History of the Clayton Mine and Smelter, Custer County, Idaho

Victoria E. Mitchell

Staff Report 10-8
November 2010

Idaho Geological Survey
Morrill Hall, Third Floor
University of Idaho
Moscow, Idaho 83844-3014

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INTRODUCTORY NOTE

This report was prepared under a cooperative agreement with the State of Idaho, Department of Lands, as part of a project to compile information on inactive and abandoned mines in Idaho. Work on this project included preparing detailed histories of mines of interest to the State of Idaho, as well as compiling additional information on mines on state lands.

The information in this report is taken from published and unpublished sources in the Idaho Geological Survey's mineral property files. Unless otherwise noted, most mine production data are drawn from the U.S. Geological Survey's (USGS) annual volumes on *Mineral Resources of the United States* (1882-1923) and the equivalent volumes produced by the U.S. Bureau of Mines (USBM)(*Mineral Resources of the United States*, 1924-1931, and *Minerals Yearbook*, 1932 to the present). Additional information was drawn from the Reports of the Director of the Mint (DotMR), which are particularly useful in the 1880s. Information on underground workings and mine equipment is generally from the annual reports of the Idaho Inspector of Mines (IMIR), published from 1899 to 1979. After 1974, the Mine Inspector's office was known as the Mine Safety Bureau, a section of the Idaho Department of Labor and Industrial Services. Detailed accounts of mine operations are mostly drawn from the annual reports prepared by the companies for the State Inspector of Mines; these reports were required by law, and the information contained in them formed the basis of the Mine Inspector's annual reports. Reports of recent developments are taken from the Idaho Geological Survey's (IGS) annual reports on mining and minerals in Idaho (from 1984 to present) or from similar reports produced by the Survey's predecessor, the Idaho Bureau of Mines and Geology (IBMG) from 1975 to 1984. Other published sources are referenced in the text. A complete bibliography is included at the end of the report. Where direct quotations are taken from source materials, the original spelling and grammar are preserved.

History of the Clayton Mine and Smelter, Custer County, Idaho

Victoria E. Mitchell[1]

INTRODUCTION

The Clayton Silver Mine is in the Bayhorse mining district about 1½ miles up Kinnikinic Creek from the Salmon River at Clayton (Figures 1, 2, and 3). It is in the SW¼, sec. 13, T. 11 N., R. 17 E. The mine shaft is at an elevation of about 6,000 feet. The smelter site is at the town of Clayton (Figures 1, 2, 3, and 4), in the NE¼, sec. 25, T. 11 N., R. 17 E.

The mine is on the east flank of a large anticline in the enclosing Ordovician-age rocks (Ross, 1937). The rocks in the vicinity of the mine include the Clayton Mine Quartzite, the Ella Dolomite, the Kinnikinic Quartzite, and the Ramshorn Slate, all of probable Ordovician age. This package of rocks is cut off above and below by thrust faults (Hobbs and others, 1975; Figure 5); it is also broken by steep normal faults (Hobbs, 1985; Figure 6).

Mineralization occurs in shear zones that parallel bedding in the Ella Dolomite (Hillman, 1986). This block of Ella Dolomite is bounded by two steep faults and capped by a thrust fault (Figure 6). The hydrothermal solutions that formed the replacement deposit were channeled up the steep boundary faults (Hobbs, 1985). The ore is argentiferous galena in a siderite gangue. Less abundant ore minerals include sphalerite, tetrahedrite, native silver, gold, chalcopyrite, pyrargyrite, and arsenopyrite. Other gangue minerals are quartz and calcite (Shaffer, 1942; Hillman, 1986).

[1]Idaho Geological Survey, Main Office at Moscow, University of Idaho, Moscow.

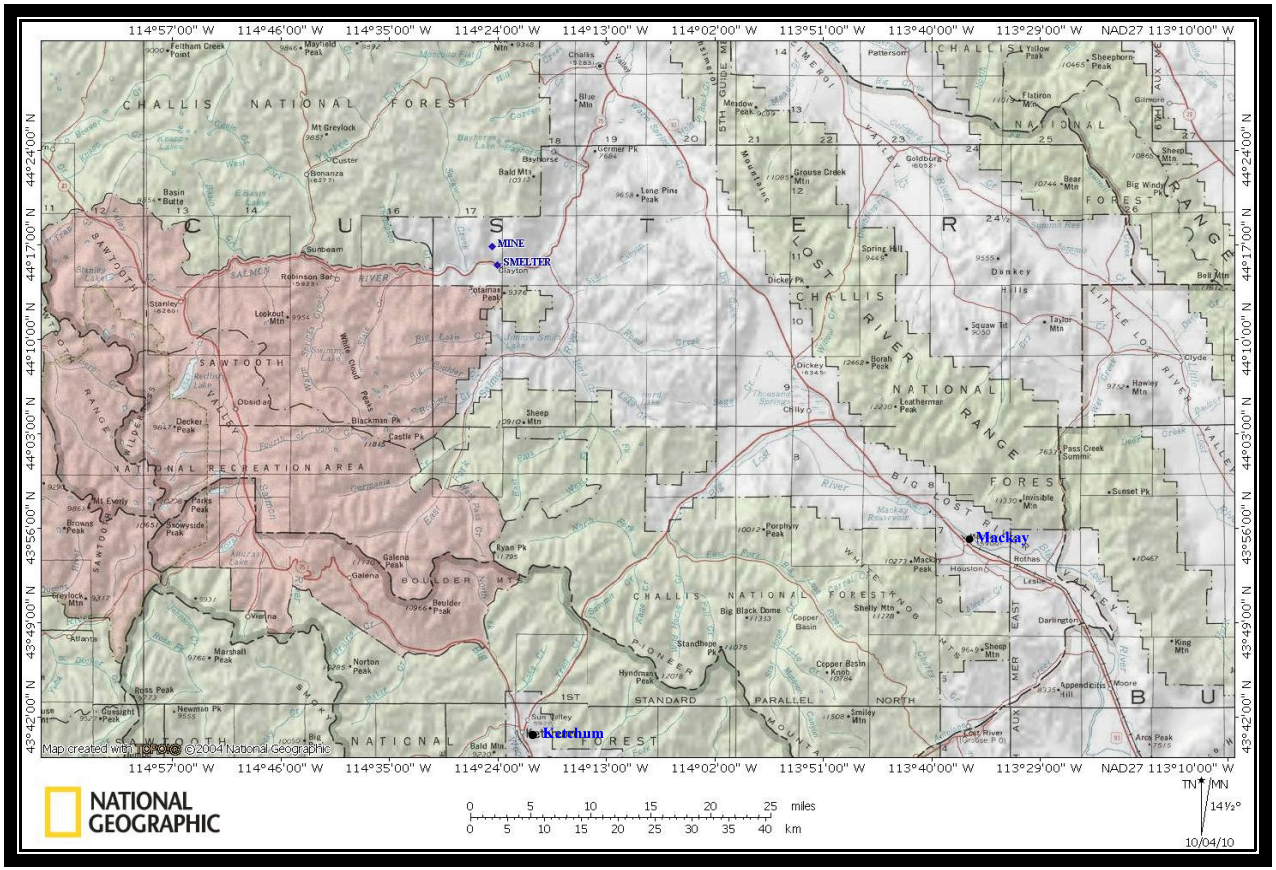

Figure 1. Location of the Clayton smelter and the Clayton Silver Mine (National Geographic Society TOPO! map). Note the distance to Mackay (in the lower right), where the ore was hauled for railroad shipment to smelters, and Ketchum, a major source of supplies. Hailey, another major mining center, is a few miles south of Ketchum.

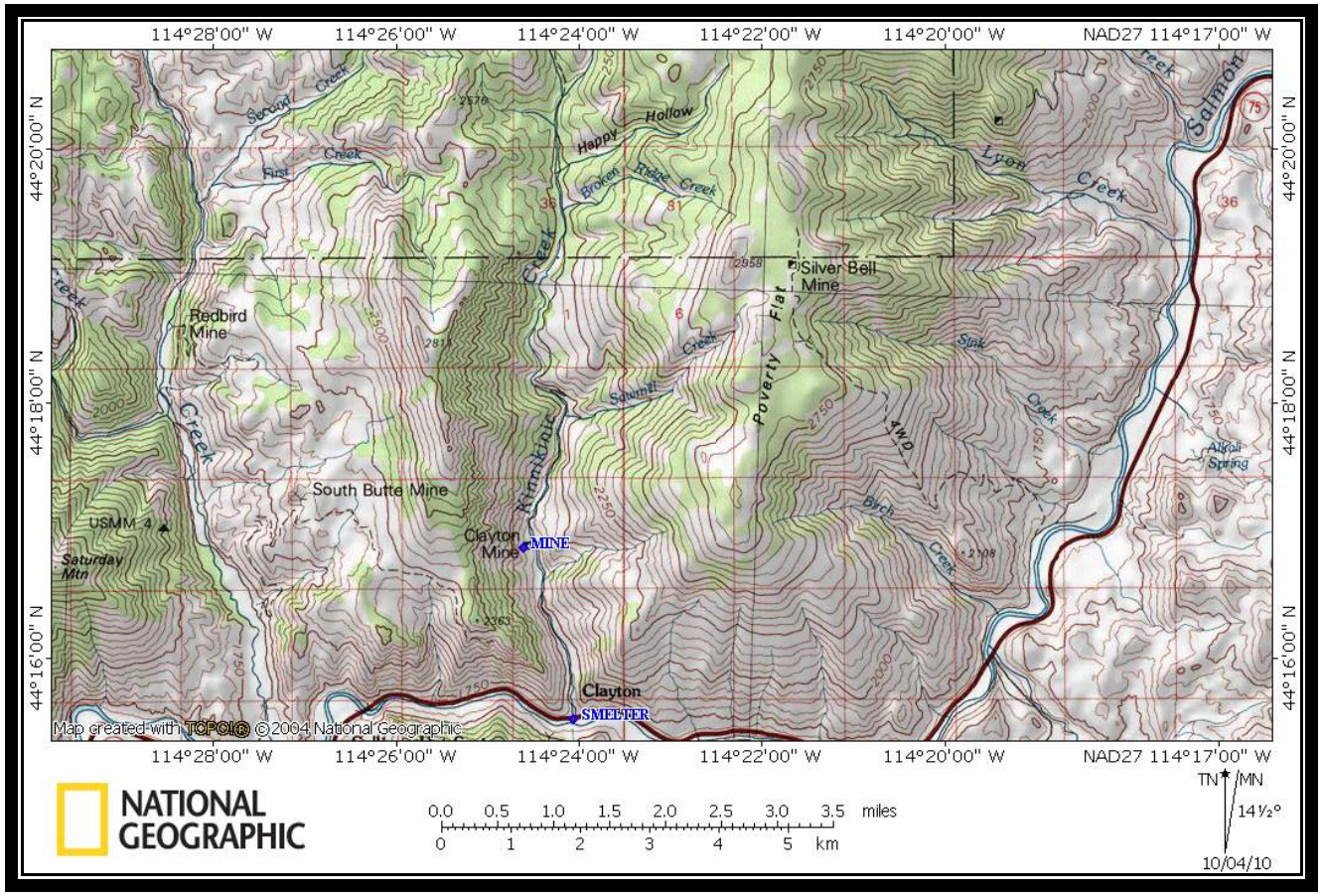

Figure 2. Locations of the Clayton smelter and the Clayton Silver Mine, with surrounding area (National Geographic Society TOPO! map). The locations of the Poverty Flat mines that supplied ore to the Clayton smelter are not marked, and most are not known today.

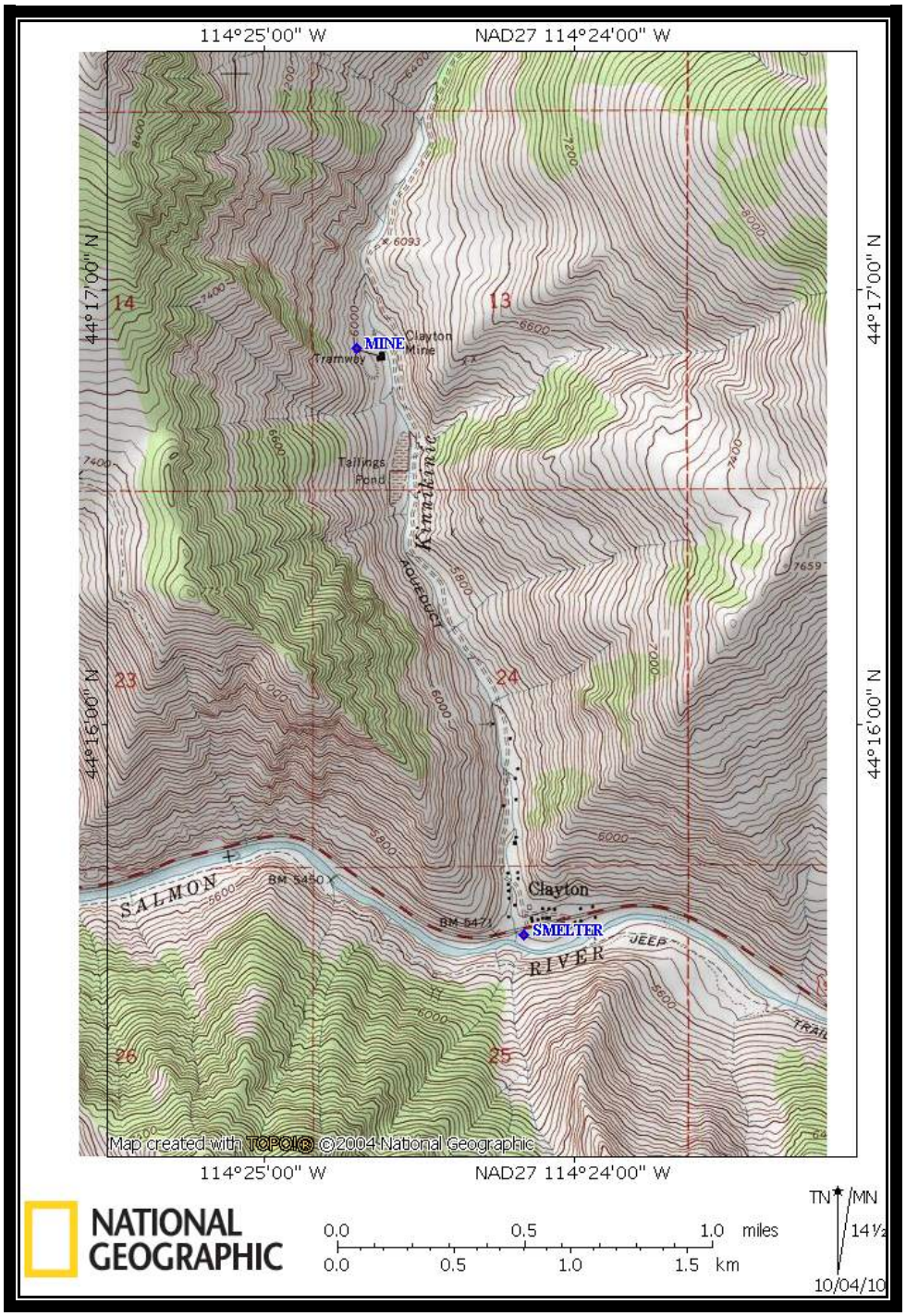

Figure 3. Locations of the Clayton smelter and the Clayton Silver Mine (National Geographic Society TOPO! map).

Figure 4. The Clayton smelter (right foreground), with the town of Clayton in the background, c. 1912. Photograph used courtesy of Clayton Area Historical Association (www.claytonidaho.org).

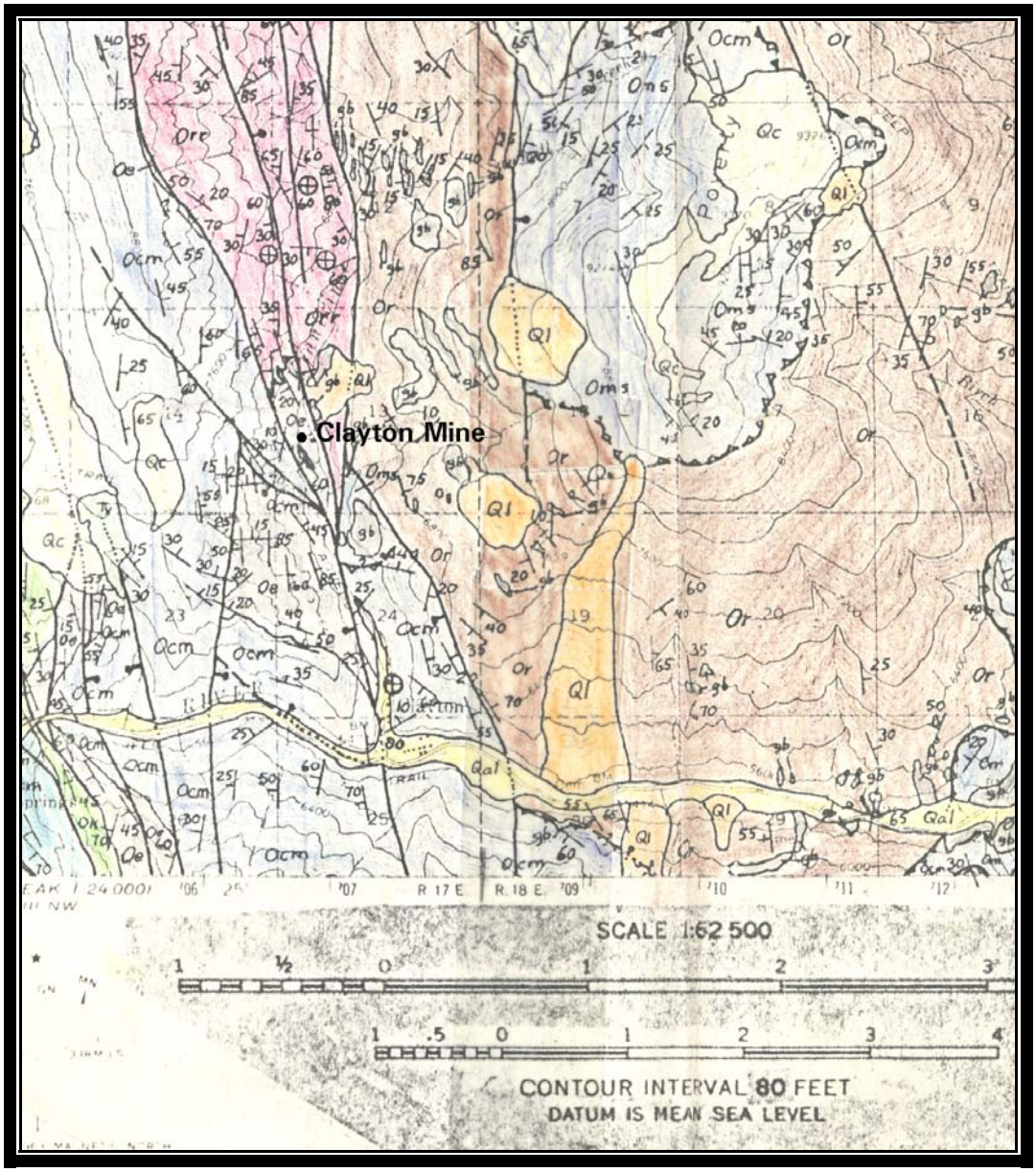

Figure 5. Geologic map of the Clayton area (south-central section of Hobbs and others, 1975). Or–Ordovician Ramshorn Slate; Orr–Ordovician siltstone, sandy siltstone, and quartzite of the Rob Roy Mine area; Ocm, Om, Oms–Ordovician Clayton Mine Quartzite and related rocks; Oe–Ordovician Ella Dolomite; Ok–Ordovician Kinnikinic Quartzite; gb–Cretaceous or Jurassic gabbro; Tv–Eocene Challis Volcanics, undivided; Qc–Quaternary colluvium; Qal–Quaternary alluvium; Ql–Quaternary landslide deposits.

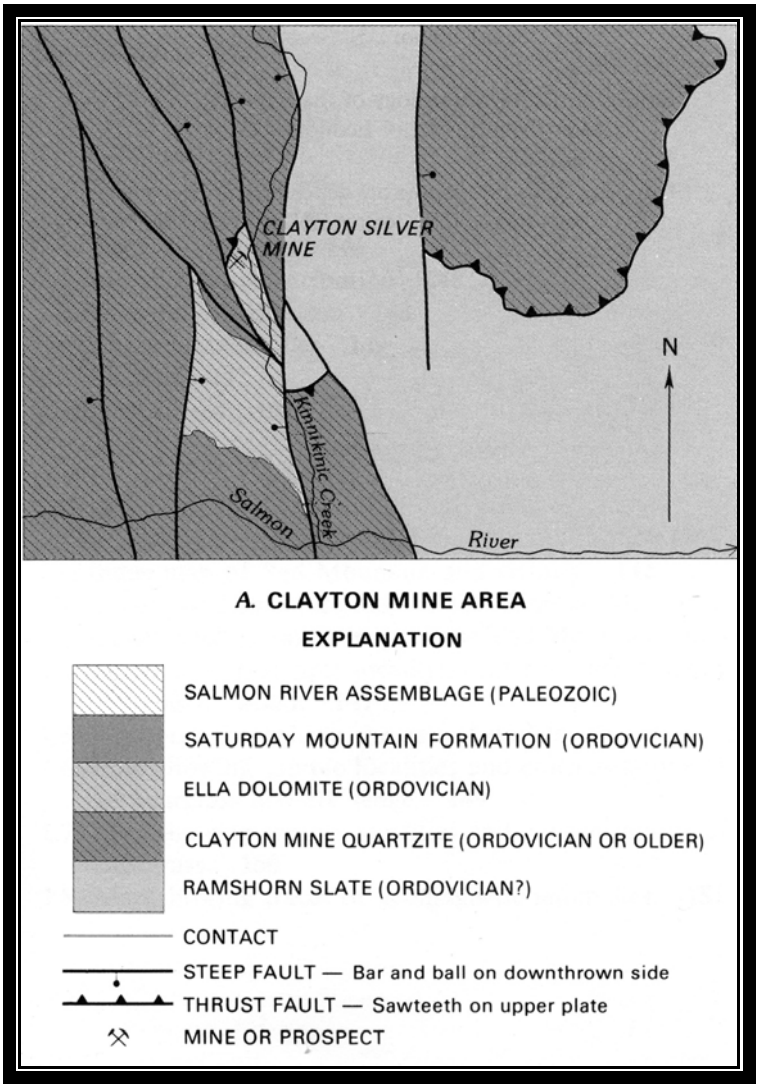

Figure 6. Geologic sketch of the Clayton Mine area, showing the major faults (Figure K4A from Hobbs, 1985). The Saturday Mountain Formation and the Salmon River assemblage are not found near the Clayton Mine.

HISTORY OF THE CLAYTON SMELTER

In 1880, the Salmon River Mining and Smelting Company began construction of a smelter that was variously described as having a capacity of 25 tons-per-day (tpd; Onderdonk, 1885) and 30 tpd (Wells, 1983). (See Table 1 for companies operating at the smelter.) Under the management of C.B. Rustin, the smelter ran sixty-six days in the summer of 1881 and produced 220 tons of base bullion, containing 100,000 ounces of silver (Onderdonk, 1885). Ore came from mines on Kinnikinic Creek, on Poverty Flat (Figure 2), and on Sugar Creek (Engineering & Mining Journal; E&MJ). In 1882, the smelter ran twenty days and produced about one-fourth of what it had the previous year (Onderdonk, 1885). The bullion was of good quality (Director of the Mint Report; DotMR). Initially, coke for the smelter was imported from Pennsylvania, but by 1882, locally made charcoal was available as a substitute for the coke (Wells, 1983). It took forty-eight men to produce the 180,000 bushels of charcoal needed to operated the smelter each year (Figure 7; Clayton Area Historical Association). In the Clayton area, the charcoal was produced by burning trees in covered pits (Michael P. Kalenik, 2010, written communication).

At the beginning of 1884, A.J. Crook & Co. purchased the smelter and a number of mines. This included several mines on Kinnikinic Creek above the smelter, which carried some silver but were worked primarily because they contained abundant iron (Onderdonk, 1885). These included the Overland, North Star, Ella, Climax, Crown, eleven claims of the Rose, Rob Roy, five claims for the Camp Bird,, and the Nancy Lee (Clayton Area Historical Association). Among the mines purchased on Poverty Flat were the Silver Bell, which had produced $30,000 of ore in 1881, and the Redemption, which had produced about 850 tons of ore that contained $90,000 in silver (Onderdonk, 1885). During the summer of 1884 the ore was delivered to the smelter by both teams and pack animals. Two shifts of men were employed, and an average of 50 bars of bullion weighing 100 pounds were turned out each twenty-four hours. The bullion was valued at $600 per ton (DotMR). From June to October, the smelter reduced 1,810 tons of ore which contained 186,841 ounces silver. Another run in November finished off the year (Onderdonk, 1885).

The smelter ran for a short season each summer. Late in 1888, the capacity of the smelter was enlarged to 60 tpd. The variety of ores and the charcoal brought to Clayton from the surrounding area provided a balanced charge for the smelter (Wells, 1983). In 1891, the smelter (now owned by Clayton Mining and Smelting Company) was again doubled in size with the addition of another stack of 60 tpd capacity. Lawrence Green was placed in charge of the operation in 1893 (E&MJ).

The August 27, 1898, issue of E&MJ (v. 66, no. 9, p. 256) described the operation as follows:

> The smelter at the Clayton Mine, near Clayton, was blown in July 25th, and is expected to run 100 days. For several years the company has been making regular runs

Table 1. Companies and individuals operating at the Clayton smelter. Information is taken from references cited in the text.

Company Name	Officer	Date Incorporated	Charter Forfeited	Year(s) at Smelter
Salmon River Mining and Smelting Company	C.B. Rustin, manager	—[1]	—[1]	1880-1884
A.J. Crook & Co.	A.J. Crook, manager	—[1]	—[1]	1884-?
Clayton Mining and Smelting Company	Lawrence Green, manager	—[1]	—[1]	?-1912
Idaho Smelting & Mining Co.	—	14 October 1912	2 December 1918	1912-1918
Red Bird Smelting Co.	—	29 June 1914	1 December 1914	1914
Idaho Mine Development Co. (lessee)	Robert N. Bell, President	21 January 1921	1 December 1924	1921-1924
Ford Motor Company	Edsel B. Ford, President	Filed in Idaho: 6 January 1925	Withdrawn: 7 August 1947	1925-1946

[1]Information not present in Idaho Geological Survey's files.

Figure 7. Coke wagon used to transport charcoal to the Clayton smelter, c. 1912. Photograph used courtesy of Clayton Area Historical Association (www.claytonidaho.org).

> each year, the balance of the time being occupied in general preparations, development of their mines and stoping some ore. During the winter season about 30 men are employed in the Skylark on Ramshorn Hill, in the Redbird, Poverty Flat and Snake Creek mines. Now while the smelter is in operation there are employed, in the mines 50 men, at the smelter 15, in the charcoal camps 25, and 10 men with 50 horses hauling coal and ore. Besides this, employment is given to many men and teams in taking bullion to the railroad at Blackfoot, a distance of 160 miles, thus giving much life to the district for about three months. This smelter has a remarkable record for an unpretentious concern. Located on the left bank the Salmon River, the machinery is all operated by water from a creek entering the river at that point. The single furnace easily handles about 35 tons of ore per day, which, with the 8 tons of charcoal and 7 tons of limestone, give a total of 50 tons per day going through the furnace. The ores carry enough lead and iron to only require lime for complete fluxing. Mr. Lawrence Greene, superintendent, has been successful in using charcoal and dispensing with the coke formerly hauled to the works at a heavy cost.

The smelter operated into November of 1898. The owners of the company were reported to be connected with the Omaha and Grant Smelting Company (E&MJ).

In 1899, the Clayton smelter ran 106 days and produced 1,315,178 lbs. of bullion. This bullion contained 109,248 oz. of silver, 173.3 oz. of gold, and 1,307,339 lbs. of lead. In 1900, the smelter had the most successful run in its history, producing 1,700,000 lbs. of high-grade lead-silver bullion in 112 days. Since 1894, it had turned out nearly $1,000,000 worth of bullion and made an annual profit of from $25,000 to $50,000. In 1901, the smelter was started on August 17 and turned out 7-8 tons of high-grade lead-silver bullion every day. In a successful run of two months, the smelter produced 1,000,000 lbs. of lead-silver bullion (E&MJ). According to the 1901 Idaho Mine Inspector's Report (IMIR), the year's output was 954,775 lbs. of lead-silver bullion containing 67,806.86 oz. of silver and 21,784 oz. of gold. The amount of lead was not stated. The smelter's summer run in 1902 also produced over a million pounds of bullion (Wells, 1983) containing almost 100,000 oz. of silver and a small amount of gold (IMIR). In August 1902, Lawrence Green resigned as superintendent, and the owners of the smelter gave orders to close it for an indefinite period (E&MJ). A pending sale and consolidation of mining properties was rumored in 1905 (IMIR).

The Idaho Smelting and Mining Company purchased the interests of the Clayton Mining and Smelting Company in 1912. The smelter operated for part of the year (Figures 8, 9, 10, 11, and 12). In 1913 Red Bird Smelting Company took over the property of the Idaho Smelting & Mining Company; both companies were controlled by many of the same men. The Red Bird Smelting Company was incorporated the following year (Table 1). The smelter ran for three-and-a-half months, and a new 100-tpd smelter was under construction at Clayton. The old smelter operated for a few weeks in 1914, and the new smelter was still incomplete (USGS). The 1914 smelter run produced 2,700 bars of lead bullion carrying good silver values (IMIR). The smelter was idle in 1915 (USGS) and apparently never reopened despite the confusion in Wells (1983) between the

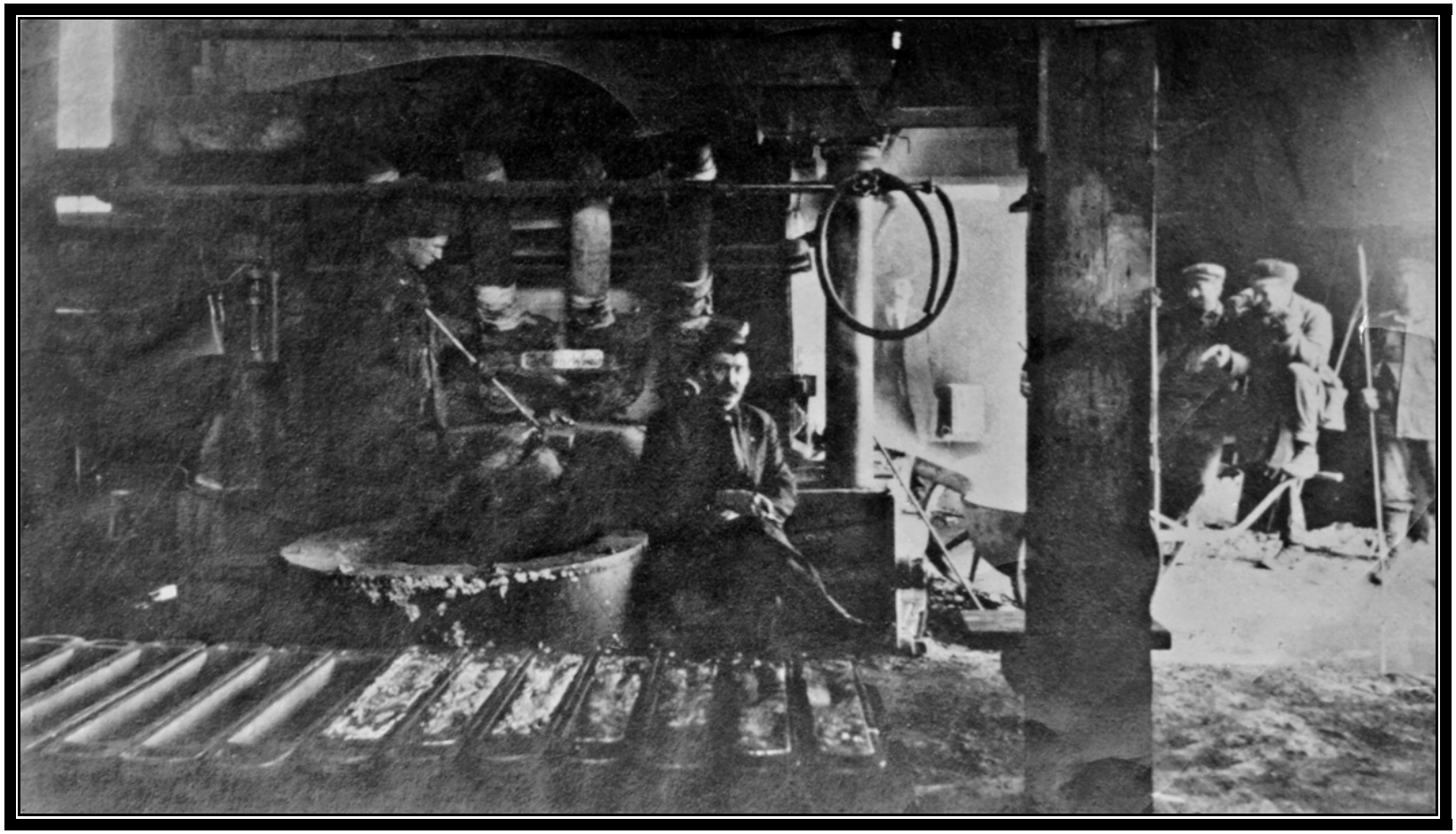

Figure 8. Casting bullion bars in the Clayton smelter, c. 1912. Photograph used courtesy of Clayton Area Historical Association (www.claytonidaho.org).

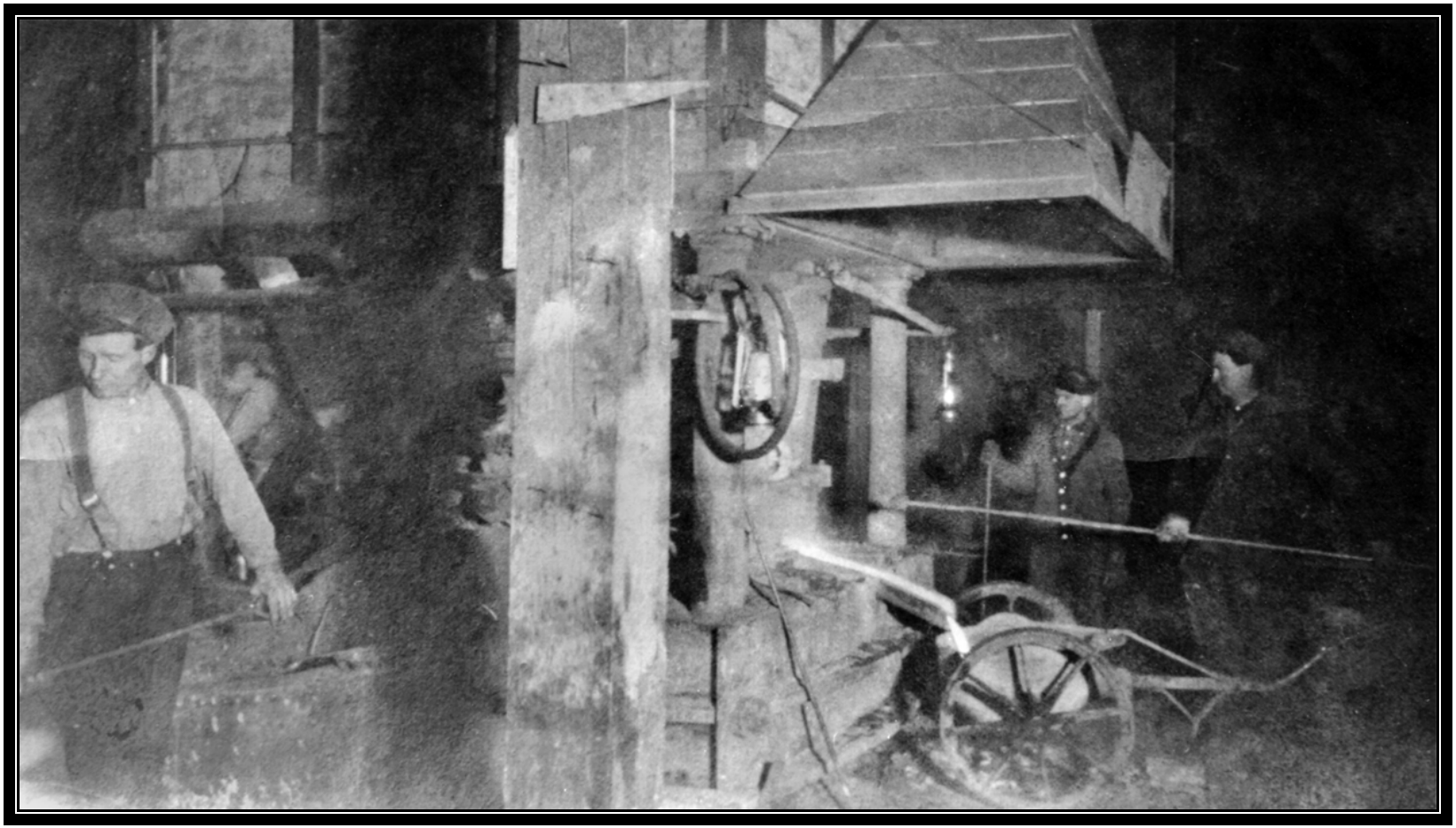

Figure 9. Removing slag from the Clayton smelter, c. 1912. Photograph used courtesy of Clayton Area Historical Association (www.claytonidaho.org).

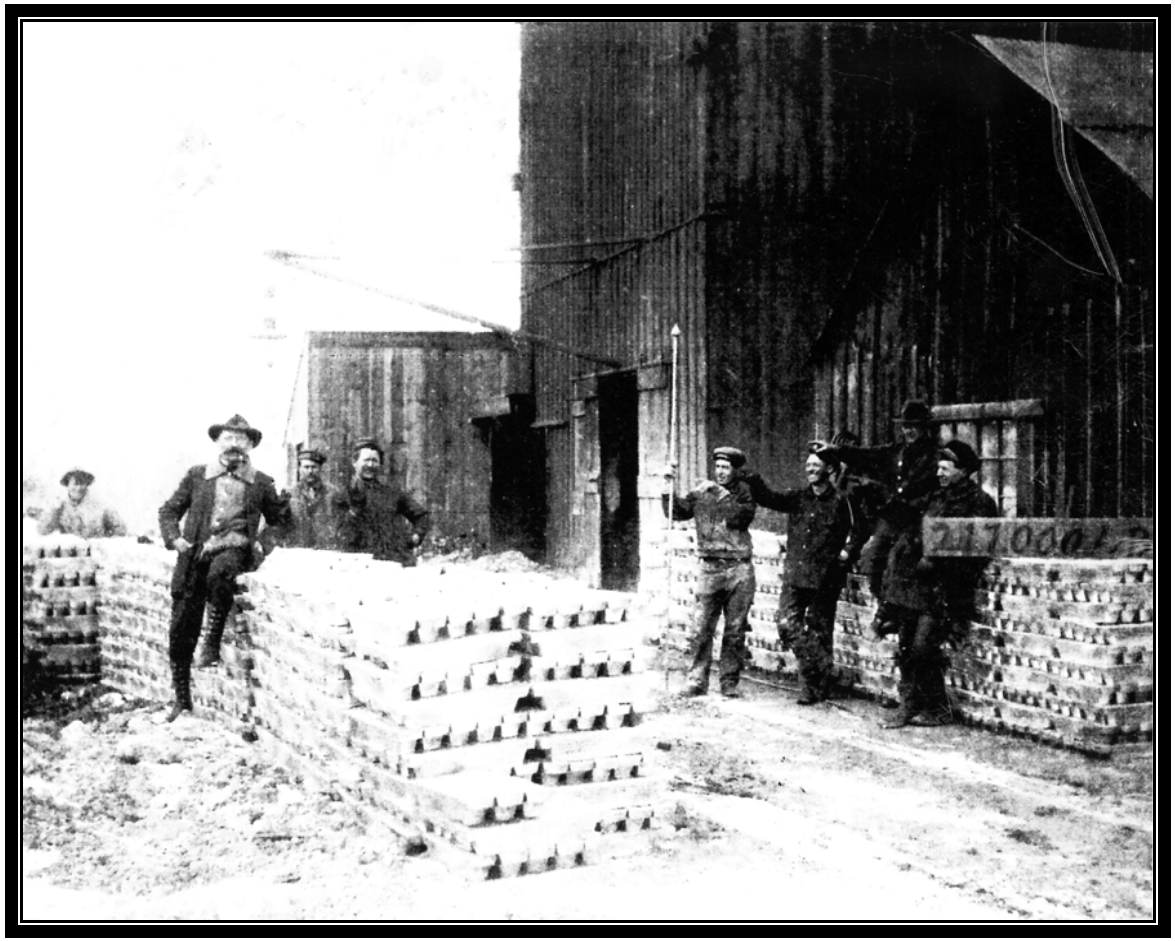

Figure 10. Lead-silver bullion bars outside the Clayton smelter, c. 1912. Photograph used courtesy of Clayton Area Historical Association (www.claytonidaho.org).

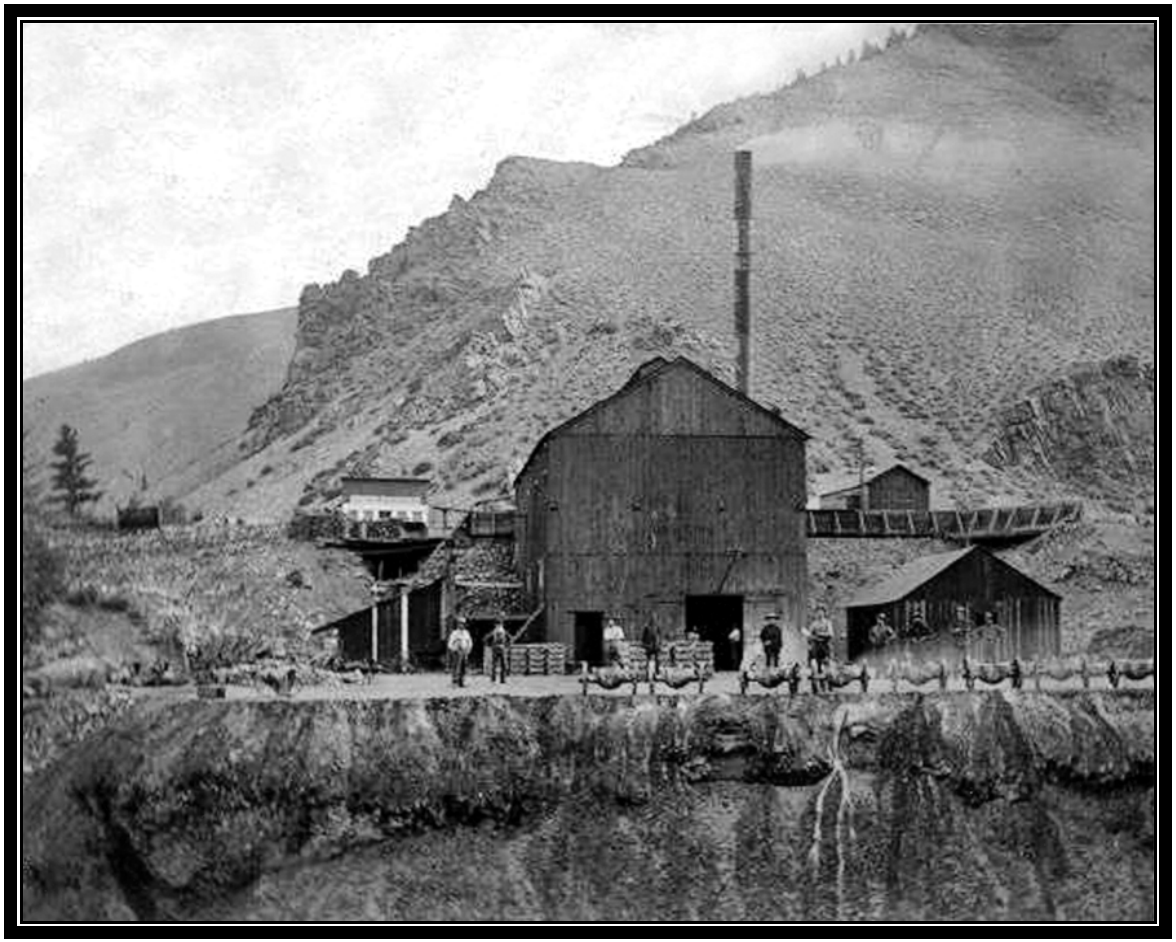

Figure 11. Clayton 100-tpd smelter, c. 1912, with line of slag pots in foreground along the bank of the Salmon River. Photograph used courtesy of Clayton Area Historical Association (www.claytonidaho.org).

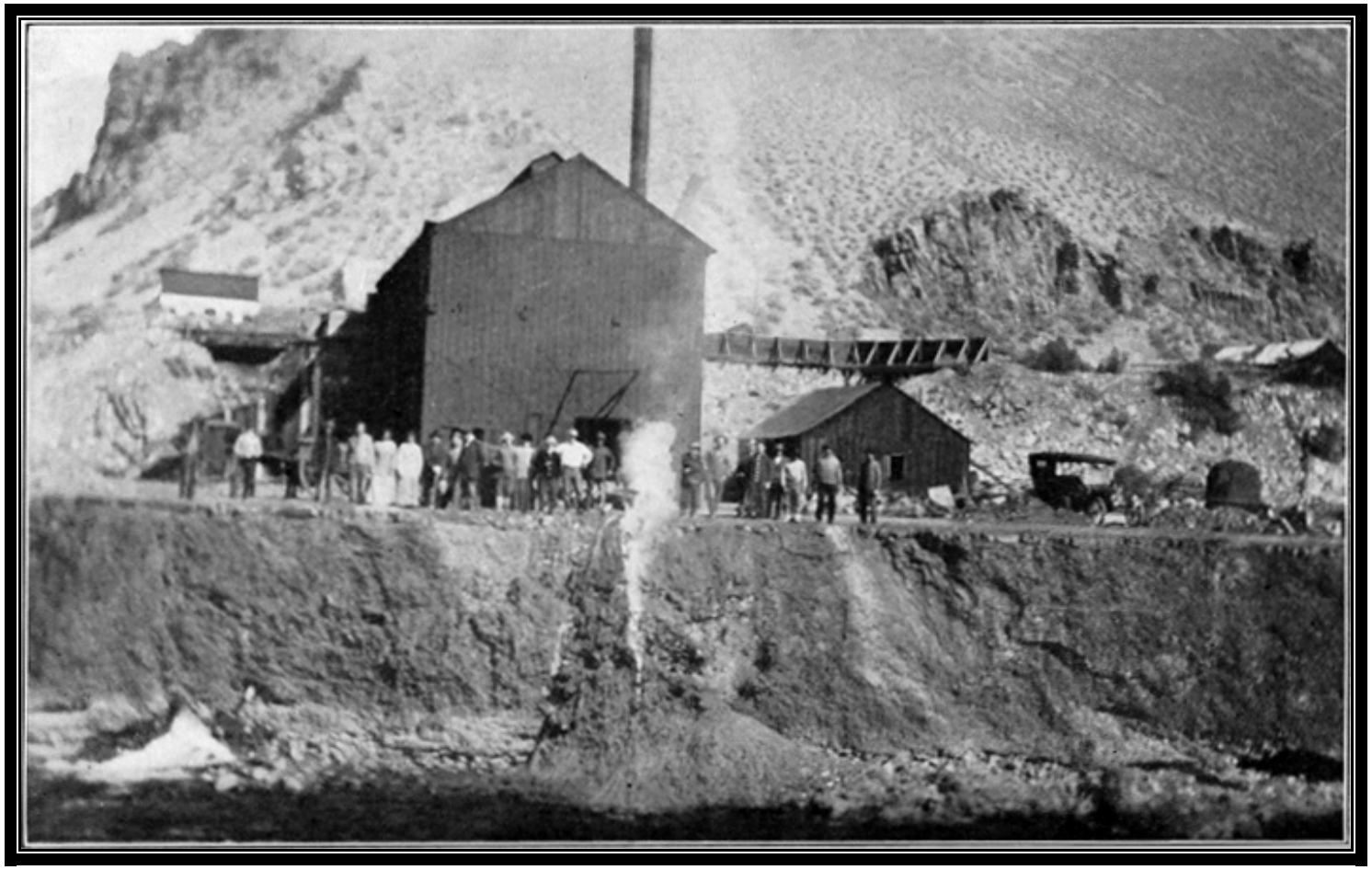

Figure 12. The 100-tpd Clayton smelter in 1912. Steam in the foreground is from slag being poured into the Salmon River (opposite p. 92 in Bell, R.N., 1913, Fourteenth Annual Report of the Mining Industry of Idaho for the Year 1912).

company owning the smelter and Clayton Mining Company (later Clayton Silver Mines), a corporation concerned only with the mine.

Idaho Mine Development Company leased the property in 1921, but only operated the Red Bird Mine. The Ford Motor Company acquired the mine in 1924 (IMIR). The smelter was part of Ford's property, but Ford was primarily interested in mining lead. During the 1930s, the smelter was sold as scrap metal to the Japanese (Clayton Area Historical Association).

HISTORY OF THE CLAYTON SILVER MINE

A number of claims along Kinnikinic Creek were worked in the 1880s and 1890s to help supply ore for the smelter (see above). However, serious activity was not reported in the area which would become the mine until 1927. In that year, the Clark Mining Co. began exploring the Camp Bird Group and built a small mill at the mine (IMIR). (See Table 2 for companies operating at the mine.) The following year, the company shipped three cars of lead ore to the International concentration plant and smelter at Tooele, Utah (USBM). According to the 1928 IMIR, the property was acquired by Camp Bird Group, apparently a partnership. The partners started work on a small hydroelectric power plant, after which they planned to sink a shaft. (See Table 3 for annual development and employment at the mine and Table 4 for cumulative development at the mine.) In 1929, the plant and a 5-drill compressor were installed. No activity was reported in 1930, but the Clayton area was explored for lead-silver deposits in 1931 (IMIR). Ross (1937) reported that litigation halted the activities of the Clark Mining Co. and that the mine was intermittently active under several managements during the next few years.

In 1932, Clayton Mining Company, organized by some of the same people behind Camp Bird Group, took over the mine. In 1933, the company began work on the shaft and did work through a tunnel on the 150-foot level. In 1934, a 50-tpd pilot jig mill was built and operated until November 15. The mill (Figure 13) was estimated to be saving 55 percent of the ore values. Ore shipments started on May 1 and the average of the concentrates was $60.00 per ton in smelter returns. The concentrates were shipped to Utah for smelting. The property was an important producer of lead-silver ore. New development opened a body of silver-lead ore 250 feet long and 65 feet wide that averaged 8 percent lead and 10 oz. of silver per ton.

In 1935, the company changed its name to Clayton Silver Mines (Figure 14). Production decreased considerably from the previous year. The 50-tpd mill was scrapped, and a new 100-tpd flotation mill was under construction. The concentrates were reported to run 73 oz. of silver and 60 percent lead to the ton (IMIR). Figure 15 shows a sketch of some of the mine workings in September 1935. There was a large increase in output from the property in 1936, and nearly 25,000 tons of silver-lead ore were treated in the company 75-tpd flotation-concentration mill. Most of the ore came from the main tunnel,

Table 2. Companies operating at the Clayton Silver Mine. Information is taken from company reports to the Idaho Inspector of Mines, from data reported on the Idaho Secretary of State's website, and from other references cited at the end of the report. Mines are listed in the order discussed in the text.

Company Name	Officer	Date Incorporated	Charter Forfeited	Year(s) at Mine
Clark Mining Co.	E.L. Clark, President	15 July 1927	30 November 1937	1927-1928
Camp Bird Group	H.B. Kingsbury and Wilbur Greenough	—	—	1928-1932(?)
Clayton Mining Co.	Wilbur Greenough, President	filed Arizona: 30 August 1930; filed Idaho: 20 January 1934	name change	1932-1992
Clayton Silver Mines	—[1]	31 May 1935	name change	1935-1992
Clayton Silver Mines, Inc.	—[1]	2 June 1980	in Idaho: 1 December 1992; in Arizona: 10 February 1993	1935-1992

[1]Information not present in Idaho Geological Survey's files.

Table 3. Development work, number of men employed, and operating companies at the Mine, by year. Information is taken from company's annual reports to stockholders or to the Idaho Inspector of Mines, unless otherwise noted.

Year	No. of Men employed	Tunnels (feet)	Sinking (feet)	Cross-cutting (feet)	Drifting (feet)	Raising (feet)	Operator
1928	7	—	—	—	—	—	Clark Mining Co.
1933	6	—	—	—	—	—	Clayton Mining Co.
1934	25	—	—	—	—	—	Clayton Mining Co.
1935	20	—	—	—	—	—	Clayton Silver Mines
1936	28	700	—	—	—	—	Clayton Silver Mines
1937	29	1,045	—	—	—	—	Clayton Silver Mines
1938	22	—	40	115	347	155	Clayton Silver Mines
1939	22	—	—	209	620	524	Clayton Silver Mines
1940	23	960	95	315	645	—	Clayton Silver Mines
1941	23	828	—	143	685	125	Clayton Silver Mines
1942	24	1,202	—	109	1,093	390	Clayton Silver Mines
1943	25	—	—	160	1,600	—	Clayton Silver Mines
1944	23	—	—	200	577	362	Clayton Silver Mines
1945	20	—	—	—	998[1]	—	Clayton Silver Mines
1946	16	0	0	0	0	0	Clayton Silver Mines
1947	35	—	—	535 [547][2]	1,995 [1,068][2]	357	Clayton Silver Mines

Table 3 (continued). Development work, number of men employed, and operating companies at the Mine, by year.

Year	No. of Men employed	Tunnels (feet)	Sinking (feet)	Cross-cutting (feet)	Drifting (feet)	Raising (feet)	Operator
1948	35	—	0	535	1,738	—	Clayton Silver Mines
1949	35	—	—	230	2,040	—	Clayton Silver Mines
1950	35	—	173	210	1,124	—	Clayton Silver Mines
1952	—[3]	—	19	251	141	—	Clayton Silver Mines
1953	14	—	123	241	323	—	Clayton Silver Mines
1954	20	—	49	45 [60][2]	849 [98][2]	323	Clayton Silver Mines
1955	20	—	49	45	849	—	Clayton Silver Mines
1956	20	—	—	556	359 [1,229][2]	51	Clayton Silver Mines
1957	24[4]	—	141	260	372	73	Clayton Silver Mines
1958	20	—	—	—	—	—	Clayton Silver Mines
1959		—	—	1,607[5]	—	—	Clayton Silver Mines
1960	25	—	10.5[2]	432 [214][2]	1,034 [1,004][2]	228	Clayton Silver Mines
1961	25	—	10.5[2]	40 [214][2]	43 [1,004][2]	109	Clayton Silver Mines
1962	25	—	10.5	214	1,004	—	Clayton Silver Mines
1963	25	—	10.5	214	1,004	—	Clayton Silver Mines
1964	25	—	10.5	214	1,004	—	Clayton Silver Mines

Table 3, footnotes.

[1]Number is combined total for crosscutting and drifting.

[2]This is the number that was reported to the Idaho Inspector of Mines; the first number was in the company annual report and was reported by the U.S. Bureau of Mines.

[3]Number of men employed was not reported to the Idaho Inspector of Mines.

[4]The company reported an average of 20 men employed to the Idaho Inspector of Mines. Other development for the year included 12,459 cubic feet of excavations.

[5]Number is combined total for crosscutting, drifting, and raising.

Table 4. Cumulative development at the Clayton Silver Mine, by year. Information is from company reports to Idaho Inspector of Mines; discrepancies in numbers reflect inconsistencies in the original data.

Year	Total Devel-op-ment (ft)	No. of Tun-nels	Total Length of Tunnels, Cross-cuts, and Drifts (ft)	No. of Shafts	Total length of shafts (ft)	No. of Raises	Total Length of Raises (ft)	No. of Cross-cuts	No. of Drifts	Length of Principal Tunnels (feet)					
										No. 1	No. 2	No. 3	No. 4	No. 5	No. 6
1928	600	1	600	—[1]	—	—	—	—	—	600	—	—	—	—	—
1933	3,000	—	3,000	1	150	—	—	—	—	—	—	—	—	—	—
1934	3,000	5	—	—	—	—	—	—	—	2,000	—	—	—	—	—
1936[2]	3,000	6	2,650	2	—	2	350	10	1	50	100	150	600	150	1,500
1937[2]	4,200	6	3,955	2	125	2	120	10	1	50	100	150	600	150	2,250
1938[3]	10,000	6	9,095	1	205	10	700	30	7	50	50	120	200	75	2,400
1939[3]	13,025	6	11,596	1	205	12	1,224	33	8	53	60	68	200	93	2,650
1940[4]	14,321	6	14,321	1	300	15	1,467	33	10	53	60	68	200	93	2,796
1941[4]	15,276	6	13,384	1	300	15	1,592	35	14	53	60	68	200	93	2,981
1942[4]	16,897	6	14,586	1	300	20	1,982	41	19	53	60	68	200	93	3,032
1943	19,000	—	16,350	—	300	—	2,340	—	—	—	—	—	—	—	—
1944[5]	21,000	6	20,000	1	325	many	1,000	many	3	—	—	—	—	—	—
1945	21,000	—	18,190	—	300	—	12,500	—	—	—	—	—	—	—	—
1946[6]	8,650	3	8,820	1	230	many	—	many	—	—	—	—	—	—	—

Table 4 (continued). Cumulative development at the Clayton Silver Mine, by year.

Year	Total Devel-op-ment (ft)	No. of Tun-nels	Total Length of Tunnels, Cross-cuts, and Drifts (ft)	No. of Shafts	Total length of shafts (ft)	No. of Raises	Total Length of Raises (ft)	No. of Cross-cuts	No. of Drifts	Length of Principal Tunnels (feet)					
										No. 1	No. 2	No. 3	No. 4	No. 5	No. 6
1947[7]	9,840	1	9,590	1	250	numer-ous	—	numer-ous	2	3,270	2,920	3,400	—	—	—
1948[6]	17,594	2	13,184	1	230	many	no account	many	2	3,270	4,201	3,483	2,000	—	—
1949[7]	12,400	1	—	1	250	numer-ous	—	numer-ous	2	3,694	3,309	3,644	—	—	—
1950[8]	16,373	2	16,373	1	426	—	—	—	3	3,694	4,759	3,727	1,333	2,865	—
1954[9]	—	1	15,727	1	550	—	—	—	5	2,865	—	—	—	—	—
1955[10]	—	1	16,576	1	631	—	—	—	5	3,694	—	—	—	—	—
1956[10]	—	1	—	1	631	—	—	—	4	3,694	—	—	—	—	—
1957[10]	—	1	—	1	631	—	—	—	4	3,694	—	—	—	—	—
1958[10]	—	1	—	1	631	—	—	—	4	3,694	—	—	—	—	—
1960[11]	—	7	—	1	900	—	—	—	6	1,830	3,250	2,600	1,760	1,840	200
1961[11]	—	1	—	1	900	—	—	—	6	1,830	3,250	2,600	1,760	1,840	200
1962[11]	—	1	—	1	900	—	—	—	6	1,830	3,250	2,600	1,760	1,840	200

Table 4 (continued). Cumulative development at the Clayton Silver Mine, by year.

Year	Total Development (ft)	No. of Tunnels	Total Length of Tunnels, Crosscuts, and Drifts (ft)	No. of Shafts	Total length of shafts (ft)	No. of Raises	Total Length of Raises (ft)	No. of Crosscuts	No. of Drifts	Length of Principal Tunnels (feet)					
										No. 1	No. 2	No. 3	No. 4	No. 5	No. 6
1963[11]	—	1	—	1	900	—	—	—	6	1,830	3,250	2,600	1,760	1,840	200
1964[11]	—	1	—	1	—	—	—	—	6	1,830	3,250	2,600	1,760	1,840	200

[1]Information not reported to Idaho Inspector of Mines.
[2]The principal vertical shaft was 125 feet deep.
[3]The principal vertical shaft was 205 feet deep.
[4]The principal vertical shaft was 300 feet deep.
[5]The principal vertical shaft was 325 feet deep.
[6]The principal vertical shaft was 230 feet deep.
[7]The principal vertical shaft was 250 feet deep.
[8]The principal vertical shaft was 426 feet deep.
[9]The principal vertical shaft was 550 feet deep.
[10]The principal vertical shaft was 631 feet deep.
[11]The principal vertical shaft was 900 feet long. The seventh tunnel was 1,350 feet long.

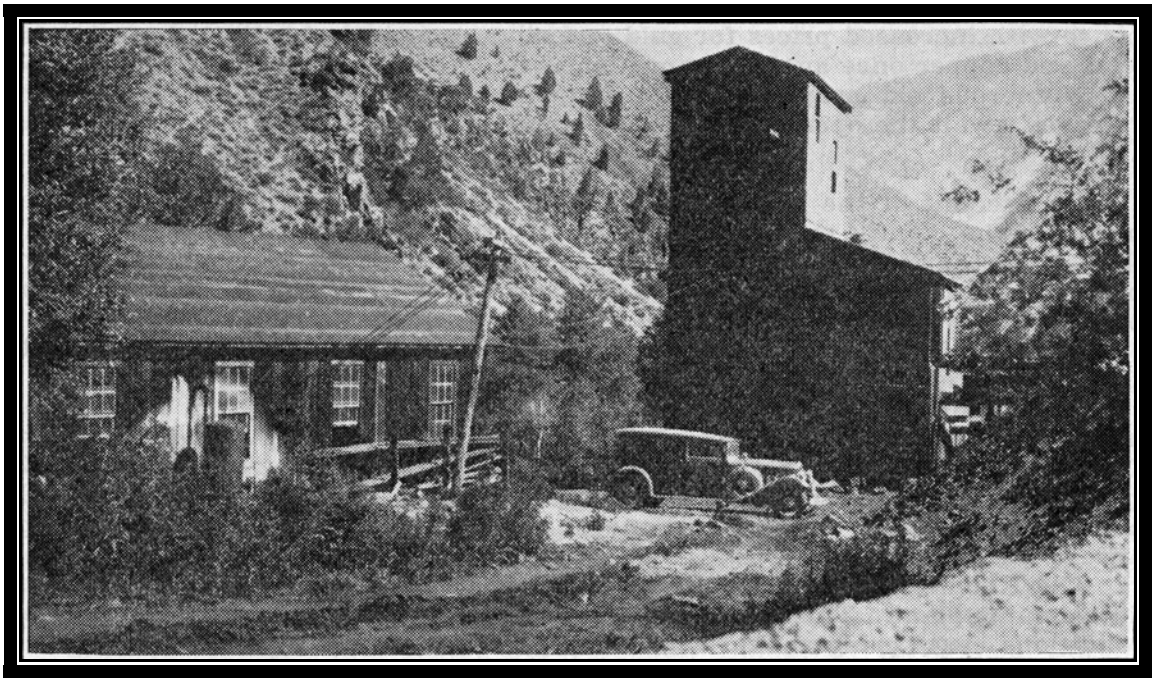

Figure 13. Clayton power house and mill, 1934 (p. 140 in Simons, W.H., 1935, Thirty-Sixth Annual Report of the Mining Industry of Idaho for the Year 1934).

Figure 14. Clayton Silver Mines stock certificate, 1935 (reproduction courtesy of Earl H. Bennett).

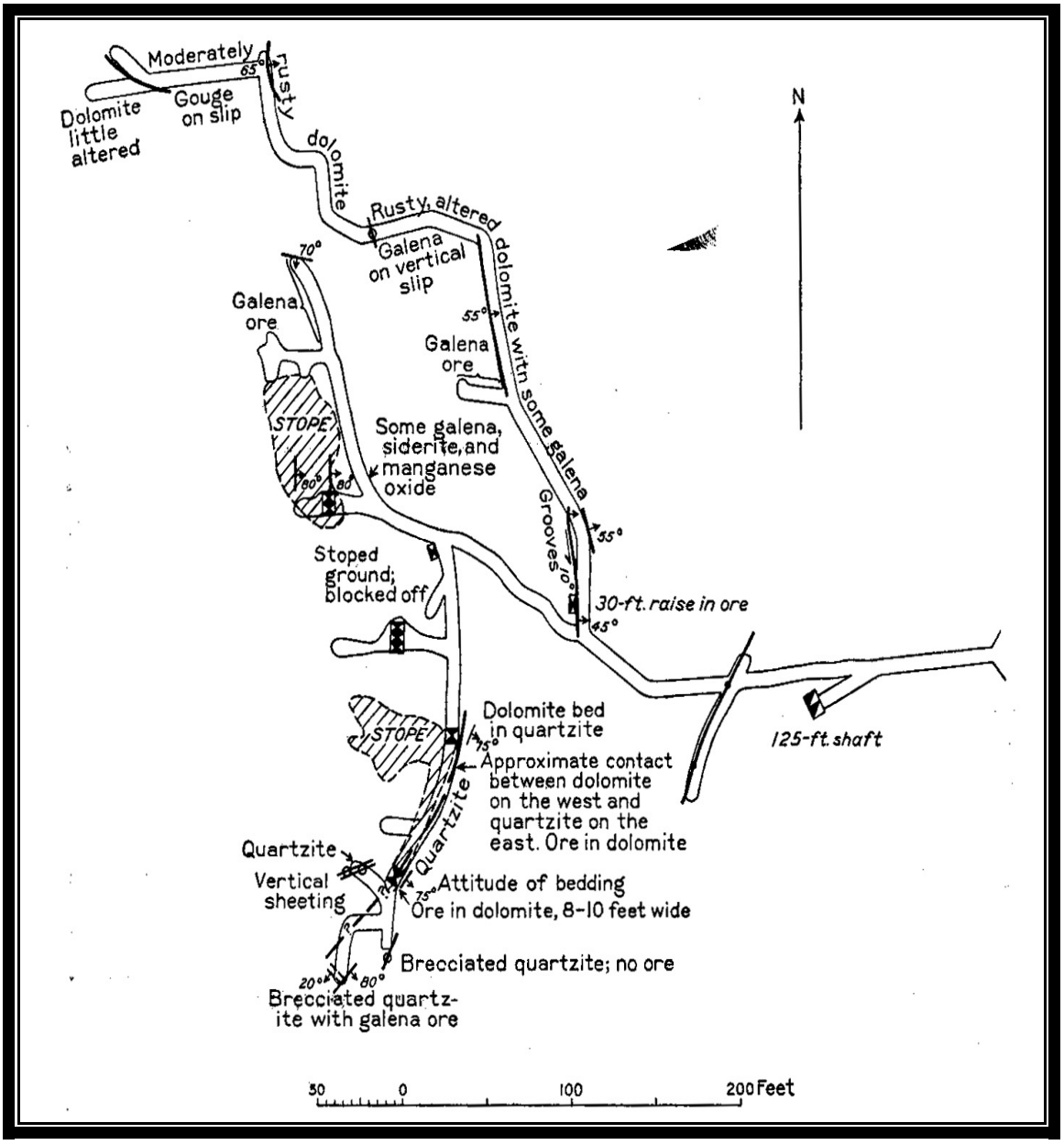

Figure 15. Geologic sketch map of the stopes in the Clayton Mine opened after 1928 (Figure 12 from Ross, 1937). Sketch map made in September 1935 by C.P. Ross.

where the orebody had been prospected for 500 feet in length, with an average stoping width of 30 feet. In 1937, production again increased from the Clayton property. The company 150-tpd flotation plant treated 28,700 tons of lead-silver ore. The mine was the most important producer in the county and did 1,045 feet of development work. According to the 1937 IMIR (p. 150):

> Clayton Silver Mines Company was the largest producer in the county. With a crew of 30 men many additions were made to the mine and mill plant during the year. The new hydroelectric power plant equipped with pelton water wheel and 310 h.p. generator was completed. Pole and power line with 6,500 feet of pipe line was also constructed. The mill capacity was increased by a Traylor crusher, belt conveyor system, elevator and one additional flotation unit. At the mine a head frame and hoist house were constructed and a new 40 h.p. Junior Coeur d'Alene hoist and pumping equipment installed. The shaft was sunk to a new horizon with sump and skip pockets so the ore reserves could be developed at greater depth. Many thousand tons of ore are broken down in the mine ready to be milled at slight cost. C. A. Fay is in charge of operations.

Clayton Silver Mines operated the Clayton mine and flotation mill throughout 1938. About 39,000 tons of lead ore were milled, producing lead concentrates rich in silver that were shipped to Utah for smelting. In 1939, Clayton Silver Mines operated its mine and 150-tpd flotation plant all year (Figures 16 and 17). The company milled 38,900 tons of silver-lead ore and shipped rich silver-lead concentrates to a smelter in Utah. The shaft was sunk an additiona1 100 feet during the latter part of the year, and 1,365 feet of development was done in the fiscal year ending May 31, 1939.

Clayton Silver Mines continued to be the largest producer of silver and lead in Custer County in 1940. The company operated its mine and mill all year, treating 39,292 tons of silver-lead ore. A crosscut was started on the 300-foot level to cut under the ore at a lower level. The Clayton Mine operated continuously in 1941 (Figure 18), producing 36,880 tons of silver-lead ore that were treated by flotation. A new orebody was opened on the 300 level around March 1. The ore was coarse-grained galena with tetrahedrite with a high silver content. Fay (1941, p. 1) described the condition of the mine in mid-April:

> After the first of this year the development of the 200 and 300 foot levels was continued to the north. About the middle of February ore began to appear in the 300 drift, and with each succeeding round of the advance the values increased. If the old type of mineralization had been present the ore would have been only a fair grade, but a new type of ore was encountered. This new ore consists of a coarse-grained galena with a large amount of gray copper, which latter has a high silver content.
>
> In addition to the silver content of the gray copper we have found specimens of native silver and of native copper in this new orebody. The ore continued in the drift for about 50 feet. The drift evidently just cut the top of the ore shoot for it does not go above the top of the drift, but it is very strong where it goes down below and to one side of the drift.

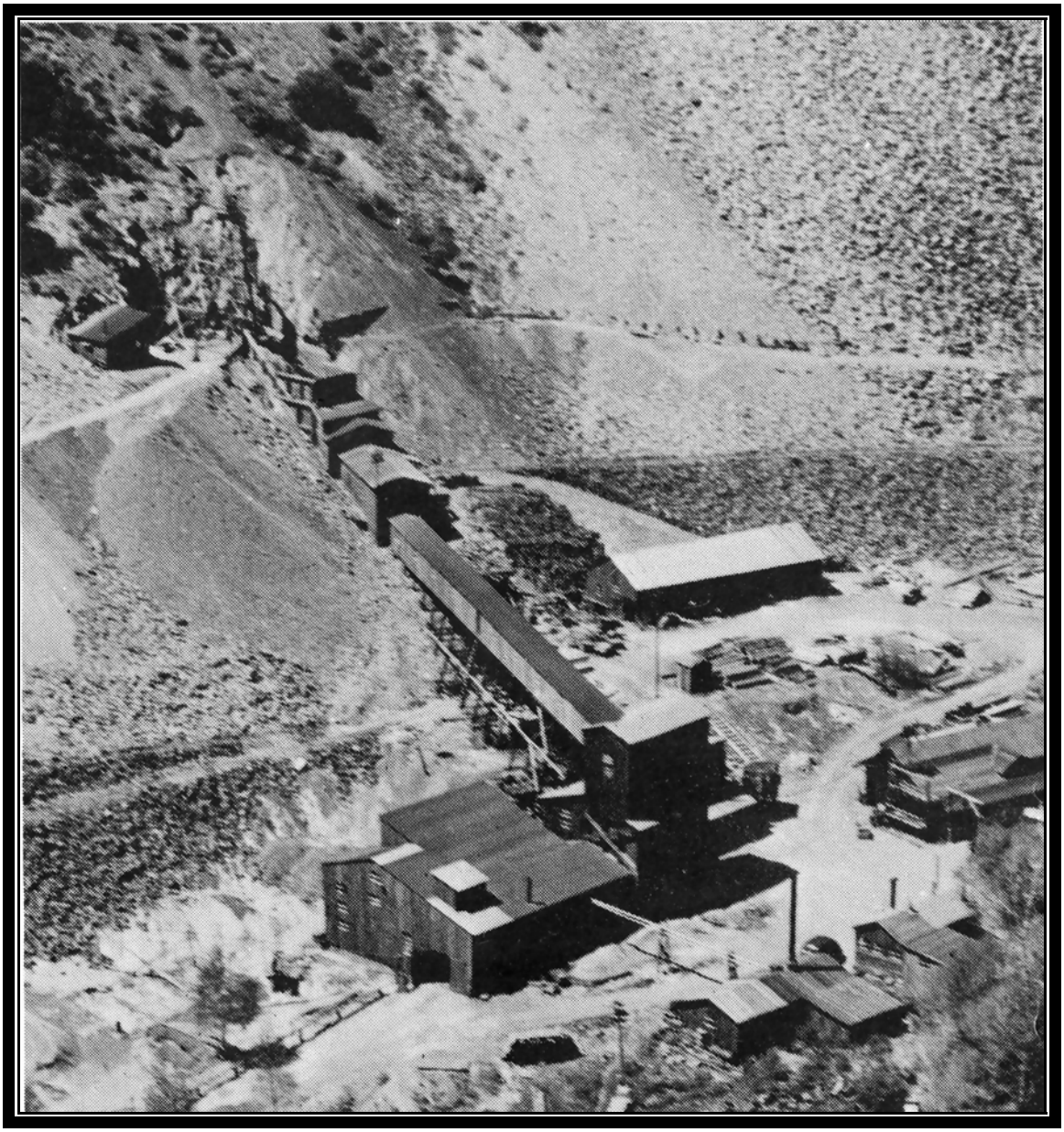

Figure 16. Aerial view of the Clayton Silver Mines' mill and surface plant, May 1939 (Clayton Silver Mines, Inc., The Golden Anniversary).

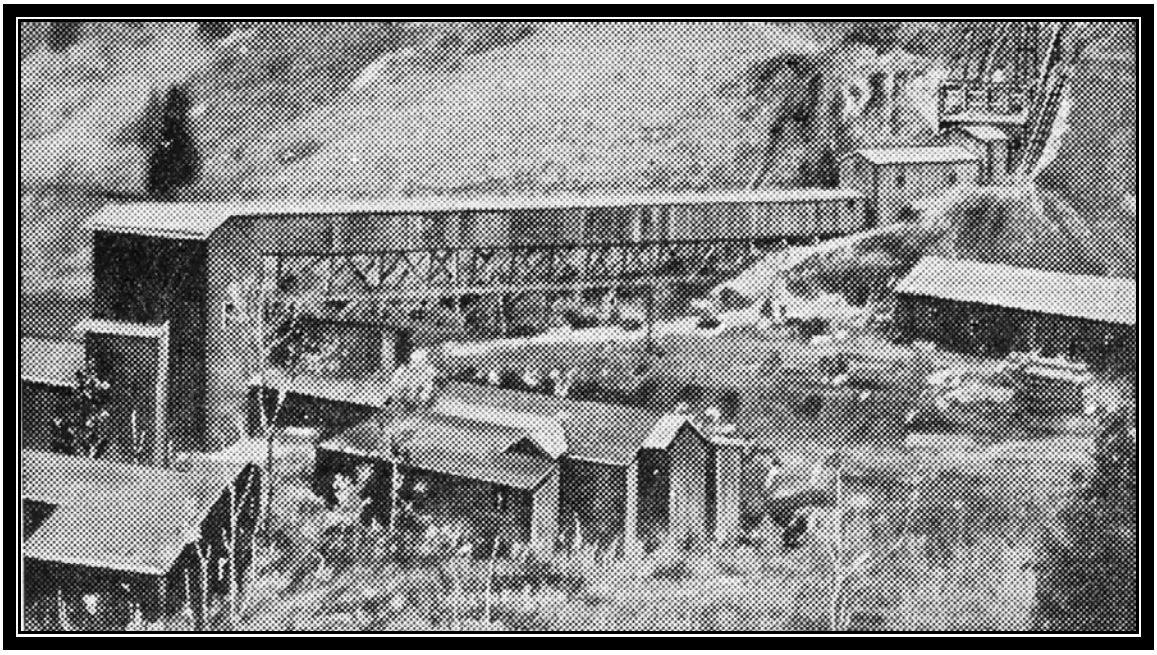

Figure 17. Surface plant of the Clayton Silver Mine, 1939 (page 193 in Campbell, Arthur, 1940, Forty-first Annual Report of the Mining Industry of Idaho for the Year 1939). The mill is on the left of the frame and the base of the headframe is on the upper right.

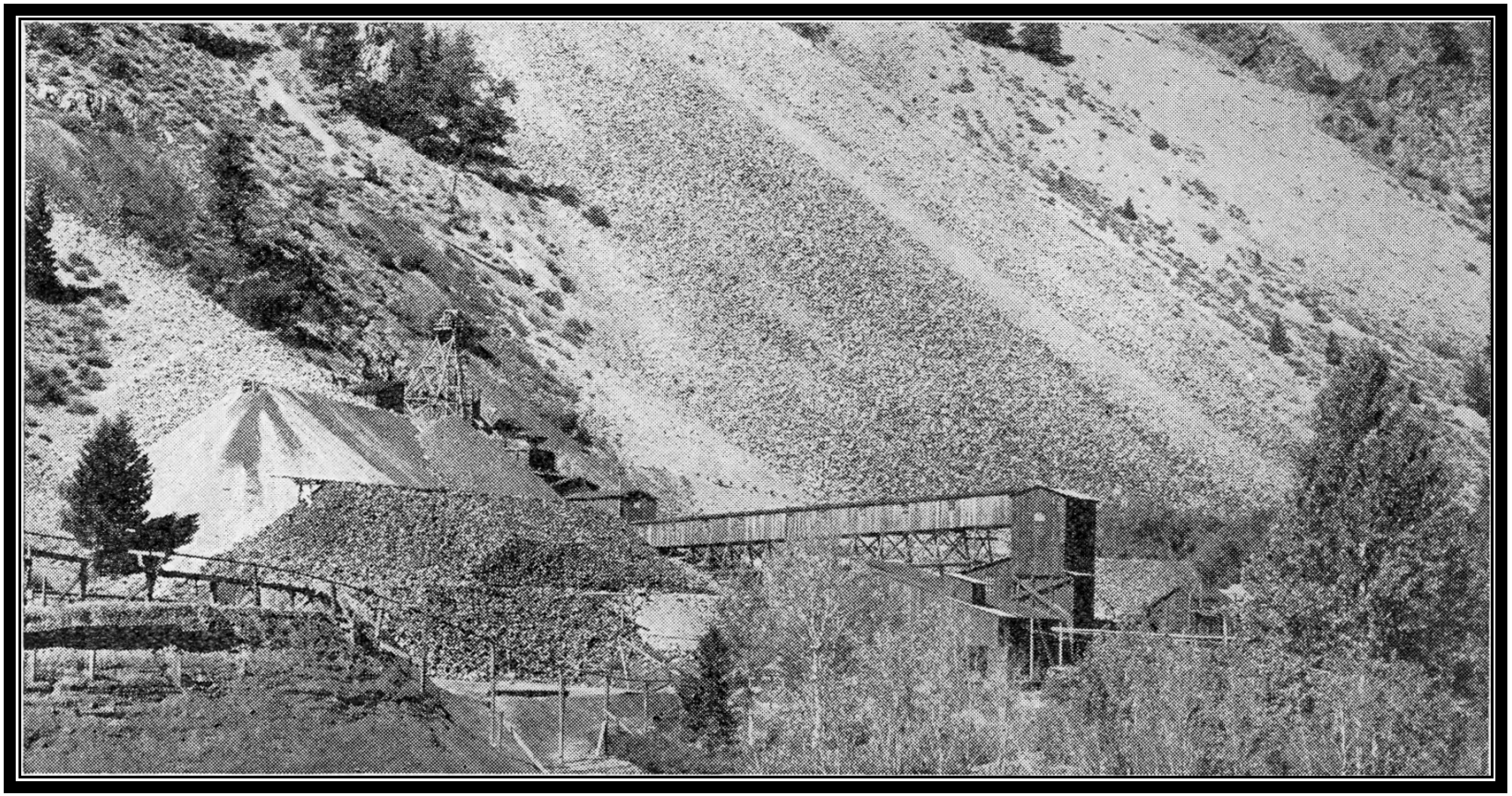

Figure 18. The Clayton Mine headframe and mill, 1941 (page 177 in Campbell, Arthur, 1942, Forty-Third Annual Report of the Mining Industry of Idaho for the Year 1941). Note the size of the mine dump below headframe and tailings pile in left foreground.

A picked sample of the gray copper assayed 1,060 ounces of silver to the ton. The best round in the drift assayed 8% lead and 40 ounces of silver. The width of the drift is 9 feet.

One car of concentrates produced in the mill during the time this new ore was in the drift netted $7,800 against the average net of $4,000 per car, when milling the old type of ore. A winze will be started on this new ore shoot to prove the values below the drift.

About the same time this ore was encountered the values in the 200 drift began to get better. The ore in this drift is the old type of ore which has a lesser silver ratio than the new ore found on the 300 level. This drift has been driven in ore for about 50 feet and is 12 feet wide. The ore as broken over this width has assayed as high as 12% lead and 10 ounces of silver.

Considerable high-grade is being sorted from the ore from this drift. By April 1st this ore shoot had been opened for 50 feet, and at the face of the drift the ore was 25 feet wide. This is the same ore shoot that was encountered on the tunnel level in March of 1940, which only went a few feet above the tunnel level. On the 200 the ore is of a better grade and it is also wider.

We now have three new stopes started, two from the 200 level, and one from the 300 level, and in addition are driving a raise from the 300 level which is up about one-third of the distance to the 200 level.

All of the ore being milled at the present time is coming from the new development. No ore is being mined from the new stopes, and none of the old oxidized ore is being put through the mill. This milling of only the new unoxidized ore has resulted in reducing the percentage of lead in the tailings from over 1% to .3 of one per cent [0.3%]. In addition to this increased recovery the heads have been raised from slightly over 3 % lead to better than 5% lead and should increase still further. Our mill recovery is now considerably over 90%.

In 1940 the mill made an average of 4¼ tons of concentrates per day. The first week in April this year we hauled 11 tons of concentrates per day to Mackay making two trips per day, but this was not as much as the mill was producing. Also, during that first week in April we sorted 20 tons of high-grade crude ore. Shipments in March were double that of the average monthly shipments in 1940.

The face of the 300 foot level is 500 feet south of the present face on the 200 level where we have the 25 foot width of ore. Most of this 500 feet should be in good ore. In this 500 feet on the 200 two shoots of stopeable ore have been encountered, and for the rest of the distance the vein is well mineralized and at no point is it barren of values. From the behavior of the lead-zinc orebody from the tunnel level down to the 200, increased values and increased width, we are justified in expecting that a large percentage of the 500 feet on the 300 foot level will be stopeable ore.

As a result of this very favorable development since the first of the year the plans for the future have been greatly altered. The winze from the 300 foot level on the new ore will be started at once. A new 225 h. p. Diesel-Electric engine is to be ordered at once. It should be in operation in about four months. The 200 foot drift will be continued to the north and new stopes and raises started as the drift exposes additional ore. The 300 level will also be continued to the north. We desire to get this drift ahead 200 or 300 feet before we decide on the location for a new three-compartment shaft, which will first be sunk to the new 400 foot level and later raised to the surface.

Toward the latter part of this year we feel confident that we will have sufficient ore developed, blocked out and ready to stope to justify consideration of increased milling capacity. In the meantime, as soon as the new power plant is in operation we plan

> to make, in addition to the lead-silver concentrate, a zinc concentrate as there is a considerable quantity of zinc in the extreme north orebody on the 200 foot level, and zinc is now in great demand.

In November the company began an addition to its mill to house a zinc-recovery plant. In May 1942, the company finished installing additional milling equipment for recovering zinc. During the first five months of the year, the mill produced only lead concentrates; lead concentrates and zinc concentrates were shipped during the rest of 1942. The mill assays of the zinc concentrates averaged 55 percent zinc. (Table 5 shows selected production data for the mine.)

In 1943, the Clayton mine produced less lead and zinc than in 1942, but more silver. The company's labor situation was fairly satisfactory through the end of May; from then on, a shortage of manpower made it difficult to operate. Production was not sufficient to keep the 110-tpd flotation mill running at capacity, and it was idle 627 hours during the year. Development work was less than normal, but ore reserves increased substantially during the year to 80,000 tons, with 60,000 tons of probable ore to the north of and below the new orebody on the 300 level.

The mine operated steadily in 1944, producing 39,258 tons of ore, which yielded 2,644 tons of high-grade lead-silver concentrates and 645 tons of zinc concentrates. This resulted in a higher output of lead and silver and a substantial decrease in zinc. A new pumping plant was added to the mine during the year. In 1945, the Clayton Mine produced 29,127 tons of ore, which yielded 1,495 tons of high-grade lead-silver concentrate and 605 tons of zinc concentrate. Labor strikes from February 1 through June 30, 1946, interrupted operations at the mine, and work did not resume until the end of August. The mine produced 10,764 tons of zinc-lead ore during the year. Most of the ore was pulled from the stopes, hoisted from the mine, and milled. In 1947, the Clayton Mine produced 24,366 tons of lead-zinc ore, which yielded 1,687 tons of lead concentrate and 800 tons of zinc concentrate. An additional 135 tons of lead-silver ore was shipped direct to a smelter. For most of the year, the company conducted two major development projects–the Ella north drift and the 200 north drift.

By the end of 1948, all known ore above the 300-foot level had been broken (but not necessarily removed from the mine yet). The company planned to start sinking the shaft to the 400-foot level before this ore was depleted and expected to developed a large tonnage of new ore in the south end of the mine through the deeper shaft. Production for the year, treated in the company's 100-tpd flotation mill, was 29,077 tons of ore, which yielded 1,306 tons of lead concentrate and 892 tons of zinc concentrate.

The Clayton mine produced 14,502 tons of ore in 1949. This material yielded 817 tons of lead concentrate and 334 tons of zinc concentrate. On the 400 level, the South ore shoot was larger and of higher lead content than that mined above the 300 level. The large North ore shoot had been found on the 400 level, but its size was undetermined. In 1950, development of the North ore shoot on the new 400 level dominated company operations. The northern limit of the orebody was not determined, but the part developed

Table 5. Selected production figures for the Clayton Silver Mine, taken from published sources.

Year	Ore (tons)	Gold (ounces)	Silver (ounces)	Copper (pounds)	Lead (pounds)	Zinc (pounds)	Comments
1942	38,014	—	146,443	—	3,120,000	3,193,000	
1943	34,500	—	195,360	—	3,028,980	1,622,000	
1944	39,258	—	224,556	—	3,698,103	1,240,553	calculated
1947	24,366	49	120,011	25,907	2,070,892	774,827	metals from concentrates; additional 135 tons of lead-silver ore shipped direct to smelter
1948	29,077	40	96,461	18,524	1,751,723	848,273	
1949	14,502	17	46,772	9,300	1,076,943	401,450	
1950	30,749	32	114,044	20,869	2,391,666	830,859	
1951	23,562	42	116,688	20,932	2,277,050	1,310,195	
Total	—	**704**	**1,944,807**	**317,641**	**33,622,737**	**8,518,631**	**Grand Total through end of 1952**
1953	34,904	—	113,952	—	2,271,451	59,414	lead concentrate only; zinc cons. stockpiled
1954	30,448	36	130,509	19,800	2,374,500	99,500	lead concentrate only; zinc cons. stockpiled
1955	35,720	39	122,500	21,000	2,471,000	177,000	lead concentrate only
1955	—	—	—	—	—	467,000	from 380 tons zinc concentrate
1956	39,901	66	183,284	39,105	3,127,039	2,489,016	
1959	27,299	—	—	—	—	—	
1962	20,700	34	124,691	34,000	1,150,000	216,000	Cu, Pb, and Zn calculated

Table 5, continued. Selected production figures for the Clayton Silver Mine, taken from published sources.

Year	Ore (tons)	Gold (ounces)	Silver (ounces)	Copper (pounds)	Lead (pounds)	Zinc (pounds)	Comments
1963	21,600	23	119,105	28,000	1,360,000	178,000	Cu, Pb, and Zn calculated
1964	23,531	27	144,275	36,000	1,378,000	206,000	Cu, Pb, and Zn calculated
1965	26,658	31	130,877	37,000	858,000	126,000	Cu, Pb, and Zn calculated
1966	57,442	54	246,591	68,000	1,514,000	164,000	Cu, Pb, and Zn calculated
1967	68,500	—	226,000	56,000	1,624,000	800,000	Cu, Pb, and Zn calculated
1968	83,049	—	290,472	76,000	2,724,000	1,104,000	Cu, Pb, and Zn calculated
1969	81,455	—	228,824	—	—	—	
1974	—	—	113,000	—	1,290,000	—	Pb calculated
1975	—	—	190,000	—	—	—	
1980	—	—	71,900	19,790	510,888	—	
1981	55,258	—	103,600	34,620	666,660	—	
1982	—	—	55,900	18,250	431,830	—	
1983	52,800	—	177,500	—	—	—	
1984	76,110	—	226,417	148,295	1,397,531	73,576	
1985	102,258	—	261,931	—	1,800,000	—	

on the 400 level during the year was 280 feet long and over 40 feet wide. Stoping in this area produced the highest grade of ore yet found in the mine. Production rose to 30,749 tons of ore, which yielded 1,745 tons of lead concentrate and 630 of zinc concentrate.

In 1951, the Clayton Mine produced 43 percent of the tonnage produced in Custer County, making it the county's largest producer. Zinc-lead ore totaling 23,562 tons was milled in the company's 100-tpd flotation mill. Production in 1952 was 20,518 tons of ore. The reasons for the reduced output were a three-and-a-half month strike at the mine and lower lead and zinc prices during the last half of 1952. Total production from the Clayton Mine through the end of 1952 was 33,622,737 pounds of lead, 8,518,631 pounds of zinc, 317,641 pounds of copper, 1,944,807 ounces of silver, and 704 ounces of gold. Estimated ore reserves were 108,500 tons at the end of the year.

Although low metal prices continued to affect operations in 1953, the Clayton Mine was still the largest producer in Custer County. A total of 34,904 tons of lead-zinc ore yielded 1,526 tons of lead concentrates and 469 tons of zinc concentrates. Because of low zinc prices, all the zinc concentrate was stockpiled at the mill. The cost of running the zinc circuit in the mill was comparatively low, so the company decided to recover zinc as well as lead concentrate rather than to run the zinc to waste through the tailings. Reduced manpower requirements resulted from improved stoping and haulage methods, including the drawhole method of pulling ore from the stopes. The average payroll at the mine and mill was eighteen men during the second half of the year. The Salmon River Electric Cooperative, Inc., completed transmission lines to the upper Salmon River area in January, allowing the company to obtain electric power. The company's diesel power units were retained to prevent flooding of the mine in case of a power failure.

Zinc concentrate was again stockpiled in 1954 because of the low price for zinc. The company produced 1,936 tons of lead concentrate and 897 tons of zinc concentrate from 30,448 tons of crude ore. The zinc concentrate stockpile amounted to 1,391 tons. A shaft to serve the 550 level was completed, and drifting south 250 feet and north 610 feet was done on the 550 level. In addition, a drainage, ventilation, and escape raise was run from the 400 level to the 200 level. Mill operation was at capacity throughout the year. Most of the ore came from the large North stope on the 400 level. Ore reserves at the end of the year were estimated to be 68,805 tons.

The Clayton Mine was the largest producer in Custer County in 1955. Mining and milling were at capacity throughout the year. Most of the ore came from the 400 North stope. The mine produced 35,720 tons of ore, which yielded 1,916 tons of lead concentrate and 1,252 tons of zinc concentrate. All the lead concentrate was sold. During the first part of the year, 872 tons of zinc concentrate was stockpiled, pending an increase in metal prices. From November 1 to December 31, after an advance in zinc prices, 380 tons of zinc concentrate was sold. The zinc stockpile consisted of 2,263 tons of concentrate averaging 55 percent zinc at the end of 1955. Most of the mine development for the year was on the new 550 level. About halfway between the shaft and the North ore shoot, a ventilation and escape raise was driven between the 550 and 400 levels. The

South end ore shoot was exposed an additional 20 feet, a raise through it was completed from the 550 level to the 400 level, and preparations for stoping were completed by December 31. The main 550 North drift was extended beneath the 400 ore, and a raise was started to the 400 level from near the face of 550. Ore reserves at the close of 1955 were an estimated 84,124 tons, an increase of 15,319 tons over reserves at the end of the previous year.

In 1956, the Clayton Mine operated throughout the year. It produced 39,901 tons of ore, which yielded 2,384 tons of lead concentrate and 2,044 tons of zinc concentrate. The 100-tpd flotation mill ran at capacity 7 days a week. Ore reserves at the end of the year were estimated at 120,120 tons, an increase of 43 percent over the end of the previous year.

Clayton Silver Mines was the leading source of lead outside Shoshone County in 1957. The mine produced 39,705 tons of ore, which yielded 2,094 tons of lead concentrate and 1,012 tons of zinc concentrate; 675 tons of zinc concentrate averaging 56 percent zinc were stockpiled. Over half the ore came from the 400 level, which was depleted; 36 percent came from the 500 South area; and 12 percent was from the 500 North area. The ore reserve in the 500 North area was estimated at a little over 96,000 tons at the end of the year. On July 19, 1957, Clayton Silver Mines was awarded a $130,840 Defense Minerals Exploration Administration (DMEA) contract, with government participation set at 50 percent. Sinking of the main Clayton shaft was resumed with DMEA assistance.

The Clayton Silver Mine continued normal operations for the first eight months of 1958. Production was suspended in early September due to declining base-metal prices, but exploration under the DMEA contract continued (Figures 19 and 20). The company stockpiled its output of lead concentrate from June through August; the concentrate was marketed in November after lead prices increased to a more profitable level. Production for the year totaled 24,876 tons of ore, which yielded 1,636 tons of lead concentrate containing over 1.5 million pounds of recoverable lead.

Mining resumed at the Clayton Mine on January 20, 1959. In mid-August, an earthquake near Yellowstone National Park severely shook the Clayton area and increased the water flow in the underground workings sharply. The installed pumps were not able to handle the flow, and two additional four-stage pumps were required.

In 1960, the Clayton Silver Mine accounted for 93 percent of the tonnage of the gold, silver, copper, lead, and zinc ores mined in Custer County. The mine was operated six days a week and the mill ran seven days a week for the entire year. Mining was by shrinkage stoping. The zinc circuit in the mill was idle because of low metal prices, and some lead ore was left in the mine for the same reason. The Clayton Silver Mines' annual report to shareholders stated in part (1960 USBM, p. 338):

> The North Drift, on the 800 level, was completed after advancing 760 feet to a point some 1,900 feet north of the shaft. The downward extension of the 500 north ore body was found approximately as planned at 1,400 feet north of the shaft. The drift was advanced on

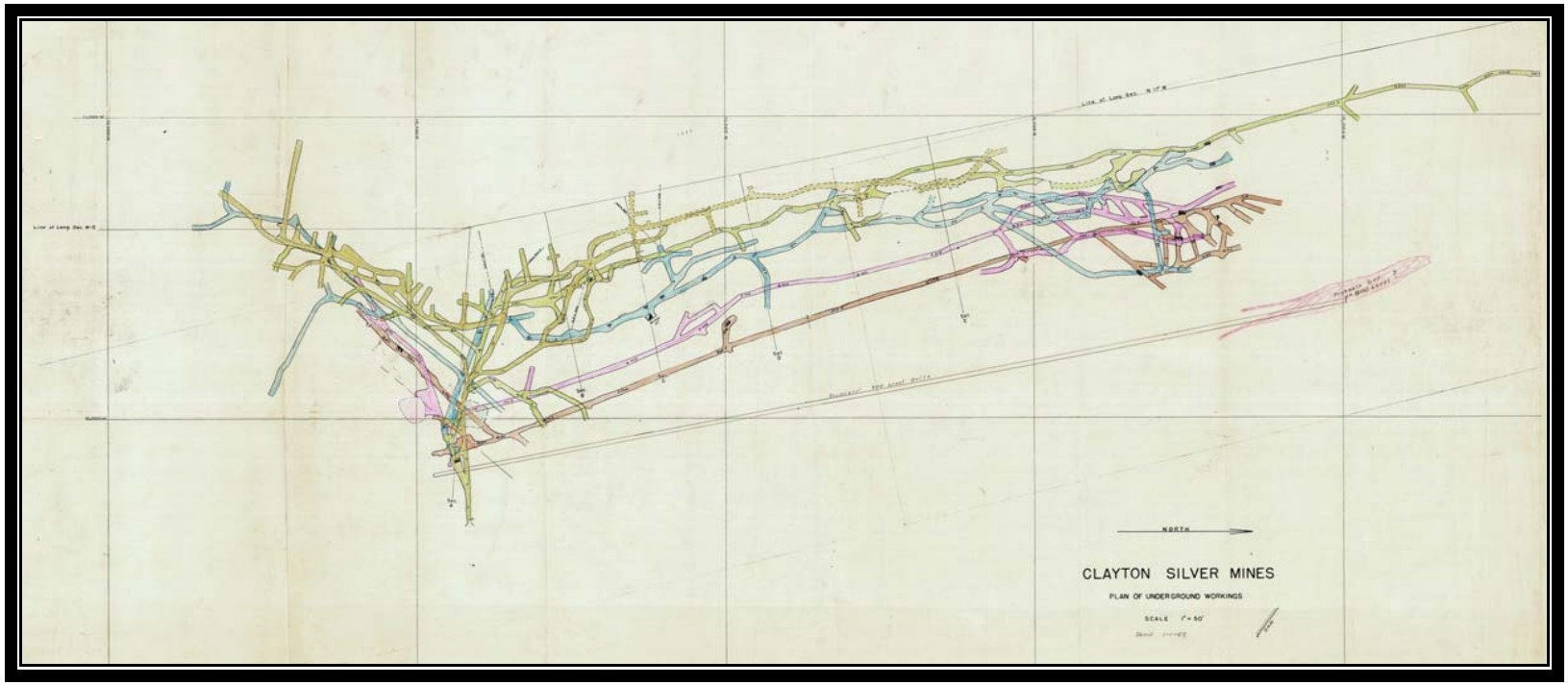

Figure 19. Composite level map of the Clayton Mine, 1957 (DMEA docket no. 4569).

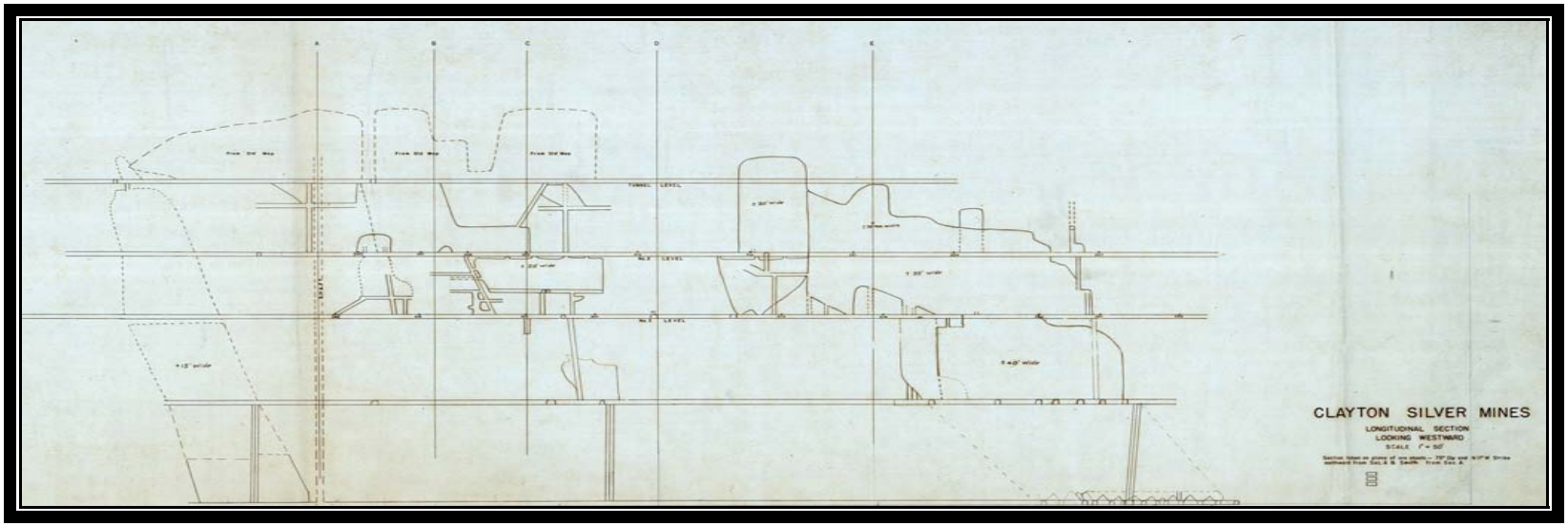

Figure 20. Longitudinal section through the Clayton Silver Mine, looking westward (DMEA docket no. 4659).

very good lead-zinc-silver ore for 140 feet. In the next 300 feet some lead and practically no zinc was found, but the silver content rose sharply. The occurrence of tetrahedrite which carried the silver in this latter area is rather erratic but the total content over a 40-foot width is considerable. By the end of the year not enough information had been gained to definitely establish grade and tonnage, but it looks as though there are over 225,000 tons with a probable content value of around $8.00 a ton at the present prices of lead and silver. The tonnage of lead-zinc-silver ore mentioned above in the first 140 feet between the 500 and 800 is estimated at 108,700 tons.

The 500 North Drift was advanced 275 feet and a crosscut was driven 173 feet eastward to explore the east wall. Some mineralization but no ore was found.

The reserves of broken ore in the south 700 and north 500 stopes were estimated at 4,000 tons at year's end.

The diamond drilling contemplated during 1960 was deferred until 1961 from fear of increasing the mine water flow which had been near the pump's capacities.

The major projects for 1961 will be development of the 800 north end ore body and diamond drilling.

During 1961, the Clayton Mine was operated six days a week and the mill ran seven days a week throughout the year. A new 75-horsepower hoist was installed at the main shaft. Seven diamond drill holes averaging 500 feet each were driven into the hanging wall and footwall of the Clayton ore zone, defining an additional ore zone in the footwall northwesterly from existing orebodies. Ore reserves were estimated by the company to be in excess of 200,000 tons.

The largest lead producer in Idaho outside of Shoshone County in 1962 was the Clayton Silver Mine, which produced 20,700 tons of ore from the 500 and 800 levels. Net smelter returns averaged 6.86 cents per pound on lead shipments. Payments were received for metals produced under the Government lead and zinc mining stabilization program. Because of worsening economic conditions in April, a winze-sinking project was suspended, the number of employees was reduced, and mining was restricted to the higher grade zones. At the end of the year, a new ore shoot on the 700 intermediate level was developed.

In 1963, the largest lead and silver producer outside Shoshone County was again the Clayton Mine. From the 500 and 800 levels of the mine, 21,600 tons of ore was produced. Net smelter returns were $245,056, and payments under the Government lead and zinc mining stabilization program were $21,839. Stabilization payments were discontinued on July 31; under the amended Small Mines Stabilization Act, Clayton was not a small domestic lead producer because its 1962 income from silver and copper exceeded its income from lead. On December 2, a $90,916 Office of Mineral Exploration (OME) loan was approved for drifting and diamond drilling in search of downward extensions of the North ore body; government participation was 50 percent.

The Clayton Mine continued to be the largest producer in the Custer County in 1964 by producing 23,531 tons of ore. Mining costs were $140,625 and milling costs were $73,617. A diamond-drilling project to check mineral zones at depth conducted under an OME loan granted in 1963, was begun in April and continued throughout the

year. Results showed from 2 to 3 million ounces of silver between the 800 working level and the projected 1500 level (Figure 21).

Clayton Silver Mines increased ore reserves in 1965. In April diamond drilling showed an orebody containing an estimated 600,000 tons between the 800 and 1300 levels. Above the 800 level, an ore block with about 200,000 tons of ore was prepared for mining. The mill capacity was increased to 180 tpd by adding a new ball mill, new jaw and gyratory crushers, two cyclone classifiers, and new and reconditioned flotation cells. Mining costs for the year were $124,284, milling costs were $72,991, and total operating expenses were $232,058. The mill was enlarged again in 1966, this time to 220 tpd. Silver production for the year was a record high for the mine. Near the end of the year, the zinc section of the mill was rehabilitated to again produce a separate zinc concentrate. Reserves at the end of the year were an estimated 283,858 tons.

Clayton again produced a record amount of ore in 1967. Mining was mostly in the 800 level North stope. During the second half of the year, a strike against copper producers closed the smelters to which Clayton sold its lead and zinc concentrates. However, the Clayton Mine stockpiled its concentrates and continued to operate. In 1968, a 21 percent increase in output of silver ore created a new record high for the Clayton Mine. After April concentrates stored during the smelter strike were sold along with current production. Mining was in the 800 level North stope. The mill operated 356 days at a rate of 230 tpd. The mine was still the leading silver producer in Custer County in 1969. Much of the ore came from the 800 level North stope. The mine operated at near capacity, and the mill ran 357 days at a rate of 228 tpd, with only four days lost for repairs and power failure.

In 1974, the Clayton Mine was the only major lead-producer and the largest silver producer outside of Shoshone County. An offset shaft was started late in the year to develop new areas, and the excavation for hoist equipment and ore pockets was finished subsequently. Operations continued in 1975, with an emphasis on increasing ore reserves. In 1976, Clayton was again the only mine outside of Shoshone County with notable production of both lead and silver. Reserves at the end of the year were 243,880 tons of ore. The mine was the only major lead and zinc producer in the state outside the Coeur d'Alene district for the next three years. In 1977, production for the year was 80,000 tons. The offset shaft between the 800-foot level and the 1,100-foot level was completed and additional development work started. The mine opened new reserves on the 1,100-foot level of the mine in 1978 and produced ore from the 950-foot and the 1,100-foot levels in 1979. The No. 2 shaft, a vertical shaft to the 1,100-foot level, was completed during the year and increased ore reserves from 100,000 tons to 410,000 tons.

In 1980, the Clayton Mine enjoyed an excellent year. Ore reserves were developed on the l,000-foot level of the mine during the year, and the 800-foot and 1,100-foot levels were opened by work from the No. 2 shaft. Among mines outside the Coeur d'Alene district, the mine was again a notable producer of silver, lead, and zinc in 1981. Ore was mined from the 950-foot and 1,100-foot levels and processed in the

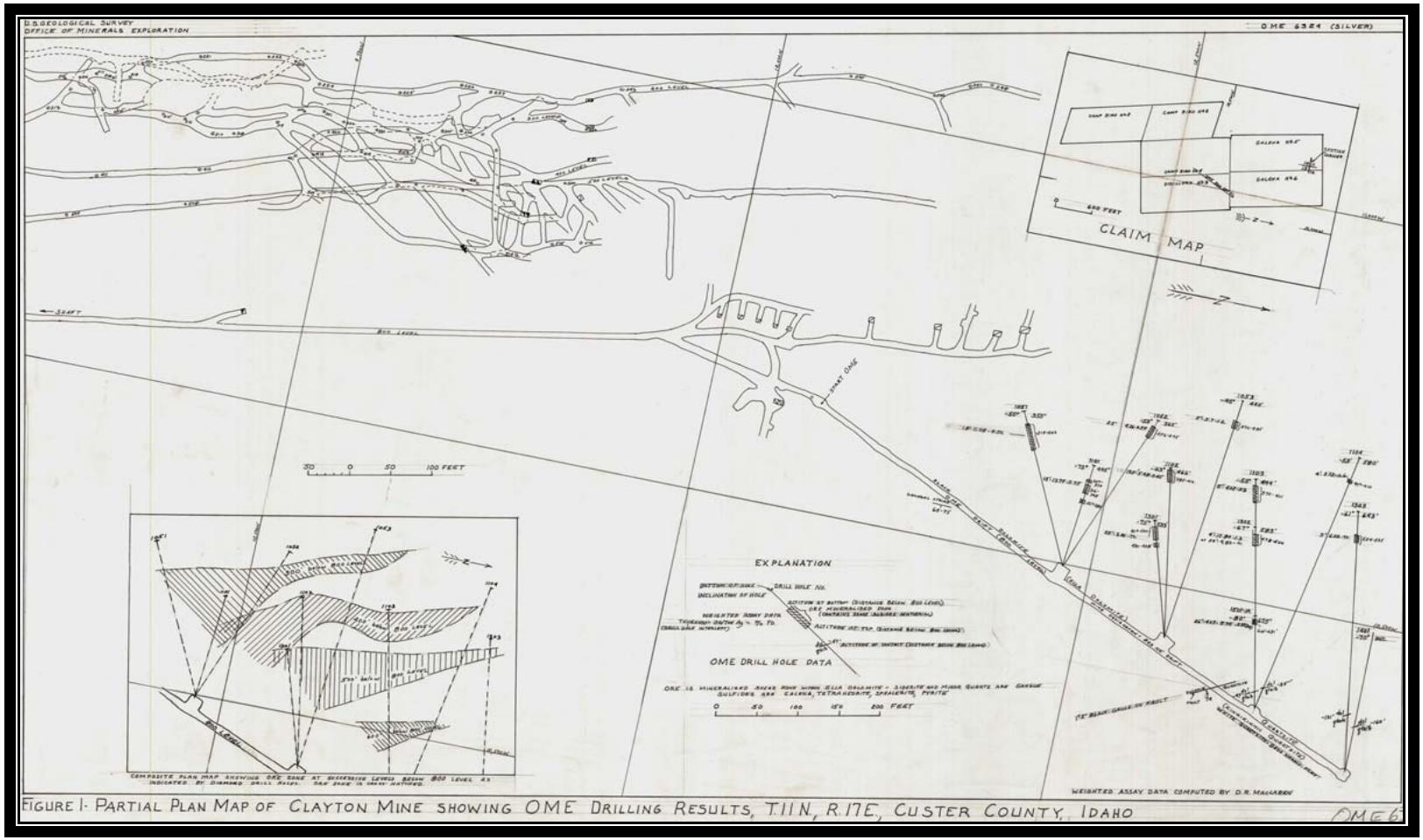

Figure 21. Partial map of the Clayton Silver Mine, showing the results from the OME drilling program (OME docket no. 6324).

company's 250-tpd mill. In April, Clayton Silver Mines's stock was listed on the Pacific Stock Exchange.

The Clayton Mine was forced to close down in June 1982 because of low metal prices. Geologic mapping and diamond drilling continued during the shutdown. Some improvements were also made; among others, the 140-tpd ball mill was replaced with a 250-tpd unit, and a new auxiliary power line was installed. The mine reopened on December 20 with employment at full strength. Production averaged 220 tpd in a six-day work week at year's end.

The mine established a new production record of 16,676 tons during the first quarter of 1983, and production averaged 254 tpd during the first six months of the year. However, the mine closed after the magnitude 6.9 October 28 Borah Peak earthquake, about 25 miles from the Clayton mine, triggered a massive increase in the flow of underground water. The earthquake did little damage to the mine and surface plants, but the Clayton Mine was a wet mine. Prior to the earthquake, 950 gallons of water per minute flowed from the 1,100-foot main shaft. The flow rate was two-thirds greater after the earthquake. With the water rising at the rate of 1.5 feet per minute shortly after the initial shock, mine personnel were forced to abandon the mine. The mine was flooded to the 975-foot level by November 3. New, more powerful pumps were installed to handle the water flow, but the mine remained closed at the end of the year. Other improvements included a larger compressor and a new 1,000-kilowatt diesel generator.

In February 1984, the Clayton Mine reopened. The water problems caused by the Borah Peak earthquake cost Clayton Silver Mines an estimated $800,000 in new equipment and down time. The new pumps removed 2.25 million gallons of water daily from the mine, and production rose to 325 tpd. The mine closed out the year with a bang, detonating the largest sequential blast ever shot at the mine. Twelve tons of powder were used to break 65,000 tons of rock.

Clayton Silver Mines, Inc., celebrated fifty years of operation in mid-1985 at the Clayton Mine. Since 1935 the mine produced nearly 6.7 million ounces of silver and 83.5 million pounds of lead from 2.2 million tons of ore. A silver coin was minted to celebrate the fiftieth birthday. Unfortunately, the company again had to compensate for low metal prices. Miners' wages were reduced 10 percent and office salaries were cut by 30 percent. All exploration was stopped, and other cost trimming measures were implemented. A pilot program with the Bonneville Power Administration was started that cut the price of electricity used at the mine. Even with all this, production ranged between 325 and 350 tpd. Despite the cost-cutting measures and increased production, the company had a $529,000 loss for the first half of 1986. In April, pumping stopped on the lower levels. The Clayton Silver Mine (Figures 22, 23, and 24) closed on May 24, 1986, ending a half century of successful mining operations.

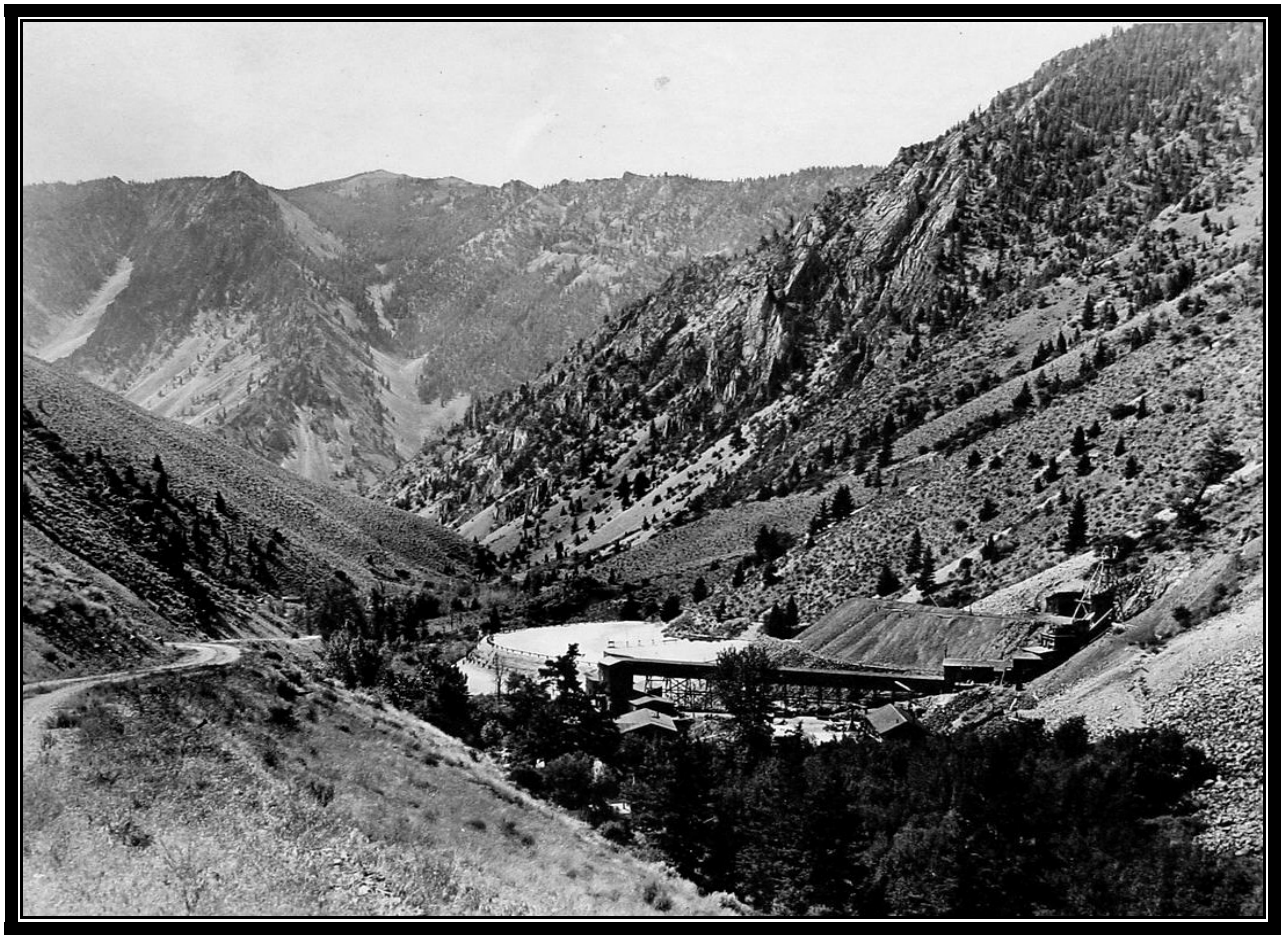

Figure 22. Clayton Silver Mine (date unknown), showing headframe, mill and camp buildings, dump, and tailings pile (photograph courtesy of Earl H. Bennett).

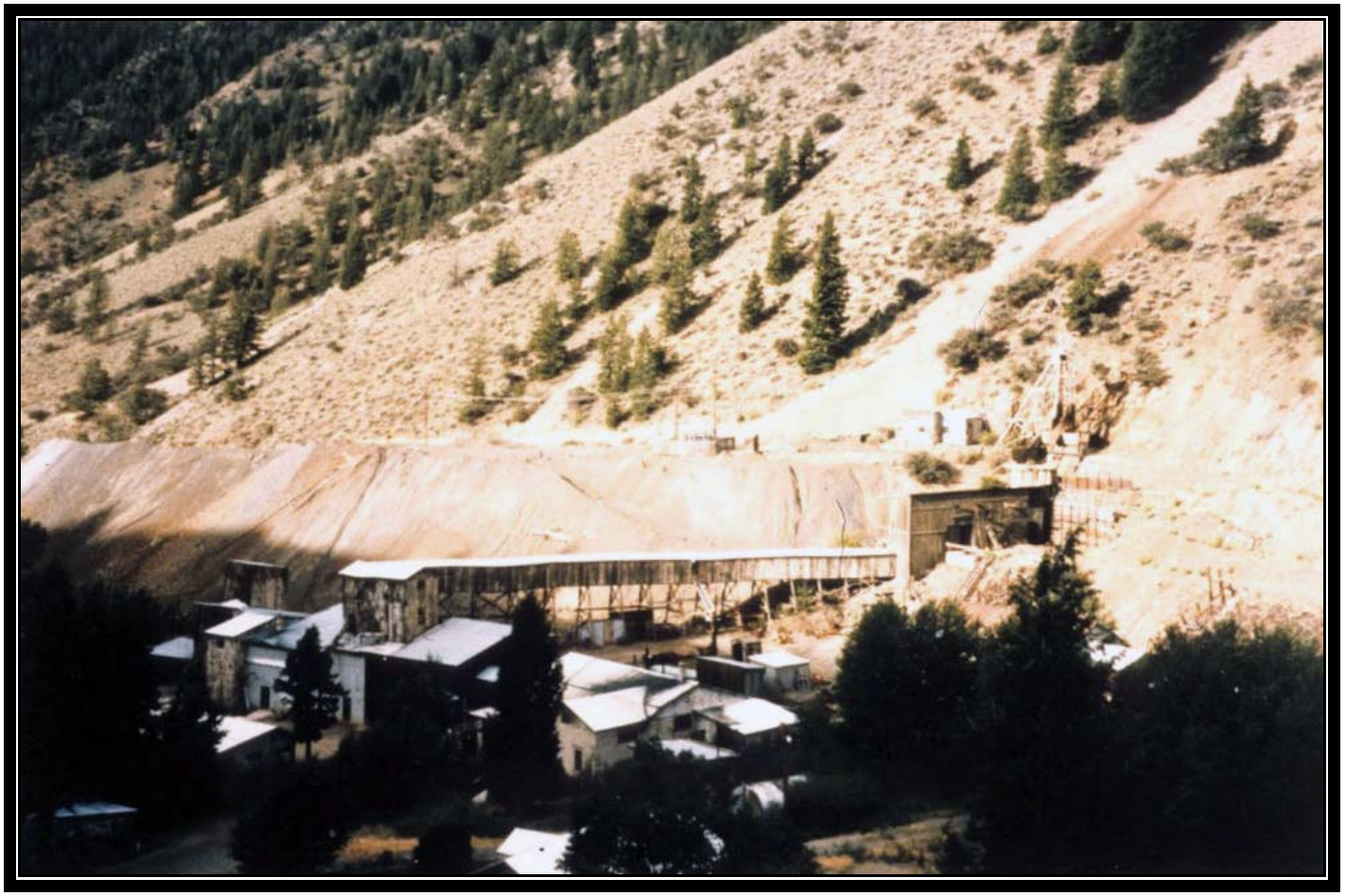

Figure 23. Close-up of Clayton Silver Mine (date unknown), showing headframe, dump, and mill buildings (photograph courtesy of Earl H. Bennett).

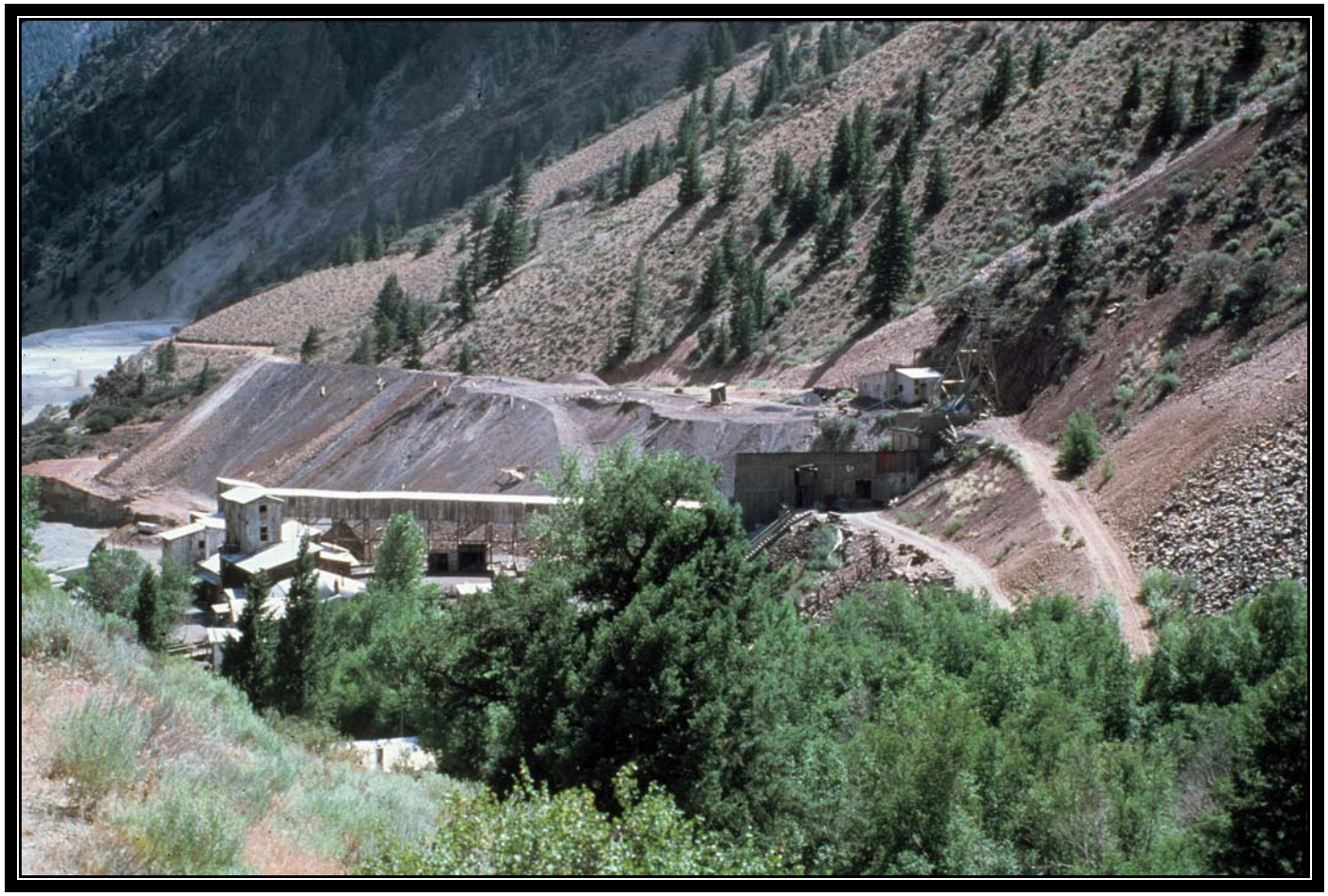

Figure 24. The Clayton Silver Mine (1989), showing the headframe, mill buildings, and dump (photograph courtesy of Earl H. Bennett). The tailings pile is visible on the left edge of the frame.

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