SW1/4NE1/4 sec. 23, T. 44 N., R. 20 W.  
 DOI 1958  
 REF Hague, R. S., Goldenstein, S. J., and Blakey, E. Uranium - vanadium deposits of the Uravan Mineral Belt, 1958.

## Strawberry Roan

LOCATION: sec. 32, T. 43 N., R. 19 W.

LCRM U.S. A.E.C. Production Records also show sec. 31.  
 QUAD Egnar 7 1/2'  
 MAP CORTEZ  
 PROD As of 1971, 7,829 tons had been mined at a grade of 0.35% U308, producing 55,275 lbs of U308, and 2.86% V205, producing 448,066 lbs of V205.  
 HUST The host is the Jurassic Morrison Formation.  
 MNZ Uranium, vanadium, uraninite (coffinite), high vanadium, intermed. lime.  
 DOI 1971  
 REF U.S. Bur. of Mines, 1977, (Unpubl.). U.S. A.E.C., 1971, Production Records, Colorado.

## Summit Incline 1 (Summit No. 21)

LOCATION: sec. 28, T. 43 N., R. 19 W.

QUAD Egnar 7 1/2'  
 MAP CORTEZ  
 OVEL Suncup (Puckett)  
 PROD As of 1971, 16,403 tons had been mined at a grade of 0.20% U308, producing 65,165 lbs of U308, and 1.12% V205, producing 368,793 lbs of V205.  
 HUST The host is the Jurassic Morrison Formation.  
 MNZ Uranium, vanadium, carnotite - tyuyamunite, high vanadium, low lime.  
 DOI 1971  
 REF U.S. Bur. of Mines, 1977, (Unpubl.). U.S. A.E.C., 1971, Production Records, Colorado.

## Suncup (Puckett)

LOCATION: SW1/4 sec. 31, T. 43 N., R. 17 W.

QUAD Joe Davis Hill 7 1/2'  
 MAP CORTEZ  
 PROD As of 1971, 16,130 tons had been mined.  
 MNZ Uranium, vanadium.  
 DOI 1971  
 REF U.S. Bur. of Mines, 1977, (Unpubl.). U.S. A.E.C., 1971, Production Records, Colorado.

## Sunday Group

LOCATION: S1/2 sec. 15, T. 44 N., R. 18 W.

LCRM U.S. A.E.C. Production Records also show N1/2 sec. 24 and sec. 29, T. 43 N., R. 18 W.  
 QUAD Hamm Canyon 7 1/2'  
 MAP MDAB  
 PROD As of 1971, 26,316 tons had been mined at a grade of 0.27% U308, producing 143,221 lbs of U308, and 2.11% V205, producing 1,111,112 lbs of V205.  
 HUST The host is the Jurassic Morrison Formation.  
 MNZ Uranium, vanadium, carnotite - tyuyamunite, high vanadium, low lime.

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DOI 1971  
REF U.S. Bur. of Mines, 1977, (Unpubl.). U.S. A.E.C., 1971, Production Records, Colorado.

## Sundown

LOCATION: sec. 27, T. 44 N., R. 19 W.  
QUAD Horse Range Mesa 7 1/2'  
MAP MOAB  
PROD As of 1971, 85 tons had been mined at a grade of 0.25% U3O8, producing 419 lbs of U3O8, and 2.45% V2O5, producing 4,161 lbs of V2O5.  
MNZ Uranium, vanadium.  
DOI 1971  
REF U.S. Bur. of Mines, 1977, (Unpubl.). U.S. A.E.C., 1971, Production Records, Colorado.

## Sundown Group

LOCATION: sec. 22, T. 45 N., R. 19 W.  
LCRM Also sec. 25, 26, 27 and 34.  
QUAD Anderson Mesa 7 1/2'  
MAP MOAB  
PROD As of 1971, 46 tons had been mined at a grade of 0.26% U3O8, producing 242 lbs of U3O8, and 1.48% V2O5, producing 1,364 lbs of V2O5.  
HOST The host is the Jurassic Morrison Formation.  
MNZ Carnotite - tyuyamunite, high vanadium, Intermed. lime.  
DOI 1971  
REF U.S. A.E.C., 1971, Production Records, Colorado.

## Sunnyside

LOCATION: SW 1/2 sec. 32, T. 44 N., R. 18 W.  
LCRM U.S. A.E.C. Production Records also show E 1/2 of sec. 31.  
QUAD Horse Range Mesa 7 1/2' and Hamm Canyon 7 1/2'  
MAP MOAB  
PROD As of 1971, 227 tons had been mined at a grade of 0.15% U3O8, producing 699 lbs of U3O8, and 1.12% V2O5, producing 5,073 lbs of V2O5.  
MNZ Uranium, vanadium.  
DOI 1971  
REF U.S. Bur. of Mines, 1977, (Unpubl.). U.S. A.E.C., 1971, Production Records, Colorado.

## Sunrise

LOCATION: sec. 5, T. 43 N., R. 19 W.  
LCRM U.S. A.E.C. Production Records show location as sec. 33, 34, T. 46 N., R. 18 W.  
QUAD Horse Range Mesa 7 1/2'  
MAP MOAB  
PROD As of 1971, 12,130 tons had been mined at a grade of 0.33% U3O8, producing 81,254 lbs of U3O8, and 1.89% V2O5, producing 458,160 lbs of V2O5.  
HOST The host is the Jurassic Morrison Formation.  
MNZ Uranium, vanadium, carnotite - tyuyamunite, high vanadium, low lime.  
DOI 1971  
REF U.S. Bur. of Mines, 1977, (Unpubl.). U.S. A.E.C., 1971, Production Records, Colorado.

## Sunrise 1 (one)

LOCATION: sec. 8, T. 43 N., R. 19 W.  
QUAD Horse Range Mesa 7 1/2'  
MAP MOAB  
PROD As of 1971, 8,295 tons had been mined at a grade of 0.27% U3O8, producing 44,928 lbs of U3O8, and 1.65% V2O5, producing 274,283 lbs of V2O5.  
HOST The host is the Jurassic Morrison Formation.  
MNZ Uranium, vanadium, carnotite - tyuyamunite, high vanadium, low lime.  
DOI 1971  
REF U.S. Bur. of Mines, 1977, (Unpubl.). U.S. A.E.C., 1971, Production Records, Colorado.

## Sunrise 3, 4 and 5

LOCATION: sec. 8, T. 43 N., R. 19 W.  
QUAD Horse Range Mesa 7 1/2'  
MAP MOAB  
PROD As of 1971 666 tons had been mined at a grade of 0.16% U3O8, producing 2,191 lbs of U3O8, and 0.37% V2O5, producing 4,939 lbs of V2O5.  
HOST The host is the Jurassic Morrison Formation.  
MNZ Uranium, vanadium, carnotite - tyuyamunite, high vanadium, low lime.  
DOI 1971  
REF U.S. Bur. of Mines, 1977, (Unpubl.). U.S. A.E.C., 1971, Production Records, Colorado.

## Sunrise and Patented Land

LOCATION: sec. 5, T. 43 N., R. 19 W.  
LCRM Also sec. 8  
QUAD Horse Range Mesa 7 1/2'  
MAP MOAB  
PROD As of 1971, 16,749 tons had been mined at a grade of 0.32% U3O8, producing 106,644 lbs of U3O8, and 2.04% V2O5, producing 683,173 lbs of V2O5.  
HOST The host is the Jurassic Morrison Formation.  
MNZ Carnotite - tyuyamunite, high vanadium, low lime.  
DOI 1971  
REF U.S. A.E.C., 1971, Production Records, Colorado.

## Sunshine 6

LOCATION: sec. 21, T. 44 N., R. 17 W.  
LCRM U.S. A.E.C. Production Records also show sec. 34.  
QUAD Gypsum Gap 7 1/2' and Hamm Canyon 7 1/2'  
MAP MOAB  
PROD As of 1971, 29 tons had been mined at a grade of 0.16% U3O8, producing 93 lbs of U3O8, and 1.70% V2O5, producing 988 lbs of V2O5.  
HOST Jurassic Morrison Formation, Salt Wash Member.  
MNZ Uranium, vanadium.  
DOI 1971  
REF U.S. Bur. of Mines, 1977, (Unpubl.). U.S. A.E.C., 1971, Production Records, Colorado.

## Tailhoit

LOCATION: SW 1/4 sec. 27, T. 44 N., R. 19 W.

## SAN MIGUEL COUNTY

LCRM U.S. A.E.C. Production Records also show sec. 28.  
 QUAD Horse Range Mesa 7 1/2'  
 MAP MOAB  
 PROD As of 1971, 3,206 tons had been mined at a grade of 0.32% U3O8, producing 20,327 lbs of U3O8, and 2.03% V2O5, producing 130,176 lbs of V2O5.  
 HOST The host is the Jurassic Morrison Formation.  
 MNZ Uranium, vanadium, carnotite - tyuyamunite, high vanadium, low lime.  
 DOI 1971  
 REF U.S. Bur. of Mines, 1977, (Unpubl.). U.S. A.E.C., 1971, Production Records, Colorado.

### Texas Chief 1

LOCATION: sec. 28, T. 43 N., R. 19 W.  
 LCRM This deposit lies in the Slick Rock district.  
 PROD As of 1971, 28 tons had been mined at a grade of 0.08% U3O8, producing 46 lbs of U3O8, and 0.35% V2O5, producing 198 lbs of V2O5.  
 HOST Jurassic Morrison Formation, Salt Wash Member.  
 DOI 1971  
 REF U.S. A.E.C., 1971, Production Records, Colorado.

### Tiny

LOCATION: sec. 30, T. 44 N., R. 16 W.  
 LCRM U.S. A.E.C. Production Records also show sec. 25, T. 44 N., R. 17 W.  
 QUAD Gypsum Gap 7 1/2'  
 MAP MOAB  
 PROD As of 1971, 3,118 tons had been mined at a grade of 0.18% U3O8, producing 11,346 lbs of U3O8, and 1.40% V2O5, producing 87,026 lbs of V2O5.  
 HOST The host is the Jurassic Morrison Formation.  
 MNZ Uranium, vanadium, carnotite - tyuyamunite, high vanadium, low lime.  
 DOI 1971  
 REF U.S. Bur. of Mines, 1977, (Unpubl.). U.S. A.E.C., 1971, Production Records, Colorado.

### Topaz Group

LOCATION: sec. 9, T. 44 N., R. 18 W.  
 LCRM Also sec. 10, 11, 14-16.  
 QUAD Hamm Canyon 7 1/2'  
 MAP MOAB  
 MNZ Uranium, vanadium.  
 DOI 1971  
 REF U.S. Bur. of Mines, 1977, (Unpubl.). U.S. A.E.C., 1971, Production Records, Colorado.

### Two Bar

LOCATION: sec. 24, T. 44 N., R. 17 W.  
 QUAD Gypsum Gap 7 1/2'  
 MAP MOAB  
 PROD As of 1971, 1,258 tons had been mined at a grade of 0.17% U3O8, producing 4,255 lbs of U3O8, and 1.96% V2O5, producing 49,215 lbs of V2O5.  
 HOST The host is the Jurassic Morrison Formation.  
 MNZ Uranium, vanadium, carnotite - tyuyamunite, high vanadium, low lime.

DOI 1971  
 REF U.S. Bur. of Mines, 1977, (Unpubl.). U.S. A.E.C., 1971, Production Records, Colorado.

### Uintah

LOCATION: sec. 28, T. 43 N., R. 19 W.  
 QUAD Egnar 7 1/2'  
 MAP MOAB  
 PROD As of 1971, 2,259 tons had been mined at a grade of 0.17% U3O8, producing 211 lbs of U3O8, and 0.96% V2O5, producing 1,194 lbs of V2O5.  
 HOST The host is the Jurassic Morrison Formation.  
 MNZ Uranium, vanadium, carnotite - tyuyamunite, high vanadium, intermed. lime.  
 DOI 1971  
 REF U.S. Bur. of Mines, 1977, (Unpubl.). U.S. A.E.C., 1971, Production Records, Colorado.

### Uintah 2 Lode

LOCATION: sec. 28, T. 43 N., R. 19 W.  
 QUAD Egnar 7 1/2'  
 MAP MOAB  
 PROD As of 1971, 36 tons had been mined at a grade of 0.17% U3O8, producing 124 lbs of U3O8, and 1.60% V2O5, producing 1,151 lbs of V2O5.  
 HOST Jurassic Morrison Formation.  
 MNZ Uranium, vanadium.  
 DOI 1971  
 REF U.S. Bur. of Mines, 1977, (Unpubl.). U.S. A.E.C., 1971, Production Records, Colorado.

### Uncle Sam 1

LOCATION: S1/2 sec. 10, T. 44 N., R. 18 W.  
 QUAD Hamm Canyon 7 1/2'  
 MAP MOAB  
 PROD As of 1971, 2,916 tons had been mined at a grade of 0.21% U3O8, producing 12,520 lbs of U3O8.  
 HOST Jurassic Morrison Formation.  
 MNZ Uranium, vanadium, carnotite - tyuyamunite, high vanadium, low lime.  
 DOI 1971  
 REF U.S. Bur. of Mines, 1977, (Unpubl.). U.S. A.E.C., 1971, Production Records, Colorado.

### Uncle Sam 2

LOCATION: sec. 6, T. 42 N., R. 17 W.  
 QUAD Joe Davis Hill 7 1/2'  
 MAP CORTEZ  
 PROD As of 1971, 300 tons had been mined at a grade of 0.23% U3O8, producing 1,371 lbs of U3O8, and 2.09% V2O5, producing 12,560 lbs of V2O5.  
 DOI 1971  
 REF U.S. A.E.C., 1971, Production Records, Colorado.

### Valley View

LOCATION: sec. 19, T. 45 N., R. 18 W.  
 QUAD Anderson Mesa 7 1/2'  
 MAP MOAB

## SAN MIGUEL COUNTY

PROD As of 1971, 40 tons had been mined at a grade of 0.21% U3O8, producing 172 lbs of U3O8, and 1.69% V2O5, producing 1,355 lbs of V2O5.  
 MNZ Uranium, vanadium.  
 DOI 1971  
 REF U.S. Bur. of Mines, 1977, (Unpubl.). U.S. A.E.C., 1971, Production Records, Colorado.

### Van

#### LOCATION:

LCRM This deposit lies in the Uravan district.  
 PROD As of 1971, 30 tons had been mined at a grade of 0.18% U3O8, producing 110 lbs of U3O8, and 1.70% V2O5, producing 1,019 lbs of V2O5.  
 HOST Jurassic Morrison Formation, Salt Wash Member.  
 DOI 1971  
 REF U.S. A.E.C., 1971, Production Records, Colorado.

### Vanadium 7

LOCATION: sec. 23, T. 44 N., R. 17 W.  
 LCRM This deposit lies in Gypsum Valley.  
 QUAD Gypsum Gap 7 1/2'  
 MAP MOAB  
 PROD As of 1971, 6 tons had been mined at a grade of 0.21% U3O8, producing 25 lbs of U3O8, and 0.84% V2O5, producing 101 lbs of V2O5.  
 MNZ Uranium, vanadium.  
 DOI 1971  
 REF U.S. Bur. of Mines, 1977, (Unpubl.). U.S. A.E.C., 1971, Production Records, Colorado.

### Vanadium (Middle Group)

LOCATION: sec. 31, T. 44 N., R. 18 W.  
 LCRM This deposit lies in the Slick Rock district.  
 QUAD Horse Range Mesa 7 1/2'  
 MAP MOAB  
 PROD As of 1971, 190 tons had been mined at a grade of 0.20% U3O8, producing 762 lbs of U3O8, and 0.82% V2O5, producing 3,132 lbs of V2O5.  
 HOST Jurassic Morrison Formation, Salt Wash Member.  
 MNZ Uranium, vanadium.  
 DOI 1971  
 REF U.S. Bur. of Mines, 1977, (Unpubl.). U.S. A.E.C., 1971, Production Records, Colorado.

### Vanadium Queen

LOCATION: sec. 12, T. 44 N., R. 20 W.  
 LCRM U.S. A.E.C. Production Records show location as sec. 23, T. 47 N., R. 17 W (?); sec. 1-7, 30-36, T. 44 N., R. 19 W.  
 QUAD Mount Peale 4 SE 7 1/2'  
 MAP MOAB  
 PROD By 1971, 2,273 tons had been mined at a grade of 0.36% U3O8, producing 16,544 lbs of U3O8, and 1.23% V2O5, producing 56,024 lbs of V2O5.  
 HOST Jurassic Morrison Formation.  
 MNZ Uranium, vanadium, carnotite - tyuyamunite, high vanadium, low lime.  
 DOI 1971  
 REF U.S. Bur. of Mines, 1977, (Unpubl.). U.S. A.E.C., 1971, Production Records, Colorado.

### Vanura Claims

LOCATION: sec. 11, T. 44 N., R. 18 W.  
 QUAD Hamm Canyon 7 1/2'  
 MAP MOAB  
 PROD As of 1971, 43 tons had been mined at a grade of 0.09% U3O8, producing 77 lbs of U3O8, and 1.11% V2O5, producing 956 lbs of V2O5.  
 HOST Jurassic Morrison Formation.  
 MNZ Uranium, vanadium, carnotite - tyuyamunite, high vanadium, intermed. lime.  
 DOI 1971  
 REF U.S. Bur. of Mines, 1977, (Unpubl.). U.S. A.E.C., 1971, Production Records, Colorado.

### Veta Med Mine

LOCATION: sec. 19, T. 44 N., R. 18 W.  
 QUAD Horse Range Mesa 7 1/2'  
 MAP MOAB  
 MNZ Uranium, vanadium.  
 DOI 1975  
 REF U.S. Bur. of Mines, 1977, (Unpubl.).

### Victor

LOCATION: sec. 7, T. 43 N., R. 16 W.  
 LCRM U.S. A.E.C. Production Records also show R. 19 W.  
 QUAD Gypsum Gap 7 1/2'  
 MAP MOAB  
 PROD As of 1971, 5 tons had been mined at a grade of 0.16% U3O8, producing 16 lbs of U3O8, and 1.45% V2O5, producing 145 lbs of V2O5.  
 HOST Jurassic Morrison Formation, Salt Wash Member.  
 MNZ Uranium, vanadium.  
 DOI 1971  
 REF U.S. Bur. of Mines, 1977, (Unpubl.). U.S. A.E.C., 1971, Production Records, Colorado.

### Victor 2

LOCATION: sec. 20, T. 43 N., R. 19 W.  
 QUAD Egnar 7 1/2'  
 MAP CORTEZ  
 PROD As of 1971, 430 tons had been mined at a grade of 0.17% U3O8, producing 1,474 lbs of U3O8, and 1.11% V2O5, producing 9,515 lbs of V2O5.  
 HOST Jurassic Morrison Formation.  
 MNZ Uranium, vanadium, carnotite - tyuyamunite, high vanadium, low lime.  
 DOI 1971  
 REF U.S. Bur. of Mines, 1977, (Unpubl.). U.S. A.E.C., 1971, Production Records, Colorado.

### Virginia

LOCATION: sec. 19, T. 43 N., R. 18 W.  
 PROD As of 1971, 10 tons had been mined at a grade of 0.23% U3O8, producing 46 lbs of U3O8, and 2.95% V2O5, producing 589 lbs of V2O5.  
 HOST Jurassic Morrison Formation, Salt Wash Member.  
 DOI 1971  
 REF U.S. A.E.C., 1971, Production Records, Colorado.

# SAN MIGUEL COUNTY

## Wally (Wally 1, Double Jack, Double Buck)

LOCATION: sec. 14, T. 43 N., R. 18 W.  
 LCRM U.S. A.E.C. Production Records also show sec. 15.  
 QUAD Joe Davis Hill 7 1/2'  
 MAP CORTEZ  
 PROD As of 1971, 1,375 tons had been mined at a grade of 0.26% U3O8, producing 7,019 lbs of U3O8, and 1.76% V2O5, producing 48,280 lbs of V2O5.  
 HOST Jurassic Morrison Formation.  
 MNZ Uranium, vanadium, carnotite - tyuyamunite, high vanadium, intermed. lime.  
 DOI 1971  
 REF U.S. Bur. of Mines, 1977, (Unpubl.). U.S. A.E.C., 1971, Production Records, Colorado.

## Weatherly Claims (Evans Claims, Black King No. 5)

LOCATION: T. 44 N., R. 11 W.  
 LCST UNLOCATABLE  
 QUAD Placerville 7 1/2'  
 MAP MOAB  
 HOST Triassic Dolores Formation and Permian Cutler Formation. Fault breccia and gouge in quartz conglomerate and sandy shale; with abundant hard "hydrocarbon" and sparse viscous asphalt.  
 MNZ Uranium, vanadium, uraninite, autunite, torbernite, coffinite, uranophane.  
 DOI 1975  
 REF U.S. Bur. of Mines, 1977, (Unpubl.). Finch, W. I., 1967, U.S. Geol. Survey Prof. Paper 538, p. 13.

## Wedding Bell Group (Ground Hog Claims)

LOCATION: NE1/4 sec. 21, T. 45 N., R. 18 W.  
 LCRM Also sec. 16 and 22, Wedding Bell Mountain area, Bull Canyon district.  
 QUAD Bull Canyon 7 1/2'  
 MAP MOAB  
 PROD As of 1971, 1,530 tons of ore were mined at grades of 0.33% U3O8 and 1.5% V2O5.  
 MNZ Uranium, vanadium.  
 DOI 1971  
 REF U.S. A.E.C., 1971, Production Records, Colorado.

## White Star and Black King Claims

LOCATION: sec. 35, T. 44 N., R. 11 W.  
 QUAD Placerville 7 1/2'  
 MAP MOAB  
 HOST Triassic Dolores Formation & Permian Cutler Formation. Fault gouge in a conglomerate with abundant hard "hydrocarbon".  
 MNZ Uranium, vanadium, uraninite, coffinite.  
 DOI 1975  
 REF U.S. Bur. of Mines, 1977, (Unpubl.). Finch, W. I., 1967, U.S. Geol. Survey Prof. Paper 538, p. 13.

## Wilmarth

LOCATION: sec. 24, T. 44 N., R. 17 W.  
 QUAD Gypsum Gap 7 1/2'  
 MAP MOAB

PROD As of 1971, 143 tons had been mined at a grade of 0.11% U3O8, producing 318 lbs of U3O8, and 1.17% V2O5, producing 3,352 lbs of V2O5.  
 MNZ Uranium, vanadium.  
 DOI 1971  
 REF U.S. Bur. of Mines, 1977, (Unpubl.). U.S. A.E.C., 1971, Production Records, Colorado.

## Windswept

LOCATION: sec. 15, T. 44 N., R. 17 W.  
 LCRM U.S. A.E.C. Production Records also show sec. 14, 22, 23.  
 QUAD Gypsum Gap 7 1/2'  
 MAP MOAB  
 PROD As of 1971, 2,764 tons had been mined at a grade of 0.16% U3O8, producing 8,928 lbs of U3O8, and 0.99% V2O5, producing 54,527 lbs of V2O5.  
 HOST Jurassic Morrison Formation.  
 MNZ Uranium, vanadium, carnotite - tyuyamunite, high vanadium, low lime.  
 DOI 1971  
 REF U.S. Bur. of Mines, 1977, (Unpubl.). U.S. A.E.C., 1971, Production Records, Colorado.

## Windy Day (Bell)

LOCATION: sec. 8, T. 43 N., R. 16 W.  
 QUAD Gypsum Gap 7 1/2'  
 MAP MOAB  
 PROD As of 1971, 506 tons had been mined at a grade of 0.21% U3O8, producing 2,167 lbs of U3O8, and 2.64% V2O5, producing 26,749 lbs of V2O5.  
 HOST Jurassic Morrison Formation.  
 MNZ Uranium, vanadium, carnotite - tyuyamunite, high vanadium, low lime.  
 DOI 1971  
 REF U.S. Bur. of Mines, 1977, (Unpubl.). U.S. A.E.C., 1971, Production Records, Colorado.

## Wyoming

LOCATION:  
 LCRM This deposit lies in the Slick Rock district.  
 PROD As of 1971, 40 tons had been mined at a grade of 0.26% U3O8, producing 207 lbs of U3O8, and 1.86% V2O5, producing 1,488 lbs of V2O5.  
 HOST Jurassic Morrison Formation, Salt Wash Member.  
 DOI 1971  
 REF U.S. A.E.C., 1971, Production Records, Colorado.

## Yellow Girl

LOCATION: NE1/4 sec. 13, T. 44 N., R. 20 W.  
 DOI 1957  
 REF Hague, R. S., Goldenstein, S. J., and Blakey, E., 1958, Uranium - vanadium deposits of the Uravan Mineral Belt.

## Yellow Girl (Lower Group)

LOCATION: NE1/4 sec. 13, T. 44 N., R. 13 W.  
 QUAD Oak Hill 7 1/2'  
 MAP MOAB

# SAN MIGUEL COUNTY

PROD As of 1971, 349 tons had been mined at a grade of 0.20% U3O8, producing 1,428 lbs of U3O8, and 1.16% V2O5, producing 8,127 lbs of V2O5.  
 HOST Jurassic Morrison Formation, Salt Wash Member.  
 MNZ Uranium, vanadium, carnotite - tyuyamunite, high vanadium, low ilme.  
 DOI 1971  
 REF U.S. Bur. of Mines, 1977, (Unpubl.). U.S. A.E.C., 1971, Production Records, Colorado.

## Yellowbird (Radium)

LOCATION: sec. 4, T. 43 N., R. 19 W.  
 QUAD Horse Range Mesa 7 1/2'  
 MAP MOAB  
 PROD As of 1971, 3,802 tons had been mined at a grade of 0.31% U3O8, producing 23,521 lbs of U3O8, and 1.81% V2O5, producing 137,286 lbs of V2O5.  
 HOST Jurassic Morrison Formation.  
 MNZ Uranium, vanadium, carnotite - tyuyamunite, high vanadium, low ilme.  
 DOI 1971  
 REF U.S. Bur. of Mines, 1977, (Unpubl.). U.S. A.E.C., 1971, Production Records, Colorado.

## Yorkton

LOCATION: sec. 19, T. 45 N., R. 18 W.  
 LCRM U.S. A.E.C. Production Records show sec. 13 & 14.  
 QUAD Anderson Mesa 7 1/2'  
 MAP MOAB  
 PROD As of 1971, 13 tons had been mined at a grade of 0.30% U3O8, producing 79 lbs of U3O8, and 1.93% V2O5, producing 502 lbs of V2O5.  
 HOST Jurassic Morrison Formation.  
 MNZ Uranium, vanadium, carnotite - tyuyamunite, high vanadium, low ilme.  
 DOI 1971  
 REF U.S. Bur. of Mines, 1977, (Unpubl.). U.S. A.E.C., 1971, Production Records, Colorado.

## Zebra Claims AN (Yellow Jacket, D. Hattie Claims)

LOCATION: sec. 15, T. 43 N., R. 16 W.  
 QUAD Dawson Draw 7 1/2' & McKenna Peak 7 1/2'  
 MAP CORTEZ  
 PROD As of 1971, 28 tons had been mined at a grade of 0.07% U3O8, producing 41 lbs of U3O8, and 1.59% V2O5, producing 678 lbs of V2O5.  
 HOST Jurassic Morrison Formation.  
 MNZ Uranium, vanadium, carnotite - tyuyamunite, high vanadium, low ilme.  
 DOI 1971  
 REF U.S. Bur. of Mines, 1977, (Unpubl.). U.S. A.E.C., 1971, Production Records, Colorado.

## SEDGWICK COUNTY

There are no reported occurrences of uranium in this county.

The geology of the county is very simple, consisting of flat-lying Tertiary and Quaternary sediments.

Potential for uranium resources in the county is small. The Ogallala Formation is the most favorable unit in the county for such resources.



## SUMMIT COUNTY

No recorded production of uranium is reported in Summit County. Only three occurrences of uranium have been reported in the county, and the validity of one is questionable.

Geologically, the county is quite complex. Its southern part lies astride the Colorado mineral belt in the Park Range and includes the mining districts of Breckenridge, Montezuma, and Kokomo. The northern half includes the Gore Range and the Williams Forks Mountains separated by the valley of the Blue River.

Precambrian, Paleozoic, and Tertiary rocks are intermingled in all of the mountain ranges. Quaternary and Cretaceous rocks are found in the valley of the Blue River.

Potential for reserves to be found in the county appears to be small, due to the unfavorable host-rock types that occur in the county. Because of the complexity of structures and intrusions, the most likely occurrences that would be found in the county would be the vein-type or igneous-type.

## SUMMIT COUNTY

### Como Claims

LOCATION: sec. 30, T. 6 S., R. 77 W.  
MAP LEADVILLE  
MNZ Uranium.  
DOI 1975  
REF U.S. Bur. of Mines, 1977 (Unpubl.).

### Loveland Pass

LOCATION: T. 4 S., R. 76 W.  
LCST UNSURVEYED  
LCRM Just west of Pass Lake.  
MAP DENVER  
HOST Precambrian Idaho Springs Formation and  
Precambrian granite.  
STRC Area is in the Loveland Pass-Berthoud Pass  
shear zone with moderate to intense shear  
in the rocks of the area.  
MNZ 0.031% to 0.964% U308 assay by Charlie Parker  
reported.  
RMKS Claims located as the Tet, Pete, Neil and  
Sher Claims.  
DOI 1977  
REF Western Nuclear Inc. submittal file, 1977.

### Unnamed No. 1

LOCATION: sec. 22, T. 6 S., R. 76 W.  
MAP DENVER  
RNG 2 x bg  
STRC Fissure vein.  
MNZ 0.027% eU308, cerussite, pyrolusite, limonite.  
DOI 1953  
REF U.S. A.E.C., 1966, Preliminary Reconnaissance  
Reports, Summit County, Colorado.

## TELLER COUNTY

Little uranium has been produced from Teller County. Records show that by 1971, 401 tons of ore were mined that yielded 1,226 lb of  $U_3O_8$ .

The geology of the county is not complex. It is almost entirely underlain by Precambrian igneous rocks, mostly the Pike's Peak Granite. Scattered volcanics are found in the southern part of the county, and some Tertiary lake beds lie along the western edge. A large graben near the town of Woodland Park has preserved Cambrian to Mississippian sediments. Uranium occurrences are recorded in almost all these rock types, except for the Paleozoic sediments found in the graben.

Only five mines or prospects out of 13 total uranium occurrences in the county have recorded uranium production. All of these mines have produced from one formation, the Tallahassee Creek Conglomerate. The producing mines include Abril 2, 6, 8, Genevieve Lode, High Park Prospect, McVey Lease, and SWQ NEQ, sec. 36. Three of these producers are clustered in the southwestern corner of the county. One is on Grouse Mountain southwest of Victor. The other producing mine is near Rhyolite Mountain north of the town of Cripple Creek. Those three producers all occur in the Tertiary Tallahassee Creek Conglomerate in an area known as High Park. This area was extensively explored in the 1950's, and recent exploration carried out by Cyprus Mines has found economic reserves at the High Park Prospect. In 1977 a small pilot open pit was under development at this site to test the feasibility of mining. Mining at High Park Prospect is planned to commence at the same time the Hansen Ore Body at Tallahassee Creek in Fremont County begins production.

The SWQ NEQ, sec. 36 mine on Grouse Mountain has produced approximately 76 percent of the recorded tonnage mined for uranium in the county. This mine also is reported to be in the Tallahassee Creek Conglomerate.

The last-mentioned producer is the Genevieve Lode north of Cripple Creek. It is reported to occur in Tertiary volcanics, tuffs, and in a conglomeratic sandstone possibly within the Tallahassee Creek Conglomerate.

The potential for more reserves to be found in the county is high. All producing mines in Teller County are within the Tallahassee Creek Conglomerate, which is the host for the large Hansen Ore Body in the Tallahassee Creek area. Therefore, this formation will become a high-priority exploration target. Other rock showing potential are the Florissant lake beds. These sediments were explored near the towns of Divide and Lake George (Del Rio, 1960, p. 364) in the 1950's. Exploration was also carried out at these localities in 1976-77. It is very likely that these areas contain uranium reserves, but we were not able to document them. Another potential host for uranium resources in the county is the Mt. Rosa alkaline granite, a series of granitic bodies that extend from Teller into El Paso County. A number of occurrences associated with this granite are noted in El Paso County with one in Teller County. The areas where this granite is sheared and/or altered have potential for uranium occurrences and resources. For more information on this particular host see Murphy, M., Wollenberg, H., Strisower, B., and others, 1978, Uranium in Alkaline Rocks, U.S. Department of Energy GJBX078(78), p. 50.

Uraninite and uranothorite are found in small pegmatites within the Pike's Peak Granite. However, these are too small to be considered economic.

In conclusion, rock types and structures in the county have potential for hosting uranium resources. The small historical production belies the future potential for uranium resources in the county.

# TELLER COUNTY

## Abril Nos. 2,6,8

LOCATION: NE1/4 sec. 30, T. 15 S., R. 70 W.  
 LCRM Occurrence is on Four Mile Creek 1/2 mile north of Booger Red Hill.  
 QUAD Cover Mountain 15'  
 MAP PUEBLO  
 PROD In 1961, 8 tons were mined at a grade of 0.18% U308, producing 29 lbs of U308.  
 HOST Oligocene Tallahassee Creek Conglomerate, conglomeratic sandstone associated with volcanics.  
 MNZ Autunite and uraninite.  
 DOI 1973  
 REF U.S. Geol. Survey, 1977, CRIB File. Young, P., and Mickle, D. G., 1976. U.S. A.E.C., 1971, Production Records, Colorado. U.S. Geol. Survey, 1964, Mineral and Water Resources of Colorado, p. 140.

## Carl Claim No. 1

LOCATION: sec. 2, T. 15 S., R. 68 W.  
 LCST UNCERTAIN  
 LCRM The directions to claim are as follows: "From the junction of S. Tejon St. and Cheyenne Blvd. in Colorado Springs go west on Cheyenne Blvd. for 2.9 miles and take a right fork onto Gold Camp Road. Proceed for 3.2 miles and take left fork toward Cripple Creek for 8.9 miles. Now take a left fork for .4 mile and a right fork for 3.2 miles. Then take left fork for 0.15 mile and a right fork onto work road for .7 mile. Park and go up hill in direction of N41°W for 350 yds to claim".  
 QUAD Pikes Peak 7 1/2'  
 MAP PUEBLO  
 BKG .08 mr/hr  
 RNG .08 to 4.8 mr/hr  
 HOST Coarse-grained, almost pegmatitic Precambrian Pikes Peak Granite.  
 MNZ No radioactive minerals were observed.  
 DOI 1954  
 REF U.S. A.E.C., 1966, Preliminary Reconnaissance Reports, Teller County, Colorado.

## Curtis, Thorpe & Green Lease (Tree No. 3)

LOCATION: E1/2 sec. 25, T. 15 S., R. 71 W.  
 LCRM Not same as Sand Creek No. 4. (U.S. A.E.C. note).  
 HOST Arkosic sandstone in Oligocene Tallahassee Creek Conglomerate.  
 MNZ Uraninite.  
 DOI 1971  
 REF U.S. A.E.C., 1971, Production Records, Colorado.

## Fluorine Mine

LOCATION: sec. 2, T. 15 S., R. 70 W.  
 LCST UNCERTAIN  
 MAP PUEBLO  
 RNG 5 x bg.

HOST Replacement in Tertiary phonolite and phonolite breccia.  
 MNZ Gold, silver, no uranium observed.  
 DOI 1950  
 REF U.S. A.E.C., 1966, Preliminary Reconnaissance Reports, Teller County, Colorado.

## Genevieve Lode (Phonolite Mountain)

LOCATION: SE1/4 sec. 19, T. 14 S., R. 69 W.  
 QUAD Cripple Creek North 7 1/2'  
 MAP PUEBLO  
 PROD In 1957 and 1958, a total of 5 tons were mined at a grade of 0.44% U308, producing 44 lbs of U308 and 0.02% V205, producing 2 lbs of V205.  
 HOST Tertiary volcanics and welded tuffs associated with conglomeratic sandstone (probably Oligocene Tallahassee Creek Conglomerate).  
 MNZ Autunite identified on fractures.  
 DOI 1971  
 REF U.S. A.E.C., 1977, Production Records, Colorado. U.S. Geol. Survey, 1977, CRIB File. Young, P., and Mickle, D. G., 1976.

## High Park Prospect

LOCATION: N1/2 sec. 31, T. 15 S., R. 70 W.  
 LCRM On High Creek 1 mile south of the Abril Mine.  
 QUAD Cover Mountain 15'  
 MAP PUEBLO  
 DYEL There is a small open pit.  
 PROD Prior to 1971, 46 tons were mined averaging .13% U308 and containing 115 lbs of U308.  
 HOST Oligocene Tallahassee Creek Conglomerate.  
 MNZ Autunite, saleeite, sabugalite (a uranium bearing titanium oxide) were identified in oxidized ores. Uraninite was identified in unoxidized ores.  
 DOI 1977  
 REF E. P. Beroni, 1978, Personal Communication. Young, P., and Mickle, D. G., 1976. U.S. A.E.C., 1971, Production Records, Colorado.

## Hilda May Claim No. 3

LOCATION: sec. 22, T. 11 S., R. 71 W.  
 LCST UNCERTAIN  
 QUAD Hackett Mtn. 7 1/2'  
 MAP DENVER  
 BKG .02 mr/hr  
 RNG .02 to .45 mr/hr  
 HOST Pegmatite in Precambrian Pikes Peak Granite.  
 STRC Pegmatite strikes NW.  
 MNZ Quartz, biotite, feldspar, fluorite, lepidolite. Thorium? No radioactive minerals identified.  
 DOI 1955  
 REF U.S. Bur. of Mines, 1977, (Unpubl.). U.S. A.E.C., 1966, Preliminary Reconnaissance Reports, Teller County, Colorado.

## Lady Stith Claim (Globe Hill Group)

LOCATION: sec. 18, T. 15 S., R. 69 W.  
 LCST UNCERTAIN  
 LCRM Two shafts and underground workings which were inaccessible in 1955. There was substantial gold production prior to 1902.

# TELLER COUNTY

DVEL There has been no uranium production. There was an estimated reserve of 12 tons at a grade of 0.24% U308 stockpiled.

BKG .05 mr/hr

RNG .15 to 4.0 mr/hr

HOST Tertiary volcanic breccia intruded by a phonolite or basic dike.

STRC Uranium occurs in a shear zone at the contact between the breccia and altered zone. Uraniferous zone is 4-8 in. wide with a strike length of 5 ft.

ALT "Talc and Kaolinite in strangely altered zone."

MNZ Tyuyamunite, fluorite, talc, kaolinite, gypsum. A 1-ft channel sample assayed 0.44% U308.

RMKS This claim is a patented claim. Patent number is 7686.

DOI 1955

REF U.S. A.E.C., 1955, Unpublished notes by Newcomb, E. L.

## McVey Lease

LOCATION: NE1/4 sec. 25, T. 15 S., R. 71 W.

QUAD Cover Mountain 15'

MAP PUEBLO

DVEL Adit with small workings.

PROD In 1959, 37 tons averaging 0.10% U308 and containing 73 lbs of U308 were mined.

HUST Conglomeratic sandstone associated with volcanics in the Oligocene Tallahassee Creek Conglomerate.

MNZ Uraninite.

DOI 1971

REF R. C. Malan, 1978, Personal Communication.  
U.S. A.E.C., 1977, Production Records, Colorado.  
U.S. Geol. Survey, 1977, CRIB File.

## Rhyolite Mountain

LOCATION: SW1/4 sec. 6, T. 15 S., R. 69 W.

QUAD Cripple Creek

MAP PUEBLO

DVEL Drilling has been carried out by a major company on the property.

BKG Rhyolite 100-150 cps

RNG 500-1000 cps

HOST Tertiary altered rhyolite plug.

ALT Bleached

MNZ Autunite and torbernite associated with fluorite. (Pods 3 ft across in area of much clay. Area nearby has petrified wood per Comm. Nate Salo).

DOI 1977

REF David Wolf, 1977, Personal Communication.  
E. P. Beroni, 1977, Personal Communication.  
Nate Salo, 1977, Personal Communication.

## School Section (Park City No. 1)

LOCATION: NE1/4NE1/4 sec. 36, T. 15 S., R. 71 W.

QUAD Cover Mountain 15'

MAP PUEBLO

PROD No production reported, drilled out ore body.

HOST Tertiary conglomeratic sandstone associated with volcanics (Tallahassee Creek Conglomerate).

MNZ Uraninite, average depth to ore 40 ft.

DOI 1973

REF U.S. Geol. Survey, 1977, CRIB File. U.S. A.E.C., 1971, Production Records, Colorado.

## Summit Claims; (Dandy Dollar; McDonough; Breen Extension Lucky M)

LOCATION: sec. 6, T. 15 S., R. 69 W.

MAP PUEBLO

MNZ Uranium.

DOI 1977

REF U.S. Bur. of Mines, 1977, (Unpubl.).

## SWQ NEQ SEC. 36

LOCATION: SW1/4NE1/4 sec. 36, T. 15 S., R. 70 W.

DVEL Small open pit with an adit in wall of pit.

PROD In 1962, 305 tons were mined at a grade of .16% U308, producing 965 lbs of U308.

HOST Oligocene Tallahassee Creek Conglomerate.

MNZ Uraninite (coffinite), autunite, scattered sulfide.

DOI 1971

REF U.S. A.E.C., 1971, Production Records, Colorado.  
R. C. Malan, 1963, Personal Notes.

## WASHINGTON COUNTY

Neither uranium production nor occurrences have been reported from this county. The county is underlain by flat-lying Quaternary and Tertiary sediments. Potential for uranium resources within the county is small, but the most favorable unit for occurrences is the Tertiary Ogallala Formation, which outcrops in the eastern area of the county.

## WELD COUNTY

No production of uranium from Weld County has taken place to date. Production will begin in the near future as Power Resources Corporation and Wyoming Minerals Corporation develop their in-situ leach project near the communities of Grover and Keota.

Weld County is in northeastern Colorado in the Great Plains Province. Upper Cretaceous sedimentary rocks dip gently southwest into the Denver Basin. The bedrock formations are mantled extensively by Tertiary gravels and clays and Quaternary eolian sands and valley-fill deposits.

Exploration in the northern part of the Denver Basin for uranium has been underway since 1970. Occur-

rences in outcrops of the Laramie Formation caused accelerated exploration, and subsequent wide-spaced drilling discovered several deposits. These deposits occur in what may be unaltered beach sands in the Laramie Formation, very similar to the uranium deposits in Texas. The deposit near Grover was chosen as an in-situ leach test site. The pilot test of this program is in operation at this time. Reserves at the Grover site have been reported to be about 1,000,000 lb of  $U_3O_8$  (Reade, H. L., 1976). Other deposits of this type will likely be discovered in the county. The 30 occurrences in the county almost all lie in the Laramie or Fox Hills Formations.

# WELD COUNTY

## Eastman Basin

LOCATION: sec. 27, T. 9 N., R. 65 W.  
 LCRM Other anomalies in sec. 28, 33, 34.  
 QUAD Antelope Reservoir 7 1/2'  
 MAP GREELEY  
 BKG 100 cps  
 RNG 1100 cps or 11 x bg  
 HOST Cretaceous Laramie Formation.  
 ALT Heavy Fe and Mn staining in the sands.  
 RMKS These were some of the first finds of anomalies when the Grover anomaly was discovered. Radioactive anomalies in stream valleys and irrigation ditches.  
 REF Kenneth Baker, 1977, Personal Communication.

DOI 1975  
 REF U.S. Bur. of Mines, 1977 (Unpubl.)

## Unnamed No. 1

LOCATION: NW1/4 sec. 19, T. 9 N., R. 65 W.  
 MAP GREELEY  
 HOST Cretaceous Lance Formation, equivalent to Fox Hills Formation at base.  
 RMKS No radioactivity range given - merely noted as a "sand outcrop with uranium showings".  
 DOI 1977  
 REF Ken Holmes, 1977, Personal Communication.

## Unnamed No. 2

LOCATION: NW1/4 sec. 12, T. 9 N., R. 66 W.  
 MAP GREELEY  
 HOST Cretaceous Lance Formation, equivalent to Fox Hills Formation at base.  
 RMKS No radioactivity range given - merely noted as a "sand outcrop with uranium showings".  
 DOI 1977  
 REF Ken Holmes, 1977, Personal Communication.

## Unnamed No. 3

LOCATION: SW1/4 sec. 7, T. 9 N., R. 65 W.  
 MAP GREELEY  
 HOST Cretaceous Lance Formation, equivalent to Fox Hills Formation at base.  
 RMKS No radioactivity range given - merely noted as a "sand outcrop with uranium showings".  
 DOI 1977  
 REF Ken Holmes, Mobil Oil Corp., 1977, Personal Communication.

## Unnamed No. 4

LOCATION: NW1/4 sec. 17, T. 9 N., R. 65 W.  
 MAP GREELEY  
 HOST Cretaceous Lance Formation, equivalent to Fox Hills Formation at base.  
 RMKS No radioactivity range given - merely noted as a "sand outcrop with uranium showings".  
 DOI 1977  
 REF Ken Holmes, Mobil Oil Corp., 1977, Personal Communication.

## Unnamed No. 5

LOCATION: SE1/4 sec. 6, T. 9 N., R. 65 W.  
 MAP GREELEY  
 HOST Cretaceous Lance Formation, equivalent to Fox Hills Formation at base.  
 RMKS No radioactivity range given - merely noted as a "sand outcrop with uranium showings".  
 DOI 1977  
 REF Ken Holmes, Mobil Oil Corp., 1977, Personal Communication.

## Unnamed No. 6

LOCATION: SE1/4 sec. 5, T. 9 N., R. 65 W.  
 MAP GREELEY  
 HOST Cretaceous Lance Formation, equivalent to Fox Hills Formation at base.  
 RMKS No radioactivity range given - merely noted as a "sand outcrop with uranium showings".

## Grover Deposit

LOCATION: sec. 24, T. 10 N., R. 62 W.  
 LCRM See also sec. 23, 25, 36.  
 MAP GREELEY  
 PROD Grade of 0.14% eU308, gross reserves quoted as being 1,007,000 lbs U308 at a 0.05% U308 cutoff and a grade thickness above 0.20.  
 HOST Sandstone, gray, medium- to fine-grained, quartzose, micaceous, in part carbonaceous, in the Upper Cretaceous Fox Hills Sandstone and Laramie Formation.  
 STRC Fluvial channel sands trending in a N-S direction.  
 ALT None identified. Sands reported to be similar on both sides of geochemical cell.  
 RMKS Exploration was carried out extensively in this area 1970-1973 by Hyland Nuclear and Trend Exploration Limited. Development now being carried out by Power Resources Corp. and Wyoming Mineral Corp. Several deposits reported found by drilling in the area. This deposit is being tested for possible solution mining.  
 REF U.S. Bur. of Mines, 1977, (Unpubl.). Power Resources Corporation, 1977. Reade, H. L., Jr., 1976.

## Indian Creek

LOCATION: sec. 19, T. 10 N., R. 67 W.  
 MAP GREELEY  
 MNZ Uranium.  
 DOI 1975  
 REF U.S. Bur. of Mines, 1977, (Unpubl.)

## King Solomon

LOCATION: sec. 34, T. 9 N., R. 65 W.  
 MAP GREELEY  
 MNZ Uranium, vanadium.  
 RMKS Federal lease.  
 DOI 1975  
 REF U.S. Bur. of Mines, 1977, (Unpubl.)

## Pawnee Buttes N.E.

LOCATION: sec. 25, T. 8 N., R. 60 W.  
 MAP GREELEY  
 MNZ Uranium, vanadium.



# WELD COUNTY

DOI 1977  
REF Ken Holmes, Mobil Oil Corp., 1977, Personal Communication.

## Unnamed No. 7

LOCATION: SE1/4 sec. 4, T. 9 N., R. 65 W.  
MAP GREELEY  
HOST Cretaceous Lance Formation, equivalent to Fox Hills Formation at base.  
RMKS No radioactivity range given - merely noted as a "sand outcrop with uranium showings".  
DOI 1977  
REF Ken Holmes, Mobil Oil Corp., 1977, Personal Communication.

## Unnamed No. 8

LOCATION: SW1/4 sec. 3, T. 9 N., R. 65 W.  
MAP GREELEY  
HOST Cretaceous Lance Formation, equivalent to Fox Hills Formation at base.  
RMKS No radioactivity range given - merely noted as a "sand outcrop with uranium showings".  
DOI 1977  
REF Ken Holmes, Mobil Oil Corp., 1977, Personal Communication.

## Unnamed No. 9

LOCATION: SW1/4 sec. 22, T. 10 N., R. 65 W.  
MAP GREELEY  
HOST Cretaceous Lance Formation, equivalent to Fox Hills Formation at base.  
RMKS No radioactivity range given - merely noted as a "sand outcrop with uranium showings".  
DOI 1977  
REF Ken Holmes, Mobil Oil Corp., 1977, Personal Communication.

## Unnamed No. 10

LOCATION: SE1/4 sec. 19, T. 10 N., R. 65 W.  
MAP GREELEY  
HOST Cretaceous Lance Formation, equivalent to Fox Hills Formation at base.  
RMKS No radioactivity range given - merely noted as a "sand outcrop with uranium showings".  
DOI 1977  
REF Ken Holmes, Mobil Oil Corp., 1977, Personal Communication.

## Unnamed No. 11

LOCATION: NE1/4 sec. 15, T. 9 N., R. 65 W.  
MAP GREELEY  
HOST Cretaceous Lance Formation, equivalent to Fox Hills Formation at base.  
RMKS No radioactivity range given - merely noted as a "sand outcrop with uranium showings".  
DOI 1977  
REF Ken Holmes, Mobil Oil Corp., 1977, Personal Communication.

## Unnamed No. 12

LOCATION: NW1/4 sec. 34, T. 9 N., R. 65 W.  
MAP GREELEY  
HOST Cretaceous Lance Formation, equivalent to

Fox Hills Formation at base.

RMKS Pit.  
DOI 1977  
REF Ken Holmes, Mobil Oil Corp., 1977, Personal Communication.

## Unnamed No. 13

LOCATION: SW1/4 sec. 22, T. 9 N., R. 64 W.  
MAP GREELEY  
HOST Cretaceous Lance Formation, equivalent to Fox Hills Formation at base.  
RMKS No radioactivity range given - merely noted as a "sand outcrop with uranium showings".  
DOI 1977  
REF Ken Holmes, Mobil Oil Corp., 1977, Personal Communication.

## Unnamed No. 14

LOCATION: NE1/4 sec. 27, T. 9 N., R. 64 W.  
MAP GREELEY  
HOST Cretaceous Lance Formation, equivalent to Fox Hills Formation at base.  
RMKS No radioactivity range given - merely noted as a "sand outcrop with uranium showings".  
DOI 1977  
REF Ken Holmes, Mobil Oil Corp., 1977, Personal Communication.

## Unnamed No. 15

LOCATION: SE1/4 sec. 10, T. 8 N., R. 64 W.  
MAP GREELEY  
HOST Cretaceous Lance Formation, equivalent to Fox Hills Formation at base.  
RMKS No radioactivity range given - merely noted as a "sand outcrop with uranium showings".  
DOI 1977  
REF Ken Holmes, Mobil Oil Corp., 1977, Personal Communication.

## Unnamed No. 16

LOCATION: NW1/4 sec. 24, T. 8 N., R. 64 W.  
MAP GREELEY  
HOST Cretaceous Lance Formation, equivalent to Fox Hills Formation at base.  
RMKS No radioactivity range given - merely noted as a "sand outcrop with uranium showings".  
DOI 1977  
REF Ken Holmes, Mobil Oil Corp., 1977, Personal Communication.

## Unnamed No. 17

LOCATION: SE1/4 sec. 28, T. 8 N., R. 64 W.  
MAP GREELEY  
HOST Cretaceous Lance Formation, equivalent to Fox Hills Formation at base.  
RMKS No radioactivity range given - merely noted as a "sand outcrop with uranium showings".  
DOI 1977  
REF Ken Holmes, Mobil Oil Corp., 1977, Personal Communication.

## Unnamed No. 18

# WELD COUNTY

LOCATION: NW1/4 sec. 34, T. 8 N., R. 64 W.  
 MAP GREELEY  
 HOST Cretaceous Lance Formation, equivalent to Fox Hills Formation at base.  
 RMKS No radioactivity range given - merely noted as a "sand outcrop with uranium showings".  
 DOI 1977  
 REF Ken Holmes, Mobil Oil Corp., 1977, Personal Communication.

## Unnamed No. 19

LOCATION: NW1/4 sec. 24, T. 8 N., R. 64 W.  
 HOST Cretaceous Lance Formation, equivalent to Fox Hills Formation at base.  
 RMKS No radioactivity range given - merely noted as a "sand outcrop with uranium showings".  
 DOI 1977  
 REF Ken Holmes, 1977, Personal Communication.

## Unnamed No. 20

LOCATION: NW1/4 sec. 4, T. 9 N., R. 63 W.  
 MAP GREELEY  
 HOST Cretaceous Lance Formation, equivalent to Fox Hills Formation at base.  
 RMKS No radioactivity range given - merely noted as a "sand outcrop with uranium showings".  
 DOI 1977  
 REF Ken Holmes, Mobil Oil Corp., 1977, Personal Communication.

## Unnamed No. 21

LOCATION: SE1/4 sec. 10, T. 9 N., R. 63 W.  
 MAP GREELEY  
 HOST Cretaceous Lance Formation, equivalent to Fox Hills Formation at base.  
 RMKS No radioactivity range given - merely noted as a "sand outcrop with uranium showings".  
 DOI 1977  
 REF Ken Holmes, Mobil Oil Corp., 1977, Personal Communication.

## Unnamed No. 22

LOCATION: S1/2 sec. 14, T. 9 N., R. 63 W.  
 MAP GREELEY  
 HOST Cretaceous Lance Formation, equivalent to Fox Hills Formation at base.  
 RMKS No radioactivity range given - merely noted as a "sand outcrop with uranium showings".  
 DOI 1977  
 REF Ken Holmes, Mobil Oil Corp., 1977, Personal Communication.

## Unnamed No. 23

LOCATION: NE1/4 sec. 4, T. 8 N., R. 62 W.  
 MAP GREELEY  
 HOST Cretaceous Lance Formation, equivalent to Fox Hills Formation at base.  
 RMKS No radioactivity range given - merely noted as a "sand outcrop with uranium showings".  
 DOI 1977  
 REF Ken Holmes, Mobil Oil Corp., 1977, Personal Communication.

## Unnamed No. 24

LOCATION: NW1/4 sec. 10, T. 8 N., R. 62 W.  
 MAP GREELEY  
 HOST Cretaceous Lance Formation, equivalent to Fox Hills Formation at base.  
 RMKS No radioactivity range given - merely noted as a "sand outcrop with uranium showings".  
 DOI 1977  
 REF Ken Holmes, Mobil Oil Corp., 1977, Personal Communication.

## Wildhorse

LOCATION: sec. 20, T. 9 N., R. 63 W.  
 MAP GREELEY  
 MNZ Uranium.  
 DOI 1975  
 REF U.S. Bur. of Mines, 1977, (Unpubl.)

## YUMA COUNTY

There has been no production of uranium from Yuma County, nor are any occurrences reported.

The geology of the county is simple, consisting of flat-lying Quaternary, Tertiary, and Cretaceous sediments.

Potential for uranium resources in the county is small. The Tertiary Ogallala Formation is the most favorable unit for uranium occurrences.

## **PART TWO**

### **Bibliography**



## Introduction

This bibliography is a compilation of references dealing with radioactive occurrences and radioactivity in Colorado. We have attempted to make it complete as of approximately October 1977, with more recent references added as they came to our attention. Obviously a "complete" bibliography is virtually impossible, but this work is as comprehensive as we could achieve within the given time constraints. Readers' contributions of any additional references will be added to our files.

### DESCRIPTION OF COMPILATION METHODS, STYLE AND FORMAT

References were compiled from a large variety of sources and entered in a standard format onto a mini-computer. The format chosen was taken from "Suggestions to Authors", 5th edition, 1958, by the U.S. Geological Survey. The references are arranged alphabetically by the first author's last name, and then by additional authors where they exist. This alphabetization was done by computer and carries to 28 places. When an author has written more than one paper, the references are arranged chronologically. Each reference includes the author's name(s), year of publication, title of the article, publication source, and number of pages:

Shoemaker, E. M., and Newman, W. L.,  
1957, Notes on the Moenkopi  
Formation in the salt anticline  
region of Colorado and Utah: U.S.  
Geol. Survey T-681, 43 p., (see  
Am. Assoc. Petroleum Geologists  
Bull., v. 43, p. 1835-1851).

The names of serial publications are abbreviated but are listed in full in the serials list at the beginning of the bibliography. Cross-references, where known to us, are shown in parentheses with each reference (see example), so that if one publication is unobtainable, the same or similar information may be found in another journal or book.

### DESCRIPTION OF SOURCES

Sources of information include published and unpublished bibliographies, computerized bibliographic searches, state and federal libraries and librarians, and miscellaneous references furnished by many people who have helped in completing the project. The U.S. Geological Survey Library in Lakewood, Colorado was the main reference facility used, with some additional work done at the Department of Energy Library in Grand Junction, Colorado and at the Colorado State Library in Denver, Colorado. The primary literature sources include:

Colorado Geological Survey, 1976,  
Bibliography and Index of Colorado  
geology, 1875 to 1975: Colorado Geol.  
Survey Bull. 37, 488 p.

Cooper, Margaret, 1954, Bibliography and  
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thorium and radioactive occurrences in

the United States, Part 3, Colorado and  
Utah: Geol. Soc. America Bull., v. 65,  
p. 467-590.

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igneous and metamorphic rocks in the  
United States: U.S. Geol. Survey Bull.  
1059-E, p. 205-262.

Dean, B. G., 1960, Selected annotated  
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bearing veins in the United States:  
U.S. Geol. Survey Bull. 1059-G,  
p. 327-440.

Flx, C. E., 1958, Selected annotated  
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Kruszewski, S. V., 1973, Availability of  
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PB-187559 (rev.), 124 p.

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# 6: NTIS 1964-1976  
#34: SCISEARCH 74-76  
#35: DISSERTATIONS Nov. 76  
# 8: ENGR INDEX 70-76/NOV  
#40: ENVIROLINE OCT 76

Mellin, R. E., 1957, Selected annotated  
bibliography of the geology of  
sandstone-type uranium deposits in the  
United States: U.S. Geol. Survey Bull.  
1059-C, p. 159-175.

Mineral Economics Consultants, Inc., 1975,  
Uranium and vanadium occurrences in  
Colorado: U.S. Bureau of Mines  
Contract H-0252026, 49 p., (unpubl.).

Oak Ridge Retrieval, February, 1977,  
Ecological Sciences Information Center  
of Oak Ridge National Laboratory,  
retrieval of information on uranium and  
thorium in Colorado and RECON printouts  
from the ERDA Energy Data Base and  
Nuclear Science Abstracts.

Solster, P. E. and Conklin, D. R., 1959,  
Bibliography of U.S. Geological Survey  
reports on uranium and thorium, 1942  
through May 1958, in Contributions to  
the geology of uranium: U.S. Geol.  
Survey Bull. 1107-A, 93 p.

- Solster, P. E., Conklin, D. R. and Bowman, M. D., 1956, Bibliography and index of U.S. Geological Survey Trace Elements and related reports through June 1956: U.S. Geol. Survey TEI-600, 533 p.
- U.S. Atomic Energy Commission, 1969, Selected topical references relating to uranium exploration: U.S. Atomic Energy Commission, PB-187560, 31 p.
- U.S. Atomic Energy Commission, 1972, Selected bibliography on radioactive occurrences in Colorado: U.S. Atomic Energy Commission, 17 p.
- U.S. Atomic Energy Commission, 1973, Selected bibliography on radioactive occurrences on the Colorado Plateau: U.S. Atomic Energy Commission, 12 p.
- U.S. Atomic Energy Commission, 1974, U.S. Atomic Energy Commission Grand Junction Office Open-file reports: U.S. Atomic Energy Commission, 25 p.
- U.S. Energy Research and Development Administration, 1976, Nuclear raw materials, a selected bibliography: U.S. Energy Research and Development Administration TID-3357, 18 p., Indexes.
- U.S. Energy Research and Development Administration, 1977, Open-file report, April 1952 to October, 1977: U.S. Energy Research and Development Administration, October, 1977, 47 p.
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- U.S. Geological Survey, 1977, Uranium and thorium resources program bibliography of reports issued 1972 to 1976: U.S. Geol. Survey, Branch of Uranium and Thorium Resources, 34 p.
- Wenrich-Verbeek, K. J., Collins, D. B., and Feilmee, J. K., 1977, Bibliography on uranium and daughter products in water and associated sediments: U.S. Geol. Survey Open-file Report 77-82, 139 p.

Several types of references need some explanation for those who are not already familiar with them. These include Trace Elements Investigations Reports (TEI), Trace Elements Memorandum Reports (TEM), Raw Materials Exploration Reports (RME) and Raw Materials Operations Reports (RMO).

Trace Elements Investigations reports (TEI) and Trace Elements Memorandum reports (TEM) resulted from investigations conducted by the U.S. Atomic Energy Commission and/or the U.S. Geological Survey,

primarily during the 1950's. Raw Materials Exploration Reports (RME) and Raw Materials Operations Reports (RMO) were issued by the Division of Raw Materials of the Atomic Energy Commission. All of these reports concerned investigations of and for defense-related minerals--primarily uranium, thorium, and beryllium. The reports were not originally intended for public inspection and were considered "classified" or for "official use only". When information contained in these reports was to be made public, it was published in journal articles or other forms such as U.S. Geological Survey Circulars, Bulletins, Professional Papers, and Open-file reports. Where known, the reference to the published form of these previously classified reports is given as a note following each individual reference in this bibliography.

In 1975 the U.S. Geological Survey reviewed and declassified many of the older TEI's and TEM's. However, some 350 of these reports remained classified as "official use only". In response to requests resulting from this current study, the majority of the remaining 350 classified reports are being or have been declassified. Microfiche copies of these will soon be available for public inspection at various federal government depositories. Since declassification is nearing completion, we have included references to these reports.

#### USE OF THE BIBLIOGRAPHY

The bibliography volume is broken into two major sections: the bibliographic references and the cross-indexes. The references are presented first and have already been described partially as to style and format. The cross-indexes follow the references and are divided into the general categories of county and host rock, and the special categories of "Colorado Plateau", "Front Range", and "thorium".

The bibliography primarily includes references to specific information on uranium or other radioactive minerals in Colorado. Some reports, however, contain only general reference to uranium and uranium geology, applicable to Colorado as well as to other uranium-producing states. A few references contain no information on uranium but deal with geographic areas or deposits in which uranium has been found in significant amounts.

Keywords were assigned to each reference in the bibliography and were determined by consulting the individual reports or their abstracts when possible. Most of the reports deal with specific deposits or localities within Colorado and, therefore, include information on counties and host rocks. All reports were specifically keyworded and cross-indexed for these two subjects, with additional keywords added as known and appropriate. The generalized host rock type names which were used for the cross indexing include:

coal, shale  
igneous-metamorphic  
limestone, phosphorite  
sandstone, siltstone  
spring deposits, groundwater

If the report was unlocatable or unobtainable, the keywords were taken from the title of the report.

Some reports of a general nature discuss only such larger provinces as the "Colorado Plateau" or the "Front Range" and do not cite specific counties or host rocks. These reports were included in the cross-index as special categories since they are major uranium provinces in Colorado. When specific locations could be inferred from these general citations, the appropriate county and host-rock keywords were added to facilitate retrieval by the cross-indexes.

Stratigraphic nomenclature used in keywording is taken from many sources and from references written over a period of years; therefore, certain nomenclature may be outdated. We sought to make the names consistent as the entries were keyworded. As a result, names like "Entrada sandstone", "Entrada Formation", "Entrada Sandstone", and "Entrada formation" have all been standardized to "Entrada Sandstone" in the keywording. Also, if old nomenclature was used in the reports, and if the currently accepted formation names were known, both terms were used in keywording the entries.

To use the cross-indexes, first look for the county, host rock, or special category in which you are interested. For example, if you want information on Lake County, turn to the cross-index for Lake County to find:

#### LAKE COUNTY

Pierson, C. T., and Singewald, Q. D., 1953  
Sugar Loaf district/St. Kevin district/  
Lake County/ igneous-metamorphic/

geology/ veins/ minerals/ autunite/  
florencite/ metatorbernite/ torbernite/  
Josie May mine/ Turquoise Chief mine/  
granite/ turquoise/ Wilkesbarre adit/  
mineralogy/ leaching/Precambrian rocks/  
Tertiary/ schist/

This report discusses deposits in Lake County, with information on all of the other subjects in the keywords. Note that this reference would also be listed under the host-rock cross-index for "igneous-metamorphic". If the subjects listed within the keywords describe a reference of interest, turn to the bibliography and look for the author's name(s):

Pierson, C. T., and Singewald, Q. D., 1953,  
Occurrences of uranium-bearing  
minerals in the St. Kevin district,  
Lake County, Colorado: U.S. Geol.  
Survey TEI-234, 39 p., maps. (see  
U.S. Geol. Survey Bull. 1027-E).

This reference is one of the TEI's, which are sometimes difficult to obtain. In this case, because of the cross-reference, the U.S. Geological Survey Bulletin that should contain similar or identical information can easily be obtained from any major library.

We hope that you will find the bibliography and cross-indexes both useful and easily useable, as these were two of the major goals in compiling them. If the general features and limitations of each are kept in mind, we think that they can be valuable tools for geologists, explorationists, planners, government officials, students, and many others, for years.



## Serials List

Acad. Nat. Sci. Philadelphia Proc. ....	Academy of Natural Sciences of Philadelphia Proceedings. Philadelphia, Pennsylvania.
Acta Cryst. ....	Acta Crystallographica (International Union of Crystallographica). Copenhagen.
Akad. Nauk SSSR Inst. Geologii Rudnykh Mestorozhdeniy, Petrografi, Mineralogii i Geokhimii. ....	Akademlya Nauk S.S.S.R. Institut Geologii Rudnykh Mestorozhdenii, Petrografi, Mineralogii: Geokhimii.
Akad. Nauk SSSR Izv. Ser. Geol. ....	Akademlya Nauk S.S.S.R. Izvestiya. Seriya Geologicheskaya.
Akad. Sci., Comptes Rendus ....	Akademlya Nauk S.S.S.R. Science, Comptes Rendus.
Am. Assoc. Petroleum Geologists Bull. ....	American Association of Petroleum Geologists, Bulletin. Tulsa, Oklahoma.
Am. Assoc. Petroleum Geologists, Geol. Record. ....	American Association of Petroleum Geologists, Geologic Record.
Am. Assoc. Petroleum Geologists Mem. ....	American Association of Petroleum Geologists, Memoir. Tulsa, Oklahoma.
Am. Geophys. Union Trans. ....	American Geophysical Union, Transactions. Washington, D.C.
Am. Inst. Mining and Metallurgical Engineers, Mining Geology, Geophysics Div. Ann. Mtg., Abs. Tech. Papers. ....	American Institute of Mining and Metallurgical Engineers, Mining Geology, Geophysics Division Annual Meeting, Abstract of Technical Papers.
Am. Inst. Mining Eng. Trans. ....	American Institute of Mining Engineers Transcript.
Am. Inst. Mining, Metallurgical, and Petroleum Engineers, Ann. Minerals Symposium. ....	American Institute of Mining, Metallurgical and Petroleum Engineers, Annual Minerals Symposium.
Am. Jour. Sci. ....	American Journal of Science. New Haven, Connecticut.
Am. Mineralogist. ....	American Mineralogist (Mineralogical Society of America, Journal). Washington, D.C.
Am. Mining Cong., Ann. Rpt. Proc. ....	American Mining Congress, Annual Report of Proceedings.
Am. Mus. Nat. History Bull. ....	American Museum of Natural History, Bulletin. New York.
Am. Philos. Soc. Proc. ....	American Philosophical Society, Proceedings. Philadelphia, Pennsylvania.
American Assoc. Adv. Sci. Proc. ....	American Association for the Advancement of Science Proceedings, Washington, D.C.
Anal. Chemistry ....	Analytical Chemistry.
Arch. Ind. Health ....	Archives of Industrial Health.
Arizona Bur. Mines Bull. ....	Arizona Bureau of Mines, Bulletin.
Atom - U.S. ....	Atom - United States.
Austria, Z. Bergwirtsch. Huettenwes. ....	Austria, Z. Bergwirtsch. Hue Huettenwes.
Bull. Atomic Scientists ....	Bulletin of Atomic Scientists.
Bull. Volcanol. ....	Bulletin of Volcanology.
California Div. Mines ....	California Division of Mines.
California Inst. Technology ....	California Institute of Technology.
Canada Inst. Mining Metall., Geol. Div., Soc. Econ. Geology ....	Canadian Institute of Mining and Metallurgy, Geological Division, Society of Economic Geology.
Canadian Mineralogist ....	Canadian Mineralogist.
Canadian Mining Metall. Bull. ....	Canadian Mining and Metallurgy, Bulletin.
Chem. Abs. ....	Chemical Abstracts.
Chemical News ....	Chemical News.
Chemikerzeitung ....	Chemikerzeitung.
Colorado Basic Data Report ....	Colorado Basic Data Report.
Colorado Bur. Mines Circ. ....	Colorado Bureau of Mines, Circular. Denver, Colorado.
Colorado Bur. Mines Pub. ....	Colorado Bureau of Mines, Publication.
Colorado Bur. Mines Rept. ....	Colorado Bureau of Mines, Report.
Colorado Geol. Survey Bull. ....	Colorado Geological Survey, Bulletin. Denver, Colorado.
Colorado Geol. Survey Inf. Ser. ....	Colorado Geological Survey, Information Series. Denver, Colorado.
Colorado Geol. Survey Map Ser. ....	Colorado Geological Survey, Map Series. Denver, Colorado.
Colorado Magazine. ....	Colorado Magazine.
Colorado Metal Mining Fund ....	Colorado Metal Mining Fund.

Colorado Mineral Resources Board .....	Colorado Mineral Resources Board.
Colorado Mining Assoc. Mining Yearbook .....	Colorado Mining Association Mining Yearbook.
Colorado Mining Assoc., Nat'l. Western Mining Conf. Trans. ....	Colorado Mining Association, National Western Mining Conference Transcript.
Colorado Mining Assoc. Spec. Pub. ....	Colorado Mining Association Special Publication.
Colorado School Mines .....	Colorado School of Mines. Golden, Colorado.
Colorado School Mines, Bienn. Report .....	Colorado School of Mines Biennial Report. Golden, Colorado.
Colorado School Mines Mineral Industries Bull. ....	Colorado School of Mines Mineral Industries Bulletin. Golden, Colorado.
Colorado School Mines Progress Rpt. ....	Colorado School of Mines, Progress Report. Golden, Colorado.
Colorado School Mines Quart. ....	Colorado School of Mines, Quarterly. Golden, Colorado.
Colorado School Mines Remote Sensing Rpt. ..	Colorado School of Mines Remote Sensing Report. Golden, Colorado.
Colorado School Mines Research Foundation, Inc. ....	Colorado School of Mines, Research Foundation Incorporated. Golden, Colorado.
Colorado School Mines, Unpub. notes .....	Colorado School of Mines, Unpublished Notes. Golden, Colorado.
Colorado Sci. Soc. Proc. ....	Colorado Scientific Society, Proceedings. Denver, Colorado.
Colorado Water Conserv. Board Ground Water Ser. Basic Data Rpt. ....	Colorado Water Conservation Board Ground Water Series Basic Data Report.
Commonwealth Mining and Metal. Cong., Proc., Inst. Mining and Metallurgy.....	Commonwealth Mining and Metallurgy, Congress, Proceedings, Institute of Mining and Metallurgy.
Compass.....	Compass of Sigma Gamma Epsilon. Lawrence, Kansas.
Comptes Rendus.....	Comptes Rendus.
Contributions to Geology.....	Contributions to Geology (Wyoming University). Laramie, Wyoming.
Dallas Dig. ....	Dallas Digest.
Denison Univ. Sci. Lab. Jour. ....	Denison University, Journal of Scientific Laboratories. Granville, Ohio.
Denver Magazine.....	Denver Magazine.
Dissert. Abs. Internat. ....	Dissertation Abstracts International; Abstracts of Dissertation Available on Microfilm or as Xerox Reproductions. Ann Arbor, Michigan.
Earth Science Bull. ....	Earth Science Bulletin (Wyoming Ecological Association). Casper, Wyoming.
Econ. Geology.....	Economic Geology and the Bulletin of the Society of Economic Geologists. New Haven, Connecticut.
Eng. and Mining Jour. ....	Engineering and Mining Journal. New York.
Explosives Engineer.....	Explosives Engineer.
Four Corners Geol. Soc. Field Conf. ....	Four Corners Geological Society Field Conference.
Four Corners Geol. Soc. Guidebook.....	Four Corners Geological Society Guidebook.
Fuel.....	Fuel; the Journal of Fuel Science. London.
Geochim. et Cosmochim. Acta.....	Geochimica et Cosmochimica Acta (The Geochemical Society, Pergamon Press, Oxford.
Geol. Soc. America Abs. with Programs.....	Geological Society of America, Abstracts with Programs.
Geol. Soc. America Bull. ....	Geological Society of America, Bulletin. Boulder, Colorado.
Geol. Soc. America Mem. ....	Geological Society of America, Memoir. Boulder, Colorado.
Geol. Soc. America Spec. Paper.....	Geological Society of America, Special Paper. Boulder, Colorado.
Geophysics.....	Geophysics (Society of Exploration Geophysicists, Journal). Tulsa, Oklahoma.
Globus.....	Globus.
Health Physics.....	Health Physics.
Idaho Mineral Industries Ann. Rpt. ....	Idaho Mineral Industries Annual Report.
Inst. Geol., Anu.....	Institutul de Geologie si Geofizica. Darl de Seama Ale Sedintelor. Romania.
Intermtn. Assoc. Geologists Ann. Field Conf. ....	Intermountain Association of Geologists Annual Field Conference.
Intermtn. Assoc. Petroleum Geologists Ann. Field Conf. Guidebook .....	Intermountain Association of Petroleum Geologists Annual Field Conference Guidebook.

Internat. Atomic Energy Agency Symposium.....	International Atomic Energy Agency Symposium.
Internat. Geol. Cong. ....	International Geological Congress.
Internat. Geology Review.....	International Geology Review.
Internat. Mineralog. Assoc. ....	International Mineralogical Association.
Isochron West.....	Isochron/West; a Bulletin of Isotopic Geochronology. Socorro, New Mexico.
Jour. Geology.....	Journal of Geology. Chicago, Illinois.
Jour. Geophys. Research.....	Journal of Geophysical Research (American Geophysical Union). Washington, D.C.
Jour. Metals.....	Journal of Metals.
Jour. Sed. Petrology.....	Journal of Sedimentary Petrology. Tulsa, Oklahoma.
Kansas Geol. Soc. Guidebook.....	Kansas Geological Society Guidebook.
Los Alamos Scientific Lab. Report NTIS # LA..	Los Alamos Scientific Laboratory Report National Technical Information Service. LA.
M.S.S. Report.....	Master of Social Studies Report.
Metallurgia.....	Metallurgia.
Mineral Industries.....	Mineral Industries Bulletin.
Mines and Mineral Reports of Colorado.....	Mines and Mineral Reports of Colorado.
Mines and Minerals.....	Mines and Minerals.
Mines and Minerals, Quart. Jour. Indian Bur. Mines, Nagpur, India.....	Mines and Minerals; Quarterly Journal of the Indian Bureau of Mines. Nagpur.
Mine & Quarry Eng. ....	Mine and Quarry Engineering.
Mines Mag. ....	Mines Magazine. Golden, Colorado.
Mining and Contracting Review.....	Mining and Contracting Review.
Mining Cong. Jour. ....	Mining Congress Journal.
Mining Eng. ....	Mining Engineering, American Institute of Mining Metallurgical and Petroleum Engineers. New York.
Mining Mag. ....	Mining Magazine. London.
Mining Rev. ....	Mining Review.
Mining Sci. ....	Mining Science.
Mining Sci. Press.....	Mining and Scientific Press. San Francisco, California.
Mining World.....	Mining World. San Francisco, California.
Moscow Atomizdat.....	Moscow Atomizdat.
Mtn. Geologist.....	Mountain Geologist (Rocky Mountain Association of Geologists). Denver, Colorado.
NASA Rept. ....	National Aeronautics and Space Administration Report.
Natl. Geog. Mag. ....	National Geographic Magazine (National Geographic Society). Washington, D.C.
Natl. Research Council Pub. ....	National Research Council Publication.
Natl. Tech. Inf. Service Pub. PB _____ Natl. Sci. Found. ....	National Technical Information Service, Publication of the National Science Foundation.
Natl. Tech. Inf. Service Pub. PB _____ U.S. Geol. Survey ....	National Technical Information Service, Publication of the U.S. Geological Survey.
New Mexico Bur. Mines and Mineral Resources..	New Mexico Bureau of Mines and Resources. Campus Station, Socorro, New Mexico.
New Mexico Geol. Soc. Field Conf. Guidebook..	New Mexico Geological Society, Annual Field Conference Guidebook. Socorro, New Mexico.
New Mexico Univ. Pubs. Geology.....	New Mexico University Publications Geology.
NSA.....	Nuclear Science Abstracts.
Nuclear Eng. Sci. Cong., Proc. ....	Nuclear Engineering Science Congress, Proceedings.
Nuclear Sci. ....	Nuclear Science.
Nucleonics.....	Nucleonics.
Oak Ridge National Lab. ORNL.....	Oak Ridge National Laboratory. Oak Ridge, Tennessee.
Oil and Gas Jour. ....	Oil and Gas Journal. Tulsa, Oklahoma.
Ores and Metals.....	Ores and Metals.
Pan-American Geology.....	Pan America Geology. Des Moines, Iowa.
Periodical Geology and Metallurgy.....	Periodical Geology and Metallurgy.
Precambrian.....	Precambrian.
Rocks and Minerals.....	Rocks and Minerals. Peetsville, New York.
Rocky Mtn. Assoc. Geologists Guidebook.....	Rocky Mountain Association of Geologists Field Conference Guidebook. Denver.
Schweiz. Mineralog. U. Petrogr. Mitt. ....	Schweizerische Mineralogische und Petrographische Mittellungen--Bulletin Suisse de Mineralogie et Petrografia Zuerich.
Science.....	Science (American Association for the Advancement of Science). Washington, D.C.

Ser. Hydrol., France, Office Recherches Sci.	
Tech. Outre-Mer, Cah. ....	Serie Hydrogeologie, France, Office de Recherches Scientifique et Technique, Outre-Mer, Cah.
Soc. Chim. de Paris Bull. ....	Societe de Chimie de Paris, Bulletin.
Soc. Francaise Mineralogie Bull. ....	Societe Francaise de Mineralogie et de Cristallographie, Bulletin. Paris.
Soc. Mining Bull. ....	Society of Mining, Bulletin.
Soil Sci. ....	Soil Science, Williams & Wilkins Co., Baltimore, Maryland.
Tech. Inf. Service CU ....	Technical Information Service. Colorado University.
Tschermaks Mineralogy Petrog. Mitt. ....	Tschermaks Mineralogische und Petrographische Mitteilungen. Vienna.
U. K. Atomic Energy Authority ....	United Kingdom Atomic Energy Authority.
U.N. Internat. Conf. on Peaceful Uses of Atomic Energy, Proc. ....	United Nations International Conference on Peaceful Uses of Atomic Energy, Proceedings.
Uranium ....	Uranium.
Uranium Pubs. ....	Uranium Publications.
U.S. Atomic Energy Comm. AEC-RD. ....	U.S. Atomic Energy Commission Report, AEC-RD.
U.S. Atomic Energy Comm. AEC-RID ....	U.S. Atomic Energy Commission Report, AEC-RID.
U.S. Atomic Energy Comm. CEX ....	U.S. Atomic Energy Commission Report, CEX.
U.S. Atomic Energy Comm. COM ....	U.S. Atomic Energy Commission Report, COM.
U.S. Atomic Energy Comm. COO ....	U.S. Atomic Energy Commission Report, COO.
U.S. Atomic Energy Comm. DAO-3-TM ....	U.S. Atomic Energy Commission Report, DAO-3-TM.
U.S. Atomic Energy Comm. DEB-3-TM ....	U.S. Atomic Energy Commission Report, DEB-3-TM.
U.S. Atomic Energy Comm. GJO ....	U.S. Atomic Energy Commission Report, GJO.
U.S. Atomic Energy Comm. open-file map ....	U.S. Atomic Energy Commission open-file map.
U.S. Atomic Energy Comm. open-file report ...	U.S. Atomic Energy Commission open-file report.
U.S. Atomic Energy Comm. PB ....	U.S. Atomic Energy Commission Report PB.
U.S. Atomic Energy Comm. Prelim. Map ....	U.S. Atomic Energy Commission Preliminary Map.
U.S. Atomic Energy Comm. Press Release ....	U.S. Atomic Energy Commission Press Release.
U.S. Atomic Energy Comm. RCD ....	U.S. Atomic Energy Commission Report RCD.
U.S. Atomic Energy Comm. Report ....	U.S. Atomic Energy Commission Report.
U.S. Atomic Energy Comm. RME ....	U.S. Atomic Energy Commission Report of the Raw Materials Division, RME.
U.S. Atomic Energy Comm. RMO ....	U.S. Atomic Energy Commission Report of the Raw Materials Division, RMO.
U.S. Atomic Energy Comm. TID ....	U.S. Atomic Energy Commission Report TID.
U.S. Atomic Energy Comm. TM ....	U.S. Atomic Energy Commission Report TM.
U.S. Atomic Energy Comm. Uranium Workshop ...	U.S. Atomic Energy Commission, Uranium Workshop.
U.S. Atomic Energy Comm. WASH ....	U.S. Atomic Energy Commission Report, Washington, D.C., WASH.
U.S. Bur. Indian Affairs Admin. Rept. ....	U.S. Bureau of Indian Affairs Administration, Report.
U.S. Bur. Mines Bull. ....	U.S. Bureau of Mines, Mines Bulletin. Washington, D.C.
U.S. Bur. Mines Inf. Circ. ....	U.S. Bureau of Mines, Information Circular. Washington, D.C.
U.S. Bur. Mines Mineral Resources U.S. ....	U.S. Bureau of Mines and Mineral Resources in the U.S.
U.S. Bur. Mines Rept. Inv. ....	U.S. Bureau of Mines, Report of Investigations. Washington, D.C.
U.S. Bur. Mines TPR ....	U.S. Bureau of Mines Report TPR.
U.S. Dept. Energy GJT ....	U.S. Department of Energy Report GJT. Grand Junction, Colorado.
U.S. Dept. Interior Press Memo ....	U.S. Department of the Interior, Press Memo.
U.S. 88th Cong. 2d sess., Comm. Print ....	U.S. 88th Congress, 2nd session, [Commission Print].
U.S. Energy Research Devel. Adm. ERDA ....	U.S. Energy Research and Development Administration Report ERDA.
U.S. Energy Research Devel. Adm. GJBX ....	U.S. Energy Research and Development Administration Report GJBX. Grand Junction, Colorado.
U.S. Energy Research Devel. Adm. GJO ....	U.S. Energy Research and Development Administration Report GJO. Grand Junction, Colorado.
U.S. Environmental Protection Agency Conf. ..	U.S. Environmental Protection Agency, Conference.
U.S. Environmental Protection Agency, Office Water Program ....	U.S. Environmental Protection Agency, Office Water Program.
U.S. Environmental Protection Agency PB ....	U.S. Environmental Protection Agency Report PB.
U.S. Environmental Protection Agency Radiation Data and Repts. ....	U.S. Environmental Protection Agency Radiation Data and Reports.
U.S. Govt. Printing Office ....	U.S. Government Printing Office.
U.S. Natl. Mus. Proc. ....	U.S. National Museum, Proceedings. Washington, D.C.

U.S. Geol. and Geog. Terr. Survey (Hayden)	
Ann. Rept. ....	U.S. Geologic and Geographic Territorial Survey (Hayden) Annual Report.
U.S. Geol. Survey Bull. ....	U.S. Geological Survey, Bulletin.
U.S. Geol. Survey Circ. ....	U.S. Geological Survey, Circular.
U.S. Geol. Survey Geol. Quad. Map GQ ....	U.S. Geological Survey, Geologic Quadrangle Map.
U.S. Geol. Survey Geophys. Inv. Map GP ....	U.S. Geological Survey, Geophysical Investigations Map.
U.S. Geol. Survey Jour. Research ....	U.S. Geological Survey, Journal of Research.
U.S. Geol. Survey leaflet ....	U.S. Geological Survey, leaflet.
U.S. Geol. Survey Mineral Inv. Field Studies	
Map MF ....	U.S. Geological Survey, Mineral Investigations, Field Studies Map.
U.S. Geol. Survey Mineral Inv. Resource Map	
MR ....	U.S. Geological Survey, Mineral Investigations Resource Map.
U.S. Geol. Survey Mineral Resources U.S. ....	U.S. Geological Survey, Mineral Resources of the U.S.
U.S. Geol. Survey Minerals Inv. Prelim. Map	U.S. Geological Survey Minerals Investigations, Preliminary Map.
U.S. Geol. Survey Misc. Geol. Inv. Map I ....	U.S. Geological Survey, Miscellaneous Geologic Investigations Map.
U.S. Geol. Survey Missouri Basin Studies	
Map ....	U.S. Geological Survey Missouri Basin Studies Map.
U.S. Geol. Survey Oil and Gas Inv. Prelim.	
Map ....	U.S. Geological Survey Oil and Gas Investigations, Preliminary Map.
U.S. Geol. Survey open-file map ....	U.S. Geological Survey open-file map.
U.S. Geol. Survey open-file report ....	U.S. Geological Survey open-file report.
U.S. Geol. Survey Press Release ....	U.S. Geological Survey Press Release.
U.S. Geol. Survey Prof. Paper ....	U.S. Geological Survey, Professional Paper.
U.S. Geol. Survey Strategic Minerals Inv.	
Prelim. Map ....	U.S. Geological Survey, Strategic Minerals Investigations, Preliminary Map.
U.S. Geol. Survey Strategic Minerals Inv.	
Report ....	U.S. Geological Survey Strategic Minerals Investigations Report.
U.S. Geol. Survey TEI ....	U.S. Geological Survey Report, Trace Element Investigation.
U.S. Geol. Survey TEM ....	U.S. Geological Survey Report, Trace Element Memorandum.
U.S. Geol. Survey Water-Supply Paper ....	U.S. Geological Survey Water-Supply Paper.
Utah Geol. and Mineralog. Survey Spec.	
Studies ....	Utah Geological and Mineralogical Survey, Special Studies.
Utah Geol. Soc. Guidebook ....	Utah Geological Society, Guidebook to the Geology of Utah.
	Utah Geological & Mineralogical Survey, Salt Lake City.
Washington Acad. Sci. Jour. ....	Washington Academy of Science, Journal. Washington, D.C.
Western Chem. Metallurgy ....	Western Chemistry Metallurgy.
Wyoming Geol. Assoc. Field Conf. Guidebook ..	Wyoming Geological Association, Field Conference Guidebook.
Zeitschr. Erzbergbau u. Metallhüttenwesen ...	Zeitschriften Erzbergbau und Metallhüttenwesen.

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## Cross Indexes



## County

ADAMS COUNTY

- Boberg, W. W., 1970  
surface water/ streams/ transport/ precipitation/  
South Platte River/ geochemistry/ shale/ Jefferson  
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granite/ schist/ gneiss/ pegmatite/

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geophysics/

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igneous-metamorphic/ Black Cloud mine/ pitchblende/  
reconnaissance/ Front Range/ ore deposits/

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petrology/ geochemistry/ breccia reefs/ zoning/  
Front Range/ pitchblende/ schroeckingerite/  
torbernite/ Black Cloud mine/ Goldsmith Maid  
vein/ Snowbound mine/ reconnaissance/ veins/  
igneous-metamorphic/

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petrology/ geochemistry/ breccia reefs/ zoning/  
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County/ Rio Blanco County/ sandstone/ ore deposits/  
igneous-metamorphic/

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sandstone/ Colorado Plateau/ Front Range/ Copper  
King mine/ veins/ Larimer County/ Los Ochos  
mine/ Saguache County/ Caribou mine/ Boulder  
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district/ San Miguel County/ alteration/ pitchblende/  
igneous-metamorphic/ Jefferson County/ Carroll  
mine/ structural tension/

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granite/ Front Range/ Copper King mine/ Larimer  
County/ alteration/ Los Ochos mine/ Saguache  
County/ Caribou mine/ Carroll mine/ Boulder  
County/ San Miguel County/ ore deposits/ sandstone/  
Placerville district/ Schwartzwald mine/ Jefferson  
County/ structural tension/ United States/ Tertiary/  
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geochemistry/ black shale/ alteration/ White  
River group/ uranium/ radioactivity/ Cretaceous  
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ore deposits/ host rocks/ alteration/ veins/ sandstone/ Igneous-metamorphic/ limestone/ Boulder County/ Park County/ Front Range/ Gilpin County/ Clear Creek County/ Jefferson County/ Saguache County/ coal/ dolomite/ Pitkin County/ Larimer County/ Caribou mine/ Los Ochos mine/ Leyden coal mine/ Copper King mine/
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alteration/ veins/ igneous-metamorphic/ sandstone/ limestone/ Boulder County/ Park County/ Front Range/ Gilpin County/ Clear Creek County/ Jefferson County/ Saguache County/ coal/ Cochetopa district/ ore deposits/ Placerville district/ San Miguel County/ Larimer County/ Central City district/ Caribou mine/ Los Ochos mine/ Leyden coal mine/ Copper King mine/
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ore deposits/ radium/ veins/ wall-rock alteration/

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Caribou mine/ Radium vein/ Igneous-metamorphic/  
uraninite/ Front Range/ Boulder County/

Wright, H. D., 1951

ore deposits/ paragenesis/ Boulder County/ Caribou  
district/ Radium vein/ Igneous-metamorphic/  
uraninite/ silver/ Caribou mine/ Front Range/  
veins/

Wright, H. D., 1951

Canada/ Ontario/ ore deposits/ uraninite/ Caribou  
mine/ alteration/ Boulder County/ paragenesis/  
Front Range/ Igneous-metamorphic/

Wright, H. D., 1954

ore deposits/ uraninite/ mineralogy/ Boulder  
County/ silver/ Radium vein/ uranium/ veins/  
wall-rock/ Igneous-metamorphic/ geochemistry/  
Caribou mine/ Front Range/ Caribou district/

Wright, H. D., and Shulhof, W. P., 1957

veins/ sulfide minerals/ Front Range/ Boulder  
County/ Igneous-metamorphic/ ore deposits/

Wyant, D. G., 1949

Boulder County/ Wheelman (mine) tunnel/ pegmatites/  
Igneous-metamorphic/ Precambrian rocks/ granite/  
gold/ wolframite/ veins/ Front Range/ analyses/

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Chaffee County/ Gunnison County/ Mount Antero/  
Igneous-metamorphic/ beryl/ beryllium/ White  
Mountain/

Adams, J. W., 1951

Chaffee County/ Carbonate Mountain/ Garfield  
quadrangle/ Mount Antero region/ brannerite/  
California mine/ veins/ molybdenum/ pegmatites/  
Igneous-metamorphic/ aquamarine/ White Mountain/  
granite/ quartz monzonite/ beryllium/

Adams, J. W., 1953

veins/ pegmatite/ quartz/ beryllium/ Mount Antero/  
White Mountain/ granite/ quartz monzonite/ California  
mine/ brannerite/ aquamarine/ molybdenum/ Chaffee  
County/ Igneous-metamorphic/

Baillie, W. N., 1962

pegmatites/ feldspar/ rare earths/ Boulder County/  
Chaffee County/ Clear Creek County/ Douglas  
County/ El Paso County/ Fremont County/ Gunnison  
County/ Jefferson County/ Larimer County/ Park  
County/ Igneous-metamorphic/ Front Range/

De Voto, R. H., 1961

South Park/ Park County/ sandstone/ Chaffee  
County/ geology/ ore deposits/

De Voto, R. H., 1971

South Park/ Park County/ Chaffee County/ sandstone/  
geology/ geologic history/ Antero Reservoir  
quadrangle/ ore deposits/

Dings, M. G., 1952

Garfield quadrangle/ Taylor Park quadrangle/

## CHAFFEE COUNTY

Chaffee County/ Gunnison County/ Bon Ton mine/  
Little Jimmie prospect/ Madonna mine/ Silent  
Friend mine/ reconnaissance/ radioactive material/  
mining districts/ fault breccia/ shear zone  
material/ ore deposits/ veins/ Igneous-metamorphic/  
geology/

Dings, M. G., and Robinson, C. S., 1952

geology/ ore deposits/ Quartz Creek district/  
Gunnison County/ Tin Cup district/ production/  
Igneous-metamorphic/ Garfield quadrangle/ Chaffee  
County/

Dings, M. G., and Robinson, C. S., 1957

geology/ ore deposits/ Gunnison County/ Chaffee  
County/ production/ volcanic rocks/ Quartz Creek  
district/ Tin Cup district/ Garfield quadrangle/  
Igneous-metamorphic/

Dings, M. G., and Schafer, Max, 1953

veins/ Garfield quadrangle/ Taylor Park quadrangle/  
Igneous-metamorphic/ geology/ ore deposits/  
Gunnison County/ Chaffee County/ Mount Antero  
region/ Bon Ton mine/ Madonna mine/ brannerite/  
black (marine carbonaceous) shales/ pegmatites/  
reconnaissance/ radiometrics/ Silent Friend  
mine/

Dings, M. G., Robinson, C. S., and Brock, M. R., 1952  
Garfield quadrangle/ Chaffee County/ Gunnison  
County/ Igneous-metamorphic/ geology/ ore deposits/

Doe, B. R., and Pearson, R. C., 1969

chronology/ age dating/ uranium/ thorium/ lead/  
zircons/ granite/ Chaffee County/ Gunnison County/  
analyses/ St. Kevin granite/ Igneous-metamorphic/  
Sawatch Range/

George, R. D., Curtis, H. A., Lester, O. C., and  
others, 1920

Colorado Plateau/ mineralized waters/ springs/  
spring deposits/ Front Range/ Jefferson County/  
Pitkin County/ Pueblo County/ Garfield County/  
Park County/ El Paso County/ Ouray County/ Boulder  
County/ Gunnison County/ Delta County/ Chaffee  
County/

Guillotte, G. B., 1944

reconnaissance/ uranium/ ore deposits/ Front  
Range/ Igneous-metamorphic/ Park County/ Boulder  
County/ Jamestown district/ Larimer County/  
Masonville mines/ Chaffee County/ Trout Creek  
permatites/ Clear Creek County/ carnotite/

King, R. U., 1951

reconnaissance/ Front Range/ geology/ mineralogy/  
pitchblende/ Boulder County/ Clear Creek County/  
Gilpin County/ Chaffee County/ Custer County/  
El Paso County/ Fremont County/ Huerfano County/  
Jefferson County/ Larimer County/ Teller County/  
veins/ Igneous-metamorphic/ stream sediments/  
spring deposits/ shear zones/ pegmatites/ sandstone/  
coal/ Eagle County/ Grand County/ Gunnison County/  
Lake County/ Moffat County/ ore deposits/ Douglas  
County/ San Miguel County/ Summit County/

Knepper, D. H., Lee, Keenan, Butler, R. W., and  
others, 1974

photogeology/ exploration/ hydrogeology/ remote

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sensing/ uranium/ multispectral photography/  
photomapping/ ore deposits/ Bonanza test site/  
Saguache County/ Chaffee County/ geologic analyses/

Lee, Keenan, 1975

Colorado/ geology/ remote sensing/ hydrogeology/  
uranium/ water/ resources/ Saguache County/  
Chaffee County/ Bonanza test site/ ore deposits/

Lovering, T. G., and Beroni, E. P., 1956

Diamond J Ranch/ Golden Gate Canyon/ Haputa  
Ranch area/ Ouray hot springs/ Chaffee County/  
Custer County/ Gunnison County/ Jefferson County/  
Ouray County/ radioactive limonite/ Lucky Break  
Iron mine/ sandstone/ thorium/ uranium/ spring  
deposits/ Front Range/ conglomerate/ limestone/  
tufa/ analyses/ igneous-metamorphic/ ore deposits/  
El Paso County/

Lovering, T. G., and Beroni, E. P., 1959

Diamond J Ranch/ Golden Gate Canyon/ Haputa  
Ranch area/ Ouray hot springs/ Chaffee County/  
Custer County/ Gunnison County/ Jefferson County/  
Ouray County/ radioactive limonite/ Lucky Break  
Iron mine/ thorium/ uranium/ spring deposits/  
Front Range/ sandstone/ conglomerate/ limestone/  
tufa/ El Paso County/ igneous-metamorphic/ ore  
deposits/

Olson, J. C., 1977

uranium/ Pitch mine/ Gunnison County/ Saguache  
County/ Chaffee County/ map/ igneous-metamorphic/  
limestone/ shale/ ore deposits/ geology/

Osterwald, F. W., 1956

Cordilleran foreland/ Clear Creek County/ Jefferson  
County/ ore deposits/ Routt County/ Jackson  
County/ El Paso County/ Park County/ Grand County/  
Front Range/ igneous-metamorphic/ Larimer County/  
Eagle County/ Summit County/ Fremont County/  
Saguache County/ Teller County/ Chaffee County/  
tectonics/ Gilpin County/ Pueblo County/ Custer  
County/ Precambrian/ genesis/ structures/

Page, L. R., 1950

Mount Antero region/ Crystal Mountain district/  
San Juan Mountains/ Chaffee County/ Larimer  
County/ helvite/ pegmatites/ beryllium/ beryl/  
Colorado Plateau/ igneous-metamorphic/ Devils  
Hole mine/ Fremont County/ Gunnison County/  
Jefferson County/ San Juan County/ Front Range/  
aquamarine/

Page, L. R., 1950

beryllium/ beryl/ Colorado Plateau/ pegmatites/  
Larimer County/ igneous-metamorphic/ San Juan  
County/ Devils Hole mine/ Fremont County/ Gunnison  
County/ Jefferson County/ Mount Antero/ Chaffee  
County/ aquamarine/ Front Range/ Crystal Mountain  
district/

Page, L. R., 1950

pegmatite/ geochemistry/ igneous-metamorphic/  
uranium/ mineralogy/ Gunnison County/ Larimer  
County/ Chaffee County/ Fremont County/ Front  
Range/

Phair, George, and Mela, Henry, Jr., 1955

Bergen Park/ Breckenridge district/ Caribou

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district/ age determination/ Front Range/ Cotopaxi/  
Gold Hill/ Guffey/ Laramide/ isotopes/ Lawson-Dumont/  
Silver Plume/ El Paso County/ mineralogy/ petrology/  
geochemistry/ galena/ Summit County/ Boulder  
County/ Clear Creek County/ Gilpin County/ Fremont  
County/ Chaffee County/ isotopic variation/  
igneous-metamorphic/

Pierson, C. T., Singewald, Q. D., and Dings, M.  
G., 1953

Colorado mineral belt/ ore deposits/ exploration/  
St. Kevin district/ Summit County/ Chaffee County/  
Gunnison County/ Glacier Mountain/ Alma district/  
Lake County/ igneous-metamorphic/ Park County/

U.S. Atomic Energy Commission, 1966

geology/ uranium/ geophysical prospecting/ economic  
geology/ mining engineering/ petrology/ minerals/  
radioactivity/ Chaffee County/ reconnaissance/  
ore deposits/ sandstone/ igneous-metamorphic/

Van Alstine, R. E., 1968

structural geology/ Tertiary trough/ Arkansas  
Valley/ San Luis Valley/ Rio Grande depression/  
Fremont County/ Chaffee County/ Lake County/  
Saguache County/

Van Alstine, R. E., 1971

geology/ map/ Poncha Springs SE quadrangle/  
Chaffee County/

Walker, G. W., 1957

Marysvale/ leaching/ uranium/ ore deposits/  
supergene alteration/ veins/ Marshall Pass/  
Colorado/ Utah/ Saguache County/ Nigger shaft/  
North Star mine/ Jefferson County/ Gilpin County/  
Front Range/ sandstone/ igneous-metamorphic/  
zoning/ Madonna mine/ Chaffee County/

Walker, G. W., 1963

Marysvale/ leaching/ uranium/ ore deposits/  
supergene alteration/ veins/ Marshall Pass/  
Colorado/ Utah/ Saguache County/ Nigger Shaft/  
North Star mine/ Jefferson County/ Gilpin County/  
Front Range/ sandstone/ igneous-metamorphic/  
zoning/ Madonna mine/ Chaffee County/

Walker, G. W., and Osterwald, F. W., 1956

ore deposits/ veins/ fluorite/ Front Range/  
Gilpin County/ coal/ Jefferson County/ Placerville  
district/ San Miguel County/ Clear Creek County/  
sandstone/ igneous-metamorphic/ Colorado Plateau/  
Cochetopa district/ Saguache County/ Powderhorn  
district/ Custer County/ Chaffee County/

Walker, G. W., and Osterwald, F. W., 1963

ore deposits/ veins/ geology/ Front Range/ Gilpin  
County/ Jefferson County/ sandstone/ Boulder  
County/ San Miguel County/ igneous-metamorphic/  
Colorado Plateau/ Saguache County/ Custer County/  
Chaffee County/ Clear Creek County/ Jamestown  
district/ Cochetopa district/ Powderhorn district/  
Placerville district/

## CHEYENNE COUNTY

Landis, E. R., 1954

Colorado/ Kansas/ exploration/ black shale/

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Cretaceous/ Cheyenne County/ Kiowa County/ Crowley County/ Las Animas County/ map/ Pierre Shale/

Landis, E. R., 1955

Cheyenne County/ Crowley County/ Kiowa County/ Las Animas County/ Pueblo County/ genesis/ Pierre Shale/ Niobrara Formation/ shale/ Sharon Spring Member/ black shales/ ore deposits/ radioactivity/ uranium/ Yuma County/ stratigraphy/ uraniferous/

Landis, E. R., 1956

ground water/ surface water/ Kansas/ Colorado/ Oklahoma/ shale/ tuff/ sandstone/ Smoky Hill River valley/ Rule Creek basin/ Baca County/ siltstone/ uranium/ claystone/ Bent County/ Las Animas County/ Kiowa County/ Cheyenne County/ Crowley County/ Lincoln County/ springs/ wells/ Muddy Creek/ geochemistry/

Landis, E. R., 1957

Colorado/ Kansas/ New Mexico/ Oklahoma/ exploration/ geochemistry/ ground water/ surface water/ tuff/ shale/ sandstone/ wells/ springs/ Cheyenne County/ Bent County/ Las Animas County/ Kiowa County/ Crowley County/ Lincoln County/ uranium/ Baca County/

Landis, E. R., 1959

Colorado/ Kansas/ ore deposits/ Cretaceous/ Pierre Shale/ Sharon Springs Member/ radioactivity/ Cheyenne County/ Crowley County/ Kiowa County/ Yuma County/ Las Animas County/ Pueblo County/ shale/ black shale/

Landis, E. R., 1960

ground water/ surface water/ Great Plains/ analyses/ Baca County/ Bent County/ Cheyenne County/ Crowley County/ Kiowa County/ Lincoln County/ Prowers County/ sandstone/ Las Animas County/ geochemistry/

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ground water/ radium/ La Plata County/ Cheyenne County/ Kiowa County/ Lincoln County/ Crowley County/ Otero County/ Bent County/ Prowers County/ Las Animas County/ Baca County/ Montezuma County/ Archuleta County/ Colorado Plateau/

Tourtlot, H. A., 1955

Boulder County/ Cheyenne County/ Crowley County/ Jefferson County/ Kiowa County/ Larimer County/ Pueblo County/ mineralogy/ petrology/ geochemistry/ black shale/ alteration/ White River group/ uranium/ radioactivity/ Cretaceous shales/ Great Plains/ El Paso County/

Tourtlot, H. A., 1956

marine black shales/ Boulder County/ Crowley County/ El Paso County/ Jefferson County/ Kiowa County/ Larimer County/ Pueblo County/ petrology/ geochemistry/ black shale/ alteration/ White River group/ uranium/ radioactivity/ Cretaceous shales/ Great Plains/ Cheyenne County/ mineralogy/

## CLEAR CREEK COUNTY

Alsford, P. R., 1916

Gilpin County/ ore deposits/ pitchblende/ occurrence/

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properties/ areal geology/ economics/ veins/ uranium/ igneous-metamorphic/ Clear Creek County/ gneiss/ schist/ pegmatite/ Front Range/

Anonymous, 1950

Clear Creek County/ pitchblende/ igneous-metamorphic/ Front Range/

Armstrong, F. C., 1952

pitchblende/ ore deposits/ Quartz Hill/ Gilpin County/ Clear Creek County/ igneous-metamorphic/ uranium/ ore grade/ veins/ Front Range/ Central City district/

Armstrong, F. C., 1952

pitchblende/ ore deposits/ Quartz Hill/ Central City district/ Gilpin County/ Clear Creek County/ igneous-metamorphic/ gneiss/ schist/ pegmatite/ Front Range/

Baillie, W. N., 1962

pegmatites/ feldspar/ rare earths/ Boulder County/ Chaffee County/ Clear Creek County/ Douglas County/ El Paso County/ Fremont County/ Gunnison County/ Jefferson County/ Larimer County/ Park County/ igneous-metamorphic/ Front Range/

Bain, H. F., 1914

Idaho Springs/ Clear Creek County/ springs/ radium/ Front Range/ igneous-metamorphic/

Bastin, E. S., and Hill, J. M., 1915

Gilpin County/ igneous-metamorphic/ Boulder County/ Quartz Hill/ gold/ silver/ uranium/ copper/ tungsten/ Front Range/ ore deposits/ Clear Creek County/

Bertrand, Didier, 1950

biogeochemistry/ vanadium/ rocks/ sediments/ water/ soil/ coal/ Jamestown district/ Front Range/ Gilpin County/ igneous-metamorphic/ plants/ animals/ oil/ asphalt/ Clear Creek County/

Bleniewski, C. L., Persse, F. H., and Brauch, E. F., 1971

Colorado Plateau/ Rifle district/ Front Range/ Garfield County/ Clear Creek County/ Jefferson County/ Boulder County/ resources/ price/ cost analysis/ sandstone/ igneous-metamorphic/ Marshall Pass/

Boos, C. M., and Boos, M. F., 1957

tectonics/ Front Range/ igneous-metamorphic/ Gilpin County/ Larimer County/ Boulder County/ Jefferson County/ geology/ Clear Creek County/ Park County/ Douglas County/ Teller County/ El Paso County/ Fremont County/ Pueblo County/ granite/ schist/ gneiss/ pegmatite/

Braddock, W. A., 1969

geology/ ore deposits/ Empire quadrangle/ Grand County/ Gilpin County/ Clear Creek County/ Front Range/ igneous-metamorphic/

Brinkworth, G. L., 1974

geophysical investigations/ Front Range/ mineral belt/ igneous-metamorphic/ Jefferson County/ Boulder County/ Clear Creek County/ Gilpin County/ geophysics/

Butler, A. P., Jr., 1952

Front Range/ thorium/ Colorado Plateau/ Morrison Formation/ Igneous-metamorphic/ Chinle Formation/ Shinarump Member/ geology/ ore deposits/ pegmatites/ veins/ sandstone/ placers/ carnotite/ fresh waters/ gases/ Gilpin County/ Clear Creek County/ Custer County/ Lake County/ San Miguel County/ Gunnison County/

Butler, A. P., Jr., Killeen, P. L., Page, G. B., and Rubey, W. W., 1947

ore deposits/ resources/ reconnaissance/ Front Range/ reserves/ Colorado Plateau/ carnotite/ uranium/ vanadium/ Igneous-metamorphic/ uraninite/ Iron Hill/ Gunnison County/ Gilpin County/ Clear Creek County/ radioactive springs/ thorium/ mineralogy/ San Miguel County/ Montrose County/ Mesa County/ sandstone/ genesis/

Carter, W. D., and Gualtieri, J. L., 1958

map/ tectonics/ Colorado/ Utah/ Moffat County/ Logan County/ geology/ Larimer County/ Jackson County/ Boulder County/ Jefferson County/ Clear Creek County/ Gilpin County/ Summit County/ Grand County/ Eagle County/ Routt County/ Garfield County/ Rio Blanco County/ sandstone/ ore deposits/ Igneous-metamorphic/

Decker, E. R., 1969

geophysics/ geothermal/ radioactive materials/ heat flow/ Colorado/ New Mexico/ Summit County/ Jefferson County/ Clear Creek County/ La Plata County/ Igneous-metamorphic/ Roberts tunnel/

Drake, A. A., Jr., 1955

ore deposits/ Wood mine/ Central City district/ pitchblende/ Gilpin County/ uranium/ veins/ Igneous-metamorphic/ Clear Creek County/ Front Range/

Drake, A. A., Jr., 1955

Front Range/ Igneous-metamorphic/ Central City district/ Gilpin County/ geology/ mineralogy/ petrology/ geochemistry/ pitchblende/ ore deposits/ Calhoun mines/ Wood mine/ production/ veins/ Precambrian rocks/ Quartz Mill vein/ Wood vein/ Willowdale vein/ paragenesis/ alteration/ bostonite porphyry/ Clear Creek County/

Drake, A. A., Jr., 1957

veins/ Precambrian rock/ bostonite porphyry/ pitchblende/ production/ Central City district/ Gilpin County/ structure/ geology/ Wood-East Calhoun area/ Igneous-metamorphic/ East Calhoun mine/ Clear Creek County/ mineralogy/ Front Range/ Wood mine/

Everhart, D. L., and Wright, R. J., 1953

veins/ pitchblende/ geologic features/ sulfides/ Precambrian rocks/ Canadian shield/ Paleozoic/ Tertiary/ paragenesis/ alteration/ sandstone/ Africa/ Idaho/ Front Range/ Gilpin County/ Clear Creek County/ Boulder County/ Utah/ Colorado Plateau/ Igneous-metamorphic/

Fix, P. F., 1956

hydrogeochemistry/ surface water/ ground water/

uranium/ exploration/ Front Range/ Colorado Plateau/ Central City/ Clear Creek County/

Fix, P. F., 1956

hydrogeochemistry/ surface water/ ground water/ uranium/ exploration/ Front Range/ Colorado Plateau/ Central City/ Gilpin County/ Clear Creek County/

Gottfried, David, 1956

Front Range/ ore deposits/ exploration/ Precambrian rocks/ igneous complexes/ granite/ uranium/ Jefferson County/ Clear Creek County/ Gilpin County/ Pikes Peak batholith/ Log Cabin batholith/ Boulder Creek batholith/ Igneous-metamorphic/ Boulder County/

Grossman, E. L., 1957

Front Range/ ore deposits/ uranium/ Gilpin County/ Clear Creek County/ Jefferson County/ Schwartzwalder mine/ pitchblende/ Igneous-metamorphic/ Ladwig mine/ Leyden mine/ Boulder County/ coal/ sandstone/ Morrison Formation/ Park County/ Gem Dandy/

Guillotte, G. B., 1944

reconnaissance/ uranium/ ore deposits/ Front Range/ Igneous-metamorphic/ Park County/ Boulder County/ Jamestown district/ Larimer County/ Masonville mines/ Chaffee County/ Trout Creek permatites/ Clear Creek County/ carnotite/

Guillotte, G. B., 1944

uranium/ ore deposits/ Grover pegmatite mine/ Igneous-metamorphic/ Clear Creek County/ Front Range/ columbite/ North Beaver Brook area/

Hall, C. R., 1976

alkalic/ Igneous rocks/ Igneous-metamorphic/ Gilpin County/ Front Range/ bibliography/ San Juan County/ Custer County/ Fremont County/ La Plata County/ Montezuma County/ Gunnison County/ Saguache County/ El Paso County/ Rio Grande County/ Jefferson County/ Larimer County/ Boulder County/ Colorado Plateau/ Clear Creek County/ Teller County/

Hanley, J. B., Heinrich, E. W., and Page, L. R., 1950

pegmatites/ geology/ mineralogy/ Chaffee County/ Boulder County/ Clear Creek County/ Douglas County/ Fremont County/ Gunnison County/ Jefferson County/ Larimer County/ Montrose County/ Park County/ monazite/ thorium/ production/ Front Range/ El Paso County/ Igneous-metamorphic/ Colorado Plateau/ Wyoming/ Utah/ Summit County/

Harder, J. O., and Wyant, D. G., 1944

Central City district/ Cripple Creek/ Jamestown district/ Nederland district/ Boulder County/ Gilpin County/ Gunnison County/ Teller County/ Clear Creek County/ ore deposits/ Igneous-metamorphic/ reconnaissance/ Precambrian rocks/ granite/ veins/ Brown Derby Pegmatite/ Calhoun mine/ Belcher mine/ trace elements/ Front Range/

Harrison, J. E., 1952

Clear Creek County/ ore deposits/ Front Range/ Spring Gulch/ Lawson-Dumont district/ pegmatite/ granite/ schist/ minerals/ autunite/ metatorbernite/

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- Harrison, J. E., 1953  
fracture patterns/ Freeland-Lamartine district/ Colorado/ Clear Creek County/ Igneous-metamorphic/ veins/ Gilpin County/ thorium/ hypogene zoning/ Front Range/
- Harrison, J. E., 1953  
Freeland-Lamartine district/ Clear Creek County/ veins/ Igneous-metamorphic/ Gilpin County/ Front Range/
- Harrison, J. E., 1955  
fracture patterns/ Freeland-Lamartine district/ Clear Creek County/ Igneous-metamorphic/ Gilpin County/ veins/ thorium/ hypogene zoning/ Front Range/
- Harrison, J. E., and Leonard, B. F., 1952  
Front Range/ Clear Creek County/ Lawson-Dumont district/ pitchblende/ Jo Reynolds mine/ veins/ stratigraphy/ Idaho Springs Formation/ Precambrian rocks/ Igneous-metamorphic/ structure/ ore deposits/ geology/ metamorphic rocks/ bostonite porphyry/ economic geology/
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Front Range/ Clear Creek County/ Lawson-Dumont district/ pitchblende/ Jo Reynolds mine/ veins/ stratigraphy/ Idaho Springs Formation/ Precambrian rocks/ Igneous-metamorphic/ structure/ ore deposits/ geology/ metamorphic rocks/ bostonite porphyry/ economic geology/
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veins/ bituminous substances/ genesis/ uranium/ ore deposits/ igneous-metamorphic/ sandstone/ limestone/ coal/ shale/ pitchblende/ geochemistry/ age/ Front Range/ Colorado Plateau/ Gilpin County/ Clear Creek County/ San Miguel County/ Montrose County/ Mesa County/

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veins/ bituminous substances/ ore deposits/ migmatites/ sandstone/ shale/ igneous-metamorphic/ Colorado/ Colorado Plateau/ San Juan County/ San Miguel County/ coal/ Jefferson County/ Montrose County/ Old Leyden mine/ uranium/ Gilpin County/ Clear Creek County/ Front Range/ genesis/ Mesa County/

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uranium/ Colorado Plateau/ Front Range/ exploration/ Morrison Formation/ phosphates/ shale/ sandstone/ igneous-metamorphic/ Mesa County/ Montrose County/ San Miguel County/ Montezuma County/ Dolores County/ Gilpin County/ Clear Creek County/ Garfield County/ Boulder County/

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uranium/ exploration/ Colorado Plateau/ sandstone/ Morrison Formation/ Entrada Sandstone/ Mesa County/ San Miguel County/ Dolores County/ Montezuma County/ Front Range/ Boulder County/ Gilpin County/ Caribou district/ igneous-metamorphic/ Montrose County/ Clear Creek County/

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uranium/ Colorado Plateau/ Morrison Formation/ Entrada Sandstone/ sandstone/ Mesa County/ Montrose County/ San Miguel County/ Dolores County/ Montezuma

County/ Front Range/ Boulder County/ Gilpin County/ Clear Creek County/ Caribou district/ igneous-metamorphic/

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mapping/ Idaho Springs district/ Precambrian rocks/ veins/ igneous-metamorphic/ mineralogy/ Stanley mines/ Lawrence L. claim/ P. J. claim (?)/ radioactivity/ Clear Creek County/ Gilpin County/ Front Range/ geology/

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pegmatites/ gneiss/ granite/ uranium/ thorium/  
Front Range/ geology/ map/ Central City district/  
Trilo claims/ White Spar claim/ Quartz Creek  
district/ uranium/ thorium/ Colorado/ gneiss/  
origin/ Sharon Springs Member/ Hermosa Formation/  
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district/ geology/ maps/ ore deposits/ Iron  
mine/ veins/ Russell Gulch area/ Quartz Hill  
area/ Nevada Gulch area/ pitchblende/ Wood mine/  
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Gomer mine/ Golden Calf mine/ Golden Glen mine/  
Martha E. mine/ veins/ Old Town mine/ Spread  
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County/ Jefferson County/ Clear Creek County/  
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district/ Idaho Springs district/ mineralogy/  
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natural waters/ Morrison Formation/ Mesa County/  
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geology/ ore deposits/ Gilpin County/ Clear  
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reserves/ Colorado Plateau/ exploration/ sandstone/  
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Rio Blanco County/ Front Range/ igneous-metamorphic/  
Jefferson County/ pitchblende/ hydrogeochemical  
exploration/ stream sediments/ ground water/  
mine waters/

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Colorado Plateau/ mapping/ geophysics/ Clear Creek County/ geochemistry/ Maybell-Lay area/ Front Range/ Gilpin County/ research/ thorium/ Moffat County/ sandstone/ Mesa County/ San Miguel County/ Montrose County/ igneous-metamorphic/

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ore deposits/ host rocks/ alteration/ veins/ sandstone/ Igneous-metamorphic/ limestone/ Boulder County/ Park County/ Front Range/ Gilpin County/ Clear Creek County/ Jefferson County/ Saguache County/ coal/ dolomite/ Pitkin County/ Larimer County/ Caribou mine/ Los Ochos mine/ Leyden coal mine/ Copper King mine/

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alteration/ veins/ Igneous-metamorphic/ sandstone/ limestone/ Boulder County/ Park County/ Front Range/ Gilpin County/ Clear Creek County/ Jefferson County/ Saguache County/ coal/ Cochetopa district/ ore deposits/ Placerville district/ San Miguel County/ Larimer County/ Central City district/ Caribou mine/ Los Ochos mine/ Leyden coal mine/ Copper King mine/

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Boulder County/ Larimer County/ Placerville district/ Central City district/ Gilpin County/ Clear Creek County/ Front Range/ Jefferson County/ Schwartzwalder mine/ San Miguel County/ Colorado Plateau/ Copper King mine/ Saguache County/ ore deposits/ Caribou mine/ Los Ochos mine/ sandstone/ Colorado/ mineralogy/ Igneous-metamorphic/ textures/ structures/ paragenesis/

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ore deposits/ veins/ fluorite/ Front Range/

## CLEAR CREEK COUNTY

Gilpin County/ coal/ Jefferson County/ Placerville district/ San Miguel County/ Clear Creek County/ sandstone/ igneous-metamorphic/ Colorado Plateau/ Cochetopa district/ Saguache County/ Powderhorn district/ Custer County/ Chaffee County/

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ore deposits/ veins/ geology/ Front Range/ Gilpin County/ Jefferson County/ sandstone/ Boulder County/ San Miguel County/ Igneous-metamorphic/ Colorado Plateau/ Saguache County/ Custer County/ Chaffee County/ Clear Creek County/ Jamestown district/ Cochetopa district/ Powderhorn district/ Placerville district/

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ore deposits/ veins/ genesis/ Placerville district/ transportation/ deposition/ depositional environments/ Clear Creek County/ Gilpin County/ Saguache County/ Jefferson County/ Cochetopa district/ Front Range/ San Miguel County/ Leyden coal mine/ Larimer County/ Boulder County/ sandstone/ igneous-metamorphic/

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structure/ granodiorite/ Ute Creek/ Clear Creek County/ Front Range/ Igneous-metamorphic/ petrology/

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veins/ igneous-metamorphic/ Clear Creek County/ sulfide minerals/ base metals/ mineral associations/ analyses/ paragenesis/ trace elements/ Idaho/ Arizona/ Central City district/ Carroll mine/ pitchblende/ solid solution/ ore deposits/ Front Range/

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Gow, T. T., 1914

basalt/ Table Mountain/ igneous-metamorphic/ Jefferson County/ Conejos County/ Rio Grande County/ Gilmore/ Front Range/ radioactivity/

Larsen, E. S., and Cross, C. W., 1956

geology/ petrology/ San Juan region/ Colorado Plateau/ igneous-metamorphic/ Montrose County/ Ouray County/ San Miguel County/ Dolores County/ La Plata County/ Gunnison County/ Hinsdale County/ Archuleta County/ Mineral County/ Saguache County/ Conejos County/ Alamosa County/ San Juan County/ Montezuma County/ Rio Grande County/

Lipman, P. W., Bunker, C. M., and Bush, C. A., 1973

basalt/ spectroscopy/ Cenozoic rocks/ potassium/ thorium/ uranium/ Rio Grande depression/ New Mexico/ geochemistry/ ore composition/ Baca County/ Las Animas County/ igneous-metamorphic/ Conejos County/ Costilla County/ Rio Grande County/ Alamosa County/

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geology/ uranium/ geophysical prospecting/ economic geology/ mining engineering/ petrology/ minerals/ radioactivity/ Conejos County/ reconnaissance/ ore deposits/ sandstone/

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Brown, L. J., and Easton, W. W., 1955

ore deposits/ reconnaissance/ airborne/ Huerfano Embayment/ Intrusives/ volcanics/ Las Animas Arch/ La Veta Pass area/ Huerfano County/ Las Animas County/ Otero County/ Costilla County/ Pueblo County/ Crowley County/ Kiowa County/ Bent County/ Prowers County/ Baca County/ sandstone/ shale/ claystone/ igneous-metamorphic/

Brown, L. J., and Malan, R. C., 1954

ore deposits/ exploration/ Sangre de Cristo/ reconnaissance/ province/ Canyon City embayment/ City Slicker mine/ igneous-metamorphic/ El Paso County/ Las Animas County/ La Veta Pass/ Alamosa County/ Costilla County/ sandstone/ Fremont County/ Huerfano County/ Pueblo County/ Rio Grande County/ Saguache County/ Teller County/ Dakota Sandstone/ Morrison Formation/ Cripple Creek - Victor district/

Emerson, J. F., 1943

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Finch, W. I., 1967

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Lipman, P. W., Bunker, C. M., and Bush, C. A., 1973

basalt/ spectroscopy/ Cenozoic rocks/ potassium/ thorium/ uranium/ Rio Grande depression/ New Mexico/ geochemistry/ ore composition/ Baca County/ Las Animas County/ igneous-metamorphic/ Conejos County/ Costilla County/ Rio Grande County/ Alamosa County/

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ore deposits/ Huerfano County/ Raton basin/ Fremont County/ Custer County/ Las Animas County/ sandstone/ Costilla County/ uranium/ geology/ arkose/

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Brown, L. J., and Easton, W. W., 1955

ore deposits/ reconnaissance/ airborne/ Huerfano Embayment/ Intrusives/ volcanics/ Las Animas Arch/ La Veta Pass area/ Huerfano County/ Las Animas County/ Otero County/ Costilla County/ Pueblo County/ Crowley County/ Kiowa County/ Bent County/ Prowers County/ Baca County/ sandstone/ shale/ claystone/ igneous-metamorphic/

Landis, E. R., 1954

Colorado/ Kansas/ exploration/ black shale/ Cretaceous/ Cheyenne County/ Kiowa County/ Crowley County/ Las Animas County/ map/ Pierre Shale/

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Cheyenne County/ Crowley County/ Kiowa County/ Las Animas County/ Pueblo County/ genesis/ Pierre Shale/ Niobrara Formation/ shale/ Sharon Spring Member/ black shales/ ore deposits/ radioactivity/ uranium/ Yuma County/ stratigraphy/ uraniferous/

Landis, E. R., 1956

ground water/ surface water/ Kansas/ Colorado/ Oklahoma/ shale/ tuff/ sandstone/ Smoky Hill River valley/ Rule Creek basin/ Baca County/ siltstone/ uranium/ claystone/ Bent County/ Las Animas County/ Kiowa County/ Cheyenne County/ Crowley County/ Lincoln County/ springs/ wells/ Muddy Creek/ geochemistry/

Landis, E. R., 1957

Colorado/ Kansas/ New Mexico/ Oklahoma/ exploration/ geochemistry/ ground water/ surface water/ tuff/

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shale/ sandstone/ wells/ springs/ Cheyenne County/  
Bent County/ Las Animas County/ Kiowa County/  
Crowley County/ Lincoln County/ uranium/ Baca  
County/

Landis, E. R., 1959

Colorado/ Kansas/ ore deposits/ Cretaceous/  
Pierre Shale/ Sharon Springs Member/ radioactivity/  
Cheyenne County/ Crowley County/ Kiowa County/  
Yuma County/ Las Animas County/ Pueblo County/  
shale/ black shale/

Landis, E. R., 1960

ground water/ surface water/ Great Plains/ analyses/  
Baca County/ Bent County/ Cheyenne County/ Crowley  
County/ Kiowa County/ Lincoln County/ Prowers  
County/ sandstone/ Las Animas County/ geochemistry/

Scott, R. C., and Barker, F. B., 1961

ground water/ radium/ La Plata County/ Cheyenne  
County/ Kiowa County/ Lincoln County/ Crowley  
County/ Otero County/ Bent County/ Prowers County/  
Las Animas County/ Baca County/ Montezuma County/  
Archuleta County/ Colorado Plateau/

Tourtelot, H. A., 1955

Boulder County/ Cheyenne County/ Crowley County/  
Jefferson County/ Kiowa County/ Larimer County/  
Pueblo County/ mineralogy/ petrology/ geochemistry/  
black shale/ alteration/ White River group/  
uranium/ radioactivity/ Cretaceous shales/ Great  
Plains/ El Paso County/

Tourtelot, H. A., 1956

marine black shales/ Boulder County/ Crowley  
County/ El Paso County/ Jefferson County/ Kiowa  
County/ Larimer County/ Pueblo County/ petrology/  
geochemistry/ black shale/ alteration/ White  
River group/ uranium/ radioactivity/ Cretaceous  
shales/ Great Plains/ Cheyenne County/ mineralogy/

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thorium/ Wet Mountains/ Fremont County/ Custer  
County/ Igneous-metamorphic/ veins/ ore deposits/

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County/ Gunnison County/ Igneous-metamorphic/  
ore deposits/

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ore deposits/ bibliography/ thorium/ rare earths/  
Alaska/ Colorado/ United States/ El Paso County/  
Custer County/ Gunnison County/ Igneous-metamorphic/

Butler, A. P., Jr., 1952

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Formation/ Igneous-metamorphic/ Chinle Formation/  
Shinarump Member/ geology/ ore deposits/ pegmatites/  
veins/ sandstone/ placers/ carnotite/ fresh  
waters/ gases/ Gilpin County/ Clear Creek County/  
Custer County/ Lake County/ San Miguel County/  
Gunnison County/

Christman, R. A., Brock, M. R., and Singewald,  
Q. D., 1954

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County/ thorium/ Fremont County/ Pueblo County/  
veins/ Igneous-metamorphic/

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and Singewald, Q. D., 1954

Wet Mountains/ Haputa Ranch/ Silver Cliff district/  
McKinley Mountain area/ Rosita district/ Tuttle  
Ranch/ Westcliff area/ Custer County/ Fremont  
County/ Pine Tree claim/ stratigraphy/ ore deposits/  
structure/ Precambrian rocks/ rare earths/ veins/  
thorium/ Igneous-metamorphic/

Christman, R. A., Brock, M. R., Pearson, R. C.,  
and others, 1955

Wet Mountains/ ore deposits/ thorium/ Custer  
County/ Fremont County/ veins/ Igneous-metamorphic/  
rare earths/ Pueblo County/

Christman, R. A., Brock, M. R., Pearson, R. C.,  
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Wet Mountains/ ore deposits/ resources/ production/  
geology/ thorium/ Custer County/ Pueblo County/  
Fremont County/ veins/ Igneous-metamorphic/

Christman, R. A., Heyman, A. M., Dellwig, L. F.,  
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veins/ thorium/ Wet Mountains/ Custer County/  
thorite/ shear zones/ metamorphic rocks/ ore  
deposits/ Igneous-metamorphic/

Christman, R. A., Heyman, A. M., Dellwig, L. F.,  
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thorium/ Wet Mountains/ Custer County/ Fremont  
County/ metamorphic rocks/ thorite/ ore deposits/  
veins/ Igneous-metamorphic/ shear zones/

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County/ Custer County/ Igneous-metamorphic/  
exploration/ veins/ ore deposits/

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1953

drilling/ analyses/ Igneous-metamorphic/ Wet  
Mountains/ structure/ geology/ mineralogy/ Custer  
County/ Fremont County/ Haputa Ranch/ Tuttle  
Ranch/ stratigraphy/ Precambrian rocks/ thorium/  
rare earths/ ore deposits/ veins/ Atomic Mountain  
group/ Barite lode/ thorite/ Big Chief claim/  
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County/ Park County/ Mesa County/ Montrose County/  
El Paso County/ San Miguel County/ Bent County/  
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Jefferson County/ Larimer County/ Teller County/  
veins/ igneous-metamorphic/ stream sediments/  
spring deposits/ shear zones/ pegmatites/ sandstone/  
coal/ Eagle County/ Grand County/ Gunnison County/  
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Ouray County/ radioactive ilmenite/ Lucky Break  
Iron mine/ sandstone/ thorium/ uranium/ spring  
deposits/ Front Range/ conglomerate/ limestone/  
tufa/ analyses/ Igneous-metamorphic/ ore deposits/  
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thorium/ Igneous-metamorphic/ resources/ Custer County/ Fremont County/ Gunnison County/
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thorium/ Powderhorn district/ Gunnison County/ veins/ Custer County/ Fremont County/ Colorado/ Idaho/ Wyoming/ Precambrian rocks/ Montana/

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California/ geology/ New Mexico/ Wisconsin/  
New York/ Michigan/ Wet Mountains/ ore deposits/  
Igneous-metamorphic/

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geology/ thorium/ Powderhorn district/ Gunnison  
County/ Wet Mountains/ Custer County/ Fremont  
County/ veins/ Precambrian rocks/ Colorado/  
Wyoming/ Idaho/ Montana/ California/ New Mexico/  
Wisconsin/ New York/ Michigan/ ore deposits/  
Igneous-metamorphic/

U.S. Atomic Energy Commission, 1966  
geology/ uranium/ geophysical prospecting/ economic  
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radioactivity/ Custer County/ reconnaissance/  
ore deposits/ Front Range/ sandstone/ igneous-metamorphic/

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Colorado Plateau/ Front Range/ sandstone/ coal/  
springs/ igneous-metamorphic/ shale/ Gilpin  
County/ Clear Creek County/ Jefferson County/  
Boulder County/ Custer County/ thorium/ Gunnison  
County/ La Plata County/ San Juan County/ Ouray  
County/

Walker, G. W., and Osterwald, F. W., 1956  
ore deposits/ veins/ fluorite/ Front Range/  
Gilpin County/ coal/ Jefferson County/ Placerville  
district/ San Miguel County/ Clear Creek County/  
sandstone/ igneous-metamorphic/ Colorado Plateau/  
Cochetopa district/ Saguache County/ Powderhorn  
district/ Custer County/ Chaffee County/

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ore deposits/ veins/ geology/ Front Range/ Gilpin  
County/ Jefferson County/ sandstone/ Boulder  
County/ San Miguel County/ igneous-metamorphic/  
Colorado Plateau/ Saguache County/ Custer County/  
Chaffee County/ Clear Creek County/ Jamestown  
district/ Cochetopa district/ Powderhorn district/  
Placerville district/

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Adler, H. H., 1963  
genesis/ sandstone/ ore deposits/ Jefferson  
County/ Pueblo County/ Gunnison County/ Moffat  
County/ Garfield County/ Mesa County/ Delta  
County/ Montrose County/ San Miguel County/  
Dolores County/ Montezuma County/ La Plata County/  
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Rio Blanco County/

Adler, H. H., 1964  
uranium/ roll ore/ exploration/ sandstone/ ore  
deposits/ Jefferson County/ Pueblo County/ Gunnison  
County/ Rio Blanco County/ Garfield County/  
Mesa County/ Delta County/ Montrose County/  
San Miguel County/ Montezuma County/ La Plata  
County/ Archuleta County/ Moffat County/ Colorado  
Plateau/ Front Range/ Dolores County/

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genesis/ Colorado/ general/ Mesa County/ Delta

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County/ Dolores County/ Archuleta County/ Garfield  
County/ La Plata County/

Baltz, E. H., Jr., 1955  
Colorado/ New Mexico/ ore deposits/ exploration/  
carbonaceous rocks/ sandstone/ Mesa County/  
Delta County/ Montrose County/ Gunnison County/  
Ouray County/ San Miguel County/ Hinsdale County/  
Dolores County/ Montezuma County/ La Plata County/  
Archuleta County/ coal/ shale/ reconnaissance/  
Colorado Plateau/

Cadigan, R. A., 1967  
petrology/ Morrison Formation/ Colorado Plateau/  
sandstone/ Gunnison County/ La Plata County/  
Archuleta County/ San Miguel County/ Mesa County/  
Delta County/ Eagle County/ Montrose County/  
Montezuma County/ mineralogy/ Rio Blanco County/  
Salt Wash Member/

Cadigan, R. A., 1971  
petrology/ Moenkopi Formation/ Colorado Plateau/  
mineralogy/ Moffat County/ Rio Blanco County/  
Garfield County/ Mesa County/ Delta County/  
Montrose County/ San Miguel County/ Dolores  
County/ Montezuma County/ sandstone/ stratigraphy/

Cadigan, R. A., 1971  
geochemical distribution/ Colorado Plateau/  
red beds/ vanadium/ sandstone/ La Plata County/  
Montezuma County/ Dolores County/ San Miguel  
County/ Montrose County/ Mesa County/ Delta  
County/ Rio Blanco County/ geochemistry/ Garfield  
County/ Moenkopi Formation/

Cadigan, R. A., 1972  
stratigraphy/ genesis/ Chinle Formation/ Colorado  
Plateau/ paleontology/ sandstone/ Triassic strata/  
Eagle County/ La Plata County/ Archuleta County/  
Garfield County/ Mesa County/ Moffat County/  
Montezuma County/ Pitkin County/ Montrose County/  
Rio Blanco County/ Routt County/ San Miguel  
County/ San Juan County/ Summit County/ Park  
County/ Delta County/ Dolores County/ mineralogy/  
conglomerate/ Gunnison County/ Ouray County/

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Delta County/ spring deposits/ radioactive springs/  
radium/ geochemistry/

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geochemistry/ radioactive springs/ exploration/  
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springs/ spring deposits/ Delta County/ geochemistry/  
exploration/ radioactive springs/ uranium/

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Delta County/ radioactive springs/ spring deposits/  
geochemistry/

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Colorado Plateau/ ore deposits/ botanical prospecting/  
exploration/ indicator plants/ sandstone/ Rio  
Blanco County/ Garfield County/ Mesa County/

Delta County/ Montrose County/ San Miguel County/ Dolores County/ Montezuma County/ La Plata County/ geobotany/

Chew, R. T., 3d, 1955

Colorado Plateau/ Rifle mine/ Uravan district/ map/ Uranium Peak/ sandstone/ production/ uranium/ vanadium/ Morrison Formation/ La Plata County/ ore deposits/ Entrada Sandstone/ Rio Blanco County/ Mesa County/ Garfield County/ Delta County/ Montrose County/ San Miguel County/ Dolores County/ Montezuma County/ Gateway district/

Chew, R. T., 3d, 1955

sandstone/ Mesa County/ Utah/ stream sediments/ exploration/ radioactivity/ Delta County/ Montrose County/ gravels/ San Miguel County/ Dolores County/ Ouray County/ San Juan County/ Montezuma County/ La Plata County/ Colorado Plateau/

Chew, R. T., 3d, 1956

Mesa County/ Delta County/ Montrose County/ sandstone/ Dolores County/ Ouray County/ San Juan County/ gravels/ Montezuma County/ La Plata County/ Colorado Plateau/ exploration/ stream sediments/ radioactivity/ San Miguel County/

Chew, R. T., 3d, 1956

Rifle mine/ Uravan district/ Uranium Peak/ vanadium/ production/ Colorado Plateau/ uranium/ sandstone/ Rio Blanco County/ Mesa County/ Delta County/ Montrose County/ San Miguel County/ Dolores County/ Montezuma County/ La Plata County/ Entrada Sandstone/ ore deposits/ Garfield County/ Morrison Formation/

Craig, L. C., and Holmes, C. N., 1951

Morrison Formation/ Colorado Plateau/ sandstone/ Moffat County/ Rio Blanco County/ Garfield County/ Delta County/ Montrose County/ San Miguel County/ Dolores County/ Montezuma County/ La Plata County/ Archuleta County/ Mesa County/ stratigraphy/ Glen Canyon group/ San Rafael group/

Craig, L. C., Holmes, C. N., Cadigan, R. A., and others, 1951

Colorado Plateau/ Morrison Formation/ Mesa County/ stratigraphy/ Glen Canyon group/ Montezuma County/ Delta County/ San Rafael group/ Dolores County/ Gunnison County/ Montrose County/ sandstone/ Moffat County/ Ouray County/ San Juan County/ San Miguel County/ La Plata County/ Rio Blanco County/ Garfield County/ Archuleta County/

Craig, L. C., Holmes, C. N., Cadigan, R. A., and others, 1955

stratigraphy/ Morrison Formation/ Colorado Plateau/ sandstone/ Recapture Member/ Mesa County/ Ouray County/ Delta County/ Gunnison County/ Montrose County/ San Juan County/ San Miguel County/ Dolores County/ La Plata County/ Montezuma County/ Salt Wash Member/

Finch, W. I., 1955

Colorado Plateau/ ore deposits/ uranium/ sandstone/ copper/ conglomerate/ ore-bearing formation/ limestone/ vanadium/ Rio Blanco County/ Garfield County/ Mesa County/ geology/ Delta County/

San Miguel County/ Dolores County/ Rifle mine/ Montezuma County/ La Plata County/ Greysill mine/ Placerville district/ Uravan district/ Gateway district/ map/ geology/

Finch, W. I., 1956

Colorado Plateau/ ore deposits/ La Plata County/ production/ Triassic/ Chinle Formation/ shale/ sandstone/ conglomerate/ fossil wood/ minerals/ structures/ Mesa County/ Delta County/ Montrose County/ San Miguel County/ Dolores County/ Montezuma County/ Garfield County/ Rio Blanco County/ geology/

Finch, W. I., 1959

Colorado Plateau/ ore deposits/ production/ Triassic/ Chinle Formation/ fossil wood/ minerals/ structures/ Mesa County/ Delta County/ Montrose County/ San Miguel County/ Dolores County/ Montezuma County/ La Plata County/ sandstone/ conglomerate/ shale/ Garfield County/ Rio Blanco County/ geology/

Fischer, R. P., 1950

Colorado Plateau/ ore deposits/ sandstone/ uranium/ Morrison Formation/ Rio Blanco County/ Garfield County/ Mesa County/ Delta County/ Montrose County/ Dolores County/ Montezuma County/ La Plata County/ Archuleta County/ ore guides/ Garfield County/ San Miguel County/

Fischer, R. P., 1955

Durango district/ Placerville district/ Rico district/ uranium/ vanadium/ chromium/ Delta County/ Garfield County/ La Plata County/ Ouray County/ Rio Blanco County/ San Juan County/ San Miguel County/ minerals/ marlposite/ sandstone/ Entrada Sandstone/ regional relations/ ore deposits/ Colorado Plateau/ Mesa County/ Moffat County/ Montezuma County/ Montrose County/ Rifle area/ Dolores County/

Foster, M. D., 1959

Colorado Plateau/ ore deposits/ mineralogy/ geochemistry/ clay mineralogy/ uranium/ vanadium/ sandstone/ Moffat County/ Rio Blanco County/ Garfield County/ Mesa County/ Delta County/ San Miguel County/ Montrose County/ Dolores County/ Montezuma County/ La Plata County/ Archuleta County/

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Colorado Plateau/ ore deposits/ mineralogy/ geochemistry/ sandstone/ ground water/ clay/ mudstone/ organics/ Peanut mine/ J. J. mine/ Montrose County/ Rifle mine/ Garfield mine/ Moffat County/ Rio Blanco County/ Mesa County/ Delta County/ San Miguel County/ Dolores County/ La Plata County/ Montezuma County/ Archuleta County/

George, R. D., Curtis, H. A., Lester, O. C., and others, 1920

Colorado Plateau/ mineralized waters/ springs/ spring deposits/ Front Range/ Jefferson County/ Pitkin County/ Pueblo County/ Garfield County/

Park County/ El Paso County/ Ouray County/ Boulder County/ Gunnison County/ Delta County/ Chaffee County/

Gill, J. R., 1953

Colorado/ Montana/ Wyoming/ ore deposits/ carbonaceous rocks/ coal/ Park County/ Gunnison County/ Delta County/ Las Animas County/ El Paso County/ Teller County/ La Plata County/ Montezuma County/ Denver Basin/ Larimer County/ shale/ Crested Butte/ Laramie Formation/ Colorado Plateau/ Front Range/

Hackman, R. J., 1958

Mesa County/ Montrose County/ Delta County/ photogeologic map/ sandstone/ Colorado Plateau/ Escalante Forks quadrangle/

Headden, W. P., 1905

Delta County/ spring deposits/ radium/ Doughty Springs/ Colorado Plateau/

Headden, W. P., 1905

Delta County/ spring deposits/ radium/ Doughty Springs/ Colorado Plateau/

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Delta County/ spring deposits/ radium/ alunogen/ Doughty Springs/ Colorado Plateau/

Headden, W. P., 1909

Delta County/ springs deposits/ Doughty Springs/ radium/ Colorado Plateau/

Hess, F. L., 1914

genesis/ carnotite/ Colorado/ uranium/ vanadium/ Rio Blanco County/ Eagle County/ geology/ San Miguel County/ Montrose County/ Moffat County/ Routt County/ Garfield County/ Mesa County/ Delta County/ Dolores County/ Montezuma County/ La Plata County/ Archuleta County/ Utah/ Colorado Plateau/ sandstone/ ore deposits/

Hess, F. L., 1925

carnotite/ vanoxite/ vanadium/ mineralogy/ sandstone/ Rio Blanco County/ Garfield County/ Mesa County/ Montrose County/ San Miguel County/ Dolores County/ Montezuma County/ La Plata County/ Colorado Plateau/ ore deposits/ Delta County/

Holmes, C. N., 1950

sandstone/ Uncompahgre uplift/ tectonics/ sedimentary rocks/ Mesozoic/ Chinle Formation/ Pitkin County/ Gunnison County/ Montrose County/ Mesa County/ Delta County/ Dolores County/ Dolores Formation/ Montezuma County/ Entrada Sandstone/ stratigraphy/ Morrison Formation/ Colorado Plateau/

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Cenozoic/ geology/ Colorado Plateau/ physiography/ stratigraphy/ Moffat County/ sandstone/ Delta County/ Rio Blanco County/ Garfield County/ Mesa County/ Montrose County/ San Miguel County/ Dolores County/ Montezuma County/ La Plata County/ Archuleta County/

Isachsen, Y. W., Mitcham, T. W., and Wright, R. J., 1955

Colorado Plateau/ ore deposits/ absolute age/ host rocks/ sandstone/ formational environments/

Entrada Sandstone/ Kayenta Formation/ Garfield County/ Moffat County/ Rio Blanco County/ San Miguel County/ Mesa County/ Montrose County/ Delta County/ Dolores County/ Montezuma County/ La Plata County/ Archuleta County/

Jobin, D. A., 1956

Colorado Plateau/ ore deposits/ exploration/ uranium/ sediments/ sandstone/ ground water/ La Plata County/ Archuleta County/ Moffat County/ Rio Blanco County/ Garfield County/ Mesa County/ Montrose County/ San Miguel County/ Dolores County/ regional transmissivity/ Delta County/

Jobin, D. A., 1956

Colorado Plateau/ ore deposits/ exploration/ regional transmissivity/ uranium/ sediments/ sandstone/ ground water/ La Plata County/ Archuleta County/ Moffat County/ Rio Blanco County/ Montrose County/ Garfield County/ Mesa County/ Delta County/ San Miguel County/ Dolores County/ Montezuma County/

Jobin, D. A., 1962

Colorado Plateau/ ore deposits/ Morrison Formation/ transmissivity/ sandstone/ San Miguel County/ ground water/ conglomerate/ Chinle Formation/ Moffat County/ Rio Blanco County/ Garfield County/ Mesa County/ Delta County/ Montrose County/ Dolores County/ Montezuma County/ La Plata County/ Archuleta County/

Kaiser, E. P., King, R. U., Wilmarth, V. R., and others, 1952

Front Range/ pitchblende/ sandstone/ coal/ shale/ Archuleta County/ Routt County/ Eagle County/ Pitkin County/ Gunnison County/ San Juan County/ Fremont County/ Huerfano County/ Ouray County/ Colorado Plateau/ ore deposits/ Moffat County/ Garfield County/ Mesa County/ Delta County/ Montrose County/ San Miguel County/ Dolores County/ Montezuma County/ La Plata County/ Larimer County/ Boulder County/ Jefferson County/ Park County/ Rio Blanco County/ Igneous-metamorphic/

Kaiser, E. P., King, R. U., Wilmarth, V. R., and others, 1952

Front Range/ Jamestown district/ pitchblende/ bostonite/ Colorado Plateau/ sandstone/ coal/ shale/ Moffat County/ Garfield County/ La Plata County/ Pitkin County/ Gunnison County/ San Juan County/ Boulder County/ Jefferson County/ Park County/ Delta County/ Fremont County/ Rio Blanco County/ Mesa County/ Montrose County/ San Miguel County/ Dolores County/ Montezuma County/ Archuleta County/ Routt County/ Huerfano County/ Ouray County/ Larimer County/ Eagle County/ Igneous-metamorphic/

Keller, W. D., 1962

clay minerals/ Morrison Formation/ Colorado Plateau/ Salt Wash Member/ mineralogy/ Mesa County/ Moffat County/ Rio Blanco County/ Garfield County/ Delta County/ Montrose County/ San Miguel County/ Dolores County/ Montezuma County/ La Plata County/ Archuleta County/ sandstone/

Kelley, V. C., 1955

sandstone/ Colorado Plateau/ ore deposits/ genesis/ tectonics/ structural elements/ Archuleta County/ Mesa County/ Montrose County/ San Miguel County/ Dolores County/ Montezuma County/ La Plata County/ Delta County/ Ouray County/ Gunnison County/ Garfield County/ Rio Blanco County/ Moffat County/

Kelley, V. C., 1955

sandstone/ Colorado Plateau/ ore deposits/ genesis/ tectonics/ structural elements/ Mesa County/ San Miguel County/ Dolores County/ Montezuma County/ La Plata County/ Delta County/ Garfield County/ Rio Blanco County/ Moffat County/ Archuleta County/ Ouray County/ Gunnison County/ Montrose County/

Kelley, V. C., 1956

Colorado Plateau/ ore deposits/ genesis/ Delta County/ uranium/ tectonic history/ regional structure/ Colorado/ sandstone/ Montezuma County/ San Miguel County/ Dolores County/ Montrose County/ Mesa County/ Ouray County/ San Juan County/ Gunnison County/ La Plata County/ Garfield County/ Rio Blanco County/ Delta County/ structural controls/

Kelley, V. C., 1956

Colorado Plateau/ ore deposits/ genesis/ Mesa County/ structural controls/ uranium/ tectonic history/ Colorado/ sandstone/ Montezuma County/ San Miguel County/ Dolores County/ Montrose County/ Moffat County/ San Juan County/ Ouray County/ Gunnison County/ La Plata County/ Garfield County/ Rio Blanco County/ Delta County/ regional structure/

Kelley, V. C., 1959

structures/ fracture systems/ Colorado Plateau/ faults/ fractures/ Mesa County/ Montrose County/ San Miguel County/ sandstone/ Montezuma County/ Moffat County/ San Juan County/ Ouray County/ Delta County/ Gunnison County/ Garfield County/ La Plata County/ Rio Blanco County/

Kelley, V. C., 1959

jointing/ Colorado Plateau/ sandstone/ structures/ Montezuma County/ Dolores County/ Montrose County/ Mesa County/ Delta County/ Garfield County/ Rio Blanco County/ Moffat County/ San Miguel County/

Kelley, V. C., and Clinton, N. J., 1960

Colorado Plateau/ sandstone/ fractures/ tectonics/ genesis/ structures/ Montezuma County/ Dolores County/ Montrose County/ Mesa County/ Delta County/ Garfield County/ Rio Blanco County/ Moffat County/ San Miguel County/

Kerr, P. F., 1958

uranium/ ore deposits/ genesis/ alteration/ mineralogy/ Colorado Plateau/ Archuleta County/ conglomerate/ sandstone/ Moffat County/ Rio Blanco County/ Garfield County/ Mesa County/ Delta County/ Montrose County/ San Miguel County/ Dolores County/ Montezuma County/ La Plata County/

Kerr, P. F., 1958

Colorado Plateau/ ore deposits/ genesis/ sandstone/ stratigraphy/ uranium/ Moffat County/ Rio Blanco County/ Garfield County/ Mesa County/ Delta County/ Montrose County/ San Miguel County/ Montezuma County/ La Plata County/ Archuleta County/ hydrothermal emplacement/ Dolores County/

Lester, U. C., 1918

springs/ radioactivity/ mineral springs/ Colorado/ spring deposits/ Delta County/ Boulder County/

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Montrose County/ Delta County/ photogeologic map/ Delta quadrangle/ sandstone/ Colorado Plateau/

Miesch, A. T., 1963

Colorado Plateau/ ore deposits/ elements/ geology/ Morrison Formation/ Chinle Formation/ Moffat County/ Rio Blanco County/ Garfield County/ Mesa County/ Delta County/ Montrose County/ San Miguel County/ Montezuma County/ La Plata County/ Archuleta County/ sandstone/ Dolores County/

Miesch, A. T., Shoemaker, E. M., Newman, W. L., and others, 1960

Colorado Plateau/ ore deposits/ sandstone/ ore guides/ deposit size/ Jurassic/ Mesa County/ Delta County/ Montrose County/ San Miguel County/ Dolores County/ Montezuma County/ uranium/ chemical composition/ Morrison Formation/

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Colorado Plateau/ ore deposits/ maps/ sandstone/ Montrose County/ Dolores County/ Mesa County/ Delta County/ Garfield County/ Moffat County/ San Miguel County/

Mullens, T. E., and Freeman, V. L., 1954

lithofacies/ Salt Wash Member/ sandstone/ stratigraphy/ Colorado Plateau/ Mesa County/ Montrose County/ San Miguel County/ Dolores County/ Montezuma County/ La Plata County/ Moffat County/ Garfield County/ Delta County/ San Juan County/ Eagle County/ Pitkin County/ Gunnison County/ Ouray County/ Hinsdale County/ Archuleta County/ genesis/ ore deposits/ Morrison Formation/ Rio Blanco County/

Mullens, T. E., and Freeman, V. L., 1957

lithofacies/ Salt Wash Member/ sandstone/ San Juan County/ Morrison Formation/ stratigraphy/ Colorado Plateau/ Moffat County/ Rio Blanco County/ Garfield County/ Eagle County/ Mesa County/ Delta County/ Montrose County/ San Miguel County/ Dolores County/ Montezuma County/ La Plata County/ genesis/ ore deposits/ Pitkin County/ Gunnison County/ Ouray County/ Hinsdale County/ Archuleta County/

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element distribution/ sedimentary rocks/ Colorado Plateau/ genesis/ ore deposits/ sandstone/ mudstone/ limestone/ Uravan district/ Moffat County/ Rio Blanco County/ Garfield County/ Mesa County/ Delta County/ Montrose County/ San Miguel County/ Dolores County/ Montezuma County/ La Plata County/

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Notestein, F. B., 1918

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Schultz, L. G., 1963

clay minerals/ Moenkopi Formation/ Chinle Formation/ x-ray diffraction/ Ouray County/ Rio Blanco County/ Garfield County/ Mesa County/ Delta County/ Montrose County/ San Miguel County/ Dolores County/ Montezuma County/ Colorado Plateau/ sandstone/ La Plata County/

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Utah/ Colorado/ New Mexico/ Arizona/ Colorado Plateau/ structural features/ Uncompahgre uplift/ tectonics/ San Miguel County/ Montrose County/ Dolores County/ Montezuma County/ Delta County/ diatremes/ La Plata County/ sandstone/ geology/ guidebook/ Mesa County/ igneous-metamorphic/

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structural features/ Colorado Plateau/ ore deposits/ veins/ Moffat County/ Rio Blanco County/ La Plata County/ uranium/ Garfield County/ Mesa County/ Delta County/ Montrose County/ San Miguel County/ San Juan County/ Ouray County/ sandstone/ Montezuma County/ Dolores County/ Archuleta County/

Shoemaker, E. M., and Luedke, R. G., 1952

Colorado Plateau/ map/ uranium/ ore deposits/ sandstone/ Moffat County/ Rio Blanco County/ Mesa County/ Delta County/ Montrose County/ San Miguel County/ Dolores County/ Ouray County/ Montezuma County/ La Plata County/ Garfield County/

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Stokes, W. L., 1944

Morrison Formation/ Colorado Plateau/ sandstone/ stratigraphy/ correlation/ Garfield County/ Mesa County/ Delta County/ Gunnison County/ Montrose County/ Ouray County/ Dolores County/ Hinsdale County/ Archuleta County/ Montezuma County/ La Plata County/ ore deposits/ San Juan County/

Walcott, E. R., 1904

radioactivity/ springs/ minerals/ Colorado/ Delta County/

Weeks, A. D., Coleman, R. G., and Thompson, M. E., 1959

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Wright, R. J., 1955

Colorado Plateau/ ore deposits/ ore controls/ lithology/ sandstone/ genesis/ Moffat County/ Dolores County/ Rio Blanco County/ Garfield County/ Mesa County/ Delta County/ Montrose County/ San Miguel County/ La Plata County/ Archuleta County/

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surface water/ rivers/ South Platte River/ geochemistry/ uranium/ analyses/ Jefferson County/ Douglas County/ Denver County/ Arapahoe County/ Adams County/ Weld County/ Morgan County/ Washington County/ Logan County/ Sedgwick County/ reconnaissance/

Popenoe, Peter, 1965

arkose/ shale/ sandstone/ conglomerate/ Denver basin/ Larimer County/ Boulder County/ Jefferson County/ Douglas County/ Elbert County/ Arapahoe County/ Denver County/ Adams County/ Weld County/ Morgan County/ geology/ aeroradioactivity survey/ conglomerate/ Front Range/

Popenoe, Peter, 1965

Laramie Formation/ Dawson arkose/ Pierre Shale/ Castle Rock Conglomerate/ Denver basin/ Larimer County/ Boulder County/ Jefferson County/ Douglas County/ Elbert County/ Arapahoe County/ Denver County/ Adams County/ Weld County/ Morgan County/ gamma-ray logs/ airborne radioactivity/ Front Range/ Fox Hills Sandstone/

U.S. Atomic Energy Commission, 1966

geology/ uranium/ geophysical prospecting/ economic

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geology/ mining engineering/ petrology/ minerals/  
radioactivity/ Denver County/ reconnaissance/  
ore deposits/ Front Range/ slag/

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Adler, H. H., 1963

genesis/ sandstone/ ore deposits/ Jefferson  
County/ Pueblo County/ Gunnison County/ Moffat  
County/ Garfield County/ Mesa County/ Delta  
County/ Montrose County/ San Miguel County/  
Dolores County/ Montezuma County/ La Plata County/  
Archuleta County/ Colorado Plateau/ Front Range/  
Rio Blanco County/

Adler, H. H., 1964

uranium/ roll ore/ exploration/ sandstone/ ore  
deposits/ Jefferson County/ Pueblo County/ Gunnison  
County/ Rio Blanco County/ Garfield County/  
Mesa County/ Delta County/ Montrose County/  
San Miguel County/ Montezuma County/ La Plata  
County/ Archuleta County/ Moffat County/ Colorado  
Plateau/ Front Range/ Dolores County/

Anonymous, 1952

Colorado Plateau/ Urvan belt/ sandstone/ mill/  
exploration/ Mesa County/ San Miguel County/  
Dolores County/

Archbold, N. L., 1955

lithology/ vanadium/ uranium/ ore deposits/  
Morrison Formation/ Salt Wash Member/ Colorado  
Plateau/ sandstone/ analyses/ Mesa County/ Montrose  
County/ San Miguel County/ Dolores County/ calcium  
carbonate/

Archbold, N. L., 1956

uranium/ vanadium/ Colorado Plateau/ Salt Wash  
Member/ Morrison Formation/ sandstone/ Mesa  
County/ Montrose County/ Dolores County/ Montezuma  
County/ ore deposits/ lithology/ San Miguel  
County/

Archbold, N. L., 1958

carbonate cement/ lithology/ vanadium/uranium/  
sandstone/ Morrison Formation/ Colorado Plateau/  
Salt Wash Member/ Slick Rock district/ Urvan/  
geochemistry/ ore deposits/ weathering/ alteration/  
Mesa County/ Montrose County/ San Miguel County/  
Dolores County/ Cougar mine/ Golden Cycle mine/  
Virgin mine/ Upper Group/

Archbold, N. L., 1959

carbonate cement/ lithology/ vanadium/ uranium/  
sandstone/ Morrison Formation/ Colorado Plateau/  
Salt Wash Member/ Slick Rock district/ Urvan/  
geochemistry/ ore deposits/ weathering/ alteration/  
Mesa County/ Montrose County/ Dolores County/  
Cougar mine/ Golden Cycle mine/ Virgin mine/  
Upper group/

Bain, G. W., 1953

Colorado Plateau/ ore deposits/ sediments/ sandstone/  
stratigraphy/ Dakota Group/ Morrison Formation/  
structure/ topography/ geologic history/ Mesa  
County/ Montrose County/ San Miguel County/

## DOLORES COUNTY

geology/ Montezuma County/ reconnaissance/ Colorado  
Plateau/ Dolores County/

Bain, G. W., 1953

Colorado Plateau/ ore deposits/ observations/  
sedimentation/ Shinarump Member/ carnotite/  
Morrison Formation/ tectonic structure/ sandstone/  
fluvial sediments/ simulation/ precipitation/  
Mesa County/ Montrose County/ San Miguel County/  
Montezuma County/ conglomerate/ Chinle Formation/  
Dolores County/ experimental studies/ Salt Wash  
Member/

Bain, G. W., 1957

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genesis/ Colorado/ general/ Mesa County/ Delta  
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Montrose County/ Rifle mine/ Garfield mine/  
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County/
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coffinite/ Jurassic/ Larimer County/ Black King  
mine/ Mesa County/ Montrose County/ San Miguel  
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Morrison Formation/ Bull Canyon district/ Calamity  
Mesa/ Paradox Valley/ Salt Wash Member/ Front  
Range/
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County/
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Gateway district/ Sleeping Ute Mountain/ Uravan district/ geophysics/ Colorado Plateau/ San Miguel County/ Montrose County/ Mesa County/ Montezuma County/ Dolores County/ sandstone/ Slick Rock district/ vanadium/ uranium/ Egnar district/ ore deposits/

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Disappointment Valley/ Gypsum Valley/ Nucia district/ Paradox district/ Uncompahgre Plateau/ Mesa County/ San Miguel County/ Uravan district/ ore deposits/ salt anticlines/ Disappointment syncline/ geophysics/ sandstone/ Colorado Plateau/ geology/ Dolores County/ Montrose County/

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Front Range/ Jamestown district/ pitchblende/ bostonite/ Colorado Plateau/ sandstone/ coal/ shale/ Moffat County/ Garfield County/ La Plata County/ Pitkin County/ Gunnison County/ San Juan County/ Boulder County/ Jefferson County/ Park County/ Delta County/ Fremont County/ Rio Blanco County/ Mesa County/ Montrose County/ San Miguel County/ Dolores County/ Montezuma County/ Archuleta County/ Routt County/ Huerfano County/ Ouray County/ Larimer County/ Eagle County/ igneous-metamorphic/

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County/ Moffat County/ Rio Blanco County/ Garfield County/ Delta County/ Montrose County/ San Miguel County/ Dolores County/ Montezuma County/ La Plata County/ Archuleta County/ sandstone/

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Sandstone/ McElmo Formation/ genesis/ Gilpin County/ igneous-metamorphic/ ore deposits/ Front Range/

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McKelvey, V. E., 1953

Colorado Plateau/ Dolores County/ Mesa County/ exploration/ veins/ sandstone/ igneous-metamorphic/ pegmatites/ geobotany/ Front Range/ Gilpin County/ Clear Creek County/ coal/ Montrose County/ San Miguel County/ ore deposits/ phosphates/ shale/ placers/

McKelvey, V. E., 1953

veins/ Dolores County/ Mesa County/ exploration/ sandstone/ igneous-metamorphic/ Front Range/ pegmatites/ geobotany/ Gilpin County/ Clear Creek County/ coal/ Montrose County/ San Miguel County/ ore deposits/ Colorado Plateau/ phosphates/ shale/ placers/

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Dolores County/ Mesa County/ exploration/ carnotite/ veins/ sandstone/ igneous-metamorphic/ pegmatites/ geobotany/ Front Range/ Gilpin County/ Clear Creek County/ coal/ Montrose County/ San Miguel County/ ore deposits/ veins/ Colorado Plateau/ phosphates/ shale/ placers/

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Merritt, P. L., 1950

uranium/ exploration/ Colorado Plateau/ sandstone/ Morrison Formation/ Entrada Sandstone/ Mesa County/ San Miguel County/ Dolores County/ Montezuma County/ Front Range/ Boulder County/ Gilpin County/ Caribou district/ igneous-metamorphic/ Montrose County/ Clear Creek County/

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uranium/ Colorado Plateau/ Morrison Formation/ Entrada Sandstone/ sandstone/ Mesa County/ Montrose County/ San Miguel County/ Dolores County/ Montezuma County/ Front Range/ Boulder County/ Gilpin County/ Clear Creek County/ Caribou district/ Igneous-metamorphic/

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Colorado Plateau/ ore deposits/ elements/ geology/ Morrison Formation/ Chinle Formation/ Moffat County/ Rio Blanco County/ Garfield County/ Mesa County/ Delta County/ Montrose County/ San Miguel County/ Montezuma County/ La Plata County/ Archuleta County/ sandstone/ Dolores County/

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lithofacies/ Salt Wash Member/ sandstone/ stratigraphy/ Colorado Plateau/ Colorado/ uranium/ vanadium/ Mesa County/ Montrose County/ Dolores County/ Montezuma County/ La Plata County/ Utah/ Arizona/ New Mexico/ San Miguel County/ Morrison Formation/

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lithofacies/ Salt Wash Member/ sandstone/ stratigraphy/ Colorado Plateau/ Mesa County/ Montrose County/ San Miguel County/ Dolores County/ Montezuma County/ La Plata County/ Moffat County/ Garfield County/ Delta County/ San Juan County/ Eagle County/ Pitkin County/ Gunnison County/ Ouray County/ Hinsdale County/ Archuleta County/ genesis/ ore deposits/ Morrison Formation/ Rio Blanco County/

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San Juan County/ La Plata County/ Ouray County/  
geology/ Gunnison County/ Montrose County/ San  
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Clear Creek County/ Gilpin County/ ore deposits/  
reserves/ Colorado Plateau/ exploration/ sandstone/  
Mesa County/ Montrose County/ San Miguel County/  
Garfield County/ Moffat County/ Dolores County/  
Rio Blanco County/ Front Range/ Igneous-metamorphic/  
Jefferson County/ pitchblende/ hydrogeochemical  
exploration/ stream sediments/ ground water/  
mine waters/

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Colorado Plateau/ sandstone/ Mesa County/ Montrose  
County/ San Miguel County/ Dolores County/ ore  
deposits/ Morrison Formation/ geology/ Chinle  
Formation/ Shinarump Member/ reserves/ San Juan  
Mountains/ snow/ surface water/ ground water/  
Ouray County/ San Juan County/ conglomerate/  
Igneous-metamorphic/ Front Range/

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Dolores County/ Montezuma County/ drilling/  
logging/ data/ analyses/ sandstone/ maps/ Morrison  
Formation/ San Miguel County/

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Front Range/ Golden Gate Canyon area/ Uravan  
district/ exploration/ drilling/ Colorado Plateau/  
Jefferson County/ San Miguel County/ Montrose  
County/ Mesa County/ Dolores County/ sandstone/  
Igneous-metamorphic/ Ralston Buttes district/

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Colorado Plateau/ Front Range/ sandstone/ geologic  
mapping/ veins/ carbonaceous rocks/ geochemistry/  
reconnaissance/ analyses/ Igneous-metamorphic/  
Mesa County/ Montrose County/ Dolores County/  
San Miguel County/ Montezuma County/ Fremont  
County/ Jefferson County/

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Colorado Plateau/ Front Range/ veins/ geologic  
mapping/ mineralogy/ petrology/ geophysics/  
carbonaceous rocks/ analyses/ sandstone/ San  
Miguel County/ Dolores County/ Montrose County/  
Montezuma County/ Jefferson County/ Mesa County/  
Igneous-metamorphic/

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Colorado Plateau/ mapping/ geology/ geophysics/  
mineralogy/ vanadium/ carbonaceous rocks/ petrology/  
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Dolores County/ Montrose County/ Montezuma County/  
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Fremont County/

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mineralogy/ research/ sandstone/ San Miguel  
County/ Igneous-metamorphic/ Dolores County/  
Montrose County/ Mesa County/ Montezuma County/  
Jefferson County/ Fremont County/

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Montrose County/

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deposits/ Mesa County/ Montrose County/ San  
Miguel County/ Dolores County/

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County/ Montrose County/

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Dolores County/ Big Indian district/

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surveys/ uranium/ prospecting/ reserves/ stratigraphy/  
geology/ uranium oxides/ Dolores Plateau/ sandstone/  
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Plateau/ Dolores River district/

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stratigraphy/ mining/ mineralogy/ vanadium/  
minerals/ reserves/ Coyote Mesa district/ Dolores  
Plateau/ sandstone/ Colorado Plateau/ San Miguel  
County/ Dolores County/

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Colorado Plateau/ alteration/ sandstone/ oxidation/  
paragenesis/ ore deposits/ pitchblende/ roscoelite/  
mineralogy/ Uravan district/ Chinle Formation/  
Shinarump Member/ Morrison Formation/ uraninite/  
Mesa County/ Dolores County/ Montrose County/  
San Miguel County/

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Uravan district/ ore deposits/ mineralogy/ sandstone/  
Colorado Plateau/ Dolores County/ San Miguel  
County/ Montrose County/ Mesa County/

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minerals/ mineralogy/ identification/ x-ray  
data/ Mesa County/ analyses/ Montrose County/  
San Miguel County/ Dolores County/ sandstone/

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mineralogy/ Dolores County/ San Miguel County/  
Montrose County/ Mesa County/ ore deposits/

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oxidation/ vanadium/ sandstone/ uranium/ Moffat  
County/ Dolores County/ Garfield County/ Rio  
Blanco County/ Mesa County/ Delta County/ Montrose

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La Plata County/ Archuleta County/

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guides/ exploration/ ore deposits/ Morrison  
Formation/ Mesa County/ Montrose County/ San  
Miguel County/ Dolores County/ geology/

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Mesa County/ Montrose County/ San Miguel County/  
Dolores County/ geology/

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Shinarump Formation/ channels/ Colorado Plateau/  
uranium/ Moffat County/ Rio Blanco County/ Garfield  
County/ Mesa County/ Delta County/ Montrose  
County/ San Miguel County/ Dolores County/ Montezuma  
County/ sandstone/

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Uravan district/ Dolores County/ San Miguel  
County/ Montrose County/ Mesa County/

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County/ Montrose County/ Mesa County/

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lithology/ sandstone/ genesis/ Moffat County/  
Dolores County/ Rio Blanco County/ Garfield  
County/ Mesa County/ Delta County/ Montrose  
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Archuleta County/

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Jefferson County/ geology/ Clear Creek County/  
Park County/ Douglas County/ Teller County/  
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granite/ schist/ gneiss/ pegmatite/

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County/ Denver basin/ Dawson Arkose/ sandstone/  
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exploration/ Huerfano County/ Summit County/  
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sandstone/ ore deposits/ oil/ gas/ oil shale/  
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Range/ El Paso County/ igneous-metamorphic/  
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Park County/ igneous-metamorphic/ mineralogy/  
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pitchblende/ Boulder County/ Clear Creek County/  
Gilpin County/ Chaffee County/ Custer County/  
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Jefferson County/ Larimer County/ Teller County/  
veins/ igneous-metamorphic/ stream sediments/  
spring deposits/ shear zones/ pegmatites/ sandstone/  
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County/ San Miguel County/ Summit County/

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County/ Arapahoe County/

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Front Range/ Jamestown district/ pitchblende/ bostonite/ Colorado Plateau/ sandstone/ coal/ shale/ Moffat County/ Garfield County/ La Plata



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radioactive aureoles/ ore deposits/ uranium/ exploration/ Gilman district/ Eagle County/ Igneous-metamorphic/ veins/
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Beroni, E. P., and King, R. U., 1950

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tectonics/ Front Range/ igneous-metamorphic/ Gilpin County/ Larimer County/ Boulder County/ Jefferson County/ geology/ Clear Creek County/ Park County/ Douglas County/ Teller County/ El Paso County/ Fremont County/ Pueblo County/ granite/ schist/ gneiss/ pegmatite/

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ore deposits/ exploration/ Sangre de Cristo/ reconnaissance/ province/ Canyon City embayment/ City Slicker mine/ igneous-metamorphic/ El Paso County/ Las Animas County/ La Veta Pass/ Alamosa County/ Costilla County/ sandstone/ Fremont County/ Huerfano County/ Pueblo County/ Rio Grande County/ Saguache County/ Teller County/ Dakota Sandstone/ Morrison Formation/ Cripple Creek - Victor district/

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Custer County/ Gunnison County/ igneous-metamorphic/

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geology/ Larimer County/ Jackson County/ Routt  
County/ Moffat County/ Garfield County/ Grand  
County/ Eagle County/ Boulder County/ Jefferson  
County/ Park County/ Mesa County/ Montrose County/  
El Paso County/ San Miguel County/ Bent County/  
Park County/ Saguache County/ Pueblo County/  
Dolores County/ Las Animas County/ Huerfano  
County/ Costilla County/ Custer County/ San  
Juan County/ La Plata County/ Montezuma County/

George, R. D., Curtis, H. A., Lester, O. C., and  
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Colorado Plateau/ mineralized waters/ springs/  
spring deposits/ Front Range/ Jefferson County/  
Pitkin County/ Pueblo County/ Garfield County/  
Park County/ El Paso County/ Ouray County/ Boulder  
County/ Gunnison County/ Delta County/ Chaffee  
County/

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Colorado/ Montana/ Wyoming/ ore deposits/ carbonaceous  
rocks/ coal/ Park County/ Gunnison County/ Delta  
County/ Las Animas County/ El Paso County/ Teller  
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Basin/ Larimer County/ shale/ Crested Butte/  
Laramie Formation/ Colorado Plateau/ Front Range/

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Gilpin County/ Front Range/ bibliography/ San  
Juan County/ Custer County/ Fremont County/  
La Plata County/ Montezuma County/ Gunnison  
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County/ Teller County/

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igneous-metamorphic/

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pegmatites/ geology/ mineralogy/ Chaffee County/  
Boulder County/ Clear Creek County/ Douglas  
County/ Fremont County/ Gunnison County/ Jefferson  
County/ Larimer County/ Montrose County/ Park  
County/ monazite/ thorium/ production/ Front  
Range/ El Paso County/ igneous-metamorphic/  
Colorado Plateau/ Wyoming/ Utah/ Summit County/

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uranium/ thorium/ zircon/ analyses/ Front Range/  
sphene/ apatite/ epidote/ monazite/ granite/  
minerals/ pegmatites/ mineralogy/ Climax/ Colorado/  
Massachusetts/ Nova Scotia/ Canada/ Germany/  
El Paso County/ Eagle County/ Lake County/ Summit  
County/ igneous-metamorphic/

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thorium/ Wet Mountains/ Custer County/ El Paso  
County/ Fremont County/ Gunnison County/ Jefferson  
County/ Park County/ mineralogy/ Powderhorn

district/ rare earths/ resources/ igneous-metamorphic/  
Colorado/ Wyoming/ New Mexico/ economics/ Front  
Range/ Gilpin County/

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pitchblende/ Boulder County/ Clear Creek County/  
Gilpin County/ Chaffee County/ Custer County/  
El Paso County/ Fremont County/ Huerfano County/  
Jefferson County/ Larimer County/ Teller County/  
veins/ igneous-metamorphic/ stream sediments/  
spring deposits/ shear zones/ pegmatites/ sandstone/  
coal/ Eagle County/ Grand County/ Gunnison County/  
Lake County/ Moffat County/ ore deposits/ Douglas  
County/ San Miguel County/ Summit County/

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igneous-metamorphic/ reconnaissance/ Jefferson  
County/ Park County/ El Paso County/ Clear Creek  
County/ prospects/ uranium/ thorium/ Front Range/  
ore deposits/ geology/

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Ranch area/ Ouray hot springs/ Chaffee County/  
Custer County/ Gunnison County/ Jefferson County/  
Ouray County/ radioactive limonite/ Lucky Break  
Iron mine/ sandstone/ thorium/ uranium/ spring  
deposits/ Front Range/ conglomerate/ limestone/  
tufa/ analyses/ igneous-metamorphic/ ore deposits/  
El Paso County/

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Ranch area/ Ouray hot springs/ Chaffee County/  
Custer County/ Gunnison County/ Jefferson County/  
Ouray County/ radioactive limonite/ Lucky Break  
Iron mine/ thorium/ uranium/ spring deposits/  
Front Range/ sandstone/ conglomerate/ limestone/  
tufa/ El Paso County/ igneous-metamorphic/ ore  
deposits/

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Pueblo County/ shale/ clay/ George Avery Ranch/  
carnotite/ analyses/ Hoyt Adkins Ranch/ Burgess  
prospect/ El Paso County/ Dawson Arkose/ sandstone/  
Dakota Formation/ Fremont County/ geology/ Morrison  
Formation/ Front Range/

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County/ Custer County/ Larimer County/ Gilpin  
County/ Montezuma County/ Moffat County/ El  
Paso County/

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Cordilleran foreland/ Clear Creek County/ Jefferson  
County/ ore deposits/ Routt County/ Jackson  
County/ El Paso County/ Park County/ Grand County/  
Front Range/ igneous-metamorphic/ Larimer County/  
Eagle County/ Summit County/ Fremont County/  
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County/ Precambrian/ genesis/ structures/

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Plains/ El Paso County/
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County/ Las Animas County/ La Veta Pass/ Alamosa  
County/ Costilla County/ sandstone/ Fremont  
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County/ Fremont County/ Gunnison County/

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veins/ Custer County/ Fremont County/ Colorado/  
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California/ geology/ New Mexico/ Wisconsin/  
New York/ Michigan/ Wet Mountains/ ore deposits/  
igneous-metamorphic/

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County/ Wet Mountains/ Custer County/ Fremont  
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mapping/ veins/ carbonaceous rocks/ geochemistry/  
reconnaissance/ analyses/ igneous-metamorphic/  
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County/ Jefferson County/

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mineralogy/ vanadium/ carbonaceous rocks/ petrology/  
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Jefferson County/ Front Range/ Mesa County/  
Fremont County/

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mineralogy/ research/ sandstone/ San Miguel  
County/ igneous-metamorphic/ Dolores County/  
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limestone/ Cotopaxi Inlier/ Sangre de Cristo  
Range/

## GARFIELD COUNTY

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County/ Pueblo County/ Gunnison County/ Moffat  
County/ Garfield County/ Mesa County/ Delta  
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Dolores County/ Montezuma County/ La Plata County/  
Archuleta County/ Colorado Plateau/ Front Range/  
Rio Blanco County/

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uranium/ roll ore/ exploration/ sandstone/ ore  
deposits/ Jefferson County/ Pueblo County/ Gunnison  
County/ Rio Blanco County/ Garfield County/  
Mesa County/ Delta County/ Montrose County/  
San Miguel County/ Montezuma County/ La Plata  
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Plateau/ Front Range/ Dolores County/

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genesis/ Colorado/ general/ Mesa County/ Delta  
County/ sandstone/ Montrose County/ San Miguel  
County/ Dolores County/ Archuleta County/ Garfield  
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County/ Boulder County/ resources/ price/ cost  
analysis/ sandstone/ igneous-metamorphic/ Marshall  
Pass/

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J. J. mine/ Jo Dandy group/ Bull Canyon district/  
geology/ mineralogy/ Montrose County/ sandstone/  
carnotite/ uranium/ vanadium/ ore deposits/  
Rifle mine/ Garfield County/ Colorado Plateau/  
Morrison Formation/ Salt Wash Member/

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Garfield mine/ Colorado Plateau/ galena/ Rifle  
mine/ minerals/ clauthallite/ montrosite/ roscoelite/  
sandstone/ geology/ uranium/ vanadium/ Entrada  
Sandstone/ Wingate Sandstone/ ore deposits/  
stratigraphy/ structure/ chromium/

Botinelly, Theodore, and Fischer, R. P., 1959

mineralogy/ geology/ Rifle mine/ Garfield mine/  
sandstone/ uranium/ vanadium/ Entrada Sandstone/  
Chinle Formation/ ore deposits/ stratigraphy/  
structure/ chromium/ petrology/ geochemistry/  
galena/ minerals/ Garfield County/ clauthallite/  
montrosite/ roscoelite/

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area/ Rifle mine/ Garfield County/ clay minerals/



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petrology/ Moenkopi Formation/ Colorado Plateau/ mineralogy/ Moffat County/ Rio Blanco County/ Garfield County/ Mesa County/ Delta County/ Montrose County/ San Miguel County/ Dolores County/ Montezuma County/ sandstone/ stratigraphy/

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Delta County/ Montrose County/ San Miguel County/ Dolores County/ Montezuma County/ La Plata County/ geobotany/

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map/ tectonics/ Colorado/ Utah/ Moffat County/ Logan County/ geology/ Larimer County/ Jackson County/ Boulder County/ Jefferson County/ Clear Creek County/ Gilpin County/ Summit County/ Grand County/ Eagle County/ Routt County/ Garfield County/ Rio Blanco County/ sandstone/ ore deposits/ igneous-metamorphic/

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Rifle mine/ Uravan district/ Uranium Peak/ vanadium/ production/ Colorado Plateau/ uranium/ sandstone/ Rio Blanco County/ Mesa County/ Delta County/ Montrose County/ San Miguel County/ Dolores County/ Montezuma County/ La Plata County/ Entrada Sandstone/ ore deposits/ Garfield County/ Morrison Formation/

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Morrison Formation/ Colorado Plateau/ sandstone/ Moffat County/ Rio Blanco County/ Garfield County/ Delta County/ Montrose County/ San Miguel County/ Dolores County/ Montezuma County/ La Plata County/ Archuleta County/ Mesa County/ stratigraphy/ Glen Canyon group/ San Rafael group/

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Ebbley, Norman, 1950

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Finch, W. I., 1955

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Finch, W. I., 1959

Colorado Plateau/ ore deposits/ production/ Triassic/ Chinle Formation/ fossil wood/ minerals/ structures/ Mesa County/ Delta County/ Montrose County/ San Miguel County/ Dolores County/ Montezuma County/ La Plata County/ sandstone/ conglomerate/ shale/ Garfield County/ Rio Blanco County/ geology/

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Colorado/ Utah/ vanadium/ ore deposits/ uranium/ radium/ Morrison Formation/ Entrada Sandstone/ Shinarump Member/ sandstone/ conglomerate/ Mesa County/ Montrose County/ San Miguel County/ Garfield County/ Dolores County/ Colorado Plateau/

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Colorado Plateau/ exploration/ drilling/ sandstone/ carnotite/ recommendations/ Garfield County/ San Miguel County/ Montrose County/ Mesa County/

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sandstone/ Colorado Plateau/ vanadium/ genesis/ ore deposits/ Garfield County/ San Miguel County/

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Morrison Formation/ Entrada Sandstone/ Placerville district/ Colorado Plateau/ production potential/ uranium/ vanadium/ ore deposits/ Colorado/ Utah/ New Mexico/ Arizona/ sandstone/ Uravan district/ Rifle district/ Garfield County/ Dolores County/ San Miguel County/ Montrose County/ Slick Rock district/

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Morrison Formation/ Colorado Plateau/ Mesa County/ Dolores County/ Montrose County/ San Miguel County/ Garfield County/ Rio Blanco County/ sandstone/ ore rolls/ carnotite/ geology/ ore deposits/ mineralogy/ alteration/ Club mine/ uranium/ radium/ vanadium/ Entrada Sandstone/ genesis/

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Colorado Plateau/ hot springs/ uranium/ vanadium/ geochemistry/ igneous-metamorphic/ sedimentary rocks/ veins/ sandstone/ ore deposits/ San Miguel County/ Mesa County/ Montrose County/ Dolores County/ Garfield County/

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vanadium/ uranium/ geochemistry/ Colorado Plateau/ Igneous-metamorphic/ sedimentary rocks/ veins/ sandstone/ ore deposits/ San Miguel County/ Mesa County/ Montrose County/ Dolores County/ Garfield County/ hot springs/

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veins/ Igneous-metamorphic/ sedimentary rocks/ sandstone/ vanadium/ uranium/ ore deposits/ Colorado Plateau/ geochemistry/ San Miguel County/ Mesa County/ Montrose County/ Dolores County/ Garfield County/ hot springs/

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Durango district/ Placerville district/ Rico district/ uranium/ vanadium/ chromium/ Delta County/ Garfield County/ La Plata County/ Ouray County/ Rio Blanco County/ San Juan County/ San Miguel County/ minerals/ marlposite/ sandstone/ Entrada Sandstone/ regional relations/ ore deposits/ Colorado Plateau/ Mesa County/ Moffat County/ Montezuma County/ Montrose County/ Rifle area/ Dolores County/

Fischer, R. P., 1956

ore deposits/ Colorado Plateau/ uranium/ vanadium/ localization/ Entrada Sandstone/ sandstone/ Rifle district/ Garfield County/ genesis/ San Miguel County/ La Plata County/ Placerville district/ Rico district/ Dolores County/

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vanadium/ uranium/ ore deposits/ Colorado Plateau/ sandstone/ Garfield County/ San Miguel County/ La Plata County/ Rifle district/ Placerville district/ Rico district/ Durango district/ genesis/ localization/ Dolores County/ Entrada Sandstone/

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ore deposits/ Colorado Plateau/ uranium/ vanadium/ localization/ genesis/ Rifle Creek area/ Garfield County/ Entrada Sandstone/ sandstone/ geology/ stratigraphy/ mineralogy/

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vanadium/ uranium/ mineralogy/ Rifle mine/ Rifle Creek area/ Garfield County/ ore deposits/ Entrada Sandstone/ Morrison Formation/ sandstone/ Colorado Plateau/

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Colorado/ vanadium/ sandstone/ Entrada Sandstone/ Garfield County/ United States/ Colorado Plateau/

Fischer, R. P., 1968

geology/ structure/ genesis/ sandstone/ San Miguel County/ Montrose County/ Mesa County/ Dolores County/ Chinle Formation/ Morrison Formation/ Montezuma County/ La Plata County/ San Juan County/ Garfield County/ Rio Blanco County/ Moffat County/ Entrada Sandstone/ production/ stratigraphy/ Colorado Plateau/ ore deposits/

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bed distribution/ lithology/ sandstone/ uranium/ vanadium/ copper/ Colorado/ Morrison Formation/ Colorado Plateau/ ore deposits/ San Miguel County/ Garfield County/ Entrada Sandstone/

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copper/ vanadium/ uranium/ ore deposits/ sandstone/ Colorado Plateau/ Entrada Sandstone/ geochemistry/ San Miguel County/ Garfield County/

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Fischer, R. P., Stokes, W. L., and Smith, L. E., 1944

Rifle mine/ Garfield mine/ uranium/ vanadium/ Garfield County/ Entrada Sandstone/ sandstone/ geology/ Rifle Creek area/ Colorado Plateau/ ore deposits/

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Garfield County/ vanadium/ Entrada Sandstone/ sandstone/ uranium/ geology/ Rifle Creek area/ Rifle mine/ Garfield mine/ Colorado Plateau/ ore deposits/

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Colorado Plateau/ oxidation/ reduction/ ore deposits/ organics/ uraninite/ pyrite/ sandstone/ geochemistry/ San Miguel County/ Garfield County/ Montrose County/ Mesa County/

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oxidation/ reduction/ ores/ minerals/ geochemistry/ ore deposits/ mineralogy/ Colorado Plateau/ sandstone/ San Miguel County/ Mesa County/ Montrose County/ Garfield County/

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thermodynamics/ uranium oxides/ oxidation states/ Colorado Plateau/ ore deposits/ San Miguel County/ genesis/ sandstone/ Montrose County/ Garfield County/ Mesa County/

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minerals/ rocks/ Colorado/ occurrences/ uses/ Colorado Plateau/ sandstone/ Igneous-metamorphic/ uranium/ vanadium/ radium/ carnotite/ pitchblende/ Jefferson County/ Gilpin County/ Front Range/ Montrose County/ San Miguel County/ Dolores County/ Garfield County/ Rio Blanco County/ Routt County/ Boulder County/

George, R. D., Curtis, H. A., Lester, O. C., and others, 1920

Colorado Plateau/ mineralized waters/ springs/ spring deposits/ Front Range/ Jefferson County/

Pitkin County/ Pueblo County/ Garfield County/  
Park County/ El Paso County/ Ouray County/ Boulder  
County/ Gunnison County/ Delta County/ Chaffee  
County/

Gulliotte, G. B., 1944

minerals/ hydrocarbons/ Uinta basin/ Colorado/  
Utah/ Garfield County/ Rio Blanco County/ uranium/  
Colorado Plateau/ reconnaissance/ ore deposits/  
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veins/ Front Range mineralogy/ petrology/ pitchblende/ geochemistry/ ore deposits/ uranium/ Central

City district/ bostonite/ Gilpin County/ Clear Creek County/ Larimer County/ Boulder County/ Jefferson County/ hypogene zoning/ igneous-metamorphic/

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Dolores County/ Mesa County/ exploration/ carnotite/ veins/ sandstone/ igneous-metamorphic/ pegmatites/ geobotany/ Front Range/ Gilpin County/ Clear Creek County/ coal/ Montrose County/ San Miguel County/ ore deposits/ veins/ Colorado Plateau/ phosphates/ shale/ placers/

McKelvey, V. E., 1955

ore deposits/ exploration/ veins/ bituminous substances/ coal/ sandstone/ phosphates/ United States/ Dolores County/ Mesa County/ Gilpin County/ igneous-metamorphic/ Clear Creek County/ Montrose County/ San Miguel County/ Front Range/ Colorado Plateau/

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genesis/ uranium/ ore deposits/ veins/ bituminous substances/ sandstone/ limestone/ coal/ shale/ pitchblende/ geochemistry/ age/ Front Range/ Colorado Plateau/ Gilpin County/ Clear Creek County/ Montrose County/ San Miguel County/ Mesa County/ igneous-metamorphic/

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veins/ bituminous substances/ ore deposits/ migmatites/ sandstone/ shale/ igneous-metamorphic/ Colorado/ Colorado Plateau/ San Juan County/ San Miguel County/ coal/ Jefferson County/ Montrose County/ Old Leyden mine/ uranium/ Gilpin County/ Clear Creek County/ Front Range/ genesis/ Mesa County/

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County/ Gunnison County/ Boulder County/ Larimer County/ Jefferson County/ coal/ San Miguel County/ Montrose County/ Mesa County/ Moffat County/

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uranium/ Colorado Plateau/ Front Range/ exploration/ Morrison Formation/ phosphates/ shale/ sandstone/ igneous-metamorphic/ Mesa County/ Montrose County/ San Miguel County/ Montezuma County/ Dolores County/ Gilpin County/ Clear Creek County/ Garfield County/ Boulder County/

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uranium/ exploration/ Colorado Plateau/ sandstone/ Morrison Formation/ Entrada Sandstone/ Mesa County/ San Miguel County/ Dolores County/ Montezuma County/ Front Range/ Boulder County/ Gilpin County/ Caribou district/ igneous-metamorphic/ Montrose County/ Clear Creek County/

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uranium/ Colorado Plateau/ Morrison Formation/ Entrada Sandstone/ sandstone/ Mesa County/ Montrose County/ San Miguel County/ Dolores County/ Montezuma County/ Front Range/ Boulder County/ Gilpin County/ Clear Creek County/ Caribou district/ igneous-metamorphic/

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Jamestown district/ Lawson area/ Quartz Hill  
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mines/ Jo Reynolds mine/ Kirk mine/ Wood mine/  
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Eagle County/ Summit County/ Fremont County/  
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County/ Front Range/ tectonics/ El Paso County/  
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structural controls/ Moffat County/ pitchblende/  
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ore deposits/ tectonics/ structural geology/  
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district/ Gilpin County/ Clear Creek County/  
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Plateau/ sandstone/ veins/ San Miguel County/

Burbank, W. S., and Pierson, C. T., 1953

radioactivity/ reconnaissance/ San Juan Mountains/  
Ouray County/ San Miguel County/ Gunnison County/  
Dolores County/ igneous-metamorphic/ sandstone/  
Colorado Plateau/ veins/ San Juan County/

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Front Range/ thorium/ Colorado Plateau/ Morrison  
Formation/ Igneous-metamorphic/ Chinle Formation/  
Shinarump Member/ geology/ ore deposits/ pegmatites/  
veins/ sandstone/ placers/ carnotite/ fresh  
waters/ gases/ Gilpin County/ Clear Creek County/  
Custer County/ Lake County/ San Miguel County/  
Gunnison County/

Butler, A. P., Jr., Killen, P. L., Page, G. B.,  
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ore deposits/ resources/ reconnaissance/ Front  
Range/ reserves/ Colorado Plateau/ carnotite/  
uranium/ vanadium/ igneous-metamorphic/ uraninite/  
Iron Hill/ Gunnison County/ Gilpin County/ Clear  
Creek County/ radioactive springs/ thorium/  
mineralogy/ San Miguel County/ Montrose County/  
Mesa County/ sandstone/ genesis/

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petrology/ Morrison Formation/ Colorado Plateau/  
sandstone/ Gunnison County/ La Plata County/  
Archuleta County/ San Miguel County/ Mesa County/  
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stratigraphy/ genesis/ Chinle Formation/ Colorado  
Plateau/ paleontology/ sandstone/ Triassic strata/  
Eagle County/ La Plata County/ Archuleta County/  
Garfield County/ Mesa County/ Moffat County/  
Montezuma County/ Pitkin County/ Montrose County/  
Rio Blanco County/ Routt County/ San Miguel  
County/ San Juan County/ Summit County/ Park  
County/ Delta County/ Dolores County/ mineralogy/  
conglomerate/ Gunnison County/ Ouray County/

Coats, R. R., 1956

felsic volcanic rocks/ igneous-metamorphic/  
uranium/ trace elements/ Cenozoic/ genesis/  
Gunnison County/ Pitkin County/ Lake County/  
Park County/ Chaffee County/ Ouray County/ Saguache  
County/ Hinsdale County/

Coats, R. R., 1956

uranium/ trace elements/ felsic volcanic rocks/  
Cenozoic/ genesis/ Igneous-metamorphic/ Gunnison  
County/ Pitkin County/ Lake County/ Park County/  
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## GUINISON COUNTY

## GUNNISON COUNTY

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sandstone/ Colorado Plateau/ ore deposits/ genesis/ tectonics/ structural elements/ Mesa County/ San Miguel County/ Dolores County/ Montezuma County/ La Plata County/ Delta County/ Garfield County/ Rio Blanco County/ Moffat County/ Archuleta County/ Ouray County/ Gunnison County/ Montrose County/
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stratigraphy/ sandstone/ Middle Park/ South  
Park/ Raton basin/ Thirtynine Mile volcanic  
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mine/ Saguache County/ Caribou mine/ Boulder  
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district/ San Miguel County/ alteration/ pitchblende/  
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mine/ structural tension/

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granite/ Front Range/ Copper King mine/ Larimer  
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County/

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genesis/ carnotite/ Colorado/ uranium/ vanadium/ Rio Blanco County/ Eagle County/ geology/ San Miguel County/ Montrose County/ Moffat County/ Routt County/ Garfield County/ Mesa County/ Delta County/ Dolores County/ Montezuma County/ La Plata County/ Archuleta County/ Utah/ Colorado Plateau/ sandstone/ ore deposits/

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Rio Blanco County/ Garfield County/ Mesa County/  
Montrose County/ San Miguel County/ Dolores  
County/ Montezuma County/ La Plata County/ Colorado  
Plateau/ ore deposits/ Delta County/

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sandstone/ radium/ San Miguel County/ Montrose  
County/ Mesa County/ ore deposits/ resources/

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radium/ sandstone/ ore deposits/ resources/  
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radium/ sandstone/ ore deposits/ resources/  
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ore deposits/ San Miguel County/ Montrose County/  
Mesa County/

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gold/ silver/ molybdenum/ sediments/ Colorado  
Plateau/ sandstone/ San Miguel County/ Montrose  
County/ Mesa County/

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uranium/ vanadium/ mines/ sandstone/ reports/  
Dolores County/ Gunnison County/ Little Indian  
property/ Mesa County/ Montrose County/ San  
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Plateau/

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uranium/ vanadium/ mines/ sandstone/ Dolores  
County/ Montrose County/ Saguache County/ Pitch  
mine/ igneous-metamorphic/ San Miguel County/  
Colorado Plateau/ Mesa County/

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uranium/ vanadium/ mines/ reports/ sandstone/  
Montrose County/ San Miguel County/ Mesa County/  
Saguache County/ igneous-metamorphic/ Pitch  
mine/ Colorado Plateau/ Dolores County/

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mines/ reports/ Mesa County/ Montrose County/  
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reports/ Montrose County/ San Miguel County/  
sandstone/ mines/ Colorado Plateau/

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drilling/ Dolores County/ Mesa County/ sandstone/  
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County/ Rico-Argentine district/

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carnotite/ mineralogy/ vanadium/ sandstone/  
Placerville district/ analyses/ Roc Creek area/  
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carnotite/ mineralogy/ vanadium/ sandstone/  
Placerville district/ analyses/ Roc Creek area/  
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metahewettite/ pascolite/ Colorado Plateau/ hydrous  
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County/ Montrose County/ San Miguel County/  
Dolores County/ ore deposits/ drilling/ Morrison  
Formation/ Uravan district/ Yellow Cat mine/  
Monogram Mesa/ Gateway district/

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Mesa County/ San Miguel County/ Dolores County/  
drilling/ exploration/ ore deposits/ Morrison  
Formation/ Salt Wash Member/ Uravan district/  
Gateway district/ Gypsum Valley district/ Montrose  
County/

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drilling/ exploration/ ore deposits/ Outlaw  
Mesa/ sandstone/ Gateway district/ Colorado  
Plateau/ analyses/

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geology/ carnotite/ ore deposits/ Colorado Plateau/  
sandstone/ San Miguel County/ Montrose County/  
Mesa County/

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sandstone/ Uncompahgre uplift/ tectonics/ sedimentary  
rocks/ Mesozoic/ Chinle Formation/ Pitkin County/  
Gunnison County/ Montrose County/ Mesa County/  
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Morrison Formation/ Colorado Plateau/

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Plateau/ sandstone/ San Miguel County/ Montrose  
County/ Mesa County/ Dolores County/

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stratigraphy/ Moffat County/ sandstone/ Delta  
County/ Rio Blanco County/ Garfield County/  
Mesa County/ Montrose County/ San Miguel County/  
Dolores County/ Montezuma County/ La Plata County/  
Archuleta County/

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Disappointment Valley/ Gypsum Valley/ Nucla district/ Paradox district/ Uncompahgre Plateau/ Mesa County/ San Miguel County/ Uravan district/ ore deposits/ salt anticlines/ Disappointment syncline/ geophysics/ sandstone/ Colorado Plateau/ geology/ Dolores County/ Montrose County/

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Colorado/ concretes/ daughter products/ radiation  
monitoring/ radioactivity/ radon/ uranium/ Mesa  
County/ sandstone/ Colorado Plateau/

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mineralogy/ Colorado Plateau/ Archuleta County/  
conglomerate/ sandstone/ Moffat County/ Rio  
Blanco County/ Garfield County/ Mesa County/  
Delta County/ Montrose County/ San Miguel County/  
Dolores County/ Montezuma County/ La Plata County/

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stratigraphy/ uranium/ Moffat County/ Rio Blanco  
County/ Garfield County/ Mesa County/ Delta  
County/ Montrose County/ San Miguel County/  
Montezuma County/ La Plata County/ Archuleta  
County/ hydrothermal emplacement/ Dolores County/

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Uravan district/ ore deposits/ Morrison Formation/  
Colorado/ Utah/ Arizona/ Long Park district/  
Dolores County/ Yellow Cat mine/ Slick Rock  
district/

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ore deposits/ Morrison Formation/ Salt Wash  
Member/ Colorado Plateau/ exploration/ sandstone/  
Monogram Mesa/ Uravan district/ Jo Dandy area/  
Mesa County/ Montrose County/ San Miguel County/  
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Browns Park Formation/ Slick Rock district/  
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sandstone/ stratigraphy/ Mesa County/ ore deposits/  
geology/ Colorado Plateau/

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stratigraphy/ structure/ ore deposits/ sandstone/  
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County/ Colorado Plateau/ Mesa County/ Montezuma  
County/ San Miguel County/ Dolores County/ sandstone/

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shale/ carnotite/ roscoelite/ Colorado Plateau/  
Dolores County/ San Miguel County/ Mesa County/  
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Sandstone/ McElmo Formation/ genesis/ Gilpin  
County/ igneous-metamorphic/ ore deposits/ Front  
Range/

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stratification/ Morrison Formation/ sandstone/  
Arizona/ New Mexico/ mud-pellets/ conglomerate/  
Salt Wash Member/ Calamity Mesa/ Mesa County/  
Colorado/ Utah/ ore deposits/ Chuska Mountains/

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water/ mineralization/ sandstone/ Jurassic/  
syncline/ aquifers/ experimental simulation/  
Morrison Formation/ Salt Wash Member/ Mesa County/  
Montrose County/ San Miguel County/ Dolores  
County/ Montezuma County/

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geology/ radiation monitoring/ Paleocene/ Ohio  
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Montrose County/ Uravan district/ Gateway district/  
ore guides/ exploration/ sandstone/ Morrison  
Formation/ Salt Wash Member/ carnotite/

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Carpenter Ridge/ Carpenter Flats/ Martin Mesa/  
Uravan district/ Montrose County/ Red Canyon  
quadrangle/ carnotite/ Dolores mines/ Raven  
mine/ Shamrock mine/ sandstone/ Morrison Formation/  
Salt Wash Member/ stratigraphy/ Brushy Basin  
Member/ Mesa County/ Colorado Plateau/ ore deposits/  
geology/

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Blue Mesa/ Uravan district/ Mesa County/ Montrose  
County/ sandstone/ Morrison Formation/ Salt  
Wash Member/ Utah/ stratigraphy/ Colorado Plateau/  
carnotite/ Gateway district/ ore deposits/ exploration/  
geology/ genesis/ localization/ ore guides/

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Uravan district/ Montrose County/ ore guides/  
carnotite/ Star No. 1 claim/ Wright mines/ theories  
of origin/ sandstone/ Morrison Formation/ Salt  
Wash Member/ stratigraphy/ Brushy Basin Member/  
Burro Canyon Formation/ geology/ Colorado Plateau/  
ore deposits/ Wingate Sandstone/ Mesa County/  
Atkinson Creek quadrangle/

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Montrose County/ Mesa County/ Colorado Plateau/  
Morrison Formation/ Salt Wash Member/ sandstone/  
Dolores mines/ Shamrock mines/ Raven claim/  
Martin Mesa/ Carpenter Flats/ carnotite/ geology/  
ore deposits/ Red Canyon quadrangle/

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quadrangle/ Colorado Plateau/ Morrison Formation/  
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No. 1 claim/ geology/ ore deposits/

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pegmatites/ geobotany/ Front Range/ Gilpin County/  
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placers/

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veins/ sandstone/ igneous-metamorphic/ Front  
Range/ pegmatites/ geobotany/ Gilpin County/  
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veins/ sandstone/ igneous-metamorphic/ pegmatites/  
geobotany/ Front Range/ Gilpin County/ Clear  
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County/ ore deposits/ veins/ Colorado Plateau/  
phosphates/ shale/ placers/

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mine/ Robinson property/ pyrobitumens/ Weatherly  
property/ Wild Steer mine/ veins/ sandstone/  
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County/ La Plata County/ ore deposits/ San Juan  
County/

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claims/ sandstone/ Tenderfoot Mesa/ carnotite/  
production/ Salt Wash Member/ Morrison Formation/  
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Member/

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basin/

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coal/ shale/ Moffat County/ Garfield County/  
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Blanco County/ Mesa County/ Montrose County/  
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County/ Moffat County/ Rio Blanco County/ Garfield  
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tectonics/ structural elements/ Archuleta County/  
Mesa County/ Montrose County/ San Miguel County/  
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controls/

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faults/ fractures/ Mesa County/ Montrose County/  
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County/ Montrose County/ Mesa County/ Delta  
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uranium/ Morrison Formation/ Entrada Sandstone/  
sandstone/ Mesa County/ Montrose County/ San  
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mineralogy/ Colorado Plateau/ Archuleta County/  
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stratigraphy/ uranium/ Moffat County/ Rio Blanco  
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Waters, A. C., and Granger, H. C., 1952

Colorado Plateau/ Uravan district/ Dolores mines/ volcanic debris/ sandstone/ genesis/ Georgetown group/ precipitation/ San Miguel County/ Montrose County/

Weeks, A. D., 1951

ore deposits/ Jurassic/ Morrison Formation/ clay studies/ Calamity Mesa/ Mesa County/ Montrose County/ mineralogy/ petrology/ geochemistry/ clay (red and gray)/ sandstone/ Colorado Plateau/ Bitter Creek district/

Weeks, A. D., 1952

Colorado Plateau/ alteration/ sandstone/ oxidation/ paragenesis/ ore deposits/ pitchblende/ roscoelite/ mineralogy/ Uravan district/ Chinle Formation/ Shinarump Member/ Morrison Formation/ uraninite/ Mesa County/ Dolores County/ Montrose County/ San Miguel County/

Weeks, A. D., 1953

mineralogy/ petrology/ geochemistry/ Cretaceous/ claystone/ siltstone/ Colorado Plateau/ clay studies/ Utah/ Jurassic/ Dolores Group/ Dry Creek anticline/ sandstone/ Mesa County/ Montrose County/ Unaweep/ Escalante Forks/

Weeks, A. D., 1956

Uravan district/ ore deposits/ mineralogy/ sandstone/ Plateau/ Dolores County/ San Miguel County/ Montrose County/ Mesa County/

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Colorado Plateau/ ore deposits/ uranium/ vanadium/

minerals/ mineralogy/ identification/ x-ray data/ Mesa County/ analyses/ Montrose County/ San Miguel County/ Dolores County/ sandstone/

Weeks, A. D., and Truesdell, A. H., 1957

Uravan district/ sandstone/ Colorado Plateau/ mineralogy/ Dolores County/ San Miguel County/ Montrose County/ Mesa County/ ore deposits/

Weeks, A. D., Cisney, E. A., and Sherwood, A. M., 1950

hummerite/ montroseite/ vanadium/ Montrose County/ sandstone/ Paradox Valley/ analyses/ minerals/ Colorado Plateau/

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hummerite/ montroseite/ minerals/ Montrose County/ Colorado/ sandstone/ vanadium/ x-ray analyses/ Hummer mine/ Paradox Valley/ Colorado Plateau/

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montroseite/ Montrose County/ Bitter Creek mine/ Jo Dandy mine/ Matchless mine/ Mesa County/ Colorado Plateau/ vanadium/ mineral properties/ geochemistry/ x-ray analyses/ sandstone/

Weeks, A. D., Cisney, E. A., and Sherwood, A. M., 1953

montroseite/ Montrose County/ Jo Dandy mine/ Matchless mine/ Mesa County/ Bitter Creek mine/ Colorado Plateau/ vanadium/ mineral properties/ sandstone/ geochemistry/ x-ray analyses/

Weeks, A. D., Coleman, R. G., and Thompson, M. E., 1956

Colorado Plateau/ asphaltic rocks/ Atkinson Mesa/ Club Mesa/ Flat Top Mesa/ Jo Dandy area/ Paradox district/ Placerville district/ Rifle district/ Slick Rock district/ Uravan/ Montrose County/ San Miguel County/ mineralogy/ petrology/ geochemistry/ vanadium/ ore deposits/ Garfield mine/ roscoelite/ chemical analyses/ sandstone/ Garfield County/

Weeks, A. D., Coleman, R. G., and Thompson, M. E., 1959

Colorado Plateau/ ore deposits/ mineralogy/ oxidation/ vanadium/ sandstone/ uranium/ Moffat County/ Dolores County/ Garfield County/ Rio Blanco County/ Mesa County/ Delta County/ Montrose County/ San Miguel County/ Montezuma County/ La Plata County/ Archuleta County/

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grantsite/ vanadium/ Golden Cycle mine/ La Salle mine/ Montrose County/ Morrison Formation/ sandstone/ Colorado Plateau/ mineral properties/ geochemistry/ x-ray analyses/ ore deposits/

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Montrose County/ sandstone/ Colorado Plateau/
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Miguel County/ Dolores County/ geology/
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ore deposits/ Morrison Formation/ sandstone/  
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Formation/ Salt Wash Member/ sandstone/ map/
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structure/ sandstone/
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Plateau/ Uravan district/ carnotite/ structure/  
stratigraphy/ Salt Wash Member/ sandstone/ Cashin  
mine/ Cliff Dweller mine/ copper/ silver/ vanadium/  
uranium/ Skeln Mesa/ geology/ Morrison Formation/
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geology/ ore guides/ minerals/ carnotite/ Cashin  
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ore deposits/ sandstone/ Morrison Formation/  
Salt Wash Member/ stratigraphy/ Colorado Plateau/
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Colorado Plateau/ stratigraphy/ structure/ Salt  
Wash Member/ sandstone/ carnotite/ copper/ silver/  
vanadium/ uranium/ Wray Mesa/ Skeln Mesa/ Cliff  
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Morrison Formation/ Montrose County/ geology/
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Plateau/ stratigraphy/ structure/ Morrison Formation/  
geology/ Salt Wash Member/ sandstone/ carnotite/  
vanadium/ uranium/ copper/ silver/ Skeln Mesa/  
Cashin mine/ Cliff Dweller mine/ Wray Mesa/  
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district/ exploration/ sandstone/ Colorado Plateau/
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Range/ coal/ igneous-metamorphic/
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County/ sandstone/
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lithology/ sandstone/ genesis/ Moffat County/  
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County/ sandstone/ Colorado Plateau/ geology/
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Formation/ exploration/ reconnaissance/ Montrose  
County/ stratigraphy/ structure/ Brushy Basin  
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uranium/ vanadium/ shale/ mudstone/ Colorado  
Plateau/

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County/ Douglas County/ Denver County/ Arapahoe  
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Morgan County/ Washington County/ Logan County/  
Sedgwick County/
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uranium/ analyses/ Jefferson County/ Douglas  
County/ Denver County/ Arapahoe County/ Adams  
County/ Weld County/ Morgan County/ Washington  
County/ Logan County/ Sedgwick County/ reconnaissance/

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Hyden, H. J., 1956

uranium/ crude oil/ petroleum/ Moffat County/ conglomerate/ Triassic/ Jurassic/ Entrada Sandstone/ Morrison Formation/ Archuleta County/ Cretaceous/ Dakota Sandstone/ Mancos Shale/ Morgan County/ Rio Blanco County/ sandstone/ trace elements/ Shinarump Member/ Fremont County/

Maxwell, J. C., 1977

elements/ analyses/ hydrogeochemistry/ stream waters/ stream sediments/ Sterling area/ Fort Morgan area/ South Platte drainage/ data/ Morgan County/ Logan County/ Washington County/ sandstone/ ground water/

Popenoe, Peter, 1965

arkose/ shale/ sandstone/ conglomerate/ Denver basin/ Larimer County/ Boulder County/ Jefferson County/ Douglas County/ Elbert County/ Arapahoe County/ Denver County/ Adams County/ Weld County/ Morgan County/ geology/ aeroradioactivity survey/ conglomerate/ Front Range/

Popenoe, Peter, 1965

Laramie Formation/ Dawson arkose/ Pierre Shale/ Castle Rock Conglomerate/ Denver basin/ Larimer County/ County/ Boulder County/ Jefferson County/ Douglas County/ Elbert County/ Arapahoe County/ Denver County/ Adams County/ Weld County/ Morgan County/ gamma-ray logs/ airborne radioactivity/ Front Range/ Fox Hills Sandstone/

## OTERO COUNTY

Brown, L. J., and Easton, W. W., 1955

ore deposits/ reconnaissance/ airborne/ Huerfano Embayment/ Intrusives/ volcanics/ Las Animas Arch/ La Veta Pass area/ Huerfano County/ Las Animas County/ Otero County/ Costilla County/ Pueblo County/ Crowley County/ Kiowa County/ Bent County/ Prowers County/ Baca County/ sandstone/ shale/ claystone/ Igneous-metamorphic/

Scott, R. C., and Barker, F. B., 1961

ground water/ radium/ La Plata County/ Cheyenne County/ Kiowa County/ Lincoln County/ Crowley County/ Otero County/ Bent County/ Prowers County/ Las Animas County/ Baca County/ Montezuma County/ Archuleta County/ Colorado Plateau/

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geology/ uranium/ geophysical prospecting/ economic geology/ mining engineering/ petrology/ minerals/ radioactivity/ Otero County/ reconnaissance/ ore deposits/

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Baltz, E. H., Jr., 1955

Colorado/ New Mexico/ ore deposits/ exploration/ carbonaceous rocks/ sandstone/ Mesa County/ Delta County/ Montrose County/ Gunnison County/ Ouray County/ San Miguel County/ Hinsdale County/ Dolores County/ Montezuma County/ La Plata County/ Archuleta County/ coal/ shale/ reconnaissance/ Colorado Plateau/

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Burbank, W. S., and Pierson, C. T., 1952

Gunnison County/ Ouray County/ San Juan County/ Dolores County/ radioactivity/ reconnaissance/ San Juan Mountains/ Igneous-metamorphic/ Colorado Plateau/ sandstone/ veins/ San Miguel County/

Burbank, W. S., and Pierson, C. T., 1953

radioactivity/ reconnaissance/ San Juan Mountains/ Ouray County/ San Miguel County/ Gunnison County/ Dolores County/ Igneous-metamorphic/ sandstone/ Colorado Plateau/ veins/ San Juan County/

Cadigan, R. A., 1972

stratigraphy/ genesis/ Chinle Formation/ Colorado Plateau/ paleontology/ sandstone/ Triassic strata/ Eagle County/ La Plata County/ Archuleta County/ Garfield County/ Mesa County/ Moffat County/ Montezuma County/ Pitkin County/ Montrose County/ Rio Blanco County/ Routt County/ San Miguel County/ San Juan County/ Summit County/ Park County/ Delta County/ Dolores County/ mineralogy/ conglomerate/ Gunnison County/ Ouray County/

Chew, R. T., 3d, 1955

sandstone/ Mesa County/ Utah/ stream sediments/ exploration/ radioactivity/ Delta County/ Montrose County/ gravels/ San Miguel County/ Dolores County/ Ouray County/ San Juan County/ Montezuma County/ La Plata County/ Colorado Plateau/

Chew, R. T., 3d, 1956

Mesa County/ Delta County/ Montrose County/ sandstone/ Dolores County/ Ouray County/ San Juan County/ gravels/ Montezuma County/ La Plata County/ Colorado Plateau/ exploration/ stream sediments/ radioactivity/ San Miguel County/

Coats, R. R., 1956

felsic volcanic rocks/ Igneous-metamorphic/ uranium/ trace elements/ Cenozoic/ genesis/ Gunnison County/ Pitkin County/ Lake County/ Park County/ Chaffee County/ Ouray County/ Saguache County/ Hinsdale County/ Saguache County/ Hinsdale County/ Pitkin County/

Coats, R. R., 1956

uranium/ trace elements/ felsic volcanic rocks/ Cenozoic/ genesis/ Igneous-metamorphic/ Gunnison County/ Pitkin County/ Lake County/ Park County/ Chaffee County/ Ouray County/ Saguache County/ Hinsdale County/

Craig, L. C., Holmes, C. N., Cadigan, R. A., and others, 1951

Colorado Plateau/ Morrison Formation/ Mesa County/ stratigraphy/ Glen Canyon group/ Montezuma County/ Delta County/ San Rafael group/ Dolores County/ Gunnison County/ Montrose County/ sandstone/ Moffat County/ Ouray County/ San Juan County/ San Miguel County/ La Plata County/ Rio Blanco County/ Garfield County/ Archuleta County/

Craig, L. C., Holmes, C. N., Cadigan, R. A., and others, 1955

stratigraphy/ Morrison Formation/ Colorado Plateau/ sandstone/ Recapture Member/ Mesa County/ Ouray County/ Delta County/ Gunnison County/ Montrose County/ San Juan County/ San Miguel County/ Dolores County/ La Plata County/ Montezuma County/ Salt Wash Member/

Duncan, D. C., compiler, 1953

ore deposits/ black shale/ Weber Formation/ exploration/ shale/ reconnaissance/ Belden Formation/ Paradox Member/ Eagle County/ Garfield County/ Gunnison County/ Hermosa Formation/ San Juan County/ La Plata County/ Lake County/ Pony Express Limestone Member/ Ouray County/ Dakota Sandstone/ Archuleta County/ Pierre Shale/ Las Animas County/ Huerfano County/ Vermejo Formation/ limestone/ sandstone/ Front Range/ Colorado Plateau/

Emmons, S. F., 1905

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Fischer, R. P., 1955

Durango district/ Placerville district/ Rico district/ uranium/ vanadium/ chromium/ Delta County/ Garfield County/ La Plata County/ Ouray County/ Rio Blanco County/ San Juan County/ San Miguel County/ minerals/ mariposite/ sandstone/ Entrada Sandstone/ regional relations/ ore deposits/ Colorado Plateau/ Mesa County/ Moffat County/ Montezuma County/ Montrose County/ Rifle area/ Dolores County/

Fischer, R. P., Luedke, R. G., Sheridan, M. J., and others, 1968

mineral industry/ resources/ minerals/ Ouray County/ Hinsdale County/ San Miguel County/ production/ Gunnison County/ Beth claim/ veins/ rhyolite porphyry/ black shale/ Precambrian rocks/ pitchblende/ bituminous shale/ igneous-metamorphic/ Uncompahgre primitive area/

Fix, P. F., 1953

natural waters/ ground water/ streams/ geochemistry/ San Juan County/ Ouray County/ tuffaceous terranes/ Cimarron Creek basin/ Las Animas River basin/ Colorado Plateau/ San Juan Mountains/

Fix, P. F., 1954

San Miguel River/ Montrose County/ ground water/ nonsaline waters/ analyses/ Big Springs Gulch/ Orvis Hot spring/ streams/ geochemistry/ Mesa County/ San Miguel County/ Ouray County/ Hinsdale County/ Gunnison County/ springs/ Cougar mine spring/ Maverick Mesa spring/ Cimarron Creek/ Blue Creek/ Colorado Plateau/ Calamity Mesa spring/

Fix, P. F., 1954

Colorado Plateau/ natural waters/ streams/ snow/ ground water/ San Juan Mountains/ San Juan County/ Ouray County/ acid tuff/ igneous-metamorphic/ Front Range/ Colorado Plateau/ surface water/

George, R. D., Curtis, H. A., Lester, O. C., and others, 1920

Colorado Plateau/ mineralized waters/ springs/ spring deposits/ Front Range/ Jefferson County/ Pitkin County/ Pueblo County/ Garfield County/ Park County/ El Paso County/ Ouray County/ Boulder County/ Gunnison County/ Delta County/ Chaffee County/

Gottfried, David, 1958

San Juan Mountains/ ore deposits/ exploration/

Igneous-metamorphic/ volcanics/ Iceland/ New Jersey/ Oregon/ Hinsdale Formation/ Potosi volcanic series/ Ouray County/ Hinsdale County/ San Juan County/

Kaiser, E. P., King, R. U., Wilmarth, V. R., and others, 1952

Front Range/ pitchblende/ sandstone/ coal/ shale/ Archuleta County/ Routt County/ Eagle County/ Pitkin County/ Gunnison County/ San Juan County/ Fremont County/ Huerfano County/ Ouray County/ Colorado Plateau/ ore deposits/ Moffat County/ Garfield County/ Mesa County/ Delta County/ Montrose County/ San Miguel County/ Dolores County/ Montezuma County/ La Plata County/ Larimer County/ Boulder County/ Jefferson County/ Park County/ Rio Blanco County/ igneous-metamorphic/

Kaiser, E. P., King, R. U., Wilmarth, V. R., and others, 1952

Front Range/ Jamestown district/ pitchblende/ bostonite/ Colorado Plateau/ sandstone/ coal/ shale/ Moffat County/ Garfield County/ La Plata County/ Pitkin County/ Gunnison County/ San Juan County/ Boulder County/ Jefferson County/ Park County/ Delta County/ Fremont County/ Rio Blanco County/ Mesa County/ Montrose County/ San Miguel County/ Dolores County/ Montezuma County/ Archuleta County/ Routt County/ Huerfano County/ Ouray County/ Larimer County/ Eagle County/ igneous-metamorphic/

Kelley, V. C., 1955

sandstone/ Colorado Plateau/ ore deposits/ genesis/ tectonics/ structural elements/ Archuleta County/ Mesa County/ Montrose County/ San Miguel County/ Dolores County/ Montezuma County/ La Plata County/ Delta County/ Ouray County/ Gunnison County/ Garfield County/ Rio Blanco County/ Moffat County/

Kelley, V. C., 1955

sandstone/ Colorado Plateau/ ore deposits/ genesis/ tectonics/ structural elements/ Mesa County/ San Miguel County/ Dolores County/ Montezuma County/ La Plata County/ Delta County/ Garfield County/ Rio Blanco County/ Moffat County/ Archuleta County/ Ouray County/ Gunnison County/ Montrose County/

Kelley, V. C., 1956

Colorado Plateau/ ore deposits/ genesis/ Delta County/ uranium/ tectonic history/ regional structure/ Colorado/ sandstone/ Montezuma County/ San Miguel County/ Dolores County/ Montrose County/ Mesa County/ Ouray County/ San Juan County/ Gunnison County/ La Plata County/ Garfield County/ Rio Blanco County/ Delta County/ structural controls/

Kelley, V. C., 1956

Colorado Plateau/ ore deposits/ genesis/ Mesa County/ structural controls/ uranium/ tectonic history/ Colorado/ sandstone/ Montezuma County/ San Miguel County/ Dolores County/ Montrose County/ Moffat County/ San Juan County/ Ouray County/ Gunnison County/ La Plata County/ Garfield County/ Rio Blanco County/ Delta County/ regional structure/

Kelley, V. C., 1959

structures/ fracture systems/ Colorado Plateau/ faults/ fractures/ Mesa County/ Montrose County/ San Miguel County/ sandstone/ Montezuma County/ Moffat County/ San Juan County/ Ouray County/ Delta County/ Gunnison County/ Garfield County/ La Plata County/ Rio Blanco County/

Larsen, E. S., and Cross, C. W., 1956

geology/ petrology/ San Juan region/ Colorado Plateau/ Igneous-metamorphic/ Montrose County/ Ouray County/ San Miguel County/ Dolores County/ La Plata County/ Gunnison County/ Hinsdale County/ Archuleta County/ Mineral County/ Saguache County/ Conejos County/ Alamosa County/ San Juan County/ Montezuma County/ Rio Grande County/

Larsen, E. S., and Phair, George, 1954

uranium/ thorium/ Igneous-metamorphic/ Front Range/ dikes/ stocks/ minerals/ porphyry/ San Juan Mountains/ calc-alkalic rocks/ San Juan County/ Ouray County/ Hinsdale County/ Cripple Creek/ Teller County/ quartz-bostonite/ geochemistry/

Larsen, E. S., Gottfried, David, and Molloy, Marjorie, 1958

San Juan Mountains/ ore deposits/ Ouray County/ volcanic rocks/ San Juan County/ Hinsdale County/ Igneous-metamorphic/

Lovering, T. G., and Beroni, E. P., 1956

Diamond J Ranch/ Golden Gate Canyon/ Haputa Ranch area/ Ouray hot springs/ Chaffee County/ Custer County/ Gunnison County/ Jefferson County/ Ouray County/ radioactive ilmonite/ Lucky Break Iron mine/ sandstone/ thorium/ uranium/ spring deposits/ Front Range/ conglomerate/ limestone/ tufa/ analyses/ Igneous-metamorphic/ ore deposits/ El Paso County/

Lovering, T. G., and Beroni, E. P., 1959

Diamond J Ranch/ Golden Gate Canyon/ Haputa Ranch area/ Ouray hot springs/ Chaffee County/ Custer County/ Gunnison County/ Jefferson County/ Ouray County/ radioactive ilmonite/ Lucky Break Iron mine/ thorium/ uranium/ spring deposits/ Front Range/ sandstone/ conglomerate/ limestone/ tufa/ El Paso County/ Igneous-metamorphic/ ore deposits/

Marshall, C. H., 1959

Ouray County/ Montrose County/ photogeologic map/ Norwood-1 quadrangle/ sandstone/ Colorado Plateau/

Maxwell, J. C., 1977

San Juan Mountains/ geology/ Archuleta County/ hydrogeochemistry/ stream sediments/ stream waters/ ground waters/ Storm King Mountain/ Vallecito Creek/ Montrose County/ Gunnison County/ San Miguel County/ Dolores County/ Montezuma County/ La Plata County/ San Juan County/ Ouray County/ Hinsdale County/ Mineral County/

Mullens, T. E., and Freeman, V. L., 1954

lithofacies/ Salt Wash Member/ sandstone/ stratigraphy/ Colorado Plateau/ Mesa County/ Montrose County/ San Miguel County/ Dolores County/ Montezuma County/ La Plata County/ Moffat County/ Garfield

County/ Delta County/ San Juan County/ Eagle County/ Pitkin County/ Gunnison County/ Ouray County/ Hinsdale County/ Archuleta County/ genesis/ ore deposits/ Morrison Formation/ Rio Blanco County/

Mullens, T. E., and Freeman, V. L., 1957

lithofacies/ Salt Wash Member/ sandstone/ San Juan County/ Morrison Formation/ stratigraphy/ Colorado Plateau/ Moffat County/ Rio Blanco County/ Garfield County/ Eagle County/ Mesa County/ Delta County/ Montrose County/ San Miguel County/ Dolores County/ Montezuma County/ La Plata County/ genesis/ ore deposits/ Pitkin County/ Gunnison County/ Ouray County/ Hinsdale County/ Archuleta County/

Nash, J. T., 1975

fluid inclusions/ veins/ breccia pipes/ replacement ores/ ore deposits/ San Juan Mountains/ San Miguel County/ Ouray County/ Igneous-metamorphic/

Pierson, C. T., 1953

San Juan Mountains/ San Juan County/ La Plata County/ Ouray County/ Dolores County/ Bonanza district/ Saguache County/ Mineral County/ Hinsdale County/ La Plata district/ Upper Uncompahgre district/ Colorado Plateau/ Igneous-metamorphic/

Pierson, C. T., 1954

San Juan Mountains/ minerals/ mineralogy/ petrology/ Ouray County/ slate/ pitchblende/ Igneous-metamorphic/ Mickey Breen mine/

Pierson, C. T., Burbank, W. S., and Singewald, Q. D., 1952

Colorado mineral belt/ ore deposits/ veins/ Igneous-metamorphic/ Pitkin County/ Park County/ Ouray County/ San Juan County/ San Miguel County/ uranium/ Colorado Plateau/

Pierson, C. T., Weeks, W. F., and Kleinhampl, F. J., 1958

San Juan Mountains/ reconnaissance/ mining districts/ radioactivity/ Igneous-metamorphic/ San Juan County/ Ouray County/ San Miguel County/ La Plata County/ Hinsdale County/ Mineral County/ Saguache County/

Schultz, L. G., 1963

clay minerals/ Moenkopi Formation/ Chinle Formation/ x-ray diffraction/ Ouray County/ Rio Blanco County/ Garfield County/ Mesa County/ Delta County/ Montrose County/ San Miguel County/ Dolores County/ Montezuma County/ Colorado Plateau/ sandstone/ La Plata County/

Shoemaker, E. M., 1956

structural features/ Colorado Plateau/ ore deposits/ veins/ Moffat County/ Rio Blanco County/ La Plata County/ uranium/ Garfield County/ Mesa County/ Delta County/ Montrose County/ San Miguel County/ San Juan County/ Ouray County/ sandstone/ Montezuma County/ Dolores County/ Archuleta County/

Shoemaker, E. M., and Luedke, R. G., 1952

Colorado Plateau/ map/ uranium/ ore deposits/ sandstone/ Moffat County/ Rio Blanco County/

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Mesa County/ Delta County/ Montrose County/  
San Miguel County/ Dolores County/ Ouray County/  
Montezuma County/ La Plata County/ Garfield  
County/

Stokes, W. L., 1944

Morrison Formation/ Colorado Plateau/ sandstone/  
stratigraphy/ correlation/ Garfield County/  
Mesa County/ Delta County/ Gunnison County/  
Montrose County/ Ouray County/ Dolores County/  
Hinsdale County/ Archuleta County/ Montezuma  
County/ La Plata County/ ore deposits/ San Juan  
County/

U.S. Atomic Energy Commission, 1966

geology/ uranium/ geophysical prospecting/ economic  
geology/ mining engineering/ petrology/ minerals/  
radioactivity/ Ouray County/ reconnaissance/  
ore deposits/ spring deposits/ igneous-metamorphic/  
Colorado Plateau/ San Juan Mountains/

U.S. Geological Survey, 1953

sandstone/ Colorado Plateau/ Front Range/ veins/  
igneous-metamorphic/ thorium/ Powderhorn district/  
natural waters/ Morrison Formation/ Mesa County/  
San Miguel County/ Dolores County/ Gilpin County/  
San Juan County/ La Plata County/ Ouray County/  
geology/ Gunnison County/ Montrose County/ San  
Juan Mountains/ Clear Creek County/ ore deposits/  
geology/

U.S. Geological Survey, 1953

Colorado Plateau/ Front Range/ sandstone/ coal/  
springs/ igneous-metamorphic/ shale/ Gilpin  
County/ Clear Creek County/ Jefferson County/  
Boulder County/ Custer County/ thorium/ Gunnison  
County/ La Plata County/ San Juan County/ Ouray  
County/

U.S. Geological Survey, 1954

Colorado Plateau/ sandstone/ Mesa County/ Montrose  
County/ San Miguel County/ Dolores County/ ore  
deposits/ Morrison Formation/ geology/ Chinle  
Formation/ Shinarump Member/ reserves/ San Juan  
Mountains/ snow/ surface water/ ground water/  
Ouray County/ San Juan County/ conglomerate/  
igneous-metamorphic/ Front Range/

Williams, P. L., 1964

Colorado/ Utah/ Moab quadrangle/ ore deposits/  
uranium/ maps/ San Miguel County/ Montrose County/  
Mesa County/ Delta County/ Ouray County/ geology/  
structure/ sandstone/

## PARK COUNTY

Anonymous, 1950

South Park/ Park County/ sandstone/

Baillie, W. N., 1962

pegmatites/ feldspar/ rare earths/ Boulder County/  
Chaffee County/ Clear Creek County/ Douglas  
County/ El Paso County/ Fremont County/ Gunnison  
County/ Jefferson County/ Larimer County/ Park  
County/ igneous-metamorphic/ Front Range/

Bever, J. E., 1952

Park County/ Fremont County/ igneous-metamorphic/  
geology/ petrology/ Guffey-Micanite region/

Boos, C. M., and Boos, M. F., 1957

tectonics/ Front Range/ igneous-metamorphic/  
Gilpin County/ Larimer County/ Boulder County/  
Jefferson County/ geology/ Clear Creek County/  
Park County/ Douglas County/ Teller County/  
El Paso County/ Fremont County/ Pueblo County/  
granite/ schist/ gneiss/ pegmatite/

Brown, L. J., Easton, W. W., and Mallory, N. S., 1955

uranium/ ore deposits/ minerals/ aerial prospecting/  
reconnaissance/ geology/ South Park/ Park County/  
Garo district/ igneous-metamorphic/ Tertiary/  
Precambrian/ trachyte/ granite/ sandstone/

Cadigan, R. A., 1972

stratigraphy/ genesis/ Chinle Formation/ Colorado  
Plateau/ paleontology/ sandstone/ Triassic strata/  
Eagle County/ La Plata County/ Archuleta County/  
Garfield County/ Mesa County/ Moffat County/  
Montezuma County/ Pitkin County/ Montrose County/  
Rio Blanco County/ Routt County/ San Miguel  
County/ San Juan County/ Summit County/ Park  
County/ Delta County/ Dolores County/ mineralogy/  
conglomerate/ Gunnison County/ Ouray County/

Case, J. E., 1967

anomalies/ gravity surveys/ aeromagnetic surveys/  
igneous-metamorphic/ ore guides/ geophysics/  
Park County/ Lake County/ Park Range/ sandstone/  
Colorado mineral belt/

Coats, R. R., 1956

felsic volcanic rocks/ igneous-metamorphic/  
uranium/ trace elements/ Cenozoic/ genesis/  
Gunnison County/ Pitkin County/ Lake County/  
Park County/ Chaffee County/ Ouray County/ Saguache  
County/ Hinsdale County/ Saguache County/ Hinsdale  
County/ Pitkin County/

Coats, R. R., 1956

uranium/ trace elements/ felsic volcanic rocks/  
Cenozoic/ genesis/ igneous-metamorphic/ Gunnison  
County/ Pitkin County/ Lake County/ Park County/  
Chaffee County/ Ouray County/ Saguache County/  
Hinsdale County/

De Voto, R. H., 1961

South Park/ Park County/ sandstone/ Chaffee  
County/ geology/ ore deposits/

De Voto, R. H., 1971

South Park/ Park County/ Chaffee County/ sandstone/  
geology/ geologic history/ Antero Reservoir  
quadrangle/ ore deposits/

Finch, W. I., 1956

uranium/ terrestrial sedimentary rocks/ Maroon  
Formation/ sandstone/ Sangre de Cristo Formation/  
Cucharas district/ Huerfano County/ Park County/  
Garo deposit/ vanadium/ carnotite/ tyuyamunite/

Finch, W. I., 1956

uranium/ terrestrial sedimentary rocks/ Maroon  
Formation/ sandstone/ Sangre de Cristo Formation/  
Cucharas district/ Huerfano County/ Park County/  
Garo deposit/ vanadium/ carnotite/ tyuyamunite/

Finch, W. I., 1967

Colorado Plateau/ Front Range/ igneous-metamorphic/

- geology/ Larimer County/ Jackson County/ Routt County/ Moffat County/ Garfield County/ Grand County/ Eagle County/ Boulder County/ Jefferson County/ Park County/ Mesa County/ Montrose County/ El Paso County/ San Miguel County/ Bent County/ Park County/ Saguache County/ Pueblo County/ Bent County/ Dolores County/ Las Animas County/ Huerfano County/ Costilla County/ Custer County/ San Juan County/ La Plata County/ Montezuma County/
- Fleck, Herman, 1909  
Park County/ Garo district/ vanadium/ uranium/ sandstone/ ore deposits/
- Gallagher, G. L., 1976  
Badger Flats area/ Elkhorn thrust area/ Park County/ Teller County/ Precambrian rocks/ Igneous-metamorphic/ Front Range/ uranium favorability/ ore deposits/
- George, R. D., Curtis, H. A., Lester, O. C., and others, 1920  
Colorado Plateau/ mineralized waters/ springs/ spring deposits/ Front Range/ Jefferson County/ Pitkin County/ Pueblo County/ Garfield County/ Park County/ El Paso County/ Ouray County/ Boulder County/ Gunnison County/ Delta County/ Chaffee County/
- Gill, J. R., 1953  
Colorado/ Montana/ Wyoming/ ore deposits/ carbonaceous rocks/ coal/ Park County/ Gunnison County/ Delta County/ Las Animas County/ El Paso County/ Teller County/ La Plata County/ Montezuma County/ Denver Basin/ Larimer County/ shale/ Crested Butte/ Laramie Formation/ Colorado Plateau/ Front Range/
- Gott, G. B., 1951  
Park County/ minerals/ calciovolborthite/ carnotite/ volborthite/ Shirley May deposit/ Garo deposit/ uranium/ sandstone/ analyses/ ore deposits/
- Grossman, E. L., 1957  
Front Range/ ore deposits/ uranium/ Gilpin County/ Clear Creek County/ Jefferson County/ Schwartzwalder mine/ pitchblende/ Igneous-metamorphic/ Ladwig mine/ Leyden mine/ Boulder County/ coal/ sandstone/ Morrison Formation/ Park County/ Gem Dandy/
- Gulliotte, G. B., 1944  
reconnaissance/ uranium/ ore deposits/ Front Range/ Igneous-metamorphic/ Park County/ Boulder County/ Jamestown district/ Larimer County/ Masonville mines/ Chaffee County/ Trout Creek permatites/ Clear Creek County/ carnotite/
- Hanley, J. B., Heinrich, E. W., and Page, L. R., 1950  
pegmatites/ geology/ mineralogy/ Chaffee County/ Boulder County/ Clear Creek County/ Douglas County/ Fremont County/ Gunnison County/ Jefferson County/ Larimer County/ Montrose County/ Park County/ Summit County/ monazite/ thorium/ production/ Front Range/ El Paso County/ Igneous-metamorphic/ Colorado Plateau/ Wyoming/ Utah/
- Heinrich, E. W., 1958  
thorium/ pegmatites/ Lake George area/ South Platte area/ Douglas County/ Teller County/ Park County/ Igneous-metamorphic/ mineralogy/ analyses/ rare earth minerals/
- Heinrich, E. W., and Bever, J. E., 1957  
Guffey area/ Igneous-metamorphic/ radioactive minerals/ pegmatites/ Park County/ Fremont County/
- Heinrich, E. W., and Dahlem, D. H., 1966  
Guffey area/ Igneous-metamorphic/ radioactive minerals/ pegmatites/ Park County/ Fremont County/ carbonatite/ Arkansas River Canyon area/
- Javernick, B. L., 1975  
mining/ Park County/ uranium/ Gold Star deposit/ sandstone/ ore deposits/
- Kaiser, E. P., King, R. U., Wilmarth, V. R., and others, 1952  
Front Range/ pitchblende/ sandstone/ igneous-metamorphic/ coal/ shale/ Archuleta County/ Routt County/ Eagle County/ Pitkin County/ Gunnison County/ San Juan County/ Fremont County/ Huerfano County/ Ouray County/ Colorado Plateau/ ore deposits/ Moffat County/ Garfield County/ Mesa County/ Delta County/ Montrose County/ San Miguel County/ Dolores County/ Montezuma County/ La Plata County/ Larimer County/ Boulder County/ Jefferson County/ Park County/ Rio Blanco County/
- Kaiser, E. P., King, R. U., Wilmarth, V. R., and others, 1952  
Front Range/ Jamestown district/ pitchblende/ bostonite/ Colorado Plateau/ sandstone/ Igneous-metamorphic/ coal/ shale/ Moffat County/ Garfield County/ La Plata County/ Pitkin County/ Gunnison County/ San Juan County/ Boulder County/ Jefferson County/ Park County/ Delta County/ Fremont County/ Rio Blanco County/ Mesa County/ Montrose County/ San Miguel County/ Dolores County/ Montezuma County/ Archuleta County/ Routt County/ Huerfano County/ Ouray County/ Larimer County/ Eagle County/
- Kelly, F. N., 1962  
thorium/ Wet Mountains/ Custer County/ El Paso County/ Fremont County/ Gunnison County/ Jefferson County/ Park County/ mineralogy/ Powderhorn district/ rare earths/ resources/ Igneous-metamorphic/ Colorado/ Wyoming/ New Mexico/ economics/ Front Range/ Gilpin County/
- King, R. U., 1953  
reconnaissance/ Front Range/ Igneous-metamorphic/ Clear Creek County/ Park County/ Summit County/ geology/ ore deposits/ Boulder County/
- King, R. U., 1954  
ore deposits/ exploration/ veins/ Ralston Creek district/ Jefferson County/ Copperdale/ Lake George/ Park County/ geology/ Igneous-metamorphic/ Front Range/
- King, R. U., and Beroni, E. P., 1953  
Igneous-metamorphic/ reconnaissance/ Jefferson County/ Park County/ El Paso County/ Clear Creek County/ prospects/ uranium/ thorium/ Front Range/ ore deposits/ geology/
- King, R. U., Leonard, B. F., Moore, F. B., and others, 1952  
Front Range/ Boulder County/ Clear Creek County/



- Garfield County/ Gilpin County/ Jefferson County/ Larimer County/ Moffat County/ Pitkin County/ pitchblende/ hydrocarbons/ Kiowa County/ Rio Blanco County/ Routt County/ hot spring deposits/ limestone/ pegmatites/ sandstone/ veins/ breccia pipes/ igneous-metamorphic/ Park County/ Lake County/ geology/ mineralogy/ San Miguel County/ ore deposits/ metal-mining districts/ Huerfano County/ Eagle County/
- King, R. U., Leonard, B. F., Moore, F. B., and others, 1953  
Front Range/ Boulder County/ Clear Creek County/ Garfield County/ Gilpin County/ Jefferson County/ Larimer County/ Moffat County/ Pitkin County/ pitchblende/ hydrocarbons/ hot spring deposits/ limestone/ sandstone/ veins/ breccia pipes/ igneous-metamorphic/ Park County/ Lake County/ geology/ mineralogy/ San Miguel County/ ore deposits/ metal-mining districts/ Kiowa County/ Rio Blanco County/ Routt County/ Huerfano County/ Eagle County/
- Lovering, T. G., 1954  
radioactivity/ iron oxides/ geochemistry/ analyses/ uranium/ thorium/ Park County/ Garo deposit/ sandstone/ ilmonite/ tyuyamunite/
- Lovering, T. G., 1955  
radioactivity/ iron oxides/ geochemistry/ analyses/ uranium/ thorium/ Park County/ Garo deposit/ sandstone/ ilmonite/ tyuyamunite/
- Lovering, T. S., and Goddard, E. N., 1938  
Laramide/ tectonics/ differentiation/ Clear Creek County/ correlation/ geochemistry/ petrology/ Boulder County/ Grand County/ Summit County/ Gilpin County/ Park County/ Larimer County/ Teller County/ Jefferson County/ Front Range/ igneous-metamorphic/
- Lozano, Efraim, 1965  
Park County/ sandstone/ Garo area/ uranium/ copper/ vanadium/ South Park/ geology/
- Malan, R. C., 1969  
Intermontane basins/ North Park/ Tertiary/ Middle Park/ South Park/ Raton basin/ Tallahassee Creek district/ sandstone/ ore deposits/ Grand County/ Teller County/ Park County/ arkose/ Fremont County/ mudstone/ Huerfano County/ conglomerate/ genesis/ geology/ Gunnison County/ Saguache County/ exploration/ water sampling/ Wet Mountains/ High Park/ Cochetopa district/ Marshall Pass/ Thirtynine Mile field/
- Malan, R. C., 1969  
genesis/ ore deposits/ Tertiary/ Intermontane basins/ geology/ uranium/ minerals/ sediments/ stratigraphy/ sandstone/ Middle Park/ South Park/ Raton basin/ Thirtynine Mile volcanic field/ Tallahassee Creek district/ Jackson County/ Grand County/ Park County/ Fremont County/ Huerfano County/ Custer County/
- McCarn, D. W., and Freeman, R. W., 1976  
ground water/ surface water/ United States/ uranium/ chemical analyses/ Colorado/ Front Range/ Jefferson County/ Chaffee County/ Fremont County/ Gunnison County/ Huerfano County/ Saguache County/ Park County/ Colorado Plateau/
- Nishimori, R. K., Ragland, P. C., Rogers, J. J., and others, 1977  
uranium/ ore deposits/ granite/ igneous-metamorphic/ Wheeler Basin/ Grand County/ Front Range/ Park County/ Clear Creek County/ Gilpin County/ Boulder County/ Jefferson County/ bostonite dikes/ Central City district/
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Cordilleran foreland/ Clear Creek County/ Jefferson County/ ore deposits/ Routt County/ Jackson County/ El Paso County/ Park County/ Grand County/ Front Range/ igneous-metamorphic/ Larimer County/ Eagle County/ Summit County/ Fremont County/ Saguache County/ Teller County/ Chaffee County/ tectonics/ Gilpin County/ Pueblo County/ Custer County/ Precambrian/ genesis/ structures/
- Pierson, C. T., and Singewald, Q. D., 1953  
reconnaissance/ radioactivity/ Alma district/ Park County/ veins/ uranium/ pitchblende/ igneous-metamorphic/ ore deposits/ Precambrian rocks/ London vein/ Cooper Gulch/ Orphan Boy mine/ geology/
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Alma district/ Park County/ ore deposits/ reconnaissance/ veins/ Precambrian rocks/ London vein system/ igneous-metamorphic/ Cooper Gulch/ Orphan Boy mine/ pitchblende/ geology/
- Pierson, C. T., Burbank, W. S., and Singewald, Q. D., 1952  
Colorado mineral belt/ ore deposits/ veins/ igneous-metamorphic/ Pitkin County/ Park County/ Ouray County/ San Juan County/ San Miguel County/ uranium/ Colorado Plateau/
- Pierson, C. T., Singewald, Q. D., and Dings, M. G., 1953  
Colorado mineral belt/ ore deposits/ exploration/ St. Kevin district/ Summit County/ Chaffee County/ Gunnison County/ Glacier Mountain/ Alma district/ Lake County/ igneous-metamorphic/ Park County/
- Riley, L. B., 1946  
Park County/ sandstone/ Garo district/ carnotite/ copper/ vanadium/ Front Range/
- Salotti, C. A., 1965  
mineralogy/ paragenesis/ Cotopaxi area/ Chaffee County/ Custer County/ Fremont County/ Park County/ igneous-metamorphic/ petrology/ geology/ skarn/ ore deposits/ copper/ zinc/ uranium/
- Sharp, R. R., Jr., 1976  
Wyoming/ uranium/ water/ stream sediments/ hydrogeochemistry/ analyses/ sampling/ Teller County/ Park County/ geochemical surveys/ NURE program/
- Sharp, R. R., Jr., and Aamodt, P. L., 1976  
hydrogeochemistry/ springs/ South Platte River/ analyses/ natural waters/ South Park/ Tarryall Creek/ West Fourmile Creek/ Currant Creek/ Badger Creek/ surface water/ ground water/ Teller County/ Park County/ Badger Flats/ Boomer mine/ igneous-metamorphic/ sandstone/ Garo deposit/

## PARK COUNTY

Sharp, R. R., Jr., and Aamodt, P. L., compilers, 1976  
Alaska/ Colorado/ geochemical surveys/ hydrogeochemistry/  
Montana/ New Mexico/ exploration/ sampling/  
uranium/ Wyoming/ water/ stream sediments/ analyses/  
Teller County/ Park County/ South Park/ surface  
water/ ground water/

Sharp, R. R., Jr., Morris, W. A., and Aamodt, P.  
L., 1976

Alaska/ Colorado/ Montana/ New Mexico/ exploration/  
research programs/ sample preparation/ sampling/  
sediments/ uranium/ water/ Wyoming/ analyses/  
surface water/ ground water/ stream sediments/  
hydrogeochemistry/ South Park/ Park County/  
Hinsdale County/ San Juan County/

U.S. Atomic Energy Commission, 1966

geology/ uranium/ geophysical prospecting/ economic  
geology/ mining engineering/ petrology/ minerals/  
radioactivity/ Park County/ reconnaissance/  
ore deposits/ sandstone/ igneous-metamorphic/

Walker, G. W., 1956

ore deposits/ host rocks/ alteration/ veins/  
sandstone/ igneous-metamorphic/ limestone/ Boulder  
County/ Park County/ Front Range/ Gilpin County/  
Clear Creek County/ Jefferson County/ Saguache  
County/ coal/ dolomite/ Pitkin County/ Larimer  
County/ Caribou mine/ Los Ochos mine/ Leyden  
coal mine/ Copper King mine/

Walker, G. W., 1963

alteration/ veins/ igneous-metamorphic/ sandstone/  
limestone/ Boulder County/ Park County/ Front  
Range/ Gilpin County/ Clear Creek County/ Jefferson  
County/ Saguache County/ coal/ Cochetopa district/  
ore deposits/ Placerville district/ San Miguel  
County/ Larimer County/ Central City district/  
Caribou mine/ Los Ochos mine/ Leyden coal mine/  
Copper King mine/

Wilmarth, V. R., 1953

veins/ Shirley May mine/ radioactivity/ Garo  
deposit/ sandstone/ Maroon Formation/ copper/  
vanadium/ Park County/ uranium/ geology/ ore  
deposits/

Wilmarth, V. R., 1958

Park County/ Shirley May mine/ Garo deposit/  
sandstone/ uranium/ vanadium/ copper/ Maroon  
Formation/ geology/ ore deposits/

Wilmarth, V. R., 1959

geology/ uranium/ vanadium/ Park County/ sandstone/  
Maroon Formation/ Shirley May mine/ ore deposits/  
Garo deposits/ copper/

Wilmarth, V. R., and Smith, L. E., 1952

drilling/ geology/ reconnaissance/ Maroon Formation/  
sandstone/ ore deposits/ structure/ Park County/  
uranium/ reserves/ resources/ minerals/ calciovolborthite/  
carnotite/ tyuyamunite/ volborthite/ vanadium/  
copper/ Garo deposit/ Shirley May deposit/

Wood, H. B., 1956

Colorado Plateau/ genesis/ host rocks/ uranium/  
ore deposits/ Jefferson County/ San Miguel County/  
Saguache County/ Park County/ Boulder County/  
Montrose County/ Moffat County/ sandstone/ Front  
Range/ coal/ igneous-metamorphic/

## PITKIN COUNTY

Wood, H. B., 1956

Colorado Plateau/ genesis/ host rocks/ uranium/  
sandstone/ production/ geology/ Boulder County/  
Jefferson County/ Saguache County/ Park County/  
Montrose County/ San Miguel County/ Moffat County/  
coal/ igneous-metamorphic/ Front Range/

Young, Patti, and Mickle, D. G., 1976

uranium/ favorability/ Tertiary rocks/ Badger  
Flats/ Elkhorn thrust area/ Park County/ Teller  
County/ igneous-metamorphic/ Front Range/

## PITKIN COUNTY

Anonymous, 1951

Turret district/ rare earths/ igneous-metamorphic/  
Pitkin County/

Bartleson, B. L., Bryant, B., and Mutschler, F.  
E., 1968

nomenclature/ stratigraphy/ Elk Mountains/ Eagle  
basin/ Gothic Formation/ Belden Formation/ Maroon  
Formation/ Pitkin County/ Gunnison County/ Permian  
stratigraphy/ Pennsylvanian stratigraphy/

Boyd, F. S., Jr., and Bromley, C. P., 1953

veins/ Aspen area/ Smuggler mine/ Pitkin County/  
uranium/ breccia/ shale/ limestone/ Chaffee  
Formation/ Devonian/ Weber Formation/ production/  
reconnaissance/

Cadigan, R. A., 1972

stratigraphy/ genesis/ Chinle Formation/ Colorado  
Plateau/ paleontology/ sandstone/ Triassic strata/  
Eagle County/ La Plata County/ Archuleta County/  
Garfield County/ Mesa County/ Moffat County/  
Montezuma County/ Pitkin County/ Montrose County/  
Rio Blanco County/ Routt County/ San Miguel  
County/ San Juan County/ Summit County/ Park  
County/ Delta County/ Dolores County/ mineralogy/  
conglomerate/ Gunnison County/ Ouray County/

Coats, R. R., 1956

felsic volcanic rocks/ igneous-metamorphic/  
uranium/ trace elements/ Cenozoic/ genesis/  
Gunnison County/ Pitkin County/ Lake County/  
Park County/ Chaffee County/ Ouray County/ Saguache  
County/ Hinsdale County/

Coats, R. R., 1956

uranium/ trace elements/ felsic volcanic rocks/  
Cenozoic/ genesis/ igneous-metamorphic/ Gunnison  
County/ Pitkin County/ Lake County/ Park County/  
Chaffee County/ Ouray County/ Saguache County/  
Hinsdale County/

George, R. D., Curtis, H. A., Lester, O. C., and  
others, 1920

Colorado Plateau/ mineralized waters/ springs/  
spring deposits/ Front Range/ Jefferson County/  
Pitkin County/ Pueblo County/ Garfield County/  
Park County/ El Paso County/ Ouray County/ Boulder  
County/ Gunnison County/ Delta County/ Chaffee  
County/

Holmes, C. N., 1950

sandstone/ Uncompahgre uplift/ tectonics/ sedimentary  
rocks/ Mesozoic/ Chinle Formation/ Pitkin County/

# PITKIN COUNTY

# PROWERS COUNTY

Gunnison County/ Montrose County/ Mesa County/  
Delta County/ Dolores County/ Dolores Formation/  
Montezuma County/ Entrada Sandstone/ stratigraphy/  
Morrison Formation/ Colorado Plateau/

Kaiser, E. P., King, R. U., Wilmarth, V. R., and  
others, 1952

Front Range/ pitchblende/ sandstone/ coal/ shale/  
Archuleta County/ Routt County/ Eagle County/  
Pitkin County/ Gunnison County/ San Juan County/  
Fremont County/ Huerfano County/ Ouray County/  
Colorado Plateau/ ore deposits/ Moffat County/  
Garfield County/ Mesa County/ Delta County/  
Montrose County/ San Miguel County/ Dolores  
County/ Montezuma County/ La Plata County/ Larimer  
County/ Boulder County/ Jefferson County/ Park  
County/ Rio Blanco County/ Igneous-metamorphic/

Kaiser, E. P., King, R. U., Wilmarth, V. R., and  
others, 1952

Front Range/ Jamestown district/ pitchblende/  
bostonite/ Colorado Plateau/ sandstone/ coal/  
shale/ Moffat County/ Garfield County/ La Plata  
County/ Pitkin County/ Gunnison County/ San  
Juan County/ Boulder County/ Jefferson County/  
Park County/ Delta County/ Fremont County/ Rio  
Blanco County/ Mesa County/ Montrose County/  
San Miguel County/ Dolores County/ Montezuma  
County/ Archuleta County/ Routt County/ Huerfano  
County/ Ouray County/ Larimer County/ Eagle  
County/ Igneous-metamorphic/

King, R. U., Leonard, B. F., Moore, F. B., and  
others, 1952

Front Range/ Boulder County/ Clear Creek County/  
Garfield County/ Gilpin County/ Jefferson County/  
Larimer County/ Moffat County/ Pitkin County/  
pitchblende/ hydrocarbons/ Kiowa County/ Rio  
Blanco County/ Routt County/ hot spring deposits/  
limestone/ pegmatites/ sandstone/ veins/ breccia  
pipes/ igneous-metamorphic/ Park County/ Lake  
County/ geology/ mineralogy/ San Miguel County/  
ore deposits/ metal-mining districts/ Huerfano  
County/ Eagle County/

King, R. U., Leonard, B. F., Moore, F. B., and  
others, 1953

Front Range/ Boulder County/ Clear Creek County/  
Garfield County/ Gilpin County/ Jefferson County/  
Larimer County/ Moffat County/ Pitkin County/  
pitchblende/ hydrocarbons/ hot spring deposits/  
limestone/ sandstone/ veins/ breccia pipes/  
igneous-metamorphic/ Park County/ Lake County/  
geology/ mineralogy/ San Miguel County/ ore  
deposits/ metal-mining districts/ Kiowa County/  
Rio Blanco County/ Routt County/ Huerfano County/  
Eagle County/

King, R. U., Moore, F. B., and Leonard, B. F., 1952

Front Range/ Boulder County/ Clear Creek County/  
Garfield County/ Gilpin County/ Jefferson County/  
Kiowa County/ Larimer County/ Moffat County/  
Pitkin County/ Rio Blanco County/ Routt County/  
ore guides/ pitchblende/ hydrocarbons/ metal-mining  
districts/ ore deposits/ limestone/ sandstone/  
veins/ breccia pipes/ Eagle County/ Igneous-metamorphic/  
hot spring deposits/ fluorite/

Leonard, B. F., 3d, 1953

pitchblende/ ore deposits/ zoning/ Lake County/  
Front Range/ Gilpin County/ Clear Creek County/  
Igneous-metamorphic/ Pitkin County/ Teller County/  
San Juan County/ Coeur d'Alene/ Idaho/

Mullens, T. E., and Freeman, V. L., 1954

lithofacies/ Salt Wash Member/ sandstone/ stratigraphy/  
Colorado Plateau/ Mesa County/ Montrose County/  
San Miguel County/ Dolores County/ Montezuma  
County/ La Plata County/ Moffat County/ Garfield  
County/ Delta County/ San Juan County/ Eagle  
County/ Pitkin County/ Gunnison County/ Ouray  
County/ Hinsdale County/ Archuleta County/ genesis/  
ore deposits/ Morrison Formation/ Rio Blanco  
County/

Mullens, T. E., and Freeman, V. L., 1957

lithofacies/ Salt Wash Member/ sandstone/ San  
Juan County/ Morrison Formation/ stratigraphy/  
Colorado Plateau/ Moffat County/ Rio Blanco  
County/ Garfield County/ Eagle County/ Mesa  
County/ Delta County/ Montrose County/ San Miguel  
County/ Dolores County/ Montezuma County/ La  
Plata County/ genesis/ ore deposits/ Pitkin  
County/ Gunnison County/ Ouray County/ Hinsdale  
County/ Archuleta County/

Pierson, C. T., Burbank, W. S., and Singewald,  
Q. D., 1952

Colorado mineral belt/ ore deposits/ veins/  
igneous-metamorphic/ Pitkin County/ Park County/  
Ouray County/ San Juan County/ San Miguel County/  
uranium/ Colorado Plateau/

Scott, R. C., and Barker, F. B., 1962

data/ uranium/ radium/ ground water/ analyses/  
Logan County/ Phillips County/ Prowers County/  
Yuma County/ Jefferson County/ Garfield County/  
Kit Carson County/ Pitkin County/ Mesa County/  
Huerfano County/ Baca County/ Montezuma County/  
Front Range/ Colorado Plateau/

U.S. Atomic Energy Commission, 1966

geology/ uranium/ geophysical prospecting/ economic  
geology/ mining engineering/ petrology/ minerals/  
radioactivity/ Pitkin County/ reconnaissance/  
igneous-metamorphic/ ore deposits/

Walker, G. W., 1956

ore deposits/ host rocks/ alteration/ veins/  
sandstone/ igneous-metamorphic/ limestone/ Boulder  
County/ Park County/ Front Range/ Gilpin County/  
Clear Creek County/ Jefferson County/ Saguache  
County/ coal/ dolomite/ Pitkin County/ Larimer  
County/ Caribou mine/ Los Ochos mine/ Leyden  
coal mine/ Copper King mine/

## PROWERS COUNTY

Brown, L. J., and Easton, W. W., 1955

ore deposits/ reconnaissance/ airborne/ Huerfano  
Embayment/ Intrusives/ volcanics/ Las Animas  
Arch/ La Veta Pass area/ Huerfano County/ Las  
Animas County/ Otero County/ Costilla County/  
Pueblo County/ Crowley County/ Kiowa County/  
Bent County/ Prowers County/ Baca County/ sandstone/  
shale/ claystone/ igneous-metamorphic/

## PROWERS COUNTY

- Landis, E. R., 1960  
ground water/ surface water/ Great Plains/ analyses/  
Baca County/ Bent County/ Cheyenne County/ Crowley  
County/ Kiowa County/ Lincoln County/ Prowers  
County/ sandstone/ Las Animas County/ geochemistry/
- Scott, R. C., and Barker, F. B., 1961  
ground water/ radium/ La Plata County/ Cheyenne  
County/ Kiowa County/ Lincoln County/ Crowley  
County/ Otero County/ Bent County/ Prowers County/  
Las Animas County/ Baca County/ Montezuma County/  
Archuleta County/ Colorado Plateau/
- Scott, R. C., and Barker, F. B., 1962  
data/ uranium/ radium/ ground water/ analyses/  
Logan County/ Phillips County/ Prowers County/  
Yuma County/ Jefferson County/ Garfield County/  
Kit Carson County/ Pitkin County/ Mesa County/  
Huerfano County/ Baca County/ Montezuma County/  
Front Range/ Colorado Plateau/
- U.S. Atomic Energy Commission, 1966  
geology/ uranium/ geophysical prospecting/ economic  
geology/ mining engineering/ petrology/ minerals/  
Prowers County/ reconnaissance/ ore deposits/  
Great Plains/ sandstone/ radioactivity/
- Voegeli, P. T., Sr., and Hershey, L. A., 1960  
Prowers County/ ground water/ radium/ uranium/  
beta-gamma activity/ aquifers/ data/ radioactivity/  
analyses/ wells/ logs/ test holes/
- Voegeli, P. T., Sr., and Hershey, L. A., 1965  
Prowers County/ ground water/ aquifers/ springs/  
resources/ radioactivity/ Arkansas River/ beta-gamma  
activity/ uranium/ radium/ geology/

## PUEBLO COUNTY

- Adler, H. H., 1963  
genesis/ sandstone/ ore deposits/ Jefferson  
County/ Pueblo County/ Gunnison County/ Moffat  
County/ Garfield County/ Mesa County/ Delta  
County/ Montrose County/ San Miguel County/  
Dolores County/ Montezuma County/ La Plata County/  
Archuleta County/ Colorado Plateau/ Front Range/  
Rio Blanco County/
- Adler, H. H., 1964  
uranium/ roll ore/ exploration/ sandstone/ ore  
deposits/ Jefferson County/ Pueblo County/ Gunnison  
County/ Rio Blanco County/ Garfield County/  
Mesa County/ Delta County/ Montrose County/  
San Miguel County/ Montezuma County/ La Plata  
County/ Archuleta County/ Moffat County/ Colorado  
Plateau/ Front Range/ Dolores County/
- Boos, C. M., and Boos, M. F., 1957  
tectonics/ Front Range/ igneous-metamorphic/  
Gipin County/ Larimer County/ Boulder County/  
Jefferson County/ geology/ Clear Creek County/  
Park County/ Douglas County/ Teller County/  
El Paso County/ Fremont County/ Pueblo County/  
granite/ schist/ gneiss/ pegmatite/
- Boyer, R. E., 1961  
Badito Cone/ zirconium/ phonolite/ Huerfano

## PUEBLO COUNTY

- County/ Dakota Sandstone/ Morrison Formation/  
Stumbling Stud claims/ Wet Mountains/ Pueblo  
County/ sandstone/ fluorite/ thorium/ uranium/  
cement/ rhyolite/ igneous-metamorphic/
- Brown, L. J., and Easton, W. W., 1955  
ore deposits/ reconnaissance/ airborne/ Huerfano  
Embayment/ intrusives/ volcanics/ Las Animas  
Arch/ La Veta Pass area/ Huerfano County/ Las  
Animas County/ Otero County/ Costilla County/  
Pueblo County/ Crowley County/ Kiowa County/  
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Front Range/ Jamestown district/ pitchblende/ bostonite/ Colorado Plateau/ sandstone/ coal/ shale/ Moffat County/ Garfield County/ La Plata County/ Pitkin County/ Gunnison County/ San Juan County/ Boulder County/ Jefferson County/ Park County/ Delta County/ Fremont County/ Rio Blanco County/ Mesa County/ Montrose County/ San Miguel County/ Dolores County/ Montezuma County/ Archuleta County/ Routt County/ Huerfano County/ Ouray County/ Larimer County/ Eagle County/ igneous-metamorphic/

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jointing/ Colorado Plateau/ sandstone/ structures/  
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Mesa County/ Delta County/ Garfield County/  
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County/

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genesis/ structures/ Montezuma County/ Dolores  
County/ Montrose County/ Mesa County/ Delta  
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mineralogy/ Colorado Plateau/ Archuleta County/  
conglomerate/ sandstone/ Moffat County/ Rio  
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Kerr, P. F., 1958

Colorado Plateau/ ore deposits/ genesis/ sandstone/  
stratigraphy/ uranium/ Moffat County/ Rio Blanco  
County/ Garfield County/ Mesa County/ Delta  
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pitchblende/ hydrocarbons/ Kiowa County/ Rio  
Blanco County/ Routt County/ hot spring deposits/  
limestone/ pegmatites/ sandstone/ veins/ breccia  
pipes/ igneous-metamorphic/ Park County/ Lake  
County/ geology/ mineralogy/ San Miguel County/  
ore deposits/ metal-mining districts/ Huerfano  
County/ Eagle County/

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others, 1953

Front Range/ Boulder County/ Clear Creek County/  
Garfield County/ Gilpin County/ Jefferson County/  
Larimer County/ Moffat County/ Pitkin County/  
pitchblende/ hydrocarbons/ hot spring deposits/  
limestone/ sandstone/ veins/ breccia pipes/  
igneous-metamorphic/ Park County/ Lake County/  
geology/ mineralogy/ San Miguel County/ ore  
deposits/ metal-mining districts/ Kiowa County/  
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Garfield County/ Gilpin County/ Jefferson County/  
Kiowa County/ Larimer County/ Moffat County/  
Pitkin County/ Rio Blanco County/ Routt County/  
ore guides/ pitchblende/ hydrocarbons/ metal-mining

districts/ ore deposits/ limestone/ sandstone/  
veins/ breccia pipes/ Eagle County/ igneous-metamorphic/  
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area/ mines/ Naturita NW quadrangle/

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mapping/ Colorado Plateau/ geology/ San Miguel  
County/ Mesa County/ Montrose County/

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sandstone/ ore deposits/ Morrison Formation/  
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structure/ Colorado Plateau/ geology/ exploration/  
mapping/ San Miguel County/

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County/ Egnar quadrangle/ geology/ ore guides/  
exploration/ minerals/ carnotite/ Colorado Plateau/  
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group/ Spud Patch group/ Legn mines/ Ike group  
of mines/ mines/ ore deposits/

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San Miguel County/ Uravan district/ geology/  
carnotite/ Salt Wash Member/ Colorado Plateau/  
map/ Morrison Formation/

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Dolores County/ San Miguel County/ Egnar quadrangle/  
Colorado Plateau/ carnotite/ Morrison Formation/  
sandstone/ Charles T. mines/ Golden Rod mines/  
ore deposits/ Ownbey group of mines/ Spud Patch  
group/ Legn mines/ Ike group of mines/ geology/  
map/ mines/ Salt Wash Member/

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San Miguel County/ Gypsum Gap quadrangle/ sandstone/ Colorado Plateau/ Morrison Formation/ Salt Wash Member/ Hermosa Formation/ Pitchfork mines/ Bald Eagle mines/ Long Ridge mines/ limestone/ geology/ map/ carnotite/

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Montrose County/ San Miguel County/ Naturita NW quadrangle/ Morrison Formation/ Salt Wash Member/ Colorado Plateau/ sandstone/ carnotite/ Thunderbolt mine/ Oversight claim/ Jo Dandy area/ geology/ map/ mines/ ore deposits/

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Dolores County/ San Miguel County/ Colorado Plateau/ Joe Davis Hill quadrangle/ Morrison Formation/ ore deposits/ sandstone/ carnotite/ geology/ map/ Salt Wash Member/

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San Miguel County/ Colorado Plateau/ Morrison Formation/ Salt Wash Member/ sandstone/ carnotite/ Hermosa Formation/ limestone/ Pitchfork mines/ geology/ Bald Eagle mines/ Long Ridge mines/ map/ ore deposits/ Gypsum Gap quadrangle/

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San Miguel County/ Morrison Formation/ Salt Wash Member/ sandstone/ Colorado Plateau/ carnotite/ Rambler claim/ Mexico mines/ Lookout mine/ Riverview claim/ geology/ map/ ore deposits/ Hamm Canyon quadrangle/

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Montrose County/ San Miguel County/ ore deposits/ carnotite/ Morrison Formation/ Salt Wash Member/ sandstone/ Colorado Plateau/ Gyp mine/ Raven mine/ Silveys Pocket/ geology/ map/ Anderson Mesa quadrangle/

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Dolores County/ San Miguel County/ Egnar quadrangle/ Colorado Plateau/ carnotite/ Morrison Formation/ sandstone/ Charles T. mines/ Ike group mines/ ore deposits/ Ownbey group/ Spud Patch group/ Legin mines/ geology/ map/ mines/ Golden Rod mines/ Salt Wash Member/

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County/ Garfield County/ Rio Blanco County/  
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district/ uranium/ vanadium/ chromium/ Delta  
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localization/ Entrada Sandstone/ sandstone/  
Rifle district/ Garfield County/ genesis/ San  
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Formation/ Uravan district/ Yellow Cat mine/  
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Mesa County/
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Dolores County/ San Miguel County/ Salt Wash  
Member/ sandstone/ stratigraphy/ mapping/ structure/  
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area/ Morrison Formation/
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County/ Rio Blanco County/ Garfield County/  
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County/ drilling trends/ ore deposits/ reserves/  
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Holiday Mesa/ Happy Jack mine/ Calyx mines/  
Delta mine/ Cameron district/ copper/ vanadium/  
sandstone/ geology/ ore deposits/ Montrose County/  
San Miguel County/ Dolores County/ Big Indian  
Wash-Lisbon Valley district/ Mesa County/ stratigraphy/  
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Delta mine/ Cameron district/ copper/ vanadium/  
Big Indian Wash-Lisbon Valley district/ sandstone/  
geology/ ore deposits/ Mesa County/ Montrose  
County/ San Miguel County/ Dolores County/ Montezuma  
County/ stratigraphy/ structure/

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host rocks/ sandstone/ formational environments/  
Entrada Sandstone/ Kayenta Formation/ Garfield  
County/ Moffat County/ Rio Blanco County/ San  
Miguel County/ Mesa County/ Montrose County/  
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sandstone/ radium/ mining/ ore deposits/ San  
Miguel County/ Colorado Plateau/ history/ Utah/  
carnotite/ Montrose County/ Dolores County/  
Mesa County/ Montezuma County/ uranium/ McElmo  
Formation/

Jensen, M. L., 1957  
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sulfides/ uranium/ sandstone/ sulfur isotopes/  
sulfur ratios/ genesis/ San Miguel County/ Montrose  
County/ Mesa County/

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County/ Morrison Formation/ Entrada Sandstone/

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San Miguel County/ Montrose County/ Garfield  
County/ Mesa County/

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uranium/ sediments/ sandstone/ ground water/

La Plata County/ Archuleta County/ Moffat County/  
Rio Blanco County/ Garfield County/ Mesa County/  
Montrose County/ San Miguel County/ Dolores  
County/ regional transmissivity/ Delta County/

Jobin, D. A., 1956  
Colorado Plateau/ ore deposits/ exploration/  
regional transmissivity/ uranium/ sediments/  
sandstone/ ground water/ La Plata County/ Archuleta  
County/ Moffat County/ Rio Blanco County/ Montrose  
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Jobin, D. A., 1962  
Colorado Plateau/ ore deposits/ Morrison Formation/  
transmissivity/ sandstone/ San Miguel County/  
ground water/ conglomerate/ Chinle Formation/  
Moffat County/ Rio Blanco County/ Garfield County/  
Mesa County/ Delta County/ Montrose County/  
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Joesting, H. R., and Byerly, P. E., 1953  
Gateway district/ Sleeping Ute Mountain/ Uravan  
district/ geophysics/ Colorado Plateau/ San  
Miguel County/ Montrose County/ Mesa County/  
Montezuma County/ Dolores County/ sandstone/  
Slick Rock district/ vanadium/ uranium/ Egnar  
district/ ore deposits/

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Disappointment Valley/ Gypsum Valley/ Nucla  
district/ Paradox district/ Uncompahgre Plateau/  
Mesa County/ San Miguel County/ Uravan district/  
ore deposits/ salt anticlines/ Disappointment  
syncline/ geophysics/ sandstone/ Colorado Plateau/  
geology/ Dolores County/ Montrose County/

Joesting, H. R., and Byerly, P. E., 1956  
aeromagnetism/ gravity profiles/ sandstone/  
Colorado Plateau/ Colorado/ Utah/ Mesa County/  
Montrose County/ Dolores County/ Uravan district/  
geology/ ore deposits/ geophysics/ San Miguel  
County/

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Disappointment Valley/ Disappointment syncline/  
Nucla district/ Paradox district/ Uncompahgre  
Plateau/ Mesa County/ Montrose County/ San Miguel  
County/ geophysics/ salt anticlines/ map/ ore  
deposits/ sandstone/ Gypsum Valley district/  
Uravan district/ geology/ Dolores County/ Colorado  
Plateau/

Joesting, H. R., and Case, J. E., 1960  
salt anticlines/ structures/ Paradox basin/  
Colorado/ Utah/ ore deposits/ sandstone/ Hermosa  
Formation/ Paradox Member/ Montrose County/  
Mesa County/ San Miguel County/ structural geology/  
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Joesting, H. R., Case, J. E., and Plouff, D. F., 1966  
Moab area/ Needles area/ Utah/ sandstone/ Mesa  
County/ Montrose County/ geophysics/ stratigraphy/  
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geology/ San Miguel County/ Dolores County/  
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Kahn, J. S., Groff, D. W., and Griffiths, J. C., 1953  
lithology/ cores/ Colorado Plateau/ Morrison  
Formation/ petrography/ Salt Wash Member/ sediments/  
sandstone/ structure/ Mesa County/ Montrose  
County/ San Miguel County/ shale/ siltstone/  
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Kaiser, E. P., King, R. U., Wilmarth, V. R., and  
others, 1952

Front Range/ pitchblende/ sandstone/ Igneous-metamorphic/  
coal/ shale/ Archuleta County/ Routt County/  
Eagle County/ Pitkin County/ Gunnison County/  
San Juan County/ Fremont County/ Huerfano County/  
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Kaiser, E. P., King, R. U., Wilmarth, V. R., and  
others, 1952

Front Range/ Jamestown district/ pitchblende/  
bostonite/ Colorado Plateau/ sandstone/ Igneous-metamorphic/  
coal/ shale/ Moffat County/ Garfield County/  
La Plata County/ Pitkin County/ Gunnison County/  
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Blanco County/ Mesa County/ Montrose County/  
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Keller, G. V., 1953

Colorado Plateau/ electric well logs/ Morrison  
Formation/ Spud Patch area/ Montrose County/  
San Miguel County/ geophysics/ petrophysical  
studies/ sandstone/

Keller, G. V., 1957

sandstone/ Morrison Formation/ electrical properties/  
logging/ geophysics/ Colorado Plateau/ Spud  
Patch area/ uranium/ vanadium/ ore deposits/  
San Miguel County/ Montrose County/ Gramlich  
claims/ La Sal Creek area/ Utah/ Uravan district/  
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Keller, G. V., 1958

resistivity/ geophysics/ exploration/ ore deposits/  
Spud Patch area/ San Miguel County/ sandstone/  
Morrison Formation/ uranium/ vanadium/ Utah/  
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Keller, G. V., 1959

electrical properties/ sandstone/ Morrison Formation/  
geophysics/ resistivity/ porosity/ Dolores County/  
Mesa County/ Montrose County/ San Miguel County/  
Uravan district/ exploration/ Colorado Plateau/

Keller, G. V., 1959

Colorado/ Utah/ ore deposits/ exploration/ resistivity/  
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County/ sandstone/ Morrison Formation/ geophysics/

Keller, G. V., and Licastro, P. H., 1959

dielectric constant/ electrical resistivity/  
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Miguel County/ Miguel County/ Dolores County/  
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Keller, W. D., 1953

Colorado Plateau/ ore deposits/ mudstone/ clay  
mineralogy/ uranium/ vanadium/ Morrison Formation/  
San Miguel County/ Chinle Formation/ Montrose  
County/ Mesa County/ Dolores County/ sandstone/  
clay minerals/

Keller, W. D., 1955

Colorado Plateau/ clay minerals/ mudstone/ Long  
Park area/ Slick Rock district/ Uravan district/  
Club mines/ mudstone/ ore deposits/ Utah/ uranium/  
vanadium/ mineralogy/ Dolores County/ San Miguel  
County/ Montrose County/ sandstone/

Keller, W. D., 1962

clay minerals/ Morrison Formation/ Colorado  
Plateau/ Salt Wash Member/ mineralogy/ Mesa  
County/ Moffat County/ Rio Blanco County/ Garfield  
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Plata County/ Archuleta County/ sandstone/

Kelley, V. C., 1955

sandstone/ Colorado Plateau/ ore deposits/ genesis/  
tectonics/ structural elements/ Archuleta County/  
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Kelley, V. C., 1955

sandstone/ Colorado Plateau/ ore deposits/ genesis/  
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Kelley, V. C., 1956

Colorado Plateau/ ore deposits/ genesis/ Delta  
County/ uranium/ tectonic history/ regional  
structure/ Colorado/ sandstone/ Montezuma County/  
San Miguel County/ Dolores County/ Montrose  
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Kelley, V. C., 1956

Colorado Plateau/ ore deposits/ genesis/ Mesa  
County/ structural controls/ uranium/ tectonic  
history/ Colorado/ sandstone/ Montezuma County/  
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Kelley, V. C., 1959

structures/ fracture systems/ Colorado Plateau/  
faults/ fractures/ Mesa County/ Montrose County/  
San Miguel County/ sandstone/ Montezuma County/  
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Kelley, V. C., 1959

Jointing/ Colorado Plateau/ sandstone/ structures/  
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Colorado Plateau/ sandstone/ fractures/ tectonics/  
genesis/ structures/ Montezuma County/ Dolores  
County/ Montrose County/ Mesa County/ Delta  
County/ Garfield County/ Rio Blanco County/  
Moffat County/ San Miguel County/

Kellogg, J. P., 1952

Colorado Plateau/ ore deposits/ exploration/  
drilling/ Utah/ Colorado/ Arizona/ New Mexico/  
uranium/ Morrison Formation/ Entrada Sandstone/  
sandstone/ Mesa County/ Montrose County/ San  
Miguel County/ Dolores County/ Montezuma County/  
Salt Wash Member/ Tenderfoot Mesa/

Kellogg, J. P., 1954

drilling/ statistics/ Colorado Plateau/ Mesa  
County/ San Miguel County/ Montezuma County/  
Dolores County/ sandstone/ exploration/

Kerry, R. F., 1958

uranium/ ore deposits/ genesis/ alteration/  
mineralogy/ Colorado Plateau/ Archuleta County/  
conglomerate/ sandstone/ Moffat County/ Rio  
Blanco County/ Garfield County/ Mesa County/  
Delta County/ Montrose County/ San Miguel County/  
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Kerr, P. F., 1958

Colorado Plateau/ ore deposits/ genesis/ sandstone/  
stratigraphy/ uranium/ Moffat County/ Rio Blanco  
County/ Garfield County/ Mesa County/ Delta  
County/ Montrose County/ San Miguel County/  
Montezuma County/ La Plata County/ Archuleta  
County/ hydrothermal emplacement/ Dolores County/

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County/ veins/ bituminous substances/ sandstone/  
Entrada Sandstone/ genesis/ mineralogy/ Colorado  
Plateau/ Placerville district/

King, R. U., Leonard, B. F., Moore, F. B., and  
others, 1952

Front Range/ Boulder County/ Clear Creek County/  
Garfield County/ Gilpin County/ Jefferson County/  
Larimer County/ Moffat County/ Pitkin County/  
pitchblende/ hydrocarbons/ Kiowa County/ Rio  
Blanco County/ Routt County/ hot spring deposits/  
limestone/ pegmatites/ sandstone/ veins/ breccia  
pipes/ Igneous-metamorphic/ Park County/ Lake  
County/ geology/ mineralogy/ San Miguel County/  
ore deposits/ metal-mining districts/ Huerfano  
County/ Eagle County/

King, R. U., Leonard, B. F., Moore, F. B., and  
others, 1953

Front Range/ Boulder County/ Clear Creek County/  
Garfield County/ Gilpin County/ Jefferson County/  
Larimer County/ Moffat County/ Pitkin County/  
pitchblende/ hydrocarbons/ hot spring deposits/  
limestone/ sandstone/ veins/ breccia pipes/  
Igneous-metamorphic/ Park County/ Lake County/  
geology/ mineralogy/ San Miguel County/ ore  
deposits/ metal-mining districts/ Kiowa County/  
Rio Blanco County/ Routt County/ Huerfano County/  
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veins/ Colorado/ uranium/ Central City district/  
Front Range/ San Miguel County/ pitchblende/  
ore deposits/ Larimer County/ Jefferson County/  
Gilpin County/ Ralston Creek district/ Igneous-metamorphic/  
Jamestown district/ Caribou district/ Lawson  
district/ Clear Creek County/

Kirkemo, Harold, 1954

Colorado Plateau/ sandstone/ exploration/ drilling/  
Mesa County/ Montrose County/ San Miguel County/  
Uravan district/ ore deposits/ Morrison Formation/  
Colorado/ Utah/ Arizona/ Long Park district/  
Dolores County/ Yellow Cat mine/ Slick Rock  
district/

Kirkemo, Harold, 1954

ore deposits/ Morrison Formation/ Salt Wash  
Member/ Colorado Plateau/ exploration/ sandstone/  
Monogram Mesa/ Uravan district/ Jo Dandy area/  
Mesa County/ Montrose County/ San Miguel County/  
Garfield County/ Entrada Sandstone/ Moffat County/  
Browns Park Formation/ Slick Rock district/  
Long Park district/

Kirkpatrick, R. K., 1944

Utah/ Colorado/ ore deposits/ vanadium ores/  
exploration/ mineralization/ lithology/ sampling/  
analyses/ uranium/ geochemistry/ Monticello district/  
Dry Valley district/ Green River Desert area/  
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stratigraphy/ mineralization/ exploration/ lithology/  
Slick Rock district/ Dolores Plateau area/ Colorado  
Plateau/ San Miguel County/ sandstone/ mine  
maps/ ore deposits/ Veta Mad claim/ Georgetown  
group/ Mercantile group/ Radium group/ Lower  
group/ Upper group/ Goldenrod group/ Charles  
T. group/ Middle group/

Kirkpatrick, R. K., 1946

geology/ stratigraphy/ vanadium/ geologic deposits/  
reserves/ uranium/ exploration/ mineralization/  
Gypsum Valley district/ Colorado Plateau/ San  
Miguel County/ sandstone/ Dolores Plateau area/

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ore deposits/ carnotite/ resources/ Colorado  
Plateau/ production/ mining/ sandstone/ radium/  
Montrose County/ San Miguel County/ Long Park  
district/

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geology/ technology/ ore deposits/ Colorado  
Plateau/ sandstone/ San Miguel County/

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Plateau/ Douglas County/ sandstone/ Igneous-metamorphic/  
Front Range/
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Utah/ genesis/ ore deposits/ discussion/ Montrose  
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County/ San Miguel County/ Dolores County/ sandstone/
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trip/ New Mexico/ Utah/ Colorado/ stratigraphy/  
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Dolores County/ Montezuma County/ Montrose County/  
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uranium/ Australia/ supergene/ genesis/ Front  
Range/ veins/ calcrete/ carnotite/ ore deposits/  
Igneous-metamorphic/ sandstone/ Colorado Plateau/  
Jefferson County/ Montrose County/ San Miguel  
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genesis/ surficial origin/ pitchblende/ ore  
deposits/ uranium/ Igneous-metamorphic/ surface  
waters/ sandstone/ Colorado Plateau/ Front Range/  
Jefferson County/ Montrose County/ San Miguel  
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Ouray County/ San Miguel County/ Dolores County/  
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Archuleta County/ Mineral County/ Saguache County/  
Conejos County/ Alamosa County/ San Juan County/  
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minerals/ mining/ fuels/ industries/ iron/ uranium/  
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oil shale/ sandstone/ ore deposits/ Colorado  
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Miguel County/ Montrose County/
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sandstone/ San Miguel County/ Dolores County/  
Montezuma County/ crystallography/ geochemistry/
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shale/ carnotite/ roscoelite/ Colorado Plateau/  
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Sandstone/ McElmo Formation/ genesis/ Gilpin  
County/ Igneous-metamorphic/ ore deposits/ Front  
Range/
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Plateau/ reserves/ exploration/ drilling/ sandstone/  
limestone/ ore deposits/ uranium/ vanadium/  
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San Miguel County/
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water/ mineralization/ sandstone/ Jurassic/  
syncline/ aquifers/ experimental simulation/  
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Montrose County/ San Miguel County/ Dolores  
County/ Montezuma County/
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geology/ exploration/ sandstone/ carbonaceous  
materials/ mineralization/ ore deposits/ San  
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Colorado Plateau/ San Miguel County/ Montrose  
County/ Entrada Sandstone/
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hydrogeochemistry/ stream sediments/ stream  
waters/ ground waters/ Storm King Mountain/  
Vallecito Creek/ Montrose County/ Gunnison County/  
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County/ Hinsdale County/ Mineral County/
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exploration/ veins/ sandstone/ igneous-metamorphic/  
pegmatites/ geobotany/ Front Range/ Gilpin County/  
Clear Creek County/ coal/ Montrose County/ San  
Miguel County/ ore deposits/ phosphates/ shale/  
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veins/ Dolores County/ Mesa County/ exploration/  
sandstone/ Igneous-metamorphic/ Front Range/  
pegmatites/ geobotany/ Gilpin County/ Clear  
Creek County/ coal/ Montrose County/ San Miguel  
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shale/ placers/
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veins/ sandstone/ Igneous-metamorphic/ pegmatites/  
geobotany/ Front Range/ Gilpin County/ Clear  
Creek County/ coal/ Montrose County/ San Miguel  
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ore deposits/ exploration/ veins/ bituminous  
substances/ coal/ sandstone/ phosphates/ United  
States/ Dolores County/ Mesa County/ Gilpin  
County/ Igneous-metamorphic/ Clear Creek County/



Montrose County/ San Miguel County/ Front Range/  
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McKelvey, V. E., Everhart, D. L., and Garrels,  
R. M., 1955

genesis/ uranium/ ore deposits/ veins/ igneous-metamorphic/  
bituminous substances/ sandstone/ limestone/  
coal/ shale/ pitchblende/ geochemistry/ age/  
Front Range/ Colorado Plateau/ Gilpin County/  
Clear Creek County/ Montrose County/ San Miguel  
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McKelvey, V. E., Everhart, D. L., and Garrels,  
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ore deposits/ igneous-metamorphic/ sandstone/  
limestone/ coal/ shale/ pitchblende/ geochemistry/  
age/ Front Range/ Colorado Plateau/ Gilpin County/  
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McKelvey, V. E., Everhart, D. L., and Garrels,  
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Colorado/ Colorado Plateau/ San Juan County/  
San Miguel County/ Jefferson County/ Montrose  
County/ Old Leyden mine/ coal/ Gilpin County/  
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Mesa County/

McKelvey, V. E., Everhart, D. L., and Garrels,  
R. M., 1956

veins/ bituminous substances/ Colorado/ genesis/  
uranium/ ore deposits/ pegmatites/ migmatites/  
San Miguel County/ sandstone/ coal/ shale/ phosphorites/  
igneous-metamorphic/ Front Range/ Colorado Plateau/  
San Juan County/ replacement/ Jefferson County/  
Montrose County/ Old Leyden mine/ Mesa County/  
Gilpin County/ Clear Creek County/

McKelvey, V. E., Page, L. R., Fischer, R. P., 1951

geochemistry/ mineralogy/ geophysics/ geobotany/  
veins/ pitchblende/ thorium/ uranium/ resources/  
exploration/ igneous-metamorphic/ Front Range/  
Gilpin County/ Clear Creek County/ pegmatites/  
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Gateway district/ Mesa County/ Montrose County/

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Igneous-metamorphic/ thorium/ Powderhorn district/  
natural waters/ Morrison Formation/ Mesa County/  
San Miguel County/ Dolores County/ Gilpin County/  
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geology/ Gunnison County/ Montrose County/ San  
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geology/

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deposits/ Morrison Formation/ geology/ Chinle  
Formation/ Shinarump Member/ reserves/ San Juan  
Mountains/ snow/ surface water/ ground water/  
Ouray County/ San Juan County/ conglomerate/  
Igneous-metamorphic/ Front Range/

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logging/ data/ analyses/ sandstone/ maps/ Morrison  
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exploration/ drilling/ Ralston Buttes district/  
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County/ Mesa County/ Jefferson County/ Colorado  
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district/ exploration/ drilling/ Colorado Plateau/  
Jefferson County/ San Miguel County/ Montrose  
County/ Mesa County/ Dolores County/ sandstone/  
Igneous-metamorphic/ Ralston Buttes district/

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mapping/ veins/ carbonaceous rocks/ geochemistry/  
reconnaissance/ analyses/ Igneous-metamorphic/  
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San Miguel County/ Montezuma County/ Fremont  
County/ Jefferson County/



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district/ San Miguel County/ Clear Creek County/  
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district/ Custer County/ Chaffee County/

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limestone/ pegmatites/ sandstone/ veins/ breccia  
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Montrose County/ Clear Creek County/

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Range/

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claim/ Black Wonder claim/ Beryl and Rare Minerals  
Lode claim/ Buckhorn mica mine/ Bucky claim/  
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Limestone Member/ Ouray County/ Dakota Sandstone/  
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Larimer County/ Moffat County/ Pitkin County/  
pitchblende/ hydrocarbons/ Kiowa County/ Rio  
Blanco County/ Routt County/ hot spring deposits/  
limestone/ pegmatites/ sandstone/ veins/ breccia  
pipes/ Igneous-metamorphic/ Park County/ Lake  
County/ geology/ mineralogy/ San Miguel County/  
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County/ Eagle County/
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limestone/ sandstone/ veins/ breccia pipes/  
igneous-metamorphic/ Park County/ Lake County/  
geology/ mineralogy/ San Miguel County/ ore  
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Pitkin County/ Rio Blanco County/ Routt County/  
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County/ Montezuma County/

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geology/ ore deposits/ Colorado/ Wyoming/ Utah/  
Miller Hill/ Baggs/ Colorado Plateau/

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geology/ mining engineering/ petrology/ minerals/  
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Range/

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Valley/ Morrison Formation/ sandstone/ veins/  
limestone/

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vanadium/ copper/ manganese/ Colorado Plateau/  
San Miguel County/ Gypsum Valley district/ Morrison  
Formation/ sandstone/ veins/ limestone/

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ore deposits/ host rocks/ alteration/ veins/  
sandstone/ igneous-metamorphic/ limestone/ Boulder  
County/ Park County/ Front Range/ Gilpin County/  
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County/ coal/ dolomite/ Pitkin County/ Larimer  
County/ Caribou mine/ Los Ochos mine/ Leyden  
coal mine/ Copper King mine/

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limestone/ Boulder County/ Park County/ Front  
Range/ Gilpin County/ Clear Creek County/ Jefferson  
County/ Saguache County/ coal/ Cochetopa district/  
ore deposits/ Placerville district/ San Miguel  
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Caribou mine/ Los Ochos mine/ Leyden coal mine/  
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Cycle mine/ Morrison Formation/ ore deposits/

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pyrobitumens/ base metals/ precious metals/  
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Moss Back Member/ Chinle Formation/ conglomerate/  
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district/ San Miguel County/ sandstone/ Eagle  
County/ carnotite/ uranium/ Paradox Valley/  
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Quartz Hill/ Meeker/ Skull Creek/ Utah/ Colorado/  
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uranium/ sandstone/ Igneous-metamorphic/ Rio  
Blanco County/ Front Range/ San Miguel County/
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Dolores County/

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 ore deposits/ geochemistry/ lithology/ Colorado  
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 uranium/ vanadium/ Colorado Plateau/ Salt Wash  
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 County/ Montrose County/ Dolores County/ Montezuma  
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 County/
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 carbonate cement/ lithology/ vanadium/uranium/  
 sandstone/ Morrison Formation/ Colorado Plateau/  
 Salt Wash Member/ Slick Rock district/ Uravan/  
 geochemistry/ ore deposits/ weathering/ alteration/  
 Mesa County/ Montrose County/ San Miguel County/  
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Colorado Plateau/ ore deposits/ intrusives/ ore sources/ sandstone/ Mesa County/ Dolores County/ Montrose County/ San Miguel County/ extrusives/ Montezuma County/ ground water/ Igneous-metamorphic/

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uranium concentration/ sediments/ geochemistry/ sandstone/ genesis/ Mesa County/ Montrose County/ San Miguel County/ Dolores County/ Montezuma County/ multiple migration-accretion/ Colorado Plateau/

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siltstone/ sandstone/ Colorado Plateau/ uranium/ cohnite/ Jurassic/ Larimer County/ Black King mine/ Mesa County/ Montrose County/ San Miguel County/ Dolores County/ Montezuma County/ mineralogy/ Morrison Formation/ Bull Canyon district/ Calamity Mesa/ Paradox Valley/ Salt Wash Member/ Front Range/

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map/ Morrison Formation/ Salt Wash Member/ sandstone/  
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exploration/ ore deposits/ Wyoming/ geology/  
sandstone/
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geology/
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mudstone/ clay mineralogy/ mixed-layered structures/  
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San Miguel County/ sandstone/

Hawkes, H. E., 1949

Colorado Plateau/ botany/ geobotany/ Garfield  
ore zones/ carnotite/ ore deposits/ Charles  
T. mine/ geology/ sandstone/ Utah/ selenium/  
Rifle mine/ Lower group mines/ Garfield mine/  
Mesa County/ Montrose County/ San Miguel County/  
Arizona/

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uranium/ Cortez quadrangle/ map/ host formations/  
sandstone/ San Miguel County/ Dolores County/  
La Plata County/ Colorado Plateau/ stratigraphy/  
Montezuma County/

Henderson, E. P., 1935

stilpnerite/ properties/ Gypsum Valley district/  
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minerals/

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corvusite/ vanadium/ San Miguel County/ Mesa  
County/ Gateway district/ Gypsum Valley district/  
Colorado/ Colorado Plateau/ sandstone/ rillandite/  
Utah/ carnotite/

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minerals/ resources/ ore deposits/ Colorado/  
New Mexico/ Montezuma County/ sandstone/ Colorado  
Plateau/ Ute Mountain Indian Reservation/

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Colorado/ vanadium/ uranium/ tungsten/ molybdenum/  
bismuth/ tantalum/ sandstone/ ore deposits/  
Colorado Plateau/

Hess, F. L., 1911

ore deposits/ Colorado/ vanadium/ sandstone/  
Colorado Plateau/ uranium/ tungsten/

Hess, F. L., 1912

Colorado/ vanadium/ uranium/ tungsten/ molybdenum/  
bismuth/ sandstone/ Colorado Plateau/ ore deposits/

Hess, F. L., 1912

Colorado/ vanadium/ uranium/ tungsten/ molybdenum/  
bismuth/ sandstone/ Colorado Plateau/ ore deposits/

Hess, F. L., 1913

Placerville district/ vanadium/ sandstone/ geology/  
San Miguel County/ Entrada Sandstone/ ore deposits/  
Colorado Plateau/

Hess, F. L., 1913

Colorado Plateau/ uranium/ vanadium/ sandstone/  
ore deposits/

Hess, F. L., 1914

geasite/ carnotite/ Colorado/ uranium/ vanadium/  
Rio Blanco County/ Eagle County/ geology/ San  
Miguel County/ Montrose County/ Moffat County/

## SANDSTONE, SILTSTONE

Routt County/ Garfield County/ Mesa County/  
Delta County/ Dolores County/ Montezuma County/  
La Plata County/ Archuleta County/ Utah/ Colorado  
Plateau/ sandstone/ ore deposits/

Hess, F. L., 1922

Colorado Plateau/ ore deposits/ resources/ radium/  
uranium/ vanadium/ Mesa County/ Montrose County/  
San Miguel County/ Dolores County/ Montezuma  
County/ sandstone/

Hess, F. L., 1925

carnotite/ vanoxite/ vanadium/ mineralogy/ sandstone/  
Rio Blanco County/ Garfield County/ Mesa County/  
Montrose County/ San Miguel County/ Dolores  
County/ Montezuma County/ La Plata County/ Colorado  
Plateau/ ore deposits/ Delta County/

Hess, F. L., 1925

Colorado/ Colorado Plateau/ uranium/ vanadium/  
sandstone/ radium/ San Miguel County/ Montrose  
County/ Mesa County/ ore deposits/ resources/

Hess, F. L., 1927

Colorado/ Colorado Plateau/ uranium/ vanadium/  
radium/ sandstone/ ore deposits/ resources/  
San Miguel County/ Montrose County/ Mesa County/

Hess, F. L., 1929

Colorado/ Colorado Plateau/ uranium/ vanadium/  
radium/ sandstone/ ore deposits/ resources/  
San Miguel County/ Montrose County/ Mesa County/

Hess, F. L., 1932

Colorado/ Colorado Plateau/ vanadium/ sandstone/  
ore deposits/ San Miguel County/ Montrose County/  
Mesa County/

Hess, F. L., 1933

bituminous substances/ uranium/ vanadium/ radium/  
gold/ silver/ molybdenum/ sediments/ Colorado  
Plateau/ sandstone/ San Miguel County/ Montrose  
County/ Mesa County/

Heyl, A. V., 1954

Montrose County/ mineralogy/ petrology/ geochemistry/  
zoning/ montroselite/ Bitter Creek mines/ corvusite/  
pascolite/ rauvite/ uraninite/ Uravan district/  
asphaltite/ hydrocarbons/ pyrobitumen/ uranium/  
thucholite/ sandstone/ Morrison Formation/ Salt  
Wash Member/ vanadium/ Colorado Plateau/ ore  
deposits/

Heyl, A. V., 1956

Uravan district/ Bitter Creek mine/ ore deposits/  
zoning/ Morrison Formation/ sandstone/ Montrose  
County/ Colorado Plateau/ uranium/ geology/  
vanadium/ mineralogy/ petrology/ geochemistry/  
rauville/ uraninite/ thucholite/ Salt Wash Member/  
corvusite/ montroselite/ pascolite/

High, T. D., 1970

uranium/ vanadium/ mines/ sandstone/ reports/  
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property/ Mesa County/ Montrose County/ San  
Miguel County/ igneous-metamorphic/ Colorado  
Plateau/

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Dolores County/ uranium/ vanadium/ sandstone/ mines/ reports/ Mesa County/ Montrose County/ San Miguel County/ Colorado Plateau/
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uranium/ vanadium/ Dolores County/ Mesa County/ reports/ Montrose County/ San Miguel County/ sandstone/ mines/ Colorado Plateau/
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uranium/ vanadium/ mapping/ geological studies/ drilling/ Dolores County/ Mesa County/ sandstone/ Colorado Plateau/ Montrose County/ San Miguel County/ Rico-Argentine district/
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Montezuma County/ Entrada Sandstone/ stratigraphy/  
Morrison Formation/ Colorado Plateau/

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Colorado/ Colorado Plateau/ sandstone/ Jurassic  
history/ stratigraphy/ paleogeography/ paleogeology/  
Morrison Formation/

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Jurassic history/ stratigraphy/ Colorado/ Colorado  
Plateau/ sandstone/ geology/ Morrison Formation/

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Mesa County/ Montrose County/ copper/ sandstone/  
Colorado Copper Company/ Colorado Plateau/

Holmes, W. H., 1878

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County/ San Miguel Mountains/ geology/ Colorado  
Plateau/ Igneous-metamorphic/ sandstone/ Sierra  
AbaJo Mountains/

Hoover, W. B., 1950

Glen Canyon Formation/ San Raphael Formation/  
correlation/ sandstone/ La Plata County/ Jurassic  
Formations/ stratigraphy/ Utah/ Colorado/ Arizona/  
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Montezuma County/ sandstone/ Colorado Plateau/  
Morrison Formation/

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transportation/ precipitation/ uranium/ vanadium/  
Colorado/ sandstone/ geochemistry/ minerals/  
Colorado Plateau/

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quadrangle/ Ute Mountains/ Morrison Formation/  
sandstone/ uranium/ vanadium/ map/ geology/  
Salt Wash Member/

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Ute Mountains/ Montezuma County/ Dolores County/  
sandstone/ Cretaceous strata/ Colorado Plateau/  
Dakota Sandstone/

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organic materials/ La Plata County/ Durango  
area/ thorium/ titanium/ Cretaceous/ Dakota  
Sandstone/ barium/ bitumens/ gold/ rare earths/  
sandstone/ transition elements/ uranium/ petrography/  
chemistry/ composition/ mineralogy/

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basin/ sandstone/ Cretaceous/ black sandstones/  
stratigraphy/ structure/ mineralogy/ placer  
deposits/ heavy minerals/ monazite/ zircon/  
ilmenite/ depositional environment/

Huff, L. C., 1954

Sage Plain area/ Utah/ Colorado/ Colorado Plateau/  
mapping/ uranium/ vanadium/ Morrison Formation/  
Salt Wash Member/ sandstone/ Dolores County/  
San Miguel County/ ore deposits/

Huff, L. C., 1955

Colorado/ Utah/ ore deposits/ Colorado Plateau/

# SANDSTONE, SILTSTONE

Dolores County/ San Miguel County/ stratigraphy/  
Salt Wash Member/ sandstone/ uranium/ vanadium/  
Sage Plain area/ Morrison Formation/

Huff, L. C., and Lesure, F. G., 1956

Sage Plain area/ Utah/ Colorado/ Colorado Plateau/  
uranium/ vanadium/ Dolores County/ San Miguel  
County/ Morrison Formation/ sandstone/ Salt  
Wash Member/ geochemistry/ Middle Montezuma  
group/ Coyote No. 1 mine/ Verdure mine/ Strawberry  
mine/ Rainbow mine/ ore deposits/ geophysical  
logs/ Lucky Boy mine/

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## FRONT RANGE

## FRONT RANGE

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igneous-metamorphic/ Front Range/ bostonite/  
porphyry/
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pitchblende/ Caribou mine/ Boulder County/ uranium/  
igneous-metamorphic/ veins/ ore deposits/ Front  
Range/
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veins/ Caribou mine/ Boulder County/ pitchblende/  
igneous-metamorphic/ monzonite/ uranium/ Front  
Range/ ore deposits/
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monzonite/ igneous-metamorphic/ ore deposits/  
Front Range/
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geology/ ore deposits/ Lawson-Dumont-Fall River  
district/ Clear Creek County/ igneous-metamorphic/  
Front Range/
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Dumont-Fall River district/ Clear Creek County/  
igneous-metamorphic/ mapping/ veins/ radioactivity/  
Front Range/
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1954  
Boulder County/ Caribou area/ pitchblende/ ore  
deposits/ geology/ igneous-metamorphic/ Belcher  
mine/ Caribou mines/ Comstock mine/ Cross mine/  
Great Northern mine/ Idaho mine/ No Name vein/  
Poorman mine/ Potosi mine/ Radium vein/ Seven-thirty  
mine/ Sherman mine/ Silver Point mine/ Socorro  
mine/ Spencer mine/ Wigwam mine/ veins/ Front  
Range/ St. Louis mine/
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1957  
Boulder County/ Caribou area/ pitchblende/ ore  
deposits/ geology/ igneous-metamorphic/ Belcher  
mine/ Caribou mines/ Comstock mine/ Cross mine/  
Great Northern mine/ Idaho mine/ No Name vein/  
Poorman mine/ Potosi mine/ Radium vein/ St.  
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Silver Point mine/ Socorro mine/ Spencer mine/  
Wigman mine/ veins/ Front Range/
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Caribou district/ Central City district/ Front  
Range/ Clear Creek County/ Gipin County/ Boulder  
County/ ore deposits/ Grand Island district/  
Jamestown district/ Lawson area/ Quartz Hill  
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mines/ Jo Reynolds mine/ Kirk mine/ Wood mine/  
pitchblende/ breccia deposits/ igneous-metamorphic/  
exploration/
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geochemistry/ leaching studies/ analytical techniques/  
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County/ Clear Creek County/ Gipin County/ Boulder  
County/ Jefferson County/ bostonite dikes/ Central  
City district/
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County/ ore deposits/ Routt County/ Jackson  
County/ El Paso County/ Park County/ Grand County/  
Front Range/ igneous-metamorphic/ Larimer County/  
Eagle County/ Summit County/ Fremont County/  
Saguache County/ Teller County/ Chaffee County/  
tectonics/ Gipin County/ Pueblo County/ Custer  
County/ Precambrian/ genesis/ structures/

## FRONT RANGE

Osterwald, F. W., 1956

veins/ structural geology/ Precambrian rocks/  
Teller County/ structural controls/ ore deposits/  
Cordilleran foreland/ Igneous-metamorphic/ Gilpin  
County/ Front Range/ tectonics/ El Paso County/  
Larimer County/ Clear Creek County/

Osterwald, F. W., 1965

ore deposits/ genesis/ veins/ mining districts/  
structural controls/ Moffat County/ pitchblende/  
conglomerate/ Front Range/ Igneous-metamorphic/  
sandstone/ Jefferson County/ Boulder County/  
Montrose County/ Clear Creek County/ Gilpin  
County/ Saguache County/ Fremont County/

Osterwald, F. W., and Dean, B. G., 1956

bibliography/ structural geology/ Gilpin County/  
Larimer County/ Boulder County/ Jefferson County/  
Clear Creek County/ Igneous-metamorphic/ sandstone/  
Front Range/ Grand County/ Jackson County/ Summit  
County/ Eagle County/ Rio Blanco County/ Garfield  
County/ Routt County/ Moffat County/ ore deposits/  
tectonics/

Osterwald, F. W., and Dean, B. G., 1958

ore deposits/ tectonics/ structural geology/  
Larimer County/ Boulder County/ Jefferson County/  
Gilpin County/ Clear Creek County/ Igneous-metamorphic/  
sandstone/ Front Range/ Grand County/ Jackson  
County/ Summit County/ Eagle County/ Rio Blanco  
County/ Garfield County/ Routt County/ Moffat  
County/

Osterwald, F. W., and Dean, B. G., 1961

Cordilleran foreland/ ore deposits/ genesis/  
structural controls/ tectonic patterns/ Front  
Range/ Denver basin/ uranium/ Igneous-metamorphic/  
Jefferson County/ Boulder County/ Clear Creek  
County/ Gilpin County/ Larimer County/

Page, L. R., 1950

Mount Antero region/ Crystal Mountain district/  
San Juan Mountains/ Chaffee County/ Larimer  
County/ helvite/ pegmatites/ beryllium/ beryl/  
Colorado Plateau/ Igneous-metamorphic/ Devils  
Hole mine/ Fremont County/ Gunnison County/  
Jefferson County/ San Juan County/ Front Range/  
aquamarine/

Page, L. R., 1950

beryllium/ beryl/ Colorado Plateau/ pegmatites/  
Larimer County/ Igneous-metamorphic/ San Juan  
County/ Devils Hole mine/ Fremont County/ Gunnison  
County/ Jefferson County/ Mount Antero/ Chaffee  
County/ aquamarine/ Front Range/ Crystal Mountain  
district/

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pegmatite/ geochemistry/ Igneous-metamorphic/  
uranium/ mineralogy/ Gunnison County/ Larimer  
County/ Chaffee County/ Fremont County/ Front  
Range/

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limestone/ Montrose County/ Jefferson County/

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arkosa/ sandstone/ shale/ geology/ uranium/  
thorium/ exploration/ Igneous-metamorphic/ San  
Miguel County/ geochemistry/ mineralogy/ conglomerate/

Pearce, Richard, 1896

ore deposits/ uraninite/ Gilpin County/ Igneous-metamorphic/  
veins/ Front Range/ Wood mine/

Pearce, Richard, 1898

uraninite/ veins/ Igneous-metamorphic/ Gilpin  
County/ Front Range/

Pearce, Richard, 1898

uraninite/ veins/ Igneous-metamorphic/ Gilpin  
County/ Front Range/ Wood mine/

Pearce, Richard, 1916

veins/ uraninite/ Igneous-metamorphic/ Gilpin  
County/ Front Range/ Wood mine/

Phair, George, 1952

ore deposits/ porphyries/ radioactivity/ Gilpin  
County/ Central City district/ pitchblende/  
Tertiary/ deposition/ Front Range/ mineralogy/  
petrology/ geochemistry/ zircon/ veins/ uranium/  
thorium/ analyses/ Quartz Hill/ Nigger Hill  
dike/ Clear Creek County/ Igneous-metamorphic/  
ore deposits/

Phair, George, 1952

Front Range/ Central City district/ ore deposits/  
Clear Creek County/ Gilpin County/ analyses/  
quartz monzonite/ Igneous-metamorphic/ Wood  
mine/ Kirk Mine/ Quartz Hill area/ pitchblende/  
Copper King mine/ Larimer County/ paragenesis/

Phair, George, 1953

Front Range/ veins/ Igneous-metamorphic/ ore  
deposits/ Central City district/ Idaho Springs  
district/ Gilpin County/ Clear Creek County/  
reserves/ Wood mine/ Kirk mine/ Bonanza mine/  
German mine/ pitchblende/ Martha E mine/

Phair, George, 1953

Front Range/ Central City district/ ore deposits/  
geochemistry/ petrology/ mineralogy/ bostonite/  
pitchblende/ Wood mine/ Kirk mine/ Igneous-metamorphic/  
Quartz Hill area/ Copper King mine/ Larimer  
County/ Jamestown district/ Boulder County/  
Chalk Mountain rhyolite/ Climax/ beta-uranophane/  
uraninite/ Lake County/ Eagle County/ Summit  
County/

Phair, George, 1953

mineralogy/ geochemistry/ Copper King mine/  
Larimer County/ pitchblende/ uraninite/ coffinite/  
Front Range/ ore deposits/ Igneous-metamorphic/

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uranium/ veins/ Igneous-metamorphic/ Front Range/  
pitchblende/ porphyries/ thorium/ ore deposits/

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age/ Clear Creek County/
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rocks/ age dates/ ore deposits/ Boulder County/
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County/ Gilpin County/ Jefferson County/ Larimer  
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basin/ Larimer County/ Boulder County/ Jefferson  
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geology/ Schwartzwalder mine/ ore deposits/  
Jefferson County/ Igneous-metamorphic/ Front  
Range/

Scott, B. C., 1957

uranium/ ore deposits/ geology/ asphaltite/  
sandstone/ faults/ thermal waters/ ground water/  
mineralization/ Dakota hogback/ structure/ Morrison  
area/ Jefferson County/ Front Range/ Dakota  
Sandstone/

Scott, R. C., and Barker, F. B., 1962

data/ uranium/ radium/ ground water/ analyses/  
Logan County/ Phillips County/ Prowers County/  
Yuma County/ Jefferson County/ Garfield County/  
Kit Carson County/ Pitkin County/ Mesa County/  
Huerfano County/ Baca County/ Montezuma County/  
Front Range/ Colorado Plateau/

Shedd, J. C., 1912

El Paso County/ mineral springs/ radioactivity/  
Manitou/ Front Range/

Sheridan, D. M., 1953

Jefferson County/ veins/ pitchblende/ Front  
Range/ uranium/ Igneous-metamorphic/ Schwartzwalder  
mine/ Mena mine/ Ladwig lease/ Golden Gate Canyon  
area/ Ralston Creek area/ mineralogy/ paragenesis/  
structure/ copper/ faults/ Ralston Buttes district/  
Ascension mine/

Sheridan, D. M., 1955

Jefferson County/ veins/ pitchblende/ Front  
Range/ uranium/ Igneous-metamorphic/ Schwartzwalder  
mine/ Mena mine/ Ladwig lease/ Golden Gate Canyon  
area/ Ralston Creek area/ mineralogy/ paragenesis/  
structure/ copper/ faults/ Ralston Buttes district/  
Ascension mine/

Sheridan, D. M., 1956

Jefferson County/ veins/ pitchblende/ Ascension  
mine/ Front Range/ uranium/ Igneous-metamorphic/  
Schwartzwalder mine/ Mena mine/ Ladwig lease/  
Golden Gate Canyon area/ Ralston Creek area/  
mineralogy/ faults/ copper/ Ralston Buttes district/

Sheridan, D. M., 1956

Jefferson County/ pitchblende/ Ralston Buttes  
district/ Front Range/ uranium/ Igneous-metamorphic/  
Schwartzwalder mine/ Mena mine/ Ladwig lease/  
Golden Gate Canyon area/ Ralston Creek area/  
mineralogy/ faults/ copper/ paragenesis/ structure/  
Ascension mine/

Sheridan, D. M., and Maxwell, C. H., 1953

Ralston Buttes district/ ore deposits/ exploration/  
Jefferson County/ veins/ pitchblende/ Front  
Range/ uranium/ Igneous-metamorphic/ Schwartzwalder  
mine/ Mena mine/ Ascension mine/ Ladwig lease/  
Golden Gate Canyon area/ Ralston Creek area/  
mineralogy/ paragenesis/ structure/ copper/  
faults/

Sheridan, D. M., and Maxwell, C. H., 1954

Jefferson County/ veins/ pitchblende/ Front  
Range/ uranium/ Igneous-metamorphic/ Schwartzwalder  
mine/ Mena mine/ Ladwig lease/ Golden Gate Canyon

area/ Ralston Creek area/ mineralogy/ paragenesis/  
structure/ copper/ faults/ Ralston Buttes district/  
Ascension mine/

Sheridan, D. M., and Maxwell, C. H., 1954

Ralston Buttes district/ ore deposits/ exploration/  
veins/ Jefferson County/ pitchblende/ Front  
Range/ uranium/ Igneous-metamorphic/ Schwartzwalder  
mine/ Ladwig lease/ Mena mine/ Ascension mine/  
Golden Gate Canyon area/ Ralston Creek area/  
mineralogy/ paragenesis/ structure/ copper/  
faults/

Sheridan, D. M., and Maxwell, C. H., 1954

Front Range/ Igneous-metamorphic/ Ralston Buttes  
district/ Jefferson County/ pitchblende/ Schwartzwalder  
mine/ Golden Gate Canyon area/ exploration/

Sheridan, D. M., Maxwell, C. H., Albee, A. L.,  
and others, 1958

Jefferson County/ veins/ pitchblende/ bedrock  
geology/ Front Range/ uranium/ Igneous-metamorphic/  
Schwartzwalder mine/ Ladwig lease/ Mena mine/  
Ascension mine/ Golden Gate Canyon area/ mineralogy/  
paragenesis/ structure/ copper/ faults/ Ralston  
Buttes quadrangle/ Ralston Buttes district/  
Ralston Creek area/

Sheridan, D. M., Maxwell, C. H., Albee, A. L.,  
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Ralston Buttes district/ ore deposits/ genesis/  
geology/ maps/ Jefferson County/ Schwartzwalder  
mine/ Mena mine/ Ascension mine/ Ladwig lease/  
structure/ Ralston Creek area/ mineralogy/ paragenesis/  
copper/ faults/ uranium/ economic geology/ production/  
Front Range/ veins/ breccia/ pitchblende/ gneiss/  
pegmatite/ Igneous-metamorphic/ Golden Gate  
Canyon area/

Sheridan, D. M., Maxwell, C. H., Albee, A. L.,  
and others, n.d.

Jefferson County/ Juanita Arch quadrangle/ veins/  
pitchblende/ Ralston Buttes district/ Front  
Range/ uranium/ Igneous-metamorphic/ Schwartzwalder  
mine/ Ascension mine/ Ladwig lease/ Mena mine/  
Golden Gate Canyon area/ Ralston Creek area/  
mineralogy/ paragenesis/ structure/ copper/  
faults/

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Front Range/ ore deposits/ exploration/ Clear  
Creek County/ Gilpin County/ Igneous-metamorphic/

Sims, P. K., 1953

ore deposits/ Central City district/ Georgetown  
district/ Front Range/ Clear Creek County/ Gilpin  
County/ Igneous-metamorphic/

Sims, P. K., 1954

veins/ Igneous-metamorphic/ Clear Creek County/  
Gilpin County/ Front Range/ ore deposits/

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Front Range/ ore deposits/ mineralogy/ petrology/  
Igneous-metamorphic/ Gilpin County/ Clear Creek  
County/

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paragenesis/ structure/ pitchblende/ veins/ Igneous-metamorphic/ Gilpin County/ uranium/ mineralogy/ Front Range/ ore deposits/ Buckhorn mica mine/ Bucky claim/ Opportunity No. 1 claim/ Trio claims/ White Spar claim/ Quartz Creek district/ uranium/ thorium/ Colorado/ gneiss/ origin/ Sharon Springs Member/ Hermosa Formation/ Paradox Member/
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## Appendixes



# Appendix 1

## CHRONOLOGY

### AEC Domestic Uranium Raw Materials Program

1947-1965

The history of the AEC Domestic Uranium Raw Materials Program can be confusing, especially to those new in uranium exploration and development. For this reason we are including a chronology, 1947-1965, prepared as an AEC handout by Nellson B. O'Rear, Public Information Officer, Grand Junction Office, U.S. Atomic Energy Commission, May 31, 1966. We hope that this chronology will help clarify some of the questions regarding procurement programs, withdrawals, bonus payments, various circulars, and miscellaneous events through the years.

#### 1947

May 28

Concentrate purchase contract executed with Vanadium Corporation of America for Naturita, Colo., processing mill. Deliveries to AEC started late in 1947. First mill contract.

October 2

Concentrate purchase contract with U.S. Vanadium (later Union Carbide) for processing mill at Rifle, Colo. First deliveries to AEC in December, 1947.

December

Colorado Raw Materials office established in Grand Junction, Colorado, to inaugurate AEC procurement program.

#### 1948

April 8

Commission approves plan for expanding uranium production in Colorado Plateau region, including operation of a Government-owned processing mill at Monticello, Utah.

April 11

Domestic Uranium Program Circular 1 promulgated by AEC. Guaranteed for 10 years a minimum price for certain high grade uranium ores other than carnotite or roscoelite type ores. (Terminated April 11, 1958)

April 11

Domestic Uranium Program Circular 2 promulgated, offering a bonus of \$10,000 for delivery of 20 short tons of uranium-bearing ores or mechanical concentrates assaying 20 percent or more  $U_3O_8$  from any single mining location, lode, or placer, which had not previously been worked for uranium. Did not apply to carnotite or roscoelite type ores. Offer expired April 11, 1958. This bonus collected only once in 10 years.

April 11

Domestic Uranium Program Circular 3 promulgated. Provided minimum prices, specifications and conditions under which AEC would purchase carnotite and roscoelite type ores delivered at Monticello, Utah, buying station.

June 1

Domestic Uranium Program Circular 4 promulgated. Provided for payment of haulage and development allowances.

July 1

54,000 tons of ore produced in western states in FY 1948; AEC purchased 110 tons of  $U_3O_8$  in FY 1948 at cost of \$1,700,000 an average price per pound, \$7.14.

December 31

In Calendar Year 1948, U.S. Geological Survey drilled 130,000 feet of holes in AEC exploration program; estimate private industry drilled 80,000 feet.

#### 1949

February 1

Domestic Uranium Program Circular 5 promulgated. Consolidated Circulars 3 and 4; Increased price of  $U_3O_8$  by fifty cents per pound, plus premium prices and other provisions.

February 17

Contract with Vanadium Corporation of America to purchase  $U_3O_8$  from Durango, Colo., processing mill. (First deliveries to AEC in August, 1949).

April 13

Contract with U.S. Vanadium (later Union Carbide) to purchase concentrates from Uravan, Colo., mill.

May 17

First lease issued in Mineral Leasing program for mining of uranium ore on AEC-controlled lands which had been explored by AEC and certain ore reserves established. This program, authorized by the 1946 Atomic Energy Act, continued from 1949 to 1962, during which a total of 49 leases were executed between the AEC and individuals or companies. The lessees paid the Government a royalty fee for the uranium mined. (See March 31, 1962, for ore mined and fees paid Government).

May 17

Contract with VCA to purchase concentrates from mill at White Canyon, Utah. (Power plant operation). This mill went into production in 1950 and shut down in 1953 after delivering more than 125,000 pounds of  $U_3O_8$  to AEC.

July 10

AEC announces types of high-lime uranium-vanadium ores to be purchased at Monticello, Utah. (Differed from Circular 5).

August 23

AEC contracts with Galigher Company to renovate Monticello, Utah, mill (from War Assets Admin.) and operate to produce  $U_3O_8$ . Six months later the mill was producing concentrates.

December 31

In exploration program in CY 1949, AEC drilled 70,000 feet of holes and the USGS drilled 223,000 feet, for total Government drilling of 293,000 feet. Estimate private industry drilling at 120,000 feet.

1950

January

First concentrates produced by Government-owned processing mill at Monticello, Utah.

March

First concentrates received by AEC from Rifle, Colorado mill.

March 12

Marysvale, Utah, AEC ore-buying station established and schedules given.

July 1

FY 1950 ore production, 230,000 tons. FY 1950  $U_3O_8$  purchased by AEC, 320 tons at cost of \$5,800,000; average cost per pound, \$8.92.

July 10

Concentrate purchase contract executed by AEC and Climax Uranium Company for mill at Grand Junction, Colorado.

December 31

In exploration program in CY 1950, AEC drilled 156,000 feet of holes, USGS drilled 212,000, for Government total of 368,000 feet. Estimate private drilling at 410,000 feet.

1951

March 1

Domestic Uranium Program Circular 5, Revised, promulgated. Extended Circular 5 to March 31, 1962, and increased the price payable for  $U_3O_8$  in certain ores.

March 16

AEC restored 42 square miles in Colorado to public domain (through BLM) and withdrew another 86 square miles for exploration program.

March 29

AEC offers to buy copper-bearing uranium ores at Marysvale, Utah, and Monticello, Utah.

June 29

Domestic Uranium Program Circular 6 promulgated. Provided bonus payments for initial and certain other production of uranium ores to assist development of new sources. This known as "the bonus program".

June

AEC receives first concentrates from Climax Uranium mill at Grand Junction, Colorado.

July 1

FY 1951 ore production, 290,000 tons. FY 1951  $U_3O_8$  purchased by AEC, 630 tons at cost of \$12,800,000; average cost per pound, \$10.01.

August 22

AEC asked withdrawal of 66 square miles of public land in Grand County, Utah, for exploration program.

October 25

AEC executes contract with Vitro Corporation of America to buy concentrates from mill at Salt Lake City, Utah. (First  $U_3O_8$  delivered to AEC later in 1951).

December 27

AEC and the Anaconda Company execute contract for concentrates to be produced at mill at Bluewater, New Mexico (Grants area).

December 31

In CY 1951, AEC drilled 354,000 feet in exploration program, and USGS drilled 374,000 feet, for total Government drilling of 728,000 feet. Estimate private industry drilling at 700,000 feet.

1952

January 17

Bluewater, New Mexico, ore-buying station opened by Anaconda for AEC and buying schedules announced.

January 30

AEC announces over a quarter million dollars paid out in initial production bonus program in 1951. (First payments under Circular 6, promulgated June 29, 1951)

June 8

Grants, New Mexico, ore-buying station opened by AEC and buying schedules given.

July 1

In FY 1952, total of \$607,232 paid by AEC in initial production bonus program.

July 1

FY 1952 ore production, 390,000 tons. FY 1952 AEC concentrate purchases, 830 tons at cost of \$18,400,000; average cost per pound, \$11.19.

November 30

Grand Junction Operations Office established to consolidate AEC's exploration and procurement programs on the Colorado Plateau. Formerly known as Colorado Raw Materials Office. Operations Office status ranked it with major AEC field installations throughout U.S.

November 30

Edgemont, South Dakota, ore-buying station established by AEC and schedule published.

December 31

First report on access road program made by AEC, showing construction started on 428 miles of roads with total costs to be \$1,782,802.

December

CY 1952, In exploration program AEC drilled 482,000 feet and USGS 580,000 feet, for Government total of 1,062,000 feet. Estimate private industry drilled 600,000 feet.

1953

January 11

AEC announces issuance of report on uranium sampling practices on Colorado Plateau prepared by Colorado School of Mines Research Foundation.

#### April 12

AEC announces policy of posting results of airborne surveys of radioactivity on the 15th of each month in public places throughout the West. (This airborne program continued until 1956 when it was no longer necessary. AEC had as many as a dozen planes flying at one time).

#### July 1

FY 1953 ore production, 610,000 tons. FY 1953 concentrates purchased by AEC, 990 tons at cost of \$24,200,000, with average price per pound of \$12.30.

#### August 17

AEC signs contract with Kerr-McGee Oil Industries, Inc., to buy concentrates from Shiprock, New Mexico, mill.

#### September

Anaconda mill at Bluewater, New Mexico, delivers first concentrate to AEC.

#### September 23

AEC announces extension of Circular 5, Revised, through March 31, 1962, and extension of Circular 6 (bonus) from February 24, 1954, to February 28, 1957.

#### November 17

AEC reports initial production bonus payments total 2 1/2 million dollars since start March 1, 1951.

#### December 31

In CY 1953, AEC requested seven separate public land withdrawals for the exploration program.

#### December 31

In exploration program, AEC drilled 600,000 feet and USGS drilled 715,000 feet, for total Government drilling of 1,315,000 feet. Estimate private industry drilling at 2,700,000 feet.

### 1954

#### January 29

Domestic Uranium Program Circular 7 promulgated. Provided for AEC to issue mining leases on certain public lands. Terminated on December 18, 1954, with passage of Public Law 585.

#### February 23

AEC announces bonus payments over \$3 million since the beginning on March 1, 1951. Current rate of payments at \$175,000 a month.

#### March 30

AEC announces ore-crushing and sampling plant to be built at Moab, Utah.

#### May 5

Contract signed for expansion of Government-owned Monticello, Utah, processing mill to treat refractory ores.

#### May 9

Provisional ore-buying station established by AEC at Moab, Utah.

#### May 18

Contract signed for expansion of Anaconda's Bluewater, New Mexico, mill to treat sandstone gangue ores.

#### July 1

FY 1954 ore production, 914,000 tons. FY 1954 concentrate purchases by AEC, 1,450 tons costing \$35,600,000; average price per pound, \$12.25.

#### July 7

AEC announces ore-buying station to open in White Canyon, Utah, in August, 1954.

#### July 20

AEC announces progress in construction of ore-testing pilot plant at Grand Junction Operations Office. This plant began operations in July, 1954 and ran continuously until June of 1958. Approximately 30,000 tons of ore from 40 different mines were tested in this plant.

#### September 15

Another expansion of Anaconda's Bluewater, New Mexico uranium processing plant announced.

#### October 12

AEC announces plans to establish ore-buying station at Riverton, Wyoming. (Opened for business March 1, 1955).

#### October 25

Expansion of Climax Uranium Company mill at Grand Junction announced.

#### November 1

Shiprock, New Mexico processing mill at Kerr-McGee Oil Industries goes into operation.

#### November 30

Capacity increased at Naturita, Colorado processing mill operated by Vanadium Corporation of America.

#### December 31

In CY 1954, approximately 133,000 acres in Colorado and Utah restored to public domain at request of AEC. Had been withdrawn in exploration program.

#### December 31

In CY 1954, in exploration program, AEC drilled 613,000 feet of holes and the USGS drilled 497,000 feet, for Government total of 1,110,000. Estimate private industry drilled 3,500,000 feet.

#### December 31

In access road program in CY 1954, projects on 72 1/2 miles of roads started at total cost of \$287,732.

### 1955

#### January

First concentrate received from Shiprock, New Mexico mill of Kerr-McGee.

#### March 1

Announce ore-buying station to open at Globe, Arizona. (Opened July 5, 1955).



March 5

Announce ore-buying station for Green River, Utah. (cancelled later).

March 30

AEC announces plans to make tests on uranium-bearing lignite, but no buying program at that time.

April 8

AEC announces bonus payments pass \$5 million mark since start of program March 1, 1951. To date, 2,889 payments totaling \$5,001,019. Rate of payments per month, \$195,000.

April 29

Contract executed for purchase of concentrates from Edgemont, South Dakota, mill operated by Mines Development, Inc.

June 17

AEC executed contract with Uranium Reduction Company for Moab, Utah, processing mill. (Later acquired by Atlas Corporation).

July 1

FY 1955 ore production, 1,306,000 tons. FY 1955 concentrate purchases, 2,140 tons at cost of \$53,600,000; average price per pound, \$12.51.

July 15

Tuba City, Arizona, mill contract signed with Rare Metals Corp. (Later, El Paso Natural Gas Company).

August 6

Announce expansion of U.S. Vanadium (later Union Carbide) processing mill at Uravan.

August 10

Executed contract with Trace Elements Corp., for mill at Maybell, Colorado. (Later, Union Carbide).

November 29

Contract with Continental Uranium, Inc., for mill at LaSal, Utah. (Never built and contract cancelled).

December 31

In CY 1955, AEC requested restoration of approximately 84,000 acres of public land in Wyoming, Colorado and Utah.

December 31

In CY 1955 exploration program, AEC drilled 316,000 feet of holes and USGS drilled 213,000, for Government total of 529,000 feet. Estimate of private drilling was 5,500,000 feet.

December 31

In CY 1955, access road projects totaling 110 miles and costing \$1,874,184 started under AEC auspices.

1956

January 12

AEC to open ore-buying station at Tuba City, Arizona.

January 15

AEC to open ore-buying station at Grants, New Mexico. (Began receiving ore July 5, 1956).

March 27

National Lead Company gets contract to operate Government-owned processing mill at Monticello, Utah, succeeding the Galigher Company.

May 24

AEC announces uranium procurement program for 1962-1966 period and extends initial production bonus to March 31, 1960.

June 2

Contract with Atomic Fuel Extraction Corporation for mill at Bedrock, Colorado. (Mill never built and contract cancelled).

June 8

Contract with Union Carbide Nuclear Company, for new mill at Rifle, to replace old one.

June 23

Reorganization of field activities of Division of Raw Materials under which GJ00 would direct all AEC exploration activities west of the Mississippi River, in addition to continuing the ore and concentrate procurement programs in same geographical area.

July 1

FY 1956 ore production, 2,185,000 tons. FY 1956 concentrate purchases, 4,200 tons at cost of \$97,800,000; average cost per pound, \$11.63.

July 1

Bonus payments FY 1956 total \$2,237,949.

July

First concentrate received from Tuba City, Arizona, mill operated by El Paso.

July 13

Domestic Uranium Program Circular 8 effective. Established regulations governing the issuance of leases for mining uranium deposits on certain withdrawn public lands. (Formalized the Mineral Leasing program in operation since 1949 under the Atomic Energy Act of 1946).

July 17

Contract with Texas-Zinc Minerals Company for processing mill at Mexican Hat, Utah.

August

First concentrates received from mill at Edgemont, So. Dakota, operated by Mines Development, Inc.

August 8

Contract executed with Dawn Mining Company for mill at Ford, Washington.

August 15

Contract executed with Lost Creek Oil & Uranium Co., (later Western Nuclear) for mill in Fremont County, Wyoming.

August 16

AEC revised procedures for releasing airborne survey maps.

August 22

Domestic Uranium Program Circular 5, Revised, is modified to eliminate requirements for proof of development allowance funds.

October 18

New AEC-Vitro contract increases capacity of mill and extends contract from December, 1958, to March, 1962.

October 24

Moab, Utah, ore-buying station to go on standby basis November 1, 1956.

November

First concentrate from URC mill at Moab, Utah, received by AEC.

November 11

Contract with Trace Elements Corp., for Maybell mill (supersedes contract executed in August, 1955). Union Carbide later bought out Trace Elements.

November 15

Contract executed for Gas Hills, Wyoming, processing mill with Lucky Mc Uranium (later Utah Construction and Mining Company).

November 16

Contract with Gunnison Mining Co., for processing mill at Gunnison, Colorado.

December 14

AEC announces plans for provisional ore-buying station at Crooks Gap, Wyoming.

December 20

AEC contract with Homestake-New Mexico Partners for processing mill at Grants, New Mexico.

December 31

In CY 1956, AEC initiated 8 separate actions to restore 148,000 acres to the public domain in Colorado, Utah and New Mexico.

December 31

In CY 1956, AEC drilled 14,000 feet and USGS drilled 26,000 feet in exploration program. Estimate private industry drilled 8,750,000 feet. (The final AEC drilling contract was let in 1956; private industry had taken over and there was no need for further Government drilling.)

December 31

In CY 1956, access road program saw start of work on 48 miles of roads at total cost of \$559,381.

1957

January 1

Globe, Arizona, AEC ore-buying station to close June 30, 1957.

February 5

Marysville, Utah, AEC ore-buying station to close March 15, 1957.

March 4

Domestic Uranium Program Circular 9 promulgated. Deals with prospecting permits on certain lands.

April 2

AEC requests restoral to public domain of about 95,000 acres in Colorado.

April 24

AEC signs contract with Homestake-Sapin Partners for mill at Grants, New Mexico.

May 3

AEC signs contract with Kermac Nuclear Fuels Corporation for processing mill at Grants, New Mexico.

May 23

AEC signs contract with Cotter Corporation to purchase concentrates from pilot plant at Canon City, Colorado.

July 1

FY 1957 ore production, 3,303,000 tons. FY 1957 AEC concentrate purchases, 7,580 tons at cost of \$159,600,000; average cost per pound, \$10.53.

July 1

Bonus payments by AEC in Fiscal Year 1957 totaled \$2,982,965.

July 15

AEC announces White Canyon, Utah, buying station to close July 31, 1957.

July 19

AEC announces discontinuance of ore buying at Crooks Gap, Wyoming.

August

First concentrates received by AEC from Western Nuclear, Inc., mill in Wyoming.

September

First concentrate received by AEC from Dawn Mining Company mill at Ford, Washington.

September 17

AEC signs contract with Phillips Petroleum Company for processing mill at Grants, New Mexico.

October 28

Address by Director, Division of Raw Materials, before Atomic Industrial Forum in New York City in which it was stated that "We have arrived at the point where it is no longer in the interest of the Government to expand the production of uranium concentrate."

November

First concentrate received by AEC from Texas-Zinc mill at Mexican Hat, Utah.

November 18

AEC signs contract with Lakeview Mining Company for processing mill at Lakeview, Oregon.

December 4

AEC signs contract with Fremont Minerals (Later, Susquehanna-Western, Inc.) for a mill at Riverton, in Fremont County, Wyoming.

December

First concentrate received by AEC from Maybell, Colo., processing mill owned by Union Carbide.

December 5

Reorganization of the Grand Junction Operations Office affecting units responsible for programs for the evaluation of source material resources, uranium ore procurement, mining incentives, and the acquisition and production of uranium concentrates.

December 31

CY 1957, there was no AEC or USGS exploratory drilling. It was estimated that private industry drilled 9,200,000 feet.

December 31

Access road program in CY 1957 saw projects begun on 30 miles of roads at total cost of \$1,483,976.

1958

January 24

Riverton, Wyoming, AEC ore-buying station closed.

March

First concentrate received by AEC from Utah Construction & Mining Company mill in Wyoming.

April 2

AEC announces program modification to permit a limited expansion of the domestic uranium industry by providing a market for certain ore reserves developed prior to November 1, 1957.

April 24

AEC requests restoral to public domain of 21,440 acres in Utah.

April 28

Lisbon Uranium Company of Salt Lake City collects the \$10,000 bonus under Circular 2 only two days before the circular expired on April 11.

May 8

AEC announces plan to permit private sales of uranium.

July 1

FY 1958 ore production, 4,416,000 tons. FY 1958 AEC concentrate purchases, 10,250 tons at cost of \$196,000,000; average cost per pound, \$9.57.

July 1

FY 1958 bonus payments total \$2,040,118.

August

First concentrate received from Cotter pilot plant at Canon City, Colorado.

August

First concentrate received by AEC from Phillips Petroleum Company mill at Grants, New Mexico.

August 6

Texas-Zinc Minerals contract for Mexican Hat mill extended from March, 1962, to December 31, 1966.

August 27

AEC announces discontinuance of ore buying at Grants, New Mexico, station.

September

AEC receives first concentrate from Homestake-Sapin mill at Grants, New Mexico.

November 24

AEC announces modification of procurement program, establishing November 24, 1958, as cutoff date for eligible ores from which concentrates could be derived for sale to Government in 1962-66 period. (Allocation system also established later by AEC as part of this program).

December

AEC receives first concentrates from Kermac processing mill at Grants, New Mexico.

December 31

AEC estimates private industry drilled 7,300,000 feet of exploratory holes. (AEC and USGS had discontinued exploratory drilling).

1959

January

First concentrate received from Susquehanna-Western mill at Riverton, Wyoming.

February 27

AEC contract with Western Nuclear extended to December 31, 1966, and capacity of mill increased.

April 10

AEC signs contract with Federal-Radrock-Gas Hills Partners for processing mill in Fremont County, Wyoming.

May 1

AEC extends contract with Lucky Mc Uranium Corp., (later, Utah Construction & Mining) from July 1, 1959, to December 31, 1966.

May 9

AEC announces Government-owned processing mill at Monticello, Utah, will be closed January 1, 1960.

May 13

AEC signs contract with Globe Mining Co., (later, Union Carbide) for new processing mill in Natrona County, Wyoming.

May 14

Initial production bonus payments to March 31, 1959, total \$14,327,200 on 1,015 certified properties under Circular 6.

May 18

AEC requests ore reserve data by August 1, 1959, under terms of November 24, 1958, announcement. (Deadline later extended to October 1, 1959).

July 1

FY 1959 uranium ore production, 6,117,000 tons. FY 1959, AEC bought 15,160 tons of U<sub>3</sub>O<sub>8</sub> at cost of \$280,500,000; average price per pound, \$9.25.

August 3

AEC contract with Uranium Reduction (later Atlas) amended and extended to December 31, 1966.

November 24

AEC contract with Kerr-McGee (Shiprock mill) extended to June 30, 1965.

December 1

AEC estimates domestic recoverable uranium ore reserves at 88,900,000 tons.

December 11

AEC contract with Anaconda Company for Bluewater, New Mexico mill extended to December 31, 1966.

December 17

Copper concentrate purchase contract extended to March 1, 1960. (Pilot plant enlarged to full scale mill).

December

First concentrate delivered to AEC from Federal processing mill in Wyoming.

1960

January 1

Government-owned uranium processing mill at Monticello, Utah, is closed.

February 1

First concentrate received by AEC from Globe mill in Natrona County, Wyoming.

March 29

AEC contract with Phillips Petroleum Co., amended to provide for deferral of 1,000,000 pounds of  $U_3O_8$  to the 1962-1966 period.

March 31

Initial production bonus program (Circular 6) terminates. From beginning March 1, 1951, to date, total of approximately \$17,700,000 paid on 1,281 certified properties.

April 26

Dawn Mining Co. processing contract extended to December 31, 1966, from March 31, 1962.

May 27

AEC sold 1,581,000 pounds of vanadium pentoxide to Vanadium Corporation of America for \$1 per pound.

July 1

In FY 1960, uranium ore production, 7,606,309 tons. In FY 1960, AEC bought 16,403 tons of  $U_3O_8$  at cost of \$287,140,064; average price per pound, \$8.75.

July 25

AEC signs  $U_3O_8$  purchase contract with Susquehanna-Western, Inc., for mill at Falls City, Texas; runs to December 31, 1966.

July 27

AEC-Homestake-Sapin contract extended from April 1, 1960, to December 31, 1966.

August 12

AEC signs contract with Petrotomics Company to purchase concentrate from Shirley Basin (Wyo.) ores. (Mill built later by Petrotomics).

September 22

AEC-Climax contract extended to December 31, 1966, from August 1, 1960.

November

Lakeview Mining Co., processing mill at Lakeview, Oregon, closed. Assets acquired by Kermac.

1961

January 4

AEC-Susquehanna-Western contract for Riverton mill extended from June 1, 1960, to December 31, 1966.

February 2

AEC sold 1,139,900 pounds of vanadium pentoxide to private industry firms for \$1,152,756.

February 13

AEC exempts uranium miners from source material license rules.

February 21

Uranium mineral belt policy statement issued. Established historical production rate as basis for allocations.

March 21

AEC extends contract with Trace Elements (unit of Union Carbide) from March 31, 1962, to December 31, 1966.

May 1

AEC-Union Carbide Corporation contract for Rifle and Uravan mills extended from March 31, 1962, to December 31, 1966.

May 22

AEC-VCA contract for Durango mill extended from March 31, 1962, to December 31, 1966.

June

First concentrate received by AEC from Susquehanna-Western mill at Falls City, Texas.

July 1

FY 1961, uranium ore production 8,300,198 tons. (Peak year). FY 1961, AEC bought 17,671 tons of  $U_3O_8$  at a cost of \$299,340,000. (Peak year). Average cost per pound, \$8.47.

August

Grand Junction Operations Office changed to Grand Junction Office.

August 16

AEC-Kerr-McGee Shiprock mill contract extended from June 30, 1965, to December 31, 1966.

November 9

AEC modifies contract with Homestake-Sapin Partners to replace prior existing contracts with Homestake-Sapin Partners and Homestake-New Mexico closed in April, 1962.

1962

March 14

AEC announces Monticello, Utah, ore-buying station to close March 31, 1962.

March 19

AEC-Mines Development contract for Edgemont mill extended from September 1, 1961, to December 31, 1966.

March 31

Termination of Domestic Uranium Program Circular 5, Revised, which provided for minimum ore prices, premium prices, haulage and development allowances, etc.

March 31

Last ML lease (Mineral Leasing program) expires. Between 1949 and 1962, a total of 49 such leases executed, with a peak 30 active leases operating in 1954. Total ore production during program was 1,251,971 tons of ore averaging 0.29 percent  $U_3O_8$  and yielding 7,261,000 pounds of  $U_3O_8$ . The ore also yielded 40,824,000 pounds of vanadium ( $V_2O_5$ ). The Government received \$5,890,391 in royalties during the program.

1962

April

AEC receives first concentrates from Perotomics Company mill in Wyoming's Shirley Basin area.

April

Gunnison Mining Company, mill at Gunnison, Colorado, closed and assets acquired by Kermac.

April 9

AEC extends concentrate contract with Vitro, Salt Lake City, from March 31, 1962 to December 31, 1963.

June 29

AEC relaxes restrictions for small mines producing less than 20,000 pounds of  $U_3O_8$  for year.

July 1

FY 1962, uranium ore production, 7,965,291. FY 1962, AEC bought 17,248 tons of  $U_3O_8$  at a cost of \$281,180,000; average price per pound, \$8.00

August 18

AEC announces assignment of Uranium Reduction Company contract (Moab, Utah, mill) to Atlas Corporation.

November 17

AEC announces domestic uranium procurement program through December 31, 1970. (stretch-out program).

November 19

AEC-El Paso contract for Tuba City, Arizona, mill extended from September 30, 1962, to December 31, 1966.

1963

February 25

AEC transfers Phillips processing mill contract to United Nuclear Corporation. Phillips mill closed March, 1963, and United Nuclear ores tolled through Homestake-Sapin mill in Grants, New Mexico, area.

March

VCA's processing mill at Durango, Colorado, closed. VCA acquired Kerr-McGee mill at Shiprock, New Mexico. The AEC-Kerr-McGee contract assigned to VCA for Shiprock mill.

May

Susquehanna-Western processing mill at Riverton, Wyoming, closed and arrangements made to toll some ores through Federal mill.

July 1

FY 1963, uranium ore production, 6,435,359 tons. FY 1963, AEC bought 15,760 tons of  $U_3O_8$  at cost of \$246,210,000; average price per pound, \$8.00.

July 12

AEC announces appointment of Rafford L. Faulkner as Director of the Division of Raw Materials to succeed Jesse C. Johnson, retired.

July 25

AEC-Vitro contract for Salt Lake City mill extended from December 31, 1963, to December 31, 1966.

July 31

AEC approves consolidation of contracts of Atlas Corporation (Moab mill) and Texas-Zinc Minerals (Mexican Hat mill).

December 27

AEC announces signing of first stretch-out contract under the November 17, 1962 announcement with the Anaconda Company for the processing mill at Bluewater, New Mexico. Anaconda deferred approximately 3,000,000 pounds of  $U_3O_8$  from the 1962-1966 period to 1967 and 1968.

1964

January 10

AEC announces uranium procurement program not affected by fissionable materials cutback; procurement commitments through 1970 to be carried out.

March 13

Second stretch-out contract signed with Western Nuclear for processing mill in Wyoming. Western Nuclear deferred approximately 2,500,000 pounds of  $U_3O_8$ .

May 13

Third stretch-out contract signed with Union Carbide Corp., for processing mill in Wyoming, formerly Globe Mining Co. Union Carbide deferred approximately 758,000 pounds of  $U_3O_8$ .

July 1

FY 1964 uranium ore production, 5,430,471 tons. FY 1964, AEC bought 12,583 tons of  $U_3O_8$  at cost of \$201,370,000; average price per pound, \$8.00

July 2

Fourth stretch-out contract signed with Utah Construction & Mining Co., for processing mill in Wyoming. Utah deferred approximately 2,100,000 pounds of  $U_3O_8$ .

August 28

Fifth stretch-out contract signed with Kermac Nuclear Fuels Corp., for mill at Grants, New Mexico. Kermac deferred approximately 6,000,000 pounds of  $U_3O_8$ .

December 10

Sixth stretch-out contract signed with Federal-Radorock-Gas Hills Partners for mill in Wyoming. Federal deferred approximately 1,400,000 pounds of  $U_3O_8$ .

1965

January 28

Seventh stretch-out contract signed with Federal-Radorock-Gas Hills Partners for mill in Wyoming. Federal deferred approximately 1,400,000 pounds of  $U_3O_8$ .

February

Cotter Corporation processing mill at Canon City, Colo., closed upon expiration of AEC contract.

June

Dawn Mining Company mill at Ford, Washington closed.

June 23

Eighth stretch-out contract signed with Homestake-Sapin Partners for mill at Grants, New Mexico. Homestake-Sapin deferred approximately 4,100,000 pounds of  $U_3O_8$ .

July 1

FY 1965 uranium ore production, 4,896,239 tons. FY 1965, AEC bought 11,819 tons of  $U_3O_8$  at cost of \$181,100,000; average price per pound, \$8.00.

July 27

AEC-Vitro contract for Salt Lake City mill terminated at request of Vitro because of declining ore production in district.

August 5

Ninth stretch-out contract signed with United Nuclear Corp., operators in Grants, New Mexico, area. United Nuclear deferred approximately 3,800,000 pounds of  $U_3O_8$ . United Nuclear had choice of operating own mill or tolling through Homestake-Sapin mill. (At end of 1965, UN was tolling through Homestake.)

October 28

Tenth stretch-out contract signed with Union Carbide Corp., for processing mills at Uravan and Rifle, Colorado. Carbide deferred approximately 2,520,000 pounds of  $U_3O_8$ .

November 26

Eleventh and last stretch-out contract signed with Vanadium Corporation of America for mill at Shiprock, New Mexico. VCA deferred approximately 867,000 pounds of  $U_3O_8$ .

Summarizing the stretch-out program, AEC announced that in the eleven contracts executed, about 15,300 tons of  $U_3O_8$  had been deferred from the 1962-1966 period for delivery in 1967 and 1968 at \$8 per pound, and that the AEC expected to buy an additional 15,300 tons in 1969 and 1970 at an average price within the range of \$5.50 to \$6.00 per pound.

NOTE: This chronology of the Domestic Uranium Raw Materials program, 1947-1965, prepared by Neilsen B. O'Rear, Public Information Officer, Grand Junction Office, U.S. Atomic Energy Commission. Work was completed May 31, 1966.



## Appendix 2

### CHEMICAL CLASSIFICATION OF THE URANIUM AND THORIUM MINERALS

(From Frondel, J. W. et al, 1967, Glossary of Uranium- and Thorium-Bearing Minerals, U.S. Geological Survey Bulletin 1250, 69 p.)

#### Arsenates:

- Abernathylite  $K_2(UO_2)_2(AsO_4)_2 \cdot 6H_2O$   
Arsenuranylite  $Ca(UO_2)_4(AsO_4)_2(OH)_4 \cdot 6H_2O$   
Hallimondite  $Pb_2(UO_2)(AsO_4)_2$   
Heinrichite  $Ba(UO_2)_2(AsO_4)_2 \cdot 10-12H_2O$   
Hügelite  $Pb_2(UO_2)_3(AsO_4)_2(OH)_4 \cdot 3H_2O$   
Kahlerite  $Fe(UO_2)_2(AsO_4)_2 \cdot nH_2O$   
Metaheinrichite  $Ba(UO_2)_2(AsO_4)_2 \cdot 8H_2O$   
Metakahlerite  $Fe(UO_2)_2(AsO_4)_2 \cdot 8H_2O$   
Metakirchheimerite  $Co(UO_2)_2(AsO_4)_2 \cdot 8H_2O$   
Metanovacekite  $Mg(UO_2)_2(AsO_4)_2 \cdot 4H_2O$   
Meta-uranospinite  $Ca(UO_2)_2(AsO_4)_2 \cdot 8H_2O$   
Metazeunerite  $Cu(UO_2)_2(AsO_4)_2 \cdot 8H_2O$   
Novacekite  $Mg(UO_2)_2(AsO_4)_2 \cdot 8-10H_2O$   
Paulite  $HA(UO_2)_4(AsO_4)_4 \cdot 16H_2O(?)$   
Sodium uranospinite  $(Na_2, Ca)(UO_2)_2[As, P]O_4]_2 \cdot 5H_2O$   
Troegerite  $H_2(UO_2)_2(AsO_4)_2 \cdot 8H_2O$   
Uranospathite  $Cu(UO_2)_2(AsO_4, PO_4)_2 \cdot 11H_2O(?)$   
Uranospinite  $Ca(UO_2)_2(AsO_4)_2 \cdot 10H_2O$   
Walpurgite  $Bi_4(UO_2)(AsO_4)_2O_4 \cdot 3H_2O$   
Zeunerite  $Cu(UO_2)_2(AsO_4)_2 \cdot 10-12H_2O$

#### Carbonates:

- Andersonite  $Na_2Ca(UO_2)(CO_3)_3 \cdot 6H_2O$   
Bayleyite  $Mg_2(UO_2)(CO_3)_3 \cdot 18H_2O$   
Liebigite  $Ca_2(UO_2)(CO_3)_3 \cdot 10H_2O$   
Mackelveyite Near  $Na_2Ba_4Ca(Y, U)_2(CO_3)_9 \cdot 5H_2O$   
Metazellerite  $Ca(UO_2)(CO_3)_2 \cdot 3H_2O$   
Rabbitite  $Ca_3Mg_3(UO_2)_2(CO_3)_6(OH)_4 \cdot 18H_2O$



Rutherfordine  $(\text{UO}_2)\text{CO}_3$

Schroëckingerite  $\text{NaCa}_3(\text{UO}_2)(\text{CO}_3)_3(\text{SO}_4)\text{F} \cdot 10\text{H}_2\text{O}$

Sharplite  $(\text{UO}_2)(\text{CO}_3) \cdot \text{H}_2\text{O}$  or  $6\text{UO}_3 \cdot 5\text{CO}_2 \cdot 7\text{H}_2\text{O}$

Studtite Hydrated carbonate of U and Pb.

Swartzite  $\text{CaMg}(\text{UO}_2)(\text{CO}_3)_3 \cdot 12\text{H}_2\text{O}$

Thorbastnaesite  $\text{Th}(\text{Ce}, \text{Ca})(\text{CO}_3)_2\text{F}_2 \cdot 3\text{H}_2\text{O}$

Voglite  $\text{Ca}_2\text{Cu}(\text{UO}_2)(\text{CO}_3)_4 \cdot 6\text{H}_2\text{O}$

Widenmannite Carbonate of U and Pb.

Wyartite  $\text{UO}_2 \cdot 6\text{UO}_3 \cdot 2\text{CO}_2 \cdot 3\text{CaO} \cdot 12\text{--}14\text{H}_2\text{O}$

Zellerite  $\text{Ca}(\text{UO}_2)(\text{CO}_3)_2 \cdot 5\text{H}_2\text{O}$

#### Molybdates:

Calcurmollite  $\text{Ca}(\text{UO}_2)_3(\text{MoO}_4)_3(\text{OH})_2 \cdot 11\text{H}_2\text{O}$

Cousinite  $\text{MgO} \cdot 2\text{MoO}_3 \cdot 2\text{UO}_2 \cdot 6\text{H}_2\text{O}$

Iriginite  $\text{UO}_3 \cdot 2\text{MoO}_3 \cdot 3\text{H}_2\text{O}$

Moluranite  $\text{UO}_2 \cdot 3\text{UO}_3 \cdot 7\text{MoO}_3 \cdot 20\text{H}_2\text{O}$

Mourite Hydrated uranous uranic molybdate.

Sedovite  $\text{U}(\text{MoO}_4)_2(?)$

Umoholite  $(\text{UO}_2)(\text{MoO}_4) \cdot 4\text{H}_2\text{O}(?)$

Wulfenite  $\text{Pb}(\text{Mo}, \text{U})\text{O}_4$

#### Niobates-tantalates-titanates:

Aeschynite  $(\text{Ce}, \text{Ca}, \text{Fe}^{+2}, \text{Th})(\text{Ti}, \text{Nb})_2(\text{O}, \text{OH})_6$

Betafite  $\text{A}_{2-x}\text{B}_2\text{O}_6(\text{O}, \text{OH})_x$ , where  $\text{A}=\text{Ca}, \text{Na}, \text{U}, \text{Ce}$ ;  $\text{B}=\text{Nb}, \text{Ta}, \text{Ti}, \text{Fe}$ .

Brannerite  $\text{AB}_2\text{O}_6$ , where  $\text{A}=\text{U}, \text{Ca}, \text{Fe}, \text{Th}, \text{Y}$ ;  $\text{B}=\text{Ti}$  mainly and  $\text{Fe}$ .

Calcioclosamarskite Probably  $(\text{Ca}, \text{Y}, \text{Ce}, \text{U}, \text{Th})_3(\text{Nb}, \text{Ta}, \text{Fe}, \text{Ti}, \text{Sn})_5\text{O}_{15}(?)$

Davidite  $\text{A}_6\text{B}_{15}(\text{O}, \text{OH})_{36}$ , where  $\text{A}=\text{Fe}^{+2}$ , rare earths,  $\text{U}^{+6}$ ,  $\text{Ca}, \text{Zr}, \text{Th}$ ;  $\text{B}=\text{Ti}, \text{Fe}^{+3}$ .

Euxenite  $(\text{Y}, \text{Ca}, \text{Ce}, \text{U}, \text{Th})(\text{Nb}, \text{Ta}, \text{Ti})_2\text{O}_6$

Fergusonite  $(\text{Y}, \text{Er}, \text{Ce}, \text{Fe})(\text{Nb}, \text{Ta}, \text{Ti})\text{O}_4$

Formanite  $(\text{Y}, \text{U}, \text{Th}, \text{Ca})(\text{Ta}, \text{Nb}, \text{Ti})\text{O}_4$

Hielmite  $(\text{Y}, \text{Fe}, \text{U})(\text{Nb}, \text{Ta}, \text{Sn}, \text{W})_2\text{O}_6$

Ishikawaite  $(\text{U}, \text{Fe}, \text{Y}, \text{Ce})(\text{Nb}, \text{Ta})\text{O}_4$

Khlopinite  $(\text{Y}, \text{U}, \text{Th})_3(\text{Nb}, \text{Ta}, \text{Ti}, \text{Fe})_7\text{O}_{20}(?)$

Kobelite  $\text{AB}_2(\text{O}, \text{OH})_6$ , where  $\text{A}=\text{Y}, \text{U}$ ;  $\text{B}=\text{Ti}$  mainly,  $\text{Fe}^{+3}$ ,  $\text{Nb}, \text{Ta}$

Loparite  $(\text{Na}, \text{Ce}, \text{Th})_{1-x}(\text{Nb}, \text{Ti})[\text{O}_{3-x}(\text{OH})_x]$

Microlite  $\text{A}_2\text{B}_2\text{O}_6(\text{O}, \text{OH}, \text{F})$ , where  $\text{A}=\text{Na}, \text{Ca}, \text{Fe}^{+2}, \text{U}^{+4}, \text{Sb}^{+3}, \text{Pb}, \text{Th}, \text{Zr}, \text{Ce}, \text{Y}$ ;  $\text{B}=\text{Nb}, \text{Ta}, \text{Ti}, \text{Sn}, \text{Fe}^{+3}$ .

Niobo-aeschnite  $(\text{Ce}, \text{Y}, \text{Ca}, \text{Fe}, \text{Th})(\text{Nb}, \text{Ti})_2\text{O}_6$   
 Nohite  $(\text{Ca}, \text{Mg}, \text{Fe}^{+2}, \text{Y}, \text{U})_2(\text{Nb}, \text{Zr}, \text{Fe}^{+3})_3\text{O}_{10}$   
 Obruchevite  $(\text{Y}, \text{Na}, \text{Ca}, \text{U})(\text{Nb}, \text{Ta}, \text{Ti}, \text{Fe})_2(\text{O}, \text{OH})_7 \cdot \text{H}_2\text{O}$   
 Plsekite Niobate-tantalate-titanate of U and rare earths, with Th and Sn.  
 Polycrase  $(\text{Y}, \text{Ca}, \text{Ce}, \text{U}, \text{Th})(\text{Ti}, \text{Nb}, \text{Ta})_2\text{O}_6$   
 Priorite  $(\text{Y}, \text{Er}, \text{Ca}, \text{Fe}^{+2}, \text{Th})(\text{Ti}, \text{Nb})_2\text{O}_6$   
 Pyrochlore  $\text{A}_2\text{B}_2\text{O}_6(\text{O}, \text{OH}, \text{F})$ , where  $\text{A} = \text{Na}, \text{Ca}, \text{U}, \text{Th}, \text{Ce}, \text{Y}$ ;  $\text{B} = \text{Nb}, \text{Ta}, \text{Ti}$ .  
 Samarskite  $(\text{Y}, \text{Ce}, \text{U}, \text{Ca}, \text{Fe}, \text{Pb}, \text{Th})(\text{Nb}, \text{Ta}, \text{Ti}, \text{Sn})_2\text{O}_6$   
 Sinclite  $\text{AB}_2(\text{O}, \text{OH})_7$ , where  $\text{A} = \text{Ce}, \text{Y}, \text{Th}, \text{U}$ ;  $\text{B} = \text{Ti}, \text{Nb}$  mainly  
 Thorutite  $(\text{Th}, \text{Ca}, \text{U})\text{Ti}_2(\text{O}, \text{OH})_6$   
 Yttrocraolite  $(\text{Y}, \text{Th}, \text{U}, \text{Ca})_2\text{Ti}_4\text{O}_{11} (?)$   
 Yttrotantalite  $(\text{Fe}, \text{Y}, \text{U})(\text{Nb}, \text{Ta})\text{O}_4$   
 Zirkelite  $(\text{Ca}, \text{Fe}, \text{Th}, \text{U})_2(\text{Ti}, \text{Nb}, \text{Zr})_2\text{O}_7 (?)$

#### Oxides:

Becquerelite  $7\text{UO}_3 \cdot 11\text{H}_2\text{O}$   
 Billietite  $\text{BaO} \cdot 6\text{UO}_3 \cdot 11\text{H}_2\text{O}$   
 Cerlanite  $(\text{Ce}, \text{Th})\text{O}_2$   
 Clarkeite  $(\text{Na}, \text{Ca}, \text{Pb}, \text{Th}, \text{H}_2\text{O})\text{U}_2(\text{O}, \text{H}_2\text{O})_7$   
 Compregnacite  $\text{K}_2\text{O} \cdot 6\text{UO}_3 \cdot 11\text{H}_2\text{O}$   
 Curite  $3\text{PbO} \cdot 8\text{UO}_3 \cdot 5\text{H}_2\text{O}$   
 Fourmarierite  $\text{PbO} \cdot 4\text{UO}_3 \cdot 5\text{H}_2\text{O}$   
 Hydronasturan  $\text{UO}_2 \cdot k\text{UO}_3 \cdot n\text{H}_2\text{O}$ , where  $k = 2.3$  to  $5.0$ ;  $n = 3.9$  to  $9.0$   
 Ianthininite  $\text{UO}_2 \cdot 5\text{UO}_3 \cdot 10-11\text{H}_2\text{O}$   
 Masuyite  $\text{UO}_3 \cdot 2\text{H}_2\text{O}$   
 Parapitchblende Oxide of uranium, chiefly  $\text{U}^{+6}$ , minor  $\text{U}^{+4}$ .  
 Richetite Contains Pb and U.  
 Schoepite  $\text{UO}_3 \cdot 2\text{H}_2\text{O}$   
 Thorlanite  $(\text{Th}, \text{U})\text{O}_2$   
 Uraninite  $(\text{U}^{+4}_{1-x}, \text{U}^{+6}_x)\text{O}_2 + x$   
 Uranosphaerite  $\text{BiUO}_4(\text{OH})$   
 Urgite  $\text{UO}_3 \cdot n\text{H}_2\text{O}$   
 Vandenbrandelite  $\text{CuUO}_4 \cdot 2\text{H}_2\text{O}$   
 Vandendriesscheite  $\text{PbO} \cdot 7\text{UO}_3 \cdot 12\text{H}_2\text{O} (?)$   
 Wölsendorflite  $(\text{Pb}, \text{Ca})\text{U}_2\text{O}_7 \cdot 2\text{H}_2\text{O}$

# Phosphates:

- Autunite  $\text{Ca}(\text{UO}_2)_2(\text{PO}_4)_2 \cdot 10-12\text{H}_2\text{O}$
- Bassetite  $\text{Fe}(\text{UO}_2)_2(\text{PO}_4)_2 \cdot 8\text{H}_2\text{O}$
- Bergenville  $\text{Ba}(\text{UO}_2)_4(\text{PO}_4)_2(\text{OH})_4 \cdot 8\text{H}_2\text{O}$
- Brockite  $(\text{Ca}, \text{Th})\text{PO}_4 \cdot \text{H}_2\text{O}$
- Cerphosphorhuttonite  $(\text{Th}, \text{Ce})(\text{Si}, \text{P})\text{O}_4 \cdot 1.5\text{H}_2\text{O}$
- Cheralite  $(\text{Ca}, \text{Th}, \text{Ce})(\text{P}, \text{Si})\text{O}_4$
- Coconinoite  $\text{Fe}^{+3}_2\text{Al}_2(\text{UO}_2)_2(\text{PO}_4)_4(\text{SO}_4)(\text{OH})_2 \cdot 20\text{H}_2\text{O}$
- Dawsonite  $\text{Pb}_3(\text{UO}_2)_5(\text{PO}_4)_4(\text{OH})_4 \cdot 10\text{H}_2\text{O} (?)$
- Dumontite  $\text{Pb}_2(\text{UO}_2)_3(\text{PO}_4)_2(\text{OH})_4 \cdot 3\text{H}_2\text{O}$
- Fritzscheite  $\text{Mn}(\text{UO}_2)_2[(\text{P}, \text{V})\text{O}_4]_2 \cdot 8\text{H}_2\text{O} (?)$
- Grayite Thorium phosphate, perhaps  $(\text{Th}, \text{Pb}, \text{Ca})(\text{PO}_4) \cdot \text{H}_2\text{O}$
- Hydrogen autunite  $\text{H}_2(\text{UO}_2)_2(\text{PO}_4)_2 \cdot 8-10\text{H}_2\text{O}$
- Kivulite  $(\text{Th}, \text{Ca}, \text{Pb})\text{H}_2(\text{UO}_2)_4(\text{PO}_4)_2(\text{OH})_8 \cdot 7\text{H}_2\text{O}$
- Lermontovite  $(\text{U}, \text{Ca}, \text{R.E.}^*)_3(\text{PO}_4)_4 \cdot 6\text{H}_2\text{O}$  \*RARE EARTHS
- Meta-ankoleite  $\text{K}_2(\text{UO}_2)_2(\text{PO}_4)_2 \cdot 6\text{H}_2\text{O}$
- Meta-autunite I  $\text{Ca}(\text{UO}_2)_2(\text{PO}_4)_2 \cdot 2-6\text{H}_2\text{O}$
- Meta-autunite II  $\text{Ca}(\text{UO}_2)_2(\text{PO}_4)_2 \cdot 0-6\text{H}_2\text{O}$
- Metasaleeite  $\text{Mg}(\text{UO}_2)_2(\text{PO}_4)_2 \cdot 4(?)\text{H}_2\text{O}$
- Metatorbernite  $\text{Cu}(\text{UO}_2)_2(\text{PO}_4)_2 \cdot n\text{H}_2\text{O}$ , where  $n=4 (?)$  to 8.
- Meta-uranocircite  $\text{Ba}(\text{UO}_2)_2(\text{PO}_4)_2 \cdot 8\text{H}_2\text{O}$
- Monazite  $(\text{Ce}, \text{La}, \text{Nd})\text{PO}_4$ , with Th substituting for (Ce, La).
- Natroautunite  $\text{Na}_2(\text{UO}_2)_2(\text{PO}_4)_2 \cdot 8\text{H}_2\text{O}$
- Ningyolite  $(\text{U}, \text{Ca}, \text{R.E.}^*)_2(\text{PO}_4)_2 \cdot 1-2\text{H}_2\text{O}$  \*RARE EARTHS
- Parsonsite  $\text{Pb}_2(\text{UO}_2)(\text{PO}_4)_2$
- Phosphuranylite  $\text{Ca}(\text{UO}_2)_4(\text{PO}_4)_2(\text{OH})_4 \cdot 7\text{H}_2\text{O}$
- Przhevalskite  $\text{Pb}(\text{UO}_2)_2(\text{PO}_4)_2 \cdot 2\text{H}_2\text{O}$
- Pseudo-autunite  $(\text{H}_3\text{O})_2\text{Ca}(\text{UO}_2)(\text{PO}_4)_2 \cdot 2.5\text{H}_2\text{O}$
- Renardite  $\text{Pb}(\text{UO}_2)_4(\text{PO}_4)_2(\text{OH})_4 \cdot 7\text{H}_2\text{O}$
- Sabugalite  $\text{HAl}(\text{UO}_2)_4(\text{PO}_4)_4 \cdot 16\text{H}_2\text{O}$
- Saleeite  $\text{Mg}(\text{UO}_2)_2(\text{PO}_4)_2 \cdot 8-10\text{H}_2\text{O}$
- Saryarkite  $(\text{Ca}, \text{Y}, \text{Th})_2\text{Al}_4(\text{SiO}_4, \text{PO}_4)_4(\text{OH}) \cdot 9\text{H}_2\text{O}$
- Sodium uranospinitite  $(\text{Na}_2, \text{Ca})(\text{UO}_2)_2[(\text{As}, \text{P})\text{O}_4]_2 \cdot 5\text{H}_2\text{O}$
- Torbernite  $\text{Cu}(\text{UO}_2)_2(\text{PO}_4)_2 \cdot 12\text{H}_2\text{O}$
- Uramphite  $(\text{NH}_4)(\text{UO}_2)(\text{PO}_4) \cdot 3\text{H}_2\text{O}$

Uranospathite  $\text{Cu}(\text{UO}_2)_2(\text{AsO}_4, \text{PO}_4)_2 \cdot 11\text{H}_2\text{O} (?)$

Selenites:

Demesmaekerite  $\text{Pb}_2\text{Cu}_5(\text{UO}_2)_2(\text{SeO}_3)_6(\text{OH})_6 \cdot 2\text{H}_2\text{O}$

Guilleminite  $\text{Ba}(\text{UO}_2)_3(\text{OH})_4(\text{SeO}_3)_2 \cdot 3\text{H}_2\text{O}$

Silicates:

Barium uranophane Contains major Ba, U, Si.

Beta-uranophane  $\text{Ca}(\text{UO}_2)_2(\text{SiO}_3)_2(\text{OH})_2 \cdot 5\text{H}_2\text{O}$

Billbinitite  $3(\text{Ca}, \text{Pb})\text{O} \cdot (\text{U}, \text{Th})\text{O}_2 \cdot 7\text{UO}_3 \cdot 10\text{SiO}_2 \cdot 19\text{H}_2\text{O}$

Boltwoodite  $\text{K}_2(\text{UO}_2)_2(\text{SiO}_3)_2(\text{OH})_2 \cdot 5\text{H}_2\text{O}$

Caryocerite Borosilicate of Ce, Y, and Th.

Cerphosphorhuttonite  $(\text{Th}, \text{Ce})(\text{Si}, \text{P})\text{O}_4 \cdot 1.5\text{H}_2\text{O}$

Cheralite  $(\text{Ca}, \text{Th}, \text{Ce})(\text{P}, \text{Si})\text{O}_4$

Chevkinite  $(\text{Ce}, \text{Y}, \text{Ca}, \text{U}, \text{Th})_2(\text{Ti}, \text{Fe}, \text{Mg})_2(\text{Si}, \text{Al})_2\text{O}_{11} (?)$

Coffinite  $\text{U}(\text{SiO}_4)_{1-x}(\text{OH})_{4x}$

Cuprosklodowskite  $\text{Cu}(\text{UO}_2)_2(\text{SiO}_3)_2(\text{OH})_2 \cdot 5\text{H}_2\text{O}$

Ekanite  $(\text{Th}, \text{U})(\text{Ca}, \text{Fe}, \text{Pb})_2\text{Si}_8\text{O}_{20}$

Halweelite  $\text{CaO} \cdot 2\text{UO}_3 \cdot 6\text{SiO}_2 \cdot 5\text{H}_2\text{O}$

Huttonite  $\text{ThSiO}_4$

Hydrocerite  $(\text{La}, \text{Ce}, \text{Th})_2(\text{Si}, \text{P})_2\text{O}_7 \cdot 5\text{H}_2\text{O}$

Kasolite  $\text{Pb}(\text{UO}_2)(\text{SiO}_3)(\text{OH})_2$

Metahalweelite  $\text{CaO} \cdot 2\text{UO}_3 \cdot 6\text{SiO}_2 \cdot n\text{H}_2\text{O}$

Nenadkevite  $(\text{U}^{+4}, \text{Y}, \text{Ce})\text{U}^{+6}(\text{Ca}, \text{Mg}, \text{Pb})(\text{SiO}_4)_2(\text{OH})_4 \cdot n\text{H}_2\text{O}$

Orillite  $3\text{PbO} \cdot 3\text{UO}_3 \cdot 4\text{SiO}_2 \cdot 6\text{H}_2\text{O}$

Orthochevkinite Dimorph of chevkinite.

Perrierite  $(\text{Ce}, \text{Y}, \text{Ca}, \text{Th})_2(\text{Ti}, \text{Fe}, \text{Mg})_2(\text{Si}, \text{Al})_2\text{O}_{11} (?)$

Ranquillite  $3\text{CaO} \cdot 4\text{UO}_3 \cdot 10\text{SiO}_2 \cdot 24\text{H}_2\text{O}$

Saryarkite  $(\text{Ca}, \text{Y}, \text{Th})_2\text{Al}_4(\text{SiO}_4, \text{PO}_4)_4(\text{OH}) \cdot 9\text{H}_2\text{O}$

Sklodowskite  $\text{Mg}(\text{UO}_2)_2(\text{SiO}_3)_2(\text{OH})_2 \cdot 5\text{H}_2\text{O}$

Sodylite  $(\text{UO}_2)_5(\text{SiO}_4)_2(\text{OH})_2 \cdot 5\text{H}_2\text{O}$

Steenstrupine  $(\text{Ce}, \text{La}, \text{Th}, \text{Ca}, \text{Na})_2(\text{Mn}, \text{Fe})(\text{SiO}_3)_2(\text{OH})_2 \cdot 2\text{H}_2\text{O}$

Thorite  $\text{ThSiO}_4$

Thorogummite  $(\text{Th}(\text{SiO}_4)_{1-x}(\text{OH})_{4x})$

Thorosteenstrupine  $(\text{Ca}, \text{Th}, \text{Mn})_3\text{Si}_4(\text{O}, \text{F})_{12} \cdot 5.7\text{H}_2\text{O}$

Tritomite Borosilicate of Ce, Y, Th, Ca, and F.

Uranophane  $\text{Ca}(\text{UO}_2)_2(\text{SiO}_3)_2(\text{OH})_2 \cdot 5\text{H}_2\text{O}$

Ursilite  $2(\text{Ca}, \text{Mg})\text{O} \cdot 2\text{UO}_3 \cdot 5\text{SiO}_2 \cdot 9-10\text{H}_2\text{O}$

Usgite  $\text{R}(\text{UO}_2)_2(\text{Si}_2\text{O}_7) \cdot n\text{H}_2\text{O}$  MEANING OF R NOT SPECIFIED

Weeksite  $\text{K}(\text{UO}_2)_2(\text{Si}_2\text{O}_5)_3 \cdot 4\text{H}_2\text{O}$

Yttrialite  $(\text{Y}, \text{Th})_2\text{Si}_2\text{O}_7$

#### Sulfates:

Calclouraconite Near  $\text{Ca}(\text{UO}_2)_4(\text{SO}_4)_2(\text{OH})_6 \cdot 20\text{H}_2\text{O}$

Coconinolt  $\text{Fe}_2^{+3}\text{Al}_2(\text{UO}_2)_2(\text{PO}_4)_4(\text{SO}_4)(\text{OH})_2 \cdot 20\text{H}_2\text{O}$

Cuprozippeite  $\text{Cu}(\text{UO}_2)_2(\text{SO}_4)_2(\text{OH})_2 \cdot 11\text{H}_2\text{O}$

Johannite  $\text{Cu}(\text{UO}_2)_2(\text{SO}_4)_2(\text{OH})_2 \cdot 6\text{H}_2\text{O}$

Medjildite Supposedly a uranium sulfate.

Meta-uranopilite  $(\text{UO}_2)_6(\text{SO}_4)(\text{OH})_{10} \cdot 5\text{H}_2\text{O}(?)$

Schroekingite  $\text{NaCa}_3(\text{UO}_2)(\text{CO}_3)_3(\text{SO}_4)\text{F} \cdot 10\text{H}_2\text{O}$

Uranochalcite Supposedly a uranium sulfate.

Uranopilite  $(\text{UO}_2)_6(\text{SO}_4)(\text{OH})_{10} \cdot 12\text{H}_2\text{O}$

Voglianite Hydrus calcium uranium sulfate.

Zippeite  $\text{K}_4(\text{UO}_2)_6(\text{SO}_4)_3(\text{OH})_{10} \cdot \text{H}_2\text{O}$

#### Tellurites:

Moctezumite  $\text{PbO} \cdot \text{UO}_3 \cdot 2\text{TeO}_2$

#### Vanadates:

Carnotite  $\text{K}_2(\text{UO}_2)_2(\text{VO}_4)_2 \cdot n\text{H}_2\text{O}(n=1 \text{ to } 3)$

Ferghanite  $(\text{UO}_2)_3(\text{VO}_4)_2 \cdot 6\text{H}_2\text{O}(?)$

Francevillite  $(\text{Ba}, \text{Pb})(\text{UO}_2)_2(\text{VO}_4)_2 \cdot 5\text{H}_2\text{O}$

Fritzscheite  $\text{Mn}(\text{UO}_2)_2[(\text{P}, \text{V})\text{O}_4]_2 \cdot 8\text{H}_2\text{O}(?)$

Metatyuyamunite  $\text{Ca}(\text{UO}_2)_2(\text{VO}_4)_2 \cdot 3-5\text{H}_2\text{O}$

Rauvite  $\text{CaO} \cdot 2\text{UO}_3 \cdot 5\text{V}_2\text{O}_5 \cdot 16\text{H}_2\text{O}(?)$

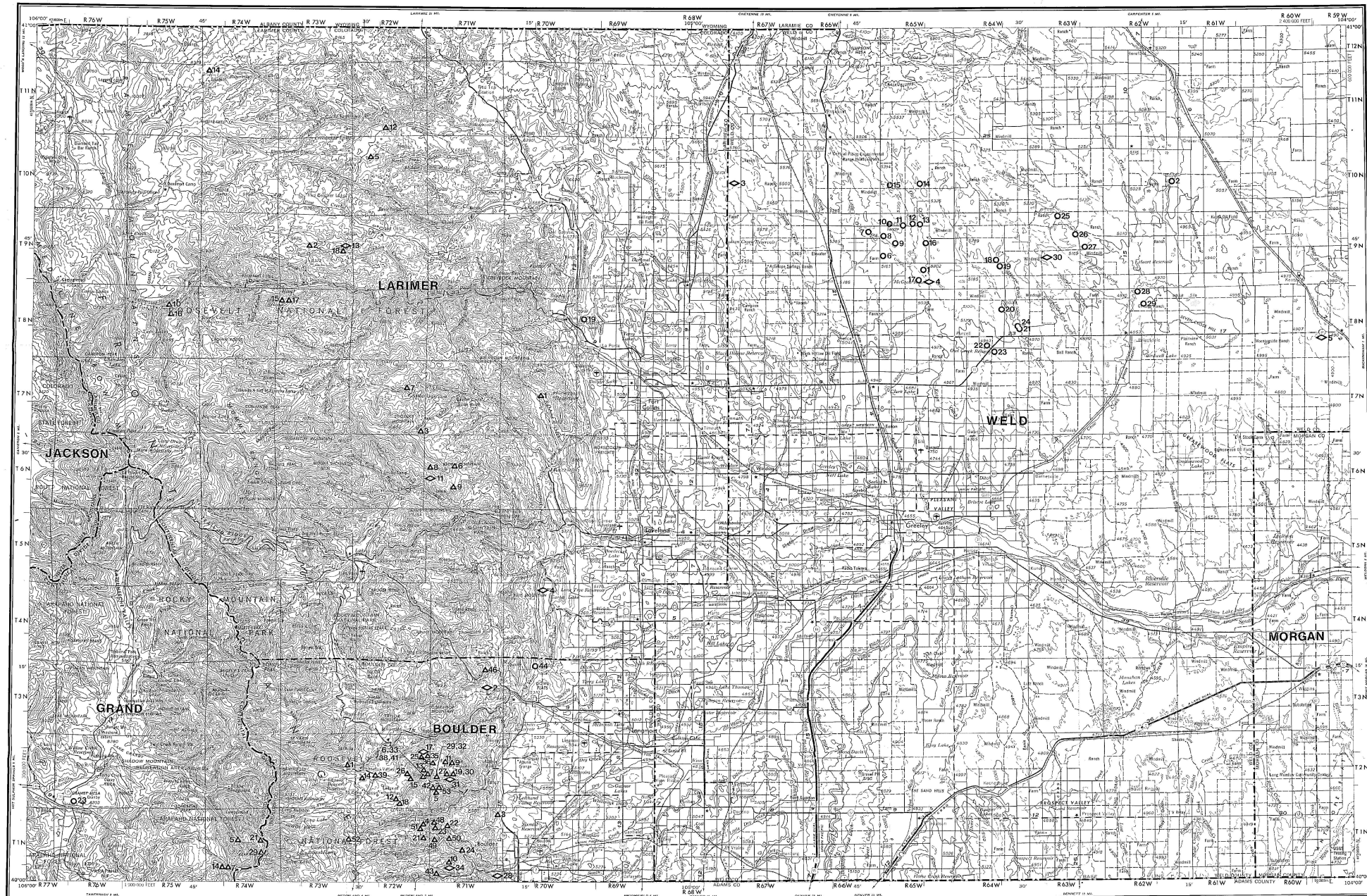
Senglerite  $\text{Cu}(\text{UO}_2)_2(\text{VO}_4)_2 \cdot 8-10\text{H}_2\text{O}$

Tyuyamunite  $\text{Ca}(\text{UO}_2)_2(\text{VO}_4)_2 \cdot 5-8\text{H}_2\text{O}$

Uvanite  $\text{U}_2\text{V}_6\text{O}_{21} \cdot 15\text{H}_2\text{O}(?)$

Vanuralite  $(\text{UO}_2)_2\text{Al}(\text{VO}_4)_2(\text{OH}) \cdot 8\text{H}_2\text{O}$

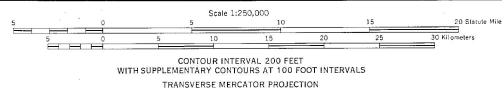
Vanuranylite  $[(\text{H}_3\text{O})_{1.2}(\text{Ba}, \text{Ca}, \text{K}, \text{Pb})_{0.4}](\text{UO}_2)_2(\text{VO}_4)_2 \cdot 4 \cdot 2\text{H}_2\text{O}$



Base from U. S. Geological Survey

EXPLANATION

- HOST ROCKS FOR OCCURRENCES**
- SANDSTONE, ARKOSE, CONGLOMERATE, SILTSTONE, LAKE SEDIMENTS
  - COAL, SHALE, LIMESTONE
  - SPRING DEPOSITS, GROUND WATER
  - △ IGNEOUS, METAMORPHIC
  - ◇ UNDETERMINED
  - 11 OCCURRENCE NUMBER FROM TEXT
- STATE BOUNDARY
- COUNTY BOUNDARY



**RADIOACTIVE MINERAL OCCURRENCES OF THE GREELEY 1°x2° QUADRANGLE, COLORADO**

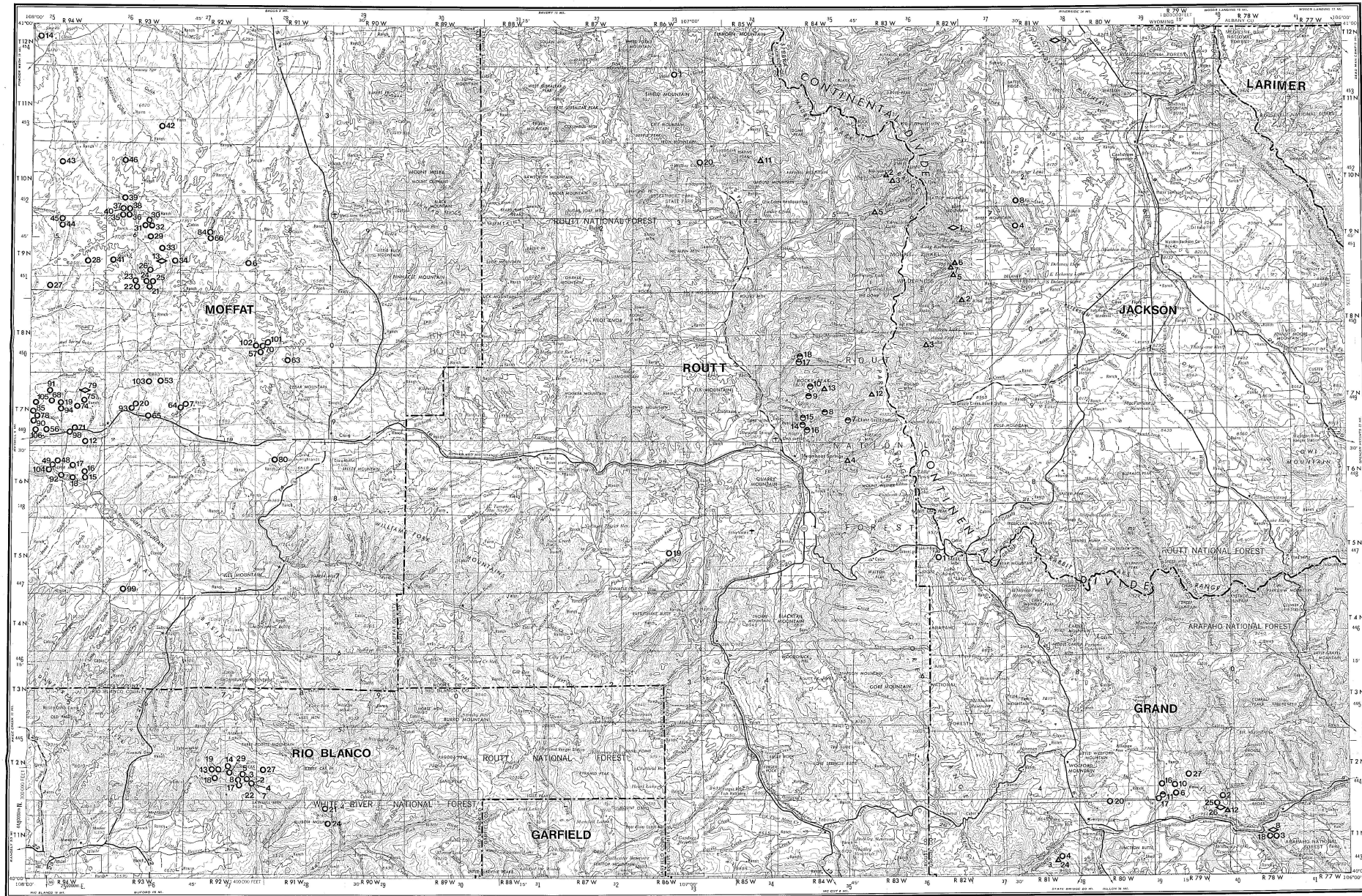
Compiled by James L. Nelson-Moore, Donna Bishop Collins, and A. L. Hornbaker

1978

# LOCATION DIAGRAM FOR NK 13-11

LEADER	GADSDEN	NK 13-5	NK 13-6	WILKINSON
NK 12-6	NK 13-4	NK 13-5	NK 13-6	NK 13-4
NK 12-7	NK 13-5	NK 13-6	NK 13-7	NK 13-5
NK 12-8	NK 13-6	NK 13-7	NK 13-8	NK 13-6
NK 12-9	NK 13-7	NK 13-8	NK 13-9	NK 13-7
NK 12-10	NK 13-8	NK 13-9	NK 13-10	NK 13-8
NK 12-11	NK 13-9	NK 13-10	NK 13-11	NK 13-9
NK 12-12	NK 13-10	NK 13-11	NK 13-12	NK 13-10
NK 12-13	NK 13-11	NK 13-12	NK 13-13	NK 13-11
NK 12-14	NK 13-12	NK 13-13	NK 13-14	NK 13-12
NK 12-15	NK 13-13	NK 13-14	NK 13-15	NK 13-13
NK 12-16	NK 13-14	NK 13-15	NK 13-16	NK 13-14
NK 12-17	NK 13-15	NK 13-16	NK 13-17	NK 13-15
NK 12-18	NK 13-16	NK 13-17	NK 13-18	NK 13-16
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NK 12-21	NK 13-19	NK 13-20	NK 13-21	NK 13-19
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NK 12-102	NK 13-100	NK 13-101	NK 13-102	NK 13-100
NK 12-103	NK 13-101	NK 13-102	NK 13-103	NK 13-101
NK 12-104	NK 13-102	NK 13-103	NK 13-104	NK 13-102
NK 12-105	NK 13-103	NK 13-104	NK 13-105	NK 13-103
NK 12-106	NK 13-104	NK 13-105	NK 13-106	NK 13-104
NK 12-107	NK 13-105	NK 13-106	NK 13-107	NK 13-105
NK 12-108	NK 13-106	NK 13-107	NK 13-108	NK 13-106
NK 12-109	NK 13-107	NK 13-108	NK 13-109	NK 13-107
NK 12-110	NK 13-108	NK 13-109	NK 13-110	NK 13-108
NK 12-111	NK 13-109	NK 13-110	NK 13-111	NK 13-109
NK 12-112	NK 13-110	NK 13-111	NK 13-112	NK 13-110
NK 12-113	NK 13-111	NK 13-112	NK 13-113	NK 13-111
NK 12-114	NK 13-112	NK 13-113	NK 13-114	NK 13-112
NK 12-115	NK 13-113	NK 13-114	NK 13-115	NK 13-113
NK 12-116	NK 13-114	NK 13-115	NK 13-116	NK 13-114
NK 12-117	NK 13-115	NK 13-116	NK 13-117	NK 13-115
NK 12-118	NK 13-116	NK 13-117	NK 13-118	NK 13-116
NK 12-119	NK 13-117	NK 13-118	NK 13-119	NK 13-117
NK 12-120	NK 13-118	NK 13-119	NK 13-120	NK 13-118
NK 12-121	NK 13-119	NK 13-120	NK 13-121	NK 13-119
NK 12-122	NK 13-120	NK 13-121	NK 13-122	NK 13-120
NK 12-123	NK 13-121	NK 13-122	NK 13-123	NK 13-121
NK 12-124	NK 13-122	NK 13-123	NK 13-124	NK 13-122
NK 12-125	NK 13-123	NK 13-124	NK 13-125	NK 13-123
NK 12-126	NK 13-124	NK 13-125	NK 13-126	NK 13-124
NK 12-127	NK 13-125	NK 13-126	NK 13-127	NK 13-125
NK 12-128	NK 13-126	NK 13-127	NK 13-128	NK 13-126
NK 12-129	NK 13-127	NK 13-128	NK 13-129	NK 13-127
NK 12-130	NK 13-128	NK 13-129	NK 13-130	NK 13-128
NK 12-131	NK 13-129	NK 13-130	NK 13-131	NK 13-129
NK 12-132	NK 13-130	NK 13-131	NK 13-132	NK 13-130
NK 12-133	NK 13-131	NK 13-132	NK 13-133	NK 13-131
NK 12-134	NK 13-132	NK 13-133	NK 13-134	NK 13-132
NK 12-135	NK 13-133	NK 13-134	NK 13-135	NK 13-133
NK 12-136	NK 13-134	NK 13-135	NK 13-136	NK 13-134
NK 12-137	NK 13-135	NK 13-136	NK 13-137	NK 13-135
NK 12-138	NK 13-136	NK 13-137	NK 13-138	NK 13-136
NK 12-139	NK 13-137	NK 13-138	NK 13-139	NK 13-137
NK 12-140	NK 13-138	NK 13-139	NK 13-140	NK 13-138
NK 12-141	NK 13-139	NK 13-140	NK 13-141	NK 13-139
NK 12-142	NK 13-140	NK 13-141	NK 13-142	NK 13-140
NK 12-143	NK 13-141	NK 13-142	NK 13-143	NK 13-141
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NK 12-147	NK 13-145	NK 13-146	NK 13-147	NK 13-145
NK 12-148	NK 13-146	NK 13-147	NK 13-148	NK 13-146
NK 12-149	NK 13-147	NK 13-148	NK 13-149	NK 13-147
NK 12-150	NK 13-148	NK 13-149	NK 13-150	NK 13-148
NK 12-151	NK 13-149	NK 13-150	NK 13-151	NK 13-149
NK 12-152	NK 13-150	NK 13-151	NK 13-152	NK 13-150
NK 12-153	NK 13-151	NK 13-152	NK 13-153	NK 13-151
NK 12-154	NK 13-152	NK 13-153	NK 13-154	NK 13-152
NK 12-155	NK 13-153	NK 13-154	NK 13-155	NK 13-153
NK 12-156	NK 13-154	NK 13-155	NK 13-156	NK 13-154
NK 12-157	NK 13-155	NK 13-156	NK 13-157	NK 13-155
NK 12-158	NK 13-156	NK 13-157	NK 13-158	NK 13-156
NK 12-159	NK 13-157	NK 13-158	NK 13-159	NK 13-157
NK 12-160	NK 13-158	NK 13-159	NK 13-160	NK 13-158
NK 12-161	NK 13-159	NK 13-160	NK 13-161	NK 13-159
NK 12-162	NK 13-160	NK 13-161	NK 13-162	NK 13-160
NK 12-163	NK 13-161	NK 13-162	NK 13-163	NK 13-161
NK 12-164	NK 13-162	NK 13-163	NK 13-164	NK 13-162
NK 12-165	NK 13-163	NK 13-164	NK 13-165	NK 13-163
NK 12-166	NK 13-164	NK 13-165	NK 13-166	NK 13-164
NK 12-167	NK 13-165	NK 13-166	NK 13-167	NK 13-165
NK 12-168	NK 13-166	NK 13-167	NK 13-168	NK 13-166
NK 12-169	NK 13-167	NK 13-168	NK 13-169	NK 13-167
NK 12-170	NK 13-168	NK 13-169	NK 13-170	NK 13-168
NK 12-171	NK 13-169	NK 13-170	NK 13-171	NK 13-169
NK 12-172	NK 13-170	NK 13-171	NK 13-172	NK 13-170
NK 12-173	NK 13-171	NK 13-172	NK 13-173	NK 13-171
NK 12-174	NK 13-172	NK 13-173	NK 13-174	NK 13-172
NK 12-175	NK 13-173	NK 13-174	NK 13-175	NK 13-173
NK 12-176	NK 13-174	NK 13-175	NK 13-176	NK 13-174
NK 12-177	NK 13-175	NK 13-176	NK 13-177	NK 13-175
NK 12-178	NK 13-176	NK 13-177	NK 13-178	NK 13-176
NK 12-179	NK 13-177	NK 13-178	NK 13-179	NK 13-177
NK 12-180	NK 13-178	NK 13-179	NK 13-180	NK 13-178
NK 12-181	NK 13-179	NK 13-180	NK 13-181	NK 13-179
NK 12-182	NK 13-180	NK 13-181	NK 13-182	NK 13-180
NK 12-183	NK 13-181	NK 13-182	NK 13-183	NK 13-181
NK 12-184	NK 13-182	NK 13-183	NK 13-184	NK 13-182
NK 12-185	NK 13-183	NK 13-184		

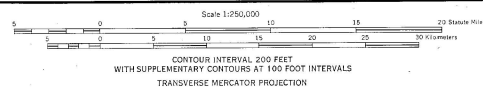




Base from U. S. Geological Survey

EXPLANATION

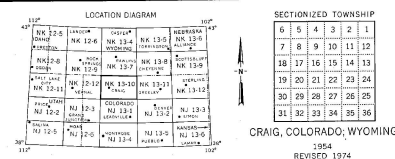
- HOST ROCKS FOR OCCURRENCES**
- SANDSTONE, ARKIOSE, CONGLOMERATE, SILTSTONE, LAKE SEDIMENTS
  - COAL, SHALE, LIMESTONE
  - △ SPRING DEPOSITS, GROUND WATER
  - ▲ IGNEOUS, METAMORPHIC
  - UNDETERMINED
  - 11 OCCURRENCE NUMBER FROM TEXT
- STATE BOUNDARY
- COUNTY BOUNDARY



**RADIOACTIVE MINERAL OCCURRENCES OF THE CRAIG 1° x 2° QUADRANGLE, COLORADO**

Compiled by James L. Nelson-Moore, Donna Bishop Collins, and A. L. Hornbaker

1978



CRAIG, COLORADO; WYOMING  
1954  
REVISED 1974





HOST ROCKS FOR OCCURRENCES	
0	SANDSTONE, ARKOSE, CONGLOMERATE,
	SILTSTONE, LAKE SEDIMENTS
1	COAL, SHALE, LIMESTONE
2	SPRING DEPOSITS, GROUND WATER
3	IGNEOUS, METAMORPHIC
4	UNDETERMINED
5	OCCURRENCE NUMBER FROM TEXT

Scale 1:250,000

5 10 15 20 Statute Miles

10 15 20 25 30 Kilometers

CONTOUR INTERVAL 200 FEET  
ELEMENTARY CONTOURS AT 100 FOOT INTERVALS  
TRANSVERSE MERCATOR PROJECTION

Compiled by James L. Nelson-Moore, Donna Bishop Collins, and A. L. Hornbaker

**LOCATION DIAGRAM**

43°N 104°W 107°W

COCATELLO\* NK 12-4 IDAMO JEROME NK 12-5 PRESTON NK 12-6 CASPER NK 13-4 WYOMING NK 13-5

BRIMFORD CITY NK 12-8 ROCK SPRINGS NK 13-7 NK 13-8 GREELEY

Greeley SALT LAKE CITY NK 12-11 VERNAL NK 12-12 CRAIG NK 13-10 NK 13-11

NK 12-10 UTAH PRICE COLORADO NK 13-1 DENVER NK 13-2

DELTA NK 12-2 NK 12-3 GRAND JUNCTION LEADVILLE NK 13-3

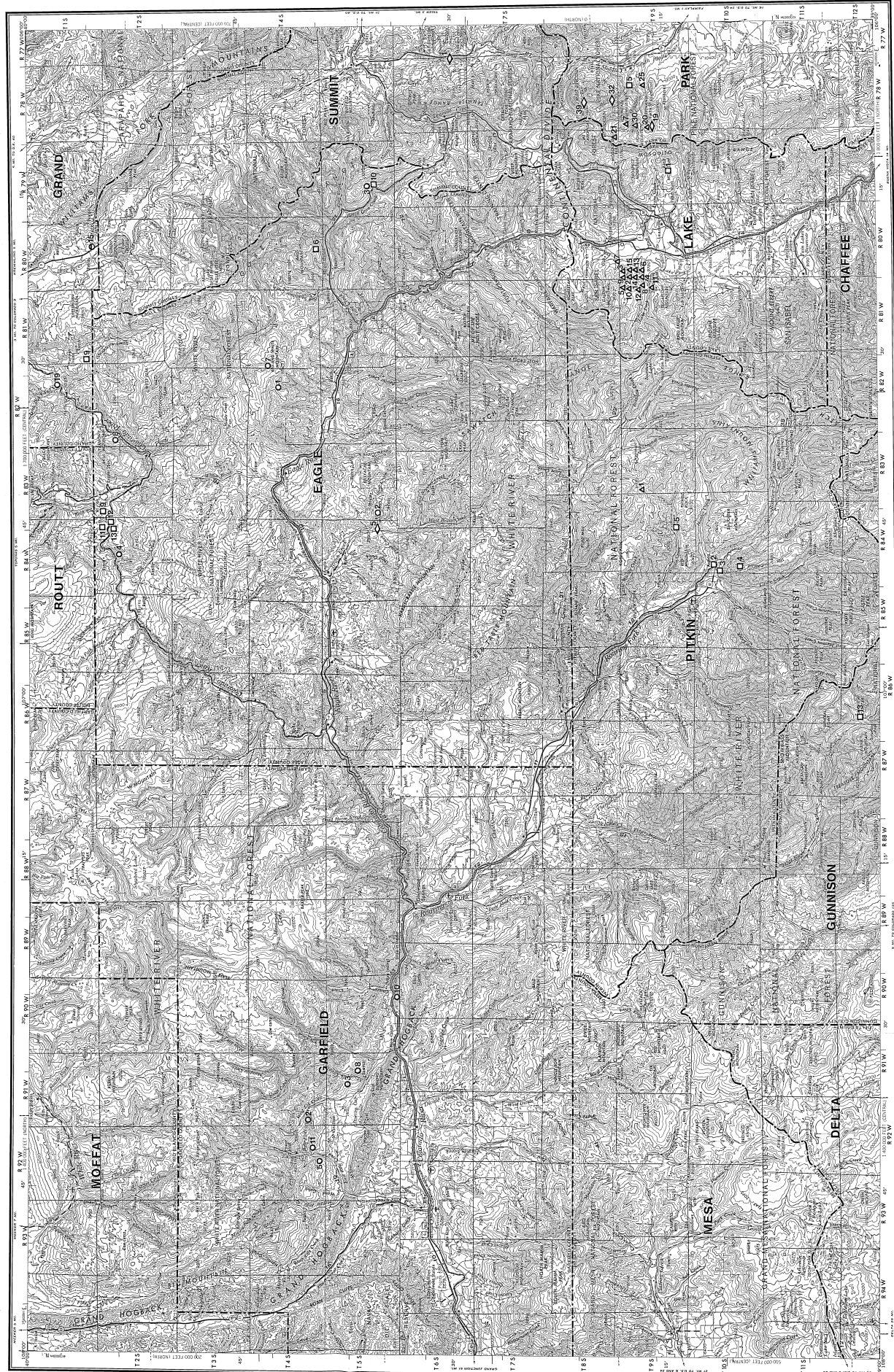
RICHFIELD NK 12-4 SALT LAKE NK 12-5 NK 12-6 MONTROSE NK 13-4 NK 13-5 PUEBLO

36°N

6	5	4	3	2	1
7	8	9	10	11	12
18	17	16	15	14	13
19	20	21	22	23	24
30	29	28	27	26	25
31	32	33	34	35	36

VERNAL, UTAH; COLORADO  
1954  
LIMITED REVISION 1965



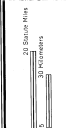


Base from U. S. Geological Survey

EXPLANATION

- ROCK FOR OCCURRENCES
- SILTSTONE, CONGLOMERATE
- COAL, SHALE, LIMESTONE
- △ SPRING DEPOSITS, GROUND WATER
- ▲ IGNEOUS, METAMORPHIC
- 011 OCCURRENCE NUMBER FROM TEXT
- STATE BOUNDARY
- COUNTY BOUNDARY

Scale 1:50,000  
CONTOUR INTERVAL, 200 FEET  
WITH SUPPLEMENTARY CONTOURS AT 100 FOOT INTERVALS  
TRANSVERSE MERCATOR PROJECTION



LOCATION DIAGRAM FOR N. 13.1

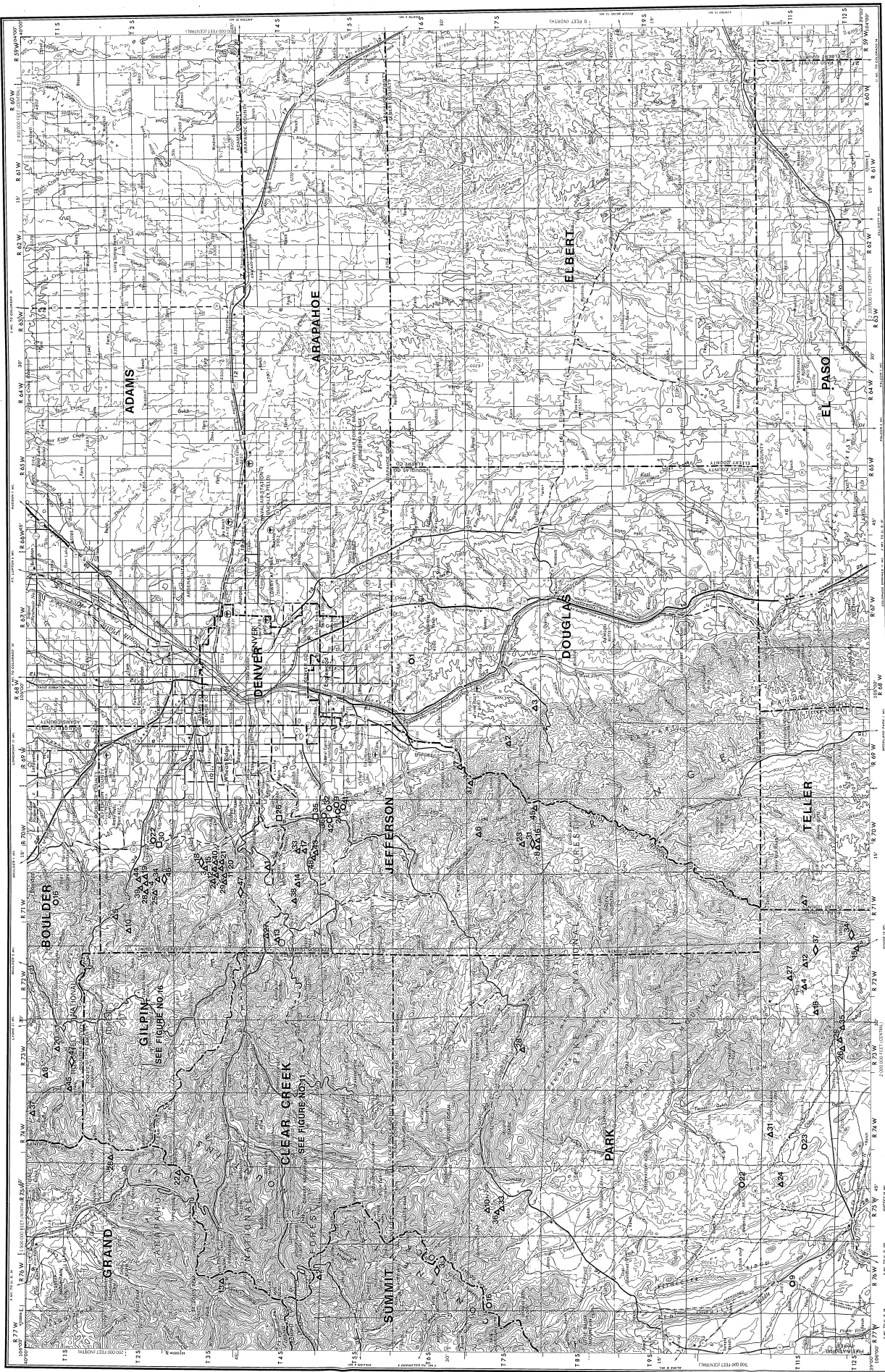


RADIOACTIVE MINERAL OCCURRENCES OF THE LEADVILLE 1° x 2° QUADRANGLE, COLORADO

Compiled by James L. Nelson-Moore, Donna Bishop Collins, and A. L. Hornbaker

1978

LEADVILLE, COLORADO



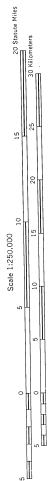
Base from U.S. Geological Survey

EXPLANATION

HOT ROCKS FOR OCCURRENCES

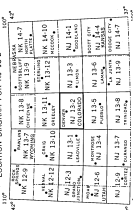
- SANDSTONE, ARGILLACEOUS CONGLOMERATE,
- SILTSTONE, LAKELAND SEDIMENTS
- COAL, SHALE, LIGNITE
- QUARTZITE, GNEISS, GRANITE
- METAMORPHIC
- UNDETERMINED
- 01 OCCURRENCE NUMBER FROM TEXT

- STATE BOUNDARY
- COUNTY BOUNDARY



CONTOUR INTERVAL 200 FEET  
WITH SUPPLEMENTARY CONTOURS AT 100 FOOT INTERVALS  
TRANSVERSE MERCATOR PROJECTION

LOCATION DIAGRAM FOR NJ 132



RADIOACTIVE MINERAL OCCURRENCES OF THE DENVER 1°x2° QUADRANGLE, COLORADO

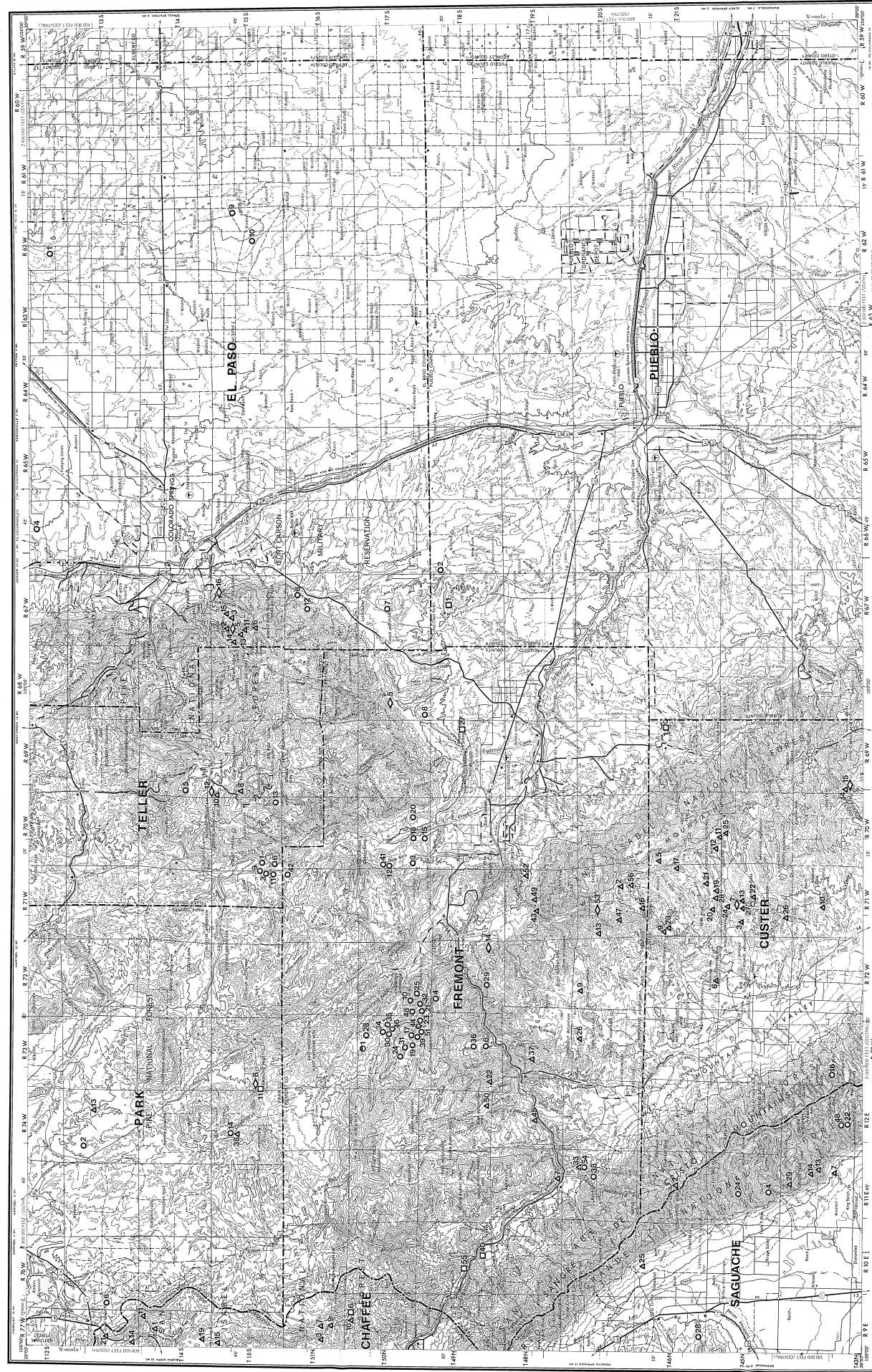
Compiled by James L. Nelson - Moore, Donna Bishop Collins, and A. L. Hornbaker

1978

DENVER, COLORADO

UNITED STATES GEOLOGICAL SURVEY





**EXPLANATION**

HOST ROCKS FOR OCCURRENCES

- SANDSTONE, LARGE CONGLOMERATE
- SILTSTONE, LAKE SEDIMENTS
- COAL, SHALE, LIMESTONE
- SPRING DEPOSITS, GROUND WATER
- IGNEOUS, METAMORPHIC
- OCCURRENCE NUMBER FROM TEXT

--- STATE BOUNDARY

--- COUNTY BOUNDARY

**Base from U.S. Geological Survey**

Scale 1:250,000

Scale in feet: 0 5 10 15 20 25 30 35 40 45 50 55 60 65 70 75 80 85 90 95 100

Scale in miles: 0 5 10 15 20 25 30 35 40 45 50 55 60 65 70 75 80 85 90 95 100

CONTOUR INTERVALS  
WITH SUPPLEMENTARY CONTOURS AT 100 FOOT INTERVALS  
TRANSVERSE VECTOR PROJECTION

SECTIONED TOWNSHIP

6	5	4	3	2	1
7	8	9	10	11	12
13	14	15	16	17	18
19	20	21	22	23	24
25	26	27	28	29	30
31	32	33	34	35	36

PUEBLO, COLORADO  
1964  
LIMITED EDITION 1962

RADIOACTIVE MINERAL OCCURRENCES OF THE PUEBLO 1° x 2° QUADRANGLE, COLORADO

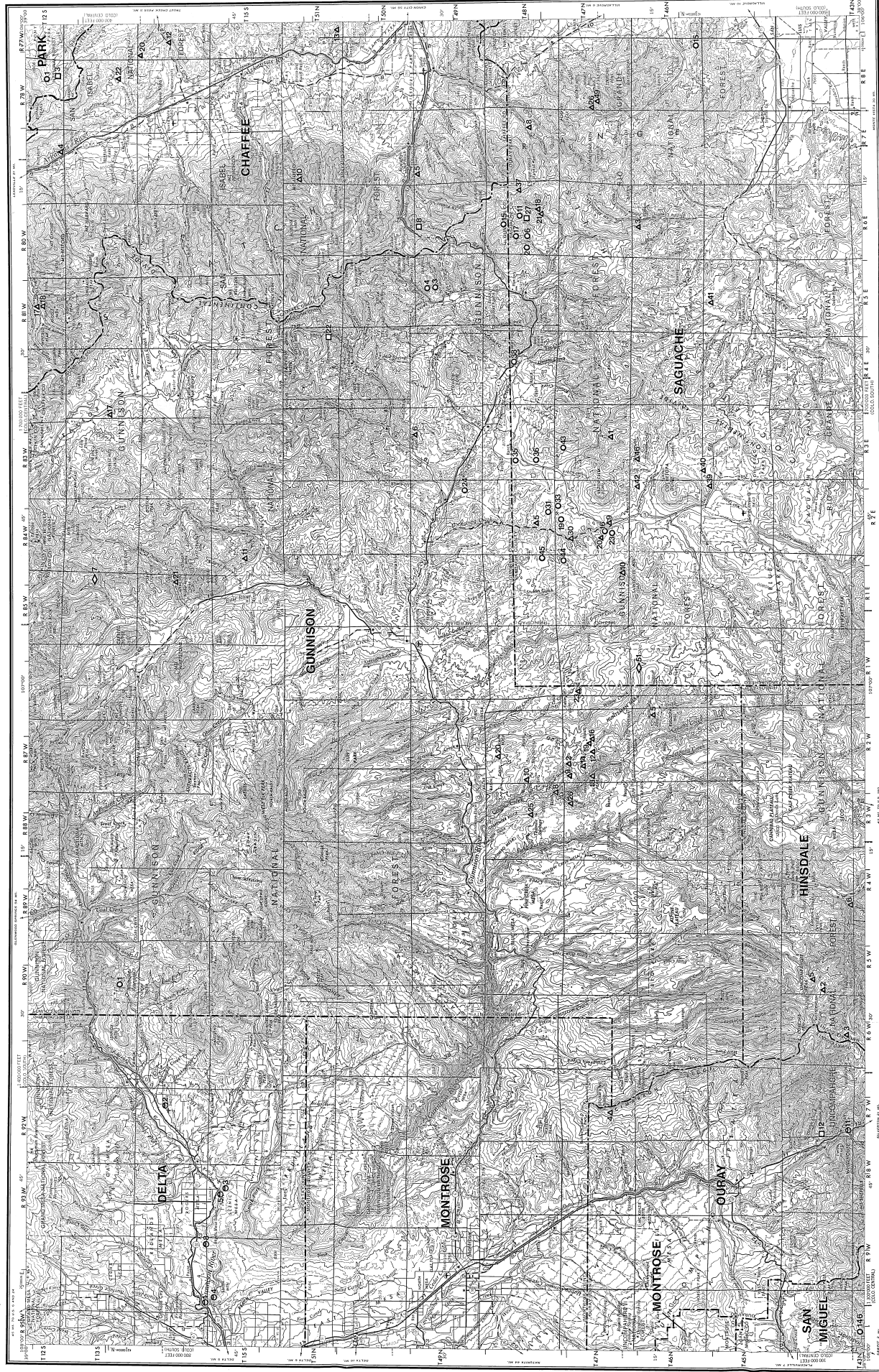
Compiled by James L. Nelson - Moore, Doms Bishop Collins, and A. L. Hornbaker

1978

MONTROSE

COLORADO GEOLOGICAL SURVEY  
DEPT. OF NATURAL RESOURCES  
STATE OF COLORADO  
JOHN W. NOLD, DIRECTOR

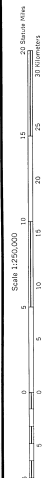
COLORADO GEOLOGICAL SURVEY  
BULLETIN 40  
PLATE 7 OF 12  
\$1.00



Base from U. S. Geological Survey

EXPLANATION

- SANDSTONE, ARKOSE, CONGLOMERATE
  - SILTSTONE, LAKE SEDIMENTS
  - COAL SHALE, LIMESTONE
  - △ IGNEOUS METAMORPHIC
  - ◇ UNDETERMINED
  - 11 OCCURRENCE NUMBER FROM TEXT
- STATE BOUNDARY  
--- COUNTY BOUNDARY



CONTOUR INTERVAL 200 FEET  
WITH SUPPLEMENTARY CONTOURS AT 100 FOOT INTERVALS  
TRANSVERSE MERCATOR PROJECTION

SECTIONED TOWNSHIP

6	5	4	3	2	1
7	8	9	10	11	12
13	14	15	16	17	18
19	20	21	22	23	24
25	26	27	28	29	30
31	32	33	34	35	36

LOCATION DIAGRAM FOR N. 13.4

13.4	13.5	13.6	13.7	13.8	13.9	14.0
14.0	14.1	14.2	14.3	14.4	14.5	14.6
14.6	14.7	14.8	14.9	15.0	15.1	15.2
15.2	15.3	15.4	15.5	15.6	15.7	15.8
15.8	15.9	16.0	16.1	16.2	16.3	16.4
16.4	16.5	16.6	16.7	16.8	16.9	17.0

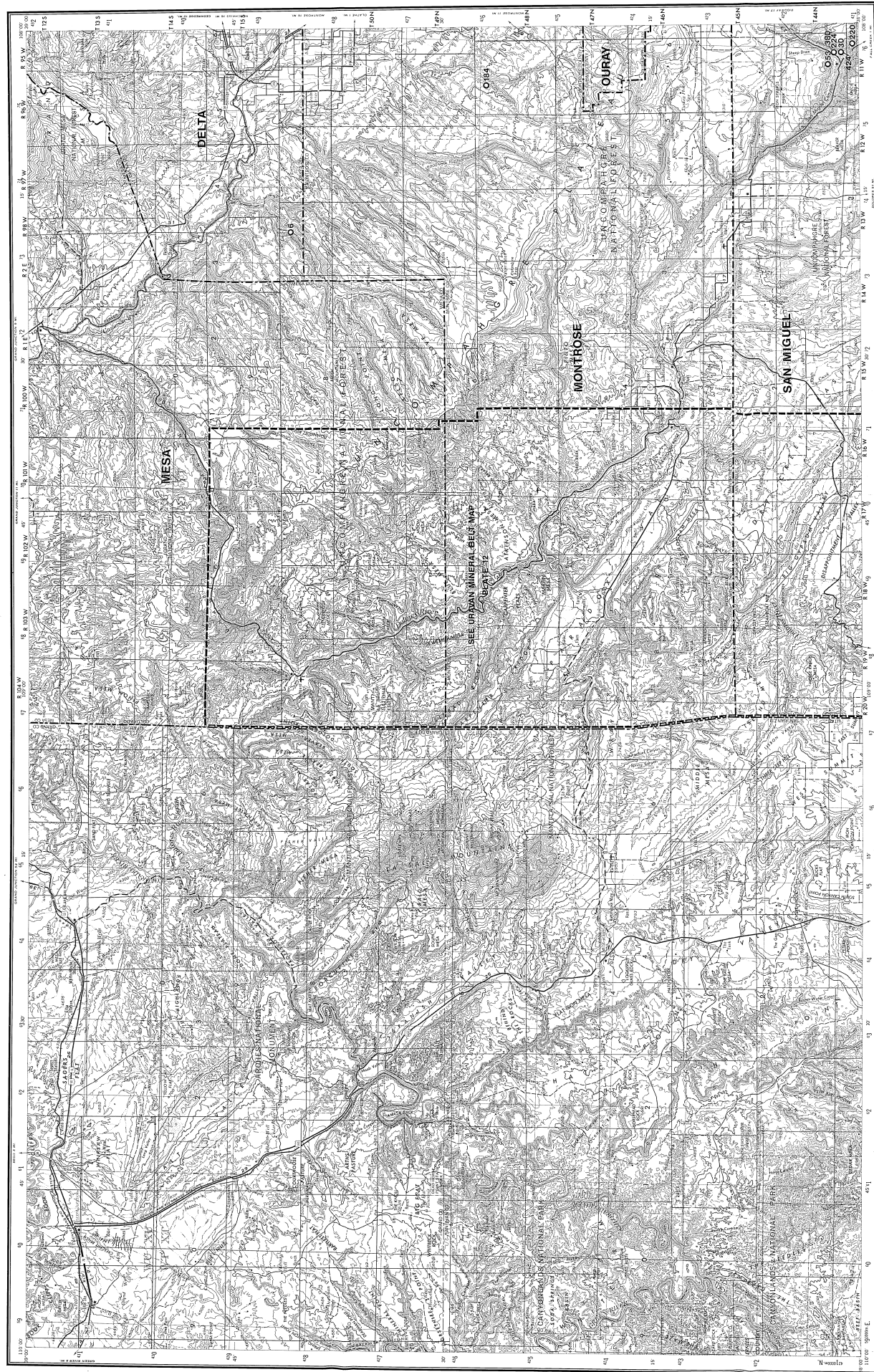
RADIOACTIVE MINERAL OCCURRENCES OF THE MONTROSE 1° x 2' QUADRANGLE, COLORADO

Compiled by James L. Nelson - Moore, Donna Bishop Collins, and A. L. Hornbaker

1978

MONTROSE, COLORADO





Base from U. S. Geological Survey

EXPLANATION

- HOST ROCKS FOR OCCURRENCES
  - SANDSTONE, PORCE CONGLOMERATE
  - SILTSTONE, LAKE SEDIMENTS
  - COAL, SHALE, LIMESTONE
  - SPRING DEPOSITS, GROUND WATER
  - UNDETERMINED
  - 01 OCCURRENCE NUMBER FROM TEXT
- STATE BOUNDARY
- COUNTY BOUNDARY
- UTAH MINERAL BELT BOUNDARY, PLATE 12

Scale 1:250,000  
25 Statute Miles  
30 Kilometers

COTOUR INTERVAL 200 FEET  
WITH SUPPLEMENTARY CONTOURS AT 100 FOOT INTERVALS  
TRANSVERSE MERCATOR PROJECTION

LOCATION DIAGRAM

42° 34' 30" N 106° 00' 00" W

42° 34' 30" N 106° 00' 00" W

42° 34' 30" N 106° 00' 00" W

42° 34' 30" N 106° 00' 00" W

42° 34' 30" N 106° 00' 00" W

42° 34' 30" N 106° 00' 00" W

42° 34' 30" N 106° 00' 00" W

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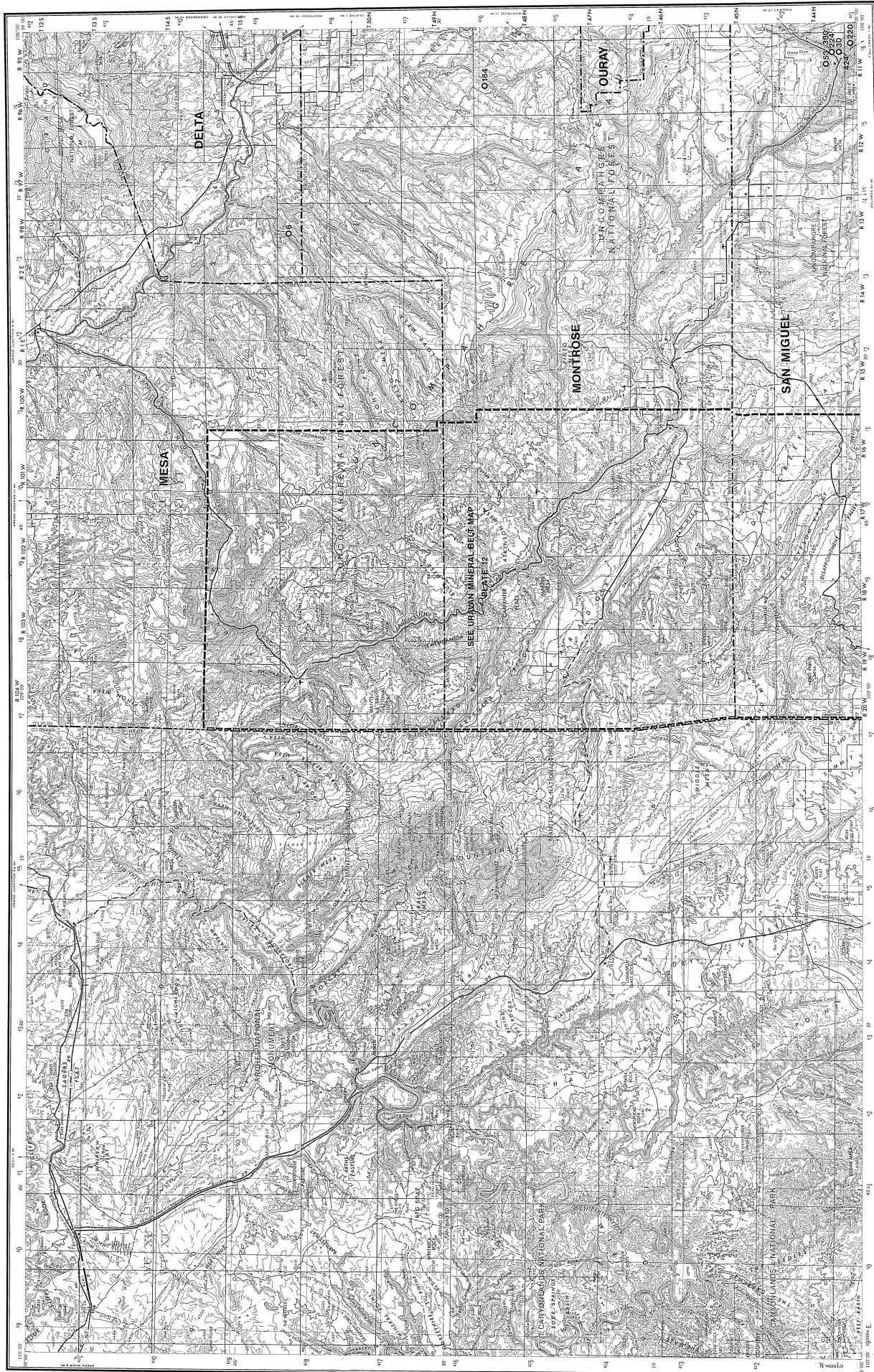
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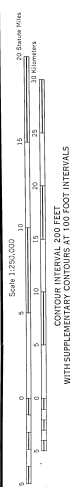
42° 34' 30" N 106° 00' 00" W

42° 34' 30" N 1



Base from U. S. Geological Survey

- EXPLANATION**
- HOST ROCKS FOR OCCURRENCES
    - SANDSTONE, IRONSTONE, CONGLOMERATE
    - SILTSTONE, LAKE SEDIMENTS
    - COAL, SHALE, LIMESTONE
    - SPRING DEPOSITS, GROUND WATER
    - IGNEOUS, METAMORPHIC
    - O1 OCCURRENCE NUMBER FROM TEXT
  - STATE BOUNDARY
  - COUNTY BOUNDARY
  - URBAN MINERAL BELT BOUNDARY, PLATE 12



SECTIONED TOWNSHIP

6	5	4	3	2	1
7	8	9	10	11	12
13	14	15	16	17	18
19	20	21	22	23	24
25	26	27	28	29	30
31	32	33	34	35	36

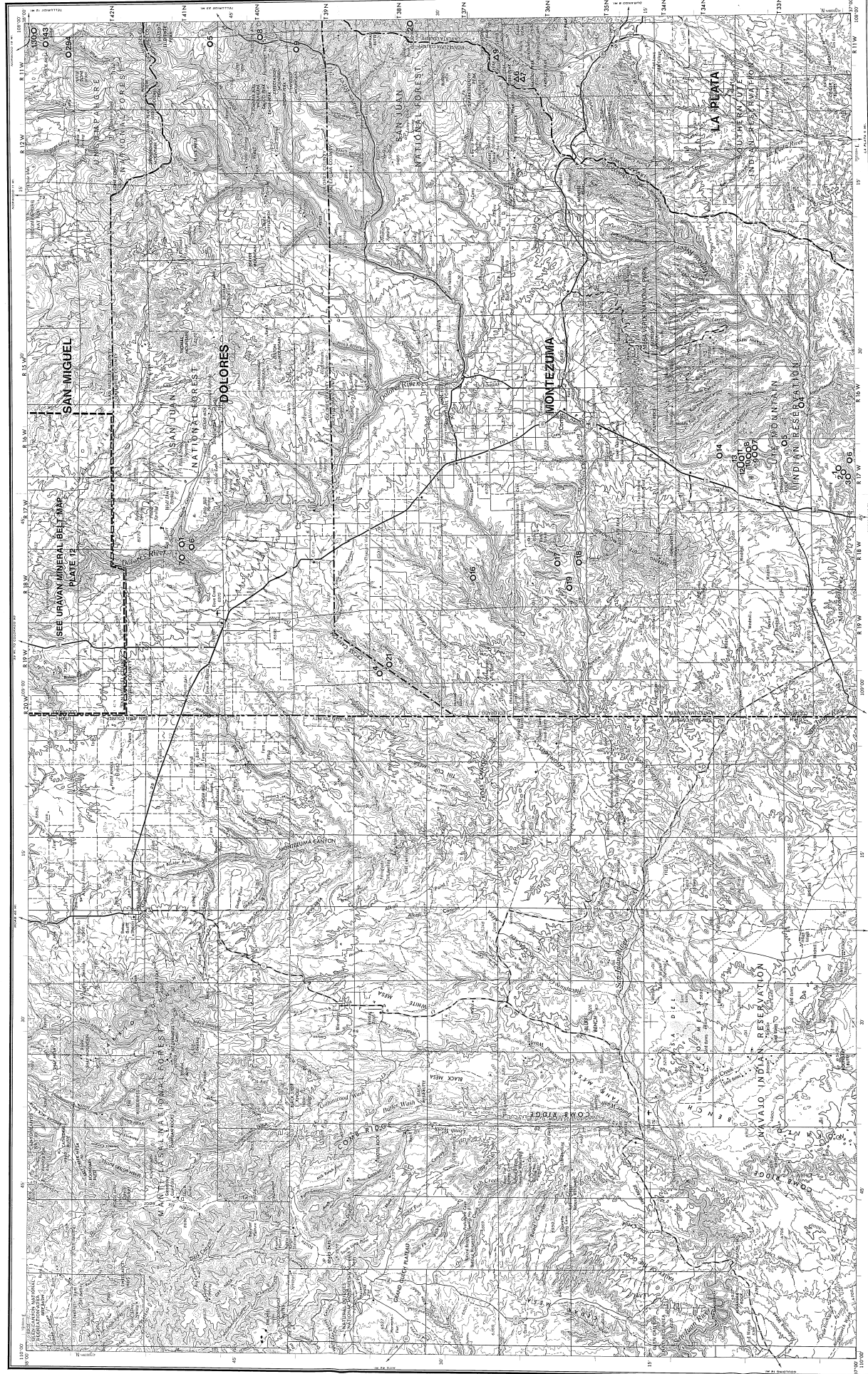
MOAB, UTAH, COLORADO  
REVISED 1969

# RADIOACTIVE MINERAL OCCURRENCES OF THE MOAB 1° x 2° QUADRANGLE, COLORADO

Compiled by James L. Nelson - Moore, Donna Bishop Collins, and A. L. Hornbaker

1978





Base from U. S. Geological Survey

EXPLANATION

- HOST ROCKS FOR OCCURRENCES
  - SANDSTONE, ARGILLACEOUS CONGLOMERATE
  - SILTSTONE, LAKE SEDIMENTS
  - COAL, SHALE, LIMESTONE
  - SPRING DEPOSITS, GROUND WATER
  - METAMORPHIC
  - UNDETERMINED
- 11 OCCURRENCE NUMBER FROM TEXT
- STATE BOUNDARY
- COUNTY BOUNDARY
- URBAN MINERAL BELT BOUNDARY, PLATE 12

Scale 1:250,000  
CONTOUR INTERVAL 200 FEET  
WITH SUPPLEMENTARY CONTOURS AT 100 FOOT INTERVALS  
TRANSVERSE MERCATOR PROJECTION

LOCATION DIAGRAM



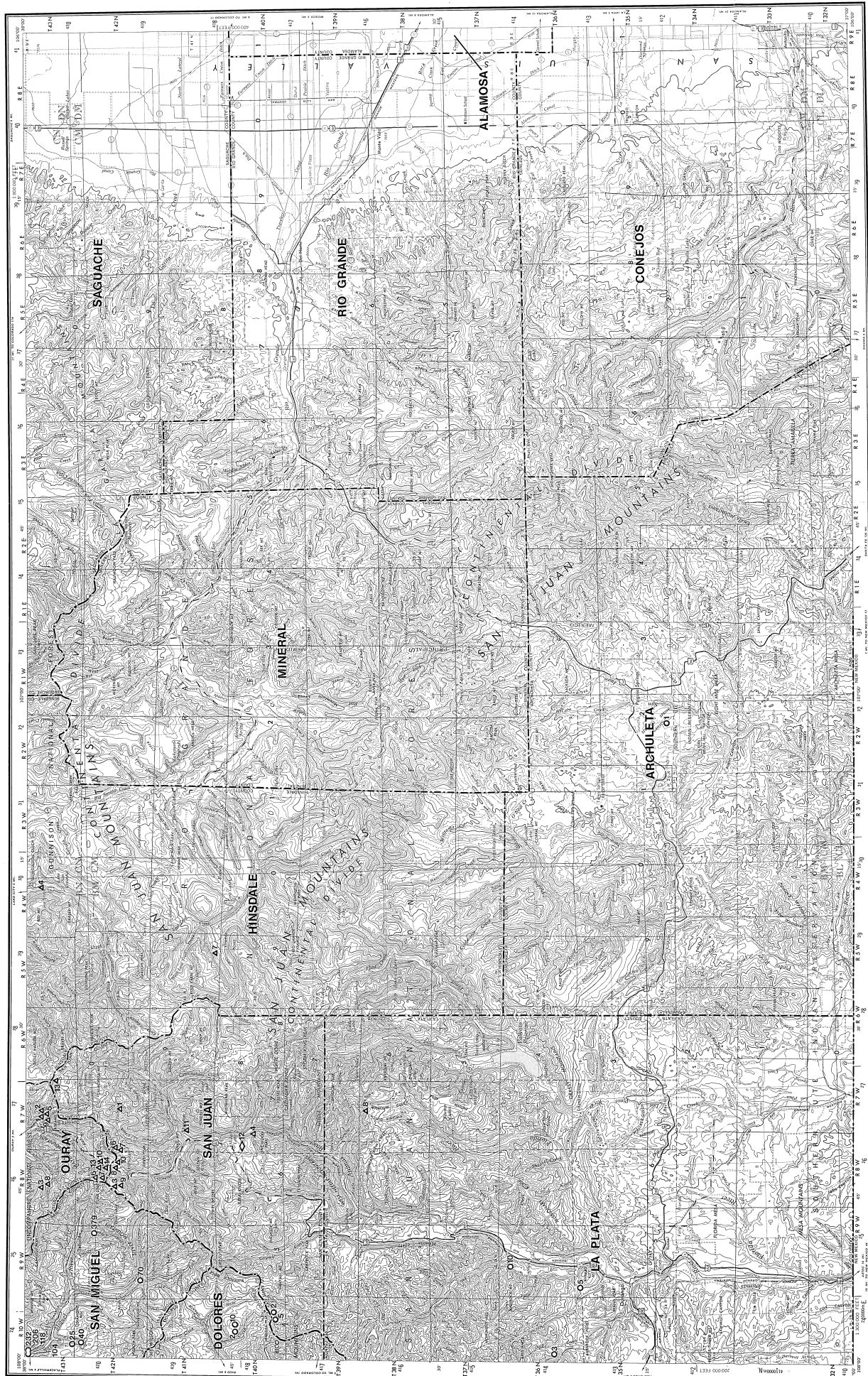
RADIOACTIVE MINERAL OCCURRENCES OF THE CORTEZ 1° x 2° QUADRANGLE, COLORADO

Compiled by James L. Nelson-Moore, Donna Bishop Collins, and A. L. Hornbaker

1978

CORTEZ, COLORADO, UTAH

REVISED 1989



Base from U. S. Geological Survey

**EXPLANATION**

**HOST ROCKS FOR OCCURRENCES**

- SILTSTONE, LAKE SEDIMENTS
- COAL SHALE, LIMESTONE
- SPRING DEPOSITS, GROUND WATER
- ▲ IGNEOUS, METAMORPHIC
- OCCURRENCE NUMBER FROM TEXT

**OTHER SYMBOLS**

- STATE BOUNDARY
- - - COUNTY BOUNDARY

**Scale**

Scale 1:50,000

CONTOUR INTERVAL 200 FEET  
WITH SUPPLEMENTARY CONTOURS AT 100 FOOT INTERVALS  
TRANSVERSE MERCATOR PROJECTION

**LOCATION DIAGRAM**

**SECTIONIZED TOWNSHIP**

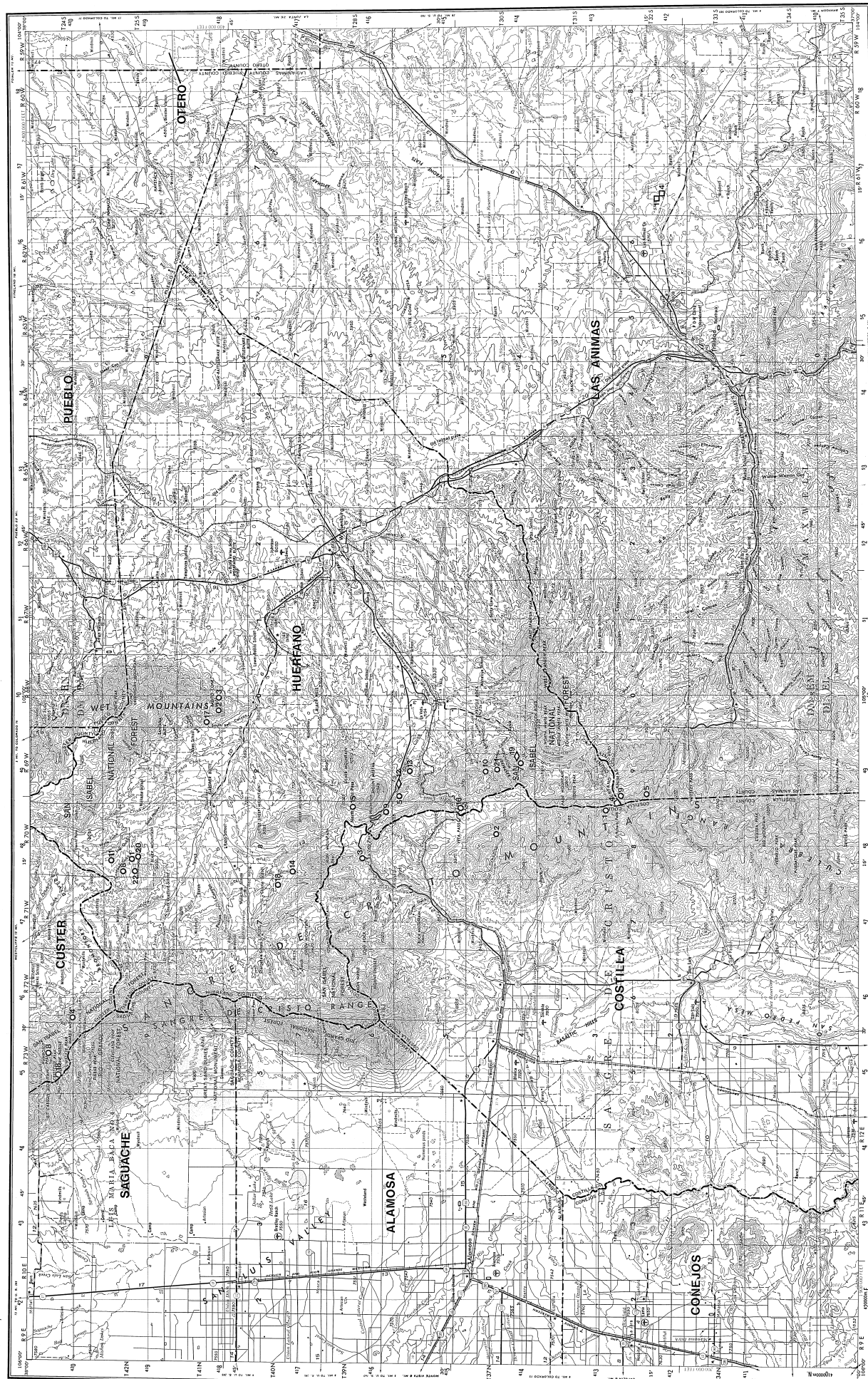
Township	Section	Occurrence Number
36N	1	131
36N	2	132
36N	3	133
36N	4	134
36N	5	135
36N	6	136
36N	7	137
36N	8	138
36N	9	139
36N	10	140
36N	11	141
36N	12	142
36N	13	143
36N	14	144
36N	15	145
36N	16	146
36N	17	147
36N	18	148
36N	19	149
36N	20	150
36N	21	151
36N	22	152
36N	23	153
36N	24	154
36N	25	155
36N	26	156
36N	27	157
36N	28	158
36N	29	159
36N	30	160
36N	31	161
36N	32	162
36N	33	163
36N	34	164
36N	35	165
36N	36	166

**RADIOACTIVE MINERAL OCCURRENCES OF THE DURANGO 1°x2° QUADRANGLE, COLORADO**

Compiled by James L. Nelson-Moore, Donna Bishop Collins, and A. L. Hornbaker

1978





Base from U. S. Geological Survey

EXPLANATION

- HOST ROCKS FOR OCCURRENCES  
 ○ SILTSTONE, SHALE, AND CLAY  
 □ COAL SHALE, LIMESTONE  
 □ SILTSTONE, LAKES, SEDIMENTS  
 □ COAL SHALE, LIMESTONE  
 □ SPRING DEPOSITS, GROUND WATER  
 △ IGNEOUS, METAMORPHIC  
 ○ UNDETERMINED  
 ○ OCCURRENCE NUMBER FROM TEXT
- STATE BOUNDARY  
 --- COUNTY BOUNDARY

Scale 1:250,000  
 0 5 10 15 20 25 30 Miles  
 0 5 10 15 20 25 30 Kilometers

TRANSVERSE MERCATOR PROJECTION  
 WITH SUPPLEMENTARY CONTOURS AT 100 FOOT INTERVALS

SECTIONED TOWNSHIP

6	5	4	3	2	1
7	8	9	10	11	12
13	14	15	16	17	18
19	20	21	22	23	24
25	26	27	28	29	30
31	32	33	34	35	36

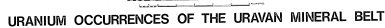
LOCATION DIAGRAM

N 133	N 134	N 135	N 136	N 137	N 138
N 139	N 140	N 141	N 142	N 143	N 144
N 145	N 146	N 147	N 148	N 149	N 150
N 151	N 152	N 153	N 154	N 155	N 156
N 157	N 158	N 159	N 160	N 161	N 162
N 163	N 164	N 165	N 166	N 167	N 168
N 169	N 170	N 171	N 172	N 173	N 174
N 175	N 176	N 177	N 178	N 179	N 180
N 181	N 182	N 183	N 184	N 185	N 186
N 187	N 188	N 189	N 190	N 191	N 192
N 193	N 194	N 195	N 196	N 197	N 198
N 199	N 200	N 201	N 202	N 203	N 204
N 205	N 206	N 207	N 208	N 209	N 210
N 211	N 212	N 213	N 214	N 215	N 216
N 217	N 218	N 219	N 220	N 221	N 222
N 223	N 224	N 225	N 226	N 227	N 228
N 229	N 230	N 231	N 232	N 233	N 234
N 235	N 236	N 237	N 238	N 239	N 240
N 241	N 242	N 243	N 244	N 245	N 246
N 247	N 248	N 249	N 250	N 251	N 252
N 253	N 254	N 255	N 256	N 257	N 258
N 259	N 260	N 261	N 262	N 263	N 264
N 265	N 266	N 267	N 268	N 269	N 270
N 271	N 272	N 273	N 274	N 275	N 276
N 277	N 278	N 279	N 280	N 281	N 282
N 283	N 284	N 285	N 286	N 287	N 288
N 289	N 290	N 291	N 292	N 293	N 294
N 295	N 296	N 297	N 298	N 299	N 300

# RADIOACTIVE MINERAL OCCURRENCES OF THE TRINIDAD 1° x 2° QUADRANGLE, COLORADO

Compiled by James L. Nelson - Moore, Donna Bishop Collins, and A. L. Hornbaker

1978



Compiled by  
James L. Nelson - Moore  
Donna Bishop Collins  
A. L. Hornbaker  
1978  
Crafted by  
Kno. M. Krawchuk  
Mark V. Peschke

