RAILROADS AND MINING IN THE MOJAVE DESERT AND SOUTHWESTERN BASIN AND RANGE, CALIFORNIA AND NEVADA

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ABSTRACT

Between 1876 and 2017 thirty-seven railroads were constructed in the Mojave Desert and southeastern Great Basin.

Early transcontinental routes that were built through our study area were the Southern Pacific - San Joaquin line (1876), and the Southern Pacific (SP) line that linked Mojave to Needles (1883). The SP connected with the Atlantic and Pacific (A&P) at Needles (Topock), which had been built from the east to west from Albuquerque. These two lines both reached Needles at nearly the same time. The Southern Pacific sold their line to the A&P in 1884. In 1885 the California Southern Railroad (A subsidiary of the Santa Fe) connected at Barstow with A&P creating a new line to the port in San Diego through the Cajon Pass. In 1905 the San Pedro-Los Angeles and Salt Lake (which was purchased in 1921 by the Union Pacific) was completed from Salt Lake City to the port of Los Angeles using some track agreements with the Santa Fe for their line between Colton and Barstow. The Carson and Colorado (C&C) was originally planned to connect Carson City with Fort Mojave on the Colorado River. That destination changed to Tonopah, then Candelaria and finally to Keeler in the Cerro Gordo Mining District.

These railroads provided a transportation framework from which a network of railroads was later connected. These later railroads primarily served individual mines and mining districts. This report is a chronological description of railroad construction in relation to mining and mineral deposits in this area.

Following the 1848 discovery of gold in Coloma, California on the American River, gold was discovered all along the western slope of the Sierra Nevada Mountains – as far west as Klamath Mountains. By the late 1850s other mineral deposits were discovered east of the Sierra Nevada Range, eventually eastward into Nevada, the Mojave Desert and Arizona.

Construction of the main lines through our study area immediately provided transportation that was less expensive than the mule teams that predated them. Several short lines were built when mineral deposits were close to the main lines, however distance and demand required the construction of several significantly longer rail lines. There were two long-line railroads dedicated to reaching the Bullfrog (Rhyolite) mining district: Las Vegas and Tonopah (1905) and Tonopah and Tidewater (T&T, 1907). The T&T's primary designation was the Lila C. Mine in the Greenwater Range east of Death Valley.

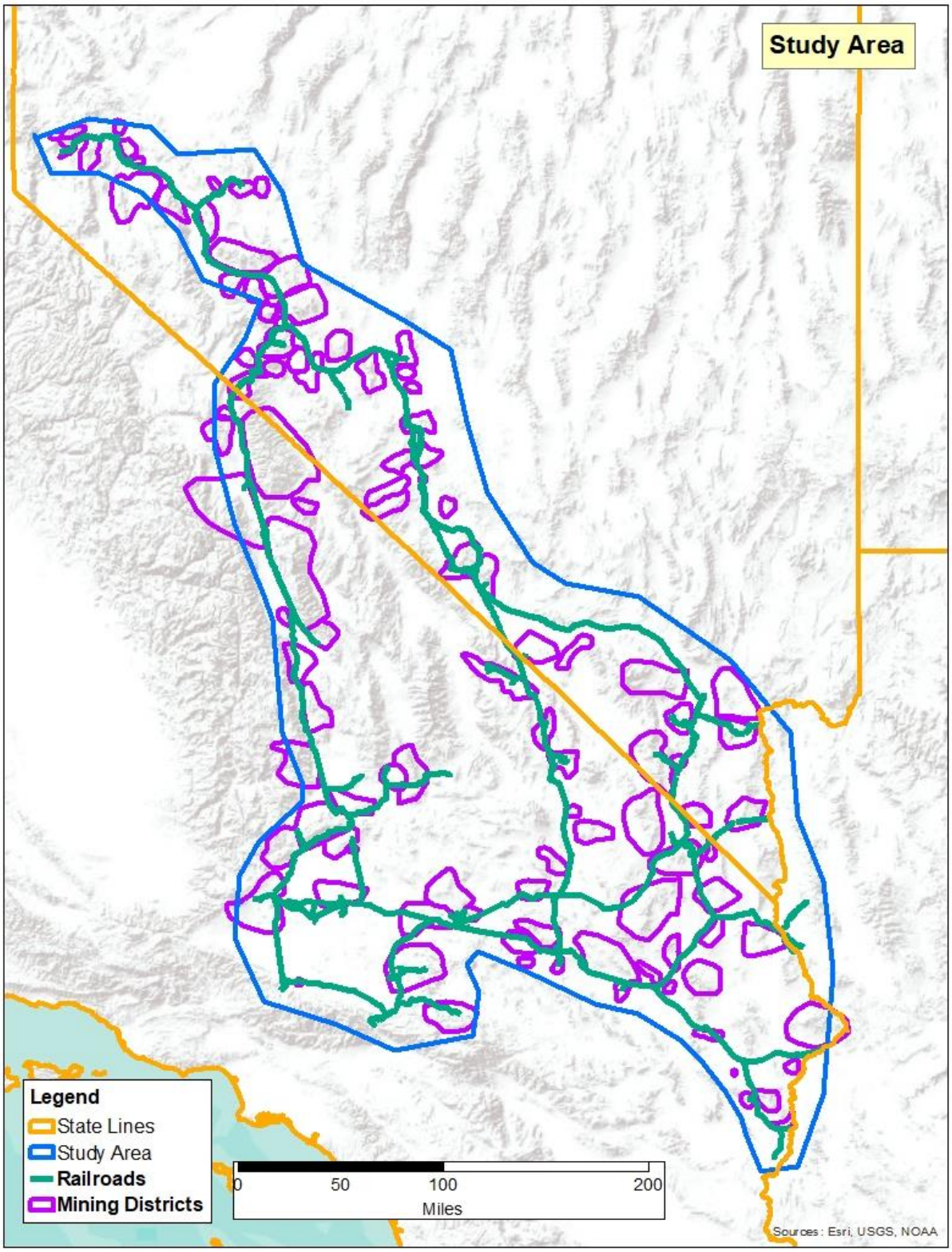
Changes in United States monetary policy in 1893 and the exhaustion of high-grade deposits led to booms and busts that affected the railroads. Competition from trucks and automobiles also contributed to a reduction in demand for railroad services. Many went bankrupt or were assimilated or merged to survive. During WWII almost all the mining-dedicated railroads in the Mojave Desert and Great Basin were scrapped for much-needed iron to support the war effort. With a few

exceptions, today only the original transcontinental lines remain in operation. The Golden Age of the mine railroads that linked remote parts of this area is but a distant memory.

Contents

STUDY AREA AND DATA SUMMARIES

This report describes the California and Nevada portions of the Mojave Desert as well as the southwestern part of the Great Basin along the Carson and Colorado railroad. The data upon which this compilation is made including maps and detailed descriptions of the railroad routes is accessible and identified in Appendix A.


Study Area
Legend
State Lines
Study Area
Railroads
Mining Districts
0
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Sources: Esri, USGS, NOAA

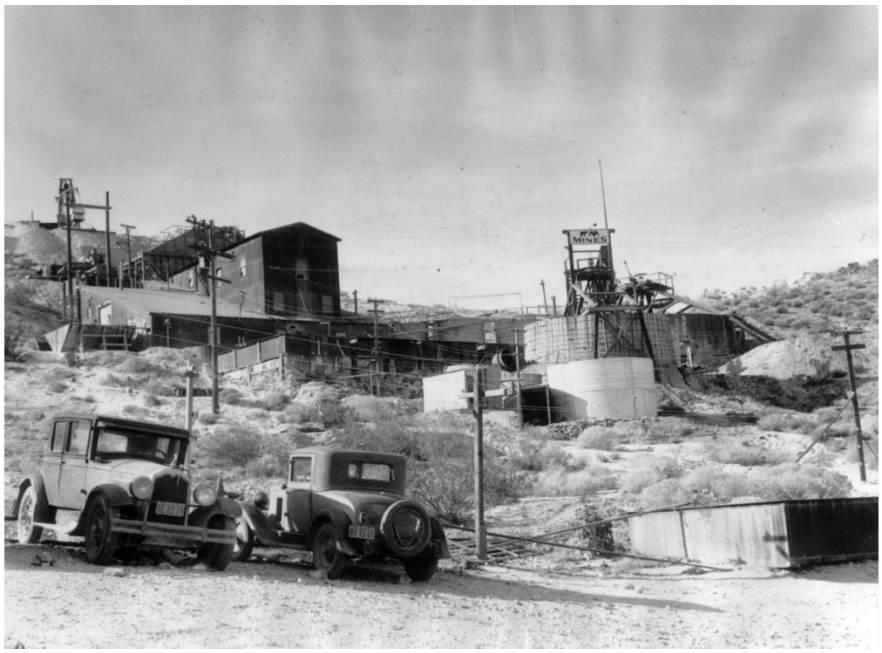
1849: THE CALIFORNIA GOLD RUSH

January 24, 1848 was the day James W. Marshall found a gold nugget in the mill race of Sutter's lumber mill at Coloma on the American River. This triggered a huge migration to California that included federal funding (Pacific Railroad Act of 1862) for railroad construction to connect the Midwest with the California gold fields. These contracts were issued to the Central Pacific and Union Pacific Railroad Companies. The resulting railroad connected Omaha, Nebraska with Sacramento, California. The railroad was completed in 1869. There were pre-Coloma gold discoveries in California at Placerita Canyon near present day Newhall and at Salt Springs south of Tecopa. These earlier events did not create the mass migration that followed the Coloma discovery. The Viginia and Truckee railroad reached the mines of the Comstock Lode in 1866 and connected to the transcontinental railroad in Truckee.

1876: SAN JOAQUIN VALLEY LINE, SOUTHERN PACIFIC RAILROAD

The first railroad in our study area was a segment of the present Antelope Valley Railroad (AVR) which connects Cajon Pass to Palmdale and Mojave. The Tehachapi to Mojave to Palmdale section of this route was originally part of Southern Pacific's (SP) San Joaquin Valley Line (SJVL) which connected Sacramento to the San Fernando Valley at Lang station. That railroad was built 1875 to 1886 and connected Bakersfield (Summit) to Los Angeles via Tehachapi, Mojave, Lancaster, Palmdale, Soledad Canyon and the San Fernando Valley (Serpico, 2000"1-2). This segment of the SJVL was not made for any particular mining destination. But it did provide easy access to the mines of the Mojave District including the Golden Queen (1876) and Portland Cement (1955) mines.

The SJVL reached Tehachapi, Mojave, Lexin (Ansel) and Lancaster in 1876. From Lancaster the SJVL went south to Palmdale, Harold and Vincent in Soledad Canyon. The SJVL then left the Mojave Desert and went through the San Gabriel Mountains to Newhall where a tunnel connected the line into the San Fernando Valley and Los Angeles. The line was completed at Lang on September 5, 1876 (Serpico, 2000:12-15). This segment of the SJVL is still operated by the SP.



Caption: View of the shaft house and buildings of the Elephant Eagle Mine, adjacent to the Silver Queen Mine near Mojave, California. The mine was a few miles west of the SJVL. Two automobiles are parked nearby. A sign on a head frame depicts an elephant and an eagle and reads: "Mines". From Denver Public Library Call Number x-61473.

Caption: Children pose near a tent and automobile in a mining camp near the Silver Queen Mine, Mojave, California. Children pose near a tent and automobile in a mining camp near the Silver Queen Mine, Mojave, California. Denver Public Library Collection Call Number x-61479.

Caption. San Joaquin Daylight. From https://www.railpictures.net/photo/2720/ accessed Dec. 31, 2023. Copyright Mike Woodruff.

DISCOVERIES 1856-1876

At the time the SJVL had reached Palmdale, the following mining districts in our study area had been discovered:

DISTRICT	DISCOVERY	ABANDONMENT
Goodsprings (Yellow Pine) MD	1856	1964
Santa Fe MD	1856	1964
Comstock MD	1858	1882
Blind Springs MD	1859	1882
Jumbo MD	1859	1930
Silver City MD	1859	1945
Como MD	1860	1936
Cushenbury RR	1861	1941
New York (Vanderbilt) MD early	1861	1941
Buena Vista early	1862	1943
Ivanpah MD	1862	1862
Ivanpah MD early	1862	1943
Red Ridge MD	1862	1862
White Mnt MD early	1862	1890

Buckeye (Stedman) MD	1863	1960
Churchill MD	1863	1930
Lone Mountain (Tonopah)	1863	1947
Silver Peak MD early	1863	1948
Candelaria MD early	1864	1890
Randsburg MD early	1864	1935
Cerro Gordo	1865	1938
Garfield MD	1865	1945
Nopah MD	1865	1957
Pilot	1865	1941
Pilot MD	1865	1865
Yerington MD	1865	1930
Silver Star	1866	1945
Silver Star MD	1866	1866
Tokop	1866	1930
Tokop MD	1866	1866
Columbus Marsh MD	1866	1885
Eagleville MD	1869	1950
Gold Point MD	1870	1870
Searles Lake MD	1870	2024
Charleston MD	1873	1873
Rock Hill MD	1873	2024
Stedman-Bagdad MD	1874	1874
Bristol Lake	1875	2024
Fitting MD	1876	1876
Wabuska Wash MD (gold)	1876	1945

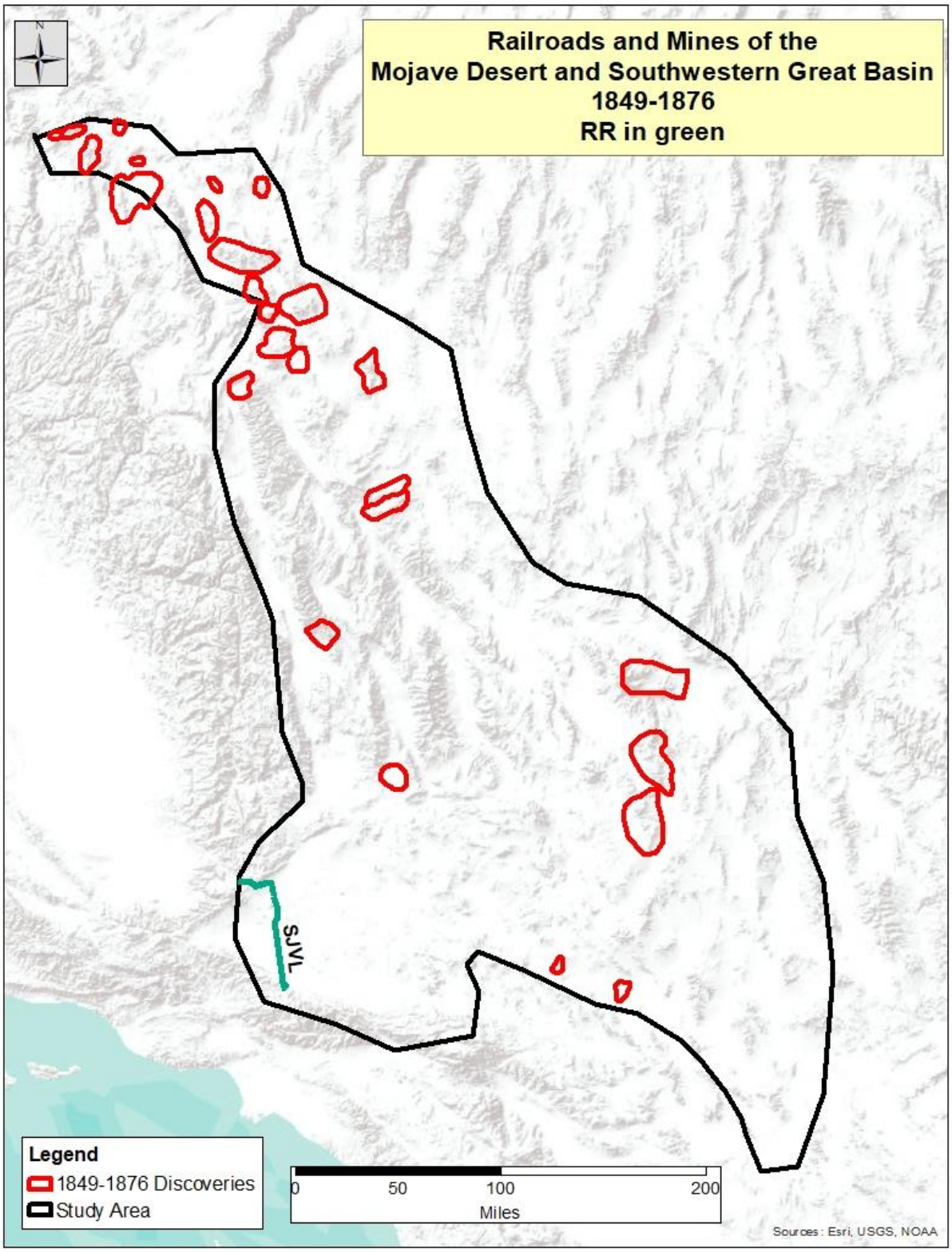


Figure 1. Mining Districts and Railroads 1876

1882: ATLANTIC AND PACIFIC RAILROAD

The Mojave Desert portion of the Southern Pacific and Santa Fe railroad was the Atchison, Topeka and Santa Fe (AT&SF). It did not have a particular mining district destination when constructed but many railroads with mine destinations were connected to it after it was built. This included the Ludlow and Southern, Calico and Odessa, Borate and Dagget, Saltus, Pacific Gypsum, Randsburg and Boron railroads. Mining districts near the A&P were the Sacramento, Piute, Clipper, Marble, Bristol Mountains, Bristol Lake, Southern Cady, Hector, Kramer and Mojave.,

Railroad magnets P. Huntington, Mark Hopkins, Governor Leland Stanford, and Charles Crocker built the Southern Pacific Railroad. They started in Sacramento and built to Bakersfield thence over the Tehachapi mountains to Mojave which was reached in 1878. Proceeding eastward they reached Waterman in the Calico Mining District (now Barstow) and finally Needles at the Colorado River in 1882 (Chappell, 2005:41-42, Myrick, 1963).

The Southern Pacific (SP) was building another line from Los Angeles to Yuma, while its competitor the Atlantic and Pacific Railroad (APR, a subsidiary of the Atchison, Topeka and Santa Fe Railway) was building track from Winslow, Arizona to Topock (southeast of Needles) which was reached in 1882 (Chappell, 2005, p. 42).

With one railroad coming from the east to Needles and another from the west, a negotiation between APR and SP resulted in the sale of the Mojave-to-Needles segment to Santa Fe. After a series of mergers and bankruptcies the old Atchison, Topeka and Santa Fe Railway (AT&S) became the Burlington Northern and Santa Fe (BN&SF) railway in 1996 (Chappell, 2005, p. 42).

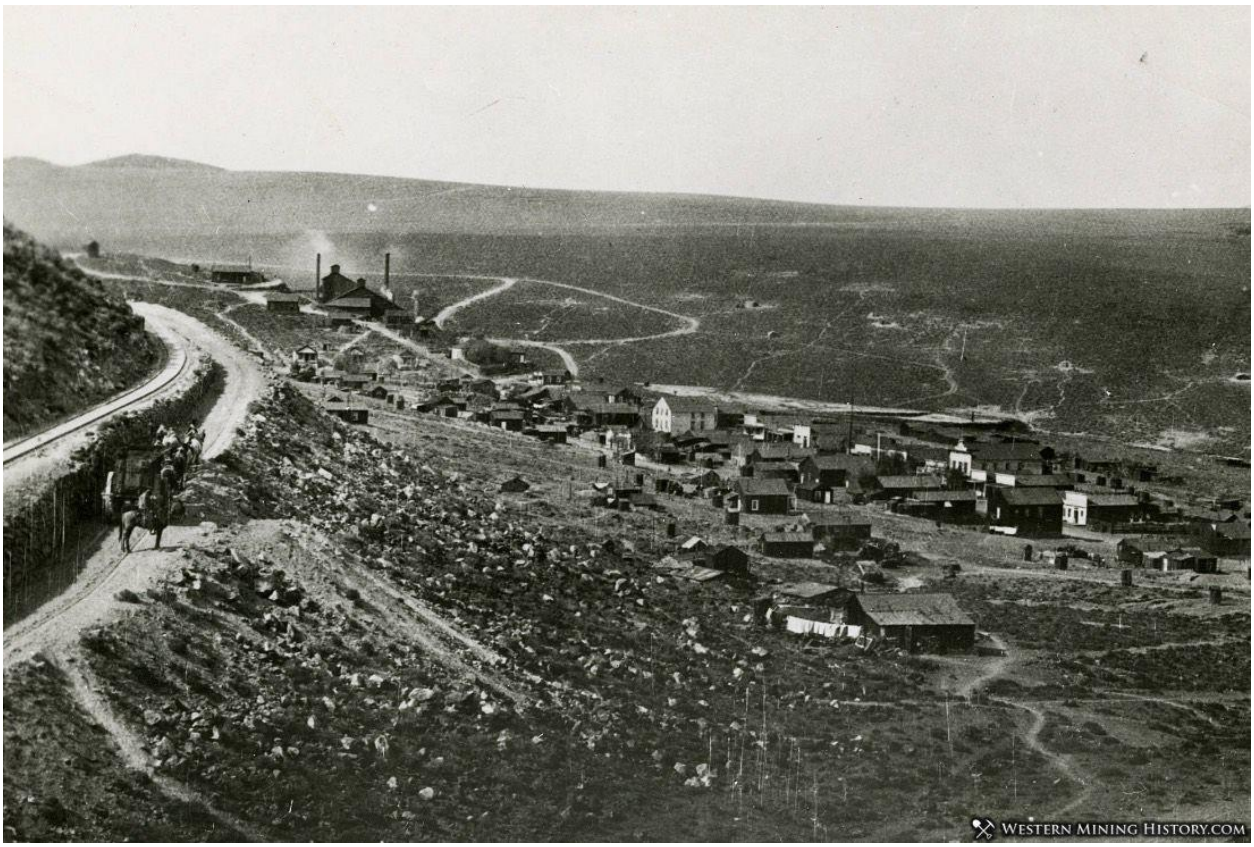
Caption: Bridge over the Colorado River at Topock, 1889 for the AP. Gila steamboat on the eastern bank. From Larry Vredenburgh Collection.

Caption: Product loading facility, Boron. From https://www.railpictures.net/photo/500164/ accessed Jan. 14, 2024. Used by permission.

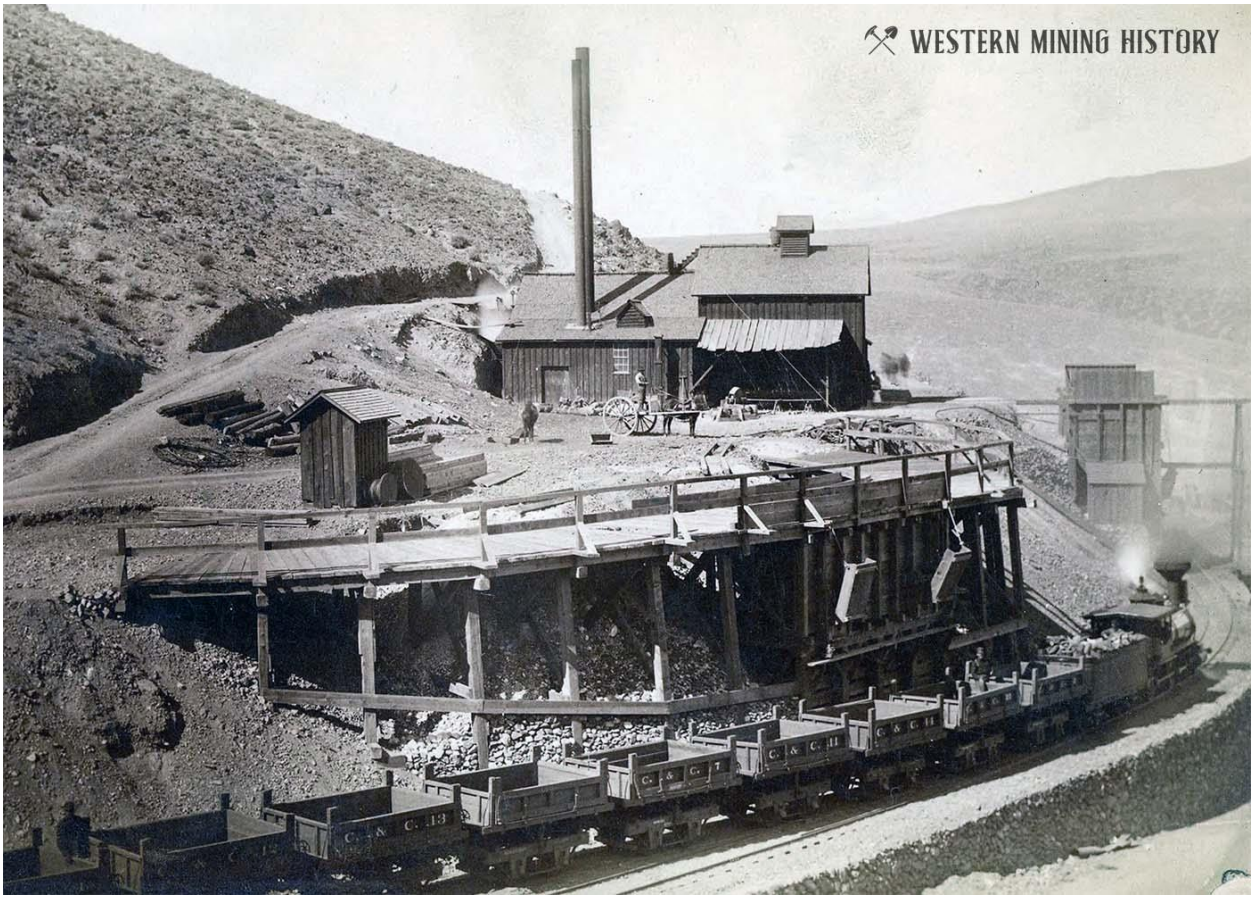
Caption: Product train with mine and plant in background. U.S. Borax (now Rio Tinto). From https://www.railpictures.net/photo/501777/ accessed Jan. 14, 2024. Copyright Mark MacDougall. Used by permission.

1882: CANDELARIA RAILROAD

The Candelaria Mining District was discovered in 1864 and got a railroad when the Carson and Colorado (C&C) came through the area in February 1882. It later became part of the Southern Pacific Railroad. It was closed in 1931(Myrick, 1962:209; Western Mining History, 2023d). Candelaria was the reason the C&C changed its plans to build a railroad to Fort Mojave on the Colorado River.



Caption: Candelaria and railroad in 1890. From https://westernmininghistory.com/gallery-image/39345/ accessed Jan. 14, 2014.



Caption: Northern Belle Mine at Candelaria, Nevada ca. 1880; From https://westernmininghistory.com/towns/nevada/candelaria/ accessed Nov. 11, 2023.

1883: CARSON AND COLORADO RAILROAD

Mining activity in the 1850' s and 1860's in northern Nevada (Comstock, 1859; Candelaria, 1864) and east-central California (Aurora 1860; Bodie, 1859) resulted in incorporation of the Carson and Colorado Company (C&C) on May 10, 1880. The original plan was to build the railroad from the Mound House on the Carson River (10 miles east of Carson City) to Fort Mohave on the Colorado River near present-day Needles. The line reached Keeler on the east shore of Owens Lake in 1883. The C&C operated through 1960. The line never made it to Colorado. (Myrick, 1962, p. 169). The Nevada and California (N&C; Mojave to Owenyo) and the C&C (Carson City to Owenyo) were absorbed by the Southern Pacific Railroad in 1912. The narrow-gauge line from Mina to Benton on the old C&C was abandoned in 1938, and the line from Benton to Laws in 1942. The last revenue run on the S.P. Narrow-Gauge happened in 1959. The rails were pulled up in 1960 (Nordell, 2024).

The C&C connected to several short line mine railroads. These were the Rawhide (never completed), Rhode's Marsh, Belleville, Candelaria, Bishop (never completed), Dolomite, Swansea and Keeler (Cerro Gordo Smelter). The mining districts near the C&C included the Como, Wabuska Marsh, Churchill, Desert Mountain, Yerington, Mountain View, Buckey, Fitting, Pamico, Garfield, Santa Fe, Pilot, Rhodes Marsh, Candelaria, Eastside, Basalt, Buena Vista, Blind Springs, Volcanic Tablelands, White Mountains, Bishop Tungsten, Southern Inyo, Alabama Hills and Cerro Gordo.

Caption: Here C&C locomotive #6 stops at the California/Nevada state line so everyone can pose for a photo. From https://wnhpc.com/details/fsa0021 accessed Nov. 11, 2023.

1885: CALIFORNIA SOUTHERN

The California Southern (CS) Railroad connected SanDiego to San Bernardino, the Cajon Pass and Barstow. It was completed in 1885 under a partnership with the Santa Fe Railroad (Myrick, 1963:774). This line became part of the Los Angeles and Salt Lake Railroad through track agreements in 1905 (Serpico, 1988; Signore, 1988). The CS and LA&SL connected to the Mojave Northern and Cushenberry Mine Railroads. The CS line went through the Oro Grande and Barstow Mining Districts.

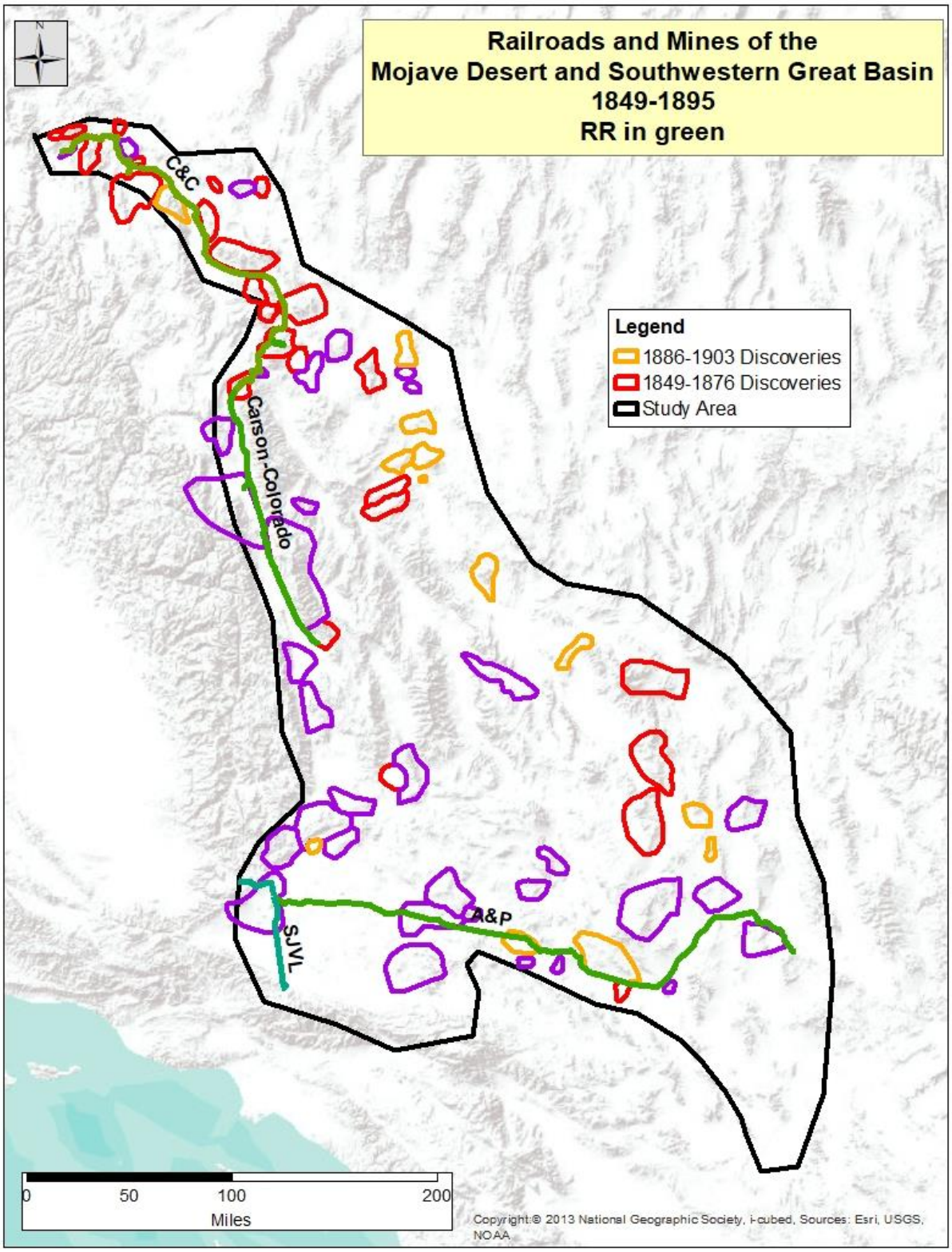
1893: DENVER DEPRESSION OF 1893:

There was a nationwide economic depression from 1893 to 1896 that resulted in bankruptcies of many mines and railroads, especially for the ones that produced mainly silver. This collapse was exacerbated by the repeal of the Sherman Silver Purchase Act of 1893 which precipitated a dramatic fall in silver prices. The oversupply of silver was also caused by the discovery of the Leadville District in the San Juan Mountains of Colorado (Steeples and Whitten, 1998).

DISCOVERIES: 1877-1895

Between 1877 and 1885 the following mining districts had been discovered in our study area.:

Red Rock MD	**1878**	**1882**
Bagdad-Chase MD early	1880	1910
Barstow MD early (gold)	1880	1945
Bishop MD early	1880	1903
Calico MD	1880	1880
Candelaria RR	1880	1882
Carson and Colorado Railroad	1880	1883
Orogrande	1880	2024
Providence MD	1880	2024
Slate Range MD	1880	1960
Borate MD	1881	1907
Calico Silver MD early	1881	1915
Divide MD	1881	1915
Greenwater MD	1881	1881
Coso MD	1882	1882
Owens Lake MD	1882	1882
Sacramento Mnts MD	1882	1932
Soda Mnts MD	1882	1882
Cason River MD	1883	1883
Gilbert MD	1883	1883


Railroads and Mines of the
Mojave Desert and Southwestern Great Basin
1849-1895
RR in green
Legend
1886-1903 Discoveries
1849-1876 Discoveries
Study Area
C&C
Carson-Colorado
A&P
SJVL
0
50
100
200
Miles
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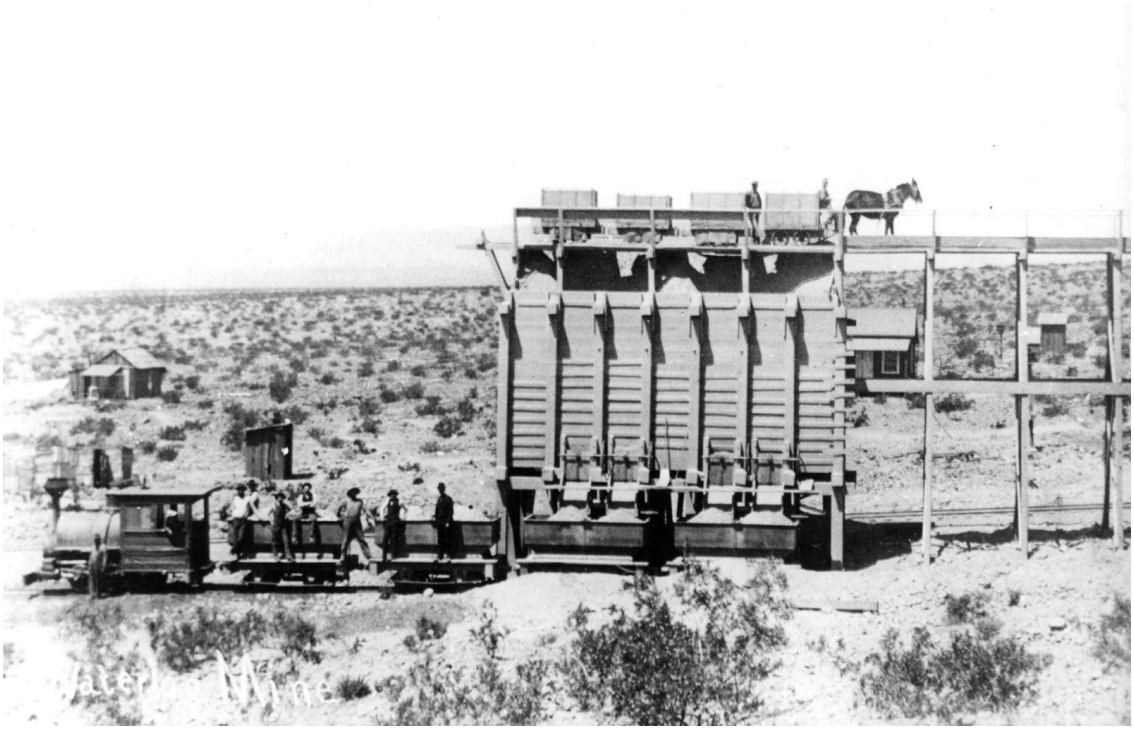
1896: BORATE AND DAGGETT RAILROAD

The Pacific Coast Borax Company was owned and operated by Francis Marion Smith. His first large mining venture was at Borate in the eastern Calico Mountains. The district was discovered in 1883 and developed in 1890. The Borate and Daggett (B&D) railroad was finished in 1896. Main mines of the Calico District were the Union, Centennial, Pacific, Union Borax, and Palm Borate (MRDS, 2011, Southern Pacific, 1964, p. 170, 187, 189, Wright and others, 1956:244; Myrick, 1963: 823-827). In 2022, lithium enrichments in the clays around Borate were reported (Benson, 2022). The B&D shared some tracks with the Calico and Odessa (C&O) Railroad.

West of these borate mines were the rich silver mines of Calico. The Borate and Daggett Railroad (B&D) was built by Smith from Borate, past Calico and down to the Mojave River at Daggett. This work began and was completed in 1898. At Daggett borate shipping facility and silver ore processing plant (Waterman mill) were built. By 1905 the reserves at Borate were nearly all developed and in 1907 the much richer Lila C. Mine was discovered. In that year the tracks of the B&D were taken up and the line abandoned (Wilkerson, 2022, Chappell, 2004, p. 43; Myrick, 1963:823-827).



Caption: Waterloo mine ore bins at south end of Calico, after 1888. From the O.A. Russell Collection.

Caption: Waterman mill and Calico Railroad. From O.A. Russell Collection No. 1038a. View looking north

Caption: Borate mine. From the Death Valley National Park collection. Also from the Larry Vredenburgh Collection.

Caption: Ore cars and engine, Borate Railroad. From the Larry Vredenburgh Collection No. 64a-05.

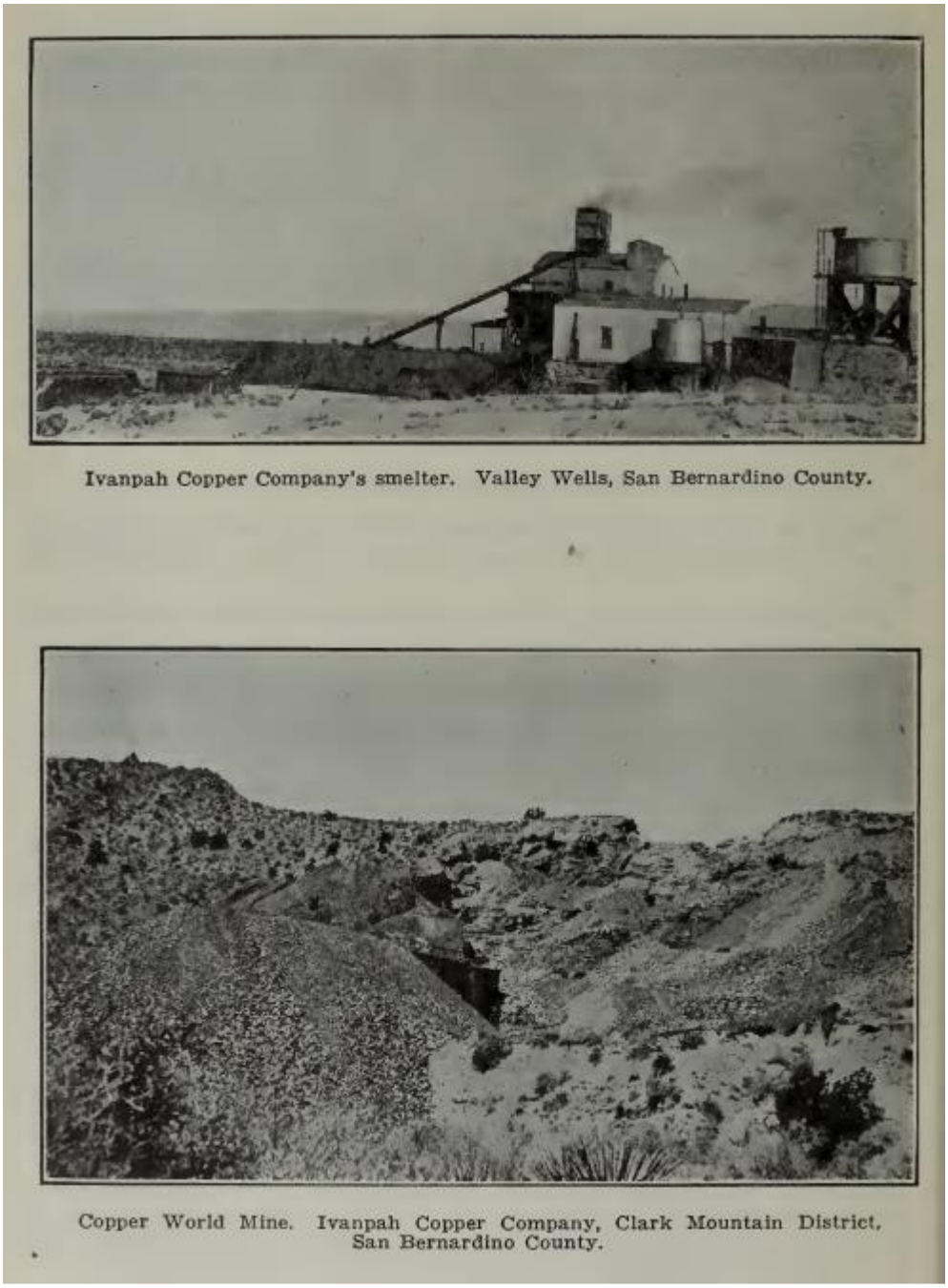
Caption: "Borax" Smith's mine, "Old Borate" ca.1890. Various buildings and equipment of the mining operation are situated in a rough line up the slope of the mountain. Smith's house is on top of the hill along the skyline. From Retro View of Mankind's Habitat; https://pastvu.com/p/384657 accessed Jan. 14, 2024,

Caption: Francis Marion "Borax" Smith, 2nd from left. Gift of Wm. Gordon Huff, 4/1/61. House is "Arbor Villa," F.M. Smith Estate, Oakland. Middle person may be "Borax Bill" Parker, famous driver of 20 mule team, c. 1917." Contributing Institution: UC Berkeley, Bancroft Library. From https://www.pinterest.es/pin/431501208018718359/ accessed Jan. 14, 2024.

1896: COPPER WORLD SMELTER

The Copper World mine and smelter in the Clark Mountains never had a railroad, but it became a possible destination that affected other railroad developments. The original smelter was built in 1896 (From Hewett, 1956, p.135; Wilkerson, 2020h, Vredenburgh, 1996).

Caption: Copper World Smelter. From Larry Vredenburgh Collection.



Ivanpah Copper Company's smelter. Valley Wells, San Bernardino County.

Copper World Mine. Ivanpah Copper Company, Clark Mountain District, San Bernardino County.

From California State Mining Bureau, 1931, v.27, p. 269

1898: RANDSBURG (EARLY)

The Randsburg Railroad serviced the mines of Atolia, Red Mountain and Rand Mountain by connecting to the Atchison, Topeka and Santa Fe Railroad at Kramer Junction.

The first gold discovery in the El Paso Mountains was at Goler (between Red Rock Canyon and Randsburg) in 1893. This discovery drew many miners to the area and the surrounding hills were heavily prospected. In 1895 a party of prospectors found placer gold at the foot of the Rand Mountains and soon traced the source of the gold to an outcropping near the top of the mountain. This discovery would become the fabulous Yellow Aster mine, and a minor rush to the new Rand district was on. Some of the important mines of the district were the Big Norse, King Solomon, Monkey Wrench, Minnehaha, Bully Boy, Napoleon, Gold Coin, and of course the famous Yellow Aster. (Western Mining History, 2023a; Myrick, 1963, :793-808).

The Randsburg Railway was a 28.5-mile branch of the Atchison, Topeka, and Santa Fe Railroad (AT&SF). The line started at Kramer Junction, California, and terminated at Johannesburg, California, with a stop at Atolia. The line was completed on January 5, 1898, and began operation on January 17, 1898. The railway was acquired by the AT&SF in 1903. During its 35-year history, the Randsburg Railway served a number of local mining operations; it also provided passenger service (Wikipedia, 2023c; Myrick, 1963, :793-798). The Randsburg line did not connect northward to the Nevada and California Railroad.

Gold mining in the Randsburg Mining District continued through the early 1930's. There was a hiatus in gold mining from WWII until the Yellow Aster reopened as an open pit operation from 1986 to 1994. Tungsten mining in the Atolia area continued through the Korean War (circa 1953) (Western Mining History, 1923a)

The Randsburg Railway served as a supply link to the Rand Mine, which produced more silver than any mine in California. The Rand mine closed in 1929, as it was no longer profitable (Wikipedia, 2023; Myrick, 1963, :793-798).

The Randsburg Railway ceased operations on December 30, 1933, a victim of the Great Depression and a decline in the mining industry. The rails were removed the following year. Portions of the grade are still visible along U.S. Route 395 between Kramer and Johannesburg (Wikipedia, 2023c; Myrick, 1963, :793-798).

Caption: Wedge Mine Overlooking Randsburgg with sacked ore redy to be sent to mill. Photo from Deric English collection; https://randdesertmuseum.com/site/?p=2763 accessed Jan. 14, 2024.

Caption: Randsburg station. From randdesertmuseum.com accessed Jan. 14, 2023

1902: NEVADA SOUTHERN AND CALIFORNIA EASTERN

The Nevada Southern-California Eastern railroad (NS&CE) was originally built by a consortium headed by Isaac C. Blake of the Needles Reduction Company to service the New York and other mines in the New York Mountains. The NS began at Goffs on the Atlantic and Pacific Railroad.

The Nevada Southern Railroad (NS) was incorporated December 15, 1892 (Myrick, 1963:842. Chappel, 2005). The original destination for the NS&CE were the mines of the Vontrigger Hills (Exchecker District) and New York Mountains.

Beginning at Goff in January 1893 the Nevada Southern railroad proceeded north to Manvel arriving there in July of that year. Manvel was the headquarters of the Rock Springs Land and Cattle Company (Chappel, 2005, p. 43; Myrick, 1963:841-848).

The mines of the Exchequer District in the Vontrigger Hills were near this first phase of Nevada Central Railroad construction (Wilkerson, 2020a).

Because of the silver crash of 1893 and resulting depression in the mining industry, plans to extend the line to Pioche from Manvel ended with the company's bankruptcy in 1894. At that time the

Nevada Southern had built the line to the mesa overlooking the mining camp of Vanderbilt. (Chappel, 2005, p. 43; Myrick, 1963:841-848).

In 1898 a smelter was built at the Copper World Mine by the Ivanpah Copper Company in the Clark Mountains (Wilkerson, 2022b). This resulted in a rejuvenation of the California Eastern Railway (Chappel, 2005, p. 43, Aubery, 1902, Aubery, 1908, Hewett, 1956:135; Myrick, 1963:841-848).

Construction resumed in April, 1901. The rejuvenation started at Manvel (renamed Barnwell) in the New York Mountains and then proceeded to the mining camp of Vanderbilt (Wilkerson, 2020c). From there it was built northward along the Ivanpah Valley to the railroad's terminus at a point near the Ivanpah mining camp at the Los Angeles and Las Vegas (LA&LV) railroad arriving there in 1902. An extension of the railroad to the mining district of Goodwell was surveyed but never constructed. The California Eastern Railway became a branch of the Santa Fe in July 1902 (Chappel, 2005, p. 43; Myrick, 1963:841-848).

Competition in 1905 from Senator Clark's San Pedro, Los Angeles & Salt Lake Railroad (LA&SL) (which crossed the California Eastern north of Vanderbilt) and construction of the Tonopah & Tidewater reaching north from Ludlow reduced revenues for the California Eastern and the line was abandoned March 10, 1921 (Chappel, 2005, p. 53; Myrick, 1963:841-848, Menchaca, 2023).

Caption: Manvel (now Barnwell). From Myrick, 1963:846. Larry Vredenburgh Collection.

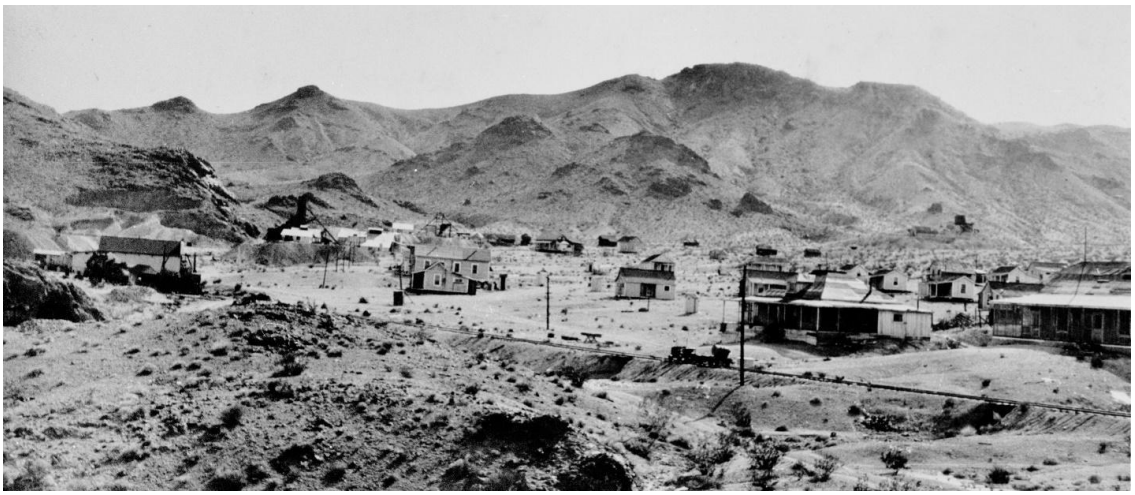
1903: LUDLOW AND SOUTHERN RAILROAD

The Ludlow and Southern (L&S) Railroad was built to serve copper mines in northern Bullion Mountains. It connected to the Atlantic and Pacific (A&P) at Ludlow and was within the Stedman-Bagdad mining district.

Copper and gold mineralization in the area of the current Bagdad-Chase and Roosevelt mines was discovered most likely around the early to late 1880's by John Suter, roadmaster for the Atlantic and Pacific subsidiary of the Santa Fe Railway. Discovery dates, which have been reported or which can be inferred from various sources, range from 1880 to 1903 (Mansfield, 2005). Construction began in 1902 and 1903 the 7.8-mile-long railroad had been built with spurs going to Stedman and Bagdad-Chase mills (Myrick, 1963:827-835, Ross, 2009). The Bagdad-Chase served the mines of the northern Bullion Mountains. These included the Ragtown, Old Pete, Bagdad, Ambush, Buckey-Stedman, Dull Pick, Gold Standard, Markerson and Bullion Range mines and the mills at Stedman and Bagdad (Wilkerson, 2020d, 2020e; Ross, 2009, Bonas and Anderson, 2023).

The Bagdad Chase was one of only four gold mines in California to be authorized to remain in production during World War II; the ore's silica content made it useful as a flux in smelting. Although not very profitable after WWII, the mine operated continuously from 1940 to 1954. The railroad fell into disuse in 1916 with the arrival of diesel-powered trucks for ore haulage. The railroad was dismantled in 1935 (Minedat, 2020c; Myrick, 1963:827-835; Ross, 2009).

Caption: Bagdad-Chase railroad at Stedman. From the Larry Vredenburgh Collection.

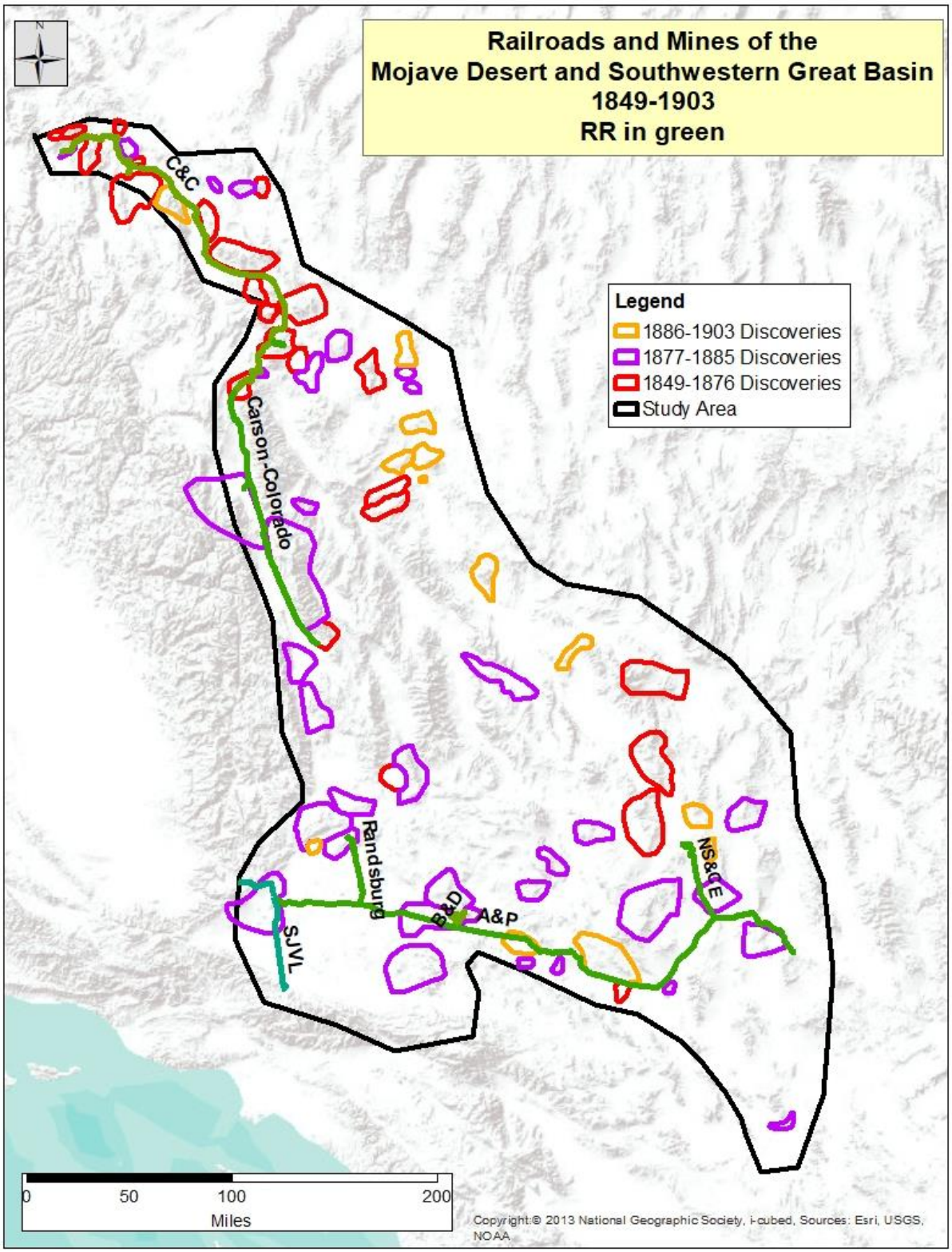


Caption: Town of Stedman in Stedman-Bagdad mining district with railroad. From the Larry Vredenburgh Collection.

DISCOVERIES: 1896-1903

Between 1896 and 1903 the following mining districts were discovered in our study area:

DISTRICT	DISCOVERY	ABANDONMENT
Goldfield MD	1897	1949
Copper World Smelter	1898	1920
Hector MD	1898	1920
Wagner MD	1898	1898
Cuprite MD	1900	1924
Stonewall MD	1900	1900
Tohopah MD	1900	1947
Mountain View MD	1901	1907
Johnnie MD	1902	1902
Kohen (Saltdale) MD early	1902	1949
Bare Mnts MD	1903	1903
Bristol Mnts MD	1903	1935
Castle MD	1903	1923
Sunset-Crecent MD	1903	1927



1904: TRACTOR ROAD

Pacific Coast Borax had purchased the Lila C Mine from Willim Tell Coleman in 1890. This mine was in the Greenwater Mountains between the Amargosa Valley to the east and Death Valley to the west. Smith proposed and built a wagon road from the upper end of the California Eastern Railroad at Second Ivanpah over the State Line Pass in the Spring Mountains thence to Mesquite Valley, California Valley, Tecopa, Shoshone, Eagle Mountain and then northwest to the Lila C. Mine. This road was completed in 1904. An experimental diesel-electric tractor ("Gibbs Engine") was designed, ordered and built but never put into service on Smith's Tractor Road. This contraption had a gasoline engine that generated electrical power to motors geared to the rear wheels of the borax wagons. Instead of using "Gibbs", an older Steam Tractor, "Old Dinah" that had was near the Calico borate mines prior to building the Borate and Daggett Railway (now on display at the Death Valley Visitor's Center) was brought to Second Ivanpah. But it broke down on State Line Pass and had to be towed by mules back to Ivanpah (Hildebrand, 1982).

Caption. "Old Dinah" broke down on Tractor Road. From backcountryexplorers.com accessed Jan. 14, 2024.

1904: TONOPAH AND GOLDFIELD RAILROAD

The Tonopah and Goldfield (T&G) Railroad was built to service both the Tonopah and Goldfield Mining Districts. It connected to the C&C, LV&T railroads and T&T railroads.

The Tonopah mining district was discovered May 17, 1900 by Jim Butler following a hunt for his lost mule. The district operated during the period 1900 to 1947.

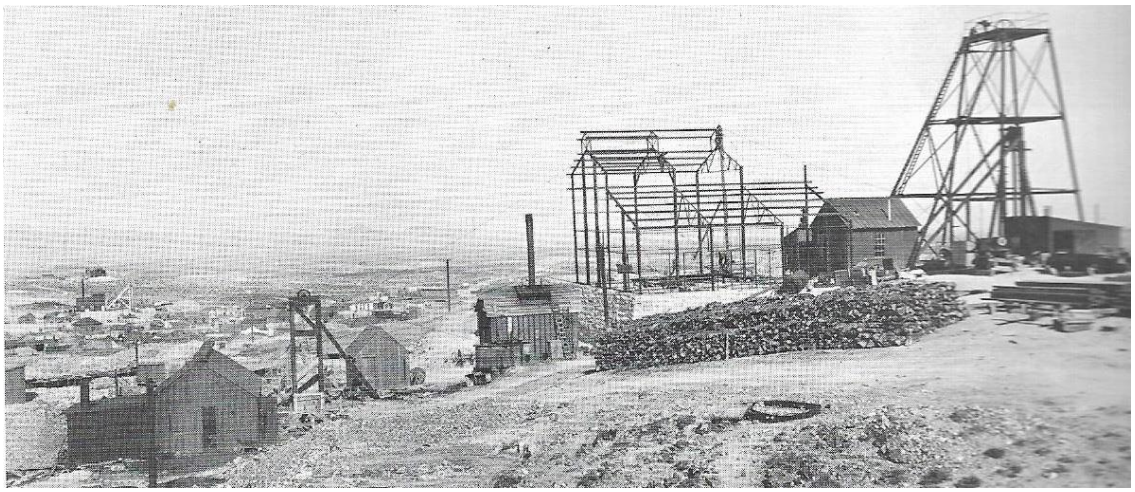
Goldfield District is located in Esmeralda and Nye Counties, This district was discovered in 1902. Goldfield is one of the state's most famous historic gold districts. Extremely rich ore discoveries resulted in the rapid development of the Goldfield camp into the state's largest city, only to be nearly abandoned in the 1920s as the gold ran out. From 1903 through 1959 the district produced over 4,000,000 ounces of gold. Currently a large project is underway to resume mining at Goldfield (Western Mining History, 2023g).

The route from Tonopah Junction (Mile Post 143) on the Carson and Colorado railroad) to Tonopah was surveyed in 1903. On July 25, 1903 the Tonopah Railroad Company was formed and tracks reached Tonopah on July 23, 1904. Flooding destroyed parts of the railroad in 1904 soon after it was built. The construction of the railroad from Tonopah to Goldfield began with surveys in the summer of 1904 by a new company the Goldfield Syndicate. Grading began February 11, 1905 and service was established Sept. 25, 1905. The line was abandoned after several cycles of near bankruptcy in 1927 (Myrick, 1962:236-267).

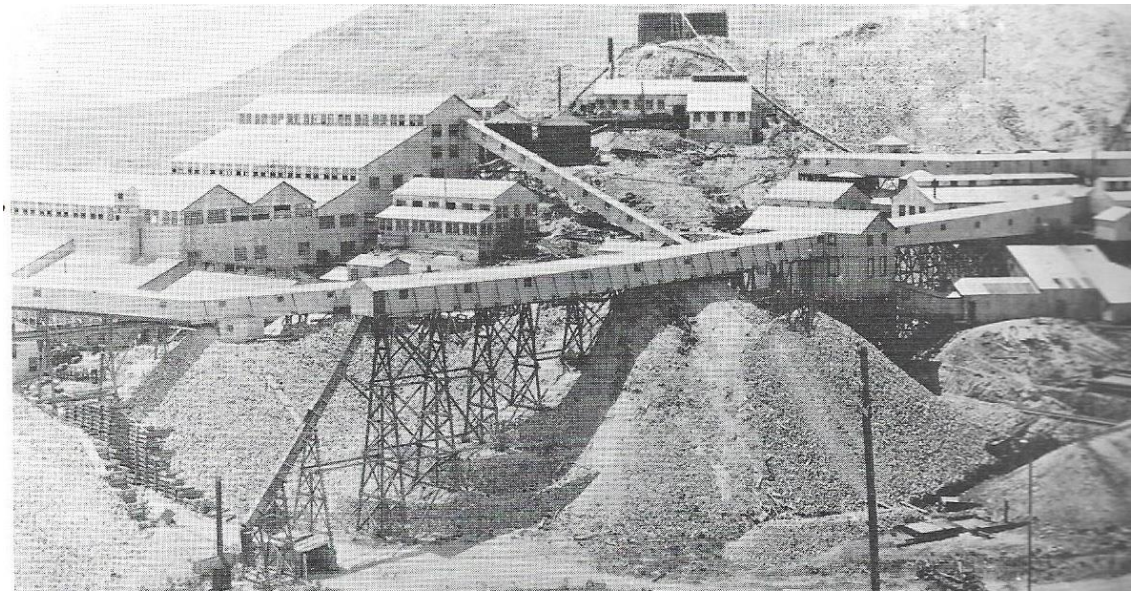
The mines and geology of the Tonopah District are described by Albers and Stewart (1972), and Ashley (1974), Kral (1951), Lock (1912), Balliet (1914), Bastin and Laney (2017) and Spur (1905). Tonopah's history is described by Latschar (1981).

Principal mines included the Mizpah, West End Consolidated, Halifax Tonopah, Jim Butler Tonopah, MacNamara, Mizpah Extension, Montana - Tonopah, North Star, Rescue Eula, Tonopah Belmont, Tonopah Extension, and Tonopah Midway Mines. The most productive of the Tonopah mines were centered between Mount Oddie and Mt. Brougher, near the south end of the San Antonio Mountain Range. Some of the more productive mines were on the southwest flanks of Mount Oddie (Minedat, 2023b).

Caption: Tonopah circa 1903. From Myrick, 1963:251; U.S. Geological Survey Collection.



Caption: Mizpah shaft, Tonopah. From Myrick, 1963:251; U.S. Geological Survey Collection.



Caption: Tonopah-Belmont mine and mill 1911-1912. This new mill caused the Tonopah and Goldfield railroad to lose money because of discontinued ore shipments to the old mill at Millers. From Myrick, 1963:251; U.S. Geological Survey Collection.

Caption: Belmont mill. From https://travelnevada.com/ghost-town/belmont-ghost-town/ accessed Jan. 1, 2024.

1904: PACIFIC CEMENT PLASTER

The Pacific Cement Plaster Company was situated between Amboy Crater and Bristol Lake. It is connected to the Atlantic and Pacific (A&P) railroad. The company built a mill at Amboy as early as 1905 and commenced operations the following year. To feed the mill, a narrow-gauge track about 1.5 miles long was strung south to the gypsum beds in Bristo Lake. The cars were pulled by mules (Myrick, 1963:835-837). The California Salt Company had its own railroad to process salt from evaporation ditches in Bristol Lake. They were producing salt in 1904. The mill and railroad were refurbished during WWII and is still in operation (Myrick, 1963:840

1905: IVANPAH

The Ivanpah Railroad was a spur line that connected to the LA&SL railroad. It was in the Ivanpah Valley adjacent to the Ivanpah mining district

Ivanpah (sometimes referred to as Ivanpah I) was a short-lived silver mining town located in San Bernardino County, California, United States. Gold was discovered in the Ivanpah Mountains in 1882. The town of Ivanpah was founded in 1869 and existed until at least the mid-1880s. Mining continued through 1915 with some activity in the 1930's and up to WWII. The Morning Star mine was developed between 1927 and 1933. It became an open pit operation from 1974 to 1990. Concentrates were made at the refurbished Vanderbilt mill in the New York Mountains (Wilkerson, 2022g; Tengelen, 2023; Western Mining History, 1923i).

The town moved south to Ivanpah Valley in 1905 with the arrival of LA&SL railroad which joined the Nevada Southern-California Eastern Railway (NS&CE) at the Ivanpah Junction. A spur line was built from the LA&SL/NS&CE junction north to the mines from "Ivanpah II" to the Ivanpah Mountain Mining District. The Ivanpah was a northward continuation of the California Eastern Railroad. The Ivanpah Railroad and its associated lines (Searchlight and Barnwell) were decommissioned after several washouts in 1923 (Myrick, 1963:842-845).

The main mines of the Old Ivanpah district were the Kewanee, Mollusk, Morning Star, New Era, Teutonia. In the 1990's the Morning Star was expanded to an open pit operation (Hewett, 1956; Tucker and Sampson, 1943:438-465; Wright and others, 1953: 69-86; Wilkerson, 2022g).
In addition, there was a spur line built to the Vandenberg Mine.

1905 (SAN PEDRO) LOS ANGELES AND SALT LAKE

Los Angeles and Salt Lake (LA&SL) as it's name indicates connected Los Angeles and Salt Lake. It did not have any specific mining district in mind as a destination when construction started, but many mine railroads later connected to it after it was built. This included the Cushenberry, Mojave Northern, Calico and Odessa, Ivanpah, Yellow Pine (Goodsprings), Blue Diamond and Six Companies railroads.

Mining districts near or serviced by the LA&SL were the Lucern-Big Bear, Oro Grande, Barstow, Calico, Borate, Cronese, Providence, New York, Ivanpah, Sunset-Crescent, Goodsprings, and Ardan.

The Los Angeles and Salt Lake (LA&SL) railroad involved the competition, mergers and cooperation between several companies.

The LA&SL began surveying and constructing a subsidiary Utah Southern southwest from Salt Lake to Milford Utah. In 1888 a reorganized LA&SL built railroad grade 145 miles but only 8 miles of track from Milford to Pioche Nevada. The crash of 1893 led to a reorganization and rejuvenation of the LA&SL by Edward Henry Harriman until 1898. At this time a competitor and owner of the rich copper mines at Butte Montana, Senator William Andrews Clark, purchased the Los Angeles Terminal Railway. Clark also created the Utah and California Railroad and obtained the rights to survey a route across Utah to the Nevada state line. A compromise between Harriman and Clark on July 9. 1902 resulted in a merger. Track was laid east from Los Angeles and west from Utah. The efforts joined at an empty area of Nevada desert about 27 miles west of Las Vegas on January 30, 1905. There was an agreement between the Southern Pacific, the Santa Fe and the A&P in 1905 to share track between Colton, Cajon Pass and Daggett (Barstow) in 1905. The LA&SL later became part of the Union Pacific Railroad. (Chappel, 2005, p. 43; Myrick, 1963:623-683). The old LA&SL route is still in operation.

Caption: San Pedro, Los Angeles, and Salt Lake Railroad - Locomotive 60. From https://collections.lib.utah.edu/details?id=482048 accessed Nov. 14, 2023.

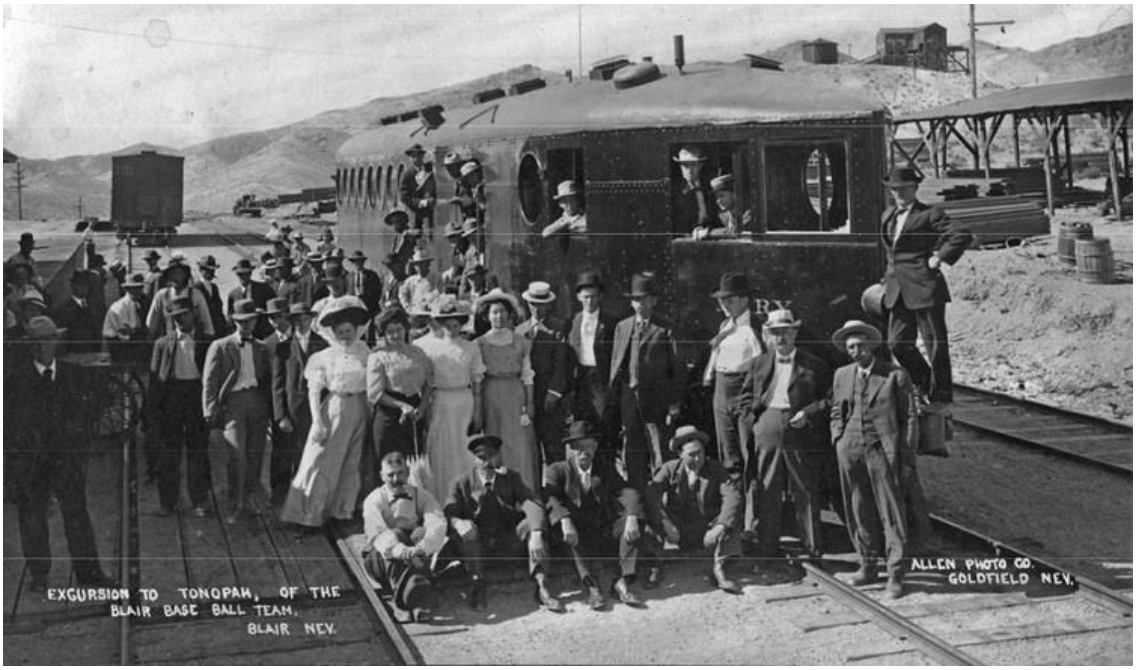
Caption: Kelso Depot on the LA&SL railroad. From https://www.flickr.com/photos/courthouselover/16402178116 accessed Jan. 14, 2023.

1906: SILVER PEAK

The Silver Peak Railroad (Blair) line was a spur line from the Tonopah and Goldfield Railroad that serviced the Silver Peak mining district. Blair Junction was about half way between Tonopah and Tonopah Junction in Big Smokey Valley on the southern flank of the Monte Cristo Range. The Silver Peak Railroad Company was organized in 1906 and the line completed to the Tonopah and Goldfields railroad at Blair Junction that same year. The district ceased activity in 1948 following a fire (Myrick, 1963:202-293).

These mines in the Blair-Silver Peak area included the 16 to 1, April, Black Warrior Mine, Blair, Columbus Mine, Coyote Mine, Crescent Mine, Crowning Glory Mine, Dewar Perlite, Drinkwater Mine, Esmeralda Prospect, Foote Minerals Gravel Pit, Gold Hill, Golden Eagle Mine, Great Gulch Mine, Homestake, Last Chance, Mary, Mineral Ridge Mine, Modern Milling, Oremonte, Pocatello Mine, Red Light Mine, Silver Peak, Silver Peak Marsh, Solberry Mine, Vanderbilt, Vega Mine, Virginia Group 17 Claims, and Western Soldier Mine. Descriptions of these mines are in NBMG (1990:32), Spurr (1906:24, 36, 63, 73-77), Minobras (1963:16) Keith (1977); Hewett (1956:113), Koschmann and Bergendahl (1968), Albert and Stewart (1972:71), Shamberger (1976), Quade and Tingley (1985), and Lowe and others (1985). Some of the major mines were at elevations of over 7,000 feet

while the towns were at 4,300 feet. A tramway 1.5 miles long connected the mines to the ore bins at the foot of the mountains and huge wagons used to haul ore to the mills (Myrick, 1963:292).



Caption: Excursion of the Blair Baseball Team riding the McKeen Motor Car "Mary" to Tonopa; From https://mckeencar.com/gallery/s/silver-peak-railroad/ accessed Jan. 14, 2024.

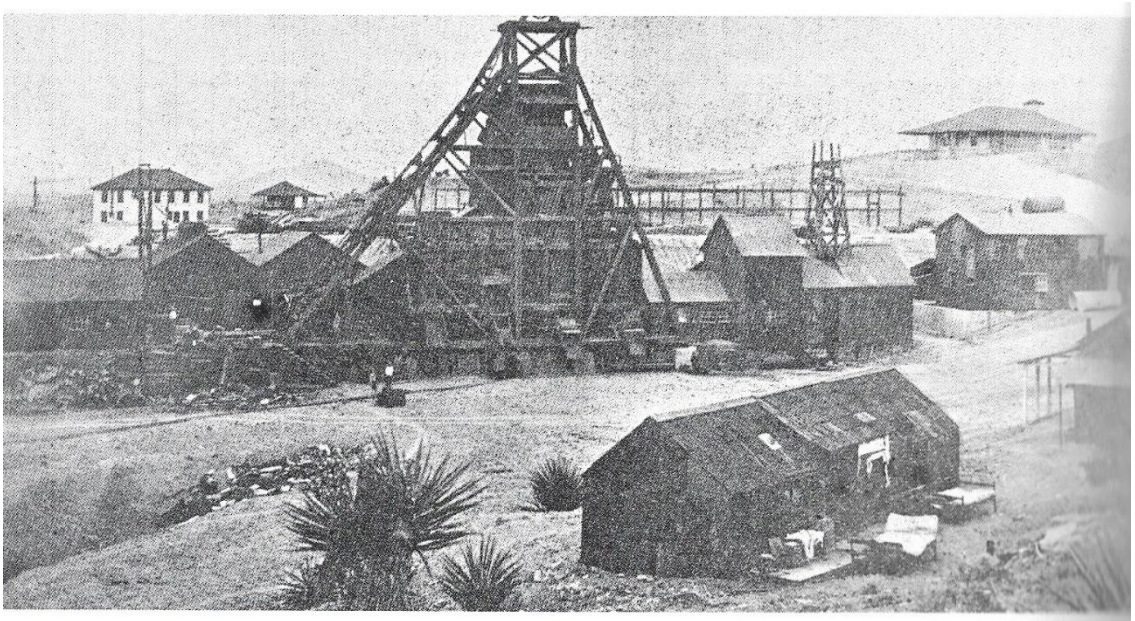
Caption: Silver Peak, Nevada 1949. Note the stamp mill in the left part of the photo. From https://westernmininghistory.com/towns/nevada/silver-peak/ accessed Jan. 14, 2024.

1907: QUARTETTE (SEARCHLIGHT TO COTTONWOOD) RAILROAD

The Quartette Railroad connected Searchlight to Cottonwood Cove on the Colorado River. It connected to the Barnwell and Searchlight (B&S) Railroad at Searchlight and from the B&S to the NS&CE railroad at Barnwell.

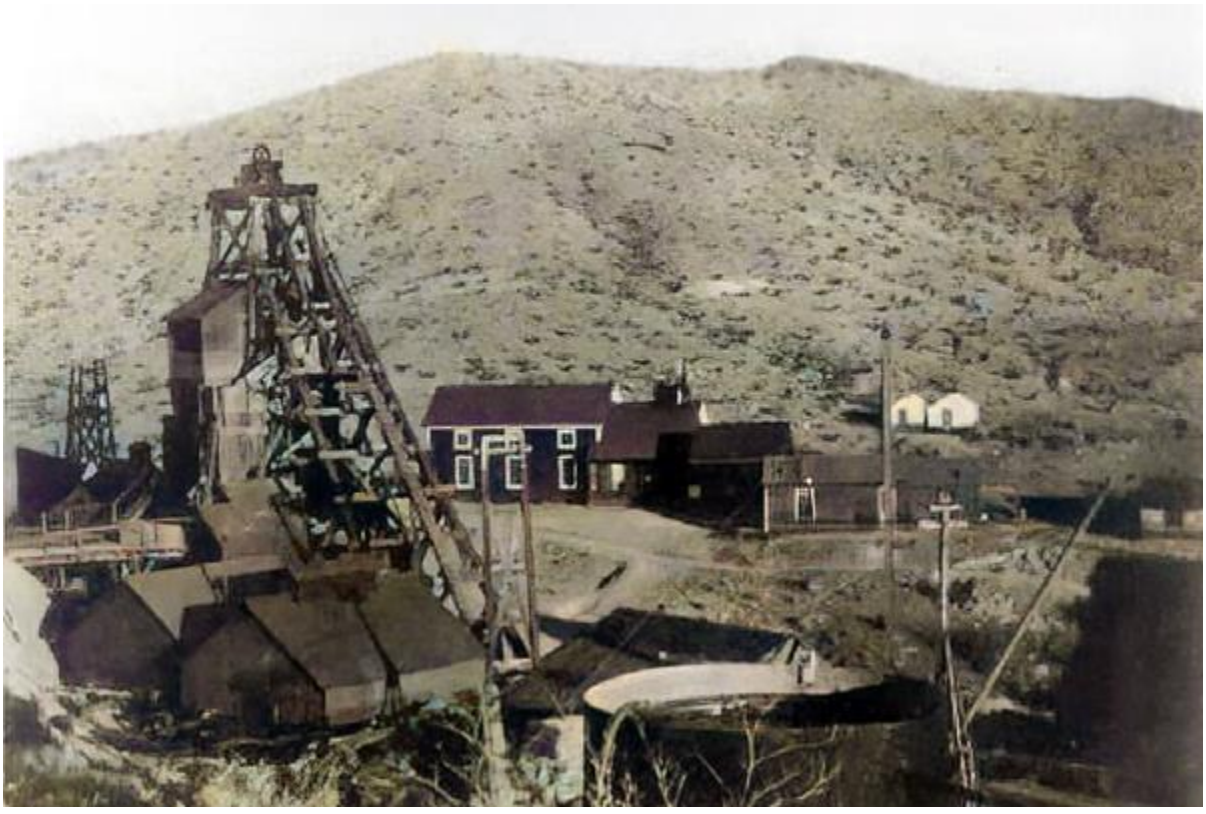
Gold was discovered in 1897 at Searchlight and a mill was built at Cottonwood Cove. A 16-mile long railroad connected them in 1902. In 1906 a new mill was built in Searchlight. In the 1930's an amalgamation and cyaniding plant was built at Cottonwood Island and the railroad rebuilt. Operations ceased in 1953 when the Davis Dam was constructed (Canyon Country, 2023).

The Quartette later expanded its lines to Barnwell (as the B&S) to the west and Nipton to the northwest. These lines were abandoned in 1924 (Myrick, 1962:848-854).



First railroad in the Searchlight area was the Quartette Mining Company's narrow gauge from the Quartette Mine *(above)* to the mill along the Colorado River to the east. Small saddle-tank locomotives hauled the little ore cars back and forth over the 16-mile line for the four years from 1902 to 1906 until the mill was moved to Searchlight proper and the need for the line ceased. *(Above: Nevada Historical Society; below: R. P. Middlebrook Collection.)*

Caption: Quartette mine headframe and railroad. From Myrick, 1963, p. 852 and Nevada Historical Society R.P. Middlebrook Collection.



Caption: Quartette Mine, 1907. From https://digital-desert.com/searchlight-nv/ accessed Jan. 14, 2024.

Caption: Colorado Riverboat. From https://digital-desert.com/searchlight-nv/ accessed Jan. 14, 2024.

1907: WESTERN MINERALS (CALICO)

The Western Minerals Railroad connected to the Calico and Odessa (C&0) railroad and through it to the Atlantic and Pacific (A&P) railroad.

Borates in the Lead Mountains west of Calico and northwest of Daggett at the Columbia Mine were discovered prior to 1894. These deposits were purchased by the American Borate Company for the manufacture of boric acid. They built the “Western Mineral Railroad” to them from Daggett in 1901. This route shared part of the C&O railroad that connected the Waterloo Mill at Daggett with the ore bins for the Waterloo Mine on the southern slope of the Calico Mountains. The Western Mineral Railroad along with its mine and mill were dismantled in November 1907 when better ore (colemanite) was discovered in Tick Canyon thirty miles north of Los Angeles (Myrick, 1963:826).

1907: BARNWELL AND SEARCHLIGHT

The Barnwell and Searchlight (B&S) was a subsidiary of the Quartette Railroad. It connected Barnwell and the NS&CE railroad to Searchlight, Nevada.

The Searchlight Mining District was discovered in 1897 and was most productive from 1903 to 1907. The main producing mines were the Bay City, Continental Heap, Coyote, Cyrus, Duplex, Good Hope, Padden, Quartette, Searchlight and Southern Nevada (Callahan, 1939, p. 136. 161-172; Lincoln, 1923; Ferguson, 1929, Longwell and others, 1965:201, NDM, 1983, 1984, USBOM, 1937:15, Ransome (1907).

The Barnwell and Searchlight (B&S) Railroad was incorporated shortly after the mines started production. The line was completed on March 31, 1907 (Myrick, 1963:851). The Barnwell and Searchlight with its parent company the Quartette Railroad ended operations in 1924 (Canyon Country, 2023).

Caption: Barnwell and Searchlight train depot 1820.
From https://digital-desert.com/searchlight-nv/ accessed Jan. 14, 2023

1907: TONOPAH AND TIDEWATER

The Tonopah and Tidewater was built to connect Ludlow on the A&P line to the Lila C mine near Death Valley Junction. After reaching Death Valley Junction, the T&T was extended to Rhyolite in the Bullfrog Mining District (Chappell, 2005, p. 46; Myrick, 1963, 545-597).

The T&T was a main line connection for the China Ranch, Tecopa, Gerstley, Lila C., Ash Meadows, Carrera, and Bullfrog and Goldfield railroads.

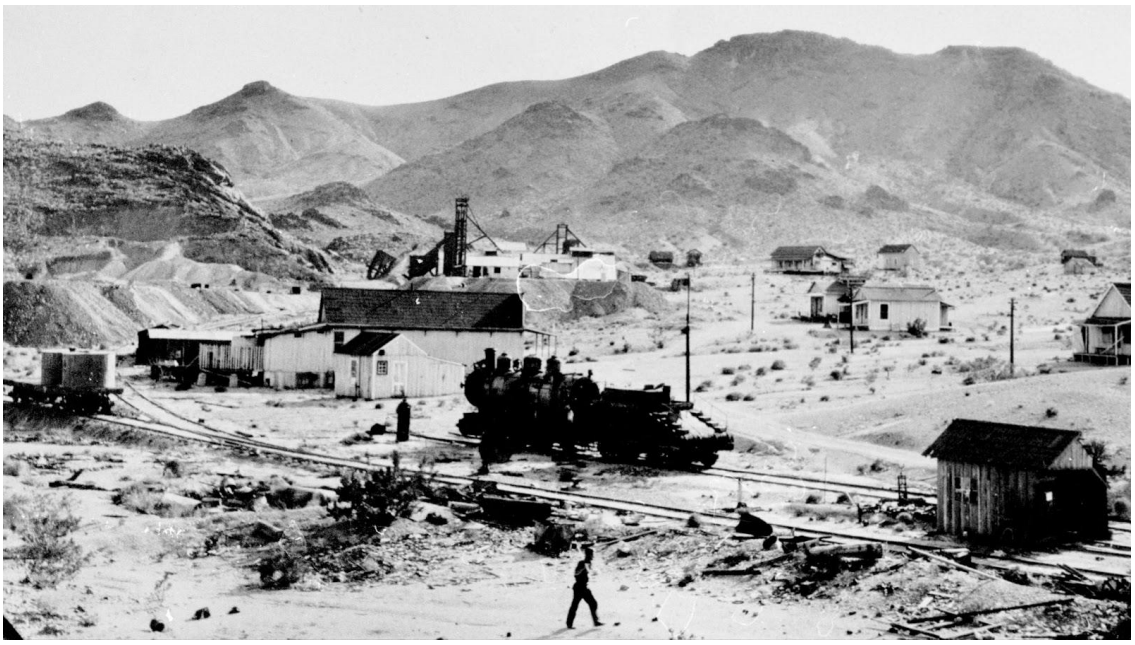
Mining districts near the T&T were the Bullfrog, Bare Mountains, Ash Meadows, Greenwater, Resting Springs, Nopal-Tecopa, Silurian Hills, Soda Mountains, and Southern Cadies.

After the failure of his Tractor Road, Smith proposed building a railroad north from Senator Clark's San Pedro, Los Angeles & Salt Lake Railroad which was then under construction. Clark initially agreed to this situation, but after Smith had built a number of miles of standard gauge grade north of Las Vegas, Clark refused to let Smith connect the T&T to his Salt Lake and Las Vegas railroad. Instead, Clark began building his own railroad from Las Vegas to Beatty and Rhyolite. He would name this the Las Vegas and Tonopah Railroad (LV&T). This set up a competition to see who would first reach the new mining town of Rhyolite. Clark planned for his new railroad to service the mines at Rhyolite, Bullfrog, Tonopah and Goldfield in Nevada. In response to this double cross, Smith abandoned railroad making at the Lila C (Death Valley Junction) and built his Tonopah and Tidewater (T&T) railroad all the way from Ludlow on the Santa Fe Railroad. The T&T would go to the Lila C via Crucero and the future town of Baker, thence northward to Gold Station south of Beatty

and then west to Rhyolite. The T&T was incorporated July 19, 1904. Construction commenced at Ludlow November 19, 1905 and the line completed to Gold Center in the Bullfrog Mining District in October, 1907. The T&T never made its own track to Tonopah. The T&T absorbed the failing B&G railroad in September 1918 when its parent company the LV&T was closed by the United Railroad Administration. The Death Valley (Ryan) Railroad (part of T&T) was abandoned in 1931. The Ludlow T&T station was closed October 8, 1933 (Chappell, 2005, p. 46; Myrick, 1963, 545-597).

Ed Cross and Frank "Shorty" Harris discovered the Bullfrog mine August 9, 1904 and the town of Rhyolite was booming in 1905. Clark's engineers surveyed the LA&T route February 25, 1905. Smith commenced his T&T railroad from Ludlow, and at the same time the B&G was building track south from Goldfields. Meanwhile additional discoveries were being made at Goldfields, Bullfrog and Tonopah. The LV&T was completed to Gold Center, south of Beatty October 12, 1906 and made it to eastern Rhyolite via Beatty on December 18, 1906. The next phase in the LV&T was to build a railroad north to Bullfrog. This section of the LV&T sometimes was laid down parallel to the B&G line. The LV&T arrived at Goldfield in October, 1907 (Myrick, 1963:455-554).

Caption: Ore loading on the Tonopah and Tidewater Railroad. From urbaneagle.com accessed Nov. 11, 2023.



Caption: Ludlow in the early 1930's. From Los Angeles Metropolitan Water District Collectio

1907: SODA LAKE RAILROADS

The Tonopah and Tidewater Railway passed along the western edge of Soda Lake and the eastern slope of the Soda Mountains. Here two salt railroads were built.

The almost always dry Soda Lake had a veneer of evaporite minerals that formed and reformed annually. Two groups of entrepreneurs attempted to collect and beneficiate these salts in the vicinity of Soda Springs (later to become Zzyzzx, Vredenburgh, 2022). This enterprise was attempted by the Pacific Coast Soda Company which purchased 22 mining claims from Russ Avery in October, 1907. A mile and a half long 30 inch gauge spur line was built out into Soda Lake from a plant near Soda Springs. Around 1911 another company, the Pacific Salt and Soda Company, built a plant north of Soda Springs to process the chemical salts. The track for this company's short railroad was 36 inch gauge. These operations did not last very long, and little is known about them. (Chappell, 2005, p. 47-48; American Mining Review, 1908).

Caption: Soda Lake Railroad ties. By Walter Feller. From https://mojavedesert.net/railroads/railroads-061.html accessed Nov. 15, 2023.

Caption: Soda Lake Railroad ties. From https://mojavedesert.net/railroads/railroads-061.html accessed Nov. 15, 2023.

Caption: Old rail bed across the salt flats of Soda Lake. From https://www.americansouthwest.net/california/mojave/soda-lake-rail-bed_l.html accessed Nov. 15,2023

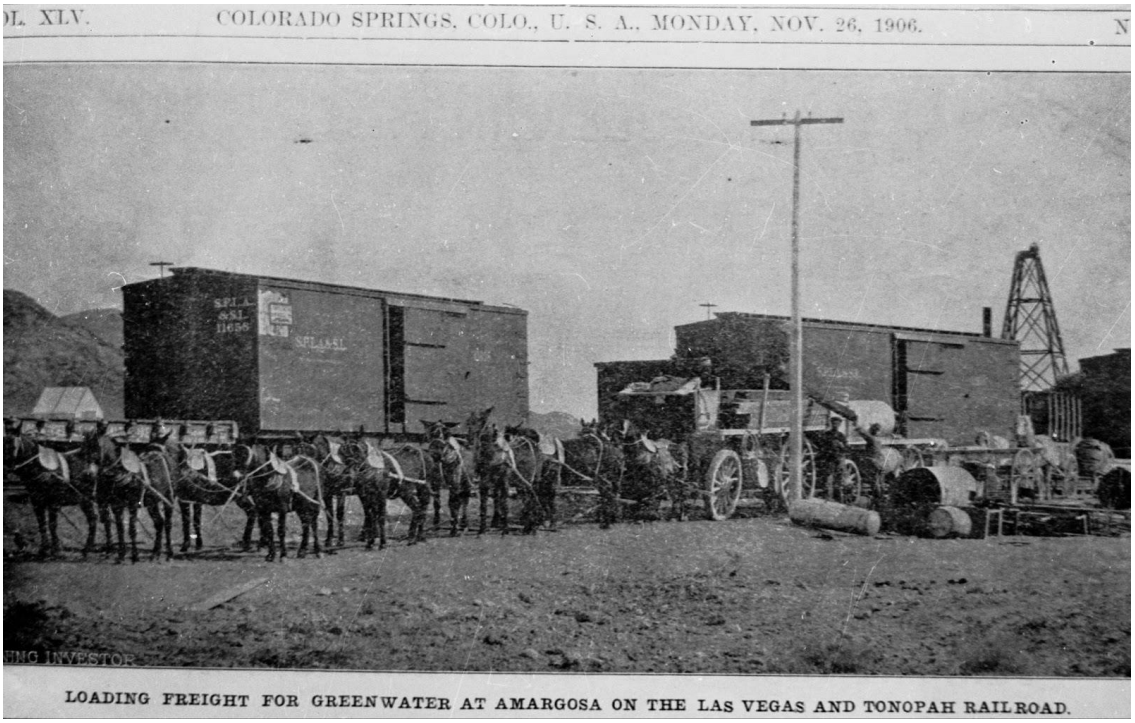
1907: LAS VEGAS AND TONOPAH

The history of the Las Vegas and Tonopah railroad is associated with three gold districts: Tonopah, Goldfield and Bullfrog-Rhyolite. Four railroads competed for these markets: Tonopah and Goldfield (T&G), Bullfrog and Goldfield (B&G), Las Vegas and Tonopah (LV&T) and the Tonopah and Tidewater (T&T). The Los Angeles and Salt Lake (LA&SL), by a compromise with Union Pacific, had been completed January 30, 1905 under the direction of Senator William Andrews Clark. Clark had a tentative agreement with Francis Marion "Borax" Smith in July 1904 to build a line from the LA&SL at Las Vegas over to Smith's Lila C mine and Death Valley Junction. Clark reneged on that agreement and initiated a "race" with Smith to build railroads to what is now Beatty and Rhyolite (Myrick, 1963:455-554; Legends of America, 2023).

The LV&T connected to the Carrera, B&G, T&G and T&T railroads.

Mining districts near the LV&T were the Bullfrog, Bare Mountains, and Charleston.

Caption: Working on the Las Vegas and Tonopah Railroad. From University of Nevada at Las Vegas Collection.



Caption: Greenwater at Amargosa on the LV&T railroad. From Mining Investor, Nov. 26, 1906

1907: CRYSTAL SALT (SALTUS)

The Saltus Railroad was a spur line off of the Atlantic and Pacific (A&P) Railroad.

Salt was discovered in the 1880's at Bristol (Dry) Lake between the southern tip of the Bristol Mountains and the eastern flank of the Bullion Mountains (Wilkerson 2021d; 2021e; Myrick, 1963:840).

On the northside of Bristol Dry lake is the company town of Saltus. Salt is harvested in a series of trenches. The salt is conveyed to the plant by a network of small gauge railways originally built in 1910 (Myrick, 1963:840). The geology and chemistry of these salts are described by Rosen and others (2020). Saltus is 3.9 miles east of the Pacific Coast Plaster (PCP) mine, plant and railroad. The mine and railroad are still active.

Caption: Saltus and Arizona and California Railroad

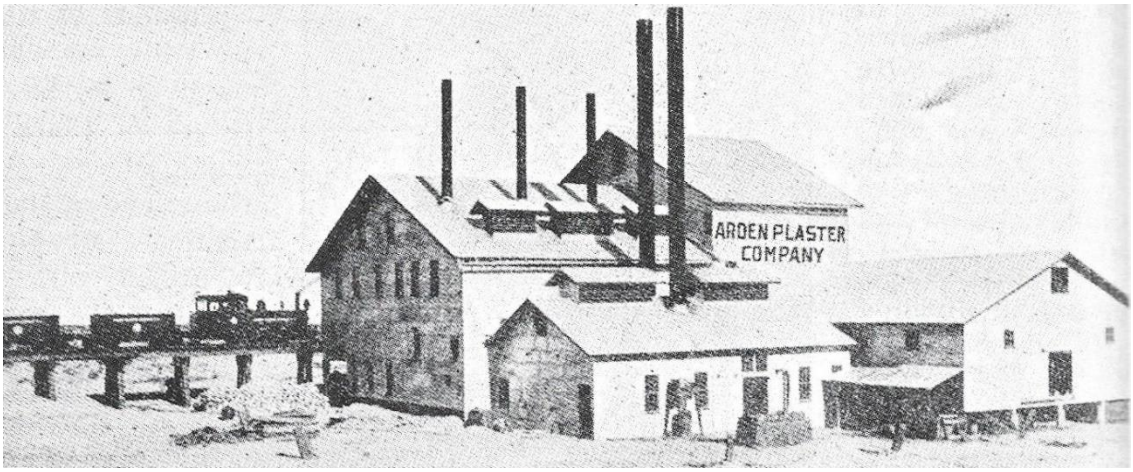
Caption. Saltus train. From the Vredenburgh Collection.

Caption: New Liverpool Salt Works. 1900. G. E. Bailey. California State Mining Bureau Photo No. DMC707a. Also from Larry Vredenburgh Collection No. 58f-03.

1907: ARDAN PLASTER RAILROAD

The Ardan Mine Railroad was a spur line off of the Los Angeles and Salt Lake (LA&SL) Railroad. A sister railroad, built in 1925, was the Blue Diamond.

Gypsum for plaster was first mined in the Diamond Mountains in 1907 by the Ardan Plaster Company. Part of this operation involved construction of a 3 feet gauge railroad. It operated through 1930 (Myrick, 1963:760).

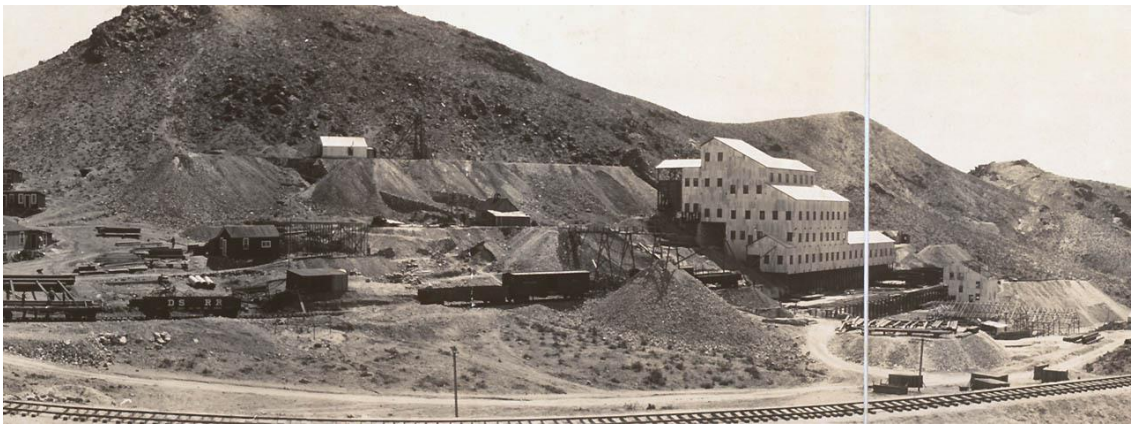


Caption: Ardan Plaster Company plant and railroad circa 1912. From Myrick (1963:860); Nevada Historical Society Collection.

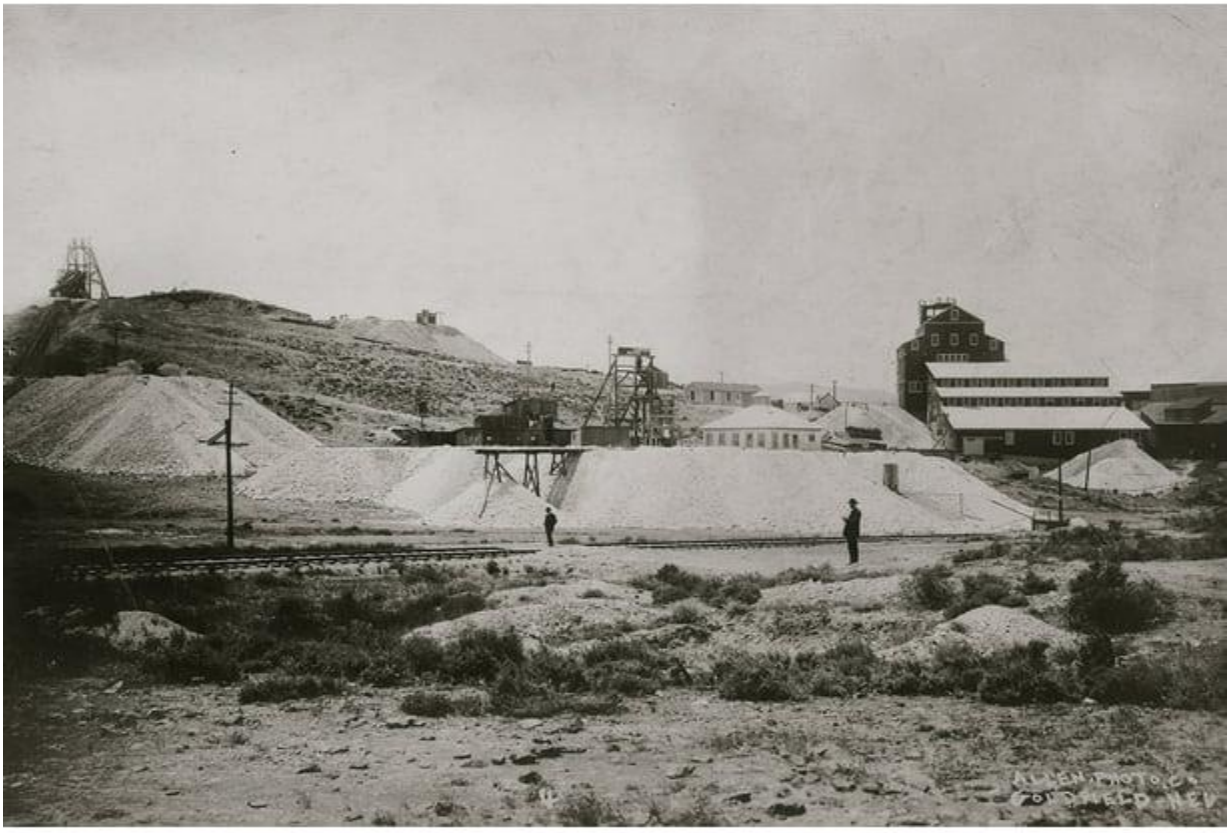
1908: BULLFROG AND GOLDFIELD RAILROAD

The Bullfrog and Goldfield (B &G) was a competitor of the Tonopah and Goldfield (T&G) Railroad. It was organized in March 1906 to build a railroad south of Goldfield to the Bullfrog (Rhyolite) mining district (Myrick, 1962, p. 262). The two companies sometimes had parallel tracks. Some sections of the B&G were shared with the Las Vegas and Tonopah Railroad (LV&T). Various mergers, expansions and contractions occurred on the LV&T, T&G, T&T and B&G between 1908 and after WWI. These railroads sometimes had parallel tracks. In 1914 the B&G was absorbed in the Las Vegas and Tonopah (LV&T) railroad. The B&G and associated railroads were abandoned in September 1948 (Myrick, 1962, p. 288).

Goldfield was also serviced by the T&G Railroad which went north from Goldfield to Tonopah. The LV&T went south from Goldfield through the eastern Chispa Hills and then south to the Esmeralda/Nye county line. Here the LV&T and the B&G tracks ran parallel or on similar routes to Stonewall Pass and Bonnie Clair. Southeast of Bonnie Claire the LV&T and B&G diverged with the LV&T going around the north side of the Bullfrog Hills and the B&G going around the south side. The Goldfield had spur lines in the Goldfield Hills that had several mines as far north as the northwest end of Montana Ridge.



Caption: Montgomery-Shoshone Mines and Mill with railroad. From Western Mining History; mindat.org/photo-125495.html accessed Jan. 1, 2024.



Caption: Goldfield Combination Mining Company In Goldfield Nevada .The Spur Built By The Bullfrog; From walmart.com/ip/Goldfield-Combination-Mining-Company-In-Nevada-The-Spur-

Built-By-Bullfrog-Railroad-Can-Be-Seen-Foreground-With-Changing-Room-Of-Background-Sign/799025449?wmlspartner=wlpa&selectedSellerId=17374 accessed Nov. 11, 2023.

1909: RED ROCK CANYON

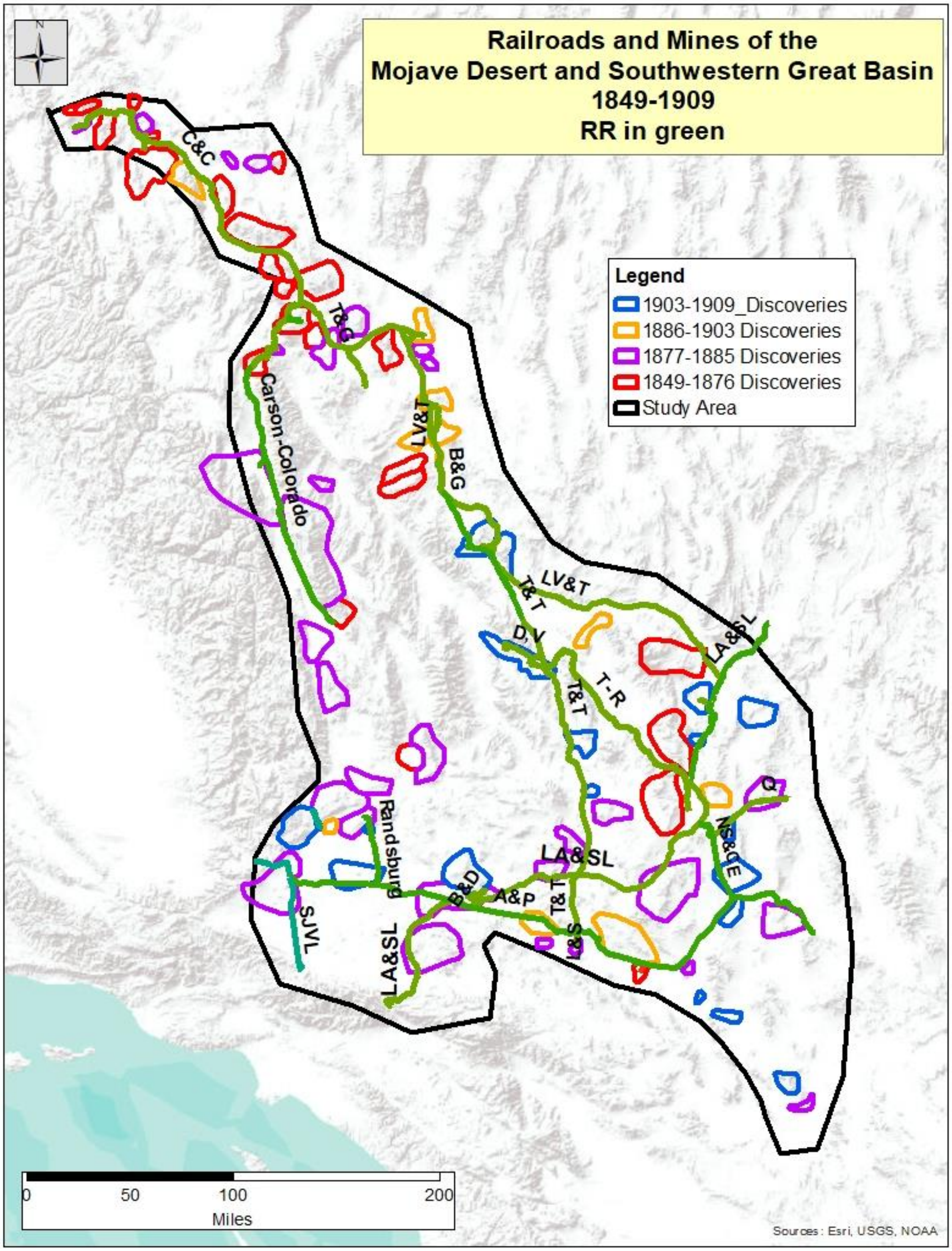
The Red Rock Canyon line (RR) was a spur line from the Nevada and California railroad that was built to access the Los Angeles Aqueduct. The Red Rock railroad was built by Southern Pacific from September 1908 to January 1909. The 23-mile long line was dismantled in December 1910 after 22 months of operation (Myrick, 1962, p. 205).

DISCOVERIES: 1904-1909

Between 1904 and 1909 the following mining districts were discovered in our study area:

Bullfrog-Rhyolite MD	**1904**	**1916**
Pacific Plaster RR and mine	1904	2024
Piute MD	1904	1916
Silver Peak RR	1904	1906
Bullfrog MD	1904	1914
Big Maria MD	1905	1933
Ardan (Blue Diamond) MD early	1905	2024
Bullfrog and Goldfield (B&G) RR	1905	1908
Carrera mine (Bare Mnts)	1905	1916
Danby MD	1905	1905
LV&T RR	1905	1907
Nopal-Tecopa MD	1905	1914 track merged with B&G, 1916
Tonopah and Tidewater RR	1905	1907
Arden MD	1906	1906
Atolia MD	1906	1955
Alunite MD	1907	1907
Baxter-Ballardi RR	1910	1917
Blue Diamond RR early	1907	1930
Castle Mnt (Hart) MD old	1907	1955
Chubuck mine (Kilbeck Hills)	1907	1930
Death Valley (Ryan) RR	1907	1931
Exchecker MD	1907	1907
Nevada and California RR	1907	1910
Red Rock Canyon RR	1907	1909
Crystal Salt (Saltus) RR	1907	2024
Silurian Hills MD	1907	1907

Sutor MD	1907	2024
Tecopa MD	1907	1940
Bishop RR	1908	1914
Kramer-Boron MD	1908	1908
Rawhide RR	1908	never completed
Yellow Pine RR	1908	1911
Calico Silver MD late	1909	1938

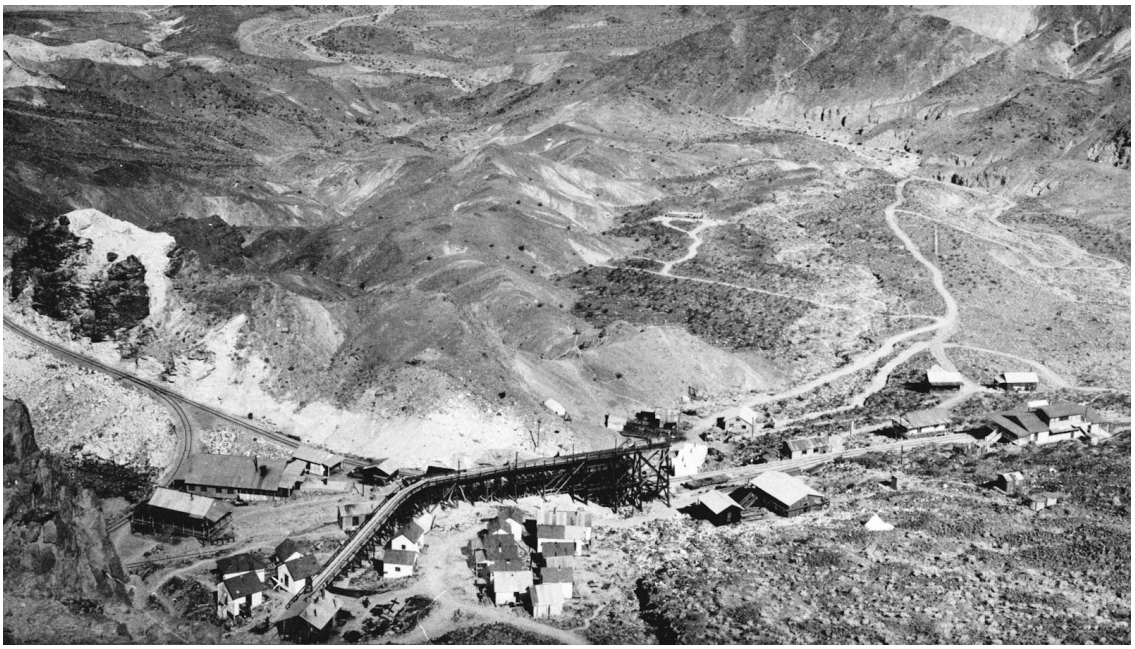

Railroads and Mines of the
Mojave Desert and Southwestern Great Basin
1849-1909
RR in green
Legend
1903-1909_Discoveries
1886-1903 Discoveries
1877-1885 Discoveries
1849-1876 Discoveries
Study Area
C&C
T&G
Carson-Colorado
LV&T
B&G
LV&T
T&T
D,V
LA&SL
T-R
T&T
Q
NS&CE
LA&SL
Randsburg
B&D
A&P
T&T
L&S
SJVL
LA&SL
0
50
100
200
Miles
Sources: Esri, USGS, NOAA

1910: TECOPA

The Tecopa Railroad connected the T&T railroad at the Amargosa River and northeastern flank of the Sperry Hills with the mines of the southern Nopal Range. These included the Gunsight, Noonday, War Eagle, Apex, Blue Dick, Columbia, Oro Fino, Shoshone and Donna Loy Talc mines (Armstrong and others, 1987; Goodwin, 1957:353-724, Norman and Stewart, 1951, Sabine and Mayerle, 1985). The settlement of Tecopa developed near the Amargosa River at an area of hot springs southeast of Grimshaw Lake.

The Gunsight mine was discovered and worked in 1865. J.B. Osborn erected a 10-stamp mill and three water-jacket furnaces a few years prior to 1882. The T&T railroad reached Tecopa in 1907. At this time both the Gunsight and Noonday lead-silver mines were being developed. The Tecopa Railroad Company was incorporated in California in May, 1909. Work on the railroad to the mines began in October 1909 and service to the mines was established in early 1910. Unfortunately, the mines closed soon afterwards but reopened from 1913 to 1918. By 1922 production had declined and the rail lines were taken up for scrap in 1938. Some sporadic mining continued through 1957 (Myrick, 163, 593-597; Lengner and Ross, 2006, 2009: Tucker and Sampson, 1938:440-450; Eric, 1948:238; Goodwin, 1957:457, 510-511).

Caption: T&T engine at Tecopa ore loading bin. From Death Valley National Park Collection Photo No. TTR 28A by Green. Also from the Larry Vredenburgh Collection



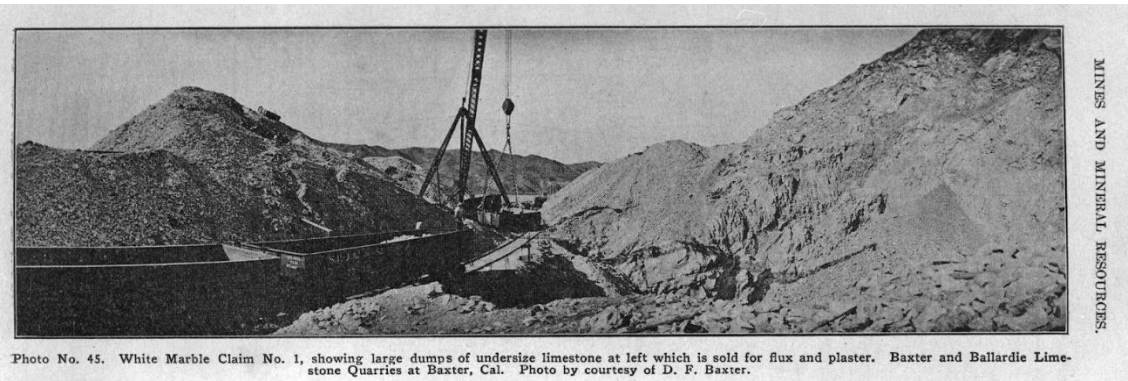
Caption: View eastward of Gunsite Mine and camp of Tecopa Consolidated Mining Company, 7 miles southeast of Tecopa. California Mining Bureau Collection DM A6555 Waring (1916) Report 15. Photo 58. Also Larry Vredenburgh Collection No. 56c-02.

1910: LONE PINE

The Lone Pine narrow gauge railroad connected the Carson and Colorado (C&C) Railroad and the Nevada and California (N&C) Railroad to the town of Lone Pine. This spur was created as part of the C&C line to Owenyo in 1910 (Myrick, 1963:208). The line was abandoned with the demise of the old Carson and Colorado and old Nevada and California by Southern Pacific in 1960.

1910: BAXTER-BALLARDI

The Baxter-Ballardi Mine Railroad was a short spur line off of the Basin siding on the Los Angeles and Salt Lake (LA&SL) railroad. It is at the head of Afton Canyon between the east end of both the Cady and Cave mountains. Here the LA&SL followed the Old Mojave Road (Wilkerson, 2018c). The Cave Mountain iron deposits are mined from the Baxter open pit mine which has been intermittently active from the 1930's to the present (Bishop, 2012). Limestone has been mined here starting in 1907 (Logan, 1947). The railroad was built around 1910 and was expanded in 1914 and 1917. The property was acquired in 1930 by the Portland Cement Company. They changed operations to supply iron to its plant in Mojave and the line was dismantled in 1930 (Myrick, 1963:760).



Caption: Baxter (White Marble) Mine. California Division of Mines and Geology, 1915. From Larry Vredenburgh Collection.


Caption. Limestone loading area, Cave Mine. Photo by Gregg Wilkerson, 2019.

1910: ARIZONA AND CALIFORNIA

The Arizona and California (A&C) Railroad was a subdivision of the Atchison, Topeka, and Santa Fe Railway (AT&SF). In the Mojave Desert, this route began at Cadiz, California where it met the main line of the AT&SF, formerly the Atlantic and Pacific Railroad (A&P). The A&C line ended in Parker, Arizona. The Midland and Chubbuck mine railroads connected to the A&C between Cadiz and Parker.

The A&C went through, or was near the Kilbeck Hills, Damby, Riverside and Whipple mining districts. A southern branch of the A&C went south through Blythe to Ripley. This branch was near the Little Maria, Big Maria and Southern Big Maria mining districts.

The main line of the A&C was originally constructed between 1903 and 1910 by the Arizona and California Railway. The line between A&C Junction and Parker opened by June 1907. The Colorado River bridge near Parker was completed in June 1908 and the track connection in Cadiz, California was completed June 10, 1910. Service to Cadiz commenced on July 1, 1910 (Myrick, 2001). Passenger service was suspended in October 1955 (Kauke, 1955). The A&C is now part of the Genesee and Wyoming Company (2023).

Caption: Arizona and California railroad at mine site. From American-rails.com accessed Jan. 14, 2024.

1910: NEVADA AND CALIFORNIA

The Nevada and California Railroad connected Mojave to Owenyo and completed the original goals of the Carson and Colorado (C&C) railroad.

On May 11, 1905, the C&C and its affiliated lines were purchased by the Southern Pacific Railway (SP). The C&C lines were renamed the Nevada and California Railroad (N&C). The SP expanded the C&C system north from Hazen to Fallon and south from Owenyo to Mojave. In doing so, rail travel was possible from Los Angeles to Carson City.

SP also took out the old C&C narrow gauge rails and replaced them with standard gauge as far as Tonopah Junction. Passenger service commenced in October 1910 (Myrick, 1962, p. 202-208).

The Nevada and California was decommissioned in 1912 after seven years of service. The N&C with the C&C were absorbed by the Southern Pacific Railroad in 1912 (Nordell, 2024).

Note: There is another Nevada and California railroad that connected San Francisco with Reno (Hanson, 1994).

Caption. Plant at Saltdale near the Nevada and California Railroad, 1920.

1911: YELLOW PINE (GOODSPRINGS)

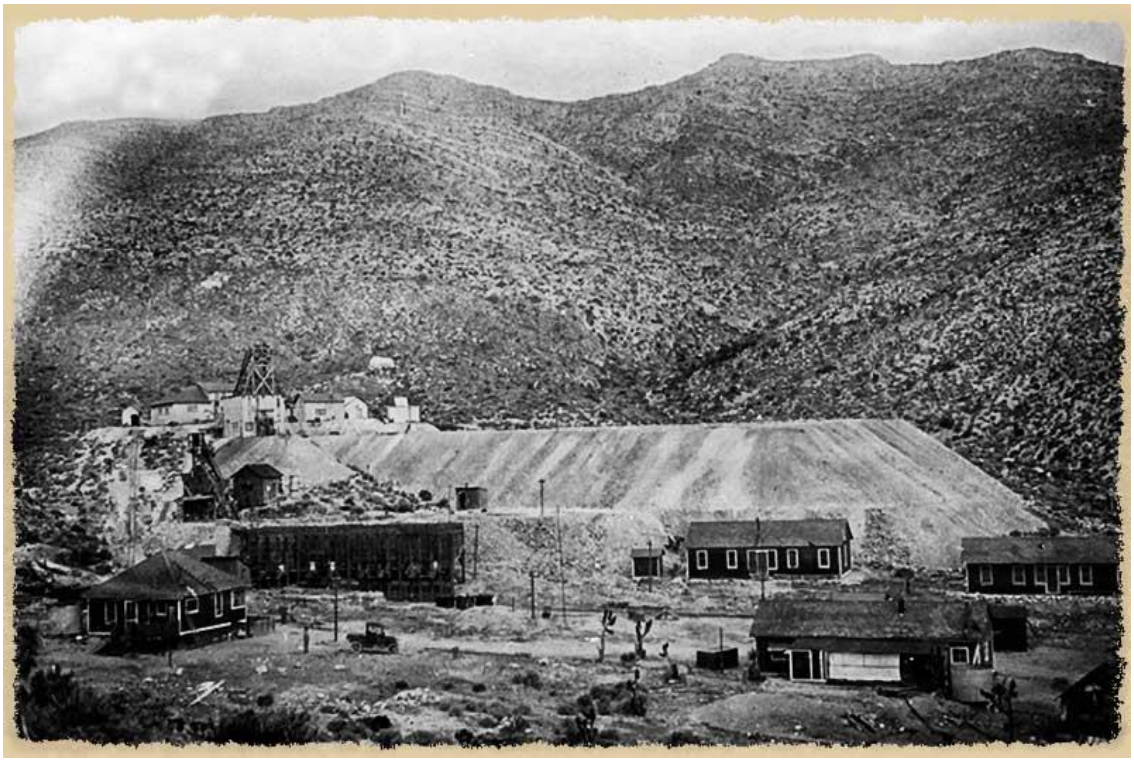
The Yellow Pine (Goodsprings Mining District) Railroad connected to the Los Angeles and Salt Lake (LA&SL) Railroad at Jean siding and was near the mines of the southern Spring Mountains (Myrick, 1963:753-759).

Minerals were known in the Spring Mountains to Native Americans and Spanish explorers. A systematic reconnaissance of the area was led by Nathaniel V. Jones in 1856 and the Potosi Mine was developed in 1861. Lead development was attempted from 1861 to 1891 and gold from 1893 to 1898 when the Yellow Pine mill began processing copper ores. In 1905 the LA&SL railroad came to Jean. The district's proximity to the railroad connecting Mojave to Las Vegas in Ivanpah Valley at Jean facilitated mine developments as did the re-evaluation of zinc resources. A narrow-gauge railroad from Jean to Goodsprings and the Yellow Pine mine was built in 1910-1911.

More lead, zinc and copper zinc mines were opened during WWI. Between 1902 and 1930, cyanidation extracted more gold and silver from the ores. There was some renewal of activity during WWII, but by 1964 most of the mines were dormant and the railroad was dismantled (Hewett, 1931, Longwell and others, 1965, Wilkerson 2018a, 2019b; Myrick, 1963:753-759). The rails were torn up in 1934 (Queho Posse Chapter 1919 E Clampus Vitus, 2023).

Caption: Yellow Pine railroad engine on trestle. From https://www.pinterest.com/pin/619667229954407697/ accessed Nov. 14, 2023.

Caption: Photograph of miners and Yellow Pine mine buildings, Goodsprings (Nev.), 1900-1925. Squires Collection. UNLV Libraries Special Collections & Archives. Also from https://historiclasvegasproject.com/Yellow-Pine-Mining-Company-Railroad.html accessed Nov. 15, 2023.



Caption: Yellow Pine Mine circa 1910. From https://www.mine-explorer.com/Yellow_Pine/Yellow%20Pine%20old%201.jpg accessed Jan. 1, 2024

Caption: Yellow Pine Mine circa 2010. From https://www.mine-explorer.com/Yellow_Pine/Yellow%20Pine%20old%201.jpg accessed Jan. 1, 2024

1913: MOJAVE NORTHERN

The Mojave Northern Railroad (MN) connected to the Los Angeles and Las Vegas Railroad (LA&LV). Its destinations were the limestone and silica mines of the Sidewinder, Black and Quartzite Mountains

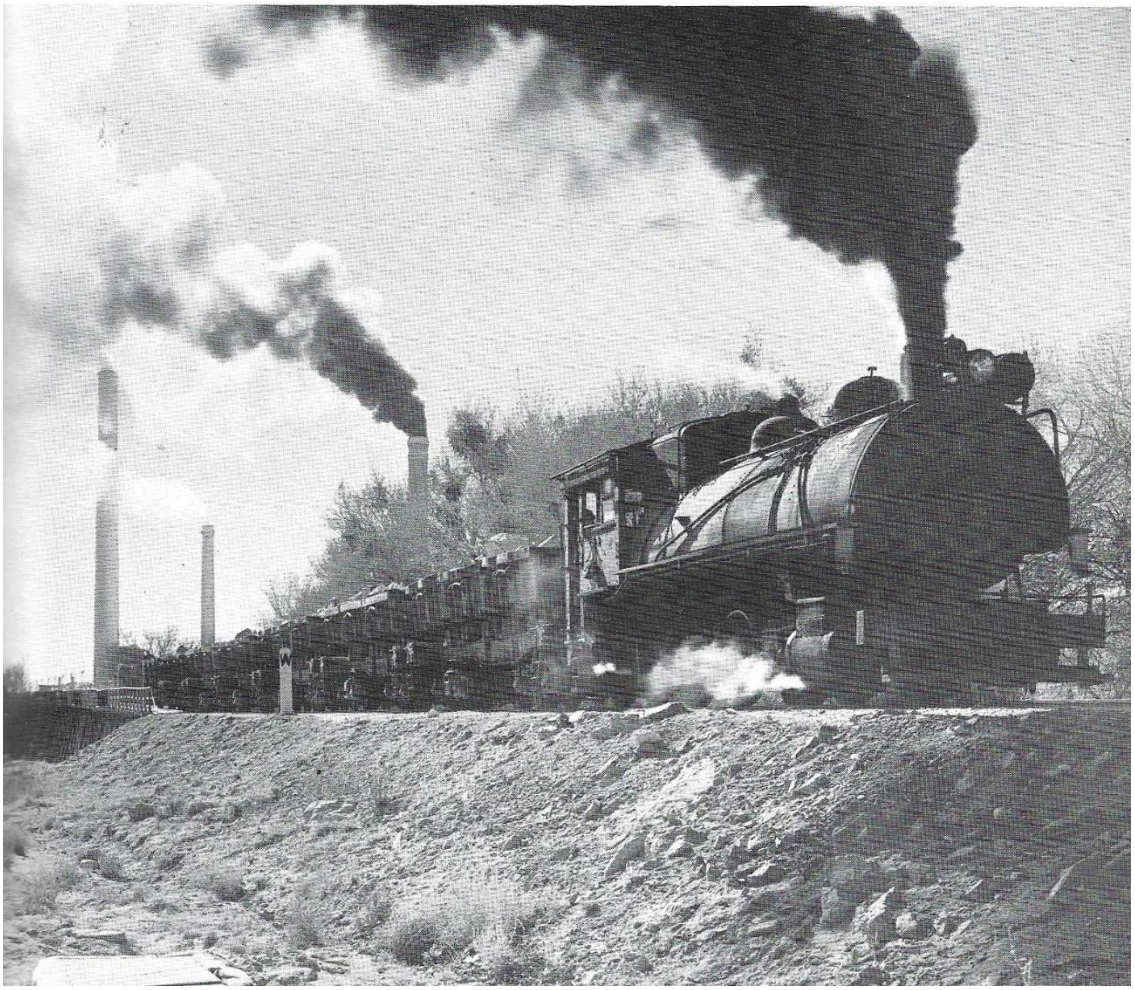
The Sidewinder Mountains and Black Mountain east of Victorville host several limestone mines including the Three Colored Marble, White Mountain, Alvic, Black Mountain and Devil's Gorge quarries (MRDS, 2011, Wright and others, 1953:142, Southern Pacific, 1964:76).

The Quartzite Mountains, north of Victorville hosts silica deposits that were produced at the Superior Silica, Oro Grande, Atlas Silica, Quartzite and Riverside Cement Silica quarries. The Quartzite Mountains also had limestone (Southwest Portland, Riverside, Mack's Peak, Original Canyon, Sparkhule, Shay-Klondike) copper (Amazon, Liberty) and gold (Gold Bullion, Embody, Liberty, Ozark, Dents Grandview) mines. These are described in Wright and others (1953:2, 12, 15, 36, 42, 52), Tucker and Sampson (1931), Bowen (1954:12, 129-130) and Cloudman (1916).

Cement producers need both lime and silica. The limestone and silica deposits were known in 1880 and first developed in 1916. They are now consolidated under the CEMEX company (CEMEX, 2023; Vredenburgh, 1992).

Construction of the Southwestern Portland cement plant and associated railroads began in 1913 and was completed in 1917 with a one kiln stack. Owner-manager Carl Leonardt was confident in his company's product and technological advances. He considered building ships of concrete during World War I. The line operated as a common carrier early in the railroad's history. In the 20s, advanced sales demanded that the plant be expanded. With a large new kiln, additional milling equipment, and slurry tanks, it was expected that the factory would produce 2,200 barrels of cement a day. In 1926 the plant had expanded to four kilns. With more technological improvements the factory produced 5,000 barrels a day. In 1942 additional quarries were opened nine miles east at Black Mountain with a railroad expansion to the new mine in 1947 and 1951 (Geocaching, 2023; Myrick, 1963:860-864). The mine and plant are still in operation.

Striking contrasts of dense black smoke and white highlight this early morning portrait of No. 2 backing a string of limestone loads into the mill at Leon. *(Southwestern Portland Cement Co. photo.)*



Caption: Mojave and Northern backing into Leon Plant. From Myrick (1963:865); Southwestern Portland Cement Company Collection.

1913: CALICO AND ODESSA

The Calico and Odessa (C&O) Railroad connected to the Atlantic and Pacific (A&P) railroad and serviced silver and borate mines in the Calico and other mountains east of Barstow, California.

The Calico silver district was discovered in 1881. The Calico District figured prominently in Shumway, Vredenburgh and Lane's classic book Desert Fever (Shumway and others, 1980; Vredenburgh and others, 1981). There were no less than 46 mines of note near Calico with the most important being the Waterloo, Bismarck, Oriental, Garfield, Silver King and Burning Moscow. The Calico and Odessa Railroad was built in 1912-1913. The mines were all closed by 1915. Exploration programs for gold and silver are currently being implemented at Calico (Vredenburgh, 1985; Vredenburgh and others, 1980, Vredenburgh, 2013; Myrick, 1963: 823-827; Wilkerson, 2017d, Wilkerson 2022a).

Caption: Calico railway. From https://westernmininghistory.com/gallery-image/6263/ accessed Nov. 14, 2023.

1914: CARRERA

The Carrera Railroad was a spur line off of the Las Vegas and Tonopah (LV&T) railroad. It was located on the southwest flank of the Bare Mountains in the Bare Mountain Mining District. Gold and silver had been discovered in this district in 1905. A beautiful limestone formation exists in Carrara Canyon. The site was named after the famous Carrera limestone of the Carrara Mountains in Italy.

In 1912 the American Carrara Marble Company was formed. The town of Carrara at a site near the LV&T was officially dedicated on May 8, 1913 and the mine railroad completed in 1914. The mine operated with what was then huge equipment capable of moving 15 ton blocks of marble. The mine operated from 1915 to 1916. There was a short rejuvenation of Carrera in 1927 by the T&T but it did not last either (Myrick, 1963:605-607).

Descriptions of the marble mines are found in Kral (1951:6), Minobras (1973:34) and CDMG (1981:48).

1914: OWENS RIVER VALLEY RAILROAD (GRADE)

The Carson and Colorado Railroad passed by Bishop on its way to Keeler from Benton in 1882-1883. The Owens Valley Railroad (ORV) was incorporated November 17, 1910 to create a connection for the town of Bishop (Myrick, 1962:314). This short line started at the Laws siding and was designed to end at Bishop 5.3 miles to the southwest. This was called the “Red Apple Route.” It was going to be an electric powered railroad.

Laws siding is at the southwest edge of the Volcanic Tablelands at the north end of Owens Valley.

Bishop is southwest of Laws, near Bishop Creek and northeast of Coyote Ridge. It was named for one of the first European settlers in the area, Samuel A. Bishop. Owens Lake was named for Richard Owens, a member of John C. Fremont's 1845 exploration party which included Kit Carson and Ed Kern. Later the entire valley became known as The Owens Valley. The city of Bishop came into being in 1860 due to the need for beef in a booming mining camp some eighty miles to the north, Aurora, Nevada (Wikipedia, 2023c, Western Mining History, 2023e).

The short line to Bishop from the C&C was intended to be built in as part of the expanding construction programs for the Los Angeles Aqueduct. The OVR Railroad grade plan was near several tungsten and antimony mines on the northeast flank of Coyote Ridge. They are part of the Bishop Tungsten District. These were the Rosi, Yaney, Pickup, and Bishop Antimony mines. The mines were discovered in 1913. The Pine Creek Tungsten mine operated through 2001 (Norman and Stewart, 1951:97-98, 198, Lemmon and Tweto, 1962; Bateman, 1965). The ORV railroad was never completed (Myrick, 1962:314-315).

Caption: Owens Valley Railroad grade construction, 1911. From Frank Merril photo, Arthur D. Haig Collection. From Myrick, 1962, p. 315.

1914: CHINA RANCH

China Ranch is in the north-central part of the Sperry Hills about halfway between Tecopa and the Western Talc Mine. It was a spur line off of the Tonopah and Tidewater (T&T) railroad.

In the 1890's a Chinese man named Ah Foo came to this canyon from the Borax Works in Death Valley. He developed a successful ranch, raising livestock, hay, fruits and vegetables to help feed the local silver miners and their draft animals. The "China Man's Ranch" became a favorite resting spot, with its cool running stream and beautiful trees (HMdb, 2023).

In 1900 Ah Foo disappeared somewhat mysteriously, though the name has stuck. After many changes of owners and financially unsuccessful ranching attempts over the next 90 years, the current owners began planting young date palms in 1990, and opened China Ranch to the public in 1996.

The China ranch line was a spur to the Tonopah and Tidewater railroad built in 1914 (Myrick, 1963, 586). It accessed the China Ranch from the Acme siding. It also was near Upper Canyon Nitrate Mine which was owned by the Pacific Nitrate Company. Another nitrate occurrence in the area of Shoshone was the Ratcliff mine (Waring and Huguenin, 1917; Nobel, 1931. Norman and Stewart, 1951).

Caption: China Ranch railroad grade. From chinaranch.com accessed Jan. 15, 2024.

1915: TRONA

The Trona Railroad (TR) connected the mines of Searles Lake to the Nevada and California Railroad. The TR connected to the Epson Salt Monorail railroad.

When John Wemple Searles arrived in the area in the 1860s, he was looking for gold and silver to mine. Instead he found a white crystalline powder, borax, in the dry Searles Lake bed. In 1873, he went into production as the San Bernardino Borax Mining Company to mine borax. Long mule teams were used to haul borax in wagons to San Pedro, until the much closer settlement of Mojave was used after the Southern Pacific Railroad reached it in 1876 (Wickipedia, 2023c; Myrick, 1963:798-808).

In 1895 The San Bernardino Borax Mining Company was sold by Searles to the Pacific Coast Borax Company, owned by Francis "Borax King" Smith. He shut down production at the company's section of Searles Lake the next year (Wickipedia, 2023c; Myrick, 1963:798-808).

In 1917, construction was completed on the American Trona Corporation Building in San Pedro, to process and store salt potash. In 1926, after becoming the American Potash & Chemical Corporation, it began producing borax, soda ash, and sodium sulfate. Production of these

chemicals continued to expand until the 1980s as more and more wells were drilled to produce a variety of products from the Searles Lake brines. (Wickipedia, 2023c; Myrick, 1963:798-808). The Trona facilities extracts and ships 1.75 million tons of chemicals per year (Hughes, 2005). Divittorio (2020) has an interesting video documentary about Seales Valley Minerals.

Caption: Trona Railroad Engine No. 1. at borate processing facility. From the Larry Vredenburgh Collection.

Caption: Trona railroad train and Searles Lake plant. From https://www.railpictures.net/photo/263537/ accessed Nov. 14, 2023.

1915: RAWHIDE WESTERN (GRADE ONLY)

The Rawhide Western Railroad was never completed. It was planned, surveyed and graded to connect Rawhide to the Carson and Colorado (C&C) railroad.

The Rawhide District of Mineral County, Nevada was discovered in 1906. The original Regent district was situated about 2 miles northwest of the town of Rawhide. The district became known as Rawhide when it was expanded to include discoveries made at Rawhide in 1906. Placers in the Rawhide district are found in Rawhide Wash and tributaries extending about 4 miles southeastward from the townsite of Rawhide to the alluvial fan at the base of the hills (Western Mining History, 2023e).

The Rawhide Western (RW) Railroad was formed in March 1908. A fire destroyed the town of Rawhide December 4, 1908 and a flood destroyed part of it in August 1909. The district recorded production from 1913 to 1916 and again in 1928. The mining at Rawhide stopped in 1941. The RW railroad was never completed. (Myrick, 1963:235).

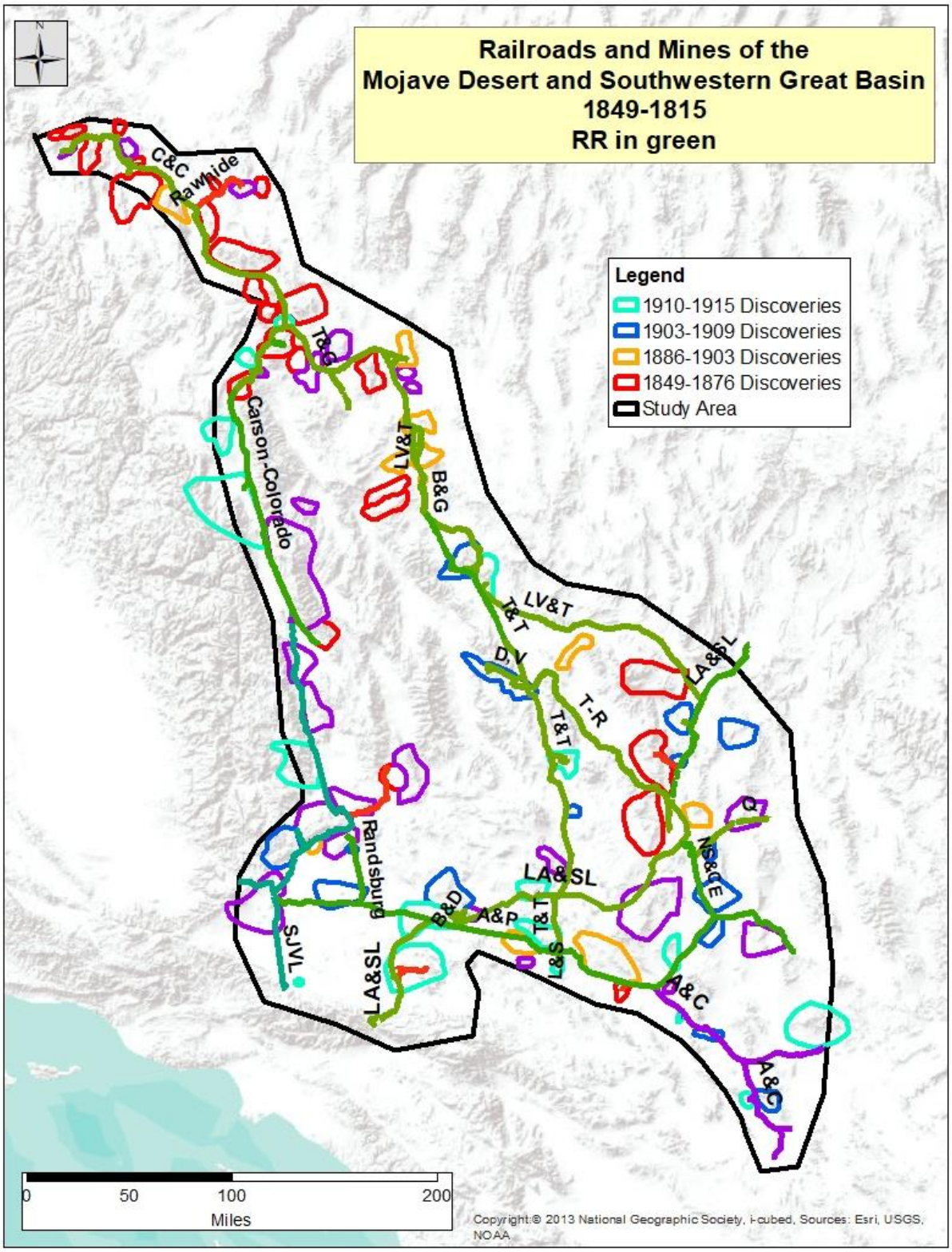
Caption: The rush is on at Rawhide, Nevada, 1908. From Western Mining History, 2023e, https://westernmininghistory.com/4210/gold-districts-of-nevada/ accessed Dec. 12, 2023.

DISCOVERIES: 1910-1915

Between 1910 and 1915 the following mining districts were discovered in our study area:

China Gardens MD	**1910**	**1950**
Cronese MD	1910	1934
Lone Pine RR late	1910	1911
Trona RR	1910	1915
Carrera RR	1912	1914
Rhodes Marsh MD	1912	1916
Barfstow MD late (limestone)	1913	1960
Bishop MD late	1913	2002
Clipper MD	1913	1913
Little Rock MD	1913	2024
Mojave Northern (Sidewinder Mnt) RR	1913	1917
Oro Grande MD	1914	1975
Saltdale RR early	1914	1950

Volcanic Tablelands MD	1914	1925
Kilbeck Hills	1914	
Stedman-Bagdad-Chase MD late	1915	1960
Carrera mine	1915	1916, 1927
Eastside MD	1915	1915
Midland	1915	1925
Nine Mile Canyon MD	1915	1966
Southern Cady MD	1915	1915
Whipple MD	1915	1915


Railroads and Mines of the
Mojave Desert and Southwestern Great Basin
1849-1815
RR in green
Legend
1910-1915 Discoveries
1903-1909 Discoveries
1886-1903 Discoveries
1849-1876 Discoveries
Study Area
C&C
Rawhide
T&G
Carson-Colorado
LV&T
B&G
LV&T
T&T
D,V
T-R
T&T
LA&SL
Randsburg
B&D
A&P
T&T
LA&SL
SJVL
LA&SL
T&T
A&C
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Miles
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1916: MIDLAND

The Midland railroad served the U.S. Gypsum Brown Mine from the Arizona and California (A&C) Midland siding (Sampson and Tucker, 1945:128).

The mine is in the southeast part of the Little Maria Mountains. A railroad was built from Blythe Junction to the Palo Verde Valley in 1915-1916. A narrow gauge line was built to the mine site in 1925. The A&C supplied water to the town and mine. The Midland plant was expanded and another underground gypsum mining venture added in 1936 at the Victor Mine. Originally discovered as a gold-silver and base metal mine, it was later developed as a gypsum mine. Open pit mining commenced in 1946. The Midland plant closed in 1966 (Vredenburgh, 2024a, Myrick, 1963:840).

Caption: Foundations and scattered debris indicate the site of a major gypsum plant and community of 1,000, once located in this remote region 20 miles from the nearest settlement. U.S. Gypsum established the town and plant to process gypsum extracted from nearby mines in 1925, responding to a demand for a new product: drywall. After the mine shut down in 1966, the town was intentionally burned to the ground. U.S. Gypsum still manufactures over half of the nation's plaster products, and operates a major plant in Plaster City, California. From https://clui.org/ludb/site/midland accessed Jan. 15, 2023. Creative commons license.

1918: ASH MEADOWS

The Ash Meadows railroad was a spur line off of the Tonopah-Tidewater railroad. It was part of the T&T subsidiary Death Valley Railroad (Myrick, 1963:608-622).

Ash Meadows is in the Amargosa Valley. The line connected to the T&T at Bradford siding in California and went northwest, across the Nevada-California state line to the clay mines in Nevada. Ash Meadows had a ranch operated by Dad Fairbanks who provided food services to the T&T (Myrick, 1963:602). Mines serviced by this line included the Clay Camp, Nevada Clay, Ash Meadows and Tenneco mines. Production started about 1918 and continues to today (Cornwall, 1972; Denney and Drews, 1965, Kral, 1951, Castor and others, 2006, Papke, 1970:23-34).

1922: CHUBBUCK

The Chubbuck railroad was a spur line that connected to the Arizona and California Railroad (A&C) at the north end of the Kilbeck Mountains and the western flank of Ward Valley between Cadiz Junction and Rice Junction.

There are two mines, the Chubbuck Station Dolomite and the West of Chubbuck Limestone mine (Wright and others, 1953:174; Southern Pacific, 1964:174). The limestone mine is near the Desert Butte copper-lead-zine Mine (Goodwin, 197:628; Wright and others, 1953:8).

The Chubbuck mine, railroad and town were constructed from 1922 to 1925. A school was opened in 1932 and a post office in 1928. The mine and plant supplied additives to the cements used in building the Colorado River Aqueduct in the late 1930's. The operations ceased in the 1940's (Vredenburg and others, 1981).

1923: RANDSBURGH (LATE)

The Randsburg Railroad was revitalized when it serviced the tungsten mines of Atolia, The original Randsburg line was built in 1898. It connected to the A&P (later the Atchison, Topeka and Santa Fe) Railroad at Kramer Junction.

Gold mining in the Randsburg Mining District continued from 1923 through the early 1930's. There was a hiatus in gold mining from WWII until the Yellow Aster reopened as an open pit operation from 1986 to 1994. Tungsten mining in the Atolia area continued through the Korean War (circa 1953) (Western Mining History, 1923a)

The Randsburg Railway served as a supply link to the Rand Mine, which produced more silver than any mine in California. The Rand mine closed in 1929, as it was no longer profitable (Wikipedia, 2023; Myrick, 1963, :793-798).

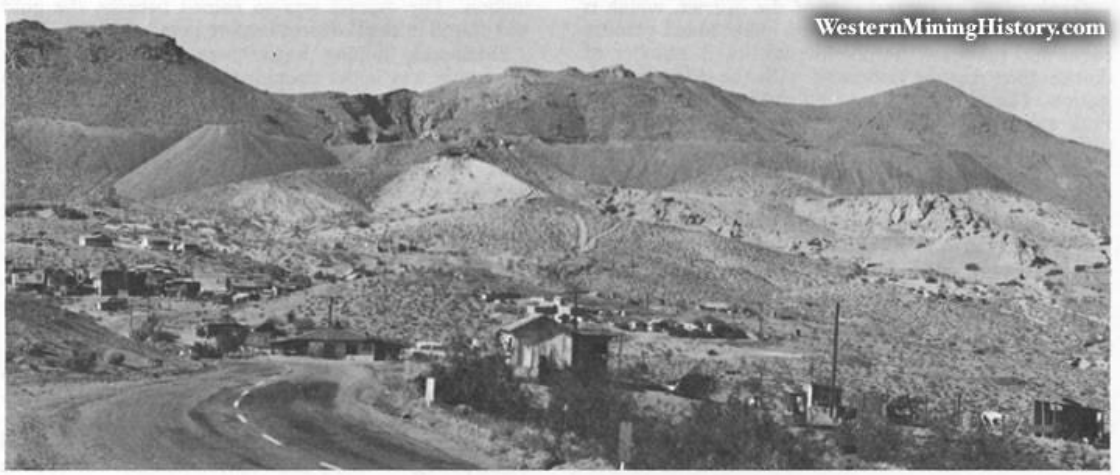


Photo 82. Yellow Aster Mine, Rand District. The Yellow Aster, in Kern County, yielded more than $12 million in gold. The mine is in the background, the town of Randsburg in the foreground.

Caption: Yellow Aster Mine. From Troxel and Morton, 1962.

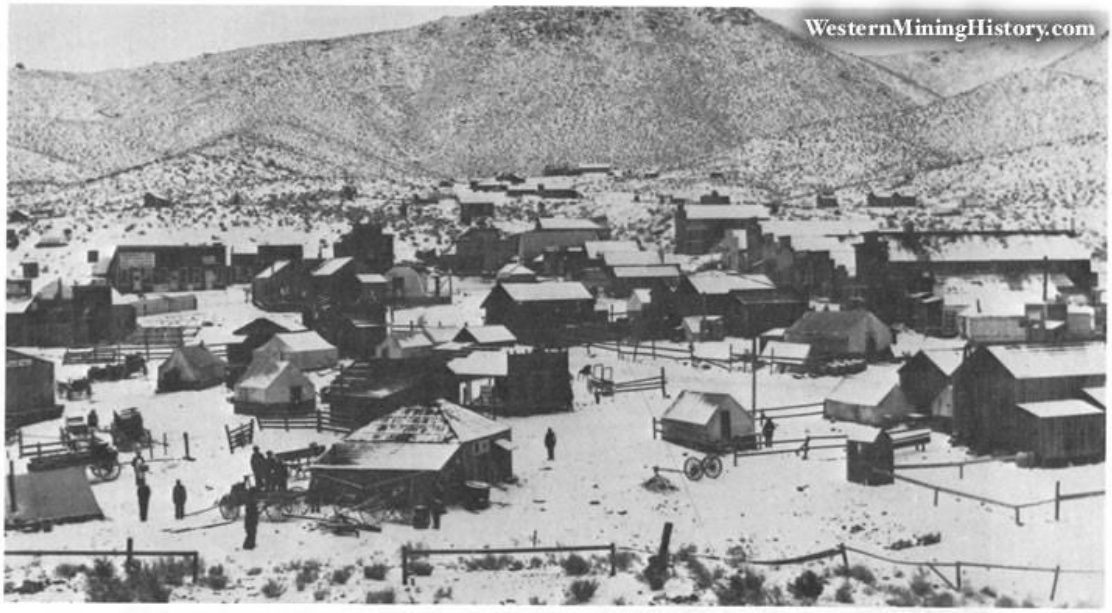


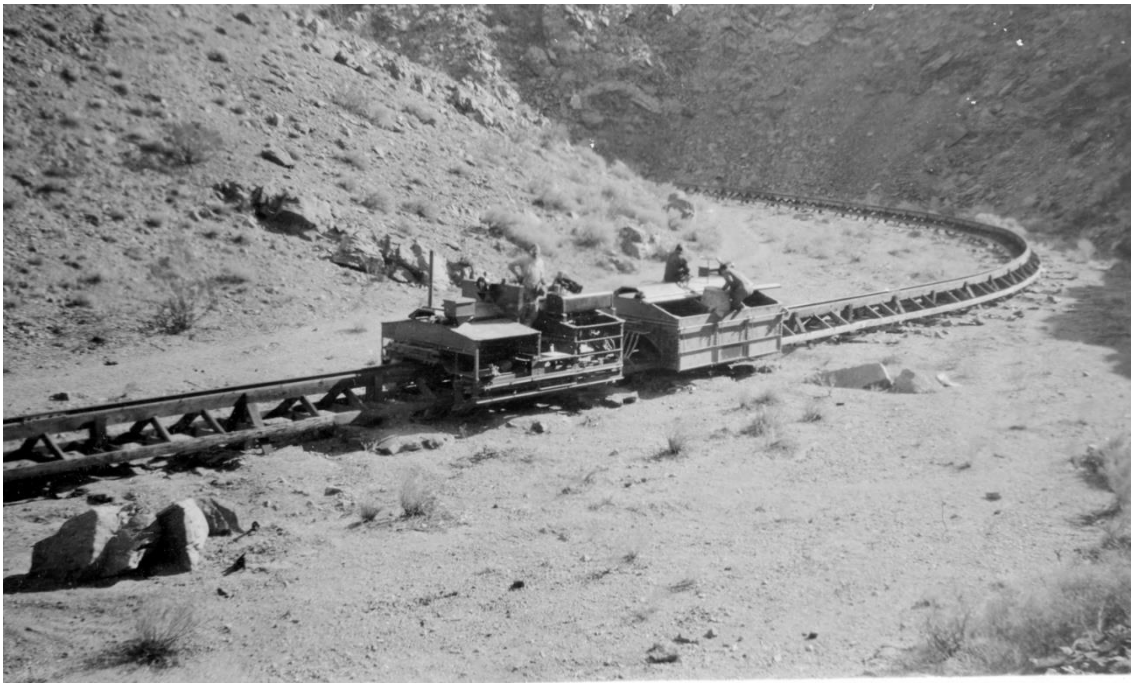
Photo 84. Town of Randsburg, Kern County. This winter view, taken in the early 1900s, looks east.

Caption: Town of Randsburg in the early 1900's. From Troxel and Morton, 1962.

1924: EPSON SALT MONORAIL

The Epson Salt Monorail Railroad connected to the Trona Railway at the southwestern end of Searles Lake.

The Epsom Salt monorail (ESM) was part of a mining venture promoted by Thomas Wright who was a Los Angeles florist. The unique railroad was built from 1923 to 1924. It was 28 miles long and made from Douglas fir. It operated through 1926 as a source of saltpeter for gunpowder. and was sold for scrap in 1930 (Myrick, 1963:808-814; Rapp and Vredenburgh, 1992).



Caption: Epsom Salts Monorail. From the Brush Collection Photo No. 14. Courtesy of the Mojave Desert Heritage and Cultural Association.

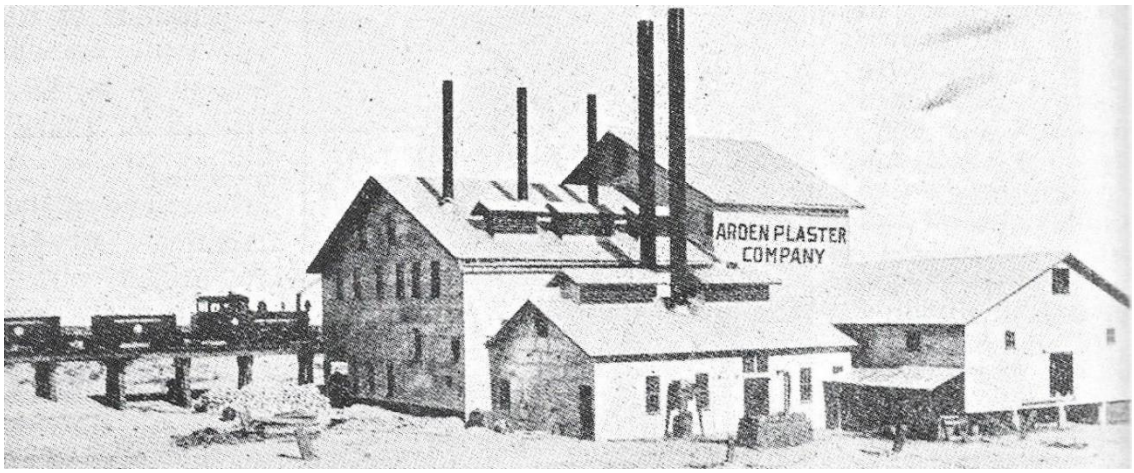
The Epson salt mine excavated magnesite in Tertiary clays and processed it in a plant 6 miles south of Trona. The project was abandoned in 1927 (Rapp and others, 1992:9; U.S. Geological Survey, 1984; Wright and others, 1953: Magnesium Table, p. 183; Jahns, 1951, Hewett and others, 1936:96; Newman, 1924:742).

1925: BLUE DIAMOND (LATE)

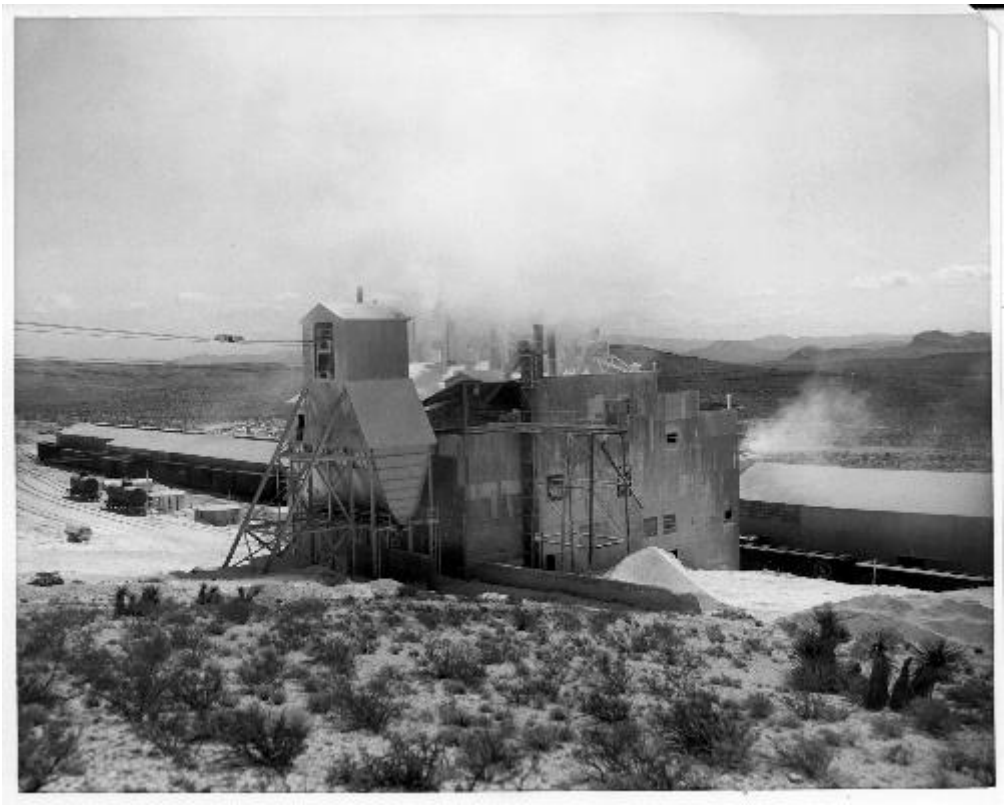
The Blue Diamond was a revitalization of the Ardan Railroad.

The Blue Diamond Mine and mill was initially owned by a Los Angeles company known as Blue Diamond. This company commenced mining in 1925 after an 11-mile-long rail line to Arden on the LA&SL railroad was re-constructed to standard gauge.

An on-site processing plant was added in 1941, followed a year later by the construction of a nearby company town, known as Blue Diamond, Nevada. The mine was eventually sold to James Hardie Gypsum, which expanded operations in 1998. BPB took over the gypsum factory a few years later, and developer Jim Rhodes purchased 2,400 acres in 2003 (Wickipedia, 2023; Myrick,1963, p. 761).



Caption: Ardan Plaster Company plant and railroad circa 1912. From Myrick (1963:860); Nevada Historical Society Collection.



Blue Diamond Mill and Ore Loading Facility, from https://www.reviewjournal.com/uncategorized/southwest-of-las-vegas-village-of-blue-diamond-upholds-nevadas-legacy/ accessed Nov. 11, 2023

1926: GERSTLEY BABY GAUGE

The Gerstley Railroad was a spur line off of the Tonopah and Tidewater (T&T) railroad north of Shoshone in the Resting Springs Range.

The Gerstley Railroad was built by Pacific Coast Borax (PCB, owner and operator of the T&T, to service its borate mines northeast of Shoshone about 1921. This was a baby gauge (2 foot) line and connected the T&T to ore bins at Gerstley. The railroad hauled ore from the mine and water to it. The line ran for five years until 1926 when PCB moved all its operations to the Kramer deposit at Boron (Myrich, 1963:587, Hees, 2023).

Information about the Gerstley mines is found in Evans and others (1976), Noble (1926:63-75), Norman and Stewart (1951) and Papke and others (1975).

1927: SALTDALE

Saltdale was on the north shore of Koehn Lake in Fremont Valley between the El Paso and Rand Mountains. It was adjacent to the Nevada and California railroad.

It was mined illegally for several decades. Mining claims were staked in 1909 by Thomas Thorkildsen and Thomas Rosenburger. The Consolidated Salt Company constructed a crushing and screening plant and laid a baby-gauge railroad track onto the playa, from where a gasoline-powered locomotive hauled the salt to the crusher. Consolidated began shipping in 1914. They were processing 240 tons or more a week by October. The output that year totaled 20,000 tons. In January 1915 the company was shipping about twelve cars of salt weekly. After several court challenges to the legitimacy of the mining operations involving interpretations of the 1901 Saline Placer Act, the mine shut down in 1975 (Hensher and others, 1998, Wilkerson, 2023k).

Caption: Long Beach Salt Company Mill and Plant at Saltdale. Photo by Avirill, 1920. From California State Mining Bureau Photo No. DM A625a. Also from Larry Vredenburgh Collection No. 70a-00.

Caption: Harvesting salt at Saltdale, April 1953. From Hensher and others, 1998; Photo by Wiliam Ver Planck, California Division of Mines and Geology Collection and Larry Vredenburgh Collection.

1928: BORON

The Boron Railroad connected to the Atlantic and Pacific Railroad.

In 1913 John K. Suckrow discovered the Kramer borate deposit accidentally when he drilled a water well. Suckrow's farm was immediately purchased by John Ryan of the Pacific Borax Company (PCB). Underground mining soon began. The discovery had the good fortune of being only 3 miles from the present Santa Fe (formerly Atlantic and Pacific) Railroad. The PCB company closed its mines in Death Valley and concentrated its efforts for open pit mining at Boron in 1928. This is when the Boron Railroad was first constructed. It connected the town to the mine. In 1957 an expanded line connected the mine and town to new and bigger borate recovery plants. The railroad is still in operation (Myrick, 1963:610; Troxel and Morton, 1961:60-66; Siefke, 1979, 1980, 1984, 1991; Wilkerson, 1922b).

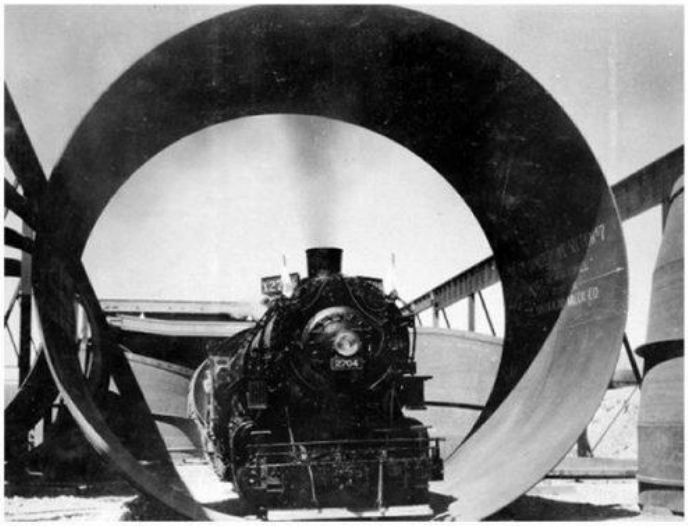
Caption: Product loading facility, Boron. From https://www.railpictures.net/photo/500164/ accessed Jan. 14, 2024. Copyright Charles Freericks.

Caption: Product train with mine and plant in background. U.S. Borax (now Rio Tinto). From https://www.railpictures.net/photo/501777/ accessed Jan. 14, 2024.

1931: SIX COMPANIES (BOULDER BRANCH LINE)

The Six Companies railroad connected to the Los Angeles and Salt Lake Railroad south of Las Vegas.

It took more than a heroic effort to build Hoover Dam in the 1930s. It also took a railroad. The Boulder Branch Line was set up by Union Pacific (formerly the LA&SL) in 1931 to haul all the project's building materials. The Six Companies railroad was built to a point near the dam and operated through December 1, 1961. In that time, it had transported 35,000 carloads of construction materials weighing about 2,000,000 tons (Myrick, 1963:734-752).

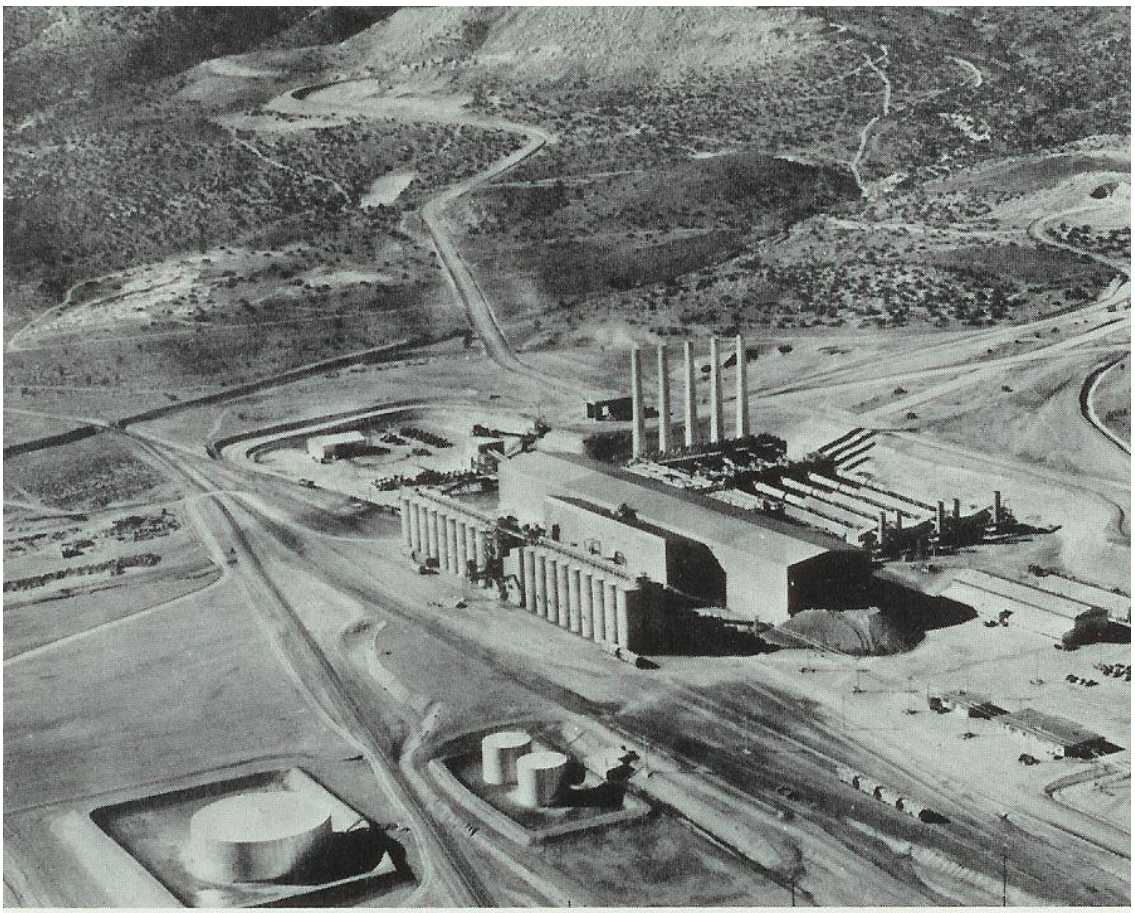


Caption: Six companies locomotive and Hoover Dam giant pipe. From thelasvegastourist.com Broken link in www.bing.com accessed Jan. 16, 2024.

1955: PORTLAND CEMENT (MOJAVE)

The Portland limestone mine and cement plant were built west of Mojave along the southeast margin of the Tehachapi mountains in 1954-1955. The original name was the Creal mine and plant. To service this mine and plant, the Portland Cement (PC) railroad was built that connected to Mojave where it joined the Atchison, Topeka and Santa Fe railroad. This was formerly part of the San Joaquin Valley line. In 1962, 95% of the plant output was exported by rail (Troxel and Morton, 1962:221-222).

Renowned industrialist Henry J. Kaiser originally developed the Cushenbury limestone quarry to supply his steel making operations in Fontana, California during World War II. He built the cement plant and 35-mile long railroad in 1957. The facility was modernized in 1982 and Mitsubishi Cement Corp. purchased the plant in 1988. Today the Mitsubishi Cement Corporation Cushenbury Plant is one the leading industries in the Victor Valley (Mitsubishi Cement Corporation, 2023).



Caption: Cal Portland Cement plant with railroad lines, Mojave in 1972. From https://www.pinterest.com/pin/357754764129999754/ accessed Jan. 1, 2024.

1957: CUSHENBURY

The Cushenbury railroad connected to the Los Angeles and Salt Lake (LA&SL) Railroad at Hesperia. That railroad is now part of the Union Pacific Railroad company.

The Cushenbury limestone quarry was opened in 1947 by the Permanente Cement Company, and operated intermittently and on a small scale until it was shut down in 1950. During this period the deposit yielded several thousand tons. The limestone was trucked to Thorn; from Thorn it was shipped by rail to the Los Angeles mill of the Kennedy Minerals Company where it was ground for use as whiting (Wright and others, 1953, P. 174; Rapp and others, 1990; Myrick, 1963:864).

Renowned industrialist Henry J. Kaiser originally developed the Cushenbury limestone quarry to supply his steel making operations in Fontana, California during World War II. He built the cement plant and 35-mile long railroad in 1957. The facility was modernized in 1982 and Mitsubishi Cement Corp. purchased the plant in 1988. Today the Mitsubishi Cement Corporation Cushenbury Plant is one the leading industries in the Victor Valley (Mitsubishi Cement Corporation, 2023).

1967: ANTELOPE VALLEY PALMDALE TO COLTON CUTTOFF

The Cajon Pass to Palmdale section of the Antelope Valley Railroad (AVR) was called the Palmdale-Colton Cutoff. Proposals for the building of this line were first considered in 1881 while the San Joaquin Valley line (1875-1886) was being built. The cutoff was not built until 1967. It was built by the Southern Pacific Railroad. Service was discontinued in 1971 and resumed in 1994 as part of the Los Angeles Metrolink system. Union Pacific purchased the Southern Pacific lines on the AVR in September 1996 (Serpico, 2000:97-98,104-107).

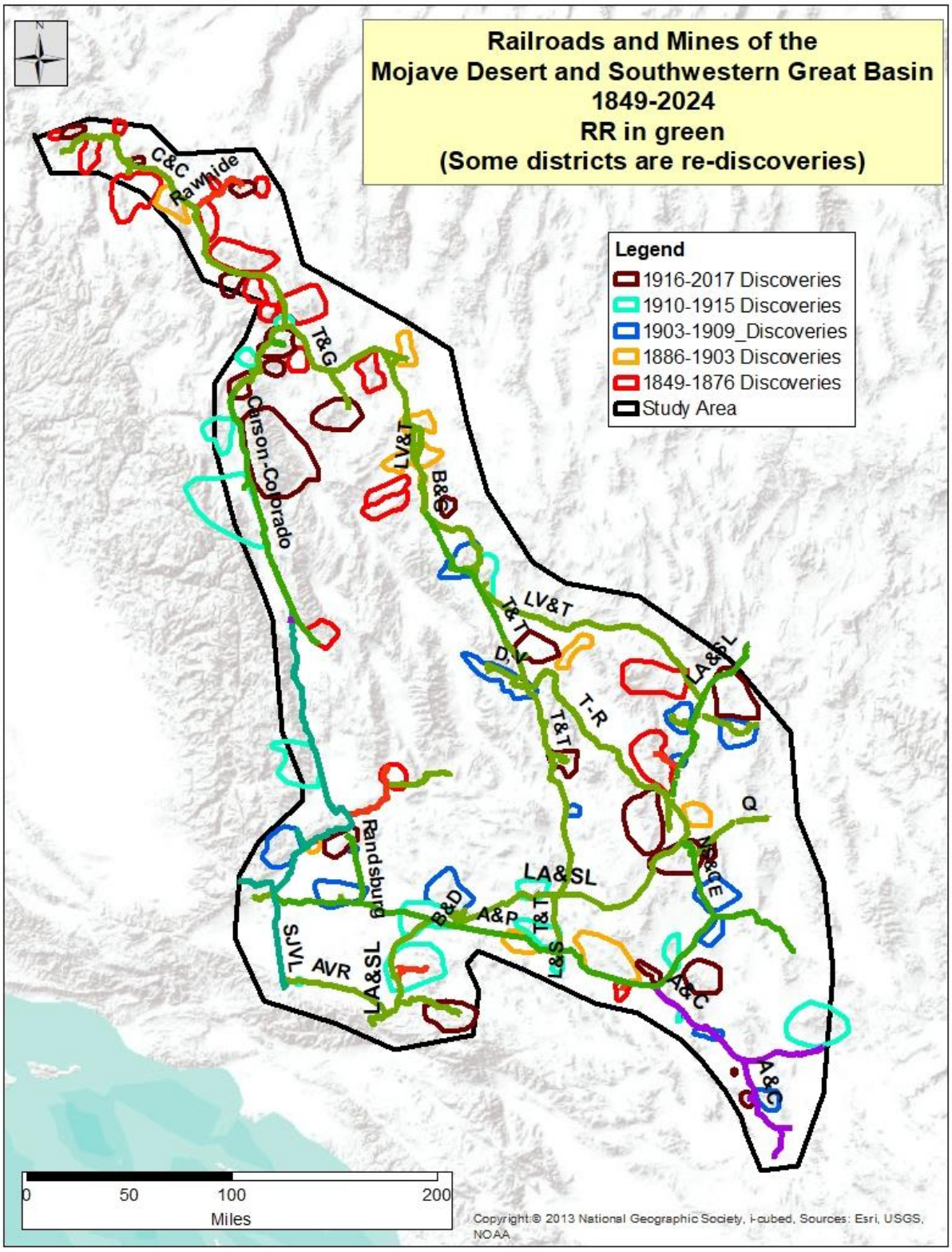
Caption: Palmdale to Cajon Pass section of the Antelope Valley Railroad. From https://www.flickr.com/photos/32755955@N05/49725707762/ accessed Jan. 16, 2024

DISCOVERIES: 1916-2017

Between 1910 and 2017 the following mining districts were discovered in our study area:

Ash Meadows MD	1916	1916
Las Vegas MD	1916	1916
Little Maria MD	1916	1916
White Mnt MD late	1916	1945

Chubbuck RR	1917	1922
Epson Salt Monorail	1917	1924
Gerstley mine	1917	1926
Marble (Chubbuck) MD	1917	1917
Ash Meadows RR and MD	1918	1919
Old Woman MD	1920	1920
Gerstley RR	1921	1926
Candelaria MD late	1922	1935
Saltdale RR late	1922	1975
Chubbuck RR	1922	1924
Randsburgh RR late	1923	1924
Blue Diamond RR late	1925	2024
Boron RR	1928	2024
Clarkdale MD	1931	1940
Comestock MD middle	1933	1942
Cushenbury Mine	1947	2024
Wabuska Wash MD late (limeston)	1947	1960
Silver Peak MD late lithium	1966	2024
Antlope Valley Palmdale-Colton cutoff	1967	1967; 1994 metrolink
Pamilco MD	1967	1967
Black Horse MD	1969	1969
New York (Vanderbilt, Morning Star) MD late	1969	1993
Atlantic and Pacific RR late	1974	1990
Ivanpah MD late	1974	1990
Arica MD	1989	1994
Randsburg MD late	1989	1994
Rawhide MD late	2000	2024
Buena Vista late	2006	2024


Railroads and Mines of the
Mojave Desert and Southwestern Great Basin
1849-2024
RR in green
(Some districts are re-discoveries)
Legend
1916-2017 Discoveries
1910-1915 Discoveries
1903-1909_Discoveries
1886-1903 Discoveries
1849-1876 Discoveries
Study Area
C&C
Rawhide
T&G
Carson-Colorado
LV&T
B&C
T&T
D.V.
T-R
LA&SL
Randsburg
B&D
A&P
SJVL
AVR
T&L
S&L
A&C
A&G
0
50
100
200
Miles
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LIST OF FIGURES

LIST OF TABLES

LIST OF APPENDICIES