2008 Minerals Yearbook

CALIFORNIA

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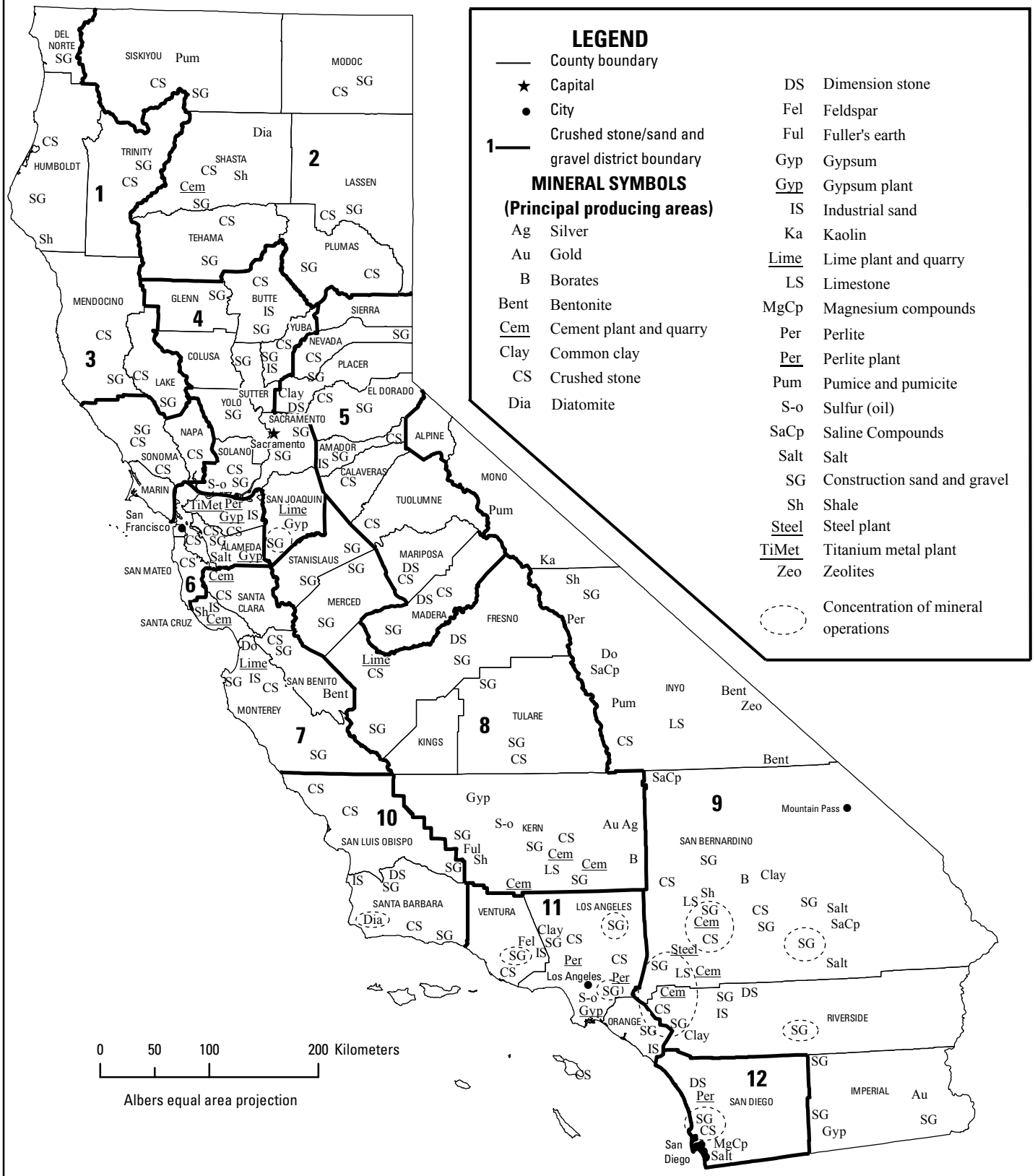
CALIFORNIA



Source: California Geological Survey/ U.S. Geological Survey (2008).

The Mineral Industry of California

This chapter has been prepared under a Memorandum of Understanding between the U.S. Geological Survey and the California Geological Survey for collecting information on all nonfuel minerals.

In 2008, California's nonfuel raw mineral production[1] was valued at $4.20 billion, based upon annual U.S. Geological Survey (USGS) data. This was a $220 million, or 5%, decrease from the State's total nonfuel mineral value in 2007, which had decreased by $360 million, or about 7.5%, from that of 2006. The State, for the third consecutive year, was third in rank among the 50 States in total nonfuel mineral production value in 2008, having been second in 2005 and first in the Nation for 6 consecutive years from 1999 through 2004. California accounted for 5.9% of the U.S. total.

Industrial minerals accounted for more than 95% of California's nonfuel mineral production value; the remaining value resulted from gold, iron ore, and silver mining (descending order of value). In 2008, California continued as the leading construction sand and gravel-producing State, accounting for nearly 11% of the commodity's total U.S. mine production and 16% of the Nation's total value for that mineral commodity. Construction sand and gravel was, by value, also the State's leading nonfuel mineral, accounting for 30% of the State's total nonfuel mineral production value. Cement (portland and masonry) was the second ranked nonfuel mineral, followed by boron minerals, crushed stone, soda ash, and gold; these six accounted for 94% of the State's total nonfuel mineral value (table 1).

In 2008, increases of more than $100 million, more than $70 million, $40 million, and more than $30 million, respectively, took place in the values of gold, boron minerals, crushed stone, and soda ash production. Smaller increases of $5 million or less took place in the production value of diatomite, fuller's earth clays, and salt. But these were more than offset by decreases that took place, particularly in construction sand and gravel and cement (portland and masonry combined), down by $270 million and $176 million, respectively. Also decreasing in production value were pumice and pumicite, down by nearly $10 million, crude gypsum and fire clays, down by more than $7 million each, dimension stone, down by $5 million, and lime down by nearly $4 million (table 1). Mineral commodities having a lesser dollar value but that had significantly large changes in the quantities produced or value included zeolites, silver, usable iron ore, dimension stone, and pumice and pumicite. An average between quantity and the production values of the first three increased significantly, up by about 330%, about 250%, and about 95%, respectively. The quantities produced by dimension stone and pumice and pumicite decreased by 33% and 51%, respectively.

In 2008, California continued to be the Nation's only State to produce boron and remained first in the quantities of construction sand and gravel produced (listings in descending order of value) and first of four diatomite producing States. The State also continued to rank second in portland cement production and second of two States that produced soda ash; third in feldspar and crude gypsum; fourth in crude perlite; and ninth in the production of salt.

California rose in rank to first from second in masonry cement production; to fifth from sixth in the production of fuller's earth clay; to sixth from seventh of 11 gold-producing States; and to seventh from eight in bentonite clay production.

The State decreased in rank to second from first in fire clay production; to second from first in that of pumice and pumicite; to fifth from fourth in gemstones (based upon production value); to a tie for sixth with two other States (North Carolina and Michigan) from fourth in industrial sand and gravel; and to ninth from seven in kaolin clay production. Additionally, the State was a producer of significant quantities of common clays, crushed stone, and dimension stone.

The following narrative information was provided by the California Geological Survey[2] (CGS). The CGS production data and information, except where otherwise noted, were based upon the agency's own surveys and mine inquiries, company annual reports, and data and information derived from other State government agency sources. These data may differ from USGS annual production figures, which were based upon company responses to USGS surveys and upon USGS estimates. California produced about 30 different commercial industrial minerals during the year. In addition to those nonfuel mineral commodities ranked above, the State led the Nation in the production of natural sodium sulfate. There were about 717 active mines producing nonfuel minerals during 2008. Approximately 10,000 people were employed at these mines and their mineral processing plants.

Commodity Review

Industrial Minerals

California's residential construction slowdown of 2007 continued on into 2008, and contributed to a significant decrease overall in both the production and the value of construction aggregate (construction sand and gravel and crushed stone). Although, based upon USGS data, crushed stone production slightly increased and its value was up by more than 7%, construction sand and gravel production and value were

[1]The terms "nonfuel mineral production" and related "values" encompass variations in meaning, depending upon the mineral products. Production may be measured by mine shipments, mineral commodity sales, or marketable production (including consumption by producers) as is applicable to the individual mineral commodity.

All 2008 USGS mineral production data published in this chapter are those available as of July 1, 2010. All USGS Mineral Industry Surveys and USGS Minerals Yearbook chapters—mineral commodity, State, and country—can be retrieved over the Internet at URL http://minerals.usgs.gov/minerals.

[2]Susan Kohler, Senior Engineering Geologist, authored the text of information submitted by the California Geological Survey.

substantially down (table 1). But despite the significant downturn in the production of construction sand and gravel, by value, it continued to be California's leading industrial mineral, followed by portland cement and boron, California's third highest dollar-value mineral produced in 2008. U.S. Borax and Chemical Corporation Inc. (a subsidiary of Rio Tinto Inc.) led the State and Nation in the production of borates at its Boron Mine and processing facility in Kern County. Crushed stone by value continued to rank fourth in the State.

Cement.—California's decline in new home and business construction during 2008 contributed to a significant drop in cement production and in cement imports. For example, the port of Stockton, San Joaquin County, experienced a substantial decline in cement imports—a 70% decrease from 1.02 million metric tons (Mt) of imports in 2007 to 0.30 Mt of imports in 2008. As compared with that of 2006 cement imports of 2.2 Mt, the decline was about 86%.

The decline in cement demand prompted CEMEX to plan for the temporary closing of its Davenport cement plant, Santa Cruz County, to begin in March 2009 for a minimum of 6 months. Most of the 125 plant and mine employees were to be laid off except for a few workers to maintain the plant's equipment. The plant primarily serves the San Francisco Bay Area. The closure was to come in the wake of the overall economic downturn, which was causing a significant decrease in cement demand throughout California. CEMEX also owned a cement plant located in Victorville, San Bernardino County, which would remain fully operational.

Texas Industries, Inc.'s Riverside Cement Klin shut down its Crestmore cement plant located in Riverside County, in December, laying off 88 employees; the plant was to remain closed until the economy improves. Texas Industries planned to suspend temporarily operations at its Oro Grande facility in San Bernardino County at the end of January 2009, this being just 8 months after the company completed the expansion and modernization of the Oro Grande plant facilities at a cost of $427 million. The renovation completed in May 2008 included modernization of mining equipment and crushing facilities as well as replacing seven 50-year-old kilns with a single state-of-the-art precalciner kiln. The modernization almost doubled the plant's annual cement processing capacity from 1.2 Mt to 2.1 Mt.

The construction slump impacted California's cement plants, including Lehigh Southwestern Cement Co.'s plant north of Redding, Shasta County. In August, the company planned the cutting of all employees' hours by 20% and to go to a 4-day work week.

Despite the downturn in cement importation, CEMEX and Pan Pacific Cement Inc. completed construction of two new state-of-the-art bulk cement terminals at the Port of Sacramento. CEMEX invested more than $54 million on its new terminal, which could handle up to 1 million metric tons per year (Mt/yr) of cement—almost five times the capacity of the former CEMEX facility. Pan Pacific's new facility cost about $20 million, with an annual maximum capacity of about 800,000 metric tons (t).

Lehigh Hanson (formerly Hansen Permanente Cement Inc.) continued working on revising and expanding the 1987 reclamation plan for its Permanente limestone quarry, Santa Clara County, set to expire in 2010. The Permanente Quarry and cement plant continued in supplying about 50% of the San Francisco Bay Area's cement.

Rare Earths.—The Mountain Pass rare-earth mine, San Bernardino County, was purchased from Chevron Mining Inc. (a wholly owned subsidiary of Chevron Corp.), by a group of U.S.-based investors on September 30, forming Molycorp Minerals LLC, a Denver-based company that owned and operated the mine operation. The new company continued separating rare-earth elements from stockpiled rare-earth concentrates. The major products being produced were lanthanum hydroxychloride, used in the manufacturing of fluid catalytic cracking catalysts, and didymium oxide (neodymium + praseodymium oxide), used to manufacture rare-earth magnets. The current plant had a production capacity of about 2,040 metric tons per year (t/yr) of rare-earth products but plans were under way to increase capacity to about 2,700 t/yr by 2010. The stockpiled rare-earth concentrates were expected to last until 2010, at which point the plant feed would change to bastnasite concentrate. The rare-earth separation operations were mostly idle between 1998 and 2007, yet stockpiled ore continued to be sold during this time making mine operations continuous since the mine opened in 1952. The company also had plans to set up a factory for the production of high-power neodymium magnets used in the manufacturing of wind turbine generators and other high-tech products.

Sand and Gravel, Construction.—Lehigh Hanson (a subsidiary of HeidelbergCement), CEMEX, and Shamrock Materials Inc. continued to buy aggregate shipped from Canada to the State's San Francisco Bay area ports. Lehigh Hanson also barged sand from Mexico into San Diego, CA. The quantity of aggregate shipped from Canada and Mexico has remained fairly constant at nearly 2 to 3 Mt/yr. Eagle Rock Aggregates (a subsidiary of Polaris Minerals Corporation, Vancouver, British Columbia, Canada) did preparatory work in anticipation of the shipping of Canadian aggregate into the Los Angeles, Long Beach, and San Diego areas when the economy recovers and aggregate sales start to improve.

In August, 12 years after the initial project proposal, the Fresno County Board of Supervisors approved Calaveras Materials Inc.'s 127-hectare (ha) sand and gravel mining project along the north bank of the Kings River in Fresno County. The approval followed an appeal by Calaveras Materials (a subsidiary of Lehigh Hanson) of a March 2008 decision to deny the permit. The project will add approximately 27 Mt of aggregate reserves to the Fresno County area. The company proceeded with work on the plant design so as to comply with conditions of the approval.

In September, Teichert Aggregates put on hold the construction of the company's Lincoln aggregate facility, Placer County, until improvement in the local economy. Teichert was granted an extension through 2010 of the project's CUP, or conditional use permits (regulating the mining, processing, storage, and sale of natural resource materials). Work continued on road improvements and other mitigating measures associated with the approved mine and plant. The mining and processing of nearby sand and gravel deposits to be processed at the facility

was proposed for a period of approximately 35 to 40 years to potentially be followed by hard rock granite mining to continue for an additional 85 years in varying rates in response to specific market conditions (AECOM—EDAW, Inc., 2004, p. 16–2).

Triangle Rock Products Inc. (a subsidiary of Vulcan Materials Co.) planned to expand its current gravel operation north of Florin Road in Sacramento County to a 40-ha site south of Florin Road. Under the proposed plan, the mine expansion was expected to yield about 9.7 Mt of gravel during a 12-year life span. Also, the plan called for the preservation of a 9-ha wildlife corridor along Laguna Creek west of the proposed mined area.

A draft environmental impact report (DEIR) was submitted in June for De Silva Gates LLP's Ostrom Road 71-ha aggregate mining and processing project located along Dry Creek, Yuba County. The project also included a more than 5,400-metric-ton-per-day (6,000-short-ton-per-day) asphalt plant to be built during the first year of the mine's operation. The proposed mine and plant were expected to produce up to 544,000 t/yr of sand and gravel and would have reserves of about 8.2 Mt.

Troesh Materials Inc. received final county approval in September from the Santa Barbara County Board of Supervisors for the company's 54-ha Diamond Rock Sand Mine and processing facility located in and along the Cuyama River, Santa Barbara County. The approval came after the Board of Supervisors upheld a May 2008 decision by the Planning Commission to approve the project. The approval allows up to 680,000 t/yr of sand and gravel to be mined from a 34-ha site. Troesh Materials planned to mine roughly 12 Mt of aggregate during the permit life of 30 years. The Richards Holdings Co. also applied for a permit from Santa Barbara County for the purpose of mining sand from the Cuyama River channel; at yearend the permit was still pending.

Baldwin Contracting Company Inc.'s proposed 81-ha, 4.2-million-cubic-meter M&T Ranch sand and gravel mining project in Butte County was denied by the Board of Supervisors in January 2008—ending nearly 12 years of discussion and debate with regard to the proposed mine. The company did not plan to appeal the decision.

Stone, Crushed.—Northern Aggregates Inc. continued the permitting process for a proposed 14-ha expansion of the company's Harris rock quarry located in Mendocino County. The project also called for the construction of an onsite concrete and asphalt processing plant. Findings of the DEIR for the expansion were presented to the county in January. The company worked on a list of conditions aimed at mitigating potential negative impacts of the project. The proposed expansion would add approximately 25 Mt of aggregate reserves to the county.

The permitting process for Granite Construction Co.'s 63-ha Liberty Quarry project continued throughout the year. The project's approval would allow Granite Construction to mine a total of 245 Mt of crushed rock (up to 4.5 Mt/yr) from a granite deposit located in southeastern Riverside County about 5 kilometers (km) south of Temecula. A DEIR for the project was scheduled for release in July 2009, with public comment to continue through November 2009. In December 2008, the city of Temecula filed an application to annex about 2,000 ha in the vicinity of, and including, the Liberty Quarry project site, which if approved would change the permitting agency for the quarry from Riverside County to the city of Temecula.

A DEIR was released in August for Teichert Aggregate's 155-ha hard rock aggregate quarry and plant project located in eastern Sacramento County between U.S. Highway No. 50 and California Highway No 16. The project, referred to as the Teichert Quarry, was proposed by the company for the mining of slightly more than 120 Mt of granitic rock during a 25-year quarry life. The proposed project was one of three hard rock quarry projects in eastern Sacramento County that were in the permitting stage. The two other projects had been initiated by Granite Construction Co. (the Walltown Quarry project) and by DeSilva Gates Construction, Inc. (the Barton Quarry project). As of yearend, the DEIRs had not been released for either of those projects. If all three mining projects were to be approved as proposed, the Sacramento Region and Western El Dorado County would gain nearly an additional 710 Mt of construction grade aggregate reserves.

Metals

The only metals produced by mines in California were gold and silver; silver production was comparatively very small to that of gold, being produced only as a byproduct of gold production. Iron ore mined in California was used in the production of portland cement and was considered to be an industrial mineral.

Gold.—Gold dominated California's metal production in 2008, comprising about 99% of the value of the State's metals production. According to the CGS (as derived from State government agency sources and CGS individual mine inquiries), annual production increased dramatically to 3,590 kilograms (kg) in 2008, a 494% increase as compared with production of 603 kg in 2007. As similarly derived, the value of gold production in the State had an even greater increase to $100.6 million from $13.0 million in 2007, a 674% increase, driven in part by increasing gold prices.

The State's large increase in gold production can be attributed mainly to Western Goldfields, Inc., which brought the Mesquite gold mine back into production in 2008, with a similarly derived production total in excess of 3,100 kg of gold for the year. The company purchased the Mesquite Mine from Newmont Mining Corp. in 2003 and began mining operations in the fall of 2007. The company's first gold pour from the new operations took place in January 2008. Gold production for the Mesquite Mine for 2009 was projected to be between about 4,350 kg and 4,670 kg. By yearend, Western Goldfields had identified and estimated 81,000 kg of gold reserves and an additional 47,000 kg of measured and indicated resources.

Canyon Resources Corp. merged with Atna Resources Ltd. in March 2008. Following the merger, Atna Resources concentrated its efforts on restarting its new holding, the Briggs Gold Mine in Inyo County. Major projects that started during 2008 included a 9.3-ha, or 92,900-square-meter, leach pad expansion, refurbishing of the existing crushing plant and mining equipment, and the purchasing of new mining equipment. Stripping of overburden began at the mine in late 2008, and mining of the first ore began in January 2009. The

first gold pour at the mine was to take place in May 2009. Atna expected full production to be achieved by the beginning of 2010, with an estimated annual yield of about 1,240 kg (40,000 troy ounces) of gold. Measured and indicated gold resources at the Briggs Mine and the unpermitted Cecil R deposit were estimated to be about 21,000 kg. These resources reflected a recent 7,600-meter drilling program conducted from late 2008 into the first half of 2009. Proven and probable reserves at the Briggs Mine remained an estimated 8,300 kg. Atna was working on revising its mine plan to increase these reserves.

In February, Sutter Gold Mining Inc. updated the company's mineral resource estimate for its Sutter Gold Project in Amador County as a result of its having conducted 5,940 meters of core drilling in 2006–07. The new 2008 indicated resource estimate was determined to be about 611,000 t of ore containing an estimated 6,940 kg (223,000 troy ounces) of gold, a 29% increase in contained gold from the 2006 estimate. The drilling identified several new ore zones in the fully permitted Sutter Creek project comprising 217-ha along a 5-km segment of the Mother Lode belt including the historic Lincoln Mine site. A portion of the historic workings was opened for tours.

A DEIR was completed in October for the reopening of Emgold Mining Corp.'s Idaho Maryland gold mine located in the City of Grass Valley, Nevada County. After public comment ended in January 2009, a decision was made to make revisions to the report for resubmission. As of October, Emgold Mining anticipated that the mine probably was about 4 years away from production if the permit were to be granted. The Idaho Maryland Mine is a historic underground load gold mine that operated from 1862 to 1956, producing about 74,600 kg (2.4 million troy ounces) of gold. Emgold had thus far identified measured and indicated gold resources of 14,700 kg. A key component of the mine reopening was the dewatering of the historic workings. Emgold also was working with Golden Bear Ceramics Co. to plan an onsite manufacturing facility to use waste rock for the production of ceramic products.

In addition to the above mentioned lode gold mines, placer gold was produced from Cal Sierra Development Inc.'s Yuba River gold dredging operation in Yuba County and as a byproduct mineral from numerous sand and gravel mines located in the northern and central part of the State. California also has several small underground gold mines that mainly produce specimen gold including gold, in quartz matrix for jewelry.

Legislation and Government Programs

State and Federal Transportation Project Funding.—Although California's residential construction slowdown during the year contributed to the decrease in both the production and value of construction sand and gravel, funds continued to come in from bond sales by the State Treasurer's Office to fund the $19.9 billion transportation bond package approved by the California voters in 2006. As of December 2008, the California Department of Transportation had awarded $1.57 billion to contractors for 98 transportation projects funded by California State Proposition 1B money. The projects consisted of expansion of public transit, improvements to the seismic safety of local bridges, repairs to local streets and roads, safety improvements and repairs to State highways, and upgrades to freeways. The 1B bond package also authorized State and regional agencies to engage in public and private partnerships to attract additional funds in private investments for the development of transportation infrastructure in the State. Many of these infrastructure projects will require large amounts of construction aggregate and cement. The increased demand for construction materials necessary for these projects may offset some of the reduced demand from declining commercial and residential construction owing to the recent economic downturn.

Federal Government Legislation.—In addition to the Proposition 1B money, California was expected to receive approximately $2.57 billion for freight and passenger rail, highways, local streets and roads, and port infrastructure projects following final passage in early 2009 of the Federal American Recovery and Reinvestment Act of 2009 (Recovery Accountability and Transparency Board, 2009).

In order to resolve a longstanding dispute between the City of Santa Clarita and CEMEX over the proposed Soledad Canyon sand and gravel quarry in Los Angeles County, the Soledad Canyon Bill (H.R. 5887) was introduced in the U.S. Congress in April by the U.S. Congressman from the Santa Clarita District (Santa Clara Valley Signal News, The, 2008). The bill would have protected Soledad Canyon, including the CEMEX proposed mine site, as open space. The bill also would have authorized compensation to CEMEX for its two 10-year contracts with the U.S. Department of the Interior's Bureau of Land Management by providing CEMEX with land near Victorville that was comparable in value to the company's investment in the cancelled contracts. As part of H.R. 5887, one mine would not be traded for another as CEMEX had a separate agreement with the City of Victorville to sell these lands near Victorville in accordance with local land use and economic development goals. Despite being supported by CEMEX and the cities of Santa Clarita and Victorville, the bill failed to be brought up because of the heavy legislative schedule, especially in relation to the Nation's financial crisis. However, it had bipartisan, support and it was to be reintroduced in 2009 in the 111th Congress (West Branch Beacon, The, 2008).

State Mineral Land Classification Project.—The California Geological Survey's Mineral Land Classification Project, a mandate of the State's Surface Mining and Reclamation Act, continued to provide lead agencies with mineral resource maps that have been of significant value in land-use planning and mineral resource conservation (California Department of Conservation Office of Mine Reclamation, 2007, p. 49; California Geological Survey, 2007). At yearend, the CGS had completed mineral resource studies in about one-third of the State. During the year, the CGS completed an updated classification project in the San Bernardino area. Further classification work was being conducted for southern Los Angeles County, Kern County, Nevada County, the North San Francisco Bay area (Marin County, Napa County, and Sonoma County), San Joaquin County. These reports were scheduled for completion in 2009–10.

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TABLE 1
NONFUEL RAW MINERAL PRODUCTION IN CALIFORNIA[1, 2]

(Thousand metric tons and thousand dollars)

Mineral	2006		2007		2008	
	Quantity	Value	Quantity	Value	Quantity	Value
Cement:						
Masonry	698	89,500 [e]	522	68,900 [e]	337	43,600 [e]
Portland	10,900	1,190,000 [e]	10,800	1,180,000 [e]	9,880	1,030,000 [e]
Clays:						
Bentonite	24	2,510	29	3,090	30	3,360
Common	744	7,640	549	3,390 [r]	469	3,570
Fire	W	W	W	W	118	W
Gemstones, natural	NA	1,040	NA	818	NA	732
Sand and gravel:						
Construction	128,000 [r]	1,570,000 [r]	141,000 [r]	1,520,000 [r]	110,000	1,250,000
Industrial	1,670	57,800	1,850	43,400	1,500	42,300
Stone:						
Crushed	70,500 [r]	780,000 [r]	51,000 [r]	533,000 [r]	51,500	573,000
Dimension	40	10,000	39	12,300	26	7,320
Combined values of boron minerals, clays (fuller's earth, kaolin), diatomite, feldspar, gold, gypsum (crude), iron ore (usable shipped), lime, magnesium compounds, perlite (crude), pumice and pumicite, salt, silver, soda ash, talc (crude), tungsten, zeolites, and values indicated by symbol W	XX	1,070,000	XX	1,050,000	XX	1,250,000
Total	XX	4,780,000 [r]	XX	4,420,000 [r]	XX	4,200,000

[e]Estimated. [r]Revised. NA Not available. W Withheld to avoid disclosing company proprietary data. Withheld values included in "Combined values" data.
XX Not applicable.
[1]Production as measured by mine shipments, sales, or marketable production (including consumption by producers).
[2]Data are rounded to no more than three significant digits; may not add to totals shown.

TABLE 2
CALIFORNIA: CRUSHED STONE SOLD OR USED, BY TYPE[1]

Type	2007 Number of quarries	2007 Quantity[r] (thousand metric tons)	2007 Value[r] (thousands)	2008 Number of quarries	2008 Quantity (thousand metric tons)	2008 Value (thousands)
Limestone[2]	29	23,200	$211,000	33	29,200	$345,000
Dolomite	3 r	98	1,300	4	210	1,080
Granite	30 r	13,200	147,000	31	11,000	108,000
Traprock	28 r	7,520	87,400	25	4,930	51,500
Sandstone and quartzite	8 r	1,870	21,700	11	1,780	21,200
Slate	3 r	222	2,170	3	160	1,560
Volcanic cinder and scoria	9 r	633	8,980	7	392	4,960
Miscellaneous stone	51 r	4,250	53,400	50	3,790	39,000
Total	XX	51,000	533,000	XX	51,500	573,000

[r]Revised. XX Not applicable.
[1]Data are rounded to no more than three significant digits; may not add to totals shown.
[2]Includes limestone-dolomite reported with no distinction between the two.

TABLE 3
CALIFORNIA: CRUSHED STONE SOLD OR USED BY PRODUCERS
IN 2008, BY USE[1]

(Thousand metric tons and thousand dollars)

Use	Quantity	Value
Construction:		
Coarse aggregate (+1½ inch):		
Riprap and jetty stone	533	12,500
Filter stone	45	987
Other coarse aggregate	792	10,000
Coarse aggregate, graded:		
Concrete aggregate, coarse	850	12,900
Bituminous aggregate, coarse	145	2,480
Railroad ballast	215	3,070
Other graded coarse aggregate	3,250	133,000
Fine aggregate (-⅜ inch):		
Stone sand, concrete	185	2,710
Stone sand, bituminous mix or seal	151	2,230
Screening, undesignated	215	4,750
Other fine aggregate	952	20,500
Coarse and fine aggregates:		
Graded road base or subbase	1,210	11,300
Unpaved road surfacing	424	3,790
Terrazzo and exposed aggregate	33	855
Crusher run or fill or waste	254	1,560
Other coarse and fine aggregates	4,100	41,800
Other construction materials	66	1,110
Agricultural:		
Limestone	115	2,180
Poultry grit and mineral food	238	5,540
Other agricultural uses	10	461
Chemical and metallurgical:		
Cement manufacture	13,200	50,900
Lime manufacture	W	W
Flux stone	W	W
Glass manufacture	W	W
Sulfur oxide removal	W	W
Special:		
Asphalt fillers or extenders	W	W
Whiting or whiting substitute	W	W
Other fillers or extenders	W	W
Lightweight aggregate	W	W
Other miscellaneous uses and specified uses not listed	W	W
Unspecified:[2]		
Reported	13,800	139,000
Estimated	9,600	83,000
Total	51,500	573,000

W Withheld to avoid disclosing company proprietary data; included in "Total."
[1]Data are rounded to no more than three significant digits; may not add to totals shown.
[2]Reported and estimated production without a breakdown by end use.

TABLE 4
CALIFORNIA: CRUSHED STONE SOLD OR USED BY PRODUCERS IN 2008, BY USE AND DISTRICT[1]

(Thousand metric tons and thousand dollars)

Use	District 1		District 2		District 3		Districts 4, 5, & 6[2]		Districts 7, 8, & 9[2]	
	Quantity	Value	Quantity	Value	Quantity	Value	Quantity	Value	Quantity	Value
Construction:										
Coarse aggregate (+1½ inch)[3]	W	W	74	1,410	W	W	120	1,760	739	9,590
Coarse aggregate, graded[4]	W	W	W	W	W	W	627	9,860	3,310	134,000
Fine aggregate (-⅜ inch)[5]	W	W	W	W	220	3,420	202	3,570	882	20,600
Coarse and fine aggregates[6]	W	W	W	W	954	9,610	225	1,880	1,120	7,940
Other construction materials	--	--	--	--	--	--	12	187	54	925
Agricultural[7]	--	--	W	W	W	W	230	4,700	3	100
Chemical and metallurgical[8]	W	W	W	W	--	--	W	W	12,600	48,800
Special[9]	--	--	W	W	--	--	W	W	W	W
Other miscellaneous uses	--	--	--	--	--	--	W	W	W	W
Unspecified:[10]										
Reported	267	3,120	19	196	597	5,890	2,370	23,200	7,360	75,900
Estimated	322	4,000	947	8,400	1,900	16,000	2,100	18,000	3,900	34,000
Total	860	10,800	4,460	43,900	3,980	42,300	6,210	70,400	30,700	349,000

	Districts 10, 11, & 12[2]		Unspecified districts	
	Quantity	Value	Quantity	Value
Construction:				
Coarse aggregate (+1½ inch)[3]	197	4,330	--	--
Coarse aggregate, graded[4]	285	3,640	--	--
Fine aggregate (-⅜ inch)[5]	95	1,390	--	--
Coarse and fine aggregates[6]	882	8,970	--	--
Other construction materials	--	--	--	--
Agricultural[7]	W	W	--	--
Chemical and metallurgical[8]	153	651	--	--
Special[9]	W	W	--	--
Other miscellaneous uses	--	--	--	--
Unspecified:[10]				
Reported	3,100	31,000	41	65
Estimated	388	3,300	--	--
Total	5,210	56,200	41	65

W Withheld to avoid disclosing company proprietary data; included in "Total." -- Zero.
[1]Data are rounded to no more than three significant digits; may not add to totals shown.
[2]Specified districts are combined to avoid disclosing company proprietary data.
[3]Includes filter stone, riprap and jetty stone, and other coarse aggregate.
[4]Includes bituminous aggregate (coarse), concrete aggregate (coarse), railroad ballast, and other graded coarse aggregate.
[5]Includes screening (undesignated), stone sand (concrete), stone sand (bituminous mix or seal), and other fine aggregate.
[6]Includes crusher run or fill or waste, graded road base or subbase, terrazzo and exposed aggregate, unpaved road surfacing, and other coarse and fine aggregates.
[7]Includes agricultural limestone, poultry grit and mineral food, and other agricultural uses.
[8]Includes cement, lime, and glass manufacture and sulfur oxide removal.
[9]Includes asphalt fillers or extenders, whiting or whiting substitute, and other fillers or extenders.
[10]Reported and estimated production without a breakdown by end use.

TABLE 5
CALIFORNIA: CONSTRUCTION SAND AND GRAVEL SOLD OR USED IN 2008,
BY MAJOR USE CATEGORY[1]

Use	Quantity (thousand metric tons)	Value (thousands)	Unit value
Concrete aggregate (including concrete sand)	24,600	$283,000	$11.54
Plaster and gunite sands	3,760	40,000	10.65
Concrete products (blocks, bricks, pipe, decorative, etc.)	101	1,560	15.42
Asphaltic concrete aggregates and other bituminous mixtures	13,100	175,000	13.38
Road base and coverings	9,500	95,400	10.04
Fill	4,760	47,300	9.93
Snow and ice control	18	239	13.28
Other miscellaneous uses[2]	323	3,800	11.77
Unspecified:[3]			
Reported	28,700	319,000	11.09
Estimated	25,000	280,000	11.42
Total or average	110,000	1,250,000	11.39

[1]Data are rounded to no more than three significant digits, except unit value; may not add to totals shown.

[2]Includes golf course and railroad ballast.

[3]Reported and estimated production without a breakdown by end use.

TABLE 6
CALIFORNIA: CONSTRUCTION SAND AND GRAVEL SOLD OR USED IN 2008, BY USE AND DISTRICT[1]

(Thousand metric tons and thousand dollars)

Use	District 1		District 2		District 3	
	Quantity	Value	Quantity	Value	Quantity	Value
Concrete aggregate and concrete products[2]	W	W	349	3,680	W	W
Asphaltic concrete aggregates and other bituminous mixtures	W	W	169	5,680	W	W
Road base and coverings	237	2,480	561	5,990	W	W
Fill	28	235	44	122	61	608
Other miscellaneous uses[3]	281	4,440	36	436	169	1,910
Unspecified:[5]						
Reported	171	5,190	51	609	328	3,590
Estimated	576	6,500	955	13,000	86	977
Total	1,290	18,900	2,170	29,800	644	7,090
	District 4		District 5		District 6	
	Quantity	Value	Quantity	Value	Quantity	Value
Concrete aggregate and concrete products[2]	5,440	49,400	89	1,230	704	10,700
Asphaltic concrete aggregates and other bituminous mixtures	3,050	30,000	--	--	W	W
Road base and coverings	3,460	28,600	232	2,590	W	W
Fill	892	8,280	77	501	1,340	18,500
Other miscellaneous uses[3]	196	1,640	5	70	1,320	19,800
Unspecified:[5]						
Reported	5,640	62,500	741	8,140	2,450	27,200
Estimated	854	9,700	779	8,800	368	4,200
Total	19,500	190,000	1,920	21,400	6,170	80,200
	District 7		District 8		District 9	
	Quantity	Value	Quantity	Value	Quantity	Value
Concrete aggregate and concrete products[2]	703	5,470	4,450	53,000	1,730	78,100
Asphaltic concrete aggregates and other bituminous mixtures	--	--	1,550	19,900	5,420	75,900
Road base and coverings	66	1,260	1,940	21,400	1,240	10,800
Fill	48	388	197	2,430	903	5,110
Other miscellaneous uses[3]	21	423	6,710	82,600	59	1,180
Unspecified:[5]						
Reported	864	13,100	3,950	44,600	4,970	55,300
Estimated	67	762	793	9,000	15,000	170,000
Total	1,770	21,400	19,600	23,300	29,500	398,000
	District 10		District 11		District 12	
	Quantity	Value	Quantity	Value	Quantity	Value
Concrete aggregate and concrete products[2]	W	W	7,970	102,000	584	8,350
Asphaltic concrete aggregates and other bituminous mixtures	W	W	1,420	21,200	W	W
Road base and coverings	W	W	819	10,700	W	W
Fill	82	622	801	5,890	318	3,490
Other miscellaneous uses[3]	738	11,500	(4)	642	702	9,840
Unspecified:[5]						
Reported	1,100	12,000	5,660	67,700	771	9,260
Estimated	587	6,500	2,900	32,000	1,600	19,000
Total	2,500	30,500	19,500	240,000	4,020	49,500

See footnotes at end of table.

TABLE 6—Continued

CALIFORNIA: CONSTRUCTION SAND AND GRAVEL SOLD OR USED IN 2008, BY USE AND DISTRICT[1]

(Thousand metric tons and thousand dollars)

	Unspecified districts	
	Quantity	Value
Concrete aggregate and concrete products[2]	--	--
Asphaltic concrete aggregates and other bituminous mixtures	--	--
Road base and coverings	--	--
Fill	--	--
Other miscellaneous uses[3]	--	--
Unspecified:[5]		
Reported	2,060	9,470
Estimated	--	--
Total	2,060	9,470

W Withheld to avoid disclosing company proprietary data; included in "Other miscellaneous uses." -- Zero.

[1]Data are rounded to no more than three significant digits; may not add to totals shown.

[2]Includes plaster and gunite sands.

[3]Includes golf course, railroad ballast, and snow and ice control.

[4]Less than ½ unit.

[5]Reported and estimated production without a breakdown by end use.