

THE MINERAL INDUSTRY OF

NICARAGUA

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Although Nicaragua was the world's 14th or 15th largest gold producer in the 1940's and 1950's, it was only in 1997, after many years of relatively low output, that its gold production seemed ready to accelerate toward higher levels. Even so, mineral production in 1997 accounted for less than 1% of the country's gross domestic product, estimated to be slightly more than \$8 billion.

The Nicaraguan Mining Corp., or Corporacion Nicaraguense de Minas (INMINE), was established in 1979 to nationalize, administer, direct, and promote the country's mining industry as well as to control permits and licenses for mining concessions. Since 1990, the Government of Nicaragua has devoted increasing attention to modernizing its legal framework. All resources, metallic and nonmetallic, are the property of the State. The mining law of 1996 was to bring the awarding of concessions and the tax structure into closer accord with practice in much of the rest of the western world. Changes were made to this law in 1997 that would lift the ban on all new natural resource concessions, except for those in forestry, which were to be dealt with later. Besides encouraging the formation and investment of private capital, the 1996 law was simplified in the context of current mining technology. Environmental remediation was a growing priority, given that past mining operations had a poor history of responsibility in Nicaragua. Concession holders are required to maintain environmental standards and to restore any environmental damage. The social and economic value of small-scale miners, or *quiriseros*, in rural areas was recognized, and they were given legal access to resources, mainly gold (Mining Journal, 1996, p. 4).

INMINE operated several small gold and silver mines, mostly in sparsely populated areas in the northwest and primarily for export, which was controlled by the Central Bank of Nicaragua. Most output of bentonite, gypsum, and lime was also exported. Other industrial minerals, such as cement, salt, and sand and gravel, were consumed domestically. (See table 1.) Although INMINE controlled most of the country's mineral exploration and production operations, the present government established the Corporacion Nacional del Sector Publico in 1990 to acquire INMINE with the aim of returning firms to former owners, selling them to private investors, and closing unprofitable companies.

Nicaragua's largest producer of gold was the El Limon property, operated by Minera de Occidente S.A., 95% of which is owned by Triton Mining Corp. (Canada). The property included two open pits with an adjacent cyanide-processing plant and the underground Talavera mine, 4 kilometers (km) to the west. The mill was expanded to treat 1,000 metric tons per day (t/d), 500 to 600 t/d from the Talavera mine and the remainder from the open pits, an arrangement that enabled production of 36,839 ounces (oz) [slightly more than 1,200 kilograms (kg)] in 1996 (David Jenkins, Vice President Exploration, Triton Mining Corp., oral commun., 1997) and 48,000 oz (nearly 1,500 kg) in 1997. Proven and probable

reserves at El Limon amounted to 667,000 tons grading 5.58 grams per ton (Northern Miner, 1997b).

Canada-based Greenstone Resources Ltd. acquired a 75% interest in the La Libertad gold mine from the Nicaraguan Government in 1994 and more recently negotiated for the other 25% share of ownership. Originally, the 120-square-kilometer concession surrounded a small open pit mine, but after nearly 13,000 meters of reverse-circulation drilling, Greenstone projected reserves of 1.5 million oz (about 46.7 metric tons) of gold at La Libertad concession's Cerro Mojon locality (Greenstone Resources Ltd., 1997). By the beginning of the year, major stockpiles were created for heap leaching and a first gold pour during the second quarter. Leach agglomeration using lime was changed to cement, effecting better recovery. Output varied but should have produced about 1,850 kg by the end of 1997 (Northern Miner, 1998). After an aggressive drilling program in 1996-97, Greenstone identified a 15-km-long structure of continuous mineralization, now called the Cerro Mojon corridor, along which more than 30 *en echelon* target veins are positioned (Northern Miner, 1997a). At the end of the year, Greenstone contemplated a surface-mining "super pit" 4 km long.

Cement was produced by the state-owned Compania Nacional Productora de Cemento. Empresa Nicaraguense de Minerales No Metalicos controlled several of the state's industrial mineral companies, including those for bentonite (Empresa Rotowa S.A.), gypsum (Yesera Centroamericana S.A.), and limestone (Empresa Piedra Cal S.A. and Empresa Cal El Pueblo). Inversiones Mineras S.A. (IMISA) functioned as a holding company to promote and expand its affiliated production companies. IMISA incorporated Arenas S.A. (sand and gravel), Canteras S.A. (dimension stone), and Calizas S.A. (limestone). Salt was produced by private companies.

Nicaragua relied on imports for mineral fuel, especially crude from Venezuela. Esso Standard Oil S.A. Ltd. of Nicaragua supplied most of the country's petroleum products. Geothermal energy was an important energy resource, having an estimated potential of 1,200 megawatts (MW). The 70-MW Momotombo geothermal plant on the north shore of Lake Managua accounted for 20% of Nicaragua's installed capacity. Unocal (United States) corporate unit, Unocal Geotermica Nicaragua S.A., announced that it had agreed to an exploration contract for geothermal energy in Nicaragua, marking the company's first geothermal venture in Latin America (Reuters Limited, 1997).

Mining in Nicaragua had great potential for expansion; the Government planned to revive the industry with financial and technical aid from abroad.

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Major Sources of Information

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TABLE 1
NICARAGUA: PRODUCTION OF MINERAL COMMODITIES 1/ 2/

(Metric tons unless otherwise specified)

Commodities 3/		1993	1994	1995 e/	1996 e/	1997 e/
Bentonite		2,161	704	800	850	850
Cement		255,000	308,800	324,000 r/	350,000 4/	360,000
Gold, mine output, Au content	kilograms	1,188	1,241	1,316 4/	1,500	3,400
Gypsum and anhydrite, crude		11,078	27,900	12,500	12,500	13,000
Lime		3,630	2,280	3,600	3,600	3,800
Petroleum refinery products	thousand 42-gallon barrels	4,630	4,700	4,800	4,800	4,900
Salt, marine e/		15,000	15,000	15,000	15,000	15,000
Sand and gravel	thousand tons	1,100	1,200 e/	1,300	1,350	1,400
Silver, mine output, Ag content	kilograms	2,237	2,235	2,400	2,500	5,600

e/ Estimated. r/ Revised.

1/ Estimated data are rounded to three significant digits.

2/ Includes data available through May 1, 1998.

3/ In addition to the commodities listed, Nicaragua produced a variety of industrial minerals to meet domestic needs. Output of these materials was not reported, and information was inadequate to make reliable estimates.

4/ Reported figure.

TABLE 2
NICARAGUA: STRUCTURE OF THE INDUSTRY IN 1997

(Thousand metric tons unless otherwise specified)

Commodity		Major operating companies and major equity ownership	Location of main facilities	Annual capacity
Bentonite		Empresa Rotowa S.A. [Corporacion Nicaraguense de Minas (INMINE), (Government, 100%)]	South of Sebaco, Matagalpa Department	4
Cement		Compania Nacional Productora de Cemento (Government, 100%)	San Rafael del Sur, Managua Department	700
Gold-silver	kilograms	Minera de Occidente S.A. [Triton Mining Corp. (Canada), 95%]	El Limon Mine, Leon Department	1,150
Do.	do.	Mining of Nicaragua S.A. (Greenstone Resources Ltd., 100%)	La Libertad Mine, Chontales Department	1,000
Gypsum		Yesera Centroamericana S.A. (INMINE, 100%)	Santa Rosa del Penon, Leon Department	17
Petroleum products	thousand 42-gallon barrels	Esso Standard Oil S.A. Ltd. (100%)	Managua, Managua Department	5,400