

0120 0003

Mineral County
Item 3I. C. 6941
May 1937INFORMATION CIRCULARDEPARTMENT OF THE INTERIOR - BUREAU OF MINESRECONNAISSANCE OF MINING DISTRICTS IN MINERAL COUNTY, NEV.^{1/}By William O. Vanderburg^{2/}CONTENTS

	<u>Page</u>
Introduction	4
Acknowledgments	4
Mineral County	4
General	4
Topography	5
Water resources	5
Climate and vegetation	6
Power facilities	6
Transportation facilities	7
History of mining	7
Metal production	9
Ashby District	11
Ashby Gold Mine, Inc.	12
Aurora District	13
Basalt District . Buena Vista	16
Somerville group	16
Diatom Company	17
Bell District	17
Simon Silver-Lead Mines, Inc.	17
Omco mine	18
Golden Mile group	19
Clay Peters group	21
Harvey-Taylor group	21
Finger Rock Quicksilver Mining Co., Inc.	22
Diatomaceous earth	22

- ^{1/} The Bureau of Mines will welcome reprinting of this paper, provided the following footnote acknowledgment is used: "Reprinted from U. S. Bureau of Mines Information Circular 6941."
- ^{2/} Mining engineer, U. S. Bureau of Mines.

	<u>Page</u>
(192) Broken Hills District	22
Broken Hills mine	23
Silver Trailer group	24
Baxter mine	24
(195) Candelaria District	25
Argentum Mining Co.	26
Secretary Lode Mines Co.	26
Turquoise and variscite	27
Double Springs Marsh District	27
(196) Eagleville District	29
Highland group	29
Other claims	29
(197) Fitting District	30
Dover group	30
Other andalusite claims	31
Chiatovich group	31
Mica	31
Graphite	32
Iron	32
Fick Mining Co.	32
Hawaiian group	33
(198) Garfield District	33
Eldorado Mining Co.	34
Mabel mine	34
200+204 Hawthorne District	35
(200) Lucky Boy Consolidated Mines Co.	35
La Panta mine	38
(204) Pamlico mine	38
Placer gold	39
Barite	39
(196) King District (Eagleville)	39
Donnelly group	39
(201) Marietta District	40
Moho mine	40
Endowment mine	42
Rutty group	43
Gold Gulch Mining and Milling Co.	43
Annett group	43
(202) Mountain View District	44
(203) Mountain Grant District	44
Grant Mountain Gold Mine	44
Big Indian mine	45
Cory mine	46
Talisman group	46
Return group	46
Molybdenite	46

	Page
(194) Mount Montgomery District (Buena Vista)	47
Mount Montgomery Quicksilver Co.	47
Tip Top mine	47
Golden Gate Mining Co.	47
Other properties	48
Mogoe claims	48
Bentonite	48
Fluorspar	49
(194) Oneota District (Buena Vista)	49
(205) Pilot Mountains District	50
Mina Mercury Co.	51
Drew mine	52
Other cinnabar claims	52
Gunmetal group	53
Other tungsten claims	54
Stormland group	54
Belleville mine	54
Sodaville tailings	55
Bentonite	55
Montezuma mine	55
(191-B) Rand District	55
Randall property	55
Gold Pen mine	57
Lone Star group	58
(206) Rawhide District	58
Leonard lease	59
Placers	62
Tungsten claims	63
(South of 205) Rhodes Marsh District	64
(207) Santa Fe District	66
New Year group	67
Dolly group	70
American Copper Co.	70
Other mines and prospects	71
(208) Silver Star District	71
General Tungsten Corp.	74
Silver Dyke mine	74
Tungsten Dike group	75
Nevada Douglas Gold Mines, Inc.	76
High Ore group	76
Bentonite	77
(West of 195) Teel's Marsh District	77
(209) Whiskey Flat District	78

INTRODUCTION

This paper gives the results of a reconnaissance of the mining districts of Mineral County, Nev., made during the month of June and the first 10 days in October 1936.^{3/} During the field work virtually all the mining districts in the county were visited and many data were obtained relative to active and inactive properties. The report covers the location of the various mining districts, nature of deposits, ownership, information on past and current activity, data on economic conditions, and general information likely to be useful to operators and investors and others interested in mining. The geology of the deposits is discussed only in a general way.

For nearly three-quarters of a century mining in Mineral County has been the principal if not the only industry of importance. At times it has reached a very low ebb, and at other times it has been attended by the wild excitement that usually accompanies valuable discoveries of precious metals.

Current metal-mining activity in this county is characterized by small-scale leasing operations. The ores are shipped mainly to smelters near Salt Lake City, Utah, for treatment.

ACKNOWLEDGMENTS

The author wishes to thank the owners, lessees, and mine operators, too numerous to mention individually, who wholeheartedly provided information and assistance during the course of the field work.

Charles White Merrill, of the Mineral Production and Economics Division, United States Bureau of Mines, furnished data for the mineral-production tables, and the Mackay School of Mines, University of Nevada, at Reno, cooperated in making mineral determinations and assays and in permitting the use of its technical library.

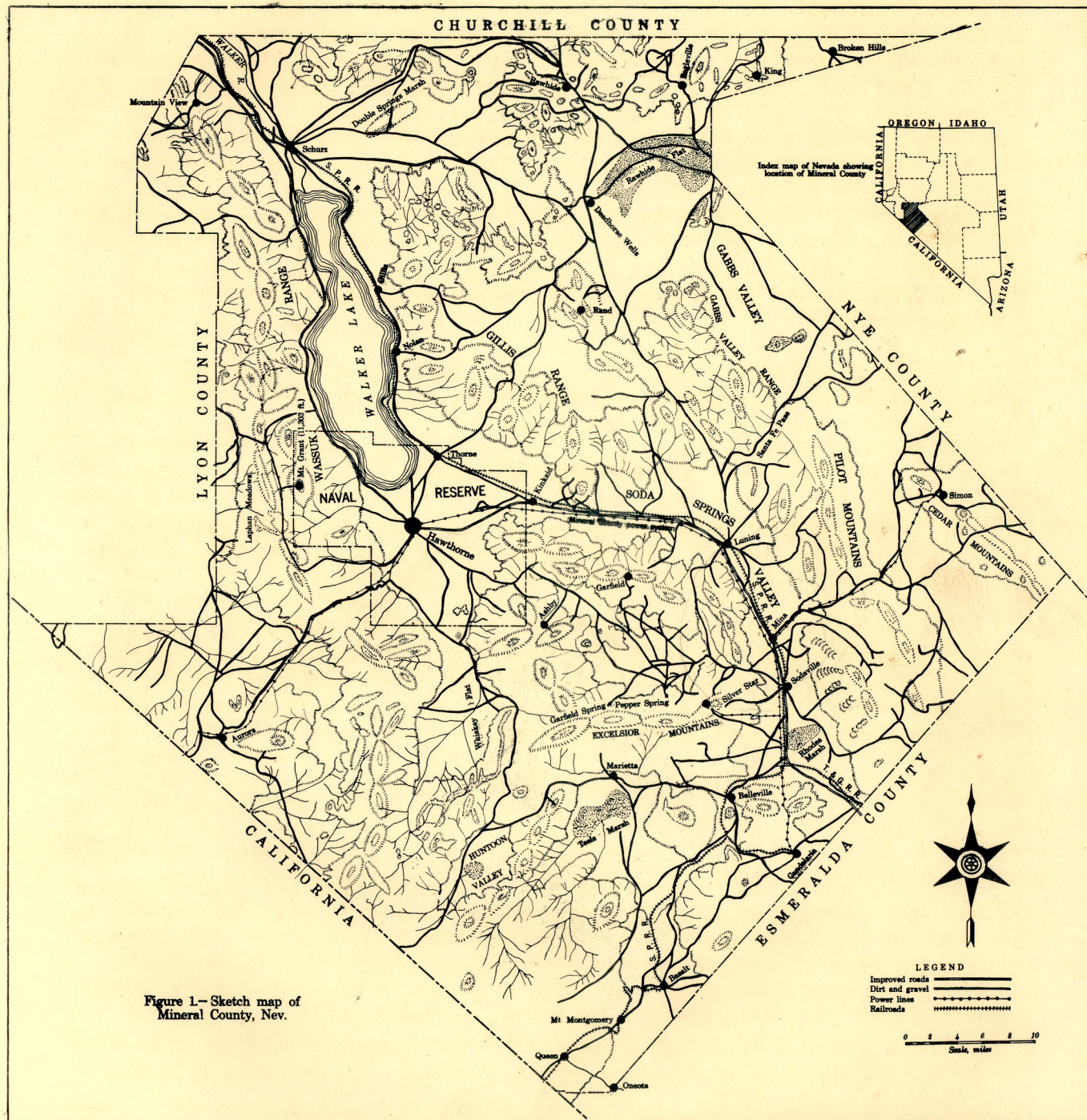
MINERAL COUNTY

General

Mineral County, in the west-central part of Nevada, was created out of the northern portion of Esmeralda County, and its boundaries were established by an act of the State Legislature approved February 10, 1911. In 1933 certain northern townships and parts of townships were withdrawn from Mineral County and annexed to Lyon County by act of the State Legislature approved March 28, 1933. Before this area was annexed to Lyon County, Mineral County had a land area of 4,019 square miles and a water area of 125 square miles, a total of 4,144 square miles.^{4/} No accurate figures

^{3/} Manuscript completed November 14, 1936.

^{4/} Lotz, T. A., Report of the Surveyor General and State Land Register, State of Nevada, for the period Jan. 1, 1931, to June 30, 1932, incl.: State Printing Office, Carson City, Nev., p. 11.



are available on the area withdrawn from Mineral County in 1933, but it is roughly figured to contain 475 square miles. The water area embraces Walker Lake in the northwestern part of the county.

Figure 1 is a sketch map of the county. The population of the county, according to the census of 1930, was 1,863, about 1,200 of whom reside in Hawthorne, the county seat, and 400 in Mina.

The welfare of the county depends largely on mining, as its ranching and agriculture are of little importance. In addition to mining, the only other activity of any consequence is the maintenance of the Naval Ammunition Depot at Hawthorne, which employs a considerable part of the civilian population of Hawthorne in the storage of explosives.

The assessed property valuation in the county for the fiscal year 1935 was \$4,521,755.23, and the tax rate for the same was \$2.88 per \$100, exclusive of special taxes.

Topography

Mineral County has the characteristic physical features of the Great Basin region, comprising a series of approximately parallel mountain ranges with a general northwest-southeast trend and separated by troughlike valleys. The principal ranges are the Wassuk, Gabbs Valley, Gillis, Pilot, and Excelsior Mountains. The strike of the last range is not like the general strike of the others, as it has a general east and west trend. All the mountains are more or less mineralized. The valleys have gently sloping sides and in their lowest portions are filled with a mixture of silt and alkali salts that form the so-called "dry" lakes. The altitude of the lower parts of the valleys ranges from 4,000 to 4,500 feet above sea level.

The mountain ranges are from 6,000 to over 10,000 feet above sea level. The highest mountain in the county is Mount Grant in the Wassuk Range northwest of Hawthorne. Its summit is 11,303 feet above sea level, and it is accessible by automobile road constructed in 1935.

Water Resources

Walker Lake is the only large body of water in the county. It lies between the Wassuk and Gillis Ranges, is 23 miles long, and has a maximum width of 7 miles and maximum depth of 435 feet. Although the lake has no apparent outlet, the water is fresh enough to support trout, bass, carp, and other species of fish. Walker Lake is fed by Walker River and its tributaries, which have their source in the Sierra Nevada Range.

Most of the precipitation is in the form of snow during the winter months. In the valleys the precipitation is approximately 5 inches per year. The amount of precipitation increases progressively with the altitude, and in the higher mountains within this area is appreciably greater. The sides of the mountain ranges are intersected by short, steep canyons, in which small streams are formed by melting snow during the spring run-off.

No surface water from this area flows to the sea, and the valleys constitute the drainage reservoirs. Mountain streams supply the water for the town of Hawthorne and the Naval Ammunition Depot, while water for Mina is obtained from springs.

As in all semiarid regions of the southwest, heavy downpours of rain, called cloudbursts, occur occasionally during the summer months. These storms are local in character and bring to the area affected as much rain in a few hours as would normally fall during the whole year.

In some of the mining districts water for milling is scarce. At Sodaville, water for milling is obtained from a number of highly mineralized hot springs. The hot spring water is unsuited for domestic use, but it is used for milling purposes, apparently with satisfactory results. In a number of places within the county are scattered springs and seeps that occur on the slopes of the mountain ranges, but the flows usually are small. In some of the valleys water can probably be obtained from shallow wells in sufficient quantities for milling purposes. The only artesian water in the county is from two wells sunk at the south end of Rhodes Marsh in 1930.

Climate and Vegetation

The climate of Mineral County is characteristic of the high, arid regions in the Great Basin. In the summer the temperature often rises above 90° F. during the day, but the humidity is low, so that this temperature can be endured without discomfort. During the summer months the nights invariably are cool. The winters usually are mild and open, but occasionally freezing temperatures are maintained for short periods. In virtually all the mining districts mentioned in this report mining activity can be carried on the year around without difficulty.

Some kind of vegetation is present over the whole area, with the exception of valley playas, which are filled with a mixture of silt and alkali salts, injurious to vegetation. At the lower altitudes the vegetation consists mainly of sagebrush, and on the mountain slopes stunted growths of juniper, mountain mahogany, and cedars occur. The forest areas contain no sawtimber, and the growth is fit only for firewood.

Power Facilities

Most of the mining areas in Mineral County depend upon either Diesel or gasoline engines for power. The only public-service power company operating in the county is the Mineral County Power System, owned and operated by the county. Power is generated at hydroelectric plants in the Sierra Mountains in California, and the transmission line serves the towns of Hawthorne and Mina, and Aurora, Candelaria, Cedar Mountains (Simon and Omco mines), Hawthorne (Lucky Boy Mine), and Silver Star (Silver Dyke mine) mining districts.

The rates for industrial mining and milling power consumption under schedule E, when the consumption exceeds 10,000 kilowatt hours per month, are as follows:

	<u>Cent per kw.-hr.</u>
First 1,000 kw.-hr. per month	0.04
Next 2,000 kw.-hr. per month03
Next 3,000 kw.-hr. per month02 1/2
Next 4,000 kw.-hr. per month02
Next 10,000 kw.-hr. per month01 1/2
Over 20,000 kw.-hr. per month01 1/4

In addition to the above kw.-hr. charge, there is a readiness-to-serve or demand charge of \$2.50 per month per kw. of 15 minute maximum demand as recorded by meters, provided the monthly minimum payment required shall not be less than \$250 per month to cover line and transformer losses so long as any service shall be required of the county.

This demand charge shall be taken as the highest kw. reading for the current month and the 11 months next immediately preceding.

The minimum charge shall be the demand or readiness-to-serve charge, as explained above, of at least \$250 per month.

A 10-percent discount is allowed for prompt payment.

Transportation Facilities

The Mina-Hazen branch of the Southern Pacific R.R. traverses the central part of the county. This branch line connects with the main line at Hazen. From Mina, the southern terminus of this railroad, the Tonopah & Goldfield R. R., serves the towns of Tonopah and Goldfield. A narrow-gauge railroad, also operated by the Southern Pacific R.R. connects Mina with Keeler, Calif.

An excellent macadam highway running north and south traverses the county. Fair dirt roads branch off the main highway, so that virtually all the districts mentioned in this report are accessible by automobile.

The Southern Pacific R. R. freight rates on ores from the various loading stations in Mineral County to Utah smelters are shown in table 1.

History of Mining

The region comprising the State of Nevada was part of the domain acquired from Mexico by treaty after the close of the Mexican War. Subsequently it was part of the Territory of Utah. By act of Congress approved March 2, 1861, the Territory of Nevada was created, and on October 31, 1864, it was admitted into the Union.

TABLE 1. -- Freight rates on ores from various localities in Mineral County to Salt Lake City smelters.

Value of ore per ton ¹ / ₂	\$102 ¹ / ₂	\$15	\$20	\$30	\$40	\$50	\$60	\$70	\$80	\$90	\$100	\$150	\$200	\$250	\$300
Schurz	3.20	--	(3.40) (4.10) (5.10)	4.10 5.80	4.80 6.50	5.50 7.20	6.20 7.90	6.90 8.60	7.00 9.30	8.30 10.00	9.00 10.60	10.70 13.10	10.70 13.10	11.20 13.60	11.20 13.60
Thorne	3.20	--	(3.50) (5.10)	4.20 5.80	4.90 6.50	5.60 7.20	6.30 7.90	7.00 8.60	7.70 9.30	8.40 10.00	9.10 10.60	10.70 13.10	10.70 13.10	11.20 13.60	11.20 13.60
Kinthead) ... (Luning)	3.20	--	(3.60) (5.10)	4.30 5.80	5.00 6.50	5.70 7.20	6.40 7.90	7.10 8.60	7.80 9.30	8.50 10.00	9.20 10.60	10.70 13.10	10.70 13.10	11.20 13.60	11.20 13.60
Mina	3.20	--	(3.60) (5.10)	4.30 5.80	5.00 6.50	5.90 7.20	6.40 7.90	7.10 8.60	7.80 9.30	8.50 10.00	9.20 10.60	10.70 13.10	10.70 13.10	11.20 13.60	11.20 13.60
Sodaville..	--	--	3.90	4.60	5.30	6.00	6.70	7.40	8.10	8.80	9.50	10.70	10.70	11.20	11.20
Rhodes	--	--	5.60	7.00	7.00	8.40	9.10	9.90	10.50	11.10	11.60	13.10	13.10	13.60	13.60
Belleville.	--	--	(3.90) (6.30)	4.60 7.00	5.30 7.00	6.00 9.10	6.70 9.60	7.40 10.10	8.10 10.60	8.80 11.10	9.50 11.60	10.70 13.10	10.70 13.10	11.20 13.60	11.20 13.60
Basalt.....	--	(3.90) (6.60)	3.90 7.00	4.60 7.00	5.30 7.00	6.00 9.10	6.70 9.60	7.40 10.10	8.10 10.60	8.80 11.10	9.50 11.60	10.70 13.10	10.70 13.10	11.20 13.60	11.20 13.60
Mt. Montgomery	--	4.00	4.00	4.70	5.40	6.10	6.80	7.50	8.20	8.90	9.60	10.70	10.70	11.20	11.20
Queens.....	--	6.90	7.00	7.00	7.00	9.40	9.90	10.40	10.90	11.40	11.90	13.10	13.10	13.60	13.60

¹/₂ The railroad value per ton is the smelter value (less treatment) divided by the total number of tons (wet weight) in the shipment.

²/₂ Applies on carload minimum weight 100,000 pounds.

³/₂ First row of figures apply on carload shipments, minimum weight 80,000 pounds.

⁴/₂ Second row of figures apply on carload shipments, minimum weight 40,000 pounds.

There is no evidence to indicate that the area now included in Mineral County was worked for its mineral deposits while it was a part of Mexico. Gold placers, which are usually the first deposits to be exploited, are relatively scarce in this area, and its mountainous character and vast distance from inhabited centers prevented early settlement.

The first systematic mining began with the discovery of the silver-gold deposits of Aurora on August 26, 1860. This discovery was followed by others, including Candelaria, Garfield, Oneota, Silver Star, and Santa Fe. The period of greatest mining activity was from 1865 to 1875, when these districts attained their maximum production.

In the early seventies great excitement was aroused by the discovery of borax in the salines of Teels, and Rhodes Marsh in Mineral County and Columbus and Fish Lake Marsh in Esmeralda County. Large plants were erected, which were kept constantly at work night and day 8 months of the year. The crude borax was hauled to Wadsworth, Nev., 130 miles distant, by freight teams. In the summer of 1875, 28 teams, 16 horses in each, were engaged in hauling ore and supplies. As the result of the success of the borax operations in Nevada, the principal producer, F. M. (Borax) Smith, extended his activities to other borax deposits and eventually obtained control of the world borax market, which he held for about 20 years.

The Carson and Colorado narrow-gage railroad was completed in 1882. With the discovery of bonanza ores of Tonopah and Goldfield, the road was inadequate to handle the traffic, and it was converted to a broad-gage line in 1904.

The mining districts included in this report have been active intermittently since the early days, experiencing alternate periods of prosperity and decline. The last period of intense mining activity in the county occurred during the World War, when the prices of metals rose considerably. Cinnabar deposits were found and worked in the Pilot Mountains, and the tungsten deposits in the Excelsior Mountains began to be exploited. By 1930 the production of metals had reached an all-time low with only \$26,699 worth for the entire county. Since 1930 there has been a gradual increase in mining activity by lessees. Since lessees usually are men of small means and hence unable to carry on extensive development, their activities are restricted to the mining of ore of shipping grade that occurs in such a manner that a minimum of dead work is required to recover it. In recent months a number of deposits in the county were being investigated by investors from other States, and the general feeling is that the county will again attain a production comparable to that of former years.

Metal Production

Mineral County is appropriately named, as it contains a greater variety of mineral products in proportion to its size than any other of the 17 counties in the State. The principal minerals produced in the past have been gold, silver, copper, lead, tungsten, and quicksilver. In addition, commercial

I. C. 6941

quantities of placer gold and zinc, in the metal group, and salt, soda, borax, sodium sulphate, clay (bentonite), diatomaceous earth, barite, and andalusite, in the industrial mineral group, have been mined in commercial quantities. Turquoise also has been produced for semiprecious gem stones.

The writer estimates that in October 1936, 200 men were employed in the mining industries in the county.

Mineral production of the county from 1910 to 1934 is shown in table 2. The table does not include tungsten and quicksilver production. The production of these two metals for the period given in the table was approximately \$1,300,000.

TABLE 2. -- Metal production Mineral County, 1910-34

Year	Lode gold		Placer gold		Silver, lode and placer		Copper	
	Fine ozs.	Value	Fine ozs.	Value	Fine ozs.	Value	Pounds	Value
1910	8,307.78	\$171,737	579.77	\$11,985	522,987	\$282,413	47,375	\$6,017
1911	4,696.01	97,075	324.06	6,699	165,808	87,878	12,868	1,609
1912	3,144.04	64,993	81.90	1,693	320,275	196,969	493,719	81,464
1913	6,034.11	124,736	8.22	170	228,832	138,215	769,536	119,278
1914	18,132.69	374,836	259.58	5,366	194,762	107,703	244,536	32,523
1915	36,063.37	745,496	344.82	7,128	292,242	148,167	433,584	75,877
1916	34,264.64	708,313	35.94	743	431,130	283,683	2,986,361	734,645
1917	34,470.82	712,575	20.70	428	407,302	335,617	3,461,969	945,117
1918	27,957.95	577,942	47.55	983	351,760	351,760	2,228,337	550,399
1919	9,204.89	190,282	45.33	937	84,240	94,349	296,815	55,208
1920	4,280.99	88,496	-	-	59,021	64,333	70,886	13,043
1921	5,199.64	107,486	6.58	136	47,561	47,561	6,184	798
1922	981.86	20,297	2.18	45	193,919	193,919	5,063	684
1923	2,928.48	60,537	2.03	42	635,350	520,987	17,942	2,637
1924	1,938.09	40,064	8.37	173	103,956	69,650	1,726	226
1925	2,902.45	59,999	-	-	313,847	217,810	13,282	1,886
1926	1,748.61	36,147	-	-	287,696	179,522	57,054	7,987
1927	2,139.24	44,222	21.33	441	117,490	66,617	48,962	6,414
1928	2,459.00	50,832	-	-	45,890	26,846	22,971	3,308
1929	2,009.22	41,534	-	-	37,167	19,810	56,536	9,950
1930	1,141.70	23,601	-	-	5,307	2,043	6,538	856
1931	1,615.38	33,393	18.29	378	2,429	704	-	-
1932	2,257.47	46,666	42.04	869	7,762	2,189	367	23
1933	1,897.39	39,223	74.61	1,542	11,837	4,143	1,460	93
1934	3,659.33	127,894	39.92	1,395	16,380	10,589	5,028	402
	219,435.15	4,588,376	1,963.22	41,153	4,884,950	3,453,477	11,289,099	2,650,438

1/ Mineral County was part of Esmeralda County prior to 1910.

Continued --

TABLE 2. - Metal production Mineral County, 1910-34 (Continued)

Year	Lead		Zinc		Total value
	Pounds	Value	Pounds	Value	
1910 ^{1/}	711,517	\$31,307	-	-	\$503,459
1911	184,662	8,310	-	-	201,571
1912	298,598	13,437	-	-	358,556
1913	59,632	2,624	-	-	385,023
1914	60,800	2,371	-	-	522,799
1915	221,047	10,389	-	-	987,057
1916	270,734	18,680	-	-	1,746,064
1917	357,876	30,777	-	-	2,024,514
1918	171,660	12,188	-	-	1,493,272
1919	65,204	3,456	-	-	344,232
1920	158,555	12,684	-	-	178,556
1921	111,500	5,017	-	-	160,998
1922	2,056,098	113,085	1,224,000	\$69,768	397,798
1923	3,124,176	218,692	2,320,053	157,763	960,658
1924	96,068	7,685	-	-	117,798
1925	740,007	64,381	255,000	19,380	363,456
1926	1,693,400	135,472	910,125	68,259	427,387
1927	654,930	41,261	285,406	18,266	177,221
1928	51,000	2,958	-	-	83,944
1929	40,036	2,522	1,113	73	73,889
1930	4,100	205	-	-	26,699
1931	-	-	-	-	34,475
1932	17,478	524	-	-	50,271
1933	26,603	984	-	-	45,985
1934	9,497	351	-	-	140,631
	11,185,178	739,360	4,995,697	333,509	11,806,313

^{1/} Mineral County was part of Esmeralda County prior to 1910.

ASHBY DISTRICT

The Ashby district is in an unnamed group of low hills about 20 miles by road a little north of west from Mina. The nearest shipping point is Kinkead Siding, 11 miles to the north.

No water has been developed in the immediate vicinity of the camp; the nearest water supply is probably at Whiskey Springs, approximately 8 miles in an air line to the southwest and at an altitude roughly 1,000 feet lower than that of the camp.

Some prospecting had been done in this area in former years, but no ore was shipped until 1933, when a discovery was made by George A. Ashby of Hawthorne, Nev. The veins are covered with 2 to 20 feet of detrital material and were found by tracing float. Production from 1933 to the time of the writer's visit in June 1936 had been approximately \$40,000 worth of shipping ore produced by lessees.