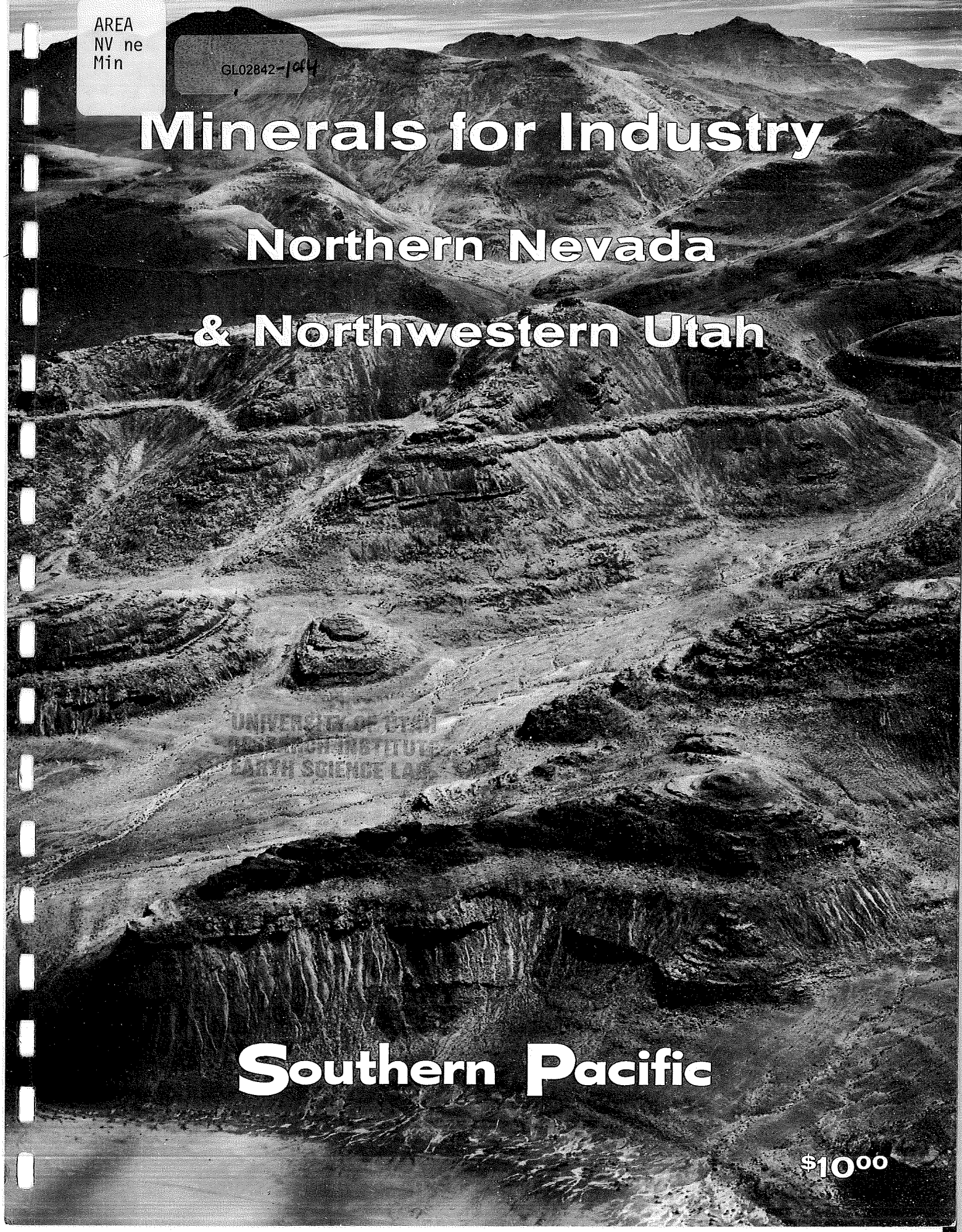
Minerals for Industry

Northern Nevada & Northwestern Utah



Southern Pacific

$10.00

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Cover photo: Crater Island, north end of Silver Island Range, T.5N., R.17W., SLBM, Box Elder Co., Utah Photo courtesy of Jack M. Ahearn, Aerial Surveys, Salt Lake City, Utah.

Order From
Southern Pacific Company
Land Department
65 Market Street
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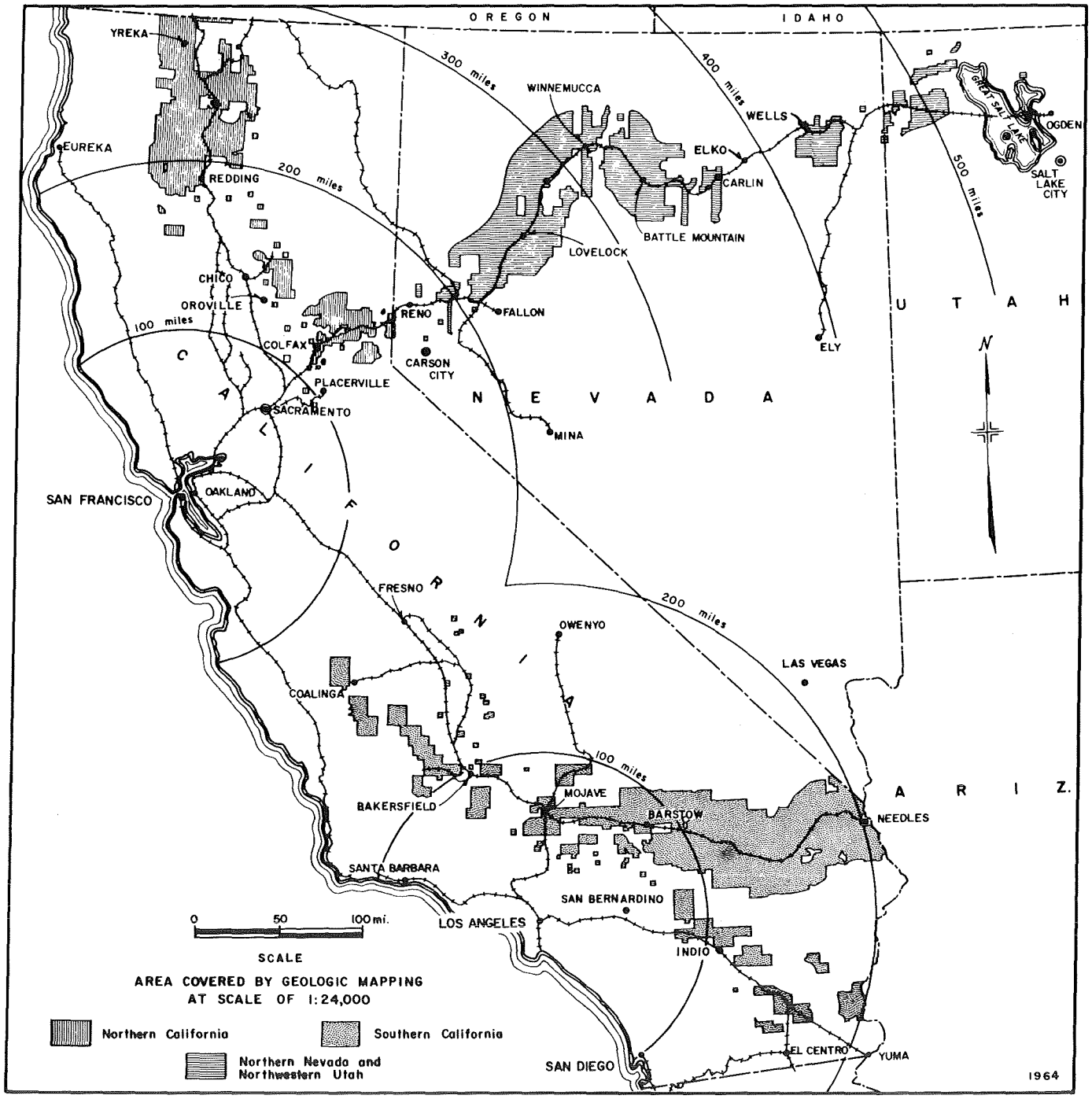


Figure 1

SOUTHERN PACIFIC
LAND DEPARTMENT

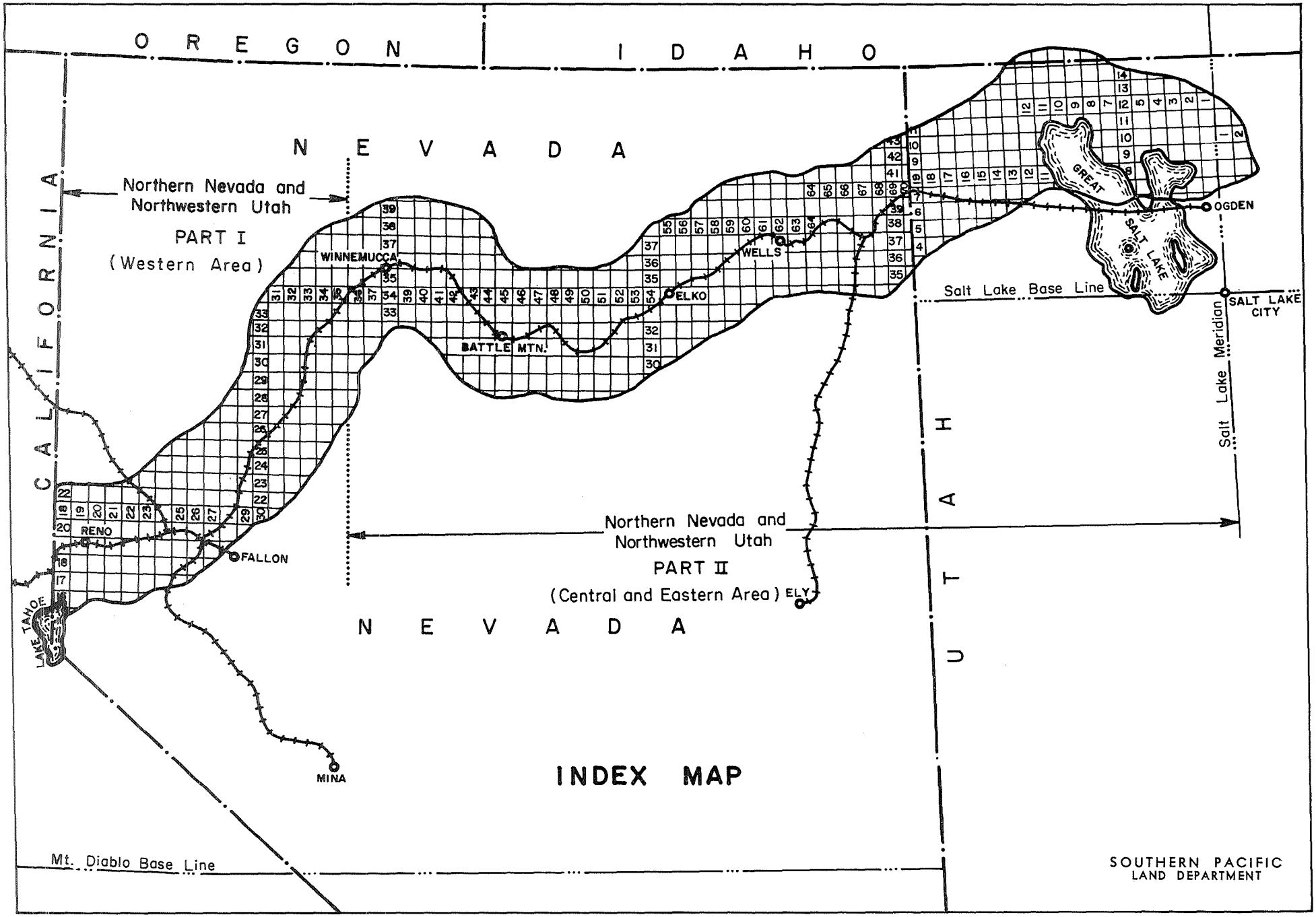

OREGON
IDAHO
NEVADA
CALIFORNIA
UTAH
Northern Nevada and Northwestern Utah
PART I
(Western Area)
Northern Nevada and Northwestern Utah
PART II
(Central and Eastern Area)
WINNEMUCCA
BATTLE MTN.
ELKO
WELLS
OGDEN
SALT LAKE CITY
GREAT SALT LAKE
Salt Lake Base Line
Salt Lake Meridian
RENO
FALLON
LAKE TAHOE
ELY
MINA
Mt. Diablo Base Line
INDEX MAP
SOUTHERN PACIFIC
LAND DEPARTMENT

Figure 2

Introduction

Southern Pacific's economic geology survey in California, Nevada and Utah was conducted from early 1955 to mid-1961. Results of the survey are summarized in three *MINERALS FOR INDUSTRY* volumes:

NORTHERN CALIFORNIA

Part I—Northern Sierra Nevada

Part II—Klamath Mountains and Cascade Range

SOUTHERN CALIFORNIA

Part I—San Joaquin Valley

Part II—Western Mojave Desert

Part III—Eastern Mojave and Colorado Deserts

NORTHERN NEVADA AND NORTHWESTERN UTAH

Part I—Western Area

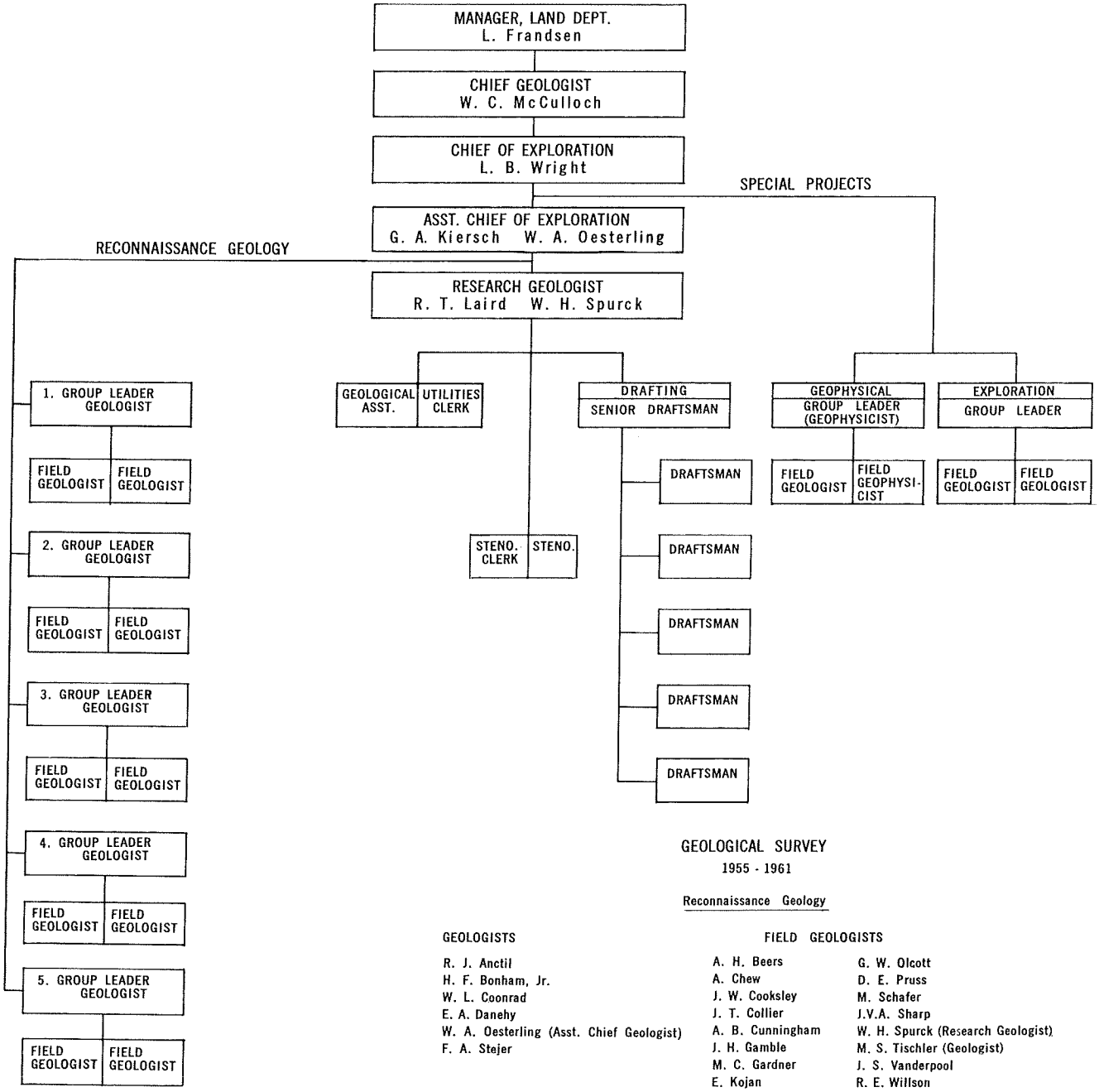
Part II—Central and Eastern Area

Areas covered by the survey are illustrated on Figure 1. The townships and ranges of the Mount Diablo and Salt Lake Base Lines and Meridians, which are included in this NORTHERN NEVADA AND NORTHWESTERN UTAH volume, are shown on Figure 2.

During the survey, the areal geology of 13.3 million acres, approximately one-third Company owned, in California, Nevada, and Utah was mapped at a scale of 2,000 feet to the inch. Economic geology has been recorded on some 550 detailed topographic maps, which also illustrate elements of culture and Company ownership. Reports on the geology and mineral resources, except oil and gas, have been written for each map area. Reconnaissance investigation was followed by detailed field work at selected sites, and large-scale maps and accompanying reports were prepared. All maps and reports, with supporting data, are on file at the Land Department, Southern Pacific Company, San Francisco, California.

Mineral Commodity Maps I, II, and III (map pocket) show the general locations of deposits summarized herein. Information relative to leasing of Company properties is available from the Land Department; however, it is not in position to furnish title information on other properties.

ORGANIZATION DIAGRAM
SOUTHERN PACIFIC COMPANY, LAND DEPT., GEOLOGICAL SURVEY



GEOLOGICAL SURVEY
1955 - 1961

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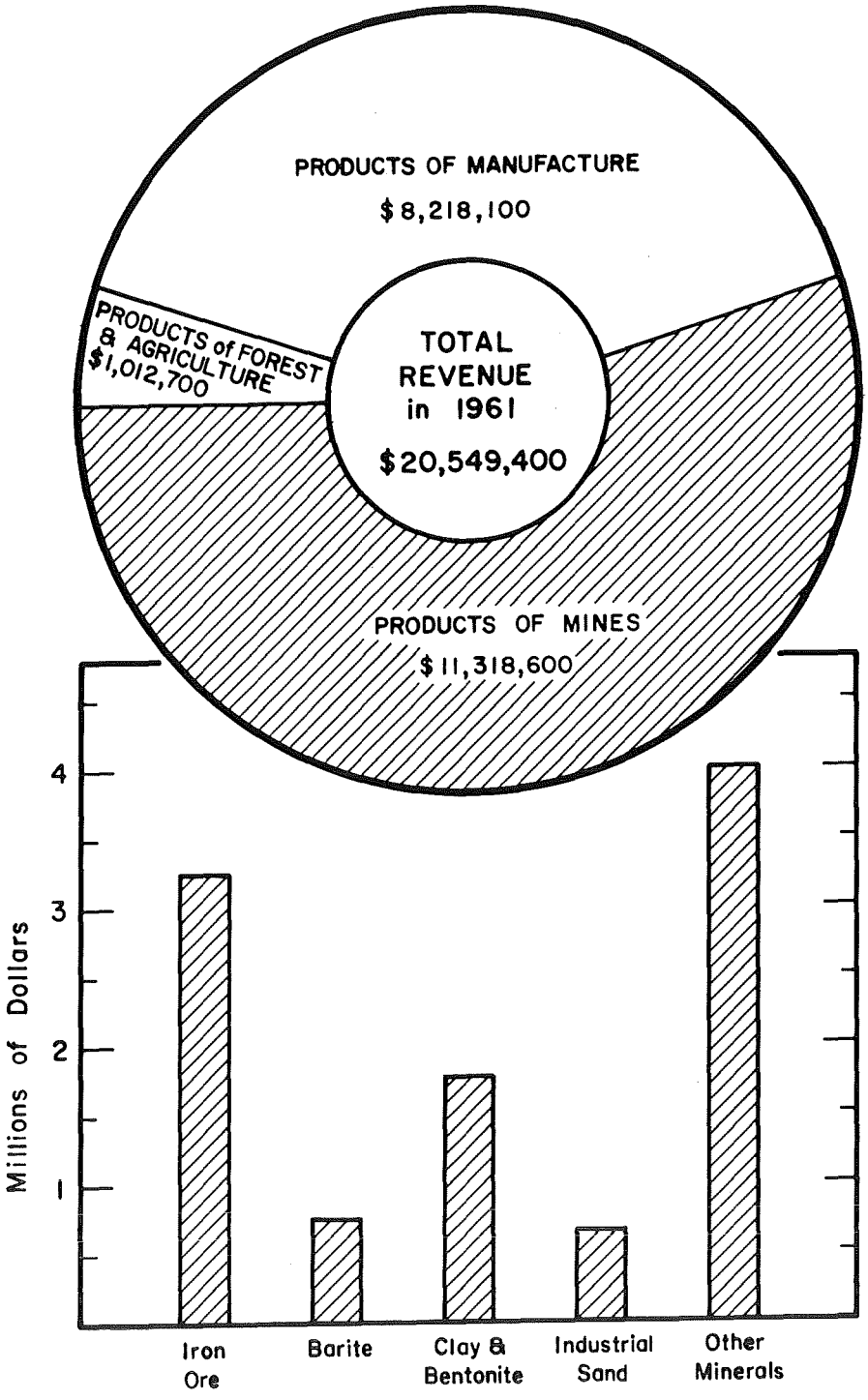
Figure 3

Acknowledgements

The office and field staff assembled by the Land Department is shown on the Organization Diagram (Figure 3), and the persons employed in these positions from time to time are listed. Because of the lack of previous geologic mapping for most of this region, maps and reports prepared by the field staff are the main sources of the information presented.

Authors of this volume are listed on the title pages for PARTS I and II. This volume was edited by: W. C. McCulloch, W. A. Oesterling, and M. S. Tischler. The multitude of clerical details involved in proper assembly of the manuscript and editing gallies and page proofs were efficiently handled by Mrs. Marilou Lockhart.



RAILROAD FREIGHT REVENUES in 1961
From PRODUCTS ORIGINATING in NEVADA

SOURCE: Interstate Commerce Commission Statements SS-2 thru SS-6, 1961

Compilation of Mineral Commodities

CLASSIFICATION

Commodity information is presented in condensed form under four major headings:

METALLICS—potential sources of metals.

INDUSTRIAL ROCKS AND MINERALS—all mineral commodities exclusive of metallics, mineral fuels, and water resources.

WATER RESOURCES—springs, wells, and surface water discharge data.

GEOTHERMAL RESOURCES—potentially useful sites for the production of natural steam, hot water, and valuable minerals in brine.

METALLICS and INDUSTRIAL ROCKS AND MINERALS are further classified under one of the following subheadings:

Mines and Prospects—locations at which mining, development, or exploration has been undertaken.

Occurrences—commodity locations at which no physical exploration has been undertaken.

Trends—possible mineral locations projected from mines, prospects, or occurrences.

METHOD OF LISTING AND REFERENCING

Mineral commodities listed under METALLICS and INDUSTRIAL ROCKS AND MINERALS are presented in alphabetical order.

Mineral locations for each commodity are listed primarily in order of increasing townships and secondarily by increasing ranges. "MDBM" refers to Mount Diablo Base Line and Meridian, and "SLBM" to Salt Lake Base Line and Meridian (see Figure 2).

Numbers in italics to right of each location (for PART II only) are keyed to a numbered reference list which follows the commodity listing.

LIMITATIONS

Mineral locations given are largely[1] those described by Southern Pacific geologists in the course of investigation of Company lands and contiguous areas, and do not comprise a complete inventory of all mineral locations which may occur within the report area. The analyses and other test data reported are not necessarily representative inasmuch as an attempt was made to select the highest-grade material for preliminary analysis. Conclusions are made solely with respect to property owned by the Company,[2] and it is not the intent of Southern Pacific to evaluate properties it does not own.

At some of the listed locations, "ore-grade" material was found, but not in sufficient tonnage for economic operation. At others, material in sight is too low grade to constitute ore under present economic conditions regardless of available tonnage; or profitable exploitation is dependent on technological advances. Conclusions as to the economics of operating any mineral property should be based on the availability of markets for products at favorable sales price and cost.

[1]Additional mineral locations were obtained from published sources.
[2]Deposits at locations indicated by * are not owned by Southern Pacific.

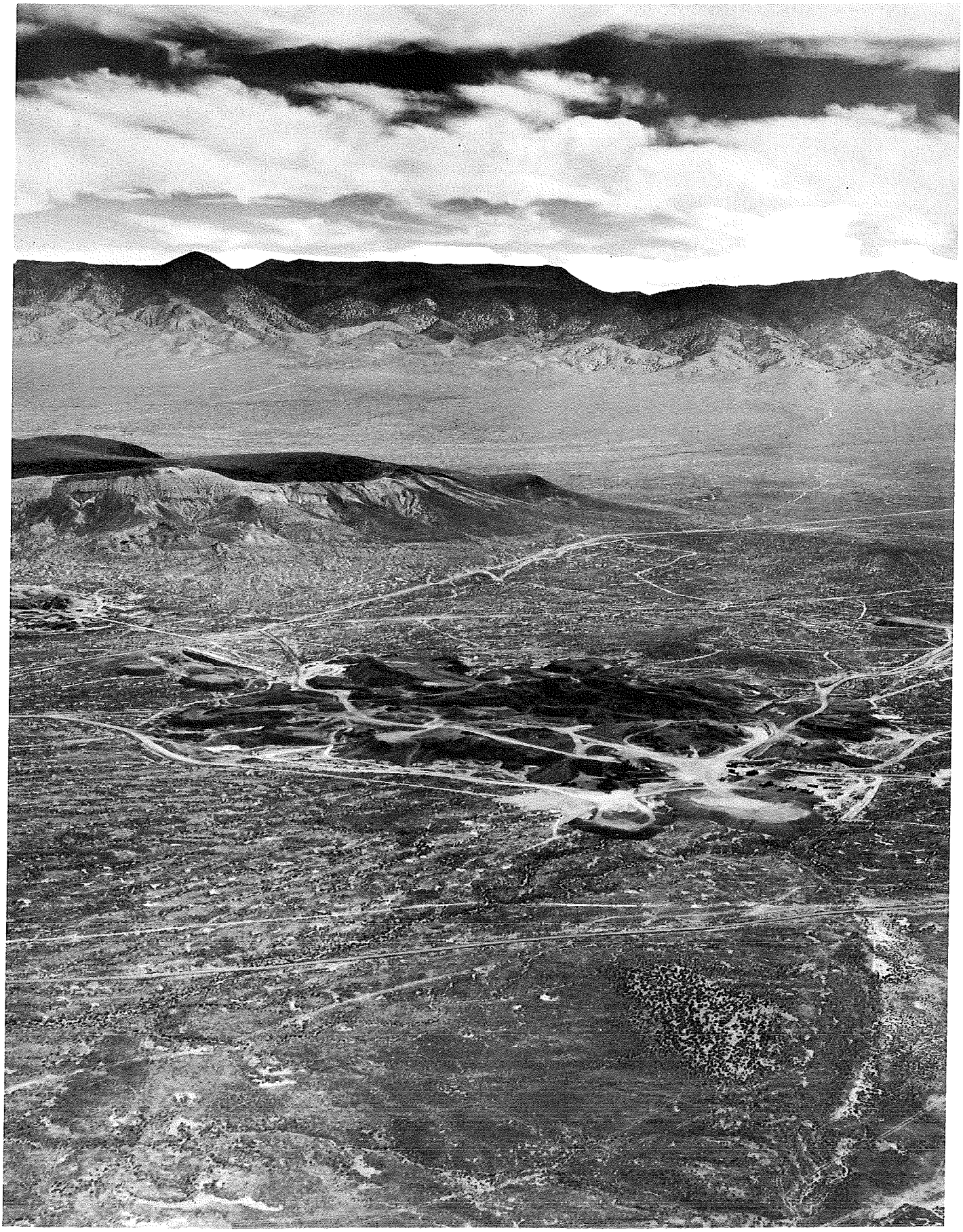
PART I

Western Area

By: M. S. Tischler, *Geologist*

Geologic History By: H. F. Bonham, Jr., *Geologist* and
W. A. Oesterling, *Asst. Chief Geologist*

PART I encompasses areas mapped by Southern Pacific within:
Townships 15–38 North, Ranges 18–35 East, MDBM.
See Mineral Commodity Map I in map pocket.



View looking easterly toward Southern Pacific's iron mine on Sec. 15, T.25 N., R.34E., MDBM, Pershing Co.; Stillwater Range in background.

Metallics

Deposits[1] *of metallic mineral commodities are of limited extent, and those of economic importance have relatively high unit value as contrasted with industrial rocks and minerals. Metallics are commonly associated with igneous intrusives and are usually localized along fractures.*

Most metallic ores and concentrates of ores are sold by producers to ore buyers and processors somewhat below the quoted market price. The difference reflects the costs and profits of such buyers. There are variations in price from time to time depending on quality, quantity, and demand.

Of the Southern Pacific properties listed in the PART I area the metallic deposits at the following locations are considered to be the most promising:

ANTIMONY:

NW¼ Sec. 19, T.28N., R.33E., MDBM, Pershing Co.

GOLD:

E½, SW¼, and S½NW¼ Sec. 27, T.21N., R.23E., MDBM, Washoe Co.

IRON:

Lot 1, SE¼NE¼, and E½SE¼ Sec. 1, T.17N., R.22E., and SW¼ Sec. 31, T.18N., R.23E., MDBM, Lyon and Storey Counties
Parts of Twps. 24, 25, and 26 N., Rge. 34E., MDBM, Pershing and Churchill Counties
Sec. 27, T. 25N., R.28E., MDBM, Pershing Co.
Sec. 3, T.25N., R.32E., and Sec. 35, T.26N., R.32E., MDBM, Pershing Co.
Secs. 25 and 35, T.25N., R.32E., and Sec. 19, T.25N., R.33E., MDBM, Pershing and Churchill Counties

SILVER:

Sec. 9, T.25N., R.29E., MDBM, Pershing Co.
NW¼ Sec. 13, T.28N., R.33E., MDBM, Pershing Co.
Sec. 3, T.29N., R.30E., MDBM, Pershing Co.
NE¼SW¼ Sec. 9, T.29N., R.32E., MDBM, Pershing Co.
SE¼ Sec. 35, T.29N., R.33E., MDBM, Pershing Co.
N½N½ Sec. 19, T.35N., R.35E., MDBM, Humboldt Co.

[1]Deposits at locations indicated by * are not owned by Southern Pacific.

TUNGSTEN:

NE¼ Sec. 21, T.24N., R.24E., MDBM, Washoe Co.

ANTIMONY [Sb]

MINES AND PROSPECTS

Name: Green

Location: *E½SE¼ and SE¼NE¼ Sec. 15, T.25N., R.32E., MDBM, Pershing Co., 12 miles from rail point of Lovelock

Description: active during World War I; workings include shaft (caved), drift 100–150' long, several stopes, and small adits

Geology: stibnite and minor accessory minerals, as pods associated with siliceous vein material in a fault zone

Location: SW¼ Sec. 1, T.26N., R.34E., MDBM, Pershing Co.

Description: explored during World War II

Geology: minor pyrite in phyllite and quartzite

Conclusions: shows little promise

Name: Hollywood

Location: *SE¼ Sec. 2, T.26N., R.34E., MDBM, Pershing Co.

Description: explored during World War II

Geology: minor pyrite in phyllite and quartzite

Name: Culver

Location: *NW¼ Sec. 12, T.26N., R.34E., MDBM, Pershing Co.

Description: small amount mined; remains of old furnace nearby

Geology: veins in limestone

Location: NW¼ Sec. 11, T.27N., R.33E., MDBM, Pershing Co.

Description: several small pits

Geology: gossan and calcite veins along fault in conglomeratic limestone; traces of antimony and cinnabar reported

Conclusions: shows limited promise

Name: Sutherland

Location: *SE¼NW¼ and W½SW¼NE¼ Sec. 15, T.27N., R.33E., MDBM, Pershing Co., 9 miles from rail point of Colado

Description: largest antimony mine in U. S. until end of World War I; prospected and developed by numerous surface and underground workings; most of production was from area served by a main shaft; underground workings inaccessible in 1957; ore shipped reportedly averaged over 35% Sb

Geology: stibnite blebs and masses in quartz veins parallel to beds of calcareous shale

Location: NW¼ Sec. 19, T.28N., R.33E., MDBM, Pershing Co., 2 miles from rail point of Woolsey

Description: 70 tons of 45% Sb mined in 1916, and 100 tons of 30% Sb mined from 1946 to 1949 from incline shaft and several hundred feet of drifts; several hundred tons of low-grade ore on dumps; considerable low-grade remains underground; explored by trenching for 2500′ along shear zone

Geology: vein along shear zone which contains brecciated shale, limonite, quartz, stibnite, and antimony oxides; massive and disseminated stibnite in quartz

Conclusions: additional exploration warranted

Location: Sec. 3, T.29N., R.30E., MDBM, Pershing Co.
(See under METALLICS, Silver)

Location: NE¼SW¼ Sec. 9, T.29N., R.32E., MDBM, Pershing Co.
(See under METALLICS, Silver)

Name: Montezuma, Electric, and Jersey (*Arabia District*)

Location: *NW¼ and N½SW¼ Sec. 21, T.29N., R.32E., MDBM, Pershing Co.
(See under METALLICS, Silver)

COPPER [Cu]

MINES AND PROSPECTS

Location: *E½SE¼ Sec. 32, T.21N., R.20E., MDBM, Washoe Co.

Description: two intersecting trenches and several pits

Geology: quartz vein 1–4′ wide emplaced along fault in granite; vein contains azurite, chrysocolla, and malachite

Location: *S½ Sec. 29, T.24N., R.34E., MDBM, Churchill Co.

Description: several pits

Geology: metavolcanic rock cut by 6″ quartz veins which carry chalcopyrite, malachite, and azurite; these same minerals found in gossan zone in SW¼ of section

Location: S½S½ Sec. 1, T.26N., R.32E., MDBM, Pershing Co.

Description: numerous cuts; selected sample from E½SW¼SE¼ of section assayed 1% Cu

Geology: argillite intruded by diorite; fractures in diorite stained with malachite and azurite

Conclusions: shows limited promise

Location: *N½ Sec. 12, T.26N., R.32E., MDBM, Pershing Co.

Description: several cuts and adits

Geology: malachite and azurite along fractures in diorite and argillite

Location: *E½NE¼ and NE¼SE¼ Sec. 11, and W½NW¼ Sec. 12, T.27N., R.32E., MDBM, Pershing Co.

Description: several trenches and pits

Geology: chalcopyrite and tetrahedrite in quartz veins in metasedimentary rocks

Location: SE¼SE¼ Sec. 25, T.27N., R.32E., MDBM, Pershing Co.

Description: pits and 10′ drift

Geology: copper-stained quartz veins to 2′ wide in metasedimentary rocks; chalcopyrite disseminated in quartz; traces of gold and silver reported

Conclusions: shows limited promise

Location: E½SW¼SE¼ Sec. 11, T.28N., R.34E., MDBM, Pershing Co.
(See under METALLICS, Silver)

Location: S½S½ Sec. 3, T.30N., R.32E., MDBM, Pershing Co.
(See under METALLICS, Silver)

Name: Majuba Hill

Location: *Sec. 2, T.32N., R.31E., MDBM, Pershing Co.

Description: 4,000 tons of 12% Cu mined (1916–18) and 23,000 tons of 4% Cu and 350 tons of 2–4% tin mined (1942–45) from three adits; lower adit is 2000′ long, middle adit 2000′ long, and upper adit 100′ long; raise connects middle and upper adits; reported analyses for selected samples show a trace to 0.05 oz. Au and 0.10–11.08 oz. Ag, 0.01–1.14% Sn, and about 0.10–0.30% U_3O_8

Geology: copper and tin deposited along normal fault in partly brecciated rhyolitic plug as chalcocite, chalcopyrite, cuprite, pyrite, arsenopyrite, cassiterite, and metazeunerite; numerous copper-oxide minerals near surface

OCCURRENCES

Location: SW¼ Sec. 9, T.25N., R.26E., MDBM, Pershing Co.

Geology: gossan, malachite stringers in aplite, and vein float containing malachite and azurite assayed 0.22–1.65% Cu, a trace of Au, and 0.6–0.7 oz. Ag; mineralization is associated with granite-aplite contact

Conclusions: shows limited promise

GOLD [Au]

MINES AND PROSPECTS

Location: *SE¼ Sec. 7, T.16N., R.18E., MDBM, Washoe Co.

Description: explored by 100′ adit

Geology: quartz stringers less than ½″ along shears in andesite

Location: W½NE¼ and NW¼SE¼ Sec. 21, T.16N., R.21E., MDBM, Lyon Co.

Description: several shallow pits and trenches

Geology: quartz stringers and hydrothermally altered shear zones in rhyolite welded tuff

Conclusions: shows limited promise

Name: Gold Canyon Placer (*Dayton*)

Location: $NW\frac{1}{4}SW\frac{1}{4}$ and $SW\frac{1}{4}NW\frac{1}{4}$ Sec. 23, T.16N., R.21E., MDBM, Lyon Co.

Description: production reported from Gold Canyon, Carson River, and adjacent areas for period Sept. 5, 1920 to Apr. 5, 1923 was 14,625.3 fine oz. Au, and 7,482 fine oz. Ag, having a gross value of $309,750; Company land is locally stripped to bedrock and stacked with dredge tailings, many of which have been reworked

Geology: placer gold; source was from deposits in Comstock (Silver City and Gold Hill) District

Conclusions: worked out

Location: *$SW\frac{1}{4}$ Sec. 1 and $NE\frac{1}{4}SE\frac{1}{4}$ Sec. 12, T.18N., R.23E., and $NE\frac{1}{4}SE\frac{1}{4}$ Sec. 6, T.18N., R.24E., MDBM, Lyon Co.

Description: numerous shallow shafts, adits, pits, and trenches

Geology: gossan, quartz veins and stringers in metavolcanic rocks, rhyolite, and andesite

Location: *$SW\frac{1}{4}$ Sec. 31, T.19N., R.24E., MDBM, Lyon Co.

Description: two incline shafts and one vertical shaft

Geology: silica boxwork and vein quartz along fault zone in rhyolite tuff; iron oxides and pyrite disseminated in quartz

Name: Olinghouse Placer

Location: $E\frac{1}{2}$, $SW\frac{1}{4}$, and $S\frac{1}{2}NW\frac{1}{4}$ Sec. 27, T.21N., R.23E., MDBM, Washoe Co.

Description: four shafts and numerous churn drill holes in gravel; samples (1939) assayed from $0.08 to $0.94 per cu. yd.; churn drill samples (1940–54) averaged 23.66¢ per cu. yd. for 10,391,000 cu. yds. to 75′ depth; drilling did not positively define limits of auriferous gravels; part of reserves on Sec. 26 (not owned by Southern Pacific)

Conclusions: warrants further exploration

Name: Olinghouse District (part)

Location: *Secs. 29 and 30, T.21N., R.23E., MDBM, Washoe Co.

Description: $520,040 gross value produced from entire district 1898–1940; explored and developed by numerous shafts, pits, adits and trenches

Geology: gold in small quartz veins and calcite seams in altered rhyolite; a little silver chloride also reported

Location: *$NE\frac{1}{4}$ Sec. 32, T.21N., R.23E., MDBM, Washoe Co.

Description: one small adit

Geology: andesite; no metallic minerals observed

Location: $NE\frac{1}{4}$ Sec. 33, T.21N., R.23E., MDBM, Washoe Co.

Description: explored by 10′ adit in basalt

Conclusions: shows little promise

Name: Jessup

Location: *Sec. 18, T.24N., R.28E., MDBM, Churchill Co.

Description: about $15,000 gross production for entire district as of 1938; several thousand feet of workings include pits, shafts, trenches, and adits

Geology: fault zones and other fractures in metavolcanic rocks and andesite contain quartz veins and silica boxworks 2–4′ wide

Location: *S½SW¼NW¼ Sec. 13, T.26N., R.32E., MDBM, Pershing Co.

Description: small open cut

Geology: hornfels-diorite contact

Location: parts of Secs. 3 and 23, T.28N., R.33E., MDBM, Pershing Co.

Description: intermittently hand-placered, never dredged

Geology: placer gold in Quaternary gravel and also in gravel and fanglomerate of Tertiary age

Conclusions: shows limited promise

Location: *S½SW¼Sec. 5, T.28N., R.34E., MDBM, Pershing Co.

Description: small pit

Geology: quartz vein several hundred feet long and 5–10′ wide; pyrite and limonite in quartz; aplite country rock

Location: *S½NE¼ and NW¼NE¼ Sec. 31, and W½NW¼ Sec. 32, T.28N., R.35E., MDBM, Pershing Co.

Description: shafts in gravel

Geology: gold in canyon gravels

Name: Superior

Location: *S½NW¼SE¼ Sec. 25, T.33N., R.30E., MDBM, Pershing Co.
(See under METALLICS, Silver)

Location: *NW¼SE¼ Sec. 3, T.34N., R.31E., MDBM, Pershing Co.

Description: inclined shaft

Geology: gold-bearing quartz veins associated with aplite sill in slate and phyllite

Name: Lone Star

Location: *W½ Sec. 20, T.34N., R.32E., MDBM, Pershing Co.

Description: open cuts, shallow pits, and shaft of unknown depth

Geology: narrow gold-bearing quartz veins in granodiorite

Name: Keystone

Location: *SW¼SW¼ Sec. 1 and NW¼NW¼ Sec. 12, T.34N., R.34E., MDBM, Pershing Co.

Description: shaft mine

Geology: narrow quartz vein in slate and phyllite

Name: Marietta

Location: *N½N½ Sec. 2, T.34N., R.34E., MDBM, Pershing Co.

Description: old mine

Geology: narrow quartz veins in slate and phyllite

IRON [Fe]

MINES AND PROSPECTS

Name: Dayton (part owned by Company)

Location: Lot 1, $SE\frac{1}{4}NE\frac{1}{4}$, and $E\frac{1}{2}SE\frac{1}{4}$ Sec. 1, T.17N., R.22E., and $SW\frac{1}{4}$ Sec. 31, T.18N., R.23E., MDBM, Lyon and Storey Counties

Description: drilled on 100′ grid (1959–61)

Geology: a number of magnetite bodies in metamorphic rocks associated with granodiorite

Conclusions: moderate iron-ore reserve indicated

Name: Dayton (part)

Location: *$W\frac{1}{2}$ Sec. 6, T.17N., R.23E., MDBM, Lyon and Storey Counties

Description: several shafts and a long adit (1909–10); numerous trenches and core-drill holes by U. S. Bureau Mines in 1942; drilled on 100′ grid (1959–61); limited reserve of direct-shipping ore but large reserve of ore that can be upgraded by conventional methods

Geology: a number of magnetite bodies in metamorphic rocks associated with granodiorite

Name: Buena Vista area (*Mineral Basin District*, part)

Location: parts of Twps. 24, 25, and 26N., Rge. 34E., MDBM, Pershing and Churchill Counties

Description: more than 1,500,000 long tons of direct-shipping (58%+ Fe) ore produced from Southern Pacific lands through 1963; estimated Company reserves total about 51,680,000 long tons of 26.6% Fe, about 5% of which is direct-shipping grade

Geology: magnetite occurs as massive replacement deposits and as disseminations along fault and fracture zones predominantly in scapolitized, hornblende-rich metavolcanic rock, near contacts with scapolitized diorite intrusives; some of the intrusive rock has also been replaced by magnetite; hematite occurs locally

Conclusions: important source of iron ore; detailed metallurgical tests by University of Minnesota Davis Laboratory indicate a conventional taconite circuit will yield good recovery and produce better-than-average, high-iron, low-silica concentrates

Name: Basalt

Location: Sec. 27, T.25N., R.28E., MDBM, Pershing Co.

Description: magnetometer survey and 13 wagon drill holes; chemical analyses indicate occurrence of low-phosphorus, low-sulfur iron deposit

Geology: magnetite-hematite veins in diorite in mineralized zone 100–200′ wide

Conclusions: limited tonnage potential

Iron mine on Southern Pacific's Sec. 29, T.26N., R.34E., MDBM, Pershing Co.

Name: Tule (part)

Location: *Secs. 2 and 16, T.25N., R.32E., and Sec. 34, T.26N., R.32E., MDBM, Pershing Co.

Description: trenching and core drilling in Sec. 34

Geology: disseminated magnetite and pyrite occur near diorite stock in calcareous metamorphic rocks capped by shallow gossan to 20′ thick; magnetite to pyrite ratio of 5:4 indicated from five drill holes; one hole encountered 79′ of magnetite with some pyrite

Name: Tule (part owned by Company)

Location: Sec. 3, T.25N., R.32E., and Sec. 35, T.26N., R.32E., MDBM, Pershing Co.

Description: trenching and drilling in Sec. 3; pits in Sec. 35

Geology: disseminated magnetite and pyrite occur near diorite stock in calcareous metamorphic rocks capped by shallow gossan to 20′ thick

Conclusions: results of drilling on Sec. 34 (see above listing) indicate further exploration warranted

Name: Piute (part)

Location: *Secs. 24, 26, and 36, T.25N., R.32E., MDBM, Pershing and Churchill Counties

Description: drill hole on $SW\frac{1}{4}SW\frac{1}{4}SE\frac{1}{4}$ Sec. 24 cored disseminated magnetite from 700–1600′+; drill hole on Sec. 26, 50′ west of $E\frac{1}{4}$ corner, encountered disseminated magnetite from 1000–1200′+

Geology: argillaceous limestone replaced by magnetite

Name: Piute (part owned by Company)

Location: Secs. 25 and 35, T.25N., R.32E., and Sec. 19, T.25N., R.33E., MDBM, Pershing and Churchill Counties

Description: drill holes located about 100′ north and 50′ west of Sec. 25 encountered disseminated magnetite; see drill hole descriptions above; magnetic survey indicates magnetite on Company lands

Geology: argillaceous limestone replaced by magnetite

Conclusions: warrants further exploration

OCCURRENCES

Location: $S\frac{1}{2}$ Sec. 31, T.24N., R.27E., MDBM, Churchill Co.

Geology: 4–6′ wide jasper zone contains 2–4″ hematite stringers; two samples assayed 36–41% Fe and 39–45% SiO_2

Conclusions: shows little promise

Location: *Sec. 36, T.27N., R.28E., MDBM, Pershing Co.

Geology: altered zone over 1,000′ long in rhyolite tuff contains limonite and chalcedony nodules

TRENDS

Location: Company lands in N½ T.24N., R.33E., T.25N., R.33E., S½ T.26N., R.33E., MDBM, Churchill and Pershing Counties

Geology: covered area of Carson Sink valley is between known iron deposits

Conclusions: warrants geophysical investigation

LEAD [Pb]

MINES AND PROSPECTS

Location: Sec. 3, T.29N., R.30E., MDBM, Pershing Co.
(See under METALLICS, Silver)

Location: NE¼SW¼ Sec. 9, T.29N., R.32E., MDBM, Pershing Co.
(See under METALLICS, Silver)

Name: Montezuma, Electric, and Jersey (*Arabia District*)

Location: *NW¼ and N½SW¼ Sec. 21, T.29N., R.32E., MDBM, Pershing Co.
(See under METALLICS, Silver)

Name: Superior

Location: *S½NW¼SE¼ Sec. 25, T.33N., R.30E., MDBM, Pershing Co.
(See under METALLICS, Silver)

Name: Noble

Location: *NE¼NE¼ Sec. 26, T.33N., R.30E., MDBM, Pershing Co.
(See under METALLICS, Silver)

MERCURY [Hg]

MINES AND PROSPECTS

Location: *NE¼ Sec. 8, T.26N., R.34E., MDBM, Pershing Co.

Description: 25′ shaft with short drift at bottom

Geology: cinnabar in dolomitic conglomerate; same bed as mined at Pershing

Name: Pershing Quicksilver

Location: *Sec. 8, SW¼ Sec. 9, and N½ Sec. 16, T.26N., R.34E., MDBM, Pershing Co.

Description: 4,173 flasks (76 lbs. each) of Hg produced through 1943 from open pit; sporadic production to date from ore assaying 0.15–0.25% Hg; underground exploration in recent years

Geology: cinnabar in dolomitic conglomerate

Location: N½SE¼ and SW¼NE¼ Sec. 9, and S½NE¼ Sec. 15, T.26N., R.34E., MDBM, Pershing Co.

Description: several pits

Geology: dolomite conglomerate; same bed as mined at Pershing

Conclusions: shows limited promise

Location: *NW¼SE¼ Sec. 15, T.26N., R.34E., MDBM, Pershing Co.

Description: several pits

Geology: cinnabar in dolomitic conglomerate

Name: Montgomery

Location: *W½SW¼ and NW¼SE¼ Sec. 15 and SE¼ Sec. 16, T.26N., R.34E., MDBM, Pershing Co.

Description: 500 flasks of Hg produced prior to 1944; some exploration reported in 1957

Geology: cinnabar as a separate ore occurrence in the same bed mined at Pershing

Location: *SE¼NW¼ Sec. 16, T.26N., R.34E., MDBM, Pershing Co.

Description: several pits

Geology: thin limestone and dolomite beds with little cinnabar

Location: NW¼ Sec. 11, T.27N., R.33E., MDBM, Pershing Co.
(See under METALLICS, Antimony)

Name: Paymaster

Location: *Sec. 14, T.27N., R.33E., MDBM, Pershing Co.

Description: inclined shaft and numerous trenches

Geology: cinnabar disseminated in limestone

Name: Nevada Quicksilver (*Juniper*)

Location: *SW¼NE¼ and N½SE¼ Sec. 32, T.27N., R.34E., MDBM, Pershing Co.

Description: 3,259 flasks of Hg produced prior to 1944 from two stopes in an inclined shaft mine with more than a mile of crosscuts and drifts; averaged 1% Hg

Geology: bunches and pods of cinnabar in limestone; stibnite also reported

Name: Red Bird

Location: *SW¼ Sec. 33, T.27N., R.34E., MDBM, Pershing Co.

Description: 1,463 flasks of Hg produced prior to 1944 from about 2,000′ of adits and several stopes

Geology: cinnabar and free mercury in limestone and limestone conglomerate

Name: Alpine

Location: *E½SW¼NW¼ Sec. 7, T.27N., R.35E., MDBM, Pershing Co.

Description: reported production of two flasks of Hg from inclined shaft, stope, and surface cuts

Geology: cinnabar in limestone

Name: Cinnabar City

Location: *$S\frac{1}{2}S\frac{1}{2}$ Sec. 1, T.28N., R.34E., and $W\frac{1}{2}W\frac{1}{2}$ Sec. 7, T.28N., R.35E., MDBM, Pershing Co.

Description: 322 flasks produced to end of 1943

Geology: cinnabar in limestone and volcanics

Name: Hillside

Location: *$NW\frac{1}{4}NW\frac{1}{4}$ Sec. 6, T.28N., R.35E., MDBM, Pershing Co.

Description: 30′ deep inclined shaft and 75′ of drifts

Geology: cinnabar in limestone

Location: *$SW\frac{1}{4}$ Sec. 7, T.28N., R.35E., MDBM, Pershing Co.

Description: two adits; about 20 flasks of Hg produced since 1940; dump reported to contain some Hg

Geology: cinnabar in limestone and volcanics

MOLYBDENUM [Mo]

MINES AND PROSPECTS

Name: Longlease (*Chalmers and Bedford*)

Location: *$NE\frac{1}{4}$ Sec. 33, T.26N., R.32E., MDBM, Pershing Co.
(See under METALLICS, Tungsten)

Name: Nevada-Massachusetts

Location: *$S\frac{1}{2}$ Sec. 26, $SE\frac{1}{4}$ Sec. 27, $NE\frac{1}{4}$ Sec. 34, and $W\frac{1}{2}$ Sec. 35, T.34N., R.34E., MDBM, Pershing Co.
(See under METALLICS, Tungsten)

SILVER [Ag]

MINES AND PROSPECTS

Name: Gold Canyon Placer (*Dayton*)

Location: $NW\frac{1}{4}SW\frac{1}{4}$ and $SW\frac{1}{4}NW\frac{1}{4}$ Sec. 23, T.16N., R.21E., MDBM, Lyon Co.
(See under METALLICS, Gold)

Location: *$SW\frac{1}{4}$ Sec. 9, T.20N., R.20E., MDBM, Washoe Co.

Description: numerous shallow shafts, adits, and pits

Geology: quartz veins, granite pegmatite and aplite dikes in granite

Location: *$E\frac{1}{2}SE\frac{1}{4}$ Sec. 1, T.22N., R.27E., and Sec. 6 and $NW\frac{1}{4}NW\frac{1}{4}$ Sec. 7, T.22N., R.28E., MDBM, Churchill Co.

Description: several shafts, adits, and pits

Geology: quartz veins to 5′ thick in diorite; pyrite molds and limonite pseudomorphic after pyrite

Location: *SW¼NW¼ Sec. 1, T.23N., R.29E., MDBM, Churchill Co.

Description: several small drifts and adits

Geology: quartz vein in Tertiary volcanic rocks

Location: *SW¼ Sec. 10, T.23N., R.29E., MDBM, Churchill Co.

Description: several cuts and shallow shafts

Geology: pyrite-bearing quartzite and quartz vein

Location: *SE¼NE¼, E½E½NW¼, and NW¼SE¼ Sec. 35, T.24N., R.24E., MDBM, Washoe Co.

Description: shaft (partially caved), several pits, and 75′ inclined shaft

Geology: quartz veins in granodiorite; veins contain visible pyrite, jamesonite, and copper carbonate minerals

Name: Jessup (part owned by Company)

Location: Sec. 17, T.24N., R.28E., MDBM, Churchill Co.

Description: shafts and numerous trenches

Geology: breccia zone in tuff

Conclusions: shows little promise

Name: Jessup (part)

Location: *Sec. 18, T.24N., R.28E., MDBM, Churchill Co.

Description: several shafts and numerous trenches and pits

Geology: 2–4′ wide breccia zone in tuff

Location: Secs. 9, 11, and 15, T.25N., R.29E., MDBM, Pershing Co.

Description: 40′ vertical shaft in SE¼ Sec. 9 and several pits; selected samples assayed 0 to a trace of Au, and 0.1–11.6 oz. Ag

Geology: quartz veins and veinlets in slate and volcanic rocks; associated with aplite

Conclusions: warrants further exploration

Location: *W½NE¼, SE¼NE¼, and W½SW¼ Sec. 17, T.25N., R.32E., MDBM, Pershing Co.

Description: inclined shaft and 100′ drift

Geology: quartz vein averages less than one foot wide in slate, quartzite, and argillite

Location: *NW¼NW¼ Sec. 14, N½NE¼ Sec. 15, and W½SE¼SE¼ Sec. 23, T.26N., R.30E., MDBM, Pershing Co.

Description: 20′ shaft in Sec. 15, pits, 30′ inclined shaft in Sec. 14, and an adit in Sec. 23

Geology: thin quartz veins in slate on Secs. 14 and 15 and quartz-feldspar vein in granite on Sec. 23

Name: Muttlebury (*Old Tiger*)

Location: *Sec. 2, T.26N., R.32E., MDBM, Pershing Co.

Description: small amount of Ag concentrate produced in 1910 and 1919 from numerous cuts and adits

Geology: quartz-rich aplite dikes and silicified breccia in argillite

Location: Sec. 23, T.26N., R.32E., MDBM, Pershing Co.

Description: several pits and a 30′ shaft; selected dump samples assayed 0 to a trace of Au and 0.05–0.2 oz Ag

Geology: aplite dikes and quartz veins in hornfels and marble

Conclusions: shows little promise

Name: Velvet District (part)

Location: *Sec. 6, T.27N., R.29E., MDBM, Pershing Co.

Description: several pits, shallow shafts and adits

Geology: small quartz veins and siliceous stringers in rhyolite flows and welded tuff

Location: Secs. 1 and 3, T.27N., R.30E., MDBM, Pershing Co.

Description: explored for Au, Ag, and W by a pit in $SW\frac{1}{4}$ Sec. 1 and several pits in $E\frac{1}{2}$ Sec. 3; no assay data available

Geology: transition zone between granite and granodiorite and contact between slate and argillite with granite

Conclusions: shows little promise

Location: Sec. 21, T.27N., R.30E., MDBM, Pershing Co.

Description: small pits

Geology: aplite dike along contact between slate and argillite with granite

Conclusions: shows little promise

Name: Silver Dike

Location: *$S\frac{1}{2}S\frac{1}{2}NE\frac{1}{4}$ and $N\frac{1}{2}N\frac{1}{2}SE\frac{1}{4}$ Sec. 13, T.27N., R.34E., MDBM, Pershing Co.

Description: a number of shafts and adits

Geology: quartz veins in rhyolite flow breccia

Name: Relief

Location: *$N\frac{1}{2}$ Sec. 15, T.27N., R.34E., MDBM, Pershing Co.

Description: reported production of $20,255 in 1872–73; developed by several adits

Geology: quartz vein in limestone near contact with rhyolite

Location: *$N\frac{1}{2}NE\frac{1}{4}$ Sec. 35, T.27N., R.34E., MDBM, Pershing Co.

Description: several pits

Geology: quartz veins with pyrite and galena in phyllite

Location: *Sec. 18, T.27N., R.35E., MDBM, Pershing Co.

Description: an adit (caved) and two cuts

Geology: quartz veins to 2′ wide along fractures in volcanic rocks; workings are on lode about 1,000′ long; quartz stockwork and disseminated pyrite in SW¼ of section

Location: *N½SE¼ Sec. 35, T.28N., R.28E., MDBM, Pershing Co.

Description: 50′ shaft

Geology: iron-stained and silicified rhyolite enclosing pyrite

Location: *SW¼SW¼ Sec. 25 and Secs. 26 and 36, T.28N., R.32E., MDBM, Pershing Co.

Description: numerous pits and a 100′ shaft (Willard)

Geology: quartz veinlets with some copper oxides in metasedimentary and volcanic rocks

Location: NW¼ Sec. 13, T.28N., R.33E., MDBM, Pershing Co.

Description: several pits and adits; selected samples of quartz on dump assayed a trace to 0.02 oz. Au and 5.0–28.4 oz. Ag and 0.02–0.14% Cu

Geology: quartz replacement veins in limestone; veins carry freibergite, pyrite, and argentite

Conclusions: geochemical soil sampling or trenching along projected strike of veins, and detailed sampling may indicate favorable areas for development

Location: *NW¼, SW¼NE¼, and S½SW¼ Sec. 5, T.28N., R.34E., MDBM, Pershing Co.

Description: several tens of tons produced during 1920's and 30's; explored and developed by an inclined shaft (caved), several small shafts and pits

Geology: veins in intrusive rocks, especially aplite

Location: E½SW¼SE¼ Sec. 11, T.28N., R.34E., MDBM, Pershing Co.

Description: 30′ adit; selected samples from vein assayed a trace to 0.01 oz. Au and 0.5–2.6 oz. Ag per ton, and 0.20–1.62% Cu

Geology: 4–16″ quartz vein in rhyolite-trachyte contains minor amounts of chalcopyrite, malachite, azurite, and limonite

Conclusions: shows limited promise

Location: *S½SW¼ Sec. 19, and Sec. 30, T.28N., R.35E., MDBM, Pershing Co.

Description: several open cuts and pits; reported to contain silver and small amounts of gold and copper

Geology: quartz veins and stockworks

Location: *Secs. 2, 10 and S½SE¼NE¼ Sec. 13, T.29N., R.30E., MDBM, Pershing Co.

Description: three or more drifts in excess of 200′ and an inclined shaft in Sec. 10, numerous pits and open cuts in Sec. 2, and two shafts in Sec. 13

Geology: quartz veins in shear zones in slate

Location: Sec. 3, T.29N., R.30E., MDBM, Pershing Co.

Description: inclined shaft, 200′ main drift and three stopes; selected vein samples assayed a trace to 0.070 oz. Au and 0.1–17.2 oz. Ag, 0.05–4.45% As, 0 to 0.42% Sb, and 0.7–17.6% Pb

Geology: quartz veins in shear zones in slate

Conclusions: warrants further exploration

Location: *E½ Sec. 8, and NW¼SW¼ and SW¼NW¼ Sec. 9, T.29N., R.32E., MDBM, Pershing Co.

Description: unknown production from vertical shafts, five pits, four adits, and an inclined shaft

Geology: narrow quartz veins and stringers in granodiorite and along contact of granodiorite with hornfels or slate

Location: NE¼SW¼ Sec. 9, T.29N., R.32E., MDBM, Pershing Co.

Description: 50 sacks reportedly shipped from inclined shaft and an adit 300′ above incline; composite of chip samples taken at 4′ intervals along vein for about 100′ down incline assayed 36.9 oz. Ag, a trace of Au, 19.3% Pb, and 3.07% Sb; samples taken from two short lateral drifts assayed 2.2–3.0 oz. Ag, a trace of Au, and 0 to 0.4% Pb; a selected sample from dump at mouth of upper adit assayed 3.2% Ag, a trace of Au, 5.4% Pb and 0.57% Sb

Geology: quartz vein emplaced along contact between slate and granodiorite sill carries argentiferous bindheimite; vein dips 20°, is 6″ wide at surface, 1″ wide 50′ down dip and pinches out in less than 100′

Conclusions: warrants additional exploration

Name: Montezuma, Electric, and Jersey (*Arabia District*)

Location: *NW¼ and N½SW¼ Sec. 21, T.29N., R.32E., MDBM, Pershing Co.

Description: largest producer was the Montezuma, which with the Jersey, yielded 30,000 tons ($30–700 per ton) from 1865–75, and some additional tonnage in 1917 and 1926; gross production valued at approximately $1,000,000; Montezuma developed by 120′ inclined shaft (bottom of ore was at the 60′ level) and numerous adits and pits; reported to contain 50% Pb and Sb, and 80 oz. Ag

Geology: main ore body at Montezuma reportedly was 90′ long by 14′ thick in granodiorite; most of the veins which were mined strike NNE, dip E, and generally stringer out in hornfels; vein minerals include argentiferous bindheimite, jamesonite, plumbojarosite, scorodite, cerussite, and gypsum

Location: SE¼ Sec. 35, T.29N., R.33E., MDBM, Pershing Co.

Description: 150′ adit, raise, pits, short adits, incline shaft with two drifts; ten selected samples of veins, workings and dumps assayed 0 to 0.030 oz. Au and 0.5 to 8.5 oz. Ag with an anomalous 26.0 oz. Ag, and 0 to 0.05% Cu

Geology: quartz veins along the contacts of diorite dikes with marble and argillite; silver may occur in jamesonite; some copper staining

Conclusions: warrants further exploration

Location: *S½SW¼ Sec. 35, T.30N., R.30E., MDBM, Pershing Co.

Description: shallow shafts, short adits and pits

Geology: quartz veins in shear zones in slate

Location: *NW¼NE¼ Sec. 3, T.30N., R.32E., MDBM, Pershing Co.

Description: extent of workings unknown, but small

Geology: small quartz veins reported to contain bindheimite

Location: $S\frac{1}{2}S\frac{1}{2}$ Sec. 3, T.30N., R.32E., MDBM, Pershing Co.

Description: selected sample of vein quartz assayed 0.02 oz. Au and 4.0 oz. Ag, no Pb, and 2.23% Cu; small pit

Geology: bindheimite in quartz fissure veins in granodiorite

Conclusions: shows limited promise

Location: * $SE\frac{1}{4}NE\frac{1}{4}$, $NE\frac{1}{4}SE\frac{1}{4}$, and $NE\frac{1}{4}SW\frac{1}{4}$ Sec. 19, T.31N., R.32E., MDBM, Pershing Co.

Descriptions: several carloads shipped between 1885 and 1920's; mined from shafts, adits, open cuts, and trenches

Geology: quartz-fissure veins in granodiorite; veins carry argentiferous galena and arsenopyrite

Location: $SE\frac{1}{4}$ Sec. 31, T.31N., R.32E., MDBM, Pershing Co.

Description: two short shafts, two short adits, several pits, and an open cut terminating in short adits at either end; vein material assayed traces of Ag and Au

Geology: bindheimite in quartz veins and stringers in slate and quartzite

Conclusions: shows little promise

Name: Majuba Hill

Location: *Sec. 2, T.32N., R.31E., MDBM, Pershing Co.
(See under METALLICS, Copper)

Name: Superior

Location: *$S\frac{1}{2}NW\frac{1}{4}SE\frac{1}{4}$ Sec. 25, T.33N., R.30E., MDBM, Pershing Co.

Description: 350′ shaft, a long adit, and several drifts and crosscuts; 75,000 tons ($14.00 per ton) of Ag-Au-Pb with minor amounts of Zn and Cu reported blocked out in 1934

Geology: lode along shear zone in slate and quartzite

Name: Noble

Location: *$NE\frac{1}{4}NE\frac{1}{4}$ Sec. 26, T.33N., R.30E., MDBM, Pershing Co.

Description: $5,000 in silver reported produced prior to 1904 from two shafts and a drift; nine tons valued at $890 in Ag and Pb reported shipped later from one of the shafts

Geology: 4′ quartz vein along shear zone in slate and quartzite

Location: $NE\frac{1}{4}$ Sec. 3, T.33N., R.31E., MDBM, Pershing Co.

Description: few pits; selected sample assayed 0.07 oz. Au, 1.25 oz. Ag, and 1.33% Cu

Geology: thin quartz stringers in granodiorite and hornfels

Conclusions: shows little promise

Location: *$S\frac{1}{2}NE\frac{1}{4}$ Sec. 11, T.33N., R.33E., MDBM, Pershing Co.

Description: two short adits and numerous pits

Geology: quartz veins and limonitic silica boxworks along shear zones in sericitized and pyritized granodiorite

Location: *E½NW¼ Sec. 13, T.33N., R.33E., MDBM, Pershing Co.

Description: several pits and shallow shafts

Geology: quartz veins associated with sericitized granodiorite dikes and sills in altered hornfels and quartzite; quartz carries tetrahedrite, pyrite, jamesonite, chalcopyrite, and small amounts of malachite, azurite, limonite, and tripuhyite; veins pinch and swell from 2–6″

Location: *SE¼SE¼ Sec. 6, T.33N., R.34E., MDBM, Pershing Co.

Description: drift and several pits

Geology: quartz vein 1.5′ wide in hornfels; exposed for 30′ along strike; quartz carries silver and is stained by antimony oxide

Location: *NE¼ Sec. 8, T.33N., R.34E., MDBM, Pershing Co.

Description: several pits

Geology: quartz veins less than 6″ wide in hornfels and granodiorite; quartz carries argentiferous galena

Location: *SE¼NE¼ and NE¼SE¼ Sec. 23, T.34N., R.33E., MDBM, Pershing Co.

Description: several pits and a shallow inclined shaft

Geology: faulted and hydrothermally altered andesite porphyry

Name: Gold Eagle

Location: *Sec. 20 and NW¼SW¼ Sec. 21, T.35N., R.34E., MDBM, Humboldt Co.

Description: 600′ crosscut, an extensive system of drifts, numerous shallow shafts and pits, and several short adits

Geology: mineralized shear zone and associated quartz veins and stringers in slate and quartz diorite

Location: NW¼ Sec. 29, T.35N., R.34E., MDBM, Humboldt Co.

Description: a number of open cuts, a shaft and a short adit; selected dump sample assayed 0.1 oz. Au and 1.4 oz. Ag

Geology: 2–6′ wide quartz vein in slate and phyllite

Conclusions: shows limited promise

Name: Blackbird

Location: *SE¼ Sec. 34, T.35N., R.34E., MDBM, Humboldt Co.

Description: production unknown, developed by a 750′ adit, an 85′ winze and five levels of crosscuts and drifts

Geology: five parallel quartz veins in slate and phyllite

Location: N½N½ Sec. 19, T.35N., R.35E., MDBM, Humboldt Co.

Description: a 60′ incline shaft, three short adits, and several shallow trenches; seven representative samples across vein assayed 0.01–0.05 oz. Au and 1.00–14.05 oz. Ag

Geology: 1½–2′ quartz vein in slate, exposed for over 200′ along strike, quartz is grayish white, has a greasy luster, and contains small amount of limonite

Conclusions: warrants further prospecting

Location: SE¼SW¼ and SW¼SE¼ Sec. 35, T.36N., R.34E., MDBM, Humboldt Co.

Description: several small prospect pits

Geology: quartz lenses to 8′ wide along shear zones in slate and quartzite near diorite

Conclusions: shows little promise

Location: NW¼ Sec. 7, T.36N., R.35E., MDBM, Humboldt Co.

Description: one small pit

Geology: contact between a small diorite dike and slate; small quartz vein in slate

Conclusions: shows little promise

Location: SE¼ Sec. 11, T.36N., R.35E., MDBM, Humboldt Co.

Description: pit; selected sample assayed 0.06 oz. Au and 0.9 oz. Ag

Geology: quartz vein in phyllite

Conclusions: shows little promise

Location: *Sec. 28, E½NW¼ Sec. 33, and Sec. 34, T.36N., R.35E., MDBM, Humboldt Co.

Description: extent of workings unknown, but small

Geology: iron-stained shear zones in phyllite

OCCURRENCES

Location: NW¼ Sec. 3, T.25N., R.26E., MDBM, Pershing Co.

Geology: nearly horizontal shear zone in granite contains disseminated pyrite, limonite and hematite; selected sample assayed a trace of Au and 0.5 oz. Ag

Conclusions: shows little promise

Location: NW¼SE¼ and SW¼NE¼ Sec. 13, T.25N., R.31E., MDBM, Pershing Co.

Geology: quartz vein in marble; quartz assayed no Au, and 0.05 oz. Ag

Conclusions: shows little promise

Location: NW¼SW¼ Sec. 27, T.26N., R.26E., MDBM, Pershing Co.

Geology: shear zone along fault in granite; selected sample assayed 0.015 oz. Au and 0.5 oz. Ag

Conclusions: shows little promise

Location: SE¼NW¼ and NE¼SW¼ Sec. 13, T.28N., R.34E., MDBM, Pershing Co.

Geology: pyrite-bearing quartz stringers and disseminated pyrite within a highly altered shear zone in rhyolite (SE¼NW¼), and quartz-tourmaline vein with minor amounts of pyrite and limonite in rhyolite (NE¼SW¼); selected samples from both areas assayed a trace of Au and 0.05 oz. Ag

Conclusions: shows little promise

Location: NE¼NW¼ Sec. 1, T.33N., R.33E., MDBM, Pershing Co.

Geology: quartz vein in 12–18″ wide fault zone in phyllite; limonite associated with silica boxworks; selected sample of vein quartz assayed 0.05 oz. Au and 9.7 oz. Ag

Conclusions: shows limited promise

Location: NW¼NE¼ Sec. 1, T.33N., R.33E., MDBM, Pershing Co.

Geology: 6–12″ limonite-bearing quartz vein in fault zone in quartzite and hornfels; selected sample of vein material assayed 0.14 oz. Au and 5.3 oz. Ag

Conclusions: shows limited promise

Location: NE¼ Sec. 23, T.36N., R.34E., MDBM, Humboldt Co.

Geology: alteration zones associated with shear and fault zones in rhyolite intrusive breccia; selected sample assayed a trace of Au and 0.6 oz. Ag

Conclusions: shows little promise

TIN [Sn]

MINES AND PROSPECTS

Name: Majuba Hill

Location: *Sec. 2, T.32N., R.31E., MDBM, Pershing Co.
(See under METALLICS, Copper)

TUNGSTEN [W]

MINES AND PROSPECTS

Location: NW¼ Sec. 1, T.17N., R.22E., MDBM, Storey Co.

Description: several trenches, an inclined shaft, and a short adit

Geology: scheelite-bearing, iron-stained quartz stringers in granodiorite

Conclusions: shows little promise

Name: Blackhawk (*Badger*)

Location: *SE¼SW¼ Sec. 36, T.18N., R.22E., MDBM, Storey Co.

Description: reported to have been worked prior to 1916; extensive dumps; unknown production from three vertical shafts, an adit, and two pits

Geology: scheelite-bearing quartz veins in granodiorite and diorite

Location: S½SE¼ Sec. 31, T.18N., R.23E., MDBM, Lyon Co.

Description: over 60 tons mined from a vertical shaft, an inclined shaft, a trench, and several pits

Geology: scheelite-bearing quartz veins and aplite stringers in granodiorite; veins to 2′ wide

Conclusions: shows limited promise

Location: *NE¼SW¼ Sec. 13, T.20N., R.23E., MDBM, Washoe Co.

Description: short adit

Geology: disseminated scheelite in metamorphic rocks near contact with small granodiorite intrusive body

Location: NE¼ Sec. 21, T.24N., R.24E., MDBM, Washoe Co.

Description: several hundred feet of underground development

Geology: scheelite shoots in tactite 700′ long and over 15′ wide at contact of granite with marble and calcareous hornfels; shoots less than 6′ long; garnet-rich tactite contains less than 0.25% scheelite; epidote-rich tactite generally contains from 0.5–0.75% and rarely as much as 2% scheelite; granite carries some scheelite, usually less than 0.5%; local concentrations of pyrite

Conclusions: warrants additional exploration

Location: SE¼SW¼ Sec. 35, T.24N., R.24E., MDBM, Washoe Co.

Description: several shallow prospect pits and trenches

Geology: less than 0.25% scheelite in small tactite zone along granodiorite-metamorphic rock

Conclusions: shows little promise

Location: NW¼ Sec. 23, T.25N., R.24E., MDBM, Pershing Co.

Description: pit

Geology: scheelite in tactite along marble-granodiorite contact

Conclusions: shows little promise

Name: Nightingale

Location: *E½E½ Sec. 25, T.25N., R.24E., MDBM, Churchill Co.

Description: 12,000 tons of 1% WO_3 produced in 1925, continued production of unknown quantity 1917–57; workings include three adits, a vertical shaft, and a number of open cuts

Geology: scheelite in tactite zone between marble and granodiorite

Name: Jay Bird

Location: *NW¼ Sec. 31, T.25N., R.25E., MDBM, Washoe Co.

Description: several shafts and adits

Geology: scheelite in tactite near marble-granodiorite contact

Location: *SW¼SW¼ Sec. 19 and SW¼ and W½SE¼ Sec. 21, T.25N., R.26E., MDBM, Pershing Co.

Description: trenches and underground workings

Geology: scheelite and chalcopyrite in tactite

Location: SE¼SW¼ and N½SE¼ Sec. 1, NE¼SW¼ Sec. 11, and SW¼SW¼ Sec. 35, T.25N., R.28E., MDBM, Pershing and Churchill Counties

Description: several pits and cuts expose tactite averaging less than 1% WO_3

Geology: tactite along marble-granite contact carries scheelite, garnet, wollastonite, malachite, and chalcopyrite

Conclusions: shows little promise

Location: N½S½ Sec. 21, T.25N., R.29E., MDBM, Pershing Co.

Description: open pit (40′ by 50′ by 20′ deep) and several trenches

Geology: scheelite in tactite zone along marble-granodiorite contact

Conclusions: shows limited promise

Location: SW¼SW¼ Sec. 23, T.25N., R.29E., MDBM, Pershing Co.

Description: two shallow shafts

Geology: scheelite in tactite zone along marble-granodiorite contact

Conclusions: shows little promise

Location: SE¼SE¼ Sec. 29, T.25N., R.29E., MDBM, Pershing Co.

Description: several short adits and a number of trenches

Geology: scheelite in tactite along marble-granodiorite contact

Conclusions: shows limited promise

Location: N½ Sec. 33, T.25N., R.29E., MDBM, Churchill Co.

Description: several vertical shafts

Geology: scheelite in tactite along marble-granodiorite contact

Conclusions: shows limited promise

Location: SW¼ Sec. 35, T.25N., R.29E., MDBM, Churchill Co.

Description: several trenches

Geology: scheelite disseminated in tactite along marble-granodiorite contact

Conclusions: shows little promise

Location: *N½SE¼ Sec. 36, T.26N., R.28E., MDBM, Pershing Co.

Description: two surface cuts and a 10′ adit

Geology: scheelite in tactite 10′ by 60′ along marble-granodiorite contact, scheelite content about 1%

Location: *W½SE¼SE¼ Sec. 23, T.26N., R.30E., MDBM, Pershing Co.

Description: trench and two short adits

Geology: disseminated scheelite in slate, argillite, and quartzite near contact with granodiorite

Name: Longlease (*Chalmers and Bedford*)

Location: *NE¼ Sec. 33, T.26N., R.32E., MDBM, Pershing Co.

Description: 30,000 tons averaging 0.5% WO_3 produced since 1917; workings include an adit, a shaft, several drifts, numerous stopes, and pits

Geology: scheelite in tactite zone along marble-granite contact; scheelite associated with magnetite and molybdenite; tactite assayed 0.3–1.3% WO_3

Location: near center and $E\frac{1}{2}NE\frac{1}{4}$ Sec. 19, T.34N., R.32E., MDBM, Pershing Co.

Description: pit and a 10′ inclined shaft

Geology: traces of scheelite in gray-green, porphyritic, siliceous sill in slate and hornfels

Conclusions: shows little promise

Name: Nevada-Massachusetts

Location: *$S\frac{1}{2}$ Sec. 26, $SE\frac{1}{4}$ Sec. 27, $NE\frac{1}{4}$ Sec. 34, and $W\frac{1}{2}$ Sec. 35, T.34N., R.34E., MDBM, Pershing Co.

Description: 1,150,000 tons averaging about 0.875% WO_3 produced from an extensive underground mine between 1917 and 1942; large production from 1943–58 from six large open pits; adjacent properties explored by numerous pits, trenches, and adits

Geology: scheelite with local powellite (calcium molybdate and tungstate) disseminated in altered, recrystallized limestone beds intercalated in relatively impermeable hornfels; associated with quartz and skarn minerals; tungsten-bearing fluids probably originated in the deep portions of a solidifying granodiorite stock; scheelite crystals in quartz veins occur locally in the granodiorite

OCCURRENCES

Location: $SW\frac{1}{4}$ Sec. 27, T.25N., R.28E., MDBM, Pershing Co.

Description: 40′ of marble with a little scheelite (0.17% WO_3) encountered in drill hole (see METALLICS, Iron)

Geology: scheelite in marble associated with diorite intrusives

Conclusions: shows limited promise

Location: $SE\frac{1}{4}SE\frac{1}{4}$ Sec. 17, T.34N., R.34E., MDBM, Pershing Co.

Geology: minor quantities of scheelite in siliceous sill in phyllite; sill trends toward Tungsten-Lead mine in the $SW\frac{1}{4}$ Sec. 16 which produced 35 tons of 1.06–1.68% WO_3

Conclusions: shows little promise

Location: $NW\frac{1}{4}$ Sec. 25, T.34N., R.34E., MDBM, Pershing Co.

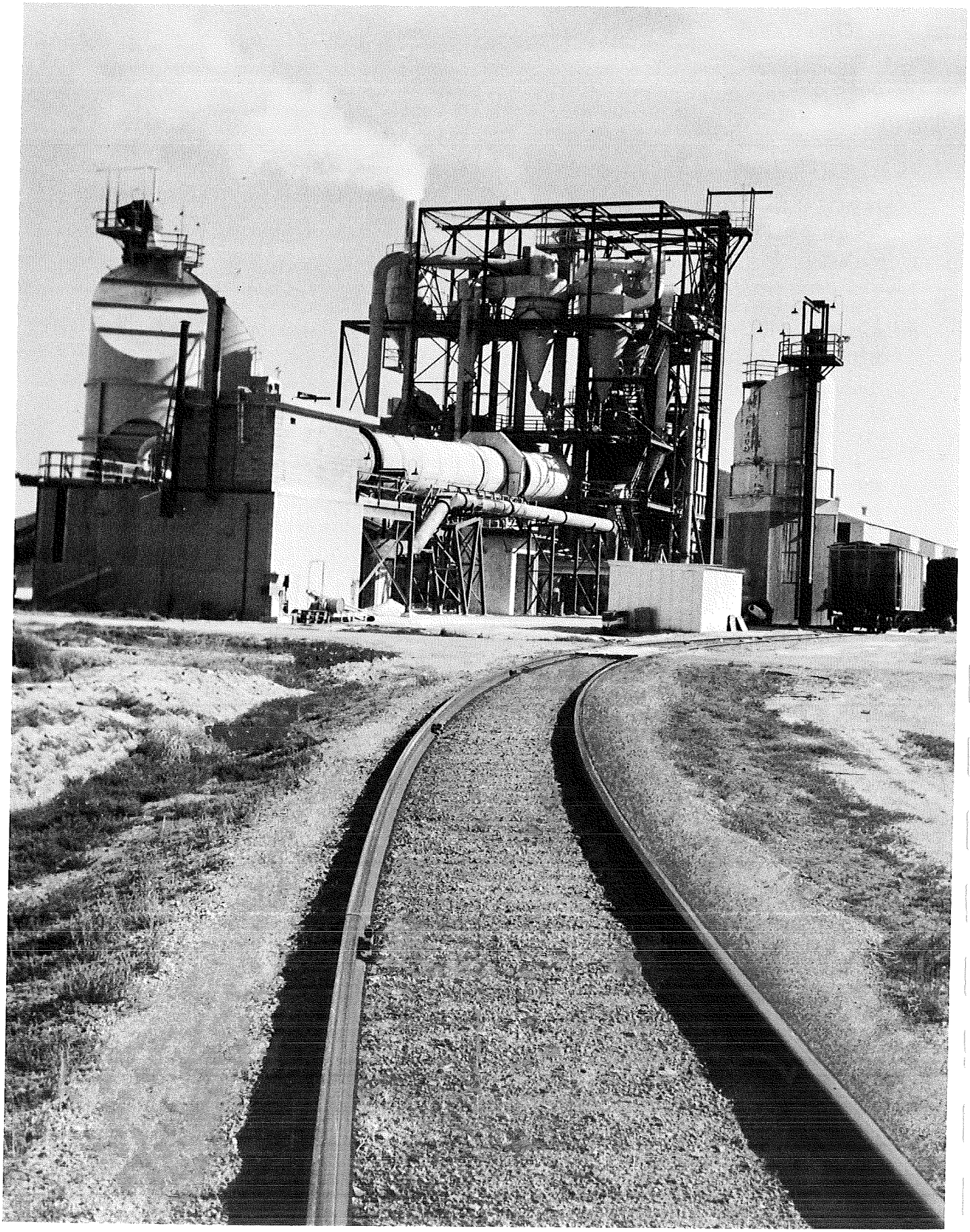
Geology: a 10″ tactite width contains a few crystals of scheelite

Conclusions: shows little promise

TRENDS

Location: $N\frac{1}{2}$ Sec. 23, T.34N., R.34E., MDBM, Pershing Co.

Geology: on strike with several scheelite-bearing marble beds exposed in the $S\frac{1}{2}$ of this section



Eagle-Picher Company's diatomaceous earth mill at Colado, six miles northeast of Lovelock. Served by Southern Pacific.

Industrial Rocks and Minerals

Industrial rocks and minerals generally occur in deposits[1] of large volume and are of relatively low unit value. Most of these deposits are easily mined by open-pit methods. Many new uses are being developed for some of these materials, and consumption for conventional uses[2] increases with population and industrial growth. Because deposits of many of these commodities are widespread, proximity to market is a most important factor.

Southern Pacific is able to offer a wide range of industrial rock and mineral deposits, of which the following are considered most promising in the PART I area:

BROKEN STONE:

E½ Sec. 17, T.20N., R.20E., MDBM, Washoe Co.

CLAYS:

Secs. 17 and 33, T.28N., R.33E., MDBM, Pershing Co.
Carson and Humboldt Sinks; Humboldt, Antelope, and Buena Vista Valleys; Churchill, Pershing, and Humboldt Counties

DECOMPOSED GRANITE:

N½ and SE¼ Sec. 9, T.20N., R.20E., MDBM, Washoe Co.
Secs. 21 and 33, T.21N., R.20E., MDBM, Washoe Co.
E½ and SW¼ Sec. 19, T.27N., R.31E., MDBM, Pershing Co.

DECORATIVE AND DIMENSION STONE:

S½ and NE¼ Sec. 3, T.21N., R.26E., Sec. 19, T.22N., R.28E., Sec. 35, T.23N., R.28E., and Sec. 19, T.23N., R.29E., MDBM, Churchill Co.

DIATOMITE:

Sec. 15, T.20N., R.26E., MDBM, Churchill Co.
Sec. 21, T.20N., R.26E., MDBM, Churchill Co.
S½ Sec. 1, Secs. 3, 9, and NW¼ Sec. 23, T.21N., R.27E., MDBM, Churchill Co.
E½ Sec. 1 and N½ Sec. 15, T.22N., R.26E., MDBM, Churchill Co.

[1]Deposits at locations indicated by * are not owned by Southern Pacific.
[2]Information regarding conventional uses for many commodities was abstracted from:
Wright, L. A., ed., 1957, Mineral commodities of California: Calif. Div. Mines Bull. 176, 736 p.
Bates, R. L., 1960, Geology of industrial rocks and minerals, Harper & Bros., New York.
U. S. Bur. Mines, 1960, Mineral facts and problems (Bull. 585), 1016 p.

$N\frac{1}{2}$ and $N\frac{1}{2}SW\frac{1}{4}$ Sec. 7, T.22N., R.27E., MDBM, Churchill Co.
$SE\frac{1}{4}$ Sec. 1, Sec. 11, $S\frac{1}{2}SE\frac{1}{4}$ and $NE\frac{1}{4}SE\frac{1}{4}$ Sec. 15, $SE\frac{1}{4}$ and $SE\frac{1}{4}NE\frac{1}{4}$ Sec. 21, $NE\frac{1}{4}NE\frac{1}{4}$, $S\frac{1}{2}NE\frac{1}{4}$, $SE\frac{1}{4}NW\frac{1}{4}$, and $S\frac{1}{2}$ Sec. 29, T.23N., R.27E., MDBM, Churchill Co.
$SW\frac{1}{4}$ and $S\frac{1}{2}NW\frac{1}{4}$ Sec. 33, T.23N., R.27E., MDBM, Churchill Co.
Secs. 17 and 19, T.24N., R.26E., MDBM, Churchill Co.
Secs. 11, 13, and 15, T.27N., R.28E., MDBM, Pershing Co.
Sec. 25, T.28N., R.28E., MDBM, Pershing Co.
$E\frac{1}{2}$ Sec. 13, T.28N., R.28E., and $SW\frac{1}{4}$ Sec. 17, $W\frac{1}{2}$ Sec. 19, and $N\frac{1}{2}$ Sec. 31, T.28N., R.29E., MDBM, Pershing Co.
$E\frac{1}{2}$ Sec. 7, T.28N., R.29E., MDBM, Pershing Co.
$SE\frac{1}{4}$ Sec. 25, T.29N., R.28E., MDBM, Pershing Co.
Secs. 29 and 31, and $W\frac{1}{2}$ Sec. 33, T.29N., R.29E., MDBM, Pershing Co.

LIMESTONE:

Secs. 23 and 27, T.22N., R.27E., MDBM, Churchill Co.
$NE\frac{1}{4}$ Sec. 21, T.27N., R.34E., MDBM, Pershing Co.
$W\frac{1}{2}SW\frac{1}{4}$ and $NE\frac{1}{4}SW\frac{1}{4}$ Sec. 9, and Secs. 17 and 21, T.28N., R.33E., MDBM, Pershing Co.
$NW\frac{1}{4}$, $E\frac{1}{2}NE\frac{1}{4}$ and $NW\frac{1}{4}SE\frac{1}{4}$ Sec. 13, T.28N., R.33E., MDBM, Pershing Co.

PERLITE:

Sec. 9, $E\frac{1}{2}$ Sec. 15, and $NE\frac{1}{4}$ Sec. 23, T.28N., R.30E., MDBM, Pershing Co.
Sec. 3 and $E\frac{1}{2}$ and $NW\frac{1}{4}$ Sec. 11, T.30N., R.30E., MDBM, Pershing Co.
$W\frac{1}{2}$ Sec. 11 and Sec. 35, T.31N., R.30E., MDBM, Pershing Co.

PUMICE AND PUMICITE:

$SE\frac{1}{4}$ Sec. 21 and $NW\frac{1}{4}$ Sec. 27, T.21N., R.27E., MDBM, Churchill Co.
Secs. 5, 7, and 17, T.27N., R.30E., MDBM, Pershing Co.

QUARTZ:

$N\frac{1}{2}NE\frac{1}{4}$ Sec. 21, T.24N., R.24E., MDBM, Washoe Co.

SALT:

Secs. 9 and 17, T.21N., R.28E., MDBM, Churchill Co.
$N\frac{1}{2}$ Sec. 5, T.23N., R.31E., MDBM, Churchill Co.
Secs. 3, 5, 7, 9, 17, 19, 21, 23, 27, 29, 31, and 33, T.23N., R.32E., MDBM, Churchill Co.
Secs. 9 and 17, T.24N., R.30E., MDBM, Churchill Co.

SAND AND GRAVEL:

Only those deposits which are favorably located with respect to present railroads and highways are listed. These include deposits at seventeen Company-owned locations; eight have yielded sand and gravel. See pages 54–57.

ANDALUSITE AND DUMORTIERITE

These minerals have been used in the manufacture of refractory products, which are materials of high melting point, low thermal expansion, and chemical inertness. Synthetic materials have largely supplanted them.

MINES AND PROSPECTS

Name: Champion

*Location:** S½ Sec. 36, T.29N., R.33E., MDBM, Pershing Co.

Description: 2500 tons of dumortierite ore produced prior to 1935 from a 600′ adit and several open cuts; no longer active

Geology: dumortierite, andalusite, quartz, and sericite as magmatic replacements in tuff beds in rhyolite-trachyte

OCCURRENCES

Location: SW¼NE¼ Sec. 1, T.28N., R.33E., MDBM, Pershing Co.

Geology: dumortierite, andalusite, quartz, and sericite as lenses, irregular masses and stringers in a 20–25′ thick altered tuff bed in rhyolite-trachyte; large quantities of rock contain small amounts of dumortierite; may be in same beds as at Champion

Conclusions: shows little promise

*Location:** E½ Sec. 18, T.28N., R.34E., MDBM, Pershing Co.

Geology: lenses, veins, and stringers of dumortierite, quartz, sericite, and andalusite (?) as replacement deposits in tuffaceous portions of a rhyolite-trachyte unit; large quantities of rock contain small amounts of dumortierite

BROKEN STONE

Broken stone is used as aggregate, fill, and aggregate base material, poultry grit, railroad ballast, riprap, roofing granules, and in a host of minor uses. Broken stone is most valuable when located near a potential market because such material is normally used in large quantities and is of low unit cost.

Numerous unlisted rock deposits occur near the Southern Pacific rail lines; many may be suitable for specialized uses.

OCCURRENCES

Location: E½ Sec. 17, T.20N., R.20E., MDBM, Washoe Co., two miles from Reno

Geology: hornblende andesite, deeply weathered, resulting in a thick deposit of loose rock fragments

Conclusions: apparently commercial reserves; favorably located

CLAYS

The intermountain valleys of northern Nevada contain large quantities of impure silty clay deposited by Pleistocene Lake Lahontan. Smaller deposits of purer clays occur in Tertiary rocks in the mountain ranges. Clays are used in the manufacture of structural clay products (clay pipe, tile, and bricks); in ceramics; as fillers, coatings, and extenders in the manufacture of paper, paint, and linoleum; as adsorbents; inert carriers for insecticides and fungi-

cides; lightweight aggregate; sealers in dams, reservoirs and irrigation ditches; and numerous lesser uses. Most of the clays in this area would be best suited for the manufacture of structural clay products or, those that exhibit swelling characteristics, as sealers.

MINES AND PROSPECTS

Location: NE¼NE¼ Sec. 7, and Sec. 9, T.27N., R.33E., MDBM, Pershing Co.

Description: several pits

Geology: gritty clay associated with altered tuff beds; montmorillonite (bentonite) of small swelling capacity

Conclusions: shows little promise

*Location:** Sec. 8, T.27N., R.33E., MDBM, Pershing Co.

Description: several pits

Geology: gritty clay associated with altered tuff beds; montmorillonite (bentonite)

OCCURRENCES

Location: SW¼SW¼ Sec. 27 and Sec. 33, T.26N., R.29E., MDBM, Pershing Co., about 4.5 miles from rail point of Toulon

Geology: impure silty clay bed containing non-uniform, impure, montmorillonite (bentonite) formed by alteration of volcanic ash; bed extends into Sec. 33 and has a strike length of about one mile; covered by thin talus

Conclusions: shows limited promise

*Location:** Sec. 2, T.27N., R.32E., MDBM, Pershing Co.

Geology: hydrothermally altered silicic tuff containing halloysite (?); as irregular masses 15–20′ thick over a distance of about 1200′

Location: NW¼NE¼ Sec. 11, T.27N., R.32E., MDBM, Pershing Co.

Geology: hydrothermally altered silicic tuff containing halloysite (?)

Conclusions: shows little promise

Location: Secs. 17 and 33, T.28N., R.33E., MDBM, Pershing Co.

Geology: impure silty clay bed in lower portion of volcanic rock sequence; largely montmorillonite (bentonite) which swells to about four times its volume when saturated with water; derived from alteration of volcanic ash

Conclusions: usable as sealer in irrigation ditches and reservoirs in Lovelock area

Location: W½ Sec. 33, T.30N., R.32E., MDBM, Pershing Co.

Geology: non-swelling clay in altered tuff bed

Conclusions: shows little promise

Location: Southern Pacific lands within Carson and Humboldt Sinks; Humboldt, Antelope, and Buena Vista Valleys

Description: analyses of clay samples from the following townships are on file:
Twp. 23N., Rges. 31 and 33E., MDBM, Churchill Co.

Twp. 24N., Rges. 30, 31, 32, and 33E., MDBM, Churchill Co.
Twp. 25N., Rge. 29E., MDBM, Churchill and Pershing Counties
Twp. 35N., Rges. 32 and 35E., MDBM, Humboldt Co.
Twp. 36N., Rge. 32E., MDBM, Humboldt Co.

Geology: clay and silt deposited in Pleistocene Lake Lahontan; material identified includes montmorillonite, hydrous micas, chlorite, quartz, feldspar, calcite, and glass (volcanic)

Conclusions: usable for common structural clay products

DECOMPOSED GRANITE

Decomposed granite (gruss) is used as subgrade, roadbed, and fill material and in smaller quantities as poultry grit.

OCCURRENCES

Location: N½ and SE¼ Sec. 9, T.20N., R.20E., MDBM, Washoe Co., about 3 miles from Sparks

Geology: decomposed granite which has formed a coarse gruss

Conclusions: usable in construction as subgrade, road base, or fill material

Location: Secs. 21 and 33, T.21N., R.20E., MDBM, Washoe Co., 4 to 6 miles from Sparks

Geology: decomposed granite; locally mixed with fan deposits of similar composition

Conclusions: usable in construction as subgrade, road base, or fill material

Location: E½ and SW¼ Sec. 19, T.27N., R.31E., MDBM, Pershing Co., 3 miles from Lovelock

Geology: decomposed granite

Conclusions: usable in construction as subgrade, road base, or fill material

DECORATIVE AND DIMENSION STONE

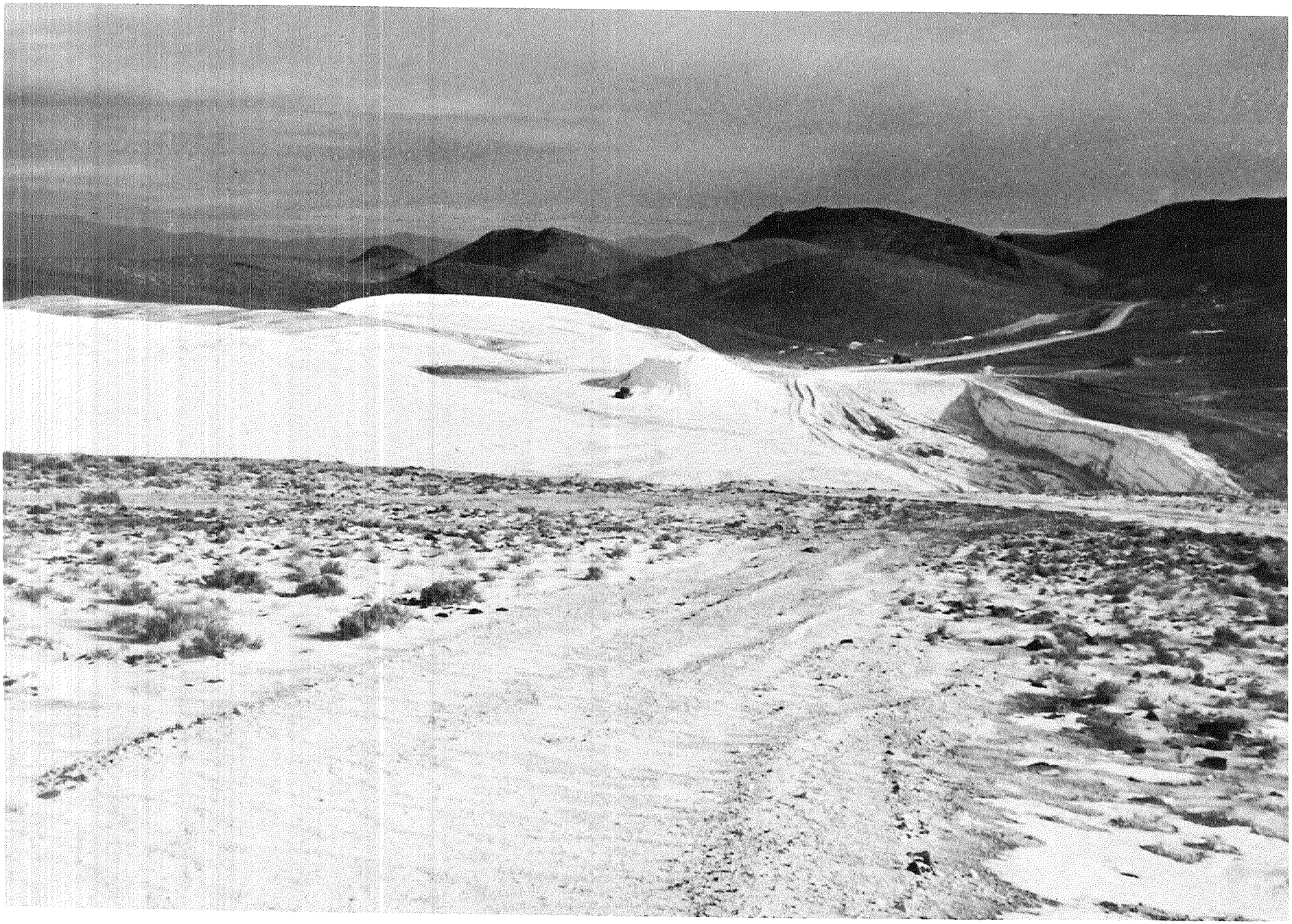
Dimension stone is used as building stone, monumental stone, paving stone, curbing, and flagging. A growing market exists for the use of stone as decorative material in gardens, patios, building lobbies and the like.

MINES AND PROSPECTS

Location: S½ and NE¼ Sec. 3, T.21N., R.26E., Sec. 19, T.22N., R.28E., Sec. 35, T.23N., R.28E., and Sec. 19, T.23N., R.29E., MDBM, Churchill Co.

Description: mined for sale as decorative stone in landscape gardening; similar stone with smaller cavities is used as facing in the Reno-Sparks area

Geology: highly vesicular and scoriaceous basalt, with numerous 6–24″ cavities; dark brown to black



Diatomite mine operated by Eagle-Picher Company on Southern Pacific's Sec. 25, T.28N., R.28E., MDBM. Pershing Co.

Conclusions: source of commercial decorative and dimension stone

Location: Sec. 29, T.24N., R.28E., MDBM, Churchill Co.

Geology: latite flows

Conclusions: source of landscape stone

DIATOMITE

Diatomite is used as a filter aid (over 50% of total output); filler in paper, molded plastics and synthetic rubber manufacture; flat-finish paint extender; heat insulator; carrier of insecticides; anti-caking agent in fertilizers; pozzolanic admixture in cement; in roofing, siding and plaster manufacture; and as a mild abrasive.

From southwest of Hazen to north of Lovelock, a distance of about 60 miles, diatomite of variable quality occurs in irregular thicknesses in lake deposits of Pliocene age. Numerous deposits crop out in this area, and covered deposits of diatomite might also be expected between outcrops. The quality of the diatomite in these deposits varies greatly over short distances, both laterally and vertically. For this reason, evaluation of a given deposit can be made only after adequate sampling and testing.

MINES AND PROSPECTS

Location: Sec. 15, T.20N., R.26E., MDBM, Churchill Co.

Description: many trenches

Geology: large quantities of diatomite interbedded with thin pumice and tuffaceous sandstone

Conclusions: potential source of commercial diatomite

Location: S½ Sec. 1, Secs. 3, 9, and NW¼ Sec. 23, T.21N., R.27E., MDBM, Churchill Co.

Description: numerous trenches

Geology: thin-bedded impure diatomite; diatomite in Secs. 1 and 23 of better quality than remainder of area

Conclusions: possibly commercial reserves

Location: *SW¼ Sec. 21 and NW¼ Sec. 28, T.23N., R.27E., MDBM, Churchill Co.

Description: 300–400′ thickness of diatomite exposed in open cuts

Geology: diatomite, iron stained in part, with thin tuff interbeds

Location: *NW¼ Sec. 32, T.23N., R.27E., MDBM, Churchill Co.

Description: open cut

Geology: diatomite with minor iron staining and thin tuff interbeds

Location: SW¼ and S½NW¼ Sec. 33, T.23N., R.27E., MDBM, Churchill Co.

Description: several pits

Geology: diatomite with thin tuff interbeds

Conclusions: warrants further exploration

Location: Secs. 17 and 19, T.24N., R.26E., MDBM, Churchill Co.

Description: numerous trenches and pits; a larger pit, 90′ long by 30′ wide by about 15′ deep, in SE¼ Sec. 17

Geology: lacustrine diatomite interbedded with volcanic ash and flows

Conclusions: warrants additional exploration

Location: *Sec. 20, T.24N., R.26E., MDBM, Churchill Co.

Description: pit, 30′ in diameter and 3′ deep, in NW¼NW¼ of section

Geology: lacustrine diatomite interbedded with volcanic ash and tuff

Location: S½ Sec. 9, T.27N., R.30E., MDBM, Pershing Co.

Description: one small pit

Geology: diatomite overlain by surficial rubble and underlain by tuff

Conclusions: shows limited promise

Location: E½ Sec. 13, T.28N., R.28E., and SW¼ Sec. 17, W½ Sec. 19, and N½ Sec. 31, T.28N., R.29E., MDBM, Pershing Co.

Description: open cuts, trenches, and pits expose an average thickness of about 200′ of lake beds, one-half to two-thirds of which is diatomite; 50′ of relatively pure diatomite in Sec. 17

Geology: diatomite with thin tuff and sandstone interbeds

Conclusions: source of commercial diatomite

Location: *Sec. 24, T.28N., R.28E., MDBM, Pershing Co.

Description: unknown production from open cuts

Geology: diatomite with thin tuff, shale, and sandstone interbeds

Name: Tunnel Hill

Location: Sec. 25, T.28N., R.28E., MDBM, Pershing Co.

Description: about 25,000 tons produced to end of 1961 from two open pits; main pit is 1100′ by 700′ and to 50′ deep; developed by 60 bulldozer cuts and 42 drill holes

Geology: three diatomite beds from 4–55′ thick interbedded with tuff and sandstone within stratigraphic interval of 150′; opal is a minor impurity

Conclusions: an important source of commercial diatomite

Location: *Secs. 6, 18, and 30, T.28N., R.29E., MDBM, Pershing Co.

Description: trenches and pits in Secs. 18 and 30

Geology: lake deposits, one-half to two-thirds of which are diatomite; 200′ section in Sec. 30 is diatomite interbedded with vitric tuff, ash, sandstone, claystone and lithic tuff; individual diatomite strata are from 3–25′ thick

Location: E½ Sec. 7, T.28N., R.29E., MDBM, Pershing Co.

Description: a few trenches

Geology: diatomite interbedded with other lake deposits

Conclusions: source of filter-grade diatomite

OCCURRENCES

Location: E½ Sec. 1 and N½ Sec. 15, T.22N., R.26E., MDBM, Churchill Co.

Geology: diatomite with minor associated tuff and sandstone

Conclusions: warrants exploration

Location: *Sec. 6, T.22N., R.27E., MDBM, Churchill Co.

Geology: diatomite with thin tuff and sandstone interbeds

Location: N½ and N½SW¼ Sec. 7, T.22N., R.27E., MDBM, Churchill Co.

Geology: diatomite with thin tuff and sandstone interbeds

Conclusions: warrants exploration

Location: S½NE¼ and SE¼ Sec. 1, T.27N., R.28E., MDBM, Pershing Co.

Geology: 20–30′ thick diatomite unit with interbedded tuff and tuffaceous sandstone; thin bedded and locally pure

Conclusions: shows limited promise

Location: Sec. 7, NW¼ Sec. 17, and Secs. 29 and 33, T.28N., R.30E., MDBM, Pershing Co.

Geology: thin lenses of diatomite in a thick deposit of volcanic rocks

Conclusions: shows limited promise

Location: SE¼SE¼ Sec. 19, T.30N., R.32E., MDBM, Pershing Co.

Geology: beds of impure diatomite

Conclusions: shows little promise

TRENDS

Location: Sec. 21, T.20N., R.26E., MDBM, Churchill Co.

Geology: largely covered by surficial deposits, but on strike with diatomite beds in Secs. 15 and 16

Conclusions: warrants exploration

Location: SE¼ Sec. 1, Sec. 11, S½SE¼ and NE¼SE¼ Sec. 15, SE¼ and SE¼NE¼ Sec. 21, NE¼NE¼, S½NE¼, SE¼NW¼, and S½ Sec. 29, T. 23N., R.27E., MDBM, Churchill Co.

Geology: sparse outcrops of diatomite along strike of diatomite mined in vicinity; thin veneer of surficial deposits

Conclusions: warrants exploration

Location: Secs. 11, 13, and 15, T.27N., R.28E., MDBM, Pershing Co.

Geology: along strike of deposits in Sec. 1, T.27N., R.28E., and in T.28N., R.28 and 29E.; covered by surficial deposits

Conclusions: warrants exploration

Location: SE¼ Sec. 25, T.29N., R.28E., MDBM, Pershing Co.

Geology: along strike of deposits in T.28N., R.28E.; covered by surficial deposits

Conclusions: warrants exploration

Location: Secs. 29 and 31, and W½ Sec. 33, T.29N., R.29E., MDBM, Pershing Co.

Geology: along strike of deposits in T.28N., R.28 and 29E.; covered by surficial deposits

Conclusions: warrants exploration

Regional geologic evidence also indicates the possible presence of diatomite under surficial and valley fill deposits in:

E½ of T.25N., R.27E., MDBM, Pershing and Churchill Counties
W½ of T.25N., R.28E., MDBM, Pershing and Churchill Counties
W½E½ and E½W½ of T.26N., R.28E., MDBM, Pershing Co.
SE¼ of T.27N., R.28E., MDBM, Pershing Co.
NW¼ of T.29N., R.29E., MDBM, Pershing Co.

DOLOMITE [$CaMg(CO_3)_2$]

Dolomite is used as a refractory source with asbestos in the manufacture of thermal insulation, as a fluxing agent, a soil conditioner, in glass manufacture, as an acid neutralizer, a source of metallic magnesium, and as both dimension and crushed stone. Crushed dolomite is used as concrete aggregate, road metal, railroad ballast, for filter beds, and for a host of lesser uses.

OCCURRENCES

Location: NW¼NW¼, E½SW¼, S½SE¼, and NE¼SE¼ Sec. 5, E½NE¼, NW¼SE¼, and SW¼ Sec. 7, and Secs. 17 and 19, T.27N., R.35E., MDBM, Pershing Co.

Geology: massive dolomite beds; analyses of two samples from two of the units show 55.5–61.6% $CaCO_3$, 33.5–44.0% $MgCO_3$, 0.90–5.10% SiO_2, 0.083–0.1% Al_2O_3, and 0.30–0.486% Fe_2O_3

Conclusions: large tonnage available

Location: N½ Sec. 29, T.24N., R.24E., MDBM, Washoe Co.
(See under INDUSTRIAL ROCKS AND MINERALS, Limestone)

Location: SE¼ and E½SW¼ Sec. 1, NW¼NE¼ and S½NE¼ Sec. 11, and Secs. 15, 21, 27, and 35, T.25N., R.28E., MDBM, Pershing and Churchill Counties
(See under INDUSTRIAL ROCKS AND MINERALS, Limestone)

FLUORITE [CaF_2]

Fluorite is largely used in the manufacture of chemicals, steel, and aluminum. The data given are from Horton, R. C., 1961, An inventory of fluorspar occurrences in Nevada: Nevada Bur. Mines Rept. 1, 31 p.

MINES AND PROSPECTS

Name: Bohannan

Location: *SW¼ Sec. 16, T.27N., R.34E., MDBM, Pershing Co.

Description: numerous small open cuts and pits and 105′ of underground workings

Geology: disseminated fluorite in limestone, sandstone, and shale

Name: Fluorine Group (*Valery, Hamilton*)

Location: *W½NE¼ Sec. 24, T.31N., R.33E., MDBM, Pershing Co.

Description: extensive trenching and underground workings; 723 tons of 44% CaF_2 reportedly shipped

Geology: fluorite in fissure zone in argillaceous sedimentary rock and massive limestone beds

OCCURRENCES

Location: NW¼ Sec. 13, T.23N., R.29E., MDBM, Churchill Co.

Geology: fluorite reported as breccia fillings along outcrop 10′ wide and 150′ long

Conclusions: shows little promise

GYPSUM [$CaSO_4 \cdot 2H_2O$]

Gypsum is mainly used in the manufacture of plaster and wallboard. It is also used as an ingredient in some types of portland cement, as an insecticide carrier, a filler, and as a nutrient for growing yeast. Gypsum and gypsite (a poorly consolidated, earthy mixture of gypsum and clay or silt) are used as soil conditioners.

MINES AND PROSPECTS

Location: *W½ Sec. 27 and Sec. 28, T.27N., R.32E., MDBM, Pershing Co.

Description: intermittent production since 1891; large reserves indicated by drilling

Geology: alternating laminae of limestone and gypsum which grade in depth to anhydrite; overall gypsum-anhydrite content is about 77%

Location: NE¼NE¼ Sec. 33, T.27N., R.32E., MDBM, Pershing Co.

Description: 3000 tons of gypsite suitable for agricultural purposes; 4′ average thickness indicated

Geology: mixture of gypsum, shale, and limestone clasts with sand and silt; redeposit of material eroded from upslope areas to the northeast

Conclusions: potential value as a soil conditioner for local use

OCCURRENCES

Location: *SW¼SW¼ Sec. 35, T.27N., R.32E., MDBM, Pershing Co.

Geology: bedded gypsum and limestone; gypsum grades with depth to anhydrite

IRON-BEARING ROCKS AND MINERALS

Crushed and sized iron-bearing rock often meets the specifications for heavy aggregate which is used to make high-density concrete. Material used for this purpose should have a specific gravity of about 4.0 and must pass conventional aggregate abrasive tests.

Iron minerals are added as a chemical ingredient in low-heat cement to reduce its heat of hydration during setting. Low-heat cement is used in massive structures to minimize cracking of the structure from internal thermal stresses.

Magnetite may be used in drilling mud, and is finely ground and mixed with mercury for magnetic switches and other electronic devices. Hematite is finely ground to produce rouge which is used as a polishing agent and a pigment.

Iron-bearing rocks and minerals for the above uses are available in northern Nevada.

(see METALLICS, Iron)

LIMESTONE [$CaCO_3$]

Limestone and calcite marble are used principally in the manufacture of portland cement. They are also employed as a metallurgical fluxing agent, soil conditioner, source of lime, raw material in the manufacture of a wide range of chemicals, in the manufacture of beet sugar, and as dimension stone. Crushed limestone and marble are utilized for concrete aggregate, road metal, railroad ballast, and in filter beds. Finer fractions are used as poultry grit, in stucco, and in several other products. Marble is used as ornamental stone.

OCCURRENCES

Location: Secs. 9, 11, and 15, T.21N., R.27E., MDBM, Churchill Co.

Geology: impure, sandy, gray limestone; poor accessibility

Conclusions: shows little promise

Location: Secs. 23 and 27, T.22N., R.27E., MDBM, Churchill Co.

Geology: gray, medium- to fine-grained, thick-bedded limestone; estimated reserves of 2.5 million tons to 50′ depth in Sec. 27; additional tonnage available in other sections; seven samples from Sec. 27 analysed 91.4–97.0% $CaCO_3$, 0.84–2.11% $MgCO_3$, and 1.46–4.75% SiO_2

Conclusions: possibly commercial reserves

Location: Secs. 17 and 19, T.23N., R.27E., MDBM, Churchill Co.

Geology: a few 4–5′ interbeds in tuff; samples from Sec. 20 analysed 93.3–93.6% $CaCO_3$, 1.60–1.69% $MgCO_3$, and 3.55–3.66% SiO_2

Conclusions: shows little promise

Location: Secs. 7 and 17, T.23N., R.29E., MDBM, Churchill Co., 1.5 miles from rail point of Huxley

Geology: sandy dolomitic limestone; dark-colored, medium to thick-bedded limestone, fossiliferous limestone and marl; beds from 7–20′ thick; seven samples from Sec. 17 analysed 82.5–86.1% $CaCO_3$, 6.69–10.7% $MgCO_3$, and 2.82–6.82% SiO_2

Conclusions: shows limited promise

Location: N½ Sec. 29, T.24N., R.24E., MDBM, Washoe Co.

Geology: interbedded calcite and dolomite marble

Conclusions: not a suitable dimension stone or lime source; shows little promise

Location: Sec. 23 and NW¼NW¼ Sec. 25, T.25N., R.24E., MDBM, Pershing Co.

Geology: thin interbeds of marble in other types of metamorphosed rocks; may contain some dolomite marble; selected sample of calcite marble analysed 92.6% $CaCO_3$, 0.6% $MgCO_3$, 5.94% SiO_2, and 1.60% Fe_2O_3 + Al_2O_3

Conclusions: poor accessibility; shows little promise

Location: SE¼ and E½SW¼ Sec. 1, NW¼NE¼ and S½NE¼ Sec. 11, and Secs. 15, 21, 27, and 35, T.25N., R.28E., MDBM, Pershing and Churchill Counties

Geology: gray, coarse-grained, thin-bedded marble; largely calcite with minor amounts of dolomite marble; limited quantities available

Conclusions: shows limited promise

Location: SE¼SE¼ Sec. 31, T.25N., R.29E., MDBM, Churchill Co., about 3 miles from U. S. Hwy. 40 and 5 miles from rail point of Ocala

Geology: coarse-grained, white limestone, largely recrystallized to marble; selected samples analysed 82–96.1% $CaCO_3$, 0.38–1.3% $MgCO_3$, 3.16–13.70% SiO_2, 0.14–0.41% Fe_2O_3, and 0.15–0.63% Al_2O_3

Conclusions: shows limited promise

Location: Sec. 21, T.25N., R.32E., MDBM, Pershing Co., about 12 miles from rail point of Perth

Geology: 70′ thick limestone bed, largely recrystallized to marble; samples analysed 91.9–94.1% $CaCO_3$, 0.84–1.77% $MgCO_3$, and 4.96–5.98% SiO_2

Conclusions: shows limited promise

Location: Sec. 15, T.27N., R.32E., MDBM, Pershing Co., about 2½ miles from railroad and 5 miles from rail point of Lovelock

Geology: seven 20′ thick beds of limestone partially recrystallized to marble

Conclusions: shows limited promise

Location: NE¼ Sec. 21, T.27N., R.34E., MDBM, Pershing Co.

Geology: dark-gray, massive, thick-bedded limestone interbedded with quartzite, argillite, slate, and volcanic breccia; locally recrystallized to marble; selected samples from Sec. 21 analysed 95.8–97.0% $CaCO_3$, 0.44–1.79% $MgCO_3$, 0.74–1.60% SiO_2, 0.07–0.26% Al_2O_3, 0.20–0.38% Fe_2O_3 and not more than 0.01% S

Conclusions: large tonnage of high-calcium limestone near the Buena Vista iron deposits, easy to mine; readily accessible

Location: Secs. 17 and 19, T.27N., R.35E., MDBM, Pershing Co.

Geology: thick-bedded, massive, gray limestone; the average composition of five samples from both sections is 93.5% $CaCO_3$, 0.82% $MgCO_3$, 2.03% SiO_2, and less than 0.01% S

Conclusions: easy to mine; poor accessibility; shows limited promise

Location: W½SW¼ and NE¼SW¼ Sec. 9, and Secs. 17 and 21, T.28N., R.33E., MDBM, Pershing Co., about 3 miles from rail point of Oreana

Geology: dark gray limestone, limestone breccia, and conglomerate; average thickness of beds is 40′; selected sample from SE¼ Sec. 17 analysed 94.40% $CaCO_3$, 1.50% $MgCO_3$, 2.70% SiO_2, 0.28% Fe_2O_3 and 0.46% Al_2O_3

Conclusions: possibly commercial reserves

Location: NW¼, E½NE¼, and NW¼SE¼ Sec. 13, T.28N., R.33E., MDBM, Pershing Co., about 5 miles from rail point of Oreana

Geology: steeply dipping, thick-bedded, massive, blue-gray limestone; selected sample analysed 91.80% $CaCO_3$, 1.20% $MgCO_3$, 4.70% SiO_2, 0.22% Fe_2O_3, and 0.54% Al_2O_3

Conclusions: possibly commercial reserves

Location: S½, E½NW¼, and S½NE¼ Sec. 35, T.29N., R.33E., MDBM, Pershing Co.

Geology: blue-gray limestone, in part silicified; selected sample analysed 90.9% $CaCO_3$, 1.8% $MgCO_3$, and 7.91% SiO_2

Conclusions: shows limited promise

Location: Secs. 3, 5, and 9, T.31N., R.34E., MDBM, Pershing Co., 5 miles south of rail point of Imlay

Geology: blue-gray, fine to coarse-grained limestone with interbedded sandstone and shale; two selected samples from Sec. 5 analysed 69% and 92% $CaCO_3$, 2.6% and 1.2% $MgCO_3$, 20.94% and 6.20% SiO_2, respectively; large quantities available

Conclusions: poor accessibility; shows limited promise

Location: SW¼ Sec. 33, T.32N., R.34E., MDBM, Pershing Co., 4½ miles south of rail point of Imlay

Geology: blue-gray, fine to coarse-grained limestone, interbedded with sandstone lenses and intruded by diabase dikes; selected sample analysed 90.6% $CaCO_3$, 2.0% $MgCO_3$, and 6.98% SiO_2

Conclusions: shows limited promise

Location: S½ Sec. 11, Sec. 15, E½ Sec. 21, and W½NW¼ Sec. 33, T.34N., R.34E., MDBM, Pershing Co.

Geology: white marble unit several hundred feet long and 15′ thick in Sec. 11; a belt of partially recrystallized limestone about 1,500′ wide in Sec. 15; similar material about 1,000′ wide across Sec. 21; most of the marble and limestone in this township contains large amounts of interbedded slate

Conclusions: shows limited promise

PERLITE

Expanded perlite is used largely as plaster aggregate, as a lightweight aggregate in concrete; and for a number of minor uses which include loose-fill insulation, filtration, soil conditioning, as a paint filler, and inert packing material.

MINES AND PROSPECTS

Location: *SE¼ Sec. 16, T.27N., R.33E., MDBM, Pershing Co.

Description: few trenches

Geology: small, irregular, bluish-gray, perlitic masses associated with silicic volcanic flows; maximum thickness of 15′

Location: *NW¼ and W½NE¼ Sec. 19, T.28N., R.31E., MDBM, Pershing Co.

Description: sufficient tonnage is quarried and stockpiled during summer to feed mill throughout winter

Geology: perlite in rhyolite lavas

OCCURRENCES

Location: N½N½ Sec. 15, T.25N., R.28E., MDBM, Pershing Co.

Geology: dark gray perlite associated with dark red, porphyritic rhyolite

Conclusions: shows little promise

Location: *SW¼ Sec. 26, and SE¼SE¼ Sec. 27, T.25N., R.34E., MDBM, Pershing Co.

Geology: perlite associated with silicic volcanic rocks

Location: SW¼ Sec. 11, T.26N., R.28E., MDBM, Pershing Co.

Geology: black, perlitic rhyolite flow 15–20′ thick, contains white feldspar phenocrysts

Conclusions: shows little promise

Location: *SE¼SW¼ and SW¼SE¼ Sec. 16, T.26N., R.29E., MDBM, Pershing Co.

Geology: perlite in lavas

Location: SW¼NE¼ Sec. 15, T.26N., R.30E., MDBM, Pershing Co.

Geology: perlite contains 10–15% feldspar phenocrysts; associated with and locally overlain by rhyolite

Conclusions: shows little promise

Location: Sec. 33, T.27N., R.29E., MDBM, Pershing Co.

Geology: nine outcrops of one perlite unit 10–50′ thick; gray to black, dull to vitreous material containing obsidian lenses; overlain by rhyolite tuff and underlain by rhyolite; three samples tested, two required high temperatures before expanding, and one expanded readily

Conclusions: shows limited promise

Location: Secs. 13 and 25, T.28N., R.29E., MDBM, Pershing Co.

Geology: perlite in rhyolite lava; individual masses are small and of poor quality

Conclusions: shows little promise

Location: Secs. 3 and 5, T.28N., R.30E., MDBM, Pershing Co.

Geology: perlite associated with rhyolite plug domes and flows; some material of commercial grade

Conclusions: shows limited promise

Location: Sec. 9, T.28N., R.30E., MDBM, Pershing Co.

Geology: two large perlite masses in rhyolite plug dome; northernmost body is 1200′ by 400′ with a minimum thickness of 40′; at least half of mass appears to be good quality perlite; southernmost body is a 30–40′ bed of good quality perlite

Conclusions: potentially commercial source of perlite

Location: *SE¼ Sec. 14, T.28N., R.30E., MDBM, Pershing Co., 8 miles from rail point of Lovelock

Geology: perlite associated with rhyolite plug domes

Location: E½ Sec. 15, T.28N., R.30E., MDBM, Pershing Co., 9 miles from rail point of Lovelock

Geology: perlite associated with plug dome; relatively free of phenocrysts or other impurities; outcrop is 450′ by 1200′; expansion ratio of 10.4; meets all specifications for lightweight aggregate and plaster; very little overburden

Conclusions: excellent source of perlite

Location: NE¼ Sec. 23, T.28N., R.30E., MDBM, Pershing Co., 8 miles from rail point of Lovelock

Geology: perlite associated with rhyolite plug domes; three bodies form a zone 2500′ long and up to 1400′ wide, one-half to two-thirds of which is perlite; expansion ratio of 10.5; meets all specifications for lightweight aggregate and plaster; very little overburden

Conclusions: excellent source of perlite

Location: *Sec. 2, T.30N., R.30E., MDBM, Pershing Co.

Geology: perlite in rhyolitic flow and plug dome sequence

Location: Sec. 3, and E½ and NW¼ Sec. 11, T.30N., R.30E., MDBM, Pershing Co.

Geology: extensive perlite deposits in rhyolitic flow and plug-dome sequence; perlite ranges up to 100′ thick and grades into rhyolite

Conclusions: potentially commercial perlite source

Location: W½ Sec. 11, T.31N., R.30E., MDBM, Pershing Co.

Geology: large perlite masses in rhyolite flow and plug-dome sequence; eight samples tested and all proved suitable for use as plaster aggregate and to a lesser degree as concrete aggregate; deposits estimated to contain over one million tons of perlite; no overburden

Conclusions: source of commercial-quality perlite

Location: Sec. 35, T.31N., R.30E., MDBM, Pershing Co.

Geology: large perlite masses in rhyolite flow and plug-dome sequence; two samples tested proved to be of commercial quality; estimated to contain about 250,000 tons of perlite

Conclusions: source of commercial-quality perlite

Location: *NW¼ Sec. 36, T.32N., R.29E., MDBM, Pershing Co.

Geology: perlite interlayered with rhyolite porphyry and breccia

Location: Secs. 17, 19, and 29, T.32N., R.30E., MDBM, Pershing Co.

Geology: numerous small perlite masses in rhyolite lava

Conclusions: shows limited promise

PUMICE, PUMICITE, TUFF, AND VOLCANIC CINDERS

Some of these industrial rocks are used in large part as lightweight aggregate and others in acoustical plaster, insulation, as filter aids, soil conditioners, fine abrasives, fillers, insecticide carriers, in pozzolan cement, and as macadam highway dressing.

MINES AND PROSPECTS

Location: SE¼ Sec. 21 and NW¼ Sec. 27, T.21N., R.27E., MDBM, Churchill Co.

Description: about 10,000 cu. yds. of pumice mined from two pits in NW¼NW¼ Sec. 27; used in manufacture of lightweight concrete blocks

Geology: white to grayish-white pumice veneered by terrace gravel

Conclusions: substantial reserves of pumice

Location: *SW¼ Sec. 22, and NE¼ Sec. 28, T.21N., R.27E., MDBM, Churchill Co.

Description: some production from Sec. 22

Geology: pumice veneered by terrace gravel

OCCURRENCES

Location: Secs. 17 and 35, T.22N., R.27E., MDBM, Churchill Co.

Geology: volcanic ash beds to 20′ thick, but generally 2–5′

Conclusions: shows limited promise

Location: Sec. 27, T.25N., R.32E., MDBM, Pershing Co.

Geology: pumicite in pyroclastic rocks

Conclusions: shows little promise

Location: *SW¼ Sec. 26, T.25N., R.34E., MDBM, Pershing Co.

Geology: pumicite

Location: Secs. 13, 23, 27, and 33, T.26N., R.29E., MDBM, Pershing Co.

Geology: pumiceous tuff in volcanic rocks

Conclusions: shows limited promise

Location: NW¼SW¼ Sec. 33, T.26N., R.34E., MDBM, Pershing Co.

Geology: pumicite; relatively clean, powdery, pumiceous volcanic glass

Conclusions: shows limited promise

Location: NW¼ Sec. 35, T.27N., R.29E., MDBM, Pershing Co.

Geology: red volcanic scoria; low grade

Conclusions: poor access; shows little promise

Location: Secs. 5, 7, and 17, T.27N., R.30E., MDBM, Pershing Co., about 7 miles from Lovelock

Geology: nearly white, smooth, uniformly fine-grained volcanic ash (pumicite); maximum thickness of 10′ in Sec. 5

Conclusions: good quality material; probably suitable for abrasives or fillers

Location: NW¼ Sec. 15, T.27N., R.30E., MDBM, Pershing Co.

Geology: pumice containing many impurities

Conclusions: shows little promise

Location: SW¼ Sec. 25, T.28N., R.28E., MDBM, Pershing Co.

Geology: large mass of basaltic cinders and scoria

Conclusions: shows little promise

Location: *Secs. 34 and 36, T.28N., R.29E., MDBM, Pershing Co.

Geology: more than 100′ of relatively pure, moderately well-graded pumicite tuff with pumice tuff-breccia interbeds in Sec. 34

Location: Sec. 5, T.28N., R.30E., MDBM, Pershing Co.

Geology: large quantities of pumicite tuff and perlite-pumice tuff breccia

Conclusions: shows little promise

Location: Sec. 35, T.28N., R.32E., MDBM, Pershing Co., about 2½ miles from rail point of Colado

Geology: white rhyolitic tuff interbedded with rhyolitic and andesitic flows

Conclusions: shows limited promise; tuff might be used as plaster aggregate

Location: Secs. 3 and 11, T.30N., R.30E., MDBM, Pershing Co.

Geology: small deposits of pumice-tuff breccia

Conclusions: shows little promise

PYRITE [FeS_2]

Pyrite is used in the manufacture of sulfuric acid and as a source of sulphur.

MINES AND PROSPECTS

Name: Tule (part)

Location: *Secs. 2 and 16, T.25N., R.32E., and Sec. 34, T.26N., R.32E., MDBM, Pershing Co.

(See under METALLICS, Iron)

Name: Tule (part owned by Company)

Location: Secs. 3, T.25N., R.32E., and Sec. 35, T.26N., R.32E., MDBM, Pershing Co.
(See under METALLICS, Iron)

QUARTZ [SiO_2]

Quartz, when sufficiently pure, can be used as a silica source in the manufacture of glass, refractories, and elemental silicon.

MINES AND PROSPECTS

Location: $N\frac{1}{2}NE\frac{1}{4}$ Sec. 21, T.24N., R.24E., MDBM, Washoe Co.

Description: trenches, pits

Geology: cone-shaped outcrop of quartz with rare muscovite and iron-stained fractures; base diameter of cone about 500′, and height about 200′

Conclusions: about 1,000,000 tons of relatively pure quartz

SALT AND OTHER SALINES

These commodities, sometimes called "evaporites," are sources of boron, potassium and sodium minerals. Salt is used in the manufacture of industrial chemicals, soap and dyes; in the processing of textiles and leather; in dust and ice control, water treatment, metallurgy, and the food industry; and as a source of metallic sodium. About 95% of the potassium minerals mined in the United States is used in fertilizers. Sodium minerals are used in the manufacture of soaps, detergents, cleansers, and water softeners; with silica and lime to make glass; in non-ferrous metallurgy, pulp and paper manufacture, leather tanning, and as a photographic fixative. Boron is used in rocket fuels, gasoline, cleansing compounds, and various chemicals.

Carson and Humboldt Sinks are the lowest portions of the desiccated basin of Pleistocene Lake Lahontan and were the sites of salt deposition during the episodes of desiccation. The possibility of other saline concentrations at depth remains essentially unexplored.

Carson Sink encompasses all or parts of the following townships:

Twp. 21N., Rges. 29,30,31E., MDBM, Churchill Co.
Twp. 22N., Rges. 29,30,31,32,33E., MDBM, Churchill Co.
Twp. 23N., Rges. 29,30,31,32,33E., MDBM, Churchill Co.
Twp. 24N., Rges. 31,32,33E., MDBM, Churchill Co.
Twp. 25N., Rge. 31E., Churchill and Pershing Counties

Humboldt Sink encompasses all or parts of the following townships:

Twp. 24N., Rges. 29,30,31E., MDBM, Churchill Co.
Twp. 25N., Rges. 30,31E., MDBM, Churchill and Pershing Counties

MINES AND PROSPECTS

Name: Eagle

Location: *Secs. 27, 33, and 34, T.22N., R.26E., MDBM, Churchill Co.

Description: over 500,000 tons produced between 1870 and 1915; brine pumped from 20′ below playa surface to salt pans where water evaporated and salt crusts formed; one acre of pan produced ten tons of salt daily from June to October

Geology: salt in playa brine

OCCURRENCES

Location: Secs. 9 and 17, T.21N., R.28E., MDBM, Churchill Co.
N½ Sec. 5, T.23N., R.31E., MDBM, Churchill Co.
Secs. 3, 5, 7, 9, 17, 19, 21, 23, 27, 29, 31, and 33, T.23N., R.32E., MDBM, Churchill Co.
Secs. 9 and 17, T.24N., R.30E., MDBM, Churchill Co.

Geology: brine-bearing silty clay deposits of the Carson and Humboldt Sinks and adjacent areas

Conclusions: several million tons of salt are available from these deposits which may become commercially important when the San Francisco Bay tidal flats now used as solar evaporation pans become more valuable for other uses

SAND AND GRAVEL

Sand and gravel are used as aggregate in concrete, as base or subgrade, as railroad ballast and fill, and on unpaved roads. Sand is used in mortar, plaster, and for various specialty products. Sand and gravel are most valuable when located near a potential market because they are of low unit cost. Southern Pacific is able to offer a large number of deposits for use within the area of this report.

A few deposits which are favorably located with respect to potential markets, or which have been mined as a source of sand and gravel are listed. Descriptions of many others are on file.

MINES AND PROSPECTS

Location: *SW¼NE¼ Sec. 14, T.16N., R.21E., MDBM, Lyon Co.

Description: pit operated in 1960, to supply mortar sand and aggregate for Carson City area

Geology: beach sand

Location: *E½SE¼ Sec. 23, T.16N., R.21E., MDBM, Lyon Co.

Description: material used for construction in Carson City area

Geology: river sand and gravel

Location: NE¼SW¼ Sec. 17, T.19N., R.21E., MDBM, Washoe Co.

Description: 112,000 tons produced through 1963 from pit for construction in Reno-Sparks area

Geology: alluvial fan gravel

Conclusions: good source of aggregate adjacent Interstate Hwy. 80

Location: *NW¼ Sec. 20, T.20N., R.23E., MDBM, Storey Co.

Description: limited amount of gravel used in construction of U. S. Hwy. 40 in Truckee Canyon area

Geology: small alluvial fan deposits

Location: NW¼NW¼ Sec. 11, T.20N., R.24E., MDBM, Lyon Co.

Description: sand pit operated by Southern Pacific; deposit is about 2,200′ long by 400′ wide and 50′ thick

Geology: clean, well sorted Lake Lahontan sand

Conclusions: 2,000,000 short tons available; favorably located

Location: NW¼ Sec. 13, T.22N., R.26E., MDBM, Churchill Co.

Description: large amount of gravel used in construction and maintenance of U. S. Hwy. 40

Geology: terrace gravel

Conclusions: large quantities available; good source of aggregate or fill near Interstate Hwy. 80

Location: SW¼SW¼ Sec. 23, and N½NE¼NE¼ and NE¼NW¼NE¼ Sec. 27, T.24N., R.28E., MDBM, Churchill Co.

Description: pit in Sec. 23

Geology: terrace gravel

Conclusions: large quantities available; good source of aggregate or fill near Interstate Hwy. 80

Location: *NW¼NW¼ Sec. 26, T.26N., R.30E., MDBM, Pershing Co.

Description: estimated 28,000 cu. yds. produced from pit 250′ by 300′ with a maximum depth of 15′

Geology: alluvial fan gravels

Location: Sec. 7 and NW¼ Sec. 17, T.26N., R.31E., MDBM, Pershing Co.

Description: pit in NW¼ Sec. 17 is 500′ by 500′ by 10′ deep

Geology: terrace sand and gravel

Conclusions: large volume available near Interstate Hwy. 80

*Location:** Sec. 8 and N½SW¼ and S½NW¼ Sec. 9, T.26N., R.31E., MDBM, Pershing Co.

Description: large amount of sand and gravel produced; one pit in Secs. 8 and 9 is 3500′ long and averages 300′ wide and 20′ deep; two smaller pits in Sec. 8, one is 1000′ by 600′ and 10′ deep, the other is 400′ by 400′ and 10′ deep; large volume of sand and gravel in Sec. 9

Geology: terrace deposits

Location: NW¼ Sec. 23, T.28N., R.32E., MDBM, Pershing Co.

Description: pit

Geology: terrace gravel

Conclusions: large quantities available; good source of aggregate or fill near Interstate Hwy. 80

Location: SE¼ Sec. 32, T.30N., R.33E., MDBM, Pershing Co.

Geology: lake gravel

Conclusions: large quantities available; good source of aggregate or fill near Interstate Hwy. 80

Location: Sec. 5, T.32N., R.34E., MDBM, Pershing Co.

Geology: lake gravel and eolian sand

Conclusions: large quantities available; good source of aggregate or fill near Interstate Hwy. 80

OCCURRENCES

Location: SE¼ Sec. 7, T.20N., R.24E., MDBM, Washoe Co.

Geology: gravel bar; estimated to contain about 3,700,000 cu. yds. with gravel averaging ½–1″ in diameter

Conclusions: good source of aggregate and fill located near bridge site across Truckee River, and Interstate Hwy. 80

Location: Secs. 13, 23, and 27, T.20N., R.26E., MDBM, Churchill Co., at rail junction of Hazen

Geology: terrace deposits contain large volume of pea gravel; eolian sand present

Conclusions: good source of pea gravel

Location: Sec. 17, T.20N., R.27E., MDBM, Churchill Co., adjacent to railroad siding at Massie

Geology: dune sand, 75% SiO_2; subangular to subrounded; about 75% medium to coarse fraction

Conclusions: accessible sand source

Location: NW¼ Sec. 5, T.21N., R.26E., MDBM, Churchill Co.

Geology: alluvial fan gravel

Conclusions: good source of fill and aggregate near Interstate Hw. 80

Location: SE¼ Sec. 15, and W½ Sec. 23, T.22N., R.26E., MDBM, Churchill Co.

Geology: terrace gravel and fan deposits

Conclusions: good source of aggregate and fill; large quantities available

Location: Sec. 15, W½W½ Sec. 23, and Sec. 35, T.24N., R.29E., MDBM, Churchill Co.

Geology: sand and gravel bars; 100′ high and ½ mile wide in Sec. 15, 80′ high and ¼ mile wide in Sec. 23, and 50′ high and ½ mile wide in Sec. 35

Conclusions: good source of aggregate and fill near Interstate Hwy. 80

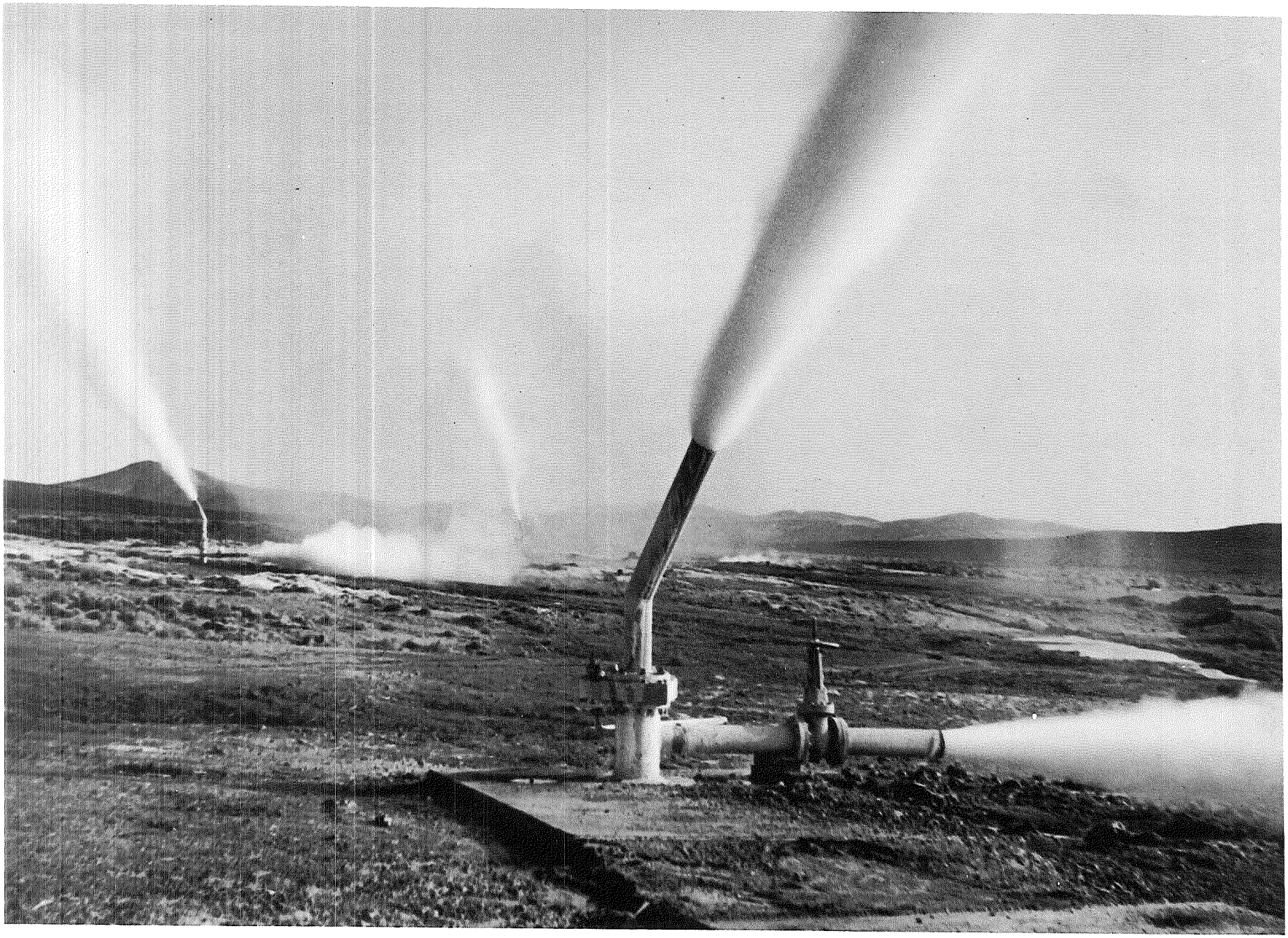
Location: W½ Sec. 7, T.25N., R.30E., MDBM, Pershing Co.

Geology: terrace gravel

Conclusions: good source of aggregate and fill near Interstate Hwy. 80

Location: N½ and SW¼ Sec. 27, and NW¼ Sec. 33, T.26N., R.30E., MDBM, Pershing Co.
Geology: alluvial fan and terrace gravel
Conclusions: good source of aggregate and fill near Interstate Hwy. 80

Location: W½SW¼ Sec. 34, T.32N., R.33E., MDBM, Pershing Co.
Geology: older alluvial fan deposits
Conclusions: good source of aggregate and fill near Interstate Hwy. 80



Steam wells drilled by Magma Power Company on Sec. 12, T.22N., R.26E., MDBM, Churchill Co.

Geothermal Resources

Steam, hot water, and associated gases rise along fractures in the earth's crust to surface locations (geothermal sites). The utilizable heat at these sites is potentially valuable as a source of energy.

For centuries, Iceland has used large volumes of natural thermal water for heating purposes. Natural steam has been used for nearly 50 years in Italy to generate electric power. In 1960, a geothermal power plant at Larderello, Italy was producing more than 300,000 kilowatts from 160 steam wells. By 1961, 125,000 kilowatts were being produced from steam wells at Wairakei, New Zealand from a geothermal field with an estimated capacity of 400,000 kilowatts. A 12,500-kilowatt geothermal power plant was placed in operation at the Geysers, Sonoma County, California in July 1960, and a second unit, completed in February 1963, increased capacity to 27,000 kilowatts.

In northern Nevada and northwestern Utah, hydroelectric sites are virtually non-existent and fossil fuels of significance have not been found. Essentially all of the electric energy consumed is either transmitted from California and Idaho or is generated from fossil fuels obtained from out-of-state sources.

A power plant utilizing natural steam is probably the most economical method known for generation of relatively modest amounts of electrical energy. Development of power from natural steam offers much promise to alleviate northern Nevada's power shortage. Exclusive of Hoover dam, Nevada's hydroelectric plants generate only 9,200 kilowatts (1962).

Several potential geothermal power sites are located within the report area, and are shown on Mineral Commodity Map I. A detailed report of the site at Brady Hot Springs in Secs. 1, 12, and 13, Twp. 22 N., Rge. 26 E., and Sec. 31, Twp. 23 N., Rge. 27 E., MDBM, Churchill County is on file with Southern Pacific. Reconnaissance maps and reports of two other sites are also on file. These areas are Steamboat Springs in Secs. 28, 29, 32, and 33, Twp. 18 N., Rge. 20 E., MDBM, Washoe County, and the boiling springs west of Hazen in Secs. 7, 18, and 19, Twp. 20 N., Rge. 26 E., MDBM, Churchill County. Wells drilled at Brady Hot Springs and Steamboat Springs have apparently tapped significant quantities of steam.

Water Resources

The average annual precipitation at Reno was 6.96 inches measured over a 30-year period and at Lovelock, 5.99 inches measured over a 20-year period.[1] These records emphasize the relative scarcity of water resources in western Nevada.

Water resources on or near Southern Pacific lands are listed in:

TABLE 1—Springs
TABLE 2—Wells
TABLE 3—Quality Data
TABLE 4—Surface Water Discharge Data

These tabulations are not a complete listing of all water resources. Sources of data are Southern Pacific files and publications of the U. S. Geological Survey.

Water resources are not located on the Mineral Commodity map.

[1]oral communication, 1961, U. S. Weather Bureau, Reno, Nevada

TABLE 1 SPRINGS

NAME	NUMBER[1]	LOCATION			DISCHARGE		ADDITIONAL DATA
		SEC.	TWP. N.	RGE. E.	RATE	DATE	
		27	16	21	5 gph	8-60	S
Steamboat		28	18	20	f	8-60	S,T
Steamboat		33	18	20	f	8-60	S,T
Horse		8	19	24	f	8-60	S
		31	19	24	2 gph	8-60	S
		6	20	23	f	57	U
		11	20	23	n	2-61	S
		31	20	24	f	57	U
		35	20	24	f	57	U
	2	13	20	25	f	9-60	S
	4	18	20	26	f	9-60	S,T
Sheehan		30	21	23	i	2-61	S
		1	22	26	f	9-61	S,Q,T
Brady		12	22	26	f	9-61	S,T
		13	22	28	f	51	U

[1]one spring only unless otherwise noted

abbreviations: f – flowing gph – gallons per hour
n – non-flowing gpm – gallons per minute
U – data from U. S. Geological Survey publications
S – data from Southern Pacific files
T – thermal water
Q – quality data from Southern Pacific files
*estimated total flow from all 5 springs

NAME	NUMBER[1]	LOCATION			DISCHARGE		ADDITIONAL DATA
		SEC.	TWP. N.	RGE. E.	RATE	DATE	
Coyote		1	24	24	5 gpm	5-55	S
Black Warrior		26	24	24	n	3-61	U
Creel		28	24	24	2 gpm	5-55	S
		1	25	32	f	6-57	S
	2	12	25	32	f	6-57	S
Wild Horse	2	14	25	32	f	6-57	S
		22	25	32	f	6-57	S
		21	25	35	f	7-58	S
		21	26	26	f	7-58	S
		22	26	26	f	7-58	S
		34	26	26	f	7-58	S
		7	26	29	n	6-57	S
		21	26	29	n	6-57	S
Toulon		26	26	29	9 gph	6-57	S,Q
	2	2	26	32	f	6-57	S,Q
		12	26	32	f	6-57	S,Q
Antelope		4	26	34	f	8-57	S
		24	27	32	f	56	U
		36	27	32	f	6-57	S,Q
	2	20	27	33	f	56	U
Muttlebury		31	27	33	f	56	U
Buffalo	2	2	27	35	7 gpm	54	S,Q
		25	28	30	f	10-58	S
		3	28	31	f	6-57	S,Q
		1	28	33	f	54	U
		2	28	33	f	54	U
	3	3	28	34	f	54	U
McCarty		8	28	34	f	54	U
Sage Hen	2	10	28	34	f	54	U
	2	15	28	34	f	54	U
		21	28	34	f	54	U
		25	28	34	f	54	U
	3	27	28	34	f	54	U
Mystic		28	28	34	f	54	U
Black Knob		31	28	34	f	54	U
	3	34	28	34	f	54	U
		19	28	35	f	54	U
Poker Brown		35	29	30	f	31	U
	3	35	29	33	f	54	U
	3	2	29	34	f	54	U
		23	29	34	f	54	U
		32	29	34	f	54	U
	2	35	29	34	f	54	U
	5	4	29	35	50 gpm*	9-58	U
		34	30	33	f	56	U
		2	30	34	f	54	U
	4	33	30	35	f	54	U
		34	30	35	f	54	U
		23	31	33	f	56	U
		2	31	34	f	56	U
		9	31	34	f	56	U
	2	11	31	34	f	56	U
		21	31	34	f	56	U,Q
		35	31	34	f	56	U
		20	32	29	f	31	U

SPRINGS (continued)

NAME	NUMBER[1]	LOCATION			DISCHARGE		ADDITIONAL DATA
		SEC.	TWP. N.	RGE. E.	RATE	DATE	
		9	32	31	f	8-58	S
		11	32	31	f	8-58	S
		13	33	30	0.5 gpm	8-58	S
		23	33	31	0.5 gpm	8-58	S
		33	33	31	2 gpm	8-58	S
		13	34	30	0.5 gpm	8-58	S
		6	34	31	f	31	U
		4	34	34	f	39	U
	2	7	34	34	f	39	U
		8	34	34	f	39	U
		11	34	34	f	39	U
		12	34	34	f	39	U
	2	15	34	34	f	39	U
	3	17	34	34	f	39	U
		18	34	34	f	39	U
		27	34	34	f	39	U
		30	34	34	f	39	U
		36	35	33	f	39	U
	3	13	36	34	f	8-58	S
		7	36	35	f	8-58	S
O'Donnell		8	36	35	f	8-58	S

[1]one spring only unless otherwise noted

abbreviations: f – flowing gph – gallons per hour
n – non-flowing gpm – gallons per minute
U – data from U. S. Geological Survey publications
S – data from Southern Pacific files
T – thermal water
Q – quality data from Southern Pacific files
*estimated total flow from all 5 springs

TABLE 2 WELLS

NAME	NUMBER[1]	LOCATION			DEPTH TO WATER TABLE		ADDITIONAL DATA
		SEC.	TWP. N.	RGE. E.	FEET	DATE	
Steamboat		28	18	20			
Steamboat		29	18	20			
Steamboat		32	18	20			
Steamboat		33	18	20			
Sparks		9	19	20	20	6-05	Q,L
Sparks, PFE		9	19	20			Q
Patrick		1	19	21			Q
Bango		23	19	26			L
Thisbe		20	20	23			
Wadsworth (M.P.278.1)		4	20	24			Q
Massie		17	20	27			Q
		14	21	24			
	2	12	21	29			A
		6	21	30			

[1]one well only unless otherwise noted

A—artesian flow
T—thermal water
L—log in Southern Pacific files
Q—quality data from Southern Pacific files
P—performance data from Southern Pacific files
*perched water table

NAME	NUMBER[1]	LOCATION			DEPTH TO WATER TABLE		ADDITIONAL DATA
		SEC.	TWP. N.	RGE. E.	FEET	DATE	
		18	21	30			
		30	21	30	154*	11-59	A
		1	22	26			
Brady	3	12	22	26			T,Q
		30	22	27			
		32	22	27			
		8	24	24			
Mineral Materials		12	24	33	51*	11-59	Q
	5	29	25	25	36	11-39	
Toulon		5	25	30			Q
		36	25	30			
		9	26	31			
		10	26	33			
Humboldt		28	26	34	40	11-59	Q,L
Lowry		31	27	29			
		3	27	31			
		20	27	31			
Lovelock	4	26	27	31	17	8-30	Q,L
		29	27	31			
Kodak		7	27	32			
		8	27	33			
		24	27	33	65	11-59	Q
		8	28	28			
		14	28	32			
		22	28	32			
		33	28	32			T
		4	28	33			
		4	28	34			
		2	28	35			
		14	28	35			
		14	29	29			
Oreana		31	29	33	171*	1-46	Q,L,P
	4	33	29	33	266*	11-45	Q,L,A
	2	34	29	34			A
	2	14	29	35			
	2	22	29	35			
		12	30	29			
Rye Patch		20	30	33	50*	8-45	L
		9	30	35			
		10	30	35			
		27	30	35			
		32	30	35			
		23	31	31			
		19	31	32			
		15	31	35			
		27	31	35			
		34	31	35			
		14	32	29			
		34	32	33			
Imlay	3	4	32	34	66	8-09	Q,L
		11	32	35			
		3	33	34			
		26	33	35			
Maude's		35	34	30	60	8-58	

WELLS (continued)

NAME	NUMBER[1]	LOCATION			DEPTH TO WATER TABLE		ADDITIONAL DATA
		SEC.	TWP. N.	RGE. E.	FEET	DATE	
		8	34	35			
Cosgrave	2	26	34	35	20.5	3-53	Q,L
		31	34	35	103	8-58	P
		33	34	35			
	5	25	35	35			
	3	36	35	35			
		2	36	34			
		5	36	34			
		30	36	34			
		32	36	34			
		14	37	33			
		23	37	34			
		24	38	34	31	9-58	

[1]one well only unless otherwise noted

A—artesian flow
T—thermal water
L—log in Southern Pacific files
Q—quality data from Southern Pacific files
P—performance data from Southern Pacific files
*perched water table

TABLE 3 QUALITY DATA

Quality data for water samples collected at the following localities are in Southern Pacific files.

NAME	LOCATION		
	SEC.	TWP. N.	RGE. E.
Steamboat Creek	28	18	20
Truckee River	11	19	20
Truckee Canal	23	20	23
Lower Hazen Drain and Reservoir	27	20	26
Pole Canyon	23	29	33
Horse Canyon	24	29	33
Wright Canyon	7	29	34
Humboldt Canyon	7	31	34
Prince Royal Canyon	9	31	34
Star Creek	24	31	34

TABLE 4 SURFACE WATER DISCHARGE DATA[1]

GAGING STATION	LOCATION			DISCHARGE EXTREMES				DISCHARGE AVERAGE		DRAINAGE AREA
	SEC.	TWP. N	RGE. E	MAXIMUM		MINIMUM		YRS.	CFS.	SQ. MI.
				Date	Cfs.	Date	Cfs.			
Carson River near Carson City, Nev.	2	14	20	12/55	30,000	9/60	3.3	21	395	876
Carson River near Fort Churchill, Nev.	32	17	24	12/55	9,680	almost every year	0	49	362	1,450
Humboldt River near Rose Creek, Nev.[2]	36	35	35	5/52	5,810	12/59	3.7[3]	12	219	15,200
Humboldt River near Imlay, Nev.[2]	25	33	33	5/52	6,080	many years	0	21	162	15,700
Rye Patch Reservoir near Rye Patch, Nev.	18	30	33	4/46	196,900[4]	8/55	0[4]			16,100
Humboldt River near Rye Patch, Nev.	18	30	33	5/52	4,720	some years	0	46	199	16,100
Humboldt River near Lovelock, Nev.	11	25	31	5/52	3,540	many years[5]	0			14,200
Truckee River at Reno, Nev.	7	19	20	12/55	20,800	7/12	18	27	770	1,067
Truckee River at Vista, Nev.[2]	13	19	20	3/07	10,000	6/60	38	10	1,033	1,429
Truckee River below Derby Dam, near Wadsworth, Nev.[2]	19	20	23	2/60	2,430	2/60	1.3			1,670
Truckee River near Nixon, Nev.[2]	18	22	24	12/55	14,000	7/60	8.1			1,869

[1]Data from U. S. Geol. Survey Water Supply Paper 1714
[2]Many diversions above station for irrigation
[3]Result of freeze up
[4]Figure shown is usable storage content in acre-ft.
[5]Prior to construction of Rye Patch dam
Cfs. = cubic feet per second

Geologic History[1]

SUMMARY

Throughout most of Paleozoic time, this area (Area I on Figure 4, page 170) was a part of the vast Cordilleran geosyncline. Marine environment was interrupted by two orogenic episodes during the Paleozoic,[2] and was terminated by a third orogeny in Mesozoic time.

Lower Paleozoic seas (Cambrian through Devonian) were the sites of thick accumulations of eugeosynclinal sediments characterized by chert, quartz sand, silt, and andesitic lavas. Marine deposition was interrupted by the Antler orogenic episode during late Devonian and Mississippian time, when the early Paleozoic rocks were uplifted, folded, and moved easterly on the Roberts Mountains thrust fault (Figure 5, page 182).

Eugeosynclinal deposition, with chert, quartz sand, and andesite again predominating, resumed in the Pennsylvanian and continued into the Permian. The close of the Permian was marked by renewed uplift, folding, and easterly movement of Paleozoic rocks on the Golconda thrust during the Sonoma orogeny (Figure 5, page 182).

The Mesozoic to Recent geologic history is recorded in rocks which crop out in western Nevada. In late Permian(?) to earliest Triassic times, rhyolitic to andesitic lavas and pyroclastics accumulated largely in a marine environment. These rocks crop out locally in the Humboldt Range and have been tentatively identified in the Antelope Range.

During early and middle Triassic time, marine deposition was typified by moderately thick accumulations of carbonate sediments with lesser amounts of fine to coarse clastics and some volcanics. Shifting seas in late Triassic time brought about a change from predominately carbonate sedimentation to largely argillaceous and arenaceous accumulations which continued to be deposited until about mid-Jurassic time. Marine deposition was terminated in this area by the onset of the Mesozoic orogenic episode which probably began some time during the Jurassic and continued into early Cretaceous time (Figure 5, page 182).

Pre-Cretaceous rocks were dynamothermally metamorphosed by imbricate thrusting which accompanied the Mesozoic orogeny. The argillaceous sedimentary rocks of Mesozoic age were metamorphosed to slate and phyllite which are by far the most abundant of the pre-Tertiary rocks. They compose the major portions of the Eugene and Antelope Ranges, and significant areas within most of the other ranges.

[1]Sources of data are given in Selected Bibliography, page 71.

[2]Paleozoic rocks of the area are masked by Mesozoic and Cenozoic deposits; therefore, the Paleozoic history must be inferred from studies in north-central Nevada where Paleozoic rocks are widely exposed. (See PART II).

During the final stages of the Mesozoic orogeny, numerous igneous intrusions varying from diorite to granite, but most commonly granodiorite, were emplaced. These intrusives, typically in the form of stocks, crop out in most of the ranges of the area and commonly are surrounded by aureoles of thermally metamorphosed rocks.

Tertiary rocks, largely lavas and pyroclastics with local sedimentary interbeds, are widespread. In the ranges of the northern part of the area (Eugene and Humboldt Ranges and northern Trinity Mountains), they comprise the foothills and lower slopes of the mountains and rarely occur at higher elevations. In the southern part of the area, they are common on the ridge crests as well as on the lower slopes. They form exceptionally thick deposits in the Hot Springs, Trinity, Truckee, and Virginia Ranges. Many of the Tertiary rocks were deposited in local basins, probably developed by lava dams and normal faults.

Normal faulting, tilting and local warping occurred intermittently during the Quaternary (Figure 6, page 183). The basin-range block faults, which are expressed by present topography, are probably no older than late Pliocene, although they may represent renewed movement along older faults. Various theories regarding the origin of basin-range block faulting have been published. In most of these theories a close genetic relationship between the faults and the volcanic activity is recognized, but whether the volcanism was a cause or an effect of the faulting is a matter of debate.

Vast quantities of basalt and basaltic andesite were extruded in late Pliocene to early Pleistocene time. These lavas were locally displaced by normal faults in Pleistocene time. Minor, normal fault readjustments continue intermittently in Recent times.

Much of the Pleistocene epoch was characterized by a pluvial climate which was contemporaneous with glaciation of the Sierra Nevada immediately to the west. Lake Lahontan filled large portions of the basin area. Development of alluvial fans was especially active before and during formation of Lake Lahontan, and continued to a lesser degree since desiccation.

COMPILATION

EPISODES			DESCRIPTION
DEPOSITIONAL	TECTONIC	INTRUSIVE	
Precambrian(?) or Cambrian (?)			Accumulation of clastic and volcanic rocks in eugeosynclinal(?) environment.
early Cambrian —middle Devonian			Marine deposition of western eugeosynclinal assemblage.
	late Devonian— early Mississippian		Antler orogenic episode (see Figure 5, page 182): uplift, folding, and easterly movement of pre-Mississippian rocks on the Roberts Mountains thrust.
Pennsylvanian and Permian			Accumulation of eugeosynclinal sediments of the Pumpernickel and Havallah formations.

COMPILATION (continued)

EPISODES			DESCRIPTION
DEPOSITIONAL	TECTONIC	INTRUSIVE	
	late Permian		Sonoma orogenic episode (see Figure 5, page 182): uplift, folding, and easterly movement of pre-Koipato rocks on the Golconda thrust.
	(Beginning of geologic history as recorded by rocks exposed)		
late Permian(?) —early Triassic			Extrusion of rhyolitic to andesitic lavas and pyroclastic rocks of the Koipato group; in part marine.
		early Triassic	Intrusions of aplite and rhyolite porphyry in Rochester District.
	early Triassic		Emergence and minor deformation indicated by slight angular unconformity between the Winnemucca sequence and the Koipato group.
early and middle Triassic			Accumulation of shallow-water marine sediments of the Winnemucca sequence: moderately thick carbonate deposits and lesser amounts of shale, sandstone, conglomerate, and volcanic rocks.
late Triassic— early Jurassic			Continued accumulation of shallow-marine Winnemucca sequence; shifting seas evidenced by great thicknesses of argillaceous sediments and lesser amounts of arenaceous and carbonate deposits.
	Jurassic— Cretaceous		Orogenic episode (see Figure 5, page 182): regional low-grade dynamothermal metamorphism of Triassic-Jurassic sedimentary rocks to produce slate, phyllite, quartzite, and some marble; rocks closely folded and thrust faulted.
		late Cretaceous(?)	Intrusion of stocks and bosses of igneous rock ranging in composition from granite to diorite; older rocks in part thermally metamorphosed and metasomatized.
	Cretaceous— early Tertiary		Regional uplift; long continued erosion; external drainage.
late Eocene— Oligocene			Extrusion of large quantities of lavas and pyroclastic rocks, largely of andesitic to rhyolitic composition; local conglomerate at base of Tertiary section and local fluvial and lacustrine interbeds within volcanic sequence (e.g., Sutro tuff member of Alta andesite

EPISODES			DESCRIPTION
DEPOSITIONAL	TECTONIC	INTRUSIVE	
			fm.); these volcanic rocks formed the hosts for gold-silver and base-metal minerals in the Comstock District and may be correlative with the volcanic rocks containing iron deposits in the Buena Vista Hills area.
	Oligocene—Miocene		Probable initial stage of basin-range block faulting, locally intense.
		Oligocene—Miocene	Possible time of emplacement of igneous rocks: diorite in Buena Vista Hills area and Stillwater and Humboldt Ranges. Iron ore deposits in Buena Vista Hills are genetically related to the diorite.
	Miocene		Intermittent faulting, warping.
		Miocene	Emplacement of Davidson granodiorite stock in Virginia City area, probable commencement of Kate Peak intrusive activity in late Miocene. Emplacement of basalt and andesite dikes and plugs and rhyolite to dacite plug domes, domes and dikes. Perlite bodies in Trinity Range formed possibly in late Miocene. Probable main period of metalization in Tertiary epithermal silver-gold districts, including Comstock Lode, Seven Troughs, Pyramid, Olinghouse, Ramsey, and Talapoosa.
Miocene			Extrusion of locally thick, basaltic to rhyolitic volcanic rocks near centers of eruption. Abundant welded ash-flows. Lacustrine and fluvial sediments deposited in local basins and depressions on surface of volcanic rocks. (Old Gregory formation, Pyramid basalt).
	Mio-Pliocene		Intermittent faulting and warping.
		Mio-Pliocene	Emplacement of silicic plugs, domes and dikes, and andesite and basalt dikes. Waning stages of metalization in Tertiary silver-gold districts.
Mio-Pliocene			Extrusion of thick sequence of volcanic rocks, principally andesite, but ranging from rhyolite to basalt. Tuff and welded ash-flows predominate as silicic rocks, flows and flow breccias in intermediate to mafic rocks. Lacustrine and fluvial sediments, deposited in local depressions in the volcanic rocks, occur as lenses and lentils. (Kate Peak, Chloropagus, Desert Peak, Valley Springs, Mehrten formations).

COMPILATION (continued)

EPISODES			DESCRIPTION
DEPOSITIONAL	TECTONIC	INTRUSIVE	
	early to middle Pliocene		Minor folding and warping.
early to middle Pliocene			Deposition of lacustrine sediments in freshwater lakes; diatomaceous sediments predominate, associated with limestone, sandstone and mudstone; waterlaid pyroclastic rocks interbedded with clastic sediments include abundant siliceous vitric tuff, crystal vitric tuff, basalt lapilli and palagonite tuff; local basalt flows and siliceous ash-flow deposits (Truckee and Coal Valley formations of Axelrod).
	late Pliocene		Extensive normal faulting and warping; beginning of major uplift of Sierra Nevada; formation of general outlines of present basins and ranges.
late Pliocene			Active erosion; formation of extensive pediments and low-relief upland surfaces; period of exterior drainage with minor deposition in basin areas.
	late Pliocene—early Pleistocene		Extensive faulting, locally of great magnitude; uplift of Sierra Nevada to approximately its present elevation by normal faulting and warping. Final blocking-out of present outlines of basins and ranges (see Figure 6, page 183).
		late Pliocene—early Pleistocene	Emplacement of basalt and andesite dikes, local intrusion of rhyolite domes.
late Pliocene—early Pleistocene			Extrusion of extensive basalt and basaltic andesite flows, local deposition of rhyolitic pyroclastic rocks. Deposition of alluvium in basin areas. Elevation of Sierra Nevada resulted in rain-shadow desert and semi-arid climatic conditions. End of exterior drainage.
	Pleistocene		Intermittent faulting, local warping.
Pleistocene			Increased precipitation and decreased average temperature during pluvial (glacial) periods resulted in formation of extensive intermontane lakes of which Lake Lahontan was the largest. Lake Lahontan reached its

EPISODES			DESCRIPTION
DEPOSITIONAL	TECTONIC	INTRUSIVE	
			maximum extent at an elevation of approximately 4,400 feet, about 11,600 years ago. Accumulation of lacustrine sediments in basins, alluvial fans and stream deposits in marginal areas, active erosion of highlands. Widespread mountain glaciation in Sierra Nevada bordering province on west.
	late Pleistocene —Recent		Local, intermittent faulting and warping.
late Pleistocene—Recent			Increased average temperature and decreased precipitation caused partial desiccation of Lake Lahontan (major existing remnants: Pyramid and Walker lakes). Formation of recessional shore lines of Lake Lahontan and associated beach deposits; deposition of lacustrine deposits in central portions of basins, alluvial fan and stream deposits in marginal portions. Continued erosion of mountainous areas.
	Recent		Local, intermittent faulting and warping.
Recent			Active erosion of mountain areas, concurrent deposition in basins; accumulation of alluvial fans, playa and stream deposits. Eolian deposition of sheet and dune silt and sand.

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PART II

Central and Eastern Area

By: M. S. Tischler, *Geologist*, and
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PART II encompasses areas mapped by Southern Pacific within:
Townships 28-43 North, Ranges 36-70 East, MDBM.
Townships 3-15 North, Ranges 1-19 West, SLBM.
See Mineral Commodity Maps II and III in map pocket.

Barth Iron Mine on Southern Pacific's Sec. 7, T.31N., R.51E., MDBM, Eureka Co.
Southern Pacific Railroad marked by bridge and telephone line in background.

Metallics

The introductory paragraphs relating to deposits[1] of metallic mineral commodities in PART I (see page 11) are also pertinent here.

Of the metallic mineral deposits on Southern Pacific lands in the PART II area, the following are considered to be the most promising:

COPPER:
SW¼NE¼ and NW¼SE¼ Sec. 21, T.31N., R.42E., MDBM, Lander Co.

GOLD:
S½SE¼ and E½SW¼ Sec. 31, T.34N., R.40E., MDBM, Humboldt Co.

PLACER GOLD:
NW¼SE¼ and NW¼SW¼SE¼ Sec. 11, T.31N., R.36E., MDBM, Pershing Co.
N½ Sec. 17, T.35N., R.51E., MDBM, Eureka Co.

IRON:
Lots 3 and 4 in Sec. 7, T.31N., R.51E., MDBM, Eureka Co.

SILVER:
NW¼ Sec. 5, T.33N., R.40E., MDBM, Humboldt Co.
NW¼NE¼ Sec. 27, T.34N., R.51E., MDBM, Eureka Co.
SE¼ and S½NE¼ Sec. 11, T.35N., R.41E., MDBM, Humboldt Co.

TUNGSTEN:
W½ Sec. 29 and N½SE¼ Sec. 31, T.37N., R.62E., MDBM, Elko Co.

ANTIMONY [Sb]

MINES AND PROSPECTS

Name: Apex
Location: *SW¼ Sec. 11, T.31N., R.43E., MDBM, Lander Co. (1)

[1]Deposits at locations indicated by * are not owned by Southern Pacific.

Description: about 16.5 tons of ore containing stibnite mined during World War II from incline leading to two levels

Geology: stibnite-bearing quartz vein strikes NE and dips 75°NW along fault contact of Scott Canyon and Harmony formations

Name: Antimony King

Location: *mining claims in $SW\frac{1}{4}NE\frac{1}{4}$, $W\frac{1}{2}SE\frac{1}{4}$, and $E\frac{1}{2}SW\frac{1}{4}$ Sec. 35, T.32N., R.43E., MDBM, Lander Co. (1,16,30)

Description: several hundred tons mined from pits; reported reserves of several thousand tons assaying 3–5% Sb

Geology: stibnite and antimony oxides along 2–10′ wide fault zone that strikes N15°E and dips 55–70°W in argillite and chert

Location: $W\frac{1}{2}NW\frac{1}{4}$ Sec. 1, T.35N., R.36E., MDBM, Humboldt Co. (1)

Description: several pits

Geology: antimony-bearing, iron-stained brecciated quartzite along steeply dipping normal faults that strike N80°E

Conclusions: shows little promise

Location: *$E\frac{1}{2}E\frac{1}{2}$ Sec. 2, T.35N., R.36E., MDBM, Humboldt Co. (1)

Description: two adits and several pits

Geology: stibnite in sheared quartzite hanging wall of fault that strikes NNE and dips 80°W

Location: *$SW\frac{1}{4}SW\frac{1}{4}$ Sec. 36, T.36N., R.36E., MDBM, Humboldt Co. (1)

Description: two pits

Geology: partly oxidized stibnite in sheared quartzite along fault that strikes NNE

OCCURRENCES

Location: *$NW\frac{1}{4}NE\frac{1}{4}NW\frac{1}{4}$ and $NE\frac{1}{4}NW\frac{1}{4}NW\frac{1}{4}$ Sec. 2, T.31N., R.43E., MDBM, Lander Co. (1)

Geology: stibnite in quartz vein along NE-trending fault

COPPER [Cu]

MINES AND PROSPECTS

Name: Star Point

Location: *$W\frac{1}{2}SE\frac{1}{4}$ Sec. 24, T.30N., R.36E., MDBM, Pershing Co. (1)

Description: incline, pit, and several adits

Geology: copper minerals and minor galena in quartz veins that strike N-S in quartzite and argillite

Location: *$S\frac{1}{2}S\frac{1}{2}SE\frac{1}{4}$ Sec. 29 and $N\frac{1}{2}NE\frac{1}{4}$ Sec. 32, T.30N., R.49E., MDBM, Eureka Co. (1)

Description: several pits

Geology: malachite, limonite, and pyrite in breccia zone associated with NE-trending fault in shale, siltstone, and quartzite

Name: Railroad (Bullion) District

Location: *Secs. 3, 4, 5, and 9, T.30N., R.53E., and Secs. 32, 33, 34, and 35, T.31N., R.53E., MDBM, Elko Co.
(See under METALLICS, Silver)

Location: $SW\frac{1}{4}NE\frac{1}{4}$ and $NW\frac{1}{4}SE\frac{1}{4}$ Sec. 21, T.31N., R.42E., MDBM, Lander Co. (1)

Description: several pits and trenches; selected samples assayed a trace to 0.01 oz. Au, 0.3–0.8 oz. Ag, and 0.90–1.11% Cu

Geology: copper minerals along several widely separated stringers

Conclusions: warrants further investigation

Name: Western Lock

Location: *$E\frac{1}{2}E\frac{1}{2}SW\frac{1}{4}$ and $W\frac{1}{2}W\frac{1}{2}SE\frac{1}{4}$ Sec. 22, T.31N., R.43E., MDBM, Lander Co. (1,16)

Description: several pits and adits

Geology: chalcopyrite, chrysocolla, malachite, and cuprite in lenses that fill vertical fissures that strike N35°W in quartzite and conglomerate

Name: Buzzard

Location: *$W\frac{1}{2}W\frac{1}{2}SW\frac{1}{4}$ Sec. 23, T.31N., R.43E., MDBM, Lander Co.
(See under METALLICS, Gold)

Name: Copper Canyon

Location: *$SW\frac{1}{4}NW\frac{1}{4}$ Sec. 27 and $SE\frac{1}{4}NE\frac{1}{4}$ Sec. 28, T.31N., R.43E., MDBM, Lander Co. (1,30,37)

Description: 42,000 tons mined 1866–80; 22,487 tons of 9% Cu mined 1916–18; 400,000 tons of Cu-Au ore mined from above 500′ level 1941–45 and production continued into 1947; commencing 1948, Pb-Zn-Ag ore was mined from 700′ level and in 1949 production was 1,213 oz. Au, 194,077 oz. Ag, 126,197 lbs. Cu, 2,808,900 lbs. Pb, and 1,343,650 lbs. Zn; two shafts leading to four levels, and a 400′ long by 220′ wide glory hole from 300′ level

Geology: hypogene (primary) deposits, composed largely of sulfides of copper, iron, lead, and zinc, occur as veins and disseminations along and between two parallel fault zones about 800′ apart that strike N and dip 65°W in chloritized conglomerate, quartzite, and hornfels; oxidized deposits consist largely of malachite, azurite, chrysocolla, and auriferous iron-oxide minerals; fault zones, enriched to about 300′ level, contain chalcocite, cuprite, and minor copper carbonates and sulfides

Location: *mining claims 2401 and 3793 in $NW\frac{1}{4}$ Sec. 35, T.31N., R.43E., MDBM, Lander Co. (1)

Description: pit

Geology: cuprite, chrysocolla, and malachite disseminated in quartzite

Name: Zenoli (*Morning Glory Group*)

Location: *$N\frac{1}{2}SW\frac{1}{4}$ Sec. 17, T.31N., R.51E., MDBM, Eureka Co.
(See under METALLICS, Silver)

Location: *SW¼SW¼SW¼ Sec. 36, T.31N., R.52E., MDBM, Elko Co. (1)

Description: three pits

Geology: malachite, azurite, and limonite in gossan in limestone

Location: E½NE¼NE¼ Sec. 9, T.32N., R.41E., MDBM, Pershing Co. (1)

Description: shafts and pits

Geology: malachite and azurite along fault that strikes NNW in chert and quartzite

Conclusions: shows little promise

Location: *N½NE¼ Sec. 10, T.32N., R.41E., MDBM, Pershing Co. (1)

Description: three pits

Geology: malachite and azurite in chert

Location: SW¼NW¼ Sec. 25, T.32N., R.42E., MDBM, Lander Co. (1)

Description: trenches and adit

Geology: copper oxides in 2–3″ wide and 1000′ long quartz vein that strikes N60°W and dips 85°N in quartzite

Conclusions: shows limited promise

Location: *SE¼NE¼ Sec. 26, T.32N., R.42E., MDBM, Lander Co. (1)

Description: trenches

Geology: copper oxides in 2–3″ wide and 1000′ long quartz vein that strikes N60°W and dips 85°N in quartzite

Location: *SE¼ Sec. 1 and NE¼ Sec. 12, T.32N., R.43E., and W½SW¼ Sec. 6, T.32N., R.44E., MDBM, Humboldt Co. (1)

Description: pits

Geology: malachite, azurite, arsenopyrite, and pyrite in gossan along faults that strike NNE in quartzite

Location: *NE¼NW¼NW¼ Sec. 6, T.32N., R.44E., MDBM, Humboldt Co. (1)

Description: two pits

Geology: malachite, chalcopyrite, and pyrite in granodiorite

Location: *SE¼NE¼ Sec. 18, T.32N., R.44E., MDBM, Humboldt Co. (1)

Description: two pits

Geology: malachite in gossan along two faults that strike NNE in quartzite.

Location: *SE¼NE¼NE¼ Sec. 19, T.32N., R.44E., MDBM, Lander Co. (1)

Description: pit

Geology: malachite and azurite in gossan that strikes NE and dips 65°NW in quartzite

Location: *NE¼NE¼ Sec. 20 and NW¼NW¼ Sec. 21, T.32N., R.44E., MDBM, Lander Co. (1)

Description: three pits

Geology: malachite, azurite, arsenopyrite, and pyrite in fractured quartzite associated with quartz monzonite porphyry

Location: *NE¼NW¼SW¼ and NW¼NE¼SW¼ Sec. 21, T.32N., R.44E., MDBM, Lander Co. (1)

Description: pit

Geology: copper minerals in fractured quartzite

Location: *E½SE¼SW¼ Sec. 21, T.32N., R.44E., MDBM, Lander Co. (1)

Description: pit

Geology: copper minerals in fault that strikes NNE in quartzite

Location: *SW¼SW¼SE¼ and SE¼SE¼SW¼ Sec. 28, T.32N., R.44E., MDBM, Lander Co. (1)

Description: three pits

Geology: azurite and malachite in gossan that strikes E-W in quartzite

Name: Carissa

Location: *SW¼NW¼SW¼ Sec. 28, T.32N., R.44E., MDBM, Lander Co.
(See under METALLICS, Gold)

Name: Sweet Marie

Location: *SW¼SW¼SW¼ Sec. 28, SE¼SE¼SE¼ Sec. 29, NE¼NE¼NE¼ Sec. 32, and NW¼-NW¼NW¼ Sec. 33, T.32N., R.44E., MDBM, Lander Co. (1,30)

Description: 20,071 tons averaging 9.99% Cu mined prior 1947 from underground workings; largest deposit mined was 245′ long by 110′ wide and averaged about 50′ thick

Geology: largely chalcocite in lower levels and azurite, malachite, and chrysocolla in upper levels in and adjacent to faults in hornfels, argillite, and quartzite; two directions of faulting, an older system that strikes about N65°E and dips 25–45°N, and a younger system that strikes N60–70°W and dips more steeply; richest deposits associated with older fault system

Name: Contention

Location: *NE¼SW¼SE¼ Sec. 29, T.32N., R.44E., MDBM, Lander Co. (1,30)

Description: about 6,000 tons of 5.84% Cu mined from shallow underground workings

Geology: azurite, malachite, and chrysocolla in and adjacent to faults in hornfels, argillite, and quartzite

Name: Copper Queen

Location: *W½NW¼NW¼ Sec. 29 and E½NE¼ Sec. 30, T.32N., R.44E., MDBM, Lander Co. (1,30)

Description: 11,843 tons of 5–10% Cu mined since 1880's from underground workings; lodes reported almost 300′ long and 230′ down dip

Geology: largely chalcocite and cuprite, with azurite and malachite, in shoots along fault zone that strikes N10°W and dips 40–45°W in hornfels and quartzite intruded by quartz monzonite porphyry dikes

Name: Widow

Location: *S½NE¼NE¼ and N½SW¼NE¼ Sec. 32, T.32N., R.44E., MDBM, Lander Co. (1,30)

Description: pits and underground workings

Geology: azurite, malachite, and chrysocolla in and adjacent to faults in hornfels, argillite, and quartzite

Location: NW¼ Sec. 5, T.33N., R.40E., MDBM, Humboldt Co.
(See under METALLICS, Silver)

Location: *E½NW¼, SW¼NW¼, S½NE¼, W½SW¼, and N½SE¼ Sec. 33 and E½SW¼ Sec. 34, T.32N., R.44E., MDBM, Lander Co. (1)

Description: numerous pits

Geology: azurite and malachite in and adjacent to faults in hornfels, argillite, and quartzite

Location: *S½SE¼NE¼ and N½NE¼SE¼ Sec. 16, T.33N., R.42E., MDBM, Humboldt Co. (1)

Description: two pits

Geology: copper minerals in granodiorite

Location: *N½SE¼ Sec. 36, T.33N., R.43E., MDBM, Humboldt Co. (1)

Description: pit

Geology: malachite and azurite in quartzite and hornfels adjacent to intrusive granodiorite

Location: *SE¼SW¼NW¼ Sec. 36, T.33N., R.43E., MDBM, Humboldt Co. (1)

Description: shaft and two pits

Geology: malachite in vein that strikes NNE and dips 60°W in quartzite and argillite adjacent to intrusive granodiorite

Location: SE¼SW¼SW¼ Sec. 31, T.33N., R.44E., MDBM, Humboldt Co. (1)

Description: pit

Geology: malachite in fracture in granodiorite

Conclusions: shows little promise

Name: Adelaide

Location: *SE¼ and SE¼NE¼ Sec. 20, T.34N., R.40E., MDBM, Humboldt Co. (1,22,27,30,36)

Description: 300′ shaft, 2,000′ adit, and about one mile of additional underground workings yielded about $120,000 in copper, silver, gold, and zinc 1878–1914; ore mined 1918 assayed 5.75% Cu, 1.5 oz. Au, and 6–7 oz. Ag

Geology: copper, lead, and zinc sulfides in a 50–75′ thick metasomatic replacement zone in limestone, calcareous slate, and argillite

Location: E½E½NE¼ Sec. 11, T.34N., R.42E., MDBM, Humboldt Co. (1)

Description: two adits

Geology: malachite in WNW-trending fault-breccia zones in quartzite

Conclusions: shows little promise

Location: *W½NW¼ and NW¼SW¼ Sec. 12, T.34N., R.42E., MDBM, Humboldt Co. (1)

Description: two adits, two shafts, and four pits

Geology: malachite in WNW-trending fault-breccia zones in quartzite

Location: *S½SW¼ Sec. 28 and NE¼ Sec. 32, T.34N., R.42E., MDBM, Humboldt Co. (1)

Description: numerous trenches

Geology: malachite and chalcocite adjacent to faults that strike NNE in granodiorite and hornfels

Location: SE¼ and E½SW¼ Sec. 29 and NW¼ Sec. 33, T.34N., R.42E., MDBM, Humboldt Co. (1)

Description: numerous trenches, adits, and shafts

Geology: malachite and chalcocite disseminations and 1–12″ stringers in NNE-trending fault zones to 15′ wide that strike NNE in granodiorite and hornfels; copper minerals concentrated at intersection of main fault and small cross faults that strike NW

Conclusions: shows little promise

Location: W½NE¼ Sec. 1, T.35N., R.38E., MDBM, Humboldt Co. (1)

Description: incline, adit, and several pits and trenches; selected sample of dump material at collar of incline assayed 6.57% Cu, 0.02 oz. Au, and 0.39 oz. Ag

Geology: malachite, chalcopyrite, and pyrite along NNE-trending thrust fault in sheared and contorted argillite

Conclusions: shows limited promise

Location: *NE¼NE¼, E½SE¼, and E½SW¼SE¼ Sec. 1 and E½NE¼ and NW¼NW¼ Sec. 12, T.35N., R.38E., and W½ Sec. 6, T.35N., R.39E., MDBM, Humboldt Co. (1)

Description: numerous shafts, adits, and pits

Geology: largely chalcopyrite with minor bornite and malachite, azurite, and chrysocolla along fracture and in quartz veins to 2′ wide in highly brecciated and sheared argillite, quartzite, and slate

Location: *NW¼SW¼ Sec. 11, T.35N., R.38E., MDBM, Humboldt Co. (1)

Description: pit

Geology: copper minerals along NE-trending fault in argillite

Location: *SE¼NW¼ Sec. 24, T.35N., R.40E., MDBM, Humboldt Co. (1)

Description: two pits

Geology: malachite in fractures in greenstone

Location: *NW¼NW¼ Sec. 24, T.35N., R.40E., MDBM, Humboldt Co. (1)

Description: two pits and a trench

Geology: copper minerals in fractured chert and greenstone along NNE-trending thrust fault

Location: *SW¼SW¼NE¼ and NW¼NW¼SE¼ Sec. 26, T.35N., R.40E., MDBM, Humboldt Co. (1)

Description: five pits and a trench

Geology: malachite with minor galena in fractured zone associated with NNE-trending fault in quartzite

Location: *$W\frac{1}{2}SE\frac{1}{4}NW\frac{1}{4}$, $SW\frac{1}{4}NW\frac{1}{4}$, and $W\frac{1}{2}SW\frac{1}{4}$ Sec. 17, Sec. 18, $NE\frac{1}{4}$ Sec. 19, and $W\frac{1}{2}$ Sec. 20, T.35N., R.41E., MDBM, Humboldt Co. (1)

Description: numerous pits and trenches

Geology: malachite and azurite along faults that strike NW and N-S in chert and greenstone; associated with quartz monzonite porphyry intrusives

Location: *$SW\frac{1}{4}SE\frac{1}{4}$ Sec. 30, T.35N., R.41E., MDBM, Humboldt Co. (1)

Description: pit

Geology: copper minerals in fractured chert and greenstone

Name: Blue Bell

Location: *$NE\frac{1}{4}NW\frac{1}{4}$ Sec. 5, T.37N., R.42E., and $SE\frac{1}{4}SW\frac{1}{4}$ Sec. 32, T.38N., R.42E., MDBM, Humboldt Co. (1)

Description: numerous pits and trenches

Geology: chalcopyrite, chrysocolla, and malachite in quartz stringers in fractures in chert and calcareous slate

Location: *$NE\frac{1}{4}$ Sec. 24, T.37N., R.63E., MDBM, Elko Co. (1)

Description: numerous pits and trenches

Geology: azurite, malachite, and chrysocolla in fractured thrust-plate remnant of siliceous dolomite

Name: Loray (*Luray, Montello*)

Location: *Secs. 1, 4, 8, and 9, T.37N., R.68E., and Secs. 32, 33, and 36, T.38N., R.68E., MDBM, Humboldt Co.
(See under METALLICS, Lead)

Name: Tecoma Hill (*includes Tecoma, Black Warrior, Independence, Clipper, and Mineral Mountain*)

Location: *$NE\frac{1}{4}$ Sec. 21, T.39N., R.70E., MDBM, Elko Co., and $SE\frac{1}{4}SE\frac{1}{4}$ Sec. 8 and $S\frac{1}{2}$ Sec. 9, T.6N., R.19W., SLBM, Box Elder Co.
(See under METALLICS, Silver)

Name: Parkdale

Location: *$W\frac{1}{2}NE\frac{1}{4}SW\frac{1}{4}$ and $E\frac{1}{2}NW\frac{1}{4}SW\frac{1}{4}$ Sec. 3, T.5N., R.19W., SLBM, Box Elder Co. (1)

Description: three pits

Geology: chrysocolla in 10′ wide quartz vein that strikes NNW in mica schist

Location: *$S\frac{1}{2}S\frac{1}{2}NE\frac{1}{4}$ and $N\frac{1}{2}N\frac{1}{2}SE\frac{1}{4}$ Sec. 9, T.6N., R.13W., SLBM, Box Elder Co. (1,26)

Description: incline, over 175′ deep, and adit; intermittent activity since early 1900's

Geology: malachite, azurite, chrysocolla, pyrite, chalcopyrite, bornite, iron oxides, and possibly wolframite in silicified and hydrothermally altered fault zone that strikes N60°W and dips steeply NE in quartzitic dolomite

Name: Copper Mountain (*Glory Hole and Walker Tunnel*)

Location: *$E\frac{1}{2}SE\frac{1}{4}$ Sec. 9 and $W\frac{1}{2}SW\frac{1}{4}$ Sec. 10, T.6N., R.19W., SLBM, Box Elder Co. (1,4,5)

Description: discovered about 1870, and worked intermittently since; base and precious metal production, largely 1870–1910, reported to value about $5,000,000; major production from open pit, about 1500′ long by 400′ wide; developed to about 200′ depth; 9000 tons of limonite, valued at $50,000 shipped in 1953; gold, silver, and lead recovered as by-products

Geology: native copper, copper oxides and carbonates, and iron oxides in N-S, 100–200′ wide gossan in limestone

Name: Jeff-Doran

Location: *$NW\frac{1}{4}$ Sec. 28, T.6N., R.19W., SLBM, Box Elder Co. (1,4)

Description: two adits

Geology: copper minerals in limonitic gossan in limestone

Name: Rosebud

Location: *$S\frac{1}{2}S\frac{1}{2}SW\frac{1}{4}$ Sec. 16, T.10N., R.16W., SLBM, Box Elder Co. (1)

Description: 100′ shaft

Geology: copper minerals in quartz vein that strikes ENE for over 1500′ in cherty, recrystallized limestone

Location: $N\frac{1}{2}N\frac{1}{2}NW\frac{1}{4}$ Sec. 21, T.10N., R.16W., SLBM, Box Elder Co. (1)

Description: 100′ shaft and pit; intermittently active 1871–1916

Geology: 10–15′ wide quartz veins containing malachite and chrysocolla strike NE in recrystallized limestone

Conclusions: shows little promise

Location: *$NW\frac{1}{4}NE\frac{1}{4}$ Sec. 22, T.10N., R.16W., SLBM, Box Elder Co. (1)

Description: three shafts to 50′ deep and a pit

Geology: malachite and chrysocolla in silicified limestone

OCCURRENCES

Location: $NW\frac{1}{4}NW\frac{1}{4}$ Sec. 7, T.31N., R.43E., MDBM, Lander Co. (1)

Geology: chalcopyrite, bornite, and malachite associated with minor gold, silver, and barite in gossan that strikes N-S in chert

Conclusions: shows little promise

Location: *$NE\frac{1}{4}NE\frac{1}{4}NW\frac{1}{4}$ Sec. 1, T.32N., R.43E., and $SE\frac{1}{4}SE\frac{1}{4}SW\frac{1}{4}$ Sec. 36, T.33N., R.43E., MDBM, Humboldt Co. (1)

Geology: malachite and pyrite in granodiorite

Location: *$SE\frac{1}{4}NE\frac{1}{4}$ Sec. 11, T.32N., R.43E., MDBM, Humboldt Co. (1)

Geology: azurite, malachite, and pyrite in gossan along fault that strikes NW in quartzite

Location: *S½SE¼SW¼ Sec. 31, T.32N., R.43E., MDBM, Lander Co. (1)

Geology: malachite and pyrite in gossan along N-trending fault in argillite

Location: *NW¼SW¼ Sec. 7, T.32N., R.44E., MDBM, Humboldt Co. (1)

Geology: malachite and pyrite in gossan that parallels a N-striking quartz monzonite porphyry dike in quartzite

Location: *NE¼NE¼SE¼ Sec. 19, T.32N., R.44E., MDBM, Lander Co. (1)

Geology: malachite in NNW-trending fracture in quartz monzonite porphyry

GOLD (lode) [Au]

MINES AND PROSPECTS

Name: Hilltop, Independence

Location: *Sec. 4, T.29N., R.46E., MDBM, Lander Co. (1,8,37)

Description: mined from numerous shafts, adits, and pits since 1906; Au:Ag of 1:1

Geology: gold and auriferous sulfides in quartz stringers in quartzite

Name: Red Top (*Maysville*)

Location: *NE¼ Sec. 5, T.29N., R.46E., MDBM, Lander Co. (1,8,37)

Description: operated from about eight pits and adits, one 1,400′ long; ore shipped 1936 reported to assay 3.62 oz. Au, 13.55 oz. Ag, 0.23% Cu, 0.7% Pb and 0.5% Zn

Geology: gold, silver, sulfides, and tellurides in quartz vein that strikes N40°W and dips vertically in quartzite; vein offset by numerous small faults

Name: Grey Eagle

Location: *W½SW¼ Sec. 13 and E½SE¼ and E½SW¼SE¼ Sec. 14, T.29N., R.46E., MDBM, Lander Co.
(See under METALLICS, Silver)

Name: Mud Spring

Location: *NW¼ Sec. 18, T.29N., R.47E., MDBM, Lander Co. (1,8)

Description: incline and four adits

Geology: auriferous sulfides in stringers, less than 1″ wide, in gossan in quartzite intruded by granodiorite; bedrock masked by about 4′ of alluvium

Location: *SE¼ Sec. 18, T.29N., R.47E., MDBM, Lander Co. (1)

Description: incline, several pits and trenches

Geology: auriferous sulfides and oxides in 3–4′ wide shear zone that strikes N60–70°E in chert

Location: *SE¼ Sec. 29, T.29N., R.47E., MDBM, Lander Co. (1)

Description: several pits and adits

Geology: auriferous sulfides in gossans along shear zones associated with thrust faulted quartzite and chert

Location: *NW¼NE¼ Sec. 31, T.29N., R.47E., MDBM, Lander Co. (1)

Description: adits

Geology: auriferous sulfides in 3″ wide quartz stringers in gossan that strikes N60°W in chert

Name: Dean (*Pittsburg, Morning Star*)

Location: *mining claims 37–44 in E½ Sec. 36, T.30N., R.45E., and S½NW¼ and S½ Sec. 31, T.30N., R.46E., MDBM, Lander Co. (1,8,37)

Description: gold and silver values of over $1,000,000 mined from extensive underground workings with a vertical range of 925′ at Morning Star and 550′ at Pittsburg

Geology: auriferous and argentiferous sulfides in quartz veins that strike W and dip S at Pittsburg and strike N30°W and dip W at Morning Star; chert, quartzite, and quartz monzonite porphyry wallrock

Name: Railroad (*Bullion*) District

Location: *Secs. 3, 4, 5, and 9, T.30N., R.53E., and Secs. 32, 33, 34, and 35, T.31N., R.53E., MDBM, Elko Co.
(See under METALLICS, Silver)

Location: *SW¼ Sec. 11, T.31N., R.36E., MDBM, Pershing Co. (1)

Description: adits

Geology: gold in ¼–1″ stringers that strike N in slate and phyllitic slate

Location: SW¼SW¼ Sec. 3, T.31N., R.43E., MDBM, Lander Co.
(See under METALLICS, Silver)

Name: White and Shiloh

Location: *S½SE¼ Sec. 9, T.31N., R.43E., MDBM, Lander Co.
(See under METALLICS, Silver)

Name: Battle Mountain

Location: *E½E½NE¼ and NE¼SE¼ Sec. 9, T.31N., R.43E., MDBM, Lander Co.
(See under METALLICS, Silver)

Name: Trinity

Location: *E½SE¼SW¼ and W½SE¼ Sec. 10, T.31N., R.43E., MDBM, Lander Co.
(See under METALLICS, Silver)

Name: Butte (*Gold Butte*)

Location: *NE¼SW¼ Sec. 14, T.31N., R.43E., MDBM, Lander Co.
(See under METALLICS, Silver)

Name: Bryan

Location: *Lot 48 in W½W½SE¼, E½E½SW¼, SE¼SE¼NW¼ and SW¼SW¼NE¼ Sec. 15, T.31N., R.43E., MDBM, Lander Co. (1,16,37)

Description: shafts and adits

Geology: gold and auriferous sulfides in quartz vein along fracture zone to 10′ wide that strikes N and dips 15°W in quartzite

Name: Plumas

Location: *Lots 47A and 47B in E½SE¼SW¼ and S½SE¼ Sec. 15, and NW¼NE¼ Sec. 22, T.31N., R.43E., MDBM, Lander Co. (1,30,37)

Description: over $70,000 reportedly mined from an adit and shaft prior to 1934

Geology: gold and auriferous sulfides in quartz vein along 3–6′ wide fracture zone that strikes N20°W and dips 55°W in argillite and quartzite

Name: Elko-Lander

Location: *E½SE¼NW¼ and W½SW¼NE¼ Sec. 21, T.31N., R.43E., MDBM, Lander Co. (1,16,37)

Description: adit and pit; $40 per ton in Au and Ag reported

Geology: auriferous sulfides in 2′ wide gossan that strikes N10°W and dips 80°W in argillite and chert

Name: Independence

Location: *SE¼NW¼ Sec. 22, T.31N., R.43E., MDBM, Lander Co. (1,30,37)

Description: pits and shafts; $200,000 in Au and Ag reported mined from 400′-long shoot to a depth of 160′ below surface

Geology: auriferous pyrite and gold disseminated in fault zone that strikes N and dips steeply W in conglomerate

Name: Buzzard

Location: *W½W½SW¼ Sec. 23, T.31N., R.43E., MDBM, Lander Co. (1,16,30,37)

Description: about $200,000 in gold with silver and copper mined from shafts, adits, and pits since 1880's

Geology: gold and auriferous sulfides in lodes, to 8′ wide and 30–75′ long, in quartz vein along fault that strikes about N10°W and dips 65–70°W in quartzite

Name: Iron Canyon

Location: *SW¼ Sec. 23, T.31N., R.43E., MDBM, Lander Co. (1,6,30)

Description: pits and underground workings; 954 tons mined 1909–11 yielded $51,974

Geology: gold and auriferous sulfides along fault zones to 20′ wide that strike N and dip steeply W in chert and argillite

Name: Nevada-Omaha

Location: *mining claims in SE¼SE¼SW¼ and S½SE¼ Sec. 26, and N½NE¼, SE¼NE¼, NE¼SE¼SW¼, and E½NE¼NW¼ Sec. 35, T.31N., R.43E., MDBM, Lander Co. (1,37)

Description: 350′ shaft and 300′ adit to vein

Geology: gold-bearing quartz vein strikes northerly and dips about 65°W in argillite, chert, and greenstone

Name: Tomboy

Location: *E½E½SW¼ Sec. 27, T.31N., R.43E., MDBM, Lander Co. (1,16,30,37)

Description: 0.345 oz. Au and 0.45 oz. Ag mined subsequent to 1926 from adits, shafts, pits and a glory hole 75′ long by 25′ wide by 35′ deep; mill tests conducted in 1948 on 7000 tons reported yield of 0.21 oz. Au per ton

Geology: gold- and silver-bearing sulfides disseminated in 25′ wide shear zone that strikes northerly for several hundred feet and dips E in conglomerate

Name: Copper Canyon

Location: *$SW\frac{1}{4}NW\frac{1}{4}$ Sec. 27 and $SE\frac{1}{4}NE\frac{1}{4}$ Sec. 28, T.31N., R.43E., MDBM, Lander Co.
(See under METALLICS, Copper)

Name: Wilson-Independence

Location: *$SW\frac{1}{4}SW\frac{1}{4}$ Sec. 28, T.31N., R.43E., MDBM, Lander Co. (1,30)

Description: over $200,000 in gold and silver mined from a 400′-long shoot extending to 160′ depth; active 1957

Geology: gold and auriferous sulfides and oxides along fault zone that strikes N-S and dips 60°W in argillite and chert

Name: El Dorado

Location: *$NE\frac{1}{4}NE\frac{1}{4}$ Sec. 29, T.31N., R.43E., MDBM, Lander Co. (1,16,37)

Description: 60′ shaft and adit on vein

Geology: gold and auriferous sulfides along 3′ wide fracture zone that strikes N60°E and dips about 60°N in quartzite

Name: Buffalo Valley

Location: *$S\frac{1}{2}NE\frac{1}{4}$ Sec. 33, T.32N., R.42E., MDBM, Lander Co. (1,30,37)

Description: about 9,000 tons mined from two adits during 1930's; three additional adits and numerous pits; mined to 240′ depth; intermittent activity since 1924 when 268 tons of 0.695 oz. Au and 1.88 oz. Ag ore shipped; 792 tons of 0.42 oz. Au mined during 1930's

Geology: auriferous iron oxides along faults that strike N and dip 35–45°W in argillite and chert

Name: Lucky Strike

Location: *mining claim no. 3475 in $E\frac{1}{2}NW\frac{1}{4}$, $SW\frac{1}{4}NE\frac{1}{4}$, and $SE\frac{1}{4}$ Sec. 27, T.32N., R.43E., MDBM, Lander Co.
(See under METALLICS, Silver)

Name: Copper King

Location: *$S\frac{1}{2}SE\frac{1}{4}NW\frac{1}{4}$ and $N\frac{1}{2}NE\frac{1}{4}SW\frac{1}{4}$ Sec. 28, T.32N., R.44E., MDBM, Lander Co. (1,30)

Description: pits and adits

Geology: gold and copper carbonates along NNE-trending fault in calcareous argillite and quartzite

Name: Carissa

Location: *$SW\frac{1}{4}NW\frac{1}{4}SW\frac{1}{4}$ Sec. 28, T.32N., R.44E., MDBM, Lander Co. (1,30)

Description: adit and underground workings; 2980 tons of 0.622 oz. Au, 2.44 oz. Ag, and 2.56% Cu shipped 1937, and 2178 tons of 0.34 oz. Au shipped in 1938

Geology: gold and copper carbonates in lode 4–15′ wide by 60′ long, and 150′ down dip along tactite zone that strikes NE in calcareous argillite and quartzite

Name: White Bear (*Chafey*)

Location: *SE¼SE¼ Sec. 11, T.33N., R.36E., MDBM, Pershing Co. (6,9,27,34)

Description: about $112,000 in gold and silver reportedly mined 1908–10 from four adits to vein; reported Au:Ag of 1:2

Geology: sulfides in persistent 2–8′ wide and 4000′ long quartz vein that strikes NE and dips 45–60°SE in schist, slate, and silicic volcanic rocks cut by diabase dikes

Name: Lang Syne (*Auld Lang Syne*)

Location: *NW¼NW¼ Sec. 12, T.33N., R.36E., MDBM, Pershing Co. (6,9,27,34)

Description: $200,000 in gold and silver reportedly mined from several adits stoped to surface to form 100′-wide glory hole; 22-ton sample collected from glory hole 1935 was amalgamated and yielded $3.90 per ton; tailings averaged $2.65 per ton; best values obtained within 75′ of surface

Geology: auriferous sulfides in four parallel quartz veins, each averaging about 2.5′ wide, that strike N and dip 45–60°E in a 100′ wide shear zone in andesite

Name: Auburn

Location: *NW¼NW¼ Sec. 6, T.33N., R.37E., MDBM, Pershing Co. (6,9,34)

Description: $250,000 in gold with silver and lead reportedly mined from six adits during 1880's

Geology: auriferous sulfides in numerous 1–24″ wide quartz stringers and veins that parallel a NNE-trending fault that dips steeply to E in schist, phyllite, and carbonate rocks

Location: NE¼NE¼ Sec. 17, T.33N., R.41E., MDBM, Humboldt Co. (1)

Description: shaft and pits; selected sample assayed 0.53 oz. Au and 2.30 oz. Ag

Geology: 18″ wide auriferous quartz vein strikes NNE in granodiorite

Conclusions: shows limited promise

Name: Marigold

Location: *Sec. 18, T.33N., R.43E., MDBM, Humboldt Co. (1,6,30)

Description: $20,000–30,000 in gold reportedly produced from 0.2–0.5 oz. Au ore; shaft, adit, and numerous trenches; 433 tons yielded $6,568 in 1938–39

Geology: auriferous iron and manganese oxides along silicified brecciated zones in conglomerate, chert, quartzite, and argillite

Location: *NE¼NW¼SW¼ and SE¼SW¼NW¼ Sec. 19, T.33N., R.43E., MDBM, Humboldt Co. (1)

Description: pits

Geology: auriferous iron and manganese oxides in shear zone that trends NNE in argillite, chert, quartzite, and greenstone

Name: Snowstorm

Location: *NW¼NE¼, NE¼NW¼, and S½NW¼ Sec. 25, T.33N., R.45E., MDBM, Lander Co.
(See under METALLICS, Silver)

Name: Adelaide Crown

Location: *W½W½ Sec. 19, T.34N., R.40E., MDBM, Humboldt Co. (1,22,27,30,36)

Description: several shafts, the deepest 430′, several adits and about 8,000′ of underground workings; 27,886 tons yielded $73,116 in gold and silver in 1940

Geology: auriferous and argentiferous sulfides in quartz veins that strike N-NNW and dip 60–75°W in quartzite and argillite; principle vein, the Crown vein, is 10–80′ wide, strikes northerly, and dips 70°W

Name: Nevada Lead

Location: *SW¼SE¼ Sec. 19, NW¼NE¼, SE¼NE¼, and E½SW¼ Sec. 30, and E½NW¼ Sec. 31, T.34N., R.40E., MDBM, Humboldt Co. (1,22,27,30,36)

Description: incline, pits and adits

Geology: auriferous and argentiferous sulfides in quartz veins that strike NNE-NNW and dip steeply W

Name: Adelaide

Location: *SE¼ and SE¼NE¼ Sec. 20, T.34N., R.40E., MDBM, Humboldt Co.
(See under METALLICS, Copper)

Location: S½SE¼ and E½SW¼ Sec. 31, T.34N., R.40E., MDBM, Humboldt Co. (1)

Description: three pits in E½SE¼SE¼

Geology: sulfides in veins along southern extension of Adelaide Crown fault system

Conclusions: warrants additional exploration

Location: *NW¼NE¼ Sec. 31, T.34N., R.42E., MDBM, Humboldt Co. (1)

Description: several adits and pits

Geology: gold in narrow quartz stringers along 2′ wide fault zone that strikes N and dips 35°E in chert

Location: NW¼NE¼ Sec. 27, T.34N., R.51E., MDBM, Eureka Co.
(See under METALLICS, Silver)

Name: Maggie Group

Location: *Sec. 35, T.34N., R.52E., MDBM, Eureka Co. (35)

Description: six carloads mined 1936 from pit and adit; about 60 tons shipped 1936 assayed 0.417 oz. Au and 0.8825 oz. Ag per ton

Geology: gossan in quartzite

Location: *S½ Sec. 5, T.35N., R.40E., MDBM, Humboldt Co. (1)

Description: numerous pits

Geology: quartz lenses in schist and quartzite

Name: Golconda Gold Ledge

Location: *NW¼ Sec. 8, T.35N., R.40E., MDBM, Humboldt Co. (1,36)

Description: about 13,700 tons of 0.25 oz. Au mined 1908–15 from several adits

Geology: quartz stringers and lenses associated with silica porphyry dike that trends N and dips steeply W in quartzite and schist

Name: West Coast (*Pansy Lee, Nevada Consolidated*)

Location: *Sec. 1 and N½ Sec. 12, T.36N., R.36E., and SW¼ Sec. 6, T.36N., R.37E., MDBM, Humboldt Co.
(See under METALLICS, Silver)

Name: Golden Amethyst

Location: *N½N½ Sec. 28, T.36N., R.36E., MDBM, Humboldt Co. (1)

Description: inclined shaft, trenches and pits develop mineralized quartzite bed for about 250′ along strike

Geology: fault parallels 18″ quartzite bed intercalated in slate; bed strikes N73°E, dips about 75°N, and contains wire gold associated with small quartz crystals

Location: NW¼NW¼SE¼ Sec. 7, T.36N., R.37E., MDBM, Humboldt Co. (1)

Description: shaft and several pits; selected sample assayed 0.02 oz. Au and 0.4 oz. Ag

Geology: auriferous iron oxides in quartz stringers that strike NE in slate

Conclusions: shows little promise

Name: Adamson (*A & T*)

Location: *NW¼NE¼SE¼ Sec. 11, T.36N., R.37E., MDBM, Humboldt Co. (1,9,23)

Description: over $8,000 in gold mined from adit and other underground workings

Geology: gold and iron oxides in calcite vein, several feet wide, that strikes NE for several hundred feet and dips steeply NW in slate

Name: Pride of the Mountain (*Pride of the West*)

Location: *NW¼NE¼ Sec. 23, T.36N., R.37E., MDBM, Humboldt Co. (1,9,22,23,36)

Description: about $1,000,000 in $40–100 gold-silver ore mined 1868–77 from adit and cuts

Geology: quartz vein strikes NW and dips NE in hornfels associated with quartz diorite intrusions

Location: *W½NE¼NE¼, NW¼NE¼, and E½NE¼NW¼ Sec. 9, T.38N., R.36E., MDBM, Humboldt Co. (1)

Description: shaft and several pits and trenches

Geology: auriferous sulfides and iron oxides in 4′ wide quartz vein in quartz monzonite

Name: El Paso

Location: *W½W½ Sec. 16, and E½E½ Sec. 17, T.38N., R.40E., MDBM, Humboldt Co. (38)

Description: several pits and adits

Geology: auriferous sulfides and minor scheelite in quartz veins in granodiorite

Name: Getchell

Location: *Secs. 29, 32, and 33, T.39N., R.42E., MDBM, Humboldt Co. (1,6,36)

Description: many millions of dollars produced largely from open pits prior to 1942 and subsequently from extensive underground workings; about $4,800,000 yield from over 650,000 tons mined 1938–40; produced tungsten during World War II and shortly thereafter; reactivated as gold mine in 1962 and operated at about 1200 tons per day in 1963

Geology: epithermal-mesothermal gold deposits associated with granodiorite intrusives; mineralization along NNW-trending fault; early-stage minerals are sulfides of iron, copper, lead, zinc, and arsenic; late-stage minerals include realgar, orpiment, and stibnite

Name: Copper Mountain (*Glory Hole and Walker Tunnel*)

Location: *$E\frac{1}{2}SE\frac{1}{4}$ Sec. 9 and $W\frac{1}{2}SW\frac{1}{4}$ Sec. 10, T.6N., R.19W., SLBM, Box Elder Co.
(See under METALLICS, Copper)

GOLD (placer) [Au]

MINES AND PROSPECTS

Name: Copper Canyon

Location: *$W\frac{1}{2}NE\frac{1}{4}$, $SE\frac{1}{4}NW\frac{1}{4}$, $NE\frac{1}{4}SW\frac{1}{4}$, and $NW\frac{1}{4}SE\frac{1}{4}$ Sec. 33, T.31N., R.43E., MDBM, Lander Co. (1,33)

Description: worked since 1913 and dredged to depth limit of bucket ladder, 1947–55; gravel within 15′ of bedrock averaged $1.50 per cu. yd.

Geology: highest gold values in lower 2–6′ of channel gravels averaging 50′ deep

Name: Lynn Creek

Location: $N\frac{1}{2}$ Sec. 17, T.35N., R.51E., MDBM, Eureka Co. (1,35)

Description: cuts, trenches, pits, and shafts; 4000-cu.-yd. sample yielded 25 oz. Au or about $0.22 per cu. yd.

Geology: gold in stream gravel

Conclusions: indicated reserves in excess of 1,000,000 cu. yds.; limits not defined

OCCURRENCES

Location: $NW\frac{1}{4}SE\frac{1}{4}$ and $NW\frac{1}{4}SW\frac{1}{4}SE\frac{1}{4}$ Sec. 11, T.31N., R.36E., MDBM, Pershing Co. (1)

Geology: auriferous gravel overlain by 15–30′ of surficial alluvium along Willow Creek; nearby downstream gravels extensively placered 1959–60

Conclusions: warrants further investigation

TRENDS

Location: $E\frac{1}{2}$ Sec. 33, T.34N., R.40E., MDBM, Humboldt Co. (1)

Geology: fan gravel downstream from Adelaide property on Gold Run; potentially auriferous

Location: S½ Sec. 1, S½ Sec. 3, SE¼ Sec. 5, Secs. 11 and 13, S½NE¼, W½SW¼, NE¼SW¼, NW¼NW¼SE¼, and NE¼NE¼SE¼ Sec. 17, NE¼NE¼NE¼ Sec. 19, and Secs. 23 and 25, T.29N., R.47E., MDBM, Lander Co. (1,33)

Geology: alluvium along Black Rock Canyon, Mud Spring Gulch, and Tub Spring Gulch, and "older" alluvial fan gravel east of these drainages may be auriferous, especially adjacent to bedrock

IRON [Fe]

MINES AND PROSPECTS

Name: Jackson

Location: *SE¼ Sec. 22, T.29N., R.50E., MDBM, Eureka Co. (32)

Description: 120′-wide by 200′-long area explored by pits and trenches

Geology: hematite and magnetite replacement along N-trending shear zones in andesite and dacite tuff

Name: Imperial

Location: *SE¼ Sec. 23, T.29N., R.50E., MDBM, Eureka Co. (32)

Description: 30–40′-wide by 100′-long area explored by pits and trenches

Geology: hematite and magnetite replacement along near-vertical shear zone that strikes N75°W in andesite and dacite tuff

Name: Frenchie Creek

Location: *N½ Sec. 26, T.29N., R.50E., MDBM, Eureka Co. (32)

Description: 100′ adit, pits, and trenches; mapped magnetically 1951; selected samples assayed 33.8–52.7% Fe

Geology: magnetite and minor hematite localized along shear zones that strike N65–70°E and dip 75°N in early Tertiary andesite and latite tuff

Name: Big Pole

Location: *E½ Sec. 34, T.29N., R.50E., MDBM, Eureka Co. (32)

Description: three pits in NE¼ of section

Geology: several veins of magnetite and hematite, about 1–5′ wide and to 100′ long, strike N30°E and dip 50–60°E in andesite and dacite; largest vein outcrop about 20′ wide

Name: Modarelli (*Amarilla*)

Location: *Sec. 30, T.29N., R.51E., MDBM, Eureka Co. (32)

Description: 263,000 long tons of 57.8% Fe mined 1951–52 from open cut; about 120,000 additional tons mined 1955, '56, and '59

Geology: hematite-magnetite replacement of early Tertiary volcanic rocks, especially at intersection of NW and E-trending faults

Name: Barth (*West*)

Location: Lots 3 and 4 in Sec. 7, T.31N., R.51E., MDBM, Eureka Co. (1,20,35)

Description: 763,000 long tons of hematite produced as smelter flux for siliceous ores 1903–10 from open pit and underground; from 1961 through 1963, 400,000 long tons of hematite (about 63% Fe) produced from open pit 800′ long by 200′ wide; deposit contains relatively high phosphorous content

Geology: hematite and magnetite replacement of andesite; 160′ width of massive hematite in hanging wall exposed in pit and about the same width of massive magnetite in footwall is drilled, but not stripped; deposit strikes NNW and dips about 40°E

Conclusions: source of iron ore

Location: *$NE\frac{1}{4}$ and $S\frac{1}{2}SW\frac{1}{4}$ Sec. 24, T.37N., R.63E., MDBM, Elko Co. (1)

Description: several trenches, adits, and pits in $NE\frac{1}{4}$ and adits in $S\frac{1}{2}SW\frac{1}{4}$

Geology: gossans to 6′ wide in calcareous mylonite; gossans in $NE\frac{1}{4}$ strike about N45°E and dip steeply, in $S\frac{1}{2}SW\frac{1}{4}$ strike N30°E for several hundred feet

OCCURRENCES

Location: *$SE\frac{1}{4}SW\frac{1}{4}$ Sec. 18 and $NE\frac{1}{4}NW\frac{1}{4}$ Sec. 19, T.29N., R.51E., MDBM, Eureka Co. (32)

Geology: magnetite and hematite replacement zone trends for over 1000′ to NNE in andesite to dacite tuff

Location: *$N\frac{1}{2}NE\frac{1}{4}$ Sec. 34, T.32N., R.51E., MDBM, Eureka Co. (1)

Geology: hematite gossan in andesite

LEAD [Pb]

MINES AND PROSPECTS

Name: Grey Eagle

Location: *$W\frac{1}{2}SW\frac{1}{4}$ Sec. 13 and $E\frac{1}{2}SE\frac{1}{4}$ and $E\frac{1}{2}SW\frac{1}{4}SE\frac{1}{4}$ Sec. 14, T.29N., R.46E., MDBM, Lander Co.
(See under METALLICS, Silver)

Name: Railroad (*Bullion*) District

Location: *Secs. 3, 4, 5, and 9, T.30N., R.53E., and Secs. 32, 33, 34, and 35, T.31N., R.53E., MDBM, Elko Co.
(See under METALLICS, Silver)

Name: Silver-Lead

Location: *$SE\frac{1}{4}$ Sec. 7, T.31N., R.41E., MDBM, Pershing Co.
(See under METALLICS, Silver)

Name: Butte (*Gold Butte*)

Location: *$NE\frac{1}{4}SW\frac{1}{4}$ Sec. 14, T.31N., R.43E., MDBM, Lander Co.
(See under METALLICS, Silver)

Name: Copper Canyon

Location: *$SW\frac{1}{4}NW\frac{1}{4}$ Sec. 27 and $SE\frac{1}{4}NE\frac{1}{4}$ Sec. 28, T.31N., R.43E., MDBM, Lander Co.
(See under METALLICS, Copper)

Name: Lucky Strike

Location: *mining claim no. 3475 in $E\frac{1}{2}NW\frac{1}{4}$, $SW\frac{1}{4}NE\frac{1}{4}$, and $SE\frac{1}{4}$ Sec. 27, T.32N., R.43E., MDBM, Lander Co.
(See under METALLICS, Silver)

Name: O'Leary (*Midland, Northland, Buckingham*)

Location: *$E\frac{1}{2}SW\frac{1}{4}SW\frac{1}{4}$ Sec. 30 and $N\frac{1}{2}NW\frac{1}{4}$, $E\frac{1}{2}SW\frac{1}{4}NW\frac{1}{4}$, $SE\frac{1}{4}NW\frac{1}{4}$, and $NE\frac{1}{4}SW\frac{1}{4}$ Sec. 31, T.32N., R.44E., MDBM, Lander Co.
(See under METALLICS, Silver)

Location: $NW\frac{1}{4}$ Sec. 5, T.33N., R.40E., MDBM, Humboldt Co.
(See under METALLICS, Silver)

Name: Snowstorm

Location: *$NW\frac{1}{4}NE\frac{1}{4}$, $NE\frac{1}{4}NW\frac{1}{4}$, and $S\frac{1}{2}NW\frac{1}{4}$ Sec. 25, T.33N., R.45E., MDBM, Lander Co.
(See under METALLICS, Silver)

Location: $NW\frac{1}{4}NE\frac{1}{4}$ Sec. 27, T.34N., R.51E., MDBM, Eureka Co.
(See under METALLICS, Silver)

Location: $SW\frac{1}{4}SE\frac{1}{4}$ Sec. 13, T.35N., R.38E., MDBM, Humboldt Co.
(See under METALLICS, Silver)

Location: $E\frac{1}{2}SE\frac{1}{4}$ Sec. 13, T.37N., R.63E., MDBM, Elko Co. (1)

Description: explored for strike length of 85′ and to depth of about 30′ by an adit, a tunnel, and several trenches and pits; selected sample assayed 54.2% Pb, a trace of Au, and no Ag

Geology: galena stringers and pods in 0.5–3.5′ wide oxidized zone that strikes N70°E and dips 30–60°S in brecciated limestone

Conclusions: shows limited promise

Name: Loray (*Luray, Montello*)

Location: *Secs. 1, 4, 8 and 9, T.37N., R.68E., and Secs. 32, 33, and 36, T.38N., R.68E., MDBM, Humboldt Co. (1,14)

Description: about 1,500,000 lbs. Pb, 58,000 oz. Ag, 36,700 lbs. Cu, and 5 oz. Au valued at about $190,000 reportedly mined from numerous pits and trenches and several short shafts and adits

Geology: argentiferous copper oxides in opaline quartz veins in limestone and dolomite

Name: Tecoma Hill (*includes Tecoma, Black Warrior, Independence, Clipper, and Mineral Mountain*)

Location: *$NE\frac{1}{4}$ Sec. 21, T.39N., R.70E., MDBM, Elko Co., and $SE\frac{1}{4}SE\frac{1}{4}$ Sec. 8 and $S\frac{1}{2}$ Sec. 9, T.6N., R.19W., SLBM, Box Elder Co.
(See under METALLICS, Silver)

Name: Jackson

Location: *NE¼ Sec. 18, T.41N., R.70E., MDBM, Elko Co. (1,14)

Description: about $103,000 in lead, silver, gold, and copper mined from shaft, adits, and pits prior to 1923; 1814 tons mined 1947–51; concentrates from district, largely from Jackson, reported to average 20% Pb, 7–8 oz. Ag, 1.5% Zn, and 0.08% Cu; shoots averaging about 12% Pb reported mined to depths of about 250′

Geology: cerussite in N-trending, steeply dipping, 1–10′ wide fractured silicified zones in limestone

Name: Durham

Location: *SE¼ Sec. 18, T.41N., R.70E., MDBM, Elko Co. (1,14)

Description: 60′ shaft; average "crude" reportedly assayed 40% Pb, 32 oz. Ag, and 0.2 oz. Au

Geology: cerussite in fracture zone that strikes N30°E and dips 60° in limy shale

Name: Copper Mountain (*Glory Hole and Walker Tunnel*)

Location: *E½SE¼ Sec. 9 and W½SW¼ Sec. 10, T.6N., R.19W., SLBM, Box Elder Co.
(See under METALLICS, Copper)

Name: Cunepah Tunnel (*Montello*)

Location: *N½NW¼ Sec. 33, T.6N., R.19W., SLBM, Box Elder Co. (1)

Description: 300′ adit leading to 160′ inclined winze and 100′ raise to surface; explored by numerous surface workings

Geology: irregular veins of limonite, cerussite, and galena with thin coatings of smithsonite along fractures in limestone

MANGANESE [Mn]

MINES AND PROSPECTS

Location: W½W½ Sec. 33, T.30N., R.45E., MDBM, Lander Co. (1)

Description: pit

Geology: fracture fillings and replacements by pyrolusite and psilomelane along NW-trending fracture zone in chert

Conclusions: shows little promise

Location: NE¼NE¼ Sec. 29, T.30N., R.46E., MDBM, Lander Co. (1)

Description: 214 tons mined from pit 1942–45; assayed about 20–30% MnO_2

Geology: pyrolusite, psilomelane, and limonite in 2–3′ wide vein that strikes N25°W and dips 30°W in chert

Conclusions: shows limited promise

Name: Black Diablo

Location: *NE¼ Sec. 2, T.32N., R.39E., MDBM, Pershing Co. (9,24)

Description: 57,281 tons reported produced, of which 17,160 tons contained 35.3–37.4% Mn and the remainder 27.3–33.4% Mn; active 1929, during and after World War II; ore mined from one open cut that exposes 400′ long by 150′ wide deposit; explored by trenching and diamond drilling

Geology: lenticular bedding replacement deposit, largely brunite, strikes N60°E and dips 30°W in chert, jasper, and argillite

Name: Black Rock

Location: *$SE\frac{1}{4}SE\frac{1}{4}$ Sec. 34, T.32N., R.42E., MDBM, Lander Co. (1,10,24,30)

Description: three cuts, one to 200′ long, and three short adits; about 2000 tons of manganese concentrates averaging about 48% Mn shipped; explored by trenching and diamond drilling; three main lenses from 150–420′ long and to 121′ wide; operated 1941–44

Geology: nearly vertical lenticular bedding replacement deposits of psilomelane, pyrolusite, and silica strike about N25°W in chert and quartzite

Location: *$SE\frac{1}{4}SW\frac{1}{4}$ Sec. 19, T.32N., R.44E., MDBM, Lander Co (1)

Description: two pits

Geology: psilomelane and pyrolusite in N-trending stringers along faults in quartzite

Location: *$W\frac{1}{2}W\frac{1}{2}SW\frac{1}{4}$ Sec. 5 and $E\frac{1}{2}E\frac{1}{2}SE\frac{1}{4}$ Sec. 6, T.33N., R.41E., MDBM, Humboldt Co. (1)

Description: three trenches

Geology: manganese oxides in fractured chert

Location: *$N\frac{1}{2}$ Sec. 8, T.33N., R.41E., MDBM, Humboldt Co. (1)

Description: three pits and several trenches

Geology: rhodonite and manganese-oxide replacements in fractured chert

Location: $SW\frac{1}{4}NW\frac{1}{4}$ and $SE\frac{1}{4}SW\frac{1}{4}$ Sec. 9, T.33N., R.41E., MDBM, Humboldt Co. (1)

Description: two pits

Geology: manganese oxides in fractured chert

Conclusions: shows little promise

Location: $S\frac{1}{2}SE\frac{1}{4}$ Sec. 33, T.34N., R.41E., MDBM, Humboldt Co. (1)

Description: pit; selected sample assayed 17.67% Mn, 0.04 oz. Au, and 0.20 oz. Ag

Geology: psilomelane and pyrolusite in 3–5′ wide vein that strikes N5°W and dips 30°W in quartzite; float traced about 200′ along strike

Conclusions: shows limited promise

Location: $SW\frac{1}{4}NE\frac{1}{4}$ Sec. 19, T.34N., R.42E., MDBM, Humboldt Co. (1)

Description: pit

Geology: pyrolusite in fractured chert

Conclusions: shows little promise

Location: *$S\frac{1}{2}SW\frac{1}{4}NE\frac{1}{4}$ and $N\frac{1}{2}NW\frac{1}{4}SE\frac{1}{4}$ Sec. 30, T.34N., R.42E., MDBM, Humboldt Co. (1)

Description: pit

Geology: manganese oxides in fractured chert and hornfels

Name: Golconda

Location: *NW¼ Sec. 1, T.35N., R.40E., and W½ Sec. 36, T.36N., R.40E., MDBM, Humboldt Co.
(See under METALLICS, Tungsten)

Location: NW¼SE¼ Sec. 15, T.35N., R.41E., MDBM, Humboldt Co. (1)

Description: pit

Geology: manganese-oxide replacement of chert along 2–3′ wide fracture zone trending N75°W

Conclusions: shows little promise

Location: *E½SE¼ Sec. 15, T.35N., R.41E., MDBM, Humboldt Co. (1)

Description: two pits

Geology: manganese-oxide replacement in lower 5′ of fractured chert bed discontinuously exposed for 260′ along a N trend

Location: *NW¼SE¼ Sec. 21, T.35N., R.41E., MDBM, Humboldt Co. (1)

Description: pit

Geology: pyrolusite replacement in 8′ thick by 260′ long fracture zone in chert

Location: *E½E½ Sec. 22 and W½SW¼ and SW¼NW¼ Sec. 23, T.35N., R.41E., MDBM, Humboldt Co. (1)

Description: three pits

Geology: manganese oxides in fractured chert

OCCURRENCES

Location: *E½E½ Sec. 32, T.30N., R.45E., MDBM, Lander Co. (1)

Geology: fracture fillings and replacements of chert by pyrolusite and psilomelane along NW-trending fracture zone

Location: SE¼NE¼ Sec. 5, T.31N., R.43E., MDBM, Lander Co. (1)

Geology: manganese oxides in shear zone in carbonate rocks

Conclusions: shows little promise

Location: SW¼NE¼SE¼ Sec. 27, T.32N., R.42E., MDBM, Lander Co. (1)

Geology: 40′ by 50′ area containing manganese oxide in fractured chert

Conclusions: shows little promise

Location: *SW¼SW¼ Sec. 26, T.32N., R.44E., MDBM, Lander Co. (1)

Geology: psilomelane and pyrolusite in NNE-trending stringers along fault in carbonate rocks

Location: *NW¼NW¼ Sec. 35, T.32N., R.44E., MDBM, Lander Co. (1)

Geology: psilomelane and pyrolusite in NNW-trending stringers along fault in carbonate rocks

MERCURY [Hg]

MINES AND PROSPECTS

Name: Beowawe (*Red Devil Group*)

Location: *SW¼NW¼ Sec. 5 and SW¼SE¼ Sec. 6, T.31N., R.49E., MDBM, Eureka Co. (1,2)

Description: 132 flasks recovered in 1929 and a few flasks in 1932 from 150′ shaft leading to about 2000′ of underground workings in Sec. 6; pit in Sec. 5

Geology: disseminated cinnabar in fracture zone along fault that strikes N25°E and dips 25°E in silicified limestone conglomerate; cinnabar concentrated along gash fractures that trend about N15°W

Name: Plymouth (*O'Leary*)

Location: *NW¼SW¼ Sec. 1, T.35N., R.38E., MDBM, Humboldt Co. (2)

Description: short adits

Geology: scattered pods and stringers of cinnabar in clastic rocks and silicified E-trending rhyolite dikes

Name: Red Devil

Location: *NW¼SE¼ Sec. 5, T.37N., R.40E., MDBM, Humboldt Co. (1,2)

Description: about one flask produced prior to 1943 from incline and several pits

Geology: cinnabar in silicified volcanic and clastic rocks

Name: Dutch Flat

Location: *N½NW¼ Sec. 17, T.38N., R.40E., MDBM, Humboldt Co. (1,2,38)

Description: about 72 flasks produced prior to 1955 from a 125′ incline, a 75′ incline, about 500′ of other underground workings, and several trenches and pits

Geology: cinnabar disseminated along shear zone that strikes N45°E and dips 35°SE in silicified volcanic and clastic rocks

Location: *W½NE¼ Sec. 17, T.38N., R.40E., MDBM, Humboldt Co. (38)

Description: pits

Geology: irregular cinnabar-bearing shoots to 2.5′ wide in shear that strikes N10°E and dips 20–35°E in quartzite and hornfels

Name: Last Chance

Location: *Sec. 21, T.38N., R.40E., MDBM, Humboldt Co. (2)

Description: about one flask produced in 1941 from a shallow shaft and pits

Geology: cinnabar in silicified volcanic and clastic rocks

TRENDS

Location: NW¼NE¼ Sec. 7, T.31N., R.49E., MDBM, Eureka Co. (1)

Geology: on strike with fault containing cinnabar in SW¼SE¼ Sec. 6; covered by alluvium

MOLYBDENUM [Mo]

MINES AND PROSPECTS

Location: *NW¼SW¼ Sec. 30, T.32N., R.44E., MDBM, Lander Co. (1)

Description: pit

Geology: molybdenite, pyrite, and arsenopyrite along fractures in quartz monzonite porphyry

Location: SW¼NW¼ Sec. 13, T.34N., R.40E., MDBM, Humboldt Co. (1)

Description: pit

Geology: molybdenite crystals to 0.4″ in diameter associated with copper minerals in quartz vein less than 1′ wide that strikes N70°E and dips 30°N in finely crystalline metamorphosed volcanic rocks

Conclusions: shows little promise

Location: *SE¼SE¼ Sec. 14, T.34N., R.40E., MDBM, Humboldt Co. (1)

Description: adit and two pits

Geology: molybdenite crystals to 0.4″ in diameter associated with copper minerals in quartz vein less than 1′ wide that strikes N25°W and dips 20°W in granodiorite

SILVER [Ag]

MINES AND PROSPECTS

Name: Silver Side

Location: *Sec. 6, T.28N., R.47E., MDBM, Lander Co. (8)

Description: 625′ adit on vein

Geology: argentiferous quartz-carbonate vein 3′ wide strikes N and dips 20–38°E in quartzite

Location: *SW¼SW¼SW¼ Sec. 16, T.28N., R.49E., MDBM, Eureka Co. (1)

Description: pit

Geology: pyrite in gossan in quartzite; oxidized zone along NE-trending fault in quartzite

Location: *E½ Sec. 19, T.29N., R.45E., MDBM, Lander Co. (1)

Description: pits and adit

Geology: argentiferous sulfides in quartz veins in dolomite marble

Location: *NE¼NE¼SE¼ Sec. 1, T.29N., R.46E., and NW¼NW¼SW¼ Sec. 6, T.29N., R.47E., MDBM, Lander Co. (1)

Description: adit and pit

Geology: argentiferous(?) galena in quartz in brecciated quartzite

Location: NW¼SE¼SE¼ and NE¼SW¼SE¼ Sec. 1, T.29N., R.46E., MDBM, Lander Co. (1)

Description: two pits

Geology: argentiferous galena in 4–6″ wide quartz stringer that strikes NE in chert and argillite

Conclusions: shows little promise

Location: *SE¼ Sec. 3, T.29N., R.46E., MDBM, Lander Co. (1)

Description: several pits and adits

Geology: argentiferous oxides and sulfides in brecciated quartzite and chert

Name: Hilltop, Independence

Location: *Sec. 4, T.29N., R.46E., MDBM, Lander Co.
(See under METALLICS, Gold)

Name: Red Top (*Maysville*)

Location: *NE¼ Sec. 5, T.29N., R.46E., MDBM, Lander Co.
(See under METALLICS, Gold)

Name: Kattenhorn

Location: *W½NW¼NW¼ Sec. 5 and NE¼NE¼ Sec. 6, T.29N., R.46E., and SW¼SW¼SW¼ Sec. 32, T.30N., R.46E., MDBM, Lander Co. (1,37)

Description: about $200,000 in silver reportedly mined from six adits during 1880's and 1890's

Geology: argentiferous sulfides in quartz vein that strikes N45°W and dips about 45°SW in quartzite

Name: Blue Dick

Location: *W½NE¼ Sec. 6, T.29N., R.46E., MDBM, Lander Co. (1,37)

Description: about $100,000 in silver with gold mined from seven adits 1917–37; workings extend to about 150′ depth; ore shipped 1937 assayed 0.0325 oz. Au, 31.1175 oz. Ag, and 0.10% Cu

Geology: argentiferous sulfides in 1–5′ wide quartz vein that strikes N45°W and dips about 45°SW in quartzite

Name: Grey Eagle

Location: *W½SW¼ Sec. 13 and E½SE¼ and E½SW¼SE¼ Sec. 14, T.29N., R.46E., MDBM, Lander Co. (1,8,37)

Description: operated intermittently since 1870's from 250′ shaft and numerous surface workings that exposed parts of vein for over 3000′ of strike length; about $25,000 in silver, gold, and lead produced 1906–07

Geology: argentiferous lead and zinc sulfides in quartz vein that strikes N70°E and dips 70°N in granodiorite

Location: *SE¼SW¼ Sec. 24 and N½NE¼NW¼ Sec. 25, T.29N., R.46E., MDBM, Lander Co. (1)

Description: 75′ inclined shaft

Geology: brecciated quartzite

Name: Silver Prize

Location: *W½NE¼ and E½NW¼ Sec. 19, T.29N., R.47E., MDBM, Lander Co. (8)

Description: three adits on one vein and an incline on second vein

Geology: oxidized silver-bearing minerals and argentiferous sulfides in 2′ wide vertical quartz vein that strikes NW in andesite; silver-bearing lead sulfide and carbonate minerals in 20″ wide vein that strikes N50°W and dips 58°S in quartzite

Name: Lovie (*Bonnie Jean*)

Location: *W½ Sec. 30, T.29N., R.47E., MDBM, Lander Co. (1,8)

Description: about $300,000 in Ag reportedly mined from four adits and a shaft to 250′ depth

Geology: cerargyrite in gossan-capped quartz-carbonate vein that strikes N65°E and dips 20–50°S in argillite and quartzite; vein crops out over 400′ along strike

Name: Betty O'Neal

Location: *E½E½ Sec. 22 and W½W½ Sec. 23, T.30N., R.45E., MDBM, Lander Co. (1,6,8,37)

Description: silver and minor gold, valued at about $3,000,000 mined 1923–28 from 330′ shaft and extensive underground workings; over $2,000,000 yielded from about 146,000 tons 1927–28; first worked in 1880 and produced over $250,000 in 1882

Geology: argentiferous sulfides in quartz vein, a few inches to three feet wide, that strikes N30°W and dips 20–50°E in quartzite and argillite

Name: Dean (*Pittsburg, Morning Star*)

Location: *mining claims 37–44 in E½ Sec. 36, T.30N., R.45E., and S½NW¼ and S½ Sec. 31, T.30N., R.46E., MDBM, Lander Co.
(See under METALLICS, Gold)

Name: Railroad (*Bullion*) District

Location: *Secs. 3, 4, 5, and 9, T.30N., R.53E., and Secs. 32, 33, 34, and 35, T.31N., R.53E., MDBM, Elko Co. (1,8,14)

Description: about 1,180,000 oz. Ag, 22,930,000 lbs. Pb, 6,750,000 lbs. Cu, and 2,590 oz. Au valued at about $4,290,000 produced 1869–1949 from numerous shafts, adits, and pits; mined to depth of 500′

Geology: argentiferous base-metal sulfides, oxides, and carbonates in replacement deposits in marble; auriferous quartz vein in granodiorite

Name: Silver-Lead

Location: *SE¼ Sec. 7, T.31N., R.41E., MDBM, Pershing Co. (10)

Description: active during 1880's

Geology: argentiferous(?) galena, sphalerite, and pyrite in veins and lenses along faults that strike NNE and dip 60–70°W

Location: *NW¼SW¼SE¼ Sec. 1, T.31N., R.42E., MDBM, Lander Co. (1)

Description: adit

Geology: argentiferous sulfides in quartz vein that strikes NE in argillite

Location: SW¼NE¼ and NW¼SE¼ Sec. 21, T.31N., R.42E., MDBM, Lander Co.
(See under METALLICS, Copper)

Location: SE¼NE¼ Sec. 1, T.31N., R.43E., MDBM, Lander Co. (1)

Description: two pits; selected samples assayed 0.05–0.6 oz. Ag

Geology: argentiferous oxides in gossan that strikes N10°E and dips 45–55°W in quartzite and slate

Conclusions: shows little promise

Location: SE¼SE¼ Sec. 3, T.31N., R.43E., MDBM, Lander Co. (1)

Description: adit; selected sample assayed 0.09 oz. Au and 6.4 oz. Ag

Geology: argentiferous, 1–6″ wide oxidized fissure that strikes N10–20°E and dips 20–35°W in quartzite and argillite

Conclusions: shows limited promise

Location: SW¼SW¼ Sec. 3, T.31N., R.43E., MDBM, Lander Co. (1)

Description: pits; selected sample assayed 1.98 oz. Au and 88.86 oz. Ag

Geology: thin stringers in N-trending oxidized zone in argillite

Conclusions: shows limited promise

Location: W½NW¼NW¼ Sec. 7, T.31N., R.43E., MDBM, Lander Co. (1)

Description: pit; selected sample assayed a trace Au and 0.8 oz. Ag

Geology: oxidized zone several feet wide and about 1300′ long along fault that strikes N15°E and dips 80°W to vertically between limestone and argillite

Conclusions: shows limited promise

Name: White and Shiloh

Location: *S½SE¼ Sec. 9, T.31N., R.43E., MDBM, Lander Co. (1,16,30,36)

Description: two adits and a shaft provided access to depth of 160′ along strike distance of 1300′; yielded over $100,000 in silver and gold 1873–75 from 1,073 tons of ore

Geology: argentiferous sulfides in quartz vein that strikes NNE and dips W in argillite, slate, and quartzite

Location: E½SW¼SW¼ Sec. 9, T.31N., R.43E., MDBM, Lander Co. (1)

Description: adit; selected sample assayed 0.08 oz. Au and 1.5 oz. Ag

Geology: quartz stringers in oxidized zone that strikes N15°E and dips 60°W in chert

Conclusions: shows little promise

Name: Battle Mountain

Location: *E½E½NE¼ and NE¼SE¼ Sec. 9, T.31N., R.43E., MDBM, Lander Co. (1,16,30,36)

Description: adit to vein; yielded over $360,000 in silver and gold 1871–74 from 5,449 tons of ore

Geology: argentiferous sulfides and carbonates in 2′ wide lode in 4–8′ wide vertical quartz vein that strikes N45°W in argillite, slate, and quartzite

Name: Trinity

Location: *E½SE¼SW¼ and W½SE¼ Sec. 10, T.31N., R.43E., MDBM, Lander Co. (1,16,30,36)

Description: 800′ adit on vein; ore reported to assay $20 per ton in silver and gold

Geology: argentiferous sulfides in 1–4′ wide zone in hanging wall of fault that strikes N30°E and dips 45–50°W in argillite and quartzite

Name: Driscol

Location: *W½W½ Sec. 10, T.31N., R.43E., MDBM, Lander Co. (1,16,30,36)

Description: four adits on vein provided access to 200′ depth

Geology: argentiferous sulfides and carbonates in quartz vein 3–48″ wide that strikes N25°E and dips 50°W in quartzite

Name: North Butte

Location: *SW¼SW¼ Sec. 11, T.31N., R.43E., MDBM, Lander Co. (1,16,30)

Description: adit to vein at a depth of 75′

Geology: argentiferous sulfides and carbonates in 15′ wide quartz vein that strikes N15°W and dips 50°W in argillite

Location: E½E½SW¼ and W½SE¼ Sec. 13, T.31N., R.43E., MDBM, Lander Co. (1)

Description: several pits; four selected samples assayed a trace Au and 0.5–0.6 oz. Ag

Geology: oxidized zone and quartz stringers in argillite, greenstone, and chert

Conclusions: shows little promise

Name: Butte (*Gold Butte*)

Location: *NE¼SW¼ Sec. 14, T.31N., R.43E., MDBM, Lander Co. (1,30,37)

Description: about $100,000 in silver with gold and lead mined from two adits and several shafts

Geology: silver-bearing sulfide, chloride, and carbonate minerals in 3′ wide vein that strikes N10°W and dips 45–60°W in argillite and quartzite; a second vein worked primarily for gold

Name: Sioux

Location: *SE¼NW¼ Sec. 14, T.31N., R.43E., MDBM, Lander Co. (1,30)

Description: two adits and several pits

Geology: argentiferous sulfides in 4–6′ wide quartz vein that strikes N15°W and dips 75°W in argillite

Name: Spanish

Location: *NW¼NW¼ Sec. 15, T.31N., R.43E., MDBM, Lander Co. (1,16,30)

Description: pits

Geology: argentiferous sulfides in 2–10″ wide quartz vein that strikes N10°E and dips 75°W in slate and quartzite

Location: SW¼NE¼ Sec. 15, T.31N., R.43E., MDBM, Lander Co. (1)

Description: pit; selected sample assayed 0.01 oz. Au and 2.3 oz. Ag

Geology: argentiferous cerussite in oxidized zone that strikes NNE and dips 35°W in chert

Conclusions: shows limited promise

Location: E½NW¼SE¼, W½NE¼SE¼, and SE¼SE¼ Sec. 15, T.31N., R.43E., MDBM, Lander Co. (1)

Description: pits; selected sample assayed 0.01 oz. Au and 0.1 oz. Ag

Geology: N-trending oxidized stringers that dip 65–75°E in greenstone

Conclusions: shows little promise

Name: Avalanche

Location: *E½E½ Sec. 16, T.31N., R.43E., MDBM, Lander Co. (1,16,30)

Description: 800′ adit on vein; main shoot 100′ long

Geology: argentiferous sulfides in 2–8′ wide quartz vein that strikes N5–10°W and dips 60°W in argillite, slate, and quartzite

Name: Meger

Location: *SW¼SE¼ Sec. 16, T.31N., R.43E., MDBM, Lander Co. (1,16,30)

Description: 150′ adit to vein and pits

Geology: argentiferous sulfides in two 4–6″ wide stringers that strike N10°W and dip 50°W in argillite and quartzite

Name: Nevada

Location: *SE¼SE¼ Sec. 16 and N½NE¼NE¼ Sec. 21, T.31N., R.43E., MDBM, Lander Co. (1,16,30)

Description: several shafts; 100 oz. Ag reported in sulfide zone and 200 oz. Ag in carbonate zone

Geology: argentiferous sulfides and carbonates in 40′ wide by 150′ long lode in zone that strikes N15°W and dips 50°W in limestone

Name: Elko-Lander

Location: *E½SE¼NW¼ and W½SW¼NE¼ Sec. 21, T.31N., R.43E., MDBM, Lander Co.
(See under METALLICS, Gold)

Name: Independence

Location: *SE¼NW¼ Sec. 22, T.31N., R.43E., MDBM, Lander Co.
(See under METALLICS, Gold)

Name: Buzzard

Location: *W½W½SW¼ Sec. 23, T.31N., R.43E., MDBM, Lander Co.
(See under METALLICS, Gold)

Location: W½E½NW¼, E½W½NW¼, and NE¼NE¼NW¼ Sec. 25, T.31N., R.43E., MDBM, Lander Co. (1)

Description; adit; selected sample assayed a trace to 0.02 oz. Au and 0.4–0.7 oz. Ag

Geology: quartz in 2–4′ wide, N-trending and steeply dipping oxidized zones and veins along faults in argillite, chert, and greenstone; one zone traced over 0.5 mile along strike

Conclusions: shows limited promise

Location: *SW¼SE¼SE¼ Sec. 26, T.31N., R.43E., MDBM, Lander Co. (1)

Description: pits

Geology: quartz vein strikes N35°W and dips 45°W in argillite

Name: Copper Canyon

Location: *SW¼NW¼ Sec. 27 and SE¼NE¼ Sec. 28, T.31N., R.43E., MDBM, Lander Co.
(See under METALLICS, Copper)

Name: Tomboy

Location: *E½E½SW¼ Sec. 27, T.31N., R.43E., MDBM, Lander Co.
(See under METALLICS, Gold)

Name: Wilson-Independence

Location: *SW¼SW¼ Sec. 28, T.31N., R.43E., MDBM, Lander Co.
(See under METALLICS, Gold)

Location: *NW¼SW¼ Sec. 6, T.31N., R.44E., MDBM, Lander Co. (1)

Description: pit

Geology: silver-bearing oxidized zone that strikes N20°W and dips 75°W

Location: *NW¼NW¼ Sec. 6, T.31N., R.44E., MDBM, Lander Co. (1)

Description: pit

Geology: argentiferous galena and sphalerite in 1–2″ wide quartz stringer that strikes N20°W and dips 75°E in argillite and greenstone

Location: NE¼NW¼NW¼ Sec. 3, T.31N., R.49E., MDBM, Eureka Co. (1)

Description: pit; selected sample assayed a trace Au and 0.20 oz. Ag

Geology: limonite along quartzite-andesite contact

Conclusions: shows little promise

Name: Zenoli (*Morning Glory Group*)

Location: *N½SW¼ Sec. 17, T.31N., R.51E., MDBM, Eureka Co. (1,6,8,35)

Description: $60–70 per ton in Ag with Cu and Pb values mined 1907–08 from 100′ deep incline and adit to vein; three other adits and several pits explore area; about 20 tons shipped 1936 assayed 21.2 oz. Ag, 1.11% Cu, and 2.0% Zn

Geology: argentiferous sulfides in 1–5′ wide quartz-calcite-barite vein that strikes about N and dips 23–45°E in andesite

Name: Onondaga

Location: *S½SW¼ Sec. 17, T.31N., R.51E., MDBM, Eureka Co. (1,6,8,35)

Description: two lodes reported to assay 30–100 oz. Ag mined 1882–86 from several adits on vein and a shaft to depths of 250′ below outcrop; about 19 tons shipped 1933 assayed 45.54 oz. Ag and 0.6% Cu

Geology: cerargyrite with calcite, barite, and copper oxides and carbonates in main vein that strikes NW and dips 60–80°SW in andesite

Location: *SW¼SW¼ Sec. 36, T.31N., R.52E., MDBM, Elko Co. (1)

Description: several pits

Geology: argentiferous sulfides in 3′′ wide quartz stringers that strike N50°E and dip 85°N in limestone, dolomite, and minor chert

Name: Buffalo Valley

Location: *S½NE¼ Sec. 33, T.32N., R.42E., MDBM, Lander Co.
(See under METALLICS, Gold)

Name: DeWitt

Location: *W½SW¼ Sec. 23, T.32N., R.43E., MDBM, Lander Co. (1,16,30)

Description: adit and several pits

Geology: argentiferous sulfides in quartz stringers that strike N10–15°E and dip 45°E in quartzite

Name: Lucky Strike

Location: *mining claim no. 3475 in E½NW¼, SW¼NE¼, and SE¼ Sec. 27, T.32N., R.43E., MDBM, Lander Co. (1,16,30)

Description: 106′ shaft and adit to vein yielded sulfide ore in 1908 that reportedly averaged 0.2–0.25 oz. Au, 150 oz. Ag, and 50% Pb

Geology: argentiferous sulfides in steeply dipping quartz vein to 2.5′ wide that strikes N35°W in quartzite

Name: Irish Rose

Location: *E½NE¼NW¼ and W½NW¼NE¼ Sec. 36, T.32N., R.43E., MDBM, Lander Co. (1,30)

Description: several pits

Geology: argentiferous sulfides in quartz vein that trends NW in quartzite

Name: Little Giant

Location: *E½NE¼ Sec. 36, T.32N., R.43E., and SW¼NW¼ Sec. 31, T.32N., R.44E., MDBM, Lander Co. (1,16,30)

Description: over $1,000,000 in Ag reportedly mined from several pits, two shafts, and eight adits which explore vein for 1700′ on strike and over a vertical range of 250′; richest ore mined reported to contain to 150 oz. Ag

Geology: argentiferous sulfides in quartz vein to 8′ wide that strikes N30–60°W and dips 40–50°SW in hornfels; partly oxidized upper portions contained silver carbonate and chloride minerals

Name: Carissa

Location: *SW¼NW¼SW¼ Sec. 28, T.32N., R.44E., MDBM, Lander Co.
(See under METALLICS, Gold)

Name: O'Leary (*Midland, Northland, Buckingham*)

Location: *E½SW¼SW¼ Sec. 30 and N½NW¼, E½SW¼NW¼, SE¼NW¼, and NE¼SW¼ Sec. 31, T.32N., R.44E., MDBM, Lander Co. (1,16,30)

Description: 98′ shaft and 250′ adit on Midland vein, incline on Northland vein, and incline and adit to Buckingham vein; ore at Midland reported to have yielded over $50 per ton largely in silver, lead, and zinc

Geology: argentiferous lead, zinc, copper, and iron sulfides at Midland in quartz vein to 18″ wide that strikes N10°W and dips 80°W in hornfels and quartzite; argentiferous copper and iron sulfides at Northland which appears to be a continuation of Midland vein; argentiferous iron, lead, and zinc sulfides in vein that strikes N20°W and dips 40–45°W in quartzite

Name: White Bear (*Chafey*)

Location: *SE¼SE¼ Sec. 11, T.33N., R.36E., MDBM, Pershing Co.
(See under METALLICS, Gold)

Name: Lang Syne (*Auld Lang Syne*)

Location: *NW¼NW¼ Sec. 12, T.33N., R.36E., MDBM, Pershing Co.
(See under METALLICS, Gold)

Name: Auburn

Location: *NW¼NW¼ Sec. 6, T.33N., R.37E., MDBM, Pershing Co.
(See under METALLICS, Gold)

Location: NW¼ Sec. 5, T.33N., R.40E., MDBM, Humboldt Co. (1)

Description: pit, adit, and incline; selected sample assayed 0.025 oz. Au, 9.5 oz. Ag, 8.3% Pb, 8.2% Zn, and 1.2% Cu

Geology: argentiferous sulfides in 2–10″ wide quartz stringers and 2–3′ wide replacement zone in footwall of fault that strikes N and dips 20–30°W in hornfels and phyllite

Conclusions: warrants additional exploration

Location: *NE¼NE¼ Sec. 1, T.33N., R.41E., and SE¼SE¼ Sec. 36, T.34N., R.41E., MDBM, Humboldt Co. (1)

Description: shaft and two pits

Geology: vertical quartz vein to 4′ wide that strikes N5°W in chert

Location: *NW¼SW¼ Sec. 15, and N½NE¼SE¼ and S½SE¼NE¼ Sec. 16, T.33N., R.41E., MDBM, Humboldt Co. (1)

Description: pits and adit

Geology: quartz stringers in granodiorite

Location: NE¼NE¼ Sec. 17, T.33N., R.41E., MDBM, Humboldt Co.
(See under METALLICS, Gold)

Location: *$NE\frac{1}{4}NE\frac{1}{4}$ Sec. 21, T.33N., R.41E., MDBM, Humboldt Co. (1)

Description: shaft

Geology: argentiferous 4–6″ vertical quartz stringer strikes N25°W in granodiorite

Location: $E\frac{1}{2}NW\frac{1}{4}$, $NE\frac{1}{4}SW\frac{1}{4}$, and $SE\frac{1}{4}$ Sec. 35, T.33N., R.43E., MDBM, Humboldt Co. (1)

Description: several pits; selected samples assayed 0–0.040 oz. Au and 0.8–8.9 oz. Ag

Geology: argentiferous sulfides in quartz veins that trend NNW in quartzite

Conclusions: shows limited promise

Location: *$S\frac{1}{2}NE\frac{1}{4}$ and $NE\frac{1}{4}SE\frac{1}{4}$ Sec. 23, T.33N., R.45E., MDBM, Lander Co. (1)

Description: two pits and adit

Geology: argentiferous gouge and quartz stringers in shear zone that strikes N55°E in chert

Name: Snowstorm

Location: *$NW\frac{1}{4}NE\frac{1}{4}$, $NE\frac{1}{4}NW\frac{1}{4}$, and $S\frac{1}{2}NW\frac{1}{4}$ Sec. 25, T.33N., R.45E., MDBM, Lander Co. (1)

Description: discovered 1906; one carload reported shipped 1910; 200 tons of 35 oz. Ag, 12% Pb, and 0.4 oz. Au mined 1927–28 from 200′ incline

Geology: argentiferous cerussite in 1–3′ wide quartz vein with gouge that strikes N65°E over a distance of about 2000′ in chert and dips 40°S

Name: Adelaide Crown

Location: *$W\frac{1}{2}W\frac{1}{2}$ Sec. 19, T.34N., R.40E., MDBM, Humboldt Co.
(See under METALLICS, Gold)

Name: Nevada Lead

Location: *$SW\frac{1}{4}SE\frac{1}{4}$ Sec. 19, $NW\frac{1}{4}NE\frac{1}{4}$, $SE\frac{1}{4}NE\frac{1}{4}$, and $E\frac{1}{2}SW\frac{1}{4}$ Sec. 30, and $E\frac{1}{2}NW\frac{1}{4}$ Sec. 31, T.34N., R.40E., MDBM, Humboldt Co.
(See under METALLICS, Gold)

Name: Adelaide

Location: *$SE\frac{1}{4}$ and $SE\frac{1}{4}NE\frac{1}{4}$ Sec. 20, T.34N., R.40E., MDBM, Humboldt Co.
(See under METALLICS, Copper)

Location: $NW\frac{1}{4}NE\frac{1}{4}$ Sec. 27, T.34N., R.51E., MDBM, Eureka Co. (1,8,35)

Description: over 1000 tons mined 1884–1959 from two shafts to 173′ depth; ore shipped 1958–59 assayed 4.97 oz. Ag, 4.08% Pb, and 0.019 oz. Au

Geology: silver, lead, and gold-bearing minerals in barite, calcite, limonite, and quartz gangue as small replacement lenses associated with two parallel nearly vertical fissures that strike NNE in limestone

Conclusions: warrants additional exploration

Name: Maggie Group

Location: *Sec. 35, T.34N., R.52E., MDBM, Eureka Co.
(See under METALLICS, Gold)

Location: SW¼SE¼ Sec. 13, T.35N., R.38E., MDBM, Humboldt Co. (1)

Description: adit and two pits; selected samples assayed 0–0.04 oz. Au, 34.00 oz. Ag, 0.9–18.8% Pb, and 0.7–11.5% Zn

Geology: vertical quartz vein strikes about S35°W in quartzite; pinches and swells from six inches to several feet

Conclusions: shows limited promise

Location: SE¼NE¼ Sec. 23, T.35N., R.40E., MDBM, Humboldt Co. (1)

Description: pit; selected sample assayed a trace Au and 0.40 oz. Ag

Geology: NNE-trending fault in chert

Conclusions: shows little promise

Location: *W½W½W½ and E½W½SW¼ Sec. 1, T.35N., R.41E., MDBM, Humboldt Co. (1)

Description: adit, two inclines, and pits

Geology: sulfide minerals in 2–6′ wide silicified breccia zone along fault that strikes N10–15°E and dips 60–70°W in slate, chert, argillite, and limestone

Name: Silver Coin

Location: *N½NE¼ Sec. 11, and W½ Sec. 12, T.35N., R.41E., MDBM, Humboldt Co. (1,36)

Description: about 700 tons of 44.49 oz. Ag and 0.02 oz. Au ore mined 1918–24 from 165′ deep incline, pits, and trenches

Geology: silver-chloride and oxide minerals with cerussite, copper oxides, and vanadium minerals in 3′ wide vein that strikes N15°E and dips about 30°W in silicified slate and limestone locally intruded by monzonite porphyry

Location: SE¼ and S½NE¼ Sec. 11, T.35N., R.41E., MDBM, Humboldt Co. (1)

Description: two pits in SW¼NE¼

Geology: slate

Conclusions: warrants additional exploration; possible extension of Silver Coin vein

Location: SE¼SE¼NE¼ Sec. 5, T.35N., R.64E., MDBM, Elko Co. (1)

Description: pit; selected sample assayed 0.010 oz. Au and 0.3 oz. Ag

Geology: oxidized zone along NNE-trending fault in dolomite

Conclusions: shows little promise

Location: N½SW¼NW¼ Sec. 5, T.35N., R.64E., MDBM, Elko Co. (1)

Description: pit; selected sample assayed a trace Au and 0.2 oz. Ag

Geology: oxidized zone along E-trending fault in dolomite

Conclusions: shows little promise

Location: *SW¼SW¼SW¼ Sec. 6, T.35N., R.64E., MDBM, Elko Co. (1)

Description: pits

Geology: quartz stringers in fault that strikes NNW and dips 45–50°W in dolomite

Location: N½NW¼NW¼ and NW¼NE¼NW¼ Sec. 7, T.35N., R.64E., MDBM, Elko Co. (1)

Description: incline; selected sample assayed a trace Au and 0.4 oz. Ag

Geology: oxide minerals in 4′ wide shear zone along fault that strikes N20°E and dips 50°W in dolomite

Conclusions: shows little promise

Location: N½NE¼ Sec. 7, T.35N., R.64E., MDBM, Elko Co. (1)

Description: shaft and pits; selected sample assayed a trace Au and 0.3 oz. Ag

Geology: oxidized zone along NE-trending fault between limestone and dolomite

Conclusions: shows little promise

Name: West Coast (*Pansy Lee, Nevada Consolidated*)

Location: *Sec. 1 and N½ Sec. 12, T.36N., R.36E., and SW¼ Sec. 6, T.36N., R.37E., MDBM, Humboldt Co. (1,6,9,36)

Description: yielded about $60,000 in Ag and Au prior to 1938 and 1,677 tons valued at about $54,000 in 1939–40 from several adits and two shafts; about 44 tons shipped 1937 assayed 36.25 oz. Ag, 0.525 oz. Au, 0.05% Cu, 3.25% Pb, and no Zn

Geology: argentiferous sulfides in quartz vein averaging about 2′ wide that strikes N and dips about 70°E in slate

Location: *W½SW¼ Sec. 4, T.36N., R.36E., MDBM, Humboldt Co. (1)

Description: pit

Geology: argentiferous pyrite and chalcopyrite in 4′ wide oxidized shear zone that strikes N and dips 65°E

Location: SE¼NE¼ Sec. 11, T.36N., R.36E., MDBM, Humboldt Co. (1)

Description: three pits; selected sample assayed 0.020 oz. Au and 4.1 oz. Ag

Geology: 6–12″ oxidized shear zone strikes NW and dips about 45°E in slate

Conclusions: shows limited promise

Location: E½NE¼ Sec. 21, T.36N., R.36E., MDBM, Humboldt Co. (1)

Description: two pits; selected sample assayed 0.030 oz. Au and 0.4 oz. Ag

Geology: N-trending shear zone in slate

Conclusions: shows little promise

Location: *Sec. 22, T.36N., R.36E., MDBM, Humboldt Co. (1,9)

Description: numerous pits, trenches, adits, and five inclined shafts

Geology: N and NNW-trending shear zones in slate and diorite

Location: *S½SW¼NW¼ and N½NW¼SW¼ Sec. 34, T.36N., R.36E., MDBM, Humboldt Co. (1)

Description: three pits

Geology: pyrite and chalcopyrite in quartz vein, to 4′ wide, and 3′ wide breccia zone; strikes N60°E and dips about 40°S in slate

Name: Pride of the Mountain (*Pride of the West*)

Location: *NW¼NE¼ Sec. 23, T.36N., R.37E., MDBM, Humboldt Co.
(See under METALLICS, Gold)

Location: *SW¼SE¼ Sec. 19, T.36N., R.41E., MDBM, Humboldt Co. (1)

Description: two adits and several pits

Geology: galena in quartz stringers in schist and phyllite

Location: SE¼SW¼ Sec. 27, T.37N., R.65E., MDBM, Elko Co. (1)

Description: pits and trenches; selected samples assayed a trace to 0.005 oz. Au, 0–0.2 oz. Ag, 0–1.6% Pb, and a trace to 6.6% Zn

Geology: small discontinuous oxidized fracture fillings in limestone

Conclusions: shows little promise

Name: Loray (*Luray, Montello*)

Location: *Secs. 1, 4, 8, and 9, T.37N., R.68E., and Secs. 32, 33, and 36, T.38N., R.68E., MDBM, Humboldt Co.
(See under METALLICS, Lead)

Name: Tecoma Hill (*includes Tecoma, Black Warrior, Independence, Clipper, and Mineral Mountain*)

Location: *NE¼ Sec. 21, T.39N., R.70E., MDBM, Elko Co., and SE¼SE¼ Sec. 8 and S½ Sec. 9, T.6N., R.19W., SLBM, Box Elder Co. (1,4,5)

Description: originally worked for Ag, Pb, and Cu; under development for Zn in late 1950's; adits and pits at Tecoma and Black Warrior in Sec. 21; incline and several pits at Clipper in NE¼SE¼ Sec. 9; numerous pits and adit at Mineral Mountain in SE¼SW¼ Sec. 9; mine run samples reported to assay a trace to 3.8 oz. Ag, 1.8–9.4% Pb, a trace to 2.4% Cu, 11.9–25.0% Fe, and a trace to 0.03 oz. Au; major production from Tecoma and Black Warrior prior to 1910 from "high-grade" argentiferous cerussite ore; development for open pit zinc operation reported in 1961

Geology: sulfates, carbonates, and molybdates of lead, silver, and zinc in highly faulted and folded limestone, dolomite, chert, and quartzite; quartz monzonite stock nearby; limestone and dolomite of Laketown fm. appears to be most favorable host for metallic mineralization

Name: Queen of the West

Location: *Sec. 17, T.41N., R.70E., MDBM, Elko Co. (1,14)

Description: 120′ deep incline; concentrates to 80 oz. Ag and 18% Zn reported

Geology: cerussite and smithsonite in irregular fractured silicified zone that strikes about N20°W and dips 25°E in limestone

Name: Jackson

Location: *NE¼ Sec. 18, T.41N., R.70E., MDBM, Elko Co.
(See under METALLICS, Lead)

Name: Durham

Location: *SE¼ Sec. 18, T.41N., R.70E., MDBM, Elko Co.
(See under METALLICS, Lead)

Name: Copper Mountain (*Glory Hole and Walker Tunnel*)

Location: *E½SE¼ Sec. 9 and W½SW¼ Sec. 10, T.6N., R.19W., SLBM, Box Elder Co.
(See under METALLICS, Copper)

Name: Judson

Location: *W½SW¼NW¼ and NW¼NW¼SW¼ Sec. 10, T.6N., R.19W., SLBM, Box Elder Co. (1)

Description: adit

Geology: argentiferous cerussite in N-trending oxidized zone in limestone

Location: *NW¼SW¼NE¼ Sec. 33, T.6N., R.19W., SLBM, Box Elder Co. (1)

Description: shaft

Geology: galena in oxidized zone along WNW-trending fault in limestone

OCCURRENCES

Location: *N½NW¼NW¼ Sec. 20, T.28N., R.49E., MDBM, Eureka Co. (1)

Geology: pyrite in gossan along fault that strikes ENE in chert and quartzite

Location: *SE¼ Sec. 4, T.29N., R.45E., MDBM, Lander Co. (1)

Geology: argentiferous galena in quartz stringers that trend SE in chert

Location: *SE¼SE¼ Sec. 15, T.29N., R.46E., MDBM, Lander Co. (1)

Geology: quartz vein in chert and argillite

Location: NW¼NW¼SE¼ and W½SW¼NE¼ Sec. 33, T.30N., R.45E., MDBM, Lander Co. (1)

Geology: pyrite in porphyritic felsic dikes to 50′ wide that trend N and NW in chert; selected sample assayed a trace Au and 0.3 oz. Ag

Conclusions: shows little promise

Location: SE¼SW¼SE¼ and W½NW¼SE¼ Sec. 11, T.31N., R.43E., MDBM, Lander Co. (1)

Geology: selected samples from quartz stringers in oxidized zone in chert and greenstone assayed a trace Au and 0.05 oz. Ag

Conclusions: shows little promise

Location: *W½W½NE¼ and E½E½NW¼ Sec. 16, T.31N., R.43E., MDBM, Lander Co. (1)

Geology: vein in oxidized zone that strikes N15°W and dips 50°W in argillite

Location: E½SE¼ Sec. 9, T.35N., R.41E., MDBM, Humboldt Co. (1)

Geology: 1500′ long oxidized zone trends N in chert breccia; selected sample assayed a trace Au and 0.2 oz. Ag

Conclusions: shows little promise

Location: W½SE¼NW¼ Sec. 1, T.35N., R.63E., MDBM, Elko Co. (1)

Geology: N-trending oxidized fault zone in dolomite; selected sample assayed a trace Au and 0.4 oz. Ag

Conclusions: shows little promise

Location: *SE¼NE¼ Sec. 12, T.35N., R.63E., MDBM, Elko Co. (1)

Geology: brecciated quartz, dolomite, and gouge in fault zone that strikes N in dolomite

Location: N½NE¼ Sec. 3, T.36N., R.36E., MDBM, Humboldt Co. (1)

Geology: quartz lenses in slate; selected sample assayed a trace Au and 0.2 oz. Ag

Conclusions: shows little promise

TRENDS

Location: E½W½ Sec. 13, T.35N., R.41E., MDBM, Humboldt Co.

Geology: 50′ wide oxidized zone on one of two faults on strike of Silver Coin vein selected samples assayed a trace to 0.105 oz. Au and 0.2 oz. Ag

TIN [Sn]

MINES AND PROSPECTS

Location: *N½SE¼ Sec. 26, T.36N., R.45E., MDBM, Lander Co. (1,11)

Description: shaft and several pits

Geology: cassiterite sparsely disseminated in quartz stringers that occur in 4–6′ thick and 15–20′ long lodes in porphyritic rhyolite; stringers strike E-W and dip 85°N

Location: SW¼SE¼ Sec. 27, T.36N., R.45E., MDBM, Lander Co. (1,11)

Description: shaft and several pits

Geology: cassiterite sparsely disseminated in quartz stringers in 4–6′ thick and 15–20′ long lodes in porphyritic rhyolite; stringers strike NNE and dip 70°W–75°E

Conclusions: shows little promise

Location: *SE¼SE¼ Sec. 28, T.36N., R.45E., MDBM, Lander Co. (1,11,37)

Description: incline and several pits

Geology: cassiterite sparsely disseminated in quartz stringers in 4–6′ thick and 15–20′ long lodes in porphyritic rhyolite; stringers strike WNW and dip 55°N

TUNGSTEN [W]

MINES AND PROSPECTS

Location: SE¼SE¼ Sec. 29, T.29N., R.45E., MDBM, Lander Co. (1)

Description: several pits and a trench

Geology: scheelite in float and in contact metamorphic aureole in limestone adjacent to quartz monzonite porphyry

Conclusions: shows limited promise

Location: *$NE\frac{1}{4}NE\frac{1}{4}$ Sec. 32, T.29N., R.45E., MDBM, Lander Co. (1)

Description: several pits

Geology: scheelite in float and in contact metamorphic aureole in limestone adjacent to quartz monzonite porphyry

Location: *$SW\frac{1}{4}NW\frac{1}{4}$ and $NW\frac{1}{4}SW\frac{1}{4}$ Sec. 19, T.32N., R.43E., MDBM, Lander Co. (1)

Description: pit; selected sample assayed 0.50% WO_3

Geology: scheelite, azurite, malachite, and chalcopyrite in tactite zone in hornfels

Name: Rose Creek

Location: *Sec. 6, T.34N., R.37E., MDBM, Pershing Co. (9,29)

Description: 1,898 tons of 1.0% WO_3 mined from surface workings 1943–45; numerous pits and trenches, a shaft, and two adits explore tactite zone for 400′ along strike and to about 110′ depth; reserves of about 6000 tons of 15% WO_3 reported 1940

Geology: scheelite in 2′ wide tactite zone that strikes ENE and dips 30–45°N in argillite

Location: *$S\frac{1}{2}NE\frac{1}{4}$ Sec. 22, T.34N., R.40E., MDBM, Humboldt Co. (1)

Description: trench

Geology: scheelite in 8–20′ wide tactite zone along limestone-granodiorite contact

Name: Golconda

Location: *$NW\frac{1}{4}$ Sec. 1, T.35N., R.40E., and $W\frac{1}{2}$ Sec. 36, T.36N., R.40E., MDBM, Humboldt Co. (1,10,15,21,36)

Description: pits and trenches in 6,000′-long by 1,000′-wide area yielded 103,000 tons of 0.78% WO_3; similar WO_3 content reported in dumps

Geology: tungsten-bearing iron and manganese oxides with minor fluorite in bedded travertine, clay, and gravel deposits, 1–20′ thick; locally clay contains to 40% MnO_2 and 7% WO_3; metallic oxides and travertine deposited by thermal waters

Location: $SE\frac{1}{4}SE\frac{1}{4}NW\frac{1}{4}$ and $NW\frac{1}{4}NW\frac{1}{4}SE\frac{1}{4}$ Sec. 13, T.35N., R.40E., MDBM, Humboldt Co. (1)

Description: pit

Geology: scheelite associated with epidote in chert

Conclusions: shows little promise

Location: $W\frac{1}{2}$ Sec. 29 and $N\frac{1}{2}SE\frac{1}{4}$ Sec. 31, T.37N., R.62E., MDBM, Elko Co., about 5.5 miles from rail point at Wells (1)

Description: adit leading to 20′ and 50′ drifts; 50 tons of 2.11% WO_3 shipped 1956

Geology: scheelite associated with beryllium minerals in tactite zone to 6′ thick that strikes NW and dips 30–45°SW in calcite mylonite

Conclusions: warrants additional exploration

Name: Markus

Location: *$E\frac{1}{2}NE\frac{1}{4}$ Sec. 24, T.38N., R.41E., MDBM, Humboldt Co. (17)

Description: two adits, several pits, and trenches; measured, indicated, and inferred reserves of 7,650 tons of about 0.4% WO_3 reported 1946

Geology: scheelite in discontinuous, irregular tactite bodies in marble interbedded with argillite and intruded by granodiorite stock and apophyses

Name: Chase (*Getchell*)

Location: *NW¼ Sec. 4, T.38N., R.42E., MDBM, Humboldt Co. (17,31)

Description: pit exposes several feet of 0.5% WO_3

Geology: scheelite and powellite in sheared argillite along N-trending fault

Name: Riley (*Dernan*)

Location: *S½S½SW¼ Sec. 4 and NW¼ Sec. 9, T.38N., R.42E., MDBM, Humboldt Co. (17,31)

Description: about 88,000 tons mined from eight pits 1943–45; explored by 15 diamond drill holes to depths of 500′ below outcrop; estimated and inferred reserves of 578,500 tons of about 0.7% WO_3 reported 1946

Geology: scheelite and base-metal sulfides in 3–20′ wide tactite zones along granodiorite-marble contact that strikes generally N and dips 30–60°E

Name: Alpine (*Porvenir*)

Location: *SE¼SW¼ Sec. 6, T.38N., R.42E., MDBM, Humboldt Co. (1,17)

Description: 8000 tons of 0.5% WO_3 mined from pit in 1943; several pits and shaft expose 8–10′ wide tactite zone reported to assay over 1% WO_3; estimated and inferred reserves of 10,000 tons averaging 0.475% WO_3 reported 1946

Geology: scheelite in tactite zone in marble adjacent to granodiorite

Name: Kirby (*Getchell*)

Location: *S½NW¼ and N½SW¼ Sec. 17, T.38N., R.42E., MDBM, Humboldt Co. (17)

Description: about 32,000 tons of 0.43% WO_3 mined from a 315′ adit leading to two glory holes prior to 1943, at which time glory holes were connected; numerous adits, pits, and trenches explore area; measured, indicated, and inferred reserves of 5500 tons averaging about 0.42% WO_3 reported 1946

Geology: scheelite in tapered "pendant-like" mass of skarn extending to 60′ depth in granodiorite

Name: Eyraud

Location: *SW¼SW¼ Sec. 17, T.38N., R.42E., MDBM, Humboldt Co. (17)

Description: pits

Geology: scheelite reported in narrow, discontinuous tactite bodies along NNW-trending granodiorite-marble contact

Name: Valley View (*Saunders*)-Pacific (*Getchell*)

Location: *E½ Sec. 20, W½SW¼ Sec. 21, W½NW¼ Sec. 28, and E½NE¼ Sec. 29, T.38N., R.42E., MDBM, Humboldt Co. (17)

Description: about 1500 tons mined from Valley View prior to June, 1945; estimated and inferred reserves of 56,000 tons averaging about 0.49% WO_3 reported at Valley View and 40,000 tons averaging 0.5% WO_3 at Pacific in 1946; 255′ adit, 315′ adit, and numerous pits and trenches at Valley View, and adit over 600′ long that intersects contact zone at 450′ depth at Pacific

Geology: scheelite in discontinuous 1–10′ wide tactite zone along granodiorite-marble contact that trends generally N-S and dips 45–80°E; contact locally offset by E-trending faults

Name: Granite Creek (*Getchell*)

Location: *SW¼ Sec. 29 and SE¼ Sec. 30, T.38N., R.42E., MDBM, Humboldt Co. (17)

Description: 88,000 tons of 0.5% WO_3 mined from two adits and two glory holes 1942–44; short adits, pits, and trenches explore tactite to west of main workings; measured, indicated, and inferred reserves of 118,000 tons averaging about 0.48% WO_3 reported 1946

Geology: scheelite in discontinuous tactite zones along 2200′ granodiorite-marble contact; largest tactite outcrop is about 15–20′ wide and about 230′ long

Location: E½SE¼ Sec. 31, T.39N., R.42E., MDBM, Humboldt Co. (1,17)

Description: adit to vein, and incline; three selected samples assayed 0.06–0.57% WO_3

Geology: scheelite with minor copper oxides in 3–7′ wide tactite zone in marble adjacent to granodiorite; some scheelite in quartz veins in granodiorite

Conclusions: shows limited promise

Name: Knight

Location: *W½SE¼ Sec. 31, T.39N., R.42E., MDBM, Humboldt Co. (1,17)

Description: incline, several pits and trenches; estimated and inferred reserves of 2100 tons averaging about 0.52% WO_3 reported 1946

Geology: scheelite in tactite in limestone and calcareous hornfels adjacent to granodiorite

Name: Richmond

Location: *S½SW¼ Sec. 31, T.39N., R.42E., MDBM, Humboldt Co. (1,17)

Description: over 30,000 tons of 0.5% WO_3 mined from pit and underground workings in 1942–43; several pits, adits, and trenches explore area; estimated and inferred reserves of 20,000 tons averaging 0.5% WO_3 reported 1946

Geology: scheelite, calcium and lead tungstate in two separate tactite zones in limestone adjacent to granodiorite; one zone is 210′ long and averages 35′ wide

Name: Tonapah (*Getchell*)

Location: *W½SW¼ Sec. 33, T.39N., R.42E., MDBM, Humboldt Co. (17)

Description: pit

Geology: scheelite in ill-defined, N-trending, 1000′-long tactite zone

Name: A & W

Location: *NE¼NE¼ Sec. 10, T.9N., R.17W., SLBM, Box Elder Co. (3,5)

Description: adit

Geology: scheelite with minor argentiferous galena, vanadinite, and wulfenite in tactite zone in limestone adjacent to quartz monzonite

Name: Magnitude

Location: *NW¼NE¼ Sec. 15, T.9N., R.17W., SLBM, Box Elder Co. (3,5)

Description: adit

Geology: scheelite with minor argentiferous galena, vanadinite, and wulfenite in chloritized fault zones in quartz diorite

TRENDS

Location: NE¼ Sec. 29, T.29N., R.45E., MDBM, Lander Co. (1)

Geology: minor scheelite in contact aureoles in limestone intruded by quartz monzonite porphyry in SE¼ Sec. 20 and NW¼ Sec. 28; similar contact metamorphism may occur at depth in NE¼ Sec. 29

VANADIUM [V]

OCCURRENCES

Location: NW¼NE¼ and W½ Sec. 9, T.30N., R.46E., MDBM, Lander Co. (1)

Geology: vanadium and phosphorous minerals in argillaceous slate; similar rocks crop out over large area

Conclusions: shows limited promise

Location: S½NE¼ and N½NE¼SE¼ Sec. 11, T.35N., R.41E., MDBM, Humboldt Co. (1)

Geology: vanadium-bearing slate and phyllite

Conclusions: shows limited promise

ZINC [Zn]

MINES AND PROSPECTS

Name: Silver-Lead

Location: *SE¼ Sec. 7, T.31N., R.41E., MDBM, Pershing Co.
(See under METALLICS, Silver)

Name: Copper Canyon

Location: *SW¼NW¼ Sec. 27 and SE¼NE¼ Sec. 28, T.31N., R.43E., MDBM, Lander Co.
(See under METALLICS, Copper)

Name: Zenoli (*Morning Glory Group*)

Location: *N½SW¼ Sec. 17, T.31N., R.51E., MDBM, Eureka Co.
(See under METALLICS, Silver)

Name: O'Leary (*Midland, Northland, Buckingham*)

Location: *E½SW¼SW¼ Sec. 30 and N½NW¼, E½SW¼NW¼, SE¼NW¼, and NE¼SW¼ Sec. 31, T.32N., R.44E., MDBM, Lander Co.
(See under METALLICS, Silver)

Location: NW¼ Sec. 5, T.33N., R.40E., MDBM, Humboldt Co.
(See under METALLICS, Silver)

Name: Adelaide

Location: *$SE\frac{1}{4}$ and $SE\frac{1}{4}NE\frac{1}{4}$ Sec. 20, T.34N., R.40E., MDBM, Humboldt Co.
(See under METALLICS, Copper)

Location: $SW\frac{1}{4}SE\frac{1}{4}$ Sec. 13, T.35N., R.38E., MDBM, Humboldt Co.
(See under METALLICS, Silver)

Name: Tecoma Hill (includes *Tecoma, Black Warrior, Independence, Clipper, and Mineral Mountain*)

Location: *$NE\frac{1}{4}$ Sec. 21, T.39N., R.70E., MDBM, Elko Co., and $SE\frac{1}{4}SE\frac{1}{4}$ Sec. 8 and $S\frac{1}{2}$ Sec. 9, T.6N., R.19W., SLBM, Box Elder Co.
(See under METALLICS, Silver)

Name: Queen of the West

Location: *Sec. 17, T.41N., R.70E., MDBM, Elko Co.
(See under METALLICS, Silver)

Name: Jackson

Location: *$NE\frac{1}{4}$ Sec. 18, T.41N., R.70E., MDBM, Elko Co.
(See under METALLICS, Lead)

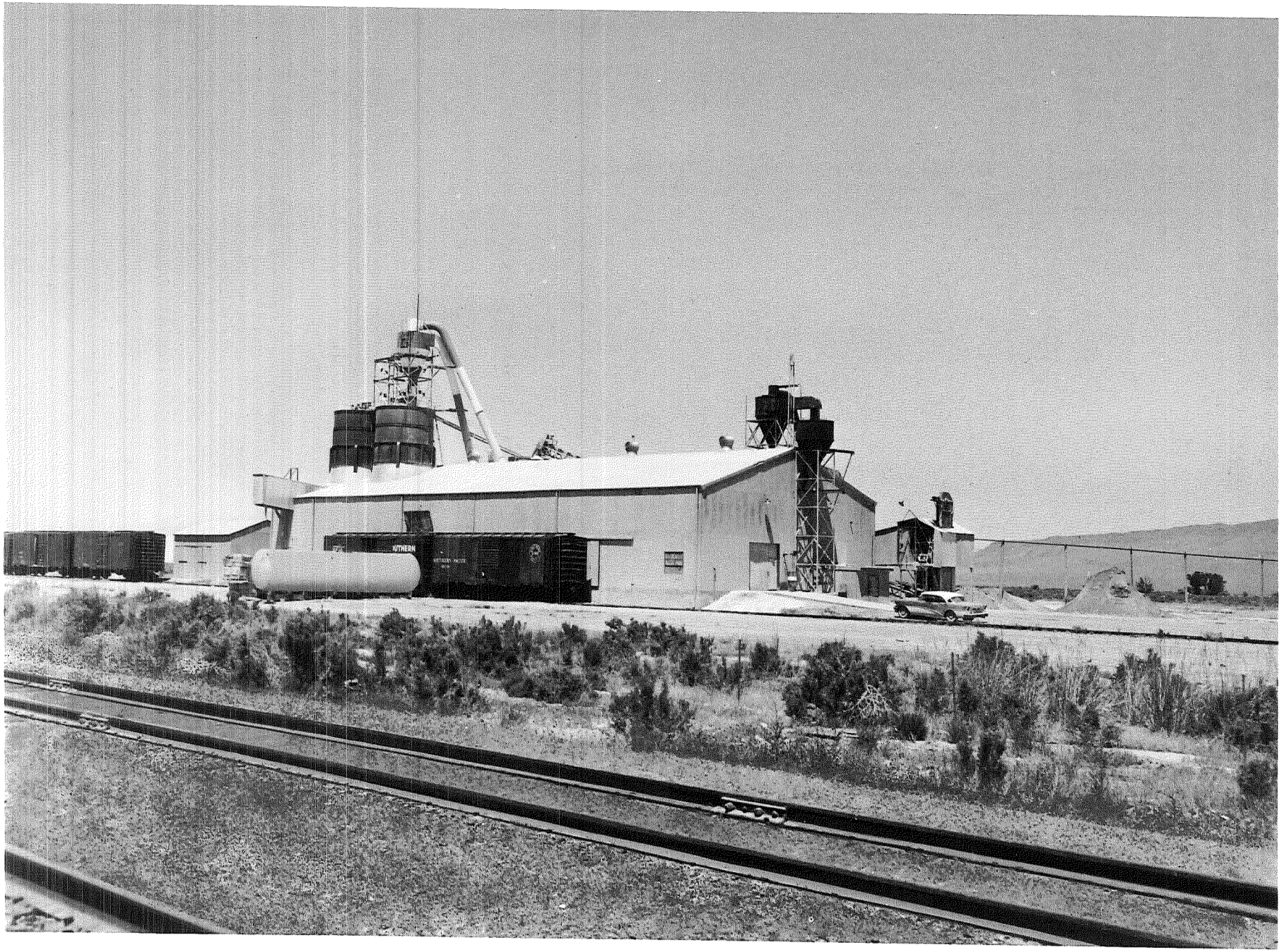
Name: Cunepah Tunnel (*Montello*)

Location: *$N\frac{1}{2}NW\frac{1}{4}$ Sec. 33, T.6N., R.19W., SLBM, Box Elder Co.
(See under METALLICS, Lead)

OCCURRENCES

Location: *$W\frac{1}{2}NW\frac{1}{4}SW\frac{1}{4}$ Sec. 17, T.38N., R.42E., MDBM, Humboldt Co. (17)

Geology: sphalerite replacement in limestone



Magnet Cove Company's barite mill at Battle Mountain. Served by Southern Pacific.

Industrial Rocks and Minerals

The introductory paragraph relating to deposits[1] of industrial rocks and minerals in PART I (see page 35) is also pertinent here.

Southern Pacific is able to offer a wide range of industrial rock and mineral deposits in the PART II area of which the following are considered the most promising:

BARITE:

$SE\frac{1}{4}NW\frac{1}{4}$ and $NE\frac{1}{4}SW\frac{1}{4}$ Sec. 11, T.30N., R.46E., MDBM, Lander Co.
$SW\frac{1}{4}NE\frac{1}{4}$ Sec. 35, T.30N., R.46E., MDBM, Lander Co.
$E\frac{1}{2}E\frac{1}{2}NE\frac{1}{4}$ Sec. 27, T.34N., R.51E., MDBM, Eureka Co.
$SW\frac{1}{4}NE\frac{1}{4}$ and $S\frac{1}{2}NW\frac{1}{4}NE\frac{1}{4}$ Sec. 31, T.36N., R.41E., MDBM, Humboldt Co.

LIMESTONE AND CALCITE MARBLE:

$NE\frac{1}{4}$ and $W\frac{1}{2}SE\frac{1}{4}$ Sec. 11, T.31N., R.36E., MDBM, Pershing Co.
$W\frac{1}{2}$ and $W\frac{1}{2}W\frac{1}{2}E\frac{1}{2}$ Sec. 17, T.36N., R.41E., MDBM, Humboldt Co.
$SE\frac{1}{4}NW\frac{1}{4}$, $SW\frac{1}{4}$ and $W\frac{1}{2}SW\frac{1}{4}NE\frac{1}{4}$ Sec. 27, T.37N., R.62E., MDBM, Elko Co.
$W\frac{1}{2}NW\frac{1}{4}$ and $NW\frac{1}{4}SW\frac{1}{4}$ Sec. 29, T.37N., R.62E., MDBM, Elko Co.
$E\frac{1}{2}NE\frac{1}{4}$ Sec. 13, T.37N., R.63E., MDBM, Elko Co.

SEMIPRECIOUS STONES:

$NE\frac{1}{4}$ Sec. 21, T.8N., R.18W., SLBM, Box Elder Co.

POTASSIUM:

$W\frac{1}{2}$ Sec. 1, Secs. 3, 9, 11, and $N\frac{1}{2}$ Sec. 15, T.4N., R.18W., and Sec. 31, T.5N., R.18W., SLBM, Box Elder Co.

SILICA:

$SE\frac{1}{4}NE\frac{1}{4}SW\frac{1}{4}$ and $N\frac{1}{2}SE\frac{1}{4}SW\frac{1}{4}$ Sec. 7, T.29N., R.46E., MDBM, Lander Co.
$SE\frac{1}{4}$, $S\frac{1}{2}S\frac{1}{2}NE\frac{1}{4}$ and $E\frac{1}{2}NE\frac{1}{4}SW\frac{1}{4}$ Sec. 9, T.29N., R.46E., MDBM, Lander Co.
$NE\frac{1}{4}$, $SE\frac{1}{4}NW\frac{1}{4}$, $N\frac{1}{2}SE\frac{1}{4}$ and $SE\frac{1}{4}SE\frac{1}{4}$ Sec. 25, T.29N., R.46E., MDBM, Lander Co.

[1] Deposits at locations indicated by * are not owned by Southern Pacific.

$N\frac{1}{2}N\frac{1}{2}SW\frac{1}{4}$ and $N\frac{1}{2}SE\frac{1}{4}$ Sec. 7, T.30N., R.46E., MDBM, Lander Co.
$NW\frac{1}{4}$, $W\frac{1}{2}NE\frac{1}{4}$, $E\frac{1}{2}SW\frac{1}{4}$ and $SE\frac{1}{4}$ Sec. 21, T.30N., R.46E., MDBM, Lander Co.
$W\frac{1}{2}SW\frac{1}{4}$ Sec. 1 and $E\frac{1}{2}E\frac{1}{2}$ Sec. 11, T.34N., R.42E., MDBM, Humboldt Co.
$SE\frac{1}{4}SW\frac{1}{4}NW\frac{1}{4}$ and $N\frac{1}{2}NW\frac{1}{4}SW\frac{1}{4}$ Sec. 13, $SE\frac{1}{4}SE\frac{1}{4}SE\frac{1}{4}$ Sec. 19, $N\frac{1}{2}$ and $SW\frac{1}{4}$ Sec. 21, $SW\frac{1}{4}$-$SW\frac{1}{4}$ Sec. 23, $NW\frac{1}{4}$, $S\frac{1}{2}NE\frac{1}{4}$, and $S\frac{1}{2}$ Sec. 29, and $W\frac{1}{2}NW\frac{1}{4}$ Sec. 33, T.37N., R.63E., MDBM, Elko Co.
$W\frac{1}{2}W\frac{1}{2}$ Sec. 33, T.37N., R.64E., MDBM, Elko Co.

ABRASIVES

MINES AND PROSPECTS

Location: *$S\frac{1}{2}NE\frac{1}{4}$ Sec. 22, T.34N., R.40E., MDBM, Humboldt Co. (1)

Description: pit

Geology: garnet in 12′ wide tactite zone

BARITE [$BaSO_4$]

Barite (specific gravity of 4.2–4.6) is primarily used in well-drilling muds and in lesser quantities in the manufacture of barium chemicals, pigments, glass, and porcelain. It is also used as paint and rubber fillers and as heavy aggregate in concrete.

MINES AND PROSPECTS

Location: *$SE\frac{1}{4}SE\frac{1}{4}$ Sec. 6, T.29N., R.47E., MDBM, Lander Co. (1)

Description: open cut 75′ long and to 25′ deep

Geology: white, iron-stained barite replacement zones 6–10″ wide in chert, quartzite, and argillite; chert beds strike N10°W and dip 45°E

Name: White Rock

Location: *$NW\frac{1}{4}NW\frac{1}{4}SE\frac{1}{4}$, and $SW\frac{1}{4}SE\frac{1}{4}$ Sec. 7, T.29N., R.47E., MDBM, Lander Co. (1,19)

Description: over 10,000 tons reportedly mined from cut and 50′ adit on vein in $NW\frac{1}{4}$-$NW\frac{1}{4}SE\frac{1}{4}$; 30′ trench and several shallow cuts in $SW\frac{1}{4}SE\frac{1}{4}$

Geology: white to light gray barite vein about 20′ wide strikes N10°W in chert ($NW\frac{1}{4}$-$NW\frac{1}{4}SE\frac{1}{4}$); vein and replacement zone strikes N10–70°W and chert about N60°W; 15′ wide barite vein ($SW\frac{1}{4}SW\frac{1}{4}SE\frac{1}{4}$); deposits occur along N-trending normal fault in chert; barite stringers exposed by trench ($SE\frac{1}{4}SW\frac{1}{4}SE\frac{1}{4}$)

Location: *$NW\frac{1}{4}NE\frac{1}{4}$ Sec. 18, T.29N., R.47E., MDBM, Lander Co. (1)

Description: shallow cut about 15′ wide and 40′ long

Geology: barite vein about 10′ wide strikes N8°W and dips 65°W in chert

Location: *Sec. 30, T.29N., R.47E., MDBM, Lander Co. (1)

Description: several tons of barite mined from pits ($NE\frac{1}{4}NW\frac{1}{4}$, $S\frac{1}{2}NE\frac{1}{4}$, $SE\frac{1}{4}SW\frac{1}{4}$, and $NE\frac{1}{4}SE\frac{1}{4}$), a trench ($NE\frac{1}{4}SE\frac{1}{4}$), and an adit ($NE\frac{1}{4}NE\frac{1}{4}$)

Geology: barite bedding-replacement and vein deposits in chert; 5–15′ vein strikes N35°E and dips 40–60°W

Name: Valley View (*Pleasant View*)

Location: *E½SW¼, NW¼SE¼, and SE¼NW¼ Sec. 2, and NE¼NW¼ Sec. 11, T.30N., R.46E., MDBM, Lander Co. (1,13)

Description: over 20,000 tons of 88–91% $BaSO_4$ mined from a number of cuts and trenches in Sec. 2, and 20,000 tons of +90% $BaSO_4$ mined from cuts in Sec. 11

Geology: barite replacement deposits in chert and limestone

Location: *S½NW¼ Sec. 26, T.30N., R.46E., MDBM, Lander Co. (1)

Description: trenches; active in 1960

Geology: barite replacement deposit in chert

Name: Bateman Canyon

Location: *E½NW¼ Sec. 35, T.30N., R.46E., MDBM, Lander Co. (1,18)

Description: more than 10,000 tons mined from cuts to 7′ deep

Geology: barite replacement deposit in chert is U-shaped in plan (central portion probably removed by erosion) with closed end located on SW¼NE¼ of section (see below); deposit is about 1,000′ long and arms of "U" are about 150–200′ wide; base of deposit is not exposed, but barite is at least 7′ thick in cuts; chert beds dip 25–35° westerly; local shears strike N55–60°E and are near vertical

Name: Bateman Canyon Extension

Location: SW¼NE¼ Sec. 35, T.30N., R.46E., MDBM, Lander Co. (1)

Description: a few holes were collared in barite

Geology: up-dip extension of Bateman Canyon deposit described above

Conclusions: economically promising source of barite

Location: E½NW¼NW¼ Sec. 7, T.31N., R.43E., MDBM, Lander Co. (1)

Description: 8′ by 10′ by 6′ pit

Geology: bedding-replacement deposits and veinlets of barite in pit; traced about 1300′ along N-S trend

Conclusions: shows limited promise

Location: *SE¼SE¼SW¼ Sec. 13, S½NE¼, E½SW¼, and W½SE¼ Sec. 24, and W½NE¼ Sec. 25, T.31N., R.46E., MDBM, Lander Co. (1)

Description: several cuts and trenches; drill holes in Sec. 25, where deposit reaches maximum surface dimension of about 200′; thickness unknown; several tons of barite reported mined from Sec. 13

Geology: barite replacement of chert and limestone

Name: Safford Canyon

Location: *SW¼ Sec. 17, T.31N., R.51E., MDBM, Eureka Co. (1)

Description: barite mined from several adits, shafts, and stopes

Geology: steeply dipping barite veins less than 4′ wide in andesitic flows; veins strike from N20°E to N60°W

Name: Pine Mountain

Location: *$SE\frac{1}{4}SE\frac{1}{4}$ Sec. 26, $E\frac{1}{2}NE\frac{1}{4}$ Sec. 35, and $W\frac{1}{2}NW\frac{1}{4}$ Sec. 36, T.31N., R.52E., MDBM, Elko Co. (1)

Description: about 50 tons reportedly mined in 1931 from several pits

Geology: barite vein to 10′ wide strikes about N30°E and dips 70°E to 90° in limestone in Secs. 35 and 36; barite in Sec. 26 occurs as brecciated fragments which reflect a fault zone or a slumped mass; white barite with local pyrite and limonite

Name: Argenta (*Nevada Barite*)

Location: *$SE\frac{1}{4}SE\frac{1}{4}SE\frac{1}{4}$ Sec. 13, T.32N., R.46E., and $SW\frac{1}{4}SW\frac{1}{4}SW\frac{1}{4}$ Sec. 18 and $NW\frac{1}{4}$-$NW\frac{1}{4}$ Sec. 19, T.32N., R.47E., MDBM, Lander Co. (1,13,19)

Description: more than 10,000 tons of barite, reported to analyze about 90% $BaSO_4$, mined from several cuts to 50′ wide by 200′ long in Sec. 19 and pits in Secs. 13 and 18

Geology: barite bedding-replacement deposits in chert and limestone; beds strike N-NW and dip 25–30°E; some witherite reported

Location: *$S\frac{1}{2}NW\frac{1}{4}$ Sec. 35, T.32N., R.46E., MDBM, Lander Co. (1)

Description: several cuts and pits expose barite masses 15′ by 15′

Geology: barite replacement deposits in chert and limestone

Name: Yuba Minerals and Milling (*Shelton*)

Location: *$SE\frac{1}{4}NW\frac{1}{4}$ and $NE\frac{1}{4}SW\frac{1}{4}$ Sec. 18, T.32N., R.47E., MDBM, Lander Co. (1,19)

Description: more than 10,000 tons reported mined from 300′ by 500′ pit; many small cuts nearby

Geology: barite veins and replacement deposits in chert and limestone

Location: $E\frac{1}{2}E\frac{1}{2}NE\frac{1}{4}$ Sec. 27, T.34N., R.51E., MDBM, Eureka Co. (1,35)

Description: 5870 tons mined 1932–38 and 1961 from three adits to vein, pits and trenches which expose portions of vein to 50′ depth for about 1200′ along strike

Geology: white coarsely crystalline barite in vein 3–15′ wide that strikes N25–35°W and dips about 70°E in limestone; some calcite gangue

Conclusions: warrants additional exploration

Name: Heavy Spar

Location: *Sec. 10, T.35N., R.52E., MDBM, Elko Co. (19)

Description: four trenches explore 10′ by 330′ outcrop

Geology: barite in chert and argillite

Location: *Sec. 36, T.36N., R.40E., MDBM, Humboldt Co. (1)

Description: two cuts, each 75–100′ long by 10′ wide

Geology: barite replacement of lenticular limestone beds that strike N10°E, dip 70°E in phyllite

Name: Sander's

Location: *NW¼ Sec. 5 and SW¼ Sec. 8, T.36N., R.41E., MDBM, Humboldt Co. (location questionable) (1,19)

Description: reported production of over 1,000 tons

Geology: barite veins in phyllite and quartzite

Location: SW¼NE¼ and S½NW¼NE¼ Sec. 31, T.36N., R.41E., MDBM, Humboldt Co. (1)

Description: about 530 tons of 4.08–4.17 sp. gr. mined 1961–62 from cut in SW¼NE¼ of section; channel samples from 200′ long by 10–12′ wide outcrop located 500′ NNW of cut reported to have sp. gr. of 4.23–4.32

Geology: barite replacement of lenticular limestone beds that strike N10°E, dip 35–40°E in phyllite

Conclusions: source of barite

OCCURRENCES

Location: *N½SE¼ Sec. 8, T.30N., R.46E., MDBM, Lander Co. (1)

Geology: partial replacement of 45′ thick section of impure chert which strikes NNW and dips 25–45°W; deposit extends for about 1000′ along strike

Location: SE¼NW¼ and NE¼SW¼ Sec. 11, T.30N., R.46E., MDBM, Lander Co., about 13 miles SE of rail point of Battle Mountain (1)

Geology: barite-replacement deposit about 200′ long by 60′ wide in chert and limestone; base not exposed, but deposit should yield about 1500 tons of $BaSO_4$ per foot of depth; composite of selected samples collected along length of deposit analysed 92.20% $BaSO_4$, 5.40% SiO_2, 0.42% Al_2O_3, 0.23% Fe, 0.32% Fe_2O_3 and no F; two other selected samples analysed 91.96% and 83.29% $BaSO_4$

Conclusions: economically promising; warrants exploration

Location: *NE¼NW¼ Sec. 18, T.31N., R.43E., MDBM, Lander Co. (1)

Geology: barite fracture fillings following splits off NW-trending fault; 2–36″ veins strike N, dip steeply E, and can be traced over 100′

Location: NW¼ Sec. 11, T.33N., R.45E., MDBM, Lander Co., about 3 miles NNE of rail point of North Battle Mountain (1)

Geology: chert with less than 3% barite in NW-trending zone, 2,500′ long and 40–180′ wide

Conclusions: shows little promise

Location: *SW¼NW¼SW¼ Sec. 14, T.33N., R.45E., MDBM, Lander Co. (1)

Geology: chert with a little barite in zone about 50′ wide

Location: NE¼SE¼ Sec. 15, T.33N., R.45E., MDBM, Lander Co., about 2 miles NNE of rail point of North Battle Mountain (1)

Geology: chert and limestone with a little barite in E-W zone 450′ long and 75′ wide

Conclusions: shows little promise

Location: E½SW¼, SE¼NW¼, and N½NE¼ Sec. 27, T.37N., R.65E., MDBM, Elko Co. (1)

Geology: barite veins, bedding replacement, and residual solution-cavity fillings in limestone; cavity fillings contain considerable iron oxide; bedding-replacement lens in N½NE¼ is flat-lying, about 3′ thick and more than 100′ long, and contains limestone remnants throughout

Conclusions: shows little promise

Location: *SW¼SW¼ Sec. 30, T.39N., R.42E., MDBM, Humboldt Co. (1)

Geology: small barite-replacement deposits in limestone

Name: Tri-State Minerals

Location: *SE¼SE¼ Sec. 3, T.6N., R.19W., SLBM, Box Elder Co. (1)

Geology: barite replacements about 10′ wide along shear zone in limestone; vein strikes NNW, and dips 15° E

BITUMENS

MINES AND PROSPECTS

Location: *N½N½ Sec. 1, T.29N., R.52E., MDBM, Elko Co. (1)

Description: shallow shaft and several short adits along a bed 9″ thick that dips steeply SE

Geology: grahamite or other oxygenated hydrocarbons in sandstone interbedded with conglomerate

BROKEN STONE

Broken stone is used as aggregate, fill, and aggregate base material, poultry grit, railroad ballast, riprap, roofing granules, and in a host of minor uses. Broken stone is most valuable when located near a potential market because such material is normally used in large quantities and is of low unit cost.

Numerous unlisted rock deposits occur near the Southern Pacific main line; many may be suitable for specialized uses.

MINES AND PROSPECTS

Location: *NE¼SE¼ Sec. 8, T.31N., R.52E., MDBM, Eureka Co. (1)

Description: quarry; used locally in road construction

Geology: basalt rubble

Location: NW¼NW¼ Sec. 7, T.35N., R.41E., MDBM, Humboldt Co. (1)

Description: two quarries yielded 820,979 tons of broken stone; used as road metal

Geology: largely hornfels and chert

Conclusions: large reserve of broken stone

Location: W½W½NW¼ Sec. 3 and E½NE¼ Sec. 4, T.7N., R.18W., and W½SE¼ Sec. 33, T.8N., R.18W., SLBM, Box Elder Co., about 0.5 mile from rail point of Lucin (1)

Description: quarry; used as road metal and ballast for railroad and roads

Geology: limestone, chert, and quartzite

Conclusions: rock source near Southern Pacific railroad

OCCURRENCES

Location: NW¼ Sec. 13 and W½ Sec. 23, T.32N., R.46E., and S½ Sec. 7, T.32N., R.47E., MDBM, Lander Co., about 0.5 mile from Hwy. 40 and 1–4 miles from rail point of Argenta (1)

Geology: chert and quartzite

Conclusions: rock source near highway and railroad

Location: SW¼SW¼ Sec. 1, E½E½ Sec. 11, and NW¼NW¼ Sec. 13, T.34N., R.42E., MDBM, Humboldt Co., about 0.5 mile from U. S. Hwy. 40 and 6 miles from rail point of Valmy (1)

Geology: fine-grained vitric quartzite

Conclusions: rock source near highway

Location: E½W½ and W½E½ Sec. 5, T.36N., R.38E., MDBM, Humboldt Co., on U. S. Hwy. 40 about 3 miles from Winnemucca (1)

Geology: dense basalt, locally vesicular

Conclusions: rock source favorably located

Location: SE¼NW¼, SW¼, and W½W½SE¼ Sec. 13, T.37N., R.62E., MDBM, Elko Co., about 3 miles from Wells and 2 miles from junction U. S. Hwys. 40 and 93 (1)

Geology: limestone with chert lenses and nodules

Conclusions: rock source favorably located

Location: W½SE¼ and SW¼ Sec. 7, T.6N., R.13W., and NE¼ Sec. 13, T.6N., R.14W., SLBM, Box Elder Co., about 3–5 miles SW of rail point of Groome (1)

Geology: quartzitic dolomite

Conclusions: source of large quantities of rock for roadbed, fill, or ballast; only source between rail points of Lakeside and Lucin on Southern Pacific main line

CLAYS

The intermountain valleys of northern Nevada and northwestern Utah contain large quantities of impure silty clay deposited by Pleistocene lakes. Smaller deposits of purer clays occur in Tertiary rocks, which crop out in the mountain ranges and foothills. Clays are used in the manufacture of structural clay products (clay pipe, tile, and bricks); in ceramics; as fillers, coatings and extenders in the manufacture of paper, paint and linoleum; as adsorbents; inert carriers for insecticides and fungicides; lightweight aggregate; sealers in dams, reservoirs and irrigation ditches; and numerous lesser uses. Most of the clays in this area would be best suited for the manufacture of structural clay products or, those that exhibit swelling characteristics, as sealers.

OCCURRENCES

Location: Secs. 15 and 21, T.35N., R.36E., MDBM, Humboldt Co. (1)

Geology: tannish-gray, fine-grained, plastic clay and very fine silt; composed of montmorillonite with minor amounts of mica, feldspar, and quartz; clay beds 20–50′ thick underlie a thin veneer of eolian sand, generally less than 5′ thick

Conclusions: usable for common structural clay products

Location: Sec. 33, T.36N., R.37E., MDBM, Humboldt Co. (1)

Geology: tannish-gray, fine-grained, plastic clay and very fine silt; composed of montmorillonite with minor amounts of mica, feldspar, and quartz

Conclusions: usable for structural clay products; with addition of 2% pulverized coal to sample tested in Dwight-Lloyd sintering machine found suitable as lightweight aggregate (bloated at 2150°F)

DECORATIVE AND DIMENSION STONE

Dimension stone is used as building stone, monumental stone, paving stone, curbing, and flagging. A growing market exists for the use of stone as decorative material in gardens, patios, building lobbies and the like.

MINES AND PROSPECTS

Location: *$E\frac{1}{2}$ Sec. 16 and $NE\frac{1}{4}NW\frac{1}{4}$, $NE\frac{1}{4}$, and $NE\frac{1}{4}SE\frac{1}{4}$ Sec. 21, T.38N., R.62E., MDBM, Elko Co. (1)

Description: several thousand cubic yards of sandstone mined from numerous pits and quarries; used for facing stone and fashioned into bowls, ash trays, and other decorative objects for local sale under name of "Nevada picture rock"

Geology: friable, variegated sandstone containing dendrites and brightly colored limonitic rings

OCCURRENCES

Location: *$S\frac{1}{2}$ and $S\frac{1}{2}N\frac{1}{2}$ Sec. 1, $S\frac{1}{2}NE\frac{1}{4}$, $NE\frac{1}{4}SW\frac{1}{4}$, and $SE\frac{1}{4}$ Sec. 2, $E\frac{1}{2}SW\frac{1}{4}$ Sec. 11, $N\frac{1}{2}N\frac{1}{2}$ and $S\frac{1}{2}S\frac{1}{2}$ Sec. 12, and $NE\frac{1}{4}$ Sec. 14, T.31N., R.36E., MDBM, Pershing Co., about 17 miles from rail point of Mill City
(See under INDUSTRIAL ROCKS AND MINERALS, Limestone and Calcite Marble)

Location: $NE\frac{1}{4}$ and $W\frac{1}{2}SE\frac{1}{4}$ Sec. 11, T.31N., R.36E., MDBM, Pershing Co., about 17 miles from rail point of Mill City
(See under INDUSTRIAL ROCKS AND MINERALS, Limestone and Calcite Marble)

Location: $W\frac{1}{2}W\frac{1}{2}NW\frac{1}{4}NW\frac{1}{4}$ Sec. 23, T.35N., R.41E., MDBM, Humboldt Co., 1 mile from U. S. Hwy. 40, about 11 miles from rail point of Golconda (1)

Geology: quartz diorite porphyry dike 50′ wide strikes N-S for over 1000′; compact, durable rock with pleasing appearances; 30–50% quartz and feldspar phenocrysts about $\frac{1}{8}$″ long in a fine-grained brown groundmass

Conclusions: source of decorative or dimension stone favorably situated for quarrying

Location: W½ and NE¼ Sec. 25, T.37N., R.62E., MDBM, Elko Co. (1)

Geology: quartzitic conglomerate; angular to subrounded clasts of dark gray, black, green, and maroon chert and light gray to white quartzite in a reddish-brown to maroon, fine-grained to aphanitic groundmass

Conclusions: source of decorative stone

Location: E½W½SW¼ and E½SE¼ Sec. 13 and N½ Sec. 21, T.37N., R.63E., and W½NW¼ and N½NW¼SW¼ Sec. 19, T.37N., R.64E., MDBM, Elko Co., about 3 miles from U. S. Hwy. 40 and 5 miles from rail point of Moor (1)

Geology: calcite marble and mylonite; alternating white and dark gray bands of finely to coarsely crystalline calcite

Conclusions: source of decorative or dimension stone favorably situated for quarrying; sampling and analyses required to determine value as source of $CaCO_3$

Location: SW¼ Sec. 7, T.6N., R.13W., and NE¼ Sec. 13, T.6N., R.14W., SLBM, Box Elder Co., about 3 miles from rail point of Groome (1)

Geology: durable, well-bedded, white, medium-grained quartzitic dolomite; 6–30″ thick slabs of pure white rock in Sec. 13

Conclusions: source of decorative and dimension stone well stituated for quarrying

Location: E½ and NW¼ Sec. 11, T.10N., R.16W., SLBM, Box Elder Co., ¼ mile from Utah Hwy. 70 and about 30 miles from rail point of Lucin (1)

Geology: thin-bedded, fine-grained, white, micaceous quartzite

Conclusions: large reserves of decorative and dimension stone well situated for quarrying

DIATOMITE

MINES AND PROSPECTS

Location: *Secs. 18 and 19, T.33N., R.53E., MDBM, Humboldt Co. (6,12)

Description: 2000 tons mined in 1932, and 928 tons in 1933 from pits

Geology: fresh-water diatomite interbedded with tuff and volcanic ash

FLUORITE [CaF_2]

MINES AND PROSPECTS

Name: Mammoth

Location: *E½ Sec. 14, T.33N., R.38E., MDBM, Pershing Co. (18)

Description: shallow trenches and pits

Geology: small lenses of fluorite in limestone and argillite

LIMESTONE AND CALCITE MARBLE [$CaCO_3$]

Limestone and calcite marble are used principally in the manufacture of portland cement. They are also employed as a metallurgical fluxing agent, soil conditioner, source of lime, raw material in the manufacture of a wide range of chemicals, in the manufacture of beet sugar and as dimension stone. Crushed limestone and marble are utilized for concrete aggregate, road metal, railroad ballast and in filter beds. Finer fractions are used as poultry grit, in stucco, and in several other products. Marble is used as ornamental stone.

MINES AND PROSPECTS

Location: *SW¼ Sec. 7, T.37N., R.64E., MDBM, Elko Co. (1)

Description: 500 tons quarried to test for use in sugar refining; limestone analysed 97.18% $CaCO_3$, 1.2% $MgCO_3$, 1.35% SiO_2, 0.13% Fe_2O_3, and 0.02% Al_2O_3

Geology: 3–8′ thick beds of gray massive limestone

OCCURRENCES

Location: *S½ and S½N½ Sec. 1, S½NE¼, NE¼SW¼, and SE¼ Sec. 2, E½SW¼ Sec. 11, N½N½ and S½S½ Sec. 12, and NE¼ Sec. 14, T.31N., R.36E., MDBM, Pershing Co., about 17 miles from rail point of Mill City (1)

Geology: several hundred-foot thickness of light gray to white, medium to coarse-grained marble

Location: NE¼ and W½SE¼ Sec. 11, T.31N., R.36E., MDBM, Pershing Co., about 17 miles from rail point of Mill City (1)

Geology: several hundred-foot thickness of light gray to white, medium to coarse-grained marble; upper 35–40′ is light gray to white with dark gray wavy streaks; beds strike N and dip 10–20°W; composite chip sample taken at 5′ intervals normal to strike analysed 89.22% $CaCO_3$, 8.21% $MgCO_3$, 24% SiO_2, 0.17% Al_2O_3, and 0.004% P_2O_5

Conclusions: more than 30,000,000 tons of marble well situated for quarrying

Location: *S½SE¼ Sec. 7, S½SW¼ Sec. 8, E½ Sec. 18, Sec. 19, and NE¼NW¼ Sec. 30, T.36N., R.41E., MDBM, Humboldt Co., about 1 mile from rail point of Preble (1)

Geology: dark gray marble interbedded with calcareous slate

Location: W½ and W½W½E½ Sec. 17, T.36N., R.41E., MDBM, Humboldt Co., about 2 miles from rail point of Preble (1)

Geology: dark gray marble interbedded with calcareous slate; selected sample analysed 92.39% $CaCO_3$, 1.00% $MgCO_3$, 4.24% SiO_2, 1.00% Al_2O_3, 0.43% Fe_2O_3, and 0.33% P_2O_5

Conclusions: reserves of about 10,000,000 tons of marble

Location: SE¼NW¼, SW¼, and W½SW¼NE¼ Sec. 27, T.37N., R.62E., MDBM, Elko Co., about 4 miles from rail point at Wells (1)

Geology: 300′ thickness of light to medium gray, massive marble and limestone

Conclusions: large reserves of marble well situated for quarrying

Location: W½NW¼ and NW¼SW¼ Sec. 29, T.37N., R.62E., MDBM, Elko Co., about 4 miles from rail point at Wells (1)

Geology: about 200′ thickness of marble and calcite mylonite containing several high-calcium intervals; composite chip sample across one such interval 7′ thick analysed 96.13% $CaCO_3$, 1.97% $MgCO_3$, 1.4% SiO_2, 0.10% Fe_2O_3, 0.05% Al_2O_3, and 0.008% P_2O_5

Conclusions: source of high-calcium marble well situated for quarrying

Location: E½NE¼ Sec. 13, T.37N., R.63E., MDBM, Elko Co., about 2 miles from rail point of Moor (1)

Geology: several hundred-foot section containing 3–8′ thick beds of gray massive limestone; sample of similar rock in Sec. 7, T.37N., R.64E. analysed over 97% $CaCO_3$

Conclusions: source of high-calcium limestone

Location: E½W½SW¼ and E½SE¼ Sec. 13 and N½ Sec. 21, T.37N., R.63E., and W½NW¼ and N½NW¼SW¼ Sec. 19, T.37N., R.64E., MDBM, Elko Co. (1)
(See under INDUSTRIAL ROCKS AND MINERALS, Decorative and Dimension Stone)

Location: Sec. 27, T.37N., R.65E., MDBM, Elko Co., on U. S. Hwy. 40 and about 11 miles from rail point of Moor (1)

Geology: medium to light gray massive limestone, much of which appears to be of high-calcium content

Conclusions: sampling and analyses required to determine value as source of $CaCO_3$; large tonnage available

MICA

Ground mica is used principally in the manufacture of roofing materials, rubber products, and paint.

OCCURRENCES

Location: NW¼SW¼ Sec. 1 and Sec. 11, T.10N., R.16W., SLBM, Box Elder Co. (1)

Geology: white quartzite beds 1–2″ thick containing white mica foliations; about 1,000,000 cu. yds. of rock available

Conclusions: further investigation required to determine mica-quartz ratio; shows limited promise

PERLITE

MINES AND PROSPECTS

Location: NE¼SE¼ Sec. 25, T.32N., R.51E., MDBM, Eureka Co. (1)

Description: quarry

Geology: 10–20′ thickness of perlite

Conclusions: shows limited promise

Location: *N½N½ Sec. 12, and Sec. 14, T.32N., R.51E., MDBM, Eureka Co. (1)

Description: trenches

Geology: perlite intercalated with rhyolite

OCCURRENCES

Location: SE¼SE¼SE¼ Sec. 9 and E½E½ Sec. 11, T.32N., R.51E., MDBM, Eureka Co. (1)

Geology: NE-striking perlite crops out in area 500–600′ long by 200′ wide in E½NE¼ Sec. 11; 50–60′ thickness of perlite between rhyolite flows in E½SE¼ Sec. 11; small outcrop of perlite in Sec. 9; perlite in both sections locally overlain by tuff, welded tuff, sand and gravel

Conclusions: shows limited promise

POTASSIUM [K]

OCCURRENCES

Location: W½ Sec. 1, Secs. 3, 9, 11, and N½ Sec. 15, T.4N., R.18W., and Sec. 31, T.5N., R.18W., SLBM, Box Elder Co. (1,17,25)

Geology: saline lake and playa; reported analyses of near-surface brine indicate minimum of 0.674% K_2O in areas fringing playa; potassium content increased toward lake where 0.867% K_2O was reported at lake edge indicating possible higher concentrations at lower levels in playa; compares with potassium content of surface brines at Salduro deposit where potash is produced near Wendover, Utah

Conclusions: source of potassium compounds

Location: *Secs. 2, 4, 5, 6, 7, 8, 10, NW¼ Sec. 14, S½ Sec. 15, Secs. 16, 17, 18, 19, 20, 21, 22, N½ Sec. 28, N½ Sec. 29, and NE¼ Sec. 30, T.4N., R.18W., and SE¼ Sec. 20, S½ Sec. 21, SW¼ Sec. 26, Secs. 27, 28, 29, SE¼ Sec. 30, Secs. 32, 33, 34, and W½ Sec. 35, T.5N., R.18W., SLBM, Box Elder Co. (1,7,25)

Geology: saline lake and playa (see analytical data above)

PUMICE, PUMICITE, AND TUFF

MINES AND PROSPECTS

Location: *W½W½ and NE¼NW¼ Sec. 2, NE¼NE¼ Sec. 3, and SE¼NE¼ and NE¼SE¼ Sec. 10, T.38N., R.65E., MDBM, Elko Co. (1)

Description: pits and adits in Sec. 2

Geology: pumice containing tuffaceous and calcareous impurities

OCCURRENCES

Location: *Sec. 30, T.32N., R.52E., MDBM, Eureka Co., within a few hundred feet of Southern Pacific tracks (35)

Geology: beds of pumicite and vitric tuff 8–30′ thick interstratified with tuff that dips 10°NW; material analysed 92.4–93.6% SiO_2

Location: E½ Sec. 29, T.38N., R.62E., MDBM, Elko Co. (1)

Geology: thick deposit of white, cream, tan, and greenish-gray vitric tuff strikes ENE and dips about 20°E; opalized along fault that borders deposit on west side

Conclusions: shows limited promise

Location: *E½ and E½W½ Sec. 32, T.38N., R.62E., MDBM, Elko Co. (1)

Geology: thick deposit of white, cream, tan and greenish-gray vitric tuff strikes NNE and dips about 20°E; opalized along fault that borders deposit on west side

Location: W½NW¼ and NW¼SW¼ Sec. 11, T.38N., R.65E., MDBM, Elko Co. (1)

Geology: pumice containing tuffaceous and calcareous impurities

Conclusions: shows little promise

Location: east of railroad in SE¼SW¼ Sec. 35, T.39N., R.65E., MDBM, Elko Co. (1)

Geology: pumice crops out in railroad cut

Conclusions: limited quantity; shows little promise

SALT [NaCl]

OCCURRENCES

Location: *Secs. 2, 4, 5, 6, 7, 8, 10, 14, S½ Sec. 15, Secs. 16, 17, 18, 19, 20, 21, 22, 27, 28, 29, and 30, T.4N., R.18W., and Secs. 28, 29, 30, 32, 33, 34, and 35, T.5N., R.18W., SLBM, Box Elder Co. (7)

Geology: salt lake and salt flat; deposit, including Southern Pacific lands (see below), estimated to contain 23,000,000 tons of salt

Location: W½ Sec. 1, Secs. 3, 9, 11, and N½ Sec. 15, T.4N., R.18W., and Sec. 31, T.5N., R.18W., SLBM, Box Elder Co. (1,7)

Geology: salt lake and salt flat

Conclusions: large reserve of salt

SAND AND GRAVEL

Sand and gravel are used as aggregate in concrete, as base or subgrade, as railroad ballast and fill, and on unpaved roads. Sand is used in mortar, plaster, and for various specialty products. Sand and gravel are most valuable when located near a potential market because

they are of low unit cost. Southern Pacific is able to offer a large number of deposits for use within the area of this report.

A few deposits which are favorably located with respect to potential markets, or which have been mined as a source of sand and gravel are listed. Descriptions of many others are on file.

MINES AND PROSPECTS

Location: SW¼ Sec. 23, T.35N., R.36E., MDBM, Humboldt Co., on U. S. Hwy. 40 and at rail point of Rose Creek (1)

Description: about 35,000 cu. yds. of sand and gravel excavated from L-shaped pit, the limbs of which total about 1000′ in length

Geology: Lake Lahontan beach deposits composed of flat-pebble gravel, sand, and silt

Conclusions: large quantities available

Location: Sec. 9 and W½NW¼ and SE¼NW¼ Sec. 10, T.7N., R.17W., SLBM, Box Elder Co., at rail point of Pigeon (1)

Description: over 1,000,000 cu. yds. of sand and gravel excavated from pit about 2500′ long by 500′ wide by 25′ deep in Sec. 9

Geology: terrace deposits composed of pebble and cobble gravel, sand, and minor silt

Conclusions: very large quantities of sand and gravel

OCCURRENCES

Location: E½ Sec. 7, T.31N., R.49E., MDBM, Eureka Co., about 1 mile SW of Beowawe (1)

Geology: alluvium composed of sand and pebble gravel

Conclusions: large quantities available

Location: E½ and E½SW¼ Sec. 1, T.31N., R.50E., and lots 1 and 2 in NW¼ Sec. 7 and SE¼ Sec. 7, T.31N., R.51E., MDBM, Eureka Co., at rail point of Barth (1)

Geology: sand and gravel in alluvial fan deposits

Conclusions: large quantities available

Location: Secs. 11, 13, and 25, T.32N., R.44E., and Secs. 30 and 31, T.32N., R.45E., MDBM, Lander Co., within 3 miles of Battle Mountain (1)

Geology: coarse gravel and sand beneath varying thicknesses of silty valley fill alluvium

Conclusions: large quantities of sand and gravel

Location: E½ and SW¼ Sec. 27, T.32N., R.46E., MDBM, Lander Co., on U. S. Hwy. 40 about 8 miles from Battle Mountain (1)

Geology: alluvial fan deposits composed largely of boulder and pebble gravel with sand and minor silt

Conclusions: large quantities of sand and gravel

Location: NE¼ Sec. 33, T.33N., R.48E., MDBM, Eureka Co., on U. S. Hwy. 40 and at rail point of Shoshone (1)

Geology: alluvial fan deposits composed of boulder, cobble, and pebble gravel with sand and minor silt

Conclusions: large quantities of sand and gravel

Location: Sec. 5, T.34N., R.55E., MDBM, Elko Co., about 2 miles from Elko (1)

Geology: alluvium

Conclusions: source of sand and gravel

Location: NE¼ Sec. 19, T.36N., R.38E., MDBM, Humboldt Co., on U. S. Hwy. 95 at Winnemucca (1)

Geology: gravel beds and lenses interstratified with silty clay

Conclusions: large quantities of sand and gravel

SEMIPRECIOUS STONES

MINES AND PROSPECTS

Location: *NW¼SW¼ Sec. 28 and SE¼ Sec. 29, T.29N., R.47E., MDBM, Lander Co. (1)

Description: numerous pits and adits

Geology: thin fracture fillings of turquoise in chert; some copper oxide staining

Location: *N½NE¼ Sec. 32, T.29N., R.47E., MDBM, Lander Co. (1)

Description: three cuts, the largest about 100′ long and 15′ deep

Geology: turquoise in black chert along zone which trends N80°W

Location: NW¼NW¼ Sec. 33, T.29N., R.47E., MDBM, Lander Co. (1)

Description: small pits

Geology: chert containing fracture fillings and surface coatings of turquoise; largest turquoise seam is about ⅛″ wide

Conclusions: shows little promise

Location: *NE¼NE¼ Sec. 29, T.31N., R.43E., MDBM, Lander Co. (1)

Description: dump

Geology: turquoise stringers to ⅛″ wide

Location: *E½SE¼ Sec. 29, T.32N., R.44E., MDBM, Lander Co. (1)

Description: 424 pounds of turquoise mined in 1937 from pits

Geology: network of 1/16-1/2″ turquoise stringers in alteration zone in quartzite

Location: *NE¼NW¼ Sec. 34, T.37N., R.38E., MDBM, Humboldt Co. (1)

Description: small pit

Geology: opal stringer in basalt

Location: *S½SE¼SE¼ Sec. 16 and W½NW¼NW¼ Sec. 22, T.8N., R.18W., SLBM, Box Elder Co. (1)

Description: pit, 10′ by 25′ by 5′ deep in Sec. 16

Geology: ferrian variscite, $(Al,Fe)PO_4 \cdot 2H_2O$, in brecciated quartzite; apple green to bluish green; maximum dimension of variscite about 1″

Location: NE¼ Sec. 21, T.8N., R.18W., SLBM, Box Elder Co. (1,5)

Description: 400 lbs. produced in 1962, from several pits and trenches, the largest about 15′ wide by 40′ long and 4′ deep

Geology: apple green to bluish green ferrian variscite, $(Al,Fe)PO_4 \cdot 2H_2O$, in veinlets to 3″ wide in brecciated chert and quartzite; variscite exposures are 500′ apart and the intervening ground is largely covered with beach gravels, some containing variscite

Conclusions: commercial source of variscite

SILICA [SiO_2]

Quartzite, chert, and vein quartz, when sufficiently pure, can be used as a silica source in the manufacture of glass, refractories and metallic silicon.

OCCURRENCES

Location: SE¼NE¼SW¼ and N½SE¼SW¼ Sec. 7, T.29N., R.46E., MDBM, Lander Co., about 18 miles from rail point at Battle Mountain (1)

Geology: white, fine-grained quartzite; selected sample analysed 98.5% SiO_2, 1.0% Al_2O_3, and 0.2% Fe_2O_3

Conclusions: about 1,000,000 cu. yds. of quartzite available for quarrying

Location: SE¼, S½S½NE¼, and E½NE¼SW¼ Sec. 9, T.29N., R.46E., MDBM, Lander Co., about 16 miles from rail point at Battle Mountain (1)

Geology: brown to gray, fine-grained quartzite, selected sample analysed 95.44% SiO_2 and 1.35% Fe_2O_3

Conclusions: very large tonnage of quartzite

Location: NE¼, SE¼NW¼, N½SE¼, and SE¼SE¼ Sec. 25, T.29N., R.46E., MDBM, Lander Co., about 26 miles from rail point at Battle Mountain (1)

Geology: 2–3″ beds of recrystallized off-white chert; no non-siliceous interbeds; selected sample analysed 95.20% SiO_2, 1.05% Fe_2O_3, 0.043% P_2O_5, and no V_2O_5

Conclusions: in excess of 150,000,000 cu. yds. of chert

Location: N½N½SW¼ and N½SE¼ Sec. 7, T.30N., R.46E., MDBM, Lander Co., about 14 miles from rail point at Battle Mountain (1)

Geology: light gray quartzite; selected sample from N½N½SW¼ analysed 99.2% SiO_2, 0.3% Fe_2O_3, and 0.1% Al_2O_3

Conclusions: 4,000,000 cu. yds. in N½N½SW¼ and 27,000,000 cu. yds. in N½SE¼ of section

Location: NW¼, W½NE¼, E½SW¼, and SE¼ Sec. 21, T.30N., R.46E., MDBM, Lander Co., about 15 miles from rail point at Battle Mountain (1)

Geology: closely jointed, light gray quartzite; four selected samples analysed 95.2–96.4% SiO_2 and 0.76–1.48% Fe

Conclusions: large tonnage of quartzite favorably situated for quarrying

Location: NW¼NW¼, E½NW¼, and W½W½NE¼ Sec. 23, T.32N., R.42E., MDBM, Lander Co., about 16 miles from rail point of Valmy (1)

Geology: well-jointed, massive to thin-bedded black chert; no argillaceous impurities evident

Conclusions: over 50,000,000 cu. yds. favorably situated for quarrying

Location: W½SW¼ Sec. 1 and E½E½ Sec. 11, T.34N., R.42E., MDBM, Humboldt Co., on U. S. Hwy. 40, about 1 mile from Southern Pacific main line, and 4 miles from rail point of Valmy (1)

Geology: fine-grained, massive, white to gray quartzite; selected sample analysed 96.76% SiO_2 and 1.5% Fe

Conclusions: over 60,000,000 cu. yds. of quartzite favorably situated for quarrying

Location: SE¼SW¼NW¼ and N½NW¼SW¼ Sec. 13, SE¼SE¼SE¼ Sec. 19, N½ and SW¼ Sec. 21, SW¼SW¼ Sec. 23, NW¼, S½NE¼, and S½ Sec. 29, and W½NW¼ Sec. 33, T.37N., R.63E., MDBM, Elko Co. (1)

Geology: well-jointed and locally brecciated light gray to white, dense, quartzite

Conclusions: large tonnage available within 2–4 miles of rail line

Location: W½W½ Sec. 33, T.37N., R.64E., MDBM, Elko Co., about 5 miles from Southern Pacific main line (1)

Geology: well-jointed and brecciated, light gray to white, dense quartzite

Conclusions: moderate tonnage favorably situated for quarrying

Location: NE¼SE¼ Sec. 29, T.39N., R.38E., MDBM, Humboldt Co., about 1½ mile from U. S. Hwy. 95 and 20 miles from Winnemucca (1)

Geology: 20′ wide, milky white, N30°E-striking quartz vein crops out for 200′ in phyllite and quartzite; visually estimated to be 98–99% SiO_2

Conclusions: limited quantity of quartz readily accessible to highway; shows limited promise

ZEOLITES

MINES AND PROSPECTS

Location: *Secs. 15, 17, and 21, T.28N., R.52E., MDBM, Eureka Co. (1,28)

Description: pits, trenches, and core-drill holes

Geology: 24–30″ thick bed of zeolite (erionite) in Secs. 17 and 21; 1–4″ thick beds of vitric tuff altered to zeolite in N½ Sec. 15; zeolites interbedded with grayish-green clay; beds strike northerly and dip a maximum of 5°E

OCCURRENCES

Location: *N½ Sec. 9, T.28N., R.52E., MDBM, Eureka Co. (1,28)

Geology: 1–4″ thick beds of vitric tuff, partly altered to zeolite (erionite); beds strike northerly and dip a maximum of 5°E

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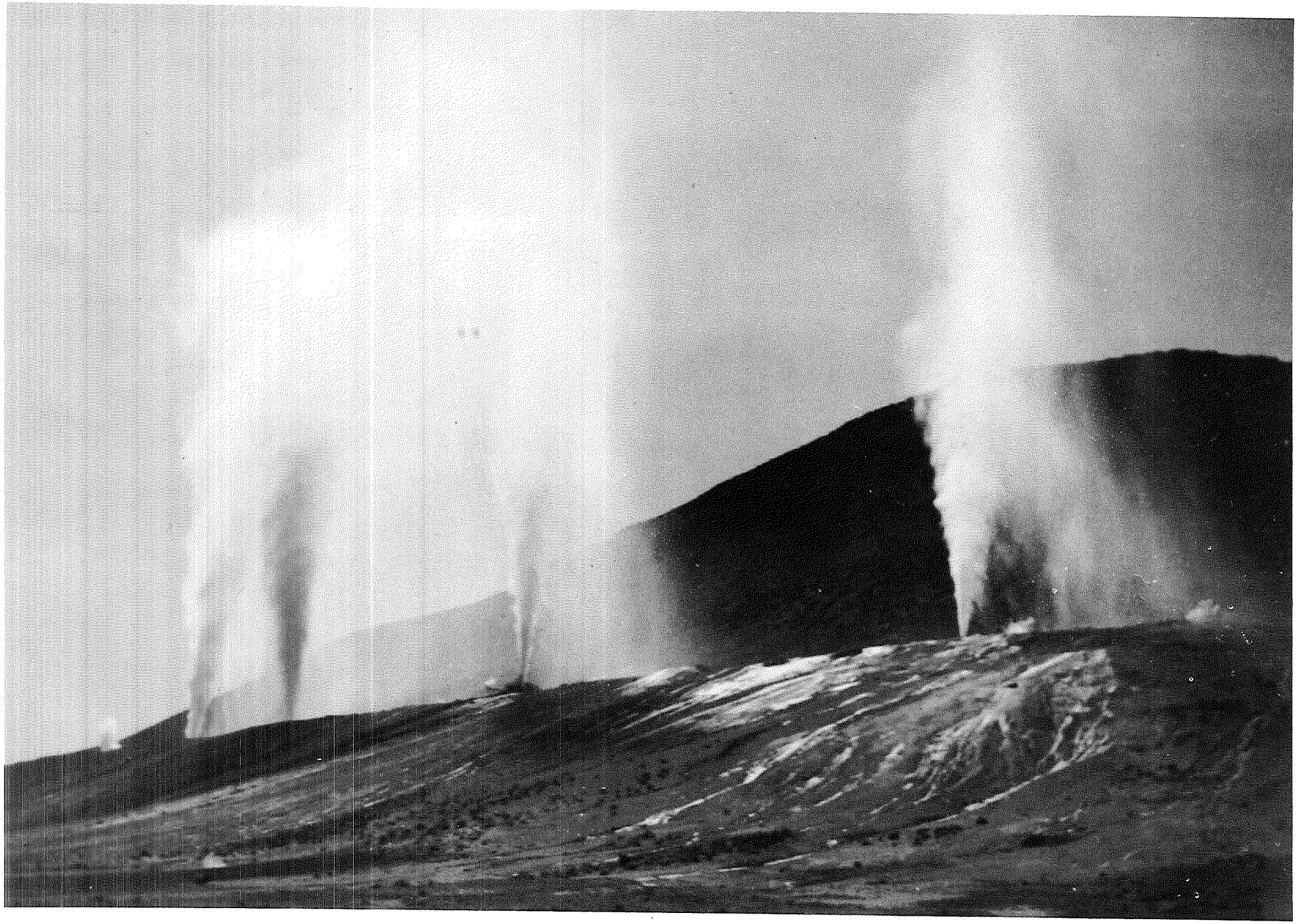

Steam wells drilled by Vulcan Thermal Power Co. in 1959-61 at Beowawe Geysers, Sec. 17, T.31N., R.48E., M.D.B.M. Wells on huge sinter terrace are 330 feet apart and about 700 feet deep. (Photo courtesy Vulcan Thermal Power Co.)

Geothermal Resources

Natural steam from geothermal sites is a potential source of power for this area. Steam wells drilled in 1959–61 at the Geysers near Beowawe are among the most powerful in the world in terms of total heat flow. The introductory paragraphs on page 59 are also pertinent here.

Most of the geothermal sites in the following tabulation and located on Mineral Commodity Maps II and III are localized along range-front faults which show evidence of recurrent movement during Pleistocene to Recent times.

TABLE 5 GEOTHERMAL SITES

NAME	LOCATION		
	NEVADA-MDBM		
	SEC.	TWP. N.	RGE. E.
	10	28	49
	12	28	52
Kyle Hot Springs	12	29	36
Hot Springs Point	1	29	48
Hot Springs Point	2	29	48
Hot Springs Point	11	29	48
Hot Springs Point	36	30	48
The Geysers	17,18	31	48
	6,7	31	52
Leach Hot Springs	36	32	38
	6	32	46
Horseshoe Ranch Hot Springs	32	32	49
	5	32	52
	33	33	52
	4,5	33	40
	8	33	53
Brooks Hot Springs	12	34	41
	10	34	55
	15	34	55
Elko Hot Springs (Hot Hole)	21	34	55
Warm Spring	31	34	59
	34	35	41
	11	35	43
	4	35	64
Golconda Hot Springs	29	36	40
Ralph's Warm Springs	28	36	64
	33	36	64
Ralph's Warm Springs	34	36	64
	3	37	39
	24,26	37	43
Railroad Spring	29	37	62
Hot Spring	17	38	62
	20	38	62
	20	38	62
		UTAH-SLBM	
		N.	W.
Baker Spring	25	10	2
Stinking Spring	3	10	3
Crystal Hot Spring	29	11	2

s h — several hundred gpm
Q — quality data available

DISCHARGE			REMARKS
TEMP. (F.)	RATE (gpm)	DATE	
186°	2.5	7-60	Q
	>100	3-61	
124°	15	6-60	Q
136°	8	6-60	
138°	15	6-60	
boiling			Q, detailed report available
	>100	3-61	
			Q
	400	3-61	
boiling	300	9-61	
115°	120	5-59	Q
94°	450		
			hot at 425′ in well
			hot at 268′ in well
150–190°	flowing	7-63	
	3	4-59	spring sinter; cold water
95°	400	4-60	Q
80–86°	50	9-60	Q
97–151°	>100	5-59	Q
warm			
warm	375	9-60	Q
warm			
158°	2.25	47	Q, well
	s h		probably thermal water,
warm	flowing	60	piped to Wells, Nevada.
120–135°	15	1-61	geyser cones.
115°	1	1-61	
98°	40	1-61	
			Q
			Q
			Q

Water Resources

The mean annual precipitation measured at several stations in this area is:

STATION	MEAN ANNUAL PRECIPITATION (INCHES)	YEARS OF RECORD
Winnemucca, Nevada	8.54	79
Beowawe, Nevada	6.44	79
Elko, Nevada	9.13	90
Montello, Nevada	6.32	30
Ogden, Utah	17.07	30

These records emphasize the relative scarcity of water resources in this region.

Water resources on or near Southern Pacific lands are listed in:

TABLE 6 — Springs

TABLE 7 — Wells

TABLE 8 — Surface Water Discharge Data

These tabulations are not a complete listing of all water resources. Sources of data are Southern Pacific files and published reports of federal and state agencies. Water resources are not located on the Mineral Commodity Maps.

TABLE 6 SPRINGS (NEVADA)

NAME	NUMBER[1]	LOCATION (MDBM)			DISCHARGE		ADDITIONAL DATA
		SEC.	TWP. N.	RGE. E.	RATE	DATE	
	4	1	28	49	i	57	P
		10	28	49	2.5 gpm	7-60	Q,T,S
		13	28	49	i	57	P
		2	28	50	i	57	P
		7	28	50	i	57	P
		10	28	50	i	57	P
	2	11	28	50	f	57	P
		12	28	50	f	57	P
	5	14	28	50	f	57	P
		15	28	50	i	57	P

[1]one spring only unless otherwise noted

f — flowing
i — intermittent
n — non-flowing
gpm — gallons per minute
s h — several hundred gpm
P — published data
S — data from Southern Pacific files
T — thermal water
Q — quality data available

NAME	NUMBER[1]	LOCATION (MDBM)			DISCHARGE		ADDITIONAL DATA
		SEC.	TWP. N.	RGE. E.	RATE	DATE	
	2	19	28	50	i	57	P
	2	20	28	50	i	57	P
	2	24	28	50	f	57	P
		7	28	51	f	52	P
		8	28	51	f	52	P
		12	28	52	100 gpm	3-61	S
		28	29	45	n	9-59	S
		1	29	46	f	50	P
		3	29	46	f	50	P
		8	29	46	i	50	P
		15	29	46	1.5 gpm	11-59	S
		16	29	46	1.5 gpm	11-59	S
Indian Box	4	17	29	46	5 gpm	2-60	S
Rock		24	29	46	0.5 gpm	11-59	S
		31	29	46	1.5 gpm	11-59	S
		9	29	47	i	50	P
Mud	2	18	29	47	0.5 gpm	11-59	S
	2	1	29	48	5 gpm	7-60	Q,T,S
Hot	2	2	29	48	8 gpm	7-60	T,S
Hot	3	11	29	48	f	57	T,P
Duff		36	29	49	f	57	P
	4	12	29	50	i	57	P
	2	13	29	50	i	57	P
		16	29	50	i	57	P
	3	20	29	50	f	57	P
		21	29	50	i	52	P
		23	29	50	f	57	P
		24	29	50	i	57	P
	2	26	29	50	i	57	P
	2	29	29	50	f	57	P
		34	29	50	i	57	P
		35	29	50	i	57	P
		5	29	51	i	57	P
		18	29	51	i	57	P
	3	21	29	51	i	52	P
Cherry	5	22	29	51	f	52	P
	4	29	29	51	i	57	P
	8	30	29	51	i	57	P
	2	31	29	51	f	57	P
	2	32	29	51	i	57	P
Indian		3	29	52	f	52	P
Papoosa		11	29	52	i	52	P
		34	29	52	f	52	P
		3	29	53	f	56	P
		9	29	53	f	52	P
		10	29	53	f	56	P
		11	29	53	f	56	P
		12	29	53	f	56	P
	4	14	29	53	f	56	P
		23	29	53	f	56	P
		33	29	53	i	56	P
		3	30	36	0.5 gpm	11-58	S
		13	30	45	1 gpm	3-60	S
		23	30	45	200 gpm	3-60	Q,S
		24	30	45	1 gpm	3-60	S

SPRINGS (continued)

NAME	NUMBER[1]	LOCATION (MDBM) SEC.	TWP. N.	RGE. E.	DISCHARGE RATE	DATE	ADDITIONAL DATA
		26	30	45	100 gpm	3-60	S
		33	30	45	1 gpm	3-60	S
		34	30	45	1 gpm	3-60	S
		35	30	45	f	50	P
	5	1	30	46	3 gpm	10-59	S
		18	30	46	f	10-59	S
		25	30	46	i	50	P
		35	30	46	f	50	P
		31	30	47	i	50	P
		36	30	48	15 gpm	6-60	T,S
Two Tanks		4	30	50	i	57	P
		10	30	50	i	57	P
	4	14	30	50	i	57	P
One Tank		16	30	50	i	57	P
Four Tanks		21	30	50	i	57	P
		3	30	51	i	52	P
	2	4	30	51	f	52	P
McCormack		10	30	51	f	52	P
		11	30	51	i	52	P
		14	30	51	i	52	P
		15	30	51	f	52	P
	2	22	30	51	i	52	P
		23	30	51	i	52	P
	4	27	30	51	i	52	P
		33	30	51	i	52	P
		34	30	51	i	52	P
	2	12	30	52	f	3-61	S
		3	30	53	i	52	P
		8	30	53	i	52	P
	2	10	30	53	f	52	P
		13	30	53	f	56	P
		15	30	53	i	56	P
	3	18	30	53	f	52	P
	2	20	30	53	f	52	P
	3	21	30	53	f	52	P
	2	23	30	53	i	56	P
		24	30	53	f	56	P
		29	30	53	f	52	P
	2	30	30	53	f	52	P
		36	30	53	i	56	P
Crane		15	30	54	i	56	P
		17	30	54	f	56	P
		19	30	54	i	56	P
		20	30	54	i	56	P
		21	30	54	i	56	P
Rock	2	29	30	54	i	56	P
	3	31	30	54	i	56	P
		32	30	54	i	56	P
		13	31	36	2 gpm	10-58	S
		18	31	36	20 gpm	10-58	S

[1]one spring only unless otherwise noted

f — flowing
i — intermittent
n — non-flowing
gpm — gallons per minute
s h — several hundred gpm
P — published data
S — data from Southern Pacific files
T — thermal water
Q — quality data available

NAME	NUMBER[1]	LOCATION (MDBM)			DISCHARGE		ADDITIONAL DATA
		SEC.	TWP. N.	RGE. E.	RATE	DATE	
		35	31	36	2 gpm	10-58	S
		27	31	37	i	32	P
		9	31	38	i	32	P
	3	1	31	42	f	40	P
	2	5	31	43	f	40	P
		17	31	43	f	40	P
Bateman		24	31	45	0.5 gpm	7-60	S
	2	26	31	45	f	57	P
	3	35	31	45	f	10-59	S
		5	31	46	i	57	P
		16	31	46	i	57	P
		17	31	46	i	57	P
	8	8	31	48	f	63	T,S
The Geysers	10	17	31	48	f	63	Q,T,S
The Geysers		18	31	48	f	63	Q,T,S
		25	31	48	i	57	P
Cold	4	36	31	48	f	6-60	Q,S
Rattlesnake		2	31	50	i	57	P
		27	31	50	f	57	P
Single Tank		33	31	50	i	57	P
Seven Tank		34	31	50	f	57	P
		17	31	51	f	3-61	S
		18	31	51	i	57	P
Emigrant		24	31	51	i	52	P
	3	27	31	51	f	52	P
	2	33	31	51	f	52	P
Rock	2	34	31	51	i	52	P
		4	31	52	f	52	P
	3	6	31	52	f	3-61	T,S
		7	31	52	f	3-61	T,S
		13	31	52	f	52	P
Red	2	16	31	52	i	52	P
	2	23	31	52	f	3-61	S
	2	3	31	53	i	52	P
		15	31	53	f	52	P
		17	31	53	f	52	P
	2	18	31	53	f	52	P
		20	31	53	i	52	P
		21	31	53	i	52	P
		26	31	53	f	52	P
Cherry	2	28	31	53	f	52	P
	3	35	31	53	f	52	P
Red		16	31	55	f	58	P
	2	35	32	36	50 gpm	10-58	S
		26	32	40	1.5 gpm	5-59	S
		17	32	41	n	12-58	S
	2	18	32	41	f	12-58	S
		6	32	43	i	40	P
		12	32	43	f	40	P
		13	32	43	f	40	P
		23	32	43	f	40	P
		32	32	43	f	40	P
		19	32	44	f	40	P
		29	32	44	f	40	P
		30	32	44	f	40	P

SPRINGS (continued)

NAME	NUMBER[1]	LOCATION (MDBM) SEC.	TWP. N.	RGE. E.	DISCHARGE RATE	DATE	ADDITIONAL DATA
Blossum		36	32	44	i	57	P
		1	32	45	i	57	P
Hot		6	32	46	f	12-59	T,S,P
		1	32	47	f	11-59	S
		8	32	47	f	11-59	S
	4	17	32	47	f	11-59	S
	3	29	32	47	f	11-59	S
	3	31	32	47	f	11-59	S
		32	32	47	f	11-59	S
		33	32	47	f	11-59	S
	2	6	32	48	i	57	P
		10	32	48	f	11-59	S
		27	32	49	i	57	P
		32	32	49	f	7-60	T,S
Emigrant		13	32	50	f	57	P
Fish Pond	4	14	32	50	f	57	P
		23	32	50	i	57	P
Fuzzy	3	24	32	50	i	57	P
		26	32	50	i	57	P
		11	32	51	i	52	P
	2	17	32	51	i	57	P
		28	32	51	f	52	P
Willy Billy	2	32	32	51	f	57	P
	2	34	32	51	f	52	P
	2	35	32	51	f	52	Q,P,S
		5	32	52	400 gpm	3-61	T,S
Rye Patch		12	32	52	i	52	P
		25	32	52	f	52	P
		35	32	52	f	52	P
		17	32	53	i	52	P
		20	32	53	i	52	P
		21	32	53	i	52	P
		24	32	53	i	52	P
Stump		31	32	53	i	52	P
Emigrant		35	32	53	i	52	P
Grindstone		5	32	54	f	52	P
Mud		18	32	54	f	52	P
Reinhart		20	32	54	f	52	P
		8	33	36	i	58	P
	2	12	33	36	f	58	P
		6	33	37	f	58	P
	2	1	33	38	f	58	P
		2	33	39	i	58	P
		4	33	40	35 gpm	6-59	T,S
	3	5	33	40	80 gpm	6-59	Q,T,S
		27	33	40	f	5-59	S
Ames		16	33	43	f	40	P
Mud		20	33	43	i	40	P
	2	35	33	43	f	40	P
		14	33	45	f	4-60	S

[1]one spring only unless otherwise noted

f — flowing
i — intermittent
n — non-flowing
gpm — gallons per minute
s h — several hundred gpm
P — published data
S — data from Southern Pacific files
T — thermal water
Q — quality data available

NAME	NUMBER[1]	LOCATION (MDBM)			DISCHARGE		ADDITIONAL DATA
		SEC.	TWP. N.	RGE. E.	RATE	DATE	
	2	15	33	46	i	57	P
		20	33	46	f	4-60	S
		29	33	46	3 gpm	4-60	S
	2	30	33	46	f	4-60	S
White House		9	33	47	i	57	P
	2	14	33	50	i	57	P
		21	33	50	i	57	P
	2	22	33	50	f	57	P
	4	23	33	50	f	57	P
		24	33	50	i	57	P
	3	26	33	50	i	57	P
		27	33	50	i	57	P
	2	34	33	50	i	57	P
		35	33	50	i	57	P
Cherry		21	33	51	i	52	P
	2	28	33	52	f	6-52	Q,S
		33	33	52	300 gpm	9-61	T,S
		4	33	53	i	58	P
Hot	7	8	33	53	f	58	T,P
Cherry		27	33	54	i	52	P
		3	33	55	i	57	P
		4	33	55	i	57	P
West		10	33	55	i	57	P
		19	33	59	i	35	P
	3	25	34	36	i	58	P
		36	34	36	i	58	P
		19	34	37	i	58	P
	2	30	34	37	i	58	P
		31	34	37	i	58	P
		21	34	38	f	58	P
		24	34	38	f	58	P
		27	34	38	f	58	P
	4	1	34	39	f	58	P
		2	34	39	f	58	P
	2	3	34	39	f	58	P
		4	34	39	f	58	P
	5	10	34	39	i	58	P
		13	34	39	i	58	P
	2	18	34	39	f	58	P
	2	24	34	39	i	58	P
	3	19	34	40	f	58	P
		30	34	40	i	58	P
Brooks		12	34	41	450 gpm	6-59	Q,T,S
	3	1	34	42	1 gpm	6-59	S
		13	34	45	f	7-60	S
		22	34	45	f	7-60	S
		29	34	46	f	58	P
		10	34	51	f	58	P
		16	34	53	f	58	P
		20	34	53	i	58	P
		7	34	54	i	58	P
	3	8	34	54	i	58	P
U. Dry Susie	3	9	34	54	i	58	P
		11	34	54	i	57	P
Mary Larson		12	34	54	i	57	P

SPRINGS (continued)

NAME	NUMBER[1]	LOCATION (MDBM) SEC.	TWP. N.	RGE. E.	DISCHARGE RATE	DATE	ADDITIONAL DATA
Hot Hole		21	34	55	f	61	T,S,P
Burner Basin	2	16	34	56	i	57	P
Warm		31	34	59	f	35	T,P
		5	34	69	f	58	P
	2	28	35	36	2 gpm	3-59	Q,P,S
	2	1	35	38	f	58	P
	4	2	35	38	f	11-58	S
		3	35	38	f	61	Q,P
		34	35	38	f	58	P
	5	6	35	39	f	61	Q,P
		7	35	39	f	58	P
		11	35	39	f	58	P
		18	35	39	f	58	P
		22	35	39	f	58	P
	3	27	35	39	f	58	P
	2	34	35	39	f	58	P
		34	35	41	3 gpm	4-59	S
	4	11	35	43	400 gpm	4-60	T,S
		29	35	43	150 gpm	4-60	S
		10	35	45	1350 gpm	4-60	Q,S
	5	17	35	45	f	4-60	S
		36	35	47	2 gpm	11-59	S
		31	35	48	2 gpm	11-59	S
	8	1	35	52	i	58	P
	6	2	35	52	f	58	P
Mine	2	10	35	52	i	58	P
	4	12	35	52	f	58	P
Yellow		24	35	52	f	58	P
Mud	4	26	35	52	f	58	P
	3	27	35	52	f	58	P
		35	35	52	i	58	P
	3	1	35	53	f	58	P
		4	35	53	f	58	P
	5	5	35	53	f	58	P
		6	35	53	f	58	P
	2	7	35	53	i	58	P
	4	8	35	53	f	58	P
		16	35	53	i	58	P
	4	17	35	53	f	58	P
	9	18	35	53	i	58	P
	3	20	35	53	f	58	P
	2	21	35	53	i	58	P
		29	35	53	i	58	P
	9	15	35	54	f	58	P
	7	16	35	54	f	58	P
	2	17	35	54	f	58	P
		27	35	54	i	58	P
		28	35	54	i	58	P
	10	29	35	54	f	58	P
		30	35	54	i	58	P

[1]one spring only unless otherwise noted

f — flowing
i — intermittent
n — non-flowing
gpm — gallons per minute
s h — several hundred gpm
P — published data
S — data from Southern Pacific files
T — thermal water
Q — quality data available

NAME	NUMBER[1]	LOCATION (MDBM)			DISCHARGE		ADDITIONAL DATA
		SEC.	TWP. N.	RGE. E.	RATE	DATE	
	2	31	35	54	f	58	P
	2	32	35	54	f	58	P
Barrel	6	34	35	54	f	58	P
		17	35	55	f	58	P
		18	35	56	f	58	P
		23	35	56	f	58	P
		35	35	56	f	58	P
		36	35	56	f	58	P
	4	4	35	64	50 gpm	9-60	Q,T,S
	2	14	35	70	f	58	P
		16	36	36	f	9-58	S
		13	36	37	f	61	Q,P
	2	29	36	39	i	58	P
	2	32	36	39	3 gpm	5-59	S
Golconda	11	29	36	40	50 gpm	5-59	Q,T,S,P
	2	2	36	41	f	61	Q,P
		19	36	41	f	61	Q,P
	8	13	36	52	f	58	P
	2	23	36	52	f	58	P
	12	24	36	52	f	58	P
	6	25	36	52	f	58	P
	6	26	36	52	f	58	P
	2	27	36	52	f	58	P
	11	35	36	52	f	58	P
	4	36	36	52	f	58	P
	3	2	36	53	f	58	P
	7	3	36	53	f	58	P
	3	4	36	53	f	58	P
	6	5	36	53	f	58	P
		6	36	53	i	58	P
	3	7	36	53	f	58	P
	5	8	36	53	f	58	P
	8	9	36	53	i	58	P
	2	10	36	53	i	58	P
		14	36	53	f	58	P
	2	15	36	53	f	58	P
		16	36	53	i	58	P
	2	17	36	53	i	58	P
	9	18	36	53	i	58	P
	9	19	36	53	f	58	P
	11	20	36	53	f	58	P
	3	22	36	53	f	58	P
	3	24	36	53	f	58	P
	2	28	36	53	f	58	P
	6	29	36	53	f	58	P
	11	30	36	53	f	58	P
	7	31	36	53	f	58	P
	8	32	36	53	f	58	P
Louse	3	33	36	53	f	58	P
		35	36	53	f	58	P
		3	36	54	f	58	P
		5	36	54	f	58	P
		18	36	54	f	58	P
		26	36	54	f	58	P
Mud		34	36	54	i	58	P

SPRINGS (continued)

NAME	NUMBER[1]	LOCATION (MDBM)			DISCHARGE		ADDITIONAL DATA
		SEC.	TWP. N.	RGE. E.	RATE	DATE	
		36	36	54	f	58	P
		30	36	62	f	9-60	S
	2	28	36	64	f	9-60	T,S
	6	33	36	64	375 gpm	9-60	Q,T,S
		34	36	64	f	9-60	S
		22	36	66	f	58	P
	2	28	36	66	f	58	P
	2	29	36	66	f	58	P
		32	36	66	f	58	P
		21	36	68	f	58	P
	6	34	37	36	f	5-59	S
Soldier		11	37	40	f	47	P
Garden		15	37	41	i	47	P
Dog		21	37	41	i	57	P
	5	24	37	43	s h	2-60	T,S
		26	37	43	s h	2-60	T,S
	4	11	37	53	f	58	P
	10	12	37	53	f	58	P
	5	13	37	53	f	58	P
		22	37	53	f	58	P
		25	37	53	f	58	P
	3	26	37	53	f	58	P
	4	27	37	53	f	58	P
		33	37	53	i	58	P
	3	34	37	53	f	58	P
		5	37	54	i	58	P
		28	37	54	f	58	P
		33	37	54	f	58	P
		14	37	55	f	58	P
		25	37	55	f	58	P
		30	37	55	f	58	P
		7	37	56	f	58	P
		26	37	58	f	58	P
		25	37	61	10 gpm	10-60	S
	5	4	37	62	s h	10-60	Q,S
Railroad		29	37	62	f	10-60	T,S
		32	37	62	10 gpm	10-60	S
Wadel		23	37	63	0.5 gpm	10-60	S
Gobel		30	37	63	f	10-60	S
		8	37	66	f	58	P
		18	37	66	f	58	P
		18	38	36	f	5-59	S
		6	38	38	f	59	P
		7	38	38	f	59	P
Cherry		2	38	40	f	47	P
		9	38	40	f	47	P
		10	38	40	f	47	P
Box		11	38	40	f	47	P
Peak		12	38	40	f	47	P
		23	38	40	f	47	P

[1]one spring only unless otherwise noted

f — flowing
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gpm — gallons per minute
s h — several hundred gpm
P — published data
S — data from Southern Pacific files
T — thermal water
Q — quality data available

NAME	NUMBER[1]	LOCATION (MDBM) SEC.	TWP. N.	RGE. E.	DISCHARGE RATE	DATE	ADDITIONAL DATA
		34	38	40	f	47	P
		2	38	41	f	47	P
		28	38	41	f	47	P
		29	38	41	f	47	P
		32	38	41	i	47	P
		20	38	43	i	7-59	S
		5	38	42	f	47	P
		36	38	55	f	58	P
	2	2	38	56	f	58	P
		9	38	56	f	58	P
		12	38	56	f	58	P
		29	38	56	f	58	P
		33	38	56	f	58	P
		23	38	61	f	12-60	S
	2	24	38	61	f	12-60	S
Hot		17	38	62	15 gpm	1-61	T,S
Sulfur	2	20	38	62	41 gpm	1-61	T,S
	4	29	38	62	3 gpm	1-61	S
		9	38	63	7 gpm	33	S
		18	38	63	i	60	S
		19	38	63	i	60	S
		18	38	64	f	58	P
		21	38	64	5 gpm	12-60	S
		22	38	64	f	12-60	S
		10	38	65	f	11-60	S
		31	38	65	f	11-60	S
		35	38	65	f	11-60	S
		29	38	66	f	58	P
		36	38	70	f	58	P
		1	39	37	i	58	P
Mud		10	39	37	i	58	P
		11	39	37	i	58	P
	2	14	39	37	i	58	P
		5	39	38	5 gpm	1-41	S
		6	39	38	1 gpm	11-60	S
		7	39	38	i	58	P
		16	39	38	i	58	P
		18	39	38	f	30	S
		19	39	38	f	30	S
		28	39	38	f	30	S
		29	39	38	f	30	S
		31	39	38	f	59	P
		33	39	38	1 gpm	11-60	S
Willow	2	26	39	40	i	47	P
Scott		18	39	41	i	47	P
		13	39	58	f	58	P
Hot	2	15	39	59	f	58	P
Antelope		16	39	61	f	58	P
		21	39	61	f	58	P
		22	39	61	f	58	P
		4	39	62	f	58	P
		6	39	62	f	58	P
		32	39	63	f	12-60	S
		33	39	63	f	12-60	S
		8	39	64	f	58	P

SPRINGS (continued)

NAME	NUMBER[1]	LOCATION (MDBM) SEC.	TWP. N.	RGE. E.	DISCHARGE RATE	DATE	ADDITIONAL DATA
		24	39	64	f	58	P
U. Deadman		26	39	64	f	58	P
Thurston	2	6	39	65	f	58	P
		18	39	65	f	58	P
Mud		33	39	65	i	12-60	S
Montello	4	7	39	68	f	10-60	Q,S
		19	40	63	f	58	P
		20	40	63	f	58	P
		21	40	64	f	58	P
		23	40	64	f	58	P
		6	40	65	f	58	P
		8	40	69	f	58	P
		14	40	69	f	58	P
		27	42	68	f	58	P
	2	8	42	69	f	58	P

SPRINGS (UTAH)

NAME	NUMBER[1]	LOCATION (SLBM) SEC.	TWP. N.	RGE. W.	DISCHARGE RATE	DATE	ADDITIONAL DATA
		27	3	19	f	10-60	S
	2	28	4	19	f	10-60	S
		33	4	19	f	10-60	S
		19	5	18	f	10-60	S
		29	5	19	f	58	P
		33	5	19	5 gpm	10-60	S
Patters		36	5	19	f	10-60	Q,P
		19	6	3	f	9-53	Q,P
Railroad	2	15	6	5	f	6-52	Q,S
		19	6	13	0.1 gpm	10-60	S
Governor's		10	6	19	10 gpm	10-60	S
		22	6	19	0.5 gpm	10-60	S
Birch		35	6	19	5 gpm	10-60	S
		18	7	1	f	8-44	Q,P
Rice Creek		22	7	1	f	4-55	Q,P
Utah Hot		4	7	2	f	3-54	T,Q,P
		10	7	5	f	13	P
	2	15	7	5	f	13	P
		24	7	19	f	10-60	Q,S
		24	8	2	f	10-54	Q,P
		35	8	2	f	3-54	Q,P
		29	8	5	f	13	P
Rabbit		14	8	18	i	10-60	Q,S,P
Owl, Rabbit	2	24	8	18	20 gpm	10-60	S
		22	9	1	f	3-51	Q,P

[1]one spring only unless otherwise noted

f — flowing
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n — non-flowing
gpm — gallons per minute
s h — several hundred gpm
P — published data
S — data from Southern Pacific files
T — thermal water
Q — quality data available

NAME	NUMBER[1]	LOCATION (SLBM)			DISCHARGE		ADDITIONAL DATA
		SEC.	TWP. N.	RGE. W.	RATE	DATE	
Mud		7	9	6	3 gpm	13	P
		12	9	6	f	13	P
Baker		25	10	2	f	5-55	T,Q,P
Stinking		30	10	3	f	55	T,Q,P
Connor		6	10	4	f	54	P
	2	11	10	4	f	54	P
		23	10	4	f	54	P
		24	10	4	f	54	P
		11	10	5	f	54	P
	3	12	10	5	f	54	P
		23	10	5	f	13	Q,P
		24	10	6	f	13	P
Rozel		7	10	7	f	2-39	Q,S
	2	6	10	15	f	63	S
		30	10	18	f	10-60	Q,P,S
		7	11	1	f	9-41	Q,P
	2	6	11	2	f	54	Q,P
		10	11	2	f	2-51	Q,P
Crystal Cold		29	11	2	f	2-53	Q,P
Crystal Hot		29	11	2	f	2-53	T,Q,P
Cedar		24	11	7	f	13	P
		5	11	9	f	13	P
		1	11	16	f	13	Q,P
		12	11	16	f	13	P
		13	11	16	f	13	P
Rosebud	3	33	11	16	f	63	Q,S
		2	11	18	f	10-60	Q,P,S
		17	12	2	f	6-41	Q,P
		6	12	5	f	3-41	Q,P
Hillside		23	12	5	f	13	P
		16	12	7	f	13	P
Locomotive		36	12	10	f	13	P
		2	12	12	i	59	P
		10	12	12	i	59	P
		5	12	13	i	59	P
		8	12	13	i	59	Q,P
Dane		5	12	14	f	11-60	S
	2	8	12	15	i	59	P
Warm		19	12	15	900 gpm	13	P
		2	12	16	i	59	P
		10	12	16	i	59	P
2-Spring		11	12	16	i	59	P
		22	13	2	f	6-41	Q,P
Hansen		32	13	2	f	2-51	Q,P
Blue		29	13	5	f	13	Q,P
	2	30	13	12	f	59	P
	2	35	13	12	n	12-60	S,P
		10	13	13	f	59	P
		14	13	13	i	59	P
		21	13	13	i	59	Q,P
		27	13	13	i	59	P
	2	34	13	13	i	59	P
	2	35	13	13	i	59	P
		13	13	14	i	59	P
	2	14	13	14	i	59	P

SPRINGS (continued)

NAME	NUMBER[1]	LOCATION (SLBM)			DISCHARGE		ADDITIONAL DATA
		SEC.	TWP. N.	RGE. W.	RATE	DATE	
		15	13	14	i	59	P
		16	13	14	i	59	P
		17	13	14	f	59	P
		18	13	14	i	59	P
		19	13	14	i	59	P
	5	21	13	14	i	59	P
	5	24	13	14	i	59	P
	3	26	13	14	i	59	P
	3	28	13	14	i	59	P
		30	13	14	i	59	P
		33	13	14	i	59	P
		36	13	14	i	59	P
	2	5	14	7	f	13	Q,P
		27	14	7	f	13	P
Pilot		13	14	11	f	59	Q,P
Cedar		11	14	12	i	59	P
		22	14	12	i	59	P
Emigrant	2	24	14	12	f	59	P
Crystal		27	14	12	i	59	P
		4	14	13	i	59	P
Big		29	14	13	f	59	P
		33	14	14	f	59	P
		33	15	7	f	11-50	Q,P

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f — flowing
i — intermittent
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gpm — gallons per minute
s h — several hundred gpm
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T — thermal water
Q — quality data available

TABLE 7 WELLS (Nevada)

NAME	NUMBER[1]	LOCATION (MDBM)			WATER LEVEL OR ARTESIAN HEAD[2]		REMARKS[3]
		SEC.	TWP. N.	RGE. E.	FEET	DATE	
		8	28	48			L,P
		9	28	48	+5	9-54	Q,P
		11	28	48	0	9-54	P
	2	14	28	48	+2-13	8-54	L,P
		15	28	48	+7	12-56	L,P
		12	29	43	30	2-60	Q
	2	3	29	48	3-5	8-54	Q,P
		5	29	48	74	5-53	Q.L
	2	17	29	48	55-70	8-54	L
	2	29	29	48	57-66	12-56	L,P
		34	29	48	7	8-56	Q,L
		11	29	49	13	12-52	L
Dewey Dann		33	29	49	70	7-60	Q,L,P
	2	34	29	49	53-71	6-57	L,P
		10	29	50			

[1]one well only unless otherwise noted
[2]+ indicates pressure head
[3]data available from published literature or Southern Pacific files on:

Q — quality
L — logs
P — performance
T — thermal water
A — artesian flow
S — saline water

NAME	NUMBER[1]	LOCATION (MDBM)			WATER LEVEL OR ARTESIAN HEAD[2]		REMARKS[3]
		SEC.	TWP. N.	RGE. E.	FEET	DATE	
		4	29	52	45	10-60	
	2	9	29	52	4-5	10-60	P
		21	29	52	3	10-60	P
		29	29	52			
		33	29	52	21	10-60	L
Pickett's		24	30	42			
		1	30	43	35	2-60	
		8	30	43			
		9	30	43			
		36	30	43			Q,P
	2	30	30	44	19	2-60	Q
		7	30	45			
		22	30	48	31	7-54	L
		27	30	48	14	3-53	L,P
		33	30	48	69	10-53	L,P
		6	30	49	5	8-56	
		20	30	52			
		29	30	52	9	10-60	L,P
		33	30	52	42	10-60	P
		8	31	44			
		36	31	44			
		24	31	45	60	14	
		36	31	45	60	14	
		1	31	46			
		10	31	46			
		1	31	48			
		5	31	49	8	8-56	
Harney		17	31	49	5	9-50	
		10	31	50	22	5-44	L
		29	31	52	32	10-60	
		18	32	38			
		23	32	42			
		1	32	45			
		2	32	45			
		5	32	45	4	5-60	P,A
		8	32	45			A
		9	32	45	9	60	A
	2	11	32	45	7	12-59	Q,L,P,A
		15	32	45			A
		16	32	45			A
Battle Mtn.	2	17	32	45			Q,L
		18	32	45			
		22	32	45	5	60	
	2	27	32	45			A
		33	32	45	4	60	
	2	34	32	45	dry	12-59	
		3	32	46			
		10	32	46			
		11	32	46			
		12	32	46			
		27	32	46	20	60	L
		31	32	46	12	60	
		12	32	48			
		24	32	48			
		25	32	48			

WELLS (continued)

NAME	NUMBER[1]	LOCATION (MDBM)			WATER LEVEL OR ARTESIAN HEAD[2]		REMARKS[3]
		SEC.	TWP. N.	RGE. E.	FEET	DATE	
		32	32	48			
		11	32	49			
		19	32	50			
		36	32	51			
		1	33	36			
		9	33	37			
	2	24	33	37	7-11	8-45	Q
		19	33	38	20	8-45	
		29	33	38	28	8-45	P
		30	33	38	30	8-45	L
		32	33	42	dry	1-59	
		11	33	44			
		14	33	44			
	2	23	33	44			
	2	25	33	44			
		35	33	44			
		36	33	44			
	2	18	33	45	+4	5-60	P
		28	33	45	+4	5-60	
		35	33	45			
		34	33	46	28	4-60	Q
		2	33	47	11	60	
		10	33	47			
		14	33	47			
		17	33	47			
		19	33	47			
		21	33	47			
		23	33	47			
		24	33	47			
		26	33	47			
		27	33	47			
		28	33	47			
		1	33	48	9	60	
		3	33	48	16	60	
		6	33	48	13	60	
		15	33	48			
		17	33	48			
		19	33	48			
	2	24	33	48			
Dunphy		26	33	48			
		33	33	48			
		15	33	49			
		27	33	52			Q
		16	33	56			
		21	33	60	13	12-39	
		29	33	60	7	6-48	
		2	34	37			
		3	34	37	160	7-51	Q
		10	34	37			
		22	34	37			

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[2]+ indicates pressure head
[3]data available from published literature or Southern Pacific files on:

Q — quality
L — logs
P — performance
T — thermal water
A — artesian flow
S — saline water

NAME	NUMBER[1]	LOCATION (MDBM)			WATER LEVEL OR ARTESIAN HEAD[2]		REMARKS[3]
		SEC.	TWP. N.	RGE. E.	FEET	DATE	
		26	34	37			
Tucker		35	34	40			P
		3	34	41	4	60	
		14	34	41	8	60	
		6	34	44	7	60	
		15	34	44	5	60	Q
		17	34	44	5	60	
		27	34	44	6	60	
		15	34	52			
		26	34	54			
		1	34	55	10	10-46	Q
		4	34	55			L,A
	2	10	34	55	84	12-46	L,T
	6	11	34	55	34-42	12-46	Q,L,P
	2	15	34	55			L,P,T,A
		19	34	55			
		22	34	55			
	2	36	34	60	6-9	8-48	
		12	34	61	20	9-48	L
		14	34	62	15	51	L
		1	34	63			L,P
		21	34	63	13	8-48	
		8	34	66	19	6-48	
	2	6	34	67	27-28	5-48	Q,L,P
	4	14	35	36	12-18	11-61	Q,L
	6	15	35	36	11-60	11-61	Q,L
		16	35	36	14	3-59	L
	5	19	35	36	13-18	7-61	Q,L
		20	35	36	18	11-61	Q
	5	21	35	36	16-29	11-61	Q,L
	3	22	35	36	4-78	11-61	Q,L
	2	23	35	36	dry-58	3-59	L
		24	35	36	212	7-61	Q
		27	35	36	99	7-61	Q
		31	35	36	88	11-61	Q
		1	35	37	9	7-59	L
		2	35	37	22	11-61	Q
	4	3	35	37	9-12	11-61	Q,L
	2	4	35	37	10-50	7-61	Q,L
	2	7	35	37	16-97	11-61	Q
	2	8	35	37	78-83	8-61	Q
	2	9	35	37	10-19	11-61	Q,L
	2	13	35	37	107-300	7-61	Q
		14	35	37	276	7-61	Q
	2	15	35	37	57-159	11-61	Q
		16	35	37	100	7-61	Q
		22	35	37	52	11-61	Q
		25	35	37	620	7-61	Q
	3	26	35	37	360-800	7-61	Q
	2	28	35	37	58-73	11-61	Q
		6	35	38	120	7-61	Q
		3	35	40	240	8-61	Q
		34	35	41	+2	5-59	
		8	35	42	16	60	
		29	35	42	8	60	

WELLS (continued)

NAME	NUMBER[1]	LOCATION (MDBM)			WATER LEVEL OR ARTESIAN HEAD[2]		REMARKS[3]
		SEC.	TWP. N.	RGE. E.	FEET	DATE	
		34	35	42	13	60	
		12	35	43	8	4-60	
	2	17	35	43	6-8	4-60	Q
		35	35	43	7	60	Q
		7	35	44	14	60	Q
	2	18	35	44	6-8	4-60	
		20	35	44	7	60	Q
		15	35	46	dry	4-60	
		3	35	53			
Osino		10	35	56	17	11-54	L,P
		30	35	56			L
		31	35	56	31	12-46	Q,L
Elburz	2	12	35	57	19	14	Q,L
		36	35	61			
		22	35	62	10	8-60	L
	3	26	35	62	7-15	8-48	L,P
	2	27	35	62	10	12-49	Q,L,P
		28	35	62	11	9-49	L
		19	35	63	80	9-60	L
Tobar	2	20	35	63	57	8-48	L,P
		33	35	66	20	49	P
		30	36	36			
	2	25	36	37	19-31	11-61	Q,L
		26	36	37	87	7-61	Q,L
		30	36	37	400	7-61	Q,L
		31	36	37	88	11-61	Q,L
		34	36	37	18	11-61	Q,L
	2	35	36	37	8-72	7-61	Q,L
		36	36	37	465	7-61	Q,L
		1	36	38	20	9-47	
		2	36	38	314	7-61	Q,L
	2	3	36	38	8-21	11-59	L,P
		4	36	38	208	7-61	Q
		5	36	38	22	12-61	Q,L
	3	9	36	38	7-25	11-59	L
		10	36	38	20	7-47	
		16	36	38	319	7-61	Q
	4	17	36	38	9-17	11-59	L
	2	19	36	38	150-525	7-61	Q,L
	2	20	36	38	7-12	11-59	L
		26	36	38	55	7-61	Q
		28	36	38	245	7-61	Q
		30	36	38	495	7-61	Q
		31	36	38	78	7-61	Q,L
		36	36	38	68	7-61	Q
		1	36	39	18	7-61	Q
	2	3	36	39	82-109	7-61	Q,L
	2	5	36	39	18-39	7-61	Q,L
		12	36	39	18	7-61	Q
		13	36	39	27	7-61	Q

[1]one well only unless otherwise noted
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[3]data available from published literature or Southern Pacific files on:

Q — quality
L — logs
P — performance
T — thermal water
A — artesian flow
S — saline water

NAME	NUMBER[1]	LOCATION (MDBM)			WATER LEVEL OR ARTESIAN HEAD[2]		REMARKS[3]
		SEC.	TWP. N.	RGE. E.	FEET	DATE	
		8	36	40	18	8-61	Q
	2	20	36	40	17-18	8-61	Q
		21	36	40	18	7-61	Q
	2	29	36	40	18-256	8-61	Q
		36	36	40	19	8-61	Q
	3	2	36	41	22-29	11-61	Q,L
		9	36	41	32	8-61	Q
		11	36	41	26	11-61	Q
		14	36	41	19	8-61	Q
		21	36	41	19	8-61	Q
		30	36	41	27	8-61	Q
		4	36	42	7	60	Q
		8	36	42	8	60	Q
		16	36	42			
		23	36	42	5	60	Q
		36	36	42	7	60	Q
		35	36	43	4	60	Q
		8	36	44			
		18	36	45			
		36	36	45			
		15	36	54			
		27	36	54			
		36	36	61	5	7-48	
		6	36	65	56	61	
		2	36	66	225	49	
		19	37	36			
		23	37	36			
		24	37	36			
		2	37	38	79	8-45	Q
		10	37	38	14	9-47	L
		16	37	38	4	8-47	L
		21	37	38	13	8-61	Q,L
		22	37	38	23	8-59	L
		24	37	38	38	12-61	Q
	2	33	37	38	11-14	10-47	
	2	34	37	38	9-40	12-61	Q,L
		35	37	38	11	8-61	Q
		36	37	38	6	10-47	
		3	37	39	61	8-61	Q,P,T,A
		19	37	39	29	12-61	Q
		24	37	39			
		28	37	39	40	12-61	Q
		30	37	39	22	8-61	Q,L
	2	31	37	39	8-9	8-59	L
		32	37	39	10	8-59	L
	3	33	37	39	9-11	8-59	
		34	37	39	27	8-61	Q
		10	37	40	10	8-47	
		25	37	42	7	60	Q
		28	37	42			
		29	37	42	5	60	Q
		33	37	42	6	60	Q
		35	37	42	7	60	Q
		18	37	43			
		20	37	43	2	60	Q

WELLS (continued)

NAME	NUMBER[1]	LOCATION (MDBM)			WATER LEVEL OR ARTESIAN HEAD[2]		REMARKS[3]
		SEC.	TWP. N.	RGE. E.	FEET	DATE	
		21	37	43	7	60	Q
		14	37	44			
		23	37	53			
		25	37	53			
		33	37	53			
Deeth		33	37	59	9	8-53	Q,L
		3	37	62	32	10-36	L,P
Alozon	2	4	37	62	30-114	5-51	L,P
		9	37	62			L
		10	37	62	+2	5-37	L,P
Moor		1	37	63			L
		10	37	63			
		16	37	65			
Cobre		3	37	67			L
		1	38	36	120	5-59	P
		36	38	38			
		4	38	39			
		9	38	39	10	9-47	
		14	38	39			
		16	38	39	8	9-47	L
		17	38	39			
		21	38	39	10	7-47	L
		22	38	39	16	9-47	
	3	28	38	39	13-420	11-61	Q
		31	38	39	10	8-47	L
		33	38	39	13	9-47	
		35	38	39	64	8-61	Q
		5	38	43	325	7-59	L
		34	38	44			L
Wilkins R. 1		21	38	61			L
		8	38	63			
Holborn		14	38	64	55	7-48	L,P
		20	38	64			
		29	38	64			
		12	38	65			
		18	38	65			
		24	38	65			
Valley Pass		25	38	66	81	8-41	Q,L,P
Loray		30	38	68	404	7-04	Q,L,P
		3	39	38	150	8-59	
	3	3	39	39	11	9-47	
		4	39	39	9	9-47	
		10	39	39			
	3	13	39	39	7-8	8-47	Q,L,P
	3	14	39	39			
	2	15	39	39			
	2	16	39	39	9	9-48	
		17	39	39	10	7-47	
	2	24	39	39	6-8	7-47	L
		26	39	39			

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S — saline water

NAME	NUMBER[1]	LOCATION (MDBM)			WATER LEVEL OR ARTESIAN HEAD[2]		REMARKS[3]
		SEC.	TWP. N.	RGE. E.	FEET	DATE	
		33	39	39	8	7-47	
Montello		17	39	69	120	10-24	Q,L
		34	40	38			

WELLS (Utah)

NAME	NUMBER[1]	LOCATION (SLBM)			WATER LEVEL OR ARTESIAN HEAD[2]		REMARKS[3]
		SEC.	TWP. N.	RGE. W.	FEET	DATE	
	3	1	6	2	+5-45	11-54	Q
		2	6	2			Q
	2	3	6	2			Q
		4	6	2			Q
		5	6	2	+43	3-54	Q
	2	6	6	2	+16	9-53	Q
	2	7	6	2			Q
	2	1	6	3	+6	7-58	Q
		5	6	3			Q
	2	7	6	3	+4-5	7-55	Q
	2	10	6	3	+10-12	7-55	Q
	2	11	6	3			Q
		12	6	3	+4	7-55	Q
	2	15	6	3			Q
		16	6	3	+22	9-53	Q
	2	17	6	3	+24	7-55	Q
		18	6	3			Q
		13	6	4			Q
		14	6	16			L
		29	7	1	+5	4-54	Q
		30	7	1	37	4-54	Q
		31	7	1	+37	3-54	Q
	3	32	7	1	+17-78	4-54	Q
		20	7	2	+10	3-54	Q
		21	7	2			Q
		22	7	2	+4	6-55	Q
	2	23	7	2	+6-42	6-55	Q
		26	7	2	+35	3-54	Q
		27	7	2	+7	6-55	Q
	2	28	7	2	+7-9	6-55	Q
	2	31	7	2	+9	5-54	Q
	3	32	7	2	+35	9-53	Q
	2	33	7	2			Q
	2	34	7	2	+10	6-55	Q
	2	35	7	2	+15	6-55	Q
	3	36	7	2	+21-38	5-54	Q
		25	7	3	+25	4-55	Q
		32	7	3	+21	5-54	Q
	2	33	7	3	+22-23	6-55	Q
	3	35	7	3	+8	3-54	Q
	2	36	7	3	+9	5-54	Q
		5	7	5	10	13	
Lemay		29	7	14	0	10-60	L,S
Newfoundland		36	7	14	0	10-60	L,S
		15	8	2		13	Q,A

WELLS (continued)

NAME	NUMBER[1]	LOCATION (SLBM)			WATER LEVEL OR ARTESIAN HEAD[2]		REMARKS[3]
		SEC.	TWP. N.	RGE. W.	FEET	DATE	
		26	9	1			Q
		27	9	1	50	10-35	Q
	2	1	9	2	11-12	13	
		9	9	2	7	13	Q
		25	9	2	60	13	P
		1	9	3	0	13	Q
	2	2	9	3	3	13	Q
		4	9	3	4	13	Q
		10	9	3	3	13	Q
		15	9	3	12	13	Q
		21	9	3	3	13	
		22	9	3	5	13	Q
		27	9	3			Q
		16	9	7	dry	13	
Government		4	9	12			
	2	5	10	2			Q
		7	10	2			Q
		8	10	2	6	13	Q
		9	10	2	25	13	Q
		18	10	2			Q
		19	10	2	10	13	Q
		23	10	2	11	13	Q
		31	10	2	12	13	Q
		36	10	2	17	13	Q
		1	10	3	5	13	Q
		2	10	3	6	13	Q
		3	10	3	5	13	Q
		4	10	3	5	13	
		8	10	3	10	13	Q
		9	10	3	3	13	
		12	10	3	5	13	Q
		13	10	3	6	13	Q
		29	10	3	3	13	
		30	10	3	3	13	Q
	3	32	10	3	4-7	13	Q
		33	10	3	3	13	Q
		35	10	3	3	13	Q
		6	10	6			
		26	10	6			Q
		36	10	6	39	13	
		23	10	7			Q
		16	10	18			
	2	28	10	18	30-38	13	Q
		30	10	18	12	13	
		33	10	18	82	10-58	Q
		1	11	2			Q
		6	11	2	17	13	Q
		7	11	2	6	13	Q
		8	11	2	6	13	Q
	2	20	11	2	5-35	13	Q

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S — saline water

NAME	NUMBER[1]	LOCATION (SLBM)			WATER LEVEL OR ARTESIAN HEAD[2]		REMARKS[3]
		SEC.	TWP. N.	RGE. W.	FEET	DATE	
		31	11	2	12	13	
		32	11	2	9	13	Q
		1	11	3	12	13	
		4	11	3	5	13	Q
		8	11	3	4	13	Q
		11	11	3	8	13	Q
		16	11	3	3	13	Q
	2	17	11	3	4-5	13	Q
		26	11	3			Q
		27	11	3			Q
		34	11	3			Q
	2	1	11	4	8	13	
		2	11	4			Q
	2	4	11	4			Q
	2	9	11	4			Q
		12	11	4	5	13	Q
		15	11	4	25-60	13	Q
		22	11	4	28	13	Q
		28	11	4	20	13	Q
		33	11	4	7	13	
		36	11	4	72	13	Q
		8	11	6	110	13	
		13	11	6	195	13	
		17	11	6			
		21	11	6	245	13	
		23	11	7	110	13	
		25	11	13			A
	2	16	11	15	7	13	
		12	11	16			
		10	11	18			Q,P
		27	11	18			
		32	11	18	12	13	Q
		33	11	18			Q
	2	8	12	1	+2	10-38	Q
		11	12	1			Q
		14	12	1			Q
		36	12	1			Q
		6	12	2	4	13	Q
		7	12	2	6	13	Q
		9	12	2	6	13	Q
	3	17	12	2	10-12	13	Q
		20	12	2	16	13	Q
		30	12	2	10	13	Q
		35	12	2			Q
		2	12	3	5	13	Q
		10	12	3	12	13	
		22	12	3	10	13	
		25	12	3	15	13	Q
		32	12	3			Q
		36	12	4	72	13	
		5	12	5			Q
		9	12	5			
		16	12	5			
	2	18	12	5	30	13	
		19	12	5	51	13	Q

WELLS (continued)

NAME	NUMBER[1]	LOCATION (SLBM) SEC.	TWP. N.	RGE. W.	WATER LEVEL OR ARTESIAN HEAD[2] FEET	DATE	REMARKS[3]
Critchlow		10	12	7	300	13	
		14	12	7	50		
Baker		8	12	8			
	2	8	12	11			Q
		28	12	11			A
		13	12	12			
	3	4	12	13	7-11	13	
		5	12	13	13	13	
		8	12	13	dry	13	
		10	12	13	48	13	
		21	12	13	2	13	
		22	12	13	32	13	Q
		2	12	14	+2	13	Q
		8	12	14	13	13	Q
		18	12	14	2	13	
		21	12	14			Q
		23	12	14	53	13	Q
	2	30	13	1	+18	5-52	Q
		7	13	2	10	13	Q
		19	13	2			Q
		20	13	2	12	13	Q
		29	13	2	20	13	Q
		30	13	2	10	13	Q
		32	13	2	8	13	Q
		4	13	3	50	13	Q
		8	13	3	9	13	Q
		10	13	3			Q
		12	13	3	10	13	
		15	13	3	34	13	Q
		22	13	3			Q
		24	13	3	29	13	Q
		27	13	3			
		35	13	3	20	13	
		4	13	5	dry	13	
		6	13	5	165	13	
		7	13	5			
	3	8	13	5	80-140	13	Q
		16	13	5			
		18	13	5	53	13	Q
		21	13	5			
		28	13	5	40		Q
		29	13	5			
		2	13	6			
		18	13	6	dry	13	
		24	13	6	208	13	
		14	13	7	225	13	Q
		24	13	7			
		27	13	13	7	13	
	3	28	13	13	9-15	11-54	Q
		29	13	13	12	13	

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S — saline water

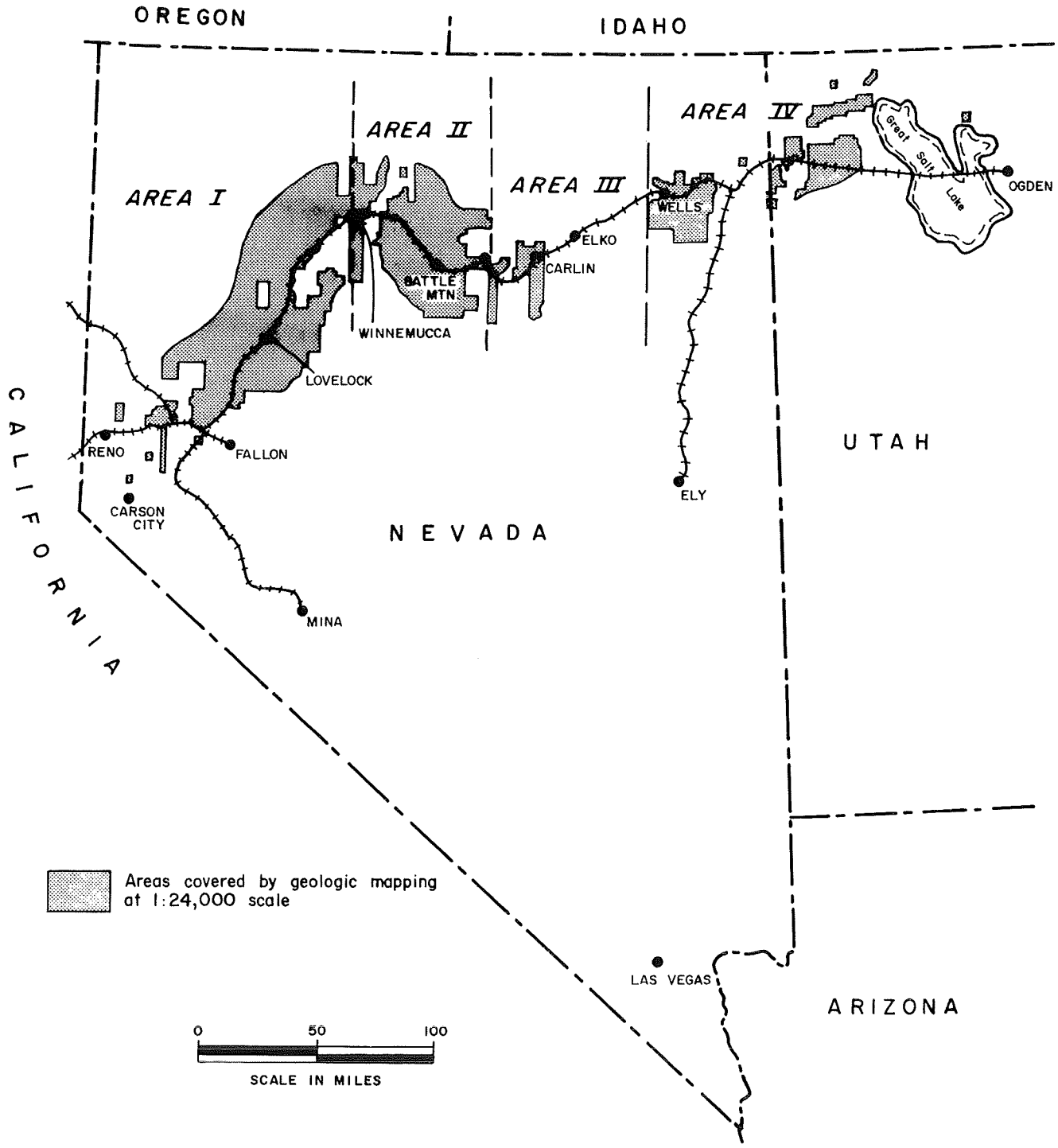
NAME	NUMBER[1]	LOCATION (SLBM)			WATER LEVEL OR ARTESIAN HEAD[2]		REMARKS[3]
		SEC.	TWP. N.	RGE. W.	FEET	DATE	
		31	13	13	11	13	
		32	13	13	23	13	
		25	13	14			Q
	2	28	13	14	8	13	
		17	14	3			Q
		20	14	5			
		6	14	7	6		
	2	8	14	7	25		
		11	14	8	dry	13	
		22	14	8	dry	13	
		1	14	9			Q
		4	14	9	183	5-56	
		5	14	9			Q
		7	14	9			Q
		10	14	9	dry	13	
		11	14	9	50	13	Q
		11	14	10			Q
		13	14	11			
		12	14	12	85	13	
		28	15	9			Q
		25	15	10			

TABLE 8 SURFACE WATER DISCHARGE DATA[1]

GAGING STATION	LOCATION (MDBM)		
	SEC.	TWP. N.	RGE. E.
Marys River above Hot Springs Creek, near Deeth, Nev.	24	39	59
Lamoille Creek near Lamoille, Nev.	6	32	58
North Fork Humboldt River at Devils Gate, near Halleck, Nev.[2]	13	38	57
Humboldt River near Elko, Nev.	11	35	56
Huntington Creek near Lee, Nev.	19	31	56
South Fork Humboldt River above Dixie Creek, near Elko , Nev.	5	32	55
South Fork Humboldt River near Elko, Nev.	30	33	55
Humboldt River near Carlin, Nev.	21	33	53
Humboldt River at Palisade, Nev.	35	32	51
Humboldt River near Argenta, Nev.[2]	2	32	47
Rock Creek near Battle Mountain, Nev.	17	34	48
Humboldt River at Battle Mountain, Nev.[2]	17	32	45
Humboldt River at Comus, Nev.	14	36	41

[1]Data from U. S. Geol. Survey "Surface Water Records of Nevada 1961" and Circular 467
[2]Many diversions above station for irrigation

DISCHARGE EXTREMES				DISCHARGE AVERAGE		DRAINAGE AREA
MAXIMUM		MINIMUM		YRS.	CFS.	SQ. MI.
Date	Cfs.	Date	Cfs.			
2/62	4,210	8/55	0.1	18	56.2	415
6/57	794	12/54	1	25	42.2	25
2/62	10,400	7/60	2.2	26	70.2	830
2/62	7,100	9/48	0	24	220	2,800
2/62	2,210	8/59	0.2	13	29.6	770
2/62	2,760	9/59	0.1	13	98.5	1,150
2/62	2,830	many years	0	57	124	1,310
2/62	6,230	8/59	0.1	18	306	4,310
2/62	6,610	8/31	2	54	350	5,010
2/62	6,000	10/55	0.2	15	262	7,490
2/62	4,800	many years	0	21	29.9	875
5/52	5,800	9/59	0	19	296	8,870
5/52	5,860	some years	0	47	272	12,100



INDEX MAP SHOWING AREAS DESCRIBED
IN COMPILATION OF GEOLOGIC HISTORY

SOUTHERN PACIFIC
LAND DEPARTMENT

Figure 4

Geologic History

SUMMARY

The geologic history of NORTHERN NEVADA AND NORTHWESTERN UTAH is complex. Specific areas[1] within this region have geologic histories peculiar to each but interrelated with those of adjoining areas. In order that these complex histories may be presented in orderly fashion, three stratigraphic charts[2] and a compilation of geologic history have been prepared. The compilation outlines the depositional, tectonic, and intrusive history of the entire region.

The stratigraphic charts show Paleozoic geosynclinal facies deposited prior to the Antler orogeny (Chart I), Paleozoic marine deposits derived from the Antler orogenic belt (Chart II), and Mesozoic marine deposits (Chart III). The use of the term "assemblage" on Chart I and "sequence" on Charts II and III are defined as follows (Silberling and Roberts, 1962):

> "Roberts and others (1958) used the term 'assemblage' to designate major groupings of Paleozoic rocks which are representative of a particular sedimentary and tectonic environment in northern Nevada. . . . . .
>
> "A different kind of subdivision, however, is required in northwestern Nevada for the upper Paleozoic and lower Mesozoic rocks. The subdivisions adopted are lithologically and geographically discrete units of major rank termed 'sequences' that are set apart from underlying or overlying sequences by unconformities. The sequences differ from assemblages in being discrete, vertically delimited rock units, some of which, though lithologically distinct, were deposited under much the same environmental conditions.
>
> ". . . . . The term sequence as used here serves the same purpose as the term group in formal rock-stratigraphic nomenclature, but the two terms differ in scope. Some sequences may include more than one established group, and hence the sequences are in effect 'supergroups'."

The references used in preparation of this geologic history are cited following the compilation. A generalized paleotectonic map and a diagrammatic cross section of a hypothetical range are also presented (Figures 5 and 6).

[1]See Figure 4 for locations.
[2]Only those formations occurring within the mapped area are listed.

STRATIGRAPHIC CHART 1

MAJOR FACIES OF PRE-ANTLER PALEOZOIC ROCKS

WEST		
DETRITAL-VOLCANIC ASSEMBLAGE[1]		**TRANSITIONAL ASSEMBLAGE**
AREA I Eugeosynclinal Deposits West of Winnemucca[2]	AGE	AREA II Continental Slope Deposits Between Winnemucca and W. Flank Shoshone Range[2]
Unnamed fm. in N. Shoshone Rge.	Mid. Devonian	
Unnamed fm. in N. Shoshone Rge.	Silurian	
Valmy, Sonoma Range, and Vinini fms.	Early to Late Ordovician	
	Early to Mid Ordovician	Comus fm.
	Late Cambrian	Harmony fm.
Scott Canyon fm.	Mid. Cambrian	Preble fm.
	Early Cambrian	Osgood Mt. quartzite

[1]These rocks were moved easterly in the upper plate of Roberts Mountains thrust during Antler orogeny.
[2]Approximate and generalized locations of original sites of deposition in NNE-trending belts.

OF THE CORDILLERAN GEOSYNCLINE

EAST

CARBONATE-CLASTIC ASSEMBLAGE

AREA IV

Continental Shelf Deposits East of Battle Mountain[2]	AGE
Joana limestone	Early Mississippian
Pilot shale, Guilmette and Devil's Gate limestone	Mid. to Late Devonian
Simonson dolomite	Mid. Devonian
Sevy dolomite	Early Devonian
Roberts Mts. and Laketown fms.	Silurian
Hansen Creek fm. and Fish Haven dolomite	Late Ordovician
Eureka quartzite	Mid. Ordovician
Swan Peak quartzite	Mid. Ordovician
Lehman and Kenosh fms.	Early Ordovician
Pogonip Group	Early Ordovician
Garden City	Early Ordovician
Unnamed formation in N. Shoshone Range	Mid. Cambrian
Eldorado dolomite	Mid. Cambrian
Prospect Mountain quartzite	Early Cambrian

STRATIGRAPHIC CHART II

PALEOZOIC SEQUENCES OF MARINE DEPOSITS LARGELY DERIVED FROM ANTLER OROGENIC BELT

WEST			EAST
HAVALLAH SEQUENCE[1]	**ANTLER SEQUENCE[2]**	**CARLIN SEQUENCE[2]**	**CARBONATE-CLASTIC ROCKS[2]**
AREA I	AREA II	AREA III	AREA IV
West of Winnemucca	Edna Mts., Battle Mt., N. Shoshone Range	Carlin Area	Wood Hills, Pequop Mts., W. Utah
	— Deposition Terminated by Sonoma Orogeny —		
			Unnamed fm.-Kaibab equiv.? (Late? Permian)
	Edna Mt. fm. (Mid? Permian)		Arcturus fm. (Mid. Permian)
Havallah Pumpernickel formations[3] (Early? Penn. to Middle Permian)	Antler Peak fm. (Late Penn. to Early Permian)		Riepetown ss. (Early Permian)
			Oquirrh fm. (Pennsylvanian)
	Battle fm.[4] and Highway ls. (Early to Mid. Pennsylvanian)		Ely ls. (Early Penn.)
		Tonka fm.[4] (Early Miss.-Early Penn.)	Diamond Peak fm.[4] (Late Miss.)
			Chainman sh. (Early to Late Miss.)

[1]Eugeosynclinal deposits; these rocks were moved easterly at least as far as northern Shoshone Range in the upper plate of Golconda thrust during Sonoma orogeny.
[2]Orogenic and post-orogenic clastic and carbonate deposits in narrow arms of shifting seas within and along east side of Antler orogenic belt.
[3]Eugeosynclinal deposits (Pumpernickel) which grade upward into continental-shelf deposits (Havallah).
[4]Orogenic conglomerate.

STRATIGRAPHIC CHART III

MESOZOIC SEQUENCES OF MARINE DEPOSITS

WEST		EAST
WINNEMUCCA SEQUENCE	**AGE**	**AUGUSTA SEQUENCE**
AREA I Offshore, shallow marine deposits		AREA II Nearshore, shallow marine deposits
Unnamed rocks	Late Triassic to Early Jurassic	
Raspberry fm. Winnemucca fm. Dun Glen fm. Grass Valley fm.	middle Late Triassic	
Natchez Pass fm.	early Late Triassic	Cane Spring fm.
	Middle to Late Triassic	Augusta Mountain fm.
Prida fm.	Middle Triassic	Panther Canyon fm. & Favret fm.
	late Early to Middle Triassic	China Mountain fm.[1]
	— Emergence and slight deformation —	
KOIPATO SEQUENCE Largely marine lavas and tuffaceous sediments	Late Permian(?) to Early Triassic	

[1]Orogenic conglomerate with local fanglomerate.

COMPILATION

EPISODES			AREA[1]
DEPOSITIONAL	TECTONIC	INTRUSIVE	
Precambrian(?) or Cambrian(?)			I (Willow Creek section)
Precambrian			IV (E. Humboldt Range section)
Precambrian			IV (Grouse Creek Mts., Utah)
Early Cambrian to Middle Devonian			I
Early Cambrian to Middle Devonian(?)[2]			II
Early Cambrian to Early Mississippian			IV
	Late Devonian		I, II, III
	Early(?) Mississippian		IV (Wood Hills)
	Middle Mississippian		IV (Silver Island Range)
	Mississippian		I (East), II, III IV (Wood Hills)
	Mississippian(?)		IV (northern East Humboldt Range)
Mississippian to Middle Permian			I (West)
Early Mississippian to Early Pennsylvanian			III
Late Mississippian			IV
Early to Middle Pennsylvanian			II
Late Pennsylvanian to Early Permian			II
	Early(?) Permian		II
Middle(?) Permian			II
Early Pennsylvanian to Late(?) Permian			IV
	Late Permian		I, II

[1]See Figure 4 for locations of Areas I, II, III, and IV: specific locations within these areas are given in parentheses.
[2]Only Early Cambrian to Middle Devonian(?) rocks are known in Area II.

DESCRIPTION
Accumulation of clastic and volcanic rocks in eugeosynclinal(?) environment.
Accumulation of clastic rocks and minor amounts of carbonate rocks.
Clastic and carbonate deposits on continental shelf(?)
Accumulation of detrital-volcanic assemblage: much chert with sand, silt, local carbonate and intercalated andesitic to basaltic lavas in eugeosyncline.
Accumulation of transitional assemblage: silt, grit, sand, arkose, chert, and impure carbonate with local lavas and pyroclastics on continental slope; inferred deposition of Late Ordovician to Middle Devonian rocks.
Accumulation of carbonate-clastic assemblage: calcium and magnesium carbonate with much sand in lower portion of assemblage on continental shelf.
Onset of Antler orogeny: folding and partial emergence; inferred removal of Late Ordovician to Middle Devonian strata in Area II.
Onset of Antler orogeny: folding and partial emergence.
Onset of Wendover phase of Antler orogeny: folding and brief partial emergence.
Maximum development of Antler orogenic belt: widespread emergence and continued folding, and uplift; easterly thrusting of detrital-volcanic assemblage over transitional and carbonate-clastic assemblages in upper plate of Roberts Mountains thrust.
Possible time of décollement thrusting of Lower Ordovician(?) carbonate rocks over Lower Cambrian(?) quartzite; movement was along an east-west trend with upper-plate carbonates probably thrust easterly relative to lower-plate quartzite.
Continued eugeosynclinal deposition: predominantly chert with silt, sand, conglomerate, local carbonate, and andesitic interflows of the Pumpernickel formation of the Havallah sequence. Westward migration of shoreline brought continental shelf environment to area during Permian time when a greater proportion of sand and carbonate and lesser amounts of silt and lava were deposited (Havallah formation).
Coarse, orogenic clastics forming lower part of the Carlin sequence were eroded from mountainous areas and accumulated in narrow troughs within the unstable Antler orogenic belt.
Coarse, orogenic clastics were derived from Antler orogenic belt and were deposited on continental shelf bordering east side of the mountainous area.
(Apparently remained a positive area throughout Mississippian time.) Coarse orogenic clastics, composing lower part of Antler sequence, accumulated in narrow troughs within the unstable Antler orogenic belt.
Carbonate deposition in troughs within Antler belt.
Partial emergence and local erosion of Pennsylvanian and Permian rocks.
Accumulation of arenaceous sediments within narrow troughs in Antler belt.
Carbonate with minor amounts of arenaceous sediment accumulated on continental shelf along east side of Antler belt.
Sonoma orogeny: folding, emergence, and development of Golconda thrust: easterly movement of Havallah sequence over Antler sequence and upper-plate rocks of the Roberts Mountains thrust.

COMPILATION (continued)

EPISODES			AREA[1]
DEPOSITIONAL	TECTONIC	INTRUSIVE	
Latest Permian(?) to Earliest Triassic			I, II
		Early Triassic	I
	Early Triassic		I
late Early to early Late Triassic			II
Middle Triassic			I
Late Triassic to Early Jurassic			I
	Mesozoic (post Early Jurassic)		I
	Late Permian or Mesozoic		IV (E. Humboldt Range and Wood Hills)
		Late(?) Cretaceous to Oligocene(?)	I, II, III, IV
	Cretaceous to Eocene(?)		I, II
			I
Oligocene(?) or Early Miocene(?)			II (Sheep Creek Range)
	Early Miocene(?)		(as above)
Middle Miocene(?)			(as above)
Late Miocene(?) to Middle Pliocene(?)			(as above)
	Middle to Late Pliocene(?)		II (Sheep Creek Range)
Late(?) Pliocene or Pleistocene(?)			(as above)
	Pleistocene		(as above)
Pleistocene			II

[1]See Figure 4 for locations of Areas I, II, III, and IV: specific locations within these areas are given in parentheses.

DESCRIPTION
Extrusion of rhyolitic to andesitic lavas and accumulation of pyroclastic sediments of the largely marine Koipato sequence.
Local intrusions of aplite and rhyolite porphyry.
Emergence and minor deformation indicated by slight angular unconformity between Koipato and Winnemucca sequences.
Accumulation of Augusta sequence of deposits near eastern shore of shallow sea: orogenic deposits in lower portion of sequence include conglomerate and local fanglomerate composed of chert, quartzite, dolomite and greenstone clasts apparently derived from upper-plate rocks (Havallah sequence) of Golconda thrust which formed mountainous areas immediately east of shoreline; carbonate deposits accumulated to form upper portion of Augusta sequence.
Accumulation of Winnemucca sequence of shallow-water, off-shore deposits in a gradually subsiding basin: moderately thick carbonate deposits, with lesser amounts of argillaceous, arenaceous, and conglomeratic deposits and lavas.
Continued accumulation of Winnemucca sequence of shallow-marine deposits; shifting seas indicated by great thicknesses of argillaceous sediments and lesser amounts of carbonate.
Orogeny: emergence, folding and thrusting in at least two directions; regional low-grade dynamothermal metamorphism of Triassic-Jurassic strata produced slate, phyllite, quartzite and marble; Augusta sequence (Area II) was not folded.
Orogeny probably contemporaneous with formation of either (1) Mid-Cordilleran geanticline of Late Permian age, or (2) Mesozoic Sevier arch; northwest thrusting (Wood Hills thrust) of Devonian to Permian carbonate-clastic rocks over older Paleozoic carbonate-clastic strata and locally over upper-plate rocks of Roberts Mountains thrust.
Emplacement of many widespread and varied stocks and bosses, most commonly granodiorite, diorite and quartz monzonite but ranging from granite to gabbro; contact (thermal) metamorphism of invaded rocks.
Major erosional interval with intermittent uplift preventing peneplanation; streams probably drained to Pacific Ocean.
(See PART I for Cenozoic History)
Extrusion of thick and extensive flows of andesite, dacite and basalt upon highly deformed upper-plate rocks of the Roberts Mountains thrust.
Uplift and normal faulting along north to northwest trends.
Extrusion of endogenic volcanic domes of porphyritic rhyolite.
Accumulation of tuffaceous lacustrine and fluviatile deposits including local fanglomerate at base of section.
Northward tilting 2–4° and beveling of tilted strata; volcanic domes remain in lowered relief.
Extrusion of thin but widespread flood basalt.
Uplift, normal faulting, and northward tilting of about one degree. (South of Humboldt River, lavas of northern Shoshone Range were tilted 8–15°SE.)
Vigorous stream and sheetwash erosion during pluvial stages of Pleistocene; deep canyons were cut through tilted ranges and extensive valley-fill deposits formed. Eastern arm of Lake Lahontan extended to near Comus.

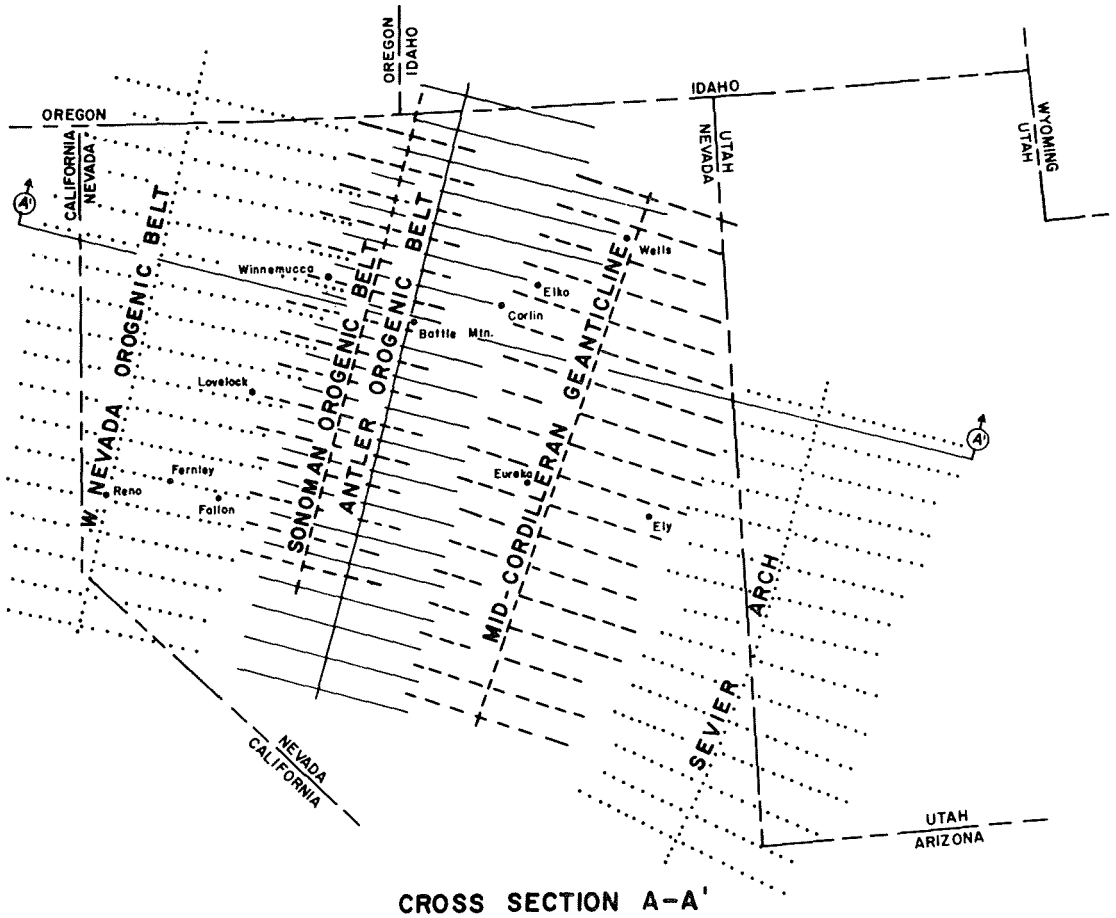
COMPILATION (continued)

EPISODES			AREA[1]
DEPOSITIONAL	TECTONIC	INTRUSIVE	
Paleocene(?)			III (Cortez Mountains)
	Eocene(?)		(as above)
		Eocene(?)	(as above)
Oligocene(?)			(as above)
	Oligocene(?)		III
Oligocene(?)			III (Carlin)
	Oligocene(?)		III (Cortez Mountains)
Late Oligocene(?) to Late Miocene			III (Carlin)
	Late Miocene		III (Cortez Mountains)
Late Miocene			III (Carlin basin)
	Late Miocene		III
Late Miocene or Early Pliocene			III (Palisade Canyon)
Early Pliocene			III (Carlin basin)
	Early Pliocene		III
Middle Pliocene to Middle Pleistocene			III (Pine Valley)
Cenozoic	Cenozoic		IV

[1]See Figure 4 for locations of Areas I, II, III, and IV: specific locations within these areas are given in parentheses.

DESCRIPTION
Extrusion of andesite to latite lavas.
Folding of lavas along northerly trending axes.
Emplacement of granodiorite and diorite stocks and bosses.
Extrusion of basaltic to andesitic lavas.
Normal faulting.
Stream deposition of sandstone and conglomerate including clasts of Paleozoic rocks and early Tertiary lavas.
Faulting and eastward tilting.
Accumulation of lake and stream deposits: pyroclastics, lavas, conglomerate, sandstone and limestone.
Eastward tilting.
Extrusion of basalt and ejection of lapilli and ash; fluviatile and lacustrine deposition of vitric tuff, coarse detritus, diatomite, shale and limestone.
Basin and range faulting.
Extrusion of porphyritic rhyolite.
Accumulation of fluviatile and lacustrine deposits: coarse detritus, tuffaceous material, rhyolitic and basaltic tuff, diatomite, shale and limestone.
Normal faulting and renewed eastward tilting of Cortez Mountains.
Lacustrine deposition: clay, limestone, volcanic ash, conglomerate and fanglomerate.
Cenozoic history of Area IV has not been studied sufficiently to permit a detailed description. This Area experienced as complex a Cenozoic history as Areas I, II, and III, involving similar episodes of uplift, faulting, tilting, volcanism, erosion, and fluvial and lacustrine deposition in basin areas. In addition, the East Humboldt Range was glaciated during the Pleistocene, and is the only glaciated range east of the Sierra Nevada within the mapped area. During the pluvial stages of the Pleistocene, lakes filled portions of intermountain basins. The most extensive of these was Lake Bonneville which experienced four major fluctuations from Kansan(?) to Mankato time, and which ranged from the Gilbert stage at 4250′ above sea level to the Bonneville stage at 5200′. As a result of prolonged arid climate during Recent time, the present level of Great Salt Lake is about 4200′

GENERALIZED PALEOTECTONIC MAP



CROSS SECTION A-A'
(DIAGRAMMATIC)

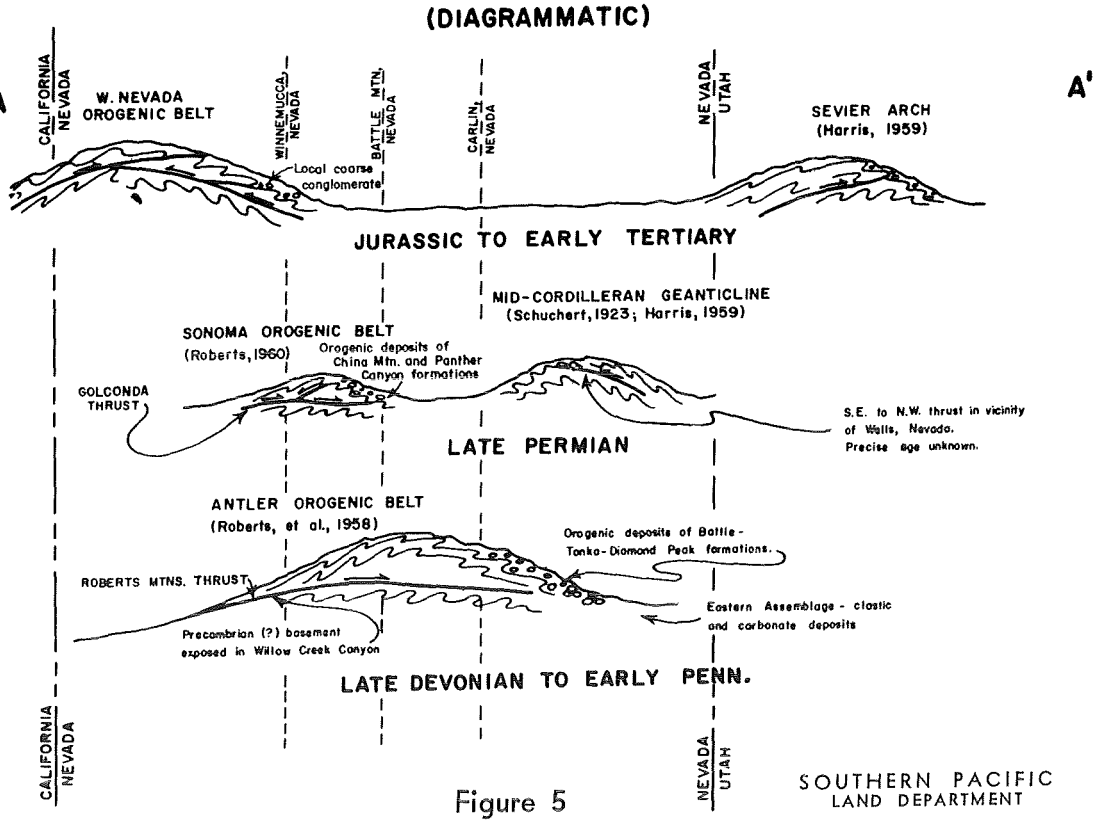
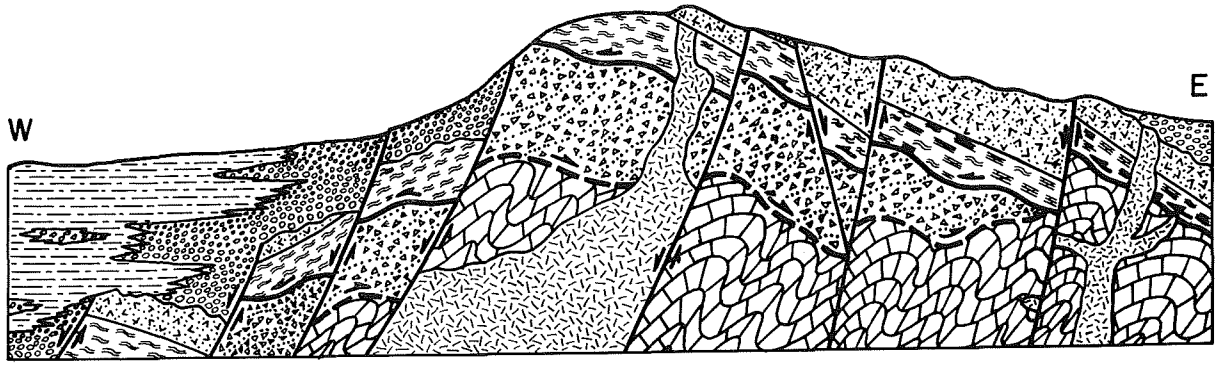


Figure 5

SOUTHERN PACIFIC
LAND DEPARTMENT



LEGEND

Quaternary fan deposits

Quaternary lake and stream deposits

Tertiary volcanic and sedimentary rocks (continental)

West East

Mesozoic facies (marine)

West East

Paleozoic Cordilleran Geosynclinal Facies:
West = detrital-volcanic; East = carbonate-clastic

Late Cretaceous to Early Tertiary intrusives

Mesozoic thrust faults (also W to E thrusts)

Paleozoic thrust faults

Basin-range block faults

DIAGRAMMATIC CROSS SECTION

BASIN-RANGE BLOCK FAULTS SUPERPOSED ON PALEOZOIC AND MESOZOIC STRUCTURES

Figure 6

SOUTHERN PACIFIC
LAND DEPARTMENT

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