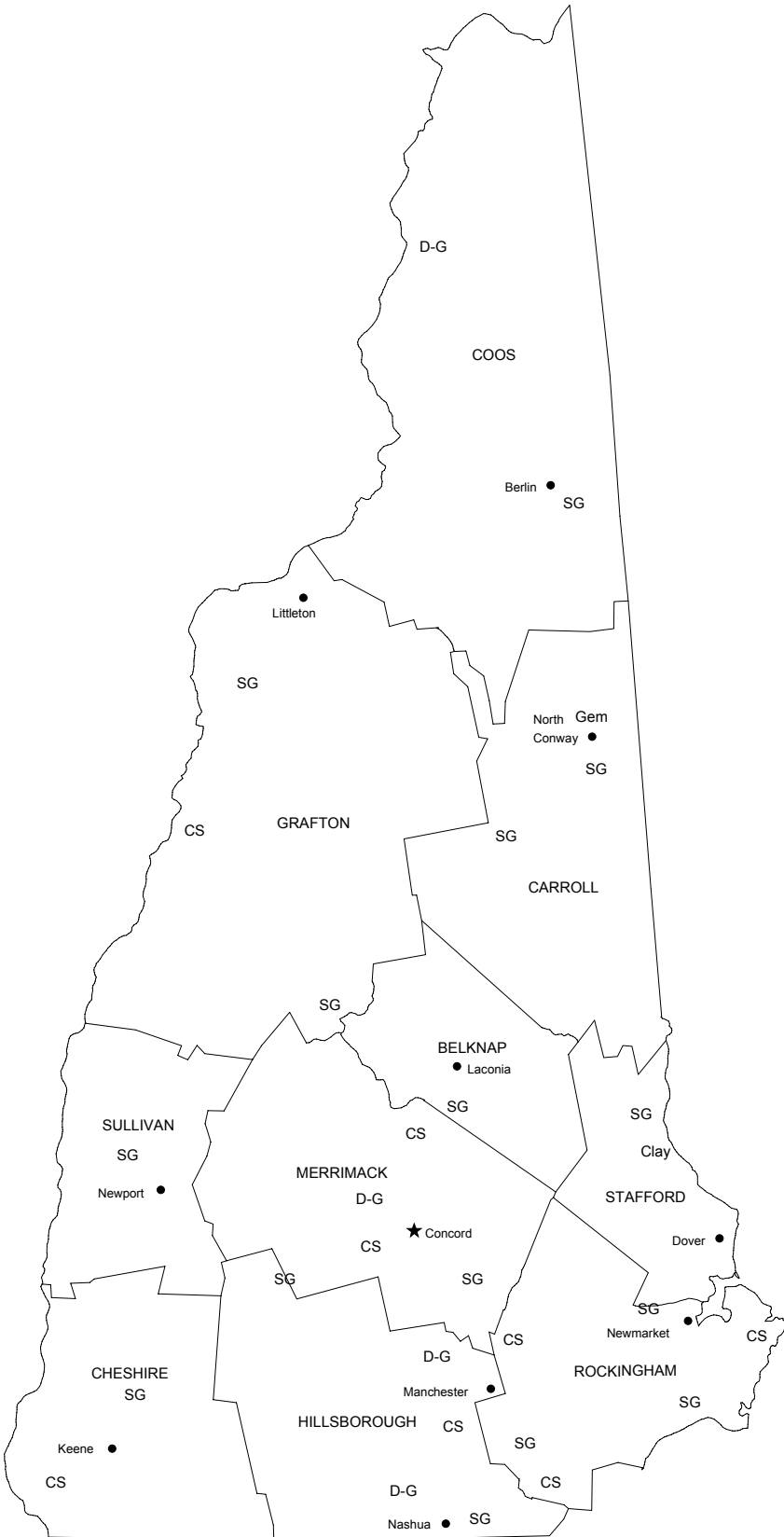


NEW HAMPSHIRE

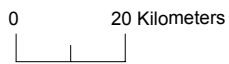


LEGEND

- County boundary
- ★ Capital
- City

**MINERAL SYMBOLS
(Major producing areas)**

- Clay Common clay
- CS Crushed stone
- D-G Dimension granite
- Gem Gemstones
- SG Construction sand and gravel



THE MINERAL INDUSTRY OF NEW HAMPSHIRE

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

In 2001, the estimated value¹ of nonfuel mineral production for New Hampshire was about \$60 million, based upon preliminary U.S. Geological Survey (USGS) data. This was about a 5.5% increase from that of 2000² and followed an 1.2% increase from 1999 to 2000. Because data for crushed sandstone and dimension granite have been withheld to protect company proprietary data, the actual total values for 1999-2001 are higher than (while following the same trend as) those reported in table 1.

Construction sand and gravel, a high-volume, low-value mineral commodity, remained New Hampshire's leading nonfuel mineral commodity in 2001, accounting for about 75% of its nonfuel mineral value. Crushed stone was the State's second leading nonfuel mineral (table 1). In 2001, dimension granite showed a 7% increase in production with a 5% increase in its value since 1999; crushed sandstone production and value also were up, about 160% and 70%, respectively. In 2000, the \$4.7 million increase in the value of construction sand and gravel more than offset the decrease in crushed stone resulting in the small net gain for the year (table 1). Dimension granite production was up, whereas its value was down slightly; the production of crushed sandstone more than doubled, while its value was up about 50%.

The following narrative information was provided by the New Hampshire Geological Survey³ (NHGS). The New Hampshire Geological Survey (NHGS) was established on August 18, 2001. The statute that created the Survey states that "The New Hampshire Geological Survey shall collect data and perform research on the land, mineral, and water resources of the state, and disseminate the findings of such research to the public through maps, reports, and other publications" (New Hampshire

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 2001 USGS mineral production data published in this chapter are preliminary estimates as of August 2002 and are expected to change. For some mineral commodities, such as construction sand and gravel, crushed stone, and portland cement, estimates are updated periodically. To obtain the most current information, please contact the appropriate USGS mineral commodity specialist. Specialist contact information may be retrieved over the Internet at URL <http://minerals.usgs.gov/minerals/contacts/comdir.html>; alternatively, specialists' names and telephone numbers may be obtained by calling USGS information at (703) 648-4000 or by calling the USGS Earth Science Information Center at 1-888-ASK-USGS (275-8747). All Mineral Industry Surveys—mineral commodity, State, and country—also may be retrieved over the Internet at URL <http://minerals.usgs.gov/minerals>.

²Values, percentage calculations, and rankings for 2000 may differ from the Minerals Yearbook, Area Reports: Domestic 2000, Volume II, owing to the revision of preliminary 2000 to final 2000 data. Data for 2001 are preliminary and are expected to change; related rankings may also change.

³Lee Wilder, Public Outreach Coordinator for the New Hampshire Geological Survey, authored the text of State mineral industry information submitted by that State agency.

Department of Environmental Services, 2001). Establishment of a State geological survey allows New Hampshire to be more competitive for grants (for example, the USGS Cooperative Statemap Program), coordinate geologic mapping projects through one central State office, and provide one central data collection agency for water well records and data. The NHGS also serves as a geological science research and information agency for State government, as well as the private sector.

Since 1984, water well drillers have been required to report depth to bedrock as part of the well report that they submit to the New Hampshire Department of Environmental Services (NHDES). The NHGS, which is a unit of the NHDES, is the repository for these reports. These data are used to provide useful subsurface data for resource evaluation, and the "depth to bedrock" information is especially valuable for estimating the thickness of deposits in the surficial geologic mapping program.

During 2001, minerals of gem quality continued to be found in New Hampshire by amateur mineral collectors and mineral clubs. Garnet, topaz, amethyst, epidote, smoky quartz, fluorite, and beryl were discovered and collected. A small quantity of muscovite continues to be mined for resale by educational science supply houses.

The demand for aggregate is steady, but growing less than in the past. Overall, permitted reserves are dwindling because many small producers are consuming their reserves but finding difficulty obtaining new permits for expansion because of land "sterilization" from growth or other land-use restrictions. Four or five major producers, mainly because of their large permitted reserves, are currently meeting most of the State and regional demand. In 2001, New Hampshire aggregate production was used for asphalt and concrete, stone for riprap and drainage, roadway subgrade material, and general construction products.

Quality deposits of sand and gravel continue to be in high demand. Thus, most operations find processing (crushing and screening) necessary to meet the wide variety of specifications. The "big dig," Boston's relocation of Interstate-93 (I-93) through the downtown area, continues to consume large quantities of sand from the Ossipee region.

Approximately 14% of New Hampshire land area is covered by stratified-drift deposits. The majority of these deposits are located mainly in stream valleys and lowlands. Because of New Hampshire's rugged topography, most urban centers, commercial/industrial parks, and transportation corridors are also located in valleys underlain by stratified drift. These land-use patterns often limit access to quality sand and gravel deposits or limit recharge to stratified-drift aquifers that typically provide major water supplies. Increasingly, "valley conflicts" arise between the demand for water supplies and the need for sand and gravel or space for urban growth.

In 2001, there were no significant commercial clay operations. Nonprocessed clay is currently (2001) an ondemand resource

and locally supplied as needed (used for the base of landfills, ponds, and the core of dams).

The John Swenson Granite Works in Concord and the Fletcher Granite Co. in Milford continue to be the State's largest producers of dimension stone. Both quarries mine the Concord gray, two-mica granite. The demand is strong and growing, with most of the cut stone being used for curbing. The Granite State has at least two other smaller, independent operations, also quarrying the Concord granite, which is used mostly for landscaping stone.

The Swenson Pink Quarry in Columbia quarries a pink granite on an ondemand basis. In 2001, demand for pink granite from this quarry was met with previously quarried stone.

The NHGS offers a number of publications on the bedrock, surficial geology, and ground water resources of New Hampshire. Publications can be obtained by contacting the Public Information Center of the Department of Environmental Services. A current listing of available publications can be accessed on the Internet at URL <http://www.des.state.nh.us/>

[geolink.htm#Maps](#).

The NHGS continues to be active in the STATEMAP program, a component of the National Cooperative Geologic Mapping Program. Under STATEMAP 2002, the surficial geology of the New Boston, Enfield, and Northfield quadrangles are scheduled to be mapped at the 1:24,000-scale.

Four EDMAP projects (designed for training future geologic cartographers) were recently completed by students and their faculty mentors from the University of New Hampshire; they mapped the bedrock geology of the 1:24,000-scale Candia, Epping, Exeter, and Hampton quadrangles. Bedrock geology mapping is also being conducted in the Lake Sunapee region by researchers from Keene State University.

Reference Cited

New Hampshire Department of Environmental Services, 2001, New Hampshire celebrates earth science week and the creation of the N.H. Geological Survey: Concord, NH, New Hampshire Department of Environmental Services press release, October 8, 2 p.

TABLE 1
NONFUEL RAW MINERAL PRODUCTION IN NEW HAMPSHIRE 1/ 2/

(Thousand metric tons and thousand dollars)

Mineral	1999		2000		2001 p/	
	Quantity	Value	Quantity	Value	Quantity	Value
Gemstones	NA	6	NA	6	NA	6
Sand and gravel, construction	7,950	36,700	8,660	41,400	9,500	46,100
Stone, crushed 3/	4,290	19,700	3,740	15,700	3,300	14,200
Combined values of stone (crushed sandstone and dimension granite)	XX	(4/)	XX	(4/)	XX	(4/)
Total	XX	56,400	XX	57,100	XX	60,300

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/ Excludes certain stones, values that must be concealed to avoid disclosing company proprietary data.

4/ Value excluded to avoid disclosing company proprietary data.

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

Kind	1999				2000			
	Number of quarries	Quantity (thousand metric tons)	Value (thousands)	Unit value	Number of quarries	Quantity (thousand metric tons)	Value (thousands)	Unit value
Granite	10	2,590	\$9,530	\$3.69	10	1,820	\$7,200	\$3.95
Sandstone	1	(2/)	(2/)	(2/)	1	(2/)	(2/)	(2/)
Traprock	7	1,700	10,100	5.96	7	1,920	8,460	4.41
Total or average	XX	4,290	19,700	4.59	XX	3,740	15,700	4.19

XX Not applicable.

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

2/ Withheld from total to avoid disclosing company proprietary data.

TABLE 3
NEW HAMPSHIRE: CRUSHED STONE SOLD OR USED BY PRODUCERS
IN 2000, BY USE 1/ 2/

Use	Quantity (thousand metric tons)	Value (thousands)	Unit value
Construction:			
Coarse aggregate (+1 1/2 inch):			
Macadam	W	W	\$4.44
Riprap and jetty stone	W	W	4.64
Filter stone	W	W	4.60
Coarse aggregates graded:			
Concrete aggregate, coarse	(3/)	(3/)	4.44
Bituminous aggregate, coarse	(3/)	(3/)	4.41
Other graded coarse aggregate	207	\$911	4.40
Fine aggregate (-3/8 inch):			
Stone sand, concrete	W	W	4.39
Stone sand, bituminous mix or seal	W	W	4.38
Screening, undesignated	W	W	4.40
Coarse and fine aggregates:			
Graded road base or subbase	(3/)	(3/)	4.47
Crusher run or fill or waste	(3/)	(3/)	4.42
Other coarse and fine aggregates	139	613	4.41
Unspecified: 4/			
Reported	1,880	8,300	4.41
Estimated	1,300	5,000	3.78
Total or average	3,220	13,300	4.15
Grand total or average	3,740	15,700	4.19

W Withheld to avoid disclosing company proprietary data; included in "Grand total."

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

2/ Includes granite and traprock; excludes sandstone from total to avoid disclosing company proprietary data.

3/ Withheld to avoid disclosing company proprietary data; included with "Other."

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

TABLE 4
NEW HAMPSHIRE: CONSTRUCTION SAND AND GRAVEL SOLD OR USED IN 2000,
BY MAJOR USE CATEGORY 1/

Use	Quantity (thousand metric tons)	Value (thousands)	Unit value
Concrete aggregate and concrete products	1,510	\$7,670	\$5.07
Asphaltic concrete aggregates and other bituminous mixtures	494	2,500	5.06
Road base and coverings	863	3,920	4.54
Fill	983	3,340	3.40
Snow and ice control	110	482	4.38
Railroad ballast	140	1,000	7.14
Roofing granules	2	7	3.50
Other miscellaneous uses 2/	135	532	3.94
Unspecified: 3/			
Reported	1,870	9,160	4.89
Estimated	2,500	13,000	5.04
Total or average	8,660	41,400	4.78

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

2/ Includes filtration.

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