

THE MINERAL INDUSTRY OF VERMONT

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

In 1999, the preliminary estimated value¹ of nonfuel mineral production for Vermont was \$83.3 million, according to the U.S. Geological Survey (USGS). This was about a 12% increase compared with that of 1998,² and followed a 7.25% decrease from 1997 to 1998. Because data for talc have been withheld to protect company proprietary data, the actual total values for 1997 to 1999 are higher than those reported in table 1.

Dimension stone, Vermont's leading nonfuel mineral commodity in 1999, led the State's other nonfuel minerals with a \$6.6 million increase (table 1). Construction sand and gravel and crushed stone followed with increases of about \$1.3 million each. The production and value of talc decreased slightly while gemstones remained unchanged. Although construction sand and gravel rose \$5.4 million and dimension stone was up \$4.8 million in 1998, crushed stone went down \$16 million, resulting in a net decrease for the year. Talc had a slight increase and gemstones remained unchanged.

Compared with USGS estimates of the quantities produced in the United States during 1999, Vermont remained second among the States that produced dimension stone and third among those producing talc.

The Vermont Geological Survey (VGS) provided the following narrative information.³ Rock of Ages Corp., which actively quarries 13 dimension stone quarries throughout the United States and Canada, continued operations at Barre and Bethel. Demand for Barre Gray granite, the largest production dimensional stone that the company quarries, remained strong and the quarries were able to meet demands while building an inventory for the winter months. In Vermont, Rock of Ages typically closes down its quarries before Christmas and then reopens them in early March, as does the company at its quarries in the rest of the northeastern United States.

¹The terms "nonfuel mineral production" and related "values" encompass variations in meaning, depending upon the minerals or 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 1999 USGS mineral production data published in this chapter are preliminary estimates as of May 2000, and are expected to change. For some mineral commodities, such as, construction sand and gravel and crushed stone, estimates are updated periodically. To obtain the most current information, please contact the appropriate USGS mineral commodity specialist. A telephone listing for the specialists may be retrieved over the Internet at URL <http://minerals.usgs.gov/minerals/contacts/comdir.html>, by using MINES FaxBack at (703) 648-4999 from a fax machine with a touch-tone handset (request Document #1000 for a telephone listing of all mineral commodity specialists), or by calling USGS information at (703) 648-4000 for the specialist's name and number. All Mineral Industry Surveys—mineral commodity, State, and country—also may be retrieved over the Internet at URL <http://minerals.usgs.gov/minerals>; facsimile copies may be obtained from MINES FaxBack.

²Values, percentage calculations, and rankings for 1998 may vary from the Minerals Yearbook, Area Reports: Domestic 1998, Volume II, owing to the revision of preliminary 1998 to final 1998 data. Data for 1999 are preliminary and are expected to change; related rankings may also be subject to change.

³Marjorie Gale, a Geologist with the Vermont Geological Survey, authored the State's minerals industry information.

Demand for export of dimensional blocks continued to grow. The primary export markets for Rock of Ages are China and Europe. During 1999, the demand for Bethel White granite for export and domestic use was extremely high. The demand was such that the quarry remained open throughout the long and cold Vermont winter. Part of the demand was from growth in an order from the Little America Grand Hotel project in Salt Lake City, UT. The initial order was for 1,420 cubic meters (m³) of stone. But by the end of the project Rock of Ages had quarried more than 2,270 m³ owing to additions made to the project. The hotel will host international Olympic delegations for the 2002 Winter Olympics. Granites from Rock of Ages quarries were under consideration for numerous other projects. In the planning stages was an addition to the Kennedy Center for the Performing Arts in Washington, DC, that would use Bethel White granite. Overall, the dimensional stone business was very active, both domestically and overseas in 1999.

In other granite industry news, Barre Granite Quarries LLC, which has office in South Burlington, received an Act 250 (Vermont's Land Use and Development Law) land use permit in June 1999 for the reopening and expansion of an existing quarry in Sheffield. The company began quarry operations in 1999.

The VGS, which is also known as the Division of Geology and Mineral Resources in Vermont's Department of Environmental Conservation, conducts surveys and research of the geology, mineral resources, and topography of the State. Although recent emphasis has been on completion of the bedrock map of Vermont, the surficial mapping program, which began in 1996, was well underway. The first Vermont digital surficial maps were delivered to the USGS in 1999. Additionally, the VGS is in the process of using the surficial and bedrock data layers of the State's maps to customize HAZUS, which is the U.S. Federal Emergency Management Agency's Earthquake Loss Estimation Program's earthquake hazard computer program to make it realistically simulate local Vermont conditions.

The State Geologist manages interdisciplinary studies with strong geologic components, especially those focused on surface waters, groundwater resources, and geologic hazards. Review of projects as they relate to Criteria 9D and 9E of the aforementioned Act 250 is a VGS activity that recognizes the importance of lands with high potential for extraction of mineral and earth resources.

The VGS reviews and makes recommendations regarding mine and quarry reclamation plans in response to current environmental concerns. Published reports are prepared and made available to the public, consultants, industry, and government. The agency collates and disseminates this practical knowledge in packages ready for the consumer by providing geologic aid and advice to the public as required by State statute.

The VGS also provides advice concerning the development

and working of rock and mineral deposits suitable for building, roadmaking, and economic purposes. An archive of old and new information is maintained by the VGS as per State statute.

In the event of any significant discovery of hydrocarbons in the State, the VGS provides geologic services for Vermont's Natural Gas and Oil Resources Board.

TABLE 1
NONFUEL RAW MINERAL PRODUCTION IN VERMONT 1/ 2/

(Thousand metric tons and thousand dollars unless otherwise specified)

Mineral	1997		1998		1999 p/	
	Quantity	Value	Quantity	Value	Quantity	Value
Gemstones	NA	1	NA	1	NA	1
Sand and gravel: Construction Stone:	3,890	15,800	4,940	21,200	5,130	22,500
Crushed	7,840	44,500	5,590	28,500	5,700	29,800
Dimension metric tons	88,300	19,700	93,300	24,500	91,000	31,100
Total 3/	XX	80,000	XX	74,200	XX	83,300

p/ Preliminary. NA Not available. 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.

3/ Partial total, excludes value of talc that must be withheld to avoid disclosing company proprietary data.

TABLE 2
VERMONT: CRUSHED STONE SOLD OR USED, BY KIND 1/

Kind	1997				1998			
	Number of quarries	Quantity (thousand metric tons)	Value (thousands)	Unit value	Number of quarries	Quantity (thousand metric tons)	Value (thousands)	Unit value
Limestone	7	3,400	\$11,900	\$3.49	8	2,580	\$11,400	\$4.43
Dolomite	7	W	W	9.19	3	W	W	6.67
Granite	2	W	W	6.17	2	W	W	6.46
Marble	3	1,490	6,670	4.49	3	1,540	6,610	4.28
Quartzite	3	2,780	24,500	8.81	3	1,270	8,980	7.09
Slate	1	W	W	10.33	1	W	W	10.56
Total or average	XX	7,840	44,500	5.67	XX	5,590	28,500	5.10

W Withheld to avoid disclosing company proprietary data; included in "Total." XX Not applicable.

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

TABLE 3
VERMONT: CRUSHED STONE SOLD OR USED BY PRODUCERS IN 1998, BY USE 1/ 2/

Use	Quantity (thousand metric tons)	Value (thousands)	Unit value
Coarse aggregate (+1 1/2 inch):			
Riprap and jetty stone	41	\$248	\$6.05
Filter stone	15	131	8.73
Other coarse aggregate	33	309	9.36
Coarse aggregate, graded:			
Concrete aggregate, coarse	144	1,350	9.38
Bituminous aggregate, coarse	W	W	9.24
Bituminous surface-treatment aggregate	W	W	8.04
Railroad ballast	W	W	8.23
Other graded coarse aggregate	396	3,440	8.68
Fine aggregate (-3/8 inch):			
Stone sand, bituminous mix or seal	189	1,340	7.07
Screening, undesignated	42	265	6.31
Coarse and fine aggregates:			
Graded road base or subbase	349	2,460	7.04
Unpaved road surfacing	139	1,100	7.88
Crusher run or fill or waste	196	684	3.49
Other coarse and fine aggregates	9	80	8.89
Other construction materials	5	19	3.80
Unspecified: 3/			
Actual	550	2,340	4.25
Estimated	3,480	14,800	4.24
Total or average	5,590	28,500	5.10

W Withheld to avoid disclosing company proprietary data; included with "Other graded coarse aggregate."

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

2/ Includes dolomite, granite, limestone, marble, quartzite, and slate.

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

TABLE 4
VERMONT: CONSTRUCTION SAND AND GRAVEL SOLD OR USED IN 1998,
BY MAJOR USE CATEGORY 1/ 2/

Use	Quantity (thousand metric tons)	Value (thousands)	Unit value
Concrete aggregate and concrete products	602	\$3,650	\$6.06
Plaster and gunite sands	8	71	8.88
Asphaltic concrete aggregates and other bituminous mixtures	259	1,360	5.25
Road base and coverings	1,370	6,060	4.42
Fill	147	368	2.50
Snow and ice control	240	935	3.90
Railroad ballast	39	106	2.72
Other miscellaneous uses 3/	212	1,450	6.85
Unspecified: 4/			
Actual	230	1,090	4.75
Estimated	1,830	6,110	3.33
Total or average	4,940	21,200	4.29

1/ To avoid disclosing company proprietary data, no district tables were produced for 1998.

2/ Data are rounded to no more than three significant digits; may not add to totals shown.

3/ Includes filtration and roofing granules.

4/ Reported and estimated production without a breakdown by end use.