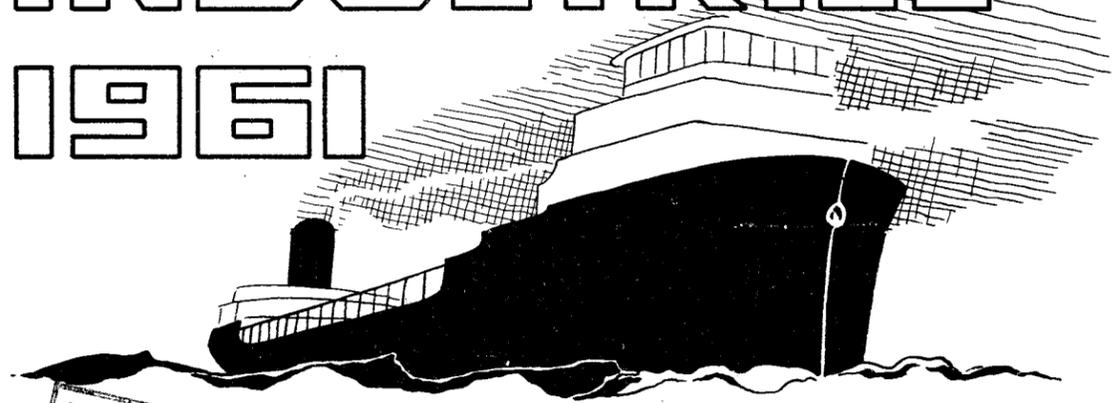


IRON & COPPER & PETROLEUM & NATURAL GAS & NATURAL GASOLINE & SALT & BRINE & SAND & GRAVEL & GLASS SAND

STATE OF MICHIGAN  
DEPARTMENT OF CONSERVATION  
GERALD E. EDDY, DIRECTOR  
GEOLOGICAL SURVEY DIVISION  
WILLIAM L. DAoust, STATE GEOLOGIST

# MICHIGAN'S MINERAL INDUSTRIES 1961



California State Division of Mines  
**RECEIVED**  
DEC 3 1977  
**LIBRARY**  
San Francisco, California



DECEMBER 1962

DUPLICATE COPY

TO: IT  
6-0  
Map Room

FROM: IT

Date \_\_\_\_\_

TE & SANDSTONE & BASALT & IRON & COPPER & PETROLEUM & NATURAL GAS & NATURAL GASOLINE & SALT & BRINE & SAND & GRAVEL & GLASS SAND & CLAY & SHALE & GYPSUM & PEAT & MARL & LIMESTONE & DOLOMITE & SANDSTONE & BASALT & IRON & COPPER & PETROLEUM & NATURAL GAS & NATURAL GASOLINE & SALT & BRINE & SAND & GRAVEL & GLASS SAND & CLAY & SHALE & GYPSUM & PEAT & MARL & LIMESTONE & DOLOMITE

\* \* \* \* \*

The STATE GEOLOGICAL SURVEY was one of the very first offices established when Michigan attained statehood in 1837. The First Legislature charged it "...to make an accurate and complete geological survey of this state, which shall be accompanied with proper maps and diagrams, and furnish a full and scientific description of its rocks, soils and minerals...and geologic productions" — work pursued to this very day.

In 1921 the several state agencies exercising independent jurisdiction over natural resources were combined into a single organization. Thus, the Geological Survey, headed by its chief administrative officer, the State Geologist, became one of the divisions of the Department of Conservation.

Assisting the Supervisor of Wells (Director of Conservation) in enforcing regulatory practices prescribed by Michigan's oil and gas conservation laws comprises the greater part of the Division's work. Some assistance is also given the State Public Utilities Commission which regulates the transmission and use of natural gas.

The Survey constitutes a bureau of continuing information and service in the field of earth science. This function is manifested through publications, maps, reference files, and personal consultation — efforts that aid materially in delineating potential areas of economic mineral deposits, and in achieving understanding of the state's geologic history.

Iron and copper mining properties are appraised annually for general property tax purposes. From time to time, appraisals of other mineral properties are made for the State Tax Commission. Evaluations of mineral venture securities being promoted in the state are prepared upon the request of the State Securities Commission.

Mineral statistics are compiled, in cooperation with the U. S. Bureau of Mines, and published annually along with information on the progress and development of the industry. Also, cooperative assistance is provided in the development of public water supplies and in conducting surface and ground water studies.

The Survey's main offices are on the 4th floor of the Mason Building, one block west of the Capitol. A branch office, serving the Upper Peninsula, is maintained at Escanaba. In addition, district offices for oil and gas regulatory work, are maintained in Lansing, Mt. Pleasant, Plainwell, and Cadillac.

\* \* \* \* \*

MICHIGAN  
MINERAL INDUSTRIES

1961

by

Harry O. Sorensen  
Emery T. Carlson

## FOREWORD

This report on the mineral industries of Michigan is a compilation of mineral production data for the year 1961. It consists of six sections: preliminary estimate of Michigan's mineral production for 1962, news items and developments in 1962, a summary of each of the mineral industries, a breakdown of mineral production by counties, a directory of mineral producers, and a picture presentation of mineral producers.

Items on 1962 developments in the various mineral fields were drawn heavily from various information sources that includes "Pit and Quarry," "Rock Products," "Mining World," "Steel," "World Oil," and other trade journals, magazines, and publications.

The Michigan Geological Survey expresses appreciation to all the mineral and mineral producers for the production information they have submitted. Without their cooperation, this report would have been impossible.

## CONTENTS

	Page
	Frontispiece
Foreword	1
Contents	3
Mineral Industry of Michigan 1962 (Preliminary)	5
News Items and Developments in 1962	7
Map: Status of Topographic Mapping in Michigan	13
Michigan Mineral Production 1961 - General Review	15
Table I.. Mineral Products of Michigan, 1961	16
Table II. Mineral Products of Michigan, 1960	17
Map: Mineral Production	18
Map: Mineral Processing	19
Metallic Minerals:	
Iron Ore	20
Map: Michigan Iron and Copper Ranges	21
Copper	22
Fuels:	
Petroleum	23
Map: Production of Petroleum and Natural Gas	24
Natural Gas	25
Natural Gas Liquids	25
Nonmetallic Minerals:	
Cement	26
Sand and Gravel	27
Map: Production of Sand and Gravel	28
Natural Salines	29
Salt	29
Stone	30
Lime	31
Clay and Shale	31
Gypsum	32
Peat	32
Marl	33
Production and Value of Minerals and Mineral Products by Counties, 1961	35
Map: Mineral Value by counties, 1961	66
Table: County Mineral Production, 1961	67
Directory of Producers of Minerals and Mineral Products	
Cement	69
Clay	70
Clay Products	70
Copper	71
Gypsum	71
Iron Ore	71
Lime	72
Marl Producers	73
Natural Salines	75
Peat	75
Salt	78
Sand and Gravel	79
Stone	89
Sulfur	92
Picture Presentation of Mineral Producers	94

(Preliminary)

Mineral production in Michigan in 1962 was valued at \$439 million, according to the Bureau of Mines, United States Department of the Interior. Value of output was lower than in 1961 (\$443 million) chiefly because of smaller shipments of iron ore and petroleum. Iron ore remained first in value, followed by cement, petroleum, and copper.

Nonmetallic minerals accounted for 57 percent of the value of mineral production, metallic minerals 29 percent, and mineral fuels 14 percent. There was little change from 1961 when nonmetals represented 56 percent, metals 29 percent, and mineral fuels 15 percent.

Production of copper in terms of recoverable metal was 4 percent larger than in 1961. Value was over 7 percent higher because the preliminary average weighted price in 1962 was 31.0¢ per pound, compared with 30.0¢ in 1961. Copper producers operated throughout the year with only minor interruptions with the exception of the Quincy Mining Co., which was closed down from May 31 to September 3 because of the collapse of a surge bin at their reclamation plant. Development of the White Pine Copper Co.'s Southwest orebody continued. The exploration shaft was completed and large-scale testing of development ore begun. Late in the year Calumet & Hecla, Inc. reported the discovery of an orebody in the Kingston Conglomerate Lode with indications of a grade of ore higher than any mined in the Michigan copper district in recent years. A crosscut from the Allouez No. 3 mine is being driven to intersect the lode.

Iron-ore shipments were estimated at 9,250,000 long tons, compared to 9,384,206 in 1961. Value of shipments decreased about \$6 million. Effective April 1, Lake Erie base prices for natural blast furnace iron ores were reduced \$.80 per ton. Growing preference for higher quality iron ores for blast-furnace feed had a considerable effect on iron-ore mining in Michigan. Shift in demand from direct-shipping ores to higher quality concentrates resulted in the closing of two underground mines during the year.

Concentrates produced from jaspilite accounted for over a quarter of iron-ore shipments in 1962. Capacity of facilities for producing and processing this material will be doubled when current and planned projects are completed. Construction of the Empire taconite plant, near Palmer, began in May. The plant will consist of crushing, grinding, concentrating, and pelletizing sections. Initial capacity of the plant, scheduled for opening late in 1963, will be 1,200,000 tons of pellets per year from low-grade magnetite. Ultimate capacity will be 3,000,000 tons of pellets a year. Hanna Mining Co. completed expansion of its Groveland operation which increased its concentration plant capacity from 700,000 to 1.5 million tons per year. These additional beneficiating facilities will be capable of producing 1.25 million tons of pellets per year. Cleveland-Cliffs Iron Co. completed the second 800,000 ton per year concentration unit at the Republic open-pit mine. A third 800,000-ton unit is under construction and scheduled for completion by the end of the year. When construction is completed, the Republic operation will have a capacity of 2.4 million tons of concentrate per year.

The Lake shipping season for Michigan ores opened at Escanaba on April 17 and closed at Marquette on December 4.

Nonmetallic minerals used for building and road construction were produced at about the same level as in 1961. Small declines in the output of

sand and gravel and stone were balanced by increased shipments of cement, clay, and gypsum. Huron Portland Cement Co. completed construction of a large rotary kiln at its Alpena plant. The largest dry process kiln in the State, with an output of 5,200 barrels per day, will increase the annual capacity of the Alpena plant from 12 million to 14 million barrels.

Salt production increased by 11 percent, while the value of chemicals derived from brines (bromine, calcium-chloride, iodine, magnesium compounds, and potash) was about 6 percent larger than in 1961.

The value of mineral fuels produced was 5 percent lower than in 1961. The decline was due to lower output of petroleum, down 1.7 million barrels from 1961. This is the first decline in petroleum production since 1958 when the development of southern Michigan oil fields reversed a downward trend. Producers of other mineral fuels (natural gas and natural gas products, and peat) reported larger outputs than in 1961.

Mineral Production in Michigan, 1962 (1)  
(Estimated)

Mineral	Thousand Short Tons (unless other- wise stated)	Value (thousands)
Cement:		
Portland - thousand 376-pound barrels	23,200	\$ 76,300
Masonry - thousand 280-pound barrels	1,500	4,400
Clays	1,925	2,100
Copper (recoverable content of ores, etc.) in short tons	73,125	45,338
Gypsum	1,300	4,900
Iron Ore (usable) thousand long tons, gross weight	9,250	81,400
Lime	1,160	15,300
Natural Gas - million cubic feet	29,600	6,500
Peat	225,000	2,335
Petroleum (crude) thousand 42-gallon barrels	17,208	50,247
Salt	4,300	33,000
Sand and Gravel	53,300	46,100
Stone	28,581	29,927
Value of items that cannot be disclosed:		
Bromine, calcium-chloride and calcium- magnesium chloride, gem stones, magnesium- compounds, natural-gas liquids, and potassium salts	-	49,385
Total Michigan (2)		\$439,469

(1) Production as measured by mine shipments, sales, or marketable production (including consumption by producers).

(2) Total adjusted to eliminate duplicating value of clays and stone.

\*Prepared December 21, 1962 by Donald F. Klyce, Mineral Economist, under the supervision of Wesley A. Grosh, Chief, Minneapolis Office of Mineral Resources, Region V, Minneapolis, Minn.

NEWS ITEMS AND DEVELOPMENTS IN 1962

IRON ORE

Growing preference for high quality iron ore for blast-furnace feed continued to shift demands from shaft mined direct-shipping ores to the higher quality concentrates of beneficiation plants supplied by surface workings. Four underground mines closed down, and tax valuation appraisals of underground mines dropped \$9,817,700 to \$68,147,000. Department valuations of mineral properties in the iron mining counties are as follows: Marquette, \$31,207,000; Iron, \$28,035,000; Gogebic, \$8,847,800; and Dickinson, \$58,000. The specific tax on beneficiation plants in Marquette and Dickinson counties amounted to \$326,858, an increase of \$108,030 over 1961.

On the Gogebic Range, North Range Mining Company had closed the Penokee Mine at Ironwood November 30, 1961, but continued to load railroad cars with stockpile iron ore through October 1962. Only two iron mines, the Geneva and Peterson, remain operative on the Gogebic Iron Range.

In the Iron River-Crystal Falls Iron District, the Cannon Mine discontinued operation September 20, 1962. Underground equipment was removed and the mine allowed to fill with water. The Tobin Mine, operated by the Republic Steel Corporation, reopened on April 1, 1962, but closed again August 24th. The Bristol, Hiawatha, Homer and Sherwood mines operated mostly on four-day weeks. The Wauseca Mine continued as a 5-day operation.

On the Marquette Iron Range, the Mather, Bunker Hill and Cliffs Shaft mines of the Cleveland-Cliffs Iron Company reduced operations because of lack of demand for underground ores. Inland Steel Company announced the Greenwood Mine would close in early 1963. The Champion Mine of the North Range Mining Company was on a 4-day schedule.

The Cleveland-Cliffs Iron Company reported the second line of the agglomerating plant at the Republic Mine in full operation. The pelletizing plant and an enlarged mill now have an annual capacity of 2.4 million tons concentrate, of which 1.6 million tons will be agglomerated at the mine with the remainder being agglomerated at the existing Eagle Mills plant.

At the Company's Empire Mine construction proceeded at a rapid pace, completion date of the 1.2 million ton initial unit being November 1, 1963. This new operation near Palmer will consist of crushing, grinding, concentrating and pelletizing sections.

The large expansion program of the Groveland beneficiation plant of the Hanna Mining Company, located near Randville, approached completion. Annual capacity will be 1,500,000 long tons of iron ore concentrate compared to existing capacity of 670,000 long tons. The original plant, completed in 1959, had two mill lines in the concentrator with space for a third. The expansion program includes installation of the equipment for the third line, remodeling the original lines, and expansion of the shop area of the service building, addition of a process water system, and construction of a pelletizing plant.

## COPPER

Annual appraisal made for tax purposes by the Geological Survey Division showed that Ontonagon County's only mine, the White Pine Mine, again carries Michigan's top copper mine valuation of \$10,010,000. Copper mines in Houghton and Keweenaw counties are appraised at \$3,385,000 and \$815,000, respectively.

Copper Range Company began experimental processing of copper ore from the new ore body located about two miles from its other mining and processing facilities. The ore body is situated on the western downfaulted side of the White Pine Fault. The development shaft had been completed at a depth of 2,290 feet in November, 1961. By September, 1962 2,400 feet of development drifting had been completed.

An exchange of mineral rights between Calumet & Hecla, Inc., and Copper Range Company enables both firms to consolidate land holdings and, therefore, undertake more aggressive mineral exploration programs on vast acreages of unexplored lands.

Late in the year Calumet & Hecla, Inc. announced discovery of a promising copper ore body. The deposit, described as a previously unknown ore body in the Kingston Conglomerate Lode (also known as the Kearsarge), was cut by eight drill holes at an inclined depth of about 500 feet. A development crosscut from the 6th level of the Allouez No. 3 mine is now being driven toward the lode.

An interested group has proposed that the State take over the old Minnesota Mine area in Ontonagon County as a historical site showing how copper was first mined. Backers said the move would preserve Indian pits where weapons, hammers and other tools were fashioned from copper by prehistoric peoples. The largest mass of copper ever produced in Michigan came from the Minnesota Mine. Reducing it into chunks small enough to get to the surface required 15 months work by 20 men.

## SILVER

White Pine Copper Company now recovers about half a million ounces of silver annually. This precious metal is stripped in the early stages of copper ore milling. Silver sells at \$1.00 an ounce; copper, at around 31 cents a pound. White Pine's copper ore assays at 34 to 37 ounces of silver per ton. After stripping, it still runs 25 ounces per ton.

## PORTLAND CEMENT

The largest dry-process kiln in Michigan started production June 19 at the Huron Portland Cement Company's plant at Alpena. The new horizontal rotary kiln, 460 feet long and from 13 to 15 feet in diameter, turns out some 5200 bbls. of cement per day - an amount said to be greater than that produced

by the eight original kilns installed in 1907. Seven concrete piers support the more than 1300-ton kiln and its auxiliary equipment. A 300 h.p. motor turns the kiln. The entire operation can be electronically controlled by one man. Annual capacity of the plant is now 14 million barrels. The new kiln culminates the first step begun two years ago, in a 15-year plant expansion program designed ultimately to increase capacity to 22,000,000 barrels a year by 1975.

In January, the General Portland Cement Company advised its 114 production employees at Cement City to look for other jobs. Only 5 workers were retained on the payroll when the plant closed in December.

Wyandotte Chemical Corporation and Huron Portland Cement Company announced they would dissolve their 60-year cement marketing agreement on January 1, 1963. Huron has been marketing Wyandotte Cement since 1903, and had operated the Wyandotte mill under lease agreement until 1926. Wyandotte will now establish its own cement marketing organization.

Approximately \$200,000 was spent at Peerless Cement Company's Port Huron plant in a modernization program involving kilns and stack. A dry dust collector at the barge-loading site cost an additional \$35,000.

In December Martin Marietta Corp. announced the purchase of the Aetna Portland Cement Company's 3 million-barrel cement plant at Bay City. The new owner intends disposing of Hetha's three concrete pipe plants located in Saginaw, Grand Rapids and Jackson.

Technical service engineers working out of Detroit, Saginaw, Lansing and Grand Rapids are bringing mobile testing equipment to customers of Huron Portland Cement Company. Laboratory facilities for aggregate analyses, designing of concrete mixtures, and making moisture, impurities, and air tests are installed in their station wagons.

A Michigan contractor, Pierson Contracting Company of Saginaw, claimed a new record for Portland Cement concrete paving. Working 40 hours between August 21 and 24, they paved 4.45 miles of road. In one 12-hour day, the firm paved 8,101 lineal feet of reinforced concrete pavement, 24 feet wide and 9 inches thick.

## LIMESTONE

A 3-day civic celebration honoring the 50th anniversary of Michigan Limestone Division and Bradley Transportation Line was held on August 3, 4 and 5 at Rogers City. The Michigan Limestone Division, known as the Michigan Limestone and Chemical Company when first founded in 1910, began operation in 1912. Purchased by Carl D. Bradley and the U. S. Steel Corporation in 1920, the Company came under the sole ownership of U. S. Steel upon Bradley's death in 1928. In 1951 the Company became a Division of the Corporation. Self-unloader vessels of the Division's Bradley Transportation Line carry limestone from here, the world's largest limestone quarry, to industrial ports around the Great Lakes.

## SAND AND GRAVEL

J. P. Burroughs & Son, Inc., Holly, producer of sand and gravel, is the surviving company in a merger with the Wallace Stone Company, Bayport. Wallace is said to be the oldest continuous producer of commercial aggregates in the state. It has a limestone quarry at Bayport, a sand and gravel plant at Hersey, and docks at Bay City, Saginaw, and Ludington.

Anderson Sand and Gravel Company of Saginaw built a ready-mix plant in Zilwaukee on the Saginaw River. The overall cost of the plant, including dredging operations for an 1100-foot dock, was estimated at about \$200,000.

## PETROLEUM

As a result of Detroit area gasoline price wars, Leonard Oil Company in July posted cuts ranging from 15 to 25 cents per barrel for Michigan crude. Leonard buys about 40% of Michigan's average 50,000 barrels per day production. In the Albion-Scipio area, largest oil producing region in the state, top crude price of \$2.95 per barrel was shaved to \$2.80. Most central state area grades were cut 25 cents to \$2.70 per barrel. St. Clair County area, producing 2,300 barrels per day, was the only district escaping cut backs. Its price stayed at \$2.80.

The State Conservation Department received a record \$310,811 for 253,109 acres of state land offered late in the summer for oil and gas leasing. Most of the land is in the northern Lower Peninsula, with about 90 percent in State forests.

RESEARCH TECHNOLOGY

The Institute of Mineral Research at Michigan College of Mining and Technology received a \$3,200 fellowship grant from Olin Mathieson Chemical Corporation for a basic study of flotation. The study will deal with measuring the effect of certain phosphate chemicals on the electrical charges that develop on mineral surfaces, such as quartz and iron oxide minerals. The long range application could possibly mean improved methods of separating iron oxides and quartz in iron ore by flotation.

LEGISLATION

## PASSED

Act. No. 22. Mineral rights. Requires purchase of land for highways to include fair price for mineral rights (will become law March, 1963).

Act. No. 158. Tax lands. Permit conveyance to lessees of mining land reverted to State. Amends Sec. 131a, Act 206, P.A. 1893. (C.L. 211. 131A).

## INTRODUCED BUT FAILED

House Bill 324. Mining. Moving of houses on company property.

House Bill 366. Mining Inspection. Duties of county mine inspectors; create safety code advisory board.

House Bill 544. Appropriations. \$25,000 to Conservation Department for mineral exploration of Gogebic County.

House Bill 708. Mineral Rights. Separate; require registration and fee.

House Bill 746. Taxation. Equalization to be by class of property; iron mining to be separate class; state equalization valuation to be entered on assessment roll for each item of property.

## INTERIM STUDY COMMITTEES

House Resolution 54. A special committee on metallic mining.

House Resolution 120. A special committee on tax laws.

## TOPOGRAPHIC MAPPING: (U. S. Geological Survey)

## STANDARD SERIES, 15-MINUTE QUADRANGLES

Reprints: Dexter, Dundee, Fowlerville.

## STANDARD SERIES, 7½-MINUTE QUADRANGLES

New Issues: Assumption, Bronson N., Bronson S., California, Camden, Coldwater W., Kinderhook, Lyons, Pigeon Pt.

Revisions: Delaware.

## 1:250,000 SERIES (1° x 2° QUADRANGLES)

New Issues: Grand Rapids (military edition), Hancock, Iron River, Marquette, Racine. These issues now afford complete coverage on Michigan.

RECENT PUBLICATIONS OF INTEREST TO THE MINERALS INDUSTRY:

"Summary of Operations, Oil and Gas Fields, 1961," by L. W. Price, et al. Geological Survey Division, Michigan Department of Conservation, Lansing 26, Michigan. Free.

"Rocks and Minerals of Michigan" by O. Floyd Poindexter, Helen M. Martin, and Steward G. Bergquist. Publication 42, Michigan Geological Survey, Lansing 26, Michigan (fourth edition revised, 1962) \$.50

"Summary of Rock Salt Deposits in the United States as Possible Storage Sites for Radioactive Waste Materials" by G. Pierce and E. I. Rich. U. S. Geological Survey Bulletin 1148 (1962) \$1.25

"Sand and Gravel Operations and Costs, Construction Aggregates Corp., Ferrysburg, Michigan," by W. A. Beck. U. S. Bureau of Mines, Information Circular 8092, (1962). Free

"Cost Accounting and Control at Calumet Division, Calumet & Hecla, Inc., Calumet, Michigan," by B. C. Peterson, E. R. Nelson, and W. A. Beck. U. S. Bureau of Mines, Information Circular 8044 (1962). \$.30

"Lake Superior Iron Resources," by D. W. Frommer and P. A. Wasson, U. S. Bureau of Mines, Report of Investigation No. 6104 (1962). Free

"Aeromagnetic Map of the Eagle Harbor Quadrangle, Keweenaw County, Michigan," by J. R. Balsey et al., U. S. Geological Survey, Map GP-314 (1962). \$.50. First of a series of overlays to be printed for the geologic maps already available for the Keweenaw area.

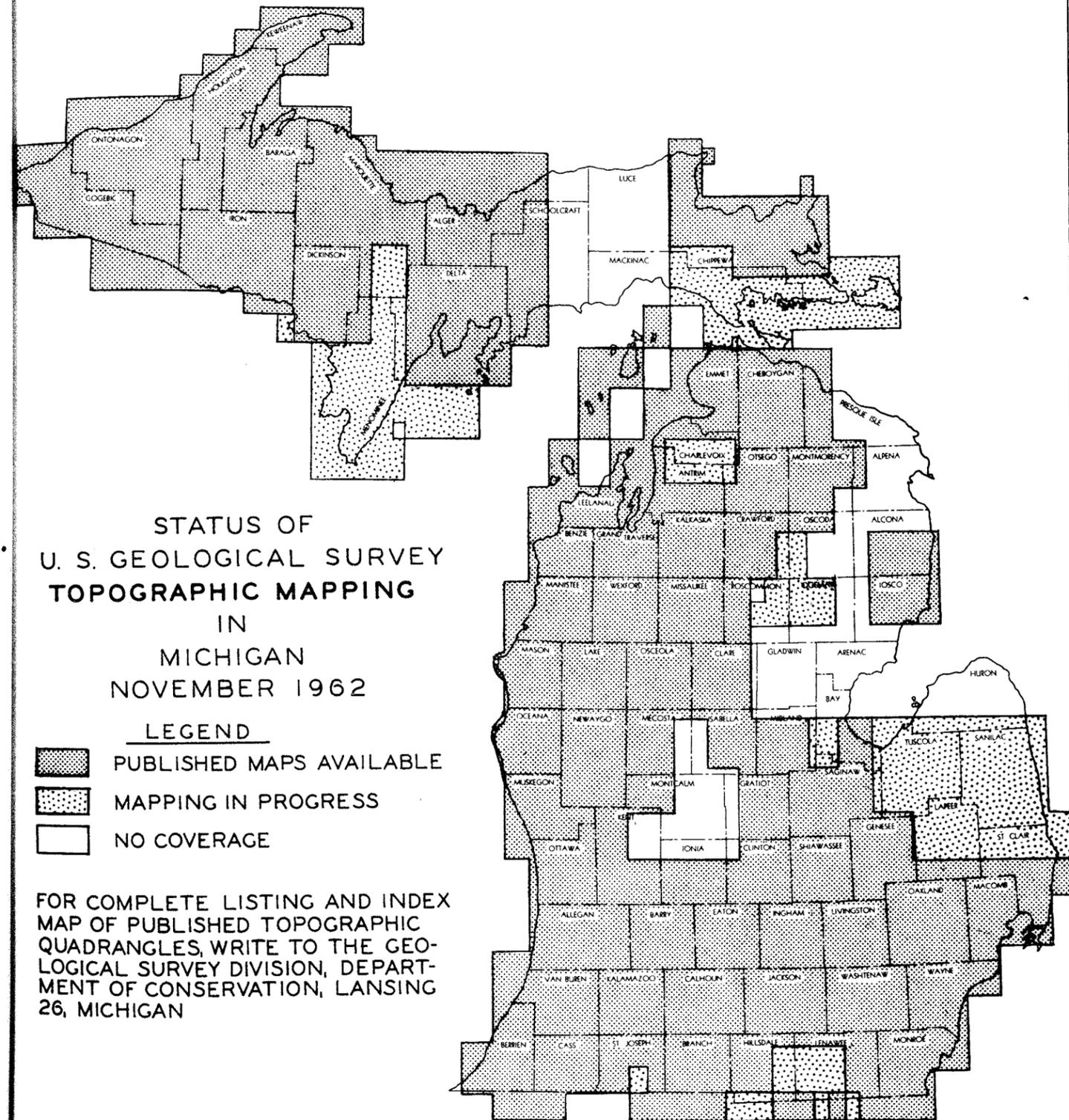
"Copper in the U. S.," by H. R. Kinkle, Jr. and N. P. Peterson, et al. U. S. Geological Survey, Mineral Investigations Resource Map MR-21 (1962). \$.75

"Electromagnetic Studies of Iron Formations in the Lake Superior Region," by F. C. Frischknecht and E. B. Ekren. Mining Engineering, v. 13, no. 13, p. 1157-62 (1962).

"Silurian Rocks of the Southern Lake Michigan Area," edited by J. H. Fisher. Annual Field Conference of the Michigan Basin Geol. Soc. Available from Librarian, Michigan Basin Geol. Soc., c/o Michigan Dept. of Conservation, Lansing 26, Michigan. (1962) \$5.00

"Structure Associated with the Albion-Scipio Oil Field Trend," by G. D. Ells. Geological Survey Division, Michigan Dept. of Conservation (1962). \$1.00

"Gypsum and Anhydrite in the U. S." by C. F. Withington, U. S. Geological Survey, Mineral Investigations Resource Map MR-33 (1962). \$.75



MICHIGAN  
MINERAL PRODUCTION  
1961  
GENERAL REVIEW

Mineral production in Michigan in 1961 was valued at \$443,263,278. The mineral output of the state exceeded the 1960 level by \$8,133,488 primarily because of increased output of fuels. Fuel value increased 23 per cent and nonmetallic value 2 per cent. Metallic value decreased 6 per cent. Iron ore was first in value, followed by cement, petroleum, and sand and gravel.

The following table gives the value of Michigan mineral production 1961.

	Value	Per Cent	Rank U.S.*	Per Cent U.S.Total*
Nonmetallics	255,163,702	57.6	4	6.73
Metallics	125,955,550	28.4	4	6.63
Fuels	62,144,026	14.0	23	0.42
<b>TOTAL</b>	<b>443,263,278</b>	<b>100.0</b>	<b>13</b>	<b>2.40</b>

\*Based on 1960 data.

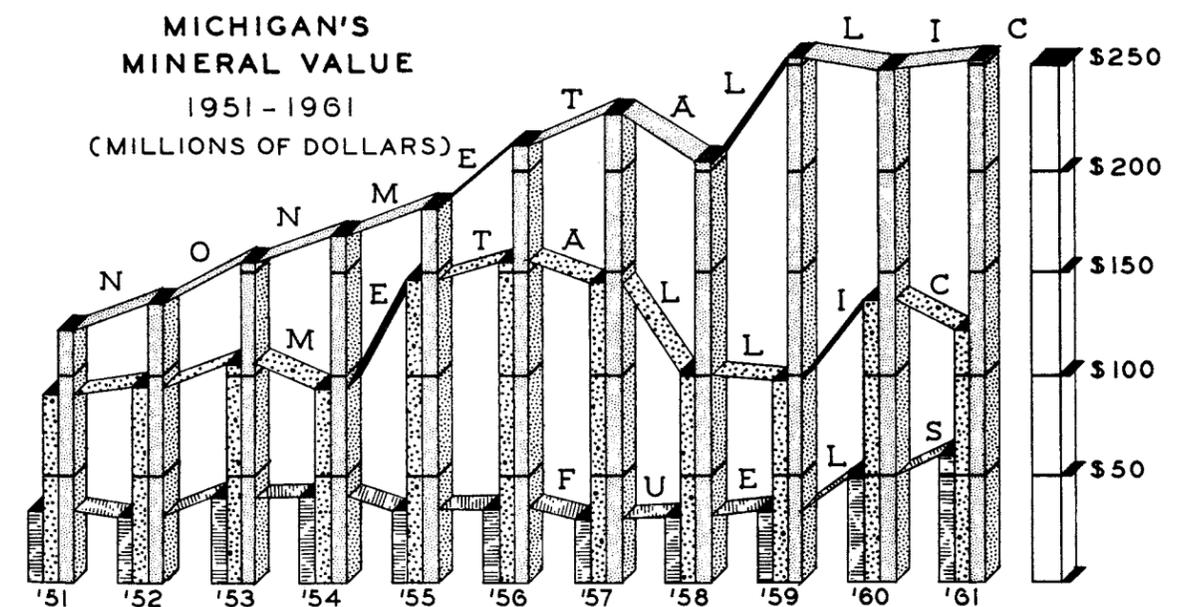


TABLE I  
MINERAL PRODUCTION OF MICHIGAN, 1961 (1)

PRODUCT	UNIT	QUANTITY	VALUE	RANK IN U.S. (2)
Iron Ore	Long Tons	9,390,197	\$ 83,375,984	2
Cement	Barrels	23,462,554	79,638,973	4
Petroleum	Barrels	18,900,947	55,247,081	17
Sand and Gravel	Short Tons	54,603,338	47,790,111	2
Natural Salines (3)			44,343,198	1
Copper	Pounds	142,268,588	42,579,566	6
Salt	Short Tons	3,885,130	31,283,571	3
Stone (4)	Short Tons	18,815,855	21,991,980	6
Lime	Short Tons	1,169,036	15,526,791	3
Clay Products			6,927,050	
Natural Gas	M. Cu. Ft.	25,044,786	5,209,662	17
Gypsum	Short Tons	1,294,619	5,095,210	2
Peat	Short Tons	209,266	2,002,310	1
Clay and Shale (5)	Short Tons	2,005,361		9
Natural Gas Liquids	Gallons	29,601,462	1,687,283	17
Marl	Short Tons	157,351	99,578	3
Miscellaneous (6)			464,930	
TOTAL			\$443,263,278	

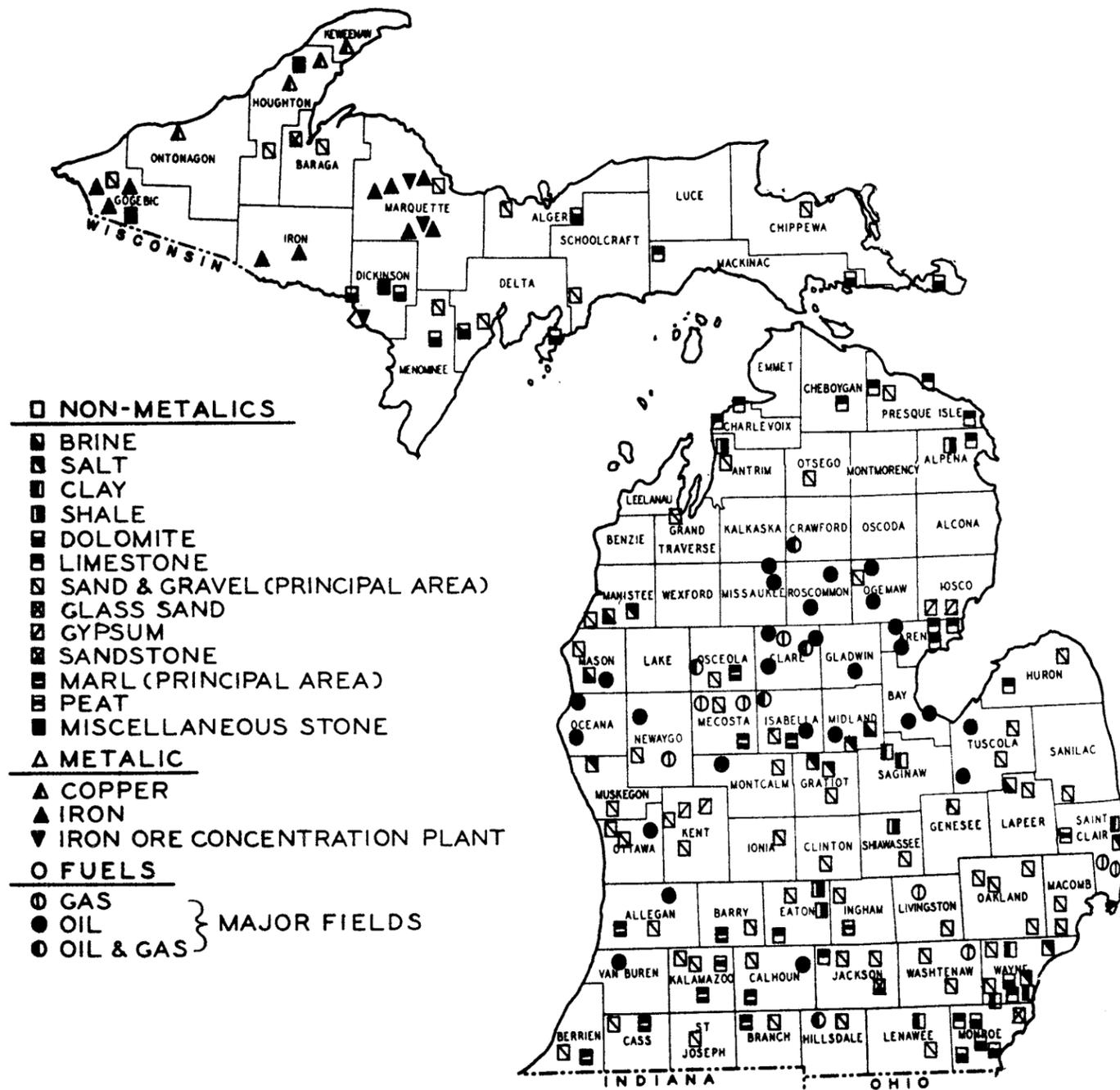
- (1) Metallic and fuel statistics compiled by Michigan Geological Survey. Nonmetallic statistics compiled in cooperation with the United States Bureau of Mines.
- (2) Based on quantity - 1960 data.
- (3) Includes bromine, magnesium compounds, calcium-magnesium chloride, potash, and iodine.
- (4) Does not include 9,762,230 short tons of limestone valued at \$8,032,098 used in the manufacture of cement and lime.
- (5) Used in the manufacture of cement and clay products.
- (6) Includes sulfur, mineral pigments, gem stones, and clay.

TABLE II  
MINERAL PRODUCTION OF MICHIGAN, 1960 (1)

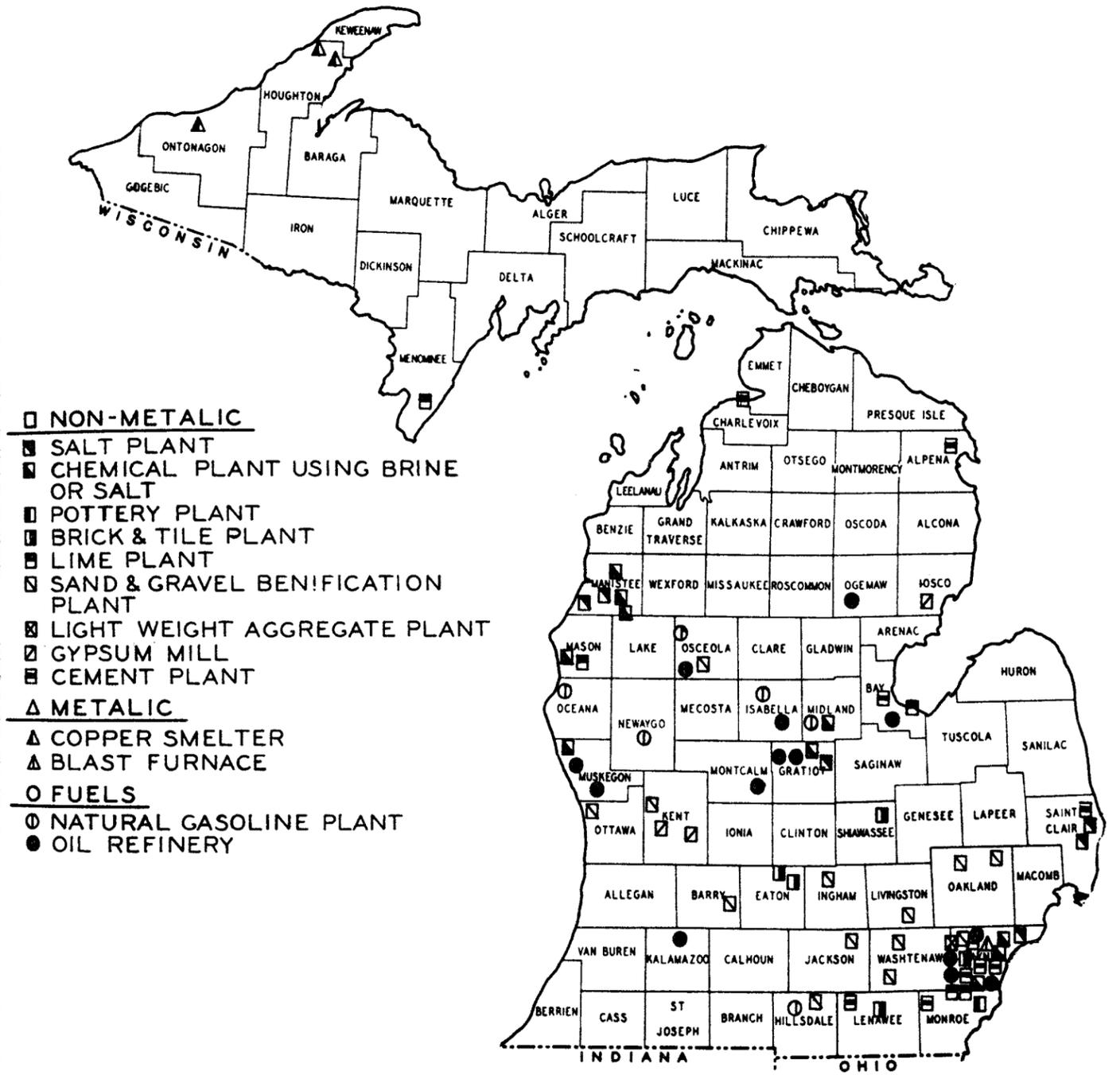
PRODUCT	UNIT	QUANTITY	VALUE	RANK IN U.S. (2)
Iron Ore	Long Tons	10,955,866	\$ 97,072,686	2
Cement	Barrels	22,361,498	77,694,087	4
Petroleum	Barrels	15,899,206	46,105,421	18
Natural Salines (3)			44,034,486	1
Sand and Gravel	Short Tons	46,910,195	39,304,400	2
Copper	Pounds	115,438,537	37,025,756	5
Salt	Short Tons	4,087,760	33,759,466	3
Stone (4)	Short Tons	21,393,405	24,316,219	6
Lime	Short Tons	1,177,431	15,730,384	4
Clay Products			6,587,345	
Gypsum	Short Tons	1,462,781	5,608,519	1
Clay and Shale (5)	Short Tons	1,989,149		9
Natural Gas	M. Cu. Ft.	19,240,168	3,839,709	17
Peat	Short Tons	214,402	2,755,245	1
Natural Gas Liquids	Gallons	12,217,120	684,159	17
Marl	Short Tons	159,345	91,173	4
Miscellaneous (6)			520,735	
TOTAL			\$435,129,790	

- (1) Metallic and fuel statistics compiled by Michigan Geological Survey. Nonmetallic statistics compiled in cooperation with the United States Bureau of Mines.
- (2) Based on quantity - 1959 data.
- (3) Includes bromine, magnesium compounds, calcium-magnesium chloride, and potash.
- (4) Does not include 9,582,765 short tons of limestone valued at \$7,775,410 used in the manufacture of cement and lime.
- (5) Used in the manufacture of cement and clay products.
- (6) Includes mineral pigments, sulfur, clay, and gem stones.

# MINERAL PRODUCTION MAP, 1961



# MINERAL PROCESSING MAP, 1961



## METALLIC MINERALS\*

## IRON ORE

Iron ore shipments totaled 9,390,197 long tons, compared to 10,955,866 in 1960. Value of shipments decreased 14 million dollars.

Lack of demand from the steel industry kept production levels below the previous year. A notable exception were producers of iron-ore concentrates who operated near capacity. In 1961 about 21 per cent of iron-ore shipments were in the form of concentrates from jaspilite, compared to 11.6 per cent in 1960. The lake shipping season for iron ore opened at Escanaba and Marquette on April 24 and closed at Marquette on December 4th.

IRON ORE SHIPMENTS BY RANGES, 1961

Range	Number of Mines		Iron Ore Shipments (Long Tons)		
	Underground	Open Pit	Direct Shipments	Siliceous	Total
Marquette	9	3	4,060,491	81,949	4,142,440
Menominee	6	1	3,885,902	-	3,885,902
Gogebic	5	-	1,361,855	-	1,361,855
TOTAL	20	4	9,308,248	81,949	9,390,197

\*Metallic statistics compiled by Michigan Geological Survey.

The Humboldt Mining Company opened a new plant in September to produce iron-ore pellets from jaspilite. The plant has an annual capacity of 650,000 tons of pellets. Work was started to increase flotation mill capacity by 50 tons per hour at the Humboldt mill. A new ball mill and related equipment was being installed for operation by 1962. With the expansion, the Humboldt mill will be able to treat 5,000 tons per day of crude ore to produce approximately 2,250 tons per day of high grade iron-ore concentrate as feed to the pelletizing plant.

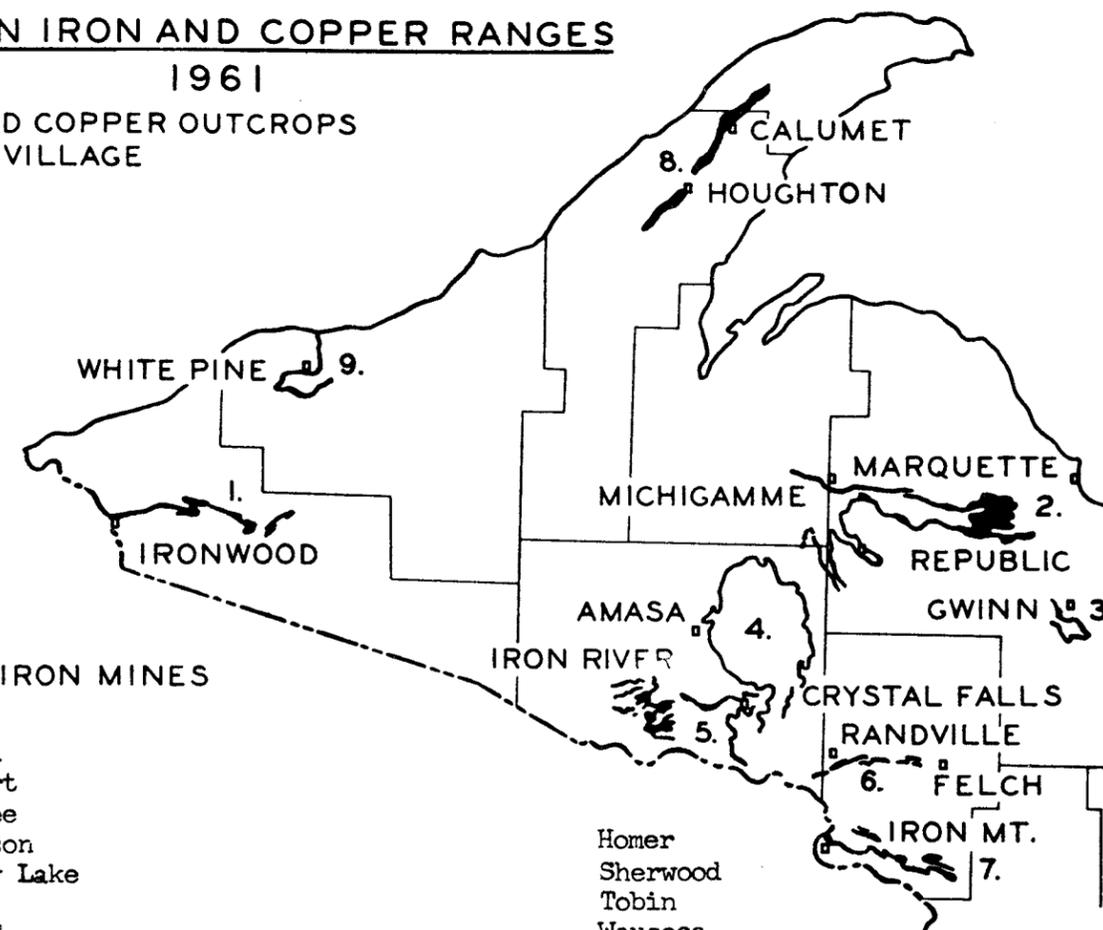
Cleveland-Cliffs planned for the construction of a third jasper concentration plant to be located just outside of Ishpeming and to be completed by 1963. The plant will have a capacity of 1 million tons per year. The property will be known as the Empire Iron Mining Company and will be an open pit. The three plants will have a combined capacity of about 3.5 million tons per year.

Early in the year the Chicago and Northwestern Railway completed a \$250,000 infra-red iron ore thawing plant near its ore dock at Escanaba. This plant is equipped with 1700 quartz lamps that can thaw iron ore, ten 70 ton railroad cars at a time, during the freezing weather of early spring and late fall.

## MICHIGAN IRON AND COPPER RANGES

1961

IRON AND COPPER OUTCROPS  
 ■ CITY OR VILLAGE



## OPERATING IRON MINES

1. GOGEBIC

Geneva  
 Newport  
 Penokee  
 Peterson  
 Sunday Lake

2. MARQUETTE

Bunker  
 Champion  
 Cliffs Shaft  
 Greenwood  
 \*Humboldt (open pit)  
 Maas  
 Mather "A"  
 Mather "B"  
 Morris  
 \*Republic (open pit)  
 \*Tilden (open pit)  
 Tracy

3. GWINN

(not active)

4. AMASA OVAL

(not active)

5. IRON RIVER - CRYSTAL FALLS

Bristol  
 Buck  
 Cannon  
 Hiawatha

6. FELCH

\*Groveland (open pit)

7. EAST MENOMINEE

(not active)

## OPERATING COPPER MINES AND RECLAMATION PLANTS

8. NATIVE COPPER

Ahmeek  
 Allouez No. 3  
 Calumet and Hecla Reclamation  
 Centennial  
 Champion  
 Osceola  
 Peninsula  
 Quincy Mining Co. Reclamation  
 Seneca No. 2

9. COPPER SULFIDE

White Pine

\* Low Grade Iron Ore Developments, open pit.  
 ○ Siliceous Iron Ore, open pit.

## IRON ORE SHIPMENTS BY RANGES

1957-1961 (Long Tons)

Year	Marquette	Menominee	Gogebic	Total	
				Quantity	Value
1957	5,992,772	4,296,567	2,837,407	13,126,746	110,605,689
1958	3,722,139	3,095,239	1,393,528	8,210,906	70,704,419
1959	3,529,949	2,477,980	1,250,786	7,258,715	62,117,507
1960	4,944,715	4,121,165	1,889,986	10,955,866	97,072,686
1961	4,142,440	3,885,902	1,361,855	9,390,197	83,375,984

## COPPER

Production of copper was 23 percent larger than in 1960, although value increased only 15 percent. Average price used for calculating the value of copper was 29.9 cents per pound in 1961 and 32.1 cents in 1960. Copper producers operated throughout the year with the exception of Copper Range Company, which shut down the Champion mine at the end of January and reopened in May.

## COPPER PRODUCTION BY COUNTIES, 1961

County	Mines	Recla- mations	Copper Production (Pounds)		
			Mines	Reclamation	Total
Houghton	4	3	12,804,849	7,370,561	20,175,410
Keweenaw	4	-	18,337,000	-	18,337,000
Ontonagon	1	-	103,756,178	-	103,756,178
TOTAL	9	3	134,898,027	7,370,561	142,268,588

Copper Range Company continued to sink a development shaft on the southwest ore body situated on the western downthrown side of the White Pine fault which cuts off the ore of the White Pine ore body. The fault moved the southwest portion of the ore downward so that the new discovery lies just over 2,000 feet below the surface. This portion of the ore body will have to be mined through a vertical shaft. The ore at White Pine is essentially sulphide of copper occurring in the Nonesuch shale.

## COPPER PRODUCTION, 1957-1961

Year	Native Copper Mines	Sands Reclamation	Sulphide Ore	Total	
				Quantity	Value
1957	36,147,820	8,937,304	68,562,019	113,647,143	33,629,326
1958	35,301,708	5,100,407	81,656,908	122,059,023	31,414,330
1959	34,167,881	9,266,420	69,647,232	113,081,533	35,245,252
1960	31,577,880	8,740,414	75,120,243	115,438,537	37,025,756
1961	31,141,849	7,370,561	103,756,178	142,268,588	42,579,566

## FUELS\*

## PETROLEUM

The value of mineral fuels produced was 14 percent of the state's total, compared to 12 percent in 1960. Petroleum production was 19 percent greater than 1960. The southern Michigan oil fields continued to supply the major part of the state's production of petroleum. During the year 18,900,948 barrels valued at \$55,247,081 were produced. At the end of 1961, 4,619 producing wells were in 45 counties. Approximately 59 percent of the total output was from Hillsdale, Calhoun, and Jackson counties.

During the year 740 wells were completed (197 oil producers, 57 gas producers, 486 dry holes). Of these completions 317 were wildcats (15 oil producers, 11 gas producers, and 291 dry holes). The remaining 423 completions were field wells (182 oil producers, 46 gas producers, and 195 dry holes). Fourteen refineries, in nine counties, processed crude oil in Michigan during 1961. The combined nominal daily capacity of all Michigan refineries is approximately 191,815 barrels.

Detailed information for oil and gas operations is recorded in "1961 Summary of Operations, Oil and Gas Field," available from Michigan Geological Survey.

\*Fuel statistics compiled by Michigan Geological Survey.

## PETROLEUM PRODUCTION AND ACCUMULATED OIL BY FORMATION, 1961

Formation	Production		Accumulated	
	Bbls.	Percent	Bbls.	Percent
Marshall	1,268	.01	66,523	.01
Berea	16,945	.09	2,172,814	.47
Traverse	1,380,081	7.30	89,100,216	19.35
Dundee	3,539,682	18.73	309,809,813	67.26
Det. River	1,748,644	9.25	34,394,701	7.47
Sal.-Niag.	916,157	4.85	1,907,139	0.41
Trenton	11,298,171	59.77	23,134,622	5.03
TOTAL	18,900,948	100.00	460,585,828	100.00

PETROLEUM AND NATURAL GAS PRODUCTION, 1957-1961

Year	Petroleum		Natural Gas	
	Barrels	Value	M. Cu. Ft.	Value
1957*	10,168,602	31,090,708	6,639,813	1,221,163
1958*	9,308,018	27,213,388	10,964,377	2,071,720
1959	10,438,608	30,518,107	15,626,227	3,045,976
1960	15,899,206	46,105,421	19,240,168	3,839,709
1961	18,900,947	55,247,081	25,044,786	5,209,662

\*Values revised to conform to Michigan Department of Revenue.

NATURAL GAS

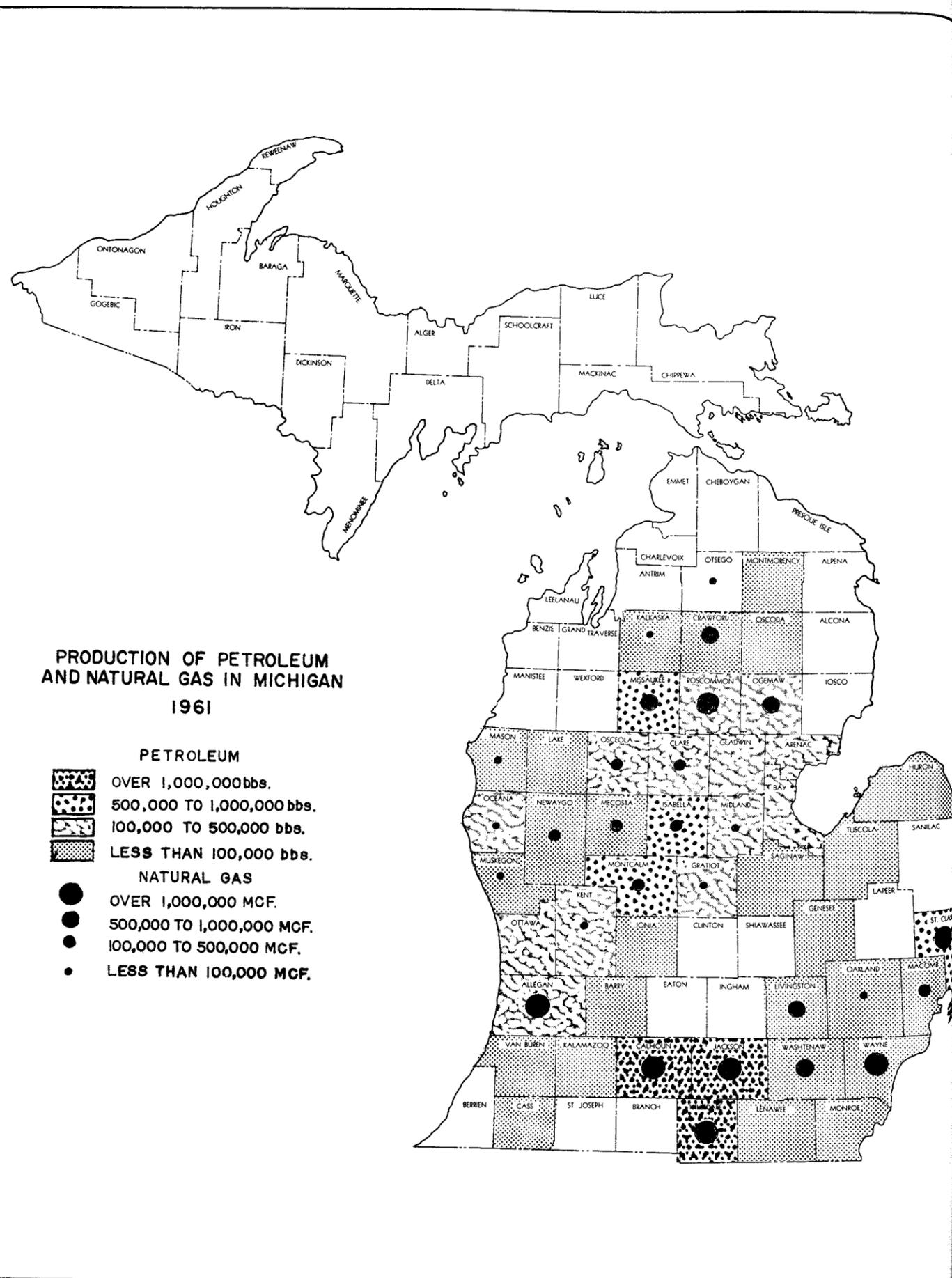
Seventy-nine percent of the natural gas produced in 1961 was from the Salina-Niagaran and Trenton-Black River formations. Natural gas production increased 30 percent to a total of 25,044,786 M. cu. ft., the largest production in history. Of this amount over 14 billion cubic feet was oil well gas. Allegan County with 25 percent of the state's total was the leading producer followed by Hillsdale, Calhoun, Jackson, and St. Clair counties, all of which produced over 2,000,000 M. cu. ft.

GAS PRODUCTION AND ACCUMULATED GAS PRODUCTION BY FORMATIONS - 1961

Formations	Production		Accumulated	
	M. Cu. Ft.	Percent	M. Cu. Ft.	Percent
Drift			8,020	.002
Stray-Marshall	616,710	2.46	210,827,850	54.79
Berea	7,357	.03	9,799,811	2.55
Antrim	25,573	.10	227,638	.06
Traverse	208,967	.83	7,757,370	2.02
Dundee-Reed City	348,084	1.39	48,643,451	12.64
Detroit River	4,054,480	16.19	28,364,601	7.37
Salina-Niagaran	9,955,240	39.75	58,883,169	15.30
Trenton-Black River	9,828,375	39.25	20,260,782	5.27
<b>TOTAL</b>	<b>25,044,786</b>	<b>100.00</b>	<b>384,772,692</b>	<b>100.00</b>

NATURAL GAS LIQUIDS - 1961

Michigan in 1961 produced from oil well gas a total of 29,601,462 gallons of natural gas liquids valued at \$1,687,283. Hillsdale County, with 89 percent of the state total, ranked first among the eight producing counties.



Year	Quantity (Gallons)	Value
1957	3,495,703	349,570
1958	3,511,671	351,167
1959	2,761,551	154,648
1960	12,217,120	684,159
1961	29,601,462	1,687,283

## NONMETALLICS

## CEMENT

Cement ranked second in value following iron ore in 1961. Cement was produced by nine plants in the state during the year and increased to 23,462,554 barrels valued at \$79,638,973. Alpena continued to be the leading producer; Wayne County ranked second. Cement was produced also in Bay, Emmet, Lenawee, Monroe, and St. Clair counties.

## RAW MATERIAL USED IN THE MANUFACTURE OF PORTLAND CEMENT

1961

Raw Material	Short Tons
Limestone	5,251,697
Clay and Shale	1,631,435
Gypsum	163,411
Other	26,864

February marked the completion of a half-million dollar expansion program by Peerless Cement Company in Grand Rapids and Schoolcraft. Peerless installed new bulk cement storage silos and a distribution system. The expansion program was designed with consideration for nearness to markets and accessibility of both rail and trucking routes. The Schoolcraft silos serve the southwestern part of Michigan and northern Indiana. The Grand Rapids expansion program was carried out with the intention of giving more expedient service to the Grand Rapids, Holland, and Muskegon markets, served by Peerless since 1900.

## CEMENT SHIPMENTS, 1957-1961

Year	Number of Plants	Shipments (Bbls.)	Value	Rank
1957	8	22,045,034	71,605,137	4
1958	8	20,911,990	70,542,501	4
1959	8	23,025,928	77,323,974	4
1960	9	22,361,498	77,694,087	4
1961	9	23,462,554	79,638,973	4

## SAND AND GRAVEL

Increased demand for materials for base course construction in the state highway program resulted in a larger sand and gravel output. Production and value of sand and gravel increased in 1961 to 54,603,338 short tons valued at \$47,790,111.

## USES OF SAND AND GRAVEL, 1961

Uses	Quantity (Short Tons)	Value	Percent of Total
Paving and road sand	6,800,955	5,576,140	12.4
Structural sand	4,427,062	3,428,149	8.1
Molding sand	1,693,079	2,497,998	3.1
Fill sand	3,388,721	1,263,288	6.3
Other sand*	958,181	2,121,597	1.8
Paving and road gravel	32,015,474	27,129,470	58.4
Structural gravel	4,380,969	5,200,477	8.1
Fill gravel	470,044	288,257	0.9
Other gravel**	468,853	284,735	0.9
TOTAL	54,603,338	47,790,111	100.0

\*Includes - Grinding and polishing, glass, railroad ballast, engine, and blast sand.

\*\*Includes - Railroad ballast, and miscellaneous gravel.

Production of sand and gravel was reported from 80 of Michigan's 83 counties. Approximately forty-six percent of the total production was from 10 counties; in order of rank - Oakland, Washtenaw, Livingston, Kent, Wayne, Tuscola, Ottawa, Macomb, Genesee, and Ingham. Twelve percent of the state total was produced in Oakland County. Each of the other counties produced more than 1,000,000 tons. About 73 percent of the state's total was reported by commercial producers and the remaining 27 percent was non-commercial production by county road commissions and other governmental agencies. Seventy-one percent of the total sand and gravel output was used in road construction and 16 percent for structural purposes.

## SAND AND GRAVEL PRODUCTION, 1957-1961

Year	Building Use	Paving and Road Use	Molding Sand	Others*	Total	
					Quantity	Value
1957	8,252,239	28,245,358	2,237,004	3,103,293	41,837,894	35,144,352
1958	7,960,834	27,653,570	1,792,447	2,464,351	39,871,202	34,615,648
1959	9,133,388	33,530,911	1,918,507	3,469,010	48,051,816	41,192,632
1960	8,642,775	31,610,214	1,699,124	4,958,082	46,910,195	39,304,400
1961	8,808,031	38,816,429	1,693,079	5,285,799	54,603,338	47,790,111

\*Includes - Grinding and polishing sand, glass sand, railroad ballast, engine sand, blast sand, and fill sand and gravel.

NATURAL SALINES

Chemicals derived from brines (bromine, calcium-chloride, magnesium compounds, potash, and iodine) were produced at about the same rate as in 1960. The value of the natural salines recovered by the chemical plants from natural brines in 1961 was \$44,343,198. The highest value was recorded for bromine, followed by magnesium compounds, calcium magnesium chloride potash and iodine.

VALUE OF NATURAL SALINES, 1957-1961

Year	Value
1957	\$37,664,914
1958	42,360,677
1959	49,286,176
1960	44,034,486
1961	44,343,198

SALT

Salt was mined at Detroit, produced from natural brines at St. Louis, Gratiot County, and produced from artificial brines in Manistee, Midland, Muskegon, St. Clair, and Wayne counties.

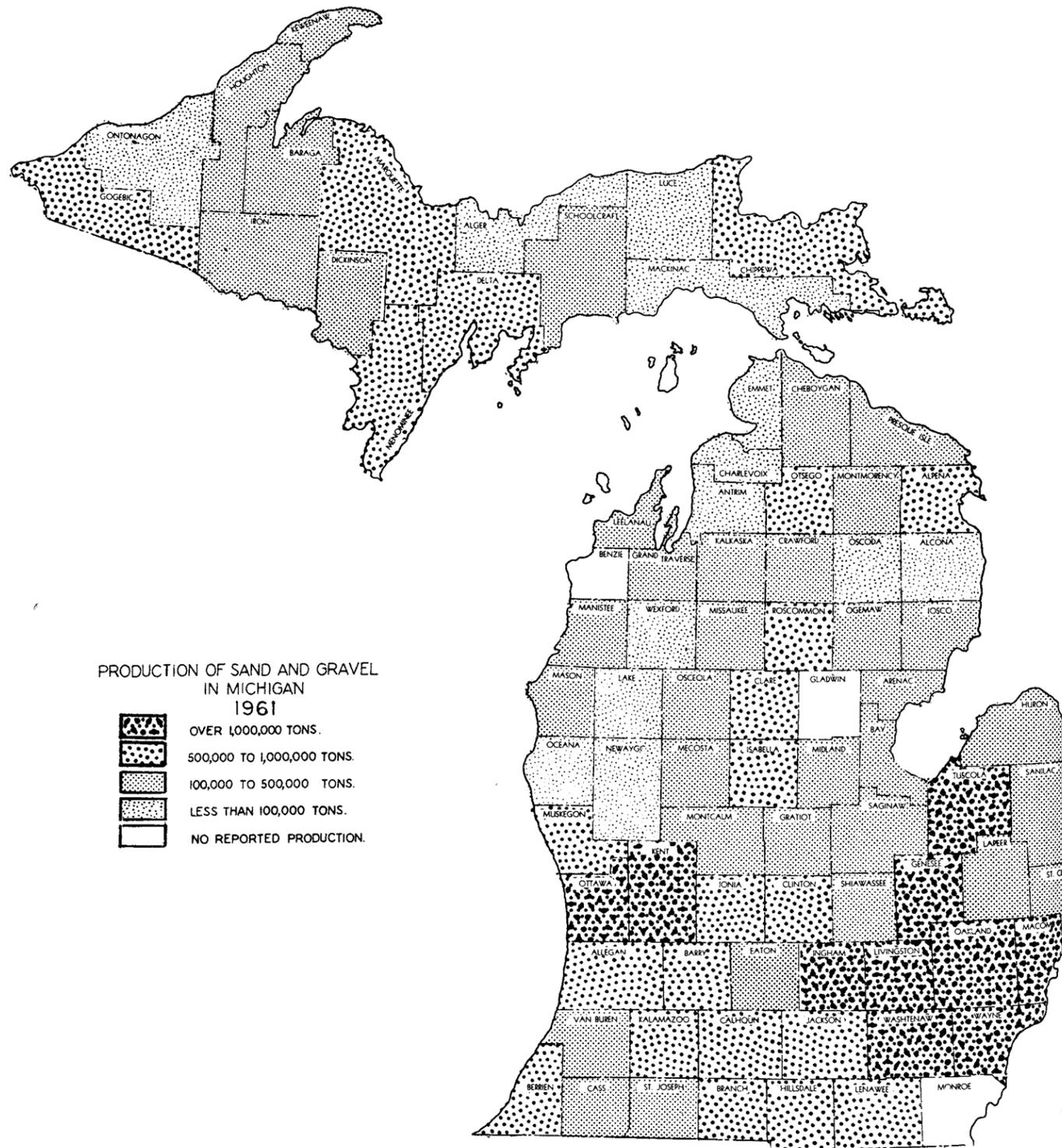
During 1961, 3,885,130 short tons of salt valued at \$31,283,571 were produced. This was a decrease of 5 percent in production and 7 percent in value below 1960. Wayne ranked first of the six counties producing salt-- followed by Midland, St. Clair, Manistee, Muskegon, and Gratiot.

Approximately 56 percent of the salt was used by chemical plants in Wayne, Midland, and Muskegon counties. Over 2.1 million tons of salt were used in the manufacture of soda ash, chlorine, and other chemicals. Approximately 23 percent of the total production was dried and evaporated salt.

The only recent significant technological development in the salt producing industry is the adoption of a unique heat-sensitive method for removing impurities and discolored salt from the mined rock salt in the solid state. The process was developed in part, and initially installed by, the International Salt Company at Detroit.

SALT PRODUCTION, 1957-1961

Year	Quantity Short Tons	Value	Percent U.S. Total	Rank in U. S.
1957	5,225,425	\$41,072,497	21.9	1
1958	4,266,688	33,018,368	19.5	1
1959	4,485,145	35,724,796	17.8	3
1960	4,087,760	33,759,466	16.0	3
1961	3,885,130	31,283,571	-	-



PRODUCTION OF SAND AND GRAVEL IN MICHIGAN 1961

- OVER 1,000,000 TONS.
- 500,000 TO 1,000,000 TONS.
- 100,000 TO 500,000 TONS.
- LESS THAN 100,000 TONS.
- NO REPORTED PRODUCTION.

## STONE

Stone production declined to 18,741,370 tons valued at \$21,749,506 because of smaller shipments of fluxstone, and stone for lime manufacture. Approximately 90 percent of the limestone and dolomite produced in Michigan in 1961 was quarried in Presque Isle, Mackinac, and Chippewa counties. Dimensional limestone was produced in Charlevoix, Eaton, Huron, and Presque Isle counties. Sandstone for rough construction, rubble, and flagging stone was quarried in Baraga, Jackson and Hillsdale counties. Basalt was crushed and used for road construction in Baraga and Houghton counties.

## STONE PRODUCTION, 1961\*

Commodity	Quantity (Short Tons)	Value
Limestone and dolomite		
Crushed	18,741,370	21,749,506
Dimensional	27,516	119,950
Sandstone-Dimensional	19,136	77,577
Basalt-Crushed	27,833	44,947
<b>TOTAL</b>	<b>18,815,855</b>	<b>21,991,980</b>

\*Does not include 9,762,230 short tons of limestone valued at \$8,032,098 used in the manufacture of cement and lime.

## USES OF CRUSHED LIMESTONE AND DOLOMITE, 1961

Uses	Percent of total	Quantity (Short Tons)	Value
Flux	56.3	10,565,419	11,855,938
Concrete & road stone	24.8	4,649,369	5,324,073
Chemical*	15.2	2,839,444	3,387,724
Agricultural	2.8	520,680	872,080
Other**	0.9	166,458	309,691
<b>TOTAL</b>	<b>100.0</b>	<b>18,741,370</b>	<b>21,749,506</b>

\*Includes: Alkali, calcium-carbide, sugar and paper.

\*\*Includes: Filler, asphalt, dust for coal mines, mineral food, railroad ballast, stone sand and others.

Drummond Dolomite opened a new quarry about five miles east of their present operation on the south shore of Drummond Island. Production from the new pit was to be gradually increased to eventually supplant the old quarry completely.

Presque Isle Corporation continued development work aimed at opening a new pit to the west of their present quarry.

Michigan Limestone Division, U. S. Steel Corporation, retired one of its self-unloader vessels, the Calcite, and replaced it by conversion of the William G. Clyde to a self-unloader vessel re-christened the Calcite II.

## USES OF CRUSHED LIMESTONE AND DOLOMITE

1957-1961 (Short Tons)

Year	Flux	Concrete + Road metal	Chemical*	Agriculture	Others**	Total	
						Quantity	Value
1957	14,624,595	4,954,171	3,574,323	586,558	921,765	24,661,412	26,974,290
1958	8,821,169	6,063,671	2,985,530	486,653	165,049	18,522,072	19,754,092
1959	10,805,705	5,311,121	3,729,465	434,116	131,526	20,411,933	22,432,225
1960	12,292,426	5,306,573	2,971,051	572,921	182,041	21,325,012	24,104,405
1961	10,565,419	4,649,369	2,839,444	520,680	166,458	18,741,370	21,749,506

\* Includes: Alkali, calcium-carbide, sugar, glass, and paper.

\*\*Includes: Filler, asphalt, dust for coal mines, mineral foods, railroad ballast, stone sand, riprap, and others.

## LIME

Production of lime decreased 1 percent to 1,169,036 tons valued at \$15,526,791 during 1961. All lime was sold or used for chemical and industrial purposes with the manufacture of alkalies the principal use. Wayne County ranked first in production.

## PRODUCTION OF LIME 1959-1961

Year	Production	Value	Rank
1959	861,808	11,747,657	4
1960	1,177,431	15,730,384	4
1961	1,169,036	15,526,791	3

## CLAY AND SHALE

Clay and shale were used for the manufacture of cement, brick, tile, pottery, and lightweight aggregate. During 1961 2,007,011 short tons of clay and shale, valued at \$2,256,061 were produced. Alpena County led in production and value with 26 percent of the state's total output, followed by Wayne, Saginaw, and Monroe counties. Approximately 78 percent of all raw clay and shale produced was used by the cement industry.

A producer of natural aggregate did some exploring and testing of glacial clays as the basic raw material for light-weight aggregate production. Though the resultant product looked good, the presence of small grains and pebbles of carbonate rock produced soft spots in the material. Since this product was not a decided improvement over light-weight aggregate materials now on the market, this program was tentatively set aside.

PRODUCTION OF CLAY AND SHALE AND CLAY PRODUCTS, 1957-1961

Year	Raw Clay and Shale Quantity (Short Tons)	Value	Value Clay Products
1957	2,031,890	2,266,599	\$6,851,113
1958	1,948,444	2,191,909	6,786,247
1959	2,050,760	2,311,917	6,745,027
1960	1,989,149	2,250,950	6,587,345
1961	2,007,011	2,256,061	6,927,050

GYPSUM

Production of gypsum decreased to 1,294,619 short tons valued at \$5,095,210. Gypsum was quarried in Arenac and Iosco counties and mined in Kent County. The raw material was processed in gypsum mills at National City; Grand Rapids; River Rouge; East Chicago, Indiana; Waukegan, Illinois; and Loraine, Ohio. Raw gypsum was also used as a retarder in cement manufacture.

Sargent Sand Company opened a gypsum quarry just east of Turner, Arenac County. Production during the year largely went to cement plants for use in the manufacture of cement.

GYPSUM PRODUCTION, 1957-1961

Year	Quantity (Short Tons)	Value	Percent of U.S.	Rank in U.S.
1957	1,385,952	4,822,810	15	1
1958	1,330,889	4,924,431	14	2
1959	1,721,453	6,595,256	16	1
1960	1,462,781	5,608,519	15	2
1961	1,294,619	5,095,210	-	-

PEAT

Production of peat decreased in 1961 to 209,266 tons valued at \$2,002,310. Michigan, with 29 producing companies, was the chief producing state, having 40 percent of the total production and nearly one-quarter of the active plants.

Most of the peat produced was used for general soil improvement purposes. Small amounts were used in pottery, in mixed fertilizers, for packing flowers for shipments, and for several miscellaneous uses.

PRODUCTION OF PEAT, 1957-1961

Year	Quantity (Short Tons)	Value	Percent of U.S.	Rank in U.S.
1957	80,271	1,406,195	25.4	1
1958	107,342	1,683,980	32.7	1
1959	191,661	2,356,656	45.7	1
1960	214,402	2,755,245	45.5	1
1961	209,266	2,002,310	40.0	1

MARL

Marl production decreased to 157,351 tons valued at \$99,578 in 1961. Commercial marl production was reported in 16 counties during 1961. Calhoun County ranked first, followed by Kalamazoo, Cass, Allegan, and Barry. These counties produced approximately 80 percent of the state output. All marl produced in the state is used for agricultural purposes. This material when added to the soil plays the same important role as does commercial lime and may be employed in much the same manner.

MARL PRODUCTION, 1957-1961

Year	Quantity (Short Tons)	Value	Rank in U.S.
1957	137,020	70,635	1
1958	230,105	130,231	4
1959	201,387	118,240	4
1960	159,345	91,173	4
1961	157,351	99,578	4

PRODUCTION AND VALUE  
OF  
MINERALS AND MINERAL PRODUCTS  
BY COUNTIES

1961

All counties with the exception of Benzie reported mineral production for 1961. Wayne, Marquette, Alpena, Ontonagon, Midland, and Iron counties led all others in value, contributing 46 per cent of the state's total.

The quantity and value of mineral production are given on a commodity basis by counties, where possible. However, in some cases, to avoid disclosure of individual company operations, the county total may be only given or the county combined with others under undistributed at the end of the county breakdown. The value of clay and shale used in manufacture of cement and clay products and the value of limestone used in the manufacture of cement and lime are not included in county totals to avoid duplications of values. The number in parentheses, following the county name, indicates the county's rank in the state in value of mineral production. Figures in parentheses, following a mineral resource, show the rank of the county in production.

All indicated tonnage is in short tons (2,000 lbs.) with the exception of iron ore, which is reported in long tons (2,240 lbs.). Mineral producers contributing production data for 1961 are listed, by county, below production data. Location of the operation, when known, is given by section, township and range, or nearest city to operation.

	<u>Quantity</u>	<u>Value</u>
ALCONA (71)		
Sand and gravel	220,909 tons	\$ 172,773
Alcona Co. Rd. Comm.	NE SW 7 25N 6E SE SW 7 26N 9E NW NE 11 26N 9E	Sand and gravel
Mich. State Hwy. Dept.		Sand and gravel
ALGER (75)		
Sand and gravel	140,210 tons	\$ 143,345
Alger Co. Rd. Comm.	6 47N 20W	Sand and gravel
Mich. State Hwy. Dept.		Sand and gravel
I. L. Whitehead Co.		Sand and gravel

		<u>Quantity</u>	<u>Value</u>
ALLEGAN (31)			
Natural gas (1st, 25%)		6,326,584 M.cu.ft.	\$ 1,308,583
Sand and gravel		670,100 tons	644,977
Petroleum		200,423 bbls.	585,235
Marl (4th, 9%)		13,808 tons	8,180
Total value			<u>\$ 2,546,975</u>
Allegan Co. Rd. Comm. Cleo L. Arndt	Douglas (3½ mi. E. on 130th St.) NW 23 3N 16W	Sand and gravel Marl	
Gerald Arnsman Bernard Damveld Kenneth Harter Huitt and Son Mich. State Hwy. Dept. Emil Pavlak Pickitt and Schreur	Allegan (1½ mi. N.) 22 4N 12W Otsego NE SW 9 2N 13W NE SW 12 2N 12W NW SE 5 1N 14W SW NE 34 3N 13W NE 1 3N 13W	Sand and gravel Marl Marl Sand and gravel Sand and gravel Marl Sand and gravel	
Harold O. Voss Ben Waanders West Shore Constr. Co. Inc.	Fennville NE NE 20 2N 13W 19 1N 14W SE SE 10 2N 16W	Sand and gravel Sand and gravel Sand and gravel	
John G. Yerington	Channel Pit	Sand and gravel	

## ALPENA (3)

Cement (1st), Stone, Sand and Gravel, Shale (1st)			
Gilliland Gravel Co. Huron Portland Cement Co.	W½ NW 13 32N 8E NE 30 31N 7E 24 31N 8E 13 31N 8E	Sand and gravel Shale Cement Limestone-crushed	
Percy McKinnon Mich. State Hwy. Dept.	NE SE 23 32N 8E SE SW 33 30N 6E	Sand and gravel Sand and gravel	

## ANTRIM (82)

Sand and gravel Shale		52,776 tons	\$ 22,397
Antrim Co. Rd. Comm.	NE NE 16 31N 6W SE 26 32N 8W NE SW 36 32N 9W	Sand and gravel	
Penn-Dixie Portland Cement Co.	SE 23 32N 8W	Shale	

		<u>Quantity</u>	<u>Value</u>
ARENAC (43)			
Petroleum		415,932 bbls.	\$ 1,214,521
Stone		143,891 tons	193,527
Sand and gravel		105,108 tons	54,058
Total value			<u>\$ 1,462,106</u>
Arenac Co. Rd. Comm.	NW 5 19N 7E	Limestone	
Bay Co. Rd. Comm.	34 20N 5E	Sand and gravel	
Eastman Gravel Pit	SW NW 36 19N 5E	Limestone	
Iosco Co. Rd. Comm.	SW 24 20N 7E	Sand and gravel	
Mich. State Hwy. Dept.		Limestone	
		Sand and gravel	
BARAGA (74)			
Sand and gravel, Stone			\$ 148,121
Baraga Co. Rd. Comm.	NW 23 51N 31W	Sand and gravel	
Mich. State Hwy. Dept.		Sand and gravel	
Superior Natural Red Stone Quarry	2 52N 33W	Sandstone	
BARRY (56)			
Sand and gravel, Petroleum Marl (5th)			\$ 521,292
Barry Co. Rd. Comm.	SW NW 25 2N 10W SW NW 29 3N 9W SE NW 4 4N 9W	Sand and gravel	
Bender Gravel Co.	SW NW 12 3N 9W	Sand and gravel	
Cole Gravel Co.	6 & 7 4N 10W	Sand and gravel	
William Currier	6 4N 10W	Marl	
E. R. Hamilton	13 2N 7W	Marl	
Ionia Co. Rd. Comm.		Sand and gravel	
Nashville Gravel Co.	14 & 15 2N 7W	Sand and gravel	
Pickitt and Schreur Inc.		Sand and gravel	
West Shore Const. Co.	16 4N 10W	Sand and gravel	

		<u>Quantity</u>	<u>Value</u>
BAY (17)			
Cement, Petroleum (9th, 3%)			
Sand and gravel, Lime			\$ 9,654,808
Aetna Portland Cement Co.	NE 14 14N 5E		Cement
Mich. State Hwy. Dept.			Sand and gravel
Monitor Sugar Co. Div.	SE NE 31 14N 5E		Lime
BENZIE (83)			
BERRIEN (48)			
Sand and gravel		980,935 tons	\$ 978,633
Marl		5,547 tons	2,685
Total value			\$ 981,318
Arrowhead Silica Corp.	Bridgman		Sand
J. V. Burkett	St. Joseph		Sand and gravel
Dale Douthett	Three Oaks		Sand and gravel
Gridley Gravel Co.	Berrien Springs		Sand and gravel
Ireland & Lester Co.	NW NW 24 4S 19W		Sand and gravel
Kiell Sand & Gravel	Niles (2 mi. N. on U.S. 31)		Sand and gravel
Martel Marl Co.	24 8S 20W		Marl
Martin Bros. Marl Co.	21 8S 20W		Marl
Mich. State Hwy. Dept.			Sand and gravel
Manley Sand Div.	5 & 8 6S 19W		Sand
Producers Core Sand Corp.	36 6S 20W		Sand
Rynd Gravel Co.	NE 27 3S 17W		Sand and gravel
John G. Yerington	NW SW 27 3S 17W		Sand and gravel
	NW SE 28 6S 18W		
	NE SW 36 7S 18W		
	Popovich Pit		
BRANCH (55)			
Sand and gravel, Marl			\$ 529,343
Branch Co. Rd. Comm.	NE SE 19 6S 6W		Sand and gravel
Hayward Dry Marl	14 5S 5W		Marl
Mich. State Hwy. Dept.			Sand and gravel
H. Stucky Co.	SW SE 4 6S 6W		Sand and gravel
Thompson Gravel Co.	Coldwater		Sand and gravel
Woodward Bldg. Mtls.	NW SW 21 6S 6W		Sand and gravel

		<u>Quantity</u>	<u>Value</u>
CALHOUN (10)			
Petroleum (2nd, 21%)		3,925,041 bbls.	\$ 11,517,365
Natural gas (3rd, 12%)		2,941,531 M.cu.ft.	617,722
Sand and gravel		756,815 tons	600,100
Marl (1st, 29%)		45,592 tons	27,355
Total value			\$ 12,762,542
Carl Avery	2 pits near Marshall		Marl
Battle Creek Gravel Co.	SW NE 15 1S 7W		Sand and gravel
	NW SE 33 1S 8W		
	SW SE 4 2S 8W		
Calhoun Co. Rd. Comm.			Sand and gravel
Case Bros.	Mutch Pit		Marl
	Smith Pit		
	Turtle Lake Pit		
Cole Bros.	SW NE 33 1S 8W		Sand and gravel
Emil Combs	NE SE 18 4S 5W		Sand and gravel
Mich. State Hwy. Dept.			Sand and gravel
Pickitt and Schreur	Various pits		Sand and gravel
Harlan Spoor	23 4S 7W		Marl
CASS (60)			
Sand and gravel		374,770 tons	\$ 317,800
Petroleum		20,286 bbls.	59,235
Marl (3rd, 11%)		16,758 tons	10,055
Total value			\$ 387,090
LaVerne Brizendine	Dowagiac		Marl
Cass Co. Rd. Comm.	NE NE 20 5S 13W		Sand and gravel
	NE SE 16 6S 15W		
	SE SE 17 6S 13W		
Mich. State Hwy. Dept.			Sand and gravel
Nieb Concrete Products Co.	NW NW 15 7S 16W		Sand and gravel
Piphers Marl Service	Long Lake, Porter Twp.		Marl
Poehlman and Sons	12 & 13 7S 16W		Marl
Walkden Gravel Co.	SE SE 35 5S 16W		Sand and gravel
John G. Yerington	NE SW 28 7S 13W		Sand and gravel
	Springfield Pit		
	Silver Creek Pit		

	<u>Quantity</u>	<u>Value</u>
CHARLEVOIX (79)		
Sand and gravel	58,304 tons	\$ 39,925
Stone	10,365 tons	22,975
Total value		\$ 62,900
Charlevoix Co. Rd. Comm.		Sand and gravel
Charlevoix Lime and Stone Co.	29 34N 8W	Limestone-crushed
Michigan State Hwy. Dept.		Sand and gravel

	<u>Quantity</u>	<u>Value</u>
CHEBOYGAN (69)		
Sand and gravel	319,410 tons	\$ 188,636
Stone	47,675 tons	31,800
Total value		\$ 220,436
Afton Stone and Lime Co.	SE 25 35N 2W	Limestone-crushed
Cheboygan Co. Rd. Comm.	SW SW 7 35N 2W	Sand and gravel
	SW NE 29 34N 2W	
	SW SW 14 37N 1W	
Hugh H. Mason and Sons	SE SW 32 33N 3W	Sand and gravel
Mich. State Hwy. Dept.		Sand and gravel

	<u>Quantity</u>	<u>Value</u>
CHIPPEWA (25)		
Stone (3rd), Sand and gravel		\$ 3,871,963
Chippewa Co. Rd. Comm.	NW SE 15 45N 2W	Sand and gravel
	E 1/2 6 46N 5W	
	NW NW 25 47N 1W	
Drummond Dolomite, Inc.	E SW 36 42N 5E	Dolomite-crushed
Mich. State Hwy. Dept.		Sand and gravel
I. L. Whitehead Co.	N NW 23 45N 2W	Sand and gravel
	E 6 46N 5W	
	NE 17 46N 7W	
	NE SE 35 47N 1W	
	SE SW 14 47N 1W	
	NW NW 28 47N 3W	

	<u>Quantity</u>	<u>Value</u>
CLARE (35)		
Petroleum (10th, 2%)	447,318 bbls.	\$ 1,306,169
Sand and gravel	644,292 tons	525,547
Natural gas	212,514 M.cu.ft.	44,628
Total value		\$ 1,876,344
Mich. State Hwy. Dept.		Sand and gravel

	<u>Quantity</u>	<u>Value</u>
CLINTON (59)		
Sand and gravel	676,730 tons	\$ 419,187
Shale		
American Vitrified Prod.	SE 34 5N 4W	Shale
Boichot Concrete Products	NE SW 3 5N 2W	Sand and gravel
Clinton Co. Rd. Comm.		Sand and gravel
Gillette Sand & Gravel		Sand and gravel
Grand Ledge Clay Products	SE 34 5N 4W	Shale
Michigan State Hwy. Dept.		Sand and gravel
Pickitt and Schreur		Sand and gravel
Walling Gravel Co.	SE NW 34 8N 2W	Sand and gravel

	<u>Quantity</u>	<u>Value</u>
CRAWFORD (47)		
Petroleum	148,056 bbls.	\$ 432,324
Sand and gravel	380,443 tons	376,592
Natural gas	733,688 M.cu.ft.	154,074
Natural gas liquids (2nd, 7%)	1,992,000 gals.	113,544
Total value		\$ 1,076,534
Crawford Co. Rd. Comm.	SE NW 27 25N 2W	Sand and gravel
	NW SW 9 25N 3W	
	SW SW 27 26N 3W	
	S SW 28 26N 3W	
O. E. Gooding and Co.	SW NE 36 26N 2W	Sand and gravel
	NE SW 24 28N 2W	
Mich. State Hwy. Dept.		Sand and gravel

		<u>Quantity</u>	<u>Value</u>
DELTA (57)			
Sand and gravel		589,346 tons	\$ 466,162
Stone		3,376 tons	6,200
Total value			\$ 472,362
Bark River Const. Co.			
Bichler Bros.	NE 12 39N 23W		Sand and gravel
	SW 1 39N 23W		Sand and gravel
Cloverland Milling and Supply Co.	NE SE 16 40N 22W		Limestone-crushed
Days River Sand and Gravel Co.	15 40N 22W		Sand and gravel
Delta Co. Rd. Comm.	SE SW 10 37N 24W		Sand and gravel
	NE NE 5 38N 24W		
	SW NE 12 39N 23W		
	NE SW 24 40N 20W		
	NW NE 28 40N 23W		
Mich. State Hwy. Dept.			Sand and gravel
DICKINSON (18)			
Iron ore		775,938 tons	\$ 6,851,532
Sand and gravel		177,225 tons	180,903
Stone		6,922 tons	95,336
Total value			\$ 7,127,771
Dickinson Co. Rd. Comm.	SE NW 7 41N 27W		Sand and gravel
	C SE 20 42N 28W		
	SE 28 42N 30W		
M. A. Hanna Co.			
Groveland Open Pit	31 42N 29W		Iron ore
City Eng.-Iron Mountain			Sand and gravel
The Metro-Nite Co.	NW 35 42N 28W		Dolomite-crushed
Mich. State Hwy. Dept.			Sand and gravel
Superior Rock Prod. Co.	SW SE 30 42N 29W		Dolomite-crushed
EATON (39)			
Clay products (3rd), Sand and gravel, Stone, Shale			\$ 1,711,566
American Vitrified Prod.	NE 10 4N 4W		Tile
Cheney Limestone Co.	NE 29 1N 6W		Limestone-crushed
Donar Asphalt Inc.			Sand and gravel
Eaton Co. Rd. Comm.	SE NW 5 1N 3W		Sand and gravel
	NE NE 19 1N 5W		
	SE SW 32 2N 3W		
	SE NW 23 4N 6W		

		<u>Quantity</u>	<u>Value</u>
EATON (contd.)			
Grand Ledge Clay Prod.	SE 3 4N 6W		Shale-tile
Mich. State Hwy. Dept.			Sand and gravel
Vermontville Gravel Co.	W NE 20 3N 6W		Sand and gravel
West Shore Constr. Co.	Alloaffer Pit		Sand and gravel
	Hosey Pit		
	Johnson Pit		
	Peck Pit		
	Redfield Pit		
	Smith Pit		
	Towe Pit		
Whittum Gravel Co.	NE SE 5 1N 3W		Sand and gravel
EMMET (16)			
Cement, Stone			
Sand and gravel			
Michigan State Hwy. Dept.			Sand and gravel
Penn-Dixie Cement Corp.	2 34N 6W		Limestone-crushed
			Portland cement
GENESEE (52)			
Sand and gravel (9th, 2%)		1,074,582 tons	\$ 836,914
Petroleum		3,582 bbls.	10,459
Total value			\$ 847,373
Ferguson Excavating Co.	Richfield Twp.		Sand and gravel
Kurtz Gravel Co.	SE SW 1 8N 7E		Sand and gravel
	SE NE 20 8N 7E		
A. F. Leffler and Sons	NW NW 2 9N 8E		Sand and gravel
Mathews Gravel Co.	SW SE 1 8N 7E		Sand and gravel
Otisville Stone Co.	S NE 13 9N 8E		Sand and gravel
John Post and Sons	SW NW 7 6N 5E		Sand and gravel
Saginaw Core Sand Co.	SE NE 28 9N 8E		Sand and gravel
Justus Snellenberger	SE 16 9N 5E		Sand and gravel
GLADWIN (44)			
Petroleum		426,950 bbls.	\$ 1,246,694

		Quantity	Value
GOGEBIC (12)			
Iron (3rd, 15%)		1,361,855 tons	\$ 11,957,087
Sand and gravel		670,389 tons	<u>638,944</u>
			\$ 12,596,031
Gogebic Co. Rd. Comm.	NE SW 17 45N 38W SW SE 13 45N 39W SE SW 8 48N 46W	Sand and gravel	
Ironwood City Hwy. Dept.	NE SE 34 47N 47W	Sand and gravel	
Lake Superior Gravel Co.	NW SW 31 48N 46W NW SW 33 48N 46W	Sand and gravel	
Mich. State Hwy. Dept.		Sand and gravel	
Pickands Mather and Co.		Iron ore	
Geneva-Davis Mine	18,19 47N 46W		
Newport-Bonnie Mine	24 47N 46W		
Peterson Mine	16,17 47N 46W		

## GRAND TRAVERSE (78)

Sand and gravel			
Michigan State Hwy. Dept.		Sand and gravel	
Paul C. Miller		Sand and gravel	
Wysong Gravel Co.	4 27N 11W NW NE 36 28N 11W	Sand and gravel	

## GRATIOT (22)

Bromine (2nd), Salt, Calcium-magnesium chloride (3rd), Magnesium compounds, Petroleum, Sand and gravel, Natural gas			
Gratiot Co. Rd. Comm.	NW SE 34 11N 4W NW NW 18 12N 4W	Sand and gravel	
Michigan Chemical Corp.	St. Louis	Bromine, calcium-magnesium chloride, magnesium compounds, salt	
Michigan State Hwy. Dept.		Sand and gravel	
G. C. Nelson	North Star	Sand and gravel	
North Star Gravel Co.	NW SE 22 10N 2W NE SE 34 11N 4W	Sand and gravel	
P. and B. Gravel Co.	9 10N 1W	Sand and gravel	

		Quantity	Value
HILLSDALE (8)			
Petroleum (1st, 22%)		4,177,780 bbls.	\$ 12,199,118
Natural gas liquids (1st, 89%)		26,296,614 gals.	1,498,907
Natural gas (2nd, 12%)		2,978,349 M.cu.ft.	625,453
Sand and gravel		788,204 tons	606,498
Marl, Stone			<u>1,874</u>
Total value			\$ 14,931,850
Bundy Hill Gravel Co.	7 & 8 5S 1W	Sand and gravel	
Canary Hill Stone Quarry	West of Hillsdale	Sandstone	
H. Eckley	8S 2W	Sand and gravel	
Hillsdale Co. Rd. Comm.	NE NE 15 5S 2W NE SE 11 5S 3W SE NW 22 5S 4W SE SE 9 6S 3W NE NW 9 6S 3W SW SE 5 7S 2W NW NE 10 7S 2W SW SE 25 7S 2W NW NE 33 7S 3W SE SE 1 7S 4W SE NE 30 7S 4W	Sand and gravel	
John Hess	14 5S 3W	Marl	
Hoover Bros.	NE SE 23 8S 2W	Sand and gravel	
Jackson Sand and Gravel	Reading	Sand and gravel	
Mich. State Hwy. Dept.		Sand and gravel	
Northwest Material, Inc.	SW 23 8S 2W	Sand and gravel	
Art Russell's Concrete	14 6S 3W	Sand and gravel	
Lowell W. Stukey	6S 4W	Marl	

## HOUGHTON (20)

Copper (2nd, 14%)		20,175,410 lbs.	\$ 6,038,298
Sand and gravel, Stone			<u>195,367</u>
Total value			\$ 6,233,665
Calumet and Hecla, Inc.		Copper	
Centennial Mine	18 56N 32W		
Osceola Mine	23 56N 33W		
Reclamation	Hubbell		
Copper Range Co.		Copper	
Champion Mine	31 54N 34W		
Hocking Construction Co.	Baltic Pit	Sand and gravel	
Houghton Co. Rd. Comm.	SE 15 54N 34W NW NE 17 56N 32W	Trap rock-crushed	
	Arcadian Mine		
	SE NW 17 53N 35W	Sand and gravel	
	NE NW 5 56N 32W		
	NW NW 12 56N 33W		

		<u>Quantity</u>	<u>Value</u>
HOUGHTON (contd.)			
Limestone Mountain Co. Mich. State Hwy. Dept. Quincy Mining Co. Reclamation	SW 24 51N 35W Mason	Dolomite-crushed Sand and gravel  Copper	
HURON (53)			
Stone (5th), Sand and gravel, Petroleum			\$ 834,940
Huron Co. Rd. Comm. Ed Murawski Vollmer Sand and Gravel Wagner Sand and Gravel	SE SE 17 16N 13E NW SW 31 17N 14E NE SE 20 15N 11E SE NE 20 16N 13E NE SW 27 16N 15E SW SW 22 16N 15E	Sand and gravel Sand and gravel Sand and gravel Sand and gravel	
The Wallace Stone Co.	SW NE 5 16N 10E	Limestone-crushed and dimensional	
INGHAM (50)			
Sand and gravel (10th, 2%) Lime Total value		1,040,505 tons 6,684 tons	\$ 829,500 <u>122,756</u> \$ 952,256
Donar Asphalt, Inc. Board of Water and Light Central Michigan Sand and Gravel Cheney Gravel Co. Fisher Supply Co. Ford and Co. Ingham Co. Rd. Comm.	Lansing Lansing SE SW 24 3N 2W SW SE 11 3N 2W SE 19 3N 2W NE SW 16 1N 2W E SW 21 1N 2W NE NE 10 2N 1E SE NE 15 2N 1E SE NW 14 2N 2E NE NW 26 2N 2E SW SE 7 2N 2W SW SE 34 3N 1E SW SE 25 3N 2E NE NW 25 3N 2W SE SE 30 3N 2W NW 36 3N 2W	Sand and gravel Lime  Sand and gravel Sand and gravel Sand and gravel Sand and gravel Sand and gravel	
S. E. Ketchum and Sons Mason Gravel Co.	25 2N 2W	Sand and gravel Sand and gravel	

		<u>Quantity</u>	<u>Value</u>
INGHAM (contd.)			
Mich. State Hwy. Dept. Scarlett Gravel Co. Skyway Sand and Gravel Co. Ronald Weaver	25 3N 2W 11 1N 2W 14, 34 2N 1E 9 2N 1W 7, 24, 25, 34 2N 2W 25, 35 3N 2W	Sand and gravel Sand and gravel Sand and gravel Sand and gravel	
West Lansing Gravel Co.	NE 10 4N 2W	Sand and gravel	
IONIA (61)			
Sand and gravel Petroleum		517,114 tons 1,101 bbls.	\$ 341,337 <u>3,215</u> \$ 344,552
Ionia Co. Rd. Comm.	NE SW 18 5N 5W SE NE 24 5N 7W SE SE 8 6N 5W NW SW 28 6N 5W NE SW 15 7N 5W SW SE 21 7N 6W NW NE 33 7N 7W 30 7N 5W	Sand and gravel	
Harold L. Martin Mich. State Hwy. Dept. Pickitt and Schreur, Inc.		Sand and gravel Sand and gravel Sand and gravel	
IOSCO (24)			
Gypsum (1st), Sand and gravel			
Michigan State Hwy. Dept. National Gypsum Co. U. S. Gypsum Co.	35 22N 6E 27 21N 7E	Sand and gravel Gypsum Gypsum	

	<u>Quantity</u>	<u>Value</u>
IRON (6)		
Iron (2nd, 33%)	3,109,964 tons	\$ 24,040,022
Sand and gravel	189,986 tons	<u>173,471</u>
Total value		\$ 24,213,493
M. A. Hanna Co.		
Cannon Mine	36 43N 35W	Iron ore
Hiawatha Mine 1 and 2	35, 36 43N 35W	
Homer Mine	22, 23 43N 35W	
Wauseca-Aronson Mine	23 43N 35W	
Inland Steel Co.		
Bristol Mine	19, 20 43N 32W	Iron ore
Sherwood Mine	23 43N 35W	
Iron County Rd. Comm.		
	SW SW 29 42N 32W	Sand and gravel
	NW NE 18 43N 32W	
	SW SW 7 43N 35W	
	SE NW 1 43N 36W	
	SW SE 8 44N 33W	
	SE NW 15 44N 33W	
	NE NE 22 44N 33W	
	NE NW 36 44N 34W	
	NW NW 10 44N 37W	
	NW SW 20 45N 33W	
Mich. State Hwy. Dept.		
Republic Steel Corp.		Sand and gravel
Tobin-Columbia Mine	30, 31 43N 32W	Iron ore

## ISABELLA (32)

Petroleum (6th, 3%)	620,944 bbls.	\$ 1,813,156
Sand and gravel	564,330 tons	402,395
Natural gas	268,547 M.cu.ft.	56,395
Natural gas liquids, Marl		<u>18,949</u>
Total value		\$ 2,290,895
Gatehouse Bros.		
	35 15N 6W	Marl
George Hubscher and Son		
	22 14N 5W	Sand and gravel
	7 16N 3W	
Michigan State Hwy. Dept.		
Pickitt and Schreur, Inc.		Sand and gravel
C. Utterback	35 15N 6W	Sand and gravel

	<u>Quantity</u>	<u>Value</u>
JACKSON (14)		
Petroleum (3rd, 17%)	3,123,574 bbls.	\$ 9,120,836
Natural gas (4th, 10%)	2,375,011 M.cu.ft.	488,752
Sand and gravel	782,852 tons	479,524
Stone, Marl	47,186 tons	<u>138,115</u>
Total value		\$10,227,227
Barnes and Brothers		
Jackson Co. Rd. Comm.	SE SE 29 1S 1W	Marl
Jeffery Limestone Co.	SE 30 2S 2W	Sand and gravel
Klumpp Bros. Gravel Co.	SE SE 1 2S 2E	Limestone-crushed
Mich. State Hwy. Dept.		Sand and gravel
Original Sandstone Quarry	NE NW 6 4S 2E	Sand and gravel
Palmer Sand and Gravel	SW NW 8 3S 1E	Sandstone
Ray Sandstone Quarry	NE NW 6 4S 2E	Sand and gravel
Star Sandstone Co.	SW SE 31 3S 2E	Sandstone
Gordon D. Stevick	NW SE 26 2S 1W	Sandstone
	SE SW 17 3S 2E	Sand and gravel
Willson Bros.		
	Rives Junction	Sand and gravel

## KALAMAZOO (54)

Sand and gravel	773,654 tons	\$ 771,888
Marl (2nd, 24%)	38,025 tons	28,446
Petroleum	635 bbls.	<u>1,854</u>
Total value		\$ 802,188
American Aggregates Corp.		
Lee Bertrand	SW NW 15 1S 11W	Sand and gravel
Ray Coville	Paw Paw Lake	Marl
Concrete Products and Building Supplies	18 3S 9W	Marl
David Flora	NE SE 8 2S 11W	Sand and gravel
Gravel Producers, Inc.	Schoolcraft	Marl
Lawrence Hayward	Portage and Cooper Twps.	Sand and gravel
Kalamazoo Co. Rd. Comm.	Brady and Climax Twps.	Marl
Jack Koetje	NE NW 34 1S 11W	Sand and gravel
Mich. State Hwy. Dept.	Kalamazoo	Sand and gravel
Pickitt and Schreur	NE NW 34 1S 11W	Sand and gravel
Fred Runz	30 4S 10W	Marl

	<u>Quantity</u>	<u>Value</u>
KALKASKA (68)		
Sand and gravel	133,126 tons	\$ 148,328
Petroleum	25,910 bbls.	75,657
Natural gas	73,014 M.cu.ft.	15,333
Total value		\$ 239,318
Kalkaska Co. Rd. Comm.	25N 8W	Sand and gravel
Mich. State Hwy. Dept.		Sand and gravel

KENT (27)		
Sand and gravel (4th, 5%), Gypsum (2nd), Petroleum, Natural gas		\$ 3,425,279
Bestwall Gypsum Co.	SW 34 7N 12W	Gypsum
Coit Ave. Gravel Co.	29 8N 11W	Sand and gravel
Cross and White		Sand and gravel
Ed DeVries and Sons	NE 22 7N 12W	Sand and gravel
Grand Rapids Gravel Co.	SE NW 9 6N 12W	Sand and gravel
	NE NW 16 6N 12W	
	SW SW 33 7N 12W	
Grand Rapids Gypsum Co.	NE 34 7N 12W	Gypsum
Kent Co. Rd. Comm.	NE SW 27 5N 10W	Sand and gravel
	SE SE 20 6N 9W	
	NE NE 32 7N 9W	
	SE SW 11 10N 12W	
Mich. State Hwy. Dept.		Sand and gravel
Northeast Gravel Co.	NE SW 24 8N 11W	Sand and gravel
Pickitt and Schreur	NE NW 25 5N 12W	Sand and gravel
	NE NE 10 6N 9W	
	SW SE 23 8N 11W	
Riverside Sand and Gravel Co.	SE SE 33 7N 12W	Sand and gravel
West Shore Constr. Co.	N NE 20 6N 12W	Sand and gravel
	Fenske Pit	

KEWEENAW (23)		
Copper (3rd, 13%)	18,337,000 lbs.	\$ 5,488,081
Sand and gravel	120,943 tons	73,156
Total value		\$ 5,561,237
Calumet and Hecla, Inc.		Copper
Ahmeek No. 2	28 57N 32W	
Allouez No. 3	32 57N 32W	
Peninsula	28 57N 32W	
Seneca No. 2	27 57N 32W	
Keweenaw Co. Rd. Comm.		Sand and gravel

	<u>Quantity</u>	<u>Value</u>
LAKE (76)		
Sand and gravel	78,486 tons	\$ 74,835
Petroleum	7,013 bbls.	20,478
Total value		\$ 95,313
Lake Co. Rd. Comm.	SE NE 23 18N 13W	Sand and gravel
	NW SE 10 20N 14W	
Mich. State Hwy. Dept.		Sand and gravel

LAPEER (58)		
Sand and gravel, Calcium-magnesium chloride		\$ 457,054
O. E. Gooding and Co.		Sand and gravel
Lapeer Co. Rd. Comm.	NE SE 11 6N 10E	Sand and gravel
	NE NW 1 8N 9E	
	SE SW 30 8N 10E	
	SW SE 16 9N 10E	
	NW SW 28 9N 12E	
Mich. State Hwy. Dept.		Sand and gravel
Vern Molesworth		Sand and gravel
Pine Sand and Gravel	NW 12 7N 10E	Sand and gravel
Wilkinson Chemical Co.	28 10N 10E	Calcium-magnesium chloride

LEELANAU (72)		
Sand and gravel	203,836 tons	\$ 159,773
Leelanau Co. Rd. Comm.	NE NW 16 28N 13W	Sand and gravel
	SW SE 12 29N 13W	
	SW NW 19 32N 10W	
Mich. State Hwy. Dept.		Sand and gravel

LENAWEE (28)		
Cement, Sand and gravel, Clay products, Petroleum, Clay		\$ 3,199,165
Adrian Sand and Gravel	Adrian	Sand and gravel
Brady's Sand and Gravel	SE 32 5S 4E	Sand and gravel
Comfort Brick and Tile Co.	SW 2 6S 5E	Clay and tile

		Quantity	Value
LENAWEE (contd.)			
O. E. Gooding and Co.	SW NE 13 8S 1E		Sand and gravel
Lenawee Co. Rd. Comm.	SE SE 4 6S 4E		Sand and gravel
Michigan State Hwy. Dept.			Sand and gravel
Peninsular Portland Cement Corp.	NE 5 5S 1E		Portland cement
	SW 5 7S 1E		Clay
Stamm Bros. Gravel Co.	SW NE 19 7S 3E		Sand and gravel
Tecumseh Gravel Co.	SW NE 4 6S 4E		Sand and gravel
Tecumseh Materials Div.	NE SE 4 6S 4E		Sand and gravel
LIVINGSTON (29)			
Sand and gravel (3rd, 5%)		2,682,940 tons	\$ 2,665,562
Natural gas		697,139 M.cu.ft.	146,399
Petroleum		109 bbls.	318
Total value			\$ 2,812,279
American Aggregates Corp.	NE NE 11 1N 6E		Sand and gravel
	NE 24 2N 6E		
D. and J. Gravel Co.	SW SW 32 3N 4E		Sand and gravel
Van E. Dailey	Howell		Sand and gravel
Mich. State Hwy. Dept.			Sand and gravel
LUCE (80)			
Sand and gravel		42,210 tons	\$ 31,235
Luce Co. Rd. Comm.	SW SE 11 45N 10W		Sand and gravel
MACKINAC (19)			
Stone (2nd), Sand and gravel			\$ 6,237,874
Inland Lime and Stone Co.	6 42N 12W		Limestone-crushed
Mackinac Aggregates Corp.	7 & 8 42N 1W		Sand and gravel
Mike Mangene	SE NE 24 42N 1E		Sand and gravel
Michigan Limestone Div.			
U.S. Steel Corp.	10 42N 1E		Dolomite-crushed
Michigan State Hwy. Dept.			Sand and gravel
Soo Line R.R. Co.			Sand and gravel

		Quantity	Value
MACOMB (49)			
Sand and gravel (8th, 2%)		1,078,084 tons	\$ 876,758
Natural gas		443,613 M.cu.ft.	93,159
Petroleum		637 bbls.	1,860
Total value			\$ 971,777
Advance Bldg. Materials Inc.	NE NW 8 4N 12E		Sand and gravel
	SE NE 31 3N 12E		
American Aggregates	NW NW 4 4N 12E		Sand and gravel
Great Lakes Gravel Co.	NW NW 31 3N 12E		Sand and gravel
Hygrade Sand & Gravel Co.	NE 8 4N 12E		Sand and gravel
Macomb Co. Rd. Comm.	8 4N 12E		Sand and gravel
	22 5N 12E		
	19 5N 13E		
Ray Malow	SE SE 5 4N 12E		Sand and gravel
Macomb Sand & Gravel	SW SW 30 3N 12E		Sand and gravel
Maortens Sand and Gravel	SE NE 30 3N 12E		Sand and gravel
	SE SW 5 4N 12E		
Louis Marsack and Sons	NW NW 3 1N 13E		Sand and gravel
Michigan State Hwy. Dept.			Sand and gravel
Morgan Sand and Gravel	30 3N 12E		Sand and gravel
S. K. Rogers	21 3N 14E		Sand and gravel
Rosteck Contractors, Inc.			Sand and gravel
Smith Sand and Gravel Co.	NW SE 8 4N 12E		Sand and gravel
Underwood Sand & Gravel Co.	19 3N 12E		Sand and gravel
MANISTEE (11)			
Salt (4th), Magnesium Comp. (2nd), Bromine (3rd), Sand and gravel, Calcium-magnesium chloride			\$ 12,712,178
Frank L. Gauthier	23 23N 16W		Sand and gravel
Gronlund Gravel Co.	SE 7 23N 14W		Sand and gravel
	SW NE 7 23N 14W		
Great Lakes Chemical Corp.	SE SW 18 21N 16W		Bromine
Manistee Co. Rd. Comm.	6 & 7 23N 14W		Sand and gravel
Manistee Salt Works	Manistee		Salt
Michigan Chemical Corp.	NW 7 21N 16W		Bromine
Mich. State Hwy. Dept.			Sand and gravel
Morton Chemical Co.	12 21N 7W		Bromine, Magnesium compounds, Calcium-magnesium chloride
Morton Salt Co.	Manistee		Salt
Sand Products Corp.	N $\frac{1}{2}$ 11 21N 17W		Sand
Sievert Bros.	Manistee		Sand and gravel
Standard Lime and Cement Co.	SE 18 21N 16W		Magnesium compounds

	<u>Quantity</u>	<u>Value</u>	
MARQUETTE (2)			
Iron (1st, 44%)	4,142,440 tons	\$ 40,527,343	
Sand and gravel	557,749 tons	<u>515,092</u>	
		\$ 41,042,435	
The Cleveland Cliffs Iron Co.			
Athens-Bunker Hill Mine	6 47N 26W		Iron ore
Cliffs Shaft Mine	3, 9, 10 47N 27W		
Humbolt Open Pit	10, 15 47N 29W		
Maas Mine	31 48N 26W		
Mather "A" Mine	2 47N 27W		
Mather "B" Mine	1 47N 27W		
Republic Open Pit	7 46N 29W		
Tilden Open Pit	26 47N 27W		
Kocking Constr. Co.			Sand and gravel
Kenneth Hogins and Sons			Sand and gravel
Inland Steel Co.			Iron ore
Greenwood Mine	14, 23 47N 28W		
City of Ishpeming			Sand and gravel
Jones and Laughlin Steel Corp.			Iron ore
Tracy Mine	7, 8 48N 26W		
Lake Superior and Ishpeming R. R.			Sand and gravel
A. Lindberg & Sons, Inc.	SE SE 8 47N 24W		Sand and gravel
	NW NW 17 47N 25W		
	NE NW 5 47N 26W		
	SE SE 36 48N 28W		
City Eng. Marquette			Sand and gravel
Marquette Co. Rd. Comm.	NE NW 1 45N 23W		Sand and gravel
	SE SW 36 46N 23W		
	NW SE 4 47N 29W		
Michigan State Hwy. Dept.			Sand and gravel
North Range Mining Co.			Iron ore
Champion	31 48N 29W		
MASON (15)			
Calcium-magnesium chloride (1st), Lime (2nd), Magnesium compounds (3rd), Bromine, Sand and gravel, Petroleum, Natural gas liquids, Natural gas			
The Dow Chemical Co.	NW SW 23 18N 18W		Bromine, Calcium- magnesium chloride, Magnesium compounds, Lime
Harbison-Walker Refractories	NE SE 23 18N 18W		Magnesium compounds

	<u>Quantity</u>	<u>Value</u>	
MASON (contd.)			
Mason Co. Rd. Comm.	SW SW 11 18N 15W		Sand and gravel
	18 18N 16W		
Michigan State Hwy. Dept.			Sand and gravel
Sargent Sand Co.	SW 33 19N 18W		Sand
MECOSTA (66)			
Sand and gravel	169,273 tons	\$ 125,223	
Petroleum	37,743 bbls.	110,210	
Natural gas	165,672 M.cu.ft.	34,791	
Marl	3,789 tons	<u>2,273</u>	
Total value		\$ 272,497	
Central Concrete Products Co. Inc.			
Frost and Cumming Marl Co.	17 13N 7W		Sand and gravel
Mecosta Co. Rd. Comm.	NE NE 32 15N 9W		Marl
Michigan Concrete Prod. Co. Big Rapids			Sand and gravel
Michigan State Hwy. Dept.			Sand and gravel
Orville Truman	13N 8W		Marl
MENOMINEE (45)			
Lime, Sand and gravel			\$ 1,133,396
Menominee Co. Rd. Comm.	SE NE 33 35N 26W		Sand and gravel
	NE NE 9 39N 25W		
Michigan State Hwy. Dept.			Sand and gravel
Limestone Products Div., Northwestern-Hanna Fuel Co. Menominee			Lime
Walsh Sand and Gravel Co.	SW SW 21 33N 27W		Sand and gravel

		<u>Quantity</u>	<u>Value</u>
MIDLAND (5)			
Bromine (1st), Magnesium compounds (1st), Calcium-magnesium chloride (2nd), Salt (2nd), Petroleum, Sand and gravel, Potash, Iodine, Natural gas, Natural gas liquids			
The Dow Chemical Co.	Midland	Bromine, Calcium-magnesium chloride,	
		Potash, Magnesium compounds, Salt	
Fisher Sand & Gravel Co.	NE NW 19 14N 2E	Sand and gravel	
Mich. State Hwy. Dept.		Sand and gravel	
Saginaw Core Sand Co.	SE 21 13N 2E	Sand	
-----			
MISSAUKEE (30)			
Petroleum (5th), Sand and gravel, Natural gas, Natural gas liquids			
			\$ 2,592,490
Mich. State Hwy. Dept.		Sand and gravel	
Pickitt and Schreur, Inc.		Sand and gravel	
-----			
MONROE (9)			
Cement (3rd), Clay products (2nd), Stone (4th), Petroleum, Clay (4th)			
			\$ 13,622,087
Dundee Cement Co.	7 6S 7E	Cement	
		Limestone	
		Clay	
The France Stone Co.	SE 7 7S 9E	Dolomite-crushed	
Maybee Stone Co.	29 5S 8E	Dolomite-crushed	
Michigan Stone Co.	SW 25 8S 6E	Dolomite-crushed	
Monroe Co. Rd. Comm.	SW 13 6S 7E	Dolomite-crushed	
F.W. Ritter Sons Co. Inc.	SE 16 5S 10E	Clay-pottery	

		<u>Quantity</u>	<u>Value</u>
MONTCALM (36)			
Petroleum (7th, 3%)			
		528,200 bbls.	\$ 1,542,344
		302,332 tons	207,500
		383,582 M.cu.ft.	80,552
		394,196 gals.	22,469
			<u>\$ 1,852,865</u>
Total value			
Mich. State Hwy. Dept.			Sand and gravel
Paul C. Miller			Sand and gravel
Montcalm Co. Rd. Comm.	NE SE 13 10N 6W		Sand and gravel
	NE NE 24 10N 6W		
	NE NW 10 11N 8W		
	SE SE 8 12N 5W		
Frank H. Stoerk	Pierson		Sand and gravel
-----			
MONTMORENCY (70)			
Sand and gravel			
		202,228 tons	\$ 208,042
Petroleum			
		80 bbls.	234
			<u>\$ 208,276</u>
Total value			
Michigan State Hwy. Dept.			Sand and gravel
Montmorency Co. Rd. Comm.	SW NW 27 30N 1E		Sand and gravel
	NE NW 28 30N 1E		
	NE NW 9 32N 4E		
	11 30N 4E		
-----			
MUSKEGON (37)			
Sand and gravel, Salt, Petroleum, Natural gas			
			\$ 1,822,272
Frank Alfredson			Marl
Hooker Electro-Chemical Co.	NE 31 12N 17W		Salt
Mich. State Hwy. Dept.			Sand and gravel
Paul C. Miller			Sand and gravel
Muskegon Co. Rd. Comm.			Sand
Nugent Sand Co.	3 9N 17W		Sand
Sand Products Corp.	E $\frac{1}{2}$ 28 10N 17W		Sand
Whitehall Gravel Co.			Sand and gravel

		<u>Quantity</u>	<u>Value</u>
NEWAYGO (65)			
Petroleum, Sand and gravel, Natural gas, Marl			\$ 279,447
Rich. Cousineaw	Paris	Sand and gravel	
Grant Tufa Lime Co.	29 11N 11W	Marl	
K. and V. Gravel Co.	NE NW 21 12N 12W	Sand and gravel	
Mich. State Hwy. Dept.		Sand and gravel	
OAKLAND (21)			
Sand and gravel (1st, 12%)		6,813,281 tons	\$ 5,951,477
Petroleum		9,624 bbls.	28,102
Natural gas		1,143 M.cu.ft.	240
Total value			\$ 5,979,819
A. and R. Gravel Co.	Pontiac	Sand and gravel	
American Aggregates Corp.	NE NW 22 5N 10E	Sand and gravel	
Floyd Beardslee	S $\frac{1}{2}$ SE 2 2N 10E	Sand and gravel	
	NE NW 11 2N 10E		
Ray Betham and Son	South Lyon	Sand and gravel	
Foley and Beardslee	NW NW 7 3N 9E	Sand and gravel	
	SW SE 36 4N 8E		
Faulkender Sand & Gravel, Inc.		Sand and gravel	
J. Gladstone and Son	NE 8 3N 11E	Sand and gravel	
O. E. Gooding and Co.	NW NE 33 2N 7E	Sand and gravel	
	NE SE 34 2N 7E		
	SW SW 32 5N 9E		
Highland Aggregate Co.	Holly	Sand and gravel	
Holly Mfg. & Mining Co.	NE SE 32 5N 8E	Sand and gravel	
John R. Sand & Gravel Co.	SE 4 4N 10E	Sand and gravel	
Kemler Bros.	SW SW 36 5N 11E	Sand and gravel	
Koenig Coal and Supply Co.	NW 1 3N 8E	Sand and gravel	
	SW SE 24 5N 10E		
Mich. State Hwy. Dept.		Sand and gravel	
Mickelson Corp.	NE NW 21 3N 8E	Sand and gravel	
New Hudson Sand & Gravel	NW NE 33 2N 7E	Sand and gravel	
Oxford Mining Co.	4 4N 8E	Sand and gravel	
Oakland Co. Rd. Comm.	SE SE 9 2N 8E	Sand and gravel	
	NW NW 1 3N 10E		
	SE SW 8 4N 8E		
	SE SW 32 5N 9E		
	SW SE 36 5N 11E		
Orvis Bros.	Milford	Sand and gravel	
Salem Gravel and Construction Co.	E NE 2 4N 9E	Sand and gravel	

		<u>Quantity</u>	<u>Value</u>
OAKLAND (contd.)			
Slaters Bald Mountain Gravel Pit	SW 36 4N 10E	Sand and gravel	
South Flint Gravel Co.	Holly	Sand and gravel	
Underwood Sand and Gravel Co.	SW 2 3N 10E	Sand and gravel	
Walker Sand and Gravel	NE SE 34 2N 7E	Sand and gravel	
	SE SW 2 2N 11E		
F. S. Ward	NW NE 7 3N 9E	Sand and gravel	
Wilkinson Sand and Gravel Co.	SE NW 35 3N 10E	Sand and gravel	
Wolverine Contractors, Inc.		Sand and gravel	
OCEANA (51)			
Petroleum		269,338 bbls.	\$ 786,467
Sand and gravel		72,178 tons	76,652
Natural gas		11,476 M.cu.ft.	2,410
Total value			\$ 865,529
Beckman Bros.	NE SW 24 14N 17W	Sand and gravel	
Mich. State Hwy. Dept.		Sand and gravel	
OGEMAW (40)			
Petroleum		440,728 bbls.	\$ 1,286,926
Natural gas		796,850 M.cu.ft.	167,339
Sand and gravel		295,445 tons	125,896
Total value			\$ 1,580,161
Ehinger Bros.	West Branch	Sand and gravel	
Ogemaw Co. Rd. Comm.	NE SE 3 21N 1E	Sand and gravel	
	NE SE 6 21N 2E		
	NW SW 5 22N 2E		
	NE SE 6 22N 2E		
	NW SE 33 22N 3E		

	<u>Quantity</u>	<u>Value</u>
ONTONAGON (4)		
Copper (1st, 73%)	103,756,178 lbs.	\$ 31,053,187
Sand and gravel	27,000 tons	37,800
Total value		\$ 31,090,987
Michigan State Hwy. Dept. White Pine Copper Co. White Pine Mine	4, 5, 9, 5N 42W	Sand and gravel Copper
OSCEOLA (38)		
Petroleum (8th, 3%)	481,074 bbls.	\$ 1,404,736
Sand and gravel	253,698 tons	315,224
Natural gas	368,468 M.cu.ft.	77,378
Marl	3,146 tons	1,888
Total value		\$ 1,799,226
C. Stanley Hooker	NW NE 24 20N 10W SW SW 1 20N 8W	Marl
Michigan State Hwy. Dept. The Wallace Stone Co. Hersey Sand & Gravel Div.	NW SW 20 17N 9W	Sand and gravel Sand and gravel
OSCODA (81)		
Sand and gravel, Petroleum		\$ 23,025
O. E. Gooding and Co. Michigan State Hwy. Dept.		Sand and gravel Sand and gravel
OTSEGO (46)		
Sand and gravel	830,629 tons	\$ 1,085,806
Natural gas	25,573 M.cu.ft.	5,370
Total value		\$ 1,091,176
Hutchins Sand and Gravel Michigan State Hwy. Dept. Otsego Co. Rd. Comm.	SE NE 17 29N 3W SW NW 16 29N 3W NW SW 2 30N 3W NW NW 3 31N 3W NW NE 29 31N 3W	Sand and gravel Sand and gravel Sand and gravel

	<u>Quantity</u>	<u>Value</u>
OTTAWA (33)		
Sand and gravel (7th), Petroleum, Marl		\$ 2,031,079
Construction Aggregates Corp.	SE SW 16 8N 15W 7 14N 7W	Sand and gravel
Henry DeWent	SW SW 22 6N 13W	Sand and gravel
William Huizenga	24 5N 15W	Sand and gravel
Tom Johnston Gravel Co.	7 7N 14W	Sand and gravel
Henry Koster	23 6N 13W	Marl
Ralph Meyers		Marl
Mich. State Hwy. Dept. Paul C. Miller		Sand and gravel Sand and gravel
Standard Sand Co.	NW 4 7N 16W	Sand
West Shore Constr. Co.	19 5N 13W 2 5N 14W 2 6N 13W 22 6N 13W	Sand and gravel
PRESQUE ISLE (13)		
Stone (1st), Sand and gravel		
Michigan Limestone Div. U. S. Steel Corp.	23 35N 5E	Limestone-crushed
Mich. State Hwy. Dept. Onaway Stone Co.	5 34N 2E	Sand and gravel
Presque Isle Corp.	2 33N 8E	Limestone-dimensional
Straits Aggregate and Equipment Corp.	NE NW 19 34N 4E NW SW 26 35N 5E	Limestone-crushed Sand and gravel
ROSCOMMON (42)		
Petroleum	243,666 bbls.	\$ 711,505
Sand and gravel	814,645 tons	545,204
Natural gas	1,288,177 M.cu.ft.	270,517
Natural gas liquids	380,955 gals.	21,714
Total value		\$ 1,548,940
Beckett Sand & Gravel Mich. State Hwy. Dept. Pickitt and Schreur, Inc. Delmar Stanley Gravel Co. Jessee Stanley Gravel Co.	Roscommon SE SE 24 24N 4W Houghton Lake	Sand and gravel Sand and gravel Sand and gravel Sand and gravel



	<u>Quantity</u>	<u>Value</u>
VAN BUREN (62)		
Sand and gravel	359,653 tons	\$ 281,236
Petroleum	20,849 bbls.	60,879
Marl	439 tons	263
Total value		\$ 342,378

John Budzen Cement Prod.		Sand and gravel
Clarence Harter	33 2S 13W	Marl
Klett Construction Co.	Hartford	Sand and gravel
Masterson Sand Co.	NE 5 2S 17W	Sand
Pickitt and Schreur	NW SW 24 3S 14W	Sand and gravel
Standard Sand Co.	2S 17W	Sand and gravel
John G. Yerington	NE SE 24 3S 15W	Sand and gravel
	North Gravel Hill Pit	

---

WASHTENAW (26)

Sand and gravel (2nd, 9%)	4,792,043 tons	\$ 3,515,834
Natural gas	695,643 M.cu.ft.	146,085
Petroleum	45,248 bbls.	132,124
Total value		\$ 3,794,043

Dexter Gravel Co.	SW SE 5 2S 5E	Sand and gravel
O. E. Gooding and Co.	Various	Sand and gravel
Halloway Sand and Gravel Co.	10930 6 Mile Rd.	Sand and gravel
Killins Gravel Co.	SE SE 25 2S 3E	Sand and gravel
	SW SW 25 2S 5E	
Kruse Gravel Pit	32 2S 7E	Sand and gravel
Michigan State Hwy. Dept.		Sand and gravel
Packard Supply Co.	NE NW 12 3S 6E	Sand and gravel
Pickitt and Schreur		Sand and gravel
Lamar Thumm	SW NE 25 3S 7E	Sand and gravel
Washtenaw Co. Rd. Comm.	24 3S 5E	Sand and gravel
Washtenaw Sand and Gravel	4984 Earhardt Rd.	Sand and gravel
Whittaker and Gooding Co.	SW NW 10 2S 5E	Sand and gravel
	NE NE 15 3S 6E	
	SW NE 19 2S 7E	

---

WAYNE (1)

Cement (2nd), Salt (1st), Lime (1st), Sand and gravel (5th, 4%), Clay products (1st), Stone, Natural Gas, Petroleum, Clay (2nd)		\$ 42,555,230
---	--	---------------

Allied Chemical Corp.	Trenton	Lime
Clippert Brick Co.	NW 21 2S 11E	Clay-brick
Dachille Trucking Co.	Various	Sand and gravel
W. L. Emery Co.		Sand and gravel

<u>Quantity</u>	<u>Value</u>
WAYNE (contd.)	
Flat Rock Clay Prod.	NW SE 30 4S 10E
Huron River Quarry Corp.	36 4S 9E
International Salt Co. Inc.	SW 32 2S 11E
Lightweight Aggregate Corp.	NE 27 1S 9E
	Clay-tile
	Dolomite-crushed
	Rock salt
	Clay-lightweight aggregate
Manning and Locklin Gravel Co.	NW SW 2 1S 8E
	Sand and gravel
Michigan Foundation Quarry Co.	7 4S 11E
	Limestone-crushed
Michigan Silica Co.	SW NE 15 5S 10E
	Silica sand
Mich. State Hwy. Dept.	
Moore Bros. Sand & Gravel	E SE 9 3S 9E
	Sand and gravel
Al Morgan Sand	Various Pits
	Sand
Northville Sand & Gravel	SE NE 8 1S 8E
	Sand and gravel
Peerless Cement Corp.	Detroit
	Cement
Penn Salt Chemical Corp.	Wyandotte
	Salt
Thomson Sand and Gravel	8 1S 8E
	Sand and gravel
Wayne Sand & Gravel Co.	NW SE 12 3S 8E
	Sand and gravel
Wyandotte Chemical Corp.	Wyandotte
	Salt, cement, lime

---

WEXFORD (77)

Sand and gravel	51,077 tons	\$ 64,983
Michigan State Hwy. Dept.		Sand and gravel
Wexford Gravel Co.	Cadillac	Sand and gravel

---

UNDISTRIBUTED

Alpena, Emmet, Grand Traverse, Gratiot, Iosco, Midland, Presque Isle, St. Joseph, and Shiawassee Counties		\$ 95,504,724
Sand and gravel, Peat, Lime, Mineral pigments, Sulfur, Gem stones		6,583,845
		\$102,088,569

Aurora Gasoline Co.	Sulfur
Champion, Inc.	Sand and gravel
The Cleveland-Cliffs Iron Co.	Mineral pigments
The Dyer Company	Sand and gravel
Fleming Gravel Co.	Sand and gravel
Fox Valley Construction Co.	Sand and gravel
The Hanna Mining Co.	Mineral pigments
Leonard Refinery, Inc.	Sulfur
Pickands Mather and Co.	Mineral pigments
Straits Aggregate and Equipment Corp.	Sand and gravel
Thornton Constr. Co., Inc.	Sand and gravel
U.S. Dept. of Agriculture	Sand and gravel

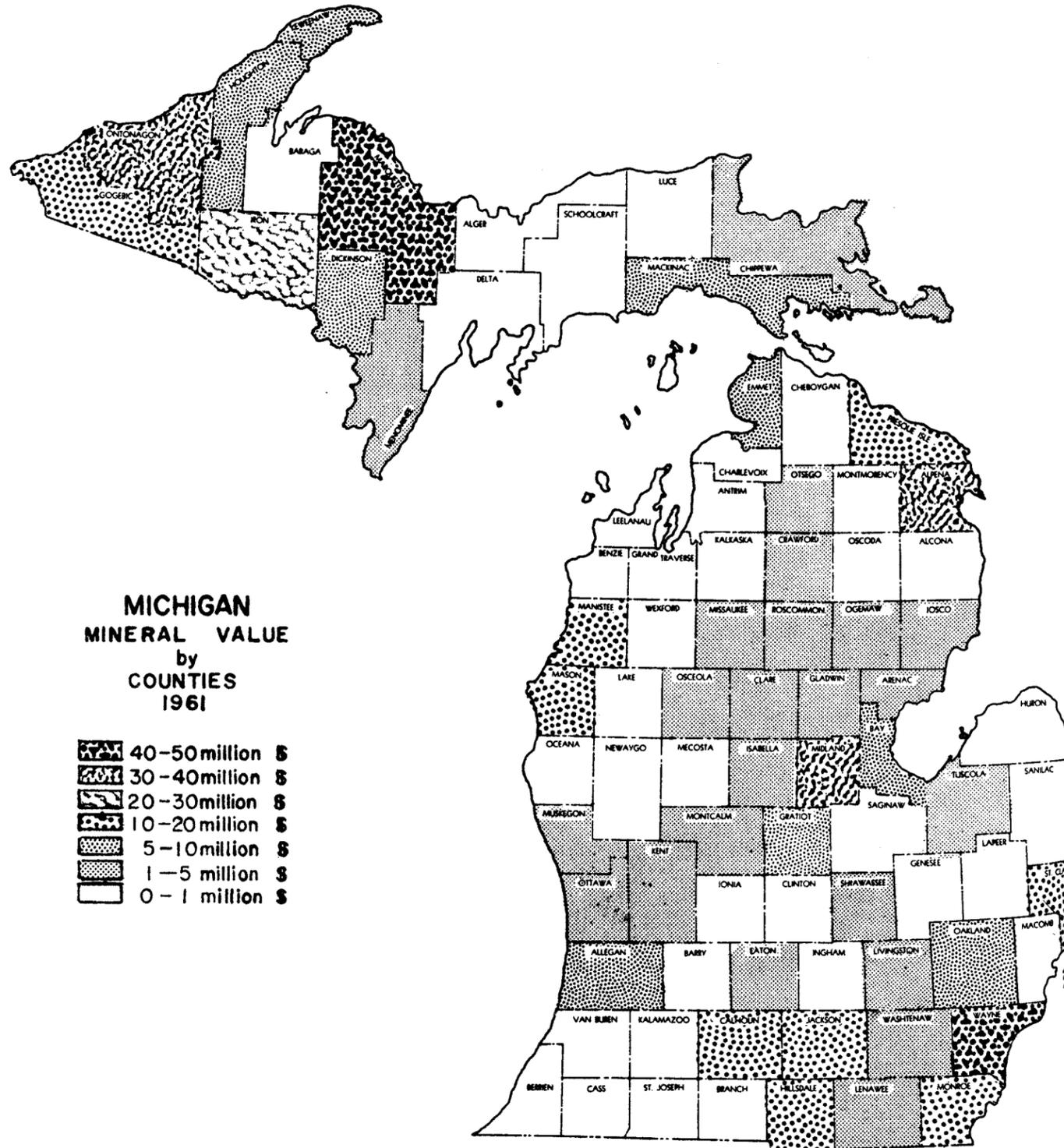
TOTAL STATE VALUE

\$443,263,278

COUNTY MINERAL PRODUCTION

1961

County	Rank	Value	County	Rank	Value
Alcona	71	\$ 172,773	Genesee	52	\$ 847,373
Alger	75	143,345	Gladwin	44	1,246,694
Allegan	31	2,546,975	Gogebic	12	12,596,031
Alpena	3	-	Grand Traverse	78	-
Antrim	82	22,397	Gratiot	22	-
Arenac	43	1,462,106	Hillsdale	8	14,931,850
Baraga	74	148,121	Houghton	20	6,233,665
Barry	56	521,292	Huron	53	834,940
Bay	17	9,654,808	Ingham	50	952,256
Benzie	83	0	Ionia	61	344,552
Berrien	48	981,318	Iosco	24	-
Branch	55	529,343	Iron	6	24,213,493
Calhoun	10	12,762,542	Isabella	32	2,290,895
Cass	60	387,090	Jackson	14	10,227,227
Charlevoix	79	62,900	Kalamazoo	54	802,188
Cheboygan	69	220,436	Kalkaska	68	239,318
Chippewa	25	3,871,963	Kent	27	3,425,279
Clare	35	1,876,344	Keweenaw	23	5,561,237
Clinton	59	419,187	Lake	76	95,313
Crawford	47	1,076,534	Lapeer	58	457,054
Delta	57	472,362	Leelanau	72	159,773
Dickinson	18	7,127,771	Lenawee	28	3,199,165
Eaton	39	1,711,566	Livingston	29	2,812,279
Emmet	16	-	Luce	80	31,235



County	Rank	Value	County	Rank	Value
Mackinac	19	\$ 6,237,874	St. Joseph	73	-
Macomb	49	971,777	Sanilac	63	\$ 314,334
Manistee	11	12,712,178	Schoolcraft	67	262,067
Marquette	2	41,042,435	Shiawassee	41	-
Mason	15	10,001,970	Tuscola	34	1,912,794
Mecosta	66	272,497	Van Buren	62	342,378
Menominee	45	1,133,396	Washtenaw	26	3,794,043
Midland	5	-	Wayne	1	42,555,230
Missaukee	30	2,592,490	Wexford	77	64,983
Monroe	9	13,622,087	Undistributed		95,504,724
Montcalm	36	1,852,865			
Montmorency	70	208,276	TOTAL STATE VALUE		\$ 443,263,278
Muskegon	37	1,822,272			
Newaygo	65	279,447			
Oakland	21	5,979,819			
Oceana	51	865,529			
Ogemaw	40	1,580,161			
Ontonagon	4	31,090,987			
Osceola	38	1,799,226			
Oscoda	81	23,025			
Otsego	46	1,091,176			
Ottawa	33	2,031,079			
Presque Isle	13	-			
Roscommon	42	1,548,940			
Saginaw	64	299,381			
St. Clair	7	15,197,003			

DIRECTORY OF MICHIGAN MINERAL PRODUCERS  
1961

CEMENT

<u>Name and Address</u>	<u>Plant Location</u>
Aetna Portland Cement Company P. O. Box 392 Bay City, Michigan	Bay City, Bay Co.
Dundee Cement Co. Dundee, Michigan	Dundee, Monroe Co.
Huron Portland Cement Co. Division of National Gypsum Co. 1325 Fort Building Detroit, Michigan	Alpena, Alpena Co.
Peerless Cement Company Division of American Cement Corp. 1144 Free Press Building Detroit 26, Michigan	Detroit, Wayne Co. (2 plants) Port Huron, St. Clair Co.
Peninsular Portland Cement Div. General Portland Cement Co. 1003 National Bank Building Jackson, Michigan	Cement City, Lenawee Co.
Penn-Dixie Cement Corporation P. O. Box No. 152 Nazareth, Pa.	Petoskey, Emmet Co.
Wyandotte Chemical Corporation 1609 Biddle Avenue Wyandotte, Michigan	Wyandotte, Wayne Co.

## CLAY\*

<u>Name and Address</u>	<u>Pit Location</u>
Minco Products Corporation Box 367 2305 Miller Road South Saginaw, Michigan	Near Paines, Saginaw Co. Section 1, T.11N., R.3E.
Robinson Clay Products Company 65 West State Street Akron 9, Ohio	Near Rockland, Ontonagon Co. Section 17, T.50N., R.39W.

\*Producers of clay used in clay products, cement, and lightweight aggregate manufacture not included.

## CLAY PRODUCTS

<u>Name and Address</u>	<u>Raw Material</u>	<u>Plant Location</u>
American Vitrified Products Co. 701 National City Bank Bldg. Cleveland, Ohio	Shale	Grand Ledge, Eaton Co. (Tile)
Clippert Brick Co. Wyoming and Southern Ave. Detroit 10, Michigan	Clay	Near Dearborn, Wayne Co. (Brick)
Comfort Brick and Tile Co. Rogers Highway Tecumseh, Michigan	Clay	Tecumseh, Lenawee Co. (Tile)
Flat Rock Clay Products Co. Flat Rock 3, Michigan	Clay	Flat Rock, Wayne Co. (Tile)
Grand Ledge Clay Products Co. West Jefferson Street Grand Ledge, Michigan	Shale	Grand Ledge, Eaton Co. (Tile)
Lightweight Aggregate Corp. 12720 Farmington Road Livonia, Michigan	Clay	Livonia, Wayne Co. (Lightweight Aggregate)
The Michigan Vitrified Tile Co. P. O. Box 450 Findlay, Ohio	Shale	Corunna, Shiawassee Co. (Tile)
F. W. Ritter Sons Co., Inc. South Rockwood, Michigan	Clay	South Rockwood, Monroe Co. (Pottery)

## COPPER

<u>Name and Address</u>	<u>Mine Locations (Counties)</u>
Calumet and Hecla, Inc. Calumet, Michigan	Houghton and Keweenaw
Copper Range Co. Painsdale, Michigan	Houghton
Quincy Mining Co. Hancock, Michigan	Houghton
White Pine Copper Co. 53 West Jackson Boulevard Chicago, Illinois	Ontonagon

## GYPSUM

<u>Name and Address</u>	<u>Mine or Quarry Location</u>	<u>Mill Location</u>
Bestwall Gypsum Co. 120 East Lancaster Ave. Ardmore, Pennsylvania	Grand Rapids Kent County (Mine)	Grand Rapids, Kent Co.
Grand Rapids Gypsum Co. 1204 Peoples National Bank Bldg. Grand Rapids 2, Michigan	Grand Rapids Kent County (Mine)	Grand Rapids, Kent Co.
National Gypsum Co. 325 Delaware Avenue Buffalo 2, New York	National City Iosco County (Quarry)	National City, Iosco Co.
Sargent Sand Co. (Michigan Gypsum Co.) 2840 Bay Road Saginaw, Michigan	Near National City Iosco County (Quarry)	
United States Gypsum Co. 300 West Adams Street Chicago 6, Illinois	Alabaster Iosco County (Quarry)	Grand Rapids, Kent Co. River Rouge, Wayne Co.

## IRON ORE

<u>Name and Address</u>	<u>Mine Locations (Counties)</u>
The Cleveland-Cliffs Iron Co. 14th Floor Union Commerce Bldg. Cleveland 14, Ohio	Marquette
M. A. Hanna Company 1300 Leader Building Cleveland 14, Ohio	Iron, Dickinson

## Iron Ore (Contd.)

<u>Name and Address</u>	<u>Mine Locations (Counties)</u>
Inland Steel Company 38 South Dearborn St. Chicago 3, Illinois	Iron, Marquette
Jones and Laughlin Steel Corp. 401 Liberty Avenue Gateway Center Pittsburgh 30, Pennsylvania	Marquette
North Range Mining Company Negaunee, Michigan	Marquette
Pickands Mather and Company 2000 Union Commerce Bldg. Cleveland 14, Ohio	Gogebic
Republic Steel Corporation Republic Building Cleveland 1, Ohio	Iron

## LIME

<u>Name and Address</u>	<u>Plant Location</u>
Allied Chemical Corp. The Solvay Process Div. P. O. Box 271 Syracuse 1, New York	Detroit, Wayne Co.
Board of Water and Light 206 S. Cedar St. Lansing, Michigan	Lansing, Ingham Co.
The Dow Chemical Co. Ludington Division Midland, Michigan	Ludington, Mason Co.
Limestone Products Division Northwestern-Hanna Fuel Co. 2150 North Prospect Avenue Milwaukee 1, Wisconsin	Menominee, Menominee Co.
Monitor Sugar Div. Robert Gage Coal Company 2600 South Euclid Avenue Bay City, Michigan	Bay City, Bay Co.
Wyandotte Chemicals Corp. 1609 Biddle Avenue Wyandotte, Michigan	Wyandotte, Wayne Co.

## MARL PRODUCERS

<u>Name</u>	<u>Address</u>	<u>Pit Location (County)</u>
A.		
Gerald Arnsman Carl Avery	R.R.#1, Hopkins R.R.#1, Athens	Allegan Calhoun
B.		
Barnes Brothers Lee Bertrano LaVerne Brizendine	Horton Mattawan 308 Pennsylvania Ave. Dowagiac	Jackson Kalamazoo Cass
C.		
Case Brothers Cleveland and Taylor Ray Coville Crosby Marl Service William Currier	R.R.#1, Sherwood R.R.#2, Fremont, Ind. R.R.#1, Climax R.R.#2, Three Oaks R.R.#1, Caledonia	Calhoun, St. Joseph Branch, Hillsdale Kalamazoo Berrien Barry
D.		
Bernard Damveld Arnie Delebaugh Calvin Dixon Coy Drake	R.R.#1, Dorr R.F.D.#2, Union City Bronson R.R.#1, Three Rivers	Allegan Calhoun Branch St. Joseph
F.		
David Flora Frost & Cummings Marl Co.	R.R.#2, Schoolcraft Blanchard	Kalamazoo Mecosta
G.		
Gatehouse Bros. Grant TUFA Lime Co. Raymond Gross	Weidman Box 46, Grant Wayland	Isabella Newaygo Allegan
H.		
E. R. Hamilton Clarence Harter Kenneth Harter Hayward Dry Marl Lawrence Hayward John Hess C. Stanley Hooker	R.R.#3, Nashville R.R.#3, Paw Paw R.R.#2, Otsego R.R.#3, Quincy R.R.#1, Vicksburg R.R.#1, Hanover 608 Colfax St., Cadillac	Barry Van Buren Allegan Branch Kalamazoo Hillsdale Osceola
K.		
Henry Koster	1074 Chicago Drive, Jenison	Ottawa

## Marl Producers (Contd.)

<u>Name</u>	<u>Address</u>	<u>Pit Location (County)</u>
L.		
Ted Lambrix Ray Luegge Emmet J. Lutz	R.R.#3, Hart R.R.#1, Three Rivers R.R.#1, Sherwood	Oceana St. Joseph Branch
M.		
Martin Bros. Marl Co. Claude Mastin Robert Medley Ralph Meyers	R.R.#2, Box 46, Three Oaks Climax R.R.#1, Onondaga R.F.D.#2, West Olive	Berrien Kalamazoo Ingham Ottawa
O.		
Outman Bros.	Six Lakes	Montcalm
P.		
Emil Pavlak Pipher Marl Service Otto Polehlman, Jr.	R.R.#2, Hopkins Jones R.R.#2, Cassopolis	Allegan Cass Cass
R.		
Reed and Frisbie Robert Brothers Marl Fred Rumz	Colon R.R.#1, Three Rivers R.R.#2, Vicksburg	St. Joseph St. Joseph Kalamazoo
S.		
Schau Bros.	2882 Bronson Blvd. Kalamazoo	Barry
Murland Smart C. H. Spies	Burr Oak R.F.D.#2, Box 414 Benton Harbor	St. Joseph Berrien
Harlan Spoor Thomas Springer Stewart and Schaefer Lowell W. Stukey	R.R.#1, Burlington R.R.#2, Vicksburg R.R.#1, Weidman R.R.#1, Reading	Calhoun Kalamazoo Isabella Hillsdale
T.		
Orville Truman	Mecosta	Mecosta
W.		
Clifford Williams Marion E. Wolkins	Nottawa R.R.#1, Bristol	St. Joseph Lake
Z.		
Zylstra Bros.	Howard City	Montcalm

## NATURAL SALINES

<u>Name and Address</u>	<u>Product</u>	<u>Plant Location</u>
The Dow Chemical Company Midland, Michigan	Bromine, Calcium-Magnesium Chloride, Magnesium Com- pounds, Potash	Midland, Midland Co. Ludington, Mason Co.
Great Lakes Chemical Corp. 502 Michigan National Bank Bldg. Grand Rapids 2, Michigan	Bromine	Filer City, Manistee Co.
Harbison-Walker Refractories Co. 307 Fifth Ave. Pittsburgh 22, Pa.	Magnesium Compounds	Ludington, Mason Co.
Michigan Chemical Corp. 500 North Bankson St. Louis, Michigan	Bromine, Calcium-Magnesium Chloride, Magnesium Com- pounds	St. Louis, Gratiot Co. East Lake, Manistee Co.
Morton Chemical Co. 110 N. Wacker Drive Chicago 6, Illinois	Bromine, Magnesium Com- pounds, Calcium-Magnesium Chloride	Manistee, Manistee Co.
Standard Lime & Cement Co. 2000 1st National Bank Bldg. Baltimore 3, Maryland	Magnesium Compounds	Stronack, Manistee Co.
Wilkinson Chemical Co. Mayville, Michigan	Calcium-Magnesium Chloride	Near Mayville, Tuscola Co.
PEAT		
<u>Name and Address</u>	<u>Pit Location</u>	
George Alber Summerfield Road Petersburgh, Michigan	Near Petersburgh, Monroe Co.	
Al-Par Peat Ovid, Michigan	Near Ovid, Clinton Co.	
Anderson Peat Company 2562 Graham Road Imlay City, Michigan	Near Imlay City, Lapeer Co.	
Appleman and Yarger Peat Co. 13316 Ida Center Road Ida, Michigan	Near Ida, Monroe County	

## Peat (Contd.)

<u>Name and Address</u>	<u>Pit Location</u>
E. G. Bristol Peat Company 5648 Van Dyke Almont, Michigan	Near Almont, Lapeer County
Jack Coddington 15510 Santa Rosa Detroit, Michigan	Near Farmington, Oakland County
Cravens Peat Farm Route 5 - Box 132 Kalamazoo, Michigan	Near Kalamazoo, Kalamazoo County
Dan's Peat Farm 42053 West 12 Mile Road Novi, Michigan	Near Novi, Oakland County
Henry Diekman Peat Company 1640 28th Street, S.W. Grand Rapids, Michigan	Near Grand Rapids, Kent County
Charles E. Douglas Wayland, Michigan	Near Wayland, Allegan County
Fletcher and Rickard 54001 Grand River Road New Hudson, Michigan	Near New Hudson, Oakland County
Geoman Nursery and Garden Center 3413 Jefferson Avenue, S. E. Grand Rapids, Michigan	Near Grand Rapids, Kent County
Gibbs Peat Company Route 2, 6120 Shappie Road Clarkston, Michigan	Near Clarkston, Oakland County
Grant's Trucking and Loading 3192 Rochester Road Troy, Michigan	Near Troy, Oakland County
Great Lakes Peat Moss Company 51 West Miller Street Sandusky, Michigan	Near Sandusky, Sanilac County
Green Thumb Peat Humus Company 247 South Stringer Road Sandusky, Michigan	Near Sandusky, Sanilac County
Gummer's Michigan Peat Company Route #2 Lakeview, Michigan	Near Lakeview, Montcalm County

## Peat (Contd.)

<u>Name and Address</u>	<u>Pit Location</u>
Hiler Peat Humus Watervliet, Michigan	Near Bainbridge Center, Berrien County
Hilu Peat Company 3040 Clinton Trail Charlotte, Michigan	Near Charlotte, Eaton County
Hofman Peat Co. Imlay City, Michigan	Near Imlay City, Lapeer County
Kerr's Peat Moss Route #1 Three Rivers, Michigan	Near Three Rivers, St. Joseph Co.
Katerberg Landscape Service 3610 Michigan Rd., N.E. Grand Rapids, Michigan	Near Grand Rapids, Kent County
Frank Mason 9104 Billmyer Road Tecumseh, Michigan	Near Tecumseh, Lenawee County
Michigan Peat, Inc. 67 West 44th Street New York 36, N. Y.	Near Capac, Lapeer & St. Clair Cos. Near Minden City, Sanilac County
Griffin H. Munger 3045 West Michigan Avenue Ypsilanti, Michigan	Near Ypsilanti, Washtenaw County
Albert H. Roodbergen 6262 East "QR" Avenue Scotts, Michigan	Near Scotts, Kalamazoo County
J. C. Roodvoets and Son 4659 Kalamazoo Avenue Grand Rapids, Michigan	Near Middleville, Barry County
Rushland Peat Company 2156 West Caro Road Caro, Michigan	Near Caro, Tuscola County
Leo Russell Dirt Farm 42201 12 Mile Road Novi, Michigan	Near Novi, Oakland County
Soulliere Nursery 23650 23 Mile Road Mt. Clemens, Michigan	Near Mt. Clemens, Macomb County

## Peat (Contd.)

Name and Address

E. G. Bristol Peat Company  
5648 Van Dyke  
Almont, Michigan

Jack Coddington  
15510 Santa Rosa  
Detroit, Michigan

Cravens Peat Farm  
Route 5 - Box 132  
Kalamazoo, Michigan

Dan's Peat Farm  
42053 West 12 Mile Road  
Novi, Michigan

Henry Diekman Peat Company  
1640 28th Street, S.W.  
Grand Rapids, Michigan

Charles E. Douglas  
Wayland, Michigan

Fletcher and Rickard  
54001 Grand River Road  
New Hudson, Michigan

Geoman Nursery and Garden Center  
3413 Jefferson Avenue, S. E.  
Grand Rapids, Michigan

Gibbs Peat Company  
Route 2, 6120 Shappie Road  
Clarkston, Michigan

Grant's Trucking and Loading  
3192 Rochester Road  
Troy, Michigan

Great Lakes Peat Moss Company  
51 West Miller Street  
Sandusky, Michigan

Green Thumb Peat Humus Company  
247 South Stringer Road  
Sandusky, Michigan

Gummer's Michigan Peat Company  
Route #2  
Lakeview, Michigan

Pit Location

Near Almont, Lapeer County

Near Farmington, Oakland County

Near Kalamazoo, Kalamazoo County

Near Novi, Oakland County

Near Grand Rapids, Kent County

Near Wayland, Allegan County

Near New Hudson, Oakland County

Near Grand Rapids, Kent County

Near Clarkston, Oakland County

Near Troy, Oakland County

Near Sandusky, Sanilac County

Near Sandusky, Sanilac County

Near Lakeview, Montcalm County

## Peat (Contd.)

Name and Address

Hiler Peat Humus  
Watervliet, Michigan

Hilu Peat Company  
3040 Clinton Trail  
Charlotte, Michigan

Hofman Peat Co.  
Imlay City, Michigan

Kerr's Peat Moss  
Route #1  
Three Rivers, Michigan

Katerberg Landscape Service  
3610 Michigan Rd., N.E.  
Grand Rapids, Michigan

Frank Mason  
9104 Billmyer Road  
Tecumseh, Michigan

Michigan Peat, Inc.  
67 West 44th Street  
New York 36, N. Y.

Griffin H. Munger  
3045 West Michigan Avenue  
Ypsilanti, Michigan

Albert H. Roodbergen  
6262 East "QR" Avenue  
Scotts, Michigan

J. C. Roodvoets and Son  
4659 Kalamazoo Avenue  
Grand Rapids, Michigan

Rushland Peat Company  
2156 West Caro Road  
Caro, Michigan

Leo Russell Dirt Farm  
42201 12 Mile Road  
Novi, Michigan

Soulliere Nursery  
23650 23 Mile Road  
Mt. Clemens, Michigan

Pit Location

Near Bainbridge Center,  
Berrien County

Near Charlotte, Eaton County

Near Imlay City, Lapeer County

Near Three Rivers, St. Joseph Co.

Near Grand Rapids, Kent County

Near Tecumseh, Lenawee County

Near Capac, Lapeer & St. Clair Cos.  
Near Minden City, Sanilac County

Near Ypsilanti, Washtenaw County

Near Scotts, Kalamazoo County

Near Middleville, Barry County

Near Caro, Tuscola County

Near Novi, Oakland County

Near Mt. Clemens, Macomb County

## Peat (Contd.)

<u>Name and Address</u>	<u>Pit Location</u>
Twin Lakes Nursery 3650 Michigan Road, N. E. Grand Rapids 6, Michigan	Near Grand Rapids, Kent County
West Lansing Gravel Company 1911 Pattengill Avenue Lansing, Michigan	Near Lansing, Ingham County
Winn's Peat Corporation 6476 Bishop Road Lansing, Michigan	Near Delhi, Ingham County

## SALT

<u>Name and Address</u>	<u>Product</u>	<u>Plant Location</u>
Allied Chemical & Dye Corp. The Solvay Process Division P. O. Box 271 Syracuse 1, New York	Salt Brine* (Soda Ash)	Detroit, Wayne County
Diamond Crystal Salt Co. 916 S. Riverside St. Clair, Michigan	Evaporated Salt	St. Clair, St. Clair County
The Dow Chemical Co. Midland, Michigan	Salt Brine (Chlorine, other Chemicals)	Midland, Midland Co.
Hooker Electrochemical Co. Niagara Falls, New York	Salt Brine (Chlorine, Caustic Soda, Hydrogen)	Montague, Muskegon Co.
International Salt Co., Inc. Clarks Summit, Pa.	Rock Salt	Detroit, Wayne County
Manistee Salt Works 800 South Vandeventer Ave. St. Louis 10, Missouri	Evaporated Salt	Manistee, Manistee Co.
Michigan Salt Company 500 North Bankson St. Louis, Michigan	Evaporated Salt	St. Louis, Gratiot County
Morton Salt Company 110 North Wacker Drive Chicago 3, Illinois	Evaporated Salt	Manistee, Manistee Co. Marysville, St. Clair Co.

## Salt (Contd.)

<u>Name and Address</u>	<u>Product</u>	<u>Plant Location</u>
Pennsalt Chemicals Corp. Wyandotte, Michigan	Salt Brine (Chlorine, Caustic Soda, Hydrogen)	Wyandotte, Wayne County
Wyandotte Chemical Corp. 1609 Biddle Ave. Wyandotte, Michigan	Salt Brine (Chlorine, Soda Ash)	Wyandotte, Wayne County

\*Artificial brine piped across Detroit River from Canada.

## SAND AND GRAVEL

<u>Name and Address</u>	<u>Pit Location</u>
A.	
A.B.C. Sand Co., 36444 Cowan Road, Plymouth	Wayne
A. and R. Gravel Co., 2073 Drawry Lane, Route #2, Pontiac	Oakland
Adrian Sand and Gravel, Adrian	Lenawee
Advance Bldg. Materials Co., 46461 Ryan Road, Utica	Macomb
Aggregate Processors, Inc., Box 566, White Pigeon	St. Joseph
Albaugh and Needham, N. Parkway, Marshall	Calhoun
William Albrecht Jr., Sandusky	Sanilac
John Alexander, Marshall	Calhoun
American Aggregates Corp., Greenville, Ohio	Kalamazoo, Livingston**
American Stone Products, Sashabow Rd., Oxford	Oakland
Anderson Sand and Gravel Co., 1700 S. Werdock St., Saginaw	Oakland Tuscola
Anttila Gravel Co., P. O. Box 115, Eben Junction	Alger
Arrowhead Silica Corp., 128 S. 15th St., Chesterton, Indiana	Berrien
B.	
B and K Sand and Gravel, Wallace	Menominee
Bark River Construction Co., Bark River	Delta
Battle Creek Gravel Co., 3800 Dickman Highway, Battle Creek	Calhoun
Beardslee, Floyd, 725 E. Square Lake Rd., Pontiac	Oakland
Beckett Sand and Gravel, 19 E. Federal Hwy., Roscommon	Roscommon
Beckman Brothers, Shelby	Oceana
Bender Gravel Co., 822 Benton St., Hastings	Barry

## Sand and Gravel (Contd.)

<u>Name and Address</u>	<u>Pit Location</u>
B. (Contd.)	
The Benjamin Pit, 30404 W. 14 Mile Road, Farmington	Oakland
Bernthal Gravel Co., R.F.D. #2, Reese	Tuscola
Ray Betham and Son, 12040 Mettetal, Detroit	Oakland
Bichler Bros., 1615 Ludington, Escanaba	Delta
Blades Construction Co., Beaverton	Clare
Boichot Concrete Products Corp., 1800 Turner St., Lansing	Clinton
Bollons Sand and Gravel, 415 Plum Creek Rd., Lapeer	Lapeer
Brilinski Sand and Gravel, 9205 2nd Ave., Alpena	Alpena
Brady's Sand and Gravel, Tecumseh	Lenawee
Budzen Cement Products, Paw Paw	Van Buren
Bundy Hill Gravel Co., Somerset Center	Hillsdale**
J. V. Burkett, St. Joseph	Berrien
	Hillsdale
C.	
Caspian Lbr. Co., Caspian	Various
Cass City Concrete Products Co., Cass City	Tuscola
Castle Hill Gravel, 4495 Butterfield Hwy., Olivet	Eaton
Catsman Co., 3315 Deming Rd., Flint	Genesee
Central Concrete Products Co., Inc., Route #2, Big Rapids	Mecosta
Central Michigan Sand and Gravel, P. O. Box 5, East Lansing	Ingham
Champion, Inc., 105 East A St., Iron Mountain	Various
Cheney Gravel Co., Inc., Willoughby Rd., Holt	Ingham
Click Bros. Gravel, 8783 Bryce Rd., Goodells	St. Clair
Cloverland Milling and Supply Co., 801 Superior Ave. Gladstone	Delta
Harold Cogswell, 1623 Grovenburg Rd., Holt	Ingham
Coit Avenue Gravel Co., 4772 Coit Ave., N.E., Grand Rapids	Kent
Cole Brothers, R.R.#3, B486, Battle Creek	Calhoun
Cole Gravel Co., Route #1, Wayland	Barry
Clarence Cole, R.R.#2, Caro	Tuscola
Combs, Emil, Route #1, Tekonsha	Calhoun
Compton Sand and Gravel, 4300 31 Mile Rd., Romeo	Macomb
Comstock Constr. Co., Box 172, Bay City	Tuscola
Concrete Service, W. Front St., Traverse City	Grand Traverse
Construction Aggregates Corp., 120 S. LaSalle St., Chicago, Illinois	Ottawa (Dredge)
Consumers Sand and Gravel, Kalamazoo	Kalamazoo
Rich Cousineau, R.R.#1, Paris	Montcalm
Cross and White, 3849 Three Mile Rd., Grand Rapids	Kent
Crystal Gravel Co., Crystal	Montcalm

## Sand and Gravel (Contd.)

<u>Name and Address</u>	<u>Pit Location</u>
D.	
D. and J. Gravel Co., Route #2, Howell	Livingston
Dachill Trucking Co., 18945 W. 8 Mile Rd., Detroit	Wayne
Van E. Daily, 410 W. Sibley St., Howell	Livingston
Harold Dean and Sons, 21802 9 Mile Road, St. Clair Shores	Macomb
Emil DeSander, 321 W. Sheridan Rd., Lansing	Clinton
Edward DeVries and Sons, 959 Bristol Ave., Grand Rapids	Kent
DeWent, Henry, U.S. 21, Hudsonville	Ottawa
DeWitt Gravel Co., U.S. 27, Lansing	Clinton
Dexter Gravel Co., 7100 Dexter Ann Arbor Rd., Dexter	Washtenaw
Dowling, Bernard, R.#1, Long Rapids Rd., Alpena	Alpena
Donar Asphalt Inc., 3000 Aurelius Road, Lansing	Ingham
Dale Douthett, Three Oaks	Berrien
Dunbar, Leo, 7658 U.S. 131, Cadillac	Wexford
Dyer Company, McBrides	Montcalm
E.	
Eastman Gravel Pit, Route #1, Standish	Arenac
H. Eckley, Pioneer, Ohio	Hillsdale
Ehinger Bros., West Branch	Ogemaw
W. L. Emery Co., 1375 E. Jefferson Ave., Detroit	Wayne (Dredge)
Elliott Ice and Coal Co., 39 Monroe St., Hillsdale	Hillsdale
F.	
Fenner-Crane and Constr. Serv. Co., Muskegon	Muskegon
Ferguson Excavating Co., 5360 N. State Rd., Davison	Genesee
Russel Finch, 10850 Platt Road, Milan	Washtenaw
Fiser Supply Co., 1617 E. Jolly Rd., Lansing	Ingham
Fisher Sand & Gravel Co., 921 S. Jefferson Ave., Midland	Midland
Fleming Gravel Co., Box 149, Allegan	Calhoun, Ionia
Foley and Beardslee, Route #3, Clarkston	Oakland
Ford and Co., 5960 S. Cedar, Lansing	Ingham
Fox Valley Construction Co., Box 827, Appleton, Wisconsin	Various
Fuoss Gravel Co., Route #1, Durand	Shiawassee
G.	
Gauthier, Frank L., Onkama	Manistee
George, Jerry, Harrisville	Alcona
Gillett Sand and Gravel, R.#1, Haslett	Clinton
Gilliland Gravel Co., R.#2, Alpena	Alpena

## Sand and Gravel (Contd.)

<u>Name and Address</u>	<u>Pit Location</u>
G. (Contd.)	
Gillisee Constr. Co., Grand Rapids	Kent**
J. Gladstone and Son, 423 Oak St., Rochester	Oakland
Gogebic Oil Co., Bessemer	Gogebic
O. E. Gooding Co., 5800 Cherry Hill Rd., Ypsilanti	Eaton, Hillsdale, Huron, Ingham, Jackson**, Lapeer Lenawee, Livingston, Oakland, Tuscola, Washtenaw
Grand Ledge Sand and Gravel, Box 78, Grand Ledge	Eaton
Grand Rapids Gravel Co., 2200 Chicago Dr., S.W., Grand Rapids	Kent
Grand Valley Gravel Co., R.F.D.#5, Grand Rapids	Kent
Gravel Producers, Inc., 106 E. Kilgore Rd., Kalamazoo	Kalamazoo
Great Lakes Foundry Sand Co., 1217 Francis, Palms Bldg., Detroit	Tuscola
Great Lakes Gravel Co., Inc., 2900 Auburn Rd., Utica	Macomb
Gridley Gravel Co., Berrien Springs	Berrien
Gronlund Gravel Co., Bear Lake	Manistee
H.	
Casper Haas Co., 1800 Ravine Rd., Kalamazoo	Kalamazoo
Hatch Gravel Crushing Co., 128 W. Campbell St., Alpena	Alpena
Hersey Gravel Co., Harrisville	Alcona
Melvin Heselschwerdt, 617 City Road, Manchester	Washtenaw
C. E. Hess and Sons, Box 180, Dowagiac	Cass
Highland Aggregate, 8695 N. Milford Rd., Holly	Oakland
Hile Bros., Route #2, Caro	Tuscola
Hocking Constr. Co., Painsdale	Houghton, Marquette
Hodgkiss and Douma, Inc., P.O. Box 311, Petoskey	Charlevoix
Kenneth Hogins and Sons, Marquette	Marquette
Holloway Sand and Gravel Co., 10930 6 Mile Rd., Northville	Washtenaw
Holly Manufacturing and Mining Co., Box 299, Flint	Oakland**
Gunnar F. Holmberg, R.F.D.#1, Gladstone	Delta
Hoover Bros., 1137 Tripp Rd., Waldron	Hillsdale
George Hubscher and Son, Box 411, Mt. Pleasant	Isabella
Huitt and Sons, 322 Water St., Allegan	Allegan
William Huizenga, Route #2, Zeeland	Ottawa
C. R. Hunt, Cass City	Tuscola
E. J. Hurley Sand and Gravel Co., 5609 Bradley, Lansing	Ingham
Huron Gravel Co., 2900 Inwood Rd., Romeo	Macomb
Hutchins Sand & Gravel, 320 S. Maple, Gaylord	Otsego
Hygrade Sand & Gravel Corp., 5000 E. 31 Mile Rd., Romeo	Macomb

## Sand and Gravel (Contd.)

<u>Name and Address</u>	<u>Pit Location</u>
I.	
Ireland and Lester Co., 220 N. Wayne St., St. Joseph	Berrien (Dredge)
Ironwood Concrete Products Co., Stockbridge, Wisc.	Gogebic
J.	
Jackson Sand & Gravel, R.F.D.#2, Reading	Hillsdale
Lewis James, 2957 Detroit Rd., Niles	Berrien
John R. Sand & Gravel Co., 1865 Indianwood Rd., Lake Orion	Oakland
Tom Johnston Gravel Co., P. O. Box 6, Ferrysburg	Ottawa
K.	
K. and V. Gravel Co., R.#4, Fremont	Newaygo
Fred Kaatz, 62701 Richmond Rd., Richmond	Macomb
Kaiser Sand & Gravel Co., 4767 N. Okemos Rd., Okemos	Ingham
Keill Excavating, 2046 M.140, Niles	Berrien
Max Kelsey, Roscommon	Roscommon
Kemler Bros., 5900 Cobb Creek Ct., Rochester	Oakland
Kester Sand and Gravel, R.#2, Millington	Tuscola
S. E. Ketchum and Sons, R.#3, Mason	Ingham
Killins Gravel Co., 1150 No. State St., Ann Arbor	Washtenaw**
Klett Construction Co., Hartford	Van Buren
Klumpp Bros., 4950 Loveland Rd., Grass Lake	Jackson
Knight Gravel Co., 90 High St., Carsonville	Sanilac
Koenig Coal & Supply Co., 1486 Gratiot Ave., Detroit	Oakland
Jack Koetje, 6803 N. Westnedge Ave., Kalamazoo	Kalamazoo
Kruse Gravel Pit, 1090 Clark Rd., Ypsilanti	Washtenaw
Kurtz Gravel Co., G-5300 N. Dort Hwy., Flint	Genesee
L.	
A. S. Leffler & Son, Davison	Genesee
Lilak and Moore, East Jordan	Charlevoix
A. Lindberg and Sons, Inc., Box 154, Ishpeming	Marquette
M.	
Mackinac Aggregates Corp., 1150 N. State St., St. Ignace	Mackinac
Macomb Sand and Gravel, 3295 Auburn Rd., Utica	Macomb
Maertens Sand and Gravel Co., 1036 Buckingham, Grosse Pointe	Macomb
Hugh T. McKenzie, 1401 Glenrose, Lansing	Ingham
McKinnon Gravel Co., State St., Alpena	Alpena
John McKenzie, 13164 Seymour Rd., Montrose	Genesee
McGaw Sand and Gravel, Yale	St. Clair

## Sand and Gravel (Contd.)

<u>Name and Address</u>	<u>Pit Location</u>
M. (Contd.)	
Ray W. Malow, Utica	Macomb
Mike Mangene, Cedarville	Mackinac
Manley Bros. Inc., 114 S. 116h St., Chesterton	Berrien
Manley Sand Division, Martin-Marietta Corp., Rockton, Ill.	Berrien
Manning-Locklin Gravel Co., Box 216, Northville	Wayne
Louis Marsack and Sons, 23633 Denhurst, St. Clair Shores	Macomb
H. L. Martin Gravel Co., Box 54, Westphalia	Ionia
Mason Gravel Co., Mason	Ingham
Hugh H. Mason & Sons, 302 N. Center Ave., Gaylord	Cheboygan
Masterson Sand Co., R.#1, Covert	Van Buren
Mathews Gravel Co., 7450 E. Stanley Rd., Otisville	Genesee
Michigan Gravel Co., 33 N. LaSalle St., Chicago	Alcona
Michigan Silica Co., Rockwood	Wayne
Michelson Corp., 1745 Seymore Lake Rd., Oxford	Oakland
Paul C. Miller, 10300 Sparta Ave., Sparta	Grand Traverse, Kent, Montcalm, Muskegon, Ottawa
Jack Millikin, Grayling	Kalkaska
Vern Molesworth, 106 Park Avenue, Yale	Huron, Livingston, Macomb, Sapilac, St. Clair, Tuscola
Moore Bros. Sand & Gravel, 7635 Wayne Rd., Wayne	Wayne
Morgan Sand & Gravel Co., 45095 Ryan Rd., Utica	Macomb
Al Morgan's Sand, 26291 Pennsylvania Rd., Romulus	Wayne
Edward Murawski, Fillion	Huron
Muskegon Gravel Co., 539 S. Dangl Rd., Muskegon	Muskegon
Murdock and Son, 1925 Duck Lane Road, Milford	Oakland
N.	
Nashville Gravel Co., R.#2, Nashville	Barry**
G. C. Nelson, North Star	Gratiot
New Hudson Sand and Gravel, New Hudson	Oakland
Nieb Concrete Products, 1406 South 11th St., Niles	Cass
Niles Sand and Gravel Co., U.S. Highway and Fort St., Niles	Cass
Neely Concrete Products, N. 6th St., Crystal Falls	Iron
North Star Gravel Co., Ithaca	Gratiot
Northeast Gravel and Excavating Co., 4300 Cannosburg Rd., Belmont	Kent
Northville Sand & Gravel Co., 18275 Beck Rd., Northville	Wayne
Northwest Materials, Inc., Bryan, Ohio	Hillsdale
Nugent Sand Co., Inc., 2875 Lincoln St., Muskegon	Muskegon

## Sand and Gravel (Contd.)

<u>Name and Address</u>	<u>Pit Location</u>
O.	
Oakland Sand & Gravel Co., 741 Glengary Rd., R.#4, Walled Lake	Oakland
Okemos Sand & Gravel, 1873 Hamilton Rd., Okemos	Ingham
Orvis Bros., 835 Atlantic Ave., Milford	Oakland
Otisville Stone Co., Otisville	Genesee
Oxford Mining Co., Davisburg	Oakland
Owosso Gravel Co., 605 S. Busha Rd., Owosso	Shiawassee
P.	
P. and B. Gravel Co., R.#3, Ithaca	Gratiot
Packard Supply Co., 4536 Packard Rd., Ypsilanti	Washtenaw
Palmer Sand and Gravel, 2531 E. South, Jackson	Jackson
Paquin's Gravel Sales, R.#1, Gladstone	Delta
Paris Gravel Co., Paris	Mecosta
Pershing Sand Co., 3829 E. Seven Mile, Detroit	Various
Peterson Bros., Beaverton	Gladwin
William Perry & Son, Peffer St., Harbor Springs	Emmet
Peterhan's Bros. Sand & Gravel, R.#2, Caro	Tuscola
Pickitt and Schreur, Box 149, Allegan	Barry, Clinton, Ionia, Isabella, Kalamazoo, Kent, Ottawa, St. Joseph, Van Buren, Washtenaw**
Piispanen Bros., R.#1, Box 80, Bessemer	Gogebic
Pine Sand and Gravel, 2690 Imlay City Rd., Lapeer	Lapeer
Poirer Gravel Co., 214 Fair Ave., Alpena	Alpena
Port Huron Sand & Gravel, 2854 20th Ave., Port Huron	St. Clair
Portage Lake Gravel, 7628 Toma Road, Dexter	Washtenaw
John Post and Sons, R.#2, Swartz Creek	Genesee
Powell Sand and Gravel, Fairgrove	Tuscola
Producers Core Sand Corp., 323 Warren Bldg., Michigan City, Indiana	Berrien
Pryor Bros., 725 N. Cochran, Charlotte	Eaton
R.	
Ray Industries, Inc., P. O. Box 165, Oxford	Macomb
Lawrence Reed, 440 Baldwin, Alpena	Alpena
Don Reynolds, 2405 Peck Rd., Crosswell	Sanilac
Bernie Rief, Fraser	Macomb
Rielely and Fisher, Inc., 6647 Arcola, Garden City	Wayne
Riverside Sand & Gravel Co., 1050 Maynard Ave., S.W. Grand Rapids	Kent
Rock's Sand and Gravel, Grand Rapids	Kent
S. K. Rogers, 48301 Sugar Bush Rd., New Baltimore	Macomb
C. E. Rose Co., 2166 Butterfield, Troy	Oakland

## Sand and Gravel (Contd.)

<u>Name and Address</u>	<u>Pit Location</u>
R. (Contd.)	
Walter Rosevear Pit, West Branch	Ogemaw
Rosteck Contractors, 32634 Utica Rd., Fraser	Macomb
Rossetti Bros., 80 S. Wolcott St., Hillsdale	Hillsdale
Ruppe Cement Products, Route 2, Ironwood	Gogebic
Ryno Sand & Gravel, R.#1, Coloma	Berrien
S.	
Sabadash and Sabadash, 26250 Outer Drive, Lincoln Park	Wayne
Saginaw Core Sand Co., Saginaw	Genesee, Midland
Salem Gravel and Construction Co., Inc., 17243 W. McNichols Road, Detroit 35	Oakland
Mrs. Hilma Samuelson, Chatham	Alger
Sand Products Corp., 2489 First National Bank Bldg., Detroit	Manistee, Muskegon
Saranac Sand and Gravel Co., Saranac	Ionia
Sargent Sand Co., 2840 Bay Rd., Saginaw	Mason, Tuscola
Scarlett Gravel, 1721 S. Cedar, Holt	Ingham
Schicker Bros., Houghton Lake	Roscommon
Schweinberg Constr. Co., 410 N. Johnson St., Bay City	Bay
Scio Gravel Co., 2911 W. Delhi, Box 233, Ann Arbor	Washtenaw
Sergeant and Son, 4830 Markey Rd., Houghton Lake	Roscommon
Severt Bros., Manistee	Manistee
Shelby Tractor Sales, Shelby	Oceana
Shenk Gravel Co., Durand	Shiawassee
Lawrence B. Skinner, 4536 Packard Rd., Ypsilanti	Washtenaw
Sky-Way Sand & Gravel Co., 4060 E. Holt Rd., Holt	Ingham
Slaters Bald Mtn., 53 N. Parke, Pontiac	Oakland
Smith Sand and Gravel Co., Inc., 65985 Mound Rd., Romeo	Macomb
Justus Snelenberger, 1545 W. Fry Road, Burt	Genesee
South Flint Gravel Co., 6090 Belford Rd., Holly	Oakland
Stamm Bros. Gravel Co., R.#1, Adrian	Lenawee
Standard Aggregates Inc., 2324 Orange Hall Road, Holly	Oakland
Standard Sand Co., 14201 Lake Shore Ave., P. O. Box 290, Grand Haven	Ottawa, Van Buren
Delmar Stanley Gravel Co., R.#1, Roscommon	Roscommon
Jessee Stanley Gravel, Houghton Lake	Roscommon
Gordon O. Stevick, 424 Patty Ave., Jackson	Jackson
Frank H. Stoerk, Pierson	Montcalm
Straits Aggregate and Equipment Corp., R.#1, Box 119-A, Oscoda	Presque Isle and Various
Stony Lake Sand and Gravel, Route #1, Augusta	Kalamazoo
H. Stukey, R.#2, Coldwater	Branch
Superior Sand and Gravel Co., 1028 Ethel Ave., Hancock	Houghton

## Sand and Gravel (Contd.)

<u>Name and Address</u>	<u>Pit Location</u>
S. (Contd.)	
Sutherland Excavating Co., Cloverdale	Barry
Wally Syers and Son, Route #2, Hesperia	Oceana
T.	
Lawrence Tamlyn, 125 Burdette St., St. Ignace	Mackinac
Tecumseh Gravel Co., P.O. Box 496, Tecumseh	Lenawee
Tecumseh Materials Div., The Maybee Stone Co., Tecumseh	Lenawee
Thompson Construction Co., 234 Garfield, Coldwater	Branch
Thompson Sand & Gravel, 47399 W. 7 Mile Road, Northville	Wayne
Thornton Construction Co., 1028 Ethel Ave., Hancock	Keweenaw
Lamar Thumm, 117 S. Grove St., Ypsilanti	Washtenaw
LeRoy Tirb, Clinton	Washtenaw
Towns Trucking Co., Ludington	Mason
Tuckey's Sand and Gravel, Cass City	Tuscola
Twin Lakes Sand and Gravel Co., R.F.D.#1, Riverdale	Gratiot
U.	
Underwood Sand & Gravel Co., 2255 Hamlin Rd., Utica	Oakland, Macomb
Union City Gravel Co., Union City	Branch
U.S. Aggregates, 4461 W. Jefferson Ave., Detroit 9	Oakland
C. E. Utterback, R.F.D.#2, Mt. Pleasant	Isabella
V.	
Valley Sand and Gravel, Three Rivers	St. Joseph
Shirley Van Deusen, R.#1, Standish	Arenac
Chuck Vaughan Gravel and Excavating, 2685 Deckerville Rd., Caro	Tuscola
Vermontville Gravel Co., R.#1, Vermontville	Eaton
Vollmar Sand and Gravel, Pigeon	Huron
Harold O. Voss, R.#2, Fennville	Allegan
W.	
Ben Waanders, R.F.D.#5, Box 30, Allegan	Allegan
Wagner Ready-Mix, 220 North 3rd St., Harbor Beach	Huron
Walkden Gravel Co., 304 Berrien St., Buchanan	Berrien
Walker Sand & Gravel Co., P.O. Box 176, New Hudson	Oakland
Wallace Stone Co., Hersey Sand Gravel Div., Hersey	Osceola
Walling Gravel Co., P.O. Box 52, St. Johns	Clinton
Walsh Sand and Gravel Co., 3301 13th St., Menominee	Menominee

## Sand and Gravel (Contd.)

<u>Name and Address</u>	<u>Pit Location</u>
W. (Contd.)	
F. S. Ward, Box 185, Clarkston Washtenaw Sand & Gravel, Inc., 4984 Earhardt, Ann Arbor	Oakland Washtenaw
Wayne Sand & Gravel Co., 39891 Ecorse Rd., Wayne Ronald Weaver, Box 116, Dansville	Wayne Ingham, Saginaw, Shiawassee Ingham
West Lansing Gravel Co., 1911 Pattengill Ave., Lansing	
West Shore Construction Co., Zeeland	
Wexford Gravel Co., P. O. Box 472, Cadillac Vern Wheeler, Greenville	Allegan, Barry, Eaton, Kent, Ottawa
Whitehall Gravel Co., Whitehall	Wexford
I. L. Whitehead Co., Sault Ste. Marie	Montcalm
Whittaker and Gooding Co., 5800 Cherry Hill Rd., Ypsilanti	Muskegon Chippewa Washtenaw
Whittum Gravel Co., Eaton Rapids	Eaton
Wilkinson Sand and Gravel Co., 2284 Auburn Rd., Pontiac	Oakland
Williams Bros., P. O. Box 78, Ionia	Ionia
Willson Bros., Rives Junction	Jackson
Wolverine Contractors, Inc., 19440 James Couzens Highway, Detroit	Macomb, Oakland
Woodward Building Materials, 120 W. Chicago St., Coldwater	Branch
Gerald Wrigglworth, Henderson	Shiawassee
Wysong Gravel Co., 6972 Peninsula Drive, Traverse City	Grand Traverse
Y.	
John G. Yerington, R.#3, Box 34, Benton Harbor	Allegan, Berrien, Cass, Van Buren, Washtenaw
Youngs Sand & Gravel, 9095 S. Huron River Drive, Ypsilanti	
Z.	
Zahns Sand & Gravel, 2315 Ellsworth Rd., Ann Arbor	Washtenaw
Allen B. Zavitz, 37835 Mallast, Mt. Clemens	Macomb
Zeigler Sand and Gravel, 901 W. State, Hastings	Barry
Zeilinger Trucking, 305 N. Franklin St., Frankenmuth	Saginaw

## STONE

<u>Name and Address</u>	<u>Type of Stone</u>	<u>Quarry Location</u>
Afton Stone and Lime Co. Afton, Michigan	Limestone, Crushed	North of Afton Sec. 25, T.35N., R.2W., Cheboygan County
Arenac County Road Comm. Omer, Michigan	Limestone, Crushed (Non-Commercial)	Northeast of AuGres Sec. 5, T.19N., R.7E., Arenac County
Charlevoix County Rd. Comm. Charlevoix, Michigan	Limestone, Crushed	Charlevoix County
Bichler Brothers 1615 Ludington EsCANABA, Michigan	Limestone, Crushed	Sec. 1, T.39N., R.23E., Delta County
Bay County Road Comm. Bay City, Michigan	Limestone, Crushed (Non-Commercial)	Near Omer Sec. 34, T.20N., R.5E., Arenac County
C. & D. Stone Co. AuGres, Michigan	Limestone, Crushed	Northeast of AuGres Sec. 5, T.19N., R.7E., Arenac County
Canary Hill Stone Quarry R.#2 Hillsdale, Michigan	Sandstone (Dimensional)	West of Hillsdale Hillsdale County
Charlevoix Lime and Stone Co. Vanderbilt, Michigan	Limestone, Crushed	West of Charlevoix Sec. 29, T.34N., R.8W., Charlevoix County
Cheney Limestone Co. P. O. Box 125 Bellevue, Michigan	Limestone, Crushed and Dimensional	West of Bellevue Sec. 20, T.1N., R.6W., Eaton County
DeRoche Brothers Keweenaw Bay, Michigan	Sandstone (Dimensional)	Sec. 34, T.52N., R.33W., Barage County
Dickinson Co. Road Comm. Iron Mountain, Michigan	Basalt, Crushed	
Drummond Dolomite, Inc. P. O. Box 688 Sheboygan, Wisconsin	Dolomite, Crushed	West end Drummond Island Sec. 24, T.42N., R.5E., Chippewa County
Dundee Cement Co. Dundee, Michigan	Limestone, Crushed	

## Stone (Contd.)

<u>Name and Address</u>	<u>Type of Stone</u>	<u>Quarry Location</u>
The France Stone Co. 1800 Toledo Trust Bldg. Toledo 14, Ohio	Dolomite, Crushed	Monroe Sec. 7, T.7S., R.9E., Monroe County
Gierke Brothers Fairport, Michigan	Dolomite (Dimensional)	North of Fairport Sec. 4, T.37N., R.19W., Delta County
Gogebic County Rd. Comm. Bessemer, Michigan	Miscellaneous Stone (Non-Commercial)	Gogebic County
Houghton County Rd. Comm. Hancock, Michigan	Basalt, Crushed (Non-Commercial)	Houghton County
Huron Portland Cement Co. 1325 Ford Bldg. Detroit, Michigan	Limestone, Crushed	Alpena Sec. 24, T.31N., R.8E., Alpena
Huron River Quarry Corp. 26068 E. Huron River Drive Flat Rock, Michigan	Sandstone (Crushed)	West of Flat Rock Sec. 36, T.4S., R.9E., Wayne County
Inland Lime and Stone Co. Div. Inland Steel Co. Manistique, Michigan	Limestone, Crushed	North of Port Inland Sec. 6, T.42N., R.12W., Mackinac County
Iosco County Rd. Comm. P. O. Box 31 East Tawas, Michigan	Limestone, Crushed (Non-Commercial)	Northeast of Au Gres Sec. 24, T.20N., R.7E., Arenac County
City of Iron Mountain Iron Mountain, Michigan	Granite, Crushed	Dickinson County
Jeffry Limestone Co. Box 107 Parma, Michigan	Limestone, Crushed	Northeast of Parma Sec. 30, T.2S., R.2W., Jackson County
Limestone Mountain Co. 1028 Ethel Avenue Hancock, Michigan	Dolomite, Crushed	Near Pelkie Sec. 23, T.51N., R.35W., Houghton County
A. Lindberg and Sons, Inc. Box 154 Ishpeming, Michigan	Dolomite, Crushed	NE SE 24, T.46N., R.18W., Alger County
Maybee Stone Co. Maybee, Michigan	Dolomite, Crushed	Near Maybee Sec. 29, T.5S., R.8E., Monroe County

## Stone (Contd.)

<u>Name and Address</u>	<u>Type of Stone</u>	<u>Quarry Location</u>
Michigan Metro-Mining Co. 318 Teal Lake Ave. Negaunee, Michigan	Dolomite, Crushed	Near Felch Sec. 26, T.42N., R.28W., Dickinson County
Michigan Foundation Quarry Co. 110 W. Jefferson Avenue Trenton, Michigan	Limestone, Crushed	Trenton Sec. 7, T.4S., R.11E., Wayne County
Michigan Limestone Div. U.S. Steel Corporation 2650 Guardian Bldg. Detroit 26, Michigan	Limestone, Crushed	Near Rogers City Sec. 23, T.35N., R.5E., Presque Isle County
Michigan Limestone Div. U.S. Steel Corporation 2650 Guardian Bldg. Detroit 26, Michigan	Dolomite, Crushed	Near Cedarville Sec. 10, T.42N., R.1E., Mackinac County
Michigan Silica Co. Rockwood, Michigan	Sandstone, Crushed	Near Rockwood Sec. 15, T.5S., R.10E., Wayne County
Michigan Stone Co. R.#2 Ottawa Lake, Michigan	Dolomite, Crushed	East of Ottawa Lake Sec. 25, T.8S., R.6E., Monroe County
Monroe County Rd. Comm. Monroe, Michigan	Dolomite, Crushed (Non-Commercial)	East of Dundee Sec. 13, T.6S., R.7E., Monroe County
Onaway Stone Co. Onaway, Michigan	Limestone, Dimensional	North of Onaway Sec. 5, T.34N., R.2E., Presque Isle County
The Original Sandstone Quarry Napoleon, Michigan	Sandstone	East of Napoleon Sec. 6, T.4S., R.2E., Jackson County
Penn-Dixie Cement Corp. Nazareth, Pa.	Limestone, Crushed	West of Petoskey Sec. 3, T.34N., R.6W., Emmet County
Presque Isle Corporation Chemstone Corp. Agents P. O. Box 321 Alpena, Michigan	Limestone, Crushed	Sec. 2, T.33N., R.8E., Presque Isle County

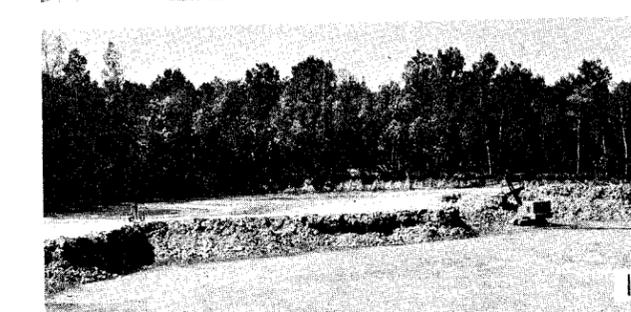
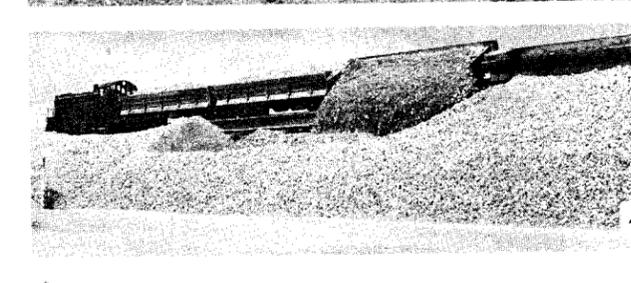
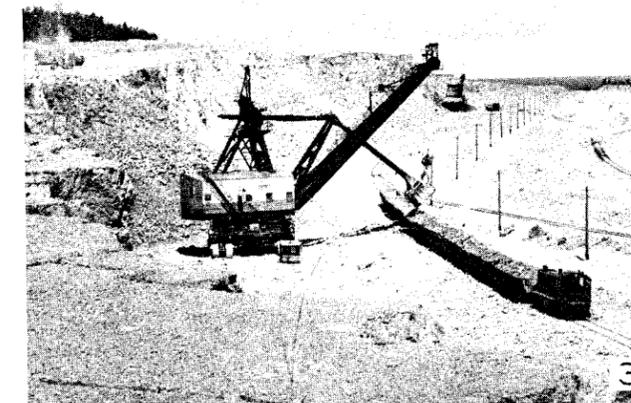
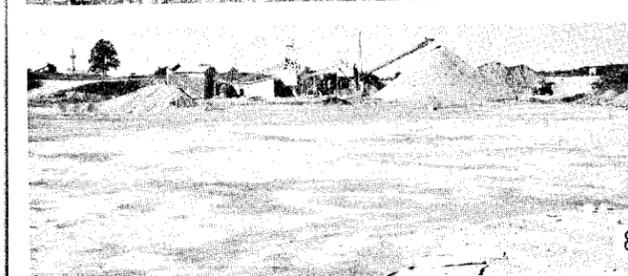
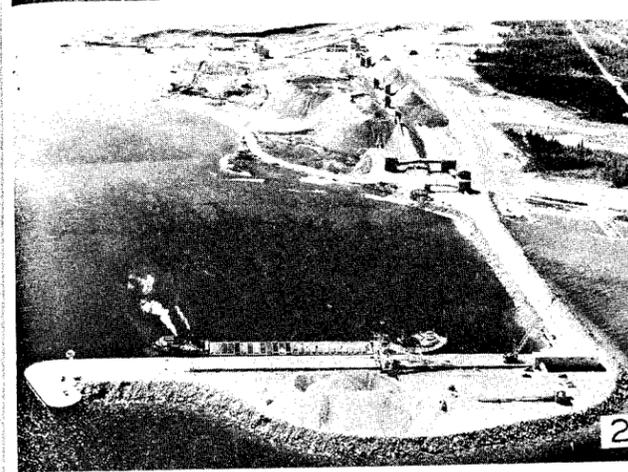
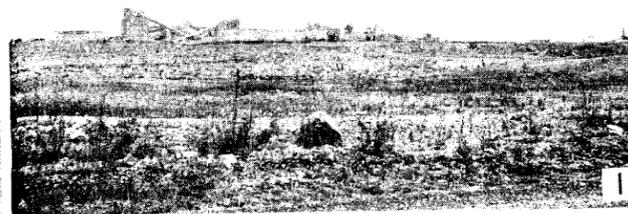
## Stone (Contd.)

<u>Name and Address</u>	<u>Type of Stone</u>	<u>Quarry Location</u>
Ray Sandstone Quarry 303 Nottawaseppe St. Napoleon, Michigan	Sandstone	East of Napoleon Sec. 6, T.4S., R.2E., Jackson County
Star Stone Co. Box 102 Napoleon, Michigan	Sandstone	East of Napoleon Sec. 31, T.3S., R.2E., Jackson County
Superior Natural Red Stone Quarry Baraga, Michigan	Sandstone	North of Baraga Sec. 2, T.52N., R.33W., Baraga County
Superior Rock Products Co. Sagola, Michigan	Dolomite, Crushed Mica Schist, Crushed Feldspar, Crushed	East of Randville Sec. 35, T.42N., R.30W., Sec. 19 and 30, T.42N., R.29W., Dickinson County
Thornton Construction Co. Inc. 1028 Ethel Ave. Hancock, Michigan	Dolomite, Crushed	Sec. 6, T.44N., R.8W., Mackinac County NW SE 5, T.38N., R.26W., Menominee County
Thornton Construction Co. Hancock, Michigan	Granite, Crushed	Sec. 17, T.47N., R.25W., Marquette County
The Wallace Stone Co. Bayport, Michigan	Limestone, Crushed and Dimensional	Southeast of Bayport Sec. 5 and 6, T.16N., R.10E., Huron County

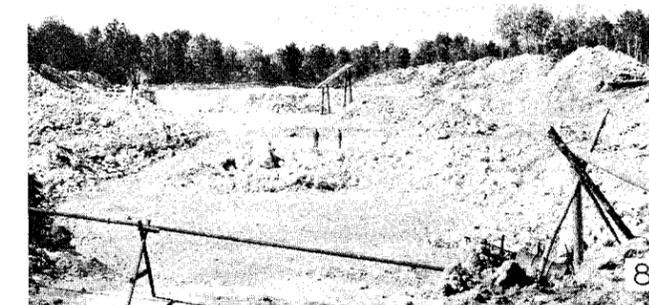
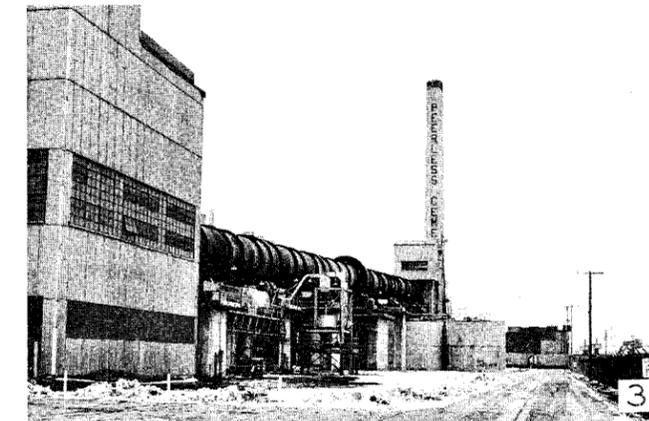
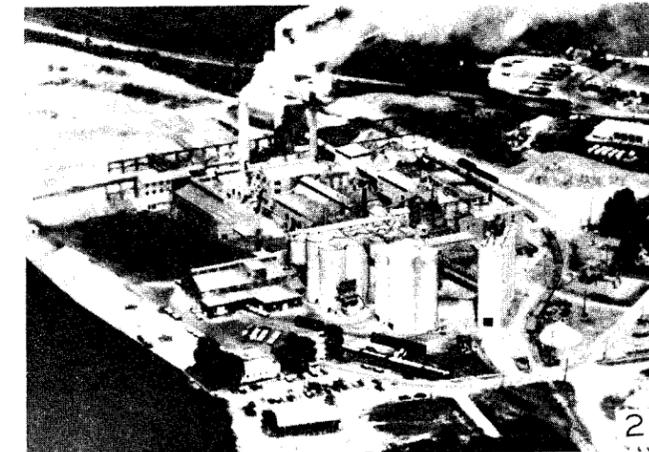
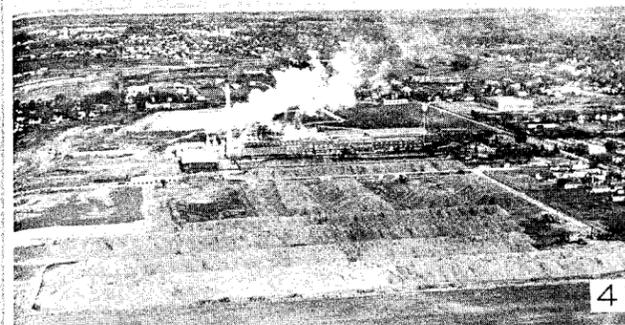
## SULFUR

<u>Name and Address</u>	<u>Location</u>
Aurora Division Ohio Oil Company 15911 Wyoming Avenue Detroit, Michigan	Detroit, Wayne County

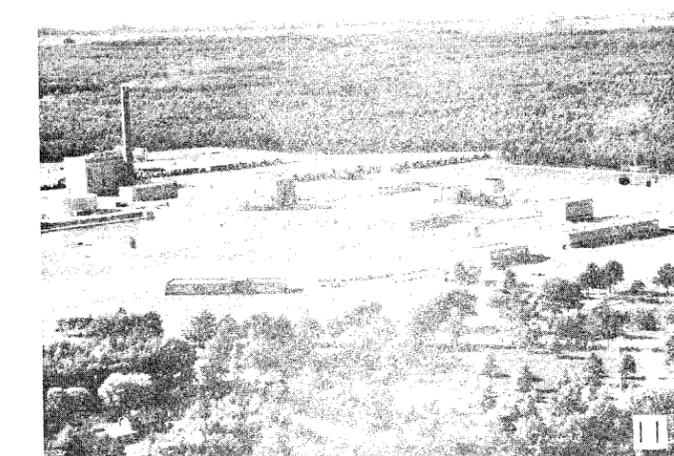
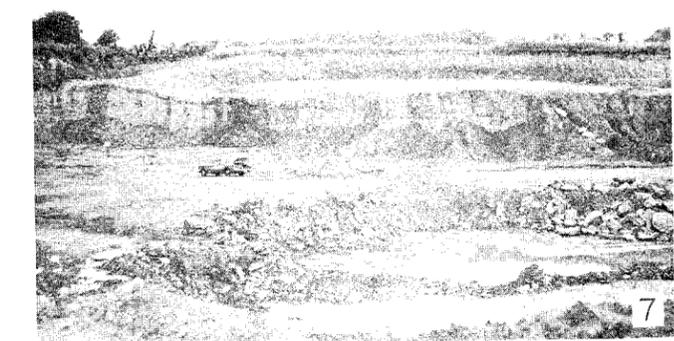
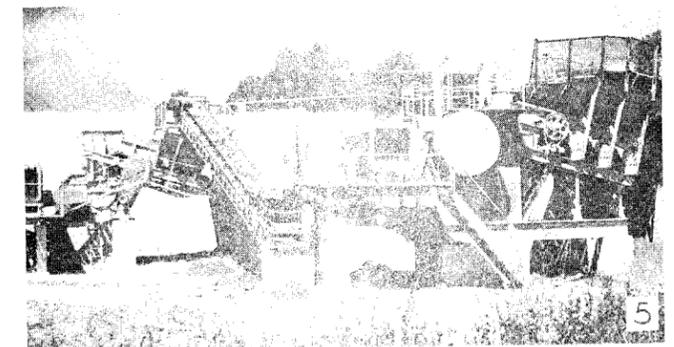
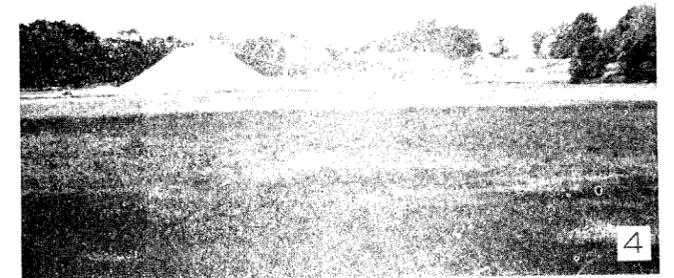
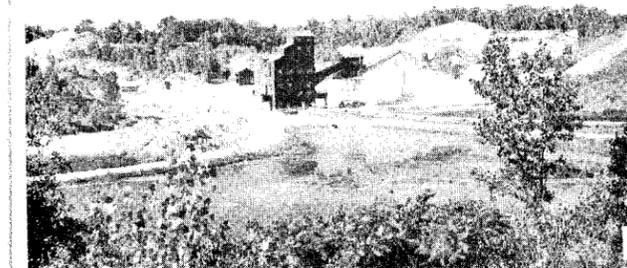
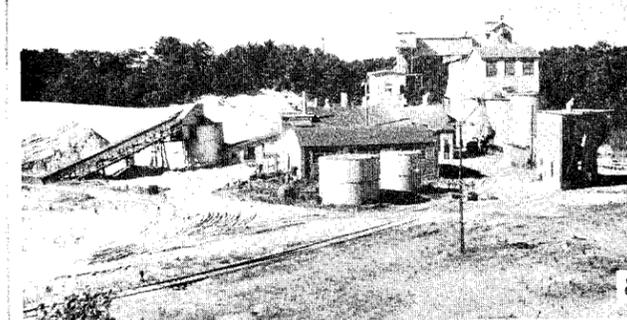
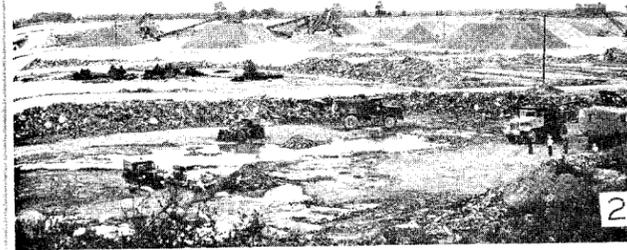
1. Second largest limestone producer on the Great Lakes. The Presque Isle Corp. on Lake Huron, 20 miles north of Alpena. This plant went into operation in 1955 and produces fluxstone for lower Great Lakes steel plants.
2. Air view of Presque Isle operations shown in picture number 1. Picture shows boat loading dock in foreground, screening and storage facilities in background.
3. Loading stone into railroad gondolas in the world's largest limestone quarry. The Rogers City quarry of the Michigan Limestone Division, U. S. Steel Corporation. The stone is high-calcium limestone of the Rogers City-Dundee formations of Middle Devonian Age.
4. Unloading crushed Engadine dolomite at Port Dolomite. The Cedarville plant of the Michigan Limestone Division, U. S. Steel Corporation. The stone will be processed to size before shipment to steel centers of the lower Great Lakes.
5. New quarry of the Drummond Dolomite, Inc. in the Engadine formation on Drummond Island. The stone is marketed both for flux in the making of steel and aggregate for roads and building construction.
- 6 & 7. Iosco County Road Commission roadstone operation near Au Gres. The stone is that of the Bayport Limestone formation of Middle Mississippian Age. Quarry opened in 1953.
8. Arenac County Road Commission roadstone operation near Au Gres. The stone is Bayport limestone, stratigraphically equivalent to that quarried by Iosco and Bay County Road Commissions shown in pictures numbered 7 and 10. Quarry opened in 1952.
- 9 & 10. Bay County Road Commission roadstone operation near Omer. The stone is stratigraphically equivalent to that shown in pictures numbered 7 & 8. County has operated at this site since about 1938.
11. View of the stone quarry operated for the production of aggregate by the Michigan Stone Co. near Ottawa Lake. The dolomitic limestone is that of the Upper Bass Islands Group of Late Silurian Age.
12. Monroe County Road Commission roadstone operation, 6 miles west of Dundee. The dolomite stone is that of the Amherstburg formation of the Detroit River Group of Middle Devonian Age.



1. Distance view of the Peninsula Portland Cement Co. wet-process plant at Cement City. For many years the plant operated on marl or a combination of marl and limestone. In 1951 a limestone quarry was developed in Ohio, and the use of marl was discontinued for this stone.
2. General view of the Aetna Cement plant at Bay City. Four new cement storage silos are in the foreground. Raw material use includes limestone from Rogers City and clay from the company's deposit in Saginaw County.
3. Scene shortly after construction in 1955 of the 425-foot kiln and stack of the Peerless Portland Cement co. Brennon Avenue Detroit plant.
4. One of the states 6 reporting lime producers is the Monitor Sugar Division located at Bay City. In the course of operation this plant will process some 350,000 tons of sugar beets; pump 725 million gallons of water; burn 18,000 tons of limestone; 1,800 tons of coke; 40,000 tons of coal and provide employment that results in an annual payroll in excess of \$1,250,000.
5. Scene at the quarry of the Star Stone Co., one of three sandstone operations at Napoleon. The stone is of the Marshall sandstone formation of Middle Mississippian Age.
6. Quarry view of sandstone operations at Napoleon. Ray Sandstone operation in background. Marshall sandstone formation of Middle Mississippian Age.
7. Men at work in the quarry of the Original Sandstone Quarry at Napoleon. The stone is thinly bedded and loose enough to be pried apart with a crowbar.
- 8 & 9. Scenes at Michigan Gypsum Co. new quarry and railroad loading area, approximately 4 miles southwest of National City. The gypsum goes to the cement industry where it is used as a retarding agent in Portland cement. Michigan formation of Middle Mississippian Age.
10. C. Stanley Hooker marl pit in Osceola County. Marl is dug from low swampy area like this, loaded onto trucks and sold to farmers for soil conditioning. This is one of more than 50 marl pits worked in the state.



- 1 & 2. Distance scene of plant and quarry view of the Wallace Stone Co.'s operation near Bayport. Wallace is said to be the oldest continuous producer of commercial aggregate in the state. Bayport formation of Middle Mississippian Age.
3. Quarry view of the Maybee Stone Co. aggregate operation near Maybee. Amherstburg formation of the Detroit River Group of Middle Devonian Age.
- 4 & 5. Distance view of plant and close up of stone crusher at the Cheney Limestone Co. ag-stone operation at Bellevue. Bayport formation of Middle Mississippian Age.
6. A scene at the Michigan Vitriified Tile Co.'s tile plant at Corunna showing several of the company's kilns in background and stacks of drain tiles in right foreground. Shale of the Saginaw Group of Early Pennsylvanian Age is used at this plant.
7. Quarry view of the American Vitriified Products Company's shale pit at Grand Ledge. Pit shows some 30 feet of black and gray shales of the Saginaw Group of Lower Devonian Age.
8. Distance view of the drying and screening plant of the Nugent Sand Company at Muskegon. Michigan ranks first in the production of sand for molding and foundry use.
9. View of the crusher and screening buildings of the Michigan Silica Company at Rockwood. High-grade silica sand for the manufacture of glass is produced at this plant. The sand is of the Sylvania Sandstone formation of the Detroit River Group of Middle Devonian Age.
10. Hersey Sand and Gravel Division, Wallace Stone Co.'s plant near Hersey. This is one of more than a dozen gravel producing plants in the state that employs a heavy-media separation unit for upgrading aggregate to meet highway specifications.
11. Plant of the Hooker Electrochemical Company at Montique. With salt wells 3,000 feet deep into rock salt beds this company obtains brines for the production of chlorine, hydrogen, and caustic soda.



# GENERALIZED COLUMNAR SECTION OF MICHIGAN

## MICHIGAN GEOLOGICAL SURVEY DIVISION

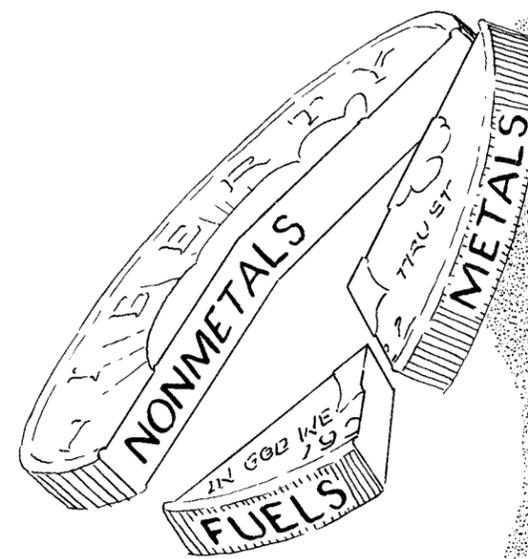
SYSTEM. SERIES	FORMATION. GROUP	LITHOLOGY	THICKNESS	ECONOMIC PRODUCTS
<b>RECENT</b>				
PLEISTOCENE	GLACIAL DRIFT	SAND, GRAVEL, CLAY, boulders, marl	0-1000	SAND, GRAVEL, PEAT, MARL, FRESH WATER
"PERMO-CARBONIFEROUS"	"RED-BEDS"	SHALE, CLAY, SANDY SHALE, gypsum		
PENNSYLVANIAN	GRAND RIVER	SANDSTONE, sandy shale	80-95	BUILDING STONE, FRESH WATER
	SAGINAW	SHALE, SANDSTONE, limestone, coal	20-535	SHALE, COAL, FRESH WATER, BRINE, GAS
MISSISSIPPIAN	BAY PORT	LIMESTONE, SANDY OR CHERTY LIMESTONE, SANDSTONE	2-100	LIMESTONE, FRESH WATER
	MICHIGAN	SHALE, gypsum, anhydrite, sandstone	0-500	GYPSUM
	"MICHIGAN STRAY"	SANDSTONE	0-80	GAS
	MARSHALL	SANDSTONE, sandy shale	100-400	FRESH WATER, BRINE BUILDING STONE
	COLDWATER	SHALE, sandstone, limestone	500-1100	SHALE, FRESH WATER
	SUNBURY	SHALE	0-140	
	BEREA-BEDFORD	SANDSTONE, SHALE	0-325	GAS, OIL
DEVONIAN	ELLSWORTH-ANTRIM	SHALE, limestone	100-950	SHALE, GAS
	TRAVERSE	LIMESTONE, SHALE	100-800	LIMESTONE, OIL, GAS, FRESH WATER
	BELL	SHALE, Limestone	0-80	SHALE
	ROGERS CITY-DUNDEE	LIMESTONE	0-475	LIMESTONE, OIL, GAS, FRESH WATER
	DETROIT RIVER	DOLOMITE, limestone, salt anhydrite	150-1400	LIMESTONE, DOLOMITE, OIL, GAS, SALT, BRINE, FRESH WATER
	SYLVANIA	SANDSTONE, SANDY DOLOMITE	0-550	GLASS SAND, FRESH WATER
SILURIAN	BOIS BLANC	DOLOMITE, CHERTY DOLOMITE	0-1000	
	BASS ISLAND	DOLOMITE	50-570	DOLOMITE, FRESH WATER
	SALINA	SALT, DOLOMITE, Shale, anhydrite	50-4000	SALT, GAS, OIL
	NIAGARAN (Guelph-Lockport-Engadine) (Manistique-Burnt Bluff) (Cataract)	DOLOMITE, Limestone, shale	150-800	LIMESTONE, DOLOMITE, OIL, GAS, FRESH WATER
ORDOVICIAN	CINCINNATIAN (Richmond) (Maysville-Eden)	SHALE, LIMESTONE	250-800	
	TRENTON-BLACK RIVER	LIMESTONE, DOLOMITE	200-1000	OIL, GAS, LIMESTONE, FRESH WATER
	ST. PETER	SANDSTONE	0-150	FRESH WATER
OZARKIAN OR CANADIAN	PRAIRIE DU CHIEN	DOLOMITE, Shale	0-410	
	HERMANVILLE	DOLOMITE, SANDY DOLOMITE, sandstone	15-500	
CAMBRIAN	LAKE SUPERIOR (Munising) (Jacobsville)	SANDSTONE	500-2000	BUILDING STONE FRESH WATER
ALGONKIAN	KEWEENAW (Copper formations)	LAVA FLOWS, conglomerate, shale, sandstone	9800-35000	COPPER, SILVER, ROAD METAL, SEMI-PRECIOUS GEM STONES
	KILLARNEY GRANITE	GRANITE, GNEISS, diorite, syenite		
	HURONIAN (Iron formations)	SLATES, HEMATITE, SCHIST, QUARTZITE, GRANITE, marble, dolomite	2000+	IRON ORE, ROOFING SLATE, ROAD METAL, GRAPHITE MARBLE
ARCHEAN	LAURENTIAN	SCHIST, GNEISS, GRANITE		ROAD METAL, BUILDING STONE, VERDE ANTIQUE, TALC, GOLD
	KEEWATIN	SCHIST, GREENSTONE, SLATE		ROAD METAL



ANNUAL STATISTICAL SUMMARY

GEOLOGICAL SURVEY DIVISION  
DEPARTMENT OF CONSERVATION

MICHIGAN'S  
MINERAL INDUSTRIES, 1962



\$437,689,000.00

1963