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A compilation of ages of mineralization of metallic mineral deposits in the western conterminous Cordillera as determined through 1985

by

Susan Sharpless and John Albers

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1. U.S.G.S., Menlo Park, California

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The tables, showing ages of mineralization for metallic mineral deposits in the Cordillera of the western conterminous United States, were developed as background information for a report on "Metallogenic Evolution in the Cordilleran Region of the western United States" by Richard Hutchinson, Colorado School of Mines and John Albers, U.S. Geological Survey to be published as part of a forthcoming DNAG volume. The age data were compiled entirely from information in the published literature through 1985 and may be incomplete. References to the source papers that yielded the majority of the information are included in the tables and are supplemented by additional information gathered by the authors. It is hoped that these tabulations will be of use to others who may become engaged in metallogenic studies as time goes on.

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Mines and districts	Latitude x longitude	Type of ore	Type of dating	Age in m.y.	Reference
			ARIZONA		
Mineral Park	35°22' x 114°02'	Cu, Mo	K-Ar	72	Eidel, J. J., Frost, J. E., and Clippinger, D. M., 1968, Copper-molybdenum mineralization at Mineral Park, Mojave County, Arizona, in Ridge, J. D., Ore deposits of the United States, 1933-1967 (Graton Sales Volume), v. 2: New York, American Institute of Mining, Metallurgical, and Petroleum Engineers, p. 1258-1281.
Gold Basin-Lost Basin districts	35°50' x 114°08'	Au	K-Ar	69, 68, 65	Theodore, T. G., McKee, E. H., Nash, J. T., and Antweiler, J. C., 1982, Genesis of Late Cretaceous gold mineralization in the Gold Basin-Lost Basin mining districts, Mojave County, Arizona: Geological Society of America Abstracts, p. 240.
Ray	33°08' x 111°42'	Porphyry Cu	K-Ar	>60.8	Banks, N. J., Cornwall, H. R., Silberman, M. L., Creasey, S. C., and Marvin, R. F., 1972, Chronology of intrusion and ore deposition at Ray, Arizona: Part I, K-Ar ages: Economic Geology, v. 67, p. 864-878.
Globe-Miami district	33°20' x 110°45'	Porphyry Cu	K-Ar	63.3±0.5 61.1±0.3 59.5±0.3 59.1±0.5	Creasey, S. C., 1980, Chronology of intrusion and deposition of porphyry copper ores, Globe-Miami district, Arizona: Economic Geology, v. 75, p. 830-844.
Bagdad	34°18' x 112°58'	Porphyry Cu	K-Ar	70.9	Livingston, D. E., 1973, A plate tectonic hypothesis for the genesis of porphyry copper deposits of the southern Basin and Range Province: Earth and Planetary Science Letters, v. 20, no. 2, p. 171-179.
Copper Basin	34°35' x 112°35'	Porphyry Cu, Pb, Zn, Au, Ag	K-Ar	64	Do.
Copper Cities	34°30' x 110°50'	Porphyry Cu	K-Ar	63.0	Do.
Castle Dome	33°30' x 110°55'	Porphyry Cu, Zn, Pb, Au, Ag	K-Ar	57.8±1.0	Do.
Inspiration	33°27' x 110°54'	Porphyry Cu	K-Ar	57.8±1.0	Do.
Ray	33°15' x 110°59'	Porphyry Cu	K-Ar	65.4±1.0	Do.
Christmas	33°08' x 110°42'	Porphyry Cu, Au, Ag	K-Ar	62.0	Do.
Poston Butte	33°20' x 110°30'	Porphyry Cu, Au, Ag	K-Ar	62.0±1.0	Do.
Sacaton	33°22' x 111°50'	Porphyry Cu	K-Ar	64.5±1.4	Do.
Lakeshore	32°27' x 111°45'	Porphyry Cu, Pb, Au, Ag	K-Ar	64.1±2.0	Do.
Silverbell	32°23' x 111°30'	Porphyry Cu, Pb, Zn, Mo, Au, Ag	K-Ar	67.1±2.0	Do.
San Manuel	32°40' x 110°40'	Porphyry Cu	K-Ar	67.0±2.0	Do.
Kalamazoo	32°40' x 110° 40'	Porphyry Cu	K-Ar	67.0±2.0	Do.
Copper Creek	32°42' x 110°30'	Porphyry Cu	K-Ar	67.5±1.5	Do.
Morenci-Metcalf	33°06' x 109°18'	Porphyry Cu	K-Ar	55.2±1.5	Do.
Lone Star (Safford)	32°56' x 109°32'	Porphyry Cu, Pb, Au, Ag	K-Ar	62.4±2.3	Do.
New Cornelia	32°22' x 112°52'	Porphyry Cu	K-Ar	63±1.0	Do.
Mission, et al	32°00' x 111°09'	Porphyry Cu	K-Ar	57.4±1.4	Do.
Sierrita-Esperanza	31°50' x 110°10'	Porphyry Cu, Pb, Zn, Au, Ag	K-Ar	61.6±1.0	Do.

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			ARIZONA		
Bisbee	31°30' x 109°52'	Porphyry Cu	K-Ar	163-178	Creasey, S. C., and Kistler, R. W., 1962, Age of some copper-bearing porphyries and other igneous rocks in southeastern Arizona, in Geological Survey Research, 1962: U.S. Geological Survey Professional Paper 450-D, p. D1-D5.
ABC	33°18' x 114°35'	Mn		Late Tertiary	Keith, S. B., Gest, D. E., DeWitt, E., Toll, N. W., and Everson, B. A., 1983, Metallic mineral districts and production in Arizona: Bureau of Geology and Mineral Technology Bulletin 194, 58 p.[1]
Agua Fria	34°22' x 112°15'	Cu, Pb, Zn, Au, Ag		Early Precambrian	Do.
Aguila	33°53' x 113°20'	Cu, Pb		Middle Tertiary	Do.
Aguirre Peak	31°37' x 111°40'	Cu, W		Early Tertiary	Do.
Ajo	32°24' x 112°52'	Cu, Pb, Mo, Au, Ag		Late Cretaceous to Early Tertiary	Do.
Ajo Cornelia	32°21' x 112°52'	Cu, Ag		Middle Tertiary	Do.
Alamo	34°16' x 113°39'	Cu, Pb, Ag, Au		Middle Tertiary	Do.
Alamo Springs	33°26' x 113°53'	Cu		Middle Tertiary	Do.
Amado	31°34' x 111°20'	Cu, Pb, Zn, Au, Ag		Jurassic	Do.
[illegible]ple	33°18' x 111°10'	Cu, Pb, Zn, Mo, Au, Ag		Late Cretaceous	Do.
[illegible]pache Iron	34°13' x 110°41'	Fe		Late Precambrian	Do.
Apache Pass	32°10' x 109°30'	Cu, Pb, Au, Ag, W		Middle Tertiary	Do.
Aquarius Mts.	34°45' x 113°32'	W		Early Precambrian	Do.
Aravaipa	32°55' x 110°15'	Cu, Pb, Zn, Au, Ag		Middle Tertiary	Do.
Arivaca	31°30' x 111°20'	Cu, Pb, Au, Ag		Late Tertiary	Do.
Artillery Peak	34°23' x 113°36'	Mn		Middle Tertiary	Do.
Artillery	34°18' x 113°30'	Cu, Ag		Middle Tertiary	Do.
Ash Peak	32°45' x 109°15'	Cu, Pb, Au, Ag, Mn		Middle Tertiary	Do.
Baboquivari	31°42' x 111°37'	Cu, Pb, Au, Ag, V		Middle Tertiary	Do.
Banner	33°05' x 110°45'	Cu, Pb, Zn, Au, Ag		Late Cretaceous to Early Tertiary	Do.
Battle Flat	34°23' x 112°19'	Cu, Pb, Zn, Ag		Middle Tertiary	Do.
Ben Nevis	32°05' x 112°10'	Cu, Ag		Middle Tertiary	Do.
Bentley	36°15' x 113°48'	Cu, Pb, Zn, Ag		Triassic to Jurassic	Do.
Bickle	33°50' x 111°47'	U		Middle Precambrian	Do.
Big Bug	34°33' x 112°18'	Cu, Pb, Au, Ag, Zn		Early Precambrian	Do.

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		ARIZONA			
Bighorn	33°44' x 113°27'	Cu, Pb, Au, Ag		Middle Tertiary	Do.
Black Burro	34°18' x 113°43'	Mn, U		Middle Tertiary	Do.
Black Canyon	34°22' x 112°12'	Cu, Pb, Zn, Au, Ag		Middle Tertiary	Do.
Black Dome	34°00' x 112°40'	Mn		Middle Tertiary	Do.
Black Dragon	31°52' x 111°36'	Mn		Middle Tertiary	Do.
Black Hawk	32°47' x 110°07'	Mn		Middle Tertiary	Do.
Black Hills	34°31' x 112°11'	Cu, Pb, Ag		Tertiary	Do.
Black King	33°15' x 113°45'	Mn		Middle Tertiary	Do.
Black Mountain	36°17' x 109°54'	U, V		Middle Cretaceous	Do.
Black Rock	34°03' x 112°34'	Cu, Pb, Au, Ag		Middle Tertiary	Do.
Black Rock Point	36°52' x 109°12'	U, V		Jurassic	Do.
Black Top	33°05' x 114°00'	Mn		Middle Tertiary	Do.
Bloody Basin	34°13' x 111°50'	Cu		Early Precambrian	Do.
Bluebird	31°26' x 110°30'	Mn		Early Tertiary	Do.
Blue Tank	34°00' x 112°37'	Cu, Ag, Au		Late Cretaceous-Early Tertiary	Do.
Bonegas	34°37' x 113°09'	Mn		Late Cretaceous-Early Tertiary	Do.
Boriana	34°54' x 113°55'	Cu, Ag, Au, W		Early Tertiary	Do.
Bowse	33°56' x 113°53'	Cu, Au		Middle Tertiary	Do.
Box Canyon	34°06' x 112°40'	Mn		Middle Tertiary	Do.
Bradford	31°27' x 110°49'	Cu, Pb, Ag		Late Cretaceous-Early Tertairy	Do.
Bronco Creek	33°55' x 111°51'	Cu, Ag, Au		Early Precambrian	Do.
Brownell	32°13' x 112°10'	Cu, Pb, Ag, U		Late Cretaceous-Early Tertiary	Do.
Bullard	34°03' x 113°13'	Cu, Ag, Au		Middle Tertiary	Do.
Bunker Hill	32°45' x 110°27'	Cu, Pb, Mo, Ag, Au		Late Cretaceous-Early Tertiary	Do.
Burmister	34°22' x 112°08'	Mn		Middle Tertiary	Do.

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		ARIZONA			
Burney	32°32' x 111°47'	Cu, Pb, Zn, Ag		Late Cretaceous-Early Tertiary	Do.
Cababi	32°03' x 111°43'	Cu, Pb, Zn, Ag, Au		Early Tertiary	Do.
Cadillac	32°15' x 112°42'	Mn		Middle Tertiary	Do.
California	31°57' x 109°13'	Cu, Pb, Zn, Ag, Au, W		Middle Tertiary	Do.
Cameron	35°48' x 111°20'	U, V		Triassic	Do.
Camp Verde	34°32' x 111°51'	W		Middle Precambrian	Do.
Camp Wood	34°43' x 113°00'	W		Middle Precambrian	Do.
Cane Valley	36°57' x 109°52'	U, V		Triassic	Do.
Casa Grande	32°59' x 111°47'	Cu, Ag, Au		Late Cretaceous-Middle Tertiary	Do.
Castle Creek	34°07' x 112°42'	Cu, Pb, Au, Ag		Middle Tertiary	Do.
Castle Dome	33°00' x 114°09'	Cu, Pb, Zn, Au, Ag		Middle Tertiary	Do.
Catalina	32°20' x 110°42'	Cu, Pb		Late Cretaceous-Early Tertiary	Do.
Cave Creek, Maricopa County	34°48' x 111°43'	Cu, Pb, Au, Ag, W		Middle. Tertiary	Do.
Cedar Valley	34°48' x 113°47'	Cu, Ag, Au		Middle Tertiary	Do.
Cerro Colorado	31°37' x 111°17'	Cu, Pb, Ag, Au		Late Cretaceous	Do.
Cerro De Fresnal	31°26' x 111°23'	Cu, Ag, Au		Middle Tertiary	Do.
Chemehuevis	34°30' x 114°13'	U		Middle Tertiary	Do.
Cherry Creek	34°37' x 112°04'	Cu, Pb, Ag, Au		Early Precambrian	Do.
Christmas	33°06' x 110°41'	Cu, Au, Ag		Late Cretaceous-Early Tertiary	Do.
Cienega	34°12' x 114°09'	Cu, Ag, Au		Middle Tertiary	Do.
Cimarron Mtns.	32°25' x 112°06'	Cu, Pb, Ag, Mn		Late Cretaceous-Early Tertiary	Do.
Cinnabar	33°35' x 114°22'	Cu, Ag, Hg		Middle Tertiary	Do.
Clara	34°09' x 113°47'	Cu, Ag		Middle Tertiary	Do.
Clark	32°48' x 110°04'	Cu, Pb, Ag		Middle Tertiary	Do.
Cleopatra	34°18' x 113°43'	Cu, Pb, Ag, Au		Middle Tertiary	Do.
Cochise	32°05' x 110°02'	Cu, Pb, Zn, Au, Ag		Late Cretaceous-Early Tertiary	Do.
Comobabi	32°03' x 111°48'	Cu, Ag		Early Tertiary	Do.

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Congress	34°10' x 112°40'	W		Middle Precambrian	Do.
Copper Basin	34°32' x 112°35'	Cu, Pb, Zn, Mo, Ag, Au		Late Cretaceous-Early Tertiary	Do.
Copper Butte	33°08' x 111°04'	Cu, Pb, Ag, Au		Middle Tertiary	Do.
Copper Mountain, Greenlee County	33°08' x 109°24'	Pb, Mo, Cu, Au, Ag, Mn		Early Tertiary	Do.
Cottonwood, Pinal County	32°58' x 110°53'	Cu, Pb, Au, Ag		Late Cretaceous-Early Tertiary	Do.
Cottonwood, Mohave County	35°17' x 113°33'	Cu, Pb, Ag, Au, W		Early Precambrian	Do.
Cottonwood Basin	31°30' x 109°03'	Mn		Middle Tertiary	Do.
Cove Mesa	36°42' x 109°18'	U, V		Jurassic	Do.
Coyote	32°00' x 111°28'	Cu, Ag		Late Cretaceous-Early Tertiary	Do.
Crescent	32°50' x 110°40'	Cu, Ag, Mn		Middle Tertiary	Do.
Crosby	34°30' x 113°08'	Pb, Cu, Ag, Au		Middle Tertiary	Do.
Cunningham Pass	33°57' x 113°33'	Cu, Pb, Au, Ag		Middle Tertiary	Do.
Cuprite	32°56' x 110°40'	Cu, Pb, Ag		Late Cretaceous-Early Tertiary	Do.
Cyclopic	35°43' x 114°10'	Cu, Pb, Au, Ag		Middle Tertiary	Do.
Date Creek	34°20' x 113°18'	U, V		Middle Tertiary	Do.
Diamond Joe	34°50' x 113°45'	Cu, Pb, Zn, Au, Ag		Late Cretaceous	Do.
Dome	32°40' x 114°22'	U		Early Tertiary	Do.
Dos Pobres	32°59' x 109°41'	Cu		Early Tertiary	Do.
Dripping Springs	33°09' x 110°51'	Cu, Pb, Zn, Mo, Au, Ag, V		Late Cretaceous-Early Tertiary	Do.
Durham-Suizo	32°42' x 111°08'	Cu, Ag		Late Cretaceous-Early Tertiary	Do.
Eagletail	33°22' x 113°32'	Mn		Middle Tertiary	Do.
Easter	31°30' x 111°23'	W		Late Cretaceous	Do.
El Capitan	33°12' x 110°48'	Cu, Pb, Ag		Late Cretaceous-Early Tertiary	Do.
El Dorado Pass	35°40' x 114°28'	Cu, Pb, Ag, Au		Middle Tertiary	Do.
Ellsworth	33°45' x 113°44'	Cu, Pb, Ag, Au, W		Middle Tertiary	Do.

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		ARIZONA			
Hardly Able	33°50' x 112°07'	Cu		Middle Tertiary	Do.
Harris	34°04' x 113°11'	Mn		Middle Tertiary	Do.
Harshaw	32°26' x 110°41'	Cu, Pb, Zn, Au, Ag, Mn		Late Cretaceous-Early Tertiary	Do.
Hartford	31°32' x 110°23'	Cu, Pb, Zn, Au, Ag, Mn, W		Early Tertiary	Do.
Harquahala	33°43' x 113°28'	Cu, Pb, Au, Ag, Mn		Middle Tertiary	Do.
Havasu Canyon	36°15' x 112°40'	Cu, Pb, Zn, Ag		Triassic-Jurassic	Do.
Heber	34°21' x 110°45'	Mn		Permian	Do.
Helvetia-Rosemont	31°50' x 110°45'	Cu, Pb, Zn, Ag, Au, Mo		Late Cretaceous-Early Tertiary	Do.
Hillside	34°30' x 112°32'	Cu, Pb, Au, Ag		Early Precambrian	Do.
Holbrook	35°02' x 110°20'	U		Triassic	Do.
Hopi Buttes	35°25' x 110°08'	U, V		Late Tertiary	Do.
Hovatter	33°21' x 113°48'	Mn		Middle Tertiary	Do.
Hualapai	34°52' x 113°58'	Cu, Pb, Zn, Ag, Au		Early Precambrian	Do.
Humbug	34°05' x 112°18'	Cu, Pb, Au, Ag		Middle Tertiary	Do.
Ivanhoe	31°33' x 110°46'	Cu, Pb, Ag, Au, Mn		Late Cretaceous	Do.
Jackson	31°43' x 110°51'	Cu, Ag		Late Cretaceous-Early Tertiary	Do.
Johnson and Hayden	35°40' x 112°59'	Mn		Permian	Do.
Juniper Flats	31°58' x 109°58'	Cu, Pb, Ag, Au		Jurassic	Do.
Kay	34°10' x 112°10'	Cu, Pb, Ag, Au		Early Precambrian	Do.
Keystone	31°52' x 111°12'	Cu, Pb, Zn, Ag, Au		Late Cretaceous	Do.
Kirkland	34°21' x 112°40'	Pb, Ag, Au		Early Precambrian	Do.
Kofa	33°12' x 114°00'	Cu, Ag, Au, Pb		Middle Tertiary	Do.
La Cholla	33°52' x 114°20'	Cu, Ag, Au		Middle Tertiary	Do.
Laguna	32°45' x 114°24'	Cu, Au		Early Tertiary	Do.
Lakeshore	32°30' x 111°53'	Cu, Pb, Mo, Ag, Au		Late Cretaceous-Early Tertiary	Do.
La McKoy	34°09' x 111°29'	Mn		Middle Tertiary	Do.
Lane Mountain	34°09' x 112°18'	Au, Ag		Late Cretaceous-Early Tertiary	Do.

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			ARIZONA		
La Posa	32°34' x 114°06'	Cu, Ag, Au		Early Tertiary	Do.
Las Guijas	31°39' x 111°21'	Cu, Ag		Early Tertiary	Do.
Lime Creek	34°00' x 111°47'	U		Middle Precambrian	Do.
Lincoln Ranch	34°11' x 113°41'	Mn		Middle Tertiary	Do.
Little Copper Creek	34°27' x 112°30'	Cu, Pb, Zn, Au, Ag		Late Cretaceous-Early Triassic	Do.
Little Harquahala	33°38' x 113°34'	Cu, Pb, Au, Ag		Middle Tertiary	Do.
Little Hills	32°34' x 110°48'	Cu, Pb, Ag, Au		Late Cretaceous-Early Tertiary	Do.
Lone Star	32°58' x 109°37'	Cu, Pb, Ag, Au		Early Tertiary	Do.
Long Valley	34°37' x 111°08'	Mn		Permian	Do.
Lost	34°28' x 113°33'	W		Early Precambrian	Do.
Lost Baain	35°56' x 115°51'	Cu		Early Precambrian	Do.
Lucky Boy	33°12' x 110°48'	U		Late Precambrian	Do.
Luckachukai	36°50' x 109°13'	U, V		Jurasaic	Do.
Madril Peak	34°23' x 113°39'	Cu		Middle Tertiary	Do.
Magonigal	32°25' x 111°36'	Cu, Mn		Late Cretaceous-Early Tertiary	Do.
Mammon, La Paz County	32°33' x 111°55'	Cu, Ag, Au		Middle Tertiary	Do.
Mammoth	32°45' x 110°40'	Cu, Pb, Zn, Mo, Ag, Au		Middle Tertiary	Do.
Mansfield	31°34' x 110°18'	Cu, Pb, Au, Ag		Late Cretaceous	Do.
Marble Peak	32°27' x 110°43'	Cu, Pb, Zn, Ag, Au		Late Cretaceous	Do.
Martinez	34°10' x 112°50'	Cu, Pb, Ag, Au		Middle Tertiary	Do.
Martinez Canyon	33°11' x 111°10'	Cu, Pb, Ag		Middle Tertiary	Do.
Mascot	32°12' x 109°33'	Cu, Pb, Ag, Au		Early Tertiary	Do.
Mayer	34°23' x 112°12'	Cu, Ag, Au		Early Precambrian	Do.
Maynard	35°05' x 113°51'	Cu, Pb, Ag, Au, U		Late Cretaceous	Do.
McConnico	35°06' x 114°06'	Cu, Ag, Au		Middle Tertiary	Do.
McCracken	34°23' x 113°47'	Cu, Pb, Zn, Mo, Au, Ag		Middle Tertiary	Do.
McDowell	33°39' x 111°50'	Cu Ag		Middle Tertiary	Do.
Mesa	34°14' x 113°48'	Mn		Middle Tertiary	Do.

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			ARIZONA		
Miami-Inspiration	33°25' x 110°56'	Cu, Pb, Zn, Mo, Au, Ag		Late Cretaceous-Early Tertiary	Do.
Middle Mountains	32°58' x 114°22'	Pb, Ag		Middle Tertiary	Do.
Middle Pass	31°57' x 110°00'	Cu, Pb, Zn, Mo, Ag, Au		Middle Tertisry	Do.
Midwsy, La Paz County	34°03' x 113°50'	Cu		Middle Tertiary	Do.
Mildred Peak	31°52' x 111°11'	Cu, Pb, Au, Ag		Early Tertiary	Do.
Mine Canyon	31°45' x 110°24'	Cu, Ag		Late Cretaceous	Do.
Mineral Butte	33°08' x 111°34'	Cu, Pb, Ag		Late Cretaceous-Early Tertiary	Do.
Mineral Creek	33°11' x 111°00'	Cu, Pb, Zn, Mo, Ag, Au		Late Cretaceous-Early Tertiary	Do.
Mineral Hill	33°12' x 111°11'	Cu, Pb, Zn, Ag, Au		Middle Tertiary	Do.
Mineral Mountain	33°10' x 111°13'	Cu, Pb, Zn, Au, Ag		Middle Tertiary	Do.
Mineral Point	34°43' x 112°15'	Cu, Ag, Au		Early Precambrian	Do.
Minnehaha	34°10' x 112°25'	Cu, Pb, Au, Ag		Early Precambrian	Do.
Minnesota	36°00' x 114°40'	Cu, Pb, Au, Ag		Middle Tertisry	Do.
Mohawk	32°44' x 113°47'	Cu, Pb, Ag		Middle Tertiary	Do.
Money Maker	34°18' x 112°16'	W		Middle Precambrian	Do.
Montezuma	31°55' x 112°51'	Cu, Pb, Ag		Early Tertiary	Do.
Monument Valley	36°55' x 110°10'	U, V		Triassic	Do.
Moon Mountains	33°49' x 119°22'	Au, Ag		Middle Tertiary	Do.
Mount Union	34°27' x 112°24'	Cu, Pb, Zn, Au, Ag		Middle Tertiary	Do.
Music Mountain	35°35' x 113°55'	Cu, Pb, Au, Ag		Late Cretaceous-Early Tertiary	Do.
Nakai Mess	36°55' x 110°27'	U		Triassic	Do.
N.E. Carrizo Mountains	36°45' x 109°03'	U, V		Jurassic	Do.
Neversweat	33°05' x 113°48'	Cu, Pb, Ag, Au		Middle Tertiary	Do.
New River	34°00' x 112°07'	Cu, Ag, Au, Mn		Early Precambrian	Do.
New Water	33°43' x 114°00'	Cu, Pb, Zn, Au, Ag, Mn		Middle Tertiary	Do.
Nogales	31°52' x 110°54'	Cu, Ag, Au, W		Jurassic	Do.
Northern Plomosa	33°56' x 114°05'	Cu, Pb, Ag, Au		Middle Tertiary	Do.

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Ostman	35°05' x 114°21'	Cu, Ag, Au		Middle Tertiary	Do.
Oceanic	31°33' x 111°22'	Cu, Pb, Ag, Au		Middle Tertiary	Do.
Old Dick	34°30' x 113°15'	Cu, Pb, Zn, Ag, Au		Early Precambrian	Do.
Ophir	35°02' x 114°00'	W		Middle Precambrian	Do.
Oracle	32°34' x 110°42'	Cu, Pb, Au, Ag, W		Early Tertiary	Do.
Oro Blanco	31°22' x 111°14'	Cu, Pb, Zn, Au, Ag		Late Cretaceous	Do.
Orphan	36°06' x 112°08'	Cu, Pb, Zn, Ag, U		Triassic-Jurassic	Do.
Osborne	33°40' x 112°57'	Cu, Pb, Zn, Au, Ag		Middle Tertiary	Do.
Owens	34°13' x 113°48'	Cu, Pb, Au, Ag		Middle Tertiary	Do.
Owl Head	32°35' x 111°06'	Cu, Ag		Middle Tertiary	Do.
Painted Rock	33°04' x 113°02'	Cu, Pb, Au, Ag		Middle Tertiary	Do.
Pajarito	32°20' x 111°04'	Cu, Pb, Zn, Au, Ag, U		Late Cretaceous	Do.
Palmetto	31°27' x 110°42'	Cu, Pb, Zn, Au, Ag, Mn, W		Late Cretaceous-Early. Tertiary	Do.
Patagonia	31°21' x 110°42'	Cu, Pb, Zn, Au, Ag		Late Cretaceous-Early Tertiary	Do.
Pearce	31°53' x 109°50'	Cu, Pb, Zn, Au, Ag		Middle Tertiary	Do.
Peck	34°18' x 112°18'	Cu, Pb, Au, Ag		Middle Tertiary	Do.
Peloncillo	32°14' x 109°05'	Cu		Middle Tertiary	Do.
Petrified Forest	34°53' x 109°52'	U, V		Triassic	Do.
Pigeon Pipe	36°42' x 112°26'	U		Triassic-Jurassic	Do.
Picacho	32°37' x 111°23'	Cu, Ag		Middle Tertiary	Do.
Pikes Peak	33°48' x 112°25'	Cu, Pb, Ag, Au		Middle Tertiary	Do.
Pilgram	35°20' x 114°25'	Au, Ag		Middle Tertiary	Do.
Pima	31°55' x 111°04'	Cu, Pb, Zn, Mo, Ag, Au, W, U		Late Cretaceous-Early Tertiary	Do.
Pinal Grande	32°34' x 112°09'	Cu, Pb, Zn, Ag		Late Cretaceous-Early Tertiary	Do.
Pinal Mountains	33°18' x 110°47'	Cu, Pb, Ag, Au		Late Cretaceous-Early Tertiary	Do.
Pine Peak	34°43' x 113°49'	Cu, Pb, Zn, Ag, Au		Middle Tertiary	Do.

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Mines and districts	Latitude x longitude	Type of ore	Type of dating	Age in m.y.	Reference
		ARIZONA			
Pioneer	33°17' x 111°04'	Cu, Pb, Zn, Au, Ag, Mn		Late Cretaceous-Early Tertiary	Do.
Pittsburg-Tonto	34°00' x 111°17'	Cu, Pb		Early Precambrian	Do.
Planet	34°13' x 114°00'	Cu, Au, Ag		Middle Tertiary	Do.
Plomosa Pass	33°49' x 114°04'	Cu, Ag		Late Cretaceous	Do.
Polk	34°13' x 111°34'	Cu		Early Precambrian	Do.
Prescott	34°36' x 112°22'	Cu		Early Precambrian	Do.
Pride	34°08' x 114°02'	Cu, Ag, Au		Middle Tertiary	Do.
Prospect Canyon	36°04' x 113°13'	Cu, V, U		Triassic-Jurassic	Do.
Querces	32°21' x 110°40'	Cu, Au, Ag		Late Cretaceous-Early Tertiary	Do.
Quien Sabe	32°12' x 111°02'	Cu, Pb, Ag		Late Cretaceous-Early Tertiary	Do.
Quijotos	32°10' x 112°09'	Cu, Pb, Ag, Au, U		Early Tertiary	Do.
Quinlan	32°00' x 111°39'	Pb, W		Early Tertiary	Do.
Rainbow	36°47' x 112°53'	U, V		Triassic	Do.
Ramsdell	33°45' x 110°41'	Mn		Middle Tertiary	Do.
Randolph	33°25' x 111°12'	Cu, Ag		Middle Tertiary	Do.
Rattlesnake	32°35' x 110°18'	Au, Ag		Middle Tertiary	Do.
Rawhide	34°15' x 113°40'	Cu, Pb, Zn, Ag		Middle Tertiary	Do.
Red Hills	33°02' x 111°13'	Cu		Middle Tertiary	Do.
Redington	32°23' x 110°33'	Cu, Ag		Late Cretaceous-Early Tertiary	Do.
Red Picacho	33°55' x 112°29'	Cu, Au, Ag		Middle Tertiary	Do.
Red Rock, Apache County	36°35' x 109°02'	U, V		Jurassic	Do.
Red Rock, Santa Cruz County	31°30' x 110°34'	Cu, Pb, Zn, Ag		Late Cretaceous	Do.
Reef	31°26' x 110°18'	W		Early Tertiary	Do.
Relief	33°44' x 112°15'	Au, Ag		Middle Tertiary	Do.
Rich Hill	34°14' x 112°42'	Cu, Au, Ag, Pb		Middle Tertiary	Do.
Richinbar	34°11' x 112°10'	Cu, Pb, Ag, Au		Early Precambrian	Do.

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Mines and districts	Latitude x longitude	Type of ore	Type of dating	Age in m.y.	Reference
			ARIZONA		
Richmond Basin	33°30' x 110°45'	Cu, Pb, Ag, Mn		Late Cretaceous-Early Tertiary	Do.
Rincon	32°04' x 110°36'	Cu, Pb, Ag, Au		Middle Tertiary	Do.
Ripsey	33°00' x 111°00'	Cu, Pb, Ag, Au		Late Cretaceous-Early Tertiary	Do.
Riverside	33°08' x 111°00'	Cu, Pb, Au, Ag		Late Cretaceous-Early Tertiary	Do.
Roskruge	32°13' x 111°09'	Cu, Ag		Late Cretaceous-Early Tertiary	Do.
Rough Rock	36°30' x 109°58'	U, V		Middle Cretaceous	Do.
Rucker Canyon	31°45' x 109°18'	Cu, Pb. Zn, Ag		Middle Tertiary	Do.
Saddle Mountain	33°03' x 110°40'	Cu, Pb, Zn, Ag, Au		Late Cretaceous-Early Tertiary	Do.
Saginaw Hill	32°10' x 111°03'	Cu, Pb, Zn, Au, Ag		Late Cretaceous-Early Tertiary	Do.
Salero	31°34' x 110°42'	Cu, Pb, Zn, Au, Ag		Late Cretaceous	Do.
Salt River	33°49' x 110°31'	Cu, Pb, Ag, U		Late Precambrian	Do.
Salt River Mountains	33°20' x 112°05'	Cu, Au, Ag		Middle Tertiary	Do.
San Carlos	33°17' x 110°19'	Mn		Middle Tertiary	Do.
Sanchez	32°55' x 109°32'	Cu		Early Tertiary	Do.
San Domingo	33°55' x 112°38'	Cu, Pb. Au, Ag		Middle Tertiary	Do.
San Juan	32°58' x 109°38'	Cu, Ag		Early Tertiary	Do.
San Manuel	32°41' x 110°40'	Cu, Mo, Ag, Au		Late Cretaceous-Early Tertiary	Do.
Santa Rosa	32°36' x 111°43'	Cu, Pb, Ag		Late Cretaceous-Early Tertiary	Do.
Sar Jac	33°40' x 112°56'	W		Late Cretaceous-Early Tertiary	Do.
Sawtooth	32°38' x 111°45'	Mn		Middle Tertiary	Do.
Sedimentary Hills	32°12' x 111°07'	Cu		Late Cretaceous-Early Tertiary	Do.
Seligman Iron	35°05' x 112°55'	Fe		Pennsylvanian-Permian	Do.
Shea	34°45' x 112°06'	Cu, Ag, Au		Middle Tertiary	Do.

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Mines and districts	Latitude x longitude	Type of ore	Type of dating	Age in m.y.	Reference
		ARIZONA			
Sheep Tanks	33°22' x 113°44'	Cu, Au, Ag, Mn		Middle Tertiary	Do.
Sierra Ancha	33°50' x 110°52'	Cu, Ag		Late Precambrian	Do.
Silver	33°07' x 114°06'	Cu, Pb, Ag		Middle Tertiary	Do.
Silverado	34°55' x 113°48'	Cu, Pb, Ag		Late Cretaceous	Do.
Silver Bell	32°25' x 111°28'	Cu, Pb, Zn, Ag, Au, Mo		Late Cretaceous-Early Tertiary	Do.
Silver Camp	32°13' x 109°37'	Cu, Pb, Au, Ag		Late Cretaceous-Early Tertiary	Do.
Silver Mountain	34°08' x 112°23'	Cu, Ag, Au		Middle Tertiary	Do.
Silver Reef	32°41' x 111°47'	Cu, Au, Ag, Mn		Middle Tertiary	Do.
Slate	32°36' x 111°52'	Cu, Pb, Ag, Au		Middle Tertiary	Do.
Southern Plomosa	33°32' x 114°23'	Cu, Pb, Au, Ag		Middle Tertiary	Do.
Spring Creek	34°05' x 111°05'	Cu, Pb, Ag, Au, W		Early Precambrian	Do.
Squaw Peak	34°33' x111°56'	Cu, Pb, Zn, Mo, Ag		Late Cretaceous-Early Tertiary	Do.
Stanley	33°04' x 110°20'	Cu, Pb, Au, Ag		Middle Tertiary	Do.
Steamboat Mountain	33°06' x 110°50'	Mn		Middle Tertiary	Do.
Stinking Springs	34°42' x 109°38'	U, V		Triassic	Do.
Summit	33°20' x 110°56'	Cu, Pg, Ag, Au, W		Late Cretaceous-Early Tertiary	Do.
Sunrise	33°55' x 112°58'	Cu, Ag, Au		Middle Tertiary	Do.
Superstition Mts.	33°20' x 111°21'	Cu, Ag, Aw		Middle Tertiary	Do.
Swansea	34°10' x 113°52'	Cu, Ag, Au, Fe		Middle Tertiary	Do.
Swingle	32°48' x 110°29'	Cu, Ag, Au, Fe		Middle Tertiary	Do.
Swiashelm	31°40' x 109°33'	Cu, Pb, Ag, Au		Middle Tertiary	Do.
Table Mountain	32°48' x 110°28'	Cu, Au		Middle Tertiary	Do.
Teviston	32°15' x 109°39'	Cu, Pb, Ag, Au		Late Cretaceous-Early Tertiary	Do.
Thumb Butte	34°33' x 112°36'	Cu, Ag, Au		Early Precambrian	Do.
Ticonderoga	34°32' x 112°20'	Cu, Pg, Zn, Ag, Au		Late Cretaceous-Early Tertiary	Do.

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Mines and districts	Latitude x longitude	Type of ore	Type of dating	Age in m.y.	Reference
			ARIZONA		
Tiger	34°08' x 112°20'	Cu, Pb, Zn, Ag, Au		Late Cretaceous-Early Tertiary	Do.
Tip Top	34°04' x 112°46'	Cu, Pb, Ag, Au		Middle Tertiary	Do.
Tombstone	31°40' x 110°04'	Cu, Pb, Zn, Au, Ag		Late Cretaceous	Do.
Topock	34°37' x 114°24'	Cu, Ag, Au		Middle Tertiary	Do.
Trigo Mountains	33°14' x 114°39'	Mn		Middle Tertiary	Do.
Triple H	34°17' x 114°03'	U		Middle Tertiary	Do.
Tungstona	34°37' x 113°10'	W		Middle Precambrian	Do.
Tuscumbia	34°16' x 112°21'	Cu, Pb, Ag, Au		Early Precambrian	Do.
Tussock	34°04' x 112°25'	W		Middle Precambrian	Do.
Twin Peaks	32°55' x 109°03'	Cu, Pb, Ag, Au		Middle Tertiary	Do.
Tyndall	31°40' x 110°54'	Cu, Pb, Zn, Au, Ag		Late Cretaceous	Do.
Union Pass	35°12' x 114°28'	Au, Ag		Middle Tertiary	Do.
Valle	35°43' x 112°09'	Cu		Middle Tertiary	Do.
Vekol	32°35' x 112°06'	Cu, Pb, Mo, Ag, Au		Late Cretaceous-Early Tertiary	Do.
Verde	34°45' x 112°07'	Cu, Pb, Zn, Ag, Au		Early Precambrian	Do.
Vermilion Cliffs	36°45' x 111°50'	U		Triassic	Do.
Virginia	35°33' x 114°31'	Cu, Pb, Ag, Au		Middle Tertiary	Do.
Vulture	33°49' x 112°43'	Cu, Pb, Au, Ag		Middle Tertiary	Do.
Wagner	33°30' x 111°00'	W		Middle Precambrian	Do.
Walnut Grove	34°20' x 112°35'	Cu, Pb, Ag, Au		Middle Tertiary	Do.
Walker	34°30' x 112°24'	Cu, Pb, Zn, Au, Ag		Late Cretaceous	Do.
Wallapai	35°18' x 114°08'	Cu, Zn, Pb, Ag, Au, Mo		Late Cretaceous-Early Tertiary	Do.
Warhoop	34°30' x 109°20'	U, V		Triassic	Do.
Warm Springs	36°41' x 112°14'	Cu, Pb, Au, Ag		Permian	Do.
Warren	31°25' x 109°55'	Cu, Pb, Ag, Au, Mn		Jurassic	Do.
Washington Camp	31°20' x 110°08'	Cu, Pb, Zn, Au, Ag		Late Cretaceous-Early Tertiary	Do.
Waterman	32°20' x 111°27'	Cu, Pb, Zn, Au, Ag		Late Cretaceous	Do.

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Mines and districts	Latitude x longitude	Type of ore	Type of dating	Age in m.y.	Reference
			ARIZONA		
Webb	33°15' x 112°55'	Cu, Au, Ag		Middle Tertiary	Do.
West Carrizo	36°47' x 109°12'	U, V		Jurassic	Do.
Wheeler Wash	35°05' x 115°51'	W		Late Cretaceous-Early Tertiary	Do.
Whetstone	31°50' x 110°20'	Cu, W, U		Middle Precambrian	Do.
White Hills	35°42' x 114°21'	Cu, Pb. Ag, Au		Late Cretaceous or Middle Tertiary	Do.
White Mesa	36°45' x 111°28'	Cu, Ag		Jurassic	Do.
White Picacho	33°59' x 112°30'	W		Middle Precambrian	Do.
Winchester	32°16' x 110°02'	Cu, Pb		Early Tertiary	Do.
Winifred	33°40' x 112°04'	Cu, Pb, Ag, Au		Middle Tertiary	Do.
Winslow	35°03' x 110°34'	U, V		Triassic	Do.
Wooley	33°02' x 111°02'	Cu, Ag		Late Cretaceous-Early Tertiary	Do.
Wrightson	31°40' x 112°48'	Cu, Pb, Zn, Ag		Late Cretaceous	Do.
Yarber Wash	34°29' x 112°07'	Cu, Ag, Au		Early Precambrian	Do.
Yellow Jacket, Mohave County	34°38' x 113°44'	Cu, Pb, Zn, Ag		Middle Tertiary(?)	Do.
Yellowstone	32°12' x 110°15'	Cu, Pb, Ag, Au		Middle Tertiary	Do.
Yucca	34°35' x 114°22'	Mn		Middle Tertiary	Do.
Yuma	32°40' x 114°38'	Au		Early Tertiary	Do.
Zannaropolis	34°28' x 113°13'	W		Eerly Precambrian	Do.
Zig Zag	32°55' x 111°15'	Mn		Middle Tertiary	Do.
Zonia	34°20' x 112°38'	Cu, Pb, Ag, Au		Early Precambrien	Do.

[1]All estimated eges in this publication "have been determined from radiometric dating of mineralization or stratigraphic position." p. 3

Note: Late Precambrian: (1250-1000 m.y.), middle Precambrian (1650-1350 m.y.), early Precambrian: (1820-1650 m.y.)

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Mines and districts	Latitude x Longitude	Type of ore	Type of dating	Age in m.y.	Reference
			CALIFORNIA		
Randsburg quadrangle	30°15'-35°30' x 117°30'-117°45'	Au, Ag	Geologic evidence	Upper Miocene	Hulin, C. D., 1925, Geology and ore deposits of the Randsburg quadrangle, Calif.: California Division of Mines and Geology, Bulletin 95, 152 p.
Point Delgada	40°05' x 124°00'	Sulfides	K-Ar	13.8±0.4	McLaughlin, R. J., Sorg, D. H., Morton, J. L., Theodore, T. G., Meyer, C. E., and Delavaux, M. H., 1985, Paragenesis and tectonic significance of base and precious metal occurrences along the San Andreas fault at Point Delgada, Calif.: Economic Geology, v. 80, no. 2, p. 344-359.
Bodie Mining district	38°13' x 119°00'	Au	K-Ar	8.6-7.2	Silberman, M. L., Chesterman, C. W., Kleinhampl, F. W., and Gray, C. H., Jr., 1972, K-Ar ages of volcanic rocks and gold-bearing quartz-andularia veins in the Bodie Mining District, Mono County, Calif.: Economic Geology, v. 67, p. 597-603.
Gold Crown mine, Alleghany distict	39°27'45" x 120°50'35"	Au	Rb-Sr	109.6±3	Bohlke, J. K., and Kistler, R. W., 1986, Rb-Sr, K-Ar, and stable isotope evidence for the ages and sources of fluid components of gold-bearing quartz veins in the northern Sierra Nevada Foothills Metamorphic Belt, California: Economic Geology, v. 81, no. 2, p. 296-322.
Kate Hardy mine, Alleghany district	39°28'41" x 120°53'13"	Au	Rb-Sr	124.2±3 124.5±3	Do.
Irelan mine, Alleghany District	39°26'43" x 120°49'25"	Au, Fe	Rb-Sr Rb-Sr K-Ar	116.3±3 115.0±3 112.9±3	Do.
Rainbow Extension mine, Alleghany district	39°27'47" x 120°50'17"	Au	K-Ar	111.6±3	Do.
Plumbago mine, Alleghany district	39°27'09" x 120°48'45"	Au	K-Ar	112.5±3	Do.
Red Ledge mine Washington district	39°20'55" x 120°48'09"	Au	Rb-Sr K-Ar	119.4±3 121.0±3	Do.
Brunswick mine Grass Valley district	39°13'25" x 121°02'15"	Au, Fe	Rb-Sr K-Ar	140.9±3 143.7±3	Do.
Gharabaldi mine Mother Lode district	37°46'21" x 120°15'24"	Au	Rb-Sr K-Ar	114.6±3 116.3±3	Do.
Sulfur Bank	39°02' x 122°40'	Hg, Sb	Geologic evidence	Presently being deposited	Dickson, F. W., and Tunell, George, 1968, Mercury and antimony deposits associated with active hot springs in the western United States, in Ridge, J. D., Ore deposits of the United States (Graton Sales Volume), v. 2: New York, American Institute of Mining, Metallurgical, and Petroleum Engineers, p. 1673-1701.
Amedee Springs	40°12' x 120°05'	Hg	Geologic evidence	Presently being deposited	Do.
Coso Springs	36°00' x 117°52'	Hg	Geologic evidence	Presently being deposited	Do.
Monitor mining district	38°40'02" x 119°42'03"	Au, Ag, Pb, Zn, Cu	K-Ar	4.95±0.24 4.76±0.19	Morton, J. L., Silberman, M. L., Bonham, H. F., Jr., Garside, L. J., and Noble, D. C., 1977, K-Ar ages of volcanic rocks, plutonic rocks, and ore deposits in Nevada and eastern California: Isochron/West, no. 20, p. 19-29.

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Mines and districts	Latitude x longitude	Type of ore	Type of dating	Age in m.y.	Reference
		COLORADO			
Summitville	37°24'30" x 106°36'30"	Au, Ag, Cu	K-Ar	22.3, 22.4	Mehnert, H. H., Lipman, P. W., and Steven, T. A., 1973, Age of mineralization at Summitville, Colorado, as indicated by K-Ar dating of alunite: Economic Geology, v. 68, no. 3, p. 399-401.
Creede district	37°45' x 107°00'	Ag	K-Ar	Mean age= 24.6±0.3	Bethke, P. M., Barton, P. B., Jr., Lanphere, M. A., and Steven, T. A., 1976, Environment of ore deposition in the Creede mining district, San Juan Mountains, Colo., II, Age of mineralization: Economic Geology, v. 71, no. 6, p. 1006-1011.
Western San Juan Mts.	38°40' x 107°40'	Pb, Zn, Ag	K-Ar fission track	10-30	Lipman, P. W., Fisher, F. S., Mehnart, H. H., Naeser, C. W., Luedke, R. G., and Steven, T. A., 1976, Multiple ages of mid-Tertiary mineralization and alteration in the western San Juan Mountains, Colorado: Economic Geology, v. 71, no. 3, p. 571-588.
Western San Juan Mts.	37°41' x 108°03'	Au, Ag, Pb, Zn	K-Ar fission track	3.4-5.5	Naeser, C, W, Cunningham, C. G., Marvin, R. F., and Obradovich, J. D., 1980, Pliocene intrusive rocks and mineralization near Rico, Colorado: Economic Geology, v. 75, no. 1, p. 122-127.
Central City	39°45' x 105°30'	U, Au, Ag, F, As, Cu, Pb, Zn, Mo	K-Ar	59±1	Rice, C. M., Lux, D. R., and Macintyre, R. M., 1982, Timing of mineralization and related intrusive activity near Central City, Colorado: Economic Geology, v. 77, no. 7, p. 1655-1666.
Golden Fleece Vein	38°00' x 107°29'	U, Au, Ag	U-Pb	27.5±0.5	Hon, Ken, Ludwig, K. R., Simmons, K. R., Slack, J. F., and Grauch, R. I., 1985, U-Pb isochron age and Pb isotope systematics of the Golden Fleece vein-implications for the relationship of mineralization to the Lake City caldera, Western San Juan Mountains, Colorado: Economic Geology, v. 80, p. 410-417.
Cripple Creek District	38°40' x 105°	Au, Ag	Geologic evidence	>Tertiary	Thompson, T. B., Trippel, A. D., and Dwelley, P. C., 1985, Mineralized veins and breccias of the Cripple Creek district, Colorado: Economic Geology, v. 80, no. 6, p. 1669-1688.
Argentine Tunnel	37°36' x 108°00'	Au, Ag, Cu, Pb, Zn	K-Ar and fission track	5.5	Naeser, C. W., Cunningham, G. C., Marvin, R. F., and Obradovich, J. D., 1979, Pliocene intrusive rocks and mineralization near Rico, Colorado: U.S. Geological Survey Open-File Report 79-1093, 19 p.
Calico Peak Stock	37°36' x 108°00'	Au, Ag, Cu, Pb, Zn	K-Ar and fission track	4-5	Do.
Leadville district	39°15' x 106°15'	Pb, Zn, Au, Ag, Fe	K-Ar	60	Tweto, Ogden, 1968, Leadville district, Colorado, in Ridge, J. D., Ore deposits of the United States, 1933-1967 (Graton Sales Volume) V. 1: New York, American Institute of Mining, Metallurgical, and Petroleum Engineers, p. 681-705.
Gilman district	39°30' x 106°18'	Cu, Ag, Al, Pb	Geologic evidence	<70	Radabaugh, R. E., Merchant, J. S., and Brown, J. M., 1968, Geology and ore deposits of the Gilman district, Eagle County, Colorado: in Ridge, J. D., Ore deposits of the United States, 1933-1967 (Graton Sales Volume) V. 1: New York, American Institute of Mining, Metallurgical, and Petroleum Engineers, p. 640-664
Schwartzwalder mine	39°50'40" x 105°16'50"	U	K-Ar	709±12	Marvin, R. F., and Dobson, S. W., 1979, Radiometric ages, compilation B, U.S. Geological Survey: Isochron/West, no. 26, p. 3-30.

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		IDAHO			
Idaho Batholiths	43°-47° x 113°-117°	Mo, U, Ag, Au,	K-Ar	38-51	Bennett, E. H., 1980, Granitic rocks of Tertiary age in the Idaho Batholith and their relation to mineralization: Economic Geology, v. 75, no. 2, p. 278-288.
Ima mine	44°31.9' x 113°41.6'	Mo	K-Ar	41.3±1.4	Armstrong, R. L., and others, 1979, K-Ar dates for mineralization in the White Cloud-Cannivan porphyry molybdenum belt of Idaho and Montana; reply: Economic Geology, v. 74, no. 3, p. 699.
Hawkeye Breccia Pipe	47°55' x 108°34.30'	Cm, Mo	K-Ar	58-66	Rostad, O. H., 1978, K-Ar dates for mineralization in the White Cloud-Cannivan porphyry molybdenum belt of Idaho and Montana--a discussion: Economic Geology, v. 73, no. 7, p. 1366-1367.
Bald Butte	46°43' x 112°21'	Cu, Mo	K-Ar	59.1	Do.
Thompson Creek	44°19' x 114°32.5'	Cu, Mo	K-Ar	86±	Do.
Little Boulder Creek	44°03' x 114°34'	Cu, Mo	K-Ar	61.5	Do.
Little Falls	44°04' x 115°45.75'	Cu, Mo	K-Ar	41-42	Do.
Cumo	44°02' x 115°47'	Cu, Mo	K-Ar	44±	Do.
Lemhi Pass	44°52'35"-45°00'-113°22'35"-113°30'	Th	Geologic evidence	Mid-Tertiary	Staatz, M. H., Shaw, V. E., and Wahlberg, J. S., 1972, Occurrence and distribution of rare earths in the Lemhi Pass thorium veins, Idaho and Montana: Economic Geology, v. 67, no. 1, 72-88.
Thunder Mountain mining district	44°55' x 115°10'	Au, Ag	K-Ar	42.8±1	Adams, Opal, 1984, Geology and ore deposits of the Thunder Mountain mining district, Valley County, Idaho: Geological Society of America Abstracts, v. 16, no. 6, p. 425.
Wood River	43°25'-43°50' x 114°10'-114°30'	Pb, Ag	K-Ar	81.7±2.5	Hall, W. E., Rye, R. O., and Doe, B. R., 1978, Wood River mining district, Idaho-intrusion-related lead-silver deposits derived from country rock source: U.S. Geological Survay Journal of Research, v. 6, no. 5, p. 579-592.
Boiling Springs	44°25' x 115°50'	Hg, Sb	Geologic evidence	Presently being deposited	Dickson, F. W., and Tunell, George, 1968, Mercury and antimony deposits associated with active hot springs in the western United States: in Ridge, J. D., Ore deposits of the United States, 1933-1967 (Graton Sales volume), v. 2: New York, American Institute of Mining, Metallurgical, and Petroleum Engineers, p. 1673-1701.
Black Bird mining district	45°08' x 114°20'	Co, Cu, Au	Geologic evidence	>1700	Hughes, G. J., Jr., 1983, Basinal setting of the Idaho cobalt belt, Blackbird mining district, Lemhi County, Idaho: Proceedings of the Denver Region Exploration Geologists Society Symposium, p. 21-27.
Coeur d'Alene district	47°30' x 116°00'	Ag, Pb, Zn	K-Ar	829	Landis, G. P., Leach, D. L., and Hofstra, A. H., 1984, Silver-base metal mineralization as a product of metamorphism, Coeur d'Alene district, Shoshone County, Idaho: concepts of genesis: Montana Bureau of Mines and Geology, Special Publication 90, p. 68.

A compilation of ages of mineralization of metallic mineral deposits in the western conterminous Cordillera as determined through 1985

Mines and districts	Latitude x longitude	Type of ore	Type of dating	Age in m.y.	Reference
			MONTANA		
Snowbird deposit	46°45'-46°50' x 114°45'-114°55'	F, Th	U-Th-Pb	71.1±1.0	Metz, M. C., Brookins, D. G., Rosenberg, P. E., and Zartman, R. E., 1985, Geology and geochemistry of the Snowbird deposit, Mineral County, Montana: Economic Geology, v. 80, no. 2, p. 394-409.
Big Ben	46°50' x 110°50'	Mo	K-Ar	<59.1	Armstrong, R. L., Hollister, V. F., and Harakal, J. E., 1978, K-Ar dates for mineralization in the White Cloud-Cannivan porphyry molybdenum belt of Idaho and Montana: Economic Geology, v. 73, no. 1, p. 94-96.
Cannivan Gulch	45°39' x 112°56'	Mo	K-Ar	59.1	Do.
Boulder Batholith	45°30'-46°45' x 111°30'-112°40'	Cu, Zn, Mg	K-Ar	57.5±1.8	Meyer, Charles, Shea, E. P., and Goddard, C. C., Jr., 1968, Ore deposits at Butte, Montana: in Ridge, J. D., Ore deposits of the Unites States, 1933-1967 (Graton Sales Volume), v. 2: New York, American Instutite of Mining Metallurgical, and Petroleum Engineers, p 1373-1416.
Jardine	45°08' x 110°45'	Au, As, W	Geologic avidence	>2600	Hallager, W. S., 1983, Geologic and geochemical evidence for exhalative gold deposition at Jardine, Montana: in Proceedings of the Denver Rocky Mountain Geologists Society Symposium; the genesis of Rocky Mountains ore deposits, changes with time and tectonics, p. 13-18.
Silver Dyke mine	46°59'05" x 110°41'45"	Ag, Mo	K-Ar	46.9±1.6	Armstrong, R. L., Harakal, J. E., and Hollister, V. F., 1982, Eocene mineralization at Mount Tolman (Keller), Washington, and Silver Dyke, Montana: Isochron/West, no. 33, p. 9-10.
Butte	46°00' x 112°36'	Mg, Mo, Fe, Cu	K-Ar	57-59	Brimhall, G. H., 1979, Lithologic determination of mass transfer mechanisms of multiple-stage porphyry copper mineralization at Butte, Montana: vein formation by hypogene leaching and enrichment of potassium-silicate protore: Economic Geology, v. 74, no. 3, p. 556-589.
Butte	46°00' x 112°36'	Mo, Fe, Cu	Geologic avidence	62-63	Proffett, J. M., Jr., 1973, Structure of the Butte district, Montana, in Miller, R. N., ed., Guidebook for the Butte Field Meeting, Society of Economic Geologists: Butte, Montana, The Anaconda Company, p. G1-G12.

A compilation of ages of mineralization of metallic mineral deposits in the western conterminous Cordillera as determined through 1985

Mines and districts	Latitude x longitude	Type of ore	Type of dating	Age in m.y.	Reference
			NEVADA		
near Getchell mine, Humboldt County	41°12' x 117°16'	Au, W	K-Ar	90	Berger, B. R., Silberman, M. L., and Koski, R. A., 1975, Discussion on K-Ar relations of granodiorite emplacement and tungsten and gold mineralization near the Getchell mine, Humboldt County, Nevada—a reply: Economic Geology, v. 70, no. 8, p. 1487-1491.
Getchell district	41°13' x 117°16'	W, Au	K-Ar	90	Silberman, M. L., Berger, B. R., and Koski, R. A., 1974, K-Ar age relations of granodiorite emplacement and tungsten and gold mineralization near the Getchell mine, Humboldt County, Nevada: Economic Geology, v. 69, no. 5, p. 646-656.
Gold Acres district	40°15' x 116°45'	W, Au	K-Ar	92-94	Do.
Cortez district	40°08' x 116°37'	W, Au	K-Ar	<35	Do.
Gooseberry mine	39°29'02" x 119°17'08"	Au, Ag	K-Ar	10.3±0.3	Morton, J. L., Silberman, M. L., Bonham, H. F., Jr., Garside, L. J., and Noble, D. C., 1977, K-Ar ages of volcanic rocks, plutonic rocks, and ore deposits in Nevada and eastern California: Isochron/West, no. 20, p. 19-29.
New Pass mine	39°36.5' x 117°18.6'	Au	K-Ar	84.2±2.5	Do.
New Pass mine	39°36.5' x 117°28.6'	Au	K-Ar	87.3±2.6	Do.
Buena Vista district	37°55.4' x 118°18.8'	Au	K-Ar	5.2±0.5	Do.
McCoy porphyry Cu Prospect	40°25.0' x 117°13.2'	Cu	K-Ar	89.5±2.7	Do.
Rhyolite district	36°54.5' x 116°48.6'	Au	K-Ar	9.5±0.2	Do.
Silver Dyke mine	38°18.9' x 118°11.9'	Au	K-Ar	17.3±0.2	Do.
Silver Dyke mine	38°18.9' x 118°11.9'	Au	K-Ar	75.9±2.3	Do.
North Fish Creek Porphyry Cu deposit	117°12'50" x 40°25'03"	Cu, Mo	K-Ar	89.5±2.7	Miller, B. W., and Silberman, M. L., 1977, Cretaceous K-Ar age of hydrothermal alteration at the North Fish Creek porphyry copper deposit, Fish Creek Mountains, Lander County, Nevada: Isochron/West, no. 18, p. 7.
Santa Fe district (New York mine)	38°30' x 118°05'	Cu, Ag	K-Ar	86.6±2.5	McKee, E. H., and Klock, P. R., 1983, K-Ar ages of micas related to mineralization in selected mining districts, Lyon and Mineral Counties, Nevada: Isochron/West, no. 36, p. 9-11.
Silver Star district	38°15' x 118°07'	U	K-Ar	84.1±2.5	Do.
Hawthorne district	38°21' x 118°38'	W, Mo, Cu	K-Ar	79.8±2.4	Do.
Wilson district (Wheeler mine)	38°40' x 119°11'	Au, Ag	K-Ar	80.8±2.4	Do.
Comstock district (Occidental vein)	39°18'59" x 119°37' 51"	Au, Ag	K-Ar	12.6±0.6	Krueger, H. W., and Schilling, J. H., 1971, Geochron/Nevada Bureau of Mines K/Ar age determinations: Isochron/West, no. 1, p. 9-14.
Crescent Peak (Stockwork veins)	35°28'24" x 115°07'36"	Fe, Mo	K-Ar	98.9±3.0	Do.
La Plata Flouride prospect	39°25'19" x 118°17'37"	F	K-Ar	83.5±1.0 85.2±1.0	Garside, L. J., Bonham, H. F., Jr., Ashley, R. P., Silberman, M. L., and McKee, E. H., 1981, Radiometric ages of volcanic and plutonic rocks and hydrothermal mineralization in Nevada: Isochron/West, no. 30, p. 11-19.
Sand Springs district	118°21'06" x 39°16'12"	Au, Ag	K-Ar	19.0±0.5 19.5±0.5	Do.
Tonopah district	38°04'17" x 117°12'53"	Ag, Au	K-Ar	19.1±0.4	Bonham, H. F., Jr., Garside, L. J., and Silberman, M. L., 1972, K-Ar ages of ore deposition at Tonopah, Nevada: Isochron/West, no. 4, p. 5, 6.

A compilation of ages of mineralization of metallic mineral deposits in the western conterminous Cordillera as determined through 1985

Mines and districts	Latitude x longitude	Type of ore	Type of dating	Age in m.y.	Reference
		NEVADA			
Goldfield	37°43' x 117°13'	Au	K-Ar	20.7±0.4	Silberman, M. L., and Ashley, R. P., 1970, Age of ore deposition at Goldfield, Nevada, from potassium-argon dating of alunite: Economic Geology, v. 65, no. 3, p. 352-354.
Comstock Lode	39°03' x 119°37'	Au, Ag, Pb, Cu	K-Ar	12.2±0.6	Bonham, H. F., and Papke, K. G., 1969, Geology and mineral deposits of Washoe and Storey Counties, Nevada: Nevada Bureau of Mines Bulletin 70, 140 p.
near Buckhorn mine	40°11'25" x 116°29'27"	Au, Ag	K-Ar	14.6±0.4	Wells, J. D., and Silberman, M. L., 1973, K-Ar ages of mineralization at Buckhorn, Eureka County, Nevada: Isochron/West, no. 8, p. 37.
Tuscarora district	41°19' x 115°41'	Au, Ag	K-Ar	38.4±1.5	McKee, E. H., and Coats, R. R., 1975, K-Ar age of ore deposition, Tuscarora mining district, Elko County, Nevada: Isochron/West, no. 13, p. 11, 12.
Rochester district	40°17' x 118°09'	Ag, Au	K-Ar	70-80	Vikre, P. G., 1981, Silver mineralization in the Rochester district, Pershing County, Nevada: Economic Geology, v. 76, no. 3, p. 580-609.
Round Mountain district	38°42' x 117°04'	Au	K-Ar	25.2	Silberman, M. L., Shawe, D. R., Koski, R. A., and others, 1975, K-Ar ages of mineralization at Round Mountain and Manhattan, Nye County, Nevada: Isochron/West, no. 13, p. 1-2.
Manhattan district	38°33' x 117°02'	Au	K-Ar	16	Do.
Ten Mile district (Reo mine shaft)	41°02' x 117°53'	Ag, Au	K-Ar	16.3±0.5	Silberman, M. L., Johnson, M. G., Koski, R. A., and Roberts, R. J., 1973, K-Ar ages of mineral deposits at Wonder, Seven Troughs, Imlay, Ten Mile, and Adelaide mining districts in central Nevada: Isochron/West, no. 8, p. 31-35.
Gold Run district (Crown mine)	40°40' x 117°20'	Ag, Au	K-Ar	14.3±0.4	Do.
Seven Troughs district (Kindergarten mine)	40°29' x 118°46'	Au, Ag	K-Ar	13.7±0.4	Do.
Wonder district (Nevada Wonder mine)	39°24' x 118°06'	Au, Ag	K-Ar	21.6±0.6	Do.
Imlay district (Black Canyon mine)	40°30' x 118°10'	Au	K-Ar	>73.2±2	Do.
Flint district	43° x 116°45'	Au	Geologic evidence	<22	Roberts, R. J., Radtke, A. S., and Coats, R. R., 1971, Gold-bearing deposits in north-central Nevada and southwestern Idaho: with a section on periods of plutonism in north-central Nevada by M. L. Silberman and E. H. McKee: Economic Geology, v. 66, no. 1, p. 14-33.
Jarbridge	41°55' x 115°30'	Au	K-Ar	<12.2	Do.
Mountain City	41°50' x 116°	Au, Ag	K-Ar	<30	Do.
Cornucopia	41°35' x 116°20'	Au, ag	K-Ar	<15	Do.
National district	41°50' x 117°20'	Au, Ag	K-Ar	15.6	Vikre, P. G., 1985, Precious metal vein systems in the National district, Humboldt County, Nevada: Economic Geology, v. 80, no. 2, p. 360-393.
Gilbert district	38°09' x 117°42'	Au, Ag, Pb, Mo	K-Ar	7.9	Silberman, M. L., Bonham, H. F., Jr., Garside, L. J., and Osborne, D. H., 1975, New K-Ar ages of volcanic and plutonic rocks and ore deposits in western Nevada: Isochron/West, no. 13, p. 13-21.

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Mines and districts	Latitude x longitude	Type of ore	Type of dating	Age in m.y.	Reference
			NEVADA		
Candeleria district	38°08.8' x 118°04.8'	Ag, Cu, Pb	Geologic evidence	Post-Jurassic, pre-Tertiary	Do.
Rawhide district (Regent)	39°01' x 118°25.9'	Au, Ag	K-Ar	14.5–15.5	Do.
Silver Star district (Camp Douglas)	38°21.07'x 118°10.05'	Au, Ag	Geologic evidence	Miocene	Do.
Battle Mountain mining district (Copper Canyon)	40°37' x 117°10'	Cu, Ag, Au	K-Ar	37.2	Theodore, T. G., Silberman, M. L., and Blake, D. W., 1973, Geochemistry and potassium-argon ages of plutonic rocks in the Battle Mountain mining district, Landar County, Nevada: U.S. Geological Survey Professional Paper 798-A, 24 p.
Silver Peak	37°47' x 117°43'	Au, Ag	K-Ar	5.0±0.2	Keith, W. J., and Ashley, R. P., 1976, Distribution of gold and other metals in silicified rocks of the Goldfield mining district, Nevada: U.S. Geological Survey Professional Paper 843B, p. B1-B17. Silberman, M. L., Stewart, J. H., and McKee, E. H., 1976, Igneous activity tectonics and hydrothermal precious metal mineralization in the Great Basin during Cenozoic time: Transactions of the American Institute of Mining Engineers, Society of Mining Engineers, v. 260, p. 253-263.
Cuprite	37°31' x 117°13'	Ag, Au, Hg, Cu, Pb	K-Ar	≤7.1±0.5	Silberman, M. L., and McKee, E. H., 1972, A summary of radiometric age determinations on Tertiary volcanic rocks from Nevada and eastern California: Part 2, Western Nevada: Isochron/West, no. 4, p. 7-28.
Aurora	38°17' x 118°54'	Au, Ag	K-Ar	9.9±0.3	Silberman, M. L., and McKee, E. H., 1972, A summary of radiometric age determinations on Tertiary volcanic rocks from Nevada and eastern California: Part 2, Western Nevada: Isochron/West, no. 4, p. 7-28. Silberman, M. L., Stewart, J. H., and McKee, E. H., 1976, Igneous activity tectonics and hydrothermal precious metal mineralization in the Great Basin during Cenozoic time: Transactions of the American Institute of Mining Engineers, Society of Mining Engineers, v. 260, p. 253-263. Morton, J. L., Silberman, M. L., Bonham, H. F., Jr., Garside, L. J., and Nobel, D. C., 1977, K-Ar ages of volcanic rocks, plutonic rocks, and ore deposits in Nevada and eastern California--determinations run under the USGS-NBMG Cooperative Program: Isochron/West, no. 20, p. 19.
Talapoosa	39°27' x 119°19'	Au, Ag, Cu	K-Ar	10.5±0.3	Silberman, M. L., and McKee, E. H., 1972, A summary of radiometric age determinations on Tertiary volcanic rocks from Nevada and eastern California: Part 2, Western Nevada: Isochron/West, no. 4, p. 7-28. Garside, L. J., and Silberman, M. L., 1973, K-Ar age of ore deposition, Talopoosa mining district, Lyon County, Nevada: Isochron/West, no. 7, p. 5.
Hasbrouch mine	37°59' x 117°16'	Ag, Cu	K-Ar	16.3±0.5	Garside, L. J., Bonham, J. F., Jr., Ashley, R. P., Silberman, M. L. and McKee, E. H., 1981, Radiometric ages of volcanic and plutonic rocks and hydrothermal mineralization in Nevada--determinations run under the USGS-NBMG cooperative program: Isochron/West, no. 30, p. 11-19.

A compilation of ages of mineralization of metallic mineral deposits in the western conterminous Cordillera as determined through 1985

Mines and districts	Latitude x longitude	Type of ore	Type of dating	Age in m.y.	Reference
		NEVADA			
Pyramid	39°52' x 119°37'	Au, Ag, Cu, U	K-Ar	21	Bonham, H. F., and Papke, K. G., 1969, Geology and mineral deposits of Washoe and Storey Counties, Nevada: Nevada Bureau of Mines and Geology Bulletin 70, 140 p. Silberman, M. L., Stewart, J. H., and McKee, E. H., 1976, Igneous activity tectonics and hydrothermal precious metal mineralization in the Great Basin during Cenozoic time: Transactions of the American Institute of Mining Engineers, Society of Mining Engineers, v. 260, p. 253-263.
Bullion	40°23' x 116°43'	Au, Ag, Cu, Pb, W	K-Ar	34.5±1.0	Silberman, M. L., Wrucke, C. T., and Armbrustmacher, T. J., 1969, Age of mineralization and intrusive relations at Tenabo, northern Shoshone Range, Lander County, Nevada [abs.]: Geological Society of America Abstracts with Programs, pt. 3, p. 62. Silberman, M. L., Stewart, J. H., and McKee, E. H., 1976, Igneous activity tectonics and hydrothermal precious metal mineralization in the Great Basin during Cenozoic time: Transactions of the American Institute of Mining Engineers, Society of Mining Engineers, v. 260, p. 253-263.
Gold Acres	40°15' x 116°45'	Au, Ag, Cu, Pb	K-Ar	94.3±1.9	Silberman, M. L., Berger, B. R., and Koski, R. A., 1974, K-Ar age relations of granodiorite emplacement and tungsten and gold mineralization near the Getchell mine, Humboldt County, Nevada: Economic Geology, v. 69, no. 5, p. 646-656. Silberman, M. L., and McKee, E. H., 1971, Periods of plutonism in north-central Nevada: Economic Geology, v. 66, p. 14-33.
Fish Lake Valley	37°52' x 118°13'	Hg	K-Ar	11.1	Shilling, J. H., 1965, Isotopic age determinations of Nevada rocks: Nevada Bureau of Mines and Geology Report 10, 79. Albers, J. P., and Stewart, J. H., 1972, Geology and mineral deposits of Esmeralda County, Nevada: Nevada Bureau of Mines and Geology Bulletin 78, 80 p.
Flourine	36°50' x 116°39'	Hg	K-Ar	≤13.1±0.2	Marvin, R. F., Mehnart, H. H., and McKee, E. H., 1973, A summary of radiometric ages of Tertiary volcanic rocks in Nevada and eastern California, Part 3: Southeastern Nevada: Isochron/West, no. 6, p. 1-30.
Salton mine, Goodspring district	35°45' x 115°28'	Au, Ag, Cu	K-Ar	≤13.7±0.2	Do.
Lynn	40°51' x 116°17'	Hg, Au	K-Ar	≤14.2±0.3	Hardie, B. S.,1965, Carlin gold mine, Lynn district, Nevada: Nevada Bureau of Mines and Geology Report 13A, p. 73. Silberman, M. L., and McKee, E. H., 1971, Periods of plutonism in north-central Nevada: Economic Geology, v. 66, p. 14-33.
Olinghouse	39°34' x 119°20'	Au, Ag, Hg	K-Ar	≤14.5±1.5	Silberman, M. L., and McKee, E. H., 1972, A summary of radiometric age determinations on Tertiary volcanic rocks from Nevada and eastern California: Part 2, Western Nevada: Isochron/West, no. 4, p. 7-28.

A compilation of ages of mineralization of metallic mineral deposits in the western conterminous Cordillera as determined through 1985

Mines and districts	Latitude x longitude	Type of ore	Type of dating	Age in m.y.	Reference
		NEVADA			
Kawich	37°50' x 116°19'	Au, Ag, Pb	K-Ar	≤14.8±0.6	Marvin, R. F., Mehnart, H. H., and McKee, E. H., 1973, A summary of radiometric ages of Tertiary volcanic rocks in Nevada and eastern California, Part 3: Southeastern Nevada: Isochron/West, no. 6, p. 1-30.
Winnemucca	40°56' x 117°50'	Ag, Au, Cu, Pb, Zn	K-Ar	16.3±0.5	Silberman, M. L., Johnson, M. G., Koski, R. A., and Roberts, R. A., 1973, K-Ar ages of mineral deposits at Wonder, Seven Troughs, Imlay, Ten Mile and Adelaide mining districts in central Nevada: Isochron/West, no. 8, p. 31-35.
Gold Basin	40°04' x 115°39'	Au	K-Ar	16.8±0.5	Schilling, J. H., 1965, Isotopic age determinations of Nevada rocks: Nevada Bureau of Mines and Geology Report 10, 79 p. Bonham, H. F., and Papke, K. G., 1969, Geology and mineral deposits of Washoe and Storey Counties, Nevada: Nevada Bureau of Mines and Geology Bulletin 70, 140 p. Silberman, M. L., Stewart, J. H., and McKee, E. H., 1976, Igneous activity tectonics and hydrothermal precious metal mineralization in the Great Basin during Cenozoic time: Transactions of the American Institute of Mining Engineers, Society of Mining Engineers, v. 260, p. 253-263.
Antelope	40°41' x 118°28'	Ag, Pb, Sb, W	K-Ar	25.1±0.8	Silberman, M. L., Stewart, J. H., and McKee, E. H., 1976, Igneous activity tectonics and hydrothermal precious metal mineralization in the Great Basin during Cenozoic time: Transactions of the American Institute of Mining Engineers, Society of Mining Engineers, v. 260, p. 253-263. Silberman, M. L., and Dockter, R. D., 1977, Age of emplacement and mineralization of the Majuba Hill Complex, Pershing County, Nevada: Isochron/West, no. 18, p. 5.
Lewis	40°24' x 116°52'	Au, Ag, Cu, Pb, W	K-Ar	34.5±1.0	Silberman, M. L., Wrucke, C. T., and Armbrustmacher, T. J., 1969, Age of mineralization and intrusive relations at Tenabo, northern Shoshone Range, Lander County, Nevada [abs.]: Geological Society of America Abstracts with Programs, pt. 3, p 62. Silberman, M. L., and McKee, E. H., 1974, Ages of Tertiary volcanic rocks and hydrothermal precious metal deposits in central and western Nevada: in Guidebook to the geology of four Tertiary volcanic centers in central Nevada: Nevada Bureau of Mines and Geology Report 19, p. 67-72. Silberman, M. L., Stewart, J. H., and McKee, E. H., 1976, Igneous activity tectonics and hydrothermal precious metal mineralization in the Great Basin during Cenozoic time: Transactions of the American Institute of Mining Engineers, Society of Mining Engineers, v. 260, p. 253-263.
Valley View	40°17' x 115°27'	W	K-Ar	26 (+4) (-2)	Schilling, J. H., 1965, Isotopic age determinatioos of Nevada rocks: Nevada Bureau of Mines and Geology Report 10, 79 p.

A compilation of ages of mineralization of metallic mineral deposits in the western conterminous Cordillera as determined through 1985

Mines and districts	Latitude x Longitude	Type of ore	Type of dating	Age in m.y.	Reference
		NEVADA			
Reese River	39°27' x 116°56'	Ag, Au, Mn, W	K-Ar	≤44±10	Schilling, J. H., 1965, Isotopic age determinations of Nevada rocks: Nevada Bureau of Mines and Geology Report 10, 79 p. Roberts, R. J., Radtke, A. S., and Coats, R. R., 1971, Gold-bearing deposits in north-central Nevada and southwestern Idaho; with a section on periods of plutonism in north-central Nevada (Silberman, M. L., McKee, E. H): Economic Geology, v. 66, no. 1, p. 14-33.
Sherman	41°10' x 117°45'	W, Mo, Au	K-Ar	50±10	Schilling, J. H., 1965, Isotopic age determinations of Nevada rocks: Nevada Bureau of Mines and Geology Report 10, 79 p.
Lexington	38°50' x 114°11'	Ag, W	K-Ar	64(+10) (-3)	Schilling, J. H., 1965, Isotopic age determinations of Nevada rocks: Nevada Bureau of Mines and Geology Report 10, 79 p.
San Antone	38°15' x 117°10'	Mo, Ag, Au	K-Ar	77.4±2.3	Silberman, M. L., Bonham, H. F., Jr., Garside, L. J., and Osborne, D. H., 1975, New K-Ar ages of volcanic and plutonic rocks and ore deposits in western Nevada: Isochron/West, no. 13, p. 13.
Rock Hill	38°12' x 118°02'	Fe, W	K-Ar	78.3±2.3	Do.
	39°05' x 118°17'	Ag, Au	K-Ar	79.6±2.0	Schilling, J. H., 1965, Isotopic age determinations of Nevada rocks: Nevada Bureau of Mines and Geology Report 10, 79 p. Willden, R., and Speed, R. C., 1974, Geology and mineral deposits of Churchill County, Nevada: Nevada Bureau of Mines and Geology Bulletin 83, 95 p.
[redacted]	39°52' x 115°55'	Pb, Au, Ag, Zn, Cu, Sb	Geologic evidence	Upper Cretaceous	Roberts, R. J., Radtke, A. S., and Coats, R. R., 1971, Gold-bearing deposits in north-central Nevada and southwestern Idaho; with a section on periods of plutonism in north-central Nevada (Silberman, M. L., McKee, E. H.): Economic Geology, v. 66, no. 1, p. 14-33. Stewart, J. H., and others, 1977, Deep-water upper Paleozoic rocks in north-central Nevada—a study of the type area of the Havallah Formation: Society of Economic Paleontologists, Pacific Coast Symposium 1, p. 337. Shawe, D. R., Poole, F. G., and Heyl, A. V., 1978, Road log field excursion C-1 route, August 20-25, 1978, western Utah-eastern Nevada, in Shawe, D. R., ed., Guidebook to mineral deposits of the Central Great Basin: Nevada Bureau of Mines and Geology Report No. 32, p. 10-37.
Pioche	37°54' x 114°16'	Zn, Pb, Au, Mn, Cu	K-Ar	94.4±3.2	Johnston, W. P., 1972, K-Ar ages of the Blind Mountain stock and Yuba dike, Lincoln County, Nevada: Isochron/West, no. 3, p. 30.
White Pine	39°13' x 115°28'	Pb, Au, Ag, Cu, Zn, W	K-Ar	110(+17) (-6)	Schilling, J. H., 1965, Isotopic age determinations of Nevada rocks: Nevada Bureau of Mines and Geology Report 10, 79 p.
Dolly Varden	40°27' x 114°50'	Cu, Pb, Ag, Au	K-Ar	125(+19) (-6)	Granger, A. E., and others, 1957, Geology and mineral resources of Elko County, Nevada: Nevada Bureau of Mines and Geology Bulletin 54, 190 p. Schilling, J. H., 1965, Isotopic age determinations of Nevada rocks: Nevada Bureau of Mines and Geology Report 10, 79 p.

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Mines and districts	Latituda x longitude	Type of ore	Type of dating	Age in m.y.	Reference
		NEVADA			
Delano	41°42' x 114°13'	W, Pb, Ag	K-Ar	135±2	Slack, J. F., 1974, Jurassic suprastructure in the Delano Mountains, northeastern Elko County, Nevada: Geological Society of America Bulletin, v. 85, no. 2, p. 269-272.
Sylvania	37°25' x 117°40'	Ag, Pb, W, Au	K-Ar	153±5.0	Schilling, J. H., 1965, Isotopic age determinations of Nevada rocks: Nevada Bureau of Mines and Geology Report 10, 79 p.
Osceol	39°04' x 114°18'	Au, Ag, Pb, W	K-Ar	170±20	Do.
Oak Springs	37°10' x 116°	W, Ag, Pb, Au	K-Ar	230±35	Do.
Tungsten	40°30' x 118°12'	W, Al	K-Ar	76±2.9 72±2.6	Do.
Steamboat Springs	39°26' x 119°42'	Hg	Geologic evidence	$>4x10^{-5}$	Dickson, F. W., and Tunell, George, 1968, Mercury and antimony deposits associated with active hot springs in the western United States in Ore deposits of the United States, 1933-1967 (Graton Sales Volume) v. 2: New York, American Institute of Mining, Metallurgical, and Petroleum Engineers, p. 1673-1701.
		Sb	Geologic evidence	Presently being deposited	
Ophir Canyon mine	38°56'45" x 117°15'30"	Au, Ag	K-Ar	69.5	Marvin, R. F., and Dobson, S. W., 1979, Radiometric ages; compilation B, U.S. Geological Survey: Isochron/West, no. 26, p. 3-30.
Round Mountain quadrangle	38°42' x 117°02'	Au, Ag	K-Ar	79.2±1.6	Do.
Opalite district	42°00' x 117°55'	Hg	K-Ar	11.5-12.5	McKee, E. H., 1976, Origin of the McDermitt caldera in Nevada and Oregon and its related mercury deposits [abs.]: Economic Geology, v. 71, no. 3, p. 701.
		NEW MEXICO			
Ambrosia Lake district	35°28' x 107°53'	U	U-Pb	3.3-12.5	Ludwig, K. R., Simmons, K. R., and Webster, J. D., 1984, U-Pb isotope systematics and apparent ages of uranium ores, Ambrosia Lake and Smith Lake Districts, Grants Mineral Belt, New Mexico: Economic Geology, v. 79, no. 2, p. 322-337.
Smith Lake district	35°30' x 108°16'	U	U-Pb	3.3-12.5	Do.
Jones Hill prospect	35°42' x 105°45'	S	Geologic evidence	Between 350 and 1700	Sumner, Ward, 1983, Geology and mineralization of the Jones Hill massive sulfide prospect, Santa Fe County, New Mexico: Proceedings of the Denver Region Exploration Geologists Society Symposium; the genesis of Rocky Mountains deposits: Changes with time and tectonics, p. 19-20.
Questa	36°46' x 105°30'	Mo, Cu, Pb	K-Ar	22.3-23.5	Laughlin, A. W., Rehrig, W. A., and Mauger, R. L., 1969, K-Ar chronology and sulfur and strontium isotope ratios at the Questa mine, New Mexico: Economic Geology, v. 64, no. 8, p. 903-909.

A compilation of ages of mineralization of metallic mineral deposits in the western conterminous Cordillera as determined through 1985

Mines and districts	Latitude x longitude	Type of ore	Type of dating	Age in m.y.	Reference
			OREGON		
North Santiam	44°43' x 122°15'	Cu, Mo, Pb, Zn, Au, Ag	K-Ar	20	Power, S. G., Field, C. W., Armstrong, R. L., and Harakal, J. E., 1981, K-Ar ages of plutonism and mineralization, western Cascades, Oregon and southern Washington: Isochron/West, no. 31, p. 27-29.
Blue River	44°17' x 122°15'	Cu	K-Ar	20	Do.
Bohemia	43°35' x 122°32'	Cu	K-Ar	20	Do.
			UTAH		
Park City mining district	40°32' x 113°30'	Ag, Pb, Zn, Cu	K-Ar	33-36	Bromfield, C. S., Erickson, A. J., Jr., Haddadin, M. A., and Mehnert, H. H., 1977, Potassium-argon ages of intrusion, extrusion, and associated ore deposits, Park City mining district, Utah: Economic Geology, v. 72, no. 5, p. 837-848.
Alta of Salt Lake County	40°38'38"-40°40'09" x 111°37'55"-111°41'17"	Au, Pb, Zn	K-Ar, Pb-α, fission track	Late Cretaceous-Oligocene	James, L. P., and McKee, E. H, 1985, Silver-lead-zinc ores related to possible Laramide plutonism near Alta, Salt Lake County, Utah: Economic Geology, v. 80, no. 2, p. 497-504.
Bingham	40°30' x 112°05"	Cu	K-Ar	35.8	Moore, W. J., and Lanphere, M. A., 1971, The age of porphyry-type copper mineralization in the Bingham mining district, Utah—A refined estimate: Economic Geology, v. 66, no. 2, p. 331-332.
Mount Belknap Volcanics	38°30' x 112°13'	U	K-Ar	18-19	Cunningham, C. G., Ludwig, K. R., Naeser, C. W., Weiland, E. K., Mehnert, H. H., Steven, T. A., and Rasmussen, J. D., 1982, Geochronology of hydrothermal uranium deposits and associated igneous rocks in the eastern source area of Mount Belknap volcanics, Maryavale, Utah: Economic Geology, v. 77, no. 2, p. 453-463.
Maryavale	38°30' x 112°10'	U	U-Pb	9-16	Cunningham, C. G., Steven, T. A., Campbell, D. L., Naeser, C. W., Pitkin, J. A., and Duval, J. S., 1984, Multiple episodes of igneous activity, mineralization and alteration in the western Tushar Mountains, Utah: U.S. Geological Survey Professional Paper 1299-A, p. 1-21.
Spor Mountain	39°45'. x 113°10'	U	U-Pb	20.8±1	Ludwig, K. R., Lindsey, D. A., Zielinski, R. A., and Simmons, K. R., 1980, U-Pb ages of uraniferous opals and implications for the history of beryllium, flourine, and uranium mineralization at Spor Mountain, Utah: Earth and Planetary Science Letters, v. 46, p. 221-232.
Iron Springs district	37°40' x 113°20'	Fe, Mg	Pb-α	28-29	Bullock, K. C., 1973, Geology and iron deposits of Iron Springs district, Iron County, Utah: Brigham Young University Geology Studies, v. 20, pt. 1, p. 27-64.

A compilation of ages of mineralisation of metallic mineral deposits in the western conterminous Cordillera as determined through 1985

ines and districts	Latitude x longitude	Type of ore	Type of dating	Age in m.y.	Reference
		WASHINGTON			
Metaline district	48°52' x 117°22'	Zn, Pb	Geologic evidence	Cambrian-Cretaceous	McConnel, R. H., and Anderson, R. A., 1968, The Metaline District, Washington, in Ridge, J. D., ed., Ore deposits of the United States, 1933-1967 (Graton-Sales Volume), v. 2, New York, American Institute of Mining, Metallurgical and Petroleum Engineers, p. 1460-1480.
Midnite mine	47°57' x 118°07'	U	U-Pb	75	Ludwig, K. R., Nash, J. T., and Naeser, C. W., 1981, U-Pb isotope systematics and age of uranium mineralization, Midnite mine, Washington: Economic Geology, v. 76, no. 1, p. 89-110.
Cascades Volcanic Arc	45°30' x 120°30'- 47°30' x 122°40'	Porphyry Cu	K-Ar	6.25, 9.9, 16.2, 17.3, 24.0	Armstrong, R. L., Harakal, J. E., and Hollister, V. F., 1976, Age determination of late Cenozoic porphyry copper deposits of the North American cordillera: Transactions of the Institution of Mining and Metallurgy, section B, v. 85, p. 239-244.
Mount Tolman	48°03'35" x 118°41'32"	Porphyry Cu, Mo	K-Ar	51.2±1.8	Armstrong, R. L., Harakal, J. E., and Hollister, V. F., 1982, Eocene mineralization at Mount Tolman (Keller), Washington, and Silver Dyke Mountain, Montana: Isochron/West, no. 33, p. 9-10.
Washougal district	45°40' x 112°12'	Porphyry Cu, Mo, Pb, Zn, Au, Ag	K-Ar	20	Power, S. C., Field, C.W., Armstrong, R. L., and Harakal, J. E., 1981, K-Ar ages of plutonism and mineralization, western Cascades, Oregon and southern Washington: Isochron/West, no. 31, p. 27-29.
Glacier Peak	48°06' x 121°04'	Poprhyry Cu	K-Ar	20	Do.
		WYOMING			
Gas Hills district	42°45' x 107°30'	U, Cu, Pb	U-Pb	26-35	Ludwig, K. R., 1979, Age of uranium mineralization in the Gas Hills and Crooks Gap districts, Wyoming, as indicated by U-Pb isotope apparent ages: Economic Geology, v. 74, p. 1654-1668.
Crooks Gap district	42°30' x 108°00'	U	U-Pb	26-35	Do.
Highland mine (Powder River Basin)	43°10' x 105°30'	U	U-Pb	<3	Santos, E. S., and Ludwig, K. R., 1983, Age of uranium mineralization at the Highland mine, Powder River Basin, Wyoming, as indicated by U-Pb isotope analysis: Economic Geology, v. 78, no. 3, p. 498-501.

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Mines and districts	Latitude x longitude	Type of ore	Type of dating	Age in m.y.	Reference
			ARIZONA		
Emerald Isle	35°21' x 114°10'	Cu, Ag		Middle Tertiary	Do.
Empire	31°52' x 110°33'	Cu, Pb, Zn, Mo, Au, Ag, W		Late Cretaceous	Do.
Eureka	34°34' x 113°11'	Cu, Pb, Zn, Mo, Ag, Au, W, U, V		Late Cretaceous-Early Tertiary	Do.
Finch	34°34' x 112°33'	Cu, Au, Ag		Early Precambrian	Do.
Fiscus	34°05' x 112°10'	Mn		Middle Tertiary	Do.
Flourescent	35°10' x 113°58'	W		Middle Precambrian	Do.
Fools Folly	33°28' x 114°25'	Mn		Middle Tertiary	Do.
Fortuna	32°35' x 114°19'	Cu, Ag, Au		Early Tertiary	Do.
Four Peaks	33°45' x 111°20'	W		Middle Precambrian	Do.
Francis	35°50' x 112°15'	Cu, Pb, Ag, Au		Triassic-Jurassic	Do.
Francisco Grande	32°55' x 111°54'	Cu		Late Cretaceous-Early Tertiary	Do.
French Gulch	34°23' x 112°33'	Cu, Ag, Au		Middle Tertiary	Do.
[illegible]co	32°40' x 114°00'	Cu, Ag		Early Triassic	Do.
Gila Hot Springs	32°58' x 109°20'	Mn		Middle Tertiary	Do.
Globe Hills	33°30' x 110°40'	Cu, Pb, Ag, Au, Zn		Late Cretaceous-Early Tertiary	Do.
Gold Basin	35°47' x 114°10'	Cu, Pb, Ag, Au		Late Cretaceous	Do.
Goldfield	33°28' x 111°28'	Cu, Ag, Au		Middle Tertiary	Do.
Gold Hill, Mohave County	31°20' x 109°50'	Au		Early Tertiary	Do.
Grand Prize	32°56' x 110°57'	Cu, Ag, Au		Late Cretaceous-Early Tertiary	Do.
Greenback	32°30' x 112°10'	Cu, Ag, Au		Middle Tertiary	Do.
Green Valley	34°15' x 111°20'	Cu, Ag, Au		Early Precambrian	Do.
Greenwood	34°28' x 113°36'	Cu, Pb, Ag, Au		Middle Tertiary	Do.
Gunsight	32°10' x 112°40'	Cu, Pb, Zn, Ag, Au		Early Tertiary	Do.
Hackberry	35°20' x 113°47'	Cu, Pb, Zn, Ag, Au		Late Cretaceous or Middle Tertiary	Do.
Hacks Canyon	36°43' x 112°50'	Cu, Ag, U		Triassic-Jurassic	Do.
Harcuvar	33°54' x 113°40'	Cu, Ag, Au		Middle Tertiary	Do.