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DEPARTMENT OF THE INTERIOR
UNITED STATES GEOLOGICAL SURVEY
GEORGE OTIS SMITH, DIRECTOR

MINERAL RESOURCES

OF THE

UNITED STATES

CALENDAR YEAR

1906

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plates, bumping tables, vanners, cyanide treatment for sands, and a canvas plant to handle the slimes. The values are about equally divided between gold and silver.

The Liberty Bell mine more than doubled the quantity of ore handled in its very efficient 300-ton, 80-stamp amalgamating mill, the operation of which is followed by tube mills and tank cyanide treatment of sands and vacuum filters for slimes. Mine developments include a 200-foot and a 2,600-foot tunnel and several miles of drifts.

Increased shipments were made by the Alta mine, which operates a 20-stamp concentrating mill, and by the Columbia-Menona Mining and Milling Company. The Mammoth Mining Company erected a 10-stamp plate amalgamating and concentrating mill, but were only able to operate a short time before closing down for the winter. Several other properties report some development work.

Metallic production of Upper San Miguel district, San Miguel County, Colo., in 1905 and 1906.

Year.	Gold.		Silver.		Copper.		Lead.		Total.
	Quantity.	Value.	Quantity.	Value.	Quantity.	Value.	Quantity.	Value.	
	Fine ozs.		*Fine ozs.*		*Pounds.*		*Pounds.*		
1905	76,171.64	$1,574,607	890,459	$537,837	1,923	$300	4,976,234	$233,883	$2,346,627
1906	112,176.07	2,318,885	1,495,332	1,001,873	70,342	13,576	6,639,803	378,469	3,712,803
Increase (+) or decrease (−)	+36,004.43	+744,278	+604,873	+464,036	+68,419	+13,276	+1,663,569	+144,586	+1,366,176

Iron Springs district.—A diminished total output was made by the mines in the section about Ophir. The Carbonero Mining Company reported shipments of silver-bearing galena, as well as lead carbonate ores, in 1906. Two tunnels on the vein, respectively 850 and 1,200 feet in length, develop the property. The Butterfly-Terrible Gold Mining Company handled a reduced tonnage last year. Other shippers included the New Dominion Gold Mining Company, operating on the south slope of Silver Mountain; the Ophir Consolidated Mining Company, and the Suffolk Mining and Milling Company. Each of these concerns is equipped with concentrating mills. Shipments were also made from the Favorite, the American-Frenchman, and the Santa Cruz mines.

Lower San Miguel district.—A small quantity of ore was shipped from the Commercial group, near Sawpit, before the mine was sold to the National Mining and Milling Company, which company also owns the Gertrude mines, on which a 10-stamp mill has been erected.

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DEPARTMENT OF THE INTERIOR

UNITED STATES GEOLOGICAL SURVEY

GEORGE OTIS SMITH, DIRECTOR

MINERAL RESOURCES

OF THE

UNITED STATES

CALENDAR YEAR

1907

PART I—METALLIC PRODUCTS

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from the Carbonero mine. Other producers included the Suffolk, New Dominion, Favorite, and Badger Boy mines.

Lower San Miguel district.—This district, in the vicinity of Sawpit, was the center of greatly increased activity, and 6 mines reported shipments in 1907, principally lead ores bearing precious metals, as compared with reports from only 1 producer in 1906.

Mount Wilson district.—Silver-lead ore, carrying small gold values, was sent from the Morning Star mine, which was developed by 3 tunnels on the vein.

SUMMIT COUNTY.

Production of gold, silver, and associated metals in Summit County, Colo., in 1906 and 1907.

Metal.	1906.		1907.		Increase (+) or decrease (−).	
	Quantity.	Value.	Quantity.	Value.	Quantity.	Value.
Gold.....fine ounces..	6,761.52	$139,773	5,156.29	$106,590	−1,605.23	−$33,183
Silver.....do....	107,752	72,194	125,847	83,059	+ 18,095	+ 10,865
Copper.....pounds..	27,120	5,234	21,865	4,373	− 5,255	− 861
Lead.....do....	1,301,912	74,209	1,915,133	101,502	+ 613,221	+ 27,293
Zinc.....do....	2,942,983	179,522	3,026,627	178,571	+ 83,644	− 951
Total.....	.....	470,932	.....	474,095	.....	+ 3,163

The gain of $3,163 in the value of the metallic output of Summit County, as compared with that of 1906, was brought about by substantial increases in silver and lead values, which more than balanced the diminished gold and copper productions.

The decrease in gold of $33,183 was caused by much smaller returns from placer mines and from siliceous or dry ores, as the lead and zinc ores furnished more gold in 1907 than in 1906. Likewise, less silver was mined in siliceous or dry ores and in lead-zinc ores, but increased quantities obtained from lead ores and zinc ores resulted in an increase of 18,095 fine ounces over the production of 1906.

The decrease in copper was due to smaller shipments from the Snake River, or Montezuma district. The lead product was nearly one-half as large again as in 1906, because of increased lead shipments from the Bevan district. The zinc output shows an increase, but because of the lower prices in 1907 than in 1906 the value decreased $951.

The same number of mines (39) as in 1906 produced greater quantities of lead ores, zinc ores, lead-zinc and copper-lead ores, but much smaller quantities of dry or siliceous ores, with a resulting total tonnage of 25,127 short tons, or 8,923 tons less than in 1906.

Breckenridge section (including Bevan, Minnesota, and Union mining districts).—In the Bevan district a decreased tonnage and less gold were mined, but the quantities of silver, copper, lead, and zinc were greater than in 1906. The Wellington mine was the foremost producer of this section, but shipments were also made from the Dunkin group, the Sallie Barber, the Truax, and the Little Sallie Barber mines. The total value of the production from 7 mines was $175,201 in 1907.

Minnesota district.—From the mines of this district a decreased tonnage and smaller quantities of gold, silver, and lead were reported; the total value was less than half as large as in 1906.

Gold Mining Company, with a 1,200-foot tunnel, and the Mountain Queen Mining and Milling Company, with a 400-foot shaft and a 2,000-foot tunnel, reported active development work during 1907. The Peerless San Juan Mining Company was tunneling and drifting, and the ore was stored on the dump. A 300-ton concentrating mill was being erected at the Henrietta mine. The Silverton Mining Company's plans include the remodeling of its mill into a regular concentrating plant.

King Solomon district.—From the King Solomon section shipments were made from the Dives and the Shenandoah No. 3 mines.

Eureka district.—The Gold King Consolidated Mines Company and the Gold Prince Mines Company each made a large production, but the big Gold Prince mill at Animas Forks was not worked at full capacity during 1907.

Production was also continued by the Sunnyside and Grand Mogul mines in this district. The Hercules mine is developed by 3 tunnels, respectively 2,600 feet, 1,800 feet, and 1,920 feet in length, and by 2 shafts sunk from tunnel levels, and is equipped with a 150-ton amalgamating and concentrating mill. Gold formed the chief value in the ore, but it also contained some silver, copper, and lead values.

The Eureka Exploration Company made shipments of crude copper ore, carrying silver values, from the Silver Wing mine to the smelter at Silverton. The Bonanza King mine reported a small production.

Considerable development work was in progress during 1907 in the Eureka district, and the Astor Mining Company, the Consolidated Eureka Mining and Tunnel Company, and the Tom Moore Mining Company were all actively engaged in opening up their properties. The last concern has acquired a large number of claims, and reports that it has developed bodies of milling ore, and that a 200-ton mill is to be erected.

SAN MIGUEL COUNTY.

Production of gold, silver, and associated metals in San Miguel County, Colo., in 1906 and 1907.

Metal.	1906.		1907.		Increase (+) or decrease (—).	
	Quantity.	Value.	Quantity.	Value.	Quantity.	Value.
Gold.....fine ounces..	118,411.84	$2,447,790	119,366.09	$2,467,[illegible]16	+ 95[illegible]	+$19,726
Silver.....do....	1,672,522	1,120,590	1,438,299	949,277	— [illegible]	—171,313
Copper .....pounds..	70,725	13,650	14,905	2,981	[illegible],820	— 10,669
Lead .....do....	7,158,189	408,017	5,274,641	279,556	—1,883,548	—128,461
Total.....	.....	3,990,047	.....	3,699,330	.....	—290,717

The metal output from San Miguel County in 1907 fell short of the record production of 1906 by $290,717. The mine reports showed decreases in the quantities of all the metals except gold, which made the slight advance of $19,726. The silver production decreased in quantity 234,223 fine ounces, or 14 per cent. The copper output was much smaller than in 1906, and a falling off of 1,883,548 pounds is noted in the lead output for 1907.

With 21 producing mines (the same number as in 1906), the total tonnage increased from 386,735 short tons in 1906 to 407,491 tons in

1907, but the total value per ton, crude, was only $9.08, as compared with $10.31 in 1906 and with $9.58 in 1905.

The siliceous or dry ores amounted to 406,650 short tons, or more than 99 per cent of the entire tonnage, and were the source of practically the entire gold and silver product, as much smaller quantities of precious metals were recovered from lead ores and from placer workings in 1907. Compared with the other counties of Colorado in 1907, San Miguel County ranked second only to Teller County as a gold producer, and third to Teller and Lake counties in the total tonnage mined and in the total value of the metallic output, and third to Lake and Pitkin counties as a silver producer.

Upper San Miguel district.—The production in this district in 1907 was 400,538 tons of ore and $2,385,265 in gold, 1,417,238 fine ounces of silver, 7,565 pounds of copper, and 4,936,170 pounds of lead. The total value of the production was $3,583,772. Three large mines of this district furnished over nine-tenths of the county's total production in 1907.

The Tom Boy Gold Mines Company (Limited) operating the Argentine mine, reported an increased tonnage and content of gold and copper and a greater total value, but the lead and silver values were less than in 1906. The Smuggler-Union Mining Company also reported an increased production, largely from the operations of leases.

At the Liberty Bell mine and mill a greater tonnage of somewhat lower grade ore was mined, and much development work was accomplished by means of a lower tunnel, which is 2,487 feet long, and a 964-foot upraise to the old workings. At the Argentine and the Liberty Bell mines the values are chiefly in gold, but at the Smuggler-Union mine the values are about equally divided between gold and silver.

Continued production was reported from the Alta mine and the Columbia-Menona, which has been included in a consolidation with other properties, by the Mines Finance Company. The Japan-Flora Mines and Tunnel Company also reported production from the Japan mines, which were developed by a 725-foot shaft connecting with a 3,000-foot tunnel.

During 1907 the Black Bear Mining Company built a 612-foot aerial tramway from the mine to the mill and a 5,895-foot tramway from the mill to the railroad at Pandora.

The Mayflower Gold Mining and Reduction Company also did considerable construction work during 1907, including remodeling of the old Alleghany mill, near the Liberty Bell mill, and connecting it with the mine in Gray's Basin by a 2½-mile aerial tramway. The difference in elevation is 3,060 feet, and one span over Bridal Veil Creek is 1,600 feet in length. The Ella Gold Mining Company, the Contention Mining Company, and the Gold King Mining Company reported shipments from this district in 1907.

Iron Springs district.—The value of the metallic product of the Iron Springs district was $61,071 in 1907, and came from 6,597 tons of ore yielding gold, silver, copper, and lead. An increased tonnage and increased gold output were reported, but the silver and lead totals were greatly decreased.

The Buckeye Mining and Leasing Company reported production from the Butterfly-Terrible mine, which is opened by a 3,200-foot tunnel and equipped with a 20-stamp amalgamating and concentrating mill. Shipments of high-grade silver-lead ore were reported

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MINERAL RESOURCES

OF THE

UNITED STATES

CALENDAR YEAR

1908

PART I—METALLIC PRODUCTS

6902

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1909

3.36 was gold; of lead ores, $11.75, of which $2.70 was gold; and f copper-lead ores, $10.70, of which $1.91 was gold.

During 1908 there were treated at gold and silver mills 120,862 ons, and the bullion amounted to $387,459 in gold, an average of 3.21 per ton, and $2,351 in silver, an average of 2 cents per ton, a otal value in gold and silver of $389,810, and an average value of 3.23 per ton. From the ore treated at gold and silver mills, and rom 77,370 tons sent to mills for concentration only, a total of 98,232 tons (97.8 per cent of all the tonnage mined) were produced 7,346 tons of concentrates, valued at $584,759 in gold, an average f $15.66 per ton, and $330,532 in silver, an average of $8.85 per on, a total in gold and silver of $915,291 and an average of $24.51 er ton.

There were produced from the ore to both classes of mills, from oth bullion and concentrates, $972,218 in gold, an average of $4.90 er ton, and $332,883 in silver, an average of $1.68 per ton, a total n gold and silver of $1,305,101, and an average of $6.58 per ton for ll ore milled.

Crude ore shipped to smelters amounted to 4,411 tons, containing 25,606 in gold, and averaging $5.81 per ton; $199,389 in silver, veraging $45.20 per ton—a total in gold and silver of $224,995, and n average of $51.01 per ton.

The average value in 1908 in gold, silver, copper, and lead of the ntire tonnage of 202,643 tons was $10.78, of which $4.92 was for old, $2.63 was for silver, $1.49 was for copper, and $1.74 was for ead.

Mining operations on the part of the regular shipping companies f San Juan County were not as active in 1908 as in 1907. The urning of the Gold King surface buildings in June, 1908, and the recking of the Iowa mill by a snowslide in March lessened the roduction considerably. The Silver Lake mines were worked with reduced force during the latter part of the year. The harsh winter f 1908–1909, with the closing of railroad transportation for some nonths, prevented the shipment of ore and concentrates during that ime. The Ross smelter was closed during the entire year.

That there was considerable progress in the county, notwithstand-ng, is shown by the increase in number of producing mines to 42 n 1908 from 27 in 1907. The production from new shippers was in mall lots taken out in the course of development, and the aggregate lid not greatly increase the output for the county.

Animas district.—There was little development done on the Aspen nine, and only a small tonnage was milled and smelted. The ore was nilled in the plant of the Silver Lake mines. The Garfield Smelting Company, controlling the Silver Lake mines, treated a slightly ncreased tonnage in the 300-ton concentrating plant, which was ompleted in 1907.

The Bullion King Mining Company, with a tunnel 4,000 feet long, f which 1,508 feet were driven in 1908, shipped a small lot of ore for est purposes. The Congress Gold and Copper Company shipped everal cars during the year. The Ross Mining and Milling Company nade two large mill runs. Work was pursued steadily on a crosscut unnel to cut the Champion vein, 550 feet below the present workings. The Hercules Consolidated Mining Company, with a 160-ton concen-rating plant, made a greatly increased output. A smaller tonnage of

ore was treated by the Iowa Gold Mining and Milling Company from the Iowa and Tiger claims. The plant is a 150-ton concentrating mill, with crushers, coarse and fine rolls, jigs, Chile mill for regrinding, Wilfley tables, and a canvas slimes plant. The Iowa mine is developed by a tunnel 1,045 feet long to the shaft, which is 250 feet deep; the Tiger mine by a tunnel 1,340 feet long and a shaft 375 feet deep.

The Hamlet Mining and Milling Company, with a 50-ton concentrating mill, was operated part of the year. Lead-silver ore was shipped by the Little Nations Mining Company and by the Gold Tunnel and Railway Company. The latter company's 100-ton mill was idle the entire year.

The Contention Mining Company's property, under lease, and the mine and mill of the Old Hundred Mining Company, were operated for a part of the year. The latter mine is opened by 3 adit tunnels. The mill has 40 stamps, amalgamating plates, and concentrators. The Pride of the West mine was worked under lease, and ore was shipped. Other small producers were the Ridge, Dewey, Cambria, Ridgway group, and Arpad mines.

King Solomon district.—The operators of the Dives and Shenandoah No. 3 mines continued shipments from this district.

Eureka district.—The production of the Gold King Consolidated Mines Company, at Gladstone, was below that of 1907. In June, 1908, the upper terminal of the tramway and other surface buildings were burned, and the mill only commenced running in October. The Gold Prince mine and mill were in the hands of a receiver during the entire year and made no production. The Sunnyside Mines and Mill Company made an increased production. The Martin Gold Mining and Power Company, operating the Tom Moore, did considerable development work, and shipped lead-silver and zinc ores during the year. Small shipments were made from the Minnehaha and Tantallon mines.

The Kittimac Mines Company is developed by 2 tunnels, one 1,000 feet long and the other 1,500 feet. The company completed a 100-ton concentrating mill.

SAN MIGUEL COUNTY.

Mine production of gold, silver, and associated metals in San Miguel County, Colo., in 1907 and 1908.

Metal.	1907.		1908.		Increase (+) or decrease (−).	
	Quantity.	Value.	Quantity.	Value.	Quantity.	Value.
Gold.....fine ounces..	119,366.09	$2,467,516	112,116.37	$2,317,651	−7,249.72	−$149,865
Silver.....do....	1,438,299	949,277	1,543,187	817,889	+ 104,888	− 131,388
Copper.....pounds..	14,905	2,981	382,402	50,477	+ 367,497	+ 47,496
Lead.....do....	5,274,641	279,556	5,555,049	233,312	+ 280,408	− 46,244
Zinc.....do....	.....	.....	952,872	44,785	+ 952,872	+ 44,785
	.....	3,699,330	.....	3,464,114	.....	− 235,216

As compared with that of 1907, the metal output of San Miguel County showed an increase in production of all the metals except gold. The total value of the metals produced, however, fell off $235,216.

The total tonnage produced from 25 deep mines was 428,231 short tons, as compared with 407,491 tons from 22 mines in 1907. The average value per ton was $8.08, as compared with $9.08 in 1907, with $10.31 in 1906, and with $9.58 in 1905. The average value per ton in gold in 1908 was $5.41, and in silver, $1.91.

The tonnage of siliceous ore amounted to 419,947 short tons, being 98 per cent of the entire tonnage. Practically all the gold and silver produced came from this class of ore. The tonnage of lead ores was 3,171 tons, and of copper ores, 113 tons.

San Miguel County in 1908 ranked second to Teller County in tonnage mined and in value of gold produced. In silver yield San Miguel was second, with Lake County first. In total value of metals produced, San Miguel County stood third, with Teller first, and Lake County second.

During 1908 there were treated at gold and silver mills (including amalgamation and cyanide mills) 419,220 short tons, or 98 per cent of all the tonnage mined; and the bullion was valued at $1,769,597 in gold, an average of $4.22 per ton, and $118,282 in silver, or an average of 28 cents per ton, a total value in gold and silver of $1,887,879, or an average value of $4.50 per ton. Therefore 60 per cent of the gold and silver produced in the county, from all sources, was recovered as bullion. From the ore treated in gold and silver mills, and from 7,640 tons sent to mills for concentration only, a total of 426,860 short tons, or 99.6 per cent of the total tonnage, there were produced 48,625 tons of concentrates, valued at $534,977 in gold, an average of $11 per ton, and $648,827 in silver, an average per ton of $13.34, a total in gold and silver of $1,183,804, and an average of $24.34 per ton.

There were produced from all milling ore $2,304,574 in gold, from both bullion and concentrates, an average of $5.40 per ton, and $767,109 in silver, or an average of $1.80 per ton, a total in gold and silver of $3,071,683, and an average of $7.20 per ton for all ore milled.

Crude ore to smelters amounted to 1,371 tons, containing $10,185 in gold, averaging $7.43 per ton; $50,744 in silver, averaging $37.01 per ton, a total in gold and silver of $60,929, and an average of $44.44 per ton.

Upper San Miguel district.—The output from this district in 1908 was 400,303 tons of ore, and $2,175,796 in gold, 1,426,458 fine ounces of silver, 333,958 pounds of copper, 4,497,029 pounds of lead, and 952,872 pounds of zinc. The total value of the production was $3,209,561. The three large mines of this district furnished over 90 per cent of the total production of the county, as was the case in 1907.

The Tom Boy Gold Mines Company (Limited) made an increased production in every metal except gold. Zinc was produced for the first time by this company. The equipment of the company's 300-ton milling plant consists of 60 stamps with plate amalgamation, twelve 6-foot Frue vanners, 15 Wilfley tables, and a roasting and magnetic separation plant.

The Smuggler-Union Mining Company increased its production over that of 1907. This company has one 80-stamp mill, and one 30-stamp mill, each with bumping tables, vanners, and concentrators, and has also 1 cyanide plant, and a canvas plant. The workings consist of 7,700 feet of tunnel, 1 shaft 670 feet deep, and another shaft 445 feet deep.

The Liberty Bell Gold Mining Company also made an increased output. The mine is opened by an adit 3,000 feet long. About 4,000 feet of drifting, 210 feet of sinking, and 2,500 feet of raising constitute the development work for 1908. The equipment of the plant consists of an 80-stamp mill, 3 tube mills for regrinding, settlers, agitators, vacuum filters, and concentrators.

The Black Bear Mining Company ran its 20-stamp concentrating mill from April throughout the year. The shaft on the mine is down 300 feet and there is an adit of 460 feet. The Gold King Consolidated mine was worked intermittently by lessees. The Contention mine was operated one month. The Kitty Mack mine was worked during part of the year. Ore from the Nellie mine was treated in the 10-stamp amalgamation mill on the property. Some ore was shipped from the Silver Chief mine. The small amalgamating plant on the Thomas property was operated for a short time. Development work on the Japan-Flora mines was reported, but the 40-ton concentration mill was not run. Development work was done on the Columbia and Champion mines by the Iowa Gold Mining Company. This company has a 20-stamp amalgamation and concentration mill.

Iron Springs district.—From this district, near Ames and Ophir, an increased tonnage was mined in 1908. From 27,086 tons were produced $128,095 in gold, 105,279 ounces of silver, 41,611 pounds of copper, and 912,765 pounds of lead, with a total value of $227,722. This was an increase, as compared with 1907, of $166,651.

The Buckeye Mining and Leasing Company, operating the Butterfly-Terrible property, ran the mill during the entire year. An increased tonnage of lead-silver ore was shipped by the Carbonero Mines and Reduction Company, and a large tonnage was treated by the Yellow Mountain Mining Company. Other producers were the New Dominion Gold Mining Company, Suffolk Mining and Milling Company, and Massachusetts-Nevada Mining Company.

Lower San Miguel district.—This district, near Sawpit, made a small though slightly increased output in 1908. The producers were the National Mining and Milling Company and the Lizzie G. mine.

Mount Wilson district.—Lead-silver ore was shipped from the Morning Star mine, and the Mount Wilson Gold and Silver Mining Company produced concentrates in the 10-stamp concentration mill, the chief metal of which was gold. The production from these two mines made an increased output for the district as compared with 1907.

SUMMIT COUNTY.

Mine production of gold, silver, and associated metals in Summit County, Colo., in 1907 and 1908.

Metal.	1907.		1908.		Increase (+) or decrease (−).	
	Quantity.	Value.	Quantity.	Value.	Quantity.	Value.
Gold.....fine ounces..	5,156.29	$106,590	9,043.27	$186,941	+ 3,886.98	+$80,351
Silver.....do....	125,847	83,059	66,025	34,993	− 59,822	− 48,066
Copper.....pounds..	21,865	4,373	28,523	3,765	+ 6,658	− 608
Lead.....do....	1,915,133	101,502	1,719,190	72,206	− 195,943	− 29,296
Zinc.....do....	3,026,627	178,571	1,232,149	57,911	−1,794,478	−120,660
	.....	474,095	.....	355,816	.....	−118,279

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DEPARTMENT OF THE INTERIOR

UNITED STATES GEOLOGICAL SURVEY

GEORGE OTIS SMITH, DIRECTOR

U.S. Bureau of Mines

MINERAL RESOURCES

OF THE

UNITED STATES

CALENDAR YEAR

1909

PART I—METALS

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1911

Animas district.—The mines of this district are at or near Silverton. The principal producers being the Hercules and the Iowa and Gold Tiger. Next in point of tonnage were the Silver Lakes mines, whose ore was treated in a 300-ton concentration plant. The Dives and Shenandoah mines and the Highland Mary group produced a considerable tonnage of lead and copper ores carrying gold and silver. Other large tonnages were from the Aspen, North Star group, Old Hundred group, and Silver Queen mines.

The Champion group, Columbus, Esmeralda, Joe and John, Little Maud, Pride of the West, and Trilby group were also producers of importance. Small shipments were made from the Black Prince, Brooklyn, Gold Bug, Little Maud, Queen City, St. Paul group, Silver Star, and other mines.

Eureka district.—There were several producers in this district credited with large tonnages in 1909. These were the Kittimac mines, equipped with a 50-ton concentration mill; the Gold King group, with an 80-stamp, 300-ton amalgamation and concentration mill; the Gold Prince group, with a 100-stamp, 350-ton amalgamation and concentration mill; and the Sunnyside group, with a 40-stamp, 125-ton amalgamation and concentration mill. There was also a small production from the Sound Democrat mine and other mines.

SAN MIGUEL COUNTY.

Mine production of gold, silver, and associated metals in San Miguel County, Colo., in 1908 and 1909.

Metal.	1908.		1909.		Increase (+) or decrease (−).	
	Quantity.	Value.	Quantity.	Value.	Quantity.	Value.
Gold.....fine ounces..	112,116.37	$2,317,651	110,539.34	$2,285,051	− 1,577.03	−$32,600
Silver.....do....	1,543,187	817,889	1,344.152	698,959	− 199,035	−118,930
Copper.....pounds..	382,402	50,477	501,285	65,167	+ 118,883	+ 14,690
Lead.....do....	5,555,049	233,312	4,941,370	212,479	− 613,679	− 20,833
Zinc.....do....	952,872	44,785	804,296	43,432	− 148,576	− 1,353
Total.....	.....	3,464,114	.....	3,305,088	.....	−159,026

The total value of the metallic production of San Miguel County in 1909 was $3,305,088, a decrease of $159,026. The decreases were in gold, silver, lead, and zinc. The lessened output from the Ophir (or Iron Springs) district and the Mount Wilson district caused the decrease in gold, silver, and lead, the zinc output coming from the Upper San Miguel district alone.

The output from 39 deep mines was 423,609 short tons, as compared with 428,231 tons from 25 mines in 1908. The average value per ton was $7.80, as compared with $8.08 in 1908, with $9.08 in 1907, with $10.31 in 1906, and with $9.58 in 1905. The average value per ton in gold in 1909 was $5.39 and in silver $1.65.

The tonnage of siliceous ore amounted to 420,625 short tons, being 99.29 per cent of the entire tonnage. Practically all the gold and silver produced came from this class of ore. The output of lead ores was 1,254 tons, of copper ores 19 tons, and of copper-lead ores 1,711 tons.

San Miguel County in 1909 ranked second to Teller County in tonnage mined, and third after Ouray and Teller in value of gold

produced. In silver yield San Miguel was again second, with Lak County first. In total value of metals produced San Miguel Count stood fourth, with Teller first, Lake second, and Ouray third.

During 1909 there were treated at amalgamation and cyanide mill 402,114 short tons, or 94.9 per cent of all the tonnage mined; an the bullion was valued at $1,659,383 in gold, an average of $4.12 per ton, and $98,566 in silver, or an average of $0.245 per ton, a tota value in gold and silver of $1,757,949, or an average value of $4.37 per ton, as compared with $4.50 per ton in 1908. Therefore 59 pe cent of the gold and silver produced in the county from all source was recovered as bullion. From the ore treated at amalgamatio and cyanide mills, and from 19,024 tons sent to mills for concentra tion or separation only, a total of 421,138 short tons, or 99.4 pe cent of the total tonnage, there were produced 23,156 tons of con centrates, valued at $570,374 in gold, an average of $24.63 per ton and $571,015 in silver, an average of $24.66 per ton, a total in gol and silver of $1,141,389, and an average of $49.29 per ton, as com pared with $24.34 per ton in 1908; there were also recovered from th concentrates 357,452 pounds of copper, valued at $46,469, or a average of 0.77 per cent, and an average value of $2.007 per ton 3,928,973 pounds of lead, valued at $168,946, or an average of 8.4 per cent, and an average value of $7.30 per ton; and 804,296 pound of zinc, valued at $43,432, or an average of 1.74 per cent, and a average value of $1.876 per ton; a total average value for the con centrates of $60.47 per ton.

There were produced from all milling ore—421,138 tons—$2,229,75 in gold, from both bullion and concentrates, an average of $5.29 pe ton, and $669,581 in silver, or an average of $1.59 per ton, a total i gold and silver of $2,899,338, and an average of $6.88 per ton; an also copper, lead, and zinc, with a combined value of $258,847, or a average of $0.62 per ton; a total average recovered value for all mil ing ore in gold, silver, copper, lead, and zinc of $7.50 per ton.

Crude ore to smelters amounted to 2,471 tons and contained $54,85 in gold, averaging $22.20 per ton; $29,376 in silver, averaging $11.8 per ton, a total in gold and silver of $84,230, and an average per to of $34.09; and also contained 143,833 pounds of copper, averagin 2.91 per cent, and 1,012,397 pounds of lead, averaging 20.49 per cent with a combined value for the two base metals of $62,231, an averag value of $25.18 per ton—a total average value for the ore smelted c $59.27 per ton.

Upper San Miguel district.—The output from this district in 190 was 395,462 tons of ore, and $2,200,883 in gold, 1,298,183 fine ounce of silver, 488,715 pounds of copper, 4,528,950 pounds of lead, an 804,296 pounds of zinc. The total value of the production wa $3,177,648, as compared with $3,209,561 in 1908. Three large con panies of this district furnished over 90 per cent of the total produc tion, as in 1908 and 1907.

From the Argentine group of the Tom Boy Gold Mines Compan (Limited) about the same tonnage was treated as in 1908. Zinc wa again produced, the first recovery of this metal by this compan being in 1908. The equipment of the 350-ton milling plant consist of 60 stamps with amalgamation plates, Frue vanners, Wilfley table and a roasting and magnetic separation plant. The output of th Smuggler-Union mines was somewhat less than in 1908. The equip

ment includes one 80-stamp mill and one 60-stamp mill, each with bumping tables, vanners and concentrators, and also one cyanide plant and a canvas plant. The Liberty Bell mine produced an increased tonnage in 1909. The equipment includes an 80-stamp 400-ton mill, tube mills for regrinding, settlers, agitators, vacuum filters, and concentrators. From the Alta mines a large tonnage was treated in the 100-ton concentration plant on the property, and concentrates were shipped to the Durango smelter.

The 20-stamp amalgamation and concentration plant of the Black Bear group was operated for a short time. Lessees on the Manuel, Nellie, and Silver Chief mines and the Ella Gold Mining Company produced considerable bullion, and bullion and crude ore were shipped from the Contention group. Ore and concentrates were shipped from the Japan-Flora mine and from the 40-ton concentrating plant on the property. Bullion was produced from ore from the Mammoth mines, and several cars of lead ore were shipped from the Lewis mine.

Iron Springs district.—An increased tonnage but a decreased output of metals was made from this district, near Ames and Ophir, in 1909. From 27,995 tons were produced $81,205 in gold, 43,764 ounces of silver, 10,921 pounds of copper, and 399,605 pounds of lead, with a total value of $122,565, as compared with $227,722 in 1908.

There were 15 producing mines in this district, as against 6 in 1908. The Butterfly-Terrible property produced an increased tonnage in 1909, all of which was treated in the company's amalgamation and concentration mill. Ore from the Caribou mine was treated in the company's 20-stamp 60-ton concentration mill. Lead ore was shipped from the Carbonero group. The Favorite mine produced bullion and concentrates from the 20-stamp 50-ton amalgamation and concentration plant, and crude ore and concentrates were shipped from the New Dominion mines. Lessees on the various mines of the Suffolk Mining and Milling Company also shipped bullion and concentrates. Among other producing mines were the Crown Point and the Waterfall.

Lower San Miguel district.—The total metallic production from this district near Sawpit was valued at $3,769, as compared with $14,161 in 1908, from the Lizzie G. and other mines.

Mount Wilson district.—There were small shipments of ore from the Morning Star and the S. B. Kendrick mines in this district in 1909.

SUMMIT COUNTY.

Mine production of gold, silver, and associated metals in Summit County, Colo., in 1908 and 1909.

Metal.	1908.		1909.		Increase (+) or decrease (−).	
	Quantity.	Value.	Quantity.	Value.	Quantity.	Value.
Gold ..... fine ounces..	9,043.27	$186,941	21,902.56	$452,766	+12,859.29	+$265,825
Silver ..... do....	66,025	34,993	99,763	51,877	+ 33,738	+ 16,884
Copper ..... pounds..	28,523	3,765	3,839	499	− 24,684	− 3,266
Lead. ..... do....	1,719,190	72,206	3,559,278	153,049	+1,840,088	+ 80,843
Zinc ..... do....	1,232,149	57,911	5,798,167	313,101	+4,566,018	+ 255,190
Total.	.....	355,816	.....	971,292	.....	+ 615,476

Summit County is the foremost placer producing area in Colorad and in 1909, as in 1908, the production of zinc was second only that of Lake County. There was a large increase in output of zi for 1909. There were increases also in the yield of all the oth metals except copper, the output of which was small.

There were 27 producing deep mines in 1909, as compared with in 1908, and the tonnage sold or treated was 31,098 tons, as compar with 14,631 tons in 1908 and with 25,127 in 1907. There were placer mines, 1 operated by sluicing and drifting, and 4 dredges.

There was an increase in output of gold from both deep and plac mines. The increase in gold from deep mines was only $5,835, b that from placer mines was $259,990, the placer output being almo three times as great as in 1908. The increase in silver from de mines was 30,049 ounces and from placers 3,689 ounces. The silv from deep mines was chiefly from lead-zinc, zinc, and lead ores, the being a decrease in silver from the dry ores of the county.

Breckenridge district.—Breckenridge district includes Bevan, Mi nesota, and Union districts.

In the Bevan district the value of the metallic production in gol silver, copper, lead, and zinc, from deep and placer mines w $793,291, as compared with $114,539 in 1908. A considerable to nage of zinc ore (carrying a high per cent of zinc) was shipped fro the Country Boy mine direct to the smelters. The Wellington min were the chief producing deep mines, with a large increase in tonna in 1909, most of which was treated at the company's 75-ton concentra ing mill. The equipment of this mill consists of crusher, rolls, jig and concentrating tables. Zinc ore was shipped from the Sall Barber mine and lead ore from the Dunkin mine. Among other pr ducing deep mines in this district were the Old Union and t Standard.

In this district also are the placer properties of the Reliance Go Dredging Company and of the French Gulch Dredging Compan both of whose dredges were operated, with notable increases in ou put. The Reliance dredge is of the double lift, open-connected typ with buckets of 9 cubic feet capacity. The Colorado Gold Dredgi Company operated 2 dredges, 1 in Blue River and 1 in Swan Rive in the Union district. These dredges are of the Bucyrus, open-co nected type, with buckets of 9½ cubic feet capacity. All the dredg are run by electricity.

In the Minnesota district there were 7 producing deep mines, t principal ones being the Blue Flag and the Hamilton. Among oth producing mines were the Carbonate, Gold-Dust-Puzzle, Silver Kin and Washington.

Consolidated Ten Mile district.—This district includes Frisc Kokomo, and Robinson. The total production in gold, silver, co per, and lead was $21,028, as compared with $79,020 in 1908. T only mines from which considerable tonnages were shipped we the Michigan and the Pearl. Among other producing propert were the Roswell, Sprague, the Mayflower, and the Queen of t West mines.

The International Mining Company, at Robinson, did not produc in 1909, confining its operations to development and the building a concentration mill.

Snake River (Argentine, Montezuma, and Peru) district.—The Silve King, Silver Wave, and Silver Wing mines produced ore that w

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U.S. Bureau of Mines

MINERAL RESOURCES

OF THE

UNITED STATES

CALENDAR YEAR

1910

PART I—METALS

6912

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1911

SAN MIGUEL COUNTY.

Mine production of gold, silver, copper, lead, and zinc in San Miguel County, Colo., in 1909 and 1910.

Metal.	1909		1910		Increase (+) or decrease (−).	
	Quantity.	Value.	Quantity.	Value.	Quantity.	Value.
Gold.....fine ounces..	110,539.34	$2,285,051	120,685.61	$2,494,793	+10,146.27	+$209,742
Silver.....do....	1,344,152	698,959	1,144,050	617,787	− 200,102	− 81,172
Copper.....pounds..	501,285	65,167	544,189	69,112	+ 42,904	+ 3,945
Lead.....do....	4,941,370	212,479	7,791,841	342,841	+2,850,471	+ 130,362
Zinc.....do....	804,296	43,432	2,193,981	118,475	+1,389,685	+ 75,043
Total.....	.....	3,305,088	.....	3,643,008	.....	+ 337,920

The total value of the metallic production of San Miguel County in 1910 was $3,643,008, an increase of $337,920. There were increased tonnages mined in all the districts except the Mount Wilson district, from which there was no production as against a small yield in 1909. With the exception of a material decrease of silver and a nominal decrease of copper in the Upper San Miguel district, there were increases of metallic contents in all the districts in which ore was mined.

The output from 43 deep mines was 481,000 short tons, as compared with 423,609 tons from 39 mines in 1909. The average value per ton in 1910 was $7.57, as compared with $7.80 in 1909, with $8.08 in 1908, with $9.08 in 1907, with $10.31 in 1906, and with $9.58 in 1905. The average value per ton in gold in 1910 was $5.19 and in silver $1.28.

The tonnage of siliceous ore produced amounted to 471,849, being 98 per cent of the entire output. Practically all the gold and silver produced came from this class of ore. The output of lead ores was 1,123 tons, of copper ores 24 tons, and of lead-zinc ores 8,004 tons.

San Miguel County again ranked second to Teller in tonnage mined, and ranked second to Teller in value of gold produced. In silver yield San Miguel County also maintained second place, with Lake County leading. In total value of metals produced San Miguel stood third, with Teller first and Lake second, while Ouray fell from third to fourth place.

During 1910 there were treated at amalgamation and cyanide mills 452,240 short tons, or 94 per cent of all the tonnage mined; and the bullion yielded $1,803,041 in gold, an average of $3.99 per ton, and 304,723 ounces of silver, valued at $164,550, or an average of $0.36 per ton, a total value in gold and silver of $1,967,591, or an average value of $4.35 per ton, as compared with $4.37 in 1909 and with $4.50 in 1908. Therefore, 63 per cent of the gold and silver produced in the county from all sources was recovered as bullion. From the ore treated at amalgamation and cyanide mills, and from 27,364 tons sent to mills for concentration or separation only, a total of 479,604 short tons, or 99.7 per cent of the total tonnage, there were produced 32,251 tons of concentrates, valued at $682,851 in gold, an average of $21.173 per ton, and 781,995 ounces of silver, valued at $422,277, an average of $13.093 per ton, a total in gold

and silver of $1,105,128, and an average of $34.27 per ton, as compared with $49.29 per ton in 1909 and with $24.34 in 1908. There were also recovered from the concentrates 529,633 pounds of copper, valued at $67,263, or an average of 0.82 per cent, and an average value of $2.09 per ton; 7,292,248 pounds of lead, valued at $320,859, or an average of 11.3 per cent, and an average value of $9.95 per ton; and 2,193,981 pounds of zinc, valued at $118,475, or an average of 3.4 per cent, and an average value of $3.67 per ton, a total average value for the concentrates of $49.98 per ton.

There were produced from all milling ore—479,604 tons—$2,485,892 in gold, from both bullion and concentrates, an average of $5.183 per ton, and 1,086,717 ounces of silver, valued at $586,827, or an average of $1.224 per ton, a total in gold and silver of $3,072,719, and an average of $6.407 per ton; and also copper, lead, and zinc, with a combined value of $506,597, or an average of $1.056 per ton, a total average recovered value for all milling ore in gold, silver, copper, lead, and zinc of $7.463 per ton.

Crude ore shipped to smelters amounted to 1,396 tons and contained $8,901 in gold, averaging $6.38 per ton; 57,333 ounces of silver, valued at $30,960, averaging $22.18 per ton, a total in gold and silver of $39,861, and an average value per ton of $28.56; and also contained 14,556 pounds of copper, averaging 0.52 per cent, and 499,593 pounds of lead, averaging 17.89 per cent, with a combined value for the two base metals of $23,831, an average value of $17.07 per ton—a total average value for the ore smelted of $45.63 per ton.

Crude ore and concentrates combined shipped to smelters amounted to 33,647 tons, containing $691,752 in gold, an average of $20.56 per ton; 839,328 fine ounces of silver, valued at $453,237, an average of $13.47 per ton; and in base metals 544,189 pounds of copper, 7,791,841 pounds of lead, and 2,193,981 pounds of zinc, the three metals valued at $530,428, or an average of $15.76 per ton—a total average value of $49.79 per ton.

Upper San Miguel district.—The output from this district in 1910 was 429,231 tons of ore, and $2,294,542 in gold, 992,452 fine ounces of silver, 488,196 pounds of copper, 6,607,352 pounds of lead, and 2,193,981 pounds of zinc. The total value of the production was $3,301,665, as compared with $3,177,648 in 1909, and $3,209,561 in 1908. Three large companies, the Liberty Bell, the Smuggler Union, and the Tomboy mines, furnished over 95 per cent of the tonnage and considerably over 90 per cent of the total production of the district, as in 1909, 1908, and 1907.

From the Argentine mine of the Tomboy Gold Mines Co. (Ltd.) a larger tonnage was treated than in 1909. The 350-ton reduction plant comprises 60 stamps with amalgamation plates, Frue vanners, Wilfley tables, and a roasting and magnetic separation plant, the latter for the removal of iron sulphides from the zinc concentrate. For the year ending June 30, 1911, the company reports that 110,560 tons was sent to the mill, as compared with 102,000 tons the year before. By amalgamation and cyaniding, bullion worth $488,304 was saved, as compared with $487,486; the dressing plant produced lead and zinc concentrates that sold for $328,060, as compared with $332,970. * * * During the year 3,555 feet of development was done, and on June 30 the reserve was estimated * * * at 444,600 tons, as compared with 400,000 tons a year ago. The con-

centrating plant has been improved in several points of detail, with the result that a larger amount of ore can now be treated and cleaner lead and zinc concentrates obtained.[1]

The tonnage output from the Smuggler-Union mines also increased in 1910. The ore is mainly sulphide with siliceous gangue and the process of treatment at this property is crushing by stamps, amalgamation, concentration, and cyaniding of the sands in the tailings. The plant includes one 80-stamp mill and one 60-stamp mill, with a capacity of 600 tons daily, 1 cyanide plant, and 1 canvas plant. The Liberty Bell mine also produced an increased tonnage in 1910. The ore from this mine is both sulphide and oxidized (chiefly sulphide), and the process of treatment is crushing in cyanide solution, amalgamation, concentration, settling, filtering, and precipitation by zinc. The annual report of the Liberty Bell Co. for the year ended September 30, 1910, shows that during the year, from its mine at Telluride, Colo., there were 133,899 tons of ore milled, from which were recovered in mill bullion $511,410, cyanide products worth $318,045, and concentrate (2,503 tons) to the value of $125,498, other incidental receipts making a total of $988,604. The recovery of gold was 57 per cent in mill bullion, 8 per cent in concentrate, 28 per cent in cyanide products, a total of 93 per cent recovery, with a loss of 7 per cent in tailing. The total recovery of silver contents was 60 per cent.[2]

From the Black Bear mine there was milled in the 20-stamp amalgamation and concentration plant a considerable tonnage of ore, which carried gold, silver, copper, lead, and zinc, the value of the product being chiefly in lead and zinc in concentrates, although the gold recovered on the plates and in concentrates was about equal to the gross value of the zinc recovered. Bullion and concentrates were produced from the Contention mine and bullion from the Gold King. Crude ore and concentrates were shipped from the Japan-Flora group mines and from the 45-ton concentrating plant on the property. Lead concentrates from one month's operation of the 50-ton concentrating plant of the Lewis mine were sent to smelter. Other producing mines were the Bear Creek, Columbia, Humboldt, Kitty Mack, La Junta, Modena, and Nellie.

Iron Springs district.—This district embraces the mines near Ames and Ophir. An increased tonnage and increased yield of metals was made in 1910. From 51,019 tons were recovered $159,332 in gold, 148,986 ounces of silver, 54,400 pounds of copper, and 1,172,181 pounds of lead, with a total value of $298,269, as compared with $122,565 in 1909.

There were 17 producing mines in this district, as against 15 in 1909. A large tonnage from the Alta mines was treated at the 150-ton concentration plant on the property. An increased tonnage from the Butterfly-Terrible mines was treated in the company's amalgamation and concentration mill. Increased shipments of lead ore were made from the Carbonero group. A small tonnage was produced from the Carribeau mine. The output from the Favorite mine was crude lead ore, and bullion and lead concentrates from the 20-stamp, 50-ton amalgamation and concentration plant. Bullion was shipped from the Suffolk mill.

Lower San Miguel district.—The total metallic yield from this district near Sawpit and Placerville was valued at $17,388, as compared with $3,769 in 1909, and with $14,161 in 1908. Lead ore was shipped from the Gertrude and Noon mines, and ore carrying chiefly gold and silver was shipped from the Lizzie G. mine. Milling ore from the Florence L., the Golden Rose, and the Thomas group mines was treated in small plants.

[1] Min. Mag. (London), October, 1910, p. 296.
[2] Min. and Sci. Press, May 27, 1911, p. 742.

Mount Wilson district.—No output was made from the mines of this district.

SUMMIT COUNTY.

Mine production of gold, silver, copper, lead, zinc, and associated metals in Summit County, Colo., in 1909 and 1910.

Metal.	1909		1910		Increase (+) or decrease (−).	
	Quantity.	Value.	Quantity.	Value.	Quantity.	Value.
Gold ..... fine ounces..	21,902.56	$452,766	17,839.05	$368,766	− 4,063.51	−$84,000
Silver ..... do....	99,763	51,877	152,250	82,215	+ 52,487	+ 30,338
Copper ..... pounds..	3,839	499	21,740	2,761	+ 17,901	+ 2,262
Lead ..... do....	3,559,278	153,049	5,015,409	220,678	+1,456,131	+ 67,629
Zinc ..... do....	5,798,167	313,101	5,542,685	299,305	− 255,482	− 13,796
Total	.....	971,292	.....	973,725	.....	+ 2,433

Summit County is the foremost placer producing area in Colorado, and in 1910, as in 1909 and 1908, the production of zinc was second only to that of Lake County. There was a decrease in the production of gold in 1910, both from placers and deep mines, and there was also a decreased yield of zinc.

There were 20 producing deep mines in 1910, as compared with 27 in 1909, and the tonnage sold or treated was 47,040 tons, as compared with 31,098 in 1909, with 14,631 in 1908, and with 25,127 tons in 1907. There were 9 placer mines, 1 operated by drifting and hydraulicking, 1 by hydraulicking, and 3 by sluicing; and there were 4 dredges.

There was a decrease in output of gold in 1910 from deep mines of $25,844, and from placer mines of $58,156, making a total decrease in gold of $84,000. The output of silver from deep mines showed an increase of 53,321 ounces, while that from placer mines decreased 834 ounces. The silver from deep mines was from lead-zinc, siliceous, lead, and copper-lead ores, there being no silver reported from zinc ores in 1910.

Breckenridge district.[1]—Breckenridge district includes Bevan, Minnesota, and Union districts, and includes the mines near Breckenridge, on French Gulch and on Blue and Swan rivers, and includes all the placers of the county. The value of the total output of gold, silver, copper, lead, and zinc from both deep and placer mines was $755,356, or almost 78 per cent of the county yield.

In the Bevan district the chief property is the Wellington mines. An increased tonnage of lead-zinc and zinc ore was mined, the greater part of which was milled at the company's 100-ton wet-concentration mill, yielding a shipping product of a lead concentrate, a zinc concentrate, and a zinc middling. Much of the zinc middling was

[1] See Ransome, F. L., Geology and ore deposits of the Breckenridge district, Colo.: Prof. Paper U. S. Geol. Survey No. 75, 1911.

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1911

PART I—METALS

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The milling ore averaged in value of recovered metals $2.98 per ton in gold, $1.03 in silver, and $4.46 in copper, lead, and zinc, a total of $8.47, as against $7.91 in 1910. Crude ore shipped to smelter—1,919 tons—averaged per ton $10.29 in gold, $32.72 in silver, and $12.66 in copper and lead, a total of $55.67 per ton, as compared with $62.32 per ton in 1910.

The value in 1911 in gold, silver, copper, lead, and zinc of the entire tonnage averaged $9.31 per ton, of which $3.11 was for gold, $1.60 for silver, $0.54 for copper, $2.89 for lead, and $1.17 for zinc.

Animas district (including the mines in the immediate vicinity of Silverton, and south and east of Animas River from Silverton to Middleton).—There were 25 producing mines in the Animas district in 1911, as compared with 37 in 1910. The Iowa-Gold Tiger group was the largest producer in 1911, the bulk of the ore being treated by concentration only. The second largest tonnage was from the Silver Lake mines, the bulk of this tonnage also being concentrated. A greatly decreased tonnage from the Hercules property was treated by amalgamation and concentration. Ore from the Intersection mine was treated by amalgamation and concentration, and ore from the North Star and the Old Green Mountain group mines was treated by concentration only. Lead ore was shipped from the Aspen and Dives mines, and copper-lead ore from the Highland Mary mine. Small shipments were made from the Big Giant, Brooklyn, Buffalo Boy, Champion, Kansas City, Queen City, Shenandoah, Slide, and other mines.

From the district there was sold or treated in 1911 a total of 34,849 tons of ore, from which were recovered $116,408 in gold, 184,736 ounces of silver, 330,175 pounds of copper, 3,032,488 pounds of lead, and 38,214 pounds of zinc, valued at $394,230, as compared with $964,987 in 1910.

Eureka district (north of Silverton, including Chattanooga, Gladstone, Animas Forks, and Eureka).—There were 12 producing mines in the Eureka district in 1911, as against 16 in 1910. Nearly all the ore in this district is milled. A large and increased tonnage was milled in the Sunnyside mill, which recovered about 60 per cent of the gold and a small quantity of silver on the amalgamating plates, the remainder being recovered as lead and lead-zinc concentrates. A zinc middling is also made, which was stored in 1911. In 1912 a new zinc plant was built, utilizing the Huff electrostatic machine. Lessees operating the Gold King mine and amalgamation and concentration mill marketed bullion and concentrates. Ore from the Silver Ledge mine, at Chattanooga, chiefly valuable for its lead and zinc contents, was treated by concentration only, the product being lead and lead-zinc concentrates. Ore of similar character, from the Bonanza mine, was also treated by concentration. Small outputs were made from the Esmeralda, Joe and John, Kittimac, Paris, and San Juan Queen mines.

From this district there were sold or treated in 1911 a total of 73,239 tons of ore, from which were recovered $219,826 in gold, 140,862 ounces of silver, 140,737 pounds of copper, 3,901,334 pounds of lead, and 2,186,137 pounds of zinc, valued at $612,245, as compared with $779,016 in 1910.

SAN MIGUEL COUNTY.

Mine production of gold, silver, copper, lead, and zinc in San Miguel County, Colo., in 1910 and 1911.

Metal.	1910		1911		Increase (+) or decrease (−).	
	Quantity.	Value.	Quantity.	Value.	Quantity.	Value.
Gold.....fine ounces..	120,685.61	$2,494,793	118,414.31	$2,447,841	− 2,271.30	−$46,952
Silver.....do....	1,144,050	617,787	1,000,834	530,442	− 143,216	− 87,345
Copper.....pounds..	544,189	69,112	971,064	121,383	+ 426,875	+ 52,271
Lead.....do....	7,791,841	342,841	6,456,333	290,535	−1,335,508	− 52,306
Zinc.....do....	2,193,981	118,475	3,386,088	193,007	+1,192,107	+ 74,532
Total.....	.....	3,643,008	.....	3,583,208	.....	− 59,800

The value of the metallic production of San Miguel County in 1911 was $3,583,208, a decrease, as compared with the yield in 1910, of $59,800, but an increase, as compared with the output of 1909, of $278,120. The Upper San Miguel district showed a small increase in total value of output in 1911, but the Iron Springs and Lower San Miguel districts showed decreases.

The output from 28 mines was 429,354 tons of ore, as compared with 481,000 tons from 43 mines in 1910. The average value per ton in 1911 was $8.35, as compared with $7.57 in 1910, with $7.80 in 1909, with $8.08 in 1908, with $9.08 in 1907, with $10.31 in 1906, and with $9.58 in 1905. In 1911 the average content per ton in gold was $5.70 and 2.33 ounces of silver, as compared with $5.19 in gold and 2.38 ounces of silver in 1910.

The siliceous ore produced amounted to 428,043 tons, being 99.7 per cent of the entire output. Practically all the gold and the bulk of the silver came from this class of ore. The output of lead ores was 1,306 tons.

San Miguel County in 1911, in quantity of output, fell slightly behind Lake County, which was second to Teller County. In gold yield, San Miguel County maintained its place as second to Teller, and in silver, held second place after Lake County. In value of metals produced, San Miguel stood third, with Teller first, Lake second, and Ouray fourth.

During 1911 there were treated at amalgamation and cyanide mills 390,568 short tons of ore, or 91 per cent of all the ore mined; an average per ton of $4.83 in gold and $0.43 in silver was saved as bullion. The gold and silver saved as bullion in 1911 represented 69 per cent of the gold and silver produced in the county.

There were 37,438 tons of ore sent to mills for concentration only, a total of 428,006 tons milled (99.7 per cent of all the ore mined), which yielded 25,994 tons of concentrates, averaging $21.62 in gold, $11.94 in silver, $4.59 in copper, $9.94 in lead, and $7.42 in zinc, a total per ton of $55.51, as compared with $49.98 in 1910.

Milling ore averaged $5.71 in gold, $1.12 in silver, and $1.34 in copper, lead, and zinc, a total of $8.17 per ton, as compared with $7.46 per ton in 1910.

Crude ore shipped to smelters—1,348 tons—averaged $1.66 in gold, $37.42 in silver, $1.51 in copper, $23.90 in lead, or $64.49 per ton, as compared with $45.63 in 1910.

Crude ore and concentrates combined shipped to smelters averaged $20.63 in gold, $13.20 in silver, and $22.12 in copper, lead, and zinc, or $55.95 per ton, as compared with $49.79 in 1910.

Upper San Miguel district.—The output from the Upper San Miguel district in 1911 was 382,858 tons of ore, yielding $2,331,398 in gold, 836,357 ounces of silver, 923,412 pounds of copper, 5,334,067 pounds of lead, and 3,386,088 pounds of zinc, valued at $3,323,133, as compared with $3,301,665 in 1910, with $3,177,648 in 1909, and with $3,209,561 in 1908. Three large companies, the Liberty Bell, the Smuggler Union, and the Tomboy, furnished over 95 per cent of the ore, over 95 per cent of the gold and silver, 78 per cent of the copper, 92 per cent of the lead, and over 96 per cent of the zinc of the total production of the district.

The output from the Argentine mine, of the Tomboy Gold Mines Co. (Ltd.) was not quite so large as in 1910, but the contents recovered were greater for all the metals except lead. The magnetic plant for the removal of the iron from the zinc concentrates from the wet mill was not operated, the zinc concentrates being shipped to Pueblo.

The report of the Tomboy Co. for the year ending June 30, 1911, is almost identical with those of the preceding two years. The ore raised amounted to 116,222 tons, yielding bullion valued at $462,773, and concentrate valued at $350,141, the total value being $781,324.

The * * * manager * * * reports the ore reserve on June 30, 1911, at 427,000 tons, as compared with 444,600 tons in 1910, and he mentions that almost all the stopes have continued to disclose profitable ore. An important step was taken since the conclusion of the year under review, in July last, when the southern portion of the Revenue Tunnel Co.'s property was acquired for $400,000. This piece of property has only been intermittently worked by the Revenue Co., owing to the natural disadvantage of its being on the other side of the divide to the main portion. Its position is favorable to exploitation by the Tomboy Co. At the present time a line is being built to facilitate the transport of ore to the Tomboy mill.[1]

To prove the mine in depth, the shaft was sunk to the 2,100-foot level. For at least 100 feet at that level, states the report, the vein has maintained its average width and grade. No important changes have been made in the plant and equipment, except certain alterations incident to the gradual increasing of the concentrating plant's capacity.[2]

The Liberty Bell mine and mill were actively operated. The Smuggler Union mines and amalgamation, concentration, and cyanide mills were steadily operated. Experiments in 1911 with the cyanide agitation and filter process resulted in the construction of a new cyanide plant in 1912. Ore from the Black Bear mine was treated by amalgamation and concentration, the product being gold-silver bullion and lead and lead-zinc concentrates. The Japan-Flora concentration mill was operated for several months during 1911, the product being lead and zinc concentrates. An appreciable tonnage from the Junta mine was treated by amalgamation in a Denver quartz mill. An increased tonnage of lead concentrates was the product from the mill of the Lewis mine. Other producing mines were the Ballard, Bear, Cimarron, Contention, Gold King, Kitty Mack, La Junta, Mammoth, and Nellie.

Iron Springs (Ames and Ophir) district.—The Iron Springs district in 1911 produced 46,416 short tons of ore, yielding $115,609 in gold, 164,381 ounces of silver, 47,652 pounds of copper, and 1,122,266

[1] Min. Mag. (London), December, 1911, p. 475. [2] Min. and Sci. Press, Dec. 30, 1911, p. 853.

pounds of lead, valued at $259,190, as compared with $298,269 in 1910 and with $122,565 in 1909. There was a decrease in the yield of all the metals, except silver.

There were 9 producing mines as against 17 in 1910. An increased output from the Alta mines was treated by concentration, the product being lead concentrates, carrying appreciable quantities of gold and silver, and some copper. The output from the Butterfly-Terrible mines sent to the company's amalgamation and concentration mill also increased. Increased shipments of lead ore were made from the Carbonero group. Lessees on the Carribeau mine shipped an increased quantity of ore to the company's concentration plant. The Favorite mine was operated for two months only in 1911, resulting in a decreased output, sent to a custom amalgamation and concentration mill. A small tonnage was treated in the Lake Superior-Ophir amalgamation and concentration mill. Lead ore was shipped from the San Bernardo group. The Suffolk mill was operated for a short time. Experimental tests with the cyanide process on ores from the Suffolk group in 1911 resulted in the introduction in 1912 of the process, including sliming and agitation and continuous decantation.

Lower San Miguel (Sawpit and Placerville) district.—A small quantity of gold-silver bullion was marketed from the treatment of ore from the Golden Rose mine.

SUMMIT COUNTY.

Mine production of gold, silver, copper, lead, and zinc in Summit County, Colo., in 1910 and 1911.

Metal.	1910		1911		Increase (+) or decrease (−).	
	Quantity.	Value.	Quantity.	Value.	Quantity.	Value.
Gold.....fine ounces..	17,839.05	$368,766	13,750.16	$284,241	− 4,088.89	−$84,525
Silver.....do....	152,250	82,215	182,957	96,967	+ 30,707	+ 14,752
Copper.....pounds..	21,740	2,761	22,888	2,861	+ 1,148	+ 100
Lead.....do....	5,015,409	220,678	6,024,867	271,119	+1,009,458	+ 50,441
Zinc.....do....	5,542,685	299,305	7,675,175	437,485	+2,132,490	+138,180
Total.....	.....	973,725	.....	1,092,673	.....	+118,948

Summit County is the foremost placer area in Colorado, and in 1911, as in 1910, 1909, and 1908, the production of zinc was second to that of Lake County. There was a decrease in the production of gold in 1911 from placers, and an increase from deep mines, and there was an increased yield of zinc.

There were 35 producing deep mines in 1911, as compared with 20 in 1910, and the ore sold or treated was 55,904 tons, as compared with 47,040 tons in 1910. There were 9 placer mines, 1 operated by drifting and hydraulicking, 2 by hydraulicking, and 3 by sluicing; and there were 3 operating dredges.

There was in increase in the output of gold in 1911, from deep mines, of $5,257, and a decrease from placer mines of $89,782, making a total decrease in gold of $84,525. The output of silver from deep mines increased 31,832 ounces, while that from placer mines decreased

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mills for concentration only, a total of 134,296 tons (95.3 per cent of all the ore mined) yielding 20,693 tons of concentrates averaging $17.39 per ton in gold, 14 ounces of silver, and also copper, lead, and zinc, with a total gross value per ton of $55.85. Crude ore shipped to smelters—6,621 tons—averaged per ton $10.18 in gold, 64 ounces of silver, and $21.13 for copper, lead, and zinc, a total of $70.67, as compared with $55.67 in 1911.

Animas district (including the mines in the immediate vicinity of Silverton, and south and east of Animas River from Silverton to Middleton).—This district in 1912 produced 58,176 tons of ore, yielding $114,567 in gold, 530,753 ounces of silver, 591,992 pounds of copper, 4,280,176 pounds of lead, and 126,053 pounds of zinc, with a total value of $739,965, as against $394,230 in 1911.

There were 26 producing mines in the Animas district, as compared with 25 in 1911. The principal producing mine in 1912 was again the Iowa-Gold Tiger group, with an output entirely in lead concentrates. The second largest output was from the Silver Lake mines, the bulk of the ore also being concentrated into lead concentrates. Ore from the Intersection mine was treated by amalgamation and concentration, and ore from the Old Green Mountain mine was concentrated. Ore from the Aspen mine was concentrated or shipped to smelters. Lead ore from the Dives, and copper-lead ores from the Highland Mary mine, were shipped to smelters. Small shipments were made from the Alice, Bonner, Brooklyn, Buffalo Boy, Champion, Kansas City, Kittimac, North Star, Pokeepsie, Potomac, Queen City, Shenandoah, and other mines.

Eureka district (north of Silverton, including Chattanooga, Gladstone, Animas Forks, Eureka).—This district in 1912 produced 82,585 short tons of ore, yielding $388,166 in gold, 179,368 ounces of silver, 469,540 pounds of copper, 4,806,639 pounds of lead, and 2,352,541 pounds of zinc, with a total value of $954,575, as compared with $612,245 in 1911.

There were 15 producing mines in 1912, as against 12 in 1911. Nearly all the ore of this district was milled. The largest tonnage in the district was mined at the Sunnyside mine, and milled at the Sunnyside mill, where over one-half of the recovered gold and a small quantity of silver were recovered on the amalgamating plates, the remainder of the product being lead and lead-zinc concentrates and iron-zinc middlings. In 1912, the Huff electrostatic separating machine was installed for separating the iron from the zinc in the zinc middlings.[1] A large and increased output was mined from the Gold King mine, by lessees. The bulk of this ore was concentrated and a small part sent to smelters. Lead and zinc concentrates were the product from the concentration of ore from the Silver Ledge mine, at Chattanooga. Lead-zinc ore and lead-zinc concentrates were marketed from the Vermilion mine. Copper-lead ore was shipped from the Congress mine. Other producing mines were the Esmeralda, Bagley tunnel, Joe and John, San Juan Queen, Scotia, and Silver Doctor.

[1] For description, see Eng. and Min. Jour., July 20, 1912, p. 105.

SAN MIGUEL COUNTY.[1]

Production of gold, silver, copper, lead, and zinc in San Miguel County, Colo., 1904–1912.

Year.	Number of producing mines.	Tonnage.	Gold.[a]	Silver.[a]	Copper.	Lead.	Zinc.	Total value.	Average value per ton.
		Short tons.		*Fine ozs.*	*Pounds.*	*Pounds.*	*Pounds.*		
1904	25	231,316	$1,728,838	1,329,184	245,709	6,184,375	.....	$2,791,077	$11.77
1905	19	291,338	1,711,853	1,275,079	17,721	6,970,152	.....	2,812,362	9.58
1906	21	386,735	2,447,790	1,672,522	70,725	7,158,189	.....	3,990,047	10.31
1907	29	407,491	2,467,516	1,438,299	14,905	5,274,641	.....	3,699,330	9.08
1908	26	428,231	2,317,651	1,543,187	382,402	5,555,049	952,872	3,464,114	8.08
1909	40	423,609	2,285,051	1,344,152	501,285	4,941,370	804,296	3,305,088	7.80
1910	43	481,000	2,494,793	1,144,050	544,189	7,791,841	2,193,981	3,643,008	7.57
1911	28	429,354	2,447,841	1,000,834	971,064	6,456,333	3,386,088	3,583,208	8.35
1912	26	455,692	2,399,234	1,153,709	845,497	7,429,622	2,943,783	3,785,726	8.31
Increase (+) or decrease (—).	—2	+26,338	—48,607	+152,875	—125,567	+973,289	—442,305	+202,518	—.04

[a] Includes placer production.

The value of the metallic production of San Miguel County in 1912 was $3,785,726, of which $2,399,234 was for gold, $709,531 for silver, $139,507 for copper, $334,333 for lead, and $203,121 for zinc. All the districts showed an increase in total value of output.

In point of tonnage mined in 1912, San Miguel County stood third after Teller and Lake. In gold yield, San Miguel maintained its place as second to Teller, and in silver, held second place after Lake County. In total gross value of metals produced, San Miguel stood third, with Lake first, Teller second, and San Juan fourth.

During 1912 there were treated at amalgamation and cyanide mills 418,886 short tons of ore, or 92 per cent of all the ore mined; and an average of $3.58 in gold and 0.73 ounce of silver per ton was saved as bullion. The gold saved as bullion in 1912 represented 63 per cent of the gold produced in the county, and the silver in bullion represented 26 per cent of the county silver output.

There were 35,600 tons of ore sent to mills for concentration only, a total of 454,486 tons milled (99.7 per cent of all the ore mined), which yielded 31,154 tons of concentrates, averaging $28.65 in gold, $16.43 in silver, and $20.79 in copper, lead, and zinc, a total per ton of $65.87, as compared with $55.51 in 1911.

Crude ore to smelters—1,210 tons—averaged $5.18 in gold and 58.3 ounces silver per ton, and 0.5 per cent copper and 24.8 per cent lead, with a total value per ton of $65.17, as compared with $64.49 in 1911.

Upper San Miguel district.—The Upper San Miguel district in 1912 produced 403,806 tons of ore, yielding $2,275,883 in gold, 987,204 ounces of silver, 786,829 pounds of copper, 6,255,953 pounds of lead, and 2,943,783 pounds of zinc, with a total value of $3,497,479, as compared with $3,323,133 in 1911. Three large companies, the Liberty Bell, the Smuggler Union, and the Tomboy, furnished more than 90 per cent of the total output.

[1] Hess, F. L., Notes on the vanadium deposits near Placerville, Colo.: Bull. U. S. Geol. Survey No. 530, 1912, pp. 142–156.

The yield from the Argentine-Montana mine of the Tomboy Gold Mines Co. (Ltd.) was larger than in 1911, with increased metal content of all the metals except zinc. The annual report for the year ending June 30, 1912, states:

> That 107,577 tons of ore were milled, of which 21,702 tons came from the Montana and the remainder from the Argentine mine. The recovery of metals was worth $954,981, the cost of mining, treatment, etc., was $504,040, and the profit $450,941. An increasing proportion of the precious metals is now being recovered in concentrates, of which several are produced, varying in lead, zinc, and iron content. The new concentration plant has been erected * * *. The 21,702 tons (from the Montana) sent to the mill averaged $10.50 in gold and silver * * *. The reserve at the Argentine group is 340,000 tons, that at the Montana 150,000 tons.[1]

The Liberty Bell mine and mill[2] were actively operated. Early in 1913 this company installed a plant for cyanidation of concentrates by fine grinding and agitation by Dorr continuous decantation wash.

The Smuggler Union mines and amalgamation, concentration, and cyanide mills were steadily operated. One of the mills (the 60-stamp) was remodeled and a slimes plant added to the cyanide plant.[3]

Lead ore from the Lewis mine was concentrated. Ore from the Cimarron mine was treated by amalgamation and concentration. Ore from the Wasatch-Orion group of the Junta Co. was treated in a small amalgamation-concentration mill, but a new 300-ton cyanidation plant is in prospect. A small tonnage from the Ballard mine was treated at the Junta mill. Ore from the Nellie mine was treated by amalgamation and concentration.

Iron Springs (Ames and Ophir) district.—The Iron Springs district in 1912 produced 51,763 tons of ore, yielding $122,154 in gold, 166,006 ounces of silver, 58,362 pounds of copper, 1,157,455 pounds of lead, with a total value of $285,963, as compared with $259,190 in 1911.

There were 11 producing mines in the district, as against 9 in 1911. An increased output from the Alta mines was treated by concentration, the product being lead concentrates, carrying appreciable quantities of gold and silver and some copper. Lead ore continued to be shipped from the Carbonero group. The yield in bullion and concentrates from the Butterfly-Terrible mines and amalgamation-concentration mill showed little change.[4] The Favorite mine was operated for several months, the ore being sent to a custom amalgamation-concentration mill. Development work was continued on the Lake Superior-Ophir group and a considerable quantity of ore was milled. The Suffolk[5] amalgamation-concentration mill was remodeled to a cyanide mill in 1912 and an increased tonnage treated. Lead ore was shipped from the San Bernardo mine.

[1] Min. Mag. (London), November, 1912, p. 388. See also Eng. and Min. Jour., Dec. 7, 1912, p. 1088.
[2] Megraw, Herbert A., Cyanidation at the Liberty Bell mill: Eng. and Min. Jour., Jan. 4, 1913, pp. 9-14. Also, Cost of milling at the Liberty Bell: Metall. and Chem. Eng., January, 1913, pp. 49-50.
[3] For brief sketch of changes, see Min. and Sci. Press, Jan. 4, 1913, p. 74.
[4] For report of operations for year ending Mar. 31, 1912, see Eng. and Min. Jour., Sept. 14, 1912, p. 497.
[5] See Parmelee, H. C., Cyaniding slimy ore by continuous decantation: Metall. and Chem. Eng., January, 1913, pp. 25-28. See also Min. Mag. (London), February, 1913, p. 144.

Lower San Miguel (Sawpit and Placerville) district.—A small quantity of gold-silver bullion was marketed from the treatment of ore from the Golden Rose mine, and a small shipment of ore was made from the Lizzie G mine.

Mount Wilson district.—A shipment of lead ore was made from the Morning Star mine.

SUMMIT COUNTY.

Production of gold, silver, copper, lead, and zinc in Summit County, Colo., 1904–1912.

Year.	Number of producing mines.	Tonnage.	Gold.[a]	Silver.[a]	Copper.	Lead.	Zinc.	Total value.	Average value per ton.
		Short tons.		*Fine ounces.*	*Pounds.*	*Pounds.*	*Pounds.*		
1904	37	35,475	$202,443	292,149	.....	5,592,140	2,512,778	$739,995	$18.20
1905	34	36,930	157,476	209,356	.....	2,181,660	3,320,237	582,359	14.85
1906	39	34,050	139,773	107,752	27,120	1,301,912	2,942,983	470,932	12.25
1907	39	25,127	106,590	125,847	21,865	1,915,133	3,026,627	474,095	17.37
1908	28	14,631	186,941	66,025	28,523	1,719,190	1,232,149	355,816	14.42
1909	32	31,098	452,766	99,763	3,839	3,559,278	5,798,167	971,292	18.11
1910	29	47,040	368,766	152,250	21,740	5,015,409	5,542,685	973,725	13.27
1911	44	55,904	284,241	182,957	22,888	6,024,867	7,675,175	1,092,673	14.91
1912	39	46,606	426,015	164,665	16,412	4,402,422	9,342,725	1,372,749	20.96
Increase (+) or decrease (−).	−5	−9,298	+141,774	−18,292	−6,476	−1,622,445	+1,667,550	+280,076	+6.05

[a] Includes placer production.

Summit County deep mines in 1912 produced 46,606 short tons of ore, yielding $33,276 in gold; silver, valued at $98,310; copper, at $2,708; lead, at $198,109, and zinc, at $644,648, a total of $977,051, as compared with $833,466 in 1911, an increase for 1912 of $143,585. Dredges and other placer operations yielded $392,739 in gold and 4,812 ounces of silver, valued at $2,959, a total of $395,698, as against $257,422 in gold and 3,368 ounces of silver, a total value of $259,207 in 1911.

Summit County is the foremost placer area in Colorado and in production of zinc ranks second to Lake County.

Breckenridge district.—Breckenridge district includes Bevan, Minnesota, and Union districts; includes the mines near Breckenridge, on French Gulch, and on Blue and Swan rivers; and includes all the placers of the county. The value of the total output of gold, silver, copper, lead, and zinc, from both deep and placer mines, was $1,250,544, or 91 per cent of the county yield, and an increase for 1912 of $385,413, as compared with the yield in 1911.

The principal producing property in this district is the Wellington mines. A large and increased quantity of lead-zinc ore was milled at the company's 100-ton wet concentration mill, lead and zinc concentrates being shipped. In addition, in 1912, a considerable quantity of zinc middlings from former years' operations, as well as from 1912 operations, were treated in the company's new roasting and magnetic separation plant[1] completed early in 1912. Lead

[1] For description of magnetic plant, see Parmelee, H. C., Zinc ore dressing in Colorado: Metall. and Chem. Eng., September, 1912, pp. 527-528.

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of copper, 5,774,530 pounds of lead, and 217,574 pounds of zinc, with a total value of $915,208, as compared with $739,965 in 1912.

There were 26 producing mines in 1913, the same as in 1912. The principal producing mines in the district were the Iowa-Gold Tiger group and the Silver Lake mines. The Silver Lake mines were operated on company account for three months only, when the mines were leased. Most of the ore was milled, producing lead and zinc concentrates, but a considerable tonnage was shipped crude to the smelter. The output of the Iowa-Gold Tiger mine was milled, lead concentrates being produced. Lead ore from the Dives and copper-lead from the Highland Mary mine were shipped to smelters. Ore from the Intersection mine was treated by amalgamation and concentration. Other producing mines were the Aspen, Bandora, Big Three, Bonner, Green Mountain, Kansas City, Mayflower, North Star, Pride of the West, and Shenandoah.

Eureka district (north of Silverton, including Chattanooga, Gladstone, Animas Forks, Eureka).—This district in 1913 produced 87,076 short tons of ore, yielding $510,662 in gold, 179,308 ounces of silver, 714,872 pounds of copper, 3,734,449 pounds of lead, and 1,447,425 pounds of zinc, with a total value of $975,141, as against $954,575 in 1912. There were 12 producing mines in 1913, against 15 in 1912. An increased tonnage was milled at the Sunnyside mill, by amalgamation, concentration, and electrostatic separation. Lessees on the Gold King mine operated 40 of the 80 stamps continuously, with an increased yield of concentrates. The tonnage of lead-zinc ore from the Silver Ledge mine, at Chattanooga, treated by concentration, fell off heavily. Some copper ore was shipped from this mine. Copper-lead ore was shipped from the Congress mine. A large tonnage of lead-zinc ore from the Frisco tunnel property was concentrated. Other producing mines were the Hematite, Joe and John, Scotia, and Silver Doctor.

SAN MIGUEL COUNTY.[a]

Production of gold, silver, copper, lead, and zinc in San Miguel County, Colo.,[a] 1904–1913.

Year.	Number of producing mines.	Tonnage.	Gold.[b]	Silver.[b]	Copper.	Lead.	Zinc.	Total value.	Average value per ton.
		Short tons.		*Fine ozs.*	*Pounds.*	*Pounds.*	*Pounds.*		
1904	25	231,316	$1,728,838	1,329,184	245,709	6,184,375	.....	$2,791,077	$11.77
1905	19	291,338	1,711,853	1,275,079	17,721	6,970,152	.....	2,812,362	9.58
1906	21	386,735	2,447,790	1,672,522	70,725	7,158,189	.....	3,990,047	10.31
1907	29	407,491	2,467,516	1,438,299	14,905	5,274,641	.....	3,699,330	9.08
1908	26	428,231	2,317,651	1,543,187	382,402	5,555,049	952,872	3,464,114	8.08
1909	40	423,609	2,285,051	1,344,152	501,285	4,941,370	804,296	3,305,088	7.80
1910	43	481,000	2,494,793	1,144,050	544,189	7,791,841	2,193,981	3,643,008	7.57
1911	28	429,354	2,447,841	1,000,834	971,064	6,456,333	3,336,088	3,583,208	8.35
1912	26	455,692	2,399,234	1,153,709	845,497	7,429,622	2,943,783	3,785,726	8.31
1913	27	509,175	2,129,371	1,051,096	736,374	6,967,136	2,405,750	3,319,647	6.52
Increase (+) or decrease (−).	+1	+53,483	−269,863	−103,613	−109,123	−462,486	−538,033	−466,079	−1.79

[a] For discussion of geology see Purington, C. W., Preliminary report on the mining industries of the Telluride quadrangle, Colo.: U. S. Geol. Survey, Eighteenth Ann. Rept., pt. 3, pp. 745–850, 1898. Cross, Whitman, and Purington, C. W., U. S. Geol. Survey, Geol. Atlas, Telluride folio (No. 57), 1899. Hess, F. L., Notes on the vanadium deposits near Placerville, Colo.: U. S. Geol. Survey Bull. 530, pp. 142–156, 1912.

[b] Includes placer production.

The value of the metallic production of San Miguel County in 1913 was $3,319,647, of which $2,129,371 was for gold, $634,862 for silver, $114,138 for copper, $306,554 for lead, and $134,722 for zinc.

In gold yield, San Miguel maintained its place as second to Teller, and in silver, held second place after Lake. In total gross value of metals produced, San Miguel stood third, with Teller first, Lake second, and San Juan fourth.

During 1913 there were treated at amalgamation and cyanide mills 480,609 short tons of ore, or 94 per cent of all the ore mined; and an average of $2.71 in gold and 0.78 ounce of silver per ton was saved as bullion. The gold saved as bullion in 1913 represented 61 per cent of the gold produced in the county, and the silver in bullion represented 36 per cent of the county silver output.

There were 27,659 tons of ore sent to mills for concentration only, a total of 508,268 tons milled (99.8 per cent of all the ore mined), which yielded 31,330 tons of concentrates, averaging $26.38 in gold, 19.84 ounces of silver, and $17.14 in copper, lead, and zinc, a total of $55.51, as compared with $65.87 in 1912.

Crude ore to smelters—907 tons—averaged $1.84 in gold, 57.8 ounces of silver per ton, and 0.24 per cent copper and 22.26 per cent lead.

Upper San Miguel district.—The Upper San Miguel district in 1913 produced 484,595 tons of ore, yielding $2,039,203 in gold, 993,923 ounces of silver, 731,498 pounds of copper, 6,557,560 pounds of lead, and 2,405,750 pounds of zinc, with a total value of $3,176,129, as compared with $3,497,479 in 1912. Three large companies, the Liberty Bell, the Smuggler Union, and the Tomboy, furnished more than 90 per cent of the total output.

The annual report for the Tomboy Gold Mines Co. (Ltd.) for the year ending June 30, 1913, states:

> The company milled 129,618 dry tons of ore, yielding an average of $8.02 per ton. Receipts, by bullion, produced $2.76 per ton. Concentrates produced, $5.26 per ton, total receipts, $8.09 per ton; expenditures, total working cost, $4.39 per ton, total cost of production, $4.88 per ton. The Montana mine, recently purchased, furnished 41 per cent of the ore milled. The average content of the ore from this mine was as follows: Gold, 0.48 ounce; silver, 4.51 ounces; lead, 1.03 per cent; zinc, 2.18 per cent; iron, 4.13 per cent; copper, 0.28 per cent.
>
> The increase in tonnage for the year was brought about by the use of coarser screens in the batteries, and the regrinding of that portion of the pulp that is sent to the middlings mill, by two Hardinge conical mills. This has decreased the recovery of free gold by amalgamation, and to remedy this this company is contemplating installing two additional Hardinge mills below the batteries. Recent experiments have been made with flotation and electrostatic processes. These tests were still in progress and indicated that a better recovery could be made on the zinc-middlings product. The ore reserves are estimated at 426,000 tons, 264,000 tons in the Argentine group and 162,000 tons in the Montana group.[1]

The Liberty Bell mine and 80 stamp, 500-ton, amalgamation, concentration, and cyanidation mill were actively operated. In May, 1913, this company completed the installation of additional equipment for cyanidation of concentrates by fine grinding and agitation by Dorr continuous decantation wash. For five months of the year concentrates were sold to smelters, and for seven months treated at the mill. The ore is partly oxidized and partly sulphide, with siliceous and calcareous gangue, oxidation extending to 2,300 to 2,400 feet and continuing in lower levels.

[1] See Eng. and Min. Jour., Jan. 3, 1914, p. 31; Min. Mag. (London), November, 1913, p. 21, adv. section.

The Smuggler Union mines and 140 stamps, 500-ton amalgamation, concentration, and cyanidation mill were steadily operated.

Ore from the Ballard mine was treated by amalgamation and concentration in the 10-stamp, 25-ton mill completed December, 1913. Ore from the Cimarron mine was treated by amalgamation and concentration. Ore from the Nellie mine was treated by amalgamation in the small mill on the property. The Alta mine and concentration mill were operated continuously. A 200-ton cyanidation plant [1] was completed at the property of the Junta Consolidated Gold Mining Co.

Iron Springs (Ames and Ophir) district.—The Iron Springs district in 1913 produced 23,972 tons of ore, yielding $83,985 in gold, 56,083 ounces of silver, 4,608 pounds of copper, and 375,507 pounds of lead, with a total value of $135,095.

There were 12 producing mines in the district. Crude ore to smelters was shipped from the Baltimore, Bottoms, Carbonero, Oro Cashier, and Parsons mines. The Butterfly-Terrible mine and mill were operated the greater part of the year. A small tonnage from the Carribeau mine was concentrated. Ore from the Little Mary mine was treated by amalgamation. A small tonnage from the Lake Superior-Ophir mine was treated by amalgamation and concentration. A considerable tonnage from the Suffolk and other mines of the Ophir Gold Mines Co. was treated by cyanidation.[2] Lead ore and lead concentrates were shipped to smelter from the San Bernardo mine and mill.

Lower San Miguel (Sawpit and Placerville) district.—Bullion was marketed from the treatment of ore from the Golden Rose mine.

Mount Wilson district.—Lead ore was shipped from the Morning Star mine and a small quantity of bullion was recovered from specimens from the Orion mine.

SUMMIT COUNTY.

Production of gold, silver, copper, lead, and zinc in Summit County, Colo., 1904–1913.

Year.	Number of producing mines.	Tonnage.	Gold.		Silver.[a]	Copper.	Lead.	Zinc.	Total value.	Average value per ton.
			Placers.	Deep.						
		Short tons.			*Fine ounces.*	*Pounds.*	*Pounds.*	*Pounds.*		
1904	37	35,475	$94,240	$108,203	202,149	.....	5,592,140	2,512,778	$739,995	$18.20
1905	34	36,930	33,728	123,748	209,356	.....	2,181,660	3,320,237	582,359	14.85
1906	39	34,050	53,199	86,574	107,752	27,120	1,301,912	2,942,983	470,932	12.25
1907	39	25,127	37,214	69,376	125,847	21,865	1,015,133	3,026,627	474,095	17.37
1908	28	14,631	145,370	41,571	66,025	28,523	1,719,190	1,232,149	355,816	14.42
1909	32	31,098	405,360	47,406	99,763	3,839	3,559,278	5,798,167	971,292	18.11
1910	29	47,040	347,204	21,562	152,250	21,740	5,015,409	5,542,685	973,725	13.27
1911	44	55,904	257,422	26,819	182,957	22,888	6,024,867	7,675,175	1,092,673	14.91
1912	39	46,606	392,730	33,276	164,665	16,412	4,402,422	9,342,725	1,372,749	20.96
1913	45	40,360	386,196	76,032	167,490	18,170	3,944,268	6,931,074	1,127,896	18.31
Increase (+) or decrease (−)	+6	−6,246	−6,543	+42,756	+2,825	+1,758	−458,154	−2,411,651	−244,853	−2.65

[a] Includes placer production.

Summit County deep mines in 1913 produced 40,360 tons of ore, yielding $76,032 in gold; silver valued at $98,519; copper, at $2,816;

[1] For description of plant see Eng. and Min. Jour., Feb. 7, 1914, p. 343.
[2] For description of process see Parmelee, H. C., Cyaniding slimy ore by continuous decantation: Metal. and Chem. Eng., January, 1913, pp. 25–28; see also Min. Mag. (London), February, 1913, p. 144.

lead, at $173,548; and zinc, at $388,140—a total of $739,055, as compared with $977,051 in 1912. Dredges and other placer operations yielded $386,196 in gold and 4,379 ounces of silver, valued at $2,645, a total of $388,841, against $392,739 in gold and 4,812 ounces of silver, a total value of $395,698 in 1912.

Summit County is the principal placer producing county in Colorado, and in production of zinc ranks second to Lake County.

Breckenridge district.[1]—Breckenridge district includes Bevan, Minnesota, and Union districts; includes the mines near Breckenridge, on French Gulch, and on Blue and Swan rivers; and includes all the placers in the county. The value of the total output of gold, silver, copper, lead, and zinc from both deep and placer mines was $1,018,465, or 90 per cent of the county yield, and a decrease for 1913 of $232,079, as compared with the yield in 1912, but an increase of $153,334 as compared with the yield in 1911.

The principal producing property is the Wellington mines. The production in 1913 was not equal to that of 1912 because in June the 100-ton wet-concentration mill was closed, although the roasting and magnetic separation mill [2] was operated all year on zinc middlings from former years' operations.

A small tonnage of lead ore from the Monte Cristo mine was treated in the company's 60-ton concentration plant. Lead-zinc ore was shipped from the Bullion King mine. An increased tonnage from the Laurium (or Blue Flag) mine was concentrated at the company's mill. Zinc sulphide of good grade was shipped from the Country Boy mine. A considerable quantity of metallic gold was recovered from pockets in the Dunkin mine, from which also an appreciable tonnage of lead ore was shipped. A considerable tonnage of lead ore was shipped from the Lucky and Standard mines. Other producing mines were the Brooks Snyder, Congress, Dreadnaught, Germania, Iowa, Montana, and Washington.

Only 3 of the 4 dredges in the district were operated in 1913. The Reliance dredge, in French Gulch, is of the double-lift, open-connected type, with buckets of a capacity of 9 cubic feet. The French Gulch Dredging Co., or Reiling dredge, is of the Bucyrus type. Only 1 of the 2 dredges of the Colorado Gold Dredging Co. was operated in 1913, and one of the dredges was partly dismantled. Both dredges are of the Bucyrus open-connected type, with buckets of a capacity of 9½ cubic feet.

The Washington placer was operated by hydraulicking, the Snyder placer by drifting and hydraulicking, and the Mekka by hydraulicking.

Consolidated Tenmile [3] district (Frisco, Kokomo, and Robinson).—This district in 1913, from 14 mines, produced 3,409 short tons of ore, yielding $13,671 in gold, 25,926 ounces of silver, 3,667 pounds of copper, 664,221 pounds of lead, and 265,632 pounds of zinc, with a total value of $73,999, as compared with $109,414 in 1912. The Robinson mine and roasting, magnetic separator, and wet-concentration mill [4] were idle.

[1] For discussion of the geology of the district see Ransome, F. L., Geology and ore deposits of the Breckenridge district, Colorado: U. S. Geol. Survey Prof. Paper 75, 1911.
[2] For description of magnetic plant see Parmelee, H. C., Zinc ore dressing in Colorado: Metal. and Chem. Eng., September, 1912, pp. 525–528.
[3] For discussion of geology see Emmons, S. F., U. S. Geol. Survey Geol. Atlas, Tenmile district special folio (No. 48), 1898.
[4] For description of mill see Parmelee, H. C., Zinc ore dressing in Colorado: Metal. and Chem. Eng., February, 1911, pp. 91–96.

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MINERAL RESOURCES

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1914

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PART I—METALS

H. D. McCASKEY, Geologist in Charge

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SAN MIGUEL COUNTY.[1]

Mine production of gold, silver, copper, lead, and zinc in San Miguel County, Colo., in 1913 and 1914.

Year.	Number of producing mines.	Ore.	Gold.	Silver.	Copper.	Lead.	Zinc.	Total value.
		Short tons.		*Fine oz.*	*Pounds.*	*Pounds.*	*Pounds.*	
1913	27	509,175	$2,129,371	1,051,096	736,374	6,967,136	2,405,750	$3,319,647
1914	25	495,742	2,114,916	1,280,461	324,105	4,039,769	.....	3,023,668
Increase (+) or decrease (−).	−2	−13,433	−14,455	+229,365	−412,269	−2,927,367	−2,405,750	−295,979

The value of the metallic production of San Miguel County in 1914 was $3,023,668, of which $2,114,916 was for gold, $708,095 for silver, $43,106 for copper, and $157,551 for lead.

In gold yield, San Miguel maintained its place as second to Teller, and in silver, held second place after Lake County. In total gross value of metals produced San Miguel stood third, with Teller first, Lake second, and Ouray fourth.

During 1914, of the 495,742 tons mined, there were treated at amalgamation and cyanidation mills, most of which also had concentration equipment, 476,240 tons of ore, or 96 per cent of all the ore mined; and an average of $2.98 in gold and 1.26 ounces silver per ton was saved as bullion or as cyanide precipitates. The gold saved as bullion in 1914 represented 67 per cent of the gold produced in the county, and the silver in bullion represented 47 per cent of the county silver output.

There were 19,901 tons of ore sent to mills for concentration only, making a total of 495,331 tons milled (99.92 per cent of all the ore mined), which yielded 26,576 tons of concentrates, averaging $26.04 in gold and 25.16 ounces of silver per ton, and 0.61 per cent of copper and 7.40 per cent of lead, with a total gross value of $47.34, as compared with $55.51 in 1913.

Crude ore sent to smelters—411 tons—averaged $5.895 in gold and 32.82 ounces of silver per ton, and 0.30 per cent copper and 12.85 per cent lead.

Upper San Miguel district.—The Upper San Miguel district in 1914 produced 472,444 tons of ore, yielding $2,051,271 in gold, 1,261,611 ounces of silver, 321,607 pounds of copper, and 3,929,613 pounds of lead, with a total gross value of $2,944,971, as compared with $3,176,129 in 1913. Three large companies, the Liberty Bell, the Smuggler Union, and the Tomboy, furnished over 90 per cent of the total output.

The annual report for the Tomboy Gold Mines Co. (Ltd.) for the year ending June 30, 1914, states:

At the Argentine claims, development was limited to the south end of the mine near manway 119 on the 2,100-foot level. At 60 feet above the level a drift opened 3 feet of ore containing considerable lead and zinc, but only $3 to $4 per ton in gold and silver. The winze from this level, started in 1911, is down to 2,200 feet, and the vein

[1] For discussion of geology see Purington, C. W., Preliminary report on the mining industries of the Telluride quadrangle, Colo.: U. S. Geol. Survey Eighteenth Ann. Rept., pt. 3, pp. 745-850, 1898. Cross, Whitman, and Purington, C. W., U. S. Geol. Survey Geol. Atlas, Telluride folio (No. 57), 1899. Hess, F. L., Notes on the vanadium deposits near Placerville, Colo.: U. S. Geol. Survey Bull. 530, pp. 142-156, 1912.

is being opened. So far it is about the same value as at 2,100 feet. Owing to a cave-in in the upper portion of the mine, it was necessary to draw all ore above the 500-foot level in one area, while the remainder of the stopes above 500 feet will be drawn during the current year. Pillars of ore supporting the level will be mined and dropped to 650-foot level stopes. Reserves in the Argentine mine amount to 215,000 tons, of which 190,000 tons is broken in stopes. In the Montana mine, reserves are estimated at 237,000 tons, 137,000 tons being in stopes. Development in this area during the year was 4,816 feet. Work at 1,450 feet and the Fortuna level has shown a shoot totaling 2,500 feet in length. Ventilation of the mine has been improved greatly. The aerial tramway worked successfully, only being interrupted by a snowslide which wrecked the Midway tension station and two towers below it. The profit was $40,000, and adding that of the last five months of the previous financial year, the total was $59,000, or $8,000 over the cost of erection.

Ore sent to the mill consisted of 80 per cent Montana and 20 per cent Argentine product, against 41 and 59 per cent, respectively, last year. There was a decrease in concentrate output, as the Montana ore contains less sulphides. This eliminated recovery of zinc middling as a concentrate product, and consequently experiments with flotation and electrostatic processes were abandoned. As the result of tests * * * Tomboy ores were proved to be amenable to cyanidation. A 400-ton plant was planned, and in the middle of August, 1914, erection of the building was well underway. The mill treated 137,456 tons of ore yielding bullion worth $385,612, and concentrate valued at $573,447.[1]

The profit on the ore, excluding depreciation and other receipts, London expense, income tax, etc., was $354,682 from 137,456 tons yielding $6.98 per ton. The operating cost was $4.40 per ton, made up of mining, $1.71; development, $0.79; milling, $0.54; concentrating, including transporting ore to railroad, $0.73; water supply, $0.13; assay office, $0.04; general expense, $0.24; taxes and insurance, $0.22 per ton. Adding depreciation and other expenses deducted by the London office the total cost was $4.48 per ton.[2]

The Tomboy 60-stamp 400-ton amalgamation-concentration mill was operated continuously during the year. The new 400-ton cyanide plant, to treat tailings, was completed and was operated for 21 days in December, 1914.

The 80-stamp 500-ton cyanidation and concentration mill of the Liberty Bell Co. was operated continuously. (Amalgamation was discontinued May, 1914.) The ore is crushed in cyanide solution, agitated, and values are recovered by filtration. The concentrate made is roughly cyanided and concentrate residues are shipped to smelter.

The annual report of the Liberty Bell Gold Mining Co. for the year ended September 30, 1913, states:

	1913	1912	1899-1913
RECEIPTS PER TON OF ORE MILLED.			
Stamp bullion	$2.25	$3.22	$3.87
Cyanide products	2.18	2.77	2.24
Concentrates	.56	.88	.82
Concentrates cyanide bullion	.25	.....	.03
Slag	.....	.....	.01
Total ore proceeds	5.24	6.87	6.97
Miscellaneous profits	.20	.22	.17
Total proceeds	5.44	7.09	7.17
EXPENSES PER TON OF ORE.			
General (per ton milled)	.50	.61	.72
Mining (per ton mined):			
Operating	1.43	1.68	2.39
Development work	.26	.17	.07
Tramming	.16	.16	.29
Milling	1.41	1.47	1.63
Treatment and shipment costs	.19	.28	.22
Average cost on basis of tons milled	3.95	4.37	5.32
Profit per ton milled	1.49	2.72	1.82

[1] Min. and Sci. Press, Oct. 31, 1914, p. 706.
[2] Eng. and Min. Jour., Jan. 23, 1915, p. 198. See also Min. Mag. (London), October, 1914, p. 272; Min. and Eng. World, Oct. 24, 1914, p. 766.

During 1913, details of shipment and treatment costs were as follows: On stamp bullion, 3 cents per ounce of gold; on concentrates, $15.10 per ton of concentrates; on cyanide bullion, 2 cents per ounce; and on cyanide bullion from concentrate treatment, 3 cents per ounce of bullion. In mining 179,178 tons of ore, 355 boxes of candles were consumed, and 310 tons of coal were used for heating. Some of the principal supplies consumed in milling follow: Quicksilver, 0.125 ounce per ton of ore; 0.985 pound of cyanide; 0.526 pound of zinc; 8.1 pounds of lime; and 0.312 pound of lead acetate and litharge per ton of ore milled. In mining 179,178 tons and running 5,662 feet of development work 148,200 pounds of powder was used.

It is stated that the amount of powder consumed was due in part to the amount of drifting done and in part to the method of doing it. A bonus system of payment substituted for the older contract system led to an unusual consumption of explosives, but it was made up in the saving of labor. The net results, however, were not good and the contract system was resumed. The width of the vein in the area mined was 5.4 feet against 4.6 feet for the previous year. The average width of the vein to date including pinched portions is 3 feet. The Liberty Bell has produced 1,397,168 tons of ore to date and performed 59,799 feet of development work or about 1 foot for every 23.4 tons of ore produced. Including ore in sight the ratio is 35 tons per foot of development. Counting all possible ore within the property above the Stilwell Tunnel, development work equals about 1 foot for 50 tons of ore. The total ore proceeds to date amount to $9,727,012, and expenses, after deducting miscellaneous receipts, $7,217,296. Profit balances amount to $2,509,716, but of this amount $360,486 for construction still stands on the books to be charged out. The total expenditure to date for construction is $712,042, or about 51 cents per ton of ore produced. The ratio of concentration is 65 : 1 and has averaged 64 : 1 to date.[1]

The Smuggler Union mines and 140-stamp, 500-ton amalgamation, concentration, and cyanidation mills [2] were operated steadily.

The 300-ton amalgamation and cyanidation plant of the Junta Consolidated Co. was operated one month and the mine three months of 1914. The Alta mine and concentration mill were operated 11 months of the year. The Ballard 10-stamp amalgamation and concentration mill was operated for nine months.

Iron Springs (Ames and Ophir) district.—The Iron Springs district in 1914 produced 23,253 tons of ore, yielding $62,452 in gold, 17,878 ounces of silver, 2.033 pounds of copper, and 78,947 pounds of lead, with a total value of $75,688, as compared with $135,095 in 1913.

There were 9 producing mines in the district. The Butterfly-Terrible mine and mill were operated the greater part of the year. Bullion was the product from the treatment of the ore from the Charter Oak mine. The Ophir Gold Mines Co.'s cyanidation mill [3] was operated for a period. Lead-silver ore was shipped to smelter from the Carbonero and Carribeau mines.

Lower San Miguel (Sawpit and Placerville) district.—Bullion was marketed from the treatment of ore from the Gertrude mine.

Mount Wilson district.—A small quantity of bullion was marketed for treatment of ore from the Link mine and several cars of lead ore were shipped from the Morning Star mine.

[1] Eng. and Min. Jour., p. 198, Jan. 23, 1915. See also Chase, Charles A., Notes on the Liberty Bell mine: Am. Inst. Min. Eng. Bull. 60, pp. 981–1078, December, 1911. For description of mill see Tracy, W. E., Colorado State Bur. Mines Thirteenth Bienn. Rept., 1913–14, pp. 102–103, 1914.

[2] For description see Wells, Bulkeley, Colorado State Bur. Mines Thirteenth Bienn. Rept., 1913–14, pp. 98–99, 1914.

[3] For description of process see Parmelee, H. C., Cyaniding slimy ore by continuous decantation: Metall. and Chem. Eng., January, 1913, pp. 25–28; see also Min. Mag. (London), February, 1913, p. 144.

SUMMIT COUNTY.

Mine production of gold, silver, copper, lead, and zinc in Summit County, Colo., in 1913 and 1914.

Year.	Number of producing mines.	Ore.	Gold.		Silver.[a]	Copper.	Lead.	Zinc.	Total value.
			Placers.	Deep.					
		Short tons.			*Fine ounces.*	*Pounds.*	*Pounds.*	*Pounds.*	
1913	45	40,360	$386,196	$76,032	167,490	18,170	3,944,268	6,931,074	$1,127,896
1914	51	22,199	608,567	60,043	67,009	7,339	1,565,231	5,111,941	1,028,395
Increase (+) or decrease (−)	+ 6	−18,161	+222,371	−15,989	−100,481	−10,831	−2,379,037	−1,819,133	− 99,501

[a] Includes placer production.

Summit County deep mines in 1914 produced 22,199 tons of ore, yielding $60,043 in gold; silver valued at $33,175; copper, at $976; lead, at $61,044; and zinc, at $260,709—a total of $415,947, as compared with $739,055 in 1913. Dredges[1] and other placer operations yielded $608,567 in gold and 7,018 ounces of silver, valued at $3,881, a total of $612,448, against $386,196 in gold and 4,379 ounces of silver, valued at $2,645, a total of $388,841, in 1913.

Summit County is the principal placer producing county in Colorado, but in production of zinc in 1914 it fell to third place after Eagle County.

Breckenridge district.[2]—The Breckenridge district includes the Bevan, Minnesota, and Union districts and contains the mines near Breckenridge, on French Gulch and on Blue and Swan rivers and all the placers in the county. The value of the total output of gold, silver, copper, lead, and zinc from both deep and placer mines was $982,329, or 95.5 per cent of the county yield, and a decrease for 1914 of $36,136, as compared with the yield in 1913, but an increase of $117,198 as compared with the yield of 1912.

The principal producing mine is the Wellington mine. In 1914 the mine was operated on ore production only six months and on development six months. The 100-ton wet-concentration mill was operated six months and the roasting and magnetic separation mill[3] was operated 10 months.

The Laurium (or Blue Flag) mine and mill were operated for six months. Lead-silver ore was shipped from the Brooks Snyder mine, and lead-zinc ore from the Bullion King. Lead-ore and dry gold-silver ore from the Dunkin mine were shipped to smelter, and a considerable quantity of metallic gold was recovered from pockets and sent to the mint. Lead ore from the Extension, Gold Dirt, Gold Dust, Lucky, Mountain Gem, and Juniata; zinc ore from the Country Boy; gold-

[1] See Revett, B. S., Gold dredging: Colorado State Bur. Mines Thirteenth Bienn. Rept., 1913–14, pp. 128–131, 1914.

[2] For discussion of the geology of the district see Ransome, F. L., Geology and ore deposits of the Breckenridge district, Colorado: U. S. Geol. Survey Prof. Paper 75, 1911.

[3] For description of magnetic plant see Parmelee, H. C., Zinc ore dressing in Colorado: Metall. and Chem. Eng., September, 1912, pp. 525–528. Also for description of mills see Henderson, R. M., Colorado State Bur. Mines Thirteenth Bienn. Rept., 1913–14, pp. 106–110, 1914.

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1915

H. D. McCASKEY
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PART I—METALS

H. D. McCASKEY, Geologist in Charge

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1917

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Minnie Lynch, and St. Louis mines; copper-lead and lead-zinc ores from the Bonanza mine. No work was done on the Rawley mine.

SAN JUAN COUNTY.[1]

Mine production in San Juan County, Colo., in 1914 and 1915.

Year.	Number of producing mines.	Ore.	Gold.	Silver.	Copper.	Lead.	Zinc.	Total value.
		Short tons.		*Fine ounces.*	*Pounds.*	*Pounds.*	*Pounds.*	
1914	29	117,988	$508,477	493,917	825,180	5,199,000	971,177	$1,143,653
1915	42	147,878	583,681	430,637	1,054,463	6,791,596	2,259,226	1,585,894
Increase or decrease, 1915	+13	+29,890	+75,204	—63,280	+229,283	+1,592,596	+1,288 049	+442,241

During 1915 there were treated at amalgamation and cyanidation mills 51,842 tons of ore, with an average recovery per ton in bullion of $1.94 in gold and 0.04 ounce silver; there were also 90,084 tons sent to mills for concentration only, a total of 141,926 tons (96 per cent of all the ore mined), which yielded 20,758 tons of concentrates, averaging $18.62 per ton in gold, 14.83 ounces of silver, and also copper, lead, and zinc, with a total gross value per ton of $59.08.

Crude ore shipped to smelters—5,952 tons—averaged per ton $16.24 in gold and 20.29 ounces silver, and also 1.36 per cent copper and 12.80 per cent lead.

Animas district (including the mines in the vicinity of Silverton and south and east of Animas River from Silverton to Middleton).—The Animas district in 1915 produced 56,013 tons of ore, yielding $212,071 in gold, 239,637 ounces of silver, 535,971 pounds of copper, 2,981,851 pounds of lead, and 9,121 pounds of zinc, with a total value of $568,640, as compared with $621,974 in 1914.

The principal producing mines in the district were the Iowa-Gold Tiger group and the Silver Lake mines. A large quantity of lead sulphide ore from the Iowa-Gold Tiger mine was milled at the company's 100-ton concentration mill, the equipment of which includes jigs, Chilean mills, Wilfley tables, and flotation cells. The Silver Lake mines, under lease, were continuously operated throughout the year. Considerable ore was shipped direct to the Durango smelter, and milling ore was treated at the Iowa-Tiger mill or at the Silver Lake mill. The equipment of the Silver Lake mill consists of rolls, jigs, Chilean mill, Wilfley tables, and flotation cells. Considerable old tailing from the Silver Lake mines was flumed to the Mears-Wilfley mill, to which the flotation process had been added. The Intersection 10-stamp amalgamation and concentration mill was operated from May 1 throughout the year. Lead ore was shipped from the Dives and Shenandoah mines. Other producing mines were the Anti-Periodic, Barbara, Bonner, Kittimac, Little Maud, Mayflower, Magnet, North Star, Old Green Mountain, Old Hundred, Pride of the West, Queen City, Primrose, and Ridge.

[1] For discussion of geology see Cross, Whitman, Howe, Ernest, and Ransome, F. L., U. S. Geol. Survey Geol. Atlas, Silverton folio (No. 120), 1905. Emmons, W. H., Ore deposits of Bear Creek, near Silverton, Colo.: U. S. Geol. Survey Bull. 285, pp. 25–27, 1906. Ransome, F. L., A report on the economic geology of the Silverton quadrangle, Colo.: U. S. Geol. Survey Bull. 182, pp. 1–265, 1901.

Eureka district (north of Silverton, including Chattanooga, Gladstone, Animas Forks, and Eureka).—This district in 1915 produced 91,865 short tons of ore, yielding $371,610 in gold, 191,000 ounces of silver, 518,492 pounds of copper, 3,809,745 pounds of lead, and 2,250,105 pounds of zinc, with a total value of $1,017,254, as compared with $521,679 in 1914.

The Sunnyside mine and amalgamation and concentration mills (one 30-stamp and one 10-stamp, including 1 Huff electrostatic separating plant and also flotation machines), were operated steadily and produced gold-silver bullion, lead concentrate, and zinc concentrate. The Gold King concentration mill, with flotation machines for the treatment of slimes, was operated most of the year, and had a large output of concentrates. Several shipments of high-grade gold ore were made direct to the smelter. Lead ore from the Hermes mines was treated at the Frisco mill. The Silver Ledge concentration mill was operated part of 1915, its product being a lead concentrate and a zinc concentrate. Copper ore was shipped from the Congress mine, in the Red Mountain district. Several cars of silver-lead ore were shipped from the Emma mine, in Ice Lake Basin. Silver-gold ore was shipped from the Columbus mine, at Animas Forks. Other producing mines were the Golden Fleece (Lion tunnel), Joe and John, Silver Wing, and Sultana-Senior Warden.

SAN MIGUEL COUNTY.[1]

Mine production in San Miguel County, Colo., in 1914 and 1915.

Year.	Number of producing mines.	Ore.	Gold.	Silver.	Copper.	Lead.	Zinc.	Total value.
		Short tons.		*Fine ounces.*	*Pounds.*	*Pounds.*	*Pounds.*	
1914	25	495,742	$2,114,916	1,280,461	324,105	4,039,769	.....	$3,023,668
1915	25	483,954	2,069,362	1,096,641	562,554	5,240,277	1,040,121	3,099,074
Increase or decrease, 1915	.....	—11,788	—45,554	—183,820	+238,449	+1,200,508	+1,040,121	+75,406

In gross value of production San Miguel County is the principal county in the San Juan region. In 1915 this county yielded second place (after Teller) in the production of gold to Lake County, and in silver it held second place after Lake County. In total gross value of metals produced, San Miguel continued to stand third, with Lake County first, Teller second, Summit fourth, Ouray fifth, and Eagle sixth.

During 1915, of the 483,954 tons mined, there were treated at amalgamation and cyanidation mills (most of which also had concentration equipment) 473,986 tons of ore, or 98 per cent of all the ore mined; and an average per ton of $2.70 in gold and 107 ounces

[1] For discussion of geology see Purington, C. W., Preliminary report on the mining industries of the Telluride quadrangle, Colo.: U. S. Geol. Survey Eighteenth Ann. Rept., pt. 3, pp. 745–850, 1898. Cross, Whitman, and Purington, C. W., U. S. Geol. Survey Geol. Atlas, Telluride folio (No. 57), 1899. Hess, F. L., Notes on the vanadium deposits near Placerville, Colo.: U. S. Geol. Survey Bull. 530, pp. 142–156, 1912.

of silver was saved as bullion or as cyanide precipitate. The gold saved as bullion in 1915 represented 62 per cent of the gold produced in the county, and the silver in the bullion represented 46 per cent of the county's silver output. There were 9,636 tons of ore sent to mills for concentration only, making a total of 483,622 tons milled (99.93 per cent of all the ore mined), which yielded 27,284 tons of concentrates, averaging per ton, $28.77 in gold and 21.31 ounces of silver, and also copper, lead, and zinc, with a total gross value per ton of $56.39, as compared with $47.34 in 1914. Crude ore sent to smelters—332 tons—averaged per ton $7.60 in gold and 21.66 ounces of silver, and 1.01 per cent copper and 21.77 per cent lead.

Upper San Miguel district.—The Upper San Miguel district in 1915 produced 474,851 tons of ore, yielding $2,041,851 in gold, 1,090,219 ounces of silver, 560,606 pounds of copper, 5,193,298 pounds of lead, and 1,040,121 pounds of zinc, with a total value of $3,065,758, as compared with $2,944,971 in 1914.

The three larger companies, the Liberty Bell, the Smuggler Union, and the Tomboy, continued to furnish the greater part of the total output, although some ore from the Black Bear mine was treated at the Smuggler Union mill.

The annual report of the Tomboy Gold Mines Co. (Ltd.) for the year ending June 30, 1915, states:

One hundred and forty-five thousand eight hundred and fifty-seven tons of ore were treated, yielding $1,027,524, or $7.05 per ton. Expenses amounted to $654,647 and profits were $372,877. The following is a summary of receipts and expenditures:

145,857 dry tons ore milled, yielding bullion worth			$414, 114. 06
Concentrates worth			537, 494. 90
Cyanide bullion worth			75, 915. 43
Dividends from the Tomboy Tramway & Tunnel Co.			10, 000. 80
Boarding house, rents, etc.			13, 345. 52
			1, 050, 870. 08
	Per ton.		
Mining and development expenses	$2.44	$356, 041. 58	
Milling expenses	.53	77, 240. 31	
Concentrating expenses (including transportation to railway)	.48	69, 650. 21	
Water-supply expenses	.09	13, 582. 65	
Assay-office expenses	.03	4, 918. 75	
Cyaniding expenses (at $0.90 per ton of tailings treated)	.45	64, 984. 10	
General expenses	.24	35, 037. 56	
Taxes and insurance	.23	33, 192. 26	
Total expenses	4.49		654, 647. 42
Surplus			396, 222. 66

Ore reserves in the Argentine group are estimated to contain 185,000 tons, of which 135,000 tons is broken in stopes. The Montana group is estimated to have 350,000 tons, of which 200,000 tons is broken in stopes. No estimate of the grade of this ore is given.

The cyanide plant was started about the middle of December, 1914. From a mechanical point of view it has given satisfaction, but the extraction has been much lower than expected, judging from the preliminary experiments. Operations indicated that the agitators would require a more diluted pulp. This has necessitated the addition of more filter capacity.[1]

[1] See Eng. and Min. Jour., Mar. 11, 1916, p. 481; also Min. Mag. (London), November, 1915, p. 292, and p. 23, advertising section.

For the calendar year 1915 the Tomboy 400-ton 60-stamp amalgamation and concentration mill and 400-ton cyanide plant were operated continuously throughout the year.

The 80-stamp 500-ton cyanidation and concentration mill of the Liberty Bell Co. was operated continuously. The ore is crushed in cyanide solution, agitated, and the contents are recovered by filtration. The concentrate made is roughly cyanided and shipped to the Durango smelter.

According to a report of the operating costs at the Liberty Bell mill,[1]

The mill has cost, from 1897 to 1913, $345,000. Since 1913 no charge has been made to construction. Of course, part of the cost went into canvas plants which were scrapped, and part represents replacements partly destructive of old work. About 700 horsepower is required for the mill operation.

The recovery in the mill is, in stamp bullion, 1 per cent of gold and no silver; in concentrates, 5 per cent of the gold and 9 per cent of the silver. In miscellaneous cyanide products, including bullion, slag, etc., the recovery is 82 per cent of the gold and 67 per cent of the silver, making a total recovery of 88 per cent of the gold and 76 per cent of the silver. About 600 gallons of water per minute is used, almost solely to dispose of tailings. The ratio of concentration is 58 to 1. The assay of mill heads from 1899 to 1915, inclusive, was $7.89; the tailings, $1.44; the percentage of extraction, 82 per cent. In 1915 the total combined extraction was 85 per cent. The mill and shop employ about 47 men, the shop crew doing some mine and tramway work.

The Smuggler Union mines and 140-stamp 500-ton amalgamation, concentration, and cyanidation mills[2] were operated steadily on ores from the Smuggler Union group and, in addition, on ores from the Black Bear mine. The output of the Black Bear mine up to the beginning of 1915 had never been large, but as a result of the operations in 1915 a very considerable quantity of lead and iron concentrates carrying gold and silver were shipped to lead plants and a large quantity of lead-zinc concentrates were shipped to zinc plants. The 30-stamp amalgamation and concentration mill of the Alta mine was operated at one-third capacity. Lessees on the Ballard group operated the amalgamation mill on the property for a period. A considerable quantity of ore from the Palmyra and Johnnie mines was treated by amalgamation at the Alta mill. Other mines from which a small production was made were the Beatrice, Cimarron, Fairview, Little Bessie, Little Mary, and Snow Drift.

Iron Springs (Ames and Ophir) district.—The Iron Springs district in 1915 produced 9,103 tons of ore, yielding $27,511 in gold, 6,422 ounces of silver, 1,948 pounds of copper, and 46,979 pounds of lead, with a total value of $33,316, as compared with $75,688 in 1914 and with $135,095 in 1913.

There were 10 producing mines in the district. The Butterfly-Terrible mine and mill were operated the greater part of the year by lessees. The Suffolk mill was repaired, and ores from the Suffolk and Yellow Girl mines were treated by amalgamation during the last six months of the year. Gold-silver bullion was shipped to the mint as the result of the treatment of ore from the Charter Oak mine. Other mines from which a small production was made were

[1] Eng. and Min. Jour., July 1, 1916, pp. 3–4; see also Weinig, A. J., The Liberty Bel methods of precipitate refining: Am. Inst. Min. Eng. Bull. 111, pp. 651–662, March, 1916
[2] For description see Wells, Bulkeley, Colorado Bur. Mines Thirteenth Bienn. Rept., fo 1913–14, pp. 98–99, 1914.

the Baltimore, Calumet, Carbonero, Parsons, Pike County, and San Bernardo.

Lower San Miguel (Sawpit and Placerville) district.—No yield was made from this district.

Mount Wilson district.—There was no production from this district.

SUMMIT COUNTY.

Mine production in Summit County, Colo., in 1914 and 1915.

Year.	Number of producing mines.	Ore.	Gold.		Silver.[a]	Copper.	Lead.	Zinc.	Total value.
			Placers.	Deep.					
		Short tons.			*Fine ounces.*	*Pounds.*	*Pounds.*	*Pounds.*	
1914	51	22,199	$608,567	$60,043	67,009	7,339	1,565,231	5,111,941	$1,028,395
1915	41	44,602	607,195	72,949	64,223	8,646	1,916,298	8,597,411	1,870,363
Increase or decrease, 1915	−10	+22,403	−1,372	+12,906	−2,786	+1,307	+351,067	+3,485,470	+841,968

[a] Includes placer production.

Dredges[1] and other placer operations yielded $607,195 in gold and 7,487 ounces of silver, valued at $3,796, a total of $610,991, against $608,567 in gold and 7,018 ounces of silver in 1914, and against $386,196 in gold and 4,379 ounces of silver in 1913.

Summit County is the principal placer-producing county in Colorado and is also one of the principal zinc-producing districts. In 1915, notwithstanding a considerable increase in the yield of zinc, this county produced less zinc than Eagle and Lake counties.

Breckenridge district.[2]—The Breckenridge district includes the Bevan, Minnesota, and Union districts, and contains the mines near Breckenridge, on French Gulch, on Blue and Swan rivers, and all the placers in the county. The value of the total output of gold, silver, copper, lead, and zinc from both deep and placer mines was $1,796,637, or 96 per cent of the county yield, and an increase for 1915 of $814,308.

The principal producing mine in the district is the Wellington. The 110-ton wet-concentration mill, with rolls, tables, and flotation cells, and the 55-ton roasting and magnetic separation mill[3] were operated continuously, with a resultant increase in output of lead and zinc concentrates. In the wet mill the lead and part of the zinc are taken out and the silica eliminated. The zinc middling is roasted and the iron taken out in the magnetic mill.

[1] See Revett, B. S., Gold dredging: Colorado Bur. Mines Thirteenth Bienn. Rept., for 1913–14, pp. 128–131, 1914.

[2] For discussion of the geology of the district see Ransome, F. L., Geology and ore deposits of the Breckenridge district, Colo.: U. S. Geol. Survey Prof. Paper 75, 1911.

[3] For description of magnetic plant see Parmelee, H. C., Zinc ore dressing in Colorado: Met. and Chem. Eng., September, 1912, pp. 525–528. Also for description of mills see Henderson, R. M., Colorado Bur. Mines Thirteenth Bienn. Rept., for 1913–14, pp. 106–110, 1914.

The Wellington Mines Co. reports[1] its financial condition for the period from December 1, 1914, to October 1, 1915, as follows:

Concentrate sales—zinc	$438,336.38
Concentrate sales—lead	39,680.52
	478,016.90
Transfer fees	33.40
Interest	1,356.59
Gross income	479,406.89
Mining, milling, and operating expenses	155,777.16
Net income	323,629.73
Balance on hand November 30, 1914	41,224.22
	364,853.95

Several large lots of metallic gold were recovered from pockets in the Dunkin mine and shipped to the Denver Mint. In addition, several cars of very high grade gold ore were shipped direct to the smelter. Lessees on the Country Boy mine in the early part of the year shipped several cars of very high grade zinc ore to smelters in Kansas, and a considerable tonnage of low grade zinc ore to the Pingrey flotation mill at Leadville. A different set of lessees in the latter part of the year erected a small concentrating plant at the mine, increasing the assay of the low grade zinc ore treated, and also shipped ore to the Old Union mill at Breckenridge and to the Pingrey mill at Leadville. Other producing lode mines were the Alice, Carbonate, Eureka, Germania, Gold Dust, Helen Jessie, Ohio, Ouray, Puzzle, and Washington.

All four of the dredges in the district were operated in 1915, with little change in the output as compared with 1914. The Tonopah Placers Co. put 2 of its dredges in operation—1 in March and 1 in May, 1915—and continued to operate them until the end of December, at which time they were closed down on account of the winter weather and for necessary repairs. Two of these dredges are of the Bucyrus open-connected type, with buckets of a capacity of 9½ cubic feet. The other dredge is of the double-lift open-connected type, with buckets of a capacity of 9 cubic feet.

The report of the Tonopah Placers Co. for the fiscal year ending February 29, 1916, appears in the annual statement of the Tonopah Mining Co. of Nevada:

Production of Tonopah Placers Co., fiscal year ending February 29, 1916

Gross value of bullion shipped to mint	$479,017.56
Cost of operations	267,324.57
	211,692.99
Cubic yards dredged	3,242,247
Gold produced ... ounces	23,034.30
Silver produced ... do	5,416.10
Value per yard	$0.147
Profit per yard	$0.086
Acres dredged, 1915	53.175
Acres dredged prior to 1915	246,498
Acres undredged	4,782.918
Acres placer ground	5,082.591
Acres lode ground	36.226

[1] Min. and Eng. World, Nov. 20, 1916, p. 815.

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MINERAL RESOURCES
OF THE
UNITED STATES
1917

H. D. McCASKEY
Geologist in Charge, Division of Mineral Resources

PART I—METALS

H. D. McCASKEY, Geologist in Charge

6959

WASHINGTON
GOVERNMENT PRINTING OFFICE
1921

Animas district (including the mines in the vicinity of Silverton and south and east of Animas River from Silverton to Middleton).—The Animas district in 1917 produced 76,481 tons of ore, yielding $213,142 in gold, 514,153 ounces of silver, 1,101,432 pounds of copper, 7,181,233 pounds of lead, and 179,686 pounds of zinc, with a total value of $1,573,409, as compared with $881,884 in 1916 and with $568,640 in 1915.

There were 35 producing mines in the district in 1917, an increase of 8 mines. The Iowa-Tiger group and the Silver Lake mines were the principal producers. The Iowa-Tiger mill was operated steadily, with an increased production, particularly a large increase for lead. The Iowa-Tiger mill was also used as a custom plant. The Silver Lake mill was operated as a custom plant on ores from Red Mountain district, Eureka district, and Animas district. The quantity of smelting ore from the Silver Lake mines decreased heavily, but the quantity of milling ore continued about the same as 1916. The Mears-Wilfley 500-ton flotation plant continued to treat old tailing from the Silver Lake mill. The North Star mill and the Green Mountain (Pride of the West Co.) mill were both operated as custom plants and made a large addition to the quantity of ore milled in the district. The Hercules mill was idle, but the Intersection mill was operated for a short period. The Hamlet 150-ton concentration mill was operated for seven and one-half months, but was shut down in August to make changes to the mill. The Kittimac mill was operated on lead-zinc ores for a short period. A considerable quantity of ore from the Mayflower mine was treated at the Iowa-Tiger mill. Lead ore was shipped to the smelter from the Dives mine, and milling and smelting ore was shipped from the Highland Mary.

Other producing mines were the Aspen, Big Giant, Big Three, Champion No. 1, Champion No. 2, Emerald, Fairview, Frank Waller, Kansas City, Lackawanna, Little Nation, Shenandoah, and Silver Pitcher.

Eureka district (north of Silverton, including Chattanooga, Gladstone, Animas Forks, Eureka, and Red Mountain).—The Eureka district in 1917 produced 69,204 tons of ore, yielding $104,864 in gold, 144,108 ounces of silver, 564,491 pounds of copper, 3,334,302 pounds of lead, and 3,090,814 pounds of zinc, with a total value of $979,728, as compared with $1,324,811 in 1916. The Sunnyside 40-stamp gravity and oil flotation mill was operated steadily, yielding lead and zinc concentrates. A new 500-ton gravity and oil flotation plant was under construction. The Gold King mine and 150-ton gravity and oil flotation mill was operated throughout the year. The product from this property was gold-silver concentrates. Lead and zinc concentrates were the product of the Ledge concentration mill, operated on ores from the Silver Ledge mine. From the Congress mine copper smelting ore was shipped and milling ore was shipped to the Silver Lake custom mill. Lead-copper ore was shipped from the St. Paul mine and lead-silver ore from the Carbon Lake mine. Small lots of ore were shipped from the Ben Butler, Galena Queen, Galty Boy, Joe and John, Silver King, and Venus mines.

SAN MIGUEL COUNTY.[1]

Mine production in San Miguel County, Colo., in 1916 and 1917.

Year.	Number of producing mines.	Ore.	Gold.	Silver.	Copper.	Lead.	Zinc.	Total value.
		Short tons.		*Fine ounces.*	*Pounds.*	*Pounds.*	*Pounds.*	
1916	20	428,651	$2,072,393	812,041	581,427	6,120,551	1,098,485	$3,319,676
1917	20	389,293	2,009,961	779,364	920,425	6,205,326	1,810,245	3,621,736
Increase or decrease, 1917	.....	−39,358	−62,432	−32,677	+338,998	+78,775	+711,760	+302,060

Upper San Miguel district.—The Upper San Miguel district in 1917 produced 387,458 tons of ore, yielding $1,997,950 in gold, 764,091 ounces of silver, 900,784 pounds of copper, 6,142,710 pounds of lead, and 1,810,245 pounds of zinc, with a total value of $3,586,393, as compared with $3,294,393 in 1916.

The three large companies, the Liberty Bell, the Smuggler Union, and the Tomboy, continued to furnish the greater part of the total output, which also includes a large quantity of ore treated at the Smuggler Union mill from the Black Bear mine. The Smuggler Union mill also treated a large quantity of ore from the Humboldt mines (in Ouray County), credit for which is given to Ouray County not to San Miguel County. The Wagner Development & Mining Co. continued to operate its 30-stamp concentration mill on ores from the Alta mines from January to September, when the property was taken over by the Belmont Wagner Mining Co., which made no production during 1917, but did much development work at the mine and reconstructed the mill to adapt it to the flotation process.

The annual report of the Liberty Bell Gold Mining Co. for the year ended September 30, 1917 (dated Jan. 5, 1918), says:

> The operations of the past year show a continued reduction in the tonnages mined and milled, a continued increase in operating costs per ton and, in compensation, a continued increase in gross and net receipts and in recovery per ton. To this may be added a substantial increase in ore reserves.
>
> The ore mined was about 12 per cent less than the preceding year, and the costs per ton were nearly 60 cents greater. The reasons for these changes were, in general terms, the scarcity, poorer quality, and higher cost of labor, the very material increase in cost of supplies, and the further fact that, during this period, mining operations were being transferred from the old part of the mine to a new part in the extreme eastern end, involving large outlays for salvage in one part and for new development and equipment in the other. * * *
>
> The increase of ore reserves * * * is most gratifying. It makes probable a 2-year extension of life, and assays during development work justify expectations of an excellent recovery. Uncertainty as to labor conditions and availability of supplies are our principal concern for the immediate future.
>
> The net profits for the year are seen to be $201.517. To this may be added the allowance of $33,925 for depreciation. During the year $227,037 were paid in dividends, or 34 per cent, of which 15 per cent was in completion of the return of capital.

[1] For discussion of geology, see Purington, C. W., Preliminary report on the mining industries of the Telluride quadrangle, Colo.: U. S. Geol. Survey Eighteenth Ann. Rept., pt. 3, pp. 745–850, 1898. Cross, Whitman, and Purington, C. W., U. S. Geol. Survey Geol. Atlas, Telluride folio (No. 57), 1899. Hess, F. L., Notes on the vanadium deposits near Placerville, Colo.: U. S. Geol. Survey Bull. 530, pp. 142–156, 1912.

Summary of operating receipts and expenses.

		Total.	Rate per ton.		
			1917	1916	1899–1917
RECEIPTS.					
Ore proceeds (143,100 tons)		$847,359.66	$5.92	$4.79	$6.28
Stamp bullion					2.74
Cyanide products	$789,543.96		5.52	4.42	2.84
Concentrates	57,815.70		.40	.37	.05
Concentrates cyanide bullion					.04
Slag					.01
Tram receipts	$3,676.75				
Rental receipts	3,328.50				
Commissary profit	2,406.54				
Interest, less loss from investments	17,454.84				
		26,866.63			
Less loss on boarding house		6,223.52			
		20,643.11	.14	.19	.17
Total receipts		868,002.77			
Average receipts per ton milled			6.06	4.98	6.45
EXPENSES.					
General expenses (143,100) tons		59,062.85	0.41	0.33	0.61
Mining (142,900 tons)		311,997.58	2.18	1.91	2.22
Operating	272,066.97		1.90	1.62	
Development work (4,676 feet)	39,930.61		.28	.29	
Tramming (142,900 tons)		23,746.22	.17	.14	.24
Milling (143,100 tons)		239,212.65	1.67	1.49	1.56
Treatment and shipping costs		32,465.80	.23	.20	.26
Stamp bullion				.18	
Concentrates (3,409 tons)	27,706.26		a 8.13	a 8.03	
Cyanide bullion (274,359 ounces)	4,759.54		.02	b .02	
Total operating expenses		666,485.10			
Average cost per ton milled			4.66	4.07	4.91
Balance profit		201,517.67			
Profit per ton milled			1.40	.91	1.54

a Per ton of concentrates. b Per ounce of bullion.

Of greatest interest this year is the tonnage estimate, in that it shows a marked increase in ore reserves from the previous report notwithstanding the 143,000 tons mined during the year. On the other hand, the decrease in tonnage produced to the lowest point in six years is striking. Operating cost was more than correspondingly high but fortunately was offset by a big increase in the grade of the ore treated and in the price received for silver.

Again country-wide conditions in labor and supply markets outweighed the efforts of the mine staff in holding down costs of operations. Labor was scarce, and new wage scales established at Leadville and Silverton were necessarily followed at Telluride; but they were in effect only for the last three months of the fiscal year. At the end of the year the average wage was $1 higher than it was two years before, an increase of about 27 per cent. The advances in the silver market were sufficient to meet the advances in wages and to pay a part of the advances in supplies, the former being 17 cents and the latter approximately 30 cents a ton. The average price of silver for the year was 77 cents, a gain of 16 cents an ounce and 29 cents a ton over the previous year. * * *

Mining expense was necessarily higher per ton. Increases by labor alone added 11 cents as compared with the two years before. Development in the new ground was higher by $1.15 per foot than the standard of the previous year. At that, the work was not sufficiently remunerative to contractors to get the rapid progress desired. * * *

In the boarding house, the cost of provisions per man for the year increased $52 ($172 in 1916 to $224 in 1917), which is accountable for the greater part of the loss in operating. * * *

The ore reserve of 175,000 tons would seem to offer at least one year of life at full capacity; but, as the new ore being opened is harder and is heavier with iron than that mined heretofore, the maximum capacity of the mill can scarcely exceed 140,000 tons for the next year. Further, there is great doubt whether the labor for even this tonnage will be available. As compared with the previous year, the present ore reserve shows almost double the area per ton of ore; or, in other words, the ore in reserve is of half thickness. The new development of the the year to the east has added greatly to the length of the already long ore body, but reference to the map sheet will show that the proximity of the junction with the Smuggler-Union vein marks a definite limit in that direction. * * *

The table of ore milled shows a gratifying gain of 2 per cent in gold extraction and of 4 per cent in silver. This gain for the whole year was made in the last four months. Mr. A. J. Weinig, superintendent of the mill, then found that the addition of minute quantities of mercury to the ore in process of treatment caused a marked gain in extraction. Subsequently the small tonnage being milled made further advantageous changes in treatment possible.

In the table of principal supplies, it is to be noted that zinc alone of the whole list decreased in price. Power alone was stationary in cost. At the mine, the big charges for mechanical plant represent a part of the cost of new pipe lines, new electric lines, and additional locomotives, hoists, and cars to reach and equip the new workings in the east end. * * *

The Liberty Bell mill has a capacity of from 400 to 500 tons a day, according to the character of the ore, and the process used is concentration, with cyanidation of concentrates and tailing. Mill extraction during the time covered by the annual report was 92 per cent of the gold and 81 per cent of the silver, with a recovery in terms of dollars of 89 per cent. The recovery in terms of dollars for the years 1899 to 1917 has been 83 per cent. During the calendar year 1917 the recovery for gold was slightly better than for the fiscal year, and in February, 1918, a still greater recovery was made.

The annual report of the Tomboy Gold Mines Co. (Ltd.) for the year ended June 30, 1917, shows

That 148,939 tons of ore (from the Argentine and Montana groups) were sent to the mill, where bullion worth $314,822 was obtained by amalgamation and $160,114 by cyanide, together with concentrates selling for $675,674. The total yield was equal to $7.73 per ton milled. Other small items brought the revenue to $1,169,231. The working cost was $811,966, or $5.45 per ton. * * * At the Argentine group developments at depth show that the ore body has increased in size and content of mixed sulphides, thus giving encouragement to open additional levels. The ore here averages $2 to $2.50 in gold and silver, 4 to 5 per cent lead, 5 to 10 per cent zinc, and 1 to 2 per cent copper. The reserve is estimated at 150,000 tons, of which 120,000 tons is ore broken in the stopes. This figure compares with 175,000 tons in 1916. At the Montana group, the reserve has been well maintained at 390,000 tons. In addition, ore has been disclosed in the Sydney-White Cloud property, recently acquired. Experiments are being made with selective flotation with a view to improving the extraction of sulphides. It is also hoped by this means to be able to treat ore not now included in the reserves.[1]

The Tomboy mill is a 60-stamp amalgamation and concentration mill, with a 400-ton cyanidation plant.

The Smuggler Union 450-ton amalgamation, gravity concentration, and flotation mill was operated steadily, the cyanidation plant having been abandoned and the flotation plant installed.

Other producing mines were the Ballard, Modena, and Wild Boy.

Iron Springs (Ames and Ophir) district.—The Iron Springs district in 1917 produced 1,835 tons of ore, yielding $12,011 in gold, 15,273 ounces of silver, 19,641 pounds of copper, and 62,616 pounds

[1] Min. Mag. (London), November, 1917, p. 250.

of lead, with a total value of $35,343, as compared with $25,283 in 1916. The principal producing mine was the Butterfly-Terrible, operated by lessees during part of the year. The product was chiefly amalgamation gold-silver bullion from the mill on the property and one car of concentrates. Several cars of silver ore were shipped from the Carbonero. At this mine, the year 1917 was devoted to completion of a working adit 2,500 feet long. Several hundred tons of silver ore from the Carribeau mine was milled. Some lead-silver ore from the Favorite mine was shipped direct to the smelter, and several hundred tons of milling ore was sent to the Suffolk mill. Other small producing mines were the Belisle & Sankey, Duffy, Oregon, San Bernardo, and Santa Cruz.

Lower San Miguel (Sawpit and Placerville).—No ore was mined in this district. Operations were discontinued at the Lizzie G. mine, from which in 1916 some iron pyrite, shipped for its iron and sulphur content only, was shipped to Vanadium for use in the treatment of vanadium ores.

Mount Wilson district.—Some assessment work was done in this district.

SUMMIT COUNTY.

Mine production in Summit County, Colo., in 1916 and 1917.

Year.	Number of producing mines.	Ore.	Gold.		Silver.[a]	Copper.	Lead.	Zinc.	Total value.
			Placer.	Deep.					
		Short tons.			*Fine ounces.*	*Pounds.*	*Pounds.*	*Pounds.*	
1916	55	65,117	$579,050	$94,841	120,207	14,581	1,688,637	13,940,948	$2,741,177
1917	51	66,768	540,951	62,486	175,699	25,033	915,535	19,868,814	2,860,402
Increase or decrease, 1917	−4	+1,651	−38,099	−32,355	+55,492	+10,452	−773,102	+5,927,866	+119,225

[a] Includes placer production.

The value of the production of Summit County in 1917 was the largest in its history. Dredges[1] and hydraulicking and sluicing operations yielded $540,951 in gold and 6,636 fine ounces of silver, as against $579,050 in gold and 7,292 ounces of silver in 1916 and $607,195 in gold and 7,487 ounces of silver in 1915.

The principal placer-producing district in Colorado is near Breckenridge, Summit County. This county is also one of the three principal zinc-producing counties, being exceeded only by Lake and Eagle.

Breckenridge district.[2]—The Breckenridge district includes the Bevan, Minnesota, and Union districts and contains the mines (near Breckenridge) on French Gulch and on Blue and Swan rivers and all the producing placers in the county. The value of the total output of gold, silver, copper, lead, and zinc from both deep and placer

[1] See Revett, B. S., Gold dredging: Colorado Bur. Mines Thirteenth Bienn. Rept., for 1913–14, pp. 128–131, 1914.

[2] For discussion of the geology of the district see Ransome, F. L., Geology and ore deposits of the Breckenridge district, Colo.: U. S. Geol. Survey Prof. Paper 75, 1911.

mines was $2,623,594, or 92 per cent of the county yield, an increase in 1917 of $66,787, following an increase in 1916 of $760,170 and an increase in 1915 of $814,308. The Wellington mine continued to be the principal producing property in the district. The 125-ton wet-concentration mill, with rolls, jigs, and tables, and 100-ton magnetic separation plant,[1] with rolls, roasters, and magnetic separation machines, were operated steadily and produced zinc and lead concentrates. In addition, much high-grade zinc ore was shipped direct to smelters. Other operating mills were the Jessie 100-ton amalgamation mill, operated for two months only, and the Pioneer 20-stamp amalgamation-concentration mill, operated for several months. Other production was in the form of small shipments direct to smelters. Several cars of high-grade lead-gold ore were shipped from the Dunkin, but none of the high-grade pocket gold for which this mine is known was found in 1917. Lead-silver ore was shipped from the Carbonate, Carpenter, Ella-Minnie, Hancock, June Bug, Puzzle-Gold Dust, and Washington; lead-zinc ore from the New York; lead-silver ore and pyrites ore from the Iron Mask; and copper-silver ore, containing some bismuth, from the Mollie B.

All four of the dredges were operated in 1917, but with a decreased output as compared with 1916. The three dredges of the Tonopah Placers Co. were operated during the season as follows: No. 1, April 1, 1917, to February 2, 1918; No. 2, April 2, 1917, to January 3, 1918; No. 3 from March 14, 1917, to January 14, 1918. Only one-half of the net earnings of dredge No. 2 accrued to the company as it was operating on the ground of the Farncomb Hill Gold Dredging Co. Dredge No. 1 was operated at a loss during the year, as it was cutting through ground containing very low contents, in order to reach another part of the property, and it will probably take about two months' operations in the season of 1918 to reach the desired ground. Two of the dredges are of the Bucyrus open-connected type, with buckets of a capacity of 9½ cubic feet; the other dredge is of the double-lift, open-connected type, with buckets of a capacity of 9 cubic feet. The French Gulch Dredging Co.'s dredge, of the Bucyrus type, with buckets of a capacity of 5 cubic feet, was operated from March 20, 1917, to January 3, 1918.

The report of the Tonopah Placers Co. for the year ending December 31, 1917, appears in the sixteenth annual report of the Tonopah Mining Co. of Nevada:

Production and income statement of Tonopah Placers Co. for year ending December 31, 1917.

Gross value of bullion shipped to Mint	$451,743.20	
Cost of operations	285,104.75	
		$166,638.45
Miscellaneous earnings:		
Electric lighting	859.72	
Interest on bank balances	610.70	
		1,470.42
		168,108.87

[1] For description of magnetic plant see Parmalee, H. C., Zinc ore dressing in Colorado: Met. and Chem. Eng., September, 1912, pp. 525–528. Also for description of mills see Henderson, R. M., Colorado Bur. Mines Thirteenth Bienn. Rept., for 1913–14, pp. 106–110, 1914.

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MINERAL RESOURCES
OF THE
UNITED STATES
1918

G. F. LOUGHLIN
Geologist in Charge, Division of Mineral Resources

PART I—METALS

G. F. LOUGHLIN, Geologist in Charge

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Experimentation work was carried on at the Caledonia mill. Copper-silver ore was shipped from the Copper Queen and from the Emerald mine. From the Champion No. 2 mine mixed sulphide ore was milled at the North Star mill and copper ore was shipped to Durango. Lead-silver-gold ore was shipped from the Hercules mine by the Dora Consolidated Mining & Milling Co. The Hamlet concentration mill (built 1916) was operated for seven months during 1918, the product being lead-copper-silver concentrates. Copper-silver ore was shipped to Durango from the Champion No. 1 mine. Various small lots of ore were shipped from other properties and a considerable quantity of bullion bars from various properties reached the Mint during the year.

Eureka district (north of Silverton, including Chattanooga, Animas Forks, Eureka, and Red Mountain).—This district in 1918 produced 63,382 tons of ore, carrying $76,969 in gold, 178,353 ounces of silver, 408,462 pounds of copper, 3,734,127 pounds of lead, and 3,410,308 pounds of zinc, with a total value of $931,673, as compared with $979,728 in 1917, and with $1,324,811 in 1916.

Copper-silver ore was shipped from the American Queen mine. Copper-silver-gold ore was shipped from the Congress mine and a car of copper-silver ore from the Henrietta mine, to Durango. Lead-silver ore was shipped from the Kansas City, from the Mountain Queen, from the St. Paul, and from the Silva Queen (Telescope) mine. A car of lead-zinc concentrates from the Ledge mine was produced at the North Star mill during the year. The Gold King mine and mill was taken over by a new company, the Gold King Extension Mines Co., but no output was made in 1918.

The new Sunnyside 600-ton flotation mill (built in 1917–18) was operated for 8 months, averaging 300 tons a day during that time. The product was lead-silver-gold concentrates shipped to Durango and lead-zinc concentrates also carrying much silver and some gold to zinc retort plants.

SAN MIGUEL COUNTY.[1]

Mine production in San Miguel County, Colo., in 1917 and 1918.

Year.	Number of producing mines.	Ore.	Gold.	Silver.	Copper.	Lead.	Zinc.	Total value.
		Short tons.		*Fine ounces.*	*Pounds.*	*Pounds.*	*Pounds.*	
1917	20	389,293	$2,009,961	779,364	920,425	6,205,326	1,810,245	$3,621,736
1918	27	374,134	2,127,634	836,570	992,814	6,044,085	797,648	3,711,145
Increase or decrease, 1918	+7	−15,159	+117,673	+57,206	+72,389	−161,241	−1,012,597	+89,409

Upper San Miguel district.—The Upper San Miguel district in 1918 produced 371,073 tons of ore, carrying $2,123,123 in gold, 796,263 ounces of silver, 942,409 pounds of copper, 5,605,183 pounds of lead, and 790,637 pounds of zinc, with a total value of $3,622,077, as compared with $3,586,393 in 1917 and with $3,294,393 in 1916.

[1] For discussion of geology, see Purington, C. W., Preliminary report on the mining industries of the Telluride quadrangle, Colo.: U. S. Geol. Survey Eighteenth Ann. Rept., pt. 3, pp. 745–850, 1898; Cross, Whitman, and Purington, C. W., U. S. Geol. Survey Geol. Atlas, Telluride folio (No. 57), 1899; Hess, F. L., Notes on the vanadium deposits near Placerville, Colo.: U. S. Geol. Survey Bull. 530, pp. 142–156, 1912.

The three large companies, the Liberty Bell, the Smuggler Union, and the Tomboy, continued to furnish the greater part of the total output, which also includes a large quantity of ore treated at the Smuggler Union mill from the Black Bear mine. The Smuggler Union mill also treated a large quantity of ore from the Humboldt mine (in Ouray County), credit for which is given to Ouray County.

The Belmont-Wagner Mining Co., which took over the Alta mines in 1917 and did much development work at the mine and reconstruction of the mill to adapt it to the flotation process, continued such work in 1918, and operated the new mill for two months, August and September. The entire plant was remodeled and the 30 stamps discarded and two No. 64½ Marcy mills installed. The primary crushing is done in a Gates gyratory crusher, followed by grinding in Marcy mills, operated in closed circuit with Dorr classifiers, flotation in Jones-Belmont machines; sodium sulphide is used for sulphidizing partly oxidized ores. The mill was shut down owing to lack of labor until May, 1919. The mines of this company are the Alta, in Gold King Basin, and the St. Louis, in Turkey Creek Basin. The ores are base, siliceous, and partly oxidized, containing considerable barite, but zinc only in slight quantities. The properties are opened by adits, the St. Louis adit being 3,500 feet in length and the Alta adit 4,900 feet. Other levels, raises, and crosscuts make a total of 18,000 to 20,000 feet of development.

At the Cimarron mine 10 stamps of the 30-stamp concentration mill (built in 1890) were operated on dump ores.

The Black Bear 20-stamp amalgamation-concentration mill (built in 1906, and operated in 1907 and 1910) was idle on account of lack of water, but a large quantity of complex galena-pyrite-chalcopyrite-sphalerite ore from the mine was steadily treated at a fixed rate at the Smuggler Union mill, at Pandora. The mill equipment consists of 30 stamps to Aikins classifiers, overflow to Wilfley tables and oversize to Hardinge ball mill, thence to above tables making lead, iron, and zinc concentrates; all table tailings go to Janney M. A. flotation machines.

The Smuggler Union 60-stamp mill with amalgamation and table and vanner concentration equipment and flotation machines was operated continuously 24 hours per day on ores from the Smuggler Union properties and from the Humboldt mine (Ouray County) and from the Black Bear mine. Cyanidation has been abandoned at this mill.

The Liberty Bell 80-stamp concentration and cyanidation mill was operated 363 days. The ore is crushed in cyanide solution, ground in tube mills, classified, and concentrated on tables. Both concentrates and tailings are cyanided by agitation and filtering. The mill was modified by the addition of 4 extra Wilfley tables, 2 agitators, and classifiers to make the cyanide treatment of concentrate more perfect. No concentrate was shipped to smelters after May, 1918.

The eighteenth annual report of the Liberty Bell Gold Mining Co. for the year ended September 30, 1918 (dated February 6, 1919), says:

The most conspicuous features of the operations of the past year are the high grade of the ore milled and the high costs of operating. The coincidence of the two was not only very remarkable but most fortunate, for, had the ore remained anywhere near the quality of preceding years, operations would have been conducted at a great loss and a suspension might have been necessary.

The high costs as well as the small tonnage mined were partly due to war conditions, with their high prices of materials and scarcity and poor quality of labor, and partly due to the facts that the vein mined was very narrow, very hard, and in a remote and inaccessible part of the mine. This is evidenced by the fact that, with a tonnage of only three-fifths of the preceding year the total mining cost was over 25 per cent greater and the area stoped was practically the same. The item of general expense, it may be noted, was just twice the amount of the preceding year, but this is attributable almost entirely, to the increase in taxes, royalties and employees' fund allotments which aggregated about $58,000. The milling costs remained about the same total, as it took the full capacity of the mill to handle this smaller tonnage of more refractory ore.

A noteworthy feature of the report is the excellent recovery, where it appears that 96 per cent of the total value was saved and the tailings from ore of over $13.00 per ton were reduced to only 60 cents.

Attention is called particularly to the estimate of ore reserves and prospective profit. The conclusion to be drawn is that about one more year will probably bring the operations of the Liberty Bell mine to a conclusion.

The profit balance for the year, with the addition of the depreciation allowance of some $33,000, was about $368,000. During the year dividends were paid of 58 per cent, aggregating $387,310.

Summary of operating receipts and expenses, Liberty Bell mine, 1917–1918.

		Totals.	Rate per ton.		
			1918	1917	1899–1918.
Receipts:					
Ore proceeds (90,700 tons)		$1,153,042.82	$12.71	$5.92	$6.55
Stamp bullion					2.63
Cyanide products		$1,084,700.08	11.96	5.52	3.22
Concentrates		68,342.74	.75	.40	.65
Concentrate cyanide bullion					.04
Slag					.01
Tram receipts	$2,854.10				
Rental receipts	3,469.05				
Commissary profit	4,434.22				
Interest and dividends	17,457.01	28,214.38			
Less loss on boarding house	14,231.93				
Less loss on investments	18,502.51	32,734.44 Dr. 4,520.06	Dr. .05	.14	.16
Total receipts		1,148,522.76			
Average receipts per ton milled			12.66	6.06	6.71
Expenses:					
General expenses (90,700 tons)		118,155.90	1.30	0.41	0.63
Mining (91,300 tons)		394,223.08	4.32	2.18	2.31
Operating		365,502.98	4.00	1.90	
Development work (3,021 feet)		28,720.10	.32	.28	
Tramming (91,300 tons)		17,082.54	.19	.17	.24
Milling (90,700 tons)		254,046.60	2.80	1.67	1.64
Treatment and shipping costs		29,945.77	.33	.23	.26
Stamp bullion					
Concentrates (2,349 tons)		23,877.54	10.17	[a] 8.13	
Cyanide bullion (226,757 ounces)		6,068.23	.03	[b] .02	
Total operating expenses		813,453.89			
Average cost per ton milled			8.97	4.66	5.08
Balance profit		335,068.87			
Per ton milled, profit			3.69	1.40	1.63

[a] Per ton of concentrates. [b] Per ounce of bullion.

Summary of ore proceeds and expenses, Liberty Bell mine, 1917–18.

	1918	1917	1899–1918
Stamp bullion, gross value			$5,633,402.93
Concentrates, gross value	$68,342.74	$57,815.70	1,399,989.59
Concentrate cyanide bullion, gross value			90,019.70
Cyanide bullion, gross value	1,084,700.08	789,543.96	6,784,474.84
Cyanide precipitate, gross value			121,153.01
Slag			14,853.15
Total ore proceeds	1,153,042.82	847,359.66	14,043,893.22
Total expenses (less boarding house and other like receipts)	817,973.95	645,841.99	10,552,056.24
Profit balances	335,068.87	201,517.67	3,491,836.98
Percentage profit to total ore proceeds			24.86
Expended on mining property and construction (less depreciation already charged to expense) about	33,923.19 (credit.)	33,816.68 (credit.)	146,174.49

Ore milled, 90,700 tons; gross values per dry ton milled, and percentages, Liberty Bell mine, 1917–18.

Recovered.	1918						1917		1899–1918	
	Gold.		Silver.		Value.		Value.		Value.	
	Fine ounces.	Per cent.	Fine ounces.	Per cent.		Per cent.		Per cent.		Per cent.
In stamp bullion									$2.63	34
In concentrates	$0.026	5	$0.247	10	$0.75	6	$0.40	6	.65	8
In concentrate cyanide bullion									.04	1
In cyanide products	.491	93	1.942	75	11.96	90	5.52	83	3.23	41
Total recovery	.517	98	2.189	85	12.71	96	5.92	89	6.55	84
Lost in tailings	.012	2	.376	15	.60	4	.76	11	1.29	16
Total contents	.529	100	2.565	100	13.31	100	6.68	100	7.84	100

The Tomboy 60-stamp, 400-ton amalgamation-concentration mill, and 400-ton cyanidation plant was operated continuously during 1918 on ores from the Argentine and Montana mines. Early in 1919 it was decided to build at once an oil-flotation plant to cost $150,000. It is estimated that at least $1 per ton more can be saved by this process. This company has operated the Tomboy property since 1899.

The annual report of the Tomboy Gold Mines Co. (Ltd.), for the year ended June 30, 1918,[1] shows

that 151,028 tons of ore were milled, yielding amalgam bullion worth $306,000 and concentrates worth $662,000. Tailings to the amount of 129,000 tons were cyanided, yielding bullion worth $168,000. A marked shortage and inefficiency of labor has increased costs materially and caused a reduction of ore reserves. Continuous tests were made from February to July with milling ore, so as to establish a reliable comparison between flotation and the present methods of treatment. The results confirmed the advantage of the flotation process and it will make available large tonnages of developed low-grade ore on the property. However, under the present conditions of the labor and materials market, installation will be postponed.

[1] Chem. and Met. Eng., Feb. 15, 1919, p. 149.

Costs, per ton, at the Tomboy mine.[1]

Mining and development	$2.51
Milling	.70
Concentrate expense, including transport to rail	.63
Water supply	.09
Assay office	.05
Cyaniding	.91
General	.33
Taxes and insurance	.36
	5.58

Two dividends amounting to $110,000 were distributed. In the Argentine mine, 568 feet of work was done on the east faces of the 1,900 and 2,100 foot levels. In 395 feet of the upper levels, 5 feet of ore averaged $3.62 in gold and silver, 4.45 per cent lead, 6.89 per cent zinc, and 0.8 per cent copper. At 2,100-foot depth, 111 feet driven on 4.2 feet of ore assay $2.83 in gold and silver, 2.13 per cent lead, 4.42 per cent zinc and 0.95 per cent copper. Reserves are 130,000 tons of which 100,000 tons are broken in the stopes.

In the Montana mine exploration covered only 3,346 feet, much lower than usual owing to the labor supply. About 1,500 feet of this was done on the Virginius vein, 400 feet being through the Robson claim of the Camp Bird Co. Within the Tomboy boundaries this body is 900 feet long, assaying $9 in gold and silver, across 3 feet. Other workings show $15 across 6 feet and $12 silver and 5.9 per cent lead over 4 feet. Reserves are estimated at 350,000 tons, exclusive of the Sidney and Virginius. Of this, 200,000 tons are broken.[2]

The Lewis mine was reopened, development at the end of the year being a 650-foot vertical shaft, a 2,800-foot adit, and 2,600 feet of drifts, of which drifts 450 feet were driven in 1918. The mill was remodeled into a 75-ton crushing and grinding plant and a 30-ton flotation plant and was operated three months only.

Iron Springs (Ames and Ophir) district.—The Iron Springs district in 1918 produced 3,048 tons of ore, carrying $4,391 in gold, 40,113 ounces of silver, 50,405 pounds of copper, 438,606 pounds of lead, and 7,011 pounds of zinc, with a total value of $88,733, as compared with $35,343 in 1917. The principal producing mine was the Carbonero, from which lead, lead-copper, and lead-zinc ore was shipped. Lessees on the Butterfly-Terrible mine and amalgamation-concentration mill operated the mill for a short time. The Carribeau concentration mill was operated for a short period, the product being lead-silver concentrates. Several cars of lead-silver ore were shipped from the Favorite mine, and a car of lead-silver ore from the Silver Bell. Lessees on the Suffolk mine produced about 100 tons of ore, which was milled at the Suffolk amalgamation-concentration mill. Several cars of lead-silver ore were shipped from the San Bernardo mine.

Lower San Miguel district (Sawpit and Placerville).—A car of gold-silver ore was shipped from the Baron Tunnel property.

Mount Wilson district.—Some development and assessment work was done in the Mount Wilson district but no ores were sold.

[1] Min. and Sci. Press., Dec. 14, 1918, p. 782.
[2] Idem, Dec. 21, 1918, p. 842.

SUMMIT COUNTY.

Mine production in Summit County, Colo., in 1917 and 1918.

Year.	Number of producing mines.	Ore.	Gold.		Silver.[a]	Copper.	Lead.	Zinc.	Total value.
			Placer.	Deep.					
		Short tons.			*Fine ounces.*	*Pounds.*	*Pounds.*	*Pounds.*	
1917	51	66,768	$540,951	$62,486	175,699	25,033	915,535	19,868,814	$2,860,402
1918	36	58,185	431,023	36,116	117,326	13,206	777,338	15,696,264	2,071,278
Decrease, 1918	15	8,583	109,928	26,370	58,373	11,827	138,197	4,172,550	789,124

[a] Includes placer production.

The value of the production of Summit County in 1918 dropped back to slightly above the production in 1915. Dredges[1] and other placer operations yielded $431,023 in gold and 5,353 ounces of silver, valued at $5,353, a total of $436,376, as against $540,951 in gold and 6,636 ounces of silver in 1917, against $579,050 in gold and 7,292 ounces of silver in 1916, and $607,195 in gold and 7,487 ounces of silver in 1915.

The principal placer-producing district in Colorado is near Breckenridge, Summit County. This county is also one of the three principal zinc-producing counties, being exceeded only by Lake and Eagle counties.

Breckenridge district.[2]—The Breckenridge district includes the Bevan, Minnesota, and Union districts and includes all the mines. (near Breckenridge) on French Gulch and on Blue and Swan rivers and all the placers in the county. The value of the total output of gold, silver, copper, lead, and zinc from both deep and placer mines was $1,926,636, or 93 per cent of the county yield, and a decrease in 1918 of $696,958, following an increase in 1917 of $66,787, an increase in 1916 of $760,170, and an increase in 1915 of $814,308.

The Wellington mine continued to be the principal producing property in the district. The 110-ton wet-concentration mill, with rolls, jigs, and tables, and the 100-ton roasting magnetic separation plant[3] with rolls, roasters, and magnetic separation machines for treatment of the zinc-iron middling product, were operated continuously, except during October and November, when, owing to the influenza epidemic, No. 1 mill was run only two shifts per day instead of three. In addition, a considerable quantity of high-grade zinc ore was shipped direct to smelters. The annual report of the Wellington Mines Co. for the fiscal year ended November 30, 1918 (dated December 14, 1918), says:

> During the year 2,365 feet of drifts and crosscuts and 975 feet of raises were driven. The Wellington vein was opened on the sixth level 500 feet west of the shaft and drifted on for 300 feet. The vein on this drift carries ore of good grade. Ore extraction for the year was again confined to the Great Northern vein, a total of 40,242 tons.

[1] See Revett, B. S., Gold dredging: Colorado Bur. Mines Thirteenth Bienn. Rept., for 1913-14, pp. 128-131, 1914.
[2] For discussion of the geology of the district see Ransome, F. L., Geology and ore deposits of the Breckenridge district, Colo.: U. S. Geol. Survey Prof. Paper 75, 1911.
[3] For description of magnetic plant see Parmalee, H. C., Zinc ore dressing in Colorado: Met. and Chem. Eng., September, 1912, pp. 525-528. For description of mills see Henderson, R. M., Colorado Bur. Mines Thirteenth Bienn. Rept., for 1913-14, pp. 106-110, 1914.

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MINERAL RESOURCES
OF THE
UNITED STATES
1919

G. F. LOUGHLIN
Geologist in Charge, Division of Mineral Resources

PART I—METALS

G. F. LOUGHLIN, Geologist in Charge

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1922

SAGUACHE COUNTY.

Baca Grant district (Liberty).—A power plant and machinery was installed at the Golden Treasure property.

Kerber Creek (Bonanza) district.—All the production of Saguache County in 1919 came from the Bonanza district. A large force of men was employed at the Cocomongo mine during the first six months of the year, but only a few men were employed during the last six months. Shipments of several hundred tons of silver ore carrying copper and some lead went direct to smelters. Other producing mines were the Joe Wheeler, Liberty, Now What, and Rico. At the Eagle mine a 50-ton flotation mill was built.

Mirage district.—At the Midnight claim the shaft was sunk 20 feet and 45 feet of trenching was done.

SAN JUAN COUNTY.

Mine production in San Juan County, Colo., in 1918 and 1919.

Year.	Number of producing mines.	Ore.	Gold.	Silver.	Copper.	Lead.	Zinc.	Total value.
		Short tons.		*Fine ounces.*	*Pounds.*	*Pounds.*	*Pounds.*	
1918	37	132,927	$257,011	477,322	1,120,178	9,485,775	3,410,308	$1,994,845
1919	20	64,899	132,560	279,667	661,667	5,443,906	1,833,768	991,249
Decrease, 1919	17	68,028	124,451	197,655	458,511	4,041,869	1,576,540	1,003,596

Animas district.—The Animas district (including the mines in the vicinity of Silverton and south and east of Animas River from Silverton to Middleton) produced 32,219 tons of ore, yielding $95,547 in gold, 198,676 ounces of silver, 469,597 pounds of copper, and 4,080,813 pounds of lead, with a total value of $621,692, as compared with $1,063,172 in 1918.

There were 22 producing mines, a decrease of 6. The chief producing properties were the Dives, Highland Mary, Iowa-Gold Tiger, and Mayflower. The Dives mine was operated continuously, with shipments of lead sulphide ore, assaying well in both silver and lead. The Highland Mary mine was operated only from June through December, but during that time several hundred tons of lead-silver ore was shipped. The Iowa-Tiger mine was operated steadily, and a large quantity of lead-silver ore was sent over the aerial tram to the Iowa-Tiger table-concentration oil-flotation mill, the product of which was a very good grade of lead-silver-gold concentrate. The flotation part of the mill was used only for the treatment of tailings and was in operation for only a short time. The Mayflower Leasing Co. operated the Mayflower mine steadily, sending the ore to the Iowa-Tiger mill for treatment, the product being lead-silver concentrate.

Several men were employed on development work at the Caledonian group. A small force of men employed steadily at the Emerald mine shipped several cars of copper-silver sulphide ore. The Detroit & Colorado Leasing Co. shipped several cars of copper-silver ore from the Champion No. 2 mine. Lead-copper-silver ore was shipped to Durango from the Hercules mine. Lessees on the Silver Lake mines shipped a few cars of silver-lead ore to the Durango smelter. At the Little Nation mine a road was built, a compressor installed, several mine buildings and an ore bin and sorting house erected, and much development work done underground, with the shipment of two cars of lead-silver ore. Copper-silver ore was shipped from the Champion No. 1 mine.

Eureka district.—The Eureka district (north of Silverton, including Chattanooga, Animas Forks, Eureka, and Red Mountain) produced 32,680 tons of ore, carrying $37,013 in gold, 80,991 ounces of silver, 192,070 pounds of copper, 1,363,093 pounds of lead, and 1,833,768 pounds of zinc and having a total value of $369,557, as compared with $931,673 in 1918.

The Sunnyside Co., which had been occupied in 1917–18 in the building of a new 500-ton flotation mill, mine buildings, and living quarters at Eureka, was able to carry on regular operations for only four months, for a fire at the property on April 26 made it necessary to rebuild the boarding house, bunk house, compressor plant, commissary, warehouse and office, framing shop, emergency hospital, and snow sheds.

The Gold King Extension Mines Co. employed a large force of men during the year. The underground workings were reopened, and ore was sent to the old 80-stamp amalgamation-concentration plant from January 1 to August 9. The remainder of the year was occupied with the installation of new crusher, stamps, concentration tables, and flotation cells.

From mines near Red Mountain was shipped several hundred tons of copper-silver-gold ore from the Congress, and several cars of ore from the Henrietta and the St. Paul. Silver-lead and zinc-lead sulphide ores were shipped from the Silver Ledge mine. The Ruby mine was reopened for inspection.

Three men working at the Early Bird prospect, on Houghton Mountain, drove an adit 40 feet long and shipped a small lot of gold-silver ore to the Salida smelter.

SAN MIGUEL COUNTY.

Mine production in San Miguel County, Colo., in 1918 and 1919.

Year.	Number of producing mines.	Ore.	Gold.	Silver.	Copper.	Lead.	Zinc.	Total value.
		Short tons.		*Fine ounces.*	*Pounds.*	*Pounds.*	*Pounds.*	
1918	27	374,134	$2,127,034	836,570	902,814	6,044,085	797,048	$3,711,145
1919	13	428,565	2,105,490	1,100,942	913,925	7,636,790	515,082	3,950,886
Increase or decrease, 1919	−14	−54,431	−22,144	+264,372	−78,889	+1,592,705	−282,566	+239,741

Upper San Miguel district.—The Upper San Miguel district in 1919 produced 427,841 tons of ore, carrying $2,104,263 in gold, 1,066,192 ounces of silver, 898,936 pounds of copper, 7,243,263 pounds of lead,

and 515,082 pounds of zinc, with a total value of $3,887,094, as compared with $3,622,077 in 1918.

The three large companies, the Liberty Bell, Smuggler Union, and Tomboy, continued to furnish the greater part of the total output. The Smuggler Union mill also treated a large quantity of lead-zinc ore from the Black Bear mine (in San Miguel County) and of silver ore from the Humboldt mine (in Ouray County, to which production is credited).

The Belmont-Wagner Mining Co., which took over the Alta mines in 1917 and did much development work in 1917 and 1918, including remodeling of the mill, operated the 250-ton oil-flotation mill (followed by table concentration) from June throughout the year, with product of lead-silver-gold concentrate. About 21,000 feet of development work has been done on this property.

The Cimarron 40-stamp table-concentration mill was operated for 100 days, with product of gold concentrate.

The Black Bear mine was operated on a productive basis for only 4¼ months, the remainder of the year being devoted to a large amount of development work. The ore, a lead-zinc-copper sulphide, was milled at the Smuggler Union mill, and a copper-lead-zinc concentrate was shipped to the River plant at Florence and a copper-lead concentrate to the Durango smelter.

The Liberty Bell concentration-cyanidation plant was operated 363 days. Since May, 1918, no concentrate has been shipped to smelters.

The Smuggler Union 650-ton amalgamation-table and vanner-concentration oil-flotation mill was operated continuously on ores from the Smuggler Union properties and from the Humboldt (Ouray County) and Black Bear mines. During the year a 200-ton ball mill was installed, increasing the capacity of the concentration mill 200 tons a day. Lessees working on the upper levels of the Smuggler Union mine, drawing old stopes of oxidized gold ore, sent this material to the 30-ton Barbara mill, equipped with a ball mill and a Huntington mill and tables, with product of amalgam bullion and gold-silver concentrate.

The Tomboy 60-stamp amalgamation table-concentration mill and 400-ton cyanidation plant for tailings were operated continuously until August, when in order to arrange for the installation of the new 500-ton flotation plant the old cyanide plant was shut down, and on November 22 the rest of the old milling plant was entirely dismantled. The new plant commenced operations, as to one unit, for five days in December, 1919, and the complete new plant was put in commission in January, 1920.

The annual report of the Tomboy Gold Mines Co. (Ltd.), dated October 8, 1919, for the year ended June 30, 1919,[1] says

that 155,334 tons of ore have been milled, from which bullion and concentrates to the value of $864,699 has been realized, at a cost of $781,397, resulting in a profit of $83,302. Deducting from this profit the loss incurred on the boarding house, etc., $8,745, the total surplus on the year's working will be found to correspond with the figures given in the manager's report, namely, $74,557. The average working costs for the year, including all expenses in America and London, were $5.10.

The following estimate of the ore reserves, exposed by the present developments are: In the Argentine group of mines, 200,000 tons, of which 100,000 tons are broken in the stopes; and in the Montana property, 300,000 tons, of which 150,000 tons are broken in the stopes.

[1] See also Eng. and Min. Jour., Jan. 10, 1920, p. 78.

From the Argentine group nearly 28,000 tons were milled, being about 18 per cent of the total for the year.

Of the total amount of ore milled during the year about 127,300 tons, or roundly 82 per cent, were supplied by the Montana group.

After exhaustive experiments, carried out on a practical scale on ore taken from all parts of the mine, the board authorized the erection of an oil-flotation plant, and the work of construction has been prosecuted with vigor during the past year. The latest advices from the general manager are to the effect that the plant should be in operation during the month of December.

The net results of the year's operations have been the most unfavorable of any year for over a decade and a half. The unusual economic and industrial conditions prevailing during the last months of the war and the first months of the reconstruction period have been the indirect underlying factors in the comparatively unprofitable results of the year's operations; while unfavorable mine conditions, induced by insufficient and inefficient labor, prevented realizing on the better-grade reserves of the mine for several months of the year and directly contributed to the unsatisfactory returns.

The cyanide plant treated 122,624 tons of tailings, recovering therefrom bullion valued at $158,222.61, and slag to the value of $2,967.08, or a total value of $161,189.69, at a cost of $1.131 per ton, and yielding a net profit of $0.183 per ton of tailings treated.

Revenue and expenditure, Tomboy mine, June 30, 1918, to June 30, 1919.

155,334 dry tons ore milled, yielding bullion worth			$265,796.55
Concentrates worth			437,712.77
Cyanide bullion worth			158,222.61
Cyanide slag worth			2,967.08
			864,699.01
Less loss on boarding house, rents, etc			8,745.52
			855,953.49
Mining and developing expenses	$2.21 per ton	$343,065.91	
Milling expenses	.67	104,403.95	
Concentrating expenses (including transportation to railway)	.53	81,970.12	
Water-supply expenses	.09	14,641.80	
Assay-office expenses	.05	7,237.69	
Cyaniding expenses	.88	137,013.81	
General expenses	.33	51,855.17	
Taxes and insurance	.27	41,208.01	
Total expense	5.03		781,396.46
Profit			74,557.03

The Gold Run Placer Co. operated from June through December a small mill equipped with thickeners and Wilfley tables, on tailing carried by San Miguel River, with product of silver-gold concentrate.

Iron Springs (Ames and Ophir) district.—The Iron Springs district produced 724 tons of ore, carrying $1,227 in gold, 34,750 ounces of silver, 14,989 pounds of copper, and 393,527 pounds of lead, with a total value of $63,792, as compared with $88,733 in 1918. Several hundred tons of lead-silver oxidized ore was shipped from the Carbonero, the most productive mine in the district. Small shipments of lead sulphide ore were made from the Carribeau and San Bernardo. The Valley View Leasing & Mining Co. retimbered the 1,500-foot adit on the San Bernardo and in October, began the erection of a 100-ton water-concentration oil-flotation mill. Small lots of copper sulphide ore were shipped from the Crown Point and Santa Cruz mines. The Matterhorn Mining & Milling Co., working from the Butterfly adit from April through December, did repair work and

prospecting for ore and made repairs on the Butterfly-Terrible amalgamation-concentration mill.

The Summit Metal Mines Corporation began in October the remodeling of the Suffolk 100-ton cyanidation-concentration mill and the reopening of the 1,000-foot adit.

SUMMIT COUNTY.

Mine production in Summit County, Colo., in 1918 and 1919.

Year.	Number of producing mines.	Ore.	Gold.		Silver.[a]	Copper.	Lead.	Zinc.	Total value.
			Placer.	Deep.					
		Short tons.			*Fine ounces.*	*Pounds.*	*Pounds.*	*Pounds.*	
1918	36	58,185	$431,023	$36,116	117,326	13,206	777,338	15,696,264	$2,071,278
1919	33	17,567	464,540	11,351	87,676	6,086	446,491	4,047,096	894,322
Increase or decrease, 1919	−3	−40,618	+33,517	−24,765	−29,650	−7,120	−330,847	−11,649,168	−1,176,956

[a] Includes placer production.

There was a heavy decrease in deep-mine production of all metals, and particularly of zinc, in Summit County in 1919. Dredges and other placer operations, however, yielded $464,540 in gold and 5,942 ounces of silver, valued at $6,655, a total of $471,195, as against $431,023 in gold and 5,353 ounces of silver in 1918.

The principal placer-producing district in Colorado is near Breckenridge, Summit County. This county is also one of the principal zinc-producing counties.

Breckenridge district.—The Breckenridge district includes the Bevan, Minnesota, and Union districts and includes all the mines (near Breckenridge) on French Gulch and on Blue and Swan rivers and all producing placers in the county. The value of the total output of gold, silver, copper, lead, and zinc from both deep and placer mines was $809,912, or 91 per cent of the county yield, but a decrease for 1919 of $1,116,724.

The Wellington mine continued to be the principal producing property in the district. Early in 1919 this company found itself without a market for its zinc concentrate, but continued milling operations for a few months, storing its concentrate. Then for a period only development work was done at the mine. In September shipment of the stored concentrate began, and in December the force of men at the mine was increased, but the number was not equal to that employed in January to March. The Wellington mills include a 115-ton wet-concentration mill, making a lead concentrate, zinc-iron middling, and a silica tailing, and a 90-ton magnetic separator for treatment of the middling, making a zinc concentrate and an iron tailing.

Several cars of silver oxidized ore were shipped to smelters from the Brooks-Snyder mine. Lead oxidized ore was shipped from the Carbonate, Iron Mask, June Bug, Price, and Sunnyside. A car of silver oxidized ore was shipped from the Quandary Queen mine. From the Standard dump several hundred tons of silver oxidized

ore was shipped. A car of silver ore was shipped by lessees from the Minnie B mine, on Mount Guyot.

The Royal Tiger Mining Co. employed a large force of men throughout the year on extensive development work, including the building of a 50-ton table and jig-concentration oil-flotation mill.

For the first six months of the year development work was done at the Laurium (Blue Flag) mine. During the last five months two men were employed in reopening the Warriors Mark mine, idle for years.

Five dredges were in operation, all operated by electricity. The Powder River Gold Dredging Co.'s dredge (new in 1918) was operated on the B. & L. and other placer claims from January 1 to October 31, when it was turned over to the Blue River Dredging Co., which operated it the remainder of the year. This dredge has 70 buckets of 8 cubic feet capacity each. The French Gulch Dredging Co.'s dredge of 80 buckets of 5 cubic feet capacity was operated for 249 days. The annual report of the Tonopah Placers Co. (subsidiary of the Tonopah Mining Co. of Nevada) says of its three dredges, two of which have each 84 buckets of 9 cubic feet capacity and one 84 buckets of 5½ cubic feet capacity.

Dredge No. 1 has been operating during the year on the Magnum Bonum placer. The tracks of the Colorado & Southern Railroad extended over this ground and divided the claim. While dredging in a southerly direction on this claim, it was found necessary that a strip of land, containing a dredgeable area of 28.2 acres on bed rock would have to be passed by in order to give sufficient lateral support to the roadbed to prevent it caving. To remedy this, negotiations were opened with the railroad company and the United States Railroad Administration, which resulted in removing the roadbed to a new location at the extreme western limits of the placer boundaries. This was accomplished at a cost of $12,476.04, which was paid by the Placers Co. This transfer of the railroad tracks to the new right of way renders available for dredging an area of 32 acres.

The No. 2 dredge was operating during all the year upon the ground of the Farncomb Hill Gold Dredging Co. This ground proved to be of such low value that the dredging in it was unprofitable. It was finally decided to suspend the operation of the dredge until drilling could be done to determine the proper course to pursue in the future. The dredge was closed down about the middle of December.

The No. 3 dredge was in continuous operation since April upon ground that had been left by other dredging operations some years ago. On resuming the operations of this dredge in the coming spring it will be necessary to dig a narrow strip of ground between two lots of tailings left in the previous dredging.

Comparative balance sheet of Tonopah Placers Co. for year ending December 31, 1919.

	Dec. 31, 1918.	Dec. 31, 1919.	Increase.	Decrease.
Assets:				
Property	$883,280.73	$771,317.50		$111,963.23
Dredges	191,881.48	308,104.19	$116,222.71	
Material and supplies	99,689.17	84,594.31		15,094.86
Victory loan (liberty) bonds		5,000.00	5,000.00	
Accounts receivable	18,640.90	13,885.96		4,754.94
Prepaid insurance and taxes	1,981.90	2,627.14	645.24	
Cash	32,635.97	48,292.07	15,656.10	
	1,228,110.15	1,233,821.17	5,711.02	
Liabilities:				
Capital stock	1,000,000.00	1,000,000.00		
Notes outstanding	56,000.00	56,000.00		
Accounts payable	91,701.46	78,010.71		13,690.75
Taxes payable	373.92			373.92
Reserve for insurance	250.62	514.47	263.85	
Surplus	79,784.15	99,295.99	19,511.84	
	1,228,110.15	1,233,821.17	5,711.02	

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MINERAL RESOURCES
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UNITED STATES
1920

G. F. LOUGHLIN
Geologist in Charge, Division of Mineral Resources

PART I—METALS

G. F. LOUGHLIN, Geologist in Charge

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Kerber Creek (Bonanza) district.—There was an appreciable increase in the production of the Kerber Creek district in 1920. Several cars of lead-copper-silver ore were shipped from the Antoro mine. Under the title of the Antoro Mines Co., several groups of claims were taken under bond and lease, preliminary surveys were made, and development work was done. From the Cocomongo mine a large quantity of ore was sent to the Bonanza 50-ton gravity-concentration and oil-flotation mill, the product being lead-copper-silver concentrate. In addition several hundred tons of copper-silver ore was shipped directly to smelters. At the Eagle mine, opened by a 450-foot vertical shaft and 2,000 feet of drifts, several thousand tons of ore was stoped and, with the addition of several thousand tons from the dump, was milled in the 50-ton oil-flotation mill on the property. The concentration ratio was high, but the resulting concentrate carried a high content of silver. Development for examination of the Liberty mine resulted in the shipment of several cars of mixed oxide and sulphide ore carrying silver. No ore was mined at the Rawley mine, which has remained idle for several years since the completion of an adit 6,235 feet long that cut the vein at 1,200 feet in depth and exposed an ore body upon which some drifting has been done.

SAN JUAN COUNTY.

The production of San Juan County for 1920 was the largest in gross value in the history of the county.

Animas district.—The Animas district (including the mines in the vicinity of Silverton and south and east of Animas River from Silverton to Middleton) did not equal its record for 1919. The largest operation was that of the Southwestern Leasing Co. on the Iowa-Gold Tiger group and gravity-concentration and oil-flotation mill, to which was sent a large quantity of milling ore that yielded a very good grade of lead concentrate carrying gold and silver. Two other important operations were the Dives and the Highland Mary, from which were shipped appreciable quantities of lead ore assaying well in silver. Lessees on the Silver Lake mines extracted several hundred tons of lead-silver ore. Other producing mines were the Champion No. 1, Colombo, Emerald, Fredericka, Hercules, Little Nation, and San Juan Queen.

Eureka district.—The Eureka district (north of Silverton, including Chattanooga, Animas Forks, Eureka, and Red Mountain) made a greatly increased output. The Sunnyside Co. operated continuously its 500-ton gravity-concentration and selective-flotation mill, producing a high-grade lead concentrate carrying marketable quantities of gold, silver, and copper and a comparatively high-grade zinc concentrate carrying appreciable quantities of lead, copper, silver and gold. A comparatively large quantity of gold ore was milled at the Gold King 80-stamp amalgamation and gravity-concentration mill and yielded gold bullion and gold concentrates. A car of copper ore carrying silver and gold was shipped from the Early Bird discovery. Two cars of chalcopyrite-pyrite ore carrying silver and gold were shipped from the Henrietta mine, near Red Mountain.

Ice Lake Basin district.—Several cars of lead-silver-gold ore were shipped from the Bandora mine by lessees.

SAN MIGUEL COUNTY.

Iron Springs (Ames and Ophir) district.—The Iron Springs district in 1920 produced 2,788 tons of ore, carrying $1,906 in gold, 32,111 ounces of silver, 12,082 pounds of copper, and 278,500 pounds of lead, with a total value of $61,410, as compared with $63,792 in 1919. Several hundred tons of lead-silver sulphide ore was shipped to Durango from the Carbonero mine. The ore from this mine also carries some zinc. The Valley View Co. completed its 100-ton Gravity concentration and oil-flotation mill at the San Bernardo property and started milling operations during the last months of the year, shipping several hundred tons of silver concentrate. The Matterhorn Mining & Milling Co. took an option on the mine and mill of the Butterfly-Terrible property and shipped one car of lead-copper ore to the Durango smelter. One car of lead-silver ore was shipped by lessees from material sorted from the dump of the Silver Bell property. Shipments of crude ore to Durango were also made from the Crown Point, Favorite, and Santa Cruz properties.

Upper San Miguel district.—The Upper San Miguel district produced 371,381 tons of ore, carrying $1,338,320 in gold, 1,032,556 ounces of silver, 936,614 pounds of copper, 7,293,375 pounds of lead, and 175,617 pounds of zinc and having a total value of $3,233,838, as compared with $3,887,094 in 1919.

The Belmont-Wagner Mining Co., operating the Alta and St. Louis mines, with a main adit of 4,000 feet and 4 miles of drifts, ran its 300-ton oil-flotation mill (followed by table concentration) from January to April and in September and October on crude ore from the mine and some tailings from previous operations, shipping lead-silver-gold concentrates. The ore from this property is both oxidized and sulphide; oxidized ores persist even in the lowest workings.

The Cimarron 40-stamp table-concentration mill was operated for a short period, with shipments of gold concentrate.

The complex lead-zinc sulphide ore of the Black Bear mine was treated in the Smuggler Union mill with two products, a lead-copper-silver-gold concentrate sold to the Durango smelter and a zinc-lead-silver-gold concentrate sold to the River smelter, at Florence.

The Liberty Bell 500-ton concentration-cyanidation mill was not in operation for four months. In September the cyanide treatment was discontinued, and for the rest of the year concentration only was applied to the ore, the reserves of which were seen to be small.

The Smuggler Union 60-stamp 650-ton amalgamation-concentration mill treated approximately the same tonnage from the Smuggler Union proper as in 1919, and also treated ore from the Black Bear mine, in San Miguel County, and the Humboldt mine, in Ouray County. Lessees working on the upper levels of the Smuggler Union also contributed to the output by operating the 30-ton Barbara mill, equipped with a ball mill, Huntington mill, and tables, with product of amalgam bullion and gold-silver concentrate.

The Tomboy new 600-ton oil-flotation plant was put into full use in January, but during the first six months of the year, except in March, the operation showed financial losses, due principally to the difficulties of starting a new plant and the adjustment of the treatment of the varied ores.

The annual report of the Tomboy Gold Mines Co. (Ltd.), dated London, December 4, 1920, for the year ended June 30, 1920, but including the report of the manager, dated New York, October 20, 1920, continues as follows:

The failure of the plant to produce a merchantable zinc product, which was one of the objects of its installation, accentuated these difficulties, and it was the treatment of much larger quantities of zinc ore, in pursuit of this object, that caused the serious losses in May and June. The endeavor to produce a profitable zinc concentrate has, at least for the present, been abandoned, and the plant is now working satisfactorily and has made continuous profits since July 1.

During the year 55,607 tons of ore were drawn from the Argentine mine, leaving 301,586 tons in reserve, of which 132,346 tons are broken in the stopes and ready to be drawn; 90,458 tons of ore * * * was drawn from the workings of the Montana group, leaving an estimated reserve of 586,658 tons, of which 189,136 tons are still unbroken.

Revenue and expenditure, Tomboy mine, June 30, 1919, to June 30, 1920.

146,066 dry tons ore milled, yielding amalgam bullion worth			$107,919.72
Concentrates worth			672,735.18
Cyanide bullion worth			28,646.97
Cyanide slag worth			2,687.68
			811,989.55
Sundry profits—boarding house, rents, etc			4,205.29
			816,194.84
	Per ton.		
Mining and developing expenses	$2.96	$432,556.71	
Milling expenses	.68	98,894.16	
Concentrating expenses (including transportation to railway)	.76	110,773.10	
Water-supply expenses	.20	29,719.71	
Assay-office expenses	.05	7,552.79	
Cyaniding expenses	.11	15,270.67	
60-mill clean-up expenses	.01	861.75	
General expenses	.49	71,502.03	
Taxes and insurance	.33	48,724.14	
Total expense	5.59		815,855.06
Profit			339.78

During the period under review the operations in mining and treatment of ore from the property have been handicapped by the change from the former method of reduction to that of oil flotation. This change led to the shutdown of the cyanide plant in July, 1919, for the purpose of remodeling it to suit the new system, also the abandonment of the 60-stamp mill early in December, 1919. As a result, both the tonnage of ore treated and the values recovered suffered severely, and this, added to the present high cost of construction and operation, put an undue strain on the company's resources.

The new flotation plant, erected to treat 15,000 tons of ore monthly, was able during the month of September, 1920, to handle 17,432 tons. It is a very efficient installation and the elasticity of its capacity is an important matter, as advantage can be taken of the periods when water is plentiful to treat the maximum tonnage.

The system of shrinkage stopes, adopted in mining the Argentine ore, was so economical and resulted so well, that the late management was induced to apply it in the Montana mine but owing to the softer walls in the Montana vein, it is found that ore stoped in this method, after long exposure, became vitiated by waste rock from the walls. It has therefore been decided to apply this system only where local conditions warrant, and generally waste-filled stopes or other methods will be adopted. This change, though more expensive, will result in cleaner ore going to the mill.

Since the connection was made between the surface workings of the Sidney and the Ophir level, nothing has been done to develop either the Sidney vein or the extension north of the Montana vein. No records are available as to former Sidney operations, but it is known that ore of a good grade was met with, and development of this section is contemplated, as soon as labor is available.

SUMMIT COUNTY.

There were increases in deep-mine production of gold, silver, lead, and zinc in Summit County in 1920. Dredges and other placer operations yielded $374,882 in gold and 4,811 ounces of silver, as compared with $464,540 in gold and 5,942 ounces of silver in 1919.

Breckenridge district.—The value of the total output of Breckenridge district from both deep and placer mines was $1,141,194, or 92 per cent of the county yield.

The Wellington mine continued to be the principal producing mine in the district. The Wellington mine has two mills, one a 115-ton wet-concentration mill, making a lead concentrate, zinc-iron middling and silica tailing, and a 90-ton magnetic separator for treatment of the middling, making a zinc concentrate and an iron tailing. These two mills were operated nearly at capacity in 1920, and a large quantity of zinc concentrate was shipped. Several hundred tons of crude pyritic ore was also shipped during the year for its sulphur content.

Other producing mines were the Brooks-Snyder, Dunkin, Iron Mask-Etta, Germania, Jessie, Minnie B., Missouri, Price, Quandary Queen, I. X. L. (Royal Tiger Co.), and Standard.

Four dredges were in operation during the year. The Blue River Placer Mining Co.'s dredge of 70 buckets of 8 cubic feet capacity each was operated on the B. & L. and other placer claims. The French Gulch Dredging Co.'s dredge of 80 buckets of 5 cubic feet capacity each was operated from April 20 to September 29. The annual report of the Tonopah Placers Co. (subsidiary of the Tonopah Mining Co. of Nevada) reports only two of its three dredges in operation in 1920, as follows:

Dredge No. 1 has continued operating during the year on the Magnum Bonum placer. This dredge handled 1,340,876 cubic yards of material during the year, giving a total production of $169,122, or an average value of 12.6 cents per yard with a net operating profit of $66,280, or 5 cents per cubic yard. In conformity with the annual custom, this dredge will be closed down the first of February, so that the necessary repairs can be made upon it for the coming season. It is probable that this dredge will have about four or five years' more operations. During the past year the company acquired a parcel of the Magnum Bonum placer and the Rankin placer, adding about 27 acres of available dredging ground for this dredge. For the coming year the ground ahead of No. 1 dredge should average about the same as 1920, but the operations of this dredge will be obliged to carry all the overhead charges formerly distributed over the three dredges.

As stated in the annual report for the year 1919, the operation of No. 2 dredge was suspended in December of that year and has continued to be closed down during all the year 1920. Owing to the location of this dredge, it could not be utilized unless it was dismantled and transported to another part of the property. The cost of the necessary repairs to put it in proper working condition, together with dismantling and moving it, would be too large to make it advisable to do so. Therefore the dredge should be dismantled and such parts

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DEPARTMENT OF THE INTERIOR
HUBERT WORK, Secretary

UNITED STATES GEOLOGICAL SURVEY
GEORGE OTIS SMITH, Director

U.S. Bureau of Mines

MINERAL RESOURCES
OF THE
UNITED STATES
1921

G. F. LOUGHLIN
Geologist in Charge, Division of Mineral Resources

PART I—METALS

G. F. LOUGHLIN, Geologist in Charge

6976

WASHINGTON
GOVERNMENT PRINTING OFFICE
1924

SAN MIGUEL COUNTY.

San Miguel County's record in 1921, as compared with 1920, showed a very material increase in quantity of ore treated and in gross value of recovered metals.

Iron Springs (Ames and Ophir) district.—The Iron Springs district in 1921 produced 14,809 tons of ore, carrying $7,717 in gold, 157,668 ounces of silver, 61,837 pounds of copper, and 1,101,979 pounds of lead, with a total value of $222,951, as compared with $61,410 in 1920. The San Bernardo mine, reopened and equipped with a concentration flotation mill in 1920 by the Valley View Mining & Leasing Co., was the most important producer in 1921, with a product of several thousand tons of lead-silver concentrates. The Matterhorn Mining & Milling Co. added a 6-cell flotation machine, settling tanks, and Wilfley tables to the Butterfly-Terrible 30-stamp concentration mill, which was operated 141 days on ore from the Butterfly-Terrible mine, adjoining the Matterhorn mine. This company received title deed to the Butterfly-Terrible property in 1921. The Suffolk 20-stamp amalgamation, gravity-concentration, and oil-flotation mill was operated intermittently in 1921 by the Summit Metal Mines Corporation, which did 150 feet of drifting and some stoping on its group of mines. Lessees operated the Carbonero mine 361 days and shipped several hundred tons of lead-silver ore to Durango and Leadville. Smelting ore was also shipped from the American Frenchman, Favorite, New Dominion, Shamus O'Brien, and Silver Bell mines.

Upper San Miguel district.—The upper San Miguel district produced 440,472 tons of ore, carrying $1,461,103 in gold, 1,619,295 ounces of silver, 859,736 pounds of copper, and 7,334,265 pounds of lead, having a total value of $3,521,346, as compared with $3,233,838 in 1920.

The Belmont-Wagner Mining Co., operating the Alta and St. Louis mines, drove the Black Hawk Tunnel (the new lower adit) 922 feet from January to June, and from October to December, inclusive. The mine openings were cleaned and retimbered, and ore was mined from July to the end of the year. The 200-ton table concentration and oil-flotation mill was operated on crude ore from the mine and some tailings from previous operations from July 10 to December 31.

The Liberty Bell Gold Mining Co. operated its mine and 80-stamp 500-ton concentration-cyanidation mill in a final clean-up until August, 1921, when operations were discontinued and the company dissolved and went into liquidation. This company's mine has been in almost continuous operation since 1898.

The Smuggler Union 60-stamp (plus one Allis Chalmers ball mill) amalgamation-concentration mill was operated 362 days on ore from the Smuggler Union mine (San Miguel County), and the Humboldt mine (Ouray County), connected mines, both operated from the San Miguel County side by adits and connected by aerial tram with the mill at Pandora, above the town of Telluride. To this mill was added in 1921 a new concrete and steel 850-ton oil-flotation plant, in a separate building, to replace the flotation plant destroyed by fire in June, 1920, with a resultant increase in quantity of ore milled in 1921 as compared with 1920.

The Tomboy new (in 1920) 600-ton table-concentration and oil-flotation mill, to which some amalgamation machinery was added and used in 1921, was operated continuously with an increased quantity of ore milled in the calendar year 1921 compared with the calendar year 1920.

The annual report of the Tomboy Gold Mines Co. (Ltd.), dated London, December 8, 1921, for the year ending June 30, 1921, containing the report of the manager, dated Telluride, September 1, 1921, says:

During the year 197,557 dry tons of ore were put through the mill, which was an increase of 51,491 tons as compared to the previous year. In addition to this 197,557 tons of ore milled, 6,250 tons of waste rock were sorted out of the total tonnage hauled from the mine since February, 1921.

No development work of any kind was performed in the Argentine during the past year, operations being confined to stoping and the removal of upper level floor pillars.

During the year 81,808 dry tons of ore were drawn from the Argentine, or 41.41 per cent of the total tonnage milled.

Estimating as closely as is to-day possible, the Argentine ore reserves consist of a total 285,000 tons, 175,000 tons of which are still unbroken. Of the total 285,000 tons, 75,000 tons of broken ore and 120,000 tons unbroken ore are below the 1,750-foot level, and this lower part of the mine is now being used for the storing of water to assure a constant ample supply for milling purposes during the season of the year when no surface water is available.

The Argentine should be able to supply easily the same proportion of ore to mill for another year, from above 1,750-foot level, as has been drawn during the past year.

Development done in the Montana mine for the year totalled 1,587.6 feet, and consisted of 787.2 feet of drifting, 783.6 feet of raises and 16.8 feet of crosscutting. The bulk of this work was done on the Virginius vein, as only 57 feet of drifting and 79.8 feet of raising was done on the Montana vein.

The Virginius ore shoot, with what little development has been done to date, is the most promising portion of the mine. Because of the great distance of this work from fresh air the present development is rather slow, but connection through to the surface should be completed by the first of the year and then extensive developments can be prosecuted diligently. If this ore body develops as well as we hope for, the complete exhaustion of the Argentine will not be felt.

The estimated ore reserves of the Montana mine consist of 384,000 tons broken and 180,000 tons unbroken. Of this total of 564,000 tons, 480,000 tons are above 1,750-foot level.

The estimated and assured ore reserves in the Virginius total 39,000 tons, of which 9,000 tons are broken.

The total ore reserves in all three mines amount to 888,000 tons, of which 503,000 tons are already broken.

The Montana produced 105,298 dry tons of ore, or 53.3 per cent of the total milled during the past year, and the Virginius produced 10,451 dry tons, or 5.29 per cent of the total.

Development will soon be under way in drifting north on the Montana level of the Montana to explore the vast territory on this level and above and lying between the present face of the old Montana drift and the Sydney vein.

The new plant on the whole seems to be doing just about as good work as can be hoped for. While the extractions are not all up to what you were led to expect from the preliminary work, it must be borne in mind that shortly after the plant commenced to operate a decided change took place in the grade and character of the ore, and this undoubtedly accounts for the difference between expectations and realizations.

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DEPARTMENT OF THE INTERIOR
Hubert Work, Secretary

U. S. GEOLOGICAL SURVEY
George Otis Smith, Director

MINERAL RESOURCES
OF THE
UNITED STATES
1922

G. F. LOUGHLIN
Geologist in Charge, Division of Mineral Resources

PART I—METALS
G. F. LOUGHLIN, Geologist in Charge

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WASHINGTON
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1925

Eureka district.—From the Eureka district, north of Silverton, including Chattanooga, Animas Forks, Eureka, and Red Mountain, one small lot of ore was shipped from the Early Bird mine, and lead-zinc concentrate and lead concentrate, stored from 1920 operations, were shipped from the Sunnyside mill. Comparatively little development work was done at the Sunnyside mine, and the 500-ton mill remained idle. Supplies were sent up late in 1922, in anticipation of active mining and milling early in 1923.

SAN MIGUEL COUNTY.

The mines in San Miguel County produced less ore than in 1921, but there was an increase in metals contained in ore and concentrate shipped from the county, including the production from the Humboldt mine, which is in Ouray County but is worked from the San Miguel side.

Iron Springs district (Ophir).—Eighteen mines in the Iron Springs district produced 17,519 tons of ore, carrying $6,806 in gold, 88,192 ounces of silver, 38,007 pounds of copper, and 481,255 pounds of lead, with a total value of $126,598, as compared with $222,951 in 1921. The Valley View Mining & Leasing Co., which had a bond and lease on the San Bernardo mine, continued operation of the 100-ton gravity-concentration and oil-flotation mill, built in 1920. The product was lead-silver concentrate. Lessees on the Ida vein of the Silver Bell mine, entered through the Silver Bell adit, mined from a narrow streak and hand cobbed several cars of relatively high-grade silver ore. After a long idleness the Ophir Loop Mines & Metals Co. decided to mine the ores above the sixth level on the Butler vein of the Silver Bell mine. Of the old 50-stamp mill (1,000 pounds each) 20 stamps were supplied with ore, which after being crushed went to Brown flotation machines, a Wilfley table for pilot, and Oliver filters. The ore first mined, a sulphide in siliceous gangue, with 20 per cent gossan material consisting of red and yellow iron oxides, was not successfully amenable to flotation, so that ore was thereafter mined from the mill level of the Butler adit, 800 feet lower, where no oxidation has occurred. The product of the mill was a lead-silver-gold concentrate. The Matterhorn (Butterfly-Terrible) concentration-flotation mill was not operated, and the mine was operated only 72 days by lessees. At the Carbonero mine nearly all the year was spent in repairing a 650-foot raise, starting new levels, and repairing lower workings, but several cars of lead-silver ore were shipped. Small shipments of ore were made from the Carribeau, Crown Point, Deadwood, New Dominion, Parsons, Santa Cruz, and Shamus O'Brien.

Klondyke district.—Two small lots of copper-silver ore were shipped from the Klondyke district near Cedar.

Mount Wilson district.—A car of silver ore was shipped from the Moody mine, in the Mount Wilson district.

Upper San Miguel district (Telluride).—Five mines in the Upper San Miguel district produced 380,299 tons of ore, carrying $1,071,040 in gold, 1,557,051 ounces of silver, 634,845 pounds of copper, and 6,579,636 pounds of lead, with a total value of $3,075,675, as compared with $3,521,346 in 1921 and with $3,233,838 in 1920.

The Belmont-Wagner Mining Co.,[5] operating the Alta mines, sent twice the quantity of ore treated in 1921 to its 150-ton gravity-concentration and oil-flotation mill and produced more than twice the quantity of concentrate, which contained gold, silver, and lead. The development work at the mine amounted to 2,904 feet. In removing the machinery from the Liberty Bell mill, which had been closed in 1921 after many years of successful operation, some bullion and smelting material was marketed. The Smuggler Union mine and mills were operated 361 days. The mills of this company, which are also used to mill ore from the Humboldt mine in Ouray County, consist of the old 60-stamp amalgamation-concentration mill and a new concrete and steel 850-ton flotation plant. This new plant was completed in 1921 to replace the wooden structure destroyed by fire in June, 1920, and has floor space and head room sufficient for the installation of additional flotation cells to handle the large quantity of complex ore blocked out at the Black Bear mine, which is being held until the completion of the Coolbaugh sulphating plant at Durango, for which ground was broken in August, 1922. Lessees on some of the upper old workings of the Smuggler Union marketed gold-silver bullion. The Tomboy Co. continued to operate steadily its 600-ton gravity-concentration and selective-flotation mill (originally a cyanidation plant built in 1914; overhauled, enlarged, and changed to a concentration-flotation mill in 1919). The rough concentrate from the Wilfley tables was put through a bath of quicksilver in a small slowly revolving table mill, a reversal of the ordinary stamp-mill practice. The annual report of the Tomboy Gold Mines Co. (Ltd.) for the year ending June 30, 1922, containing the report of the manager dated September 14, 1922, says:

> During the year 243,610 tons of material were hauled from the mines to the mill. From this total 16,533 tons of waste were sorted out ahead of the crusher and put over the dump. A further 16,248 tons were deducted for moisture content, and the bin storage was low by 174 tons on June 30. The net result for the year was therefore 211,003 dry tons of ore milled, or an increase over the previous year of 13,446 dry tons.
>
> No development work of any kind was performed in the Argentine group during the year, operations still being confined to the drawing down of ore from and clearing out of the old upper level stopes, the stoping of a few remaining blocks of ore, and the breaking down of upper level floor pillars. Practically all hand tramming has been eliminated by the numerous ore passes holed through floor pillars, and the old workings are now abandoned down to the 1,500 foot level. Where several large blocks were left in place long ago because of the low grade of the ore exposed, it is planned to later drive into these blocks to determine whether or not the low grade now exposed is only local and temporary. At the present time this can not be done without mixing waste with the ore below.
>
> During the past year 83,805 wet tons were drawn from the Argentine group, or 34 per cent of the total tonnage sent to the mill.
>
> The estimated Argentine ore reserves consist of 38,083 tons of broken and 21,785 tons of unbroken ore above 1,750-foot level, 74,062 tons broken and 121,393 tons of unbroken ore below 1,750-foot level—a total of 112,145 tons broken ore and 143,178 tons of unbroken ore, or a grand total of 255,323 tons.
>
> The total Argentine ore readily available at any time totals only 59,868 tons, but this figure is taken from the estimate, which assumes certain portions of inaccessible stopes to be practically empty. This same assumption has been made several times before, and the stopes later proved to contain much more ore than was assumed. This condition can not be relied upon to continue much longer, yet it is possible and even probable that the Argentine will con-

[5] The annual report of the Tonopah Belmont Development Co. of Nevada reports investment in the Belmont-Wagner Mining Co. as $896,900.54 (Eng. and Min. Jour.-Press, Apr. 19, 1923, p. 913).

tinue to deliver its present percentage of ore for still another year, from above 1,750-foot level.

The future drawing and mining of ore from below 1,750-foot level can only be done during the periods when the workings are free from the water stored there for use in milling during the dry season of the year. Moreover, this ore is of low grade and will have to be milled with better ore from elsewhere to stand the extra cost of tramming and hoisting to the 1,750-foot level.

Development driving in the Montana mine for the year totaled only 926 feet and consisted of 572 feet of drifting, 71 feet of crosscutting, and 283 feet of raising. This does not include the dead-work drifting, crosscutting, and raising in the hanging wall of the Montana stopes to reach ore that is hung up in the stopes and blast it down for drawing.

The estimated ore reserves in the Montana mine consist of 291,962 tons broken and 123,630 tons of unbroken ore above 1,750-foot level, 26,513 tons broken and 58,399 tons unbroken ore below 1,750-foot level—a total of 318,475 tons broken and 182,029 tons unbroken ore, or a grand total of 500,504 tons.

During the year 150,038 tons of ore were drawn from the Montana, or 61.58 per cent of the tonnage sent to the mill.

The total of 84,912 tons of ore below 1,750-foot level could be taken out at any time, but not without endangering 1,750-foot level. Therefore, this ore had best remain where it is until all the upper and inside parts of the Montana are cleaned out and abandoned. Moreover, as in the case of the Argentine, this ore below 1,750 feet is of lower grade and will cost more to remove because it will have to be trammed and hoisted.

Development driving in the Virginius for the year totaled 1,956 feet and consisted of 1,361 feet of drifting, 35 feet of crosscutting, and 560 feet of raising. The long No. 26 Manway raise, driven mainly for ventilation, holed through to the surface the early part of last February, and since that time it is possible to do considerable stoping and send some of this tonnage to the mill to raise the grade of the regular mine run.

9,767 tons of ore were drawn from the Virginius during the year, or 4.02 per cent of the total tonnage to mill.

The estimated Virginius ore reserves consist of 12,689 tons of broken ore and 34,235 tons of unbroken ore, or a total of 46,924 tons.

The total ore reserves in all three mines amount to 802,751 tons, of which 443,309 tons are already broken.

Some slight progress has been made toward better extractions in the mill, and further amalgamation has been found practicable.

Mr. J. T. Terry, jr., whose ammoniacal process of selectiive flotation is in use here, after some extensive laboratory work, came here to improve our mill work but without success.

Revenue and expenditures, Tomboy mine, June 30, 1921, to June 30, 1922.

211,003 dry tons ore milled, yielding bullion worth			$283,178.92
Concentrates worth			568,187.27
Cyanide plant, bullion			310.30
60-mill clean-up, bullion			15,905.47
60-mill clean-up, concentrates			7,000.70
			874,582.66
Sundry profit, boarding house, rents, etc			14,411.88
			888,994.54
	Per ton.		
Mining and development expenses	$1.76	$371,252.25	
Milling expenses	.67	139,656.25	
Concentrating expenses (including transportation to railway)	.71	150,537.44	
Water-supply expenses	.17	35,561.73	
Assay-office expense	.03	6,801.07	
60-mill clean-up expenses	.01	2,135.25	
General expenses	.28	59,941.91	
Taxes and insurance	.18	37,577.59	
Total expense	3.81		803,463.49
Profit			85,531.05

In April, 1923, a fire occurred which completely destroyed the boiler-plant building, coal bins, and about 250 feet of snowshed and trestle between the boiler plant and the new mill building. Five days milling time were lost while rebuilding the section of trestle and reestablishing haulage communication to the mill.

On July 8, 1923, a much more serious fire occurred which resulted in the total loss of the boarding house, club building, blacksmith, machine, and carpenter shops. This fire caused a loss of only two days lost mining and milling time while preparing temporary boarding and lodging quarters.[6]

SUMMIT COUNTY.

The rise in the price of zinc toward the end of 1922 allowed zinc concentrates stored at Breckenridge to be marketed in November and December and resulted in the reopening in December of the Wellington concentration mill at Breckenridge. Dredges and other placer operations yielded $255,298 in gold and 3,218 ounces of silver, as compared with $337,980 in gold and 4,358 ounces of silver in 1921.

Breckenridge district.—The value of the output of the Breckenridge district from both deep and placer mines was $350,723, as compared with $354,727 in 1921. During the spring and summer the Wellington mine was kept open, with a small force of men on constant repair work to keep the drifts to the zinc ore bodies in shape, and in addition several hundred tons of siliceous lead-silver carbonate ores were mined from surface ore bodies. Beginning in October zinc concentrates stored from 1920 operations were shipped, and in December operations were resumed at the mine and at both the gravity-concentration mill and the magnetic-separation mill on lead-zinc-iron sulphide ores. Several cars of highly siliceous low-sulphur gold-silver ore were shipped from the Alpha-Warriors Mark mine, and several cars of high-iron, low-silica, and low-sulphur silver ore were shipped from the Detroit mine. Small shipments of lead-silver or dry silver oxide ores were shipped from the June Bug, Minnie B, Monte Christo-Fredonia, and Price mines.

Three dredges, three hydraulic mines, and one sluice mine were in operation during the year. The Benrose-Bostwick placer, on the Breckenridge side of Hoosier Pass, was placed in operation late in the summer and had a small yield of gold bullion. The Mekka bench gravels were hydraulicked from June 1 to August 1 with two giants, with a fair recovery for the length of time in operation. The Washington placer was hydraulicked with one giant for 20 days. The Blue River Placer Mining Co.'s dredge of 70 buckets, of 8 cubic feet capacity each, was operated the greater part of the year. The Florence Gold Dredging Co. took over the French Gulch dredge of 80 buckets of 5 cubic feet each and operated it from August 1 to December 1. The Tonopah Placers Co. operated its No. 1 dredge (equipped with buckets of 9½ cubic feet) for 237.7 days. The annual report of this company, which is a subsidiary of the Tonopah Mining Co. of Nevada, says:

> Dredge No. 1 has been operated during the season of 1922. It handled 1,393,148 cubic yards of material during the year, averaging 11.1 cents per cubic yard, giving a total production of $155,512. This dredge was closed down at the end of December for the necessary repairs to be made for the coming season.

[6] See also Eng. and Min. Jour.-Press, Dec. 16, 1922, p. 1097, and Mining Mag. (London), December, 1922, p. 384.

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Hubert Work, Secretary

U. S. GEOLOGICAL SURVEY
George Otis Smith, Director

MINERAL RESOURCES
OF THE
UNITED STATES
1923

F. J. KATZ
Geologist in Charge, Division of Mineral Resources

PART I—METALS

6983

UNITED STATES
GOVERNMENT PRINTING OFFICE
WASHINGTON
1927

SAN MIGUEL COUNTY

The gross calculated value of gold, silver, copper, and lead produced from mines in San Miguel County in 1923 showed an appreciable increase over the value in 1922.

Iron Springs district (Ophir).—Eight mines in the Iron Springs district produced 9,077 tons of ore, carrying $3,404 in gold, 68,807 ounces of silver, 36,660 pounds of copper, and 708,669 pounds of lead, with a total value of $114,822, as compared with $126,598 in 1922. At the Carbonero mine, opened by an adit 4,000 feet long and 3,800 feet of drifts, 500 feet of drifts were made in 1923, and 1,000 tons of lead-silver-copper ore was shipped to Durango, averaging 35.5 ounces of silver to the ton and 30 per cent lead. On November 26 this mine was taken over by the Ophir Colorado Mines Co., which plans to build a 50-ton oil-flotation mill. Siliceous sulphide ore (considerably oxidized) from the Butler vein of the Silver Bell mine above the sixth level (800 feet above the mill-level adit), was milled during the first six months of 1923 in the 80 to 100 ton gravity-concentration and oil-flotation mill. This mill is equipped with fifty 1,000-pound stamps, but only twenty were used. After July 1 milling ceased, and during the remainder of the year 542 feet of drifts were opened westward on the mill-level adit and 110 feet of stope raises as development work to open up the block of ground below the sixth level. The lower levels show siliceous sulphide ore without a trace of oxidation. The mill-level adit is 2,800 feet long and is connected with the upper levels by an 800-foot raise. There were also 75 feet of drifts opened on the Ida vein of the Silver Bell mine, and some hand-sorted ore was shipped. Other producing mines were the Butterfly-Terrible, Carribeau, Crown Point, Deadwood, and San Bernardo. Neither the Butterfly-Terrible mill nor the San Bernardo mill was operated. The Summit or Suffolk group was idle, but the 60-ton 20-stamp amalgamation, gravity-concentration, and oil-flotation mill was used to test some ores from the Carbonero mine.

Lower San Miguel district—Warren Simmons, of Sawpit, shipped a car of iron-manganese-silver-gold ore from dumps of old properties worked 40 years ago north of the town of Sawpit.

Upper San Miguel district—Five mines in the Upper San Miguel district produced 474,971 tons of ore, carrying $1,370,461 in gold, 1,537,358 ounces of silver, 1,372,320 pounds of copper, and 9,986,866 pounds of lead, with a total value of $3,531,906, as compared with $3,075,675 in 1922.

The Belmont Wagner Mining Co., operating the Alta mines, continued to run its 150-ton gravity-concentration and oil-flotation mill steadily until October, when it was found that the domestic price paid for silver after the expiration of the Pittman Act, on June 2, was insufficient to make the lead-silver-gold concentrate product yield a profit. During 1923 this company drove 846 feet of drifts, 88 feet of raises, and 1,629 feet on the heading of the Black Hawk adit. The Smuggler Union mine and mills were operated 362 days. The mills of this company, a 60-stamp amalgamation-concentration mill and a new 850-ton flotation plant, were used to treat the Smuggler Union, Humboldt, and Black Bear ore. The Smuggler Union and Humboldt ore was first amalgamated, but the Black Bear ore was first run over tables to make a high-grade lead product, and the

overflow went to the flotation machines where a zinc-lead-copper-iron-silver-gold concentrate was made. This complex concentrate was then moved to Durango for storage and special treatment in the Reed-Coolbaugh sulphating and leaching plant at the Durango smelter, where the zinc was first removed and the roasted and leached material was sent to the lead furnaces. A market for the recovered zinc sulphate has not yet been found. Lessees on the Sheridan crosscut of the Smuggler Union Co. treated ore from old stopes in the Perino 50-ton amalgamation-concentration mill. Lessees on the Liberty Bell, on which company operations had ceased in August, 1921, after successful operations since 1898, produced some gold amalgam bullion and some gold concentrate. The Tomboy Co. continued to operate steadily its 600-ton gravity-concentration and selective-flotation mill. The rough concentrate from the Wilfley tables was put through a bath of quicksilver in a slowly revolving tube mill. Recovery by amalgamation was satisfactory, though month to month recovery was erratic, owing to the changing character and gold content of the ore. Ore that had undergone much oxidation through long exposure yielded its gold to amalgamation less readily than ore more recently broken or ore from the dry parts of the mine. The annual report of the Tomboy Gold Mines Co. (Ltd.) for the year ending June 30, 1923, containing the report of the manager dated September 15, 1923, says:

> A total gross of 233,114 tons was hauled from the mines to the mill. From this total 14,769 tons, or 6.33 per cent, were sorted out and discarded as waste, and 12,315 tons, 5.63 per cent, were deducted for moisture content, leaving, with a loss in bin storage of 116 tons, a net total of 206,146 dry tons milled.
>
> A total of 74,703 wet tons, or 32.04 per cent of the tonnage sent to the mill, were drawn from the Argentine group.
>
> No development work was performed during the year, and practically all floor pillar removal was completed above 1,650-foot level. At this date all drawing of ore on 1,750-foot level is completed and the stopes above emptied as far out as No. 123 chute. On 1,650-foot level the floor pillar was removed out to No. 126 chute.
>
> Blocks left intact in the vein above the 1,650-foot level between No. 123 raise and No. 103 raise have been carefully examined and found too low grade to mine. Still farther out are two stopes remaining to be further examined, but it is doubtful if these will warrant further mining. At the inside end of 1,650-foot level a small stope was once started but abandoned because of the low grade of the ore, and further sampling of this shows it too low to warrant mining at the present time.
>
> The last estimated ore reserves consist of 21,267 tons broken and 13,432 tons unbroken, or a total of 34,699 tons readily available from above 1,750-foot level. The estimated ore reserves below 1,750-foot level remain the same as a year ago, namely, 74,062 tons broken and 121,393 tons unbroken, or an additional amount which leaves a grand total for Argentine of 230,154 tons. Of this 195,455 tons are below 1,750-foot level, but very little can probably be drawn and milled at a profit under present-day conditions. During the coming winter, or dry season, as storage water is drawn from the lower levels, a generous amount of this ore will be hoisted and milled to determine conclusively whether or not it can be handled at a profit. A year ago it was expected that ore from above 1,750-foot level would be exhausted within the year, but to-day still another few months' run of the same percentage of total to mill is to be expected.
>
> In the Montana group development driving in the Montana mine totaled 2,709 feet and consisted of 1,579 feet of drifting, 978 feet of crosscutting, and 152 feet of raising.
>
> Of the drifting 988 feet and of the crosscutting 550 feet were on Montana level, making a total of 1,573 feet of drifting and 557 feet of crosscutting done on this level during the last two years, to prove the existence or nonexistence of ore bodies in the section of the mine to the north of No. 166 raise.

While this development work has quite thoroughly explored this level of the mine without developing other than the one ore body, 400 feet long by 100 feet in height, with an average width of 8 feet, this one block of ore will return the cost of all the Montana level development several times over. No further work on this level is contemplated except to complete the mining and drawing of the remaining ore.

The 1,750-foot level drift north of the Sidney vein crossing was extended a distance of 591 feet, following very well defined foot and hanging walls with about 4 feet of vein matter between but without encountering any ore. This drift is being continued, but to date the showing is not at all encouraging.

All other drifting was for haulage purposes around bad sections of the present main haulageway in the vein. The 152 feet of raising was all in the No. 166 manway above Montana level.

A total of 128,232 wet tons, or 55.01 per cent of the tonnage sent to the mill, were drawn from the Montana.

The last estimated ore reserves consist of 259,895 tons broken and 102,889 tons unbroken above 1,750-foot level, 26,513 tons broken and 58,469 tons unbroken below 1,750-foot level, or a total of 447,766 tons in Montana.

Preparations are now under way for the removal of the 84,982 tons below 1,750-foot level, but all of this will have to be hoisted, and considerable work remains to be completed before this tonnage becomes available, some six months or more hence.

In Montana (Virginius), development driving in the Virginius totaled 873 feet and consisted of 526 feet of drifting, 206 feet of raising, 51 feet of crosscutting, and 89 feet of sinking. With the exception of the crosscutting and sinking, which was done just outside of No. 1 chute on 1,750-foot level, all development in Virginius was carried on for the purpose of determining whether or not the ore shoot continued through and above 1,450-foot level to the Fortuna level between the No. 26 and No. 44 manways. It has been found that no payable ore lies above 1,450-foot level in this section, and it will probably prove unprofitable to carry the 1,600-foot stope through to the 1,450-foot level. All stoping has been discontinued between No. 1 chute and No. 26 manway, and at this date these stopes have been drawn practically empty. Some further stoping may be found profitable in the "Varsity stope," but the tonnage from this section will undoubtedly prove small.

As the Virginius ore body has been proved not to extend upward there remains a possibility that it may extend downward, and the drifting to be done on 1,900-foot level should soon throw interesting and definite light on this question.

The ore in reserve here is estimated at 11,256 tons broken and 22,788 tons unbroken, or a total of 34,044 tons.

During the past year 30,179 tons, or 12.95 per cent of the total sent to the mill, came from the Virginius.

As silver is the chief value in the Virginius vein, much of it must now be left in place that could be mined and milled at a small profit with higher silver price.

The total ore reserves in all three mines amount to 711,964 tons, of which 392,993 tons are already broken and 318,971 tons are unbroken.

In arriving at the estimate of ore reserves as of July 1, 1923, it has been necessary to assume that tonnages computed several years ago, when all stopes and levels were open and accurate measurements possible, were correct. Under ordinary conditions an exact statement of ore reserves should be a simple matter, as ore extracted during the year subtracted from the sum of the previous year's reserve and additional ore developed would give the figure desired. In this instance, however, an exact statement is impossible. Most of the stopes and levels are inaccessible for measuring and sampling, and there has been so much dilution of value by caving of wall rock into the ore, that what was once ore might now best not be called ore at all. As we have gradually retreated out of the Argentine we have at the same time been cleaning out and retreating from the best of the ore shoots, and only the very lowest grade ore remains. In a somewhat similar manner the same condition exists to-day in the Montana mine. Therefore, rather than accept the above figure, brought down from year to year, as correct, it would be much safer and nearer the true condition to assume that at best the ore reserves do not total over 300,000 tons of ore that can be mined and milled at a profit. It is, indeed, unfortunate that no definite assay value can be placed on this tonnage.

Following the policy decided upon by the Tomboy board the first of this year, in view of the lesser profits to be made during the balance of the life of the mines, as much development of previously unexplored territory has been carried on as

the finances of the company could stand. Such work is thoroughly consistent with good mining and if postponed, as is so often done, until all developed ore is exhausted, never would be performed. Under the present policy, when the ore already developed is exhausted, all possibilities of the property will have been thoroughly investigated.

No changes or additions have been made in the mill during the past year, but a slight improvement in recoveries has been effected.

During the last dry season water became very scarce, and this alone resulted in a slightly lower tonnage milled than during the preceding year.

Having carried the cleaning up of the old 60-stamp and site as far as was practicable with our own labor, this work was leased to some outsiders on a royalty basis and is bringing in a small additional amount of revenue.

Revenue and expenditure, year to June 30, 1923

	Per ton		
206,146 dry tons milled, yielding amalgam bullion worth			$248, 598. 64
Concentrates worth			691, 615. 51
			940, 214. 15
Sundry profit, boarding house, rents, etc			10, 002. 71
			950, 216. 86
Mining and development expenses	$1. 80	$370, 853. 47	
Milling expenses	. 59	122, 369. 57	
Concentrating expenses (including transportation to railway)	. 66	135, 991. 34	
Water-supply expenses	. 18	37, 389. 18	
Assay office expenses	. 03	6, 103. 27	
General expenses	. 32	64, 288. 26	
Taxes and insurance	. 18	37, 481. 54	
Total expense	3. 76		774, 476. 63
Profit			175, 740. 23

Since the writing of the last annual report the operations have completely recovered from the effects of the fire which occurred on July 8, 1922. All buildings have been rebuilt, all supplies and equipment replaced, and the book accounts closed, showing a total loss, uncovered by insurance, of $30,190.86. The new shops building, started just previous to the fire of last year, is completed and occupied and is proving a much more economical arrangement than the old, because of its central location and accessibility to the main haulageway.

SUMMIT COUNTY

The price of zinc allowed the Wellington zinc-concentration mill to be operated throughout the year. Dredges and other placer operations yielded $203,379 in gold and 2,472 ounces of silver, as compared with $255,298 in gold and 3,218 ounces of silver in 1922.

Breckenridge district.—The gross value of the output of the Breckenridge district from both deep and placer mines was $1,074,932, as compared with $350,723 in 1922. The Wellington gravity-concentration and magnetic-separation mill was operated almost continuously on zinc-iron-lead ores, making principally zinc concentrate, for which zinc smelters paid only for the zinc content, lead-silver concentrate, and iron-silver concentrate. From the Detroit lease, on the Detroit-Hicks and Missouri groups, were shipped lead-silver-gold sulphide ore, dry silver-gold ore, lead-silver oxide ore, and zinc-lead-silver sulphide ore. Small shipments of smelting ore were made from the June Bug, New Year, Sure Thing, and Standard dump.

69th Congress, 1st Session - - - House Document No. 114—Part 1

DEPARTMENT OF COMMERCE
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BUREAU OF MINES
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MINERAL RESOURCES
OF THE
UNITED STATES
1924

FRANK J. KATZ
Chief Engineer, Division of Mineral Resources and Statistics

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pared with $89,267 in 1923. Producing mines were the Aspen, Highland Mary, Little Dora, Little Fanny, Little Nation, North Star, Old Green Mountain, Old Hundred group, and Pride of the West.

Eureka district.—Producing mines in the Eureka district north of Silverton were the Mountain Queen, Gold King, Eureka, Silver Queen, and Sunnyside. The Sunnyside lead-zinc mine, with its 500-ton selective flotation mill, was in operation 365 days.

SAN MIGUEL COUNTY

The gold production of San Miguel County mines increased $260,100, but silver, copper, and lead production decreased. Zinc recovered in 1924 amounted to 278,000 pounds; none was produced in 1923.

Iron Springs district (Ophir).—The Butterfly-Terrible, Carbonero, Deadwood, San Bernardo, and Silver Bell mines in the Ophir district produced 562 tons of ore, yielding $697 in gold, 10,194 fine ounces of silver, 6,679 pounds of copper, and 100,925 pounds of lead, with a gross total value of $16,476. A 50-ton flotation mill was completed at the Carbonero mine in November.

Upper San Miguel district (Telluride).—Eight mines in upper San Miguel district produced 432,849 tons of ore, yielding $1,633,371 in gold, 983,945 fine ounces of silver, 487,573 pounds of copper, 7,161,400 pounds of lead, and 278,000 pounds of zinc, with a total value of $2,947,468, compared with $3,531,906 in 1923. Activities of the Belmont Wagner Mining Co. (Tonopah Belmont Development Co.) at the Alta mine were confined to driving the Black Hawk adit for development. Late in the year this company relinquished its option, and the mill was run for a short period by the original owners. The Smuggler Union mine was in operation 363 days. The mills of this company, a 60-stamp amalgamation-concentration mill and an 850-ton flotation plant, were used to treat the Smuggler Union and Black Bear ore. The Smuggler Union ore was first amalgamated, but the Black Bear ore was first run over tables to make a high-grade lead product, and the overflow went to the flotation machines, which made a zinc-lead-copper-iron-silver-gold concentrate. This complex concentrate was then moved to Durango for storage and treatment at the Reed-Coolbaugh sulphating and leaching plant at the Durango smelter, where the zinc was first removed and the roasted and leached material was sent to the lead furnaces. A market was found in 1924 for the zinc sulphate made. The Black Bear mine ran less than 90 days in 1924, but the Reed-Coolbaugh plant continued to treat stored concentrates. Lessees of the Liberty Bell mine produced some gold amalgam bullion and some gold concentrate. The Tomboy Co. mine and 600-ton flotation mill was in operation 363 days. The annual report of the Tomboy Gold Mines Co. (Ltd.) for the year ended June 30, 1924, containing the report of the manager, dated July 15, 1924, says:

A total gross of 236,353 tons was hauled from the mines to the mill. From this total 9,551 tons, or 4.04 per cent, were sorted out at the mill and discarded as waste, and 11,006 tons, or 4.85 per cent, were deducted for moisture content, leaving, with a gain in bin storage of 198 tons, a net total of 215,598 dry tons milled. A total of 22,029 wet tons, or 9 per cent of the tonnage sent to the mill, were drawn from the Argentine.

Beginning with September, 1923, all drawing of ore from above 1,750-foot level was discontinued for the reason that the ore remaining, both broken and unbroken, was too low grade to produce a profit. At the time of abandoning the upper Argentine levels a considerable tonnage of broken and unbroken ore still remained below the 1,750-foot level, but the lower part of the mine was filled with water, stored for milling purposes during the dry season. During January, 1924, when the level of the stored water had been lowered below the 1,900-foot level, 640 tons of ore were drawn from a length of stope a little over 2,000 feet and milled. A careful record of this mill test showed this ore to be of profitable grade, but later during March and April, when over 3,000 tons were drawn and milled, the grade dropped far below the mill test results. The only plausible explanation for this condition is that the first sampling drew off a large proportion of rich fines that had been washed down to the chute mouths by the water flowing through the stope. Since this last drawing of ore the Argentine has been entirely abandoned.

Development driving in the Montana proper totaled 496 feet and consisted of the completion of the foot wall drift south to No. 107 chute on 1,750-foot level, by driving an additional 183 feet, crosscutting 19 feet into the footwall opposite No. 128 raise, for a hoist station; raising into the old empty stope from this hoist station a distance of 60 feet, for an ore pocket, head sheave, and dump; and the extension of the 1,750-foot level drift on the Montana vein north of the Sidney, a distance of 141 feet, together with 93 feet of crosscutting from this drift.

This last drifting and crosscutting thoroughly explored the northern extension of the Montana vein opening to a distance totaling a little over 600 feet north of the Sidney. The showing became weaker and less encouraging as the drift was advanced, and all further development in this direction was finally abandoned.

A year ago it was expected that sufficient work would have been completed by the first of this year to enable drawing some ore from below the 1,750-foot level through No. 128 hoistway, but many unforeseen conditions were encountered and it will still be several months before any ore will even be available from the 1,900-foot stopes.

A total of 200,646 wet tons, or 85 per cent of the tonnage sent to the mill, were drawn from the Montana.

Development driving in the Montana (Virginius) totaled 426 feet, and consisted of the completion of a winze for a distance of 98 feet to the 1,900-foot level, a crosscut from the bottom of the winze to the vein, a distance of 19 feet, a drift on the vein for a distance of 296 feet, and a footwall crosscut off this drift a distance of 13 feet.

This drift on the 1,900-foot level explored the vein at this elevation vertically below the best part of the ore shoot on 1,750-foot level. It had been hoped that as the Virginius ore body did not extend above the 1,450-foot level it might improve at further depth, or at least continue to the 1,900-foot level. However, as the drift on the 1,900-foot level, in the most likely section, did not disclose any profitable ore, further development in this territory was abandoned.

Further stoping was carried on in that portion of the ore shoot lying between No. 26 raise and No. 35 chute from 1,750 to 1,450 foot levels, as shown on the progress sheet for the year, and stoping was only discontinued when the value of the ore, containing silver alone, became too low to pay to mine and mill. Just at this time, also, the gold values which, in the total run of mine, had been gradually decreasing as the best gold shoots were exhausted, reached a startlingly low point that would allow of no dilution by just medium-grade ore containing silver only. Therefore, further drawing of Virginius ore was also stopped and this section of Montana has been drawn on only occasionally since then, when better gold values from other parts would allow some dilution by silver ore.

A total of 13,677 wet tons, or 6 per cent of the tonnage sent to the mill, were drawn from the Virginius.

The total ore reserves stand, as of July 1, 1924, at 215,602 tons total, and are composed of 125,725 tons of broken ore and 89,877 tons of unbroken ore.

Of this tonnage 9,675 tons of broken ore remain in the 35 to 50 block, 13,500 tons in the 101 block, 70,275 tons in the 147 to 167 block, 14,625 tons north of No. 167, and 17,650 tons below the 1,750-foot level. Of unbroken ore 14,000 tons remain to be stoped north of No. 167, above the 1,750-foot level, and 75, 877 tons below the 1,750-foot level.

In arriving at a new estimate of ore remaining to be mined, drawn, and milled, only the ore in the Montana is dealt with, as there is but slight possibility of

being able to treat profitably any further ore from the Argentine or Virginius veins.

In estimating the above tonnage the original average width of vein is used and no account is taken of the waste wall rock that has caved into the ore or may still cave into it. This caving may prove to have increased the total tonnage to a very considerable extent, but, on the other hand, such caving may also prove to have so diluted the ore values in some sections as to render them unprofitable to mill. As has been previously explained, just what conditions exist can only be determined as the stopes are drawn and milled.

One considerable block of broken ore (that from No. 1 to No. 35 chute above 1,750-foot level) has been omitted from the estimate entirely, as it is known to be too low grade to pay, but offsetting this, 22,500 tons of very probable ore that we should be able to reach from the south end of 1,900-foot level, lying between our 1,750-foot level and the top of the old Revenue workings, have been included.

The mill has been maintained in first-class operating condition throughout the year, but no additions have been made and only a few minor improvements.

During the annual dry season water for milling became quite scarce, but the spring thaw started just when the water in the Argentine became exhausted, so that it was possible to maintain a fairly good tonnage milled throughout the 12 months.

This last spring further cleaning up of the old 60-stamp mill site has been resumed under lease.

Revenue and expenditure, year to June 30, 1924

215,598 dry tons milled, yielding bullion worth			$176,232
Concentrates worth			579,185
			755,417
Sundry profit, boarding house, rents, etc			5,660
Royalty (from lessees)			3,333
			764,410
	Per ton		
Mining and development expenses	$1.38	$296,603	
Milling expenses	.59	126,883	
Concentrating expenses (including transportation to railway)	.60	130,354	
Water supply expenses	.16	36,138	
Assay office expenses	.03	6,351	
General expenses	.27	58,307	
Taxes and insurance	.16	34,270	
Total expense	3.19		688,906
Profit			75,504

During October, 1923, after having operated for two months at a loss, the outlook for the future of the mines became very discouraging; it did not seem likely that the few remaining possibilities could pull us through, and all indications pointed to even poorer times ahead. You were therefore fully advised at that time and the situation put before you in its worst possible light. Shortly thereafter, however, conditions commenced to improve, principally because of some better ore becoming available, and to date the position has been quite comfortable. As most of the ore we were relying upon to maintain our gold heads has been gradually exhausted and the gold heads have remained up, we are led to believe that there is more gold in the ore lying to the north of No. 147 chute than had been hoped for. We are still not far enough north of the Wheel of Fortune crossing though to assume that the gold values will continue as they are until the No. 147–No. 167 block is exhausted. If we should be fortunate enough to maintain mill heads at a point high enough to continue making a profit on the total tonnage named under "Ore reserves," we should be able to continue operations for a little over a year longer, and this time will be added to by any increased tonnage from caving walls so long as the dilution of ore values is not too great.

During the past year operating costs have been still further reduced to a new low cost record. This was made possible by eliminating almost all development work; concentrating all other underground work; improved cooperation between all staff members and other workers; obtaining a more advantageous treatment schedule from the smelter and lower freight rates from the railroad; reducing the mine staff; eliminating the pay-roll bonus to men working 28 days per month, and the consolidating of the two offices by moving the town office to the mine. Some of these changes have not been in effect long enough to have their full

effect very noticeably reflected in the cost sheet, and the benefit of some extensive tax reductions will not be felt until later this year, so we may look for still further reductions in total costs during the year 1924–25.

At this date all indications point to at least another year of profitable operation, but with the underground conditions complicated by so many uncertainties no positive forecast is possible.

SUMMIT COUNTY

Breckenridge district.—The value of the metal output of the Breckenridge district from both deep and placer mines was $716,507, as compared with $1,074,932 in 1923. The Wellington gravity-concentration and magnetic-separation mills were operated until June 16, when development work only was done at the mine. Other producing deep mines were the Detroit-Hicks-Missouri group, New Era, Royal Tiger, and Silver King.

Two dredges, two hydraulic mines, and one sluice mine were in operation during the year. The Bemrose-Bostwick hydraulic placer was worked from June 1 to July 30. The Mekka bench gravel was hydraulicked from June 1 to September 15. The Blue River Placer Mining Co.'s dredge of 88 buckets of 8 cubic feet capacity each, on Blue River, was in operation from January 1 to December 25. The Tonopah Placers Co. ran its dredge *No. 1*, equipped with buckets of 9½ cubic feet capacity, for 198 days. The annual report of the Tonopah Mining Co., of Nevada, includes the following report of the activities of the Tonopah Placers Co.:

Production and income statement of Tonopah Placers Co. for the year 1924

Surplus, Dec. 31, 1923		$7,480.11
Net earnings and income for year 1924:		
Gross value of bullion shipped to mint	$164,217.45	
Cost of operations	119,367.26	
Profit from operations	44,850.19	
Other income	4,667.00	
Net income for the year 1924		49,517.19
		56,997.30
Reserves for the year 1924:		
Depletion of mineral property	$4,315.23	
Depreciation of plant and betterment	9,396.31	
Depreciation of dredge *No. 1*	3,186.80	
		16,898.34
Surplus, Dec. 31, 1924		40,098.96
Cubic yards dredged		1,141.140
Gold produced	ounces	7,877.77
Silver produced	do	2,022.64
Value per yard		$0.143

Balance sheet of Tonopah Placers Co., December 31, 1924

ASSETS	
Property, plant, and betterment	$1,313,654.80
Dredges	187,230.58
Materials and supplies	47,129.53
Accounts receivable	2,125.43
Cash	75,288.24
Philadelphia Electric Co. first lien and refunding mortgage, gold 5½ per cent bonds, series due 1953	14,775.00
Baltimore & Ohio R. R. Co. first mortgage 5 per cent bonds, due 1948	24,625.00
	1,664,828.58
LIABILITIES	
Capital stock, authorized and issued	1,000,000.00
Accounts payable	2,567.90
Reserve for depletion of property and depreciation of plant and equipment	472,452.94
Reserve for dredges *Nos. 1, 2,* and *3*	149,708.78
Surplus	40,098.96
	1,664,828.58

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zinc and 5.7 per cent lead, and the lead concentrates average 46.7 per cent lead and 12.9 per cent zinc.[2]

SAN MIGUEL COUNTY

The mines of San Miguel County in 1925 produced more ore than in 1924, and the gross value of the metals recovered was almost $20,000 higher. San Miguel County mines produced 457,401 tons of ore yielding $1,413,835 in gold, 1,075,555 ounces of silver, 220,000 pounds of copper, 9,005,200 pounds of lead, and 100,000 pounds of zinc, with a total value of $2,982,562.

Iron Springs district (Ophir).—In the Ophir district in 1925 was produced 32,453 tons of ore, yielding $9,270 in gold, 149,812 fine ounces of silver, 83,600 pounds of copper, and 1,821,800 pounds of lead, with a total value of $283,607 compared with $16,476 in 1924. The two largest producing mines were the Carbonero and San Bernardo. The Carbonero ore was treated at the 50-ton concentration and flotation plant built in 1924, and lead concentrates were shipped to Durango. The Otto Mining Co. operated the San Bernardo mine and 150-ton concentration and flotation plant; lead concentrates were shipped to Durango, as well as some crude lead ore. The mine was worked throughout 1925, and the mill was active from May on through the year.

Upper San Miguel district (Telluride).—Seven mines of the Upper San Miguel district produced 424,948 tons of ore, yielding $1,404,565 in gold, 925,743 ounces of silver, 136,400 pounds of copper, 7,183,400 pounds of lead, and 100,000 pounds of zinc, with a total value of $2,698,955 as compared with $2,947,468 in 1924. As usual, most of the output of metals was from ores mined and milled by the Smuggler-Union Mining Co. and the Tomboy Gold Mines Co. (Ltd.). Other producing properties were the Alta and Black Bear. Only 254 tons of ore was shipped direct to smelters and 3,031 tons was sent to concentrating mills, while 421,663 tons of dry gold and silver ore went to amalgamation-concentration mills. Nearly all of the silver and about two-thirds of the gold was contained in lead concentrate shipped. The directors' report of the Tomboy Gold Mines Co. (Ltd.) for the year ended June 30, 1925, includes the report of the general manager at Telluride, dated August 20, 1925, excerpts of which are as follows:

Ore extracted at the mines.—A total gross of 236,479 tons was hauled from the mines to the mill. From this total 12,959 tons, or 5.48 per cent, were sorted out at the mill and discarded as waste, and 12,200.8 tons, or 5.16 per cent, were deducted for moisture content, leaving, with a loss in bin storage of 348 tons, a net total of 211,667.6 dry tons milled.

No further ore was drawn from the Argentine mine during the year.

A total of 227,594.3 wet tons, or 96.25 per cent of the tonnage sent to the mill, was drawn from the Montana. This total tonnage from the Montana was made up from several stope blocks, as follows:

From the No. 1–35 block 32,294 tons were drawn and exhausted this reserve. This tonnage was not included in the ore reserves stated for the year 1924–25, as it was supposed to be too low grade to pay. However, by grading with better ore it was possible to mill all of this at a profit.

[2] Parsons, A. B., "New York section discusses selective flotation": Eng. and Min. Jour.-Press, vol. 121, 1926, p. 542; Robie, E. H., "Selective lead-zinc flotation at Sunnyside": Eng. and Min. Jour.-Press, vol. 121, 1926, pp. 757–762.

From the No. 35–50 block, estimated to contain as of July 1, 1924, 9,675 tons, 30,741 tons were drawn, exhausting the block. The excess of 21,066 tons over the estimate resulted from caving wall rock and the bringing down of additional ore that was hung up in the upper levels.

From the No. 96–105 block, estimated to contain 13,500 tons, 43,037 tons were drawn, or an excess over the estimate of 29,537 tons, due to the same causes as obtained in the No. 35–50 block. This block is now also exhausted.

From the No. 144–167 block 88,368.3 tons were drawn.

From north of No. 167 block, principally through No. 172 chute, 7,595 tons were drawn.

And from below 1,750-foot level, mostly from the 1,900-foot level stope, 25,559 tons were hoisted and hauled to the mill.

Development driving in the Montana proper totaled but 431.5 feet and consisted of 313.5 feet of raises and 118 feet of drifting. The 1,000-foot level drift was continued north 71 feet to the end of payable ore and a stope carried up over this new section of drift to the upper limit of payable ore. An additional 47 feet of drift was in the hanging wall on 1,450-foot level, around No. 160 chute opening. A raise from the back of the 1,150-foot stope was carried up to 1,000-foot level, a distance of 66 feet, at No. 168; from the back of 1,900-foot stope a raise was carried through to 1,750-foot level, a distance of 40 feet at No. 121; at No. 142 on 1,900-foot level a raise was carried through to 1,750-foot level, with a total drive of 139.5 feet; and at No. 77 on 1,900-foot level, a raise was started and advanced 68 feet toward 1,750-foot level.

During the year the conversion of the old No. 128 raise into a hoistway was completed down to 2,050-foot level. Hoist, skip, and ore pockets were installed and hoisting of the ore started. All of the 2,050-foot level was reopened, retimbered, and new chutes built in from No. 128 to No. 110. The reopening and retimbering of 1,900-foot level was completed to No. 110 and new loading chutes built in from No. 128 and No. 110. Further, the old Revenue drift south of No. 110 was reopened and retimbered for its entire length to a distance of 825 feet south of the old No. 110 shaft. This reopening of the old workings was slow and expensive work, but the ore to be milled from these lower levels should make this expenditure well worth while.

A stope has been started in the block north of No. 167 from No. 173 to No. 185 and will be carried through to 1,600-foot level. Then all floor pillars under the several levels above will be removed, so that all ore to the north of No. 167 may be drawn on 1,750-foot level without any tramming. This is the last remaining unbroken ore above 1,750-foot level.

Another stope has been started in the block above 1,900-foot level, from No. 128 to No. 142, and two other small stopes will be started as soon as possible from 1,900-foot level south of No. 110.

Montana (Virginius).—A total of 8,885.1 wet tons, or 3.75 per cent of the tonnage sent to the mill, were drawn from the Virginius. This drawing exhausted all broken ore, and as no ore remained that would pay for mining and milling this section of the mine was permanently abandoned.

It has always been supposed, and it was logical to believe, that the northern extension of the old Tomboy vein passed through the territory near the junction of the Big Six drift and the Ophir tunnel on the Camp Bird vein. At a distance sufficiently remote from these later veins to be well away from any local disturbance 353 feet of drifting and crosscutting was done, but only a very small tight stringer picked up and further development work was abandoned.

Ore reserves stand, as of July 1, 1925, at 277,410 tons total, and are composed of 189,960 tons of broken ore and 90,450 tons of unbroken ore.

Of the total tonnage in reserve, 108,050 tons of broken ore remain to be drawn from above 1,750-foot level, south of No. 167; north of No. 167, 50,350 tons of broken ore and 31,400 tons of unbroken ore remain. Between 1,750-foot and 1,900-foot levels, an unbroken block of 24,000 tons remains between No. 128 and No. 142; a broken block of 17,675 tons between No. 128 and No. 110; an unbroken block of 5,300 tons immediately south of No. 110, and an unbroken block of 12,300 tons between No. 75 and No. 86. Between 1,900-foot and 2,050-foot levels, from No. 182 to No. 110, there remain 17,450 tons of unbroken ore and 10,885 tons of broken ore.

The 215,602 tons of ore estimated as remaining in reserve as of July 1, 1924, was drawn on only to the extent of 132,082 tons, the balance drawn during the year 1924–25 coming from unexpected sources. Had the above ore reserve figure been correct, there would now remain only 83,520 tons, but in refiguring the block above 1,750-foot level, south of No. 167, it is found that the area

drawn empty during the past year delivered several times the tonnage estimated, showing that the dilution of ore values and increase in tons contained was several times that allowed for. Therefore the broken ore remaining has been multiplied by a proportionate conservative factor, and the 277,410 tons now set up may safely be relied upon to produce a profit so long as present ore values and working costs can be maintained. It is also probable that a like revision will be necessary next year. However, the uncertainties previously pointed out, due to the impossibility of predetermining values or tonnage with any degree of accuracy, must still be borne in mind.

The mill, shops, and all other buildings and equipment have been maintained in first-class operating condition throughout the year and must, of course, be continued in such condition to enable economical and profitable operation.

No additions were made, and no new construction was required or is contemplated.

Revenue and expenditure, year to June 30, 1925

211,067.6 tons milled, yielding bullion worth			$254,070.34
Concentrate worth			646,273.94
			900,344.28
Sundry profit, boarding house, rents, etc			14,343.40
Royalty (from lessees)			3,297.64
			917,985.32
	Per ton		
Mining and development expenses	$1.29	$272,547.07	
Milling expenses	.58	121,943.14	
Concentrating expenses (including transportation to railway)	.59	124,154.07	
Water supply expenses	.18	39,121.08	
Assay office expenses	.03	5,760.28	
General expenses	.24	52,451.53	
Taxes and insurance	.16	33,964.44	
Total expenses	3.07		649,941.61
Profit			268,043.71

At this time one year ago the outlook for another year's profitable operation was fairly good, but no such profit as actually resulted was even hoped for. While the outlook of a year ago has been carried over and remains the same or even better to-day, a like profit for the coming year can hardly be expected for the reasons that ore values are quite likely to become poorer, and that there is little likelihood of being able to further reduce operating costs.

SUMMIT COUNTY

The current prices for lead and zinc in 1925 resulted in much new development in Summit County, but the output for the year was mainly from the regular producers. Dredges and hydraulic and sluice mines at Breckenridge produced 4,189.55 ounces of gold, valued at $86,606, and 1,065 ounces of silver in 1925 as compared with $280,361 in gold and 3,406 ounces of silver in 1924.

Breckenridge district.—The value of the output of the Breckenridge district from both lode and placer mines in 1925 was $688,638 as compared with $716,507 in 1924. The Wellington zinc-lead mine was operated all year and the 120-ton jig and table wet-concentration mill and the 75-ton magnetic-separation mill from May through December. The product was zinc, zinc-lead, and lead concentrates. Some lead oxidized ore was shipped direct to the smelter from the Wellington, Detroit, and Fredonia.

Two dredges, three hydraulic mines, and three sluice mines were in operation in 1925. The Bemrose-Bostwick placer, on the Breckenridge side of Hoosier Pass, was operated part of the year. The Mekka and Washington placers were hydraulicked. The Blue River Placer Mining Co.'s dredge of 88 buckets of 8 cubic feet capacity each was operated from May 18 to June 28, when the superstructure was destroyed by a fire at night. The Tonopah Placers Co. operated its

No. 1 dredge (equipped with buckets of 9½ cubic feet) from April 1 to July 28. The annual report of this company, which is a subsidiary of the Tonopah Mining Co. of Nevada, says:

> The available dredgeable area in the property of the Tonopah Placers Co. at Breckenridge, Colo., having been exhausted, operations ceased in July. Covering the four months dredging was conducted there was handled 424,140 cubic yards of gravel, resulting in a net profit of $5,496.58.

Production and income statement of Tonopah Placers Co. for the year 1925

Surplus Dec. 31, 1924		$40,098.96
Net earnings and income for year 1925:		
Gross value of bullion shipped to mint	$57,058.23	
Value of bullion from black sands	9,404.13	
Interest on investments	5,106.11	
Profit from sale of bonds	45.50	
Profit from electric-light plant	642.70	
Rental of company cottages	366.14	
Miscellaneous income	451.44	
	73,674.25	
Cost of operations	68,177.67	
Net income for year 1925		5,496.58
		45,595.54
Reserves for year 1925:		
Depletion of mineral property	$315.23	
Depreciation of plant and betterment	8,329.71	
Depreciation of Dredge No. 1	3,186.80	
		11,831.74
Surplus Dec. 31, 1925		33,763.80
Cubic yards dredged		424,140
Gold produced	ounces	2,767.88
Silver produced	do	701.87
Value per yard		$0.135

Consolidated Tenmile district (Frisco, Kokomo, and Robinson).—The Elk Mountain gravity-concentration and flotation mill was run part of the year on lead-zinc-iron ore from the Wilfley property at Kokomo. Products were lead, zinc, and iron-silver concentrates. Several cars of dry silver ore were shipped from the Golden Queen mine at Kokomo. A car of lead-silver-gold ore was shipped from the King Solomon property at Frisco. Late in November the American Metal Co. of Colorado began cleaning out the Wilfley, Kimberly, and Uthoff adits in preparation for development and search for lead-zinc ores in an area covering 3½ square miles from Robinson to Kokomo, acquired under 10-year leases.

Montezuma district.—The Bell mine, idle for 25 years, was reopened in August, 1925, and approximately 700 feet of development work was done in 1925. Several hundred tons of lead-zinc ore was shipped to Tooele, Utah, and a car of lead ore to Leadville. Other lessees on four different properties shipped a car to two cars each of lead-silver ore.

TELLER COUNTY

Mine and dump ore, slags, slimes, concentrates, and stolen bullion from the Cripple Creek district aggregated in recovered gold to United States mints and to smelters 222,941.22 fine ounces, valued at $4,608,604, as compared with $4,941,905 in 1924, and 29,683 ounces of silver, as compared with 28,076 ounces in 1924. The Golden Cycle mill at Colorado Springs, a roast-amalgamation-cyanidation plant with a daily capacity of 1,200 tons, ran steadily at about half capacity entirely on ores from the Cripple Creek dis-

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DEPARTMENT OF COMMERCE
R. P. LAMONT, SECRETARY

BUREAU OF MINES,
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MINERAL RESOURCES
OF THE
UNITED STATES
1926

FRANK J. KATZ
Chief Engineer, Division of Mineral Statistics

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grade zinc-lead-copper-iron-silver-gold ore. In 1926 a high-grade zinc concentrate carrying also lead, copper, silver, and gold was shipped to Oklahoma-Texas zinc-retort plants (residues from the zinc retorts going to El Paso); a high-grade lead concentrate carrying more than half the recovered gold and silver went to the Durango lead smelter; and a zinc-lead middling carrying more gold than the zinc concentrate was shipped to the Read-Coolbaugh sulphating plant at the Durango smelter, where the soluble zinc sulphate was leached out, the residue being sent to the lead furnaces. Some of the zinc sulphate was sold to flotation plants throughout the United States, and some was sent to Amarillo, Tex., to be made into slab zinc after first being made into a zinc oxide. The flotation mill at Eureka is connected with the mine by a 17,000-foot aerial tram. Crushing is done both at the mine and at the mill. The mining is done by the shrinkage-stope method.

SAN MIGUEL COUNTY

The mines of San Miguel County produced a larger tonnage of ore in 1926 than in 1925, but the total gross calculated value of the five metals was less—$2,971,182 in 1926, as compared with $2,982,562 in 1925. The mine production in 1926 was 478,116 tons of ore, yielding $1,360,237 in gold, 1,206,277 ounces of silver, 255,900 pounds of copper, 9,981,900 pounds of lead, and 318,000 pounds of zinc.

Iron Springs district (Ophir).—The Ophir district in 1926 produced 28,591 tons of ore, yielding $12,774 in gold, 277,375 ounces of silver, 107,900 pounds of copper, and 2,332,400 pounds of lead, with a gross calculated value of $387,554, as compared with $283,607 in 1925. The two largest producing mines were the Carbonero and the San Bernardo. The Carbonero dry silver ore carrying some lead was treated in the 50-ton gravity concentration-flotation mill built on the property in 1924; the product, lead concentrates, was shipped to the Durango smelter. The Otto Mining Co. operated the San Bernardo mine and its 100-ton gravity concentration and flotation mill; lead concentrates were shipped to the Durango smelter. The Lazo Bisco Leasing Co. operated for a period the Butterfly-Terrible mine and amalgamation-gravity concentration mill; gold bullion was shipped to the Denver Mint and lead concentrates to the Durango smelter. Lead-silver smelting ore was shipped from the Fourth of July and Galena Girl mines. At the Silver Bell mine 600 feet of development work was done in 1926, and two cars of dry gold and silver smelting ore were shipped.

Upper San Miguel district (Telluride).—Six mines in the Upper San Miguel district in 1926 produced 449,525 tons of ore, yielding $1,347,463 in gold, 928,902 ounces of silver, 148,000 pounds of copper, 7,649,500 pounds of lead, and 318,000 pounds of zinc, with a gross calculated value of $2,583,628, as compared with $2,698,955 in 1925. The two by far most important producing mines were the Smuggler-Union and the Tomboy. Other producing mines were the Alta, Black Bear, Liberty Bell, and Nellie. Only 20 tons of ore was shipped to smelters; 444,732 tons went to amalgamation-concentration mills; 4,773 tons went to concentration mills.

The Smuggler-Union mills (650 tons daily capacity) consist of a 60-stamp plate amalgamation mill (built 1899) and a flotation mill

(built 1920). Flotation concentrates in 1926 represented two-thirds of the concentrate product. The ore is given a preliminary crushing at the mine and carried by a 1-mile aerial tram to the mill.

The Tomboy 600-ton gravity concentration-flotation mill is built at the mine.

The production from the Liberty Bell was made by lessees. The Liberty Bell Gold Mining Co. was dissolved in 1920, but production was made by the company in 1921 and by lessees since that year.

The Black Bear mine constitutes one of the known ore reserves in the State of Colorado of low-grade complex gold-silver-copper-lead-zinc-iron ores. The blocking out of these ore bodies was done in 1922 to 1924, and production was made during these years by bulk flotation treatment at the Smuggler Union mill. The ore bodies of this mine were the inspiration for the development of the Read-Coolbaugh sulphating plant at the Durango smelter. Only 80 feet of development work was done in 1926 and only 30 feet in 1925, and production was nominal for both years.

The Alta mines and 150-ton gravity concentration-flotation mill have been operated by J. M. Wagner since the release in September, 1924, of the option held by the Belmont-Wagner Mining Co. In 1925, Wagner drove a raise from the mill adit level (which is 7,500 feet long) to connect with upper workings 400 feet above for ventilation.

The report of the Smuggler Union Mining Co. for the year ended April 30, 1927, says:

> The gross extracted value of ore produced during the year was $1,581,923.53. Freight and treatment amounted to $336,946.04, leaving a total net value of $1,244,977.49. Additional receipts incident to operations amounted to $4,849.89, making total gross receipts after deduction of freight and treatment charges, $1,249,827.38.
>
> The direct operating charges for the year amounted to $1,066,445.68. The indirect charges, including insurance and local taxes, amounted to $30,584.27. Boston office expenses, including salaries, administration, legal expense and taxes, amounted to $24,673.54 making a total cost of $1,181,703.49 and leaving a net profit for the year, not including in expenses any charges for depreciation, depletion or interest, of $68,123.89.
>
> Back interest of $9,732.28 was paid on outstanding bonds, notes, and stockholders' loans, which with interest paid and accrued on other indebtedness, made a total of $11,938.03, reduced by interest received to a net charge for the year of $10,629.19.
>
> The sum of $9,460.83 was spent for construction, and is carried as a capital account.
>
> For comparison, in the tabulation below, the figures for the two fiscal years are given:

Tonnage and metal contents and average prices received, Smuggler Union Mining Co., Colo., April 30, 1925, to April 30, 1927

Period	Tons milled [1]	Gold ounces	Price per ounce	Silver ounces	Price per ounce	Lead pounds	Price per pound	Copper pounds	Price per pound
April 30, 1926, to April 30, 1927	253,975	45,093	$20.189	516,865	$0.550	6,615,908	$0.0586	----------	----------
April 30, 1925, to April 30, 1926	224,258	37,984	20.211	442,544	.646	5,519,201	.066	2,372	$0.081

[1] The fiscal year 1926 includes some lessees' ore. In 1927, all ore produced was on company account.

A tabulation of the receipts and operating expenses (not including interest, depletion or depreciation) for the year, on the basis of tons produced by the company, with corresponding figures for the year preceding, for comparison, follows:

Receipts and operating expenses, Smuggler Union Mining Co., Telluride, Colo., fiscal years 1926 and 1927

Period	Year ended Apr. 30, 1927		Year ended Apr. 30, 1926	
Tonnage	253,975		218,449	
	Receipts	*Per ton*	*Receipts*	*Per ton*
Gross extracted value	$1,581,023.53	$6.229	$1,323,039.73	$6.056
Freight and treatment	336,946.04	1.327	291,011.67	1.332
Net value	1,244,977.49	4.902	1,032,028.06	4.724
Incidental receipts	4,849.89	.019	4,515.59	.021
Royalties	----------	------	15,939.61	.073
Total receipts	1,249,827.38	4.921	1,052,483.26	4.818
	Expenses	*Per ton*	*Expenses*	*Per ton*
Direct operating charges	1,066,445.68	4.199	966,889.29	4.426
Indirect operating charges	90,584.27	.356	97,075.09	.447
Boston office expenses	24,673.54	.098	22,007.96	.101
Total operating expenses	1,181,703.49	4.653	1,086,572.34	4.974
Profit	68,123.89	.268	Loss: 34,089.08	.156

Development work at the Smuggler Union in 1926

	Feet
Drifting	5,284.9
Crosscutting	453.8
Raising	4,589.9
Total	10,328.6

This compares with 7,825 feet completed last year. In addition, 28,355 cubic feet of slabbing were done, compared with 43,076 cubic feet done last year.

Although new ore was exposed which to some extent took the place of that removed during the year, developments on the whole were not as encouraging as had been hoped for.

On the Flat vein about 9 level, drifts to the south, on 7, 8 and 9 levels have disclosed that, although the vein continues, the ore shoot which has been continuous for nearly 4,000 feet has apparently ended, and further development has been discontinued in this direction. There now remains in this section, only the stoping out of the ore in place, and removal of the broken reserve, an operation of less than a year at the present rate of production.

On the Flat vein below 9 level, No. 12 level was completed northward to its junction with stoped out ground, and exposed ore of mill grade for most of its length. Nos. 12, 13, 14 and 15 levels were all advanced south in the direction of, and under, the productive area above 9 level, above referred to, but so far developments have opened only intermittent patches of low grade ore. These unfavorable developments, together with the termination of the ore shoot above, have greatly restricted the possibilities for tonnage in this quarter.

On the "Combined Smuggler" and Flat veins, Nos. 13 and 15 levels were continued to the north and have opened ore of good grade, although there is evidence that the former, which is 1,100 feet south of the north boundary of the property, has reached the end of the ore shoot. The difficulties encountered in handling heavy ground in both of these levels have, however, made both stoping and development slow and expensive.

The Smuggler vein has been developed by drifts both north and south on 12 level, south on 13 level, and by drift and raise on 15 sublevel. Ore of good grade, but generally of narrow width, has been opened in all these developments, except for 15 sublevel, in which it is too low grade to pay at present.

Stoping has been done on the Ansborough vein from the old drift on that vein on 9 level. This work has opened ore of mill grade, containing low gold and silver and good lead values, but of somewhat erratic occurrence. As yet no

steady production is looked for, but it is hoped that this will eventually replace the tonnage now coming from the Flat vein above 9 level.

That ore exists below the lowest level, No. 15, as mentioned in the last annual report, is proven by the developments on that level, which now have exposed a shoot of good mill grade for over 1,000 feet. Designs have been drawn for the shaft which will eventually reach this territory, but the cost, considering the present price of lead and silver, prevents its undertaking for the present.

Ore reserves estimated as of May 1, 1927

	Tons	Gross value per ton [1]
Broken ore:		
Flat vein above 9 level	29,551	$6.33
Ansborough	16	8.38
Flat vein above 15 level	10,103	5.49
Combined vein above 15 level	17,392	10.81
	57,062	7.55
Unbroken ore:		
Blocked ore—		
Flat vein above 9 level	26,864	6.11
Flat vein above 15 level	23,542	7.65
Combined vein	71,076	7.15
Smuggler vein	44,730	7.50
Ansborough vein	2,555	9.80
	168,767	7.19
Partially blocked ore—		
Flat vein above 15 level	67,246	6.19
Combined vein	49,127	6.87
Smuggler vein	23,512	7.74
Ansborough vein	28,961	9.37
	168,846	7.15
Total ore in reserve	394,675	7.22
Total value:		
Broken ore	$430,621	
Unbroken ore	2,419,662	
	2,850,283	

In the estimate division is made between blocked and partially blocked ore contrary to the last estimate, because the value of ore in the latter division is not in general so well established as it was last year, and in some cases is not immediately accessible. Nevertheless, ore of this class may reasonably be considered as positive reserve. No account is taken of possible ore from which new ore reserves must be developed, further than to say that areas exist, in the Ansborough vein between 9 and 5 levels, the Smuggler vein between 15 and 11 levels, the Combined vein below 15 level, and the Flat vein between 15 and 9 levels, in which ore is indicated, and which it is hoped will supply tonnage to take the place of that now in reserve.

For comparison, on May 1, 1926, reserves were reported as follows:

	Tons	Value per ton	
Broken ore	41,005	$6.30	
Unbroken ore	478,736	6.78	
Total	519,741	6.74	Total value, $3,504,283

From the above it is seen that the ore reserves have been diminished by 125,066 tons, but that the grade of ore in reserve has been increased by $0.48 per ton. These differences have been caused partly by failure to develop sufficient new ore to take the place of the 253,975 tons produced during the year, and partly by recalculation of quantity and value due to the elimination of 20 per cent of the tonnage in the form of waste discarded on the sorting tables, a factor which it has been possible to apply for the first time during this year. This has resulted as above seen, in lowering the tonnage and raising the grade of the ore in reserve.

[1] Using prices of: $20.00 per ounce for gold; $0.50 per ounce for silver; $0.05 per pound for lead.

Financial statement, Smuggler Union Mining Co., April 30, 1926, and April 30, 1927

	April 30, 1926	April 30, 1927
Assets:		
Mines	$5,054,954.53	$5,054,954.53
Construction	1,480,670.05	1,490,130.88
San Miguel Development Co	349,109.32	339,109.32
Cash	8,901.04	98,046.21
Accounts receivable	117,308.98	107,932.29
Inventory	103,218.10	93,208.43
Accrued taxes, insurance, etc	19,598.59	14,186.50
Deficit	623,560.45	676,938.82
	7,757,321.06	7,874,506.98
Liabilities:		
Capital	5,000,000.00	5,000,000.00
Bonds	67,500.00	67,500.00
Notes payable	99,337.70	99,337.70
Accounts payable	90,608.79	88,371.27
Accrued interest and taxes	57,715.90	66,152.72
Iona property	1,872.55	1,872.55
Reserve for depreciation	839,633.58	950,620.20
Reserve for depletion	1,400,652.54	1,400,652.54
Paid in surplus	200,000.00	200,000.00
	7,757,321.06	7,874,506.98

The directors' report of the Tomboy Gold Mines Co. (Ltd.) for the year ended June 30, 1926, includes the report of the general manager at Telluride, dated July 19, 1926, excerpts of which are as follows:

Ore extracted at the mines.—A total gross of 241,264 tons was hauled from the Montana mine to the mill. From this total, 22,660.2 tons, or 9.39 per cent, were sorted out at the mill and discarded as waste, and 13,052.1 tons, or 5.41 per cent, were deducted for moisture content, leaving, with a gain in bin storage of 116 tons, a net total of 205,435.7 dry tons milled.

No further ore was drawn from the Argentine mine during the year.

One hundred per cent of the ore sent to the mill was drawn from the Montana mine and came from the several stope blocks, as follows:

A little further cleaning up of the No. 1–30 block was done and 296.3 tons were drawn.

From the No. 143–162 block, 110,557.4 tons were drawn, or 2,507.6 tons in excess of the content estimated a year ago, and still this block is not exhausted, as will be noted under "Ore reserve."

From the No. 170–184 block, 54,983.3 tons were drawn.

Miscellaneous cleaning up produced 43.8 tons of ore.

From below 1,750-foot level, 75,383.2 tons were trammed and hoisted through No. 128 hoistway. Of this tonnage, 72,139.2 tons were drawn from the No. 110–147 block, or 30,464.2 tons in excess of the estimated contents. This excess is chiefly due to the stoping of extra ore not included in last year's estimate, and to inability at that time to determine exact widths between walls where ore had been broken for many years. This tonnage practically exhausted all broken ore between 1,900-foot and 1,750-foot levels.

Three thousand two hundred forty-four tons of ore were trammed and hoisted from 2,050-foot level stope between No. 120 and No. 127. This ore constituted the shrinkage while this section was being stoped to within floor pillar distance of 1,900-foot level.

During the past year no new development of any sort was undertaken for the reason that all possibilities of the property have been thoroughly exhausted.

Ore reserves.—These stand as of July 1, 1926, at 75,570 tons total, and are composed of 48,895 tons of broken ore and 26,675 tons of unbroken ore.

Of the total reserve tonnage, 40,454 tons remain to be drawn from above 1,750-foot level. And of this 40,454 tons, 12,792 tons of broken ore together with 4,816 tons of unbroken pillars, lie south of No. 167 hoistway, and 17,637 tons of broken ore together with 5,209 tons of unbroken pillars, lie north of No. 167.

Below 1,750-foot level, the 2,050-foot level stope contains 16,466 tons of broken and 7,000 tons of unbroken ore. A small block of unstoped ore just south of No. 110 and above 1,900-foot level contains 3,825 tons, and the block just north of No. 77 raise contains 7,825 tons of unbroken probable ore between 1,900-foot and 1,750-foot levels.

Of the 241,264 tons of ore drawn during 1925–1926 from the mine, 30,804 tons were excess not included in the estimated reserve of 277,410 tons. Therefore, using last year's ore reserve figures there should remain but 66,950 tons. However, the estimate for 1926–1927 is based upon more actual measurements than have heretofore been possible, and is conservatively safe.

Just how much of this ore can be profitably milled, is uncertain, but assuming that it can all be milled and that some excess over that estimated will be drawn, all available ore is quite sure to be exhausted by the end of 1926.

The plant.—This, together with all outlying buildings and equipment, has been kept in first-class operating condition.

No additions were made and no new construction has been or will be necessary.

The electrically driven pump, assembled in our own shops, and used for pumping milling water from Argentine storage, worked out very satisfactorily and greatly relieved the overload on the compressor plant. The compressor plant, however, has been kept busy operating to full capacity supplying air for No. 128 hoist. This hoist, though old and well worn, has been kept in continuous operation and by careful attention we hope to make it last through the hoisting of all remaining ore from below 1,750-foot level.

Revenue and expenditure, year to June 30, 1926

205,435.7 tons milled, yielding bullion worth			$175,117.62
And concentrate worth			547,987.51
			723,105.13
Sundry profit, boarding house, rents, etc			10,946.11
Royalty (from lessees)			1,380.13
			735,431.37
	Per ton		
Mining and development expenses	$1.36	$279,492.96	
Milling expenses	.55	112,778.69	
Concentrating expenses (including transportation to railway)	.57	116,580.18	
Water supply expenses	.19	38,247.12	
Assay office expenses	.02	4,205.88	
General expenses	.25	52,076.62	
Taxes and insurance	.21	43,731.45	
Total	3.15		647,112.90
Profit			88,318.47

On December 25, 1926, the general manager posted a notice that the Tomboy mine would be closed down shortly. On February 3, 1927, at London, notice was given that "All active mining operations had ceased and that arrangements for cleaning up the plant and machinery, and the preparation of the necessary inventories and schedules with a view to the disposal of all the installation and stores, are in hand."

SUMMIT COUNTY

The total gross calculated value of metals produced by Summit County lode and placer mines in 1926 was $634,140, as compared with $688,638 in 1925. The decrease is mainly attributable to the falling off in dredge production at Breckenridge, for the increase in the lode output of the Montezuma district balanced the decrease in the output of lode mines at Breckenridge.

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U. S. DEPARTMENT OF COMMERCE
R. P. LAMONT, Secretary
U.S. BUREAU OF MINES,
SCOTT TURNER, Director

MINERAL RESOURCES
OF THE
UNITED STATES
1927

FRANK J. KATZ
Chief Engineer, Division of Mineral Statistics

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total calculated value to $266,307; the lead yield fell off only 2,215,243 pounds, but the decrease of $0.017 in average price resulted in a decrease of $1,312,353 in total calculated value; a decrease of 919,517 ounces in silver output, coupled with a decrease of $0.057 in average price per ounce, resulted in a total value decrease of $789,501; gold showed the heaviest decrease, $1,798,915, of which $1,788,000 was due to decreases of $1,128,507 in the Cripple Creek district, $437,431 in San Miguel County, and $222,071 in Lake County, and the remainder to the overbalancing of increases in Summit, Rio Grande, La Plata, Saguache, Dolores, and Park Counties by decreases in San Juan, Boulder, Clear Creek, Ouray, Gilpin, Eagle, and Chaffee Counties; the decreases in silver yield in San Miguel, Mineral, Lake, Clear Creek, San Juan, and Pitkin Counties were not compensated by the increases in Saguache, Dolores, and La Plata Counties; the copper increase is mainly attributable to the increased output of lead-copper-silver-gold concentrates from the Rawley mine, Saguache County; the notable increases in lead production in Dolores, Eagle, and Saguache Counties were more than balanced by decreases in the other important lead-producing counties; the zinc increase is largely due to the increased yield from Rico, Dolores County.

Operating details are given under the caption, "Review by counties and districts." Some of the more significant are briefly noted in the following: In the Cripple Creek district the tonnage of ore mined from the Cresson for the calendar year was slightly greater than in 1926 but the grade of the ore shipped was under that of 1926, the Portland production was about $800,000 less than that of 1926, the Vindicator surface buildings were destroyed by fire in December, the Queen was reopened, and the United Gold Mines Co. increased its output from 90,861 tons of ore in 1926 to 93,840 tons in 1927. At Colorado Springs the Golden Cycle mill was operated continuously, mainly on Cripple Creek mine and dump ore. At Canon City the Empire Zinc Co.'s magnetic mill was abandoned shortly after the end of the year. At Florence the River matting, fuming, and zinc oxide plant made a short run on ore and concentrates in stock but purchased no new ore. At Ilse high-grade lead (cerussite) concentrates were produced from the Terrible mine until October. At Bonanza the Rawley mill continued in operation at a rate of 300 to 325 tons of ore a day. In the Summitville district the Little Annie mine produced $133,530 in gold. At Creede silver production decreased. At Eureka the Sunnyside selective flotation mill operated steadily at a rate of 825 tons of ore a day. Near Silverton development work was done at the Shenandoah-Dives-Mayflower-North Star group. At Rico the International selective flotation 225-ton mill operated for nine months. At Ophir the Carbonero and San Bernardo selective flotation mills were in operation. At Telluride the Smuggler Union was the only important producer. In Ouray County the operations at the Camp Bird upper levels were continued by lessees; the Sutton flotation mill and the Wanakah concentration mill were operated part time; copper ore was shipped from the San Antonio, copper-lead-zinc ore from the Beaver-Belfast, and lead-silver-gold ore from the Bachelor; and development work was done on the Wanakah-Pony Express-American Nettie-Jonathan group. At Aspen silver and lead output decreased. At Rifle the 110 to 140 ton vanadium plant operated

steadily. At Gilman zinc-lead-silver-gold-iron ore was shipped until October and silver-iron pyrite throughout the year, while development of ore reserves was continued. In the Leadville district 62 per cent of the tonnage mined was lead-zinc-silver-iron ore (mostly from the Leadville Deep Mines) which was shipped to the Colorado Zinc-Lead selective flotation mill and to zinc-lead pigment plants, and 18 per cent was old smelter slags; the tonnage of all classes of ore available for the Leadville smelter was only sufficient for two furnaces. At Climax the Climax Molybdenum Co.'s flotation mill was operated at an average rate of 578 tons of ore a day for 365 days. In Summit County at Montezuma two mills were operated part time; at Breckenridge the Wellington wet gravity and roast magnetic mill was changed to a selective flotation mill, the pilot mill of the Royal Tiger was operated part time, and the Blue River dredge was operated from May 1 to December 31. In Park County operations comprised, chiefly, development work; the Fairplay dredge remained idle; some gold-silver-copper-lead-bismuth ores were shipped from Hall Valley. In Boulder County the Boulder County and Wood Mountain mills were in operation; the Wolf Tongue tungsten mill was destroyed by fire early in the summer, but a new mill was built and was ready for work in December. In the Silver Plume-Georgetown district the East Butte mill was idle and there was only small production from the mines of the district. At Empire the Gold Dirt or Rose City No. 2 flotation mill was operated on pyritic gold ore from the Gold Dirt mine. At Idaho Springs there was continued production of telluride ore from the West Gold but in lessened quantity; the Newton mill was operated for only a short period; the Lake property was developed through the Big Five lateral; and the Argo adit was reopened to allow development of the Concrete and Burroughs group in the adjoining (Gilpin) county. In Gilpin County the Eureka, Incidental, Pewabic, Arizona-Morning Star, and Perigo mines were the chief producers; the Rose City No. 1 mill was destroyed by fire.

ORE CLASSIFICATION

Ore sold or treated in Colorado in 1927, with content in terms of recovered metals

Source	Ore		Gold		Silver	
	Short tons	Per cent	Fine ounces	Per cent	Fine ounces	Per cent
Dry gold ore	514,376	32.02	183,017.90	71.67	67,791	1.79
Dry gold and silver ore	299,099	18.62	49,292.08	19.30	735,964	19.45
Dry silver ore	221,830	13.81	2,359.52	.92	1,605,746	42.43
	1,035,305	64.45	234,669.50	91.89	2,409,501	63.67
Copper ore	467	.03	140.61	.06	14,888	.39
Copper-lead ore	410	.03	87.61	.03	8,284	.22
Lead ore	61,275	3.81	2,495.90	.98	244,788	6.47
Lead-zinc ore	508,679	31.66	13,415.46	5.25	1,106,008	29.22
Zinc ore	392	.02	----------	----------	----------	----------
	571,223	35.55	16,139.58	6.32	1,373,968	36.30
Total, lode mines	1,606,528	100.00	250,809.08	98.21	3,783,469	99.97
Total, placers	----------	----------	4,568.25	1.79	1,136	.03
	1,606,528	100.00	255,377.33	100.00	3,784,605	100.00
Total, 1926	1,839,740	----------	342,399.84	----------	4,704,122	----------

going to El Paso, Tex.); a high-grade lead concentrate carrying more than half the recovered gold and silver went to the Durango smelter; and a zinc-lead middling carrying more gold but less silver than the zinc concentrate was shipped to the Read-Coolbaugh sulphating plant at the Durango smelter, where the soluble zinc sulphate was leached out, the residue being sent to the lead furnaces. Some of the zinc sulphate was sold to flotation plants throughout the United States and some was sent to Amarillo, Tex., to be made into slab zinc after first being made into a zinc oxide. The flotation mill at Eureka is connected with the mine by a 17,000-foot aerial tram. Crushing is done both at the mine and at the mill. The mining is done by the shrinkage-stope method. Development work in 1927 totaled 6,660 feet.

The equipment of the Sunnyside flotation plant in 1927 was as follows: 2 Gates No. 6-K gyratory crushers (at the mine), 2 Ferrel 13 by 31 inch jaw crushers, 4 Denver Engineering Works 5 by 14 foot tube mills, 3 Marcy No. 86 ball mills, 6 Dorr (both C and D) rake classifiers, 11 No. 6 Wilfley tables (used only for control), 30 Minerals Separation 24-inch Standard flotation machines (10 machines as lead roughers, 20 machines as zinc roughers), 6 Minerals Separation 18-inch Sub-A flotation machines (lead and zinc cleaners), 3 Portland filters (12 by 3½ foot for lead, 12 by 9 foot for zinc, 12 by 5 foot for middlings), and 3 Dorr 28 by 9 foot thickening tanks (1 each for lead, zinc, and middlings).

SAN MIGUEL COUNTY

The mines of San Miguel County in 1927 produced 312,490 tons of ore, yielding $922,806 in gold, 905,949 ounces of silver, 219,443 pounds of copper, 9,647,540 pounds of lead, and 708,000 pounds of zinc, with a total gross calculated value of $2,118,333, as compared with 478,116 tons of ore and $2,971,182 in 1926.

Iron Springs district (*Ophir*).—The Ophir district in 1927 produced 44,494 tons of ore, yielding $14,906 in gold, 246,873 ounces of silver, 96,435 pounds of copper, and 3,096,238 pounds of lead, with a total gross calculated value of $362,579, as compared with $387,554 in 1926. The principal producing mines were the Carbonero and the San Bernardo. Some lead-silver-copper-gold smelting ore was shipped from the Carbonero mine to the Durango smelter, but the greater part of the ore mined was dry silver ore, carrying some lead, and was milled at the 45-ton flotation mill on the property. The ore was nearly all sulphide; it was crushed in a Universal crusher, then went to a Ruth 3 by 9 foot rod mill, and then to an 8-cell Ruth flotation machine supplemented by 4 Deister-Plato tables (1 used as a rougher, 2 as slimers, and 1 as a pilot). The product was a lead-copper-silver-gold concentrate. The mill was built in 1924. It is connected with the mine by a 3,300-foot aerial tram. The San Bernardo dry silver ore, carrying some lead, was milled at the Valley View flotation mill, built in 1920, at Matterhorn, 2 miles south of Ophir. The equipment consists of 1 Gates gyratory crusher, 2 Allis Chalmers 6 by 5 foot ball mills, 1 Dorr duplex classifier, 1 Minerals Separation 12-cell flotation machine, 1 American continuous filter, and 1 agitation tank. The mill was operated nine months; the product was a lead-copper-silver-gold concentrate. The San Bernardo mine is opened by five adits, totaling 9,500 feet. Three hundred feet of development work was done in 1927. The Silver

Bell mine was operated all year, 300 feet of drifts being driven and one lot of lead-silver ore being shipped. A car of copper-silver-gold ore was shipped from the Crown Point mine. The old mill on the Butterfly-Terrible mine was destroyed by fire in May, 1927. Construction was started on a new mill to replace the old one. At the Suffolk group, opened by a 2,043-foot adit, the timbering was repaired and development work was done.

Lower San Miguel district (*Sawpit*).—One car of zinc-lead-silver-gold sulphide ore was shipped from the Lizzie prospect to the custom mill at Bauer, Utah.

Upper San Miguel district (*Telluride*).—Five mines in the Upper San Miguel district in 1927 produced 267,971 tons of ore, yielding $907,849 in gold, 659,030 ounces of silver, 123,008 pounds of copper, 6,548,556 pounds of lead, and 703,000 pounds of zinc, with a total gross calculated value of $1,755,184, as compared with 449,525 tons of ore and $2,583,628 in 1926. The Smuggler Union mine was the only important producer, as the Tomboy closed down in January, 1927. The Alta 300-ton mill was operated for a few weeks at part capacity; the equipment consists of 1 Allis Chalmers crusher, 2 Marcy ball mills, 2 Dorr classifiers, 6 No. 6 Wilfley tables, 7 J. B. flotation machines, 3 homemade flotation machines, 1 Minerals Separation flotation machine, 1 Colorado Iron Works filter, and 2 Dorr thickening tanks. No development work was done at the Alta mine in 1927. A lessee on the Black Bear mine shipped zinc-lead-copper-silver-gold-iron sulphide ore to the selective flotation custom mills of the International Smelting Co. at Rico, Colo., and at Tooele, Utah.

The Smuggler Union Mining Co.'s 650 to 800 ton mill, which combines stamp amalgamation, gravity concentration, and flotation, was operated steadily in 1927 until a fire on October 20 destroyed the surface workings at the Pennsylvania adit. This accident curtailed production until the internal shaft could be converted from a man-hoisting to an ore-hoisting unit to make the ninth level the main outlet. The history, production, geology, mining methods, and metallurgical methods and results at this mine, which has had a life of 52 years, are given in an article by the company's president and general manager,[5] and details of grade of ore mined and costs are quoted as follows:

> The Smuggler ore is characteristically a gold-silver ore with a little lead. The upper levels showed shoots of very rich ore, containing particularly free gold. As late as 1910 crude ore assaying several hundred ounces of silver per ton was regularly sacked and shipped, and several times within my recollection pockets of gold ore were encountered on which guards were posted. These occurrences have passed into history, unfortunately; but occasionally, even now, very rich but small pockets are encountered even at the lowest levels.
>
> The characteristic mill ore of the Smuggler vein contains now about 0.12 ounces gold and 6 to 8 ounces of silver with about 1 per cent lead. The Flat vein also was richer near the surface, but its lead content has always been greater than that of the Smuggler ore. Fortunately, its gold content is somewhat higher also. Characteristic mill ore runs 0.20 gold, 1 to 4 ounces silver, and 1.5 per cent lead.
>
> The process at present used is simple, since no selective separation is made or, indeed, is feasible. A simple oil mixture with a small addition of xanthate is added to the product as it comes from the concentrator, which is then passed through a succession of cells of Callow type. The resulting concentrate is pumped back to two cleaner cells. After thickening, this product is mixed with the concentrate from the stamp mill, dewatered, and filtered on Portland filters. The cake passes over belts to the bins, whence it is mechanically loaded into

[5] Livermore, Robert, Prolonging the Life of the Smuggler Union Enterprise: Eng. and Min. Jour., vol. 125, Mar. 31, 1928, pp. 525-532.

cars for shipment to Durango. From two to three cars a day, equivalent to about 2,000 tons of concentrates a month, are made. The amalgam is retorted and the bullion sent to the mint. This product formerly constituted about one-third of the gross production but now is somewhat less.

Considering the somewhat complex nature of the ore and the comparatively simple treatment accorded it, the percentage of extraction of the metals is satisfactory. Based on the usual method of estimation, using net smelter and mint returns and calculated values of the tailings, 90 per cent of the gold and lead and 80 per cent of the silver is recovered. The concentration ratio is quite uniformly 10 to 1.

From July, 1925, all efforts have been directed to increase of production to the full capacity of the mill, and at the same time to maintain the grade of the ore at a profitable level. This was not done at once, and there have been many setbacks. The story is summarized in the figures given in annual reports of the company for the fiscal years ended April 30, 1925, 1926, and 1927, which follow:

	1925	1926	1927
Gross extracted value, per ton	$6.25	$6.06	$6.23
Freight and treatment	1.08	1.33	1.33
All other expenses	4.88	4.97	4.65
Total cost	5.96	6.30	5.98
Tonnage	177,720	218,449	253,975

The following summary shows the operating costs for a typical year. The costs given include every expense at Telluride, including local taxes, insurance, and construction, and exclude only Boston office expenses, depletion, and depreciation:

Ore extraction	Per short ton	Ore reduction	Per short ton
Mining	$1.194	Crushing	$0.092
Timbering	.460	Flotation plant	.368
Hoisting	.057	Concentrating mill	.610
Tramming	.766	General charges	.398
Cable tramway		Development	.396
Smuggler tramway	.131	Construction	.037
Pennsylvania "	.085	Grand total	4.594

The Tomboy Gold Mines Co. (Ltd.) continued operation for about a month in 1927. Later in the year the property was sold to local capitalists, who, under the name of the Tomboy Mines Co., put up a 287-foot raise and shipped 175 tons of lead-silver gold-bearing material from a clean-up of the mill.

SUMMIT COUNTY

The total gross calculated value of metals recovered from Summit County lode and placer mines in 1927 was $532,952 as compared with $634,140 in 1926.

Breckenridge district.—The total gross value of the combined output of lode and placer mines in the Breckenridge district in 1927 was $505,133. A Universal power shovel on a caterpillar was operated from June 12 to September 12 at the Bemrose-Bostwick placer in Hoosier Gulch, near Hoosier Pass. The gravel dug up—1,126 cubic yards—was dumped over grizzlies and into sluice boxes, where a gold amalgam averaging 0.747 gold and 0.177 silver was recovered. The Blue River Placer Mining Co.'s electrically driven dredge of 88 buckets, each with a capacity of 8½ cubic feet, handled 988,527 cubic yards in 4,579 hours—May 1 to December 31. The Mekka Placers hydraulic mine was operated four months. Small sluicing operations were conducted at the Mickie, Shakespeare, Swan, and Washington placers.

A few hundred tons of dry gold and silver ore from the Detroit mine was milled by amalgamation and concentration at the Extension mill, and one car of lead-silver-gold ore was shipped from the Detroit mine to the Leadville smelter. Development was continuous at the Royal Tiger property, where 3,020 feet of drifts, 351 feet of crosscuts, and 1,159 feet of raises were opened. The Royal Tiger experimental mill was operated four months; the product was a lead-silver-gold concentrate. A small lot of lead-silver-gold siliceous oxidized ore was shipped from the Sure Thing property to the Leadville smelter. The Wellington Mines Co. operated the Wellington mine and 100-ton jigs, table, and magnetic separation mill until April 1, 1927, when the operation of the property was taken over by the Wellington Mines Leasing Co. This company rebuilt the concentrator to a 125-ton selective flotation mill and started the new mill August 23, operating it until November 28, when all operations were suspended owing to the decline in prices of metals. The flow sheet of the old mill was crushing to one-fourth inch by jaw crusher and rolls. Plus 4 mesh, 6 mesh, and 12 mesh went to Harz jigs. Minus 12 mesh went to hydraulic classifier to tables. The zinc product was roasted, then went to magnetic separators where the iron was removed, and again to tables. The new mill flow sheet is crushing by jaw crusher and rolls to one-half inch, then to ball mill and Dorr classifier until 10 per cent minus 80 mesh. One 12-cell 18-inch Minerals Separation flotation machine is used to make lead concentrates, then the pulp goes to two conditioning tanks, and then to a 12-cell 18-inch Minerals Separation flotation mill for zinc concentrates. The lead concentrate and the zinc concentrate each goes to Wilfley tables to thickener to American filter.

Montezuma district.—Two mills were operated at Montezuma part of the year—the Pennsylvania gravity concentration mill making lead concentrates and the new St. John flotation mill making a lead and a zinc concentrate. Only 70 feet of development work was done at the Bell & California group, from which 31 tons of lead-silver ore were shipped to the Leadville smelter. A small lot of lead-silver smelting ore was shipped from the Windsor claim also. At the Hall group 400 feet of development was done, at the Hunki Dori 300 feet, at the Marlin 200 feet, and at the New York 800 feet.

Tenmile district (Kokomo, Robinson, Frisco).—Several cars of siliceous lead-silver-gold sulphide ore were shipped from the Wilfley group at Kokomo to the Leadville smelter. One car of siliceous lead-silver-gold oxidized smelting ore was shipped from the Etta property at Frisco. Fifty feet of winze and 50 feet of drift were opened in 1927 at the King Solomon 6,000-foot adit at Frisco.

TELLER COUNTY

Mine and dump ore, concentrates, slags, clean-ups, and stolen specimen gold from the Cripple Creek district aggregated in recovered gold to United States mints and to smelters 160,000.52 fine ounces, valued at $3,307,505 as compared with $4,436,012 in 1926; and 25,344 ounces of silver as compared with 25,609 ounces in 1926. The Golden Cycle roast-amalgamation-cyanidation mill at Colorado Springs was operated steadily at 862 tons a day, mainly on ores from the Cripple Creek district. Gold ore in 1927 was also received from Boulder, Clear Creek, Gilpin, Lake, and La Plata Counties and silver

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Gold and silver produced at placer mines in Colorado in 1928, by counties, in fine ounces

County	Sluicing and hydraulic		Dredging		Total	
	Gold	Silver	Gold	Silver	Gold	Silver
Adams	200.56	29			200.56	29
Chaffee	26.03	5			26.03	5
Clear Creek	6.82	2			6.82	2
Douglas	15.14				15.14	
Eagle	2.90				2.90	
Gilpin	92.83	17			92.83	17
Jefferson	4.84				4.84	
Moffat	9.53				9.53	
Summit	143.80	47	2,468.06	628	2,611.86	675
Total, 1927	502.45	100	2,468.06	628	2,970.51	728
	364.38	73	4,203.87	1,063	4,568.25	1,136

MINING INDUSTRY

Operating details are given under the caption, "Review by counties and districts," but some of the more significant are briefly noted here. In the Cripple Creek district the gross value of ore shipped by the Portland Gold Mining Co. increased from $149,302 to $200,012, but the gross value recovered at that company's Independence mill dropped from $660,293 to $473,840. The mill was closed December 1, 1928. The quantity of ore from the Cresson mine for the fiscal year ended August 31, 1927, was 104,645 tons of an average gross value of $12.95; for the fiscal year ended August 31, 1928, it was 106,041 tons of an average gross value of $9.21; no improvement in grade was made in the last four months of the calendar year 1928. The United Gold Mines in 1928 produced 97,626 tons of ore of an average gross value of $9.08, compared with 93,840 tons of an average gross value of $8.16 in 1927. The Elkton and Queen became important producers. At Colorado Springs the Golden Cycle mill was operated continuously, mainly on Cripple Creek mine and dump ore. At Canon City the Empire Zinc Co.'s magnetic separation plant was dismantled shortly after the beginning of the year, but the company's zinc oxide plant was operated steadily. At Ilse development only was done at the Terrible mine, from which high-grade lead (cerussite) concentrates had been produced up to October, 1927. At Bonanza the Rawley continued in operation at a rate of 325 tons of ore a day. In the Summitville district the Little Annie mine produced $245,579 in gold. At Creede silver production increased because of ore discoveries in fissures in the hanging wall of the Amethyst fault fissure. From White Pine zinc-lead-silver milling ore was shipped. At Eureka the Sunnyside selective flotation mill operated steadily at a rate of 900 tons of ore a day. Near Silverton the ore found in the Mayflower claim by the Shenandoah-Dives Syndicate's adit was milled successfully in the pilot mill installed in the old Iowa-Tiger mill.

At Rico the International selective flotation 225-ton mill remained idle, but shipments from the district—mostly to Utah custom milling plants—aggregated 58,443 tons of ore, compared with a production of 60,743 tons in 1927. At Ophir the Carbonero selective flotation mill was the only mill operated steadily. At Telluride the Smuggler-Union was the only important producer, and it closed in December, 1928. In Ouray County the operations at the Camp Bird upper levels were continued by lessees; the Wanakah concentration mill was operated part time; and high-grade specimen gold was discovered in the Jonathan. At Aspen silver and lead output again decreased. At Rifle the 110 to 140 ton vanadium plant operated steadily. At Gilman silver-iron pyrite and silver-iron chalcopyrite ore was shipped throughout the year, but no zinc-lead-silver-gold-iron ore was shipped, pending the contemplated building of a selective flotation mill at the mine. At Leadville production showed a slight increase in total calculated gross value of metals recovered from ores mined. At Climax the Climax Molybdenum Co.'s flotation mill was operated at an average rate of 892 tons of ore a day for 365 days. In Summit County, at Montezuma, one mill was operated part time; at Breckenridge the Wellington's new selective flotation mill resumed operations in July, 1928, the pilot mill of the Royal Tiger was operated part time, and the Blue River dredge was operated from January to August 10, except March. In Park County shipments of gold ore from the London Extension increased heavily. In Boulder County the Boulder County mill was idle. In the Silver Plume-Georgetown district the East Butte mill was again in operation and the St. George mill was operated. At Empire the Gold Dirt mill was operated. At Idaho Springs the Argo remodeled mill at the mouth of the Argo adit was operated on ore from the unwatered Kansas-Ophir-Phoenix group, in the Nevadaville district, Gilpin County. Recovery of fine gold from gravel and sand washing plants continued in Adams County.

ORE CLASSIFICATION

Ore sold or treated in Colorado in 1928, with content in terms of recovered metals

Source	Ore		Gold		Silver	
	Short tons	Per cent	Fine ounces	Per cent	Fine ounces	Per cent
Dry gold ore	511,353	35.86	206,384.12	80.42	163,213	4.03
Dry gold and silver ore	194,831	13.66	30,198.82	11.77	624,909	15.42
Dry silver ore	188,271	13.20	1,735.74	.68	1,530,209	37.76
	894,455	62.72	238,318.68	92.87	2,318,331	57.21
Copper ore	11,983	.84	769.31	.30	235,581	5.81
Copper-lead ore	366	.03	315.29	.12	14,292	.35
Lead ore	26,687	1.87	1,181.56	.46	233,611	5.77
Lead-zinc ore	492,593	34.54	13,068.03	5.09	1,249,710	30.84
	531,629	37.28	15,334.19	5.97	1,733,194	42.77
Total, lode mines	1,426,084	100.00	253,652.87	98.84	4,051,525	99.98
Total, placers			2,970.51	1.16	728	.02
	1,426,084	100.00	256,623.38	100.00	4,052,253	100.00
Total, 1927	1,606,528		255,377.33		3,784,605	

5 foot ball mill, 1 Dorr Simplex 3½ by 18 foot classifier, 3 Wilfley tables, 1 Minerals Separation 14-cell flotation machine, 1 Dorr 60 by 24 inch filter, and 1 Dorr 10 by 18 foot thickening tank. The mill is in Arastra Gulch, 3,700 feet from the mine portal, and the two are connected by an aerial tram.

The ore is chalcopyrite and pyrite, accompanied by some sphalerite, in a quartz gangue. Concentrates produced were lead-copper-[zinc]-gold-silver sulphides. The Colorado-Mexico Mining Co., lessee on the Iowa-Gold Tiger group, availed itself of the opportunity to send some of its ore to the Shenandoah-Dives pilot mill but spent most of its energies on development work—sinking a 5 by 13 foot incline shaft 100 feet and driving 95 feet of drifts and 60 feet of crosscuts. The openings on the Iowa-Gold Tiger are: Vertical shaft, 175 feet; incline shaft, 410 feet; drifts, 4,500 feet. The ore carries galena, chalcopyrite, and sphalerite. Several cars of lead-copper-silver-gold sulphide ore from the Aspen and one to three cars each of lead-silver-gold sulphide ore from the Lark, Little Fannie, and Pride of the West were shipped to the Durango smelter. The lessee on the Valley Forge shipped one car of complex gold-silver-lead-zinc sulphide ore to the Sunnyside selective flotation mill at Eureka.

The Highland Mary mill and power plant were repaired in 1928. One hundred and ten feet of drifting was done at the Joe & John. Repairing of the Copper Bell adit was in progress. The Vertex Mining Co., a subsidiary of the Tonopah Mining Co., sank the main shaft (which is a winze sunk from the adit level, the adit level here being about 650 feet from the surface) 200 feet from the 200-foot level to the 400-foot level. On the 300-foot level of this shaft 100 feet of drifts and crosscuts were run. On the adit level two crosscuts were run 94 feet into the foot and hanging wall of the vein. All of this work was done on what is known as the Smuggler-Union claim. The ore developed is a dry gold-silver ore. The Lackawanna Mining Co. built a 50-ton gravity concentration and flotation mill at the Lackawanna property in the summer of 1928 but did not operate it in 1928.

Eureka district (*Eureka, Silverton*).—The Eureka district appears to include all the area from Red Mountain to Animas Forks, west of the Animas River. In 1928 the Lucky Jack prospect, 11 miles southeast of Ouray, but in San Juan County, was opened. Development on this group in 1928 consisted of 60 feet of drift, 27 feet of vertical shaft, and 10 feet of crosscut. A 4-ton lot of dry gold and silver ore was shipped in 1928. The Sunnyside mine of the United States Smelting, Refining & Mining Co., on Hanson Mountain, was operated steadily in 1928. This mine is at an altitude of 13,200 feet; it is connected by a 16,000-foot aerial tram with the 1,000-ton selective flotation mill at Eureka on the Silverton Northern Railroad. Development work at the mine in 1928 totaled 4,596 feet. This company was one of the first (in 1912) to use selective flotation in the treatment of a complex low-grade zinc-lead-copper-iron-silver-gold sulphide ore. The present mill was built in 1917, and the practice as of 1926 was described by Robie.[8] The capacity of the present mill has been enlarged from time to time from 500 tons a day to 1,000 tons rated capacity in 24

[8] Robie, E. H., Selective Lead-Zinc Flotation at Sunnyside: Eng. and Min. Jour., vol. 121, 1926, pp. 542, 757–762.

hours. In 1928 the daily average treated was 900 tons. As of March, 1929, the equipment was as follows: 2 Gates No. 6-K gyratory crushers (at the mine), 2 Farrel 13 by 30 inch jaw crushers, 3 Denver Engineering Works 5 by 14 and one 5 by 8 foot tube mills, 3 Marcy No. 86 ball mills, 7 Dorr duplex classifiers, 11 No. 6 Wilfley tables (for control), 1 Minerals Separation 10-cell 24-inch Sub A flotation machine, 1 Minerals Separation 10-cell 24-inch Standard flotation machine, 1 Minerals Separation 22-cell 24-inch Standard flotation machine, 1 Minerals Separation 16-cell 24-inch Standard flotation machine, 3 Oliver filters, 1 Portland 12 by 9 foot and 1 Portland 12 by 3½ foot filter, and 3 Dorr thickening tanks (one 8 by 25 foot, one 10 by 28 foot, and one 8 by 15 foot). Products from the mill in 1928 were high-grade zinc concentrates, carrying also lead, copper, silver, and gold, which were shipped to Oklahoma-Texas zinc-retort plants (residues from the zinc retorts going to El Paso, Tex.); high-grade lead concentrates, carrying much more than half the total recovered gold and silver, which were shipped to the Durango smelter; and a small tonnage of zinc-lead middling, carrying less gold and silver in all than the zinc concentrates but carrying five times as much gold and two and one-half times as much silver per ton as the zinc concentrates. The middling was shipped to the Read-Coolbaugh sulphating plant at the Durango smelter, where the soluble zinc sulphate produced by the roasting was leached out and the residue sent to the lead furnaces. Much of the zinc sulphate is sold as a chemical reagent for use in flotation plants.

Assessment work, repairs to buildings, roads, and bridges, mine timbering, building truck garage, and testing, altering, and experimenting with the mill were done in 1928 at the Caledonian Mining & Milling Co.'s property in T. 42 N., R. 6 W. of New Mexico principal meridian. Near the close of 1928 or early in 1929 the Frisco Tunnel property, including the Red Cloud and other claims, was leased to the United States Smelting, Refining & Mining Co., under an agreement that that company would operate the property in conjunction with the operations of the Sunnyside Mining & Milling Co. On December 31, 1928, the Golconda San Juan Mines (Inc.) purchased the former Lake Mountain Mining & Reduction Co.'s holdings, including the San Juan Chief mine; in 1928 approximately $10,000 was spent on the mines. Development on the San Juan Chief is as follows: 300 feet of main shaft and four shafts totaling 51 feet.

SAN MIGUEL COUNTY

The mines of San Miguel County in 1928 produced 188,406 tons of ore, yielding $528,093 in gold, 665,282 ounces of silver, 110,896 pounds of copper, and 6,530,431 pounds of lead, with a total gross calculated value of $1,312,017, compared with 312,490 tons of ore and $2,118,333 in 1927. The Smuggler-Union mine closed on December 11, 1928; the shutdown will cause a heavy decrease for this county in 1929.

Iron Springs district (*Ophir*).—The Ophir district in 1928 produced 20,201 tons of ore, yielding $6,710 in gold, 155,253 ounces of silver, 80,618 pounds of copper, and 3,356,758 pounds of lead, with a total gross calculated value of $303,834, compared with $362,579 in 1927. The principal producing mine was the Carbonero. It is opened by a crosscut adit 2,200 feet long. There are 4,000 feet of drifts on 5

levels, connected by a 600-foot raise. Development in 1928 consisted of 800 feet of drifts and 150 feet of raises. The ore of this mine as milled carried about 10 per cent of lead and 7 ounces of silver to the ton and was the highest grade strictly lead ore milled in the State. In addition, smelting ore carrying 48 per cent of lead and 34 ounces of silver to the ton was shipped to the Durango smelter. The mill was operated continuously at a rate of 50 tons a day; the product was high-grade lead-silver concentrates. The equipment of the mill consists of 1 Universal No. 3 crusher, 1 Ruth 3 by 9 foot rod mill, 1 Deister rougher table, 2 Deister pilot tables, 1 Deister sand table, 1 Ruth 8-cell flotation machine, and 4 settling tanks. Development work was continuous at the Butterfly-Terrible group; the new mill (built in 1927) was operated 40 days. This property is opened by 9,000 feet of adits, 600 feet of drifts, and an 850-foot vertical shaft. In 1928 development work consisted of 550 feet of shaft and 600 feet of drifts. The mill adjoins the portal of the adit and its equipment is as follows: 1 Allis Chalmers gyratory crusher, 1 impact screen, 1 Colorado Iron Works 5 by 6 foot ball mill, 1 Akins classifier, 2 Fahrenwald 6-cell flotation machines, 1 American 3-leaf filter, 2 agitation tanks, and 1 Dorr 18-foot thickening tank. The ore is a dry silver sulphide, and the concentrates made are lead-silver with a little gold, copper, and zinc. About 70 tons of ore from the Iron Mountain property was milled, making 7 tons of lead-copper-silver-gold concentrates. About 400 feet of drifting was done on the Ida vein, and 81 tons of lead-copper-[zinc]-silver-gold ore was shipped to Durango. The San Bernardo mine and mill, which made an important production in 1927, were idle after January 10, 1928. The equipment of the mill consists of 1 Gates gyratory crusher, 2 Allis Chalmers 6 by 5 foot ball mills, 1 Dorr duplex classifier, 1 Minerals Separation 12-cell flotation machine, 1 American continuous filter, and 1 agitation tank. The product was lead-copper-silver-gold concentrates.

Lower San Miguel district (*Sawpit*).—No development was done or production made from gold-silver-lead-zinc prospects in the Lower San Miguel district in 1928. The vanadium properties, closed in 1920, remained idle.

Upper San Miguel district (*Telluride*).—Two mines and ten prospects in the Upper San Miguel district in 1928 produced 168,205 tons of ore, yielding $521,383 in gold, 510,029 ounces of silver, 30,278 pounds of copper, and 3,173,673 pounds of lead, with a total gross calculated value of $1,008,183, compared with 267,971 tons of ore and $1,755,184 in 1927. The Smuggler-Union mine was the only important producer. The other producer was the Alta mine. Very little was done at the Alta mine other than keeping the workings open, but the 300-ton mill was operated for a few weeks, producing lead-copper-silver-gold concentrates. The equipment of this mill consists of 1 Allis Chalmers crusher, 2 Marcy ball mills, 2 Dorr classifiers, 6 No. 6 Wilfley tables, 7 J. B. flotation machines, 3 homemade flotation machines, 1 Minerals Separation flotation machine, 1 Colorado Iron Works filter, and 2 Dorr thickening tanks.

A fire on October 20, 1927, which destroyed the surface workings of the Pennsylvania adit of the Smuggler-Union group, curtailed production until the internal shaft could be converted from a man-

hoisting to an ore-hoisting unit to make the ninth level the main outlet. The mine and mill closed down December 11, 1928, and liquidation of the Smuggler-Union Mining Co. followed. The Smuggler-Union Mining Co. had two mills, one an old 60-stamp mill of about 650 tons capacity in 24 hours and one an 850-ton flotation mill, built in 1920. Crushing was done at the mine by three gyratory 250-ton crushers. The ore was carried by aerial tram to mills at Pandora; the equipment of these mills consisted of 60 stamps (1,050 pounds), 1 Allis Chalmers ball mill, 3 Hardinge 6-foot by 22-inch ball mills, one 6 by 4½ foot Marcy mill, 3 Akins classifiers, 2 Dorr classifiers, 21 Standard Wilfley tables, 32 Allen flotation machines, 2 Portland 8 by 6 foot filters, and 3 Dorr 20 by 16 foot thickening tanks. The history, production, geology, mining methods, and metallurgical methods and results at this mine, which in all has had a life of 52 years, are given in an article by the company's president and general manager.[9] Abstracts of this history were quoted in the 1927 report of this series.

The local purchaser of the equipment and property of the Tomboy Gold Mines Co. (Ltd.) (closed and liquidated early in 1927) made several sales of clean-up gold-silver bullion to the Denver Mint and to other United States assay offices and of other gold-silver-bearing material to the Durango and Omaha smelters.

SUMMIT COUNTY

The total gross calculated value of metals recovered from Summit County lode and placer mines in 1928 was $391,008, compared with $532,952 in 1927.

Breckenridge district.—The total gross value of the combined output of lode and placer mines in the Breckenridge district in 1928 was $380,970. From June 1 to August 31 a ¼-yard gasoline-propelled steam shovel dug 6,000 cubic yards of stream and bench gravels at the Bemrose-Bostwick placer in Hoosier Gulch, near Hoosier Pass. The gravel was dumped over grizzlies and into sluice boxes, where gold-silver bullion averaging 0.783¾ gold and 0.192½ silver was recovered. Placer ground in this property totals 266.84 acres. The length of ditches owned totals 4 miles. The Blue River Placer Mining Co., operating an electrically driven dredge of 88 buckets, each with a capacity of 8½ cubic feet, deposited gold-silver bullion at the Denver Mint monthly (except March) from January 12 to August 10, 1928. This bullion after melting averaged 0.783 gold and 0.198 silver. Sluicing operations on the Arctic-Galena Gulch-Peabody placers recovered some gold-silver bullion, which after melting at the Denver Mint averaged 0.778¾ gold and 0.185½ silver. Small sluicing operations on the Kelley and Louis D placers recovered a little gold-silver bullion. Fineness of the Kelley placer bullion after melting was 0.767¼ gold and 0.221½ silver and of the Louis D, 0.737½ gold and 0.257½ silver. Six weeks of hydraulicking at the Berlin placer recovered a small quantity of gold-silver bullion, which after melting at the Denver Mint averaged 0.631½ gold and 0.300½ silver.

[9] Livermore, Robert, Prolonging the Life of the Smuggler Union Enterprise: Eng. and Min. Jour., vol. 125, Mar. 31, 1928, pp. 525–532.

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U. S. DEPARTMENT OF COMMERCE
R. P. LAMONT, Secretary
U. S. BUREAU OF MINES
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MINERAL RESOURCES
OF THE
UNITED STATES
1929

O. E. KIESSLING
Chief Economist, Division of Mineral Statistics

PART I—METALS

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Gold and silver produced at placer mines in Colorado in 1929, by counties, in fine ounces

County	Sluicing and hydraulic		Dredging		Total	
	Gold	Silver	Gold	Silver	Gold	Silver
Adams	197.03	28			197.03	28
Chaffee	12.87	2			12.87	2
Denver	5.56				5.56	
Eagle	14.13	2			14.13	2
Gilpin	13.01	2			13.01	2
Moffat	5.61				5.61	
Summit	107.51	26	1,862.27	488	1,969.78	514
	355.72	60	1,862.27	488	2,217.99	548
Total, 1928	502.45	100	2,468.06	628	2,970.51	728

MINING INDUSTRY

Operating details are given under the caption, Review by Counties and Districts, but some of the more significant are noted briefly here. The Cripple Creek district produced $2,640,034 in gold in 1929, compared with $3,059,181 in 1928. At Colorado Springs the Golden Cycle mill was operated continuously, mainly on Cripple Creek mine and dump ore. At Canon City the Empire Zinc Co.'s zinc oxide plant was operated steadily on zinc concentrates from the company's flotation mill at Hanover, N. Mex. At Bonanza the Rawley mine continued in operation at a rate of 325 tons of ore a day. In the Summitville district the Little Annie mine produced only $20,413 in gold. At Creede the production of silver ore from fissures in the hanging wall of the Amethyst fault fissure totaled 5,436 tons. From White Pine zinc-lead-silver milling ore was shipped. At Eureka the Sunnyside selective flotation mill operated steadily at a rate of 1,000 tons of ore a day. Near Silverton the Mayflower mine continued to ship ore to the pilot mill installed by the Shenandoah-Dives Syndicate in the Iowa-Tiger mill in Arrastra Gulch; the Shenandoah-Dives completed a new 300-ton selective flotation mill on the west side of the Animas River opposite Arrastra Gulch. The La Plata Mines Co., at La Plata, shipped gold concentrates to Durango. The Durango lead bullion-copper matte smelter was closed three times during the year, owing to snow slides in the winter and floods in the summer between Durango and Silverton.

From Rico shipments of zinc-lead-copper-iron-silver-gold sulphide ore to Utah custom mills totaled 28,407 tons. At Ophir the Carbonero selective flotation mill was the only mill operated steadily. At Telluride the Smuggler Union mill and mine, closed in December, 1928, were sold for their salvage value. In Ouray County lessees continued the mining and milling of gold ore on the upper levels of the Camp Bird mine. At Aspen the output of silver and lead decreased; new development work was done in the Cowenhoven adit, the Midnight adit was connected by raise to the bottom of the Midnight shaft, and a 50 to 75 ton flotation mill was begun at the portal. At Gilman silver-iron pyrite and silver-iron chalcopyrite ore was shipped steadily throughout the year. A 600-ton flotation mill was built in Eagle Canyon at the mouth of the Newhouse adit; the mill was placed partly underground in an excavation cut into the granite walls of

Eagle Canyon. At Rifle the 140-ton vanadium plant was operated steadily. At Leadville the production of five metals totaled $2,826,261, compared with $2,903,122 in 1928. Only one furnace was in blast at the A. V. lead bullion-copper matte smelter. The selective flotation mill at Leadville was operated 313 days at a rate of 277 tons daily. At Climax an addition to the mill completed in November raised the tonnage treated by the old (893 tons daily) and the new (662 tons daily) mills to 40,000 tons for December. The new adit, 465 feet lower than the White adit, was driven 872 feet in 1929. It will be 4,000 feet long and cut under ore determined by diamond drilling. At Breckenridge the Wellington mill was closed on March 10 and later was sold, the Royal Tiger pilot mill was operated part time, and the Continental Dredging Co. bought and remodeled the Blue River Placer Mining Co.'s dredge and operated it from October 1 to December 31. In Park County shipments of gold ore from the London mine contained more than $200,000 in gold. In Boulder County the Nancy 50-ton flotation mill and the Wood Mountain amalgamation-concentration mill in the Sugar Loaf district, the Emancipation 25-ton flotation mill at Gold Hill, and the Buckhorn concentration mill at Jamestown were operated part of the year. In the Silver Plume-Georgetown district the East Butte flotation mill continued to treat silver dump ores. At Empire the Gold Dirt flotation mill produced gold concentrates. At Idaho Springs the Argo remodeled flotation mill at the mouth of the Argo adit was operated steadily (until it closed November 25), although not at capacity, on ore from the Kansas-Ophir-Phoenix group (unwatered in 1928) in the Nevadaville district, Gilpin County, and on custom ore from the Central adit at Idaho Springs. At Central City the Chain O'Mines (Inc.) mined and milled gold ore from "The Patch." Recovery of placer gold from gravel and sand washing plants continued in Adams County.

ORE CLASSIFICATION

Ore sold or treated in Colorado in 1929, with content in terms of recovered metals

Source	Ore	Gold	Silver	Copper	Lead	Zinc
	Short tons	*Fine ounces*	*Fine ounces*	*Pounds*	*Pounds*	*Pounds*
Dry gold ore	387,072	175,823.50	106,652	182,400	437,628	
Dry gold-silver ore	64,682	15,515.98	270,216	570,442	1,197,829	
Dry silver ore	188,688	1,779.73	1,721,358	2,967,739	7,433,535	
	640,442	193,119.21	2,098,226	3,720,581	9,068,992	
Copper ore	36,539	2,974.72	784,933	3,045,195	183,845	
Copper-lead ore	81	13.91	3,888	7,285	14,306	
Lead ore	36,880	2,287.61	333,369	64,972	6,580,987	
Lead-zinc ore	458,251	13,076.25	1,176,413	2,067,041	33,041,776	58,861,000
	531,761	18,352.49	2,298,603	5,184,493	39,820,914	58,861,000
Total, lode mines	1,172,193	211,471.70	4,396,829	8,905,074	48,889,906	58,861,000
Total, placers		2,217.99	548			
Total, 1928	1,172,193	213,689.69	4,397,377	8,905,074	48,889,906	58,861,000
	1,426,084	256,623.38	4,052,253	8,594,646	53,501,723	71,462,000

METAL CONTENT OF ZINC-BEARING MATERIALS

The following table gives the kind and grade of zinc-bearing materials marketed in 1929.

Read-Coolbaugh sulphating plant at the Durango smelter, where the soluble zinc sulphate produced by the roasting was leached out and the residue sent to the lead furnaces. Much of the zinc sulphate is sold as a chemical reagent for use in flotation plants.

SAN MIGUEL COUNTY

The mines of San Miguel County in 1929 produced only 17,951 tons of ore, which yielded in terms of recovered metals gold, silver, copper, and lead valued, at average yearly prices, at $303,697, compared with $1,312,017 in 1928. The closing of the Smuggler-Union mine on December 11,1928, caused the heavy decrease.

Iron Springs district (Ophir).—The Ophir district in 1929 produced 17,436 tons of ore, yielding in terms of recovered metals $5,048 in gold, 113,364 ounces of silver, 34,034 pounds of copper, and 2,382,826 pounds of lead, with a total gross calculated value of $221,579, compared with $303,834 in 1928. The principal producing mine was the Carbonero. It is opened by a crosscut adit 2,200 feet long. Mining is done from levels above the adit. In 1929, 500 feet of drifts were run on the fifth and sixth levels. The ore of this mine as milled carried about 9 per cent of lead and 7 ounces of silver to the ton and was the highest grade strictly lead ore milled in the State. The mill was operated continuously at a rate of 40 tons a day; the product was high-grade silver-lead concentrates. The equipment of the mill is as follows: 1 Universal No. 3 crusher, 1 Ruth 3 by 9 foot rod mill, 1 Deister rougher table, 3 Deister pilot tables, 1 Ruth 8-cell flotation machine, and 4 settling tanks. Development work on the Butterfly-Terrible mine totaled 750 feet of drifts and 400 feet of raises. The mill, built in 1928, was operated 45 days in 1929 at a rate of 50 tons a day. Its equipment consists of 1 Allis-Chalmers gyratory crusher, 1 vibrating screen, 1 Colorado Iron Works 5 by 6 foot ball mill, 1 Akins classifier, 2 Deister tables, 2 Fahrenwald 6-cell flotation machines, 1 American 3-leaf filter, 2 agitation tanks, and 1 Dorr 18-foot thickening tank. The product was lead-copper-silver-gold concentrates. Other producers in 1929—the Deadwood, Montezuma, New Dominion, Shoemaker, and Silver Tip—shipped small lots of smelting ore. The San Bernardo mine and mill remained idle in 1929. The equipment of the mill consists of 1 Gates gyratory crusher, 2 Allis-Chalmers 6 by 5 foot ball mills, 1 Dorr duplex classifier, 1 Minerals Separation 12-cell flotation machine, 1 American continuous filter, and 1 agitation tank.

Lower San Miguel district (Sawpit).—No development was done or production made from gold-silver-lead-zinc prospects in the Lower San Miguel district in 1929. The vanadium properties, closed in 1920, remained idle.

Upper San Miguel district (Telluride).—There was no mining in the Upper San Miguel district in 1929. The Smuggler-Union mine and mill closed December 11, 1928, and the only production in the district was clean-up material from the Alta, Smuggler-Union, and Tomboy.

SUMMIT COUNTY

The total gross calculated value of metals recovered from Summit County lode and placer mines in 1929 was $239,819, compared with $391,008 in 1928.

Breckenridge district.—The total gross value of the combined output of lode and placer mines in the Breckenridge district in 1929 was $233,715. From May 4 to September 30 a ¼-yard gasoline-propelled power shovel dug 6,000 yards of stream and bench gravels at the Bemrose-Bostwick placer in Hoosier Gulch near Hoosier Pass. Placer ground in this property totals 446 acres. The length of ditches owned totals 4 miles. Production in 1929 was 74.55 crude ounces of amalgam bullion. When melted at the Denver Mint the bullion weighed 74.52 fine ounces and assayed 0.807 fineness gold and 0.178 fineness silver. In May, 1929, the Continental Dredging Co. purchased the dredge boat formerly owned by the Blue River Placer Mining Co., spent the summer repairing the dredge, and operated from October 1 to December 31, 1929. During that period the electrically driven dredge, equipped with 90 buckets, each with a capacity of 7 cubic feet, dredged about 400,000 yards and recovered 2,372.80 crude ounces of gold, which when melted at the Denver Mint weighed 2,371.96 ounces and assayed 0.785 fineness gold and 0.201½ fineness silver. From June 1 to October 1 Frank W. Stafford sluiced the Louis D-Emile placer and recovered 30.85 crude ounces, which when melted at the Denver Mint weighed 29.83 fine ounces and assayed 0.712 fineness gold and 0.218 fineness silver. Sluicing on the Old Solid Gold placer recovered 30.82 crude ounces, which when melted at the Denver Mint weighed 30.73 fine ounces and assayed 0.666½ fineness gold and 0.178 fineness silver. Small lots of placer gold were sluiced from the Berlin and Fraction placers. The Fraction bullion when melted assayed 0.764½ fineness gold and 0.231½ fineness silver.

Two narrow-gage cars of lead-silver-gold smelting ore were shipped to the Leadville smelter from the lode mine covered by the "86" placer claim. An 8-ton lot of lead-silver-gold smelting ore from the Flag and a 10-ton lot of lead-silver ore from the Fredonia were shipped to the Leadville smelter. At the Royal Tiger mine 782 feet of drifts, 648 feet of raises, and 21 feet of crosscuts were driven in 1929. The mill was operated experimentally and produced gold-silver amalgam bullion and lead-copper-[zinc]-gold-silver concentrates. The equipment of the mill as of February 27, 1930, was as follows: 1 Blake 9 by 15 inch crusher, 3 Traylor vibrating screens, 2 Traylor 27 by 14 inch rolls, 1 Denver Engineering Works 27 by 14 inch roll, 3 classifiers, 1 Wilfley table, 5 Forrester flotation machines, 1 Portland filter, and 1 Dorr and 1 Traylor thickening tank.

The Wellington Mines Leasing Co., which took over the operation of the Wellington mine April 1, 1927, and completed and operated a 125-ton selective flotation mill from August 23 to November 28, 1927, and from July, 1928, through December, ran only January, February, and to March 10, 1929, when operations ceased. Later in the year the Royal Tiger Mining Co. bought the mine and mill but did not operate the property in 1929. During the period of operation the Wellington mill was run at a daily average of 116 tons on zinc-lead-silver-gold sulphide ore. Products were zinc-lead-silver and lead-silver-gold concentrates. The equipment of the mill consists of 1 Blake 9 by 15 inch crusher, 1 Mine & Smelter Supply Co.'s 16 by 36 inch roll, 1 Stearns Roger 6 by 5 foot ball mill, 1 Dorr Model D classifier, 4 standard Wilfley tables (for pilot only), 2 Minerals Separation 12-cell 18-inch Sub A flotation machines, 1 American 6-foot 5-leaf

(200)

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O. E. KIESSLING
Chief Economist, Division of Mineral Statistics

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first (in 1917) in the United States to use selective flotation in the treatment of a complex low-grade zinc-lead-copper-iron-silver-gold sulphide ore. The present mill was built in 1917, and the practice as of 1926 was described by Robie.[8] The capacity of the present mill has been enlarged from time to time, from 500 tons a day to 1,000 tons rated capacity in 24 hours. As of March 9, 1931, the equipment was as follows: 2 Gates No. 6–K gyratory crushers (at the mine), 2 Farrel 13 by 30 inch jaw crushers, 3 Denver Engineering Works 5 by 14 and one 5 by 8 foot tube mills, 3 No. 86 Marcy 15 by 8 foot ball mills, 2 El Oro 5 by 8 foot ball mills, 18 Dorr duplex classifiers, 11 No. 6 Wilfley tables (for control), 1 Minerals Separation 10-cell 24-inch Sub A, 1 Minerals Separation 10-cell 24-inch Standard, 1 Minerals Separation 22-cell 24-inch Standard, 1 Minerals Separation 16-cell 24-inch Standard, and 1 Minerals Separation 6-cell 24-inch Sub A flotation machine, 1 Oliver 4 by 14 foot filter, 1 Portland 9 by 12 foot filter, 1 Portland 3½ by 12 foot filter, and 3 Dorr thickening tanks (one 8 by 25 foot, one 10 by 28 foot, and one 8 by 15 foot). Products from the mill in 1930 were: High-grade zinc concentrates (carrying also lead, copper, silver, and gold), of which most were shipped to the United States Zinc Co. retort plant at Amarillo, Tex. (residues from the zinc retorts going to El Paso, Tex.) and of which several thousand tons went to the sulphating plant at Durango, Colo.; high-grade lead-copper concentrates (carrying much more than half of the total recovered gold and silver), of which some were shipped to the Durango smelter and some to the sulphating plant; and zinc-lead-copper-silver-gold middlings, which went to the sulphating plant. At the Read-Coolbaugh sulphating plant at the Durango smelter the soluble zinc sulphate produced by the roasting was leached out; the residue went to the lead furnaces. Much of the zinc sulphate is sold as a chemical reagent for use in flotation plants.

SAN MIGUEL COUNTY

The mines of San Miguel County in 1930 produced only 13,393 tons of ore; it yielded, in terms of recovered metals, gold, silver, copper, and lead with a total gross calculated value of $165,538. The metal output was valued at $303,697 in 1929 and at $1,312,017 in 1928. The large decrease from 1928 to 1929 was caused by closing of the Smuggler-Union mine on December 11, 1928.

Iron Springs district (Ophir).—The Ophir district in 1930 produced 13,329 tons of ore yielding, in terms of recovered metals, $6,385 in gold, 85,556 ounces of silver, 34,100 pounds of copper, and 1,630,600 pounds of lead, with a total gross calculated value of $125,287, compared with $221,579 in 1929. The principal producing mine was the Carbonero. It is opened by a crosscut adit 2,200 feet long. Mining is done from levels above the adit. The upper levels are connected with the adit by a 400-foot incline shaft; drifts total 4,000 feet. No development was done in 1930. The mill was operated at a daily rate of 65 tons for approximately 200 days. The equipment of the mill is as follows: 1 Universal No. 3 crusher, 1 Ruth 3 by 9 foot rod mill, 1 Deister rougher table, 3 Deister pilot tables, 1 Ruth 8-cell flotation machine, and 4 settling tanks. The product

[8] Robie, E. H., Selective Lead-Zinc Flotation at Sunnyside: Eng. and Min. Jour., vol. 121, 1926, pp. 542, 757–762.

was high-grade silver-lead concentrates. The Purdy Lease in 1930 reopened the Shoemaker group; drove 200 feet of drifts and a 40-foot raise; and built a mill equipped with 6 stamps, amalgamation plates, Pierce amalgamators, 1 Wilfley table, and 1 canvas table. The oxidized ore from this property yielded gold-silver amalgam bullion averaging 0.670 fineness in gold and 0.320 fineness in silver, and gold-silver concentrates containing also a little lead and zinc. Other ore shipped from the district was a 12-ton lot of gold-silver-copper-lead-[zinc] smelting ore to Durango from the Crown Point, an 87-pound lot of gold ore to the Golden Cycle mill from the Deadwood, and a 23-ton lot of lead-silver-gold ore to the Durango smelter from the Mary. The Butterfly-Terrible mine and mill were idle in 1930. The mill equipment consists of 1 Allis-Chalmers gyratory crusher, 1 vibrating screen, 1 Colorado Iron Works 5 by 6 foot ball mill, 1 Akins classifier, 2 Deister tables, 2 Fahrenwald 6-cell flotation machines, 1 American 3-leaf filter, 2 agitation tanks, and 1 Dorr 18-foot thickening tank. The product was lead-copper-silver-gold concentrates. The San Bernardo mine and mill remained idle in 1930. The equipment of the mill consists of 1 Gates gyratory crusher, 2 Allis-Chalmers 6 by 5 foot ball mills, 1 Dorr Duplex classifier, 1 Minerals' Separation 12-cell flotation machine, 1 American continuous filter, and 1 agitation tank.

Lower San Miguel district (Sawpit, Vanadium).—The Mount Wilson Mining & Milling Co. shipped several test lots, totaling 5 tons, of gold-silver ore to Utah smelters from Vanadium. The vanadium properties, closed in 1920, remained idle.

Upper San Miguel district (Telluride).—At the Smuggler-Union mine, closed December 11, 1928, gouging operations within the mine and clean-ups around the mill resulted in the shipment of gold-silver bullion to the Denver Mint and gold-silver-lead clean-up material to the Leadville and Durango smelters. Bullion also was shipped to the Denver Mint from clean-ups of other idle mills in the district and from several single-man operations.

SUMMIT COUNTY

The total gross calculated value of metals recovered from Summit County lode and placer mines was $141,582 in 1930, compared with $239,819 in 1929.

Breckenridge district.—The total gross calculated value of the combined output of lode and placer mines in the Breckenridge district in 1930 was $140,115.

From June 1 to August 1 a lessee on the Bemrose-Bostwick placer in Hoosier Gulch near Hoosier Pass handled 1,000 cubic yards of placer gravel by hydraulicking and recovered gold bullion worth $598.77; the bullion had a fineness of 0.811 in gold and 0.180 in silver. The property was then taken over by the Buffalo Exploration & Mining Co.. which tested the ground with an Ainlay gold separator; 490 yards of gravel yielded bullion worth $144.50 and having a fineness of 0.814¾ in gold and 0.182 in silver. The Continental Dredging Co. operated its electrically driven dredge equipped with 88 buckets, each with a capacity of 3¼ cubic feet, from January 1 to December 15, and handled 1,340,000 cubic yards yielding bullion worth $131,407. The quantity in crude ounces was 8,003.03 before melting and 7,999.95 after melting, with a fineness of 0.791 in gold

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U. S. DEPARTMENT OF COMMERCE
DANIEL C. ROPER, Secretary
BUREAU OF MINES
SCOTT TURNER, Director

MINERAL RESOURCES
OF THE
UNITED STATES
1931

O. E. KIESSLING
Chief Economist, Division of Mineral Statistics

PART I—METALS

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SAN JUAN COUNTY

Animas district (Silverton).—Mining activity in San Juan County in 1931 was confined almost entirely to Arrastra Gulch and vicinity. The Iowa Tiger mine in Silver Lake Basin was operated from January 1 to the middle of August 1931, but its mill in Arrastra Gulch was operated only from January 1 to the middle of May. A 25-ton lot of lead-silver-gold ore was shipped from the Ezra R mine to the Leadville smelter. The bulk of the production of the county came from the Shenandoah-Dives mill whose equipment was described in the 1930 report of this series. To meet the decreased prices for silver, copper, and lead, the management increased the milling capacity by refinements in practice and by increasing drill shifts at the mine to break increased tonnage. Results in 1930 and 1931 are compared in the following table.

Content of ore and concentrates and operating costs at Shenandoah-Dives mine, Silverton, Colo., 1930–31

	1930 (100,141 tons)		1931 (170,795 tons)	
	Metal content and value per ton	Percent of content and value	Metal content and value per ton	Percent of content and value
Ore:				
Gold ... ounce per ton	0.195	100.0	0.196	100.0
Silver ... do	3.409	100.0	2.929	100.0
Lead ... percent	.370	100.0	.349	100.0
Copper ... do	.701	100.0	.500	100.0
Total value per ton	[1] $7.31	100.0	[1] $5.98	100.0
Tailing:[2]				
Gold ... ounce per ton	0.018	9.2	0.017	8.7
Silver ... do	.540	15.8	.536	18.3
Lead ... percent	.051	13.8	.056	16.0
Copper ... do	.073	10.4	.067	13.4
Total value per ton	[1] $0.80	10.94	[1] $0.66	11.0
Concentrate:[2]				
Gold ... ounce per ton	0.177	90.8	0.179	91.3
Silver ... do	2.869	84.2	2.393	81.7
Lead ... percent	.319	86.2	.293	84.0
Copper ... do	.628	89.6	.433	86.6
Total value per ton	[1] $6.51	89.1	[1] $5.32	89.0
Marketing cost (freight and treatment)[2]	$1.88	25.7	$1.34	22.4
Net smelter returns [2]	4.63	63.4	3.98	66.6
Operating expense [2]	4.22	57.8	3.30	55.2
Operating margin [2]	.41	5.6	.68	11.4
Average concentrate assay:[3]				
Gold ... ounce per ton	3.107	----------	3.801	----------
Silver ... do	50.280	----------	50.840	----------
Lead ... percent	5.590	----------	6.240	----------
Copper ... do	11.000	----------	9.210	----------
Total value per ton	[1] $114.14	----------	[1] $112.99	----------

[1] Calculated at following prices:

	1930	1931
Gold ... per ounce	$20.6700	$20.6700
Silver ... do	.3618	.2854
Lead ... per pound	.0538	.0419
Copper ... do	.1184	.0798

[2] In terms of original ore.
[3] In 1930 there were 5,714 dry tons of concentrates produced at a ratio of 17½ to 1; in 1931, 8,041 tons at a ratio of 21.20 to 1.

Operating costs of Shenandoah-Dives Mining Co., Silverton, Colo., in 1931, by departments

Department:	Cost per ton
Mining development	$0.5443
Mine operation	1.6024
Mill operation	.9041
Tramway operation	.1313
General expense	.1215
Total operating expense	3.3036

Eureka district (Eureka, Silverton).—The only production from the Eureka district in 1931 was a small bar of gold bullion from the Gold King group. The 1,000-ton Sunnyside mill, closed September 30, 1930, remained idle throughout 1931. The only work at the property in 1931 was the beginning of a new adit at Midway to cut slightly under ore blocked out and partly broken in the stopes extending 600 feet below the Terry tunnel. The new adit was driven about 1,000 feet in 1931, when all work ceased. The equipment of the mill was described in the 1930 report of this series.

SAN MIGUEL COUNTY

Lode mines and several small placer mines in San Miguel County in 1931 produced, in terms of recovered metals, gold, silver, copper, and lead with a total gross calculated value of $55,651, compared with $165,538 (all from lode mines) in 1930.

Iron Springs district (Ophir).—The Ophir district in 1931 produced, in terms of recovered metals, $9,341 in gold, 8,124 ounces of silver, 5,395 pounds of copper, and 181,892 pounds of lead, with a total gross calculated value of $18,918, compared with $125,287 in 1930. Only two mines—the Carbonero and Shoemaker—made a production worthy of mention.

Lower San Miguel district (Sawpit, Vanadium).—Small lots of specimen gold and a 1-ton lot of gold ore from Placerville totaled 7.79 ounces of gold and 7 ounces of silver. Small panning and sluicing operations near Placerville, principally on the Donegan placer, resulted in a recovery of 11.32 fine ounces of gold. The fineness of the Donegan placer bullion was 0.796 in gold and 0.201 in silver.

Upper San Miguel district (Telluride).—Gouging operations within the Smuggler-Union mine, mine clean-ups around the Smuggler-Union mill, and other clean-up work in the Upper San Miguel district resulted in an output of 1,086 tons of ore yielding $35,931 in gold, 1,193 ounces of silver, and 1,596 pounds of lead.

SUMMIT COUNTY

The total gross calculated value of metals recovered from Summit County lode and placer mines was $22,966 in 1931 compared with $141,582 in 1930.

Breckenridge district.—The total gross calculated value of the combined output of lode and placer mines in the Breckenridge district in 1931 was only $21,576.

The Buffalo Exploration & Mining Co. operated the Bemrose-Bostwick placer in Hoosier Gulch near Hoosier Pass 30 working days between June 25 and September 1, using a gasoline power shovel and

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SAN MIGUEL COUNTY

Iron Springs district (Ophir).—No reduction plant was operated in the Iron Springs district in 1934, but some crude ore was shipped to smelters at Midvale and Tooele, Utah, and at Leadville, Colo., from the Carbonero, Carribeau, Montezuma, New Dominion, Pyramid, San Bernardo, and Santa Cruz mines. Lessees at several other properties recovered gold bullion from sorted high-grade ore found in pockets and reduced by hand.

Lower San Miguel district (Sawpit, Vanadium).—Placer gold was produced in 1934 from small sluicing operations along the San Miguel River and its tributaries.

Mount Wilson district.—One ton of gold ore from the Silver Pick mill, presumably a clean-up, was shipped in 1934 to the Golden Cycle mill at Colorado Springs, and a small sluicing operation on tailings near the Silver Pick mine yielded a little placer gold.

Upper San Miguel district.—The Smuggler-Union mine and 200-ton amalgamation-gravity and flotation concentration mill at Pandora were closed in February 1934 on account of a fire which necessitated renewal of the entire crushing plant. The mine was reopened in June and the mill in August, and both were operated continuously during the rest of the year. In May the San Juan Metals Corporation took over operation of the 500-ton mill, built in 1933 by the Gold Run Mining & Milling Co. for the treatment of an accumulation of tailings from old mills in the Upper San Miguel district, and produced and shipped gold concentrates to smelters from June through November. Other important producers were the Atlas, Black Bear, Liberty Bell, Lucky Strike (small milling operation on old tailings), and Laura mines. Gold bullion was produced from small-scale operations at various old mines in the district from very high-grade ore found in small kidneys and narrow fissures and treated with mortar and pestle or other types of small hand pulverizers. Sluicing operations along the San Miguel River below Telluride yielded small lots of placer gold, and panning of abandoned mine dumps yielded small lots of bullion.

SUMMIT COUNTY

Breckenridge district.—The Breckenridge district has produced more placer gold than any other district in Colorado and is the only district in the State in which floating dredges have continued to operate since the closing of the South Park dredge at Fairplay in 1925 and the Derry Ranch dredge in Lake County in 1926. Two dredges, both electrically driven, were active in 1934, one operated by the Continental Dredging Co. about 1½ miles north of Breckenridge in Blue River Valley and the other by the Tiger Placers Co. on Blue River through the town of Breckenridge. The dredge of the Continental Dredging Co. has a capacity of 4,000 cubic yards a day and is equipped with 98 buckets, each with a capacity of 7½ cubic feet; it was operated from January 1 to March 12, May 26 to September 20, October

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most of the custom ores, in order, were: Pride of the West, North Star-Sultan, Green Mountain, Vertex, Little Fannie-Philadelphia group, Treasury Tunnel (Ouray County), Coming Wonder, and King. Besides carrying on its mining and milling operations, the Shenandoah-Dives Mining Co. contracted with the American Smelting & Refining Co. to drive a 3,000-foot crosscut from the main haulage adit of the Shenandoah-Dives property to the Silver Lake group, owned by the American Smelting & Refining Co.

At the Old Hundred property, the Old Hundred Gold Mining Co. in January, February, and March, 1936, drove 700 feet of drifts and raises and constructed a 1,500-foot aerial tramway from the mine to the mill in Cunningham Gulch. Other work done included repairing the mill building, installing a new crusher, and providing facilities for tailing disposal. The mill was operated 60 days and treated 5,590 tons of ore taken out in development operations. The mine was closed March 22, 1936. Other producers in the Animas district included the Champion group, Bill Young, Mabel, Peerless, and Queen City. A little placer gold was recovered by sluicing at the Iron Magnet mill site.

Eureka district.—Producing mines in the Eureka district in 1936 were the Brooklyn group, operated continuously, and the Robert Bonner group, operated from July 15 to November 15. The Sunnyside mine, which was equipped with a 1,000-ton selective flotation mill and was an important producer of gold, silver, copper, lead, and zinc before it was shut down on September 30, 1930, remained idle in 1936.

Ice Lake Basin district.—Two lessees working at the Bandora group from May 25 to November 15, 1936, shipped 137 tons of gold-silver-lead ore to the Leadville smelter.

SAN MIGUEL COUNTY

Iron Springs district (Ophir).—Only small tonnages of ore mined in 1936 were shipped to smelters from the Iron Springs district; but due to increased metal prices late in 1936 a sizable tonnage of low-grade middlings, containing chiefly silver and lead but also some gold and copper and formerly stacked at the old Carbonero mill, was shipped to smelters in Colorado and Utah. At the Butterfly-Terrible group 285 feet of development work were done in the mine, and one lot of ore was shipped to the Leadville smelter. The mill was repaired and made ready for operation, which is planned for 1937. Other producers in 1936 included the Carribeau, Gold Bar, Montezuma, New Dominion, and Silver Bell.

Lower San Miguel district (Sawpit, Vanadium).—A few lots of gold-silver-lead ore were shipped to smelters from the Lizzie and J. L. lode properties in 1936, and some gold was recovered at small placers along the San Miguel River and its tributaries.

Mount Wilson district.—The Polar and Silver Pick mines were operated on a small scale during part of 1936, and each yielded small lots of high-grade gold ore, all of which was sold to smelters.

Upper San Miguel district.—The Smuggler Union group was operated continuously in 1936 and again yielded the bulk of the output of gold, silver, and lead from San Miguel County. The ore was treated by amalgamation followed by gravity and flotation concentration in the 300-ton mill connected with the mine by a 3,000-foot aerial tram-

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in approximate order of tonnage supplied, the Champion, Old Green Mountain, Ridgeway dump, Mystery, North Star-Sultan, Ezra R, Silver Ledge, Coming Wonder, Little Fannie, Bandora, Robert Bonner, and Snowslide. Some of the operators that shipped ore to the Shenandoah-Dives mill also shipped ore of smelting grade direct to the Leadville smelter. A few cars of ore were shipped to smelters from other mines in the district, including the Mexican group, Peerless, and St. Paul. A lessee at the Mable mine in the Copper Bell group treated 190 tons of gold-silver ore by amalgamation in a 10-ton mill at the mine. A 15-ton pilot mill erected at the Kankakee group was operated for a few weeks to test the ore. The American Smelting & Refining Co. continued development of the Silver Lake group through the 3,000-foot crosscut from the main haulage adit of the Mayflower group. Sluicing at the Depression placer claim 6 miles northwest of Silverton and at another placer in Red Canyon produced several ounces of placer gold.

Eureka district.—The Sunnyside Mining & Milling Co., which reopened the Sunnyside mine in 1937 and began production September 1, continued operations to June 30, 1938, when the mine was closed and remained idle to the end of the year; it was, however, the largest producer of lead and zinc in the State in 1938 and an important producer of gold, silver, and copper. The ore was transported from the mine over a 3½-mile aerial tram to the company 1,000-ton selective flotation mill at Eureka for treatment. The products of the mill were zinc concentrates (carrying also lead, copper, silver, and gold) shipped to the zinc smelter at Amarillo, Tex., and lead concentrates and iron concentrates (both carrying gold, silver, copper, and zinc) shipped to the Leadville smelter. In the latter part of the year the company did some work on a proposed 16,000-foot development and transportation adit to reach from the mine workings to the mill but suspended all activity at the property early in 1939. High-grade gold-silver-lead ore was shipped from the Brooklyn group to the Leadville smelter. Lessees at the Robert Bonner group shipped 38 tons of ore to the Shenandoah-Dives mill. Development work was continued at the Sandiago-Golden Fleece-Scotia group.

Ice Lake Basin district.—The Blanco Mining Co. drove 148 feet of drifts at the Bandora group from June 24 to November 5, 1938, and shipped 36 tons of ore to the Shenandoah-Dives mill and 137 tons to the Leadville smelter.

SAN MIGUEL COUNTY

Iron Springs district (Ophir).—The Butterfly Consolidated Mines, Inc., operated its group of mines and 100-ton gravity- and flotation-concentration mill continuously in 1938. The mill treated 16,000 tons of ore which yielded 2,002 tons of combined table and flotation concentrates containing 1,066 ounces of gold, 139,783 ounces of silver, 339,764 pounds of lead (wet assay), 74,854 pounds of copper (wet assay), 40,853 pounds of zinc, and 1,075,812 pounds of iron. The concentrates were shipped to the Midvale (Utah) smelter. The company drove 1,000 feet of development drifts and tunnels during the year and discovered a new body of silver-lead ore in a heretofore undeveloped vein. Several cars of smelting ore were shipped from the Carbonero and Hattie mines. Lessees treated approximately

50 tons of old tailings from the Suffolk millsite in a small amalgamation-gravity concentration mill erected to test the material. A little ore was shipped from other properties in the Iron Springs district, and some gold was recovered by amalgamation at the Gold Bar lode group and by placer methods at the Waterfall placer.

Lower San Miguel district (*Sawpit, Vanadium*).—Placer miners sluicing along San Miguel River and its tributaries produced some gold in 1938.

Mount Wilson district.—Individuals working the Special Session, Polar, Lakeview, and Silver Pick groups during the summer of 1938 shipped small lots of high-grade gold ore to smelters.

Upper San Miguel district.—Veta Mines, Inc., maintained production from the Smuggler Union mine at a higher rate in 1938 than in 1937 and continued to be the largest producer in San Miguel County. Part of the ore produced in 1938 came from above the Pennsylvania Tunnel or fifteenth level, the former lowest workings, and part from the new 1,600-foot level. Additional productive ground was opened as the company carried exploration to greater depth, reaching the Telluride Conglomerate formation at the 1,700-foot level. The company made many surface improvements to effect economies in the handling and treatment of ore, including the construction of a new aerial tram rerouting ore transportation and the transfer of milling facilities to the large steel and concrete building adjoining the old plant. The yield from 68,777 tons of ore treated by amalgamation and flotation concentration and 109 tons shipped crude to smelters was 12,788 ounces of gold, 227,684 ounces of silver, and 1,552,003 pounds of lead (gross in concentrates and smelting ore). Alta Mines, Inc., continued developing the Alta-St. Louis group and mined and treated a daily average of approximately 100 tons of ore throughout the year, except during short interruptions necessary for repairing or altering equipment. A lessee treated tailings on the Gold Run dump by gravity concentration for 80 days in 1938 and shipped gold-silver-lead-copper concentrates to the Leadville smelter. Lessees at the Tomboy group cleaned out and retimbered some of the caved workings on the Montana claim. They shipped a car of smelting ore and 21 tons of concentrates produced with jigs and tables from 1,000 tons of ore cleaned up on the surface. The equipment was dismantled later. A lessee worked 2 months on the Juan millsite in Telluride, treating old tailings with a screen and table. Some ore was treated by amalgamation at the Laura, Savage, and other claims operated on a small scale. Individuals sluicing along San Miguel River recovered small quantities of placer gold. The American Smelting & Refining Co. did 623 feet of drifting at the Fairview group after May 1 under an option agreement that was relinquished December 12.

SUMMIT COUNTY

Breckenridge district.—The output from lode mines in the Breckenridge district in 1938 comprised chiefly gold and gold-silver-lead ores shipped crude to the Leadville smelter from the Bemrose-Bostwick (also produces placer gold), Blue Flag, Fredonia, and Jumbo properties and zinc-lead-gold-silver ore shipped from the Royal Tiger property to the custom concentrator at Midvale, Utah. The Continental

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caused a shut-down of both mine and mill until September 5. An agreement between the company and the men resulted in the reopening of the property on September 7 and continuous operation of it the remainder of the year. As the Shenandoah-Dives mill treats custom ore as well as company ore, the shut-down caused a decrease in the output from other mines in the vicinity. Company ore treated in 1939 totaled 195,006 tons and yielded 5,722 tons of combined lead, lead-copper, copper, and zinc concentrates, containing in all 14,867 ounces of gold, 240,003 ounces of silver, 1,968,193 pounds of lead (wet assay), 1,132,012 pounds of copper (wet assay), and 1,838,311 pounds of zinc; the lead and lead-copper concentrates were shipped to the Leadville smelter, the copper concentrates to the El Paso (Tex.) smelter, and the zinc concentrates to the Amarillo (Tex.) smelter. The custom ore treated amounted to 3,241 tons; most of it came from the Bandora, Champion, Highland Mary, Little Fannie-Philadelphia, Mystery, and North Star-Sultan groups—all in the Animas district except the Bandora, which is in the Ice Lake Basin district. Other small producers included the Coming Wonder, Copper Bell group, Molas-Senior Warden group, Silver Ledge, and Sylvanite. The American Smelting & Refining Co. continued development of the Silver Lake group.

Eureka district.—The Sunnyside mine and 1,000-ton selective-flotation mill at Eureka, closed June 30, 1938, remained idle throughout 1939. Shipments of ore from the Brooklyn group 8 miles northwest of Silverton to the Leadville smelter totaled 253 tons containing 724 ounces of gold, 5,539 ounces of silver, and some lead, copper, and iron. The other producers of small tonnages of ore were the Lead Carbonate mine, Lucky Jacks group, and St. Paul. Development work was continued at the Sandiago-Golden Fleece-Scotia group.

Ice Lake Basin district.—In 1939 the Blanco Mining Co. continued to ship ore from the Bandora group to the Shenandoah-Dives mill and the Leadville smelter. Two tons of silver ore were shipped from an unidentified property, presumably a prospect.

SAN MIGUEL COUNTY

Iron Springs district (Ophir).—Butterfly Consolidated Mines, Inc., continued developing the Butterfly-Terrible-Silver Bell group of mines and increased the daily capacity of the mill (formerly 100 tons) to 250 tons. In 1939 the mill treated 23,000 tons of ore, which yielded 2,470 tons of combined table and flotation concentrates containing 1,101 ounces of gold, 172,865 ounces of silver, 554,531 pounds of lead (wet assay), 101,056 pounds of copper (wet assay), 77,225 pounds of zinc, and 1,348,640 pounds of iron. The concentrates were shipped to the Midvale (Utah) smelter. J. M. Belisle shipped several cars of zinc-lead-gold-silver-copper ore from the New Dominion mine to the custom concentrator at Midvale, Utah. Small lots of ore were shipped to smelters from the Carbonero mine and Sulphurette dump. A little placer gold was produced at the Waterfall placer.

Klondyke district.—In 1939 the owner of the Hidden Treasure group shipped 5 tons of material containing copper and silver to the smelter at Tooele, Utah.

Lower San Miguel district (Sawpit, Vanadium).—Placer miners recovered some gold in 1939 by sluicing at the Little Donnie, Southern Boy, and other placers along San Miguel River and its tributaries.

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shipped to the Leadville smelter. The Sunnyside mine and 1,000-ton selective-flotation mill at Eureka, closed June 30, 1938, remained idle throughout 1940.

Ice Lake Basin district.—The Blanco Mining Co. operated the Bandora group from May 4 to October 31, 1940, and shipped 1,579 tons of lead-silver-zinc-gold-copper ore to the Shenandoah-Dives mill. The company surrendered its lease on the property at the end of 1940.

SAN MIGUEL COUNTY

Iron Springs district (Ophir).—In 1940 Butterfly Consolidated Mines, Inc., continued working its Butterfly-Terrible-Silver Bell group of mines and treated 12,000 tons of ore in its 250-ton flotation mill. The concentrates produced (1,373 tons) contained 920 ounces of gold, 80,157 ounces of silver, 323,099 pounds of lead (wet assay), 39,173 pounds of copper (wet assay), and some zinc; they were sold to the Midvale (Utah) smelter. The mill was destroyed by fire December 6. Belisle Bros. shipped several cars of zinc-lead-gold-silver-copper ore to the Midvale (Utah) custom mill from the New Dominion mine, which was under development throughout the year. Other small producers included the Carbonero, Hattie, Sulphurette, and Yellow Jacket.

Lower San Miguel district (Sawpit, Vanadium).—Sluicing on the San Miguel River recovered a little gold in 1940.

Mount Wilson district.—Small lots of high-grade gold ore were shipped to smelters in 1940 from the Chindey and Shenandoah claims.

Upper San Miguel district (Telluride).—Veta Mines, Inc., operated its amalgamation-flotation mill at Pandora 2½ miles east of Telluride at an average rate of 486 tons daily for 365 days in 1940 compared with 375 tons in 1939. Improvements made in 1940 raised the daily capacity of the mill (formerly 500 tons) to 700 tons. The company ore treated came from the Smuggler-Union and Cimarron mines and dumps and the custom ore (119 tons) from the Gold Queen, Little Mary, Shoemaker, and Wasatch claims and a prospect. Mine development during the year comprised 4,281 feet of drifts, 1,660 feet of tunnel, 15 feet of winze, and 174 feet of diamond drilling. A crushing plant was installed at the portal of the Pennsylvania Tunnel and an aerial tramway erected from this point to the Cimarron dump. Alta Mines, Inc., operated the Alta-St. Louis group steadily throughout 1940. The mine is developed by 6 to 8 miles of tunnels and drifts, of which 500 feet of tunnel and 1,000 feet of drifts were driven during the year. The ore produced (45,988 wet tons) was treated in the company 150-ton mill by jig, flotation, and table concentration; the jig concentrates were amalgamated, and the flotation and table concentrates were shipped to the Leadville smelter.

SUMMIT COUNTY

Breckenridge district.—Ores shipped to the Leadville smelter from the Breckenridge district in 1940 comprised chiefly silver-lead ore from the Fredonia mine; gold-silver-lead ore from the Carbonate, Jumbo, Laurium (Blue Flag), Minnie B, Silver King, and Standard-Bulwer; and gold-silver ore from the Hoosier. Zinc-lead ore from the Mountain Pride and Wellington mines and zinc ore from the Sally Barber were shipped to custom concentrators in Utah. Some gold

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the Leadville smelter from the Brooklyn mine. The Treasure Mountain Gold Mining Co. erected a 25-ton flotation mill at the portal of the Sandiago tunnel and treated 377 tons of gold-silver ore from the Golden Fleece dump. The Sunnyside mine and 1,000-ton selective-flotation mill at Eureka, closed June 30, 1938, remained idle throughout 1941.

Ice Lake Basin district.—The only output from the Ice Lake Basin district in 1941 was 19 tons of zinc-lead ore shipped to the Midvale (Utah) custom mill.

SAN MIGUEL COUNTY

Iron Springs district (Ophir).—Nearly all the metal output from the Iron Springs district in 1941 was contained in small tonnages of ore shipped to the Leadville smelter from the Carbonero, Hattie, New Dominion, San Bernardo, Sulphurette, Texas, and Yellow Jacket properties. The Butterfly mill at Ophir was destroyed by fire December 6, 1940; the Butterfly-Terrible-Silver Bell group had no output in 1941.

Lower San Miguel district (Sawpit, Vanadium).—Sluicing on San Miguel River 5 miles from Norwood recovered 7 ounces of gold and 3 ounces of silver in 1941.

Mount Wilson district.—A little high-grade gold ore was shipped from the Silver Pick mine in 1941, and about 3 ounces of gold were produced from another property in the Mount Wilson district.

Upper San Miguel district (Telluride).—Veta Mines, Inc., operated its amalgamation and gravity- and flotation-concentration mill at Pandora 2½ miles east of Telluride at an average rate of 532 tons daily for 365 days in 1941 compared with 486 tons in 1940. The company ore treated in 1941 (193,768 tons) came from the Smuggler Union, Cimarron, and Montana mines and the Smuggler, Cimarron, and Tomboy dumps; the custom ore (315 tons) came from the Pike County mine and the Tomboy dumps. About one-third of the gold output from the mill was recovered in gold-silver bullion and the rest in concentrates, which also contained the bulk of the recoverable silver and all the recoverable lead. The bullion was shipped to the Denver Mint and the concentrates to the Leadville smelter. Alta Mines, Inc., operated the Alta-St. Louis group and 150-ton gravity- and flotation-concentration mill throughout 1941 and produced 40,498 tons of ore yielding 3,185 tons of concentrates containing 2,546 ounces of gold, 115,330 ounces of silver, 95,774 pounds of copper, 1,032,178 pounds of lead, and 463,245 pounds of zinc; the concentrates were shipped to the Leadville smelter. Individuals working small mines and prospects in the Upper San Miguel district recovered some gold from high-grade ore reduced by hand methods.

SUMMIT COUNTY

Breckenridge district.—Small-scale operations only were carried on at lode mines in the Breckenridge district in 1941, and most of the ore produced was shipped direct to the Leadville smelter. A car of zinc ore from the Royal Tiger property was shipped to the Ozark Smelting & Mining Co. smelter at Coffeyville, Kans., and some zinc-bearing material from the Sally Barber dump was shipped to a custom mill at Idaho Springs (Clear Creek County). Producers of more than 25

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1951

Prepared by the staff of the

BUREAU OF MINES

PAUL W. McGANN, *Editor*
ROBERT E. HERMAN, *Assistant Editor*

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PITKIN

The Midnight Mining Co. operated its Midnight silver-lead-zinc mine at Aspen and ran the mill occasionally. Herron Bros. shipped some silver-lead ore from the Henry Clay group.

SAGUACHE

Operators in Saguache County shipped their ore to custom mills and smelters outside the county. The Antoro mine at Bonanza, operated since 1947 by S. E. and W. E. Burleson, shipped 2,696 tons of ore. The Rawley mine and five other small producers together shipped 1,255 tons of ore during the year.

SAN JUAN

The Shenandoah-Dives Mining Co. continued in 1951 to operate as a unit its Shenandoah-Dives-Mayflower consolidated group of claims and the leased Silver Lake group; ore produced was treated in the company 700-ton mill. Since the company began large-scale mining in 1928 it has mined and milled 4,034,797 tons of gold-silver-lead-copper-zinc ore on company account (to the end of 1951) and in addition 147,772 tons of custom ore mined by other operators. Company ore milled in 1951 totaled 196,097 tons and custom ore 26,118 tons.

The Lead Carbonate mine and 50-ton mill operated throughout the year. The Old Hundred Gold Mining Co., operating the Gary Owen-Old Hundred group, was a substantial producer of ore, part of which was shipped to custom mills and part of which was treated in the reconditioned company mill put in operation in July. Other producers of more than 1,000 tons of ore, in order of tonnage of ore shipped, were the Pride of the West mine, Green Mountain (mine and dump), Columbus, Galena Queen, Silver Ledge, May Day, Great Eastern-Sioux City, and Little Nation. A total of 2,842 tons of ore and clean-up material was shipped from 17 mines, prospects, and dumps and a mill site (not counted as a mine) that produced less than 1,000 tons each during the year.

SAN MIGUEL

San Miguel County again ranked first in the State in production of gold, silver, copper, and lead and second in zinc. Most of the output came from the Upper San Miguel district, reviewed separately in the next paragraph. However, the Silver Bell group in the Ophir district, operated since 1946 by the Silver Bell Mines Co., continued to be a substantial producer of gold-silver-lead-copper ore. The capacity of the mill, formerly 150 tons daily, was raised to 175 tons, and a tungsten concentrating section was nearly completed in 1951. The company also purchased the Carbonero mine and began preparing it for operation. The Andrus group in eastern San Miguel County shipped some ore in 1951.

Upper San Miguel District.—The Idarado Mining Co. increased the tonnage of ore mined from its Treasury Tunnel-Black Bear-Ajax group

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TABLE 3.—DMEA contracts from the beginning in 1951 through December 31, 1952—Continued

Name of commodity and contractor	Property	County	Date of contract	Participation	
				Government	Private
Lead-zinc-copper					
The Moreno Cripple Creek Corp.	Silver Queen	San Juan	July 26, 1951	$38,000	$38,000
Silver Bell Mines Co.	Carbonero	San Miguel	May 9, 1952	39,560	39,560
Tungsten					
Boulder Tungsten Mines, Inc.	Dorothy Katie and Princess-Gold Coin groups.	Boulder	June 28, 1951	20,869	6,956
A. W. Brown	Blue Jay lode claim No. 19808, Ideal No. 1, lode claim No. 19808.	do	May 29, 1952	7,875	2,625
Cold Spring Tungsten Co., Inc.	Cold Spring and others	do	July 6, 1951	158,310	52,770
Glen Coughlin & E. L. Henderson.	Range View	do	May 23, 1952	3,600	1,200
George Jump	Good Friday	do	May 26, 1952	9,000	3,000
John S. Keifer	Eureka	do	July 6, 1951	15,000	5,000
Stanley L. Larson & R. L. Plummer.	Vasco Nos. 2, 5, and 8 veins and Vasco No. 5 tunnel.	do	Apr. 21, 1952	18,750	6,250
James L. McBroom and L. R. Allen.	Hallie "A"	do	Oct. 6, 1952	9,450	3,150
Robitsch and William Brewster.	Dunmore and Yankee Lad	Ouray	Oct. 3, 1952	7,238	2,413
Joseph M. Smith & Charles R. Rugg.	Rambler	Boulder	Mar. 2, 1952	18,300	6,100
Tom C. Stanford	Forest Home Tungsten	do	July 23, 1951	16,688	5,563
Tungsten Mining Co.	Dasie and others	do	Aug. 10, 1951	7,500	2,500
Vasco Tungsten Corp.	Vasco No. 5 tunnel and vein.	do	Sept. 10, 1952	13,125	4,375
Uranium					
Anaconda Lead & Silver Co.	Ground Hog Nos. 1 and 2 and Mayflower.	Eagle	Sept. 15, 1952	9,000	1,000
Cherokee Mines—T. H. Sackett.	Black Hawk Nos. 1 and 2	Larimer	July 16, 1951	21,600	2,400
Gateway Mining & Development Co., Inc.	12 mining claims	Mesa	Sept. 26, 1952	46,772	5,197
Moreno Cripple Creek Corp.	Old Leyden mine	Jefferson	May 21, 1952	56,475	6,275
The Realty Co.	Bezant and Wood veins	Gilpin	Oct. 9, 1951	72,000	8,000
Uranium Co. of America	German mine	do	Feb. 25, 1952	22,500	2,500
Uranium Development Corp.	24 mining claims	Montrose	Nov. 24, 1952	19,570	2,174
Total				1,138,073	711,899

REVIEW BY MINERAL COMMODITIES

METALS

Beryl.—The output of beryl in Colorado is derived from small-scale operations on pegmatite deposits in Clear Creek, Fremont, Gunnison, Jefferson, Larimer, and a few other counties. A local market for beryl is provided by the Beryl Ores Co., which has an ore-purchasing office and beneficiation plant in Jefferson County near Arvada. The company supplied the following information regarding its operations.

The Beryl Ores Co. mainly prepares and blends material for the ceramic trade, but also prepares small lots of beryllium compounds on order. Beryl is used often instead of feldspar for more exacting equipment because it gives a notable increase in dielectric strength, resistance to thermal shock, transverse strength, and impact resistance and electrical resistance at elevated temperatures. For certain uses the beryllium oxide is extracted from the beryl before introduction into ceramic bodies.

Telluride Mines, Inc., operated its Smuggler Union-Montana group of mines and mill in 1952 at about the same crude-ore tonnage rate as in the 2 preceding years. Completion of the ore pass connecting the new mill-level tunnel with the mine workings 1,100 feet above permitted underground transportation of ore to the mill. The aerial tram was still being used to transport men and supplies, pending completion of the service raise. The company nearly completed installing another unit in the mill, which will increase the capacity from 600 to more than 800 tons daily. The products of the mill are lead-copper-gold-silver concentrate, high-grade gold-silver-lead jig concentrate, zinc concentrate, and gold-silver bullion.

In the Iron Springs (Ophir) district the Silver Bell Mines Co. operated the Silver Bell and Carbonero groups of mines, treating the ore output in the company 175-ton flotation mill. The company also carried on exploration under a DMEA contract. The mill products comprised chiefly bulk gold-silver-lead-copper concentrate, but some zinc concentrate was made when Carbonero ore was being treated along with Silver Bell ore. A unit to recover tungsten as a byproduct from the Silver Bell ore was installed in the mill and operated late in 1952. The East Ridge Co. shipped lead-zinc-silver ore from the Andrus mine and also carried on an exploration project under a DMEA contract. Belisle, Reed & Crandell shipped some silver-gold-lead ore from the New Dominion mine. Several small lots of ore were shipped from other scattered mines and prospects. In September the Mariposa Mining Co. began work at the Butterfly mine, an important silver-gold producer before the mill was destroyed by fire on December 6, 1940. Surface buildings were erected, development work was done, and one shipment of ore was made in 1952.

Uranium mining became increasingly important in the county. The annual report of the Colorado Commissioner of Mines shows 29 producing mines in 1952, most of which were in the Slick Rock district; some were in the Lower San Miguel, Upper San Miguel, Bull Canyon, Egnar, and other areas.

SUMMIT

In the Breckenridge district W. L. Davenport continued to ship zinc-lead-silver-gold ore from the Wellington mine, operated steadily since 1947. The Carbonate and Mountain Pride lode mines and the Bemrose-Bostwick placer had a small output.

At Montezuma the producing mines included the Allen Emory (B. R. & C. Mining Co.), Bullion, Chautauqua, General Teller, Ida Belle, Manerva, National Treasury, Paymaster, Quail, Queen Bee, Radical (or Mohawk), and Sts. John (Florado group). Part of the district output of ore was treated locally in the Plymouth and Teller Basin mills, and part was shipped to custom plants at Leadville. Construction of another mill, near the Silver Wing property and designed to treat lead-zinc-silver and tungsten ores, was nearly completed in 1952 by the Silicate Reduction Co. (first organized as the Glacier Mill Co.).

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Tungsten ore was shipped from the Ruby and Galtie Boy mines near Silverton. Vanadium-uranium ore was produced at the Graysill mine of the Vanadium Corp. of America.

SAN MIGUEL

San Miguel County's production of gold, silver, copper, lead, and zinc was well maintained in 1953 despite the low prices of lead and zinc that caused heavy decreases in some other counties. Nearly all the ore mined was complex, carrying all five metals in commercial quantity.

The Idarado Mining Co. increased the tonnage of ore mined from its Treasury Tunnel-Black Bear-Ajax group for the eighth consecutive year since mining was renewed in 1945 on the lower levels opened by the 12,000-foot Treasury Tunnel 1,100 feet below the old Black Bear workings. The portal of the Treasury Tunnel and the company 800-ton mill are on the Ouray County side of the divide between the San Miguel River and Uncompahgre River drainages, but the mining in 1953 was all in San Miguel County. The mine and mill operated continuously, except for an interruption in June, while surface installations between the mill and the Treasury Tunnel portal were being rebuilt after having been destroyed by fire on June 7. The mill products were zinc concentrate, lead concentrate, and copper concentrate (all enriched by gold and silver), and gold-silver bullion (obtained by amalgamating a jig hutch product). The company continued extensive development of its properties at greater depth through tunnels opening on the Telluride side of the mountain; 9,209 feet of drifts and 3,503 feet of raises were driven on the property during the year.

In addition to its original Idarado operations, the Idarado Mining Co. in May 1953 purchased the stock of Telluride Mines, Inc., and subsequently directed that company operations on the Smuggler Union-Montana-Tomboy group of mines and 900-ton flotation mill. The tonnage of ore mined from this group in 1953 was also larger than in 1952. The mill products were copper, lead, and zinc concentrates all containing gold and silver as well as base metals and gold-silver bullion. Development continued on the deeper levels of the group of mines, opened by the recently driven 12,000-foot mill-level tunnel and 1,200-foot raise to the mine workings above.

At Ophir the Silver Bell Mines Co. operated its washing-sorting plant and 175-ton flotation mill on ore from the Silver Bell and Carbonero mines from January through July and from the Carbonero only from August through December. Most of the mill output was bulk lead-silver-gold-copper concentrate; but some zinc concentrate was also made, and tungsten (wolframite) concentrate was recovered as a byproduct. The Mariposa Mining Co. sank 100 feet of shaft and drove 200 feet of drifts at the Butterfly mine, which has extensive old workings on 4 levels. The ore produced was milled in a leased 20-ton mill at Placerville and yielded mostly silver-lead concentrate containing also some copper, zinc, and gold. The mine was shut down in November. A small lot of gold-silver ore was shipped from

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lived aberration; nonetheless, the industry remained more stable than in the preceding several years, and interest in developing gold and silver was promising.

Exploration Activities.—Although continuing low metal prices kept all but one of the State's major precious metals-base metals mines closed at least part of the year, interest in and exploration for gold and silver remained high. Colorado ranked fourth in nonferrous metals (mostly gold) exploration, behind Nevada, Arizona, and California. The major expansion effort continued to be by smaller firms; several large firms reduced exploration efforts. Several Canadian firms remained prominent. Most exploration was in areas that had a previous history of precious metals production.

Two notable exploration projects during the year were Homestake's Equity project near Creede and Galactic Resources' Summitville project south of Del Norte. Homestake has been exploring underground at the old Equity Mine property for several years, on the same vein system that runs through its closed Bulldog Mountain Mine 8 miles southeast at Creede. Although the company has not commented about discoveries, rumors suggest a major silver strike. Galactic Resources built on years of exploration work by The Anaconda Minerals Co. and others to start developing an open pit, heap leaching operation at Summitville.

Most gold and silver exploration occurred in the Colorado Mineral Belt. (See figure 2.) Activity was concentrated in the San Juan Mountains near Silverton at the southern end of the belt, at Creede and Leadville in the Clear Creek County area around Idaho Springs, in Boulder County at the northern end of the Colorado Mineral Belt, and at Cripple Creek-Victor in central Colorado.

Exploration projects near Silverton included those of Gerber Minerals Corp. at the Gold King Mine; P&G Mining Co., in partnership with International North American Resources Inc. (a Canadian company), on Sultan Mountain; the Brooklyn Mining Co. at the Brooklyn Mine; and Silverton Mining Co. at the Mighty Monarch. Cornucopia Resources of Canada, a sister company to Galactic Resources, was working on nearby Red Mountain.

One participant characterized Creede as "the most exciting gold and silver camp in the United States today"; exploration, in addition to the Homestake Equity project, included drilling programs by Pioneer Nuclear Inc.-Minerals Engineering Co. (MECO), and Crown Resources Corp.-Sutton Resources Inc. Todilto Exploration and Development Corp. prospected the Amethyst vein on Mammouth Mountain east of Creede. Also active in southwestern Colorado were Chevron Resources Co. at Spring Creek, Sierra Resources Inc. and Exxon Corp. at and around the Bessie G Mine in La Plata County, and Rapholz Silver Inc. at the Carbonero Mine near Ophir.

Companies active in exploration and development for gold and silver around Leadville were Leadville Mining and Milling Corp. at the Hopemore Shaft on Breece Hill, Leadville Silver and Gold Co., The Apache Corp., Great West Gold and Silver Inc. at the Consolidated Virginia and Dinero Mines, and American Gold Resources at the Granite Tunnel. Asarco's Leadville Unit worked to extend the gold reserves of the Black Cloud Mine, where in 1985 gold surpassed lead, silver, and zinc as the most valuable product. Across the mountains from Leadville, Chiwawa Mines was investigating its Mount Bross property; Cobb Resources Corp. found two more major gold ore veins in the London Mine near Alma; and the Blue River Mining and Milling Co. explored the Blue River Tunnel near Breckenridge.

In the old Cripple Creek-Victor District, Texasgulf Minerals and Metals Inc. resumed managing the Cripple Creek and Victor Gold Mining Co. from Hecla Mining Co. and reviewed options for further exploring the Ajax, Cresson, and other of the extensive properties held in the area with Golden Cycle Gold Corp. Minerex Minerals prospected and drilled on Mineral Hill. Yellow Gold of Cripple Creek Inc. sought to lease or buy additional mining properties in the Moffat Tunnel area; and Nerco Minerals Co., Newport Minerals Co., and Hull Mining Co. continued developing their gold leaching operations.

Among the numerous companies working in the Clear Creek-Idaho Springs area, Franklin Consolidated Mining Co. reported discovering a large gold-silver ore shoot in the Franklin Mine, and Hibernia Resources continued its Little Mattie project.

In Boulder County, the Gold Hill Limited Venture Partnership of Cosmos Resources Inc. and the Steen family completed preproduction work at the Cash Mine. Hendricks Mining Co. completed exploration and development at the Cross Mine. Wassuk Gold Co. continued work at the Bueno.

In addition to the interest in gold and

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IN THE UNITED STATES DISTRICT COURT
FOR THE DISTRICT OF COLORADO

Civil Action No. 00-S-424

PACIFICORP, an Oregon corporation,

Plaintiff,

v.

UNION OIL COMPANY OF CALIFORNIA, a California corporation; and
MINERALS EXPLORATION COMPANY, a California corporation,

Defendants.

COMPLAINT

Plaintiff PacifiCorp, an Oregon corporation, ("PacifiCorp"), by and through its undersigned attorneys, alleges and avers as follows:

INTRODUCTION

1. This is a civil action for contribution brought pursuant to Sections 107(a) and 113(f)(1) of the Comprehensive Environmental Response, Compensation and Liability Act of 1980 ("CERCLA"), as amended, 42 U.S.C. § 9613(f)(1), and for a declaratory judgment brought pursuant to CERCLA Section 113(g)(2), 42 U.S.C. § 9613(g)(2), and 28 U.S.C. § 2201. This civil action arises from remedial measures and work PacifiCorp has been forced to implement at the abandoned Silver Bell Tailings Impoundment Site ("Site") located in

NARA-001

southwestern Colorado. PacifiCorp is the corporate successor to the Western Colorado Power Company, the owner of the Site during the time when mine tailings were placed on the property. Neither PacifiCorp, the Western Colorado Power Company, nor any other entity related to PacifiCorp ever actively conducted any operations on the Site. Defendants are the successors in interest to the two related mining companies that operated the site as a disposal location for hundreds of thousands of tons of contaminated mine tailings during the 1940s and early 1950s and again during the 1970s.

2. Through this action, PacifiCorp seeks, among other things, (i) reimbursement of response costs incurred and to be incurred by PacifiCorp in response to the release or threat of release of hazardous substances from the Site; (ii) declaratory judgment on defendants' successor liability; and (iii) declaratory judgment on liability and allocation of response costs that will be binding on any subsequent action or actions to recover further response costs.

JURISDICTION AND VENUE

3. This Court has federal question jurisdiction over the subject matter of this action pursuant to 42 U.S.C. §§ 9607 and 9613(b), as well as 28 U.S.C. §§ 1331 and 1346.

4. This Court has supplemental subject matter jurisdiction over the state law-based claims asserted herein pursuant to 28 U.S.C. § 1367(a).

5. Venue is proper in this judicial district pursuant to 42 U.S.C. § 9613(b) because the damages, release, and threatened release of hazardous substances at issue in this case occurred within this judicial district and Defendants Union Oil Company of California and

Minerals Exploration Company reside in and may otherwise be found within this judicial district.

PARTIES

6. Plaintiff PacifiCorp is an Oregon corporation with its principal place of business located in Portland, Oregon. PacifiCorp is authorized to conduct business in the State of Colorado. PacifiCorp's immediate corporate predecessor in interest, Utah Power & Light Company, acquired title to the Site in or about 1975, from its corporate predecessor in interest, the Western Colorado Power Company. Upon PacifiCorp's merger with Utah Power & Light Company in 1989, PacifiCorp became the owner of the Site.

7. Defendant Union Oil Company of California ("UNOCAL") is a California corporation authorized to conduct business in the State of Colorado.

8. Defendant Minerals Exploration Company ("Minerals") is a California corporation authorized to conduct business in the State of Colorado. Minerals is, and at all times relevant to this Complaint was, a wholly-owned subsidiary of UNOCAL. Minerals and UNOCAL are referred to collectively herein as "UNOCAL."

9. UNOCAL is the legal successor in interest to both Silver Bell Mines Co. and Silver Bell Industries, companies that disposed of thousands of tons of contaminated mill tailings at the Site.

GENERAL ALLEGATIONS

A. Silver Bell Tailings Impoundment Site Background, Ownership, and Operations.

10. The Silver Bell Tailings Impoundment Site is located in southwestern Colorado approximately 1.5 miles west of the town of Ophir along Highway 145.

11. The Site is located in San Miguel County, State of Colorado, and more specifically is situated in the North 1/2 of Section 32, the Northwest 1/4 of the Northwest 1/4, and the southwest 1/4 of the Northwest 1/4 of Section 33, and the Southwest 1/4 of the Southeast 1/4 of Section 29, all in Township 42 North, Range 9 West, New Mexico Principal Meridian, described as follows:

> The Roanoak Placer, a patented mining claim, No. 15590, being situated in San Miguel County, Colorado, containing 73.2 acres, more or less.

12. The Silver Bell mine and mill sites are located on the east side of Highway 145, and the tailings impoundment is located on the west side of the highway, along the banks of the Howard Fork Creek.

13. The Western Colorado Power Company acquired the Site in 1913 and owned the same until 1975, when title to the Site was transferred as a result of the Western Colorado Power Company's merger with Utah Power & Light Company. In 1989, title to the Site was again transferred as a result of the merger of Utah Power & Light Company with Plaintiff, PacifiCorp.

14. From approximately 1946 to 1954, Silver Bell Mining and Milling Co., also known as Silver Bell Mines Co. ("Silver Bell Mines Co."), a publicly-traded Colorado corporation, operated a mining operation on the Silver Bell Mine, and also operated a 150-ton

capacity modern flotation mill equipped with primary and secondary crushers on the Silver Bell mill site, located on the east Side of Highway 145.

15. Upon information and belief, Silver Bell Mines Co. slurried tailings generated at its mill site to the Site through a wood slurry and actively operated the tailings pond for disposal of mill tailings from 1946 through 1954.

16. Ore production records indicate that from 1946 to 1954, Silver Bell Mines Co. mined approximately 240,217 tons of ore from the Silver Bell mine and milled approximately 218,886 tons of ore at the Silver Bell mill.

17. In 1954, Silver Bell Mines Co. abandoned the Silver Bell mine and mill operations and the Site remained dormant from about 1954 to about 1970.

18. Pursuant to an Agreement and Plan of Reorganization dated September 15, 1969, a new publicly-traded Colorado corporation known as Silver Bell Industries, Inc. ("Silver Bell Industries") acquired all of the assets and assumed all of the liabilities of Silver Bell Mines Co.

19. Silver Bell Industries re-built and re-opened the Silver Bell mine and mill properties.

20. Silver Bell Industries entered into a Lease Agreement with the Western Colorado Power Company, dated July 1, 1970, through which Silver Bell Industries leased the Site for the purpose of disposing mill tailings on the Site. The Lease Agreement inures to the benefit of PacifiCorp as the corporate successor of the Western Colorado Power Company.

21. The Lease Agreement provides, among other things, that Silver Bell Industries will "hold Power Company harmless from any claim or liability arising in any manner from Mining Company's use of Power Company land under this agreement" and that "[u]pon termination of this Agreement or upon cessation of the use of said placer as a tailings pond, the Mining Company agrees to do such work as is necessary to stabilize the pond."

22. According to company records, from 1970 to 1975, Silver Bell Industries mined approximately 72,791 tons of ore from the Silver Bell mine and milled approximately 70,619 tons of ore at the Silver Bell mill.

23. The tailings materials disposed of and abandoned at the Site by Silver Bell Mines Co. and Silver Bell Industries contained varying amounts of metals, including, among others, arsenic, cadmium, chromium, copper, lead, manganese, mercury, selenium, thallium, and zinc

24. In 1975, Silver Bell Industries abandoned the Silver Bell mine and mill operations, together with its tailings operations on the Site. The Site has been inactive and dormant since that time.

25. In 1975, the Western Colorado Power Company transferred title of the Site to, and otherwise merged with, Utah Power & Light Company. In 1989, Utah Power & Light Company merged with Plaintiff PacifiCorp.

26. Neither PacifiCorp nor, to the best of its knowledge, Utah Power & Light or the Western Colorado Power Company, conducted any active operations on the Site, but were merely passive owners of the property.

27. In March 1991, PacifiCorp transferred the Site to Edwin Lee and Camelia M. Wynne, who are the present owners of the Site.

B. PacifiCorp Response Actions.

28. In the summer and fall of 1998, the current owners of the Site informed PacifiCorp of the existence of problems with erosion of tailings materials at the Site. PacifiCorp began to investigate the situation, and in the fall of 1998, became aware that the tailings impoundment at the Site was the source of a significant release of tailings via erosion into Howard Fork Creek.

29. PacifiCorp's investigation further revealed that the United States Environmental Protection Agency ("EPA"), Region VIII, had completed a Site investigation and was in the process of determining whether to list the Site (along with other nearby sites) on the National Priorities List ("NPL") established under CERCLA.

30. PacifiCorp further discovered that the officials from San Miguel County, Colorado, EPA, the U.S. Forest Service, and the Colorado Department of Public Health and Environment ("Colorado DPHE") were also investigating the Site, and were working together to develop a strategy to solve the environmental problems caused by the tailings impoundment, including the identification of viable potentially responsible parties or PRPs.

31. Based on PacifiCorp's independent evaluation of the Site, it was clear that the condition of the tailings impoundment was deteriorating and that remedial measures were required during the summer of 1999 in order to prevent more tailings from washing into Howard Fork Creek and that remediation costs would rise dramatically with the passage of each season because large quantities of tailings were eroding into the stream.

32. PacifiCorp began negotiations with the Colorado DPHE to develop a remedial plan for the Site, resulting in PacifiCorp's proposal to proceed with the implementation of remedial measures at the Site pursuant to the Colorado Voluntary Cleanup Program ("VCUP").

33. Under the direct oversight of the Colorado DPHE, and after appropriate public notice and opportunity for comment, PacifiCorp undertook response activities in August and September 1999. More specifically, PacifiCorp excavated the tailings material that had eroded and placed the same within the impoundment. PacifiCorp further installed surface water drainage controls to prevent surface water from running onto and controlling the runoff from the tailings impoundment.

34. To date, PacifiCorp has expended approximately $400,000 in recoverable response costs associated with the Site.

35. PacifiCorp is in the process of submitting to the Colorado DPHE the design plan for the final remedy, which generally involves placement of a vegetated soil cap over the tailings impoundment. Officials from the Colorado DPHE agreed to review and comment on

the design by March 2000. PacifiCorp estimates that construction of the final remedy should be completed within four months of commencement of construction, with total response costs for the Site expected to reach approximately $1 million.

36. In addition to the actions of Silver Bell Industries and its predecessor in generating and disposing of tailings at the Site generally, engineering and other data indicate that the final Site operator, Silver Bell Industries, caused tailings material to be placed on the top of the tailings impoundment beyond a quantity that the impoundment could safely accommodate, leading directly to erosion and creating a long-term stability problem that exacerbated the Site's negative impacts on the environment.

C. UNOCAL Is the Successor to Silver Bell Industries and Silver Bell Mines Co.

37. Defendant UNOCAL acquired all or substantially all of the assets of Silver Bell Industries pursuant to an Agreement and Plan of Reorganization dated May 15, 1978 ("UNOCAL Reorganization Agreement").

38. Pursuant to the terms of the UNOCAL Reorganization Agreement, the only consideration paid for the Silver Bell Industries' assets was (i) 418,095 shares of UNOCAL common stock; and (ii) the assumption of certain liabilities.

39. In complete liquidation of Silver Bell Industries, UNOCAL's common stock was distributed to the shareholders of Silver Bell Industries, according to the shareholders' respective interests, resulting in a continuation of shareholders between Silver Bell Industries and UNOCAL.

40. Immediately upon consummation of the UNOCAL transaction, Silver Bell Industries ceased operations and was dissolved shortly thereafter.

41. Upon information and belief, after acquiring all or substantially all of Silver Bell Industries' assets, UNOCAL continued to operate Silver Bell Industries' business. As a result, the essential operations, affairs, and businesses of Silver Bell Industries, including the location of its business assets and operations, remained unchanged.

42. Pursuant to the UNOCAL Reorganization Agreement, UNOCAL also assumed certain liabilities of Silver Bell Industries. Upon information and belief, the assumed obligations included those obligations necessary for the uninterrupted continuation of Silver Bell Industries' business operations.

FIRST CLAIM FOR RELIEF
(Declaratory Judgment--Successor Liability)

43. PacifiCorp realleges and incorporates herein by this reference the allegations made hereinabove as if fully set forth herein.

44. There exists a present and actual controversy among the parties relating to the legal rights and duties of the parties.

45. CERCLA's definition of "person," CERCLA § 101(21), 42 U.S.C. § 9601(21), includes successor corporations.

46. Under applicable state law, UNOCAL is the legal successor to both Silver Bell Industries and Silver Bell Mines Company and as such is directly responsible and liable for all of the legal liabilities of Silver Bell Mines Co. and Silver Bell Industries.

47. An actual controversy exists between UNOCAL and PacifiCorp as to whether UNOCAL is the successor in interest to Silver Bell Industries and Silver Bell Mines Co.

48. Pursuant to 28 U.S.C. §§ 2201 and 2202, PacifiCorp is entitled to a declaratory judgment that UNOCAL is the legal successor in interest to Silver Bell Industries and Silver Bell Mines Co.

SECOND CLAIM FOR RELIEF
(Declaratory Judgment--CERCLA)

49. PacifiCorp realleges and incorporates herein by this reference the allegations made hereinabove as if fully set forth herein.

50. There exists a present and actual controversy among the parties relating to the legal rights and duties of the parties.

51. UNOCAL is a "person" within the meaning of CERCLA § 101(21), 42 U.S.C. § 9601(21).

52. The Silver Bell Tailings Impoundment Site is a "facility" within the meaning of CERCLA § 101(9), 42 U.S.C. § 9601(9).

53. A "release" or "threatened release" of "hazardous substances" has occurred at the Site within the meaning of CERCLA §§ 101(14), (22), and Section 107(a)(4), 42 U.S.C. § 9601(14), (22), and Section 9607(a)(4).

54. Such releases and/or threatened releases of hazardous substances at the Site have caused PacifiCorp to incur response costs that were and are necessary and consistent with the

National Contingency Plan, within the meaning of CERCLA Section 107(a), 42 U.S.C. § 9607(a).

55. Pursuant to and to the extent allowed by CERCLA § 107(a) and § 113(f), UNOCAL, as the legal successor in interest to the liabilities of Silver Bell Mines Co. and Silver Bell Industries is strictly liable for all past and future response costs associated with the Site, which are necessary and consistent with the National Contingency Plan, together with pre- and post-judgment interest upon such costs.

56. PacifiCorp is entitled to a judgment declaring UNOCAL strictly liable for past and future response costs associated with the Site, including a declaration in favor of PacifiCorp that will be binding on any subsequent action or actions to recover further response costs or damages, as provided under Section 113(g)(2), 42 U.S.C. § 9613(g)(2), together with pre- and post-judgment interest upon such costs.

THIRD CLAIM FOR RELIEF
(Contribution under CERCLA)

57. PacifiCorp realleges and incorporates herein by this reference the allegations made hereinabove as if fully set forth herein.

58. The Site is a "facility" within the meaning of Section 101(9) of CERCLA, 42 U.S.C. § 9601(9).

59. There has been an actual "release" or a threatened "release" of various "hazardous substances" at and from the Site as those terms as defined in Sections 101(22), 101(14) and 107(a) of CERCLA, 42 U.S.C. §§ 9601(22), (14) and 9607(a).

60. Silver Bell Mines Co. and Silver Bell Industries, by contract, agreement, and otherwise, entered into an arrangement for disposal and treatment of hazardous substances owned or possessed by Silver Bell Mines Co. and Silver Bell Industries, at the Site containing such hazardous substances, within the meaning of Section 107(a)(3) of CERCLA, 42 U.S.C. § 9607(a)(3).

61. Silver Bell Mines Co. and Silver Bell Industries were "operators" of the Site at the time of disposal of hazardous substances at the Site, within the meaning of Section 107(a)(2) of CERCLA, 42 U.S.C. § 9607(a)(2).

62. UNOCAL is the legal successor in interest to all of the liabilities of both Silver Bell Mines Company and Silver Bell Industries.

63. As the legal successor in interest to Silver Bell Mines Co. and Silver Bell Industries, UNOCAL is a "person" within the meaning of Section 101(21) of CERCLA, 42 U.S.C. § 9601(22).

64. UNOCAL is liable under Section 107(a) of CERCLA and as such is liable to PacifiCorp for contribution pursuant to the provisions of Section 113(f)(1) of CERCLA, 42 U.S.C. § 9613(f)(1).

65. PacifiCorp has incurred and will incur costs of response that are recoverable pursuant to the terms of Section 107(a) of CERCLA, 42 U.S.C. § 9607(a).

66. Using and applying equitable factors, the Court should allocate all or substantially all recoverable past and future response costs associated with Site, as well as

orphan shares, to UNOCAL pursuant to the provisions of Section 113(f)(1) of CERCLA, 42 U.S.C. § 9613(f)(1).

FOURTH CLAIM FOR RELIEF
(Breach of Contract and Express Indemnification)

67. PacifiCorp realleges and incorporates herein by this reference the allegations made hereinabove as if fully set forth herein.

68. Pursuant to the Lease Agreement dated July 1, 1970 between Silver Bell Industries and the Western Colorado Power Company, Silver Bell Industries agreed, among other things, that Silver Bell Industries will "hold Power Company harmless from any claim or liability arising in any manner from Mining Company's use of Power Company land under this agreement" and that "[u]pon termination of this Agreement or upon cessation of the use of said placer as a tailings pond, the Mining Company agrees to do such work as is necessary to stabilize the pond."

69. Silver Bell Industries breached the Lease Agreement by failing to stabilize the tailings impoundment. Silver Bell Industries caused tailings material to be placed on the top of the tailings impoundment beyond a quantity that the impoundment could safely accommodate, leading directly to erosion and creating a long-term stability problem that exacerbated the Site's negative impacts on the environment.

70. As a direct and proximate result of Silver Bell Industries' breach of contract, PacifiCorp has incurred damages in an amount to be established at trial.

71. In any event, Silver Bell Industries agreed to hold the Western Colorado Power Company "harmless" from "any claim or liability arising in any manner" from its use of the Site.

72. PacifiCorp is the Western Colorado Power Company's corporate successor and therefore the rights and benefits of the Lease Agreement inure to its benefit.

73. UNOCAL is the legal successor to the liabilities and contractual obligations of Silver Bell Industries and has refused to indemnify or hold PacifiCorp harmless as provided under the Lease Agreement, despite demand that it do so.

74. PacifiCorp is entitled to an award of damages in an amount to be proven at trial for UNOCAL's breach of contractual obligations.

FIFTH CLAIM FOR RELIEF
(Negligence)

75. PacifiCorp realleges and incorporates herein by this reference the allegations made hereinabove as if fully set forth herein.

76. Silver Bell Industries owed the Western Colorado Power Company (and its successor, PacifiCorp) a duty to exercise reasonable care in its operation of the tailings impoundment on the Site.

77. In the alternative, Silver Bell Industries owed the Western Colorado Power Company (and its successor, PacifiCorp) a higher degree of care in operating the tailings pond and in creating a large tailings impoundment at the Site because: (i) the activity was inherently dangerous, especially in close proximity to Howard Fork Creek; (ii) Silver Bell Industries

possessed special expertise in operating a tailings pond and impoundment, and (iii) neither the Western Colorado Power Company nor the general public would be able to recognize or guard against the potential danger.

78. Silver Bell Industries breached its duty of care by failing to stabilize the tailings impoundment. Silver Bell Industries caused tailings material to be placed on the top of the tailings impoundment beyond a quantity that the impoundment could safely accommodate, leading directly to erosion and creating a long-term stability problem that exacerbated the Site's negative impacts on the environment.

79. As a direct and proximate result of Silver Bell Industries' breach of its duty of care, PacifiCorp has suffered damages in an amount to be established at trial.

80. Despite its exercise of reasonable diligence, neither the Western Colorado Power Company, Utah Power & Light Company, nor PacifiCorp knew or had reason to know of Silver Bell Industries' breach of its duty of care until, at the earliest, the fall of 1998.

81. UNOCAL is the legal successor in interest to all of the liabilities of Silver Bell Industries and therefore is directly liable to PacifiCorp for damages in an amount to be proven at trial.

SIXTH CLAIM FOR RELIEF
(Strict Liability)

82. PacifiCorp realleges and incorporates herein by this reference the allegations made hereinabove as if fully set forth herein.

83. Defendants' predecessors' slurring and disposal of contaminated mine tailings at the Site, particularly in close proximity to Howard Fork Creek, constitutes an ultrahazardous activity.

84. If and to the extent PacifiCorp may need to establish a duty under this theory, Defendants' predecessors in interest owed PacifiCorp's predecessors in interest a duty to exercise a high degree of care in operating the tailings pond and creating the tailings impoundment.

85. If and to the extent PacifiCorp may need to establish a breach of Defendants' predecessors' duty under this theory, Defendants' predecessors in interest breached their duty of care by operating the tailings pond in such a way and creating the tailings impoundment at the Site so as to lead to the release of hazardous substances into the environment, as discussed in more detail above.

86. As a direct and proximate result of Defendants' predecessors' conducting ultrahazardous activities at the Site, PacifiCorp has been damaged in an amount to be established at trial.

SEVENTH CLAIM FOR RELIEF
(Implied Indemnity and Unjust Enrichment)

87. PacifiCorp realleges and incorporates herein by this reference the allegations made hereinabove as if fully set forth herein.

88. Defendants, as the corporate successors to Silver Bell Mines Co. and Silver Bell Industries, are liable to PacifiCorp under common law or implied indemnity.

89. PacifiCorp is only secondarily liable for the operations and activities at the Site that lead to the disposal of thousands of tons of contaminated mine tailings there, while Defendants, as the corporate successors to Silver Bell Mines Co. and Silver Bell Industries bear primary liability for the injury to the environment.

90. If and to the extent the Court finds that PacifiCorp's corporate predecessor was responsible with respect to the Site, then the active and intentional operations and activities of Defendants' corporate predecessors at the Site directly caused all of the harm to the environment and as such, Defendants are liable to PacifiCorp for common law or implied indemnity.

91. In addition, to the extent the Court finds that no express, contractual indemnity provision applies to the claims raised herein, Defendants, as the corporate successors to Silver Bell Mines Co. and Silver Bell Industries, have received and enjoyed a benefit due to PacifiCorp's actions with regard to the Site.

92. Under the circumstances, it would be inequitable for Defendants to retain that benefit. Therefore, under equitable principles of quasi-contract and unjust enrichment, Defendants are liable to PacifiCorp with regard to the Site, in an amount to be proven at trial.

EIGHTH CLAIM FOR RELIEF
(Uniform Contribution Among Tortfeasors Act)

93. PacifiCorp realleges and incorporates herein by this reference the allegations made hereinabove as if fully set forth herein.

94. If and to the extent the Court finds that PacifiCorp's corporate predecessor was responsible with respect to the Site, then the active and intentional operations and activities of Defendants' corporate predecessors at the Site directly caused all of the harm to the environment.

95. Under the Colorado Uniform Contribution among Tortfeasors Act ("UCTA"), 6A C.R.S. §§ 13-50.5-101 *et seq.*, Defendants are liable to PacifiCorp in contribution in an amount to be proven at trial.

WHEREFORE, PacifiCorp prays that this Court enter the following relief:

1. On PacifiCorp's First Claim for Relief, a declaratory judgment declaring that Defendant UNOCAL is the legal successor in interest to Silver Bell Industries and Silver Bell Mines Co.

2. On PacifiCorp's Second Claim for Relief, a declaratory judgment declaring that:

   a. The Silver Bell Tailings Impoundment Site is a facility within the meaning of 42 U.S.C. § 9601(9);

   b. A release or threatened release of hazardous substances has occurred at or from the Site, within the meaning of 42 U.S.C.§§ 9601(14), (22), and 9607(a);

   c. The release or threatened release has caused PacifiCorp to incur response costs that were and are necessary and consistent with the National Contingency Plan, within the meaning of 42 U.S.C. § 9607(a);

   d. UNOCAL is a liable party within the meaning of the 42 U.S.C. § 9607(a);

e. UNOCAL is strictly liable for contribution for past and future response costs associated with the Site, to the extent allowed under 42 U.S.C. § 9607(a), and 42 U.S.C. § 9613, together with pre- and post-judgment interest upon such cost, as well as attorneys' fees and costs; and

f. The nature and scope of UNOCAL's liability for response costs and damages that will be binding on all subsequent actions or recover further response costs or damages, as provided under 42 U.S.C. § 9613(g)(2).

3. Judgment on PacifiCorp's Third Claim for Relief against UNOCAL, in favor of PacifiCorp, for contribution for necessary costs of response incurred by PacifiCorp at the Site in such amount to be proven at trial, pursuant to CERCLA Sections 107(a) and 113(f).

4. Judgment on PacifiCorp's Fourth, Fifth, Sixth, Seventh, and Eighth Claims for Relief in an amount to be proven at trial.

5. Judgment for pre- and post-judgment interest pursuant to CERCLA Section 107(a)(4)(D), as well as for all compensable costs;

6. Judgment for pre- and post-judgment interest at the legal rate on all common law claims;

7. Judgment for attorney's fees to the extent permitted by law; and

8. Judgment for such other and further relief as this Court shall deem appropriate.

Dated: February 25, 2000.

Respectfully submitted,

LeBOEUF, LAMB, GREENE & MacRAE, L.L.P.

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RECD JUL 2 4 2000

IN THE UNITED STATES DISTRICT COURT
FOR THE DISTRICT OF COLORADO

FILED
UNITED STATES DISTRICT COURT
DENVER, COLORADO
JUL 2 3 2000
JAMES R. MANSPEAKER
CLERK
BY

Civil Action No. 00-S-424

PACIFICORP, an Oregon corporation,

Plaintiff,

v.

UNION OIL COMPANY OF CALIFORNIA, a California corporation; and
MINERALS EXPLORATION COMPANY, a California corporation,

Defendants.

FIRST AMENDED COMPLAINT

Plaintiff PacifiCorp, an Oregon corporation, ("PacifiCorp"), by and through its undersigned attorneys, alleges and avers as follows:

INTRODUCTION

1. This is a civil action for contribution brought pursuant to Sections 107(a) and 113(f)(1) of the Comprehensive Environmental Response, Compensation and Liability Act of 1980 ("CERCLA"), as amended, 42 U.S.C. § 9613(f)(1), and for a declaratory judgment brought pursuant to CERCLA Section 113(g)(2), 42 U.S.C. § 9613(g)(2), and 28 U.S.C. § 2201. This civil action arises from work PacifiCorp has been forced to implement at the abandoned Silver Bell Tailings Impoundment Site ("Site") located in southwestern Colorado.

PacifiCorp is the corporate successor to the Western Colorado Power Company, the owner of the Site during the time when mine tailings were placed on the property. Neither PacifiCorp, the Western Colorado Power Company, nor any other entity related to PacifiCorp ever actively conducted any operations on the Site. Defendants are the successors in interest to the two related mining companies that operated the site as a disposal location for hundreds of thousands of tons of contaminated mine tailings during the 1940s and early 1950s and again during the 1970s.

2. Through this action, PacifiCorp seeks, among other things, (i) reimbursement of response costs incurred and to be incurred by PacifiCorp in response to the release or threat of release of hazardous substances from the Site; (ii) declaratory judgment on defendants' successor liability; and (iii) declaratory judgment on liability and allocation of response costs that will be binding on any subsequent action or actions to recover further response costs.

JURISDICTION AND VENUE

3. This Court has federal question jurisdiction over the subject matter of this action pursuant to 42 U.S.C. §§ 9607 and 9613(b), as well as 28 U.S.C. §§ 1331 and 1346.

4. This Court has supplemental subject matter jurisdiction over the state law-based claims asserted herein pursuant to 28 U.S.C. § 1367(a).

5. Venue is proper in this judicial district pursuant to 42 U.S.C. § 9613(b) because the damages, release, and threatened release of hazardous substances at issue in this case occurred within this judicial district and Defendants Union Oil Company of California and

Minerals Exploration Company reside in and may otherwise be found within this judicial district.

PARTIES

6. Plaintiff PacifiCorp is an Oregon corporation with its principal place of business located in Portland, Oregon. PacifiCorp is authorized to conduct business in the State of Colorado. PacifiCorp's immediate corporate predecessor in interest, Utah Power & Light Company, acquired title to the Site in or about 1975, from its corporate predecessor in interest, the Western Colorado Power Company. Upon PacifiCorp's merger with Utah Power & Light Company in 1989, PacifiCorp became the owner of the Site.

7. Defendant Union Oil Company of California ("UNOCAL") is a California corporation authorized to conduct business in the State of Colorado.

8. Defendant Minerals Exploration Company ("Minerals") is a California corporation authorized to conduct business in the State of Colorado. Minerals is, and at all times relevant to this Complaint was, a wholly-owned subsidiary of UNOCAL. Minerals and UNOCAL are referred to collectively herein as "UNOCAL."

9. UNOCAL is the legal successor in interest to both Silver Bell Mines Co. and Silver Bell Industries, companies that disposed of thousands of tons of contaminated mill tailings at the Site.

GENERAL ALLEGATIONS

A. Silver Bell Tailings Impoundment Site Background, Ownership, and Operations.

10. The Silver Bell Tailings Impoundment Site is located in southwestern Colorado approximately 1.5 miles west of the town of Ophir along Highway 145.

11. The Site is located in San Miguel County, State of Colorado, and more specifically is situated in the North 1/2 of Section 32, the Northwest 1/4 of the Northwest 1/4, and the southwest 1/4 of the Northwest 1/4 of Section 33, and the Southwest 1/4 of the Southeast 1/4 of Section 29, all in Township 42 North, Range 9 West, New Mexico Principal Meridian, described as follows:

> The Roanoak Placer, a patented mining claim, No. 15590, being situated in San Miguel County, Colorado, containing 73.2 acres, more or less.

12. The Silver Bell mine and mill sites are located on the east side of Highway 145, and the tailings impoundment is located on the west side of the highway, along the banks of the Howard Fork Creek.

13. The Western Colorado Power Company acquired the Site in 1913 and owned the same until 1975, when title to the Site was transferred as a result of the Western Colorado Power Company's merger with Utah Power & Light Company. In 1989, title to the Site was again transferred as a result of the merger of Utah Power & Light Company with Plaintiff, PacifiCorp.

14. From approximately 1946 to 1954, Silver Bell Mining and Milling Co., also known as Silver Bell Mines Co. ("Silver Bell Mines Co."), a publicly-traded Colorado corporation, operated a mining operation on the Silver Bell Mine, and also operated a 150-ton capacity modern flotation mill equipped with primary and secondary crushers on the Silver Bell mill site, located on the east Side of Highway 145.

15. Upon information and belief, Silver Bell Mines Co. slurried tailings generated at its mill site to the Site through a wood slurry and actively operated the tailings pond for disposal of mill tailings from 1946 through 1954.

16. Ore production records indicate that from 1946 to 1954, Silver Bell Mines Co. mined approximately 240,217 tons of ore from the Silver Bell mine and milled approximately 218,886 tons of ore at the Silver Bell mill.

17. In 1954, Silver Bell Mines Co. abandoned the Silver Bell mine and mill operations and the Site remained dormant from about 1954 to about 1970.

18. Pursuant to an Agreement and Plan of Reorganization dated September 15, 1969, a new publicly-traded Colorado corporation known as Silver Bell Industries, Inc. ("Silver Bell Industries") acquired all of the assets and assumed all of the liabilities of Silver Bell Mines Co.

19. Silver Bell Industries re-built and re-opened the Silver Bell mine and mill properties.

20. Silver Bell Industries entered into a Lease Agreement with the Western Colorado Power Company, dated July 1, 1970, through which Silver Bell Industries leased the Site for the purpose of disposing mill tailings on the Site. The Lease Agreement inures to the benefit of PacifiCorp as the corporate successor of the Western Colorado Power Company.

21. The Lease Agreement provides, among other things, that Silver Bell Industries will "hold Power Company harmless from any claim or liability arising in any manner from Mining Company's use of Power Company land under this agreement" and that "[u]pon termination of this Agreement or upon cessation of the use of said placer as a tailings pond, the Mining Company agrees to do such work as is necessary to stabilize the pond."

22. According to company records, from 1970 to 1975, Silver Bell Industries mined approximately 72,791 tons of ore from the Silver Bell mine and milled approximately 70,619 tons of ore at the Silver Bell mill.

23. The tailings materials disposed of and abandoned at the Site by Silver Bell Mines Co. and Silver Bell Industries contained varying amounts of metals, including, among others, arsenic, cadmium, chromium, copper, lead, manganese, mercury, selenium, thallium, and zinc

24. In 1975, Silver Bell Industries abandoned the Silver Bell mine and mill operations, together with its tailings operations on the Site. The Site has been inactive and dormant since that time.

25. In 1975, the Western Colorado Power Company transferred title of the Site to, and otherwise merged with, Utah Power & Light Company. In 1989, Utah Power & Light Company merged with Plaintiff PacifiCorp.

26. Neither PacifiCorp nor, to the best of its knowledge, Utah Power & Light or the Western Colorado Power Company, conducted any active operations on the Site, but were merely passive owners of the property.

27. In March 1991, PacifiCorp transferred the Site to Edwin Lee and Camelia M. Wynne, who are the present owners of the Site.

B. PacifiCorp Emergency Response Actions.

28. In the summer and fall of 1998, the current owners of the Site informed PacifiCorp of the existence of problems with erosion of tailings materials at the Site. PacifiCorp began to investigate the situation, and in the fall of 1998, became aware that the tailings impoundment at the Site was the source of a significant release of tailings via erosion into Howard Fork Creek.

29. PacifiCorp's investigation further revealed that the United States Environmental Protection Agency ("EPA"), Region VIII, had completed a Site investigation and was in the process of determining whether to list the Site (along with other nearby sites) on the National Priorities List ("NPL") established under CERCLA.

30. PacifiCorp further discovered that the officials from San Miguel County, Colorado, EPA, the U.S. Forest Service, and the Colorado Department of Public Health and

Environment ("Colorado DPHE") were also investigating the Site, and were working together to develop a strategy to solve the environmental problems caused by the tailings impoundment, including the identification of viable potentially responsible parties or PRPs.

31. Based on PacifiCorp's independent evaluation of the Site, it was clear that the condition of the tailings impoundment was deteriorating and that emergency measures were required during the summer of 1999 in order to prevent more tailings from washing into Howard Fork Creek and that costs would rise dramatically with the passage of each season because large quantities of tailings were eroding into the stream.

32. PacifiCorp began negotiations with the Colorado DPHE to develop an action plan for the Site, resulting in PacifiCorp's proposal to proceed with the implementation of emergency response measures at the Site pursuant to the Colorado Voluntary Cleanup Program ("VCUP").

33. Under the direct oversight of the Colorado DPHE, and after appropriate public notice and opportunity for comment, PacifiCorp undertook response activities in August and September 1999. More specifically, PacifiCorp excavated the tailings material that had eroded and placed the same within the impoundment. PacifiCorp further installed surface water drainage controls to prevent surface water from running onto and controlling the runoff from the tailings impoundment.

34. To date, PacifiCorp has expended approximately $400,000 in recoverable response costs associated with the Site.

35. PacifiCorp has continued its response action at the Site through the summer of 2000, under the supervision of the Colorado DPHE and with the consent of the U.S. Forest Service. Work performed during calendar year 2000 will generally involve a completion of the work begun in 1999 through the placement of a soil cap over the tailings impoundment, earth-work, and grading activities. Estimated total response costs for the Site will probably be around $1 million.

36. In addition to the actions of Silver Bell Industries and its predecessor in generating and disposing of tailings at the Site generally, engineering and other data indicate that the final Site operator, Silver Bell Industries, caused tailings material to be placed on the top of the tailings impoundment beyond a quantity that the impoundment could safely accommodate, leading directly to erosion and creating a long-term stability problem that exacerbated the Site's negative impacts on the environment.

C. UNOCAL Is the Successor to Silver Bell Industries and Silver Bell Mines Co.

37. Defendant UNOCAL acquired all or substantially all of the assets of Silver Bell Industries pursuant to an Agreement and Plan of Reorganization dated May 15, 1978 ("UNOCAL Reorganization Agreement").

38. Pursuant to the terms of the UNOCAL Reorganization Agreement, the only consideration paid for the Silver Bell Industries' assets was (i) 418,095 shares of UNOCAL common stock; and (ii) the assumption of certain liabilities.

39. In complete liquidation of Silver Bell Industries, UNOCAL's common stock was distributed to the shareholders of Silver Bell Industries, according to the shareholders' respective interests, resulting in a continuation of shareholders between Silver Bell Industries and UNOCAL.

40. Immediately upon consummation of the UNOCAL transaction, Silver Bell Industries ceased operations and was dissolved shortly thereafter.

41. Upon information and belief, after acquiring all or substantially all of Silver Bell Industries' assets, UNOCAL continued to operate Silver Bell Industries' business. As a result, the essential operations, affairs, and businesses of Silver Bell Industries, including the location of its business assets and operations, remained unchanged.

42. Pursuant to the UNOCAL Reorganization Agreement, UNOCAL also assumed certain liabilities of Silver Bell Industries. Upon information and belief, the assumed obligations included those obligations necessary for the uninterrupted continuation of Silver Bell Industries' business operations.

FIRST CLAIM FOR RELIEF
(Declaratory Judgment--Successor Liability)

43. PacifiCorp realleges and incorporates herein by this reference the allegations made hereinabove as if fully set forth herein.

44. There exists a present and actual controversy among the parties relating to the legal rights and duties of the parties.

45. CERCLA's definition of "person," CERCLA § 101(21), 42 U.S.C. § 9601(21), includes successor corporations.

46. Under applicable state law, UNOCAL is the legal successor to both Silver Bell Industries and Silver Bell Mines Company and as such is directly responsible and liable for all of the legal liabilities of Silver Bell Mines Co. and Silver Bell Industries.

47. An actual controversy exists between UNOCAL and PacifiCorp as to whether UNOCAL is the successor in interest to Silver Bell Industries and Silver Bell Mines Co.

48. Pursuant to 28 U.S.C. §§ 2201 and 2202, PacifiCorp is entitled to a declaratory judgment that UNOCAL is the legal successor in interest to Silver Bell Industries and Silver Bell Mines Co.

SECOND CLAIM FOR RELIEF
(Declaratory Judgment--CERCLA)

49. PacifiCorp realleges and incorporates herein by this reference the allegations made hereinabove as if fully set forth herein.

50. There exists a present and actual controversy among the parties relating to the legal rights and duties of the parties.

51. UNOCAL is a "person" within the meaning of CERCLA § 101(21), 42 U.S.C. § 9601(21).

52. The Silver Bell Tailings Impoundment Site is a "facility" within the meaning of CERCLA § 101(9), 42 U.S.C. § 9601(9).

53. A "release" or "threatened release" of "hazardous substances" has occurred at the Site within the meaning of CERCLA §§ 101(14), (22), and Section 107(a)(4), 42 U.S.C. § 9601(14), (22), and Section 9607(a)(4).

54. Such releases and/or threatened releases of hazardous substances at the Site have caused PacifiCorp to incur response costs that were and are necessary and consistent with the National Contingency Plan ("NCP"), within the meaning of CERCLA Section 107(a), 42 U.S.C. § 9607(a) and the NCP.

55. Pursuant to and to the extent allowed by CERCLA § 107(a) and § 113(f), UNOCAL, as the legal successor in interest to the liabilities of Silver Bell Mines Co. and Silver Bell Industries is strictly liable for all past and future response costs associated with the Site, which are necessary and consistent with the NCP, together with pre- and post-judgment interest upon such costs.

56. PacifiCorp is entitled to a declaratory judgment declaring UNOCAL strictly liable for future response costs associated with the Site in the form of a declaration in favor of PacifiCorp that will be binding on any subsequent action or actions to recover further response costs or damages, as provided under Section 113(g)(2), 42 U.S.C. § 9613(g)(2).

THIRD CLAIM FOR RELIEF
(Contribution under CERCLA)

57. PacifiCorp realleges and incorporates herein by this reference the allegations made hereinabove as if fully set forth herein.

58. The Site is a "facility" within the meaning of Section 101(9) of CERCLA, 42 U.S.C. § 9601(9).

59. There has been an actual "release" or a threatened "release" of various "hazardous substances" at and from the Site as those terms as defined in Sections 101(22), 101(14) and 107(a) of CERCLA, 42 U.S.C. §§ 9601(22), (14) and 9607(a).

60. Silver Bell Mines Co. and Silver Bell Industries, by contract, agreement, and otherwise, entered into an arrangement for disposal and treatment of hazardous substances owned or possessed by Silver Bell Mines Co. and Silver Bell Industries, at the Site containing such hazardous substances, within the meaning of Section 107(a)(3) of CERCLA, 42 U.S.C. § 9607(a)(3).

61. Silver Bell Mines Co. and Silver Bell Industries were "operators" of the Site at the time of disposal of hazardous substances at the Site, within the meaning of Section 107(a)(2) of CERCLA, 42 U.S.C. § 9607(a)(2).

62. UNOCAL is the legal successor in interest to all of the liabilities of both Silver Bell Mines Company and Silver Bell Industries.

63. As the legal successor in interest to Silver Bell Mines Co. and Silver Bell Industries, UNOCAL is a "person" within the meaning of Section 101(21) of CERCLA, 42 U.S.C. § 9601(22).

64. UNOCAL is liable under Section 107(a) of CERCLA and as such is liable to PacifiCorp for contribution pursuant to the provisions of Section 113(f)(1) of CERCLA, 42 U.S.C. § 9613(f)(1).

65. PacifiCorp has incurred and will incur costs of response that are recoverable pursuant to the terms of Section 107(a) of CERCLA, 42 U.S.C. § 9607(a).

66. Using and applying equitable factors, the Court should allocate all or substantially all recoverable past response costs associated with Site, as well as orphan shares, to UNOCAL pursuant to the provisions of Section 113(f)(1) of CERCLA, 42 U.S.C. § 9613(f)(1).

FOURTH CLAIM FOR RELIEF
(Breach of Contract and Express Indemnification)

67. PacifiCorp realleges and incorporates herein by this reference the allegations made hereinabove as if fully set forth herein.

68. Pursuant to the Lease Agreement dated July 1, 1970 between Silver Bell Industries and the Western Colorado Power Company, Silver Bell Industries agreed, among other things, that Silver Bell Industries will "hold Power Company harmless from any claim or liability arising in any manner from Mining Company's use of Power Company land under this agreement" and that "[u]pon termination of this Agreement or upon cessation of the use of said placer as a tailings pond, the Mining Company agrees to do such work as is necessary to stabilize the pond."

69. Silver Bell Industries breached the Lease Agreement by failing to stabilize the tailings impoundment. Silver Bell Industries caused tailings material to be placed on the top of the tailings impoundment beyond a quantity that the impoundment could safely accommodate, leading directly to erosion and creating a long-term stability problem that exacerbated the Site's negative impacts on the environment.

70. As a direct and proximate result of Silver Bell Industries' breach of contract, PacifiCorp has incurred damages in an amount to be established at trial.

71. In any event, Silver Bell Industries agreed to hold the Western Colorado Power Company "harmless" from "any claim or liability arising in any manner" from its use of the Site.

72. PacifiCorp is the Western Colorado Power Company's corporate successor and therefore the rights and benefits of the Lease Agreement inure to its benefit.

73. UNOCAL is the legal successor to the liabilities and contractual obligations of Silver Bell Industries and has refused to indemnify or hold PacifiCorp harmless as provided under the Lease Agreement, despite demand that it do so.

74. PacifiCorp is entitled to an award of damages in an amount to be proven at trial for UNOCAL's breach of contractual obligations.

FIFTH CLAIM FOR RELIEF
(Negligence)

75. PacifiCorp realleges and incorporates herein by this reference the allegations made hereinabove as if fully set forth herein.

76. Silver Bell Industries owed the Western Colorado Power Company (and its successor, PacifiCorp) a duty to exercise reasonable care in its operation of the tailings impoundment on the Site.

77. In the alternative, Silver Bell Industries owed the Western Colorado Power Company (and its successor, PacifiCorp) a higher degree of care in operating the tailings pond and in creating a large tailings impoundment at the Site because: (i) the activity was inherently dangerous, especially in close proximity to Howard Fork Creek; (ii) Silver Bell Industries possessed special expertise in operating a tailings pond and impoundment, and (iii) neither the Western Colorado Power Company nor the general public would be able to recognize or guard against the potential danger.

78. Silver Bell Industries breached its duty of care by failing to stabilize the tailings impoundment. Silver Bell Industries caused tailings material to be placed on the top of the tailings impoundment beyond a quantity that the impoundment could safely accommodate, leading directly to erosion and creating a long-term stability problem that exacerbated the Site's negative impacts on the environment.

79. As a direct and proximate result of Silver Bell Industries' breach of its duty of care, PacifiCorp has suffered damages in an amount to be established at trial.

80. Despite its exercise of reasonable diligence, neither the Western Colorado Power Company, Utah Power & Light Company, nor PacifiCorp knew or had reason to know of Silver Bell Industries' breach of its duty of care until, at the earliest, the fall of 1998.

81. UNOCAL is the legal successor in interest to all of the liabilities of Silver Bell Industries and therefore is directly liable to PacifiCorp for damages in an amount to be proven at trial.

SIXTH CLAIM FOR RELIEF
(Strict Liability)

82. PacifiCorp realleges and incorporates herein by this reference the allegations made hereinabove as if fully set forth herein.

83. Defendants' predecessors' slurring and disposal of contaminated mine tailings at the Site, particularly in close proximity to Howard Fork Creek, constitutes an ultrahazardous activity.

84. If and to the extent PacifiCorp may need to establish a duty under this theory, Defendants' predecessors in interest owed PacifiCorp's predecessors in interest a duty to exercise a high degree of care in operating the tailings pond and creating the tailings impoundment.

85. If and to the extent PacifiCorp may need to establish a breach of Defendants' predecessors' duty under this theory, Defendants' predecessors in interest breached their duty of care by operating the tailings pond in such a way and creating the tailings impoundment at the Site so as to lead to the release of hazardous substances into the environment, as discussed in more detail above.

86. As a direct and proximate result of Defendants' predecessors' conducting ultrahazardous activities at the Site, PacifiCorp has been damaged in an amount to be established at trial.

SEVENTH CLAIM FOR RELIEF
(Implied Indemnity and Unjust Enrichment)

87. PacifiCorp realleges and incorporates herein by this reference the allegations made hereinabove as if fully set forth herein.

88. Defendants, as the corporate successors to Silver Bell Mines Co. and Silver Bell Industries, are liable to PacifiCorp under common law or implied indemnity.

89. PacifiCorp is only secondarily liable for the operations and activities at the Site that lead to the disposal of thousands of tons of contaminated mine tailings there, while Defendants, as the corporate successors to Silver Bell Mines Co. and Silver Bell Industries bear primary liability for the injury to the environment.

90. If and to the extent the Court finds that PacifiCorp's corporate predecessor was responsible with respect to the Site, then the active and intentional operations and activities of Defendants' corporate predecessors at the Site directly caused all of the harm to the environment and as such, Defendants are liable to PacifiCorp for common law or implied indemnity.

91. In addition, to the extent the Court finds that no express, contractual indemnity provision applies to the claims raised herein, Defendants, as the corporate successors to Silver

Bell Mines Co. and Silver Bell Industries, have received and enjoyed a benefit due to PacifiCorp's actions with regard to the Site.

92. Under the circumstances, it would be inequitable for Defendants to retain that benefit. Therefore, under equitable principles of quasi-contract and unjust enrichment, Defendants are liable to PacifiCorp with regard to the Site, in an amount to be proven at trial.

EIGHTH CLAIM FOR RELIEF
(Uniform Contribution Among Tortfeasors Act)

93. PacifiCorp realleges and incorporates herein by this reference the allegations made hereinabove as if fully set forth herein.

94. If and to the extent the Court finds that PacifiCorp's corporate predecessor was responsible with respect to the Site, then the active and intentional operations and activities of Defendants' corporate predecessors at the Site directly caused all of the harm to the environment.

95. Under the Colorado Uniform Contribution among Tortfeasors Act ("UCTA"), 6A C.R.S. §§ 13-50.5-101 *et seq.*, Defendants are liable to PacifiCorp in contribution in an amount to be proven at trial.

WHEREFORE, PacifiCorp prays that this Court enter the following relief:

1. On PacifiCorp's First Claim for Relief, a declaratory judgment declaring that Defendant UNOCAL is the legal successor in interest to Silver Bell Industries and Silver Bell Mines Co.

2. On PacifiCorp's Second Claim for Relief, a declaratory judgment declaring that:

a. The Silver Bell Tailings Impoundment Site is a facility within the meaning of 42 U.S.C. § 9601(9);

b. A release or threatened release of hazardous substances has occurred at or from the Site, within the meaning of 42 U.S.C.§§ 9601(14), (22), and 9607(a);

c. The release or threatened release has caused PacifiCorp to incur response costs that were and are necessary and consistent with the National Contingency Plan, within the meaning of 42 U.S.C. § 9607(a);

d. UNOCAL is a liable party within the meaning of the 42 U.S.C. § 9607(a);

e. UNOCAL is strictly liable for contribution for past and future response costs associated with the Site, to the extent allowed under 42 U.S.C. § 9607(a), and 42 U.S.C. § 9613, together with pre- and post-judgment interest upon such cost, as well as attorneys' fees and costs; and

f. The nature and scope of UNOCAL's liability for response costs and damages that will be binding on all subsequent actions or recover further response costs or damages, as provided under 42 U.S.C. § 9613(g)(2).

3. Judgment on PacifiCorp's Third Claim for Relief against UNOCAL, in favor of PacifiCorp, for contribution for necessary costs of response incurred by PacifiCorp at the Site in such amount to be proven at trial, pursuant to CERCLA Sections 107(a) and 113(f).

4. Judgment on PacifiCorp's Fourth, Fifth, Sixth, Seventh, and Eighth Claims for Relief in an amount to be proven at trial.

5. Judgment for pre- and post-judgment interest pursuant to CERCLA Section 107(a)(4)(D), as well as for all compensable costs;

6. Judgment for pre- and post-judgment interest at the legal rate on all common law claims;

7. Judgment for attorney's fees to the extent permitted by law; and

8. Judgment for such other and further relief as this Court shall deem appropriate.

Dated: July 24, 2000.

Respectfully submitted,

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IN THE UNITED STATES DISTRICT COURT
FOR THE DISTRICT OF COLORADO

Civil Action No. 00-S-424

PACIFICORP, an Oregon corporation,

Plaintiff,

v.

UNION OIL COMPANY OF CALIFORNIA, a California corporation; and
MINERALS EXPLORATION COMPANY, a California corporation,

Defendants.

PLAINTIFF'S TRIAL BRIEF
AS TO SUCCESSOR LIABILITY (PHASE I) ISSUES

Plaintiff PacifiCorp, an Oregon corporation ("PacifiCorp"), by and through its undersigned attorneys, hereby submits the following Trial Brief for the Phase I bench trial as to successor liability issues that is scheduled to commence on January 31, 2001.

I. INTRODUCTION & SUMMARY

This action arises from the Silver Bell Tailings Site, located near Telluride, Colorado (the "Site"). The last Site operator was Silver Bell Industries, Inc. ("Silver Bell"). The Site was abandoned in 1978, when Silver Bell went out of business and dissolved pursuant to an Agreement and Plan of Reorganization ("Reorganization Agreement") with Defendants Union Oil Company of California and its subsidiary, Minerals Exploration Company (collectively "Unocal"). PacifiCorp contends that Unocal is the legal successor to Silver Bell and is therefore liable to reimburse PacifiCorp for emergency response costs it incurred to clean up the Site.

NARA-003

In late 1998, it became apparent that a portion of the mill tailings impoundment at the Site had failed, that tailings were being washed into Howard Fork Creek, and that inaction would result in a continuing release of tailings into the San Miguel River. As the successor to the company that previously owned (but did not operate) the Site during the time that mill tailings were disposed, PacifiCorp elected to undertake an emergency response action. Investigation and design work began immediately. Necessary measures were implemented during the summer of 1999 and were completed during the summer of 2000. To date, PacifiCorp has incurred approximately $1.2 million in response costs and anticipates expending an additional $300,000 over the next five years.

By this action, PacifiCorp seeks contribution and damages from Defendants based on Defendants' status as the legal successor to Silver Bell. The parties have agreed to first resolve the successor liability issue in Phase I of this case and leave Silver Bell's underlying liability, damages, and allocation for Phase II. The specific issue to be determined by the Court in Phase I is as follows: If Silver Bell would be liable to PacifiCorp for costs arising from the Site, is Unocal liable as the corporate successor to Silver Bell.

While an asset purchaser is not generally liable for the corporate obligations of the selling company, three exceptions to this general rule clearly apply here. First, Unocal expressly and impliedly assumed Silver Bell's liabilities connected to the Site by contracting to do so under the terms of the Reorganization Agreement. There, Defendants expressly agreed to assume any liabilities arising or accruing after the December 1978 closing date relating to or in any way connected to Silver Bell's assets. PacifiCorp's CERCLA and contractual indemnity claims arose, as a matter of law, in late 1998. They constitute precisely the kinds of claims that fall within the scope of Defendant's express and implied assumption.

Second, the Silver Bell transaction constitutes a *de facto* merger. Under this doctrine, courts find successor liability if a purported asset transaction in substance amounts to a merger. Here, as with any classic *de facto* merger, the sole consideration paid for Silver Bell's assets was Unocal stock, which was exchanged as part of a tax-free reorganization. As a result, Silver Bell's shareholders became Unocal shareholders and continued to own precisely the same assets (including tax attributes) as they did before. Silver Bell's assets and business continued to be managed, developed, and operated in the same manner. Silver Bell ceased conducting business immediately and dissolved. Every court that has examined tax-free reorganizations has found that they constitute *de facto* mergers. This is so because a tax-free reorganization, unlike a true asset sale, is in the nature of a pooling or merging of economic interests.

Third, the Silver Bell transaction, if interpreted as Unocal suggests, would give rise to a constructive fraud. According to Defendants' theory of the case, the effect of the Silver Bell transaction will have been to transfer all of Silver Bell's valuable assets to a new company (then comprised of former Silver Bell shareholders), while at the same time purporting to leave all liabilities in the defunct shell. Yet prior to the closing, Unocal and Silver Bell had direct knowledge of the Site, that it was on PacifiCorp's predecessor's land, that Silver Bell had a contractual duty to stabilize the Site, that the tailings were in poor condition, that the Site needed attention, and that the Site was located near rivers and streams. Despite this level of knowledge, however, Defendants and Silver Bell jointly and affirmatively represented to the U.S. Securities and Exchange Commission that they did not know of any Silver Bell liabilities other than certain specified transaction costs and liabilities. This misrepresentation is material and significant, because Unocal and Silver Bell also represented to the SEC that all current Silver Bell liabilities would be satisfied through proceeds from the transaction.

Having failed to disclose a known liability to the SEC and having conveyed all of Silver Bell's valuable assets (including inherent tax attributes) to Unocal, Silver Bell and Unocal then purported to leave Silver Bell's liabilities related to the Site in a defunct shell. Although valuable consideration was paid *to Silver Bell's shareholders*, Silver Bell itself was liquidated, immediately went out of business, and was dissolved. Under the circumstances, the Silver Bell transaction worked a constructive fraud upon PacifiCorp's predecessor, a known creditor. The law cannot and does not permit such a result.

II. ARGUMENT

A. APPLICABLE LAW.

There is no outcome-determinative difference between the various laws that might potentially apply to the successor liability question (Colorado, California, and federal common law). Thus, this Brief cites persuasive authority from a variety of jurisdictions, including federal, Colorado, and California.[1] Nevertheless, it is reasonably clear that California law should apply to questions of interpretation of the 1978 Reorganization Agreement,[2] while Colorado law should apply to the question of successor liability. *See* Florom v. Elliott Mfg. Co., 629 F. Supp. 1145, 1148 (D. Colo. 1986) (applying Colorado law in a successor liability case where Colorado had the most significant contacts to the underlying tort.), aff'd, 867 F.2d 570, 575 (10th Cir. 1989).

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[1]*See* Gallenberg Equip. Inc. v. Agromac Int'l. Inc., 10 F. Supp.2d 1050, 1052 (E.D. Wis. 1998) (choice of law analysis unnecessary unless outcome-determinative rule at issue); New York v. N. Storonske Cooperage Co., Inc., 174 B.R. 366, 374-75 (N.D.N.Y. 1994) (applying both state and federal law to successor liability question because rules closely parallel); In re Acushnet River & New Bedford Harbor Proceedings, 675 F. Supp. 22, 33 (D. Mass. 1987) (same).

[2]In Section 10.03, the 1978 Reorganization Agreement provides: "This Agreement and the legal relations between the Parties shall be governed and construed in accordance with the law and jurisprudence of the State of California, excluding that body of law referred to as conflicts of laws." Questions of contract interpretation therefore should be governed by California law.

B. UNOCAL IS THE LEGAL SUCCESSOR TO SILVER BELL.

Under well-established principles of successor liability law, the purchaser of substantially all of a corporation's assets does not succeed to the seller's liabilities unless one of the following four exceptions applies: (1) the purchaser expressly or impliedly agrees to assume such debts or liabilities; (2) the transaction amounts to a merger or consolidation of the seller and purchaser; (3) the purchasing corporation is a mere continuation of the selling corporation; or (4) the transaction is entered into fraudulently in order to escape liability for such debts. *See* Florom, 867 F.2d at 574-75 ("Under Colorado law, the general rule of nonliability of successor corporations and four traditional exceptions to that rule are followed."); Ruiz v. ExCello Corp., 653 P.2d 415, 416 (Colo. Ct. App. 1982); Ray v. Alad Corp., 19 Cal.3d. 22 , 28 (Cal. 1977); 15 Fletcher, Cyclopedia Corporations, § 7122 at 249 (1999).

These successor liability principles are fully consistent with PacifiCorp's CERCLA claims, because "every federal circuit confronted with the question has determined that Congress intended successor liability to apply in the context of CERCLA." North Shore Gas Co. v. Salomon Inc., 152 F.3d 642, 649-50 (7th Cir. 1998) (citing cases from six sister circuits and reasoning that "the successor and its shareholders likely will have derived some benefit from the predecessor's use of the pollutant and the savings that resulted from the hazardous disposal methods"). *See* United States v. Mexico Feed & Seed Co., 980 F.2d 478, 487 (8th Cir. 1992) (reasoning that corporations should not be able "to evade their responsibility by dying paper deaths, only to rise phoenix-like from the ashes, transformed but free of their former liabilities").

PacifiCorp is only required to establish that one of the four exceptions applies in order to prevail on its successor liability claim. *See* New York v. N. Storonske Cooperage Co., Inc., 174 B.R. 366, 375 (N.D.N.Y. 1994). At least three of the four exceptions are satisfied here.

1. Defendants Agreed to Assume Silver Bell's Liabilities.

Where one corporation sells or otherwise transfers its assets to another corporation, the acquiring corporation is liable for the debts and liabilities of the transferor if the acquiring corporation expressly or impliedly agrees to assume such debts or liabilities. An **express** assumption of liabilities is perhaps better characterized as a simple matter of contract law between buyer and seller. *See* The Waste Inc. Cost Recovery Group v. Allis Chalmers Corp., No. 3:98 CV 0341, 2000 U.S. Dist. LEXIS 12571 (July 10, 2000) (applying basic contract law principles to find an express assumption of liabilities, thereby avoiding the necessity "to delve into the complexities of corporate successor liability") (copy attached hereto as Exhibit A).

To establish an **implied** agreement to pay the debts of another corporation, "the conduct relied upon must show such an intention." Florom, 867 F.2d at 575 (applying Colorado law). Determining whether an implied intention exists turns on the facts and circumstances in each case. Ladjeverdian v. Laidlaw-Coggeshall, Inc., 431 F. Supp. 834, 839 (S.D.N.Y. 1977).

Here, Defendants' express and implied intent to assume Silver Bell's liabilities associated with the Site can be clearly ascertained from the relevant contract documents, and from Defendants' own admissions and conduct. While the 1978 Reorganization Agreement purports to disclaim Silver Bell liabilities, the disclaimer is conditional:

> Minerals Not a Successor Corporation. When and if the transaction contemplated by this Agreement is consummated, Minerals shall have only acquired the Assets of Silver Bell and shall not be considered as a successor corporation to Silver Bell; **provided, however, Minerals shall as of the time of closing execute and deliver to Silver Bell an instrument whereby Minerals assumes all of Silver Bell's obligations under all of those certain agreements listed in Schedule of Obligations, attached hereto as Exhibit 2 and by this reference made part hereof for all purposes.** ***Such instrument*** **of assumption** ***shall provide*** **(subject to such exceptions as are set forth herein and shall be set forth in such instrument)** ***that Minerals shall assume and indemnify Silver Bell against and hold it harmless from any and all obligations in connection with the Assets arising subsequent to the time of closing.*** Silver Bell shall remain liable for all

> obligations not listed in Exhibit 2 or otherwise assumed by Minerals, including but not limited to obligations to shareholders, including dissenting shareholders.

Ex. S-5, at § 2.02 (emphasis added). The importance of this language should not be understated. The best exculpation clause Minerals could negotiate is subject to two clear and precise conditions: (1) Minerals' assumption of liabilities and obligations listed in Exhibit 2; and (2) Minerals' ***execution and delivery*** of an ***instrument*** through which "Minerals ***shall*** assume and indemnify Silver Bell against and hold it harmless from ***any and all*** obligations in connection with the Assets ***arising subsequent*** to the time of closing." *Id.* (emphasis added).

This language is neither difficult to understand nor to apply. *Execution* and *delivery* of an *instrument* represent terms of art with precise meanings. Yet Defendants have never been able to produce: (a) any version, draft or otherwise, of Exhibit 2, or (b) a final or executed copy of an "instrument" as required by and described in Section 2.02 of the Reorganization Agreement.

Far from being excused from its own contract, Unocal bears the burden of establishing compliance: "[the party] who seeks to enforce a contract must show that he has complied with the conditions and agreements of the contract on his part to be performed." Pry Corp. v. Leach, 177 Cal. App. 2d 632, 639, 2 Cal. Rptr. 425, 429 (Cal. App., 2nd Dist. 1960). Defendants have failed to carry their burden to show compliance with the conditions of their own contract and are not entitled to rely on the general liability disclaimer in section 2.02, as a matter of law.[3]

But even if Defendants were somehow excused from their failure to satisfy the terms of their own contract, the exculpatory language of Section 2.02 does not provide a defense to this action. To the contrary, section 2.02 actually establishes that the very claims asserted here were

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[3]"It is well recognized that a failure to comply with conditions precedent not only will prevent an action by the defaulting party to enforce the contract, but also will sustain an action by the other party for a breach thereof." Bennitt v. Gaumont-British Picture Corp., 39 Cal. App. 2d 461, 103 P.2d 447 (Cal. App., 2nd Dist 1940).

assumed by Defendants. Even though the *instrument* was never executed and delivered, the language of the executed Reorganization Agreement is itself sufficient. That language, standing alone, establishes Defendants' clear intent to assume *any and all* obligations (1) in connection with the Assets; and (2) arising subsequent to the closing.[4] Both elements are satisfied here.

(a) <u>The Site constitutes an obligation in connection with the assets.</u> The tailings Site is physically, logically, and legally connected with the Assets conveyed to Minerals, clearly within the contemplation of the parties to the Reorganization Agreement prior to the closing. The Assets conveyed included the Silver Bell Mill property, located across the street from the tailings Site. Stipulations 6, 37. These properties were physically connected through a slurry line, which was used to slurry tailings materials from the Silver Bell Mill to the Site for disposal. Scott Smith Depo. at 8-9, 22, 40-47, 62 (and Depo. Ex. 71).

Moreover, as of the closing date, the Silver Bell Mill, which was one of the conveyed assets, and the tailings Site were legally connected through environmental permitting. In 1975, Silver Bell acquired a permit, authorized through the federal Clean Water Act, National Pollution Discharge Elimination System ("NPDES"), authorizing (among other things) water discharges from the tailings pond on the Site (CO-0000108) (the "Permit") (Pl. Ex. 105). Pursuant to the renewal Permit in effect as of the closing date, Silver Bell was obligated to: (a) stabilize and reclaim the tailings pond; and (b) submit a report, which was to include an analysis of the

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[4]This language is entirely consistent with the un-executed draft of Exhibit 1 (which may have been intended to constitute the required instrument). *See* (Un-executed Draft Exhibit 1 to the 1978 Reorganization Agreement—Assignment and Conveyance of Mineral Properties at p. 5 (providing that Silver Bell agrees to "remain liable" for obligations "*accruing*" and "*arising*" prior to the closing date, while providing that Minerals "covenants and agrees to assume any and all of Silver Bell's obligations relating to the subject rights and properties *accruing*" and "*arising*" subsequent to the closing date.). While PacifiCorp does not argue that an un-executed draft has any force of law, it makes this note only to show the Court that the instrument apparently contemplated by the parties is entirely consistent with PacifiCorp's argument.

feasibility of total elimination of tailings seepages, and to address the construction of permanent runoff diversion structures, the elimination of tailings pools, and revegetation and/or permanent stabilization of the tailings surfaces. (Pl. Ex. 111, at 13). On December, 31, 1977, Silver Bell submitted a report as required under the Permit, outlining future work that would be done on the Site. Silver Bell claimed that it would commence initial work on the project in May or June of 1978, completing the work by October of 1978. (Pl. Ex. 135). This work was never performed.

After acquiring the Mill Site, Union allowed the underlying unpatented claim to lapse as of year end 1979. Stipulations, 38. On March 10, 1980, Molycorp, another wholly-owned subsidiary of Unocal, recorded a new Notice of Location for the Silver Bell Mill Site. Stipulations, 39. On the same date, Molycorp applied for the transfer of Silver Bell's NPDES Permit. In that application for transfer, Molycorp stated that as the "owner" of the "flotation mill and tailings pond," that it reviewed Silver Bell's NPDES Permit, and ***"accept its terms in full."*** Stipulations, 58; Ex. S-73 (emphasis added).

In addition to the physical and legal connection between the Mill Site and the tailings Site, the tailings Site was inspected by Defendants prior to the closing date by Mr. Glenn Zinn and two other employees, "as to their potential for mineral reserves, salvage value, environmental liability, and safety." Pl. Ex. 208 at 1. Regarding the tailings from the Silver Bell mill that were placed on the Site, the September, 1978 memo states (at 4):

> Silver Bell employees indicated that an agreement has been made with the power company under which Silver Bell Industries would stabilize the tailings area. It was felt that should Minerals Exploration Company acquire the property it would then become liable for stabilization of the tails.

Over one month before the closing, Zinn prepared another Memorandum regarding the Site for review by senior Minerals and Unocal officials, including Mr. W.R. Moran. This Memorandum states in part:

> The first item to be considered by Minerals Exploration Company is our responsibility for stabilization of the tailings from the Silverbell [sic] Mine. It is my understanding, based on conversations with Mel Carlson and Les Smith (Silverbell [sic] employees) that Silverbell [sic] Industries had an agreement with Colorado Utah Power Company to place tailings on the power companys [sic] land below the mine. Should Minerals Exploration Company acquire Silverbell, [sic] we then may be responsible for stabilization of the tails. Typical of old mining camps, the tailings are in a deteriorated condition and need attention. In addition, the tails are at the headwaters of the South Fork of the San Miguel River where the Howard Fork and the Lake Fork join. In my opinion, we should be prepared to take corrective action on the tailings if we are legally liable, and before we are required or ordered to do so.

Pl. Ex. 211 at 1. Regarding this Memorandum, Zinn testified that he personally inspected the Site prior to the closing and that "the tailings were there and they were old and they were deteriorated or messed up." Zinn Depo. at 86-89. With respect to his comment that the tailings "need attention," Zinn explained:

> Need attention. They were deteriorated and need attention, somebody needs to look at them and do what's necessary to stabilize them or to clean them up or make them well, make them good. I think there are other documents in this. I talk about liabilities of the company. They could have been or were a liability in my mind, I suspected.

Zinn Depo. at 89:6-18. With respect to the comment that the tailings impoundment was located near rivers and streams, Zinn stated: "if there's three streams, rivers or whatever joining that critical area, you have a lot of water happening there. Whenever you have three live water sources joined in the spring, you're going to get a lot of water and interesting things happen when you get a lot of water, and they're not all good." Zinn Depo. at 90:18-25. He later stated that "if you have a responsibility for tailings and they breach or spill into the river, there's a lot of things--not long-lasting, but there's a lot of things that happen to the ecosystem, and I would not want to see that happen anyplace." Zinn Depo. at 93:8-13.

With respect to Zinn's comment in the memo suggesting taking action before Unocal is ordered or required to do so, Zinn stated: "I suspect I mean state, local or federal governments.

I would assume that's what I meant. This was the time when those type of things, wilderness conservation, were going forward and things like that were happening." Zinn Depo. at 91:20-24.

Zinn's opinions constitute admissions.[5] Even more important, these statements show that the environmental condition of the Site generally, and *future* legal liabilities arising therefrom in particular, were clearly within Defendant's knowledge and contemplation *prior* to the closing.

(b) PacifiCorp's indemnity and CERCLA claims arose after the closing date. The language of the agreement includes a temporal condition, covering obligations "arising subsequent" to the closing date. The concept of claims "arising" before or after a fixed date constitutes a well-defined legal term of art, consistent with the ordinary meaning of the term *arise*. *See* BLACK'S LAW DICTIONARY 737 (7th ed. 1999) (*arise* means "to result (from)"; *accrue* means "to come into existence as an enforceable claim or right; ***to arise***") (emphasis added). As a matter of law, a claim "arises" or accrues when all of the elements necessary to bring an action are present. *See* Hamilton v. Asbestos Corp., 998 P.2d 403, 413 (Cal. 2000) ("A cause of action accrues upon the occurrence of the last element essential to the cause of action; that is when the plaintiff is first entitled to sue.") (internal citations omitted).

PacifiCorp's original right to contractual indemnity is based upon a 1970 Agreement between Silver Bell and PacifiCorp's corporate predecessor, which provides in part that Silver Bell would "hold Power Company harmless from any claim or liability arising in any manner from [Silver Bell's] use of Power Company land under this agreement." (Ex. S-2). "Hold harmless" is a legal term of art creating an indemnity agreement between two parties. *See* BLACK'S LAW

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[5]*See* Ladjeverdian, 431 F. Supp. at 840 (stating that admissions of liability on the part of officers or other spokesmen of the successor corporation should be considered in determining whether an express or implied assumption of liability exists); N. Storonske Cooperage Co., Inc., 174 B.R. at 389 (same); Fletcher Cyclopedia Corporations, § 7124 at 296-97 (1999) (same).

DICTIONARY 737 (7th ed. 1999) (*hold harmless* means "[t]o absolve (another party) from any responsibility for damages or other liability arising from the transaction; INDEMNIFY."); Alzado v. Blinder, Robinson & Co, Inc., 752 P.2d 544, 553 (Colo. 1988) ("An agreement to indemnify another is an agreement by one person to hold another person harmless from such loss or damage as may be specified in the agreement.").

An indemnification claim arises or accrues when the liability for the claim has become fixed. According to the "virtually universal rule . . . a claim for indemnity does not accrue, and therefore the limitations period does not begin to run, until the indemnitee's liability is fixed--*i.e.*, when he pays the underlying claim, or a judgment on it." Duncan v. Schuster-Graham Homes, Inc., 578 P.2d 637, 641 (Colo. 1978).[6] "Since an indemnity action is separate and distinct from an injured person's claim for relief, it remains inchoate until judgment becomes final or the claim is settled. Only then can the indemnitee be said to have a claim for relief, and therefor, it is at that point that the statute of limitations begins to run." *Id.* *See also* RESTATEMENT (THIRD) OF TORTS, APPORTIONMENT OF LIABILITY § 22 cmt. d ("The indemnitee cannot recover indemnity until he is obligated to the plaintiff, and he cannot even sue until he is sued.").

Thus, PacifiCorp's contractual indemnity claim first arose or accrued, at the earliest, in 1998 and 1999, when third parties, such as the U. S. Forest Service, EPA, CDPHE, and the current property owners, began investigating the Site, identified PacifiCorp as a PRP, and began to demand that PacifiCorp take action.

Likewise, PacifiCorp's CERCLA claim arose or accrued, at the earliest, when PacifiCorp began to incur recoverable response costs, starting in late 1998, with the bulk of its recoverable

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[6]While the precise holding in the Duncan case was later superceded in part by statute, Colo. Rev. Stat. § 13-80-104, this statutory revision is inapposite to the issue of when an indemnity claim arises or accrues under Colorado law.

response costs being incurred in 1999 and 2000. *See* Sun Co. v. Browning-Ferris Inc., 124 F.3d 1187, 1188 (10th Cir. 1997) (holding that a CERCLA contribution claim arises when the plaintiff pays more than its fair share of remediation costs), *cert. denied*, 522 U.S. 1113 (1998). CERCLA was not even enacted until December, 1980, two years after the closing date. At the same time, federal courts, including the Tenth Circuit, routinely enforce pre-CERCLA private contracts that relate either specifically to environmental-type liabilities or all liabilities. *See* United States v. Hardage, 985 F.2d 1427, 1433-34 (10th Cir. 1993) (enforcing pre-CERCLA indemnity contract language as sufficiently broad under Oklahoma law to indemnify contractor for own improper disposal of hazardous substances).[7] Here, Defendants' contract, covering without qualification "all obligations" arising after 1978, should be enforced.

c. **Assumption of NPDES permit.** Molycorp's voluntary acceptance of Silver Bell's NPDES permit constitutes an independent basis, apart from Section 2.02 of the Reorganization Agreement, to find an express and implied agreement to assume the liability at issue in this action. As explained above (*supra* at 8-9), as of the closing date, Silver Bell had defaulted in its legal obligation to conduct stabilization and reclamation work at the Site pursuant to its NPDES permit. In March 1980, Molycorp voluntarily filed a new Notice of Location of Mill Site for the Silver Bell Mill and also voluntarily applied for the transfer of Silver Bell's NPDES Permit. In the Application, Molycorp admits that it is the "owner" of the "flotation mill and tailings pond," that it reviewed Silver Bell's NPDES Permit, and ***"accept its terms in full."*** Stipulations, 58; Ex. S-73 (emphasis added).

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[7]*Accord, e.g.*, White Consol. Indus., Inc. v. Westinghouse Electric Corp., 179 F.3d 403, 409-11 (6th Cir. 1999) (holding a pre-CERCLA assumption of "all obligations and liabilities of the Business" transferred environmental liability); Beazer East, Inc. v. Mead Corp., 34 F.3d 206, 211 (3rd Cir. 1994) (holding that "a pre-CERCLA agreement can require an indemnitor to hold the indemnitee harmless from CERCLA liability."), *cert. denied*, 514 U.S. 1065 (1995).

While Molycorp had no direct relationship with Silver Bell and merely succeeded to the Silver Bell Mill asset, it is clear from the evidence that Molycorp was operated as a division of Union Oil and not as an independent company, through interlocking officers, directors, employees, and agents. As a result, the fact that Unocal transferred this particular asset, which it knew was associated with a potential liability, into a different subsidiary should not alter the conclusion that the NPDES permit was in substance assumed by Unocal. *See* In re Acushnet River & New Bedford Harbor, 712 F. Supp. 1010, 1016-17 (D. Mass. 1989) (rejecting defense arguments that *de facto* merger did not occur because consideration was stock of parent company and assets were transferred to wholly-owned subsidiary). Moreover, the fact that Union Oil later "got rid" of this Silver Bell asset (to quote Glen Zinn) and transferred the NPDES permit to the new owner does not change the fact that Silver Bell's defaulted legal duty to conduct reclamatio . and stabilization work on the Site was voluntarily assumed by Unocal. Defendants should be held to their voluntarily-assumed obligations and duties.

3. The Silver Bell Transaction Constitutes a *De Facto* Merger.

A *de facto* merger occurs when one corporation is absorbed by another existing company, but without compliance with the statutory requirements for a *de jure* merger. *See generally*, Fletcher § 7124.20 at 301-02. Indicia of a *de facto* merger include a number of interrelated factors, including primarily whether the consideration paid for the assets was the seller's stock, thereby resulting in a continuation of shareholders. Other factors include indicia of the continuation of the seller's business (including the assumption of liabilities necessary to continue such business and the retention of employees) and the seller's cessation of business and dissolution. North Shore Gas Co. v. Salomon Inc., 152 F.3d 642, 652 (7th Cir. 1998); Arnold Graphics Indus., Inc. v. Independent Agent Center, 775 F.2d 38, 42 (7th Cir. 1985). These

factors have been accepted and applied by Colorado and California cases. *See* Ruiz v. ExCello Corp., 653 P.2d 415, 416 (Colo. Ct. App. 1982); Johnston v. Amsted Indus. Inc., 830 P.2d 1141, 1146-47 (Colo. App. 1992) (declining to expand the traditional four exceptions as defined in Ruiz by applying a "continuity of enterprise" exception); Marks v. Minnesota Mining & Mfg. Co., 187 Cal. App. 3d 1429, 1435 (Cal. App. 1986) (stating that the *de facto* merger "exception applies where the assets of one corporation are transferred without consideration which can be made available to satisfy claims or 'where the consideration consists wholly of shares of the purchaser's stock which are promptly distributed to the seller's shareholders in conjunction with the seller's liquidation.'") (internal citations omitted).

While all material factors recognized under this exception are present in this case, "[i]t is not necessary to satisfy all of these factors to find a merger; rather, these factors are only indicators that tend to show a *de facto* merger." Diaz v. South Bend Lathe Inc., 707 F. Supp. 97, 100-101 (E.D. N.Y. 1989); Acushnet River, 712 F. Supp. at 1015 ("While all of these factors favor the finding of a *de facto* merger, 'no one of these factors is either necessary or sufficient to establish a de facto merger.'"). Applying these factors here, it is clear that the Silver Bell transaction constitutes a classic *de facto* merger.

(a) The Silver Bell Transaction Was a *Reorganization.* As a starting point, it is important to recognize that Unocal and Silver Bell intentionally structured the transaction, both in form and in substance, as a *reorganization*, not as an asset sale. In **form**, the reorganization structure was intended to satisfy the provisions of Section 368(a)(1)(C) of the Internal Revenue Code, rendering the transaction tax-free to both Silver Bell's shareholders and to Unocal. In **substance**, the transaction was a reorganization because it resulted in a pooling and merger of two previously separate companies' economic interests.

This merger of economic interests was accomplished because the sole consideration for Silver Bell's assets was Unocal common stock (combined with the assumption of specified existing and future liabilities). On December 4, 1978, Unocal and Silver Bell were separate entities, with separate assets and shareholders. On December 5, 1978, title to all of Silver Bell's valuable assets was transferred to Minerals, and Silver Bell's shareholders became Union shareholders. Even the inherent tax attributes of Silver Bell, including its net operating losses which are not typically transferrable in an asset sale, became available to Unocal. Within a few months, Silver Bell filed a notice of intent to dissolve. Within a year, Silver Bell officially dissolved, resulting in one surviving corporation. Although articles of merger were not filed, the transaction was, in form and substance, a merger, rather than a mere asset sale. As the Seventh Circuit noted, "**when an asset purchase is more properly described as a reorganization, the 'purchaser' will find it difficult to escape liability, because one or more of the successor liability exceptions will suggest that the seller has survived the sale.**" North Shore, 152 F.3d at 651 (emphasis added).[8]

As anticipated by the North Shore case, a tax-free reorganization falls squarely within the purview of *de facto* merger doctrine. Here, the Reorganization Agreement specifically recites that Minerals was to acquire all of the assets of Silver Bell "as a plan of reorganization within the purview of Section 368(a)(1)(C) of the Internal Revenue Code." Section 368(a) designates certain corporate "reorganizations" as non-taxable events, including, among others, statutory mergers or consolidations, acquisitions of stock in a company in exchange for stock in the

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[8]The court further explained that "[t]he successor liability doctrine serves the purpose of identifying transactions where the essential and relevant characteristics of the selling corporation survive the asset sale, and it is therefore equitable to charge the purchaser with the seller's liabilities. This overall purpose has particular import for an asset sale." *Id.*

acquiring company, acquisitions of "substantially all" of the assets of a company in return for stock in the acquiring company, and mere changes in identity, form or place of organization of companies. *See* 26 U.S.C. § 368(a). Section 368(a), by its terms, is completely inconsistent with a mere asset acquisition: "The application of the term *reorganization* is to be strictly limited to the specific transactions set forth in section 368(a). The term does not embrace the mere purchase by one corporation of the properties of another corporation." 26 C.F.R. § 1.368-2.

With this background, it should come as no surprise that all courts reviewing 368(a)(1)(C) reorganizations have uniformly held that tax-free, stock-for-assets exchanges constitute *de facto* mergers. Most analogous to our action is Acushnet River, 712 F. Supp. 1010. There, the seller's manufacturing practices resulted in the release of PCBs into the Acushnet River, long before the passage of CERCLA. In 1978, Bellville Industries ("Bellville") acquired seller's assets in return for shares in Belville's parent corporation, RTE, all pursuant to an "Agreement and Plan of Reorganization." *Id.* at 1012. The reorganization was a stock-for-assets exchange under Section 368(a)(1)(C). Bellville ceased using PCBs in the manufacturing process, *id.* at 1016 n.8, and disclaimed by contract any liability arising from Aerovox's use or disposal of PCBs. *Id.* at 1012.

Finding a *de facto* merger, the court explained that "[t]he purpose of [section 368(a)(1)(c)] is to permit changes in corporate structure that are primarily changes in form similar to statutory mergers." *Id.* at 1018 (interior quotations omitted). Continuing, the court reasoned that because 368(a)(1)(c) was a "bargained for precondition of the sale that the financial world view[s] . . . as a mere 'pooling of interests,' and that the Internal Revenue Service view[s] . . . as a simple change in corporate form" the court held that it would "not enforce Aerovox's attempt to separate the burdens from the benefits of acquiring Belleville" and that it would therefore "be

manifest injustice under these circumstances to permit Aerovox to contract away Belleville's liability for PCB contamination." *Id.* at 1019.

Similar cases were published prior to the closing date of the Silver Bell transaction. Notably, in Cinocca v. Baxter Laboratories, Inc., 400 F. Supp. 527, 531 (E.D. Okla. 1975), the court explained:

> it is difficult to understand how the transaction delineated by the Agreement can be a mere sale of assets for purposes of a transfer of liability for obligations and at the same time a tax exempt exchange under 26 U.S.C. § 368(a) which cannot be a mere purchase of assets. Also, transactions wherein a corporation acquires substantially all of the assets of another corporation solely in exchange for shares of stock in the acquiring corporation are especially suspect as being mergers and not sales.

Likewise, in In re Master Key Antitrust Litigation, 1976 U.S. Dist. LEXIS 13005, 1977-1 Trade Cas. (CCH) P61,456 (D. Conn. 1976) (copy attached hereto as Exhibit B), held that such a stock for assets reorganization "should be treated as the substantial equivalent of a merger for imposing liability under the Sherman Act." The court explained that the because "[i]t was a tax free exchange of stock for assets, a reorganization under Sec. 368(a)(1)(C), . . . the regulations make clear that such a reorganization cannot be an ordinary sale of assets." *Id.* Thus, the court concluded that "where the transaction resembles both in its outward reality and technical tax aspects a merger" the acquiring company should "be held liable for any antitrust violations of the acquired company." *Id.*

Finally, California courts have also concluded that tax-free reorganizations constitute *de facto* mergers. *See* Marks v. Minnesota Mining and Manufacturing, 187 Cal. App. 3d 1429, 1436-37 (Cal. App. 1st 1986) (finding a *de facto* merger in a stock-for-assets, tax-free reorganization under Section 368(a)(1)(C) and noting that "the result of the transaction was exactly that which would have occurred had a statutory merger taken place.").

Consistent with Congress' view that a tax-free, stock-for-assets transactions are in the form of mergers, Congress permits the purchasing company in such a case to succeed to the selling company's inherent tax attributes, including net operating losses ("NOLs") and the seller's tax basis in the assets. 26 U.S.C. § 381. Ordinarily, "[t]ax attributes cannot be sold or given away; only the company that generated the losses may use them." Maytag Corp. v. Navistar Int'l Trans. Corp., 219 F.3d 587, 590 (7th Cir. 2000). Yet, as a matter of substantive policy, Congress permits a purchasing corporation to succeed to the sellers NOLs and tax basis because a **§ 368 transaction is in the form of a merger**. *See* House Report on 1954 Internal Revenue Code, H.R. Rep. No. 1337, 83d Cong., 2d Sess. 41 (1954) (noting that the Code allows one entity to succeed to the deduction of another only in specific instances (including reorganizations under section 368(a)(1)(A) and (a)(1)(C)) where there has been the "economic integration of two or more separate businesses into a unified business enterprise"). The preservation of tax attributes is "based upon economic realities rather than upon such artificialities as the legal form of the reorganization." Bittker & Eustices, par. 14.20[1]. (attached hereto as Exhibit C).

Here, the tax-free nature of the reorganization was a bargained-for condition. (Pl. Ex. 137 at 2 ("Silver Bell will only sell out for shares on a tax-free basis.")). Unocal acknowledges that it acquired the right to claim Silver Bell's NOLs or tax loss carry-forwards. Stipulations, 17. Unocal also succeeded to Silver Bell's tax basis in the assets. (Pl. Ex.243). The Silver Bell transaction was far more than a mere asset purchase. The substance of the Silver Bell transaction, economically, practically, and from a tax standpoint, was that of a merger.

In sum, the continuation of Silver Bell's shareholders into Unocal is the most important single element for establishing a *de facto* merger. *E.g.*, Johnston v. Amsted Indus. Inc., 830 P.2d 1141, 1146-47 (Colo. App. 1992); Allied Corp. v. Acme Solvents Reclaiming, Inc., 812 F. Supp.

124, 128 (N.D. Ill. 1993). Because this element is typically satisfied when the predecessor shareholders are compensated with stock of the successor, N. Storonske Cooperage Co., 174 B.R. at 384, it was clearly satisfied here because the continuation of Silver Bell's shareholders into Unocal was an integral, bargained-for element of the Silver Bell transaction.[9]

(b) Continuation of Silver Bell's Business. In addition to the foregoing, other important indicia of a *de facto* merger are present here. For example, Silver Bell immediately ceased conducting business, leaving only one company.[10] With Silver Bell out of business, it is clear that Unocal continued to operate Silver Bell's business, such as it was, in substantially the same manner as Silver Bell had done previously. At the time of the transaction, Silver Bell, with four employees (its President, an office secretary, and two employees in Ophir) was not actively operating any of its mining interests, but was holding them and conducting periodic assessment work as required by law. Ex. S-4 at 47. Silver Bell's primary asset consisted of its 35 percent, non-operating interest in certain uranium mining claims located in Sweetwater County, Wyoming. Stipulations, 31-33. Before the closing date, Defendant Minerals owned the remaining 65 percent interest and was the operating partner in the parties Operating Agreement. Stipulations, 33; Ex. S-4 at 3, 50. Through the transaction, Minerals acquired Silver Bell's 35 percent interest and continued to develop and operate the Sweetwater mining project in the same manner it had been developed and operated previously. Stipulations, 33-36. Having bought out

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[9]The joint Registration Statement explains: "Silver Bell shareholders, who have never received a dividend, may be expected to benefit from Union's policy of payment of dividends on a regular basis . . . ." Ex. S-4 at 6.

[10]Silver Bell's Notice of Intent to Dissolve, filed on February 16, 1979, states that "[a] resolution to dissolve the corporation was adopted by the shareholders of the corporation on November 27, 1978." Pl. Ex.246. This vote occurred several weeks before the December 15th closing date. Silver Bell was formally dissolved on November 27, 1979. Ex. S-17.

its partner's interest in the valuable Sweetwater uranium mining project and operated the same for many years, Minerals can hardly argue that it did not continue Silver Bell's business, such as it was.

It is equally undisputed that Silver Bell's property holdings in and near Ophir, Colorado, continued to be managed in the same way after the closing as before. Unocal, directly and through its subsidiaries Molycorp and Minerals, continued to manage those properties as Silver Bell did before by conducting necessary assessment work beginning in the summer of 1978 and continuing through November, 1980. Stipulations, 37-40, 41-44; Zinn Depo. at 29-35, 39-49; Smith Depo. at 8-13, 109-110. Molycorp filed *new* mill site claims in the vicinity of the former Silver Bell and Butler mill sites (contiguous to the Site). Molycorp and Minerals also filed a number of Notices of Intent to Hold Mill Sites in which they express an intent to "continue" to hold the mill sites for mining purposes. (Ex. S-30; S-35; S-39). Defendants' continuation of Silver Bell's Ophir properties is perhaps best evidenced by Molycorp's assumption of Silver Bell's NPDES Permit pertaining to the very Site in question. *See*, *supra*, at 8-9.

It is also undisputed that Defendants assumed certain liabilities necessary for the continued operation of Silver Bell's business and operations, including: (a) Silver Bell's $12 million liability to Minerals for accrued operating expenses at the Sweetwater project; (b) Silver Bell's independent legal duty to acquire the Mancos Corporation; (c) a $50,000 promissory note owed by Silver Bell to the Mancos Corporation; (d) the outstanding lease obligations to Baumgartner, Belisle, and Pullman; and (e) the assumption of Silver Bell's NPDES permit relating to the mill, tailings pond, and other properties, as well as other liabilities. Stipulations, 15, 41-45, 48, Ex. S-4 at 1, 3, 50, 56). Defendants had no reason to accept these liabilities other than as necessary to continue Silver Bell's business.

In addition to retaining the Ophir properties for nearly two years, Unocal also continued to employ Mr. Les Smith, former Silver Bell property manager and caretaker in Ophir, for nearly two years, as a Unocal employee responsible for managing Unocal's new interests in and around Ophir. Stipulations, 29; Ex. S-23. Unocal also employed Scott Smith, who had previously performed assessment work for Silver Bell, to perform the same kinds of work for Unocal. Smith Depo. at 8-13, 109-110. PacifiCorp also notes that Minerals also entered into a business transaction with Mr. Gene Sanders, longtime Silver Bell president, after the closing, through which Mr. Sanders acquired some of the assets Minerals acquired from the Mancos Corporation. Stipulations, 48-52. Even after selling Sanders the real property, Minerals retained a royalty interest. *Id.*

PacifiCorp anticipates that Unocal may try to argue that it did not continue Silver Bell's Ophir properties because it elected to "get rid" of those interests in November 1980 for a mere $200,000. This argument is a red herring. There is no requirement in successor liability law that the seller's business be operated or continued for a fixed period of time, just as there is no requirement that any business retain or operate specific assets. Silver Bell, as well as Unocal, were free, during their respective periods of ownership, to close and sell off assets and lines of business. *See* Maytag, 219 F.3d at 590 ("Corporations change lines of business frequently without liquidating."). Even so, Defendants continued to own and manage these Silver Bell assets for nearly two years from the closing date. Sufficient time passed to satisfy the continuation requirement of *de facto* merger doctrine.

But even more important, one of Defendant's primary purposes in selling off their Ophir properties was to *avoid* the precise environmental liabilities at issue here. In response to Unocal's

request for a cost estimate of environmental liabilities associated with the Ophir properties, Unocal's environmental manager stated:

> **The area of immediate concern is the mill tailings**. I estimate initial reclamation will be approximately $100,000 and annual maintenance will be about $5,000 per year for two to five years until the ponds are stable and self-sustaining.

Pl. Ex. 239 (emphasis added). Based on Mr. Kurai's estimation of Unocal's liability costs, H.M. Rainey recommended to Unocal that the Ophir, Colorado properties be sold in light of the "potentially onerous environmental liability attendant to the company's maintaining its interest in the properties," and that "[g]iven the likelihood that the company could be held responsible for a costly reclamation program." *Id.* *See* Pl. Ex. 227 (stating that the Ophir, Colorado property should be relinquished as soon as possible due to "expensive environmental commitments"); Zinn Depo at 119 (stating that such "environmental commitments" included the Site)). Therefore, Unocal should not be permitted to hide behind their *post hoc* decision to get rid of the Ophir properties as a way of avoiding successor liabilities that had by then already vested.

While no Silver Bell officers or directors became officers or directors of Unocal, this element is not required for *de facto* merger. Moreover, the Silver Bell shareholders as a group came to own but about one percent of Unocal's outstanding shares. Stipulations, 15, 18. Under corporate norms, it is not surprising that shareholders constituting only one percent ownership could not elect their former officers and directors as such in the new company. This factor is hardly controlling, and under the circumstances here, is likewise unpersuasive. To argue that this factor should be determinative is to say that a large company can never be liable under *de facto* merger theory when it acquires a smaller company.

In conclusion, a corporation cannot simply contract away its liabilities by placing a general liability disclaimer in a purchase agreement. In Marks, 187 Cal. App. 3d at 1437, the court

rejected defendant's argument that it would be unfair to negate a general disclaimer of liability contained in the purchase agreement because "the disclaimer would have had no effect in a statutory merger, where, as here, all of the indicia of a *de facto* merger are present, the same result is entirely appropriate."

4. Defendant's Litigation Position Amounts to a Constructive Fraud.

Defendants appear to argue that all of Silver Bell's liabilities for the Site fall into the category of unassumed liabilities that somehow remained in the Silver Bell shell and somehow disappeared. If accepted, Defendants' argument, under the facts and circumstances of this case, establishes the applicability of the final basis for successor liability, involving fraud.

Under the fraud exception, "if the transfer constitutes, either in fact or as a matter of law, a fraud upon the creditors of the other corporation, the creditors defrauded by the transfer may, in equity, follow the property into the hands of the new corporation, and subject it to the satisfaction of their claims, or hold the new corporation liable to the extent of its value." 15 Fletcher, Cyclopedia Corporations, § 7125 at 305 (1999). "A purchasing corporation which takes with notice of the rights of a third person under a contract with the selling company is liable under the contract for claims against the selling company." *Id.* § 7126 at 309. This rule is particularly relevant in situations where, as here, the selling corporation is divested of all its valuable assets, leaving it insolvent, with the purchaser's knowledge that the seller will have insufficient assets to meet its obligations. *Id.* at 310-11. *See* Colorado Springs Rapid Transit Ry Co. v. Albrecht, 123 P. 957, 960 (Colo. App. 1912) (stating in *dicta* that a successor corporation may assume responsibility for the liabilities of the transferor if the transfer was done in fraud, actual or constructive, as to the creditor of the original corporation).

Here, prior to the closing, Silver Bell knew it had a contractual duty to PacifiCorp's predecessor to (i) stabilize the tailings pond; and (ii) to hold the power company harmless from third-party claims. Ex. S-2; Pl. Ex. 208 at 1; Pl. Ex. 211 at 1. Silver Bell also knew that it had a legal duty to reclaim the Site, pursuant to its NPDES Permit, and that it had filed a detailed report to the CDPHE representing that all work would be completed by October, 1978. Pl. Ex. 111 at 13; Pl. Ex. 135. Like Zinn, Silver Bell also must have known that the tailings impoundment was not in good condition and that environmental problems would eventually result from inaction.

Likewise, prior to the closing, Unocal knew that Silver Bell had disposed of tailings on the Site; that the Site was located on land owned by PacifiCorp's predecessor; that the tailings were "deteriorated" and "messed up," they needed timely "attention," in large part because the Site was located near rivers and streams. Unocal also knew that inaction would eventually result in an ecological disaster and that future liabilities resulting from inaction were likely. *Supra* at 9-11.

Despite the high degree of knowledge possessed by both Unocal and Silver Bell, both parties jointly represented to the SEC in their S-14 Registration Statement as follows:

> Aside from the described obligations and the obligations which will arise in connection with the completion of the sale-of-assets transaction described herein (See EXPENSES on page 16 hereof), ***Silver Bell has no known obligations.*** **Silver Bell will pay all such current obligations prior to or in the course of liquidation.**

Ex. S-4 at 1 (emphasis added). The facts of record establish that this joint representation is materially false and misleading. Had Silver Bell's documented liabilities relating to the Site been disclosed to the SEC and to the public shareholders of both companies, it is clear that the transaction could not have been completed without taking care of the Site. Yet nothing was done. The SEC, the public, and shareholders were misled. Conduct amounting to collusion and fraud, or at a minimum, constructive fraud, certainly as to PacifiCorp's predecessor, has been established. The law does not permit Silver Bell and Unocal to simply make Silver Bell's known

Site liabilities disappear by purporting to leave them in the Silver Bell corporate shell after stripping off all of its valuable assets, including inherent tax attributes.

PacifiCorp anticipates that Unocal will also argue that the adequacy of the consideration paid for the Silver Bell assets negates any inference of fraud. This argument is inapposite. The payment of adequate consideration does not "automatically purge" a transaction of fraud. Eagle Pacific Ins. Co. v. Christensen Motor Yacht Corp., 959 P.2d 1052, 1058 (Wash. 1998). Inadequate consideration is merely a sufficient, rather than a necessary, element of fraud. *Id.* at 1056. "[N]umerous factors may be relevant when determining good faith." *Id.* at 1059.

Here, the consideration in question, Unocal common stock, was paid directly to Silver Bell's shareholders through an independent transfer agent. Stipulations, 20. Silver Bell did not receive possession or ownership of the Unocal stock except, apparently, a limited amount of money necessary to pay certain specified costs related to the transaction. Ex. S-4 at 1, 16.

In Lamb v. Leroy Corp., 454 P.2d 24, 27 (Nev. 1969), the court stated that "when the purchasing company issues its stock in the first instance to the stockholders of the selling corporation there exists a solid basis for finding creditor liability." Continuing, the court explained that a purchasing corporation is bound to know that the property of the selling corporation ought not to be distributed among the stockholders to the exclusion of creditors, and if it does so, it is a party to a diversion of funds and holds the funds subject to the payment of the debts. *Id.* Under this scenario, "constructive fraud may be appropriately asserted against the purchasing company, at least where no other provision has been made for the satisfaction of creditors." *Id.* *See* Pierce v. U.S., 255 U.S. 398, 402 (1921) (a "corporation cannot disable itself from responding" to liability for its acts by distributing its assets and "leaving remediless those having valid claims").

Finally, PacifiCorp contends that it is entitled to a specific ruling of fraud in this case for purposes of Phase II. A finding of fraud will be directly relevant in an equitable allocation proceeding of PacifiCorp's response costs. Fraud is also relevant to respond to Unocal's defenses based on delay and limitations. Both issues remain to be considered in Phase II.

III. CONCLUSION

Thus, for the foregoing reasons, Unocal is the legal successor to Silver Bell. PacifiCorp should therefore prevail on all issues pertaining to Phase I.

Dated: January 22, 2001.

Respectfully submitted,

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COUNSEL FOR PLAINTIFF
PACIFICORP

CERTIFICATE OF HAND-DELIVERY

I hereby certify that a true and correct copy of the foregoing **PLAINTIFF'S TRIAL BRIEF AS TO SUCCESSOR LIABILITY (PHASE I) ISSUES** was served by hand-delivery, this 22nd day of January, 2001, to the following:

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Sharon Holday

A

2000 U.S. Dist. LEXIS 12571 printed in FULL format.

THE WASTE, INC. COST RECOVERY GROUP et al., Plaintiffs, v. ALLIS CHALMERS CORP. et al., Defendants. THE WASTE, INC. COST RECOVERY GROUP et al., Plaintiffs, v. ALLIED SIGNAL, INC. et al., Defendants.
Cause No. 3:98 CV 0341 AS, Cause No. 3:98 CV 0342 AS
UNITED STATES DISTRICT COURT FOR THE NORTHERN DISTRICT OF INDIANA, SOUTH BEND DIVISION
2000 U.S. Dist. LEXIS 12571

July 10, 2000, Decided

DISPOSITION: *1 Plaintiffs Motion for Partial Summary Judgment of Liability against Defendant Waste Management of Indiana, L.L.C., GRANTED and Defendant's Motion for Partial Summary Judgment DENIED.
CASE SUMMARY

PROCEDURAL POSTURE: In an action under the Comprehensive Environmental Response, Compensation, and Liability Act of 1980, 42 U.S.C.S. §§ 107(a) and 113(f), as amended, 42 U.S.C.S. §§ 9607(a) and 9613(f), plaintiff corporation moved for partial summary judgment on liability. Defendant corporation cross-moved for summary judgment on liability.

OVERVIEW: Defendant waste management corporation entered into an agreement with plaintiff corporation to purchase its contracts with customers and plaintiff's hauling assets. Defendant made it clear to the owner and sole shareholder of plaintiff corporation that it did not need or want the landfill at issue, and that the deal could not go through until plaintiff corporation disposed of the landfill. Specific language in the asset purchase agreement excluded the landfill from the transaction between defendant corporation and plaintiff. Plaintiff and others sued defendant corporation and other defendants for recovery clean up costs of the landfill under the Comprehensive Environmental Response, Compensation, and Liability Act of 1980, 42 U.S.C.S. §§ 107(a) and 113(f), as amended, 42 U.S.C.S. §§ 9607(a) and 9613(f). Both parties moved for summary judgment. The court granted plaintiff's motion. The court concluded that the parties' asset purchase agreement unambiguously indicated that defendant assumed the contingent liability of the landfill in question.

OUTCOME: The court granted plaintiff's motion for partial summary judgment on liability. Under the asset purchase agreement, defendant assumed whatever liability plaintiff corporation had at the time, including the contingent liability of the landfill in question.

CORE TERMS: waste, landfill, summary judgment, customer, closure, site, cleanup, successor liability, sole shareholder, integral part, ambiguous, indemnification, purchaser, cleaning, stock, genuine issue of material fact, matter of law, four corners, environmental, unambiguous, deferred, assumption of liability, contingent liability, agreed to assume, contingent, structured, transition, persuasive, successor, hauling

CORE CONCEPTS -

Civil Procedure: Summary Judgment: Summary Judgment Standard
Summary judgment is proper only if the record shows that there is no issue as to any material fact, and that the moving party is entitled to judgment as a matter of law. Fed. R. Civ. P. 56(c). To determine whether a genuine issue of material fact exists, the court must construe all facts in the light most favorable to the non-moving party and draw all reasonable and justifiable inferences in favor of that party.

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control the rights of the parties.

COUNSEL: For Plaintiff (3:98cv0341): Phillip R. Scaletta III, Indianapolis, IN.

For Plaintiff (3:98cv0341): John R. Jacus, Dean C. Miller, Adam S. Cohen, Denver, CO.

For Plaintiff (3:98cv0341): Maureen J. Grimmer, Hammond, IN.

For Plaintiff (3:98cv0342): Maureen Grimmer, Hammond, IN.

For Defendant (3:98cv0341): Frank J. Deveau, Indianapolis, IN.

For Defendant (3:98cv0342): (no appearances on record).

JUDGES: ALLEN SHARP, JUDGE, NORTHERN DISTRICT OF INDIANA.

OPINIONBY: ALLEN SHARP

OPINION: MEMORANDUM AND ORDER

This cause is before the Court on cross motions for partial summary judgment. On May 31, 2000, the Plaintiffs filed a Motion for Partial Summary Judgment of Liability against Defendant Waste Management of Indiana, L.L.C., and on the same day, Defendants Waste Management, Inc. and Waste Management of Indiana, L.L.C. (collectively "Waste Management") also filed a Motion for Partial Summary Judgment as to their liability. Oral arguments were held before the Court on June 28, 2000. The*2 parties have fully briefed the issue, the Court has considered the submissions of the parties, and now rules as follows.

JURISDICTION

This cause of action arises under the Comprehensive Environmental Response, Compensation, and Liability Act of 1980 (CERLA), 42 U.S.C. §§ 107(a) and 113(f), as amended, 42 U.S.C.A. §§ 9607(a) and 9613(f). Jurisdiction is proper pursuant to 28 U.S.C. § 1331.

RELEVANT FACTS

The background of this case has been thoroughly set forth in previous orders by this court. Additional facts are needed, however, to determine whether Waste Management successfully structured an asset purchase of substantially all the assets of Waste, Inc. so as to avoid any liability for cleaning up the former Waste, Inc. Landfill (the "Landfill") that is the subject matter of this suit. In the late 1970s, Waste Management built and then began operating a landfill in LaPorte County, Indiana. (Def.'s Mem. at 2.) Waste Management had excess capacity in this landfill, so it began looking for more customers in the Michigan City area. In 1981, Waste Management entered into an agreement with Waste,*3 Inc. to purchase its contracts with customers and the Waste Inc. hauling assets. A deal was finalized and went into effect March 1, 1982. Although the physical assets of Waste, Inc. were only worth about $ 300,000 at the time, Waste Management was willing to give publicly traded Waste Management, Inc. stock worth $ 700,000 for the assets, presumably to gain the valuable customer contracts.

Waste Management made it clear to Mel Harlib, the owner and sole shareholder of Waste, Inc., that it did not need or want the Landfill, and that the deal could not go through until Waste, Inc. disposed of it. Therefore, Harlib set up a separate corporation, Land Reclamation Corporation, and transferred the Landfill to this new corporation. There is no evidence in the record that any consideration was paid for the Landfill, or that Land Reclamation had any assets other than the Landfill, even though Waste, Inc. had executed an Agreed Order with the State of Indiana in 1981 to close and cap the Landfill. (Report of Pl.'s Expert, Daniel P. Dozier, at 5.) The stock that Waste Management paid for the assets of Waste, Inc. was distributed to the sole shareholder, Mel Harlib, and ended up in his personal*4 investment account instead of being used to close the Landfill and comply with the Order. Mr. Harlib did attempt to comply with the Order, and loaned money to Land Reclamation for that purpose, but eventually he gave up the effort and in 1985, the Environmental Protection Agency got involved.

Specific language in the Asset Purchase Agreement excluded the Landfill from the transaction between Waste Management and Waste, Inc. However, Waste Management did have some involvement with the site in that it had agreed to provide clay to Waste, Inc. to comply with the 1981 Order. It honored this commitment, and provided additional clay to comply with a 1982 Order, even though it did not believe it was legally required to do so. Waste Management had additional connections to the site during a month transition period beginning January 1, 1982, until it began hauling the waste from its new Michigan City customers to the landfill in LaPorte around the end of March. Because there are factual disputes about this transition period, both

parties have excluded it from their motions for summary judgment. The issue currently before the Court is whether Waste Management is liable not only for its own*5 participation at the site, but also for the activities of Waste, Inc. on a theory of direct assumption of liability, or alternatively as its successor.

STANDARD OF REVIEW

Both parties in this action have moved for summary judgment pursuant to Fed. R. Civ. P. 56. The standard a court employs in reviewing a motion for summary judgment is well-established. Summary judgment is proper only if the record shows that there is no issue as to any material fact, and that the moving party is entitled to judgment as a matter of law. Fed. R. Civ. P. 56(c). To determine whether a genuine issue of material fact exists, the court must construe all facts in the light most favorable to the non-moving party and draw all reasonable and justifiable inferences in favor of that party. King v. Preferred Technical Group, 166 F.3d 887, 890 (7th Cir. 1999)(citing Adickes v. S.H. Kress & Co., 398 U.S. 144, 157, 26 L. Ed. 2d 142, 90 S. Ct. 1598 (1970).

Where cross-motions for summary judgment are involved, the court looks to the burden of proof that each party would bear on the issue at trial, requiring that party to go beyond the pleadings and affirmatively establish a genuine issue of material fact.*6 Santanaella v. Metropolitan Life Ins. Co., 123 F.3d 456 at 461 (7th Cir. 1997). The court extends to each party the benefit of any factual doubt when considering the other's motions. Buttitta v. City of Chicago, 803 F. Supp. 213, 217 (N.D. Ill. 1992), aff'd, 9 F.3d 1198 (7th Cir. 1993). However, the court is not required to grant judgment as a matter of law for one side or the other, but may deny them both. Heublein, Inc. v. United States, 996 F.2d 1455, 1461 (2d Cir. 1993); Judsen Rubber Works, Inc. v. Manufacturing, Prod. & Serv. Workers Union Local No. 24, 889 F. Supp. 1057, 1060 (N.D. Ill. 1995). The court must evaluate each party's motion on its own merits, resolving factual uncertainties and drawing all reasonable inferences against the party whose motion is under consideration. Heublein, 996 F.2d at 1461; Judsen, 889 F. Supp. at 1060; Buttitta v. City of Chicago, 803 F. Supp. 213, 217 (N.D. Ill. 1992), aff'd, 9 F.3d 1198 (7th Cir. 1993).

DISCUSSION

Initially, the Plaintiffs in this case had over sixty defendants in their sights for contribution under*7 CERCLA. Most have settled, but it appears from the record that Plaintiffs have succeeded in collecting little more than half of the more than $ 11 million already spent cleaning up the site, and according to the Defendants, they are running out of targets. However, the Plaintiffs still have the two Waste Management Defendants in their sights. They have advanced two theories of liability that would enable them to bag Waste Management as successor to the liabilities of Waste, Inc., the primary owner/operator of the Landfill. The stakes are potentially quite high.

The Plaintiffs' first theory is contractual and based on assumption of liability language in the Asset Purchase Agreement (the "Agreement") between Waste, Inc. and Waste Management. The second theory is based on state law governing successor liability. The Plaintiffs allege that Waste Management's purchase of the assets of Waste, Inc is not covered by the general rule that a purchaser of assets does not acquire the liabilities of the corporation, but rather falls within the exceptions giving rise to successor liability. This second theory requires a highly factual inquiry that is not appropriate for resolution on a motion for*8 summary judgment. However, because the Court finds that the first issue is dispositive, it unnecessary to delve into the complexities of corporate successor liability.

The Waste, Inc. Sales Agreement contains a choice of law provision stating that the Agreement is to be "construed and enforced in accordance with the laws of the State of Illinois." (Agreement at § 19.) The Seventh Circuit discussed the application of Illinois contract law in the context of successor liability for an environmental cleanup in an opinion issued on June 27, 2000, Maytag Corporation v. Navistar International Transportation Corp., 219 F.3d 587, 2000 U.S. App. LEXIS 14666, 2000 WL 823452 (7th Cir. (Ill.)). In Maytag, the primary issue was whether a corporation reorganized in bankruptcy could be held liable for cleaning up environmental contamination on a site that it owned and operated before the bankruptcy, but which was sold as part of the reorganization. Id. at *2. While bankruptcy is not an issue in the case before this Court, Judge Easterbrook's discussion of the liability of the asset purchasers is instructive. The Court observed that the previous bankruptcy had no bearing on the asset purchasers,*9 whose recovery depended on the terms of the sale which occurred after the end of the bankruptcy. The Court stated, "Lines of business may be spun off with or without the possibility of deferred liability for cleanup expenses." Id. 2000 U.S. App. LEXIS 14666, at *10, Id. at *3 (citations omitted).

Therefore, the Court must look to the terms in the Asset Purchase Agreement to determine whether Waste

Management purchased the assets of Waste, Inc. "with or without the possibility of deferred liability for cleanup expenses." The Seventh Circuit uses a "four corners" rule to interpret contracts when applying Illinois law. See Bourke v. Dun & Bradstreet Corp., 159 F.3d 1032, 1037 (7th Cir. 1998). "As the Illinois Supreme Court recently restated this rule: 'The terms of an agreement, if not ambiguous, should be generally enforced as they appear, and those terms will control the rights of the parties.'" Id. (citing Dowd v. Dowd, Ltd. v. Gleason, 181 Ill. 2d 460, 693 N.E.2d 358, 368, 230 Ill. Dec. 229 (1998)(citations omitted). The threshold inquiry under the Illinois "four corners" rule is whether the contract is ambiguous. Id. (citations omitted). Neither party alleges that the contract is ambiguous, but they disagree*10 as to the correct interpretation of the language. The relevant language comes from different provisions in the Documents of Closing of Sale of Waste, Inc. to Waste Management, Inc. dated March 1, 1982, but when pieced together, the Court finds that the meaning is clear and unambiguous. The relevant language is as follows:

2. PAYMENT OF CONSIDERATION

(b) Buyer shall, at the Closing, assume, pay, discharge or perform (as obligations become due) all of the following debts, liabilities, contracts, leases, commitments and other obligations, absolute or contingent:

(i) The debts, liabilities and other obligations of SELLER set forth on the Balance Sheet as well as those debts, liabilities and obligations incurred in the ordinary course of business from the date of the Balance Sheet to the Closing;

The Balance Sheet is attached as part of the closing documents and labeled Exhibit "A". The Table of Contents says that the Balance Sheet is on page 3, the Statement of Changes in Financial Position is on page 4, and the Notes to the Financial Statements is on page 5. These documents were prepared by Crowe, Chizek and Company, Certified Public Accountants, on February 1, 1982. At *11the bottom of pages 3, 4, and 5 is the statement, "The accompanying notes are an integral part of these financial statements. See independent accountants review report." The relevant note is Note 8 on page 8, which reads as follows:

NOTE 8 - CONTINGENT LIABILITIES

The Company is under a closure order from the Indiana Health Department. The closure order also requires the Company to make certain improvements to the property. The Company is in the process of negotiating with the Indiana Health Department relative to the amount and type of improvements.

At oral argument, Waste Management asserted that this Note was not part of the Balance Sheet, since it was not specifically incorporated in the Balance Sheet as were some of the other Notes. This argument is not persuasive for two reasons. One is that some of the Notes are clearly explanatory of specific items on the Balance Sheet, while others are general explanations that don't relate to a specific item. For example, Notes 1 and 2 dealing with Tax Credits and Accounts Receivable do not appear on the Balance Sheet, but are nonetheless an integral part of that document, as the explanatory note affirms. The second problem with*12 Waste Management's argument is that the footnote to the Balance Sheet states that the Notes are an integral part of the Balance Sheet. The Court finds that these statements are clear and unambiguous, and reasons as follows: 1) Waste Management agreed to assume the liabilities on the Balance Sheet, absolute or contingent; 2) the Notes are an integral part of the Balance Sheet; 3) according to Note 8, compliance with the closure order from the Indiana Health Department was a contingent liability; 4) therefore, Waste Management agreed to assume Waste, Inc.'s liability for compliance with the closure order, in the event Waste, Inc. failed to do so.

This reading of the Agreement is supported by an indemnification clause which states:

9. INDEMNIFICATION OF BUYER. SELLER and HARLIB agree to defend, indemnify and hold BUYER and its officers, directors and controlling persons harmless up to an amount not to exceed $ 700,000 (except for indemnification resulting from claims arising out of the operation of the Landfill for which the indemnity hereunder shall be unlimited) against and in respect of:

(a) Any and all duties, obligations or liabilities for which BUYER may become legally*13 liable or which BUYER may be required to pay, arising out of any liability, obligation or duty of SELLER or HARLIB . . .

(Agreement at § 9). It appears from this indemnification provision that the parties contemplated the possibility that the Buyer, Waste Management, might become liable and have to pay for claims "arising out of operation of the Landfill," and they agreed to allocate that risk to the Seller, Waste, Inc., and to Harlib.

Waste Management also argues that even if Note 8

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is a part of the Balance Sheet, the course of dealing of the parties indicates their intent was just the opposite, that Waste Management was not assuming any liabilities for the Landfill. To support this argument, Waste Management points to the fact that Mel Harlib, the owner and sole shareholder, spent several more years and a substantial sum of money attempting to comply with the order before finally giving up in 1985. In addition, before the asset purchase could close, Waste Management insisted that Waste, Inc. get rid of the Landfill, presumably to make sure that Waste Management did not get stuck with liability for the closure. Finally, Waste Management argues that the equities weigh in*14 favor of finding they did not assume liability, because their purchase of the assets made it possible to close the Landfill by providing Waste, Inc. with the money to comply with the order, and by taking the trash elsewhere.

Waste Management's equitable argument is not persuasive either, because they did not, in fact, make sure that the money paid for the assets was used to close the Landfill. Instead, they intentionally structured the deal in a way that made it possible for Mel Harlib to distribute the $ 700,000 worth of Waste Management stock to himself as sole shareholder because Waste, Inc. no longer owned the Landfill. If Waste Management had made sure at the time that the valuable consideration it paid for Waste, Inc.'s assets and customer contracts was used to properly close the Landfill, then an expensive cleanup and lengthy litigation about who must pay for it could have been avoided.

The language and course of dealings of the parties to the contract does reveal an intent to structure the asset purchase in such a way as to prevent liability for the Landfill from passing to Waste Management. This was to be accomplished by transferring the Landfill to Land Reclamation, which*15 the record indicates was nothing more than a shell corporation. Still, the Court finds, based on the clear, unambiguous language of the Asset Purchase Agreement, that Waste Management assumed whatever liability Waste, Inc. had at the time, including the contingent liability for the Landfill mentioned in Note 8. The extent of that liability requires the resolution of factual issues that are not currently before the Court.

CONCLUSION

For the foregoing reasons, the Plaintiffs Motion for Partial Summary Judgment of Liability against Defendant Waste Management of Indiana, L.L.C., is hereby GRANTED, and the Defendant's Motion for Partial Summary Judgment on the issue of liability is hereby DENIED.

IT IS SO ORDERED.

DATED: July 10, 2000

ALLEN SHARP, JUDGE

NORTHERN DISTRICT OF INDIANA

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2000 U.S. Dist. LEXIS 12571 printed in FULL format.

THE WASTE, INC. COST RECOVERY GROUP et al., Plaintiffs, v. ALLIS CHALMERS CORP. et al., Defendants. THE WASTE, INC. COST RECOVERY GROUP et al., Plaintiffs, v. ALLIED SIGNAL, INC. et al., Defendants.
Cause No. 3:98 CV 0341 AS, Cause No. 3:98 CV 0342 AS
UNITED STATES DISTRICT COURT FOR THE NORTHERN DISTRICT OF INDIANA, SOUTH BEND DIVISION
2000 U.S. Dist. LEXIS 12571

July 10, 2000, Decided

DISPOSITION: *1 Plaintiffs Motion for Partial Summary Judgment of Liability against Defendant Waste Management of Indiana, L.L.C., GRANTED and Defendant's Motion for Partial Summary Judgment DENIED.
CASE SUMMARY

PROCEDURAL POSTURE: In an action under the Comprehensive Environmental Response, Compensation, and Liability Act of 1980, 42 U.S.C.S. §§ 107(a) and 113(f), as amended, 42 U.S.C.S. §§ 9607(a) and 9613(f), plaintiff corporation moved for partial summary judgment on liability. Defendant corporation cross-moved for summary judgment on liability.

OVERVIEW: Defendant waste management corporation entered into an agreement with plaintiff corporation to purchase its contracts with customers and plaintiff's hauling assets. Defendant made it clear to the owner and sole shareholder of plaintiff corporation that it did not need or want the landfill at issue, and that the deal could not go through until plaintiff corporation disposed of the landfill. Specific language in the asset purchase agreement excluded the landfill from the transaction between defendant corporation and plaintiff. Plaintiff and others sued defendant corporation and other defendants for recovery clean up costs of the landfill under the Comprehensive Environmental Response, Compensation, and Liability Act of 1980, 42 U.S.C.S. §§ 107(a) and 113(f), as amended, 42 U.S.C.S. §§ 9607(a) and 9613(f). Both parties moved for summary judgment. The court granted plaintiff's motion. The court concluded that the parties' asset purchase agreement unambiguously indicated that defendant assumed the contingent liability of the landfill in question.

OUTCOME: The court granted plaintiff's motion for partial summary judgment on liability. Under the asset purchase agreement, defendant assumed whatever liability plaintiff corporation had at the time, including the contingent liability of the landfill in question.

CORE TERMS: waste, landfill, summary judgment, customer, closure, site, cleanup, successor liability, sole shareholder, integral part, ambiguous, indemnification, purchaser, cleaning, stock, genuine issue of material fact, matter of law, four corners, environmental, unambiguous, deferred, assumption of liability, contingent liability, agreed to assume, contingent, structured, transition, persuasive, successor, hauling

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For Plaintiff (3:98cv0342): Maureen Grimmer, Hammond, IN.

For Defendant (3:98cv0341): Frank J. Deveau, Indianapolis, IN.

For Defendant (3:98cv0342): (no appearances on record).

JUDGES: ALLEN SHARP, JUDGE, NORTHERN DISTRICT OF INDIANA.

OPINIONBY: ALLEN SHARP

OPINION: MEMORANDUM AND ORDER

This cause is before the Court on cross motions for partial summary judgment. On May 31, 2000, the Plaintiffs filed a Motion for Partial Summary Judgment of Liability against Defendant Waste Management of Indiana, L.L.C., and on the same day, Defendants Waste Management, Inc. and Waste Management of Indiana, L.L.C. (collectively "Waste Management") also filed a Motion for Partial Summary Judgment as to their liability. Oral arguments were held before the Court on June 28, 2000. The*2 parties have fully briefed the issue, the Court has considered the submissions of the parties, and now rules as follows.

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Initially, the Plaintiffs in this case had over sixty defendants in their sights for contribution under*7 CERCLA. Most have settled, but it appears from the record that Plaintiffs have succeeded in collecting little more than half of the more than $ 11 million already spent cleaning up the site, and according to the Defendants, they are running out of targets. However, the Plaintiffs still have the two Waste Management Defendants in their sights. They have advanced two theories of liability that would enable them to bag Waste Management as successor to the liabilities of Waste, Inc., the primary owner/operator of the Landfill. The stakes are potentially quite high.

The Plaintiffs' first theory is contractual and based on assumption of liability language in the Asset Purchase Agreement (the "Agreement") between Waste, Inc. and Waste Management. The second theory is based on state law governing successor liability. The Plaintiffs allege that Waste Management's purchase of the assets of Waste, Inc is not covered by the general rule that a purchaser of assets does not acquire the liabilities of the corporation, but rather falls within the exceptions giving rise to successor liability. This second theory requires a highly factual inquiry that is not appropriate for resolution on a motion for*8 summary judgment. However, because the Court finds that the first issue is dispositive, it unnecessary to delve into the complexities of corporate successor liability.

The Waste, Inc. Sales Agreement contains a choice of law provision stating that the Agreement is to be "construed and enforced in accordance with the laws of the State of Illinois." (Agreement at § 19.) The Seventh Circuit discussed the application of Illinois contract law in the context of successor liability for an environmental cleanup in an opinion issued on June 27, 2000, Maytag Corporation v. Navistar International Transportation Corp., 219 F.3d 587, 2000 U.S. App. LEXIS 14666, 2000 WL 823452 (7th Cir. (Ill.)). In Maytag, the primary issue was whether a corporation reorganized in bankruptcy could be held liable for cleaning up environmental contamination on a site that it owned and operated before the bankruptcy, but which was sold as part of the reorganization. Id. at *2. While bankruptcy is not an issue in the case before this Court, Judge Easterbrook's discussion of the liability of the asset purchasers is instructive. The Court observed that the previous bankruptcy had no bearing on the asset purchasers,*9 whose recovery depended on the terms of the sale which occurred after the end of the bankruptcy. The Court stated, "Lines of business may be spun off with or without the possibility of deferred liability for cleanup expenses." Id. 2000 U.S. App. LEXIS 14666, at *10, Id. at *3 (citations omitted).

Therefore, the Court must look to the terms in the Asset Purchase Agreement to determine whether Waste

Management purchased the assets of Waste, Inc. "with or without the possibility of deferred liability for cleanup expenses." The Seventh Circuit uses a "four corners" rule to interpret contracts when applying Illinois law. See Bourke v. Dun & Bradstreet Corp., 159 F.3d 1032, 1037 (7th Cir. 1998). "As the Illinois Supreme Court recently restated this rule: 'The terms of an agreement, if not ambiguous, should be generally enforced as they appear, and those terms will control the rights of the parties.'" Id. (citing Dowd v. Dowd, Ltd. v. Gleason, 181 Ill. 2d 460, 693 N.E.2d 358, 368, 230 Ill. Dec. 229 (1998)(citations omitted). The threshold inquiry under the Illinois "four corners" rule is whether the contract is ambiguous. Id. (citations omitted). Neither party alleges that the contract is ambiguous, but they disagree*10 as to the correct interpretation of the language. The relevant language comes from different provisions in the Documents of Closing of Sale of Waste, Inc. to Waste Management, Inc. dated March 1, 1982, but when pieced together, the Court finds that the meaning is clear and unambiguous. The relevant language is as follows:

2. PAYMENT OF CONSIDERATION

(b) Buyer shall, at the Closing, assume, pay, discharge or perform (as obligations become due) all of the following debts, liabilities, contracts, leases, commitments and other obligations, absolute or contingent:

(i) The debts, liabilities and other obligations of SELLER set forth on the Balance Sheet as well as those debts, liabilities and obligations incurred in the ordinary course of business from the date of the Balance Sheet to the Closing;

The Balance Sheet is attached as part of the closing documents and labeled Exhibit "A". The Table of Contents says that the Balance Sheet is on page 3, the Statement of Changes in Financial Position is on page 4, and the Notes to the Financial Statements is on page 5. These documents were prepared by Crowe, Chizek and Company, Certified Public Accountants, on February 1, 1982. At *11the bottom of pages 3, 4, and 5 is the statement, "The accompanying notes are an integral part of these financial statements. See independent accountants review report." The relevant note is Note 8 on page 8, which reads as follows:

NOTE 8 - CONTINGENT LIABILITIES

The Company is under a closure order from the Indiana Health Department. The closure order also requires the Company to make certain improvements to the property. The Company is in the process of negotiating with the Indiana Health Department relative to the amount and type of improvements.

At oral argument, Waste Management asserted that this Note was not part of the Balance Sheet, since it was not specifically incorporated in the Balance Sheet as were some of the other Notes. This argument is not persuasive for two reasons. One is that some of the Notes are clearly explanatory of specific items on the Balance Sheet, while others are general explanations that don't relate to a specific item. For example, Notes 1 and 2 dealing with Tax Credits and Accounts Receivable do not appear on the Balance Sheet, but are nonetheless an integral part of that document, as the explanatory note affirms. The second problem with*12 Waste Management's argument is that the footnote to the Balance Sheet states that the Notes are an integral part of the Balance Sheet. The Court finds that these statements are clear and unambiguous, and reasons as follows: 1) Waste Management agreed to assume the liabilities on the Balance Sheet, absolute or contingent; 2) the Notes are an integral part of the Balance Sheet; 3) according to Note 8, compliance with the closure order from the Indiana Health Department was a contingent liability; 4) therefore, Waste Management agreed to assume Waste, Inc.'s liability for compliance with the closure order, in the event Waste, Inc. failed to do so.

This reading of the Agreement is supported by an indemnification clause which states:

9. INDEMNIFICATION OF BUYER. SELLER and HARLIB agree to defend, indemnify and hold BUYER and its officers, directors and controlling persons harmless up to an amount not to exceed $ 700,000 (except for indemnification resulting from claims arising out of the operation of the Landfill for which the indemnity hereunder shall be unlimited) against and in respect of:

(a) Any and all duties, obligations or liabilities for which BUYER may become legally*13 liable or which BUYER may be required to pay, arising out of any liability, obligation or duty of SELLER or HARLIB . . .

(Agreement at § 9). It appears from this indemnification provision that the parties contemplated the possibility that the Buyer, Waste Management, might become liable and have to pay for claims "arising out of operation of the Landfill," and they agreed to allocate that risk to the Seller, Waste, Inc., and to Harlib.

Waste Management also argues that even if Note 8

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is a part of the Balance Sheet, the course of dealing of the parties indicates their intent was just the opposite, that Waste Management was not assuming any liabilities for the Landfill. To support this argument, Waste Management points to the fact that Mel Harlib, the owner and sole shareholder, spent several more years and a substantial sum of money attempting to comply with the order before finally giving up in 1985. In addition, before the asset purchase could close, Waste Management insisted that Waste, Inc. get rid of the Landfill, presumably to make sure that Waste Management did not get stuck with liability for the closure. Finally, Waste Management argues that the equities weigh in*14 favor of finding they did not assume liability, because their purchase of the assets made it possible to close the Landfill by providing Waste, Inc. with the money to comply with the order, and by taking the trash elsewhere.

Waste Management's equitable argument is not persuasive either, because they did not, in fact, make sure that the money paid for the assets was used to close the Landfill. Instead, they intentionally structured the deal in a way that made it possible for Mel Harlib to distribute the $ 700,000 worth of Waste Management stock to himself as sole shareholder because Waste, Inc. no longer owned the Landfill. If Waste Management had made sure at the time that the valuable consideration it paid for Waste, Inc.'s assets and customer contracts was used to properly close the Landfill, then an expensive cleanup and lengthy litigation about who must pay for it could have been avoided.

The language and course of dealings of the parties to the contract does reveal an intent to structure the asset purchase in such a way as to prevent liability for the Landfill from passing to Waste Management. This was to be accomplished by transferring the Landfill to Land Reclamation, which*15 the record indicates was nothing more than a shell corporation. Still, the Court finds, based on the clear, unambiguous language of the Asset Purchase Agreement, that Waste Management assumed whatever liability Waste, Inc. had at the time, including the contingent liability for the Landfill mentioned in Note 8. The extent of that liability requires the resolution of factual issues that are not currently before the Court.

CONCLUSION

For the foregoing reasons, the Plaintiffs Motion for Partial Summary Judgment of Liability against Defendant Waste Management of Indiana, L.L.C., is hereby GRANTED, and the Defendant's Motion for Partial Summary Judgment on the issue of liability is hereby DENIED.

IT IS SO ORDERED.

DATED: July 10, 2000

ALLEN SHARP, JUDGE

NORTHERN DISTRICT OF INDIANA

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1976 U.S. Dist. LEXIS 13005 printed in FULL format.

In re Master Key Antitrust Litigation.
M.D.L. Dkt. No. 45 All Cases.
United States District Court for the District of Connecticut.
1976 U.S. Dist. LEXIS 13005; 1977-1 Trade Cas. (CCH) P61,456
September 28, 1976, Filed

CORE TERMS: antitrust, merger, stock, reorganization, continuity, selling, contingent, successor, Sherman Act, shareholders, personnel, matter of law, continuation, subsidiary, going concern, dissolution, manufacture, predecessor, transferee, structured, dissolved, purchaser, strangers, written communication, sole proprietorship, balance sheet, de facto, liquidated, pre-trial, outward

OPINIONBY: BLUMENFIELD

OPINION: Pre-Trial Ruling on the 1967 Sargent Acquisition

BLUMENFELD, D.J.: Plaintiffs have requested a pre-trial ruling concerning the liability of defendant Sargent & Company of Delaware ("New Sargent") for the alleged antitrust violations of Sargent & Company of Connecticut ("Old Sargent"). On April 21, 1967, Walter Kidde & Company, through a newly-created subsidiary, Sargent & Company of Delaware, purchased substantially all the assets of Old Sargent in return for Kidde stock. n1 Pursuant to the 1967 asset acquisition "Agreement and Plan of Reorganization," New Sargent assumed certain designated liabilities of*2 Old Sargent. Defendant contends through deposition testimony and other documents that it did not assume any obligations of Old Sargent relating to the antitrust claims now in dispute. Plaintiffs maintain that New Sargent is liable as a matter of law for the alleged antitrust violations and that Sargent should be estopped from offering evidence of such defense at this late date in the litigation. n2

n1 Subsequently in 1971, New Sargent was liquidated into, and became an operating division of, Kidde.

n2 The relevant depositions were taken on June 28, 1976, and August 30, 1976. Plaintiffs also ask that the evidence be precluded for "incompetence, irrelevance, and waiver." Plaintiffs' Motion, 2.

A transferee of assets generally is not liable for the obligations of its predecessor. Kloberdanz v. Joy Manufacturing Co., 288 F. Supp. 817 (D. Colo. 1968). To this rule, however, there have emerged several wellestablished exceptions. As Judge Coffin noted in Cyr v. B. Offen & Co., Inc., 501 F. 2d 1145, 1152 (1st Cir. 1974), a purchaser of substantially all the assets of a company will remain liable for the debts of that company where:

(1) there is an express or implied*3 assumption of liability; (2) the transaction amounts to consolidation or merger; (3) the transaction was fraudulent; (4) some of the elements of a purchaser in good faith were absent; and (5) the transferee corporation was a mere continuation or reincarnation of the old corporation.

See also 15 Fletcher Cyclopedia Corporations Secs. 7122, 7123 (1973). Several of these exceptions are applicable in the instant case. I find first that New Sargent was a continuation of Old Sargent so as to render it responsible for these antitrust claims. Alternatively, but relatedly, the reorganization of Old Sargent into New Sargent was a de facto merger. Finally, I conclude that New Sargent did in fact assume liability for the disputed antitrust violations.

I.

The continuing legal liability of New Sargent for these alleged antitrust violations is determined by the strong federal objectives expressed in the Sherman Act. New Sargent acquired substantially all the assets of Old Sargent and its business as a going concern. Following the April 21, 1967 closing, Old Sargent's only assets, other than the Kidde stock, were its corporate minute book and stock records and $45,000 in cash. Within*4 30 days of the closing, Old Sargent distributed the stock and liquidated itself. New Sargent retained the former Sargent & Company's good will, trademarks, licenses, inventory, equipment, and other tangible and intangible property rights. The new company manufactured the same product as the old in the same location with the same personnel. This uninterrupted extension of manufacture requires a continued antitrust liability. Cf. Cyr v. B. Offen & Co., Inc., supra.

Cyr was a products liability action brought against the successor of a manufacturer of a defective printing press. B. Offen & Co., Inc. purchased the business of

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B. Offen Company, a sole proprietorship, in 1963, four years after the sale of the defective press.In holding the new corporation liable, the court noted that although the successor was a different legal entity from the sole proprietorship, it had exploited the good will and policies of the old company through its outward representations of business continuity and inward continuity of personnel and manufacture. The court commented:

The dictates of freedom of business decision are less compelling when an ongoing business assumes all other benefits and*5 liabilities of its predecessor, holds itself out to the world as the same enterprise, without notifying known customers, continues to function in the same manner - indeed is under contractual obligation so to do - with the same key employees, producing the same product.

Cyr, 501 F. 2d at 1153. The continuity of enterprise which mandated liability of a successor corporation in the products liability area calls for a similar result in the federal antitrust arena.

II.

Secondly, I find that although the transaction was structured as a sale of assets and reorganization, it should be treated as the substantial equivalent of a merger for imposing liability under the Sherman Act. A merger is defined as the uniting of two or more corporations by the transfer of property to one of them, which continues in existence, the others being merged therein. 15 Fletcher Cyclopedia Corporations Sec. 7041 (1973). A mere sale of assets differs from a merger in that both corporations continue to exist as independent entities following the transaction. As the court noted in McKee v. Harris-Seybold Co., 109 N.J. Super. 555, 264 A. 2d 998, 1004 (L. Div. 1970), aff'd, 118 N.J. Super. 480, 288 A. *6 2d 585 (App. Div. 1972), it is necessary that the "two corporations... were strangers before the sale and continued to remain strangers after the sale." In this case, however, there was a continuity of management, personnel, assets, and business operation between Old Sargent and New Sargent. Old Sargent shareholders received Kidde stock and so maintained their interest through the acquiring corporation. Pursuant to the Agreement and Plan of Reorganization, Old Sargent dissolved itself within 30 days of the sale closing, retaining only assets sufficient to cover the costs of liquidation. New Sargent by contract assumed those obligations of the prior company necessary to insure a continuation of the normal business operations of the Old Sargent enterprise. The 1967 transaction amounted to a de facto merger by which Sargent of Delaware acquired the business of Old Sargent as a going concern and effected the almost immediate dissolution of the selling company. Cf. Shannon v. Samuel Langston Co., 379 F. Supp. 797, 801 (W.D. Mich. 1974).

In addition, this transaction was deliberately structured to achieve results similar to a statutory merger. It was a tax free exchange of stock*7 for assets, a reorganization under Sec. 368(a)(1)(C) of the Internal Revenue Code. n3 The regulations make clear that such a reorganization cannot be an ordinary sale of assets but requires a continuity of proprietary interest:

The application of the term "reorganization" is to be strictly limited to the specific transactions set forth in section 368(a). The term does not embrace the mere purchase by one corporation of the propertics of another corporation, for it imports a continuity of interest on the part of the transferor or its shareholders in the property transferred.... (Emphasis added). n4

n3 26 U.S.C. Sec. 368(a)(1)(C).

n4 26 C.F.R. Sec. 1-368-2(a).

Here, where the transaction resembles both in its outward reality and technical tax aspects a merger, I conclude that New Sargent will be liable for any antitrust violations of the acquired corporation. Cinocca v. Baxter Laboratories, 400 F. Supp. 527 (E.D. Okla. 1975).

In Knapp v. North American Rockwell Corp., 506 F. 2d 361 (3d Cir. 1974), cert. denied, 421 U.S. 965 (1975), Judge Adams treated a similar sale of assets as a merger for the purposes of imposing tort liability relying on the insubstantiality of*8 the selling corporation's continued existence. He noted the brevity of the selling company's continued life, the contractual requirement that it be dissolved as soon as possible, the prohibition on its engaging in normal business transactions following the sale, and the meager remaining assets of the selling corporation. Each of these factors is present in this case where Old Sargent was a mere shell after the sale of its assets in the 30 days prior to its dissolution. Old Sargent is alleged to have engaged in a course of illegal conduct which resulted in substantial injury to the plaintiffs. Between these third party victims and New Sargent who absorbed the business and good will of Sargent of Connecticut, the burden of the loss must be put on the successor corporation. Knapp v. North American Rockwell Corp., 506 F. 2d at 370.

III.

Even if New Sargent were not liable as a matter of law for any conduct of Old Sargent violative of the

Sherman Act, I would find that New Sargent had assumed such liability pursuant to the 1967 "Agreement and Plan of Reorganization." Plaintiffs argue that New Sargent assumed all except certain specified liabilities of Old Sargent. This view is*9 supported by Sargent's contemporaneous representations to its shareholders in proxies that the deal contemplated "the assumption by Kidde's subsidiary... of substantially all the liabilities and obligations of Sargent" and that "Sargent knows of no liabilities of the kinds expressly not assumed by Kidde." n5 In addition, Sargent informed the Internal Revenue Service in its requested ruling that "Kidde's subsidiary will assume... all liabilities of Sargent existing on the closing date" excluding certain obligations not here in issue. n6 I do not find it necessary to determine if New Sargent assumed substantially all of Old Sargent's obligations, but only the antitrust claims now in litigation.

n5 Sargent & Company Proxy Statement, Plaintiffs' Exhibit 4.

n6 Requested Ruling, Plaintiffs' Exhibit 5.

According to Section 2(c) of the Agreement and Plan of Reorganization, New Sargent assumed all liabilities of Old Sargent as they appeared on its balance sheet of December 31, 1966, plus any liability incurred between December 31, 1966 and the closing,

and such other liabilities and obligations of SARGENT (CONN.) (whether or not reflected in or reserved against in such balance*10 sheet and whether accrued, absolute, contingent or otherwise), the existence of which is referred to in the aforesaid Agreement and Plan of Reorganization or in any of the schedules thereto.... (Emphasis added). n7

n7 Agreement and Plan of Reorganization, Plaintiffs' Exhibit 2.

Pursuant to Sec. 9(e) of the Agreement, Sargent warranted to Kidde that it knew of no contingent liabilities of the company except as "disclosed to Kidde by written communication prior to the date hereof." Sargent also warranted that there were no pending legal proceedings or government investigations that might adversely affect the financial condition of Sargent of Connecticut "except as disclosed to Kidde by written communication prior to the date hereof."

Under Sec. 9(e), Sargent did advise Kidde by letter on February 21, 1967 that there was a government antitrust investigation pending against Sargent, alleging violations in the lock and key industry. n8 The instant suits are in part derivative of that government investigation. Sargent was obligated according to the Agreement to inform Kidde of the investigation. Kidde assumed any obligation, contingent or otherwise, whose existence was "referred" *11to in the Agreement. Based on this language, I find that New Sargent expressly assumed any liability arising out of the government investigation and impliedly assumed liability for any private civil actions based thereon. These civil suits were liabilities contingent to the government proceedings, and Kidde received implied notice of their existence in the Sargent letters.

n8 Letter dated February 21, 1967, Sargent & Company to Walter Kidde & Company, Inc., Plaintiffs' Exhibit 6.

For the foregoing reasons, I conclude that Sargent & Company of Delaware is liable as a matter of law for any conduct by Sargent & Company of Connecticut that may have violated the antitrust laws.

So Ordered.

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¶ 14.20 Section 381 in General

¶ 14.20[1] Introductory

Section 381 was enacted in 1954 to provide a comprehensive set of rules for the preservation of tax attributes, to be "based upon economic realities rather than upon such artificialities as the legal form of the reorganization." [37] The drafters hoped to protect taxpayers against the loss of favorable tax attributes as well as to prevent the avoidance of unfavorable tax attributes by paper reorganizations. These statutory rules are applicable if assets of a corporation are acquired by another corporation under the following circumstances:

1. In a liquidation of a subsidiary under § 332 (unless a § 338 election is made); [38] and

2. In a reorganization under § 368(a)(1)(A) (statutory merger or consolidation), § 368(a)(1)(C) (acquisition of substantially all of the properties of one corporation for voting stock of another), §§ 368(a)(1)(D) and 368(a)(1)(G) (transfer of assets to a controlled corporation or pursuant to an insolvency proceeding, but only if the reorganization is nondivisive under §§ 354(b)(1)(A) and 354(b)(1)(B)), or § 368(a)(1)(F) (change in identity, form, or place of organization only). [39]

¶ 14.20[2] Carryover Attributes

If the assets are acquired in a transaction fitting within one of the above categories, the acquiring corporation "shall succeed to and take into account" the items specified in § 381(c) (i.e., ◂ net operating loss ▸ carryovers, earnings and profits, capital loss carryovers, accounting methods, and a number of others). These items are inherited by the acquiring corporation subject to the operating rules of § 381(b) and to certain limitations imposed by § 381(c). [40] Because § 381(c) enumerates the items to be carried forward instead of flatly providing that the acquiring corporation must step into the shoes of the transferor for all purposes, it might be inferred that unmentioned items do not go over. However, the Senate report on the 1954 Code stated that § 381 "is not intended to affect the carryover treatment of an item or tax attribute not specified in the section." [41] It may be, therefore, that other items (e.g., amortizable research and experimental expenditures under § 174, organizational expenditures under § 248, soil and water conservation expenditures under § 175, and foreign tax credit carryovers under § 904(d)), which are hardly distinguishable from a policy standpoint from some of those items specified in § 381(c), may also be carried forward; however, the pre-1954 case law may be relevant to these unenumerated tax attributes. [42]

¶ 14.20[3] Uncovered Transactions

The Senate report also stated that § 381 is not intended to affect the carryover treatment of items or tax attributes in corporate transactions not described in § 381 (a). Among the unlisted transactions, in which some items or attributes might be carried over, are transfers of property from one corporation to another in corporate divisions under Type D reorganizations or § 355, [43] and some transfers of property to subsidiary corporations under § 351. [44] Like the items mentioned above, however, these transactions may be governed by the pre-1954 case law, including the loss-tracing theory of *Libson Shops* and perhaps even the continuity-of-entity theory of *New Colonial Ice*. [45]

It should be noted that the acquiring corporation is not dependent upon § 381 for the preservation of its *own* tax attributes (since § 381 deals only with the tax characteristics of the transferor or distributor corporation); hence, these items will continue unimpaired even though not specified in § 381(c), unless some other statutory provisions or case law principles apply. [46]

37.

S. Rep. No. 1622, 83d Cong., 2d Sess. 52 (1954).

See Worthy, "Carryover of Deductions, Credits and Other Tax Attributes in Corporate Adjustments and Reorganizations," 44 Taxes 919 (1966); Kaufman, "Application of a Loss Carryover of One Business Against Profits From Another Business; Libson Shops, and Sections 381, 382 and 269," 24 NYU Inst. on Fed. Tax'n 1199 (1966); Asimow, "Detriment and Benefit of Net Operating Losses: A Unifying Theory," 24 Tax L. Rev. 1 (1968); Comment, "◀ Net Operating Loss ▶ Carryovers and Corporate Adjustments: Retaining an Advantageous Tax ◀ History ▶ Under Libson Shops and Sections 269, 381, and 382," 69 Yale L.J. 1201 (1960). These articles cite the most important of the very extensive earlier discussions of this area.

See also Ginsburg & Levin, Mergers, Acquisitions and Leveraged Buyouts ch. 12 (Panel 1999); McGaffey, "Utilization of Net Operating Losses," 51 Taxes 613 (1973); Milefsky, "Utilization of Acquired Corporate Loss Carryovers," 3 J. Corp. Tax'n 28 (1976); New York State Bar Ass'n Tax Section, "Report on the Ancillary Tax Effects of Different Forms of Reorganizations," 34 Tax L. Rev. 477, 495 (1979).

38.

See ¶ 10.42. If § 338 is elected, the subsidiary's tax history is purged; if § 338 is not elected, the subsidiary's tax history carries over to the parent, subject to § 269 (b) (see infra ¶ 14.41[3][e]). See ¶¶ 10.42[1] , 10.42[5].

39.

See ¶¶ 12.22, ¶¶ 12.24-12.26, 12.28 , 12.30.

40.

For a possible restriction on the ostensible scope of § 381, see Rev. Rul. 58-603, 1958-2 CB 147, hinting that if a loss corporation is acquired in order to carry over its tax attributes to another corporation through the medium of a "reorganization" within the meaning of § 381(a)(2), the absence of a business purpose may mean

that there is no reorganization (see Regs. § 1.368-1(b)), and, hence, that § 381(a)(2) will not come into play to preserve the tax attributes for the successor corporation.

Note also the restrictions on the carryover of net operating losses imposed by § 382, discussed infra ¶¶ 14.42 through 14.44, and by § 384, discussed infra ¶ 14.45.

41.

S. Rep. No. 1622, 83d Cong., 2d Sess. 52, 277 (1954). But see Joseph A. Baicker, 93 TC 316 (1989) (no carryover of excess investment tax credit in a § 368(a)(1)(D) divisive reorganization).

42.

See supra ¶ 14.02[2].

43.

See Chapter 11.

44.

As to earnings and profits in such transactions, see IRC § 312(h); Regs. §§ 1.312-10, 1.312-11(b).

45.

See generally infra ¶ 14.24. See also Joseph A. Baicker, 93 TC 316 (1989) (no carryovers in divisive Type D reorganization).

46.

But see Stanton Brewery, Inc. v. CIR, 176 F2d 573 (2d Cir. 1949), for the difficulty of determining which, if any, corporation survives in a statutory merger or consolidation. See also infra Part C for a discussion of the statutory and judicial limitations that may prevent a corporation's use of its own or acquired tax attributes (e.g., §§ 269, 382, 384, and the loss-tracing doctrine of *Libson Shops*).

Next doc

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Excerpts of Legislative History

INTERNAL REVENUE CODE OF 1954

JUNE 18, 1954. - Ordered to be printed

SENATE REPORT NO. 1622; 83D CONGRESS *2d Session;* H.R. 8300.

ore of such stock.

MR. MILLIKIN, from the Committee on Finance, submitted the following

REPORT

[To accompany H.R. 8300]

The Committee on Finance, to whom was referred the bill (h.R. 8300) to revise the internal revenue laws of the United States, having considered the same, report thereon with amendments and recommend that the bill as amended do pass.

* * *

D. Carryovers to Successor Corporations (sec. 381)

(1) House changes accepted by committee

The House bill provides that the major tax benefits, privileges, elective rights, and obligations of one corporation will carry to successor corporation when the assets of two or more predecessor corporations are combined in a tax-free liquidation or reorganization. These include such items as loss carryovers, unamortized bond discount, installment sales reporting, LIFO inventory method, and earnings and profits.

Present practice rests on court-made law which is uncertain and frequently contradictory. Your committee agrees that whether or not the items carryover should be based upon economic realities rather than upon such artificialities as the legal form of the reorganization.

The bill provides for the carryover of these tax attributes or items from one corporation to another in certain tax-free liquidations and reorganizations. Under this provision, a corporation which acquires substantially all the property of another corporation in a tax-free distribution or transfer is to take into its accounts the specified items of the distributor or transferor corporation. The section does not apply in the case of split-ups, spin-offs, or other divisive reorganizations.

The new rules enable the successor corporation to step into the "tax shoes" of its predecessor corporation without necessarily conforming to artificial legal requirements which now exist under court - made law. Tax results of liquidations or reorganizations are thereby made to depend less upon the form of the transaction than upon the economic integration of two or more separate businesses into a unified business enterprise. At the same time the new provision makes it difficult to escape the tax consequences of the law by means of a legal artifice such as liquidation and reincorporation or merger into another corporation. (53)

(2) Changes made by committee

Your committee added two items to the list of those in the House bill. These are (1) the deduction of deficiency dividends in the case of personal holding companies, and (2) percentage depletion with respect to mine tailings.

* * *

PART V - CARRYOVERS

Section 381. Carryovers in certain corporate acquisitions

Your committee has retained, with some additions and technical changes, the section in the House bill establishing statutory provisions for the carryover of items or tax attributes from a corporation distributing or transferring its property to another corporation in a liquidation or reorganization described in subsection (a).

The term "carryover" as used in this section refers to the utilization of any one or more of the tax attributes covered by this section. Unless preceded by "net operating loss," the term does not necessarily refer to a net operating loss carryover. {276}

Subsection (a) describes the corporate liquidations and reorganizations which result in the carryover to the acquiring corporation of the items specified in subsection (c). This includes the complete liquidation of a subsidiary (unless the basis of the assets distributed to the parent corporation is determined under section 334(b)(2)) and the reorganizations specified in paragraph (2) of subsection (a). The section does not apply to partial liquidations or to divisive or other reorganizations not specified in subsection (a).

Throughout the section, frequent use is made of the terms distribution, distributor corporation, transfer, transferor corporation, and acquiring corporation. Distribution is used in connnection with a complete liquidation of a subsidiary corporation and distributor corporation is used to denote the subsidiary. Transfer is used in connection with any reorganization specified in subsection (a)(2) and transferor corporation is used to denote the corporation which merges into, consolidates with, or otherwise transfers its property to another corporate entity. Acquiring corporation refers to the successor corporation in either a liquidation or reorganization specified in subsection (a).

Subsection (b) contains operating rules which are applicable to the liquidations and reorganizations specified in subsection (a) except a reorganization described in subparagraph (F) of section 368(a)(1). Under subsection (b)(1) of this section, the corporation making a distribution or transfer of property must end its taxable year on the date of distribution or transfer. If the distribution or transfer is not completed in one day, the date of distribution or transfer is, as provided in subsection (b)(2), the day on which the distribution or transfer is completed, except that, under regulations, the date when substantially all the property has been distributed or transferred may be used if the distributor or transferor corporation ceases all operations, other than liquidating activities, after such date.

Paragraph (3) of subsection (b) provides that an acquiring corporation to which property is distributed or transferred in a corporate transaction described in paragraphs (1) and (2) of subsection (a) (except a reorganization described in subparagraph (F) of section 368(a)(1)) is not entitled to carry back a net operating loss for a taxable year ending after the date of distribution or transfer to a taxable year of the distributor or transferor corporation. For example, assume corporations X and Y transfer on December 31, 1954, all their property to Z in a transaction described in subparagraph (A) of section 368(a)(1). If Z has a net operating loss in 1955, such loss cannot be carried back to a taxable year of X or Y. Or, assume corporation X merges into corporation Y on December 31, 1954, in a statutory merger with Y's charter continuing after the merger. If Y has a net operating loss in 1955, such loss cannot be carried back to a taxable year of X but shall be a carryback to a taxable year of Y. If, however, corporation X, in a reorganization described in subparagraph (F) of section 368(a)(1), merely changes its identity, form, or place of organization, the resulting corporation is entitled to carry back its net operating loss to a taxable year of X prior to the reorganization.

Subsection (c) of this section contains 18 paragraphs, each of which specifies an item or tax attribute of the distributor or transferor corporation which is to be taken into account by the acquiring corporation {277} as of the close of the date of distribution or transfer in the manner and to the extent provided with respect to such item. The section is not intended to affect the carryover treatment of an item or tax attribute not specified in the section or the carryover treatment of items or tax attributes in corporate transactions not described in subsection (a). No inference is to be drawn from the enactment of this section whther any item or tax attribute may be utilized by a successor or a predecessor corporation under existing law.

Paragraph 1 of subsection (c) contains the conditions and limitations on the carryover of the net opeating losses for loss years of the distributor or transferor corporation. Subparagraph (B) contains a limitation on the amount of the net operating loss deduction attributable to net operating losses for loss years of the distributor or transferor corporation which is deductible in the first taxable year ending after the date of distribution or transfer.

For the purpose of determining the amount of a net operating loss for a loss year of either the distributor corporation, transferor corporation, or the acquiring corporation which is a carryover to taxable years following the taxable year specified in subparagraph (A), the taxable income of the taxable year specified in subparagraph (A) is determined under section 172(b)(2), subject to the conditions and limitations imposed in subparagraph (C). Under this subparagraph, a net operating loss for a loss year of the distributor or transferor corporation which ends on or before the end of a loss year of the acquiring corporation is considered to be a net operating loss for a year prior to such loss year of the acquiring corporation. If the date of distribution or transfer is on any day other than the last day of the acuiring corporation's taxable year, the provisions of clauses (i) to (vi), inclusive, must be followed in determining the amount of a net operating loss which is a carryover to a subsequent taxble year. These clauses separate the taxable year in which the date of distribution or transfer falls into two parts, which are treated as taxable years solely for the purpose of subparagraph (C). A net operating loss carryover from a loss year of the acquiring corporation is first carried to the pre-acquisition part year and then the remainder, if any, is carried to the post-acquisition part year. For the purpose of determining under section 172(b)(1) the years to which a net operating loss for a loss year of the acquiring corporation is carried, the preacquisition part year and the post-acquisition part year are together treated as only 1 taxable year.

For example, assume corporation X was organized January 1, 1953, and had net operating losses in the calendar years 1953 and 1954 of $10,000 and $15,000, respectively. Corporation Y was organized January 1, 1952, and had net operating losses in the calendar years 1952, 1953, and 1954 of $7,000, $10,000, and $25,000, respectively. On July 4, 1955, Y transfers all its property to X in a transaction described in subsection (a)(2), and ends its taxable year with $1,000 taxable income before considering the net operating loss deduction. It has no modifications specified in section 172(b)(2)(A) for such taxable year. X has taxable income of $36,500 for 1955 before considering the net operating loss deduction and also has modifications specified in section 172(b)(2)(A) of $365. {278}

X's net operating loss deduction for 1955 is:

	Net operating loss carryover
Y's 1952	n1 $6,000
Y's 1953	10,000
X's 1953	10,000
Y's 1954	n2 2,000
X's 1954	15,000
	43,000

n1 Y's 1952 net operating loss of $7,000 would first offset Y's income of $1,000 for the taxable year ended July 4, 1955, and hence, would be a net operating loss carryover of $6,000 to X for 1955.

n2 Subpar. (B) limits the portion of X's net operating loss deduction in 1955 attributable to net operating loss carryovors fromm Y to (180/365 of $36,500) $18,000. Since Y had net operating loss carryovers of $6,000 and $10,000 from years prior to 1954, Y's 1954 net operating loss carryover of $25,000 is limited in 1955 to $2,000.

In computing the net operating loss carryovers to 1956, subparagraph (C) requires the 1955 taxable income (computed with the modifications specified in section 172(b)(2)(A)) to be divided in two parts, each of which is treated as a taxable year for this purpose only. Thus 185/365's of $36,500+$365, or $18,685, is allocated to the pre-acquisition part year and 180/365's of $36,500+$365, or $18,180, is allocated to the post-acquisition part year. Only net operating losses for X's loss years can be used against the pre-acquisition part year income. X's 1953 net operating loss would be treated as follows:

Net operating loss	$10,000
X's pre-acquisition part year income computed under sec. 172(b)(2) and subpar. (C)	-18,685
No net operating loss carryover to the post-acquisition part year or any subsequent year	

X's 1954 net operating loss would be treated as follows:

Net operating loss	$15,000
X's pre-acquisition part year income computed under sec. 172(b)(2) and subpar. (c)	n1 -8,685
Net operating loss carryover to post-acquisition part year	6,315
X's post-acquisition part year income computed under sec. 172(b)(2) and subpar. (C)	n2 -0
Net operating loss carryover to 1956	6,315

n1 X's pre-acquisition part year income of $8,685 is determined as follows: Divided portion of income computed with modifications specified in sec. 172(b)(2)(A) --- $18,685 Net operating loss deduction computed under sec. 172(b)(2)(B) and subpar. (C) --- -10,000

Total --- 8,685

n2 X's post-acquisition part year income of $0 is determined as follows: Divided portion of income computed with modifications specified in sec. 172(b)(2)(A) --- $18,180 Net operating loss deduction made up of net operating loss carryovers (from prior years) of $6,000 (Y 1952), $10,000 (Y 1953), and $25,000 (Y 1954) --- -41,000

Income is not considered less than zero --- 0

Y's 1954 net operating loss would be treated as follows:

Net operating loss	$25,000
Y's income for taxable year ended July 4, 1955, computed under sec. 172(b)(2)	0
Net operating loss carryover to X 1955	25,000
X's post-acquisition part year income computed under sec. 172(b)(2) and subpar. (C)	n1 -2,180
Net operating loss carryover to 1956	22,820

n1 X's post-acquisition part year income of $2,180 is determined as follows: Divided portion of income computed with modifications specified in sec. 172(b)(2)(A) $18,180 Net operating loss deduction made up p of net operating loss carryovers (from prior years) of $6,000 (Y 1952) and $10,000 (Y 1953) --- -16,000

Total --- 2,180 {279}

Assuming X remained on the calendar year basis, the years to which the net operating losses may be a carryover under section 172(b)(1) are:

Loss year	Carried to
Y 1952	Y 1953, Y 1954, Y July 4, 1955, X 1955, X 1956.
Y 1953	Y 1954, Y July 4, 1955, X 1955, X 1956, X 1957.

X 1953	X 1954, X 1955, X 1956, X 1957, X 1958.
Y 1954	Y July 4, 1955, X 1955, X 1956, X 1957, X 1958.
X 1954	X 1955, X 1956, X 1957, X 1958, X 1959.

Paragraph (2) of subsection (c) provides that in a liquidation to which section 332 applies (except in a case in which the basis of the assets distributed are determined under sec. 334(b)(2))), or in transfer pursuant to a reorganization described in sec. 368(a)(1)(A),(C), (D) (but only if the requirements of sec. 354(b)(1)(A) and (B) are met, or (F), the earnings and profits (including a deficit in earnings and profits) of the distributor or transferor corporation shall become the earnings and profits of the acquiring corporation. Since it is required, except in the case of a transfer pursuant to a reorganization qualifying under section 368(a)(1)(F), that, for the purposes of section 381, the taxable year of the distributor or transferor corporation end on the date of the distribution or transfer, the amount which becomes part of the earnings and profits of the acquiring corporation shall be the earnings and profits of the distributor or transferor corporation accumulated after February 28, 1913, and becomes part of the earnings and profits of the acquiring corporation accumulated after February 28, 1913. In no case shall the earnings and profits of the distributor or transferor corporation, whether or not earnings and profits of the taxable year which ends on the date of distribution or transfer, be considered a part of the earnings and profits for the first taxable year of the acquiring corporation which ends after the date of distribution or transfer. (See sec. 316(a) relatingto dividends.)

If the distributor or transferor corporation has a deficit in earnings and profits, section 381(c)(1)(B) is intended to provide that such deficit may only be included in the earnings and profits of the acquiring corporation accumulated after the date of acquisition. That is, such deficit cannot be used to reduce earnings and profits of the acquiring corporation accumulated before the date of acquisition. Likewise, a deficit of the acquiring corporation can only be used to reduce earnings and profits of the acquiring corporation accumulated after the date of acquisition and cannot be used to reduce earnings and profits acquired from the distribuotr or transferor corporation. The amount of earnings and profits of the first taxable year of the acquiring corporation which ends after the date of acquisition which may be reduced by a deficit of a distributor or transferor corporation is that amount which bears the same ratio to the total undistributed earnings (earnings which, but for the operation of this section, would, at the end of the taxable year, be included in earnings and profits of the acquiring corporation accumulated after February 28, 1913) for such year as the number of days of such year after the date of acquisition bears to the total number of days in such year. The undistributed earnings for the year shall be determined without regard to such deficit. In the event that the acquiring corporation has earnings and profits accumulated after February 28, 1913, and such deficit exceeds the post-acquisition date undistributed earnings for such taxable year, (280) the excess of such deficit over such earnings shall be used to reduce the undistributed earnings of the next succeeding year determined without regard to such excess, and, if necessary, in the following succeeding years. In no case may a succeeding year by omitted for the purpose of reducing undistributed profits in succeeding years. However, if the acquiring corporation had a deficit in earnings and profits accumulated after February 28, 1913, on the date of acquisition, such deficit of the distributor or transferor corporation shall be included in the deficit of the acquiring corporation on the date of acquisition.

It is intended that "earnings and profits" as used in this section shall have the same meaning as it has for the purposes of section 316(a). See section 312 of this report for appropriate adjustments to earnings and profits.

Paragraph (3) of subsection (c) allows a corporation which acquires property in a transaction described in subsection (a) to deduct a shortterm capital loss on account of any capital loss carryover which the distributor or transferor corporation would have been entitled to had it not transferred the property. The first year in which such loss may be deducted is the first taxable year of the acquiring corporation ending after the date of acquisition. However, the deduction in such year attributable to a capital loss carryover from a

distributor or transferor corporation cannot exceed an amount determined under paragraph (3)(B). In determining the amount of the capital loss which is a carryover to a subsequent taxable year, that is, to a year following the first taxable year of the acquiring corporation ending after the date of distribution or transfer, it is necessary to reduce the capital loss carryover by the amount of any net capital gain against which it was deducted in such first taxable year of the acquiring corporation. Subject to the limitation in subparagraph (B), the capital loss which is a carryover to the fewest number of years subsequent to such first taxable year of the acquiring corporation should be deducted first against any capital gain in such taxable year.

For example, assume corporation X has a capital loss carryover from the calendar year 1953 of $10,000 and corporation Y has a capital loss carryover, also from the calendar year 1953, of $3,000. Y transfers all its property to X on September 30, 1954, in a transaction described in subsection (a)(2), closes its taxable year on that date and has no capital gains during said year. X has capital gains (computed without regard to a capital loss carryover) in 1954 of $10,000. Since Y's 1953 capital loss is first a capital loss carryover to Y's taxable year ending in 1954 and then to X's 1954 taxable year, it will be a carryover to one less year subsequent to 1954 than X's 1953 capital loss. Therefore, it should be applied against X's 1954 capital gains first, subject to the limitation in subparagraph B which provides that the capital loss carryover from Y is limited in X's 1954 taxable year to 92/365 of $10,000 or $2,520.80. Thus, $2,520.80 of Y's capital loss carryover will be applied against X's 1954 capital gain and the remainder of Y's capital loss carryover, $479.20 will be a capital loss carryover to 1955. X's capital loss carryover from 1953 will be applied against the remainder of X's 1954 capital gain, leaving a capital loss carryover to 1955 of $2,520.80.

Paragraph (4) of subsection (c), relating to method of accounting, requires that if the acquiring corporation and the distributor or transferor (281) corporation (or corporations) used the same method of accounting before the date of acquisition, the acquiring corporation shall continue to use such method after the date of acquisition. If different methods are used before the acquisition date, the acquiring corporation shall use the method or combination of methods of accounting, pursuant to regulations prescribed by the Secretary or his delegate in connection with section 446 (relating to a general rule for methods of accounting).

Paragraph (5) of subsection (c) is intended to provide that, except for specific provisions in this subchapter with respect to the basis of inventory received by an acquiring corporation in a transaction described in subsection (a), such inventory shall be used by the acquiring corporation on the same basis on which such inventory was used by the distributor or transferor corporation in determining its taxable income unless a different basis is approved by the Secretary or his delegate in accordance with section 471 (relating to a general rule for inventories).

Paragraph (6) of subsection (c) provides that if the acquiring corporation acquires an asset with respect to which the distributor or transferor corporation computes a depreciation allowance under paragraphs (2), (3), or (4) of section 167(b), the acquiring corporation must compute the depreciation allowance on such asset in the same way. However, the depreciation allowance under paragraphs (2), (3), or (4) of section 167(b) is limited to the basis of such asset (for determining gain) in the hands of the acquiring corporation which does not exceed the basis of such asset in the hands of the distributor or transferor corporation.

Paragraph (7) of subsection (c) provides that if a distributor or transferor corporation had elected to report prepaid income in the manner described in section 452, the acquiring corporation after the acquisition shall be treated as if it were the distributor or transferor corporation provided the liability described in section 452(e)(2) is assumed and the cash receipts and disbursements method of accounting is not used by the acquiring corporation. If the acquiring corporation uses the cash receipts and disbursements method of accounting, it shall include in its gross income for the first taxable year ending after the

date of acquisition so much of the prepaid income as has not been included in the gross income of the distributor or transferor corporation.

Paragraph (8) of subsection (c) provides that the acquiring corporation shall report the income from any installment obligation which it acquires from a distributor or transferor corporation in a transaction described in subsection (a), pursuant to section 453, if such distributor or transferor corporation reported the income from such obligation on the installment basis before the transfer. In such a case it is intended that the acquiring corporation shall be treated as the distributor or transferor corporation would have been treated had it not transferred the obligation.

Paragraph (9) of subsection (c) provides that in cases where the acquiring corporation assumes the liability for bonds of a distributor or transferor corporation in a transaction described in subsection (a), the acquiring corporation shall be treated as the distributor or transferor corporation would have been had it not transferred the liability for the bonds, for the purpose of determining the amount of amortization (282) allowable as a deduction or includible in income with respect to such discount or premium.

Paragraph (10) of subsection (c) is intended to provide that if the acquiring corporation acquires a mine or mineral deposit in a transaction described in subsection (a), and the distributor or transferor corporation had elected to deduct exploration and development expenses ratably out of the production of such mine or mineral deposit, pursuant to sections 615 or 616 (relating to exploration and development expenses, respectively), the acquiring corporation shall be entitled to deduct such expenses as if it were the distributor or transferor corporation and had not transferred such mine or mineral deposit. In applying the limitation with respect to exploration expenses provided in section 615(c) to the acquiring corporation, the number of years in which such expenses were deducted currently, or were deferred by the distributor or transferor corporation, shall be included in the total of the years in which such expenses are deducted currently, or are deferred by the acquiring corporation, in spite of the fact that the particular property to which such exploration expenses relate may not have been transferred. If there are 2 distributor or transferor corporations, although each deducted such expenses currently in the taxable year ending on the date of distribution or transfer or elected to defer such expenses in such year, only 1 year shall be included in such total of the acquiring corporation.

Paragraph (11) of subsection (c) provides that for the purpose of determining the amounts deductible under section 404, relating to deductions for contributions of an employer to an employer's trust or annuity plan and compensation under a deferred-payment plan, the acquiring corporation shall be treated as if it were the distributor or transferor corporation and there had been no transaction described in subsection (a). It is intended that the acquiring corporation fulfill the requirements which were imposed upon the distributor or transferor corporation as a prerequisite to such deductions, before such deductions are allowed to the acquiring corporation.

Paragraph (12) of subsection (c) provides that if, in a transaction described in subsection (a), the distributor or transferor corporation transfers to the acquiring corporation the right to recover bad debts, prior taxes, and delinquency amounts previously deducted or credited by the distributor or transferor corporation, the acquiring corporation shall include in its income such amounts as would have been includible by the distributor or transferor corporation pursuant to section 111 (relating to recovery of bad debts, prior taxes, and delinquency amounts).

Paragraph (13) of subsection (c) provides that the acquiring corporation shall be treated as the distributor or transferor corporation after the date of distribution or transfer for the purposes of applying section 1033 (relating to involuntary conversions) if the property or stock referred to in section 1033(a)(2) and (3) is included in the property transferred in a transaction described in subsection (a).

Paragraph (14) of subsection (c) is intended to provide that for taxable years ending after the date of a transaction described in subsection (a), an acquiring

corporation which is a personal holding company may include a dividend carryover (described in section 564) of a distributor or transferor corporation in the computation of the dividends paid deduction under section 561, to the same extent as the (283) distributor or transferor corporation could have included such carryover if the transaction described in subsection (a) had not occurred.

Paragraph (15) of subsection (c) is intended to provide that in computing its undistributed personal holding company income under section 545, for taxable years ending after the date of a transaction described in subsection (a), an acquiring corporation, which is a personal holding company, may deduct, to the same extent as the distributor or transferor corporation could deduct amounts set aside to pay or retire certain indebtedness incurred prior to January 1, 1934.

Paragraph (16) of subsection (c) permits the acquiring corporation to deduct amounts which arise out of an obligation of the distributor or transferor corporation paid or accrued by the acquiring corporation after the date of distribution or transfer provided the obligation is assumed by the acquiring corporation, provided also that the obligation gives rise to a liability after the date of distribution or transfer and such liability if paid or accrued by the distributor or transferor corporation after such date would have been deductible in computing its taxable income, and provided the obligation was not reflected in the amount of consideration transferred by the acquiring corporation to the transferor corporation for the property of the transferor corporation. In other words, if the amount of stock, securities, and property of the acquiring corporation transferred in exchange for the property of the transferor corporation was determined by including the obligation as a liability in valuing the property of the transferor corporation, the subsequent payment of such obligation will not be deductible by the acquiring corporation under paragraph (16). This paragraph is not intended to permit the acquiring corporation to deduct amounts paid on account of a liability of the distributor or transferor corporation which accrued or was accruable by the distributor or transferor corporation prior to the date of distribution or transfer.

Paragraph (16) of subsection (c) also permits the deduction in taxable years beginning after December 31, 1953, of amounts paid for obligations described in the preceding paragraph even though the date of distribution or transfer occurred prior to the effective date of the provisions of this code applicable to the liquidations and reorganizations described in subsection (a). For example, if Y corporation transferred all its property to X corporation in 1942 in a transaction which, if it had occurred after the effective date of part III, would have been a transaction described in subsection (a)(2), and X corporation assumed an obligation of Y corporation to make monthly pension payments directly to Y corporation's retired employees for as long as each should live, but such obligation was not taken into account in determining the amount of stock, securities, or property transferred by X to Y in exchange for Y's property, then X corporation can deduct in taxable years beginning after December 31, 1953, the payments made in each such year to Y's retired employees.

Paragraph (17) entitles an acquiring corporation to a deficiency dividend deduction paid with respect to the distributor or transferor corporation. In the House bill, a similar provision was placed in section 547. Your committee has strickon the provision from section 547 and added it as a carryover item to section 381.

Paragraph (18) permits an acquiring corporation to claim percentage (284) depletion on so-called mine tailings distributed or transferred to it by the distributor or transferor corporation just as if it were the distributor or transferor corporation. This provision has no counterpart in the House bill.

* * *

INTERNAL REVENUE CODE OF 1954

MARCH 9, 1954. - Committed to the Committee of the Whole House on the State of the Union and ordered to be printed

HOUSE OF REPRESENTATIVES REPORT No. 1337; 83D CONGRESS *2d Session;* H.R. 8300.

Mr. REED of New York, from the Committee on Ways and Means, submitted the following

REPORT

[To accompany H.R. 8300]

The Committee on Ways and Means, to whom was referred the bill (H.R. 8300) to revise the internal revenue laws of the United States, having considered the same, report favorably thereon without amendment and recommend that the bill do pass.

* * *

D. Carryovers to successor corporations (sec. 381)

Present law makes no provision for the transfer from one corporation to another, in a tax-free merger or consolidation, of the major tax benefits, privileges, elective rights and obligations which were available to the predecessor. These include such items as loss carryovers, unamortized bond discount, installment sales reporting, Lifo inventory method, etc. The courts have held, in general, that such tax attributes of a corporation may be preserved only by continuing the corporation's identity. For example, the surviving corporation in a merger is generally entitled only to the tax attributes from its own premerger experience and not from the experience of the other corporations merged. More recently, however, this separate entity rule appears not to have been followed.

As a result, present practice rests on court-made law which is uncertain and frequently contradictory. Moreover, whether or not the carryover is allowed should be based upon economic realities rather than upon such artificialities as the legal form of the reorganization.

The bill provides for the carryover of about 16 specific tax attributes or items from one corporation to another in certain tax-free reorganizations. Under this provision, a corporation which acquires substantially all the property of another corporation in a tax-free transfer is to take into its accounts certain specified items of the distributor or transferor corporation. The principal items are loss carryovers, earnings and profits, and certain elections, such as those relating to LIFO inventory accounting and those relating to the use of the special declining balance depreciation method. No provision is made for the apportionment of such items in the case of split-ups, spin-offs, or other divisive reorganizations.

The new rules enable the successor corporation to step into the "tax shoes" of its predecessor corporation without necessarily conforming to artificial legal requirements which now exist under court-made law. Tax results of reorganizations are thereby made to depend less upon the form of the transaction than upon the economic integration of two or more separate businesses into a unified business enterprise. At the same time the new provision makes it difficult to escape the tax consequences of the law by means of a legal artifice such as liquidation and reincorporation or merger into another corporation.

* * *

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U.S. DISTRICT COURT
DISTRICT OF COLORADO

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JAMES R. MANSPEAKER
CLERK

BY _____ DEP. CLK

IN THE UNITED STATES DISTRICT COURT
FOR THE DISTRICT OF COLORADO

Civil Action No. 00-S-424

PACIFICORP, an Oregon corporation,

Plaintiff,

v.

UNION OIL COMPANY OF CALIFORNIA, a California corporation; and
MINERALS EXPLORATION COMPANY, a California corporation,

Defendants.

STIPULATION FOR DISMISSAL WITH PREJUDICE

Plaintiff and Defendants, by their counsel, move the Court for an Order dismissing this action with prejudice. The parties have reached a settlement agreement of all issues in this action. The parties therefore request that the Court dismiss all claims in this action and the action with prejudice, each party to pay its own costs, attorneys' fees, and related expenses.

Dated this 3rd day of April, 2001.

Respectfully submitted,

R. Daniel Scheid

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APR 4
JAMES R. MANS

IN THE UNITED STATES DISTRICT COURT
FOR THE DISTRICT OF COLORADO

Civil Action No. 00-S-424

PACIFICORP, an Oregon corporation,

Plaintiff,

v.

UNION OIL COMPANY OF CALIFORNIA, a California corporation; and
MINERALS EXPLORATION COMPANY, a California corporation,

Defendants.

ORDER FOR DISMISSAL WITH PREJUDICE

This matter comes before the Court on the stipulated motion of the parties for dismissal of the action with prejudice. The Court has reviewed the parties' Motion.

The Court orders that this action and all claims asserted in this action are dismissed with prejudice. Each party will pay its own costs, attorneys' fees, and expenses.

Dated this 4th day of April, 2001.

BY THE COURT:

United States District Judge

EOD
UNITED STATES DISTRICT COURT
DENVER, COLORADO

APR 0 5 2001

JAMES R. MANSPEAKER
CLERK

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NARA-005

Case No. 00-S-424

CERTIFICATE OF SERVICE

I hereby certify that a copy of the ORDER FOR DISMISSAL WITH PREJUDICE signed by Judge Daniel B. Sparr on April 4, 2001, was served pursuant to Rule 5, Fed.R.Civ.P., on April 4, 2001, by (*) hand delivery; (**) delivery of same to their respective Court pick-up box; (***) depositing the same in the United States mails, postage prepaid, to the following:

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Magistrate Judge Craig B. Shaffer

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Secretary/Deputy Clerk

FILED
U.S. DISTRICT COURT
DISTRICT OF COLORADO
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JAMES R. HAMSPEAKER
CLERK
BY B DEP. CLK

UNITED STATES DISTRICT COURT
FOR THE DISTRICT OF COLORADO

Civil Action No. 00-S-424

PACIFICORP, an Oregon corporation,

Plaintiff,

v.

UNION OIL COMPANY OF CALIFORNIA, a California corporation; and
MINERALS EXPLORATION COMPANY, a California corporation

Defendants.

JOINT PRE-TRIAL REPORT TO MAGISTRATE JUDGE SHAFFER CONCERNING PHASE 1 (SUCCESSOR LIABILITY) TRIAL

Plaintiff PacifiCorp and Defendants Union Oil Company of California and Minerals Exploration Company, by their counsel, respectfully submit the following Joint Pre-Trial Report concerning certain background, procedural, and evidentiary matters related to the upcoming trial of Phase 1 (successor liability) issues scheduled to commence on January 31, 2001.

A. BACKGROUND

1. This is a civil action for contribution brought pursuant to Sections 107(a) and 113(f)(1) of the Comprehensive Environmental Response, Compensation and Liability Act of 1980 ("CERCLA") and state common law. The action arises from work PacifiCorp performed at the Silver Bell Tailings Impoundment Site located in southwestern Colorado. Plaintiff alleges that Defendants are the successors in interest to the two related mining companies that previously operated the site. Defendants deny the allegations.

2. The parties and the Court have agreed to resolve the threshold issue of successor liability prior to commencement of discovery with regard to remaining issues, including potential allocation.

3. On June 2, 2000, U.S. District Judge Sparr appointed Magistrate Judge Bruce D. Pringle pursuant to Fed.R.Civ.P. 53 as Special Master to determine all matters regarding the successor liability issue.

4. By Minute Order dated January 9, 2001, the Court ordered that Magistrate Judge Shaffer has succeeded Magistrate Judge Pringle as Special Master to hear the Phase 1 trial.

5. The Phase 1 trial is currently set to begin January 31, 2001 at 1:30 p.m. The trial is set for 2 days.

6. In an effort to streamline the Phase 1 trial, the parties' counsel have met to discuss certain matters. As a result of those discussions, the parties have reached substantial agreement concerning stipulations of fact, admissibility of exhibits, and proposed trial procedures.

B. ANTICIPATED EVIDENCE

7. The parties anticipate that all evidence will be submitted in the following form:

   a. Stipulations of fact;

   b. Designated deposition testimony of out-of-state witnesses; and

   c. Documentary and demonstrative exhibits.

8. The parties do not anticipate the need to call any live witnesses.

9. The parties do not anticipate significant dispute regarding the admissibility of designated deposition testimony.

10. The parties do not anticipate significant dispute regarding the authenticity or admissibility of exhibits. The parties reserve issues of relevance.

11. If evidentiary or other issues arise after the parties review each other's exhibits, proposed deposition testimony or trial briefs, they will so advise the Court at that time.

C. PROPOSED TRIAL SEQUENCE

12. As a result, the parties propose that the Phase 1 trial be conducted substantially as follows:

a. Plaintiff's tender of evidence, including stipulations of fact, deposition designations, and exhibit notebooks to the Court;

b. Defendants' tender of additional evidence to the Court;

c. Oral argument by Plaintiff's counsel;

d. Oral argument by Defendants' counsel; and

e. Rebuttal argument by Plaintiff's counsel.

13. The parties currently estimate that their presentations (including Plaintiff's rebuttal) may each take approximately 2 ½ hours.

D. TRIAL BRIEFS

14. To assist the Court in understanding the legal arguments and positions of the parties, each party will file fairly extensive trial briefs on January 22, 2001. The briefs will cite the stipulations of fact, designated deposition testimony, and exhibits, and will substantially set forth the legal arguments of each party. The parties are hopeful that the Court's review of the briefs in advance of trial will provide this Court with helpful and necessary background and authorities concerning the matters to be argued during the Phase 1 trial.

15. It is possible that the parties may seek leave to file reply and/or post-trial briefs as to certain limited issues.

E. OTHER PRE-TRIAL MATTERS

16. Although no formal pre-trial order or status conference has been mandated with regard to the Phase 1 trial, the parties respectfully defer to the Court's desires as to whether or not a pre-trial status conference would be helpful or necessary.

17. For the Court's information, the parties have established the following pre-trial deadlines:

a.	Finalize Stipulations of Fact	January 17, 2001
b.	Exchange Deposition Designations	January 18, 2001
c.	File Stipulated Facts	January 22, 2001
d.	Exchange Copies of Exhibit Notebooks	January 22, 2001
e.	Finalize Deposition Designations	January 25, 2001
f.	File Exhibit Notebooks	January 31, 2001
g.	File Deposition Designations	January 31, 2001

18. Magistrate Judge Pringle previously fixed a deadline for the parties to exchange lists of witnesses and exhibits. The parties have done that. Magistrate Judge Pringle also fixed January 27th as the date for the parties to submit objections to witnesses and exhibits.

Dated this 18th day of January, 2001.

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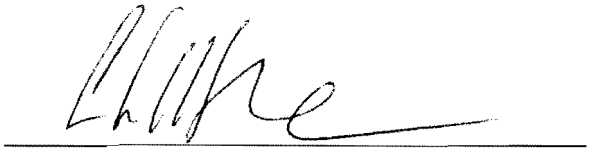

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JAMES R. LAWRENCE
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IN THE UNITED STATES DISTRICT COURT
FOR THE DISTRICT OF COLORADO

Civil Action No. 00-S-424

PACIFICORP, an Oregon corporation,

Plaintiff,

v.

UNION OIL COMPANY OF CALIFORNIA, a California corporation; and
MINERALS EXPLORATION COMPANY, a California corporation,

Defendants.

STIPULATIONS OF PARTIES (PHASE I)

Plaintiff, PacifiCorp, and Defendants Union Oil Company of California ("Union") and Minerals Exploration Company ("Minerals") (Union and Minerals may sometimes be referred to collectively as "Union"), by and through their counsel, stipulate to the following facts and other matters for purposes of Phase I of this proceeding. By entering into these stipulations, the parties are not stipulating to the relevance of any facts. All objections based on relevance of the stipulated facts are preserved.

I. PARTIES AND OTHERS

1. PacifiCorp is an Oregon corporation, with its principal place of business in Portland, Oregon.

2. Defendant Union is a California Corporation, with its principal place of business in California.

3. Defendant Minerals is a California corporation, incorporated on October 20, 1954, with its principle place of business in California. Minerals is now, and always has been, a wholly-owned subsidiary of Union.

4. Molycorp, Inc. became a wholly owned subsidiary of Union on July 29, 1977. Molycorp has been a direct or indirect wholly-owned subsidiary of Union since July 29, 1977.

II. Authenticity and Admissibility of Documents

5. [Reserved]

III. THE SILVER BELL TAILINGS IMPOUNDMENT SITE

6. The Silver Bell Tailings Impoundment Site (the "Site") is located on the Roanoak placer mining claim. The Site and the Roanoak claim are located in San Miguel County, Colorado, approximately 1.5 miles west of the town of Ophir. The Roanoak claim consists of approximately 73 acres. The Site occupies approximately 6 acres on the Roanoak claim. *(Ex. S-1, PacifiCorp Final Site Investigation Report at § 2.0, CDPHE 1556, 1563.)*

7. The Western Colorado Power Company ("WCPC") acquired the Site and the Roanoak claim in 1913, retaining ownership until 1975. In 1975, Utah Power & Light Company ("UP&L") acquired the assets and assumed the liabilities of WCPC. As a result, title to the Site and the Roanoak claim was vested in UP&L, as the corporate successor to WCPC. UP&L owned the Site until 1989.

8. In 1989, UP&L merged into PacifiCorp, a result of which title to the Site and the Roanoak claim vested in PacifiCorp, as the corporate successor to UP&L.

9. In March 1991, PacifiCorp transferred title to the Site and the Roanoak claim to Edwin Lee and Camelia M. Wynne. At some time subsequent to 1991, the Wynnes transferred approximately 38 acres of the Roanoak claim to the San Joaquin Partnership for approximately $100,000. At the present time, the Wynnes have placed most, if not all, of the remaining portion of the Roanoak claim on the market for $1,100,000.

10. On July 1, 1970, Silver Bell Industries Inc. ("Silver Bell") entered into an Agreement with WCPC relating to the use of the Site for a tailings pond *(Ex. S- 2, the "1970 Agreement".)* With the exception of admissible testimony, if any, from Scott Smith, neither party has been able to locate anyone with relevant knowledge of the 1970 Agreement or the map that was to be attached to the 1970 Agreement.

11. By 1975, Silver Bell closed its operations at the Silver Bell Mine and Mill. After that time, Silver Bell did not deposit tailings at the Site. Whether and how much tailings Silver Bell deposited prior to 1975 is in dispute.

IV. THE 1978 AGREEMENT

12. On May 15, 1978, Union, Minerals and Silver Bell entered into an Agreement and Plan of Reorganization *(Ex. S-3 the "1978 Agreement")*

13. In connection with the 1978 Agreement, Silver Bell and Union prepared and submitted an amended SEC Form S-14 to the Securities and Exchange Commission on October 13, 1978. (*Ex. S-4 October 13, 1978 SEC Form S-14.*)

14. Pursuant to the 1978 Agreement, Minerals was to acquire "substantially all of the assets" of Silver Bell "except for cash on hand, in banks (including certificates of deposit) and on deposit with third parties." (See *Ex. S-4, October 13, 1978 SEC Form S-14 at p. 1, M000758 ; Ex. S-3, 1978 Agreement at 2.)* The effective date of the 1978 Agreement was December 15, 1978. *(See Ex. S-4, Attachment to S-14 at M000881.)*

15. Consideration for Minerals' acquisition of Silver Bell's assets was comprised of : (1) 418,095 shares of Union common stock; and (2) the assumption of certain liabilities. (*See Ex. S-4 at p.1, M000758.)*

16. The price of Union common stock as of the date that the 1978 Agreement was executed, May 15, 1978, was 51 1/4. *(Ex. S-5, Tradeline printout.)* Based on this number, the stock value negotiated by Union and Minerals for Silver Bell was approximately $21,400,000.

17. The 1978 Agreement was structured to be a tax-free reorganization under Section 368(a)(1)(C) of the Internal Revenue Code of 1954, as amended. (*See Ex. S-4, Registration Statement at 7, M000764.)* Among the assets of Silver Bell acquired by Minerals as part of the 1978 transaction were certain unused net operating loss carryovers in the amount of $1,371,727. After the 1978 transaction, these were available to the affiliated group of companies filing a consolidated federal income tax return with Union Oil Company of California as the parent ("the Affiliated Group"). The Affiliated Group, however, never used the net operating loss carryovers. It was restricted from utilizing them because of limitations imposed by § 1.1502-21(c)(1) of the Federal Tax Regulations in force in 1978 and 1979.

18. As of June 30, 1978, there were 43,940,066 shares of Union common stock outstanding. *(Ex. S-6, August 8, 1978 letter from Cole to Keller.)*

19. The ten-day average price for Union common stock for the ten days prior to December 5, 1978 was $56.20. This ten day average price was to be used to calculate cash payments for fractional shares. (*Ex. S-7, Notes from Union's Silver Bell File calculating ten-day average.*) Based on this number, the total stock value paid by Union and Minerals for Silver Bell's assets was approximately $23,497,000.

20. Among the documents explaining the procedures for issuance of the Union shares are *the following: Ex. S-8, November 22, 1978 memo from Bonner to Courtney; Ex. S-9, November 22, 1978 Letter between Union and United Bank.*

21. Union and Minerals do not have any record of the specific identity or number of all the shareholders of Silver Bell that became shareholders of Union as a result of the transaction.

22. In the event that a Silver Bell shareholder had not tendered his or her shares for exchange at the time that Silver Bell dissolved, the shares to which he or she was entitled were to be sold and the proceeds of the sale were to be paid to the Treasurer of the State of Colorado to be held for twenty-one years under the Colorado escheat law. *(See Ex. S-4, October 13, 1978 SEC Form S-14 at p.8, M000765-766; Ex. S-10, November 27, 1978 Denver Post Article.)*

23. In November 1979, it appears that there were approximately 21,224 shares of Union common stock that remained unexchanged. *(Ex. S-11, November 14, 1979 Union Stock Certificate indicating that 21,224 shares of Union were unexchanged; Ex. S-12 November 7, 1979 Letter from Keller to Snyder; Ex. S-13, November 13, 1979 Letter from Snyder to Keller; Ex. S-14 December 8, 1978 letter from Cole to Union; Ex. S-15, April 30, 1981 letter from Union to United transmitting a certificate for 80 shares for the remaining unexchanged shares of Union.)* Union common stock was valued at between 47.5 and 48.25 dollars per share on November 29, 1979. *(Ex. S-16, Tradeline printout for November 29, 1979.)* Thus, the sale of the unexchanged Union shares (21,224) on the market resulted in more than one million dollars apparently being paid to the Treasurer of the State of Colorado.

24. Silver Bell filed its intent to dissolve with the Colorado Secretary of State on February 16, 1979, and was dissolved by filing Articles of Dissolution with the Colorado Secretary of State on November 27, 1979 *(Ex. S-17, Secretary of State Search Reply for Silver Bell dated 9/25/00.)*

25. In 1982, certain Silver Bell shareholders who apparently had not yet exchanged their stock began to write to Union in an attempt to then exchange their shares. Union sent them a form letter. *(See Ex. S-9 Letter Agreement outlining the exact procedures between Union and United Bank dated 11/22/78; Ex. S-18 September 26, 1990 letter from Union to Bornstein.)* On July 27, 1983, Union wrote to United Bank regarding funds remaining at United Bank in a letter attached as Exhibit S-19 *(July 27, 1983 letter from Bonner to United Bank) (See also: Ex. S-20, July 27, 1983 letter from Bonner to Stokes; Ex. S-21, July 26, 1983 letter from Union to United Bank.)*

26. By 1983, all funds that had been transferred to the Colorado Department of Treasury for the account of Silver Bell shareholders had been claimed and the fund balance was zero. Apparently, many shareholders where left unpaid. *(Ex. S-22, Letter from Patty White of Colorado Department of Treasury, dated December 8, 2000.)*

V. DIRECTORS, OFFICERS AND EMPLOYEES

27. No Director of Silver Bell was a Director, Officer or employee of Union, Minerals, or Molycorp before the 1978 transaction or became a director, officer or employee of any of those companies after the 1978 transaction.

28. No Officer of Silver Bell was a Director, Officer or employee of Union, Minerals, or Molycorp before the 1978 transaction or became a director, officer or employee of any of those companies after the 1978 transaction.

29. One employee of Silver Bell apparently was employed by Union after the 1978 transaction through a temporary agency, as reflected in a letter dated December 13, 1978. *(Ex. S-23, Letter from Rzepiela to Smith, dated 12/13/78.)* That employee was terminated on November 14, 1980. *(Ex. S-24, Letter from Rainey to Smith, date 11/24/80.)*

VI. SILVER BELL'S ASSETS AT THE TIME OF THE 1978 TRANSACTION

30. The most complete list of Silver Bell's assets that were to be transferred to Minerals is set forth in seven "Schedules," or lists, that were drafted by the parties to the 1978 Agreement in an attempt to sort the claims into workable categories. *(Ex. S-25, Letter from Hatfield to Keller dated 11/29/78 with Schedules 1-7 and Schedules 1-3 attached.)* Although the Schedules are unsigned, the Schedules are accompanied by copies of executed and recorded quitclaim deeds for most (but not all) of the listed properties from Silver Bell to Minerals. The Schedules and, where available, quitclaim deeds, are described in greater detail below .

A. Silver Bell's Sweetwater Assets

31. In 1969, Minerals entered into an Operating Agreement with Nuclear Reserves, Inc. to develop and produce uranium and other commercial ores found on certain mining claims and state leases located in Sweetwater, Fremont, and Natrona Counties, Wyoming. *(Ex. S-26, Operating Agreement of May 9, 1969 between Minerals Exploration Company and Nuclear Reserves, Inc.* (hereinafter the "Operating Agreement").) This property subject to this agreement is referred to as the "Sweetwater Project." Through a series of transactions, in November, 1972, Silver Bell apparently succeeded to Nuclear Reserves' rights and obligations under the Operating Agreement.

32. The following Schedules prepared in connection with the 1978 Agreement list those claims which were subject to the 1969 Operating Agreement:

    a Schedule 1 lists Unpatented Lode Mining Claims in Sweetwater County, Wyoming. *(Ex. S-25, at Schedule 1.)*

b. Schedule 2 lists the Unpatented Lode Mining Claims in Natrona County, Wyoming. *(Ex. S-25, at Schedule 2.)*

33. As of 1978, Minerals owned an undivided 65% interest in the Sweetwater Project and was the "Operator" of the Sweetwater Project under the Operating Agreement and subject to the terms of the Operating Agreement. *(Ex. S-26, Operating Agreement at p. 16.)* Silver Bell owned the remaining 35% undivided interest in the Sweetwater Project. This was a non-operating interest. Silver Bell's principal asset was its undivided 35% ownership interest in the Sweetwater Project. *(Ex. S-4, October 13, 1978 SEC Form S-14 at p. 58, M0000815.)*

34. As part of the 1978 transaction, effective December 15, 1978, Minerals acquired Silver Bell's 35% interest in the Sweetwater Project. By that acquisition, Silver Bell's interest and involvement in the Sweetwater Project was terminated, and the Operating Agreement was terminated.

35. The Final Environmental Statement Related To Operation Of Sweetwater Uranium Project Minerals Exploration Company contains a list stated to be the regulatory approvals and permits required prior to initiation of the Sweetwater mine and mill. *(Ex. S-27, Final Environmental Statement for Sweetwater Uranium Project dated December 1978.)*

36. The scheduled start up date for the Sweetwater Mill was July 1, 1980. Minerals ceased operations at the Sweetwater Project in 1983. Minerals continued to own the Sweetwater Project until 1991, when it was sold.

B. Silver Bell's San Miguel County, Colorado Assets

37. The following Schedules list assets in San Miguel County, Colorado that were conveyed to Minerals by Silver Bell:

a. Schedule 3 lists the Patented Lode Mining Claims in San Miguel County, Colorado. *(See Ex. S-25, Schedule 3; see also Ex. S-28.)*

b. Schedule 4 lists the Unpatented Lode and Placer Mining Claims in San Miguel County, Colorado. *(See Ex. S-25, Schedule 4; see also Ex. S-29.)*

c. Some of these unpatented claims (Ruth Lode Claims Nos. 1-33 Amended, inclusive, Ruth Lode Claims Nos. 35-38 Amended, inclusive, Ophir Lode Claims Nos. 1-74 Amended, inclusive and Ophir Lode Claims Nos. 93-109, Amended, inclusive) were subject to the Baumgartner Purchase Agreement and were conveyed in a separate Quitclaim Deed, which is described in more detail below.

d. Schedule 6 lists the Patented and Unpatented Mill Site Claims in San Miguel County, Colorado, including the Silver Bell Mill Site. *(See Ex. S-25, Schedule 6.)*

Silver Bell conveyed these mill sites to Minerals. *(See Ex. S-28; Ex. S-29; Ex. S-30, Notice of Intent to Hold Mill Sites and Tunnel Sites dated 10/17/79.)*

38. In October, 1979, Minerals filed and recorded an Affidavit of Annual Labor, a Notice of Intent to Hold Mill Sites and a Notice of Intent To Hold Mill Sites and Tunnel Site. *(Ex. S-31, Letters from Moulinet to San Miguel County Clerk and BLM dated 10/18/79; Ex. S-30, Notice of Intent to Hold Mill Sites and Tunnel Sites dated 10/17/79.)* These documents were filed only as to some of the unpatented mining and mill site claims acquired from Silver Bell. Claims not included in the filings were, by their omission from such filings, dropped and abandoned. The Silver Bell Mill Site and the Butler Mill Site were not included in the list of properties as to which such affidavits and notices were filed. *(See Ex. S-30, Notice of Intent to Hold Mill Sites and Tunnel Sites dated 10/17/79.)*

39. On March 10, 1980, Molycorp filed and recorded a Notice of Location for the Silver Bell Mill Site and the Butler Mill Site in the same vicinity as the prior claims. *(Ex. S-32, Letter from Waters to San Miguel County Recorder dated 3/10/80; Ex. S-33, Letter from Moulinet to BLM dated 3/26/80; Ex. S-34, Memo from Moulinet to Rainey dated 3/20/80; Ex. S-35, Memo from Moulinet to Rainey dated 4/14/80 with Notices of Location of Millsite Claim; Ex. S-36, Letter from Moulinet to BLM dated 3/26/80.)*

40. The following exhibits relate to additional actions with respect to certain unpatented mining claims and mill site claims post transaction: *Ex. S-37, Memo from Waters to Rainey dated 3/20/79 with attached Affidavit of Annual Labor documents; Ex. S-38, Affidavits of Labor for Molycorp dated 10/31/80; Ex. S-39, Notice of Intent to Hold Mill Sites for Molycorp dated 10/17/80; Ex. S-40, Notice of Intent to Hold Mill Sites and Tunnel Sites for Mineral dated 10/17/80; Ex. S-41, Affidavit of Annual Labor for Minerals dated 10/17/79; Ex. S-42, Notice of Intent to Hold Mill Site for Minerals dated 10/17/79.*

C. Silver Bell's 1970 Baumgartner Purchase Agreement

41. Silver Bell and Franklin W. Baumgartner apparently entered into a Purchase Agreement, dated May 30, 1970 in which Baumgartner conveyed certain mining claims and two leases to Silver Bell. *(Ex. S-43, Baumgartner Purchase Agreement; see also Ex. 25, Schedule 4 and Schedule 5.)* The mining claims are listed in Schedule 4 and the two leases are listed in Schedule 5. They are as follows:

    a. The following certain unpatented mining claims: Ruth Lode Claims Nos. 1-33 and 35-38, amended, inclusive and Ophir Lode Claims Nos. 1-74 and 93-109, amended, inclusive. *(See also Ex. S-25, Schedule 4 at page 3.)*

    b. A lease recorded in San Miguel County, Colorado dated March 2, 1967 by and between Randolph Belisle, as Lessor, and Franklin W. Baumgartner, as Lessee

("the Belisle Lease".) *(Ex. S-44, Mining Lease dated 3/2/97; Ex. S-45, Assignment of Mining Lease dated 5/30/70.)*

c. A lease recorded in San Miguel County, Colorado dated December 21, 1966 by and between Henry A. Pollman, John J. Pollman, and W.F. Pollman, as Lessors, and Franklin W. Baumgartner, as Lessee ("the Pollman Lease".) *(Ex. S-46, Mining Lease dated 12/21/66; Ex. S-47, Assignment of Mining Lease dated 5/30/70.)*

42. The Baumgartner Purchase Agreement provided as follows:

a. The Purchase Agreement provided that Silver Bell would make yearly installment payments on the claims and leases, and, until the property was paid for in full, Silver Bell and Baumgartner agreed to place the deeds conveying the mining claims and the assignments for the two leases in escrow. *(See Ex. S-43, Baumgartner Agreement at p. 2, ¶ 4; Ex. S-48, Escrow Agreement dated 5/30/70.)*

b. The total purchase price that Silver Bell was to pay for the mining claims and Baumgartner's interest in the two leases was $200,000. *(See Ex. S-43, Baumgartner Agreement at p. 2, Section II, ¶ 1.)* The balances remaining on the two leases, which were included in the $200,000 total purchase price, were $35,000 and $80,000. *(See Ex. S-43, Baumgartner Agreement at p. 2, Section II, ¶ 2.)* Silver Bell was to make yearly installment payments on the balance. *(See Ex. S-43, Baumgartner Agreement at p.4, Section III, ¶ 3.)* Silver Bell also was obligated to make minimum royalty payments to Pollman and Belisle (lessors to Baumgartner), at rates set forth in the Leases. *(Ex. S-49, Invoice from Baumgartner to Silver Bell dated 7/2/70; Ex. S-50, Letter from Belisle to Sanders dated 9/1/70; Ex. S-51, Remittance letter from Sanders to Belisle dated 8/28/70; Ex. S-52, Remittance letter from Sanders to Pollman dated 8/28/70.)*

43. Silver Bell had the right to terminate the Baumgartner Purchase Agreement on notice and payment of $100 liquidated damages. *(See Ex. S-43, Baumgartner Agreement at p. 7, Section IX, Paragraph 1.)* If Silver Bell failed to make payments under the Purchase Agreement as provided, Silver Bell would forfeit any interest it had arising out of the Baumgartner Purchase Agreement, including any payments it had already made. *(Ex. S-43, Baumgartner Agreement at p. 7, Section IX, Paragraph 1; Ex. S-43, Baumgartner Agreement at p. 9, Section XII, Paragraph 3.)*

44. On December 5, 1978, Silver Bell conveyed its interest in the Baumgartner Purchase Agreement to Minerals. *(Ex. S-53, Assignment of Mining Lease dated 12/5/78 (Belisle Assignment); Ex. S-54, Assignment of Mining Lease dated 12/5/78 (Pollman Assignment).)*

45. In 1979, Minerals evaluated the leases and the claims subject to that Agreement. On or about November 13, 1979, Minerals decided not to make the annual installment payment and to terminate Minerals' interest in the Baumgartner Purchase Agreement, surrendering the properties and interests back to Baumgartner. *(Ex. S-55, Memo from Rainey to Moran dated 11/14/79; Ex. S-56, Letter from Rainey to Baumgartner dated 11/13/79 (with certified mail receipt indicating they enclosed 3 Quitclaim Deeds conveying all of Minerals interest in the mining claims, in the Belisle lease and in the Pollman lease and paid the $100 liquidated damages).)*

D. Sale Of Remaining Ophir Properties

46. In late January 1980, Union began to offer for sale the holdings that it acquired from Silver Bell in the Ophir area of San Miguel County, Colorado. *(See Ex. S-57)*

47. On November 13, 1980, Minerals and Molycorp transferred to Fleet Resources, Inc. all the remaining holdings acquired from Silver Bell in San Miguel County and the Ophir area that were listed in Schedules 3, 4, and 6. *(See Ex. S-58.)*

E. Silver Bell's Mancos Assets

48. Prior to the 1978 Agreement, Silver Bell and another corporation, the Mancos Corporation, had entered into an agreement in which Silver Bell agreed to acquire Mancos assets for Silver Bell stock. At the same time that Minerals and Union entered into the 1978 Agreement with Silver Bell, Minerals and Union entered into a similar agreement with Mancos to acquire all the assets of Mancos in exchange for 6,905 shares of Union stock and assumption of certain liabilities ("the Mancos Agreement".) (*See Ex. S-4, October 13, 1978 SEC Form S-14 at p. 12)* Pursuant to the Mancos Agreement, Minerals apparently acquired the following assets of the Mancos Corporation which were set forth in three separate schedules that listed the following:

a Certain patented and unpatented lode mining claims in Montezuma County, Colorado. *(See Ex. S-25, Schedule 1.)*

b. A lease dated September 30, 1969 by and between Georgette Johnston Barlow and Sarah Johnston Marshall, as Lessors, and Don H. Peaker, as lessee, which was recorded in Montezuma County, Colorado. *(See Ex. S-25, Schedule 2.)* Mancos assigned this lease to Minerals on December 5, 1978. *(See Ex. S-59, Assignment of Mining Lease and Agreement dated 12/5/78 .)*

c. Unpatented Mill Site Claims in Montezuma County, Colorado referred to as the Red Arrow Mill Site and the Red Arrow Mill Site No. 2. *(See Ex. S-25, Schedule 3.)*

49. Minerals later sold certain of the Mancos property to Outwest Resources, a corporation owned and controlled by Eugene Sanders, who had been the president of Silver Bell, as described below.

50. On April 30, 1980, an Exploration and Option Agreement was executed between Eugene Sanders (doing business as Outwest Resources, Inc.) and Minerals. *(Ex. S-60, Exploration and Option Agreement dated 4/30/80.)* In this agreement, Minerals granted Outwest Resources the exclusive right to explore and develop and the exclusive option to purchase all the right, title and interest of Minerals in certain patented mining claims. *(See Ex. S-60, Exploration and Option Agreement dated 4/30/80, Exhibit A to Option Agreement.)* These claims are commonly referred to as the "Red Arrow" claims and they include all of the patented claims that Minerals acquired from the Mancos Corporation. *(See Ex. S-25, Mancos Schedule 1.)* The purchase price was to be $250,000, payable over time.

51. On May 28, 1982, Minerals conveyed all its right, title and interest to the claims covered by the Option Agreement as well as its right, title and interest to the Option Agreement to Molycorp. *(See Ex. S-61, Quitclaim Deed dated 5/28/82.)*

52. Thereafter, in February of 1988, Outwest Resources submitted its last and final payment for the "Red Arrow" claims and Molycorp conveyed the property to Outwest Resources via Warranty Deed. Molycorp reserved a royalty interest as agreed to in the Option Agreement. *(See Ex. S-62)*

53. The available documents do not show further title actions with respect to the Mancos unpatented claims.

F. Other Lease Interests

54. Schedule 5 indicates that Silver Bell transferred its interest in the following leases to Minerals:

    a. A lease dated May 16, 1972 by and between Silver Bell, as Lessor, and Union Carbide Corporation, as Lessee, relating to 88 claims held by Silver Bell in Sweetwater County, Wyoming. *(Ex. S-63, Quitclaim Deed dated 12/5/78 (Silver Bell-Minerals Deed; Ex. S-64, Memorandum and Letter attaching Lease dated 5/16/72.)*

    b. An interest in a lease dated April 7, 1966 (as amended April 15, 1966) by and between W.T. Knuckles, as Lessor, and Silver Bell Mines Co., as Lessee, which pertains to certain real property in San Juan County, Utah. *(Ex. S-65, Assignment of Mining Lease dated 12/5/78; Ex. S-66, Memorandum of Properties; Ex. S-67, Mining Lease dated 4/7/66 with Addendum and Exhibit.)*

55. On or about July 20, 1990, Minerals transferred its interest in these lease agreements to Molycorp. *(Ex. S-68, Assignment dated 7/20/90; Ex. S-69, Quitclaim Deed dated*

7/20/90; Ex. S-70, Assignment dated 7/20/90; Ex. S-71, Corrective Assignment dated 6/13/91.)

56. Schedule 7 (*Ex. S-25*) lists a number of property agreements under which Silver Bell held royalty interests or royalties with certain reversionary interests. Silver Bell's interests in these agreements were apparently transferred to Minerals. *(Ex. S-25, Schedule 7; see also Ex. 72)*

57. The available documents do not indicate whether Minerals ever received royalties under the agreements nor do they show further title actions with respect to these leases.

VII. NPDES Permit

58. Molycorp signed an "Application For Transfer and Acceptance Of Terms of NPDES Permit" on March 10, 1980 and sent that application to the State. *(Ex. S-73, Molycorp's Application for Transfer and Acceptance of Terms of NPDES Permit dated 3/10/80)*

59. Fleet Resources, Inc. signed an "Application For Transfer and Acceptance Of Terms of NPDES Permit" on December 4, 1980 and sent that application to the State. *(Ex. S-74, Fleet's Application for Transfer and Acceptance of Terms of NPDES Permit dated 12/4/80)*

VII. MISCELLANEOUS STIPULATIONS

60. Based on their employment status with Union or Minerals or Silver Bell, as reflected in various documents, and because their names appear on some of the documents related to matters at issue in this Phase of the case, it appears that following individuals had knowledge about certain matters at issue in this phase of the case but they are all now deceased: Fred Hartley, Harold Rainey, Edward Eakland, Eugene Lindsay, John Abramo, and J.R. Courtney (all from Union or Minerals) and Eugene Sanders, Alec Keller, Steven McNichols, and Les Smith (all from Silver Bell).

61. Many of the documents related to the 1978 Agreement, if they existed, have not been found, specifically including but not limited to a final Exhibit 1 and any version, draft or otherwise, of Exhibit 2 referenced in the 1978 Agreement.

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DATED this 22nd day of January, 2008.

LeBOEUF, LAMB, GREENE & MacRAE, L.L.P.

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Attorneys for Defendants

CERTIFICATE OF MAILING

I certify that a true and correct copy of the foregoing STIPULATIONS OF PARTIES (PHASE I) was sent by on the 22nd day of January, 2000, to the following:

Via handdelivery:

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Vivian E. Wood

FILED
UNITED STATES DISTRICT COURT
DENVER COLORADO

JAN 31 2001

JAMES R. MANSPEAKER
CLERK

IN THE UNITED STATES DISTRICT COURT
FOR THE DISTRICT OF COLORADO

Civil Action No. 00-S-424

PACIFICORP, an Oregon corporation,

Plaintiff,

v.

UNION OIL COMPANY OF CALIFORNIA, a California corporation; and MINERALS EXPLORATION COMPANY, a California corporation,

Defendants.

ORDER REGARDING SETTLEMENT

ORDER ENTERED BY MAGISTRATE JUDGE CRAIG B. SHAFFER

Upon notification by the parties that this case has settled, the trial set **Wednesday, January 31, 2001** and **Thursday, February 1, 2001** is hereby **VACATED**. The parties are directed to submit their settlement/dismissal papers on or before **February 16, 2001**.

The undersigned certifies that a copy of the forgoing Minute Order was served on January 31, 2001, by: ( ) delivery to:

Christopher Lane, Esq.
Ronald M. Eddy, Esq.
Sherman & Howard, LLC
DC Box 12

( ) depositing the same in the United States Mail, postage prepaid, addressed to:

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Lane Kenney
Deputy Clerk

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NARA-008

Publication: Telluride Journal (Telluride, San Miguel County); Date: Jan 4, 1906; Section: None; Page: 4

CARBONERO GROUP OF MINES

A Valuable Vein That is Yeilding Good Ore and Steadily Improving With Development, Both as to the Quantity and Quality of the Mineral.

High up on Silver Mountain, directly above the Iron Springs, lies the Carbonero group of mines comprising eighteen claims of which five are patented.

The principal lode of the group from which the property takes its name, runs parallell with the mountain side, and is opened by cross cut tunnels from which drifts are driven on the vein. Two of these drifts, between which there is a perpendicular depth of 187 feet, have reached a depth each of 1,000 feet. Two hundred feet lower another cross cut is under way, and still lower is a deeper one which will require about 3,000 feet of tunnel to intersect the vein. This tunnel is now in 600 feet, and going steadily forward.

The Carbonero property is owned by a partnership of four persons. Geo. B. Picket original locator and principal owner, being charge as manager. For five years Mr. Pickett, has prosecuted development of his property, most of the time on a modest scale with a small force, but there has been practically no cessation in the work. It is Mr. Pickett's ambition to make of the group one of the important mining enterprises of the San Juan, and with this end in view he has turned down innumerable propositions of promotors to stock the group, raise capital equip and operate the mine on a large scale.

For a year past the Carbonero has been a steady producer and shipper, the returns yielding a very satisfactory profit over and above the cost of development. At present the mine is outputting an average of 100 tons a month. The ore is shipped to the smelter at Salida, returning an average of $100 per ton in silver and lead, running from 40 to 50 percent in the latter metal.

At present a force of 20 men is employed, eight in mining and tramming ore, and the balance of the force in pushing the cross cut and other development work. Indications are for a moderate winter in which event regular shipments will continue without interruption ,at least until March, when of course excessive snow may close the trail.

The proposition is a most encouraging one. The vein has been opened and prospected at various places along the mountain side and everywhere shows more or less ore, of a profit paying value and with the careful conservative manner under which it is being opened and operated, it is inevitable that it will become an important factor in Ophir's future.

Publication: Daily Journal (Telluride, San Miguel County); Date: Sep 13, 1913; Section: None; Page: 2

MINES - MINERS - MINERALS

At the Carbonero.

Charles Hedlund, who returned about 10 days ago from the Platoro country, where he has been the past summer today took a position as mine foreman at the Carbonero property at Ophir, a position which Mr. Hedlund had with the old company several years ago.

Considerable work is being done on the Carbonero property at this time. A shaft is being sunk and a force of men is engaged in driving a cross-cut. It is estimated that the tunnel will have to be driven a matter of between 600 and 700 feet further before tapping the vein of the property. The mining activity in the Ophir district is greater now than at any time for some months past, which to say the least is most encouraging.

Shipping to Ouray.

The Tomboy Gold Mines company recently sent three carloads, or about 70,000 pounds of its zinc concentrates to the Brown smelter near Ouray for a test run. The Brown smelter people claim that they can still further reduce this ore so that a greater value can be secured when the resulting concentrates ar sent to the outside smelters.

Superintendent C. B. Smith, of the Rico-Argentine company at Rico, has also recently made arrangements to ship considerable of the ore his company is mining to the Brown smelter and if the process there proves satisfactory this smelter will get consider able ores from both Rico and Telluride.

Publication: Daily Journal (Telluride, San Miguel County); Date: Jan 11, 1916; Section: Front page; Page: 1

One of Party of Five Contractors on Carbonero Mine Caught in Slide Short Distance Below Mine Last Night and Swept to Bottom of Gulch—Blacksmith Was in Edge of Slide and Escaped—Walked to Ophir and Spread Alarm—Searchers Worked Last Night and Today But No Trace of Men Found—Was a Big Slide

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LAST HOPE DASHED WHEN SEARCHERS FOUND BUNK HOUSE AT MINE EMPTY

Searchers Hoped Men Might Have Dug Out and Returne to Mine Last Night—Half Dozen Made Trip to Bunk House This Morning and Found It Empty

Four miners, Joe Benedetti, better known as "Pinkey Joe," John Moser, Guiseppi Simone and Louis Fandron, were swept to their doom last evening about 5:30 o'clock by an avalanche of snow near the Carbonero mine workings above Ophir. There were five men in the party, the fifth, Edwino Carlin, being thrown to the edge of the slide managed to escape, walking to Ophir Loop as soon as he had recovered and giving the alarm. A searching party has been digging in the snow in Carbonero gulch ever since last night, but up to a late hour this afternoon had not succeeded in finding any of the men who were swept down and killed by the snowslide.

From information given the Journal these men were working on a contract on the Shoofly Tunnel on the Carbonero property for Geo. B. Pickett. Benedetti was in charge of the work, being the boss of the crew. He went to Ophir Loop several days ago and attempted to get a man to go with him to the property, desiring another man's labor on the contract. He was unable

to find one, but finally persuaded John Moser, an old-time miner of the Ophir section, to go with him. They secured some supplies yesterday morning from the Ophir-Ames Supply company at the Loop and left there at about 1 o'clock. They reached the town of Ophir at about 2 o'clock, stopping there for half an hour to rest, following which they started out for the mine buildings up the gulch. Contrary to all custom in the winter time, the men took what is known as the summer trail, which runs up the gulch and which section is always swept by snowslides all winter long. It is not known why the men took this trail in preference to the trail along the ridge which is always used in winter and which is safe from all slides.

When Benedetti and Moser were

within about ten minutes' walk of the Carbonero bunk house, the three men there seeing them and wishing to assist them by breaking trail and aiding them in carrying the supplies which they had, started down the summer trail to meet them down the summer story of Edwino Carlin, the blacksmith, who was at the edge of the slide and managed to escape, the three met the two others at a point only about three to five minutes walk to the bunk house at the property. They had just finished greeting one another and were about to start for the bunk house when the slide broke and carried them down the hill hardly before they knew what had happened

It was then about 5:30, according to the story told at Ophir last night by Carlin. He was carried down the hill a short distance and partially covered up with snow, but being in the edge of the slide managed to get out easily, but had lost his hat and one boot. In that condition he made his way to Ophir and spread the alarm there and at the Loop, telling that he had seen nothing whatever of his comrades following the slide. A searching party was organized at once and 15 or 20 of the residents of Ophir and the Loop made their way to the gulch and searched about for several hours with lanterns, but

found no signs of the men. As a bad storm was raging at that time, the members of the party returned home.

This morning early half a dozen men were sent over the ridge trail to the Carbonero property to see if by any chance the men had gotten out of the slide and made their way to the bunk house. Upon arriving there they found no signs of anyone about the place and could see no signs of anyone in the gulch. This party returned to Ophir about noon today and reported that they had been unable to find anyone.

Another large searching party was then formed and started out immediately to attempt to find the bodies of the men, who are now undoubtedly dead. Up to a late hour this afternoon they had been unable to locate any of the bodies.

The slide is said to have been a very large one, being more than 80 feet across. It swept far down into the gulch, and in all probability it will cause considerable trouble for the searchers in locating the bodies, it even being feared that they may have to abandon the search until the spring.

All of the men swept to their death are well known in this section and all bear splendid reputations for being industrious, hard working fellows. They had scores and scores of friends, not only among their countrymen, but also among all of the people whom they knew, and these friends were greatly shocked to hear of their untimely end. All of the men swept to the bottom of the gulch by the avalanche of snow were Austrians, only one of them being married. Louis Fandron is reported to be the married man, with a wife and family in the old country.

This is the worst snow slide which has swept down any of the mountain slopes here in a number of years, more men being killed in this slide than for several years past.

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○Yes ⊙No

PLEASE MAKE SURE THAT THE PRINTER IS SET APPROPRIATELY

Print Cancel

Publication: Daily Journal (Telluride, San Miguel County); Date: Jan 24, 1907; Section: Front page; Page: 1

Ophir Mines Shipping Ore.

Recently the Carbonero mine at Ophir has opened a large body of good ore and the trails have been opened and the pack trains are making daily trips transporting the ore to the railroad at Ames.

The trail to the Morning Star on Mt. Wilson is also being opened and within a few days this mine will begin making regular daily shipments, considerable tonnage having accumulated in the ore house and good bodies having been opened in the mine.

There has been a heavy snow fall on Mt. Wilson accompanied by strong winds which is causing Manager Pickett much annoyance and expense in keeping the trail open.

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Publication: Telluride Journal (Telluride, San Miguel County); Date: Jan 31, 1907; Section: None; Page: 7

Ophir Mines Shipping Ore.

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Publication: Daily Journal (Telluride, San Miguel County); Date: Mar 1, 1913; Section: None; Page: 2

MINES—MINERS—MINERALS

THE PRIMOS CHEMICAL company during the past week shipped two cars of vanadium to their plant at Primos, Pa.

THE CARBONERO property at Ophir which is under the management of Geo. G. Pickett and the superintendency of J. H. Haynes is plugging along steadily and shipping about a car of crude ore a week to the Salida smelter.

MANAGER F. E. TRUMBLE, of the Silver Bell property at Ophir Loop, reports that owing to unavoidable delay and waiting for instructions from the eastern offices of the company the property is still idle, but he expects to start up both the mine and mill in the near future.

DURING THE PAST week only one car of vanadium has been shipped from the Placerville station. This car was shipped by John Hart from the vanadium mines he and his associates are now operating in the Paradox country. Another car of

vanadium which was gotten out by A. M. Wilson is now at the Placerville station ready for shipment.

ON ACCOUNT OF the compressor at the Suffolk property at Ophir being out of commission for the past

Publication: Telluride Journal (Telluride, San Miguel County); Date: Sep 18, 1913; Section: None; Page: 7

MINES - MINERS - MINERALS

From Saturday's Daily.

At the Carbonero.

Charles Hedlund, who returned about 10 days ago from the Platoro country, where he has been the past summer today took a position as mine foreman at the Carbonero property at Ophir, a position which Mr. Hedlund had with the old company several years ago.

Considerable work is being done on the Carbonero property at this time. A shaft is being sunk and a force of men is engaged in driving a cross-cut. It is estimated that the tunnel will have to be driven a matter of between 600 and 700 feet further before tapping the vein of the property. The mining activity in the Ophir district is greater now than at any time for some months past, which to say the least is most encouraging.

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Superintendent C. B. Smith, of the Rico-Argentine company at Rico, has also recently made arrangements to ship considerable of the ore his company is mining to the Brown smelter and if the process there proves satisfactory this smelter will get consider able ores from both Rico and Telluride.

Ore is at present being trammed from the dumps to the mill, which is going at full capacity. Some development work is also being done on the property.

VERY SATISFACTORY PROGRES is being made on the erection of the big Junta Consolidated Gold Mining company's milling plant up Bear Creek canon. A force of more than 70 men are employed on the work and every effort is being made to have the mill well along toward completion before the snow flies.

MOST OF THE BIG MINES IN the district are grinding away at their usual rate on good ores and the res lu itsnoms hrsd u tlhrlddr the results in all instances are very satisfactory.

Publication: Daily Journal (Telluride, San Miguel County); Date: Apr 25, 1905; Section: None; Page: 2

MINES AND MILLS.

Air drills are now in operation at the Pennsylvania tunnel, the air being generated at the Smuggler-Union's big mill and piped up the hill for use.

In a few days the new foundation for the ball mill at the Liberty Bell mill will be ready to receive the machinery and the new process lately installed will be again started up.

It is understood that it is the intention of George B. Pickett to send a few men up to the Carbonero at Ophir shortly and get things in shape for an increased output this season over any heretofore attempted.

Dick Martin has been working the Silver Tip over at Ophir this winter, prospecting the vein with a little development work. I. L. Glenn, of Telluride, is in with him and they think that the showing made justifies the expenditure of some money.

A rich strike is reported at Ophir in the Marie Antonette, a property that while little has in the past been said of it, has considerable development work, a cross-cut of over 1,000 feet having been run on it in past years. Recently a five foot vein of mineral has been opened which shows quantities of free gold and makes the owners, Messrs. John E. Mulkey, I. L. Glenn, Perry Davis and Frank Maumey, feel pretty good.

Publication: Telluride Journal (Telluride, San Miguel County); Date: Nov 20, 1913; Section: None; Page: 7

MINES—MINERS—MINERALS

To Commence Operations.

The Ballard Mining and Milling company will be prepared to start operations on its splendid property near the top of Ballard mountain in a few days. At least that is the expectation of the officials of the company who are on the ground.

The only drawback to starting immediately is the delay in securing the stationary cable for the new tram which has been completed from the mine to the mill in Bear Creek canon. However, it is thought that the cable will be secured and strung by not later than the end of next week.

The officials of the company who are on the ground, Frank Weller, president of the company, J. C. Weller, Sr., manager, and J. C. Weller, Jr., one of the directors are all very optimistic regarding the future outlook of this property as one of San Miguel county's steady producers.

Rich Strike Made.

Manager George B. Pickett, of the Ophir Gold Mines, Milling and Power company, reports that his employes on the Carbonero property at Ophir encountered some very rich ore the fore part of the week. The ore is said to run about $40 and all of it taken out will be sent to a smelter instead of milling it at one of the plants at Ophir.

The vein carrying the ore is about three feet in width and was opened up 1,700 feet from the entrance of the Shoofly Tunnel and at a depth from the surface of the ground of about 700 feet. The ore has continued to hold its values and in the opinion of Mr. Pickett will develop into a big proposition, more concerning the strike will appear in the Journal later.

Streit, of the Princeton T[illegible] Brickley, of Harvard [illegible] neck and neck [illegible] touchdowns [illegible]

Publication: Daily Journal (Telluride, San Miguel County); Date: Mar 31, 1908; Section: Front page; Page: 1

MASSACHUSETTS & NEVADA CO.

Working Two Shifts on Development Work on the Befield Group Above Ophir in Waterfall Gulch— Been Good Producer.

The Massachusetts and Nevada Mining company, operating the Befield group of mines in Waterfall gulch above Ophir, is driving ahead the main tunnel on the vein, working both day and night shifts.

The main object of the present work is to intersect a large and rich gold bearing cross vein which is only about 300 feet further ahead. This tunnel is now in over 1,000 feet and connected with the level above by an upraise, thus furnishing good ventilation, and is the natural tunnel site for the opening up and operating of the whole group.

The Befield vein has a record of big production of silver and lead ores in the past few years, and with the advance of the present development will undoubtedly prove to be one of the largest producers of that rich district.

The good judgment of the manager of this company is shown by not attempting to operate the property for profit during the present winter, while the trails are closed with snow and the transportation of ore made too expensive, but confining the work solely to development.

The Company is fortunate in having for its manager as experienced a man as Mr. George B. Pickett who has been a very successful mining operator for many years, and especially so in bringing another property in the Ophir district, the Carbonero, to its present high state of production.

Publication: Daily Journal (Telluride, San Miguel County); Date: Aug 2, 1913; Section: None; Page: 2

MINES - MINERS - MINERALS

Renewing Mortars and Battery Timbers

More than $5,000 worth of improvements are being added to the Smuggler-Union Mining company's big mill, mortars and new battery timbers being put in to replace the worn ones.

The work of renewing the mortars and battery timbers was started several days ago and has been progressing nicely, several of the new mortars being already in position and practically all of the new battery timbers having been framed.

There are twelve new mortars to be put into position to replace the others, some of which are now quite badly worn. The battery timbers now used are large posts whose dimensions range from 16 to 20 inches by 24 and 28 inches are badly worn and split and will be replaced with new timbers which have been framed in the past few days by a force of company carpenters.

Concrete foundations with a tongue of iron the corresponding groove being in the battery posts, will replarce the wooden sills formerly used under the battery posts. This change is a very material improvement over the former system of using wooden sills under the heavy timbers.

While the improvements being

made are in progress, the batteries being worked upon will necessarily be hung up but the change will be completed in a short time and the fine big mill will then be equipped and primed for a long steady run.

Work Progressing Nicely

Work on the main mill building of the new Junta Consolidated Gold Mining company in Bear Creek canon is going steadily ahead at this time and the progress that is being made is quite satisfactory. The big tramway is likewise rapidly rounding into shape under the direction of Superintendent Henry Hall.

The excavations for the main mill building have long since been completed and the timbers for the mill which have been framed for some time are being rapidly put together and placed in position. Those in charge of the erection of the plant are optimistic regarding the early completion of the same.

A crew of about 15 men is at present employed at the Jim Crow vein doing necessary timbering and pushing the development work. Good progress is likewise being made in driving in the various drifts.

Good Values at Mill Creek.

Assay returns on the ore taken from the claims of Henry Williams, the pioneer prospector of this section, on his property at the head of Mill Creek show a value of $84 a ton. Several tests have recenlty been made on various samples taken from the property and each test has proved that the ores contained excellent

values. The many friends of Mr. Williams rejoice with him in these assay returns which have been recently received on his ores.

Completed Contract.

Richards and Matson, who have had a contract to drive 250 feet on the Shoofly Tunnel on the Carbonero property at Ophir, have recently completed this contract. It is reported that there is still a considerable distance to go before this tunnel which is being driven to cut the Carbonero vein at a lower level, will cut that vein and make the handling of the ore from the property much easier and less expensive.

THE ORE SHIPMENTS FOR THE past month from the Telluride station of the R. G. S. aggregated 99 carloads of concentrates and crude ore. The shipment for the corresponding month in 1912 was 131 showing a very material decrease of 32 carloads for this year over last year. However, as the Liberty Bell is no longer shipping concentrates the difference is in a measure accounted for.

WORK ON THE SAN BERNARDO property near Matterhorn is going steadily ahead, the San Bernardo Mining company, the stock company which has the lease on the property, getting out and reducing at its new mill considerable ore. The values in the ore are holding out and those connected with the company are optimistic concerning the proposition

MANAGER ADKINSON, OF THE Cimarron Mining company, has his force of men at the mine and mill busy and is taking out the usual amount of ore from the mine, this being run through the mill. The property is grinding away steadily, not taking out any sensational values, but the usual recovery of good values is still being made there.

BUT TWO CARS OF ORE WERE the total of the shipments from the Placerville station for the past week. These two cars of ore being vanadium concentrates from the reduction plant of the Primos Chemical company and were billed to the main reduction works at Primos, Pa.

WORK ON THE BALLARD group of claims on Ballard mountain is going steadily ahead a force of six men being employed at the present time in doing development work and getting out ore carrying very encouraging values.

TOM DEMPSEY STILL CONTINUES to operate his pack trains between town and Marshall and Savage basins, which in itself is an in-

dication that there is considerable doing in a mining way in the basins.

A CREW OF FOUR OR FIVE men are plugging away at the Lewis property doing necessary timbering and some little development work, the program being about the same as it has been since the spring.

Publication: Daily Journal (Telluride, San Miguel County); Date: Apr 6, 1906; Section: None; Page: 4

CENT-A-MILE RATE TO MEXICO.

From February 15 to April 7, the Colorado & Southern railroad will sell one way tickets from Denver at $20.10, from Colorado Springs and Pueblo at $26.60, and from Trrinidad at $24.00 to all points on the Mexican Central railroad north of and including the City of Mexico Pass, Laredo, Torrenon and Mexico City. These rates are on practically a cent a mile basis and afford a splendid opportunity to visit the Sister Republic at small expense. Write for particulars.

T. E. FISHER,

General Passenger Agent, Denver.

COMMISSIONERS' PROCEEDINGS

Full Board Present—A Large Amount of Important Business Transacted In a Two-Days' Session —Tax Collectors Appointed.

The board of county commissioners met Wednesday in regular quarterly session with all members present.

After the preliminary work Dick Martin appeared, asked if he could take out a license for a saloon at Newmire, and was told to put in his application, which later was conditionally granted to Martin & Biddinger.

Leonard Kaanta asked assistance for building a wagon road into Ingram basin and the matter was taken under consideration.

I. L. Glenn was awarded the contract for the burial of paupers.

Dr. M. N. Hadley was appointed health officer for the ensuing year.

E. C. Howe was appointed county attorney.

Hadley & Hadley were awarded the contract for the medical care of paupers.

The following road overseers were appointed:

District No. 1—T. H. Elskamp, E. N. Lavender.

District No. 2—B. F. Lonsbery.

District No. 3—William Hockin.

Silas Skeen.

District No. 4.—Harry Prewer.

District No. 5.—Ed. Lowe.

District No. 6.—J. W. Westcott.

The following road tax collectors were appointed:

Smuggler-Union—W. G. Hanson.

Ella G. M. Co.—S. A. Bailey.

Smuggler-Union Leases — Halstead Lindsley.

Robeson-Carter Leases—E. J. Carter.

Carruthers Lease—I. E. Brown.

Tomboy M. Co.—W. T. Tobin.

Pandora G. M. Leasing Co.—C. Y. Breck or Chas. Rittmaster.

Wagner Leasing Co.—G. G. Wagner.

Yellow Mountain G. M. Co.—Otto Erickson.

Suffolk Mining Co.—James Real.

Alta Leasing Co.—C. D. Waggoner.

Telluride Power Co.—S. A. Bailey.

San Bernardo Leasing Co.—Frank Fox.

Ophir-Milwaukee M. Co.—G. R. Dolf.

Carbonero—G. B. Pickett.

Ophir Consolidated Leasing Co.—H. H. Hutton.

Liberty Bell—C. A. Chase.

Japan-Flora—C. D. Waggoner.

Black Bear—G. G. Wagner.

Double Eagle—J. H. Litchfield.

Mayflower M. Co.—L. Henry.

Fairview—W. A. Nicodemus.

Keystone Placer—To be appointed

later.

Gold King mine, mill and basin—Gus Paro.

Golden Shaft M. Co.—W. A. Nicodemus.

Marie Antoinette M. Co.—W. Graffin.

Report of clerk checked up and approved.

Thursday the reports of the balance of county officers were checked up and approved.

Chas. Rittmaster came before the board to see about a gold brick for the Elks grand lodge meeting at Denver. The matter was laid over until the next meeting.

Liquor bond of Mike de Julio approved.

Chas. S. Watson, county superintendent of schools, came before the board and requested that the commissioners appoint a committee of two to secure banner for schools and these two to appoint the third. Granted. H. C. Lay and C. L. Watson were appointed. The banner is to cost $22 and will be contested for by all schools in the county, and purchased at the expense of the county.

Meeting then adjourned until the next monthly meeting on May 10.

Publication: Telluride Journal (Telluride, San Miguel County); Date: Nov 7, 1907; Section: Front page; Page: 1

LONG CROSS-CUT OPENS VEIN.

After Two Years Work the Carbonero Mines and Reduction Company Have Opened Excellent Body of High Grade Ore.

Sunday evening the miners at work on the long Carbonero cross-cut tunnel, which is now in 1,000 feet, broke into the Carbonero vein, for which the cross-cut tunnel has been driven, cutting the vein at a lower depth. The owners of the property have been for two years past driving ahead this tunnel for the purpose of opening up the property for a larger output and more economical and advantageous working of the mine, and as a consequence Manager Pickett is much elated, especially so, because they have broken into a vein body of high grade ore.

No assays or shipments have been made as yet to determine the value of the ore body, but the appearance of the ore indicates that it is fully as high grade and valuabl as the ore that has been mined and shipped for many years past from the upper workings. The width of the vein has not yet been determined, for the workmen had only broken into the foot wall.

The cross-cut taps the vein at a depth of 600 feet below the surface and development will now be prosecuted as fast as possible by driving drifts both ways on the vein, from the point where the tunnel has cut the same, and thus open up an immense amount of new stoping ground, which will result in a few months in a large increase in the production and output of this promising property, and will mean a great deal for the Ophir camp.

The Carbonero group, as it is usually called, consists of a group of fif-

teen lode claims, six of which are patented, and lie all together and contiguous, on Silver mountain, at an altitude of about 11,000 feet, some two miles northeast of the town of Ophir. The claims were located by George B. Pickett, some of the older locations dating back some ten years ago.

Some years later Mr. Pickett associated with him three well known men of Colorado Springs, namely, Frank L. Rouse, who is at present county commissioner of El Paso county, H. H. Stevens, owner of the Alta Vista hotel at Colorado Springs, and Prof. William Strieby, professor of chemistry at Colorado college. These three men, together with Mr. Pickett, are all equal owners, and all have furnished their proportion of the necessary money required to develop the property up to the present time. The active management of the property has been under the immediate direction of Mr. Pickett, and to his energy, judgment and pluck, during all these years, is due the success of the property.

About seven years ago the Carbonero company commenced making small shipments to the smelter, and during the past seven years it has been a small but steady shipper, the shipments only being made, however, during the summer months, as a general rule, it being expensive and impossible during a portion of the winter months to pack the ore out from the mine on account of deep snows in that vicinity.

During the past seven years this property has produced and shipped to the smelters between $60,000 and $70,000. At the present time the ore is being shipped to the Salida smelter.

The ore is what is known as a high grade silver-lead ore, generally running quite heavily in lead, and on that

account being a most desirable ore for the smelters. It requires very little sorting and is shipped in its crude state, not being susceptible of concentration to any great advantage, but comes as near being all first class shipping ore as any mine in the county. The average value of the ore that has been shipped in the past is about $75 per ton.

As above stated the four men named are the sole owners, and have stuck to the property all these years, quietly developing it from the grass roots without any assistance or outside capital, and are now in a fair way to realize on their investment in a very handsome and substantial manner, and they are certainly entitled to the success which is now assured them beyond the shadow of a doubt.

For convenience in the future operation of the property the owners have recently organized and incorporated The Carbonero Mines and Reduction company, and hereafter the property will be owned and operated as a close

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Obituary.

Albert Sydney Givens was born in Sherman Texas, in July of 1875, and died in Telluride at 5 o'clock in the morning of November 5, 1907, at the age of thirty-two.

He began military life at the age of sixteen, afterwards spending sixteen months in the Philippine Islands as a United States soldier in 1898. In February of 1898 he married Jennie Schissler and to them were born three children.

Deceased came to Telluride from Greeley with a company of infantry and wore the stripes of a lieutenant. While his company was in Telluride his time expired and he reinlisted in A Troop and was Captain Wells' orderly. After the use for the military subsided he became a guard at the Smuggler mine and later entered the employ of the Liberty Bell Gold Mining company at their mill where just fifteen minutes before his shift would have ended—at 2:45—on Monday afternoon he met with the accident which was the direct cause of his death.

He leaves two sisters—one living at Montrose and the other at Altaloma, Texas, and one brother at Amarilla, Texas, besides a good wife and three small children to mourn his loss.

The funeral services were held at the parlors of the San Juan Undertaking company at 4 o'clock this afternoon and in the morning the remains will be taken to Denver for interment.

Publication: Telluride Journal (Telluride, San Miguel County); Date: Dec 14, 1911; Section: None; Page: 9

MINES - MINERS - MINERALS

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Colorado Ore Deposits.

The geology and ore deposits near Lake City, Colorado, are described by John D. Irving and Howland Bancroft of the United States Geological Survey in bulletin 478, which has just been issued by the survey.

The Lake City quadrangle, which includes the mining camp of the same

name, is in southwestern Colorado, adjoining the Ouray quadrangle, and covers about 236 square miles of some of the most rugged mountains in Colorado, the most notable being Uncompahgre Peak, which stands 14,306 feet above the sea. The immediate region covered by the report embraces about 78 square miles, including Lake City. The surface of this area is composed principally of igneous or volcanic rocks, which have been wrought by streams, glaciers and other agencies into a topography of extreme roughness and irregularity. Viewing the country from Uncompahgre Peak, says Mr. Bancroft, one is impressed by the approximate uniformity in the altitude of many of the peaks of the San Juan Mountains, indicating that these summits represent a formerly existing plateau which has been dissected by deep erosion. The lowest altitude in the quadrangle is 8,000 feet.

Precious metals were first discovered in the Lake City area in 1842 by a member of the Fremont party, and as late as 1871, at the time of the discovery of the Ute anl Ulay veins, all the land belonged to the Indians. Probably the most talked of find during the first boom period was that of the Golden Wonder, in Deadman Gulch, so named from four men who were killed and partly eaten there by their companion in the winter of 1874. The output of the Ute and Ulay mnies alone has been over $12,000,000 and that of the Golden Fleece $1,400,000.

The report traces the early geologic history of the region, the various uplifts, depressions, and erosions of the land, its present topographical features and the mining activity since the first discovery of gold. It includes a somewhat detailed description of the numerous mines and is well illustrated with

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From Friday's Daily.

The General Vanadium company will ship two cars of high grade vanadium ore to Liverpool tomorrow.

The Silver Bell has been compelled to suspend operations for a few days because of a break in its compressor. A new and larger machine has been ordered and it is expected to be in position for operation in about ten days. Superintendent Frank Trumble is working as fast as possible to drive the mill level crosscut to cut the Silver Bell vein about 700 feet below the old workings, which is expected to lay bare an immense amount of stoping ground.

Cyanidation in Colorado.

(By Marshall D. Draper in Mining and Scientific Press.)

The decadence of the mining industry in Colorado is attributed, in the opinion of some engineers, to the exhaustion of the more accessible and probably richer deposits of the first few hundred feet in depth. On the other hand, the large amount of development work necessary to extract these orebodies has, in numerous instances at least, also developed and exposed considerable bodies of lower grade ore, which, for various causes, are not now being treated. Cripple Creek on

account of the application of the cyanide process to the treatment of ore, has been more fortunate than some of the other districts, and although concentration plants have partly solved the problem of cheaper treatment in other districts, yet freight and smelting charges on concentrates cannot be avoided. It has been stated by San Juan producers that it is impossible to make small mines, of a production of ten to thirty tons per day, profitable on ore averaging less than $20 per ton. In considering this statement, a large number of conditions must be taken into consideration, such as the transportation cost to some treatment plant, treatment costs, the width of the vein, character of the ore—whether it contains other metals than gold and silver—mining costs, and it is impossible to say without detailed and definite data covering these points whether the statement is correct or only partially correct.

It is a well known fact that ore that will not pay in the San Juan will pay in other Colorado districts, or in other states, this, of course, being due altogether to the difference either in the method or cost of treatment. Assuming that we have the ore ready for shipment, how is it that the shipper is unable to get any returns (I speak now of the San Juan shipper) on ore of a grade of about $10 per ton or possibly a higher grade? The answer is, that freight and treatment charges absorb practically all the returns from the from the ore. The establishment of some central custom-milling plant would create a market for such grade ores, and while it is not my opinion that the net result would be the immediate opening up of a number of mines, yet it would undoubtedly en-

able the small operator to exist and in the long run would greatly assist in the development of the mining industry in general. Given a possible production of 100 tons per day, there are few mines which would not be justified in the erection of individual milling plants, but the difficulty with the small shipper is to prove his mine meanwhile. Such central plant could be arranged without difficulty for the treatment of lead and copper ores, where the concentrate containing these metals could at once be taken from the jigs or tables, the tailings from the milling operation being cyanided. The San Juan has been quoted merely as one of several districts in the state where such installation might be beneficial.

Together with several associates, I made a large number of cyanide experiments on the ores of Gilpin county, about two years ago, the various tests and experiments covering a period of about a year. It was found that there was no particular difficulty in the cyanidation of these ores, and crude concentrates contained 2 per cent copper and only 10 to 12 per cent silica could be cyanided direct without undue cyanide consumption and with a high extraction. As a matter of fact, the average extraction from the proper conditions where ascertained was found, on a series of sixteen parallel tests, to be 87 per cent. Another point of considerable interest was that the average extraction of several Gilpin county custom-milling plants was found to be good, considerably better than has generally been supposed, and, in brief, probably in excess of 70 per cent. Notwithstanding this fact, the shipper seldom receives a net profit of more than 30 per cent of the gross value of the ore, and the difference has been found

to be due to the freight and smelting charges on the concentrate.

There is no doubt whatever in my mind that the establishment of a central milling plant in Gilpin county with a treatment charge of $2 per ton, would result in unparalleled activity in this pioneer gold district. This plant would use the ordinary present methods of amalgamation, followed by concentration, but would differ in further cyaniding not only the tailing but the concentrate as well.

The present situation, speaking of Gilpin county as a whole, is that the shipper is unable to work at a profit if the grade of the ore is under $6 per ton. In many cases this value is equally true to a lead value of $7 per ton. A treatment charge of $2 per ton would insure a 300 ton cyanide plant a handsome profit, and the shipper would get some net returns from an ore running as low as $3 per ton, although this figure would not allow for any mining cost. The ores of Clear Creek county come under this head also, though not to so great an extent. As far as any lead content is concerned, it may be said as before, that in the operation of a plant of this kind it would be a simple matter to divert the lead concentrate at any point and

ship direct.

The cost of the New Portland plant at Victor is said to have been something less than $1.25 per ton, and the cost at the Independence plant about $1.23. Average costs on Gilpin county ores may be estimated at $1.08. It is probable the average costs on San Juan ores would be somewhat higher, as freight on supplies is higher and generally costs are somewhat greater. It is safe to say, however, on the scale outlined that the cost on approximately a 300-ton plant would be not to exceed $1.50 per ton, and when the plant was in good running order it is probable that this cost would be considerably reduced.

From the milling standpoint is must be admitted that there is much to be desired is the development of economical methods in Colorado. I believe that more could be accomplished toword rejuvenating the mining industry by the establishment of modern mills at central points than by any other means at present known. How this condition could best be attained is hard to say, and it is a matter that is hardly within the scope of this article. It may be of interest in this connection to note that a prominent company took up the matter of the establishment of a custom plant in Gilpin county, their engineers looked into the matter and stated that hey reported favorably on the plan. In the absence of some energetic promoter, the scheme was allowed to be supplanted by other matters of a more pressing nature and nothing was done. Engineers, in the very nature of things, are seldom very good promoters, even if their inclinations are that way, and as the originators of this particular project were all engineers the matter at pres-

ent is as dormant as the mining industry in some sections of the state.

In my opinion, as previously stated, the most promising field is in the San Juan country and in Gilpin county. It may be that Ouray or possibly Telluride would also offer inducements, though this could only be ascertained by careful investigation. Alma and Breckenridge might also be favorable fields. I hardly think that the silver losses in concentration in the silver districts, such as Aspen and Creede, would be great enough to warrant such an installation. A smaller plant situated at some central point in Gunnison county might be a benefit. Such a plant in Clear Creek county would very likely prove of great benefit to operators. Cripple Creek has two individual installations embodying modern practice, but I am not aware that there is any custom plant embodying the latest practice, so that this might be a promising field for a 200 to 500-ton plant.

From Saturday's Daily.

J. H. Haynes, formerly of this camp, has entered the employ of the Ophir Gold M., M. and P. Co., of Ophir, as superintendent. This position has been held for the past year by Philo D. Grommon, who is leaving Ophir to personally manage his investments north of Denver. Mr. Haynes several years ago was engaged as expert mining and metallurgical engineer in Telluride and is well known over the state as a capable, aggressive engineer. He has just completed and put in operation the first cyanide mill in the Clear Creek district, Colorado; which is noteworthy as these ores have never been considered amenable to cyanide treatment. He will be welcomed by the

mining interests at Ophir, but Mr. Gronemon will be missed.

Progress at the Suffolk.

The Suffolk group of claims, situate on Silver mountain, at Ophir, have been quietly and steadily undergoing, for the past year, a rejuvenation. In September, 1910, the Ophir Gold Mines, Milling & Power company, of which Mr. George B. Pickett is the vice president and manager, began development work upon the Suffolk property. Mr. Pickett immediately started in upon a systematic operation of the property, and for over a year past, has been doing nothing in the way of milling or attempting to mill any ore, but has been engaged in directing the operation of fully equipping and developing the mine. A large adit tunnel has been driven ahead continuously now until this tunnel is cutting into the heart of the mine, over 1,500 feet from the surface.

This last fall, he commenced, among other matters of equipment, the erection of a new aerial tramway. This tramway is being erected by E. H. Sackett and Harry Doyle, the work of erection being under the direct supervision of Mr. Doyle, who is one of the best known millwrights and tramway construction men in this part of the country.

Philo D. Gronemon, the superintendent, informs the Journal that they expect to have the tramway completed early in December, and will then immediately begin the milling of Suffolk ores. At the present time, twenty

stamps of the Suffolk mill have been dropping, and for some little time past been operating on custom ores.

Immediately after the completion of the erection of the tramway it is the company's intention to increase the capacity of the mill by the erection and installation, as soon as possible, of twenty additional stamps.

Recently in the course of the operation of this company, they have opened up some new ground on the Lily vein, a claim which was purchased from Danzitt & Smith last spring. This new strike in the Lily vein promises at this time to be one of the important factors for the production of ore for milling purposes for the Ophir Gold Mines, Milling & Power company.

The ores as encountered in this new strike on the Lily vein carry good values and there is a large body of the same.

Associated with Mr. Pickett in the Suffolk properties, and one of the principal officers of the Ophir Gold Mines, Milling & Power company, is Mr. J. A. Heimbaugh, the well known mining operator, and business man of Colorado Springs. Mr. Heimbaugh is the owner of the Alamo hotel in Colorado Springs, a politician of some note, and is at the present time, occupying the position of Commissioner of Finance in the present commission form of government now existing in Colorado Springs.

The possibilities of the Suffolk are very encouraging, and in fact, the outlook for the whole Ophir district was never more favorable than at the present time.

Mr. Pickett has just closed a contract with Mr. B. F. Raymond, the Telluride representative of the Stearns-Rogers Manufacturing company, for the insallation of several Ingersoll-Sar-

gent drills, some of them the small and one man drills used in stoping, and it is expected that with the installation of these drills the tonnage will be materially increased, at a much lower cost and with less men employed underground. Among other improvements, a complete compressor air plant is being installed and the development and mining in the future will be carried on with machine drills instead of by hand power as has been the custom in the past.

The wisdom of Mr. Pickett in his policy of working for the past year on the Suffolk in equipping and developing the property for a large future production, will no doubt bear good fruit, and it appears now as if the property is just on the eve of entering on a large production, and with the milling facilities increased by the addition of twenty more stamps, making the mill a forty stamp mill, we confidently look forward to a large production and a prosperous season in 1912 for the Suffolk property.

The Carbonero Mine.

The Carbonero Mining & Reduction company, which owns the property known as the Carbonero, on Silver Mountain at Ophir, is a close corporation. The property is under the direct management of Mr. George B. Pickett, one of the most successful mining men in this section of the country.

The stock of this corporation is owned by four men, Mr. George B. Pickett, Mr. H. H. Stevens, Mr. Frank L. Rouse and Prof. Strieby, all of Colorado Springs, and all prominent and well known in that city. Mr. Stevens is owner of the Alta Vista hotel; Mr. Rouse was formerly a county commissioner of El Paso county, and Prof.

Strieby is well known as the professor of chemistry at Colorado College. The operation of this property under the direction of Mr. Pickett, goes forward without any hurrah or blare of trumpets. It has been steadily operated for the past ten years and has been one of the main stays of the Ophir camp. At the present time twenty-two men are employed. Two strings of mules, thirty animals, are constatly packing the products of the mine to the railroad station at Ophir Loop, where it is shipped to the Ohio & Colorado Smelting & Refining Co., at Salida.

The packing of this ore is done by Anderson and Peterson, the liverymen of Ophir, and for the past eight years the packing operations have been steadily and continuously carried on, with the exception of an occasional day or two during some hard storm of the winter, when packing would not be continued.

The ore in the Carbonero is a heavy silver lead ore, averaging about $40.00 per ton net, and is a very desirable ore for any smelter. The company is also driving a long development tunnel, which will crosscut the Carbonero vein 662 feet below the present lowest level. This large tunnel is now in over 1,000 feet.

From Monday's Daily.

The Cimarron Mining company has been compelled to discontinue its milling operations owing to hortage of water incident to this season of the year. An attempt was made to overcome this difficulty by installing a

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REPETITION OF THE OLD STORY.

Another Ophir Prospect Proves to Be a Valuable Profit Yielding Mine Under Geo. Pickett's Conservative Management.

On a recent visit visit to Ophir the Journal manager was privileged to enjoy a pleasant and profitable hour with Mr. Geo. Pickett, manager of the Carbonero mine, learning incidentally that since the 1,000 feet tunnel he has been driving encountered the vein, mention of which was recently made in these columns, he has been drifting each way with the result that on Saturday last he shipped his first car of ore.

The ore encountered in this lower tunnel level, which is called No. 3 level, appeared to be of greater quantity and of even better grade than had been found in the upper workings of the vein.

The product not being susceptible of concentration to any marked advantage practically the entire output is shipped in its crude state to the smelter. As packed to the station at the Loop the ore sacks average better than 100 pounds, the pack train makes two trips a day, hence it does not take long to fill a twenty-ton car.

There, as elsewhere throughout the San Juan, the fall weather has been very favorable to outside work, and the weather-wise assure Mr. Pickett that the coming winter promises a light snow fall, hence he is exuberant over the prospects for continuous shipping well into January.

In a brief mention of the Carbonero not long since the Journal called attention to the recent incorporation of the Carbonero Mines and Reduction company, the entire issue of stock being held by Mr. Pickett and three associates, Mr. Frank L. Rouse, Mr. H.

H. Stevens and Mr. William Strieby, all prominent in the professional and business life of Colorado Springs. The company being a close corporation in the strictest interpretation of the term.

It is the purpose of the company with the opening of next spring to equip the mine with commodious and substantial boarding and bunk houses, etc. In the meantime during the winter, work will be persistently prosecuted with as large a force of men as can be conveniently handled, in order that the mine may be developed and as much stoping ground opened as possible, with the idea of outputting a large tonnage next summer. Manager Pickett's idea is with the completion of the proposed new buildings, to erect an aerial tramway from the mine down to the Ophir-Silverton wagon road, making possible the continuous shipment of ore the year round and a reduced cost for transportation.

The Carbonero is shown in the surface workings and the drifts from the tunnel level to have an average width of five feet, a very desirable breadth for advantageous working, with a pay streak of twelve inches of silver bearing ore carrying on an average 50 per cent lead, thus yielding a rapid tonnage, a cubic foot of this ore weighing about the same as three cubic feet of the average ordinary quartz. On account of its heavy lead percentage the ore is also eagerly sought after by smelters because of its fluxing qualities when smelted in connection with other ores. Outside of the one foot pay streak referred to the vein is at present a loose formation of a sort of decomposed carbonate ore, of low grade which will not at this time pay to concentrate or ship.

It is manager Pickett's theory that

as depth is gained this decomposed carbonate will take on a sulphide form of sufficient value to either ship in its crude state or concentrate at a distinct profit.

When the deep cross-cut encountered the vein, full five feet of vein matter was found with a strong foot of good pay ore. From this point Mr. Pickett has now drifted twenty-five feet in either direction, and has made from the yield of this work a shipment of twenty-five tons to the smelter. Returns from this have not yet been received, but it is confidently expected to yield better values than were found in the shipments from the more shallow openings near the surface.

Throughout the winter, according to his present plans, Mr. Pickett will employ a force of fifteen miners largely on development work, driving ahead the drifts and making a perpendicular upraise of 225 feet to a connection with level No. 2 from which some exceptionally fine ore has been taken

From this it will readily be seen by practical mining men that a large body of good ore will have been blocked out by spring.

Indeed the present indications are most flattering for the development of the Carbonero into one of the most important mines of this district of big and paying mines.

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MINES - MINERS - MINERALS

From Thursday's Daily.

Start Mill

Judge C. B. Smith of Rico, who passed through this city last night enroute from Rico to Denver, told a Journal reporter this morning that the Pro Patria mill at Rico which has been taken over by the Rico-Wellington company and which has been undergoing repairs and remodelling for some time past, was in fine shape now, all of the work on the structure having been completed and it was the intention of officials of that company to start the mill working this morning.

Built Tram

The Rico-Argentine people at Rico have, according to C. B. Smith, one of the officials of the company, just struck another big vein of ore which they had known nothing about. He reports the ore as being of exceptional value and the company officials highly elated at the outlook.

He also informed a Journal reporter this morning that his company had just finished the construction of a short extension to its tram way which will do away with the hauling of ore to the railroad and that with this addition they will now be able to handle the ore in a better and more economical way in the future.

Cable Broke

Cable Broke.

What might have proved a serious accident had it happened during the day while workmen were engaged in construction work about the Tomboy tram was the breaking of an eye-bolt in the Pandora terminal of the tram on Tuesday night about 10 o'clock

The workmen on the tramway had just completed the stretching of the cable from the Pandora terminal to the first tower which is a sort of a breakover and tension station on the top of the cliff just back of the old Pandora mill. When they had left work in the evening both stretches of stationary cable from the terminal to the tension station had been pretty thoroughly stretched. In some manner the eye-bolt broke, probably because of a defect, letting the cable drop and coil up along the trail.

The dropping of the cable broke the telephone and power lines and caused a great amount of noise which frightened the residents who live nearby, as they thought it was another rock slide such as they experienced a little more than a year ago.

The workmen on the tram went to work yesterday morning and had the cable nearly stretched into place by the time they quit work last night so the day of starting the tram will not be long delayed by the break.

From Saturday's Daily.

AFTER a few days' shut down of 30 of the 60 stamps in the big Smuggler-Union mill at Pandora, the entire plant is now running at full capacity.

A SMALL force of men is being kept busy at the Lake Superior-Ophir property near Ophir. They are doing development work under the direction of Arthur M. Kivari.

WORKMEN on the Tomboy tram are today engaged in splicing the traction cable of the new tramway and it is anticipated that a test run will be made in a couple of days.

MANAGER F. E. Trumble, of the Silver Bell property at Ophir Loop, did not get the mine and mill started this morning as he anticipated, but told a Journal reporter over the telephone that he was pretty sure that the property would get started to working next Wednesday, February 5th.

HENRY WILLIAMS, the veteran

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she went on the morning southbound.

—I. D. Meyers was an arrival in the city last night from points north. After visiting overnight in the city he boarded the morning train for Mineral Wells, Texas.

—Mr. and Mrs. J. C. Sturtevtnt were arrivals last night from their home in Ophir, where Mr. Sturtevant is employed by the Ophir Gold Mines, Milling and Power company.

—Phil Flynn, the prominent Silverton mining engineer, was an arrival last night from his home and will be in the city today and possi-

bly longer arranging business at
fairs.

prospector in this district, has recently taken some samples from his property near Newmire and had assays made of them. He reports that the assays in one instance ran as high as $29 in gold, while in another case they went to $22 in gold. Henry is greatly elated at the result of the tests made on the ore from his property.

Cable for Lewis.

Fourteen employes of the Lewis mine in Bridal Veil basin, started out from Pandora this morning dragging 1,000 feet of cable to the Lewis property. The cable is to be used in the shaft to the Lewis property. The men will probably have considerable work dragging the cable up to the mine.

Doing Development Work.

Gio Oberto who has a lease on the Nellie workings, reports that he has a force of 11 men doing development work. The mill is at present closed down and will probably remain down the remainder of the winter. Considerable good ore is being encountered in the course of development work and the mill be started as soon in the spring as possible. With the steady shipment of concentrates and rich crude ore from this property it is bound to be a factor in the mining industry in this vicinity.

Full Capactiv.

At the Suffolk mill at Ophir which is handling all the ore from the Suffolk and Carbonero mines, a new 75 horse power motor has just been installed. The installation of this new motor will permit the management of the mill to run the entire

mill at full capacity from now on. For the past few days since the installation of this motor the mill has been running at full capacity, 150 tons being put through daily. Everything at both the mines and the mill are running smoothly and the company is getting plenty of ore to keep the mill running 24 hours a day.

Gold Amalgamator

Mr. James J. Kaighin, represent--erate all three groups of mines owning the Shareholders' Protective ed by the company, which comprise

League, Limited, of Detroit, has been in the city the past week interviewing the mining men of this section in regard to the installation of a hydrostatic gold amalgamator which his company is selling. The Shareholders' Protective league is the owner of the United States rights to the new amalgamator.

According to the literature of the company it takes the place of plates where plates are used; no gold is too fine, the amalgamator even catching float. It has been patented by Paul Kuehn, of Detroit.

To Start Operations.

H. Baker, who has a lease on the San Bernardo property at Matterhorn, expects to start operations on an extensive scale upon his return from the east. The tram which was built between the mine and the mill is in running order, and the machinery which Mr. Baker recently purchased in Denver and which arrived some time ago has all been installed. Mr. Baker is very optimistic concerning his lease, being especially well pleased with the value of the ore which has been encountered. With the mill in operation and the present good values of the ore holding out Matterhorn will forge to the front as a mining town.

Promising Outlook.

In an interview with Manager T. E. Thomas, of the Junta Consolidated Gold Mining company, a Journal reporter learned that the outlook for the Junta the coming year is more encouraging than at any time in the past. Mr. Thomas reports that he is getting things in good shape and that with the approach of spring hopes to have ev-

erything in readiness to immediately begin work on a large scale.

If things progress as rapidly and smoothly from now to spring as they have in the past few months Mr. Thomas will have everything lined up so that he will be able to put a large force of men at work constructing the proposed mill in Bear Creek and another force of men will be put to work putting the finishing touches on the tramway which was all but completed last fall. Another force of men will be engaged to build an extension to the tramway from the Jim Crow to the Junta mine.

With large forces of men at work the management figures that it will be but a short time before they will have everything in readiness to op-

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the most rugged mountains in Colorado, the most notable being Uncompahgre Peak, which stands 14,308 feet above the sea. The immediate region covered by the report embraces about 78 square miles, including Lake City. The surface of this area is composed principally of igneous or volcanic rocks, which have been wrought by streams, glaciers and other agencies into a topography of extreme roughness and irregularity. Viewing the country from Uncompahgre Peak, says Mr. Bancroft, one is impressed by the approximate uniformity in the altitude of many of the peaks of the San Juan Mountains, indicating that these summits represent a formerly existing plateau which has been dissected by deep erosion. The lowest altitude in the quadrangle is 8,000 feet.

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(By Marshall D. Draper in Mining and Scientific Press.)

The decadence of the mining industry in Colorado is attributed, in the opinion of some engineers, to the exhaustion of the more accessible and probably richer deposits of the first few hundred feet in depth. On the other hand, the large amount of development work necessary to extract these orebodies has, in numerous instances at least, also developed and exposed considerable bodies of lower grade ore, which, for various causes, are not now being treated. Cripple Creek on

account of the application of the cyanide process to the treatment of ore, has been more fortunate than some of the other districts, and although concentration plants have partly solved the problem of cheaper treatment in other districts, yet freight and smelting charges on concentrates cannot be avoided. It has been stated by San Juan producers that it is impossible to make small mines, of a production of ten to thirty tons per day, profitable on ore averaging less than $20 per ton. In considering this statement, a large number of conditions must be taken into consideration, such as the transportation cost to some treatment plant treatment costs, the width of the vein character of the ore—whether it contains other metals than gold and silver—mining costs, and it is impossible to say without detailed and definite data covering these points whether the statement is correct or only partially correct.

It is a well known fact that ore that will not pay in the San Juan will pay in other Colorado districts, , or in other states, this, of course, being due altogether to the difference either in the method or cost of, treatment. Assuming that we have the ore ready for shipment, how is it that the shipper is unable to get any returns (I speak now of the San Juan shipper) on ore of a grade of about $10 per ton or possibly a higher grade? The answer is, that freight and treatment charges absorb practically all the returns from the from the ore. The establishment of some central custom-milling plant would create a market for such grade ores, and while it is not my opinion that the net result would be the immediate opening up of a number of mines, yet it would undoubtedly enable the small operator to exist and in the long run would greatly assist in

the development of the mining industry in general. Given a possible production of 100 tons per day, there are few mines which would not be justified in the erection of individual milling plants, but the difficulty with the small shipper is to prove his mine meanwhile. Such central plant could be arranged without difficulty for the treatment of lead and copper ores, where the concentrate containing these metals could at once be taken from the jigs or tables, the tailings from the milling operation being cyanided. The San Juan has been quoted merely as one of several districts in the state where such installation might be beneficial.

Together with several associates, I made a large number of cyanide experiments on the ores of Gilpin county, about two years ago, the various tests and experiments covering a period of about a year. It was found that there was no particular difficulty in the cyanidation of these ores, and crude concentrates contained 2 per cent copper and only 10 to 12 per cent silica could be cyanided direct without undue cyanide consumption and with a high extraction. As a matter of fact, the average extraction from the proper conditions where ascertained was found, on a series of sixteen parallel tests, to be 87 per cent. Another point of considerable interest was that the average extraction of several Gilpin county custom-milling plants was found to be good, considerably better than has generally been supposed, and, in fact, probably in excess of 70 per cent. Notwithstanding this fact, the shipper seldom receives a net profit of more than 50 per cent of the gross value of the ore, and the difference has been found to be due to the freight and smelting charges on the concentrate.

There is no doubt whatever in my mind that the establishment of a central milling plant in Gilpin county with

a treatment charge of $2 per ton, would result in unparalleled activity in this pioneer gold district. This plant would use the ordinary present methods of amalgamation, followed by concentration, but would differ in further cyaniding not only the tailing but the concentrate as well.

The present situation, speaking of Gilpin county as a whole, is that the shipper is unable to work at a profit if the grade of the ore is under $6 per ton. In many cases this value is equally true to a head value of $7 per ton. A treatment charge of $2 per ton would insure a 300-ton cyanide plant a handsome profit, and the shipper would get some net returns from an ore running as low as $3 per ton, although this figure would not allow for any mining cost. The ores of Clear Creek county come under this head also, though not to so great an extent. As far as any lead content is concerned, it may be said as before, that in the operation of a plant of this kind it would be a simple matter to divert the lead concentrate at any point and

ship direct.

The cost of the New Portland plant at Victor is said to have been something less than $1.25 per ton, and the cost at the Independence plant about $1.23. Average costs on Gilpin county ores may be estimated at $1.08. It is probable the average costs on San Juan ores would be somewhat higher, as freight on supplies is higher and generally costs are somewhat greater. It is safe to say, however, on the scale outlined that the cost on approximately a 300-ton plant would be not to exceed $1.50 per ton, and when the plant was in good running order it is probable that this cost would be considerably reduced.

From the milling standpoint is must be admitted that there is much to be desired is the development of economical methods in Colorado. I believe that more could be accomplished toword rejuvenating the mining industry by the establishment of modern mills at central points than by any other means at present known. How this condition could best be attained is hard to say, and it is a matter that is hardly within the scope of this article. It may be of interest in this connection to note that a prominent company took up the matter of the establishment of a custom plant in Gilpin county, their engineers looked into the matter and stated that hey reported favorably on the plan. In the absence of some energetic promoter, the scheme was allowed to be supplanted by other matters of a more pressing nature and nothing was done. Engineers, in the very nature of things, are seldom very good promoters, even if their inclinations are that way, and as the originators of this particular project were all engineers the matter at present is as dormant as the mining industry in some sections of the state.

In my opinion, as previously stated, the most promising field is in the San Juan country and in Gilpin county. It may be that Ouray or possibly Telluride would also offer inducements, though this could only be ascertained by careful investigation. Alma and Breckenridge might also be favorable fields. I hardly think that the silver losses in concentration in the silver districts, such as Aspen and Creede, would be great enough to warrant such an installation. A smaller plant situated at some central point in Gunnison county might be a benefit. Such a plant in Clear Creek county would very likely prove of great benefit to operators. Cripple Creek has two individual installations embodying modern practice, but I am not aware that there is any custom plant embodying the latest practice, so that this might be a promising field for a 200 to 500-ton plant.

From Saturday's Daily.

J. H. Haynes, formerly of this camp, has entered the employ of the Ophir Gold M., M. and P. Co., of Ophir, as superintendent. This position has been held for the past year by Pablo D. Grommon, who is leaving Ophir to personally manage his investments north of Denver. Mr. Haynes several years ago was engaged as expert mining and metallurgical engineer in Telluride and is well known over the state as a capable, aggressive engineer. He has just completed and put in operation the first cyanide mill in the Clear Creek district, Colorado; which is noteworthy as these ores have never been considered amenable to cyanide treatment. He will be welcomed by the mining interests at Ophir, but Mr. Grommon will be missed.

Progress at the Suffolk.

The Suffolk group of claims situate

The Suffolk group of claims, situated on Silver mountain, at Ophir, have been quietly and steadily undergoing, for the past year, a rejuvenation. In September, 1910, the Ophir Gold Mines, Milling & Power company, of which Mr. George B. Pickett is the vice president and manager, began development work upon the Suffolk property. Mr. Pickett immediately started in upon a systematic operation of the property and for over a year past, have been doing nothing in the way of milling or attempting to mill any ore, but has been engaged in directing the operation of fully equipping and developing the mine. A large adit tunnel has been driven ahead continuously now until this tunnel is cutting into the heart of the mine, over 1,500 feet from the surface.

This last fall, he commenced, among other matters of equipment, the erection of a new aerial tramway. This tramway is being erected by E. H. Sackett and Harry Doyle, the work of erection being under the direct supervision of Mr. Doyle, who is one of the best known millwrights and tramway construction men in this part of the country.

Philo D. Grommon, the superintendent, informs the Journal that they expect to have the tramway completed early in December, and will then immediately begin the milling of Suffolk ores. At the present time, twenty

stamps of the Suffolk mill have been dropping, and for some little time past been operating on custom ores.

Immediately after the completion of the erection of the tramway it is the company's intention to increase the capacity of the mill by the erection and installation, as soon as possible, of twenty additional stamps.

Recently in the course of the operation of this company, they have opened up some new ground on the Lily vein, a claim which was purchased from Banzitt & Smith last spring. This new strike in the Lily vein promises at this time to be one of the important factors for the production of ore for milling purposes for the Ophir Gold Mines, Milling & Power company.

The ores as encountered in this new strike on the Lily vein carry good values and there is a large body of the same.

Associated with Mr. Pickett in the Suffolk properties, and one of the principal officers of the Ophir Gold Mines, Milling & Power company, is Mr. J. A. Heimbaugh, the well known mining operator, and business man of Colorado Springs. Mr. Heimbaugh is the owner of the Alamo hotel in Colorado Springs, a politician of some note, and is at the present time, occupying the position of Commissioner of Finance in the present commission form of government now existing in Colorado Springs.

The possibilities of the Suffolk are very encouraging, and in fact, the outlook for the whole Ophir district was never more favorable than at the present time.

Mr. Pickett has just closed a contract with Mr. B. F. Raymond, the Telluride representative of the Stearns-Rogers Manufacturing company, for the insallation of several Ingersoll-Sargent drills, some of them the small and one man drills used in stoping, and it is expected that with the installation

is expected that with the installation of these drills the tonnage will be materially increased, at a much lower cost and with less men employed underground. Among other improvements, a complete compressor air plant is being installed and the development and mining in the future will be carried on with machine drills instead of by hand power as has been the custom in the past.

The wisdom of Mr. Pickett in his policy of working for the past year on the Suffolk in equipping and developing the property for a large future production, will no doubt bear good fruit, and it appears now as if the property is just on the eve of entering on a large production, and with the milling facilities increased by the addition of twenty more stamps, making the mill a forty stamp mill, we confidently look forward to a large production and a prosperous season in 1912 for the Suffolk property.

The Carbonero Mine.

The Carbonero Mining & Reduction company, which owns the property known as the Carbonero, on Silver Mountain at Ophir, is a close corporation. The property is under the direct management of Mr. George B. Pickett, one of the most successful mining men in this section of the country.

The stock of this corporation is owned by four men, Mr. George B. Pickett, Mr. H. H. Stevens, Mr. Frank L. Rouse and Prof. Strieby, all of Colorado Springs, and all prominent and well known in that city. Mr. Stevens is owner of the Alta Vista hotel; Mr. Rouse was formerly a county commissioner of El Paso county, and Prof. Strieby is well known as the professor of chemistry at Colorado College. The operation of this property under the direction of Mr. Pickett, goes forward without any hurrah or blare of trump-

ets. It has been steadily operated for the past ten years and has been one of the main stays of the Ophir camp. At the present time twenty two men are employed. Two strings of mules, thirty animals, are constatly packing the products of the mine to the railroad station at Ophir Loop, where it is shipped to the Ohio & Colorado ~~smelting~~ & Refining Co., at Salida.

The packing of this ore is done by Anderson and Peterson, the liverymen at Ophir, and for the past eight years the packing operations have been steadily and continuously carried on, with the exception of an occasional day or two during some hard storm of the winter, when packing would not be continued.

The ore in the Carbonero is a heavy silver lead ore, averaging about $40.00 per ton net, and is a very desirable ore for any smelter. The company is also driving a long development tunnel, which will cross-cut the Carbonero vein 632 feet below the present lowest level. This large tunnel is now in over 1,000 feet.

From Monday's Daily.

The Cimarron Mining company has been compelled to discontinue its milling operations owing to shortage of water incident to this season of the year. An attempt was made to overcome this difficulty by installing a

"pumping back" system whereby the water might be used again and again, but even with this system in operation it was found that only 15 stamps could be used now. With the natural decrease which was bound to come in the next few weeks it was evident that the mill could not be continued in satisfactory operation. It is planned to resume mill operations about March 1st and in the meantime development work will be carried on in the mine by contractors.

—

J. L. Glenn has disposed of six or seven claims of the Jim Crow group to the Jim Crow Mining company, receiving the consideration all in cash from T. E. Thomas several days ago.

Publication: Daily Journal (Telluride, San Miguel County); Date: Dec 29, 1905; Section: Front page; Page: 1

DOUGLASS HAS CORRECT VIEW.

Says Arizona Would Rather Wait 20 Years Than be Admitted as a State With New Mexico.

New York, Dec. 29.—James Douglass, who is the executive head of the mining enterprises in Arizona grouped as the Phelps Dodge & Co. interests, is quoted today regarding his views upon joint statehood for Arizona and New Mexico. Douglass said among other things: "To force Arizona into the union with New Mexico is to do a great wrong to the people of the former Territory, who in raclal antecedents, religious preferences and industrial interests, are wholly unlike the inhabitants of New Mexico. New Mexico's population is sufficient to justify admission as a single state and the people of Arizona, among whom I have spent 25 years, would rather wait 20 years for statehood than be joined to New Mexico."

KING GOES HUNTING.

Madrid, Dec. 29.—King Alfonzo has gone on a hunting expedition to Granada in the south of Spain.

As a coincidence, the British armored cruiser, Drake, flagship of Rear Admiral Louis of Battenburg, has arrived at Malaga, about fifty miles from Granada. The Prince and two ladies landed at Malaga and proceeded to Granada.

It is expected that a meeting between the King and the future Queen of Spain, Princess Ena of Battenburg, will occur at the latter city.

MONEY RATE SOARS AGAIN.

New York, Dec. 29.—Call money opened strong and in considerable demand.

The first bid was 40 per cent. Loans were made at 60 per cent and by 10:45 the rate advanced to 70 bid, 80 asked.

Call money ruled at fifty percent at noon with large offerings. Much of the money came from new out of town sources, including Philadelphia and Pittsburg. The loans made yesterday at top prices were renewed today at fifty-five percent.

NARROW ESCAPE FROM BURNING.

Minneapolis, Dec. 29.—One killed, two badly burned and fifteen or more injured or overcome by smoke, is the result of the glutting of the Higgins tenements this morning.

The fire started in the apartments of Mrs. Lorraine Buckliff in the middle of a big tenement and spread with great rapidity.

Twenty-seven persons were rescued from their beds and sent shivering and half smothered into the outer air where the thermometer was ten above.

TRIED TO KILL GOVERNOR.

Moscow, Thursday, Dec. 28.—A boy tried to assassinate Baron Midem, civil governor of this city, today and failing, instantly committed suicide.

Wearing a Red Cross uniform the assassin gained admission to the Baron and approaching him, drew a revolver and fired three shots. All missed their mark and the noise brought soldiers, secretaries and ser-

brought soldiers, secretaries and servants running. Without a moment's hesitation and before anyone could seize him, the young man swallowed a liquid from a small vial which he had hidden in his hand, fell unconscious and died in a few minutes.

CARBONERO .GROUP OF MINES.

A Valuable Vein That is Yeilding Good Ore and Steadily Improving With Development, Both as to the Quantity and Quality of the Mineral.

High up on Silver Mountain, directly above the Iron Springs, lies the Carbonero group of mines comprising eighteen claims of which five are patented.

The principal lode of the group from which the property takes its name, runs parallell with the mountain side, and is opened by cross cut tunnels from which drifts are driven on the vein. Two of these drifts, between which there is a perpendicular depth of 187 feet, have reached a depth each of 1,000 feet. Two hundred feet lower another cross cut is under way, and still lower is a deeper one which will require about 3,000 feet of tunnel to intersect the vein. This tunnel is now in 600 feet, and going steadily forward.

The Carbonero property is owned by a partnership of four persons, Geo. B. Picket original locator and principal owner, being charge as manager. For five years Mr. Pickett, has prosecuted development of his property, most of the time on a modest scale with a small force, but there has been practically no cessation in the work. It is Mr. Pickett's ambition to make of the group one of the important mining enterprises of the San Juan, and with this end in view he has turned down innumerable propositions of promotors to stock the group, raise capital equip and operate the mine on a

tal equip and operate the mine on a large scale.

For a year past the Carbonero has been a steady producer and shipper, the returns yielding a very satisfactory profit over and above the cost of development. At present the mine is outputting an average of 100 tons a month. The ore is shipped to the smelter at Salida, returning an average of $100 per ton in silver and lead, running from 40 to 50 percent in the latter metal.

At present a force of 20 men is employed, eight in mining and tramming ore, and the balance of the force in pushing the cross cut and other development work. Indications are for a moderate winter in which event regular shipments will continue without interruption ,at least until March, when of course excessive snow may close the trail.

The proposition is a most encouraging one. The vein has been opened and prospected at various places along the mountain side and everywhere shows more or less ore, of a profit paying value and with the careful conservative manner under which it is being opened and operated, it is inevitable that it will become an important factor in Ophir's future.

BOSTON FIRM BUSTED.

Boston, Dec. 29.—H. R. Leighton & Co.' stockbrokers of this city assigned today for the benefit of creditors. Their liabilities are stated at $500,000. Rising markets is said to be the general cause of the suspension.

WHOLE FAMILY BURNED.

McKeesport, Pa., Dec. 29.—Mrs. Hattie Sweeney was fatally burned and eight members of the family seriously injured today by a gas explosion in the kitchen which wrecked the house.

A little child of Mr. and Mrs. O. M. Sackett at Pandora was carrying a bottle in its hands last evening when it tripped and fell, breaking the bottle and cutting itself quite badly across the forehead, both eye lids being severed and the cut extending underneath the eye far enough to cut an artery, from which it bled profusely. Dr. Edgar Hadley was called, who treated the wound, and left the little one in as good shape as a wound of this character would permit.

According to Denver papers, Herman Leuders, an old time San Juaner and for many years past secretary of the board of state capitol managers, is losing his mind, and will be taken to an asylum the first of the year.

Mentioning losers in its write-up of the Sheridan fire the Denver Republican says: "County Treasurer L. C. Lomax is in Denver visiting his daughter." And Lou has been posing as an unsophisticated young bachelor at home.

WE OFFER a very choice selection of Men's Neckwear in the Latest Shapes in Plum, Moire, Changeables and other correct shades. Full Dress Vests, Fancy Vests, Smoking Jackets, Slippers. Most anything a man could wish for.

LADIES HANDKERCHIEFS in Dainty Designs.

Little Toilet Articles that are always indespensible in a dozen varieties. A new lot of Silk Petticoats at prices below their market value. See these!

WE STILL HAVE a few Ladies Tailored Suits at Reduced Price. Don't wait until the last moment.

2 of 8 DOCUMENTS

WALL STREET JOURNAL

December 8, 1978, Friday

SECTION: Page 42, Column 3

LENGTH: 30 words

Union Oil Co of California says it has acquired most of assets of two Colorado mining companies, Silver Bell Industries Inc and Mancos Corp, for 418,095 Union Oil shares (S).

LANGUAGE: ENGLISH

JOURNAL-CODE: WSJ

Copyright 1978 The New York Times Company: Abstracts

The Globe and Mail (Canada)

March 31, 1978 Friday

International news UNION OIL

BYLINE: GAM

LENGTH: 65 words

Union Oil Co. of California, Los Angeles, plans to acquire all of the assets except cash on hand of Silver Bell Industries Inc. in exchange for 425,000 shares of Union Oil common. Silver Bell is a Colorado company engaged in developing and processing minerals and ores. It owns a 35 per cent interest in a Wyoming uranium mine and milling project being developed by a subsidiary of Union Oil.

LOAD-DATE: January 11, 2007

LANGUAGE: ENGLISH

PUBLICATION-TYPE: Newspaper

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4 of 8 DOCUMENTS

WALL STREET JOURNAL

March 31, 1978, Friday

SECTION: Page 16, Column 3

LENGTH: 38 words

Union Oil Co of Calif plans to acquire all assets, except cash on hand, of Silver Bell Industries Inc for 425,000 shares of Union Oil common. Silver Bell is engaged in exploration and development of minerals and ores (S).

LANGUAGE: ENGLISH

JOURNAL-CODE: WSJ

Copyright 1978 The New York Times Company: Abstracts

5 of 8 DOCUMENTS

WALL STREET JOURNAL

June 21, 1976, Monday

SECTION: Page 12, Column 3

LENGTH: 50 words

Silver Bell Industries Inc grants option to Pacific Gas & Electric Co to purchase Silver Bell's 35% interest in uranium joint venture with Minerals Exploration Co, subsidiary of Union Oil Co of California. Pacific G&E would issue 767,272 common shares at $20.50 each, totaling $15.7 Million (S).

LANGUAGE: ENGLISH

JOURNAL-CODE: WSJ

Copyright 1976 The New York Times Company: Abstracts

Chemical Week

February 11, 1976

Red Desert uranium project undergoing study

SECTION: BUSINESS NEWSLETTER; Pg. 15

LENGTH: 74 words

Final decision may come this fall on whether Minerals Exploration Co. will develop its Red Desert uranium project in Sweetwater County, Wyoming. The wholly owned subsidiary of Union Oil of California and Denver-based Silver Bell Industries have engaged Ralph M. Parsons Co. to run a feasibility study for a uranium mine and mill at the site. Metallurgical and mill design studies by A. H. Ross and Associates (Toronto) are also under way.

LANGUAGE: ENGLISH

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1 of 1 DOCUMENT

PR Newswire

November 3, 1998, Tuesday - 19:11 Eastern Time

Chevron Creates Environmental Management Company; Subsidiary to Manage More Cost-Effective Compliance and Remediation.

SECTION: Financial News

LENGTH: 291 words

DATELINE: SAN FRANCISCO, Nov. 3

Chevron (NYSE: CHV) today announced it has established a new subsidiary, Chevron Environmental Management Co. (CEMC), to centrally manage environmental remediation activities for its U.S. operating companies.

The new company is effective immediately and will facilitate opportunities to work more closely with state and federal regulators, manage environmental risk more consistently, share successes and lessons learned across all operations, and improve contracting efficiency. As a result, the quality and cycle time to complete these remediation activities will improve, while costs and environmental risks will be reduced.

"Establishing CEMC will benefit Chevron and the communities where we have remediation commitments," said Don Paul, corporate vice president of technology and environmental affairs, who will oversee the new company and its management team. "By integrating this important part of our business, we will be more effective and consistent in our practices, and also be more efficient in reducing associated costs -- supporting one of our major strategic objectives."

To manage the more than 3,200 uniquely different sites across the country, the new company will be structured into five primary business areas: retail and terminal; chemical; petroleum processing; exploration, production and pipeline; and Superfund.

Chevron has named Allan Vance president of CEMC. Vance, a 22-year veteran with Chevron, has worked in a variety of positions in both the downstream and upstream segments. He was most recently with Chevron Research and Technology Co. managing the health, environment, and safety group.
SOURCE Chevron Corp.
CONTACT: Dawn Soper of Chevron, 415-894-4447

LOAD-DATE: November 4, 1998

LANGUAGE: ENGLISH

DISTRIBUTION: TO BUSINESS EDITOR AND ENVIRONMENTAL EDITOR

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July 30, 2012

Molycorp, Inc.

*** * * * * * * * * * COMPANY IDENTIFIERS * * * * * * * * * ***
TICKER: MCP

*** * * * * * * * * * COMPANY INFORMATION * * * * * * * * * ***
OPERATING STATUS: Active

*** * * * * * * * * * SECURITIES INFORMATION * * * * * * * * * ***
EXCHANGE: NYSE

*** * * * * * * * * * SIGNIFICANT DEVELOPMENTS * * * * * * * * * ***

June 11, 2012, 21:38 - Molycorp Inc Announces Close Of Neo Materials Technologies Inc. Acquisition [Mergers & Acquisitions; Officer Changes] (2555528)

Molycorp Inc announced that its acquisition of Canadian-based Neo Material Technologies Inc. has officially closed. Financial terms were not mentioned. Michael F. Doolan will become Executive Vice President and Chief Financial Officer (CFO) of Molycorp. James S. Allen will serve as Senior Vice President of Finance, and Treasurer, of Molycorp.

May 18, 2012, 20:01 - Molycorp Inc Prices $650 million of Senior Secured Notes [Debt Financing / Related] (2543875)

Molycorp Inc announced the pricing of $650 million aggregate principal amount of 10.000% senior secured notes due 2020 in an offering exempt from the registration requirements of the Securities Act of 1933. The notes will be senior secured obligations of Molycorp and will be guaranteed by certain of Molycorp's subsidiaries. The gross proceeds from the offering of the senior secured notes will be placed into escrow pending the consummation of the proposed acquisition by the Company of Neo Material Technologies Inc. Following release of the gross proceeds from escrow, the Company intends to use a substantial portion of the net proceeds from the offering to fund a portion of the Company's proposed acquisition of Neo, including related fees and expenses, and any remaining net proceeds would be used for general corporate purposes. The senior secured notes and related note guarantees to be offered will not be and have not been registered under the Securities Act and may not be offered or sold in the United States absent registration or an applicable exemption from registration requirements.

May 14, 2012, 11:00 - Molycorp Inc Announces Proposed Offering Of $650 Million Of Senior Secured Notes [Debt Financing / Related] (2540228)

Molycorp Inc announced that it intends to offer to sell, subject to market and other conditions, $650 million aggregate principal amount of senior secured notes in an offering exempt from the registration requirements of the Securities Act of 1933. The notes will be senior secured obligations of Molycorp and will be guaranteed by certain of Molycorp's subsidiaries. The gross proceeds from the offering of the senior secured notes will be placed

NEX-007

into escrow pending the consummation of the proposed acquisition by the Company of Neo Material Technologies Inc. (Neo). Following release of the gross proceeds from escrow, the Company intends to use a substantial portion of the net proceeds from the offering to fund a portion of the Company's proposed acquisition of Neo, including related fees and expenses, and any remaining net proceeds would be used for general corporate purposes.

May 11, 2012, 00:30 - Molycorp Inc Reaffirms FY 2012 Production Guidance-Conference Call [Production Guidance] (2540451)

Molycorp Inc announced that it is reaffirming fiscal 2012 production guidance range of 8,000 to 10,000 metric tons of REO equivalent products across all of operating segments this year.

May 3, 2012, 11:00 - Molycorp Inc Declares Preferred Dividends [Dividends] (2533792)

Molycorp Inc announced that its Board of Directors has elected to declare a cash dividend on outstanding shares of its 5.50% Series A mandatory convertible preferred stock in an amount equal to $1.375 per share. Molycorp will pay the dividend on June 1, 2012 to the holders of record of shares of Series A mandatory convertible preferred stock at the close of business on May 15, 2012. As of May 1, 2012, there were a total of 2,070,000 shares of Series A mandatory convertible preferred stock outstanding.

April 3, 2012, 15:56 - The Law Firm of Levi & Korsinsky Announces Class Action Lawsuit Against Molycorp Inc [Class Action Lawsuit] (2514879)

Levi & Korsinsky announced that a class action lawsuit has been commenced in the United States District Court for the District of Colorado on behalf of investors who purchased Molycorp, Inc. stock between March 9, 2011 and November 10, 2011 (the Class Period). The Complaint alleges that defendants misrepresented and/or failed to disclose materially adverse facts about the Company's Mountain Pass mining operations. Specifically, defendants misrepresented and/or failed to disclose the following adverse facts during the Class Period Molycorp's development and expansion of the Mountain Pass mine was not progressing on schedule and would not allow the Company to reach rare earth oxide production rates at the end of calendar 2012 and 2013; and end users had been reducing demand for the Company's products as prices for rare earth elements increased. As a result of the aforementioned Molycorp stock traded at artificially inflated prices throughout the Class Period.

March 12, 2012, 13:15 - Molycorp Inc Announces Completion Of $390 Million Strategic Investment From Molibdenos y Metales S.A. [Equity Investments] (2498843)

Molycorp Inc announced the closing of its previously announced placement of 12.5 million shares of Molycorp common stock with Molibdenos y Metales S.A. (Molymet), for approximately $390 million. As previously disclosed, proceeds from the Molymet investment will be used by Molycorp for general corporate purposes and to bolster Molycorp's strategic flexibility, and will likely be used to finance a portion of the cash purchase price of Molycorp's recently announced acquisition of Neo Materials Technologies, Inc.

March 8, 2012, 23:00 - Molycorp, Inc. To Acquire Neo Material Technologies Inc. In $1.3 Billion Deal [Mergers & Acquisitions; Debt Financing / Related; Equity Financing / Related] (2497401)

Molycorp, Inc. (Molycorp) and Neo Material Technologies Inc. (Neo Materials or Neo) announced the signing of a definitive agreement under which Molycorp will acquire Neo Materials for approximately CDN $1.3 billion. Under the agreement, which was unanimously approved by the two companies' boards of directors, Neo Materials shareholders will receive consideration equal to CDN$11.30 per share, comprising of CDN$8.05 per share in cash and 0.122 Molycorp shares based on Molycorp's 20-day volume weighted average price of USD26.66. Neo Materials shareholders will have the right to elect their preferred consideration mix of cash and newly issued Molycorp common stock, with the total consideration being approximately 71.2% cash and approximately 28.8% Molycorp common stock. The transaction will be implemented through a court-approved Plan of Arrangement under Canadian law. The transaction is expected to close in the second or third quarter of 2012. Molycorp intends to finance the majority of the cash portion of the consideration, and has obtained a committed financing facility

from Morgan Stanley and Credit Suisse. Permanent financing is expected to include long-term debt, existing cash on hand of the combined company, and the proceeds from any equity issuances. Morgan Stanley & Co. LLC acted as financial advisor to Molycorp. GMP Securities L.P. served as Neo Materials' financial advisor.

March 8, 2012, 19:56 - Shareholder Rights Law Firm Johnson & Weaver, LLP Investigates Molycorp Inc For Securities Fraud [Class Action Lawsuit] (2497291)

Shareholder Rights Law Firm Johnson & Weaver, LLP announced it is investigating whether certain officers and directors of Molycorp, Inc. engaged in a pump-and-dump scheme in breach of their fiduciary duties and in violation of United States securities laws. Johnson & Weaver, LLP's investigation focuses on whether certain officers and directors made false and misleading statements about the capability of the Company's "Mountain Pass" mining operation and the Company's earnings. Specifically, defendants misrepresented and/or failed to disclose the following adverse facts during the Class Period: Molycorp's development and expansion of the Mountain Pass mine was not progressing on schedule and would not allow the Company to reach rare earth oxide production rates at the end of calendar years 2012 and 2013; and end users had been reducing demand for the Company's products as prices for rare earth elements increased. At the same time, certain Company insiders were selling their personal stock for proceeds of over $1.5 million while in possession of this material, non-public information.

March 8, 2012, 19:41 - Harwood Feffer LLP Announces That a Securities Class Action Lawsuit Has Been Filed Against Molycorp Inc [Class Action Lawsuit] (2497286)

Harwood Feffer LLP announced that a class action suit was filed in the United States District Court for the District of Colorado against Molycorp, Inc. (Molycorp), on behalf of purchasers of Molycorp stock between March 9, 2011 and November 10, 2011 (Class Period). The complaint alleges that defendants made false and misleading statements about the viability of a Company mining operation called Mountain Pass and that the Company's reported earnings caused Molycorp common stock to trade at artificially inflated prices throughout the Class Period. Specifically, defendants misrepresented and/or failed to disclose the following facts: development and expansion of the Mountain Pass operation was not progressing on schedule and would not allow the Company to reach its target production rates for rare earth oxide at the end of 2012 and 2013; and end users had been reducing demand for the Company's products as prices for rare earth elements increased.

March 5, 2012, 23:05 - Ryan & Maniskas, LLP Announces Class Action Lawsuit Against Molycorp Inc [Class Action Lawsuit] (2494808)

Ryan & Maniskas, LLP announced that a class action lawsuit has been filed in United States District Court for the District of Colorado on behalf of purchasers of Molycorp, Inc. (Molycorp) common stock during the period between March 9, 2011 and November 10, 2011, (Class Period). The complaint alleges that defendants' false and misleading statements about the capability of Molycorp's "Mountain Pass" mining operation and Molycorp's earnings caused Molycorp common stock to trade at artificially inflated prices throughout the Class Period. Specifically, defendants misrepresented and/or failed to disclose the following adverse facts during the Class Period; Molycorp's development and expansion of the Mountain Pass mine was not progressing on schedule and would not allow Molycorp to reach rare earth oxide production rates at the end of calendar 2012 and 2013; and end users had been reducing demand for Molycorp's products as prices for rare earth elements increased. On November 10, 2011, Molycorp reported disappointing third quarter 2011 revenues and earnings results below analysts' estimates and announced a reduction in Mountain Pass production guidance for the fourth quarter of 2011 due to expected equipment downtime relating to Mountain Pass engineering and expansion issues. Molycorp's stock price fell, dropping from $38.70 per share on November 10, 2011, to $33.45 per share on November 11, 2011, or 13.6%, on heavy trading volume.

February 18, 2012, 01:30 - Faruqi & Faruqi, LLP Reminds Investors Of Upcoming April 3, 2012 Lead Plaintiff Deadline Against Molycorp Inc [Class Action Lawsuit] (2483378)

Faruqi & Faruqi, LLP, a national securities law firm, reminds investors of the impending lead plaintiff deadline for the class action lawsuit against Molycorp, Inc. The investigation focuses on whether the Company and its executives violated federal securities laws by failing to disclose that Molycorp's efforts to expand the Company's

Mountain Pass mine were behind schedule; the Company would fail to reach projected rare earth oxide production rates by the end of calendar year 2012 or 2013; and end-user customers have been reducing their demand for Molycorp's products as prices for rare earth elements have increased. On November 10, 2011, the Company reported disappointing third quarter 2011 revenues and earnings results below analysts' estimates. Moreover, Molycorp announced a reduction in Mountain Pass production guidance for the fourth quarter of 2011 due to expected equipment downtime relating to the site's engineering and expansion issues. In response to this disappointing news, Molycorp's stock price dropped from $38.70 per share on November 10, 2011 to $33.45 per share on November 11, 2011, or 13.6%, on heavy trading volume.

February 14, 2012, 21:34 - Brower Piven Announces Class Action Lawsuit Against Molycorp Inc [Class Action Lawsuit] (2480531)

Brower Piven announced that a class action lawsuit has been commenced in the United States District Court for the District of Colorado on behalf of purchasers of the common stock of Molycorp, Inc. during the period between March 9, 2011 and November 10, 2011, inclusive (Class Period). The complaint accuses the defendants of violations of the Securities Exchange Act of 1934 by virtue of the Company's failure to disclose during the Class Period that Molycorp's development and expansion of the Mountain Pass mine was not progressing on schedule and would not allow the Company to reach rare earth oxide production rates at the end of calendar 2012 and 2013 and that end users had been reducing demand for the Company's products as prices for rare earth elements increased. According to the complaint, after, on November 10, 2011, the Company reported disappointing third quarter 2011 revenues and earnings results below analysts' estimates and announced a reduction in Mountain Pass production guidance for the fourth quarter of 2011 due to expected equipment downtime relating to Mountain Pass engineering and expansion issues, the value of Molycorp shares declined significantly.

February 11, 2012, 02:45 - The Shuman Law Firm Announces Class Action Lawsuit Against Molycorp Inc [Class Action Lawsuit] (2478754)

The Shuman Law Firm announced that a lawsuit seeking class action status has been filed in the U.S. District Court for the District of Colorado on behalf of purchasers of the common stock of Molycorp, Inc. between March 9, 2011, and November 10, 2011, inclusive (Class Period). The complaint alleges that Molycorp and certain of its officers and directors violated federal securities laws by issuing materially false and misleading statements regarding Molycorp'sbusiness and prospects. Specifically, it is alleged that the defendants misrepresented and/or failed to disclose the following adverse facts during the Class Period Molycorp's development and expansion of the Mountain Pass mine was not progressing on schedule and would not allow Molycorp to reach rare earth oxide production rates at the end of calendar 2012 and 2013; and end users had been reducing demand for Molycorp's products as prices for rare earth elements increased. On November 10, 2011, Molycorp reported disappointing third quarter 2011 revenues and earnings results below analysts' estimates and announced a reduction in Mountain Pass production guidance for the fourth quarter of 2011 due to expected equipment downtime relating to Mountain Pass engineering and expansion issues. Molycorp's stock price fell from $38.70 per share on November 10, 2011 to $33.45 per share on November 11, 2011, or approximately 13.6%.

February 9, 2012, 15:47 - The Briscoe Law Firm and Powers Taylor, LLP Announces Investigation Of Possible Breaches Of Fiduciary Duty By Officers And Directors Of Molycorp Inc [Class Action Lawsuit] (2477611)

The Briscoe Law Firm and Powers Taylor, LLP announced that the firms are investigating legal claims against the officers and Board of Directors of Molycorp, Inc. related to potential securities violations between March 9, 2011, and November 10, 2011 (Class Period). In a recently filed federal class action complaint, Molycorp and certain of its officers and directors were charged with violating the Securities Exchange Act of 1934. Specifically, the complaint alleges that during the Class Period, defendants misrepresented or failed to disclose the following adverse facts: Molycorp's development and expansion of the Mountain Pass mine was not progressing on schedule and would not allow the company to reach rare earth oxide production rates at the end of calendar 2012 and 2013; and end users had been reducing demand for Molycorp's products as prices for rare earth elements increased.

February 8, 2012, 15:34 - Holzer Holzer & Fistel, LLC Announces Investigation Into Potential Claims For

Breaches Of Fiduciary Duty By Certain Officers And Directors Of Molycorp Inc [Class Action Lawsuit] (2476645)

Holzer Holzer & Fistel, LLC announced that it is investigating potential breaches of fiduciary duty by certain officers and directors of Molycorp Inc.. On February 3, 2012, a class action lawsuit was filed in the United States District Court for the District of Colorado alleging that Molycorp violated the federal securities laws between March 9, 2010 and November 10, 2011 (Class Period). The lawsuit alleges, among other things, that Molycorp failed to adequately disclose that development and expansion of its Mountain Pass mine was not progressing on schedule. The lawsuit further alleges Molycorp failed to adequately disclose the negative impact rising prices for rare earth metals was having on demand for the Company's products. Holzer Holzer & Fistel, LLC's investigation seeks to determine if the allegations contained in the class action complaint also give rise to the separate claims against the Board of Directors for breaches of fiduciary duty, which could be enforced on behalf of the Company through shareholder derivative litigation.

February 7, 2012, 22:50 - Denver-Based Dyer & Berens LLP Files Class Action Lawsuit on Behalf of Investors Who Purchased Molycorp, Inc. Common Stock between 3/9/11 and 11/10/11; Announces Investor Deadline (MCP) [Class Action Lawsuit] (2475969)

Dyer & Berens LLP announced that it has filed a class action lawsuit in the United States District Court for the District of Colorado, Civil Action No. 12-cv-00292-WJM, on behalf of all persons who purchased or otherwise acquired Molycorp, Inc. common stock between March 9, 2011 and November 10, 2011, inclusive (the Class Period). Defendant Molycorp is a rare earth element mining company which maintains its principle offices in Greenwood Village, Colorado. The complaint alleges that, during the Class Period, defendants issued materially false and misleading statements regarding the Company's business and prospects. Specifically, defendants misrepresented and/or failed to disclose the following adverse facts during the Class Period; Molycorp's development and expansion of the Mountain Pass mine was not progressing on schedule and would not allow the Company to reach rare earth oxide production rates at the end of calendar 2012 and 2013; end users had been reducing demand for the Company's products as prices for rare earth elements increased; and the lack of progress in development and expansion of the Mountain Pass mine made it difficult, if not impossible, for the Company to produce and deliver certain magnet products to its key customers. Based upon the foregoing, the complaint charges the Company and certain of its officers with violations of the Securities Exchange Act of 1934.

February 7, 2012, 16:48 - Izard Nobel LLP Announces Class Action Lawsuit Against Molycorp Inc [Class Action Lawsuit] (2475834)

Izard Nobel LLP announced that a lawsuit seeking class action status has been filed in the United States District Court for the District of Colorado on behalf of purchasers of the common stock of Molycorp, Inc. ("Molycorp" or the "Company") between March 9, 2011 and November 10, 2011, inclusive (the "Class Period"). The Complaint alleges that Molycorp and certain of its officers and directors violated the federal securities laws. Specifically, defendants misrepresented and/or failed to disclose the following adverse facts during the Class Period: (i) Molycorp's development and expansion of the Mountain Pass mine was not progressing on schedule and would not allow the Company to reach rare earth oxide production rates at the end of calendar 2012 and 2013; and (ii) end users had been reducing demand for the Company's products as prices for rare earth elements increased.

February 7, 2012, 00:00 - Faruqi & Faruqi, LLP Announces Investigation Of Molycorp Inc [Class Action Lawsuit] (2475199)

Faruqi & Faruqi, LLP, a national securities law firm, announced that it is investigating potential securities fraud at Molycorp, Inc. (Molycorp). The investigation focuses on whether Molycorp and its executives violated federal securities laws by failing to disclose that Molycorp's efforts to expand Molycorp's Mountain Pass mine were behind schedule; Molycorp would fail to reach projected rare earth oxide production rates by the end of calendar year 2012 or 2013; and end-user customers have been reducing their demand for Molycorp's products as prices for rare earth elements have increased. On November 10, 2011, Molycorp reported disappointing third quarter 2011 revenues and earnings results below analysts' estimates. Moreover, Molycorp announced a reduction in Mountain Pass production guidance for the fourth quarter of 2011 due to expected equipment downtime relating to the site's engineering and expansion issues. In response to this disappointing news,

Molycorp's stock price dropped from $38.70 per share on November 10, 2011 to $33.45 per share on November 11, 2011, or 13.6%, on heavy trading volume.

February 6, 2012, 18:00 - Levi & Korsinsky Files Class Action Suit Against Molycorp Inc [Class Action Lawsuit] (2475097)

Levi & Korsinsky announced that a class action lawsuit has been commenced in the United States District Court for the District of Colorado on behalf of investors who purchased Molycorp, Inc. stock between March 9, 2011 and November 10, 2011 (Class Period). The Complaint alleges that defendants misrepresented and/or failed to disclose materially adverse facts about the Company's Mountain Pass mining operations. Specifically, defendants misrepresented and/or failed to disclose the following adverse facts during the Class Period: Molycorp's development and expansion of the Mountain Pass mine was not progressing on schedule and would not allow the Company to reach rare earth oxide production rates at the end of calendar 2012 and 2013; and end users had been reducing demand for the Company's products as prices for rare earth elements increased. As a result of the aforementioned Molycorp stock traded at artificially inflated prices throughout the Class Period.

February 4, 2012, 00:00 - Robbins Geller Rudman & Dowd LLP Files Class Action Suit Against Molycorp Inc [Class Action Lawsuit] (2474432)

Robbins Geller Rudman & Dowd LLP announced that a class action has been commenced in the United States District Court for the District of Colorado on behalf of purchasers of Molycorp, Inc. (Molycorp) common stock during the period between March 9, 2011 and November 10, 2011 (Class Period). The complaint charges Molycorp and certain of its officers and directors with violations of the Securities Exchange Act of 1934. The complaint alleges that defendants' false and misleading statements about the capability of the Company's "Mountain Pass" mining operation and the Company's earnings caused Molycorp common stock to trade at artificially inflated prices throughout the Class Period. Specifically, defendants misrepresented and/or failed to disclose the following adverse facts during the Class Period; Molycorp's development and expansion of the Mountain Pass mine was not progressing on schedule and would not allow the Company to reach rare earth oxide production rates at the end of calendar 2012 and 2013; and end users had been reducing demand for the Company's products as prices for rare earth elements increased. Plaintiff seeks to recover damages on behalf of all purchasers of Molycorp common stock during the Class Period (the Class). The plaintiff is represented by Robbins Geller, which has expertise in prosecuting investor class actions and extensive experience in actions involving financial fraud.

February 2, 2012, 12:00 - Molycorp Inc Declares Preferred Dividends [Dividends] (2473248)

Molycorp Inc announced that its Board of Directors has elected to declare a cash dividend on outstanding shares of its 5.50% Series A mandatory convertible preferred stock in an amount equal to $1.375 per share. Molycorp will pay the dividend on March 1, 2012 to the holders of record of shares of Series A mandatory convertible preferred stock at the close of business on February 15, 2012.

February 1, 2012, 11:45 - Molibdenos y Metales SA Acquires 13% Stake in Molycorp Inc [Equity Investments] (2473093)

Molibdenos y Metales SA announced that it has reached an agreement to acquire 12,500,000 shares in Molycorp Inc, which represents a 13% stake, at a value of USD 31.218 per share, reaching the total amount of USD 390,225,000.

November 28, 2011, 16:30 - Molycorp, Inc., Daido Steel Co., Ltd. And Mitsubishi Corporation Announce Joint Venture To Manufacture Sintered NdFeB Rare Earth Magnets [Strategic Combinations] (2441142)

Molycorp, Inc., Daido Steel Co., Ltd. and Mitsubishi Corporation announced the formation of a joint venture to manufacture and sell neodymium-iron-boron (NdFeB) permanent rare earth magnets. The joint venture will manufacture sintered NdFeB permanent rare earth magnets with technology licensed from Intermetallics, Inc., a partnership between Mitsubishi, Daido, and Dr. Masato Sagawa, co-inventor of the NdFeB magnet. The capital

contribution ratio of the newly formed company will be 30.0% by Molycorp, 35.5% by Daido, and 34.5% by Mitsubishi. The joint venture will be financed by the three shareholders and by a government subsidy sponsored by Japan`s Ministry of Economy, Trade, and Industry (METI). The joint venture plans to construct an initial 500 metric-ton-per-year magnet manufacturing facility in Nakatsugawa, Japan (Gifu Prefecture), with operations expected to commence by January 2013. The companies expect to begin work on the new facility next month and eventually expand operations in the U.S. and elsewhere.

November 10, 2011, 21:31 - Molycorp, Inc. Issues FY 2012 Production Guidance [Production Guidance] (2432378)

Molycorp, Inc. announced that it expects annual production for fiscal 2012 of REO equivalent products to be in a range of 8,000 metric tons to 10,000 metric tons for the full year.

November 9, 2011, 18:41 - Molycorp, Inc. Declares Preferred Dividends [Dividends] (2431290)

Molycorp, Inc. announced that its Board of Directors has elected to declare a cash dividend on outstanding shares of its 5.50% Series A mandatory convertible preferred stock in an amount equal to $1.375 per share. Molycorp will pay the dividend on December 1, 2011 to the holders of record of shares of Series A mandatory convertible preferred stock at the close of business on November 15, 2011.

October 24, 2011, 11:00 - Molycorp, Inc. Purchases Remaining Shares Of European Rare Earth Processing Company [Mergers & Acquisitions] (2419779)

Molycorp, Inc. announced that it has purchased the remaining shares of Molycorp Silmet AS, one of only two rare earth processing companies in Europe. Molycorp now owns 100% of the Sillamäe, Estonia-based facility, known as Molycorp Sillamäe. On April 1, 2011, Molycorp purchased a 90.023% stake in AS Silmet in a transaction valued at approximately $89 million. The purchase price for the remaining shares was proportionately the same as the price of the original share acquisition.

October 20, 2011, 11:00 - Molycorp, Inc. Announces Plan To Accelerate Initial Start-Up Of New Rare Earth Processing Facility [New Business / Unit / Subsidiary] (2418216)

Molycorp, Inc. announced plans to accelerate by approximately three months the initial start-up of its art rare earth processing facility, now under construction at Mountain Pass, California. The Company's Board of Directors has authorized an additional investment of $114 million, which includes contingency funds, to accelerate the facility's start-up. The acceleration effort will be funded from current cash flow and existing cash balances.

August 12, 2011, 17:36 - Molycorp, Inc. Announces Major Rare Earth Supply Agreement With Hitachi Metals; Suspends Discussions On Letter Of Intent To Create Joint Venture [Business Deals; Strategic Combinations] (2382901)

Molycorp, Inc. announced that it has reached an agreement with Hitachi Metals to supply the company with rare earth magnetic materials, including Didymium (a mix of neodymium and praseodymium) metal and alloy, as well as Lanthanum Oxide. The three-year deal, which extends and expands upon an existing supply relationship between the companies, significantly increases the amount of rare earth materials that Molycorp will provide Hitachi Metals. The volume begins at a level comparable to the companies' current agreement and grows substantially when Molycorp reaches its Phase 1 production level in 2012 at its flagship rare earth production facility at Mountain Pass, California. Separately, Molycorp and Hitachi Metals announced that they are suspending discussions for now on their December 2010 letter of intent to create a joint venture in the U.S. to manufacture neodymium-iron-boron (NdFeB) alloy and permanent magnets made from the alloy. The companies were unable to reach agreement on certain key matters affecting the value of the joint venture to each party.

July 28, 2011, 12:49 - Molycorp, Inc. Announces Modification Of Supply Contract [Business Deals] (2372870)

Molycorp, Inc. announced that one of its major supply contracts has been modified to allow for a higher maximum price to be paid to Molycorp for the lanthanum it manufactures in 2011 and 2012 at its current Mountain Pass, California operating facility for this customer. Modifications to the supply contract, which covers production in 2011 and 2012, are effective July 1, 2011. Terms were not disclosed. Molycorp's major lanthanum customer also has contracted with Molycorp for future rare earth production from Molycorp's new, processing facility, which is expected to begin production at its full Phase 1 rate (19,050 metric tons of rare earth oxide equivalent per year) by the end of 2012. Under this contract, the customer will purchase over 75% of the lanthanum produced at the new facility under a market-based pricing mechanism. This contract extends from 2012 until 2015, with a three-year extension at the customer's option.

July 25, 2011, 11:30 - Molycorp, Inc. Declares Preferred Dividends [Dividends] (2369687)

Molycorp, Inc. announced that its Board of Directors has elected to declare a cash dividend on outstanding shares of its 5.50% Series A mandatory convertible preferred stock in an amount equal to $1.375 per share. Molycorp will pay the dividend on September 1, 2011 to the holders of record of shares of Series A mandatory convertible preferred stock at the close of business on August 15, 2011. As of July 22, 2011, there were a total of 2,070,000 shares of Series A mandatory convertible preferred stock outstanding.

June 16, 2011, 20:01 - Molycorp, Inc. Announces Completion of Capital Raise for $781 Million Rare Earth Expansion and Modernization Project; Closes Secondary Public Offering By Selling Stockholders [Debt Financing / Related; Equity Investments] (2345390)

Molycorp, Inc. announced that it has secured the final funds necessary for the capital build out of its estimated $781 million expansion and modernization project at its flagship rare earth facility at Mountain Pass, California with the completion of an offering of $230 million aggregate principal amount of 3.25% Convertible Senior Notes due 2016. Molycorp also announced the closing of a secondary public offering of 11,500,000 shares of Molycorp's common stock at a price per share of $51.00 by certain selling stockholders, which includes an additional 1,500,000 shares of common stock sold pursuant to the underwriters' option to purchase additional shares.

June 10, 2011, 02:00 - Molycorp, Inc. Announces Pricing of Offering of Convertible Senior Notes Due 2016 [Debt Financing / Related] (2340868)

Molycorp, Inc. announced that it has priced a $200 million aggregate principal amount offering of its 3.25% Convertible Senior Notes due 2016 (the Notes) in an offering exempt from the registration requirements of the Securities Act of 1933. In addition, Molycorp has granted the initial purchasers of the Notes an option to purchase an additional $30 million aggregate principal amount of the Notes. The closing of the Notes offering is expected to occur on or about June 15, 2011. The Notes will be Molycorp's senior unsecured obligations and will bear interest at a rate of 3.25% per annum, payable semi-annually in arrears on June 15 and December 15 of each year, commencing on December 15, 2011. The Notes will be convertible at any time into shares of Molycorp's common stock, cash, or a combination thereof, at Molycorp's election. The conversion rate will initially be 14.0056 shares of Molycorp common stock per $1,000 principal amount of notes. The Notes will mature on June 15, 2016, unless earlier repurchased or converted in accordance with their terms prior to that date. Molycorp will not have the right to redeem the Notes prior to maturity. Molycorp expects to use the net proceeds from the offering to fund its original Phase 1 production capacity plan as well as its Phase 2 expansion plan at its Mountain Pass, California processing facility. Any remaining net proceeds will be used for general corporate purposes.

June 10, 2011, 01:30 - Molycorp, Inc. Announces Pricing of Secondary Offering of 10,000,000 Shares of Common Stock [Equity Financing / Related] (2340859)

Molycorp, Inc. announced that its selling stockholders priced a public offering of 10,000,000 shares of Molycorp's common stock (the Common Stock) at a price per share of $51.00. The selling stockholders have granted the underwriters an option to purchase up to an additional 1,500,000 shares of Common Stock. The Common Stock offering is expected to close on June 15, 2011, subject to customary closing conditions. Morgan Stanley & Co. LLC and J.P. Morgan Securities LLC are acting as joint book-running managers for the offering.

June 7, 2011, 20:20 - Molycorp, Inc. Announces Proposed Secondary Offering of 10,000,000 Shares of Common Stock; Proposed Offering of $200 Million of Convertible Senior Notes Due 2016 [Equity Investments; Debt Financing / Related] (2339037)

Molycorp, Inc. announced that, subject to market conditions, certain of its selling stockholders intend to offer 10,000,000 shares of Molycorp's common stock (Common Stock) in a registered public offering. In addition, the selling stockholders intend to grant the underwriters of the Common Stock an option to purchase an additional 1,500,000 shares of the Common Stock. Morgan Stanley & Co. LLC and J.P. Morgan Securities LLC will act as joint book-running managers for the proposed offering. The Company also announced that, subject to market conditions, it intends to offer $200 million principal amount of its Convertible Senior Notes due 2016 (Notes) in an offering exempt from the registration requirements of the Securities Act of 1933. The Notes are being offered only to qualified institutional buyers pursuant to Rule 144A under the Securities Act of 1933. In addition, Molycorp intends to grant the initial purchasers of the Notes an option to purchase an additional $30 million principal amount of the Notes. Molycorp expects to use the net proceeds from the proposed offering to fund its original Phase 1 production capacity plan as well as its Phase 2 expansion plan at its Mountain Pass, California processing facility. Any remaining net proceeds will be used for general corporate purposes.

May 4, 2011, 13:16 - Molycorp, Inc. Declares Preferred Dividends [Dividends] (2306659)

Molycorp, Inc. announced that its Board of Directors has elected to declare a cash dividend on outstanding shares of its 5.50% Series A mandatory convertible preferred stock in an amount equal to $1.604 per share. Molycorp will pay the dividend on June 1, 2011, to the holders of record of shares of Series A mandatory convertible preferred stock at the close of business on May 15, 2011. As of May 4, 2011, there were a total of 2,070,000 shares of Series A mandatory convertible preferred stock outstanding.

April 18, 2011, 10:00 - Molycorp, Inc.'s Molycorp Minerals, LLC Acquires Santoku America, Inc. [Mergers & Acquisitions] (2292222)

Molycorp, Inc. announced that its wholly owned subsidiary Molycorp Minerals, LLC (Molycorp) has acquired Arizona-based Santoku America, Inc. (SAI), a producer of high-purity rare earth alloys and metals outside of China, in an all-cash deal for $17.5 million. The transaction closed on April 15, 2011. The company will change its name from SAI to Molycorp Metals and Alloys, Inc., to better reflect its new U.S. based ownership.

April 4, 2011, 10:00 - Molycorp, Inc.'s Subsidiary Acquires Controlling Stake in AS Silmet [Mergers & Acquisitions; General Products] (2126413)

Molycorp, Inc. announced that its wholly owned subsidiary Molycorp Minerals, LLC (Molycorp) has completed the acquisition of a 90.023% controlling stake in AS Silmet, one of only two rare earth processing facilities in Europe, in a transaction valued at approximately $89 million. Molycorp acquired 80% of the outstanding shares of AS Silmet from AS Silmet Grupp, which will retain a 9.977% ownership interest going forward. Molycorp acquired the other 10.023% from Treibacher Industrie AG. The acquisition provides Molycorp with its first European base of operations as well as doubles the Company's current rare earth production capacity from approximately 3,000 tonnes per year of rare earth oxide (REO) equivalent to 6,000 tonnes. AS Silmet will immediately begin sourcing rare earth feed stocks for production of its products from Molycorp's Mountain Pass, California rare earth mine and processing facility, making it the first rare earth oxide and metal producer in Europe that is not dependent on rare earth materials sourced from China. As part of the transaction, the Company also will change its name to AS Molycorp Silmet.

February 11, 2011, 02:48 - Molycorp, Inc. Announces Pricing of Mandatory Convertible Preferred Offering [Equity Financing / Related] (2084218)

Molycorp, Inc. announced that it has priced a $180 million offering of 5.50% mandatory convertible preferred stock by the Company. The mandatory convertible preferred stock offering consists of 1,800,000 shares of preferred stock with a liquidation preference of $100 per share. The Company has granted the underwriters a 30-

day option to purchase up to an additional 270,000 shares of preferred stock to cover over-allotments, if any. The mandatory convertible preferred stock offering is expected to close on February 16, 2011, subject to customary closing conditions. Unless converted earlier at the option of a holder, the mandatory convertible preferred stock will convert automatically into a variable number of shares of Molycorp common stock on March 1, 2014. The mandatory convertible preferred stock will pay cumulative dividends at a rate of 5.50% per annum on the liquidation preference of $100 per share. Molycorp expects to use the net proceeds from the mandatory convertible preferred stock offering to fund its original Phase 1 production capacity plan as well as its Phase 2 expansion plan that is expected to give Molycorp the ability to produce at an annual rate of up to approximately 40,000 metric tons of rare earth oxide (REO) per year at its Mountain Pass, California Rare Earth Facility by the end of 2013. J.P. Morgan Securities LLC and Morgan Stanley & Co. Incorporated will act as joint book-running managers for the offerings.

December 21, 2010, 06:00 - Hitachi Metals, Ltd. and Molycorp, Inc. Looks Into Establishment of Joint Ventures [Strategic Combinations] (2048928)

Hitachi Metals, Ltd. announced that Hitachi Metals, Ltd. and Molycorp, Inc. has looked into the establishment of two joint ventures, which will be engaged in the production of neodymium magnet and neodymium magnet used alloy separately, in the first quarter of the fiscal year 2011.

December 10, 2010, 13:00 - Molycorp, Inc. And SUMITOMO CORPORATION Agree To USD130 Million Equity And Debt Investment In Molycorp In Exchange For Rare Earth Supply Agreement [Equity Financing / Related; Equity Investments; Debt Financing / Related] (2041325)

Molycorp, Inc. announced that it has entered into a Memorandum of Understanding (MOU) with SUMITOMO CORPORATION pursuant to which SUMITOMO will assemble an equity and debt financing package in the aggregate amount of $130 million for Molycorp's use in completing its rare earth Mine-to-Magnets manufacturing supply chain. In exchange, Molycorp will provide Sumitomo with substantial quantities of several rare earth products over the next seven years. Pursuant to the transactions contemplated by the MOU, SUMITOMO will purchase $100 million of Molycorp common stock and provide Molycorp $30 million in debt financing at a low interest rate. SUMITOMO is seeking financial support from the Japan Oil, Gas and Metals National Corporation, a Japanese government entity, in connection with this effort. The transactions contemplated by the MOU and the financing transactions are expected to close in February 2011. Molycorp is expected to provide Sumitomo with approximately 2,500 metric tons per year of cerium- and lanthanum-based products and 250 metric tons of didymium oxide (a combination of neodymium and praseodymium) per year from its current production facility at Mountain Pass, California. Following completion of its new, rare earth processing facility at Mountain Pass, Molycorp will provide to Sumitomo for an additional five years approximately 3,000 metric tons of cerium- and lanthanum-based products per year and 250 metric tons of didymium oxide per year.

November 5, 2010, 12:00 - Molycorp, Inc. Signs Rare Earth Sales Contracts With W. R. Grace & Co [Business Deals] (2016558)

Molycorp, Inc. announed that it has entered into agreements with W. R. Grace & Co. to supply rare earth products to Grace from Molycorp's Mountain Pass, California rare earth facility for a five-year period ending in 2015, which may be extended at Grace's option for an additional three-year period ending in 2018. Under the first contract, Molycorp has agreed to supply Grace with a significant amount of its current Mountain Pass rare earth production through mid-2012. Under the second contract, subject to the completion of Molycorp's new production facility at Mountain Pass, which is expected to occur by the end of 2012, Molycorp has agreed to supply over 75% of its lanthanum production per year to Grace through the end of the agreement. Grace will utilize various forms of lanthanum produced by Molycorp for the manufacture of fluid catalytic cracking catalysts and additives that enable petroleum refiners to improve yields and product quality.

October 18, 2010, 20:01 - Molycorp, Inc. Announces Agreement With BNP Paribas To Pursue Debt Facility [Debt Financing / Related] (2000493)

Molycorp, Inc. announced that it has engaged BNP Paribas Securities Corp. to arrange a debt facility of up to $150 million to be used primarily as part of the financing of Molycorp's rare earth products supply chain project in

the United States. Molycorp is producing 3,000 tons of rare earth products per year and plans to modernize and expand its Mountain Pass, California facility to produce 20,000 tons of rare earth products, including oxides, metals, alloys, and magnets, per year by the end of 2012. The debt facility, if implemented, would supplement the approximately $379 million in net proceeds from Molycorp's recently completed initial public offering to provide additional funding for Molycorp's estimated $511 million project to modernize its Mountain Pass, California processing facility and to expand into rare earth alloy production. That project is integral to Molycorp's mine-to-magnets strategy.

July 29, 2010, 15:25 - Molycorp, Inc. Prices Initial Public Offering [Equity Financing / Related] (1946582)

Molycorp, Inc. announced that its whose wholly owned subsidiary, Molycorp Minerals, LLC, is a U.S. rare earth producer and technology company, has priced its underwritten initial public offering of its common stock. Molycorp has agreed to sell 28,125,000 shares of common stock in the offering at a price of $14.00 per share. Additionally, Molycorp has granted the underwriters an option to purchase up to 4,218,750 shares of common stock to cover over allotments, if any. Molycorp`s common stock began trading on the New York Stock Exchange on July 29, 2010 under the symbol MCP. The offering is expected to close on August 3, 2010. Molycorp expects to use the net proceeds of the offering primarily to fund a portion of the modernization and expansion of its Mountain Pass, California rare earth mining and production facility. Morgan Stanley & Co. Incorporated and J.P. Morgan Securities Inc. are acting as joint book-running managers for the offering.

July 29, 2010, 12:45 - Molycorp, Inc. Cuts Estimated IPO Price To $14 Per Share-Reuters [Initial Public Offerings] (1946444)

Reuters reported that Molycorp, Inc. expects to raise about $394 million through its initial public offering (IPO). The Company expects 28.1 million shares to be priced $14 each, down from an earlier estimated range of $15 to $17 a share. Underwriters are being led by Morgan Stanley and J.P. Morgan Securities. Shares are expected to trade on the New York Stock Exchange under the symbol MCP.

July 13, 2010, 13:00 - Molycorp, Inc. Announces Share Amounts, Estimated Price Range For Initial Public Offering [Initial Public Offerings] (1934127)

Molycorp, Inc. announced that it filed an amendment to its registration statement on Form S-1 with the U.S. Securities and Exchange Commission (SEC) for a proposed underwritten initial public offering of its common stock. Molycorp proposes to sell 28,125,000 shares of common stock in the offering. Additionally, Molycorp will grant the underwriters an option to purchase up to 4,218,750 shares of common stock to cover over-allotments, if any. The estimated price range for the initial public offering is $15.00 to $17.00 per share. Molycorp expects to use the net proceeds of the offering primarily for the modernization and expansion of its Mountain Pass, California rare earth mining and production facility. Morgan Stanley & Co. Incorporated and J.P. Morgan Securities Inc. will act as joint book-running managers for the proposed offering. CIBC World Markets Corp., Credit Suisse Securities (USA) LLC, Stifel, Nicolaus & Company, Incorporated, Dahlman Rose & Company, LLC, Piper Jaffray & Co., Knight Capital Markets LLC, Houlihan, Lokey, Howard & Zukin Capital, Inc. and GMP Securities L.P. will act as co-managers for the proposed offering. The offering will be made only by means of a prospectus.

July 13, 2010, 11:04 - Molycorp, Inc. Prices IPO At $15-$17 Per Share-Reuters [Initial Public Offerings] (1933970)

Reuters reported that Molycorp, Inc. expects its initial public offering (IPO) of 28.1 million shares to be priced between $15 and $17 a share. The Company expects net proceeds from the offering of about $420.7 million, based on an assumed initial public offering price of $16 per share. The underwriters, including Morgan Stanley & Co and J.P. Morgan Securities, will have an over allotment option of about 4.2 million shares.

June 8, 2010, 11:15 - Molycorp, Inc.'s Minerals LLC and Neo Material Technologies Sign Letter of Intent For Distribution of Rare Earth Products [Strategic Combinations; Business Deals] (1908896)

Molycorp, Inc. announced that its wholly owned subsidiary, Minerals, LLC and Neo Material Technologies

Inc., have entered into a letter of intent pursuant to which the two companies expect to cooperate in the rare earth "Mine to Magnets" supply chain to their mutual benefit. The letter of intent contemplates a technology transfer agreement between the companies pursuant to which Neo would provide Molycorp with technical assistance and know-how with respect to production of rare earth metals, alloys and magnets. The letter of intent also contemplates potential supply agreements pursuant to which Neo would purchase mixed rare earth carbonates, as well as neodymium and praseodymium oxides or metals from Molycorp, and a potential cooperative marketing and distribution arrangement under which Neo would market various Molycorp products. The letter of intent is non-binding, and the transactions contemplated, including any technology transfer, supply or marketing agreements, are subject to the negotiation and execution of definitive agreements.

April 20, 2010, 00:00 - Molycorp, Inc. Files For For Initial Public Offering-Datamonitor's Financial Deals Tracker [Initial Public Offerings] (1873214)

Datamonitor's Financial Deals Tracker reported that Molycorp, Inc., has filed a registration statement on Form S-1 with the US Securities and Exchange Commission (SEC) for a proposed underwritten Initial Public Offering (IPO) of its common stock. The Company is seeking to list its common stock on the New York Stock Exchange under the symbol 'MCP'.J.P. Morgan Securities, Inc. and Morgan Stanley & Co. Incorporated are acting as joint book-running managers for the proposed offering. The Company intends to use the net proceeds from the offering for the modernization and expansion of its Mountain Pass, California mining and production facility as well as for general corporate purposes, including, without limitation, to fund working capital requirements and to develop new products, processes and technologies, both through acquisitions and capital programs.

LOAD-DATE: July 30, 2012

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Standard & Poor's Corporate Descriptions plus News

July 28, 2012

Molycorp, Inc.

5619 Denver Tech Center Parkway, Suite 1000
Greenwood Village, CO 80111
USA

OFFICE- 5619 Denver Tech Center Parkway, Suite 1000, Greenwood Village, CO, USA 80111, Telephone: 303-843-8040, http://www.molycorp.com

*** * * * * * * * * * COMMUNICATIONS * * * * * * * * * ***
TELEPHONE: 303-843-8040

*** * * * * * * * * * COMPANY IDENTIFIERS * * * * * * * * * ***
TICKER: MCP
CUSIP: 608753

*** * * * * * * * * * COMPANY INFORMATION * * * * * * * * * ***
INCORPORATION DATE: 2008
PLACE OF INCORPORATION: DELAWARE
EMPLOYEES: 150

INCORPORATED in Delaware Mar. 4, 2010. In a corporate reorganization, Molycorp, LLC and Molycorp Minerals, LLC became subsidiaries of the company. Following the corporate reorganization, Molycorp, LLC was merged into Molycorp Minerals, LLC. Molycorp Minerals, LLC, a Delaware limited liability company formerly known as Rare Earth Acquisitions LLC, was formed on June 12, 2008 to purchase the Mountain Pass, California rare earth deposit and associated assets. Molycorp, LLC, which was the parent of Molycorp Minerals, LLC, was formed Sept. 9, 2009.

*** * * * * * * * * * CORPORATE STRUCTURE * * * * * * * * * ***
SUBSIDIARIES:

- Molycorp Minerals, LLC

*** * * * * * * * * * EXECUTIVES * * * * * * * * * ***
OFFICERS:

- Ross R. Bhappu, Chairman
- Mark A. Smith, President & Chief Executive Officer
- James S. Allen, Treasurer, Chief Financial Officer & Chief Accounting Officer John K. Bassett
- John F. Ashburn, Jr., General Counsel & Exec VP
- John L. Burba, Chief Technology Officer & Exec VP
- Ksenia A. Adams, Controller

DIRECTORS:

- Russell D. Ball
- Ross R. Bhappu
- Brian T. Dolan

- Charles R. Henry
- Mark S. Kristoff
- Alec Machiels
- Mark A. Smith
- Jack Edward Thompson

*** * * * * * * * * * DESCRIPTION * * * * * * * * * ***

Revision Date: February 27, 2012

Molycorp, Inc., a development stage company, focuses on the production and sale of rare earth oxides (REOs) from stockpiled feedstocks in the western hemisphere. It operates the Mountain Pass mine, a non-Chinese rare earth deposit. The company was founded in 2008 and is based in Greenwood Village, Colorado.
RESEARCH & DEVELOPMENT EXPENDITURES, Yrs. End. : Thous. $
2010.....2,400 2009.....1,500 EMPLOYEES- December 31, 2010, 150.
CAPITAL EXPENDITURES, Thous. $
2011.....302,180 2010.....33,129

*** * * * * * * * * * MARKET AND INDUSTRY * * * * * * * * * ***
SIC CODES:
33 - Primary metal industries

*** * * * * * * * * * OTHER FINANCIALS * * * * * * * * * ***

Annual Report- Inc. Acct., Yrs. End. Dec. 31; Thou. $~

	2010	2009	2008
REVENUES			
Sales	35,157	7,093	2,137
EXPENSES			
Cost of Goods Sold	(37,591)	(21,785)	(13,027)
Selling, General and Administrative	(18,774)	(12,444)	(2,829)
Stock based Compensation	(28,739)	(241)	(150)
Accretion Expense	(912)	(1,006)	(250)
Depreciation and Amortization	(319)	(191)	(19)
Interest Income/expense-net	249	(194)	10
Other Income/expense	155	181	54
Net Income (Loss)	(50,774)	(28,587)	(14,074)
SUPPLEMENTARY INFO			
Operating Income (Loss)	(51,178.00)	(28,574.00)	(14,138.00)
Basic EPS - Continuing Operations	(0.81)	(0.72)	(0.36)
Diluted EPS - Continuing Operations	(0.81)	(0.72)	(0.36)

Bal. Sheet Dec. 31: Thou. $~

Assets-	2010	2009
ASSETS:		
CURRENT ASSETS		
Cash and Cash Equivalents	316,430	6,929
Trade Accounts Receivables	16,421	1,221
Inventory	18,822	8,545
Prepaid Expenses and Other	1,759	1,825
Total Current Assets	353,432	18,520
NON CURRENT ASSETS		

Property, Plant and Equipment, Net	93,966	66,352
Investments	111	-
Intangible Assets, Net	639	704
Deposits	26,200	-
Inventory	5,212	12,090
Total Assets	479,560	97,666
LIABILITIES:		
CURRENT LIABILITIES		
Trade Accounts Payable	13,009	2,886
Accrued Expenses	4,225	5,944
Short-term Borrowings-related Party	3,085	-
Current Portion of Asset Retirement Obligations	393	693
Total Current Liabilities	20,712	9,523
NON CURRENT LIABILITIES		
Asset Retirement Obligations	12,078	13,509
Other Non-current Liabilities	257	19
SHAREHOLDERS' EQUITY		
Common Stock - Par Value	82	45
Additional Paid in Capital	539,866	117,231
Deficit Accumulated during the Development Stage	(93,435)	(42,661)
Total Shareholders Equity	446,513	74,615
Total Liabilities & Shareholders Equity	479,560	97,666

NOTE: The 2008 income statement represents period June 12 '08 (date of inception) to December 31 '08.

RECENT FINANCIAL STATEMENTS-

************ SECURITIES INFORMATION ************
EXCHANGE: NYS (New York Stock Exchange)
NUMBER OF SHAREHOLDERS: 86
STOCK PRICE:

STOCK DATA~
STOCKHOLDERS- March 7, 2011, 86.
DIVIDENDS: Common $0.001 par: No cash.

STOCK PRICE-
LISTED- NYS (Symbol MCP)~
2011.....79.16 23.05 @2010.....55.22 12.10
@Listed July 29.

STOCK PRICE RANGE: 79.16 - 23.05

COMMON OFFERED: July 29, 2010, the company, through underwriters led by Morgan Stanley & Co. Inc. and J.P. Morgan Securities Inc., offered 28,125,000 Common shares at $14.00 per share; comm., $0.9625 per share. An additional 4,218,750 were available to cover over-allotments.

STOCK OUTSTANDING-	Auth. Shs.	Outstg. Shs.
Preferred $0.001 par	5,000,000	None
Common $0.001 par	350,000,000	82,300,610

**********SERVICE FIRMS**********
AUDITORS- PRICEWATERHOUSECOOPERS
TRANSFER AGENT & REGISTRAR- Computershare Trust Company, N.A.

NEWS TABLE OF CONTENTS-

DATE	TITLE
12 Jun 12	June 11, 2012, Molycorp, Inc. Announces Executive Changes
11 May 12	May 10, 2012, Molycorp, Inc. Announces Consolidated Earnings Results for the First Quarter Ended March 31, 2012; Reaffirms Production Guidance for the Full Year 2012
12 Mar 12	March 9, 2012, Molycorp, Inc. Appoints John Graell as Class II Director
24 Feb 12	February 23, 2012, Molycorp, Inc. Reports Unaudited Consolidated Earnings Results for the Fourth Quarter and Year Ended December 31, 2011; Reports Write-Down Charges for the Fourth Quarter Ended December 31, 2011; Reaffirms Production Guidance and Pr
11 Nov 11	November 10, 2011, Molycorp, Inc. Reports Un-Audited Consolidated Earnings Results for the Third Quarter and Nine Months Ended September 30, 2011; Provides Production Guidance for the Fourth Quarter and Year of 2011 and 2012
12 Aug 11	August 11, 2011, Molycorp, Inc. Reports Unaudited Consolidated Earnings Results for the Second Quarter and Half Year Ended June 30, 2011; Provides Production Guidance for the Third Quarter, Fourth Quarter and Year 2011
26 May 11	May 25, 2011, Molycorp, Inc. Announces Restatement of its Consolidated Financial Statements as of and for the

Year Ended December 31, 2010, and Cumulatively for the
Period from June 12, 2008 (Inception) Through December
31, 2010, and as of and for th
11 May 11 May 10, 2011,
Molycorp, Inc.
Reports Unaudited
Consolidated Earnings Results for the First Quarter
Ended March 31, 2011; Provides Production Guidance for
the Second, Third, Fourth Quarters and Year 2011

LOAD-DATE: July 28, 2012

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LexisNexis® Corporate Affiliations

July 27, 2012

Molycorp, Inc.

5619 Denver Tech Center Pkwy Ste 100
Greenwood Village, CO 80111
United States

CBSA: 19740-Denver-Aurora, CO

*** * * * * * * * * * COMMUNICATIONS * * * * * * * * * ***
TELEPHONE: (303) 843-8040
FAX: (303) 843-8082
URL: www.molycorp.com
E-MAIL: info@molycorp.com (General E-Mail)

*** * * * * * * * * * COMPANY IDENTIFIERS * * * * * * * * * ***
TICKER: MCP
DCA NUMBER: 000840-000

*** * * * * * * * * * COMPANY INFORMATION * * * * * * * * * ***
PLACE OF INCORPORATION: Delaware
LEGAL STATUS: Public
ORGANIZATION TYPE: Parent
EMPLOYEES: 920

*** * * * * * * * * * CORPORATE STRUCTURE * * * * * * * * * ***

-
-

*** * * * * * * * * * EXECUTIVES * * * * * * * * * ***

Name	Title	Role
Ross Randolph Bhappu	Chm	Chairman of the Board
Constantine E. Karayannopoulos	Vice Chm	Vice Chairman
Mark Alan Smith	Pres & CEO	President Chief Executive Officer
Michael F. Doolan	CFO & Exec VP	Executive Vice President Chief Financial Officer
John L. Burba	CTO & Exec VP	Executive Vice President Chief Technology Officer
John F. Ashburn, Jr.	Gen Counsel & Exec VP	General Counsel

		Executive Vice President
James S. Allen	Treas & Sr VP-Fin	Senior Vice President Finance Executive-Other Treasurer
Andrea G. Lieder	Sec	Corporate Secretary
John K. Bassett	Sr VP-Ops	Administration/Operations Senior Vice President
Douglas J. Jackson	Sr VP-Bus Dev, Sls & Mktg	Sales Marketing Business Development Senior Vice President
Jim Sims	VP-Corp Comm	Communications Vice President
Ksenia A. Adams	Controller	Controller
Sam Maddox	Dir-IT & Mgr-Bus Sys	Manager Director MIS
Yuan Gao	Dir-Mktg & Sls	Sales Marketing Director
Terrance J. Gleason	Dir-HR	Director Human Resources
Carl Hassler	Mgr-Product Dev	Manager 245
Neal S. Shah	Mgr-Bus Dev	Business Development Manager
Kevin Johnson	Deputy Gen Counsel	366

BOARD OF DIRECTORS

- Ross Randolph Bhappu
- Russell D. Ball
- Brian T. Dolan
- Charles R. Henry
- Constantine E. Karayannopoulos
- Mark S. Kristoff
- Alec Machiels
- John Graell Moore
- Mark Alan Smith
- Jack Edward Thompson

*** * * * * * * * * * DESCRIPTION * * * * * * * * * ***

Founded in 1920 and headquartered in Greenwood Village, CO, Molycorp, Inc. (NYSE: MCP) is a rare earth oxide producer. The company owns developed rare earth projects outside China. It has three operating segments: Molycorp Mountain Pass, Molycorp Tolleson, and Molycorp Sillamae. Its rare earth products include oxides, metals, alloys, andmagnets. The company's products are used in applications such as nickel metal hydride battery production, samarium cobalt production, and magnet production. According to the company's current 10K government filing it had FYE 12/31/2011 sales of $396.8 million and has 920 employees.
INDUSTRY TYPE: Holding Company; Rare Earth Oxide Metals Mining & Processing

*** * * * * * * * * * MARKET AND INDUSTRY * * * * * * * * * ***

SIC CODES:
6719 - Offices of Holding Companies, Not Elsewhere Classified

1099 - Miscellaneous Metal Ores, Not Elsewhere Classified
*** * * * * * * * * * PRODUCTS * * * * * * * * * ***

BRAND NAME	BUSINESS TYPE
MOLYCORP	Logo

*** * * * * * * * * * FINANCIALS * * * * * * * * * ***
FISCAL YEAR DATE: December 31, 2011

Approximate Sales (Sales):	$396,831,000
Assets:	$1,255,125,000
Liabilities:	$409,895,000
Net Worth:	$845,230,000

*** * * * * * * * * * SECURITIES INFORMATION * * * * * * * * * ***
EXCHANGE: New York Stock Exchange(NYSE)

LOAD-DATE: July 27, 2012

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July 27, 2012

MOLYCORP INCORPORATION

Suite 1000 5619 DTC Parkway
GREENWOOD VILLAGE, CO 80111
UNITED STATES

*** * * * * * * * * * COMMUNICATIONS * * * * * * * * * ***
TELEPHONE: +1 303 843-8040
FAX: +1 303 843-8082
URL: http://www.molycorp.com
INVESTOR RELATIONS PHONE/FAX: +1 303 843-8067

*** * * * * * * * * * COMPANY IDENTIFIERS * * * * * * * * * ***
TICKER: MCP
CUSIP: 608753109
WORLDSCOPE ID: 608753109

*** * * * * * * * * * COMPANY INFORMATION * * * * * * * * * ***
EMPLOYEES: 920

*** * * * * * * * * * EXECUTIVES * * * * * * * * * ***
OFFICERS:

- Dr. Ross Randolph Bhappu, Chairman
- Constantine E. Karayannopoulos, Vice Chairman
- Mark Alan Smith, President & Chief Executive
- Michael F. Doolan, Executive Vice President & Chief Financial Officer
- James S. Allen, Senior Vice President Finance & Treasurer

HEAD OF INVESTOR RELATIONS: Jim Sims, Director of Public Affairs

*** * * * * * * * * * DESCRIPTION * * * * * * * * * ***
Molycorp, Inc. (Molycorp) is a rare earth oxide (REO) producer in the Western hemisphere. The Company owns developed rare earth projects outside of China. The Company also owns rare earth oxide and rare metal producer in Europe. The Company is the producer of rare earth alloys in the United States. It has three operating segments: Molycorp Mountain Pass, Molycorp Tolleson and Molycorp Sillamae. On April 1, 2011, the Company acquired 90% interest in AS Silmet located in Sillamae, Estonia. On April 15, 2011, it acquired Santoku America, Inc. On October 24, 2011, it acquired the remaining 9.9% interest in Molycorp Sillamae. On August 22, 2011, Molycorp opened an office in Tokyo, Japan to provide customer support,as well as consulting and technical services to its customers in Japan. In June2012, the Company acquired Neo MaterialTechnologies Inc.

*** * * * * * * * * * MARKET AND INDUSTRY * * * * * * * * * ***
SIC CODES:
1099 - Metal ores, nec

IBES SECTOR:
0910

*** * * * * * * * * * FINANCIALS * * * * * * * * * ***
FISCAL YEAR END: December

7-YEAR SALES/NET INCOME

Year	Sales $	Net Income $	EPS $
Current Year	396,831,000	117,526,000	1.27
Last Year	35,157,000	-49,085,000	-0.79
2 years ago	7,093,000	-28,587,000	-0.35
3 years ago	2,137,000	-14,074,000	-0.26
4 years ago	-	-	-
5 years ago	-	-	-
6 years ago	-	-	-
7 years ago	-	-	-

MARKET CAPITALIZATION: 758,448,227

*** * * * * * * * * * SECURITIES INFORMATION * * * * * * * * * ***
EXCHANGE: NYSE
CURRENT SHARES OUTSTANDING: 96,395,822
NUMBER OF SHAREHOLDERS: 86
EPS: USD 1.27

*** * * * * * * * * * SERVICE FIRMS * * * * * * * * * ***
AUDITOR: PriceWaterhouseCoopers

*** * * * * * * * * * OTHER REPORTS * * * * * * * * * ***

SHORT COMPANY NAME: MOLYCORP INC

LOAD-DATE: July 27, 2012

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http://w3.nexis.com/new/results/docview/attachRetrieve.do?smi=LOGOS&key=17702&componentseq=1&type=log

Hoover's Company Records - In-depth Records

July 24, 2012

Molycorp, Inc.

5619 Denver Tech Center Pkwy., Ste. 1000
Greenwood Village, CO 80111
United States

*** * * * * * * * * * COMMUNICATIONS * * * * * * * * * ***
TELEPHONE: 303-843-8040, 888-577-7790
FAX: 303-843-8082
URL: http://www.molycorp.com

*** * * * * * * * * * COMPANY IDENTIFIERS * * * * * * * * * ***
TICKER: MCP
HOOVER ID: 114256

*** * * * * * * * * * COMPANY INFORMATION * * * * * * * * * ***
LEGAL STATUS: Public

EMPLOYEES: 920
ONE YEAR EMPLOYEE GROWTH: 513.3%

*** * * * * * * * * * EXECUTIVES * * * * * * * * * ***

OFFICER	TITLE	AGE	SALARY	BONUS	TOTAL_COMPENSATION
Ross R. Bhappu	Chairman	52	-	-	-
John L. Burba	EVP and CTO	60	$213,701	$4,274	$243,619
Robert E. Noll	Sales Manager	-	-	-	-
Jared M. Benedict	Financial Reporting Manager	-	-	-	-
Carl Hassler	Product Development Manager	-	-	-	-
Rocky Smith	General Manager, Mountain Pass Mine	-	-	-	-
John F. Ashburn Jr.	EVP and General Counsel	57	$215,000	$34,900	$259,700
Ksenia A. Adams	Corporate Controller	30	$52,308	$946	$53,254
James S. Allen	CFO and Treasurer	45	$12,179	$77	$12,256
Mark A. Smith	President, CEO, and Director	53	$400,000	$8,000	$679,245

DIRECTOR	TITLE	AGE
Ross R. Bhappu	Chairman	52
Mark A. Smith	President, CEO, and Director	53

Brian T. Dolan	Director	71
Charles R. Henry	Director	74
Russell D. Ball	Director	43
Jack E. Thompson	Director	62
Mark S. Kristoff	Director	50
Alec Machiels	Director	39

*** * * * * * * * * * DESCRIPTION * * * * * * * * * ***

Don't look for any mollycoddling of the earth here. Molycorp mines and produces lanthanide and molybdenum compounds, concentrates, and oxides using open-pit mining techniques. Lanthanides (which include cerium, lanthanum, and yttrium) are used in everything from cell phones and computers to X-ray film and television glass. The company is staking its future on the production of rare earth oxides (REOs). Molycorp went public in July 2010 with an initial public offering (IPO). Since its IPO, it has been making acquisitions and investing in joint ventures to further its growth. In its biggest takeover to date, Molycorp acquired rare earth processor Neo Material Technologies for about $1.3 billion in 2012.

The combination of the two companies broadens Molycorp's portfolio to include production of magnetic powders and rare metals such as gallium, indium, and rhenium, as well as zirconium oxide. It also gives Molycorp more exposure to Chinese markets. China now makes up about 70% of the global rare earth consumption. The acquisition allows Molycorp to expand its production capabilities to include Neo Material's magnet powder products, used to produce neodymium-iron-boron (NdFeB) bonded rare earth magnets -- the world's strongest magnets.

Molycorp is the only REO producer in the Western hemisphere and owns the world's largest rare earth project outside of China. Following a "mine-to-magnets" strategy, the company expects to be one of the world's top producers of rare earth products, including oxides, metals, alloys, and magnets. Rare earths are used in hybrid and electric vehicles, wind power turbines, fiber optics, lasers, disk drives, aviation guidance and control systems, global positioning systems, and advanced water treatment technology.

The company also launched the initial phase of its Project Phoenix rare earth manufacturing facility in California in 2012. It believes the plant will be the most technological advanced and energy-efficient rare earth facility in the world. The company expects to achieve an annual production rate of 19,050 metric tons of rare earth oxide equivalent in 2012.

In 2011 Molycorp, through a subsidiary, acquired a controlling stake in AS Silmet, one of only two REO processing facilities in Europe, in a deal valued at about $89 million. The acquisition provides Molycorp with its first European base of operations and doubles the company's current annual production capacity to 6,000 tons. Molycorp will process the output from its Mountain Pass, California, mine at the AS Silmet facility in Estonia, reducing that plant's dependence on REO materials sourced from China.

Molycorp also acquired the rare-earth alloy and metal producer Santoku America for $17.5 million in 2011. Arizona-based Santoku America was a subsidiary of Japanese company Santoku Corp. The acquisition allows Molycorp to begin manufacturing and selling rare earth alloys for use in magnets found in electric and hybrid cars, wind turbines, electronics, and other applications.

In late 2011 Molycorp, Daido Steel, and Mitsubishi announced plans for a joint venture to make and sell neodymium-iron-boron (NdFeB) permanent rare earth magnets. The joint venture with a 30%, 35.5%, and 34.5% ownership respectively is scheduled to be operational in 2013. The company will use a new approach, licensed from Intermetallics (another Daido and Mitsubishi joint venture), to manufacture the magnets for motors in electric and hybrid vehicles, wind power generators, and home and industrial applications.

Molycorp has an estimated total proven reserves of 88 million pounds and probable reserves of more than 2 billion pounds of REO. The company's Mountain Pass facility, when its upgrade is completed, will have the ability to mine, crush, mill, and separate rare earth ore to produce individual rare earth elements (REE). Global consumption of REEs is projected to steadily increase due to continuing growth in existing applications and increased innovation and development of new end uses.

Resource Capital Funds owns some 32% of Molycorp following its IPO. Sumitomo Corp. invested $130

million in the company for a guaranteed seven-year supply of REOs.

*** * * * * * * * * * MARKET AND INDUSTRY * * * * * * * * * ***
NAICS CODES:
212299 - All Other Metal Ore Mining
SIC CODES:
1099 - Metal ores, nec
COMPETITORS:

- Freeport-McMoRan
- Umicore
- Xstrata
- BHP Billiton Plc
- Norilsk Nickel
- Rio Tinto Limited

*** * * * * * * * * * FINANCIALS * * * * * * * * * ***
FISCAL YEAR DATE: December, 2011

(Millions U.S. Dollars)	2011	2010	2009
Revenue	$396.8	$35.2	$7.1
Net Income	$117.5	($49.1)	($28.6)
Net Profit	29.6%	-	-
Employees	920	150	120

- One Year Sales Growth: 1,028.7%

	2011
Debt Ratio	23.3%
Return on Equity	13.9%
Cash	$418,900,000
Current Ratio	3.58
Long-term debt	$196,500,000
Shares outstanding	83,900,000
Market Value	2,011.8

*** * * * * * * * * * SECURITIES INFORMATION * * * * * * * * * ***
EXCHANGE: NYSE
CURRENT SHARES OUTSTANDING: 83,900,000
STOCK PRICE:
2011 FISCAL YEAR HIGH: $79.16
2011 FISCAL YEAR LOW: $23.05
2011 FISCAL YEAR CLOSE: $23.98
EPS: $1.27
PRICE/EARNINGS HIGH: 62
PRICE/EARNINGS LOW: 18
BOOK VALUE PER SHARE: $10.07
HISTORICAL STOCK INFORMATION:

	2010	2009	2008
Fiscal Year High	$55.22	-	-
Fiscal Year Low	$12.10	-	-
Fiscal Year Close	$49.90	-	-
Earnings	($0.79)	($0.73)	-
Book Value per Share	$5.45	-	-

*** * * * * * * * * * SERVICE FIRMS * * * * * * * * * ***

AUDITOR: PricewaterhouseCoopers LLP, 2012

LOAD-DATE: July 24, 2012

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EDGAR Online

MOLYCORP, INC.

FORM TYPE: 8-K

DOCUMENT DATE: June 11, 2012

FILING DATE: June 12, 2012

*** * * * * * * * * * COMPANY INFORMATION * * * * * * * * * ***
ADDRESS: GREENWOOD VILLAGE, Colorado, 80111
CIK: 0001489137
TICKER: MCP
EXCHANGE: NYSE
SIC CODES:
1000 - Metal Mining
INDUSTRY TYPE: Metal Mining
SECTOR ID: Basic Materials

*** * * * * * * * * * FILING DATA * * * * * * * * * ***
REPORT PERIOD: June 11, 2012
SEC FILE NUMBER: 001-34827

*** * * * * * * * * * CONTENTS * * * * * * * * * ***

- Retrieve All - Form and Exhibits
- SECTION 5 CORPORATE GOVERNANCE
- Change in Directors or Principal Officers
- Signatures

*** * * * * * * * * * TEXT * * * * * * * * * ***

UNITED STATES

SECURITIES AND EXCHANGE COMMISSION

WASHINGTON, D.C. 20549

FORM 8-K

CURRENT REPORT PURSUANT TO

SECTION 13 OR 15(d) OF THE

SECURITIES EXCHANGE ACT OF 1934

Date of report (Date of earliest event reported):

June 11, 2012

Molycorp, Inc.

(Exact name of registrant as specified in its charter)

Delaware (State or other jurisdiction of incorporation)	001-34827 (Commission File Number)	27-2301797 (IRS Employer Identification No.)

5619 Denver Tech Center Parkway, Suite 1000, Greenwood Village, CO (Address of principal executive offices)	80111 (Zip Code)

Registrant's telephone number, including area code:

(303) 843-8040

(Former name or former address, if changed since last report) Check the appropriate box below if the Form 8-K filing is intended to simultaneously satisfy the filing obligation of the registrant under any of the following provisions: o Written communications pursuant to Rule 425 under the Securities Act (17 CFR 230.425) o Soliciting material pursuant to Rule 14a-12 under the Exchange Act (17 CFR 240.14a-12) o Pre-commencement communications pursuant to Rule 14d-2(b) under the Exchange Act (17 CFR 240.14d-2(b)) o Pre-commencement communications pursuant to Rule 13e-4(c) under the Exchange Act (17 CFR 240.13e-4(c))
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Item 5.02.

Departure of Directors or Certain Officers; Election of Directors; Appointment of Certain Officers; Compensatory Arrangements of Certain Officers.

On June 11, 2012, the Board of Directors (the "

Board

") of Molycorp, Inc., a Delaware corporation (the "

Company

"), based on the recommendation of the Nominating and Corporate Governance Committee of the Board (the "

NCG Committee

"), increased the overall number of Directors of the Company from nine to ten and the number of Class III Directors of the Company from three to four. Effective June 11, 2012, the Board, based on the recommendation of the NCG Committee,

elected Constantine Karayannopoulos as a Class III Director of the Company, to serve until his successor is elected and qualified or until his earlier resignation or removal. Mr. Karayannopoulos, while a Director of the Company, will serve as Vice Chairman of the Board. As a non-employee Director, Mr. Karayannopoulos will receive compensation in the same manner as the Company's other non-employee Directors, which compensation the Company previously disclosed in its Proxy Statement for the Company's 2012 Annual Meeting of Stockholders filed with the Securities and Exchange Commission on April 17, 2012, except that effective June 1, 2012, all non-employee Directors will receive an annual cash retainer of $70,000. On June 11, 2012, the Board also appointed Michael F. Doolan, age 60, to serve as Executive Vice President and Chief Financial Officer of the Company, effective June 11, 2012. Mr. Doolan served as the Chief Financial Officer and Executive Vice President of Neo Material Technologies Inc. ("

Neo

"), a producer, processor and developer of rare earth magnetic powders, materials and applications, since September 2005. Mr. Doolan will receive a base salary of Cdn $425,000 per year for serving as Executive Vice President and Chief Financial Officer of the Company. Mr. Doolan will also be entitled to participate in the Company's health and other benefit plans and equity plans and programs generally available to the Company's executive officers and will be entitled to certain perquisites. On June 11, 2012, the Compensation Committee of the Board (the "

Compensation Committee

") granted Mr. Doolan the following award opportunities under the Company's 2012 Annual Incentive Plan.

Name	Threshold (80% Level of Achievement)	Target (100% Level of Achievement)	Maximum (120% Level of Achievement)
Michael F. Doolan	27.5% of 2012 salary	55% of 2012 salary	110% of 2012 salary

On June 11, 2012, the Compensation Committee also approved a target award for Mr. Doolan of 125% of his base salary under the Company's Long-Term Incentive Program. As previously announced, on March 8, 2012, the Company entered into a definitive arrangement agreement (the "

Agreement

") to acquire all of the outstanding common shares of Neo, as described in the Current Report on Form 8-K filed by the Company on March 14, 2012. The acquisition of Neo contemplated by the Agreement (the "

Acquisition

") closed on June 11, 2012. Pursuant to the Agreement, stock options and performance units previously awarded by Neo to Mr. Karayannopoulos as a director and officer of Neo and Mr. Doolan as an officer of Neo accelerated upon closing of the Acquisition. As a result of this acceleration, Mr. Karayannopoulos and Mr. Doolan are entitled to receive approximately Cdn $8.9 million and Cdn $4.2 million, respectively. In addition, each of Mr. Karayannopoulos and Mr. Doolan previously entered into a change of control agreement with Neo, pursuant to which Mr. Karayannopoulos and Mr. Doolan are entitled to receive approximately Cdn $4.1 million and Cdn $2.4 million, respectively. Also on June 11, 2012, the Board appointed James S. Allen to serve as Senior Vice President, Finance and Treasurer of the Company. 2
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SIGNATURES

Pursuant to the requirements of the Securities Exchange Act of 1934, the registrant has duly caused this report to be signed on its behalf by the undersigned hereunto duly authorized.

MOLYCORP, INC.

By: |s|Andrea G. Leider
Name: Andrea G. Leider
Title: Senior Counsel and Corporate Secretary

Date: June 11, 2012

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ACCESSION NUMBER: 0001104659-12-042922

LANGUAGE: ENGLISH

LOAD-DATE: June 12, 2012

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UNITED STATES
SECURITIES AND EXCHANGE COMMISSION
Washington, DC 20549

Form 8-K

Current Report
Pursuant to Section 13 or 15(d) of
The Securities Exchange Act of 1934

Date of Report: September 9, 2004

Rapholz Silver, Inc.
(Exact name of small business issuer as specified in its charter)

Commission File Number: 2-89013D

Florida	59-2340242
(State of incorporation)	(IRS Employer ID Number)

211 West Wall Street, Midland, Texas 79701-4556
(Address of principal executive offices) (Zip Code)

(432) 682-1761
(Registrant's telephone number)

3910 Northeast 26th Avenue, Lighthouse Point, Florida 33064
(Former name, former address and former fiscal year,
if changed since last report)

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Section 2.01 - Completion of Acquisition or Disposition of Assets

Subsequent to the close of business on August 31, 1989, the Company liquidated all operations and assets and became a dormant entity. The Company's former management also elected to suspend it's reporting under the Securities Exchange Act of 1934, as amended, due to a lack of operating capital concurrent with the filing of an Annual Report on Form 10-K for the year ended August 31, 1989.

Section 4.01 - Changes in Registrant's Certifying Accountant

The Company has not had it's financial statements audited since the year ended August 31, 1989. At that time, the Company had engaged the services of Anchel & Company (Anchel) of Miami, Florida. Anchel's last audit report was dated January 10, 1990. In a letter dated December 14, 1995, Anchel confirmed to the Company that their firm had not performed any work for the Company subsequent to the January 10, 1990 audit opinion. Additionally, Anchel confirmed that all files, records and working papers related to their engagements were destroyed in Hurricane Andrew in 1992. The Company has had no contact with Mr. Douglas since the December 14, 1995 letter.

No accountant's report on the financial statements for either of the past two (2) years contained an adverse opinion or a disclaimer of opinion or was qualified or modified as to uncertainty, audit scope or accounting principles, except for a going concern opinion expressing substantial doubt about the ability of the Company to continue as a going concern.

During the Company's two most recent fiscal years (ended August 31, 2003 and 2002) and from September 1, 2003 to the date of this Report, there were no disagreements with Anchel on any matter of accounting principles or practices, financial disclosure, or auditing scope or procedure. There were no reportable events, as described in Item 304(a)(2)(i) and (ii) of Regulation S-B, during the

Company's two most recent fiscal years (ended August 31, 2003and 2002) and from September 1, 2003 to the date of this Report.

Engagement of S. W. Hatfield, CPA

On September 9, 2004, as a result of the change in control of the Company, the Company's Board of Directors and Senior Management authorized the engagement of S. W. Hatfield, CPA of Dallas, Texas (SWHCPA) as the Company's new independent auditors. The Company did not consult with SWHCPA at any time prior to the April 2004 change in control or subsequent thereto, including the Company's two most recent fiscal years ended August 31, 2003 and 2002, and the subsequent interim periods through the date of this Report, regarding any of the matters or events set forth in Item 304(a)(2)(i) and (ii) of Regulation S-B.

Section 5.01 - Changes in Control of the Registrant

On or about April 16, 2004, the Company sold 10,000,000 shares of restricted, unregistered common stock to Glenn A. Little, pursuant to a subscription agreement for 10,000,000 shares, for gross proceeds of approximately $10,000. The Company relied upon Section 4(2) of The Securities Act of 1933, as amended, for an exemption from registration of these shares and no underwriter was used in this transaction.

Mr. Little was concurrently elected President, Chief Executive Officer, Chief Operating Officer, Chairman of the Board of Directors, and Secretary and Treasurer of the Company.

As a result of this transaction, Glenn A. Little became the Company's controlling shareholder, owning 10,000,000 shares of the 28,649,929 issued and outstanding shares of the Registrant's common stock, or approximately 34.90%.

Item 8.01 - Other Events

With the engagement of S. W. Hatfield, CPA, management, through this filing, is notifying the general public of it's intent to file the Annual Report on Form 10-KSB for each of the years ended August 31, 2004, August 31, 2003 and August 31, 2002, as soon as the appropriate records can be provided to S. W. Hatfield, CPA, the Company's newly appointed independent certified public accounting firm and the required audits of the Company's financial statements may be completed. Additionally, the Company intends to file the required Quarterly Reports on Form 10-QSB for each of the respective quarters ended November 30, 2002, February 28, 2003, May 31, 2003, November 30, 2003, February 29, 2004 and May 31, 2004.

<PAGE>

SIGNATURES

Pursuant to the requirements of the Securities Exchange Act of 1934, the Registrant has duly caused this Report to be signed on its behalf by the undersigned thereunto duly authorized.

Rapholz Silver, Inc.

Date: September 9, 2004 By: /s/ Glenn A. Little

Glenn A. Little
Chief Executive Officer

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