2017 Report on Ohio Mineral Industries: An Annual Summary of the State's Economic Geology

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PREFACE

The *2017 Report on Ohio Mineral Industries* continues in the efforts of the ODNR Division of Geological Survey to present a clear and concise representation of mining production, sales, and employment for Ohio's mineral industry commodities. This report continues in the same format as the revised and simplified 2016 edition (Stucker, 2017). The discussion of each geologic commodity is presented in a bulleted format to make viewing and obtaining the desired data easier for the user. This format parallels the digital commodity summaries that are available on the Division's website.

The *Map of Active Mineral Industry Operations in Ohio* is included at the end of the report and continues to act as a standalone product. The map includes a table with information about each labeled point, including the company name and total combined tonnage of material(s) mined at each operation location.

The appendices are not included within the report and are instead available as downloadable files at **http://geosurvey.ohiodnr.gov/economic-geology/mineral-industry-summaries**. These appendices include data for all commodities divided by company, commodity, and county. Digital versions of these appendices allow users to view and organize data in a way that is convenient to them, which has been a feature widely requested by report users.

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2017 Ohio Economic Geology in Brief

The total tonnage of coal and industrial minerals produced in Ohio during 2017 was 113,065,193 tons or approximately 9.7 tons per capita. The total value[1] of coal was $382,618,048 in 2017; the value of oil and gas was $5,909,017,069; and the value[1] of all industrial minerals was $1,125,101,598 in 2017 (figs. 1, 2, 3; table 1). The combined value of fuel and nonfuel minerals produced in Ohio during 2017 was $7,416,736,715 or approximately $636 per capita.

Reported and estimated total direct employment in the extractive industries of Ohio in 2017 was more than 10,000 people. Industrial-mineral production increased for salt, sandstone and conglomerate, shale, and clay. The total value for all industrial-minerals exceeded $1 billion for the fourth straight year. In 2017 clay production reached 913 thousand tons, a rise of 59 percent, and Sandstone-and-conglomerate production reached more than 1.7 million tons, a rise of 16 percent. Production leading commodities of Limestone-and-dolomite, and Sand-and-gravel were down slightly from 2016 values.

[1]Includes reported and estimated values. Some operations reporting sales did not report a value for those sales. A countywide- or statewide-average price per ton was calculated for each industrial-mineral commodity based on sales for which the value was reported. A countywide, average price per ton was calculated for coal based on sales for which the value was reported and method of production. These calculated averages were used to estimate the value of the sales for which the actual values were not reported.

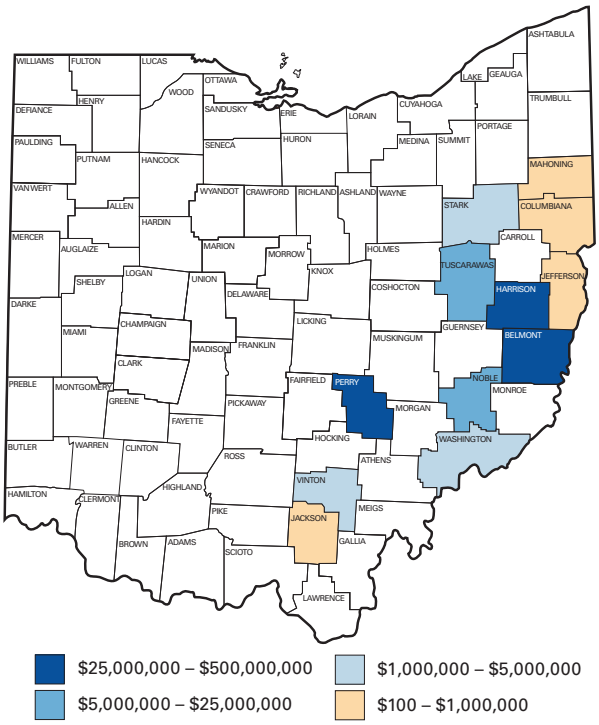

FIGURE 1. Total value of coal sold in Ohio in 2017, by county.

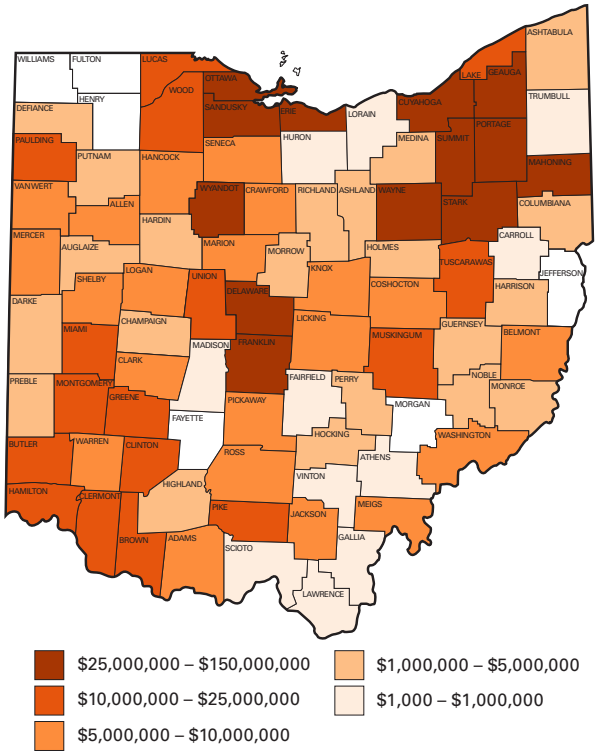

FIGURE 2. Total value of industrial minerals sold in Ohio in 2017, by county.

TABLE 1. *Fuel and nonfuel mineral sales and production in Ohio in 2017*

Commodity	Production[1]	Sales[2]	Value[3]	Change in value from 2016 (percent)
Limestone and dolomite	62,502,315 tons	62,203,537 tons	$613,629,330	– 0.3
Coal	10,270,958 tons	9,760,817 tons	$382,618,048	– 29.3
Sand and gravel	32,375,434 tons	31,840,316 tons	$242,142,075	– 3.0
Salt	4,601,315 tons	4,435,497 tons	$195,294,821	– 7.0
Sandstone and conglomerate	1,726,568 tons	1,634,876 tons	$51,221,299	+ 7.9
Shale	675,326 tons	632,140 tons	$13,890,405	– 2.0
Clay	913,277 tons	773,935 tons	$8,923,668	+ 40.4
Gas	1,771,293,830 thousand cubic feet	not available	$4,959,622,724	+ 46.2
Oil	20,093,002 barrels	not available	$949,394,345	+12.4

[1]The production figures for industrial minerals are estimates, as many operators do not know actual production. For those operators that do not report production, production is assumed equal to sales or estimated from ODNR Division of Mineral Resources Management records.

[2]Includes material for captive use.

[3]The FOB value of industrial minerals sold was estimated for mines that failed to report this information and for those producting material for captive use. These estimates were caluclated using a countywide- or statewide-average price per ton calculated on reported FOB values.

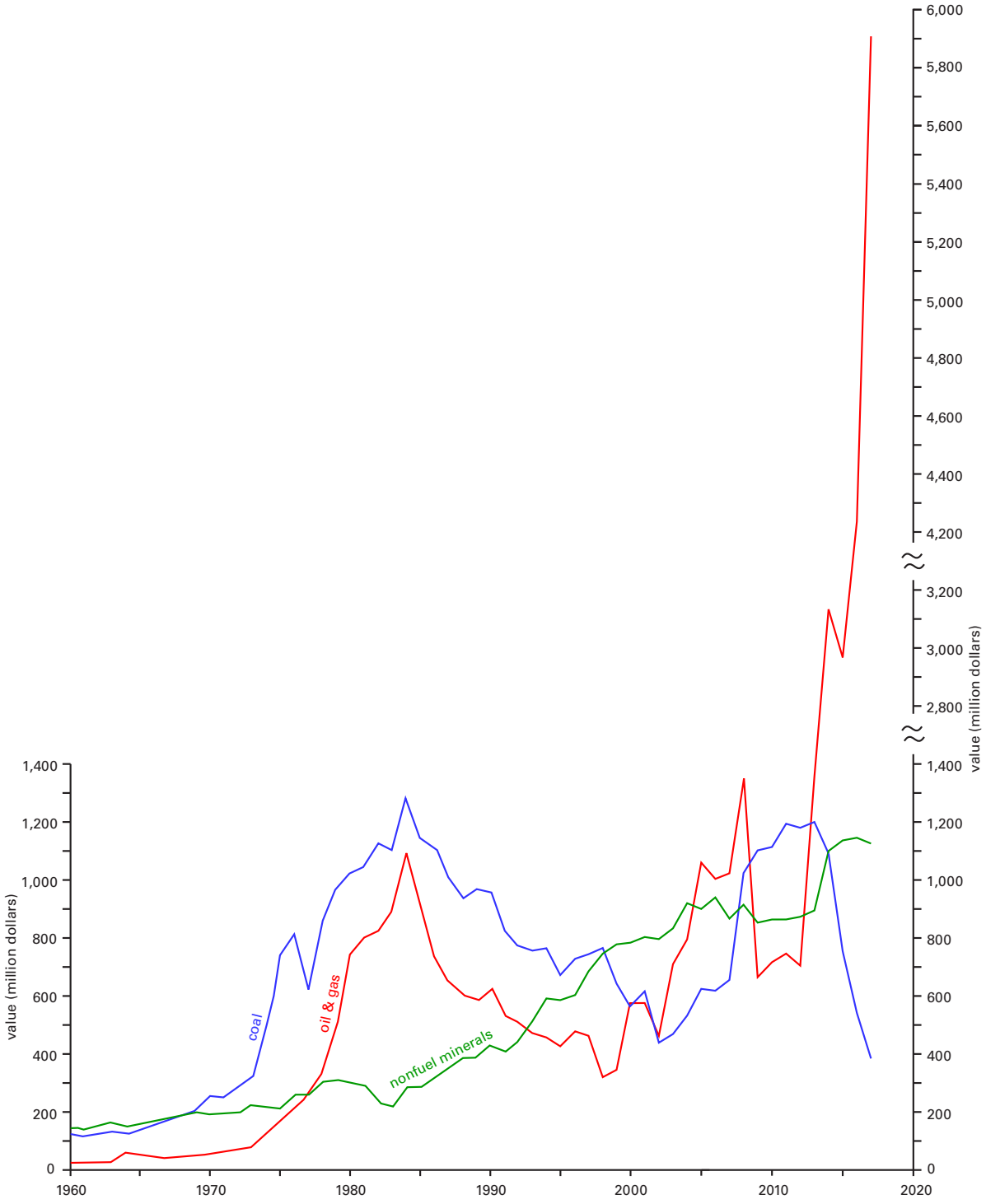

FIGURE 3. Value of coal, nonfuel minerals, and oil and gas in Ohio since 1960.

COAL

(Directory of operators available at: ***http://geosurvey.ohiodnr.gov/economic-geology/economic-geology-home****)*

Coal was first recognized in Ohio by pioneers during the 1740s, and the first map of Ohio coal deposits was made in 1752 (Crowell, 1995). Coal production first occurred in Jefferson County during 1800 and amounted to 100 tons. Columbiana County was the next to report coal production starting in 1803 (Crowell, 1995). Since that time, nearly 4 billion tons of coal has been mined from coal seams in the state (Crowell, 1995); this represents a value of more than $200 billion in 2017 dollars.

Throughout 2017, one surface mine expansion permit was issued. Also, only one new permit was issued for a new surface mine. Several coal operations ceased or curtailed production in 2017 because of less-expensive, competing natural gas and decreased demand. An article discussing the changes in the coal industry was released by the ODNR Division of Geological Survey in 2016 (Stucker, 2016). In June of 2018, an Open-File report (2018-1) evaluating the available resource potential of the Middle and Lower Kittanning coal seams was published by the ODNR Division of Geological Survey (Wright and Erber, 2018). This was the first detailed published resource estimation for these seams since the mid-1950s. Results show that there is over 11.9 billion short tons of Middle Kittanning, and 7 billion short tons of Lower Kittanning coal available for mining based on current mining regulations and restrictions.

The following link will provide more information about the formation and uses of Ohio's coal resources: **http://geosurvey.ohiodnr.gov/rocks-and-minerals/online-rock-and-mineral-kit**.

Production (see figs. 4, 5 and tables 2, 3, 4)

- Tons produced = 10,270,958 (–17.7% from 2016)
- U.S. ranking = 15th out of 24 producing states (USDOE, 2018)
- Leading counties (percentage of statewide production):
  - Belmont (59.5%)
  - Harrison (20.1%)
  - Perry (11.5%)
  - Noble (3.4%)
- Top producing seams (table 5):
  - Pittsburgh (No. 8)
  - Middle Kittanning (No. 6)
  - Meigs Creek (No. 9)

Sales (see fig. 6 and tables 2, 6, 7)

- Tons sold = 9,760,817 (–20.2% from 2016)
- Value = $382,618,048

Employment (see table 8)

- Production employees reported = 777
- Nonproduction employees reported = 508
- Median employee wages:
  - Surface-mine production = $48,386
  - Underground-mine production = $86,475
- Total wages earned = $106,251,984

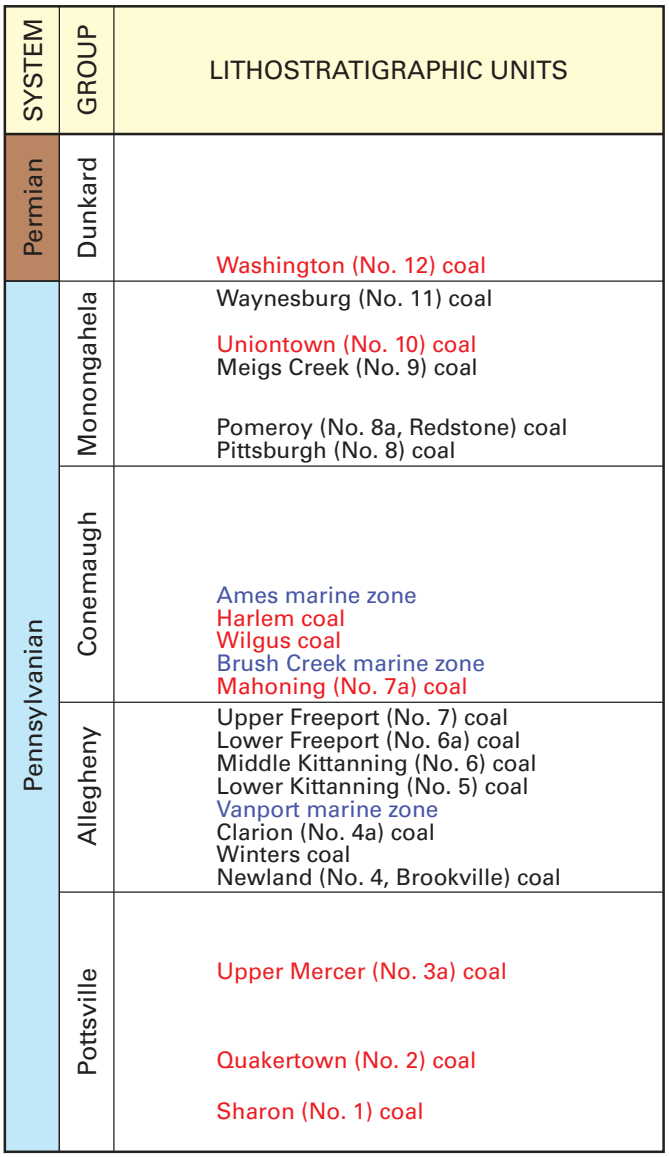

FIGURE 4. Stratigraphic column of coals mined in Ohio during 2017 (black), other significant coal beds (red), and associated key beds (blue) used for stratigraphic correlation. Modified from Brant and Delong (1960, table 9), Collins (1979, fig. 3), and Larsen (1991, fig. 2).

TABLE 2. ***2017 Ohio coal production and sales, by county, in descending order of production***

County	Production (short tons)	Sales (short tons)
Belmont	6,106,739	5,951,761
Harrison	2,067,613	2,052,961
Perry	1,178,714	843,496
Noble	345,607	345,607
Tuscarawas	315,376	316,376
Washington	104,549	104,549
Vinton	85,017	80,280
Stark	55,931	54,431
Jefferson	8,110	8,110
Mahoning	2,251	2,195
Jackson	925	925
Columbiana	119	119
Guernsey	7	7
TOTAL	10,270,958	9,760,817

TABLE 3. ***2017 Ohio coal production, by production size group and change from 2016***

Production size group	2017		Change from 2016 (short tons)
	Number of mines reporting	Production (short tons)	
1,000,000 tons and over	1	5,676,640	–2,123,494
500,000 to 999,999 tons	3	1,964,619	740,047
250,000 to 499,999 tons	3	1,070,871	–1,129,553
100,000 to 249,999 tons	8	1,131,228	334,326
50,000 to 99,999 tons	4	266,065	81,635
25,000 to 49,999 tons	3	105,961	–119,707
Less than 25,000 tons	16	55,574	8,485
TOTAL	38	10,270,958	–2,208,261

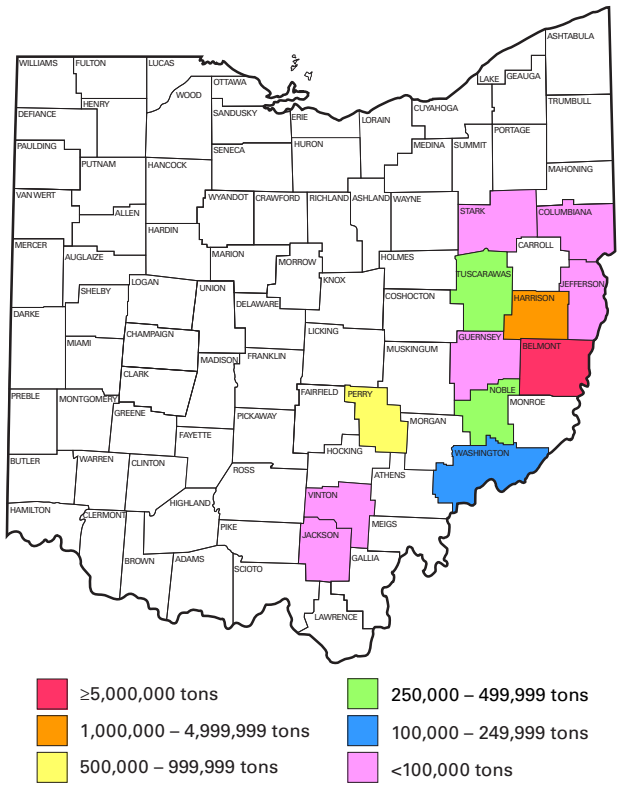

FIGURE 5. Coal production in Ohio in 2017, by county and quantity.

TABLE 4. ***2017 Ohio coal production, by county and mining method***

County	All methods (short tons)	Total number of mines	Underground				Surface				
			Number of mines reporting	Production (short tons)			Number of mines reporting	Production (short tons)			
				Total	Longwall	Continuous miner		Total	Strip	Auger	Highwall
Belmont	6,106,739	5	1	5,676,640	5,265,340	411,300	4	430,099	243,259		186,840
Columbiana	119	1					1	119	119		
Guernsey	7	1					1	7	7		
Harrison	2,067,613	7	2	519,254		519,254	5	1,548,359	1,507,583	40,776	
Jackson	925	1					1	925	925		
Jefferson	8,110	2	2	8,110		8,110					
Mahoning	2,251	1					1	2,251	2,251		
Noble	345,607	3					3	345,607	345,607		
Perry	1,178,714	3	2	950,246		950,246	1	228,468	216,435	12,033	
Stark	55,931	2					2	55,931	32,010		23,921
Tuscarawas	315,376	8	1	3,905		3,905	7	311,471	213,865	23,654	73,952
Vinton	85,017	3					3	85,017	85,017		
Washington	104,549	1					1	104,549	104,549		
TOTAL[1]	10,270,958	38	8	7,158,155	5,265,340	1,892,815	30	3,112,803	2,751,627	76,463	284,713

[1]Any tally inconsistencies are because of rounding of production tonnages.

TABLE 5. *2017 Ohio coal production, by county and seam*

County[1]	Production (short tons)											
	Total	Newland (No. 4, Brookville)	Winters	Clarion (No. 4a)	Lower Kittanning (No. 5)	Middle Kittanning (No. 6)	Lower Freeport (No. 6a)	Upper Freeport (No. 7)	Pittsburgh (No. 8)	Pomeroy (No. 8a, Redstone)	Meigs Creek (No. 9, Sewickley)	Waynesburg (No. 11)
Belmont	6,106,739								5,774,384		319,519	12,836
Columbiana	119							119				
Guernsey	7										7	
Harrison	2,067,613						374,796	144,458	1,213,084	312,065	23,210	
Jackson	925				925							
Jefferson	8,110							8,110				
Mahoning	2,251					2,251						
Noble	345,607										345,607	
Perry	1,178,714					1,178,714						
Stark	55,931				3,054	51,445	1,432					
Tuscarawas	315,376	2,517			53,302	163,481		96,076				
Vinton	85,017		36,063	15,489	16,389	5,986	7,743	3,347				
Washington	104,549										104,549	
TOTAL[2]	10,270,958	2,517	36,063	15,489	73,670	1,401,877	383,971	252,110	6,987,468	312,065	792,892	12,836

[1]Production from mines operating in more than one county was evenly split between the counties involved unless a county specific breakdown was provided by the operator.
[2]Any tally inconsistencies are because of rounding of production tonnages.

TABLE 6. *2017 Disposition of Ohio coal, by county*

County[1]	Number of mines	Disposition[1] (short tons)					Stored
		Total[2]	Rail	Water	Truck	Conveyor	
Belmont	5	5,951,761	4,565,225		1,386,536		814,775
Columbiana	1	119			119		
Guernsey	1	7			7		
Harrison	7	2,052,961	373,732		1,679,229		17,126
Jackson	1	925			925		
Jefferson	2	8,110			8,110		
Mahoning	1	2,195			948	1,247	55
Noble	3	345,607			345,607		
Perry	3	843,496	608,528		234,968		6,399
Stark	2	54,431			54,431		
Tuscarawas	8	316,376	3,905		312,471		
Vinton	3	80,280			80,280		3,893
Washington	1	104,549			104,549		
TOTAL[3]	38	9,760,817	5,551,390	0	4,208,180	1,247	842,248

[1]Tonnage of coal shipped from mines operating in more than one county was evenly split between the counties involved and type(s) of disposition reported unless county-specific information was provided by the operator.
[2]Does not reflect tonnage stored. Reflects tonnage sold and shipped from mine.
[3]Any tally inconsistencies are because of rounding.

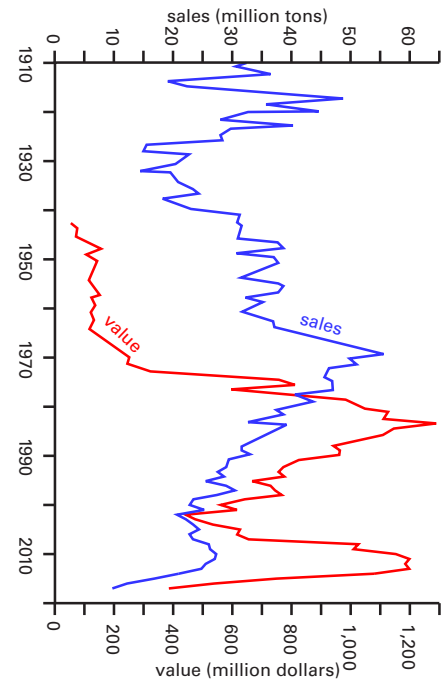

FIGURE 6. Sales and value of coal in Ohio since 1910.

TABLE 7. ***2017 Dollar value of coal at mine, by county and mining method***

County[1]	Total				Underground				Surface			
	No. of mines	Tonnage sold (short tons)	Value at mine[2] (dollars)	Per ton average (dollars)	No. of mines	Tonnage sold (short tons)	Value at mine[1] (dollars)	Per ton average (dollars)	No. of mines	Tonnage sold (short tons)	Value at mine[1] (dollars)	Per ton average (dollars)
Belmont	5	5,951,761	$220,981,770	$37.13	1	5,525,662	$206,090,086	$37.30	4	426,099	$14,891,684	$34.95
Columbiana	1	119	$4,642	$39.01					1	119	$4,642	$39.01
Guernsey	1	7	$141	$20.14					1	7	$141	$20.14
Harrison	7	2,052,961	$78,792,362	$38.38	2	518,202	$21,154,848	$40.82	5	1,534,759	$57,637,514	$37.55
Jackson	1	925	$36,084	$39.01					1	925	$36,084	$39.01
Jefferson	2	8,110	$467,336	$57.62	2	8,110	$467,336	$57.62				
Mahoning	1	2,195	$187,357	$85.36					1	2,195	$187,357	$85.36
Noble	3	345,607	$11,232,228	$32.50					3	345,607	$11,232,228	$32.50
Perry	3	843,496	$51,104,877	$60.59	2	608,528	$39,554,300		1	234,968	$11,550,577	$49.16
Stark	2	54,431	$1,588,697	$29.19					2	54,431	$1,588,697	$29.19
Tuscarawas	8	316,376	$13,202,839	$41.73	1	3,905	$152,333	$39.01	7	312,471	$13,050,506	$41.77
Vinton	3	80,280	$1,621,887	$20.20					3	80,280	$1,621,887	$20.20
Washington	1	104,549	$3,397,828	$32.50					1	104,549	$3,397,828	$32.50
TOTAL	38	9,760,817	$382,618,048	$39.20	8	6,664,407	$267,418,903	$40.13	30	3,096,410	$115,199,145	$37.20

[1]Sales reported from mines operating in more than one county were evenly split between the counties involved unless county-specific information was provided by the operator.
[2]The FOB value of coal sold was estimated for those mines that failed to report this information. These estimates were calculated using a countywide-average price per ton by mining method, based on reported FOB values deemed to be reliable.

TABLE 8. ***2017 Wage and salary payments to Ohio coal mine employees, by county and occupational group***

County[1]	Wage and salary payments (nearest whole dollar)[2]			
	All occupations	Underground production employees	Surface production employees	Other
Belmont	$60,858,575	$28,275,531	$2,541,736	$30,041,308
Guernsey	$584,992		$217,276	$367,716
Harrison	$14,698,618	$7,407,213	$4,276,579	$3,014,826
Jefferson	$241,000	$200,000		$41,000
Jackson	$382,753		$141,200	$241,553
Noble	$3,275,017		$3,275,017	
Perry	$22,750,089	$7,575,000	$941,960	$14,233,129
Stark	$307,229		$198,164	$109,065
Tuscarawas	$2,683,506	$730,904	$1,050,181	$902,421
Vinton	$470,205		$228,652	$241,553
TOTAL[3]	$106,251,984	$44,188,648	$12,870,765	$49,192,571

[1]For those operations reporting activity in more than one county, wage and salary payments were evenly split between the counties involved unless county-specific information was provided by the operator.
[2]For those operations reporting only a total wage and salary payment for all workers, an equal pay rate was assumed for all employees. In cases where quarterly employment was reported but wage and salary payments were not, wage and salary payments for that quarter were estimated from reported payments in the other quarters to arrive at the annual figure. For mines reporting employment and no wage and salary payments, wage and salary payments were estimated using a countywide or statewide average.
[3]Any tally inconsistencies are because of rounding.

INDUSTRIAL MINERALS

(Directory of operators available at: ***http://geosurvey.ohiodnr.gov/economic-geology/economic-geology-home****)*

Industrial minerals are nonmetallic, nonfuel rocks or minerals that have economic value and are essential to modern society. Industrial minerals have been mined or quarried in Ohio since the establishment of early settlements and include limestone, dolomite, sand, gravel, sandstone, conglomerate, clay, shale, salt, and gypsum. Hundreds of construction projects and industrial products rely on the availability of industrial minerals.

The production of multiple commodities is important to the economic success of mine operations in many areas of Ohio. The production of sand and gravel along with clay is often located in glaciated portions of northern and western Ohio, where deposits of sand and gravel can occur with clay-rich glacial tills. The Pennsylvanian-age cyclic sedimentation in eastern Ohio includes coals, clays, shales, and limestones in close proximity, allowing for economic recovery of multiple commodities.[3]

Industrial minerals were reported as produced or sold at 389 operations, in 82 Ohio counties during 2017. The combined value of all industrial minerals sold in 2017 was $1,125,101,598 (table 9). This is the fourth consecutive year that the combined value of all nonfuel minerals has exceeded one billion dollars. The statewide combined employment for all nonfuel industrial mineral extraction was 3,794 employees (table 10).

[3]The following links will provide more information on the general bedrock and glacial geology of Ohio:
http://geosurvey.ohiodnr.gov/portals/geosurvey/PDFs/BedrockGeology/BG-1_8.5x11.pdf
http://geosurvey.ohiodnr.gov/portals/geosurvey/PDFs/Glacial/glacial.pdf

TABLE 9. ***2017 Value of Ohio industrial minerals***

Commodity	Sales (tons)	Change from 2016 (tons/percent)	Value[1]	Percent of total value
Limestone and dolomite	62,203,537	–3,008,186/–4.6	$613,629,330	54.5
Sand and gravel	31,840,316	–2,044,704/–6.0	$242,142,075	21.5
Salt	4,435,497	–74,203/–1.6	$195,294,821	17.4
Sandstone and conglomerate	1,634,876	+185,072/+12.8	$51,221,299	4.6
Shale	632,140	+2,231/+0.4	$13,890,405	1.2
Clay	773,935	+238,012/+44.4	$8,923,668	0.8
Total	101,520,301	–4,701,778/–4.4	$1,125,101,598	100.0

[1]The FOB value of industrial minerals sold was estimated for those mines that failed to report this information and for those producing material for captive use. These estimates were calculated using a countywide- or statewide-average price per ton based on reported FOB values.

TABLE 10. ***2017 Employment at Ohio industrial-mineral operations, by county***

County	Total Employees[1]	Production Employees	Nonproduction Employees
Adams	18	7	11
Allen	17	10	7
Ashland	32	22	10
Ashtabula	7	5	2
Athens	9	6	3
Auglaize	9	6	3
Belmont	126	102	24
Brown	30	16	14
Butler	119	42	77
Carroll	1	1	0
Champaign	10	5	5
Clark	14	8	6
Clermont	42	35	7
Columbiana	20	14	6
Coshocton	36	28	8
Crawford	14	14	0
Cuyahoga	220	160	60
Darke	10	7	3
Defiance	16	9	7
Delaware	23	23	0
Erie	106	82	24
Fairfield	2	0	2
Franklin	155	105	50
Gallia	1	1	0
Geauga	74	55	19
Greene	57	40	17
Guernsey	73	49	24
Hamilton	103	47	56
Hancock	5	5	0
Hardin	28	19	9
Harrison	2	2	0
Henry	0	0	0
Highland	30	25	5
Hocking	23	19	4
Holmes	29	18	11
Huron	1	1	0
Jackson	12	6	6
Knox	64	45	19
Lake	108	74	34
Lawrence	3	3	0

TABLE 10. ***2017 Employment at Ohio industrial-mineral operations, by county (cont.)***

County	Total Employees[1]	Production Employees	Nonproduction Employees
Licking	40	23	17
Logan	62	38	24
Lorain	4	3	1
Lucas	56	42	14
Madison	13	11	2
Mahoning	79	51	28
Marion	14	11	3
Meigs	22	16	6
Mercer	31	18	13
Miami	48	33	15
Monroe	8	8	0
Montgomery	45	30	15
Morrow	5	5	0
Muskingum	74	55	19
Noble	20	17	3
Ottawa	121	96	25
Paulding	29	18	11
Perry	11	7	4
Pickaway	15	13	2
Pike	38	36	2
Portage	151	106	45
Preble	36	25	11
Putnam	9	7	2
Richland	21	16	5
Ross	43	17	26
Sandusky	219	196	23
Scioto	11	9	2
Seneca	63	12	51
Shelby	17	13	4
Stark	104	81	23
Summit	90	1	89
Tuscarawas	224	141	83
Union	49	35	14
Van Wert	38	30	8
Vinton	8	3	5
Warren	31	23	8
Washington	56	16	40
Wayne	50	38	12
Wood	68	50	18
Wyandot	122	97	25
TOTAL 80 counties	3,794	2,563	1,231

[1]Any tally inconsistencies are because of computer rounding produced by partial-year employment.

LIMESTONE AND DOLOMITE

(Directory of operators available at: ***http://geosurvey.ohiodnr.gov/economic-geology/economic-geology-home****)*

Limestone and dolomite are Ohio's most versatile industrial minerals. Both are used by the construction industry as aggregate, as an essential ingredient in the cement industry, to produce lime, as a flux in the steel and glass industries, as filler in a multitude of products, as an agricultural supplement, in water purification, and as a building stone. Ohio has long been a national leader in the production of lime and construction aggregates.

Devonian-age and Silurian-age carbonates located in the western half of Ohio are the primary geologic units producing crushed stone. Pennsylvanian-age and Mississippian-age limestones are important sources of aggregate in local markets of eastern Ohio (Stout, 1941; Lamborn, 1951).

Production

- Tons produced = 62,502,315 (–3.7% from 2016)
- U.S. rankings = 5th out of 50 producing states for crushed stone (USGS, 2018a); 3rd out of 28 producing states for lime (USGS, 2018b)
- Top producing geologic units (fig. 7):
  - Columbus/Delaware Limestones (Devonian)
  - Lockport Dolomite (Silurian)
  - Greenfield/Tymochtee Dolomites (Silurian)
  - Brassfield Formation (Silurian)

Sales

(See figs. 8, 9)

- Tons sold = 62,203,537 (–4.6% from 2016; table 11, 12)
- Value[4] = $613,629,330 (table 9)
- Leading counties (percentage of statewide sales):
  - Wyandot (11.0%)
  - Franklin (10.9%)
  - Ottawa (8.7%)
  - Erie (6.9%)

Employment

(See also table 10)

- Production employees reported = 1,319
- Nonproduction employees reported = 511
- Median employee annual wage = $50,057
- Total wages earned = $78,032,165
- Average days worked per operation = 202

[4]Includes reported and estimated values. See footnote 1, p. 1.

SYSTEM	GROUP	LITHOSTRATIGRAPHIC UNITS
Pleistocene		Glacial clay Glacial sand and gravel
Permian	Dunkard	
Pennsylvanian	Monongahela	Fishpot limestone Redstone limestone
	Conemaugh	Bellaire sandstone Ames limestone Buffalo sandstone Brush Creek limestone
	Allegheny	Lower Kittanning clay Vanport limestone Putnam Hill limestone Clarion shale Newland-Brookville clay/limestone
	Pottsville	Tionesta clay Middle Mercer clay Flint Ridge clay Massillon sandstone Sharon conglomerate
Mississippian		Maxville Limestone Logan Formation Black Hand Sandstone Buena Vista Sandstone
Devonian	Detroit River	Berea Sandstone Bedford Shale Ohio Shale Chagrin Member Ten Mile Creek Dolomite Dundee Limestone Delaware Limestone Columbus Limestone
Silurian	Salina	Salina Dolomite "Salt beds"
		Tymochtee Dolomite Greenfield Dolomite Peebles Dolomite Cedarville Dolomite Lockport Dolomite Laurel Limestone Dayton Limestone Brassfield Formation
Ordovician	Cincinnati	
	Black River	Black River Limestone

FIGURE 7. Stratigraphic column of nonfuel industrial minerals mined in Ohio during 2017. Modified from Brant and Delong (1960, table 9), Ohio Division of Geological Survey (1990), and Slucher and others (2006).

TABLE 11. ***2017 Ohio limestone and dolomite sales, by county and use***

County	Tons sold														
	Total all types	Crushed and broken stone										Dimension stone	Stone for portland cement manufacture	Agricultural stone (aglime)	Raw stone for burning
		Total	Riprap	Flux stone	Stone for portland cement concrete	Stone for asphaltic concrete	Road construction/ resurfacing	Commercial building	Railroad ballast	Extenders/ fillers	Unspecified/ other				
Adams	852,619	852,619									852,619				
Allen	776,228	772,217	8,957		73,250	204,760	33,215	40,580			411,455			4,011	
Auglaize	232,000	232,000	1,000		29,000	44,000					158,000				
Belmont	856,935	856,935					856,935								
Brown	1,489,517	1,489,517									1,489,517				
Butler	20,127	20,127									20,127				
Clark	131	131					131								
Clermont	1,641,000	1,628,000	250		10,000	239,000		1,378,750						13,000	
Clinton	1,805,487	1,796,301	40,395		200,914	491,828	462,651	554,092	10,187		36,234			9,186	
Coshocton	9,800	9,800									9,800				
Crawford	1,050,000	962,000	8,000		216,000	212,000			3,000		523,000			88,000	
Darke	271,501	271,501	1,859		9,893	27,958	68,807	162,984							
Delaware	2,923,000	2,903,000	27,000		658,000	422,000					1,796,000			20,000	
Erie	4,294,186	4,158,367	101,589		490,982	943,529	1,094,936		141,644		1,385,687	1,408		134,411	
Franklin	6,787,947	6,749,243	10,064		407,975	304,702	287,727	1,204,909			4,533,866			38,704	
Greene	1,441,179	1,441,179			920,532	3,796					516,851				
Guernsey	278,902	278,902					278,902								
Hamilton	11,988	11,988									11,988				
Hancock	641,000	641,000	4,000		20,000	131,000			2,000		484,000				
Hardin	241,707	241,707									241,707				
Harrison	446,614	446,614					446,614								
Highland	358,940	351,893	8,767			140,793	171,938				30,395			7,047	
Hocking	5,580	3,580				2,580					1,000		2,000		
Holmes	1,800	1,800									1,800				
Jackson	310,285	310,285	30,757								279,528				
Knox	13,578	13,578					8,490	5,088							
Lawrence	6,470	6,470	1,294					3,235		1,941					
Licking	8,849	8,849					639	8,210							
Logan	722,592	722,592	33,391		228,967		23,851	190,805			245,578				
Lucas	1,824,337	1,823,098	5,135		177,054	134,871	526,452		14,278		965,308			1,239	
Mahoning	1,911,596	1,911,596	2,931				420,621				1,488,044				
Marion	542,000	542,000	7,000		72,000	58,000					405,000				
Mercer	659,407	659,407									659,407				
Miami	1,178,579	1,091,301	4,962	7,304	40,330		246,609	476,616			315,480			87,278	
Monroe	462,095	462,095					462,095								

TABLE 11. *2017 Ohio limestone and dolomite sales, by county and use (cont'd.)*

County	Tons sold														
	Total all types	Crushed and broken stone										Dimension stone	Stone for portland cement manufacture	Agricultural stone (aglime)	Raw stone for burning
		Total	Riprap	Flux stone	Stone for portland cement concrete	Stone for asphaltic concrete	Road construction/ resurfacing	Commercial building	Railroad ballast	Extenders/ fillers	Unspecified/ other				
Montgomery	702,105	702,105			119,749		123,500	33,418			425,438				
Muskingum	1,131,828	1,131,828	1,666								1,130,162				
Noble	280,525	280,525	655				120,359				159,511				
Ottawa	5,411,304	5,166,361	23,582		536,932	215,719	3,001,322	45,300			1,343,506				244,943
Paulding	1,228,265	1,228,265									1,228,265				
Perry	189,558	189,558									189,558				
Pickaway	398,742	398,742	3,800		100,000	100,000	100,000	80,000	5,000		9,942				
Pike	1,319,452	1,319,302	85,000		300,000	300,000	500,000	100,000	5,000		29,302			150	
Putnam	576,336	576,336	1,000		134,135		20,923				420,278				
Ross	339,529	339,529					150,000	150,000			39,529				
Sandusky	3,076,108	1,095,059	2,053		277,710	144,460	145,736	427,997			97,103			23,597	1,957,452
Seneca	942,534	326,310	5,569		101,160		5,133	2,362		2,247	209,839	1,507		18,034	596,683
Shelby	577,000	577,000									577,000				
Tuscarawas	376,568	376,568	7,455								369,113				
Union	2,280,452	2,280,452									2,280,452				
Van Wert	724,268	724,268			27,000						697,268				
Vinton	22,286	22,286									22,286				
Warren	24	24									24				
Wayne	4,148	4,123					2,947	1,176						25	
Wood	1,722,446	1,715,623	26,323		117,036	421,090	775,581	81,200		1,340	293,053			6,823	
Wyandot	6,822,083	6,763,083	69,039	31,000	1,328,157	688,261	41,902	382,398	40,000	61,000	4,121,326			59,000	
TOTAL	62,203,537	58,889,039	523,493	38,304	6,596,776	5,230,347	10,378,016	5,329,120	221,109	66,528	30,505,346	2,915	2,000	510,505	2,799,078

TABLE 12. *2017 Production of lime from Ohio, by county and use*

County	Total tons[1]	Building (tons)	Chemical and industrial (tons)	Refractory (tons)
Ottawa	111,338	67,742	43,596	
Sandusky	851,066		851,066	
Seneca	266,438		266,438	
TOTAL	1,228,842	67,742	1,161,100	0

[1]Burning produced a 44.5% weight loss.

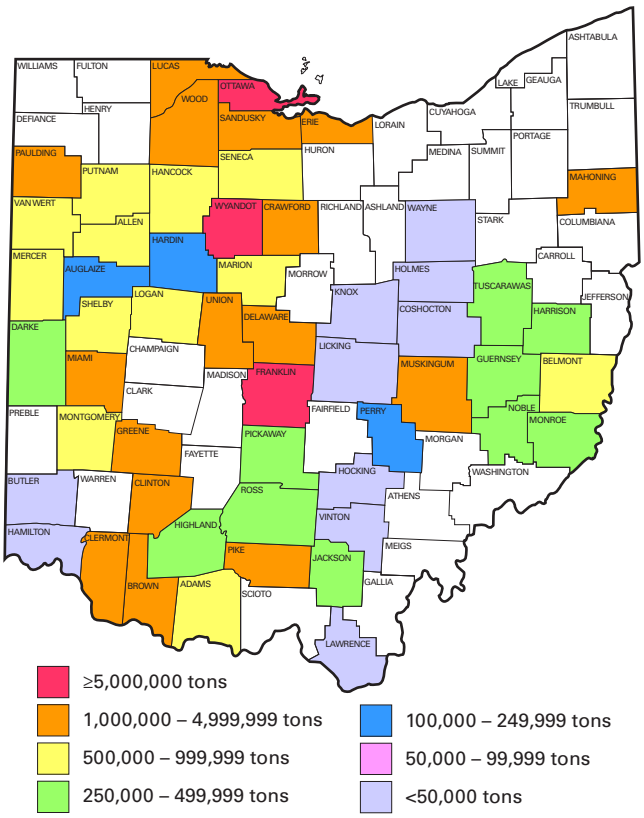

FIGURE 8. Sales of limestone and dolomite in Ohio in 2017, by county and quantity.

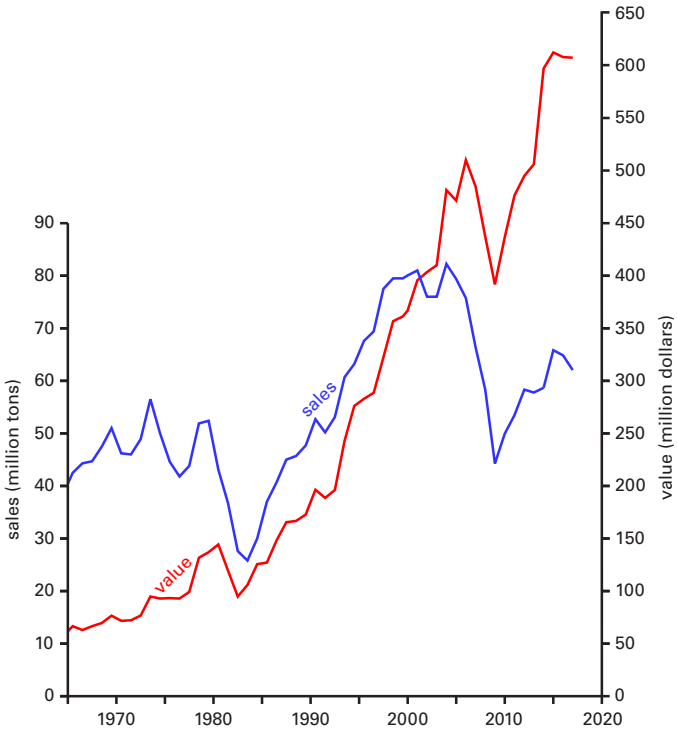

FIGURE 9. Sales and value of limestone and dolomite in Ohio.

SAND AND GRAVEL

(Directory of operators available at: ***http://geosurvey.ohiodnr.gov/economic-geology/economic-geology-home****)*

Sand and gravel are common raw materials that are major constituents of asphalt, concrete, mortar, landscaping, roofing shingles, soil additives, and many other products. Sand-and-gravel production increased rapidly in Ohio beginning in the 1950s with the development of improved mining and processing machinery and increased demand from road building (Ohio Division of Geological Survey, 1959). Many depleted sand-and-gravel operations have been redeveloped as parks, residential, or commercial facilities because of their proximity to urban areas.

Sand-and-gravel deposits in Ohio primarily are associated with Wisconsinan-age glacial outwash and kame terraces in the valleys and tributaries of the Great Miami, Scioto, and Muskingum Rivers located in the southwestern, central, and eastern portions of the state, respectively. Important sand-and-gravel deposits also are found in glacial kames in northeastern Ohio, beach ridges associated with ancestral Lake Erie, and alluvium of modern floodplains of the Ohio River and its tributaries.

Production

- Tons produced = 32,375,434 (–6.8% from 2016)
- U.S. ranking = 8th out of 50 producing states (USGS, 2018c)

Sales

(See figs. 10, 11)

- Tons sold = 31,840,316 (–6.0% from 2016; table 13)
- Value[5] = $242,142,075 (table 9)
- Leading counties (percentage of statewide sales):
  - o Stark (12.8%)
  - o Portage (11.2%)
  - o Hamilton (9.8%)
  - o Butler (8.8%)
  - o Franklin (7.2%)

Employment

(See also table 10)

- Production employees reported = 965
- Nonproduction employees reported = 497
- Median employee annual wage = $50,152
- Total wages earned = $65,873,922
- Average days worked per operation = 161

[5]Includes reported and estimated values. See footnote 1, p. 1.

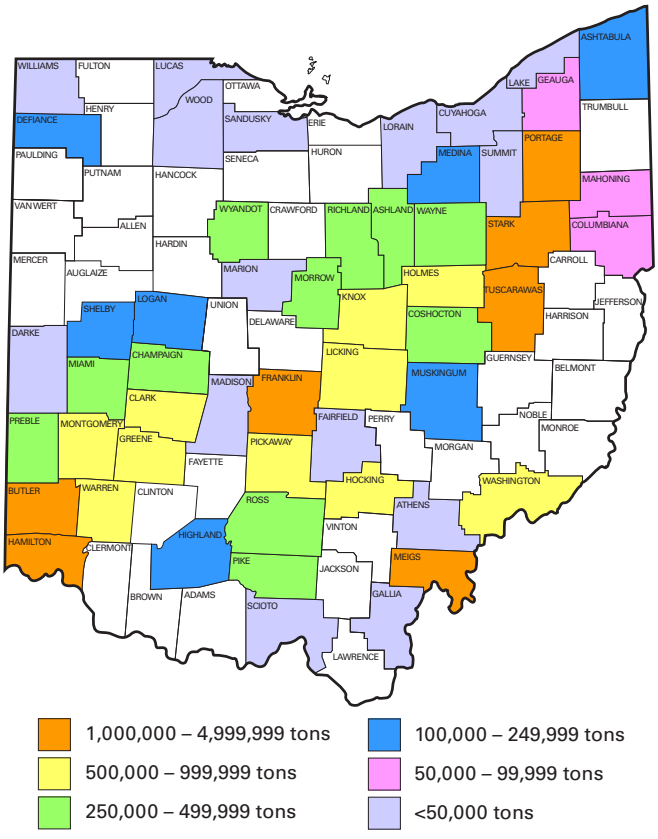

FIGURE 10. Sales of sand and gravel in Ohio in 2017, by county and quantity.

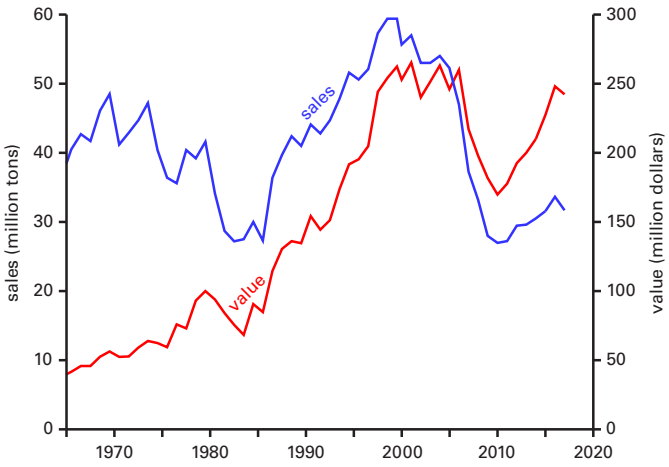

FIGURE 11. Sales and value of sand and gravel in Ohio.

TABLE 13. ***2017 Ohio sand and gravel sales, by county and use***

County	Tons sold															
	Total sand and gravel	Total sand	Total gravel	Building		Portland cement concrete		Asphaltic concrete		Road construction/ resurfacing		Filtration		Foundry sand	Industrial sand	Other/unspecified	
				Sand	Gravel	Sand	Gravel	Sand	Gravel	Sand	Gravel	Sand	Gravel			Sand	Gravel
Ashland	276,977	82,595	194,382	24,779	58,315					49,557	116,629					8,259	19,438
Ashtabula	198,577	123,708	74,869	66,024	62,869	37,789										19,895	12,000
Athens	24,659	15,615	9,044													15,615	9,044
Butler	2,789,746	1,375,766	1,413,980	376,971	378,228	332,565	284,679			2,777	62,409					663,453	688,664
Champaign	368,347	125,638	242,709	2,100	39,005	55,390	52,614			588	55,724					67,560	95,366
Clark	862,230	417,917	444,313	7,572	41,230	73,200	64,268	53,230	69,200	41,800	27,500					242,115	242,115
Columbiana	96,963	54,822	42,141	3,116	20					25,303	15,424	7,761	11,257		3,295	15,347	15,440
Coshocton	456,787	218,501	238,286	17,258	20,490						47,255	844	848			200,399	169,693
Cuyahoga	5,911	5,911														5,911	
Darke	21,000	10,500	10,500	10,500	10,500												
Defiance	242,151	204,365	37,786	7,334	32,431	197,031											5,355
Fairfield	1,723	1,639	84													1,639	84
Franklin	2,307,064	1,189,727	1,117,337	57,776	338,037	749,333	237,960	8,922	67,153		53,805					373,696	420,382
Gallia	2,832	2,576	256									256	256			2,320	
Geauga	58,176	29,131	29,045													29,131	29,045
Greene	839,502	393,329	446,173	10,000	9,000	22,000	25,000	52,000	24,000	60,000	2,000					249,329	386,173
Hamilton	3,123,983	1,663,546	1,460,437	589,028	718,147	408,759	194,057				66,612				400	665,359	481,621
Highland	138,703	79,503	59,200		19,038	70,810			22,399			8,693	1,940				15,823
Hocking	523,248	367,830	155,418	5,000		16,100	7,637	27,027	59,537	12,391	3,003					307,312	85,241
Holmes	694,702	356,307	338,395	43,285	106,175	135,006	28,025	108,718	51,445	37,575	118,404	25,410	31,641			6,313	2,705
Knox	879,192	391,660	487,532	633	72,534	177,684	25,044	92,828	152,857		76,978		24,131			120,515	135,988
Lake	3,476	1,738	1,738													1,738	1,738
Licking	943,958	511,271	432,687	33,466	292,977	264,487	10,608	50,154	19,080		3,518					163,164	106,504
Logan	173,614	89,095	84,519	1,430	4,163	5,379						1,478				80,808	80,356
Lorain	874	874		874													
Lucas	7,000	3,500	3,500													3,500	3,500
Madison	34,212	15,944	18,268	4,776	18,268			11,168									
Mahoning	56,128	31,113	25,015		3,446					30,100			19,200			1,013	2,369
Marion	15,266	10,002	5,264	707	2,307	9,295	1,821						806				330
Medina	157,860	78,930	78,930													78,930	78,930
Meigs	1,230,246	792,904	437,342			523,377	140,760									269,527	296,582
Miami	404,102	232,767	171,335		53,799	22,552										210,215	117,536
Montgomery	853,446	427,204	426,242	131,631	163,489	36,000	30,000	20,000		10,060	3,240					229,513	229,513
Morrow	307,000	121,000	186,000	1,000		59,000		30,000								31,000	186,000
Muskingum	170,330	128,936	41,394	8,500	6,400			32,918	11,403	940	583					86,578	23,008

TABLE 13. ***2017 Ohio sand and gravel sales, by county and use (cont'd.)***

County	Tons sold															
	Total sand and gravel	Total sand	Total gravel	Building		Portland cement concrete		Asphaltic concrete		Road construction/ resurfacing		Filtration		Foundry sand	Industrial sand	Other/unspecified	
				Sand	Gravel	Sand	Gravel	Sand	Gravel	Sand	Gravel	Sand	Gravel			Sand	Gravel
Pickaway	591,667	388,757	202,910			205,000	36,000	100,000	50,000	491	4,727					83,266	112,183
Pike	311,621	244,966	66,655					500			1,250		6,956			244,466	58,449
Portage	3,551,504	2,365,343	1,186,161	188,544	281,918	858,744	165,065	424,060	296,522	122,309	142,489	672	53,659			771,014	246,508
Preble	384,500	224,062	160,438	165,026	156,213					52,391	4,225					6,645	
Richland	421,435	271,000	150,435	35,456	77,536			85,513	45,631	1,160	3,165					148,871	24,103
Ross	263,672	135,577	128,095	4,037	21,413	22,702	21	22,986	29,646	146	222					85,706	76,793
Sandusky	218	218				218											
Scioto	21,451	9,815	11,636		1,985											9,815	9,651
Shelby	244,000	122,000	122,000													122,000	122,000
Stark	4,065,589	2,157,223	1,908,366	62,505	407,930	465,871	30,199	349,015	490,006	518,595	444,051					761,237	536,180
Summit	11,737	5,673	6,064	127	518											5,546	5,546
Tuscarawas	1,499,555	967,162	532,393	302,049	222,426	176,631	37,421	188,112	95,659	266,907	175,470				26,640	6,823	1,417
Warren	696,444	264,397	432,047	206,044	376,551	4,486		40,375	38,262							13,492	17,234
Washington	745,412	462,173	283,239	28,721	8,681	234,478	17,366		52,096		10,734					198,974	194,362
Wayne	416,660	291,265	125,395	20,007	62,219	193,641	4,461	59,683	10,519	15,132	45,519	2,802	2,677				
Williams	618	309	309													309	309
Wood	13,923	6,961	6,962					5,642	5,643							1,319	1,319
Wyandot	330,325	230,088	100,237	26,752	49,569	43,000		156,000				808	48,140			3,528	2,528
TOTAL[1]	31,840,316	17,702,853	14,137,463	2,443,028	4,117,827	5,400,528	1,393,006	1,918,851	1,591,058	1,248,222	1,484,936	48,724	201,511		30,335	6,613,165	5,349,125

[1]Any tally inconsistencies are because of rounding.

SANDSTONE AND CONGLOMERATE

(Directory of operators available at: ***http://geosurvey.ohiodnr.gov/economic-geology/economic-geology-home****)*

Extensive high-quality sandstone and conglomerate deposits are located in central and eastern Ohio, from near Lake Erie to the Ohio River. During the mid-1800s, these geologic resources were developed into large building-stone, and glass production industries, and to support the steel and associated industries. Many prominent buildings in the state use local building stones, including the Ohio Statehouse, Cleveland's Old Stone Church, The Ohio State University's Orton Hall, Cincinnati's City Hall, and numerous other churches, monuments, and historic structures. Ohio led the nation in sandstone production for many decades; this natural resource continues to support the state's industries today. The Pennsylvanian-age Massillon sandstone and the Devonian-age Berea Sandstone of northern Ohio, as well as the Mississippian-age Buena Vista Sandstone in southern Ohio are the primary geologic units quarried for building stone (Bownocker, 1915; see also fig. 7).

Production

- Tons produced = 1,726,568 (+15.6% from 2016)
- U.S. ranking = 5th out of 50 producing states for crushed stone (USGS, 2018a); In the top 20 of 34 producing states for dimension sandstone (USGS, 2018d)
- Top producing geologic units (fig. 7):
  - o Sharon conglomerate (Pennsylvanian)
  - o Black Hand Sandstone (Mississippian)
  - o Berea Sandstone (Devonian)
  - o Upper Freeport sandstone (Pennsylvanian)

Sales

(See figs. 12, 13)

- Tons sold = 1,634,876 (+12.8% from 2016; table 14, 15)
- Value[6] = $51,221,299 (table 9)
- Leading counties (percentage of statewide sales):
  - o Geauga (47.8%)
  - o Wayne (15.8%)
  - o Mahoning (9.2%)
  - o Tuscarawas (7.8%)
  - o Lake (6.7%)

Employment

(See also table 10)

- Production employees reported = 167
- Nonproduction employees reported = 54
- Median employee annual wage = $60,388
- Total wages earned = $14,353,701
- Average days worked per operation = 130

[6]Includes reported and estimated values. See footnote 1, p. 1.

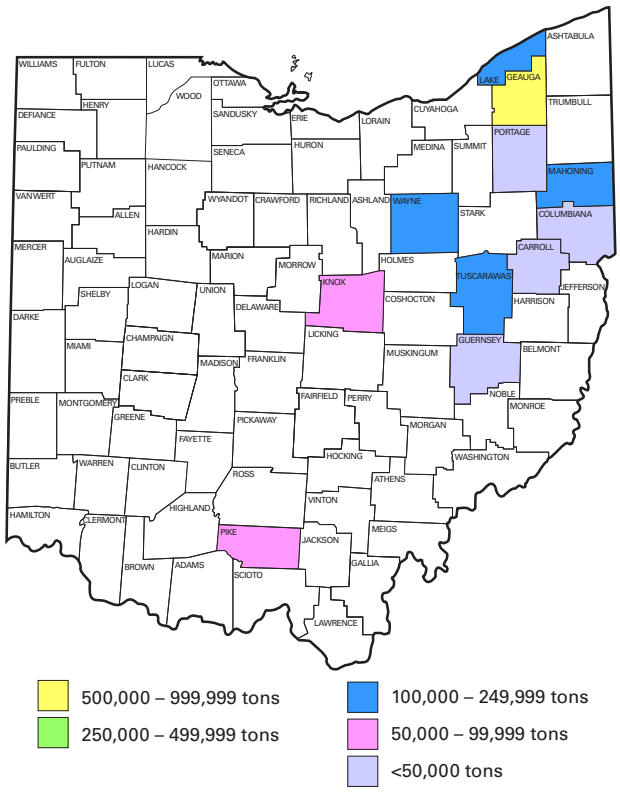

FIGURE 12. Sales of sandstone and conglomerate in Ohio in 2017, by county and quantity.

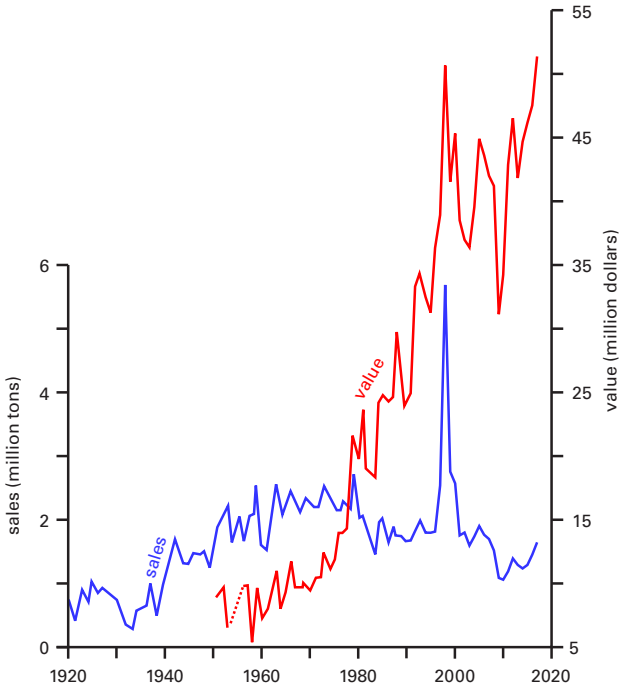

FIGURE 13. Sales and value of sandstone and conglomerate. Value line dashed where data not available.

TABLE 14. *2017 Ohio sales of crushed sandstone and conglomerate, by county and use*

County	Tons sold														
	Total	Foundry sand	Glass sand	Metallurgical pebble	Refractory	Riprap	Aggregate	Silica flour	Polishing/ grinding sand	Fire and furnace sand	Engine sand	Frac sand	Construction	Industrial sand	Other/ unspecified
Carroll	4,014					4,014									
Columbiana	13,469													4,395	9,074
Geauga	780,867	77,005	188,037	8,170	5,090		26,331					364	196,193	12,837	266,840
Guernsey	7,976					2,000	5,976								
Knox	71,853	11,392	13,229								8,493	21,299	6,000	5,599	5,841
Lake	110,310						100,014						10,296		
Mahoning	150,887												150,837		50
Pike	51,888	26											10,933		40,929
Portage	13,585														13,585
Tuscarawas	126,983														126,983
Wayne	238,557					96,869	136,016						5,672		
TOTAL	1,570,389	88,423	201,266	8,170	5,090	102,883	268,337	0	0	0	8,493	21,663	379,931	22,831	463,302

TABLE 15. *2017 Ohio sales of dimension sandstone, by county and use*

County	Tons sold									
	Total	Refractory	Rough construction	Rubble	Grindstones	Rough architectural	Finished	Curbing	Flagging	Other/ unspecified
Columbiana	2,655		2,404							251
Coshocton	12,830						12,830			
Erie	21,950		1,638	95		11,948	8,259		10	
Huron	4,786		4,786							
Knox	214						214			
Lorain	1,879			569			1,310			
Scioto	806						806			
Wayne	19,367									19,367
TOTAL	64,487	0	8,828	664	0	11,948	23,419	0	10	19,618

CLAY AND SHALE

*(Directory of operators available at: **http://geosurvey.ohiodnr.gov/economic-geology/economic-geology-home**)*

The ceramics industry in Ohio has a long and dynamic history. Potteries were established by the early 1800s to supply dinnerware and by the early 1900s Ohio was producing tremendous amounts of building bricks, sewer pipes, roof and floor tiles, paving bricks, art pottery, and refractory products. Edward Orton, Jr., established the first ceramics engineering program in the nation at Ohio State University in 1894. Ohio clay and shale are still being used to produce important ceramic products, though production tonnages are much less than 100 years ago. Ohio ceramic products are shipped throughout the eastern United States and Canada. Nearly all the clay and shale produced in Ohio is used to produce value-added products (e.g., building bricks, industrial ceramics, pottery, expanded aggregate, quarry tile), thus the economic impact is much greater than the combined mined value.

Pennsylvanian-age shales and clays of eastern Ohio are the primary sources of raw materials for the ceramics industry; Mississippian-age and Devonian-age shales of northern and central Ohio and Pleistocene-age glacial clays of western Ohio are important secondary sources. General discussions of clay and shale geology in Ohio can be found in Lamborn and others (1938) and Stout and others (1923).

Production

- Tons produced (clay) = 913,277 (+58.9% from 2016)
- Tons produced (shale) = 675,326 (+3.3% from 2016)
- Ohio's U.S. ranking for clay and shale production is likely in the top ten for 2017, based on the most recently available information for Ohio, which ranked 6th out of 37 producing states in 2016 (USGS, 2017).

Sales

(See figs. 14, 15, 16, 17)

- Clay:
  - Tons sold = 773,935 (+44.4% from 2016; table 16)
  - Value[7] = $8,923,668 (table 9)
- Leading counties for clay (percentage of statewide sales):
  - Tuscarawas (30.8%)
  - Paulding (17.0%)
  - Greene (16.8%)
  - Trumbull (8.4%)
  - Mahoning (7.0%)
- Shale:
  - Tons sold = 632,140 (+0.4% from 2015; table 17)
  - Value[8] = $13,890,405 (table 9)
- Leading counties for shale (percentage of statewide sales):
  - Cuyahoga (31.0%)
  - Tuscarawas (28.9%)
  - Marion (15.0%)
  - Licking (5.9%)
  - Harrison (4.7%)

Employment

(See also table 10)

- Production employees reported = 156
- Nonproduction employees reported = 133
- Median employee annual wage = $36,025
- Total wages earned = $9,343,439
- Average days worked per operation = 143

[7]Includes reported and estimated values. See footnote 1, p. 1.
[8]Includes reported and estimated values. See footnote 1, p. 1.

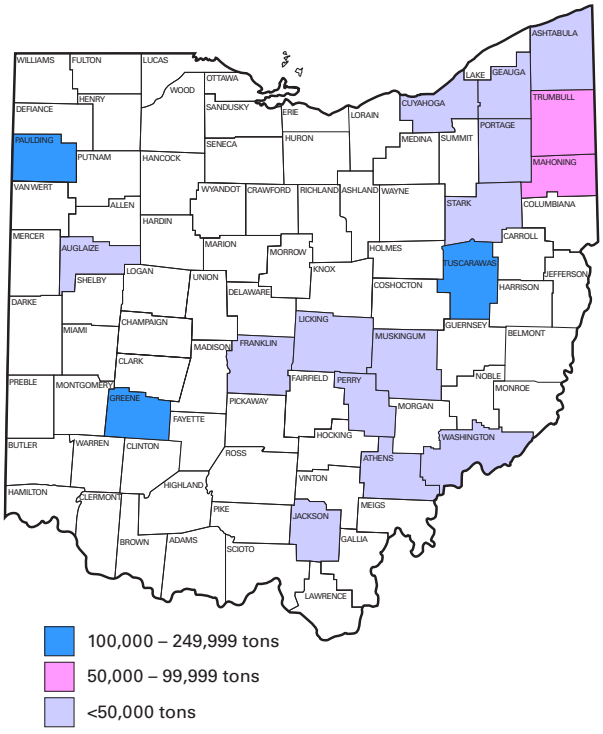

FIGURE 14.—Clay sales in Ohio in 2017, by county and quantity.

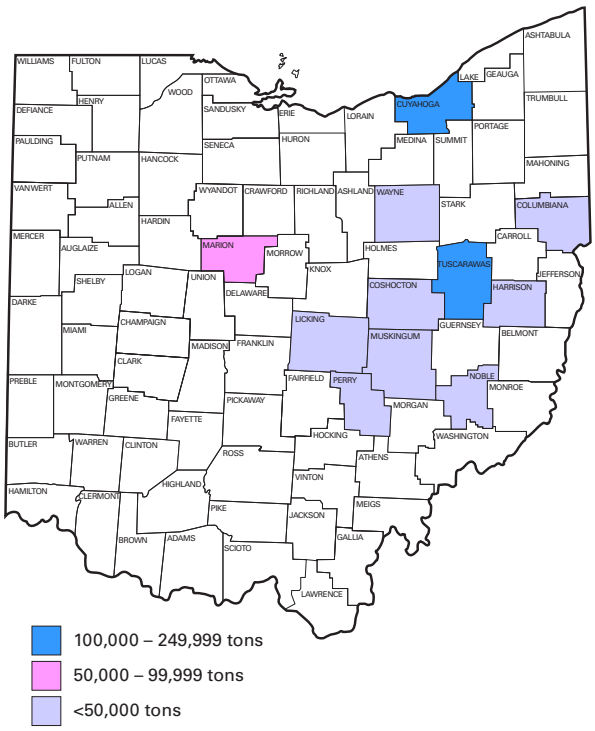

FIGURE 15.—Shale sales in Ohio in 2017, by county and quantity.

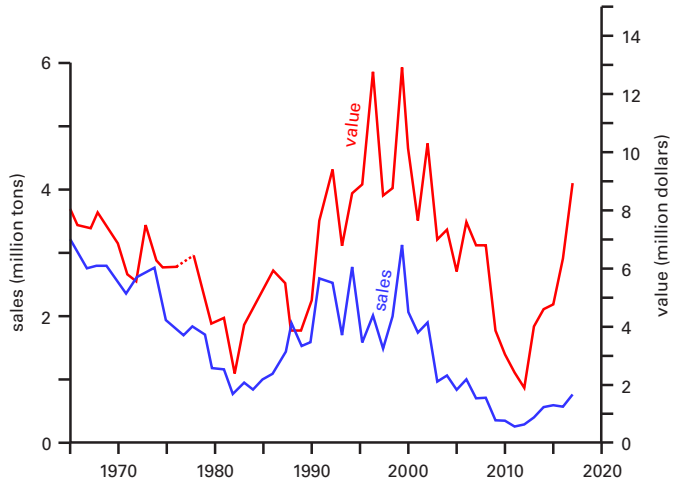

FIGURE 16.—Sales and value of clay in Ohio. Value line dashed where data not available.

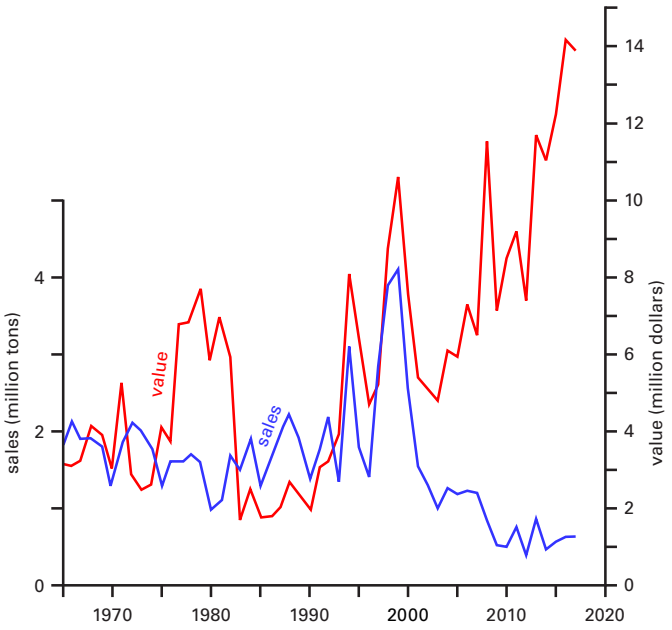

FIGURE 17.—Sales and value of shale in Ohio.

TABLE 16. ***2017 Ohio clay sales, by county and use***

County	Tons sold								
	Total	Common clay products	Stoneware	Vitrified products	Cement manufacture	Refractories	Construction	Landfill use	Other/ unspecified
Ashtabula	2,291	760					1,409		122
Athens	20,000								20,000
Auglaize	1,189	1,189							
Cuyahoga	7,659	1,955							5,704
Franklin	9,030							9,030	
Geauga	2,867								2,867
Greene	129,604				129,604				
Jackson	31,791					2,834			28,957
Licking	34,592								34,592
Mahoning	54,222								54,222
Muskingum	11,478	3,142							8,336
Paulding	131,736								131,736
Perry	18,899								18,899
Portage	10,946	414					10,532		
Stark	2,957	2,957							
Trumbull	64,823							64,823	
Tuscarawas	238,551	15,940			36,436				186,175
Washington	1,300						1,300		
TOTAL	773,935	26,357	0	0	166,040	2,834	13,241	73,853	491,610

TABLE 17. ***2017 Ohio shale sales, by county and use***

County	Tons sold							
	Total	Common clay products	Vitrified products	Cement manufacture	Lightweight aggregate	Construction	Landfill use	Other/ unspecified
Columbiana	11,068							11,068
Coshocton	13,830						13,830	
Cuyahoga	196,164				196,164			
Harrison	29,841							29,841
Knox	300							300
Licking	37,248							37,248
Marion	94,833							94,833
Muskingum	13,372	12,480					817	75
Noble	7,891							7,891
Perry	26,321							26,321
Tuscarawas	182,683	20,567						162,116
Wayne	18,589				18,580			9
TOTAL	632,140	33,047	0	0	214,744	0	14,647	369,702

SALT

(Directory of operators available at: ***http://geosurvey.ohiodnr.gov/economic-geology/economic-geology-home****)*

Salt was one of the first industrial minerals produced in Ohio and was a valuable commodity to early pioneers who obtained it from natural springs. The first State Legislature enacted laws concerning salt springs in 1803–1804 and wells were drilled in Jackson and Muskingum Counties, leading to the first commercial salt production in the state. The most important area for early salt production was in Meigs County, beginning in 1850. By 1903, Ohio was producing 14.7 percent of all salt in the United States (Bownocker, 1906).

The modern salt industry in Ohio began in 1956 with the construction of the underground salt mine at Fairport Harbor in Lake County. A second large underground operation was constructed in Cleveland, beginning in 1957. The primary use for Ohio salt in 2017 was ice control. Salt also was used as an additive in animal feed, for cattle blocks, and as a commercial and residential water-softening agent. Salt production in 2017 increased slightly from 2016, but sales tons decreased for the second straight year. Decreased sales are likely a result of the unusually warm winter with lower than average precipitation.

Production

- Tons produced = 4,601,315 (+6.1% from 2016)
- U.S. ranking = 5th out of 16 producing states (USGS, 2018e)
- Top producing geologic unit (fig. 7):
  - Salina Group (Silurian)

Sales

(See figs. 18, 19)

- Tons sold = 4,435,497 (–1.7% from 2015)
- Value[9] = $195,294,821 (table 9)

Employment

(See also table 10)

- Production employees reported = 239
- Nonproduction employees reported = 177
- Median employee annual wage = $69,840
- Total wages earned = $29,053,583
- Average days worked per operation = 287

[9]Includes reported and estimated values. See footnote 1, p. 1.

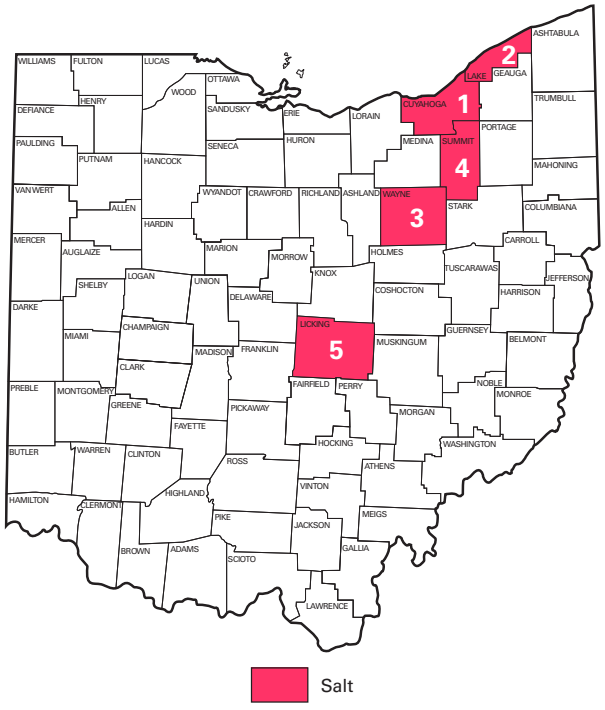

FIGURE 18.—Counties producing salt in Ohio in 2017 and their rankings in sales.

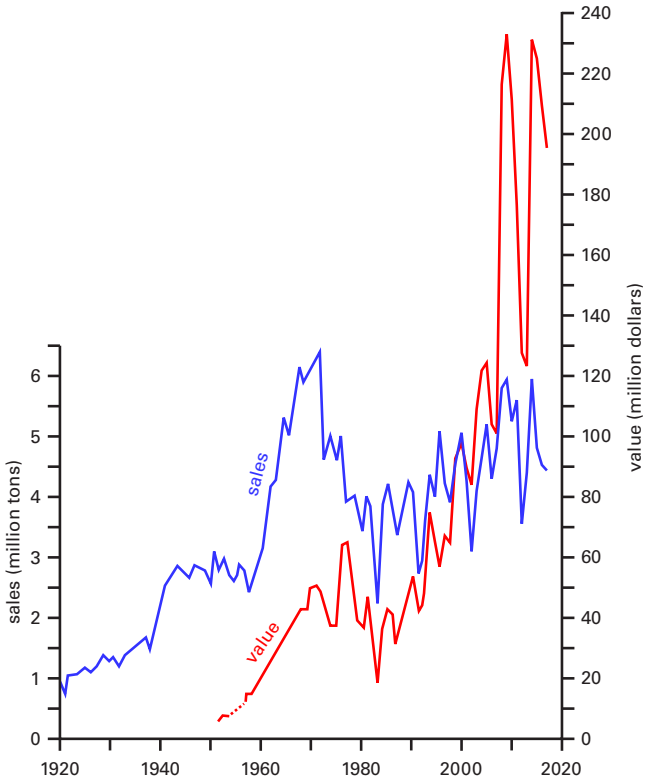

FIGURE 19.—Sales and value of salt in Ohio. Value line dashed where data not available.

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LIST OF DOWNLOADABLE APPENDICES

Mineral commodity summaries as well as the following appendices can be found on the Ohio Department of Natural Resources, Division of Geological Survey website at **http://geosurvey.ohiodnr.gov/economic-geology/mineral-industry-summaries**

2017 Coal companies reporting sales and/or production, by company and county
http://geosurvey.ohiodnr.gov/economic-geology/mineral-industry-summaries/post/2017-coal

2017 Limestone and dolomite companies reporting sales and/or production, by company and county
http://geosurvey.ohiodnr.gov/economic-geology/mineral-industry-summaries/post/2017-limestone-dolomite

2017 Sand and gravel companies reporting sales and/or production, by company and county
http://geosurvey.ohiodnr.gov/economic-geology/mineral-industry-summaries/post/2017-sand-gravel

2017 Sandstone and conglomerate companies reporting sales and/or production, by company and county
http://geosurvey.ohiodnr.gov/economic-geology/mineral-industry-summaries/post/2017-sandstone-and-conglomerate

2017 Clay and Shale companies reporting sales and/or production, by company and county
http://geosurvey.ohiodnr.gov/economic-geology/mineral-industry-summaries/post/2017-clay-and-shale

2017 Salt companies reporting sales and/or production, by company and county
http://geosurvey.ohiodnr.gov/economic-geology/mineral-industry-summaries/post/2017-salt

STATE OF OHIO
DEPARTMENT OF NATURAL RESOURCES
DIVISION OF GEOLOGICAL SURVEY
Michael P. Angle, Acting Chief

Map IM-1 2017 Edition
11/2018

MAP OF ACTIVE MINERAL INDUSTRY OPERATIONS IN OHIO 2017

By
Christopher E. Wright, and J. D. Stucker

GIS Database Administration by Joseph G. Wells
GIS Cartography by Dean R. Martin

ABOUT THE MAP

This map is based on operators included in the supplementary appendices of the *2017 Report on Ohio Mineral Industries* (Wright and Stucker, 2018) and is intended for general reference. Locations of mineral extraction operations are approximate and are based on permitting information on file at the Ohio Department of Natural Resources (ODNR), Division of Mineral Resources Management. The letters and numbers adjacent to the symbols are the state mine numbers assigned to operations listed in the downloadable directories of the *2017 Report on Ohio Mineral Industries*. Operator and other information can be viewed by using the state mine number to refer to the table included on this map or to directories of operators reporting sales or production available online at **https://geosurvey.ohiodnr.gov/economic-geology/economic-geology-home**. An interactive mineral industries map also is available on the ODNR Division of Geological Survey website at OhioGeology.com.

2017 OHIO ECONOMIC GEOLOGY IN BRIEF

The total tonnage of coal and industrial minerals produced in Ohio during 2017 was 113,065,193 tons or approximately 9.7 tons per capita. The total value[1] of coal was $383,686,914 in 2017; the value of oil and gas was $5,909,017,069; and the value[1] of all industrial minerals was $1,125,101,598 in 2017 (table 1; fig. 1). The combined value of fuel and nonfuel minerals produced in Ohio during 2017 was $7,416,736,715 or approximately $636 per capita.

Reported and estimated total direct employment in the extractive industries of Ohio in 2017 was more than 10,000 people. Industrial-mineral production increased for salt, sandstone and conglomerate, shale, and clay. The total value for all industrial-minerals exceeded $1 billion for the fourth straight year. In 2017 clay production reached 913 thousand tons, a rise of 59 percent, and Sandstone-and-conglomerate production reached more than 1.7 million tons, a rise of 16 percent. Production leading commodities of Limestone-and-dolomite, and Sand-and-gravel were down slightly from 2016 values.

REFERENCES CITED

Wright, Christopher E., and Stucker, J. D., compilers, 2018, 2017 Report on Ohio mineral industries–An annual summary of the state's economic geology: Columbus, Ohio Department of Natural Resources, Division of Geological Survey, 23 p.

[1]Includes reported and estimated values. Some operations reporting sales did not report a value for those sales. A countywide- or statewide-average price per ton was calculated for each industrial-mineral commodity based on sales for which the value was reported. A countywide-average price per ton was calculated for coal based on sales for which the value was reported and method of production. These calculated averages were used to estimate the value of the sales for which the actual values were not reported.

TABLE 1. *Fuel and nonfuel mineral sales and production in Ohio in 2017*

Commodity	Production[1]	Sales[2]	Value[3]	Change in value from 2016 (percent)
Limestone and dolomite	62,502,315 tons	62,203,537 tons	$613,629,330	− 0.3
Coal	10,270,958 tons	9,760,817 tons	$382,618,048	− 29.3
Sand and gravel	32,375,434 tons	31,840,316 tons	$242,142,075	− 3.0
Salt	4,601,315 tons	4,435,497 tons	$195,294,821	− 7.0
Sandstone and conglomerate	1,726,568 tons	1,634,876 tons	$51,221,299	+ 7.9
Shale	675,326 tons	632,140 tons	$13,890,405	− 2.0
Clay	913,277 tons	773,935 tons	$8,923,668	+ 40.4
Gas	1,771,293,830 thousand cubic feet	not available	$4,959,622,724	+ 46.2
Oil	20,093,002 barrels	not available	$949,394,345	+12.4

[1]The production figures for industrial minerals are estimates, as many operators do not know actual production. For those operators that do not report production, production is assumed equal to sales or estimated from ODNR Division of Mineral Resources Management records.
[2]Includes material for captive use.
[3]The FOB value of industrial minerals sold was estimated for mines that failed to report this information and for those producting material for captive use. These estimates were caluclated using a countywide- or statewide-average price per ton calculated on reported FOB values.

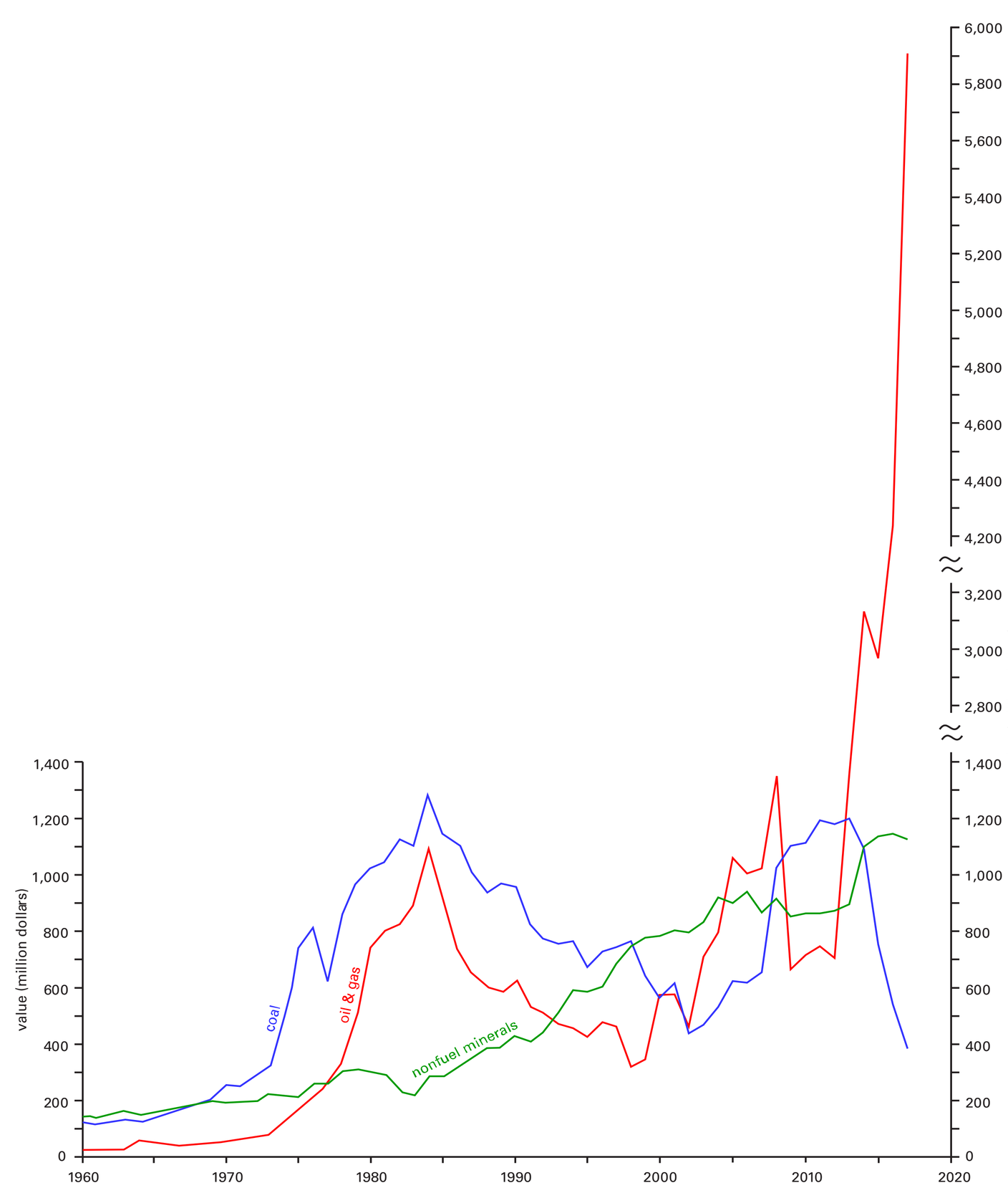
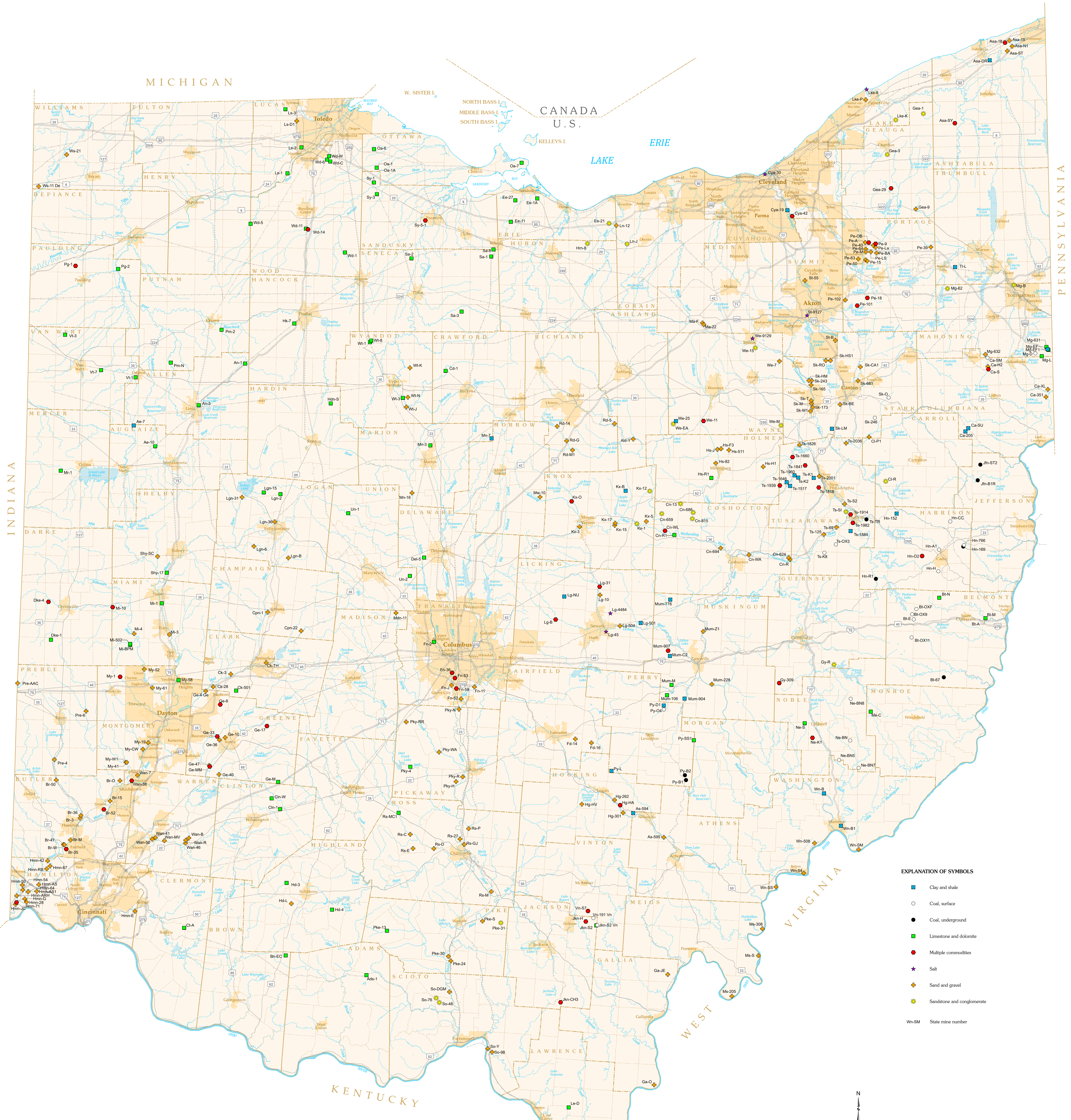


FIGURE 1. Value of coal, nonfuel minerals, and oil and gas in Ohio since 1960.



EXPLANATION OF SYMBOLS

- Clay and shale
- Coal, surface
- Coal, underground
- Limestone and dolomite
- Multiple commodities
- Salt
- Sand and gravel
- Sandstone and conglomerate
- Wn-SM State mine number

SCALE 1:500,000
10 5 0 10 20 30 40 MILES
10 5 0 10 20 30 40 50 KILOMETERS

Projection of data is Ohio coordinate system, south zone, North American Datum 1983.

REPORTING COAL AND INDUSTRIAL MINERAL OPERATORS, BY COUNTY

STATE MINE NUMBER	COMPANY NAME	MINE NAME	TOTAL PRODUCTION (TONS)	TOTAL SALES (TONS)
Adams County				
Ads-1	Hanson Aggregates Davon LLC	Plum Run Quarry	857,102	852,619
Allen County				
An-1	Bluffton Stone Co.	Bluffton Stone Co.	287,229	280,228
An-3	National Lime & Stone Co.	Lima Plant	496,000	496,000
Ashland County				
Ald-Y	Young's Sand & Gravel Co.	Spreng	276,977	276,977
Ashtabula County				
Asa-15	R. W. Sidley, Inc.	Sidley-Kingsville Plant		18,492
Asa-18	Joe Simak & Sons Trucking, Inc.	North Ridge Pit	106,309	106,309
Asa-DR	D & R Developers, Ltd.	D & R Developers	760	760
Asa-N1	Nelson Sand & Gravel, Inc.	Nelson Sand & Gravel, Inc.	37,280	37,280
Asa-ST	Joe Simak & Sons Trucking, Inc.	Amboy Pit	37,761	37,761
Asa-SY	Sypniewski, Joseph N.	Sypniewski	266	266
Athens County				
As-594	Athens Hocking Reclamation Center	Athens-Hocking Clay Mine	20,000	20,000
As-595	Cochran Transportation Services, Inc.	Circle Hill	24,659	24,659
Auglaize County				
Ae-10	National Lime & Stone Co.	Buckland Plant	232,000	232,000
Ae-7	Sandkuhl Clay Works, Inc.	Sandkuhl Clay Works, Inc.	1,189	1,189
Belmont County				
Bt-67	American Energy Corp.	Century Mine	5,676,640	5,525,662
Bt-A	Sidwell Materials, Inc.	Blaine Aggregates	469,951	384,133
Bt-E	Egypt Valley Stone, LLC	Shugert	29,851	29,851
Bt-M	Maysville Materials, LLC	Maysville Materials, LLC	3,240	3,240
Bt-N	Sidwell Materials, Inc.	Uniontown Stone	550,303	469,562
Bt-OX11	Oxford Mining Co., LLC	Speidel	12,836	15,836
Bt-OX9	Oxford Mining Co., LLC	Buttermilk	321,852	327,152
Bt-OXF	Oxford Mining Co., LLC	Egypt Valley Wildlife	65,560	53,260
Brown County				
Bn-EC	Hanson Aggregates Davon LLC	Eagle Crushed Stone	1,588,642	1,489,517
Butler County				
Br-15	Watson Gravel, Inc.	Mecco, Inc.	551,332	551,332
Br-3	The Gravel Company	New Miami Pit	394	394
Br-35	Martin Marietta Aggregates	Fairfield Sand & Gravel	1,062,302	979,814
Br-36	Colwell, Bill D.	Bill D. Colwell Gravel	283	283
Br-47	Watson Gravel, Inc.	Watson Pit	818,152	818,152
Br-50	Dingledine Basic Materials, Inc.	Dingledine Basic Materials, Inc.	31,604	31,604
Br-52	Martin Marietta Aggregates	Trenton	390,252	354,227
Br-M	Miami Valley Topsoil, LLC	Miami Valley Topsoil, LLC	27,828	27,828
Br-O	Watson Gravel, Inc.	Ongais Plant #1	120,517	
Br-W	Welch Sand & Gravel, Inc.	Hamilton City Plant	46,239	46,239
Carroll County				
Cl-R	Romig Excavating	Romig Excavating	4,014	4,014
Champaign County				
Cpn-1	Morrow Gravel Co.	Urbana	204,164	205,421
Cpn-22	Mechanicsburg Sand & Gravel, Inc.	Mechanicsburg Sand & Gravel, Inc.	162,926	162,926
Clark County				
Ck-3	Enon Sand & Gravel, LLC	Enon Sand & Gravel, LLC	378,000	378,000
Ck-28	Barrett Paving Materials, Inc.	Haddix Sand & Gravel #399	535,000	482,000
Ck-501	Enon Sand & Gravel, LLC	Enon Sand and Gravel	131	131
Ck-TH	Home Road Ridge Co., LLC	Home Road Ridge Co., LLC	2,230	2,230
Clermont County				
Ct-A	Arch Materials, LLC	Batavia Mine	1,825,000	1,641,000
Clinton County				
Cln-1	The Melvin Stone Co., LLC	The Melvin Stone Co., LLC	1,796,017	1,796,017
Cln-W	Shamrock Materials, Inc.	Clinton Limestone	9,470	9,470
Columbiana County				
Ca-205	Summitville Tiles, Inc.	Summitville Tiles, Inc.	2,026	2,026
Ca-351	Buck Run Aggregates, LLC	Krcich	53,080	28,657
Ca-H2	Harvest Sand & Gravel, Inc.	Eberly	17,618	17,618
Ca-S	Solomon's Mines, Inc.	Solomon's Mines, Inc.	36,392	36,392
Ca-SM	Solomon's Mines, Inc.	Solomon's Mines, Inc.	119	119
Ca-SU	Summitville Tiles, Inc.	Summitcrest, Inc.	9,042	9,042
Ca-XL	X. L. Sand & Gravel Co., Inc.	X. L. Sand & Gravel Co., Inc.	30,420	30,420
Coshocton County				
Cn-13	Briar Hill Stone Co.	Quarry #26	1,314	1,314
Cn-624	Oasis Properties Inc.	Sugarcreek	144,344	144,344
Cn-659	Briar Hill Stone Co.	Quarry #3	304	304
Cn-686	Briar Hill Stone Co.	Quarry #32	3,731	3,731
Cn-694	Shelly Materials, Inc.	Shelly Materials, Inc., Plant #1305	73,608	191,264
Cn-815	Briar Hill Stone Co.	Quarry #55	7,481	7,481
Cn-R	Razor Lake Materials Inc.	Razor Lake S. & G., LLC	63,609	57,609
Cn-R1	Rohr Excavating, Ltd.	Miller	9,800	9,800
Cn-WA	William Albert, Inc.	William Albert, Inc., Pit 2	24,082	21,080
Cn-WL	Walhonding Sand & Gravel	Walhonding Valley Sand & Gravel	56,320	56,320
Crawford County				
Cd-1	National Lime & Stone Co.	Bucyrus Plant	1,050,000	1,050,000
Cuyahoga County				
Cya-19	DiGeronimo Aggregates, LLC	DiGeronimo Aggregates, LLC	239,499	196,164
Cya-30	Cargill, Incorporated	Cargill Deicing Technology	3,047,262	3,044,927
Cya-42	Boyas Excavating, Inc.	Boyas Excavating, Inc.	13,570	13,570
Darke County				
Dke-1	Shamrock Materials, Inc.	Walls Material	269,891	269,891
Dke-4	Foureman's Sand & Gravel, Inc.	Foureman's Sand & Gravel, Inc.	22,610	22,610
Defiance County				
Ws-11 De	Weber Sand & Gravel, Inc.	Weber Sand & Gravel, Inc.	242,151	242,151
Delaware County				
Del-5	National Lime & Stone Co.	Delaware Plant	2,923,000	2,923,000
Erie County				
Ee-11	Hanson Aggregates Midwest, Inc.	Sandusky Crushed Stone	2,779,335	2,573,897
EE-1A	Hanson Aggregates Midwest Inc.	Wagner Quarry	1,378,393	1,363,921
Ee-21	IRG Operating, LLC, dba Cleveland Quarries	IRG Operating, LLC	20,776	21,950
Ee-27	Erie Blacktop, Inc.	Erie Blacktop Quarry	356,368	356,368
Fairfield County				
Fd-14	Paul D. Beery Trucking Co.	Paul D. Beery Trucking Co.	942	732
Fd-16	Digg Enterprises, LLC	Downard Pit	991	991
Franklin County				
Fn-11	Mason's Sand & Gravel Co.	Mason's Sand & Gravel Co.	33,540	33,540
Fn-2	Shelly Materials, Inc.	Marble Cliff Plant #0332	633,912	660,924
Fn-36	Agg Rok Materials	Agg Rok	9,093	9,093
Fn-52	National Lime & Stone Co.	South Columbus	185,000	185,000
Fn-53	Shelly Materials, Inc.	Columbus Limestone #331	4,333,749	4,514,581
Fn-58	Olen Corp.	Columbus Plant #3	3,572,963	3,587,903
Fn-J	National Lime & Stone Co.	Jackson	113,000	113,000
Gallia County				
Ga-JE	Jaclib Enterprises, Inc.	Cheshire Pit	512	512
Ga-O	Ours Sand & Gravel	Ours Sand & Gravel	2,320	2,320
Geauga County				
Gea-1	R. W. Sidley, Inc.	Thompson Pit	202,488	120,369
Gea-29	The Arms Trucking Company	Arms Sand & Gravel	60,957	60,957
Gea-3	Best Sand Corp.	Best Sand Corp.	644,027	660,498
Gea-9	Soltis Sand & Gravel	Soltis Sand & Gravel	86	86
Greene County				
Ge-10	Xenia Sand & Gravel, Inc.	Xenia Sand & Gravel, Inc.	5,200	5,200
Ge-17	Martin Marietta Aggregates	Cedarville	504,779	507,439
Ge-33	Martin Marietta Aggregates	Xenia S & G	285,771	206,476
Ge-36	Phillips Companies, LLC	Phillips Companies, LLC	188,000	204,000
Ge-4 Ge	Barrett Paving Materials, Inc.	Fairborn Sand & Gravel #398	660	660
Ge-40	R. J. Martin Service & Excavating	Horseshoe Bend Sand & Gravel, Inc.	212	212
Ge-47	M. J. Coates Construction Co., Inc.	M. J. Coates Construction Co., Inc.	101,540	101,540
Ge-8	Fairborn Cement Co., LLC	Miller, Schieder, Batdorf, Stewart	1,050,136	1,050,136
Ge-M	The Melvin Stone Co., LLC	Bowersville	3,796	3,796
Ge-MM	Martin Marietta Aggregates	Cook Rd.	377,412	330,826
Guernsey County				
Gy-309	Cumberland Limestone, LLC	Cumberland Limestone, LLC	126,712	278,909
Gy-R	Rocky Enterprise	Rocky Enterprise - Robins Ridge	7,976	7,976
Hamilton County				
Hmn-28	The Gravel Company	Cleves	340	340
Hmn-42	Welch Sand & Gravel, Inc.	Fernald Pit	638,943	638,943
Hmn-50	Hanson Aggregates Davon LLC	Dry Fork Sand & Gravel	500,466	442,723
Hmn-54	Ashcraft Sand & Gravel, Inc.	Ashcraft Sand & Gravel, Inc.	36,510	36,510
Hmn-64	Watson Gravel, Inc.	Minges-Getz	397,837	397,837
Hmn-67	R. L., Ltd.	R. L., Ltd.	600	600
Hmn-71	Martin Marietta Aggregates	E-town Sand & Gravel	299,547	318,769
Hmn-ARH	Watson Gravel, Inc.	Harrison #2	902,413	902,413
Hmn-AS	Allgeier & Son, Inc.	Allgeier & Son, Inc., Pit 2	50,000	50,000
Hmn-AS1	Allgeier & Son, Inc.	Allgeier & Son, Inc., Pit 1	45,000	45,000
Hmn-E	Evans Gravel, Inc.	Evans Gravel, Inc.	293,281	160,806
Hmn-G	Top Dog Service Company	Whitewater Reclamation Company	800	800
Hmn-JC	Carter, Joe E.	Lost Bridge	700	700
Hmn-RB	Burwinkel, Richard & Kathy	Burwinkel	140,530	140,530
Hancock County				
Hk-7	National Lime & Stone Co.	Findlay Plant	641,000	641,000
Hardin County				
Hdn-S	Shelly Materials, Inc.	Forest Quarry	275,900	241,707
Harrison County				
Hn-152	Bowerston Shale Co.	Bowerston (Calwell)	29,841	29,841
Hn-169	Hopedale Mining, LLC	Hopedale Mining, LLC	374,796	373,744
Hn-766	Oxford Mining Co., LLC	Harrah	374,223	360,623
Hn-A1	Oxford Mining Co., LLC	Sandy Ridge	500,046	502,046
Hn-CC	Sidwell Materials, Inc.	Apex Quarry	14,064	14,064
Hn-H	Oxford Mining Co., LLC	Sexton 2	514,327	504,327
Hn-O2	Oxford Mining Co., LLC	Standingstone Mine	592,313	600,313
Hn-R1	Rosebud Mining Company	Vail Mine	144,458	144,458
Highland County				
Hd-3	Ohio Asphaltic Limestone Corp.	Ohio Asphaltic Limestone Corp.	328,545	328,545
Hd-4	Marshall Quarry, Inc.	Marshall Quarry, Inc.	30,395	30,395
Hd-L	Ervin Hill Enterprises, Inc.	Ervin Hill Enterprises, Inc.	138,703	138,703
Hocking County				
Hg-262	Hocking Valley Concrete, Inc.	Hocking Valley Concrete, Inc.	125,000	99,594
Hg-301	Muskingum River Gravel Co.	S & S Aggregate #8	26,337	26,337
Hg-HA	KCI Sand & Gravel	KCI Sand & Gravel	84,480	67,317
Hg-HV	MAR-ZANE Materials, Inc.	Enterprise Pit	319,111	335,580
Holmes County				
Hs-511	Feikert Sand & Gravel, Inc.	Feikert Sand & Gravel, Inc.	263,638	263,638
Hs-82	Holmes Redimix, Inc.	Holmes Redimix, Inc.	9,018	9,018
Hs-F3	Feikert Sand & Gravel, Inc.	Feikert Sand & Gravel	9,800	9,800
Hs-H1	Holmes Supply Corp.	Schlabach	324,380	324,380
Hs-J	Holmes Supply Corp.	Holmes Supply Corp.	87,866	87,866
Hs-R1	Rohr Excavating, Ltd.	Rohr	1,800	1,800
Huron County				
Hrn-8	Mesenburg Bros., Inc.	Mesenburg Bros., Inc.	4,786	4,786
Jackson County				
Jkn-CH3	Cedar Heights Clay Co.	Phillips	34,343	29,882
Jkn-H	Harbisonwalker International Inc.	Harbisonwalker International	9,034	9,034
Jkn-S2	Sands Hill Mining, LLC	Clinton Stone, LLC	304,085	304,085
Jefferson County				
Jfn-B1R	Rosebud Mining Company	Bergholz Mine	1,392	1,392
Jfn-ST2	Sterling Mining Co.	SMC-Shean Hill	6,718	6,718
Knox County				
Kx-1	Pioneer Sands LLC	Millwood Plant	76,368	71,853
Kx-12	Briar Hill Stone Co.	Quarry #6	214	214
Kx-15	Small's Sand & Gravel, Inc.	Small's Sand & Gravel, Inc.	255,083	255,083
Kx-17	Small's Sand & Gravel, Inc.	Small's Sand & Gravel, Inc.	381	381
Kx-3	United Aggregates, Inc.	United Aggregates, Inc.	165,678	148,680
Kx-5	United Aggregates, Inc.	United Aggregates, Inc.	10,442	7,655
Kx-B	Buckland, Edsel L.	Buckland	300	300
Kx-O	Olen Corp.	Fredericktown Plant #2	429,049	480,971
Lake County				
Lke-6	Morton International, Inc.	Fairport Mine	769,739	644,515
Lke-K	Keeney Sand & Stone, Inc.	Keeney Sand & Stone, Inc.	110,310	110,310
Lke-P	J.J.J. Properties, LLC	J.J.J. Properties, LLC	3,476	3,476
Lawrence County				
Le-D	D. M. Mining, Inc.	Ice Creek Land Co.	6,970	6,470
Licking County				
Lg-10	Shelly Materials, Inc.	St. Louisville	229,010	211,844
Lg-31	Olen Corp.	St. Louisville Plant #5	398,567	514,000
Lg-4484	Royalty Enterprises, Inc.	King #1	320	320
Lg-45	R. H. Penick Co., Ltd.	R. H. Penick Co.	343	343
Lg-501	Bowerston Shale Co.	Hanover Pit	37,248	37,248
Lg-504	Newark Materials, LLC	Newark Materials	60,000	47,651
Lg-B	Brookside Materials, LLC	Brookside Materials, LLC	199,500	183,812
Lg-NU	Nuway Services	Hopewell	30,092	30,092
Logan County				
Lgn-15	Duff Quarry, Inc.	Duff Quarry, Inc.	477,014	477,014
Lgn-2	Shelly Materials, Inc.	Belle Center	289,931	245,578
Lgn-31	Duff Quarry, Inc.	Duff Sand Co.	6,809	6,809
Lgn-36	Duff Quarry, Inc.	Duff Quarry, Inc.	1,478	1,478
Lgn-6	Neer's Sand & Gravel	Neer's Sand & Gravel	159,538	159,538
Lgn-B	Boyd Excavating	Boyd Excavating	5,789	5,789
Lorain County				
Ln-12	Schieve, Guy	Schieve Pit	874	874
Ln-J	Johnson Stone Products, Inc.	Johnson Stone Products	1,910	1,879
Lucas County				
Ls-1	Hanson Aggregates Midwest, Inc.	Waterville	352,962	361,275
Ls-2	Stoneco, Inc.	Maumee Quarry	603,335	683,486
Ls-3	Hanson Aggregates Midwest, Inc.	Sylvania	795,791	779,576
Ls-D1	Dennis Topsoil & Landscaping, Inc.	Dennis Topsoil & Landscaping, Inc.	7,000	7,000
Madison County				
Mdn-11	Tuffco Sand & Gravel, Inc.	Tuffco Sand & Gravel, Inc.	14,800	34,212
Mahoning County				
Mg-62	City Stone, LLC	City Stone, LLC	150,837	150,837
MG-631	East Fairfield Coal Co.	Withers-Petersburg	7,701	60,367
Mg-632	Solomon's Mines, Inc.	Solomon's Mines, Inc.	56,128	56,128
Mg-B	Brier Hill Slag Company	Brier Hill Slag Company	50	50
Mg-D	D. & D. Mining Co.	D. & D. Strip	2,251	2,195
Mg-EF	East Fairfield Coal Co.	Withers Petersburg - Surface	54,222	54,222
Mg-EF1	Subtropolis Mining	Kemp Mine	1,345,942	1,427,677
Mg-L	Shelly Materials, Inc.	Petersburg	478,347	423,552
Marion County				
Mn-16	Fleming Construction Co., Inc.	Pit #1	15,266	15,266
Mn-3	National Lime & Stone Co.	Marion Plant	542,000	542,000
Mn-7	Glen-Gery Corp.	Iberia Quarry	94,833	94,833
Medina County				
Ma-22	Friendsville Sand, LP	Friendsville	85,260	85,260
Ma-F	Friendsville Sand, LP	Friendsville Sand	72,600	72,600
Meigs County				
Ms-205	Martin Marietta Aggregates	Apple Grove Plant	337,530	380,495
Ms-308	Jaymar, Inc.	Plant #4	664,137	664,137
Ms-S	Shelly Materials, Inc.	Portland Plant	196,842	185,614
Mercer County				
Mr-1	Stoneco, Inc.	Celina Quarry	684,549	659,407
Miami County				
Mi-1	Piqua Materials, Inc.	Piqua Minerals Division	584,812	584,812
Mi-10	C. F. Poeppelman, Inc.	C. F. Poeppelman, Inc.	285,133	285,133
Mi-3	Martin Marietta Aggregates	Troy Sand & Gravel	442,257	327,751
Mi-4	Milton Materials, LLC	Milton Materials Fenner Pit	70,500	69,505
Mi-502	Barrett Paving Materials, Inc.	Bed Rock Properties	480	480
Mi-BPM	Barrett Paving Materials, Inc.	Ludlow Quarry #394	315,000	315,000
Monroe County				
Me-C	Christman Quarries	Christman Quarry	462,095	462,095
Montgomery County				
My-1	Martin Marietta Aggregates	Phillipsburg	551,922	469,878
My-19	Barrett Paving Materials, Inc.	West Carrollton Aggregate Plant	411,000	397,000
My-41	Eagle Materials, LLC	Plant #5	96,316	84,366
My-52	Phillips Companies, LLC	Phillips Sand and Gravel	170,000	113,000
My-58	Fairborn Cement Co., LLC	G-Tract	276,667	276,667
My-61	Tipp Stone Co., Inc.	Tipp Stone Co., Inc.	17,586	17,586
My-CW	Carter & Carter, Inc.	Carter & Carter, Inc.		300
My-W1	Weidle Sand & Gravel, Inc.	Weidle Sand & Gravel	196,754	196,754
Morrow County				
Mw-10	National Lime & Stone Co.	Chesterville Plant	307,000	307,000
Muskingum County				
Mum-106	Shelly Materials, Inc.	East Fultonham	843,197	879,884
Mum-228	Muskingum River Gravel Co.	S & S Aggregate #1	134,574	155,430
Mum-776	Bowerston Shale Co.	Frazeysburg	8,336	8,336
Mum-904	Valley Clay Mining Co.	Spring Pit	15,622	15,622
Mum-907	Thompson Mining Co.	Pleasant Valley Limestone	142,163	143,829
Mum-C2	Murrey, Charles A.	Sandridge Farms	75	75
Mum-M	Maysville Materials, LLC	Maysville Materials, LLC	108,932	108,932
Mum-Z1	Zanesville Materials, LLC	Zanesville Materials	27,685	14,900
Noble County				
Ne-BN	B & N Coal, Inc.	Estadt Mine	45,992	45,992
Ne-BN5	B & N Coal, Inc.	Westfork Mine	124,109	124,109
Ne-BN8	B & N Coal, Inc.	Whigville III	175,506	175,506
Ne-K1	King Quarries, Inc.	King Quarries, Inc.	154,232	154,232
Ne-S	Sharon Stone Co.	Sharon Stone Co.	134,184	134,184
Ottawa County				
Oa-1	Graymont Dolime (OH), Inc.	Graymont Dolime (OH), Inc.	373,329	609,220
Oa-1A	Genoa Limestone, LLC	Genoa Limestone	325,000	302,700
Oa-6	Stoneco, Inc.	White Rock Quarry	1,418,925	1,343,506
Oa-7	Lafarge Marblehead	Lafarge Marblehead	3,384,851	3,155,878
Paulding County				
Pg-1	Lafarge Corp.	Paulding Quarry	712,037	712,037
Pg-2	Stoneco, Inc.	Auglaize Quarry	691,340	647,964
Perry County				
Py-B1	Buckingham Coal Company, LLC	Buckingham Mine No. 7		608,528
Py-B2	Buckingham Coal Company, LLC	Buckingham Mine No. 6	950,246	
Py-D1	TOM, LLC	Saltillo	31,064	31,064
Py-L	The Logan Clay Products Co.	Webb Summit	14,007	14,156
Py-O4	Oxford Mining Co., LLC	Avondale	228,468	234,968
Py-SS1	Sergeant Stone, Inc.	Sergeant Stone	176,333	189,558
Pickaway County				
Pky-4	The Melvin Stone Co., LLC	Williamsport	398,742	398,742
Pky-H	Hoffman, William A., Jr.	Hoffman Pit	300	300
Pky-N	National Lime & Stone Co.	National Lime & Stone	216,000	216,000
Pky-R	The Melvin Stone Co., LLC	Circleville	320,063	320,063
Pky-RR	Roush, Roy M.	R Farm S & G	5,218	5,218
Pky-WA	Westfall Aggregate & Materials, Inc.	Hill Road Pit	50,086	50,086
Pike County				
Pke-13	Latham Limestone, LLC	Latham Limestone	1,319,452	1,319,452
Pke-24	Hanson Aggregates Davon LLC	Piketon Sand & Gravel	184,617	224,024
Pke-30	South Central Sand & Gravel	South Central Sand & Gravel	67,388	8,706
Pke-31	Best Sand Corp.	Best-Southern Division	74,560	51,888
Pke-S	Southern Ohio Sand, LLC	Southern Ohio Sand, LLC	78,891	78,891
Portage County				
Pe-101	D & K Materials, Inc.	D & K Materials, Inc.	217,588	217,588
Pe-102	Core Aggregates LLC	Gans, Ltd., dba Brimfield Sand & Soils	12,000	5,600
Pe-15	S & S Aggregate, Inc.	S & S Aggregate #16	531,024	532,163
Pe-18	Sober Sand & Gravel Co.	Sober Sand & Gravel Co.	201,128	201,128
Pe-39	Miller's Sand & Gravel, Inc.	Miller Sand & Gravel, Inc.	1,200	1,200
Pe-40	Lakeside Sand & Gravel Co.	Lakeside Sand & Gravel Co.	2,758	2,758
Pe-50	Beck Sand & Gravel, Inc.	Beck Sand & Gravel, Inc.	225,000	240,881
Pe-63	Shelly Materials, Inc.	Jefferson Materials	370,751	304,199
Pe-64	Aurora Aggregate Supplies	Aurora Aggregate Supplies	56,163	56,163
Pe-9	Oscar Brugmann Sand & Gravel, Inc.	Oscar Brugmann Sand & Gravel, Inc.	520,470	520,470
Pe-A	Lakeside Sand & Gravel Co.	Solak	18,110	18,110
Pe-BA	Ballentine Sand & Gravel, LLC	Ballentine Lake	73,512	73,512
Pe-La	Shelly Materials, Inc.	Shalersville North	316,201	402,205
Pe-LS	Lakeside Sand & Gravel Co.	Lakeside Sand & Gravel Co. Plant 1	854,362	854,062
Pe-M	Portage Aggregate & Supply, LLC	Portage Aggregate & Supply, LLC	54,148	54,148
Pe-OB	Oscar Brugmann Sand & Gravel, Inc.	Oscar Brugmann Sand & Gravel, Inc.	91,848	91,848
Preble County				
Pre-4	Wysong Gravel Co.	Wysong Gravel Co.	94,316	94,316
Pre-6	Wysong Gravel Co.	Wysong Gravel Co. - West Alexandria Plant	57,401	57,401
Pre-AAC	U.S. Aggregates, Inc.	U.S. Aggregates - Richmond Plant	167,478	232,783
Putnam County				
Pm-2	Putnam Aggregates Company, LLC	Putnam Aggreagtes Company, LLC	245,582	323,336
Pm-N	National Lime & Stone Co.	Rimer Plant	253,000	253,000
Richland County				
Rd-14	John L. Garber Materials, Inc.	John L. Garber Materials, Inc.		108,972
Rd-5	S & S Aggregate, Inc.	S & S Aggregate #14	295,016	308,443
Rd-G	John L. Garber Materials, Inc.	John L. Garber Materials, Inc.	113,656	
Rd-M1	Mid Ohio Resources	Bellville West		4,020
Ross County				
Rs-27	Shelly Materials, Inc.	Shelly Materials, Inc. - Chillicothe	141,950	124,434
Rs-C	Calvin's Hauling, Inc.	Calvin's Hauling, Inc.	1,820	1,820
Rs-D	D.G.M., Inc.	Tow Path Warwick	44,437	44,437
Rs-E	Edgington, David E.	Edgington Pit	3,736	3,736
Rs-GJ	G & J Asphalt & Material Inc.	G & J Asphalt & Materials	8,958	8,958
Rs-M	Muskingum River Gravel Co.	S & S Aggregate Plant #7	77,896	78,167
Rs-MC1	The Melvin Stone Co., LLC	Plano Road	339,529	339,529
Rs-P	Scott, Mark E.	Scott Pit	2,120	2,120
Sandusky County				
Sy-1	Martin Marietta Magnesia Specialties, LLC	Woodville Quarry	1,981,341	2,054,555
Sy-3	Carmeuse Lime, Inc.	Woodville Plant	990,038	940,163
Sy-5-1	Precision Aggregates II, LLC	Precision Aggregates III, LLC	81,608	81,608
Scioto County				
So-48	Waller Bros. Stone Co.	Inskeep Quarry 1 & 2	343	343
So-76	Waller Bros. Stone Co.	Crabtree Quarry	463	463
So-98	BCE Materials, Inc.	Cab Pit	19,303	19,303
So-DGM	D.G.M., Inc.	Tow Path Lucasville	1,985	1,985
So-Y	Youngs Sand and Gravel	Young	393	163
Seneca County				
Sa-1	Hanson Aggregates Midwest, Inc.	Flat Rock	4,070	4,070
Sa-2	Carmeuse Lime, Inc.	Maple Grove	596,683	596,683
Sa-3	Hanson Aggregates Midwest, Inc.	Bloomville	185,570	224,721
Sa-8	Heitsche North Shore Stone Quarries, LLC	North Shore Stone Quarries	116,141	117,060
Shelby County				
Shy-17	Barrett Paving Materials, Inc.	Miami River Quarry #400	650,000	577,000
Shy-SC	Barrett Paving Materials, Inc.	Hardin Sand & Gravel #396	289,000	244,000
Stark County				
Cl-P1	Phoenix Asphalt Company, Inc.	Smith Sand & Gravel #1	103,744	103,744
Sk-165	Oster Sand & Gravel, Inc.	Massillon Plant	501,460	501,460
Sk-173	Shelly Materials, Inc.	Massillon Aggregates	524,507	606,174
Sk-243	American Sand & Gravel, Inc.	Plant #4	620,530	620,530
Sk-246	American Landfill, Inc.	American Landfill, Inc.	3,054	3,054
Sk-681	Central-Allied Enterprises, Inc.	Canton Aggregate Div.	690,291	690,291
Sk-BE	The Beaver Excavating Company	Stone Products	1,249	1,249
Sk-CA1	Central-Allied Enterprises, Inc.	Central Sand & Gravel Div.	373,555	373,555
Sk-HM	HMS Construction and Rental Co.	HMS Construction and Rental Co.	66,752	66,752
Sk-HS1	Heiser Sand & Gravel Corp.	Heiser Sand & Gravel Corp.	1,762	1,762
Sk-LM	L & M Mineral Co.	Barr Farm	2,597	2,957
Sk-M	Massillon Materials, Inc.	Massillon Materials, Inc.	421,821	421,821
Sk-M1	Massillon Materials, Inc.	MMI Warmington Plant	118,670	118,670
Sk-O	Oxford Mining Co., LLC	Pero	52,877	51,377
Sk-RO	American Sand & Gravel, Inc.	Plant #6	2,235	2,235
Sk-T	Tiger Sand & Gravel, LLC	Tiger Sand & Gravel, LLC	600,000	557,346
Summit County				
St-55	Perrin Family, LLC	Perrin	11,092	11,092
St-9127	Cargill Salt	Cargill Salt	330,417	324,859
St-B	Bontrager Excavating Co.	Gilbert	645	645
Trumbull County				
Tl-L	Lafarge North America, Inc.	Lordstown Construction Recovery	64,823	64,823
Tuscarawas County				
Ts-125	Stocker Sand & Gravel Co.	Stocker Sand & Gravel Co.- Island	465,712	465,712
Ts-1517	The Belden Brick Company, LLC	Moomaw Pit	36,152	36,152
Ts-1646	The Belden Brick Company, LLC	Belden Pit	2,861	2,861
Ts-1660	Regeneration Materials	Dundee Mine	1,856	2,801
Ts-1818	Kimble Clay & Limestone Co.	Kimble Clay & Limestone Co.	713,773	713,773
Ts-1826	Soehnlen Bros. Sand & Gravel, Inc.	Soehnlen Bros. Sand & Gravel, Inc.	319,061	319,061
Ts-1841	The Belden Brick Company, LLC	Wallick Pit	92,853	36,131
Ts-1884	L & M Mineral Co.	Heil	20,567	20,567
Ts-1914	L & M Mineral Co.	Luikart	17,423	17,423
Ts-1939	The Belden Brick Company, LLC	Shanesville Pit	181,648	103,129
Ts-1960	The Belden Brick Company, LLC	Beagle Pit	13,122	13,122
Ts-1982	L & M Mineral Co.	Spring	11,554	11,554
Ts-2001	Newton Asphalt Paving, Inc.	516	59,596	59,596
Ts-2036	Oster Sand & Gravel, Inc.	Oster Sand & Gravel, Inc. - Bolivar	93,028	93,028
Ts-69	Stocker Sand & Gravel Co.	Stocker Sand & Gravel Co. - Gnaden	346,842	346,842
Ts-K1	Kimble Clay & Limestone Co.	Kimble Clay & Limestone Co.	25,631	25,631
Ts-K2	Kimble Clay & Limestone Co.	Penn-Ohio Coal Co.	51,829	51,829
Ts-K8	Oxford Mining Co., LLC	Hunt	106,139	106,139
Ts-Ox3	Oxford Mining Co., LLC	Garrett	96,076	97,076
Ts-S2	Sidco Development, Inc.	Midvale Sand & Gravel	212,771	212,771
Ts-SI	L & M Mineral Co.	Spring Industries	1,613	1,613
Ts-TR	Rosebud Mining Company	Tusky Mine	3,905	3,905
Union County				
Un-1	Shelly Materials, Inc.	York Center Quarry	418,558	417,187
Un-2	Shelly Materials, Inc.	Ostrander Quarry	1,905,179	1,863,265
Van Wert County				
Vt-1	National Lime & Stone Co.	Delphos Quarry	72,000	72,000
Vt-3	Stoneco, Inc.	Scott Quarry	377,788	453,276
Vt-7	Ridge Township Quarry	Ridge Township Quarry	198,992	198,992
Vinton County				
Jkn-S2 Vn	Sands Hill Mining, LLC	Sands Hill Rockcamp II	30,118	29,274
Vn-191 Vn	Waterloo Coal Co., Inc.	Dundas-Oreton	3,347	3,347
Vn-S7	Sands Hill Mining, LLC	Big Rock	73,838	69,945
Warren County				
Wan-38	Martin Marietta Aggregates	Franklin Gravel	24	25,598
Wan-41	Carl E. Oeder and Sons Sand & Gravel	Carl E. Oeder and Sons Sand & Gravel	400,251	419,947
Wan-46	Little Miami Sand & Gravel	Little Miami Sand & Gravel Plant #2	100	100
Wan-50	L & I Natural Resources, Inc.	L & I Pit & Mill	65,548	65,548
Wan-7	Eagle Materials, LLC	Plant #7	97,000	97,000
Wan-B	Little Miami Sand & Gravel	Little Miami Sand & Gravel Plant #1	500	500
Wan-MV	Miami View Mining Co., Ltd.	Miami View	87,375	87,375
Wan-R	Daniel L. Browning Riverside Sand & Gravel	Riverside Sand and Gravel	400	400
Washington County				
Ne-BN7	B & N Coal, Inc.	Mantel Mine	104,549	104,549
Wn-508	Briggs Sand & Gravel, Inc.	Briggs Sand & Gravel, Inc.	27,114	27,114
Wn-54	Atlas Towing Co.	Belpre Bank Run	4,612	4,612
Wn-B	Burkhart Trucking, Inc.	Triple B #2	580	580
Wn-B1	Burkhart Trucking, Inc.	Triple B #1	720	720
Wn-SM	Shelly Materials, Inc.	Reno	388,724	388,724
Wn-SS	Sharon Stone Co.	Belpre Sand & Gravel	324,962	324,962
Wayne County				
We-11	Olen Corp.	The Olen Corp. - Wooster	342,520	320,156
We-15	Zollinger Sand & Gravel Co.	Zollinger Sand & Gravel Co.	9,425	9,425
We-25	Route 3 Stone Products	Crushers Stone Products, LLC	18,580	18,580
We-7	Rupp Construction, Inc.	Rupp Construction, Inc.	100,661	100,661
We-9129	Morton International, Inc.	Morton Salt Well Field 9129	453,234	420,533
We-EA	Wood Land & Cattle Co., Ltd.	#1	229,132	229,132
We-M	Mt. Eaton Reclamation, Inc.	Mt. Eaton Reclamation, Inc.	19,367	19,367
Williams County				
Ws-21	Thiel Construction Co., Inc.	Thiel Construction Co.	618	618
Wood County				
Wd-1	Gerken Materials, Inc.	Gerken Materials, Inc.	208,417	210,057
Wd-11	Stoneco, Inc.	Portage Quarry	8,739	118,590
Wd-14	Precision Aggregates II, LLC	Precision Aggregates II, LLC	142,435	142,435
Wd-5	Custar Stone Co., Inc.	Custar Stone Co., Inc.	518,717	519,024
Wd-6	Stoneco, Inc.	Lime City Quarry	6,070	7,083
Wd-C	Cardinal Aggregates, Inc.	Cardinal Aggregates	599,100	571,800
Wd-W	Wylie and Sons Landscaping	Wylie & Sons	167,380	167,380
Wyandot County				
Wt-1	National Lime & Stone Co.	Carey Plant	4,048,000	4,048,000
Wt-3	Olen Corp.	Upper Sandusky	525,152	583,710
Wt-8	Stoneco, Inc.	Carey Quarry	2,405,444	2,190,373
Wt-J	JALIP, Ltd.	JALIP, Ltd.	5,056	5,056
Wt-K	Kirby's Sand & Gravel, Inc.	Kirby's Sand & Gravel, Inc.	117,269	117,269
Wt-N	National Lime & Stone Co.	Upper Sandusky Plant	208,000	208,000

Recommended bibliographic citation

Wright, C.E., and Stucker, J.D., 2018, Map of active mineral industry operations in Ohio, 2017: Columbus, Ohio Department of Natural Resources, Division of Geological Survey Map IM-1 2017 Edition, scale 1:500,000.