

MICHIGAN MINERAL PRODUCERS 1977

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ELEVENTH
ANNUAL
DIRECTORY

DEPARTMENT OF NATURAL RESOURCES
GEOLOGICAL SURVEY DIVISION

1978

COVER ILLUSTRATIONS

The covers of this directory were created by Mr. Donald E. Raymond of the Geological Survey Division staff. The front cover idealizes the production and value charts plotted over the years for Michigan's Mineral production. The back cover depicts the many years of mineral production statistics maintained by the Geological Survey Division.

The year 1977 marks 100 years of official collection of mineral statistics in Michigan. Some statistics have been kept unofficially since the early 1840's. The topic, Mineral Statistics, included in this booklet, briefly explains the history involved, and gives condensed mineral production and value data for 1976. More detailed statistical information is available in other publications listed in this directory.

MICHIGAN MINERAL PRODUCERS

1977

GEOLOGICAL SURVEY DIVISION

ANNUAL DIRECTORY 11



Compiled

By

Milton A. Gere, Jr.

STATE OF MICHIGAN
William G. Milliken, *Governor*
DEPARTMENT OF NATURAL RESOURCES
Howard A. Tanner, *Director*

GEOLOGICAL SURVEY DIVISION
Arthur E. Slaughter, *Chief*
and *State Geologist*

NATURAL RESOURCES COMMISSION
Dean Pridgeon, *Chairman*, Montgomery, 1974
E. M. Laitala, Hancock, 1961
(Mrs.) Joan L. Wolfe, Belmont, 1973
Hilary F. Snell, Grand Rapids, 1971
Harry H. Whiteley, Rogers City, 1961
Carl T. Johnson, Cadillac, 1963
Charles G. Younglove, Allen Park, 1972
John M. Robertson, *Executive Assistant*

. . . the State Geological Survey shall make an annual report to the Governor, setting forth in detail the mineral statistics for the year; with the progress and development . . . mining and smelting industries.

Published by authority of State of Michigan CL '70 s.319.202
Printed by Reproduction Services Section, Office Services Division,
Department of Management and Budget

Available from the Information Services Center, Michigan Department
of Natural Resources, Box 30028, Lansing, Michigan 48909

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PREFACE

"Michigan Mineral Producers, 1977", is the eleventh annual directory of Metallic and Nonmetallic mineral commodity producers in Michigan. This edition includes the names and addresses of the producers and the locations of their operations as of the end of 1977, and mineral commodity production and values for 1976. Much of the material in this directory is based upon the 1976 annual canvass of the mineral producers by the U.S. Bureau of Mines, and name and location updates supplied to them by the U.S. Mine Safety and Health Administration.

Listings are on a commodity basis by operator as well as a cross reference by county. Numerous location maps and historical production and value charts accompany the various commodity material. Once again, a list of state-owned sand and gravel pit locations is included.

The writer wishes to thank the mineral producers for their cooperation in submitting the U.S.B.M. forms and answering inquiries for information pertaining to their operations. Thanks are given to the Bureau of Mines, U.S. Department of the Interior, both their Federal headquarters and the State Liaison Office - Michigan for canvassing the mineral producers and providing the data collected. The author wishes to give special thanks to the Michigan Liaison Officer, Mr. Edward C. Peterson, and the Liaison Program Assistant, Ms. Esther A. Middlewood for much extra help to complete this directory.

The Lansing and Marquette offices of the Mine Safety and Health Administration of the U.S. Department of Labor are to be thanked for updates on producer name and location changes. These updates throughout the year help keep the material reported herein more accurate.

The writer is also indebted to the following persons from the Geological Survey Division and wishes to express his thanks: 1) Authors of previous editions for ideas and formats passed on; 2) Mr. Donald E. Raymond for designing the covers and updating the various maps and charts; 3) Mr. Harry O. Sorensen, Unit Supervisor and Mr. William A. Walden, Subunit Supervisor, both of the Mining and Economic Geology Unit, for their helpful suggestions; 4) Mrs. Lois A. Padgett, of the Mining and Economic Geology Unit for typing the manuscript.

It is hoped that this edition, although later than usual, will be useful to those persons interested in Michigan's vast resources of Minerals. Suggestions for additions, deletions, changes, or other improvements for future editions will be gratefully received.

Lansing, Michigan

December, 1978

Milton A. Gere, Jr.

Geologist

Mining and Economic Geology Unit

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INTRODUCTION

Michigan's mineral industry produces a wide variety of mineral commodities from many locations throughout the state as indicated by the listings in this directory for 1977. As of the end of the year there were 435 producers of 16 categories of metallic and non-metallic commodities with over 698 active operations. There was also active exploration for more mineral deposits in various parts of the state.

The mineral industry is important to the citizens of Michigan as an employer of thousands of people. According to Michigan Employment Security Commission statistics, an average of 12,700 people were employed by the mining industry in Michigan in 1976. This does not include the number of owner-operators also involved in the mineral industry, along with others involved in the production of petroleum and natural gas. These people produced \$1,485,646,237 worth of mineral commodities in Michigan in 1976. This amounts to about two percent of the Gross State Product for this year.

Michigan's nearly 1½ billion dollars of mineral commodity production during 1976 can be placed into three general categories; Metallics, Nonmetallics, and Fuels. The value for Metallics was \$487,171,681; Nonmetallics was \$563,240,353; and \$435,234,203 for Fuels.

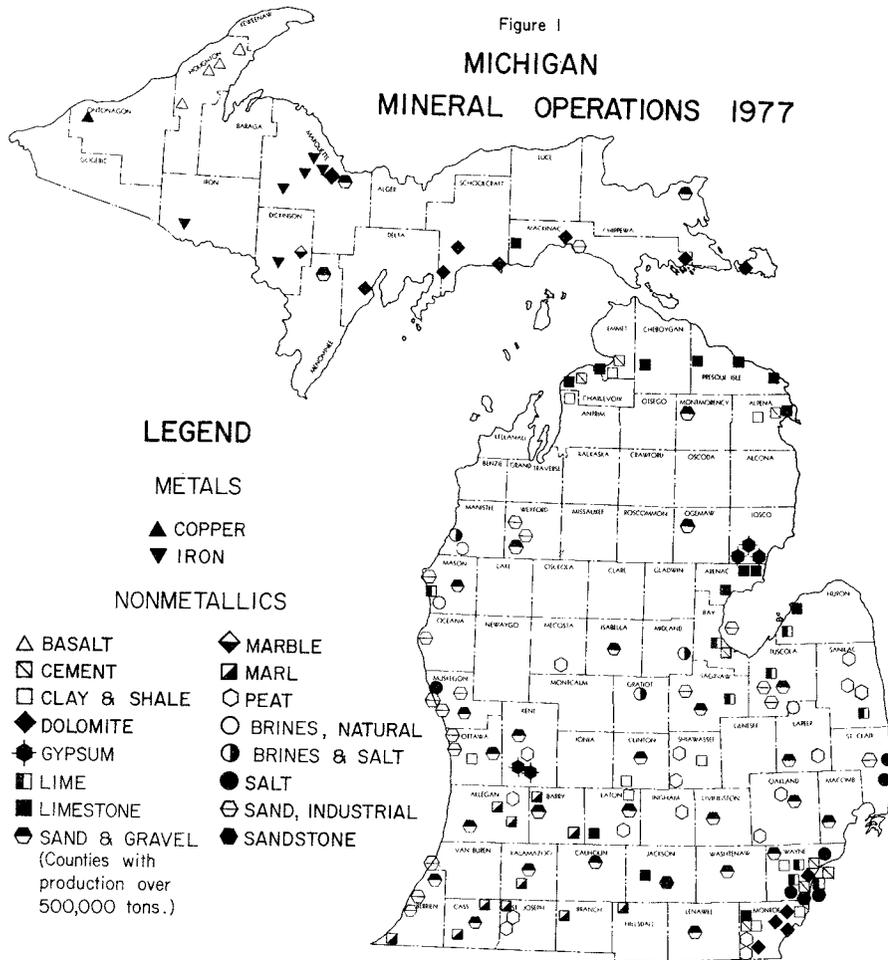
The mineral commodities produced in Michigan are used within the state and are also shipped to other states and countries to help fulfill their mineral needs. In return, other mineral commodities are shipped to Michigan for industries which process materials not produced here.

The U.S. Bureau of Mines State Liaison Office estimates that the processing of raw minerals in Michigan results in products valued about ten times the value of the State's extracted minerals themselves. Michigan's availability of bulk shipping via the Great Lakes enhances this important form of interstate and international trade.

Besides being important for the economy, many Michigan minerals are sought after by mineral and rock collectors. These may not be the same mineral commodities used by industry and they may be of little or unknown dollar value, but their natural beauty makes them of interest to a growing number of people.

Anyone interested in Michigan's mineral commodities and various aspects of the geology of the state are invited to contact the Geological Survey Division offices. Many files of maps, well logs, and other materials of public record are available for office use.

Figure 1
**MICHIGAN
MINERAL OPERATIONS 1977**



MINERAL PRODUCTION STATISTICS

Background

Michigan mineral production statistics have been officially kept for 100 years. Act 9 of Public Acts of 1877, as amended, was entitled "An act to authorize the appointment of a commissioner of mineral statistics..." Among the duties listed is the following, known as Sec. 5, "Said commissioner is hereby authorized to demand, and it shall be the duty of all corporations or individuals engaged in mining to make such reports under oath, as to product and other matters as shall be required by him on blanks to be furnished by said commissioner for that purpose".

The Commissioner of Mineral Statistics office was abolished and the duties transferred to the Board of Geological Survey by Act 7 of P. A. 1911, as amended. Then Act 17 of P. A. 1921, as amended, transferred the duties of the Board of Geological Survey to the Department of Conservation wherein the Geological Survey Division was formed. Act 380 of P. A. 1965, as amended, known as the Executive Organization Act, changed the name of the Department of Conservation to the Department of Natural Resources (DNR). Thus, the original "commissioner" duties now lie within the DNR.

For the last number of years the Geological Survey Division, DNR, has had a memorandum of understanding with the U.S. Bureau of Mines in which the U.S.B.M. gives the Geological Survey Division copies of the mineral production data which it gathers during its' annual canvass of the mineral industry. It is now from this canvass that the state receives most of its' mineral production and value data. Copper and iron ore data is collected separately by the Geological Survey Division for tax purposes. Petroleum and natural gas figures are reported directly, and indirectly, to the Geological Survey Division's Production Proration Unit for proration and statistical purposes.

The publication of Michigan mineral statistics is done in several ways. A very brief summary sheet of production and value data is printed in the Annual Directory, such as this publication, but the data is for the year previous to the Directory listing. Also, in the directory are a number of historical production and value charts for various commodities and all commodities combined.

A detailed booklet containing yearly mineral statistical data, mineral commodity and industry information is entitled "The Mineral Industry of Michigan". This is a preprint from the annual "U.S. Bureau of Mines Minerals Yearbook" and is currently written by the State Liaison Officer and Liaison program assistant of the State Liaison Office of the U.S. Bureau of Mines, located in Lansing. Under a memorandum of understanding between the Geological Survey Division and the U.S. Bureau of Mines, the Geological Survey Division attaches a cover and preface to this "U.S.B.M. Minerals Yearbook" chapter and offers it as the Geological Survey Division's "Annual Statistical Summary" for the minerals industry.

Yearly statistics for Michigan's petroleum and natural gas exploration and production are published as another Geological Survey Division Annual Statistical Summary entitled "Michigan's Oil and Gas Fields". This booklet is compiled by the Petroleum Geology Unit of the Geological Survey Division and is available for \$2.00 per copy.

An additional U.S.B.M. publication which also includes some statistical data is "Minerals in the Economy of Michigan". This annual booklet is written by the State Liaison Office and was first published in 1978.

A yearly release of statistical data for iron is produced by the Geological Survey Division as a three page speciality. The title is "General Statistics Covering Production of Michigan Iron Mines". Historical production of iron through 1974 is reported in the Geological Survey Division's Circular 12, "One Thousand Million Tons", by R. C. Reed, 1975, which is sold for 50 cents per copy.

Geological Survey Division publications are available from the following address: Michigan DNR, Information Services Center, Box 30028, Lansing, MI 48909. The Center is located on the 7th floor of the Stevens T. Mason Building and is open for over-the-counter sales. Sales within Michigan are subject to 4% sales tax.

Information about U.S. Bureau of Mines publications is available from the U.S. Bureau of Mines, State Liaison Office - Michigan, Room 200, Corr Building, 300 E. Michigan Ave., Lansing, MI 48933.

Current Production Data

As of the end of 1977, there were 435 metallic and nonmetallic mineral commodity producers with at least 698 operations in Michigan. We assume more than the 698 operations existed because numerous sand and gravel operators use portable equipment and operate out of several locations in a year's time. Not all of these locations get reported to us. The list of operations follows in Table 1.

TABLE 1 NUMBER OF PRODUCERS AND OPERATIONS BY COMMODITY - 1977

Commodity Produced	Number of Producers	Number of Operations
Copper	2	2
Iron	3	6
Clay and Shale	8	9
Gypsum	5	9 (quarries + mills)
Marl	10	10
Natural Brines	5	6
Peat	15	17
Salt	8	9
Sand and Gravel		
Construction	317	554+
Industrial	15	18
Stone		
Limestone and Dolomite	26	30
Miscellaneous Stone	2	5
Sandstone	3	4
Cement	8	8
Lime	6	9
Sulfur	2 (refineries)	2
Total	435	698+

The 1976 Production and Value is shown by Table 2. Our figures and those of the U.S. Bureau of Mines may not be the same due to using different categories and criteria.

Historical mineral value information for the years 1910 to 1976 is illustrated by Figure 2. Fuels, Metallic Minerals, Nonmetallic Minerals, and Total values are shown. The 1976 mineral commodity value and rank for each county is included in Table 3. Since the county ranking is based upon dollar values, those counties producing crude oil and natural gas may not have their true production values shown.

The county values for crude oil and natural gas are based upon average values per barrel and thousand cubic feet (M.C.F.), respectively, multiplied by the production figures published in "Michigan's Oil and Gas Fields, 1976". The oil values shown may differ from actual values because crude oil prices depend upon whether the well is classified as "old oil", "new oil", "stripper oil", and "sweet" or "sour" oil. The gas values may differ because the price paid for gas at the wellhead depends upon individual contract agreements and the B.T.U. content of the gas. Thus, counties with large quantities of oil and gas production may in reality have a higher or lower mineral production value and ranking than shown here.

The map in Figure 3 shows 1976 county mineral production value as to category of Fuels, Metallic Minerals, and Nonmetallic Minerals. As mentioned in the Introduction, the 1976 value of Fuels was \$435,234,203, Metallic Minerals \$487,171,681, Nonmetallic Minerals \$563,240,353, and the total value was \$1,485,646,237.

Table 2

MINERAL PRODUCTION OF MICHIGAN - 1976

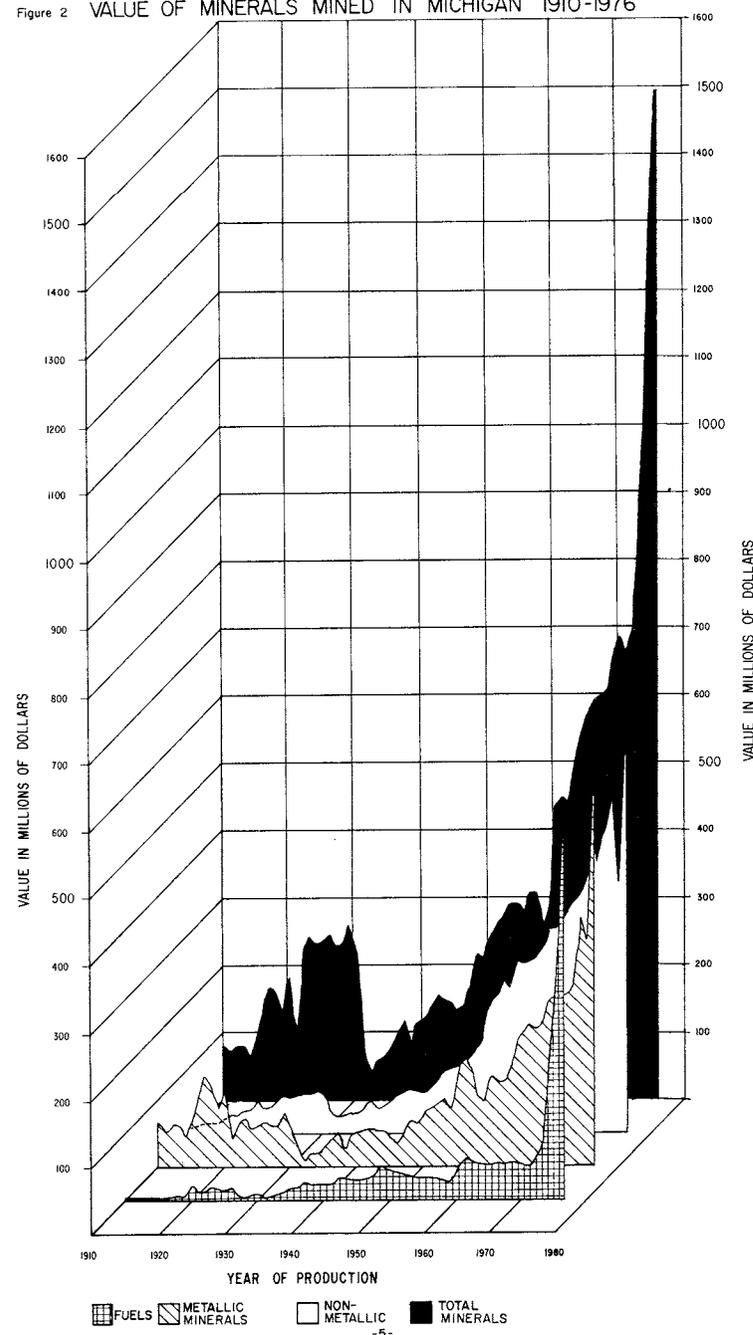
Compiled by the Geological Survey Division
(from U.S.B.M. and Company Information)

MINERAL	UNIT	QUANTITY	VALUE	PERCENT CHANGE FROM 1975 IN: QUANTITY/VALUE	RANK IN VALUE FOR U.S. 1975/1976
Iron Ore	Long tons (2240#)	15,687,910	426,446,262	+ 9.109 +23.09	2 2
Cement	Short tons	5,331,490	159,576,957	+10.85 +15.34	4 5
Petroleum (5)	Barrels (42 gal.)	30,421,363	329,636,770	+24.58 +25.65	- -
Sand & Gravel	St. Tons (2000#)	47,318,499	79,118,555	+ 0.57 + 7.80	3 5
Nat. Brines (1)	Short Tons	1,192,531	126,443,347	+ 9.96 + 8.19	**
Copper	Pounds	86,930,299	59,502,695	-38.90 -27.52	6 6
Salt	Short Tons	4,189,336	79,711,972	+ 7.55 +11.58	2 3
Stone (2)	Short Tons	41,418,274	82,176,000	+ 3.91 +11.58	10 10
Lime	Short Tons	1,455,886	39,686,022	+ 1.54 + 8.61	5 4
Nat. Gas (5)	Th. Cu. Ft. (MCF)	120,250,105	105,597,433	+17.13 +62.20	8 -
Gypsum (crude)	Short Tons	1,836,957	10,344,621	+50.08 +74.25	1 1
Clay & Shale (3)	Short Tons	1,934,334	4,741,192	+ 6.39 +32.44	6 6
Nat. Gas Liq. (5)	Gallons (262,714,326)		---	(+20.02) --	- -
Peat	Short Tons	300,103	3,713,954	+22.53 +15.83	1 1
Marl	Short Tons	66,527	109,527	-35.98 -28.37	1 4
Miscellaneous (4)	---	---	2,239,873	---	-40.24
Sub-Total			1,509,045,180		
Minus (stone used in manufacturing of lime and cement in Michigan and processed sandstone included in sand and gravel figures)			-23,398,943		
Total value of Michigan production 1976			<u>1,485,646,237</u>		

- (1) Bromine, Magnesium compounds. Calcium-Magnesium chloride, and Iodine.
**U.S. Rank 75/76 as above 2/2, 1/1, 2/1, 1/1.
- (2) Does include 17,446,891 short tons of limestone and dolomite used in the manufacture of cement and lime. See other notes.
- (3) Tile, brick, pottery, clay used for cement, lightweight aggregate, and miscellaneous.
- (4) Sulfur, natural mineral pigments, silver.
- (5) Natural Gas Liquids was figured into Oil and Natural Gas production and values by the Production Proration Unit. They no longer differentiate the three.

The U.S. Bureau of Mines ranked Michigan in 13th place for mineral production value in 1976.

Figure 2 VALUE OF MINERALS MINED IN MICHIGAN 1910-1976



COUNTY MINERAL VALUATION AND RANK --- 1976

COUNTY	M E T A L L I C			I N D U S T R I A L M I N E R A L S										F U E L S		MINERAL PRODUCTION VALUE (\$) (in thousands)			
	Silver	Iron Ore	Copper	Sulfur	Stone	Total Sand & Gravel	Industrial Sand	Salt	Peat	Natural Salines	Marl	Lime	Gypsum	Clay and Shale	Cement		Crude Oil	Natural Gas	County Value Ranking
ALCONA						52												76	187
ALGER						50												74	207
ALLEGAN						20			10							24	25	49	2,292
ALPENA					4	54								1	1		6	66,941	
ANTRIM						56										22	14	42	3,401
ARENAC					12	80										20	45	2,831	
BARAGA						55										77	183		
BARRY						24										40	63	872	
BAY						--										21	22	13,112	
BENZIE						76										50	35	83	5,095
BERRIEN						3		1								7	7	217	
BRANCH						48										6	6	5	5,095
CALHOUN						22										6	5	17	22,016
CASS						19										43	61	987	
CHARLEVOIX						59										16	16	28,074	
CHEBOGAN						74										51	78	166	
CHIPPEWA						5										14	39	3,751	
CLARE						35										9	15	23	11,573
CLINTON						14										16	16	28,074	
CRAWFORD						73										3	31	6,129	
DELTA						28										18	22	39	3,751
DICKINSON						41										16	9	26	8,202
EATON						21			11							35	20	15,968	
EMMET						46										18	47	2,736	
GENESEE						43										16	10	55,526	
GLADWIN						79										8	8	202	
GOGEBIC						57										5	5	505	
GD. TRAVERSE						32										3	7	66,929	
GRATTIOT						38										39	28	24	11,114
HILLSDALE						33										7	19	16,388	
HOUGHTON						44										44	44	2,839	
HURON						58										5	5	1,746	
INGHAM						60										5	15	29,809	
IONIA						36										69	25	407	
IOSCO						45										25	25	9,728	
IRON						68										36	36	4,276	

Table 3

ISABELLA						27													51	1,917
JACKSON						31													28	6,833
KALAMAZOO						12													54	1,668
KALKASKA						81													8	59,719
KENT						4													33	5,369
KEWEEAW						75													82	36
LAKE						69													62	960
LAPEER						23													40	3,654
LEELANAU						49													73	211
LENAWEE						17													60	1,021
LIVINGSTON						6													37	4,128
LUCE						62													80	106
MACKINAC						53													21	13,354
MACOMB						10													48	2,547
MANISTEE						66													2	125,181
MARQUETTE						16													1	369,226
MASON						11													6	68,837
MECOSTA						42													2	359
MENOMINEE						39													70	722
MIDLAND						--													14	31,613
MISSAUKEE						67													27	7,489
MONROE						34													12	33,132
MONTCALM						26													59	1,244
MONTMORENCY						7													65	641
MUSKOGON						64													38	3,811
NEWAYGO						1													75	205
OAKLAND						18													18	18,497
OCEANA						29													58	1,286
OGEMAW						77													29	6,729
ONTONAGON						25													9	58,202
OSCEOLA						63													41	3,464
OSCODA						61													81	105
OTSEGO						4													4	78,706
OTTAWA						51													32	5,633
PRESQUE ISLE						78													13	32,826
ROSCOMMON						13													35	4,439
SAGINAW						72													50	1,945
ST. CLAIR						30													11	47,488
ST. JOSEPH						40													68	490
SANILAC						70													53	1,744
SCHOOLCRAFT						37													56	1,423
SHIawassee						9													57	1,370
TUSCOLA						47													43	3,063
VAN BUREN						8													71	338
WASHTENAW						2													46	2,792
WAYNE						15													3	83,986
MEXFORD						8													10	6,542 *

M = WITHHELD

*NOTE = DATA WILL NOT ADD UP TO TOTAL SHOWN DUE TO INDEPENDENT ROUNDING -

11,485,646

METALLIC MINERALS

During 1977 the metallic minerals mined in Michigan consisted of iron and copper with some associated silver. Back in the late 1800's some gold was also mined.

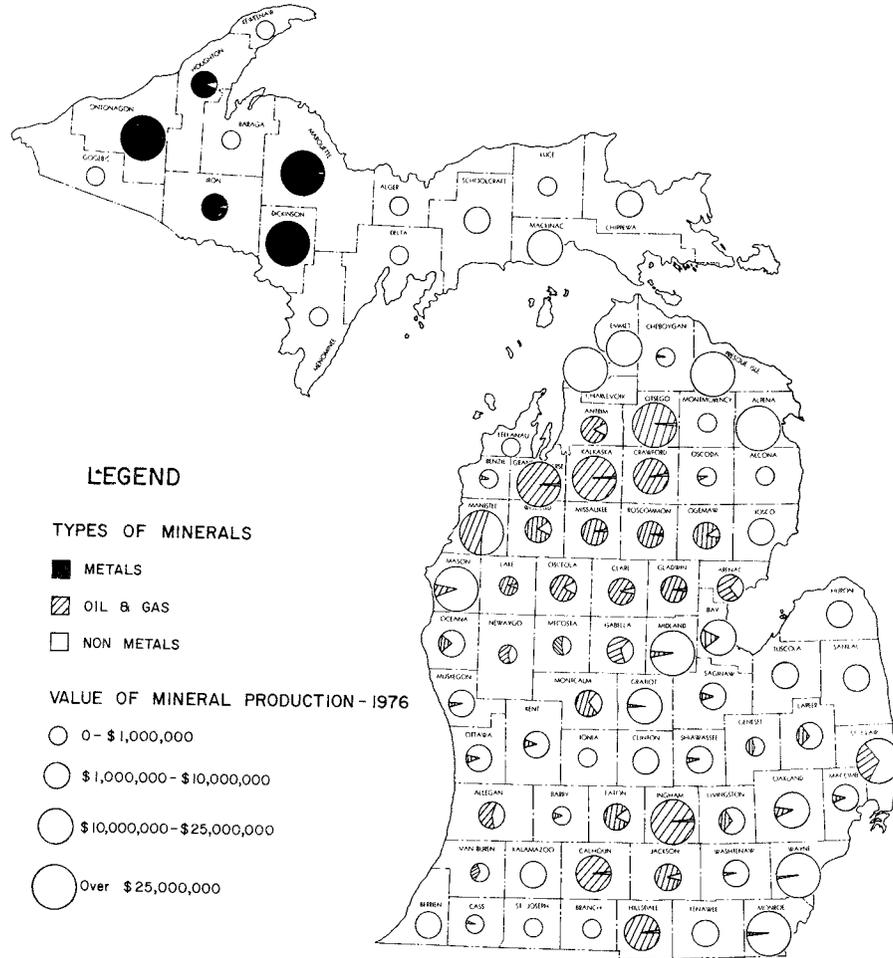
During the past few years there has been reported exploration activity for several metals. So far, no great new finds have been reported, but continued exploration efforts may eventually prove fruitful.

COPPER

Copper, with some associated silver, was mined from only one mine in 1977. Low copper prices forced the White Pine Division of Copper Range Co., which is owned by the Louisiana Land and Exploration Co., to cut back their production. A labor strike also contributed to the lower production. The Homestake Copper Co., a subsidiary of the Homestake Mining Co., stopped production of copper in late 1976. However, they continued mine and surface exploration drilling until late 1977 when all activity ceased. It is not known when Homestake Copper Co. will reopen their properties.

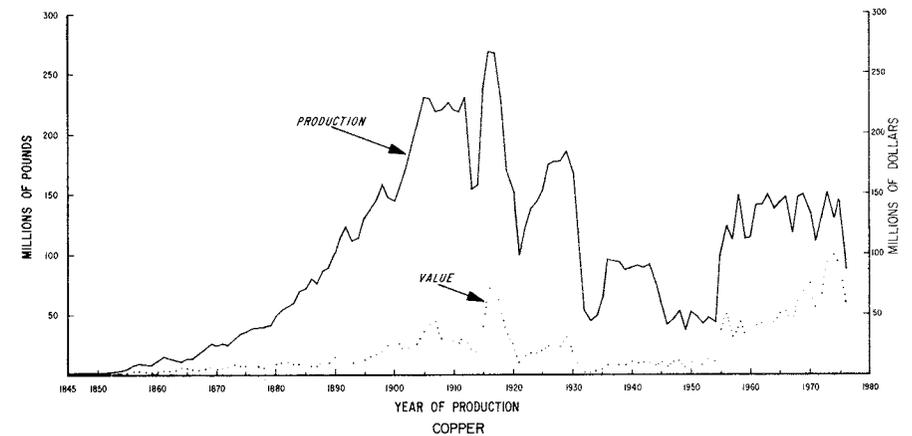
Michigan's Copper industry has been through many 'boom and bust' cycles since the start of modern copper mining in the 1840's. Various exploration efforts continue, however, an increase in the price of copper will be required before interest in the State's low grade copper deposits can ever be fully reactivated.

Figure 3 MINERAL VALUE DISTRIBUTION BY COUNTY 1976



-8-

Figure 4 PRODUCTION AND VALUE OF MICHIGAN COPPER 1845-1976



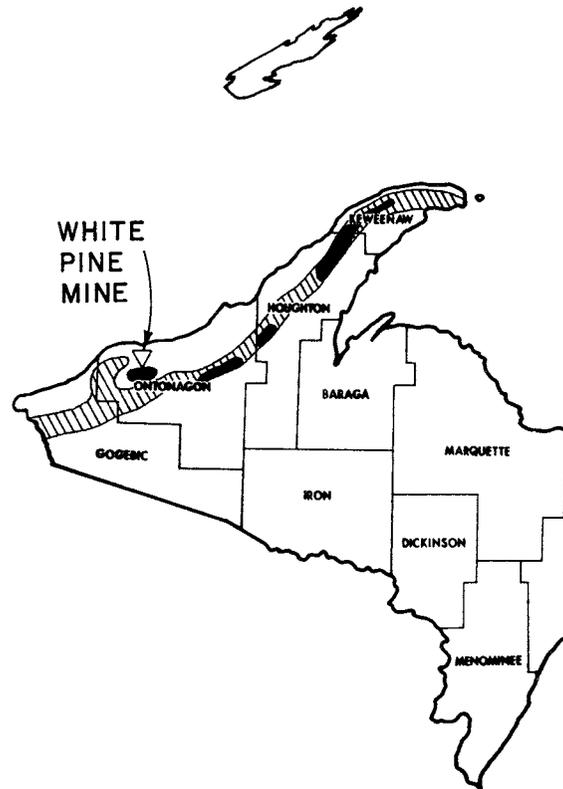
-9-

COPPER MINES

Name of Operation	Map No.	Ore Type	Location
White Pine Division of Copper Range Co. P. O. Box 100 White Pine, Michigan 49971	(1)	Copper sulfide, native copper, native silver	White Pine Mine White Pine, Mich. in Sec. 4, T50N, R42W, <u>ONTONAGON COUNTY</u>

Figure 5

MICHIGAN COPPER RESOURCES



KEY

- KNOWN PRODUCTIVE AREAS
- ▨ COPPER BEARING FORMATIONS
- ▽ ACTIVE MINE

IRON

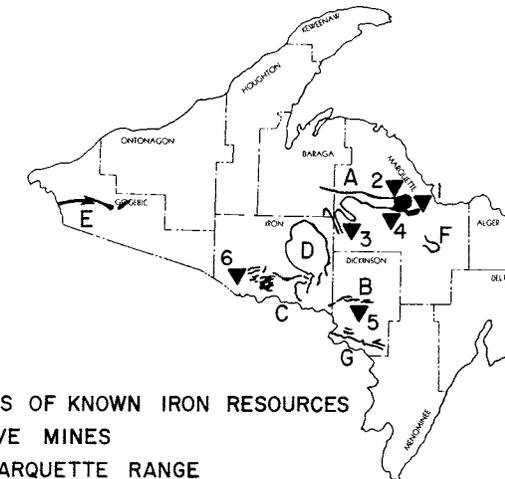
Six iron ore mines, four open-pit and two underground, continued to operate in Michigan during 1977. Production was hampered by a long strike at the four mines operated by the Cleveland Cliffs Iron Co. The other two mines, the Sherwood and the Groveland, continued operations due to early contract negotiations.

The Inland Steel Co. announced that they will close their Sherwood Mine in mid-1978 and continue to ship ore from stockpile until 1981 when all operations will cease. Michigan will then be left with only one underground mine, the Mather at Negaunee.

The U. S. Geological Survey has recently made an inventory of iron-rich rock in the state. They differentiated between iron reserves and resources. Rock which is currently minable was labelled reserves. All other iron-rich rock was named iron resources because new technology will be needed to make it minable in the future. With huge quantities of both reserves and resources, iron ore may be an important commodity on Michigan's list of minerals for generations in the future.

Figure 6

MICHIGAN IRON RESOURCES



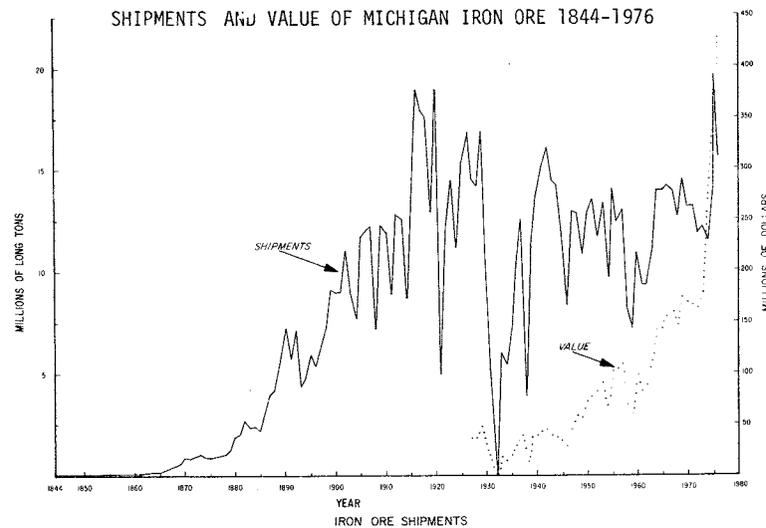
KEY

- ~ AREAS OF KNOWN IRON RESOURCES
- ▽ ACTIVE MINES
- A. MARQUETTE RANGE
 - 1. EMPIRE- OPEN PIT
 - 2. MATHER- UNDERGROUND
 - 3. REPUBLIC- OPEN PIT
 - 4. TILDEN- OPEN PIT
- B. FELCH DISTRICT
 - 5. GROVELAND- OPEN PIT
- C. IRON RIVER CRYSTAL FALLS DISTRICT
 - 6. SHERWOOD- UNDERGROUND
- D. AMASA OVAL DISTRICT- INACTIVE
- E. GOGEBIC RANGE- INACTIVE
- F. GWINN DISTRICT- INACTIVE
- G. IRON MOUNTAIN RANGE- INACTIVE

IRON MINING COMPANIES

Operator	Map No.	Range/District & Ore Type	Mine Name/Type & Location
Cleveland-Cliffs Iron Co. (Operator for Empire Mining Company) 504 Spruce St. Ishpeming, Michigan 49849	(1)	MARQUETTE Magnetite	Empire-Open pit 1 Mi. NW of Palmer, in Secs. 19, 20, 25, 30 T47N, R26W <u>MARQUETTE COUNTY</u>
Cleveland-Cliffs Iron Co. (Operator for the Negaunee Mine Company) 504 Spruce St. Ishpeming, Michigan 49849	(2)	MARQUETTE Hematite	Mather-Underground Ishpeming-Negaunee in Secs. 1 & 2 T47N, R27W <u>MARQUETTE COUNTY</u>
Cleveland-Cliffs Iron Co. (Operator for the Marquette Mining Company) 504 Spruce St. Ishpeming, Michigan 49849	(3)	MARQUETTE Hematite	Republic-Open pit 1 Mi. S of Republic in Sec. 7 & 18, T46N, R29W <u>MARQUETTE COUNTY</u>
Cleveland-Cliffs Iron Co. (Operator for Tilden Mining Company) 504 Spruce St. Ishpeming, Michigan 49849	(4)	MARQUETTE Hematite Magnetite Martite	Tilden-Open pit 3 Mi. S of Ishpeming in Sec. 26, T47N, R27W <u>MARQUETTE COUNTY</u>
Hanna Mining Co. Groveland Mine Star Route 1 Box 131 Iron Mountain, Michigan 49801	(5)	FELCH Magnetite Hematite	Groveland-Open pit 3 Mi. E of Randville in Sec. 31, T42N, R29W <u>DICKINSON COUNTY</u>
Inland Steel Co. Sherwood Mine P. O. Box 232 Iron River, Michigan 49935	(6)	IRON RIVER- CRYSTAL FALLS Hematite	Sherwood-Underground ½ Mi. N of Iron River in Secs. 23 & 24, T43N, R35W <u>IRON COUNTY</u>

Figure 7



NONMETALLIC MINERALS

Nonmetallic minerals produced in Michigan during 1976 included the following: Sand and Gravel, Natural Brines, Salt, Stone, Gypsum, Clay and Shale, Peat, Marl and some Sulfur. Two important nonmetallic commodities which are produced by processing raw minerals are also included with the minerals themselves. These are Cement and Lime.

CEMENT

Cement, like lime, is a manufactured mineral product which has been included with nonmetallic mineral production over the years. Simply, Portland cement is made by combining five parts of limestone and one part of shale or clay. The mixture is ground to a powder and passed through a rotary kiln which is fired to a temperature of about 1500°C. In the kiln the materials roll up into gray, ball shaped masses which emerge as hardened clinkers. The clinkers are then ground to a powder and ground gypsum is combined with it to form what we know as Portland cement. Additional ingredients are added to form various other types of cement for specific uses, such as masonry cement, etc.

Michigan's eight cement plants operate in three different ways in respect to their raw materials: Four plants are located at or adjacent to their limestone quarries, two receive all of their raw materials from pits and quarries in other locations, some from Canada; two purchase partially processed material, clinker, from other producers and complete the processing at their facilities.

During 1977 there were two changes made by Michigan's Cement producers: 1) Martin Marietta Cement's Northern Division plant at Essexville was sold to the Aetna Cement Corporation, a subsidiary of Lake Ontario Cement Ltd., of Toronto, Ontario, Canada. 2) Jefferson Marine Terminal, a division of the Edward C. Levy Co., Detroit, ceased production of cement near the end of the year.

Figure 8

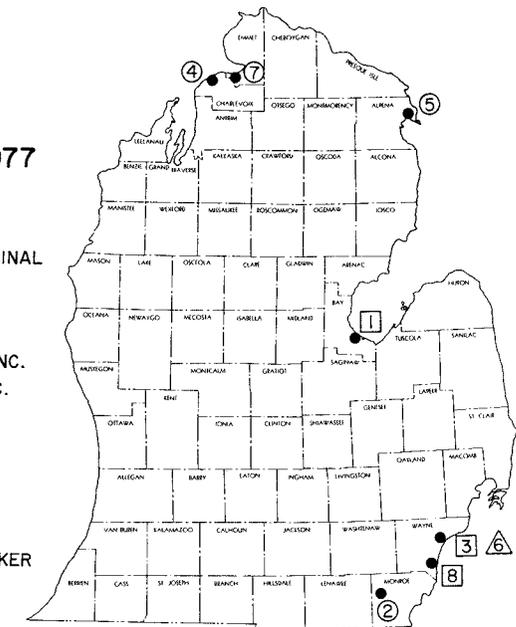
MICHIGAN CEMENT PLANTS - 1977

CEMENT PLANTS 1977

- ① AETNA CEMENT CORP.
- ② DUNDEE CEMENT CO.
- ③ JEFFERSON MARINE TERMINAL
- ④ MEDUSA CEMENT CO.
- ⑤ NATIONAL GYPSUM CO.
- △ PEERLESS CEMENT CO.
- ⑦ PENN-DIXIE INDUSTRIES, INC.
- ⑧ WYANDOTTE CEMENT, INC.

LEGEND

- PLANT & QUARRY
- △ PROCESS PURCHASED RAW MATERIALS
- PROCESS PURCHASED CLINKER



CEMENT COMPANIES

Name of Operation	Map No.	Plant Location
Aetna Cement Corp. P.O. Box #80 Essexville, Michigan 48732	(1)	3 Mi. NE of Bay City at Essexville, NE $\frac{1}{4}$ Sec. 14, T14N, R5E; Clinker imported from Ontario. <u>BAY COUNTY</u>
Dundee Cement Co. P. O. Box 122 Dundee, Michigan 48131	(2)	2 Mi. N of Dundee, Sec. 6, T6S, R7E, plant and quarry <u>MONROE COUNTY</u>
Jefferson Marine Terminal Div. of Edward C. Levy Co. 8941 West Jefferson Avenue Detroit, Michigan 48209	(3)	Jefferson Avenue at Detroit; Process purchased clinker. Note - cement plant closed late 1977. <u>WAYNE COUNTY</u>
Medusa Cement Co. Div. of Medusa Corp. Plant address: Charlevoix, Michigan 49720 Office address: Box 5668 Cleveland, Ohio 44101	(4)	2 Mi. W of Charlevoix plant and quarry C of Sec. 28, T34N, R8W <u>CHARLEVOIX COUNTY</u>
National Gypsum Co. Cement Division Plant address: Alpena, Michigan 49707 Office address: 17515 W. Nine Mile Rd. Honeywell Center 12th Fl. Southfield, Michigan 48075	(5)	1.5 Mi. NE of Alpena, in Sec. 13, T31N, R8E, plant and quarry. <u>ALPENA COUNTY</u>
Peerless Cement Co. Division Amcord Inc. 9333 Dearborn Street Detroit, Michigan 48209	(6)	Forman Avenue Plant - Ext. Sec. 28, T2S, R1E; raw materials obtained from Ford Motor Co. clay pit and Rogers City area. <u>WAYNE COUNTY</u>
Penn-Dixie Industries, Inc. Plant #10 Plant address: Petoskey, Michigan 49770 Office address: 1111 South Main St. Kokomo, Indiana 46901	(7)	3.5 Mi. W of Petoskey, plant and quarry. Sec. 3, T34N, R6W. <u>EMMET COUNTY</u>
Wyandotte Cement Inc. 3509 Biddle Avenue P. O. Box 420 Wyandotte, Michigan 48192	(8)	Wyandotte, Mich. Process purchased clinker. <u>WAYNE COUNTY</u>

CLAY AND SHALE

Clay and/or Shale are mined by five companies in Michigan for use as an ingredient in making cement. Three other operators mine clay and/or shale for making drain tile, sewer pipe and flue linings, bricks, and flower pots. Years ago there were many more producers of brick and drain tile, etc.

Michigan has vast resources of clay and shale which could be utilized if new economic uses are discovered for it. The accompanying map shows the known Michigan clay areas, shale outcrops, and present mine locations.

CLAY AND SHALE COMPANIES

Name of Operation	Map No.	Product	Location
Dundee Cement Co. P. O. Box 122 Dundee, Michigan 48131	(1)	Cement	Sec. 6, T6S, R7E, (clay overburden over limestone) <u>MONROE COUNTY</u>
Grand Ledge Clay Products Co. R.R. 1, Box 66 Grand Ledge, Michigan 48837	(2)	Drain tile, sewer pipe, flue linings	Shale pits at SE $\frac{1}{4}$ Sec. 3, T4N, R4W, <u>EATON COUNTY</u> and NE $\frac{1}{4}$ SW $\frac{1}{4}$ Sec. 34, T5N, R4W <u>CLINTON COUNTY</u>
Medusa Cement Co. Division of Medusa Corp. Box 5668 Cleveland, Ohio 44101	(3)	Cement	Shale pit, SW $\frac{1}{4}$, Sec. 24, T32N, R8W <u>ANTRIM COUNTY</u>
Michigan Brick, Inc. 3820 Serr Rd. Corunna, Michigan 48817	(4)	Brick	Shale pit, $\frac{1}{2}$ Mi. E of Corunna, Sec. 22, T7N, R3E <u>SHIAWASSEE COUNTY</u>
Peerless Cement Division of Amcord, Inc. 9333 Dearborn St. Detroit, Michigan 48209	(5)	Cement	Ford Motor Co. Clay pit NW $\frac{1}{4}$ Ext. Sec. 36, T2S, R10E <u>WAYNE COUNTY</u>
National Gypsum Co. Cement Division 17515 W. Nine Mile Rd. Honeywell Center-12th Floor Southfield, Michigan 48075	(6)	Cement	Paxton Shale Quarry, 8 Mi. W of Alpena, NE $\frac{1}{4}$ Sec. 30, T31N, R7E <u>ALPENA COUNTY</u>
Penn-Dixie Industries, Inc. P. O. Box 307 Petoskey, Michigan 49770	(7)	Cement	Shale pit, Sec. 8, T34N, R6W <u>EMMET COUNTY</u>
Ritter & Sons, F. W., Co., Inc. 12670 N. Dixie Hwy. S. Rockwood, Michigan 48179	(8)	Flower pots	Clay pit, 1 Mi. S of South Rockwood, NE $\frac{1}{4}$ SW $\frac{1}{4}$, Sec. 16, T5S, R10E <u>MONROE COUNTY</u>

GYPSUM

The mineral Gypsum ($\text{CaSO}_4 \cdot 2 \text{H}_2\text{O}$), along with some Anhydrite (CaSO_4), occurs in sedimentary rocks. Thick beds of gypsum are mined in both Kent and Iosco Counties. Some of the reported uses of gypsum from Michigan are: 1) manufacturing plaster wall board; 2) an important ingredient in Portland cement; and 3) agricultural uses (soil treatment, etc.).

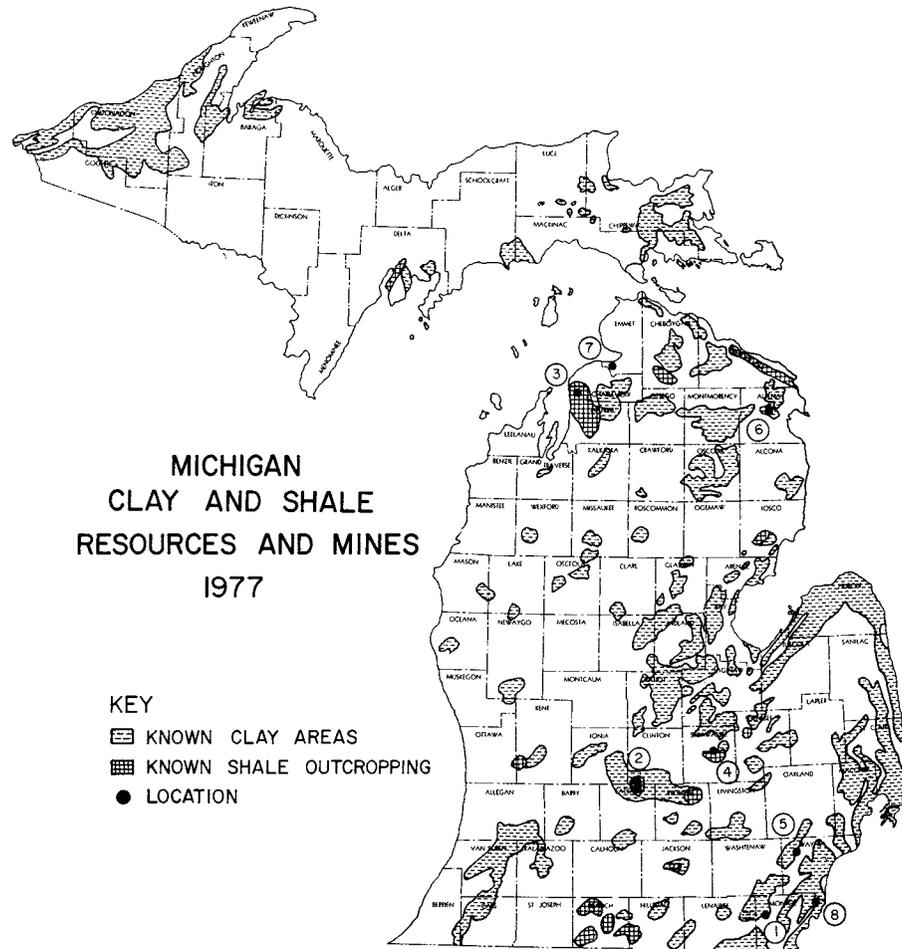
The majority of the gypsum mined in Michigan is used for the manufacture of construction materials, thus the rate of mining is tied in with the economy of the building industry. Figure 11 illustrates the many fluctuations in the production and value of gypsum produced in Michigan between 1868 and 1976.

Michigan is a leading producer of gypsum. The state has been in first or second place for the value of gypsum produced in the U.S. for most of the years since 1930. The high rank was maintained again in 1976 when 22 states with 68 mines were compared.

The 1976 U.S. Bureau of Mines list of the nation's ten largest producing gypsum mines included two from Michigan. These two Iosco County mines are operated by the National Gypsum Company and the U.S. Gypsum Company. They were ranked, respectively, as the first and third largest producers in the entire United States.

The map in Figure 10 indicates the approximate locations of the two underground mines in Kent County. The addresses for the gypsum companies and their mine locations and mill locations are listed below.

Figure 9 CLAY AND SHALE RESOURCES AND MINES 1977



-16-

GYPSUM COMPANIES

Name of Operation	Map No.	Mine or Quarry Location	Mill Location
Georgia-Pacific Corp. 900 SW Fifth Avenue Portland, Oregon 97204	(1)	SE Grand Rapids in NW¼ Sec. 24, T6N, R11W <u>KENT COUNTY</u>	SW Grand Rapids 2228 Butterworth Rd. SW Grand Rapids, Mich. 49501
Grand Rapids Gypsum Co. 201 Monroe Avenue NW Grand Rapids, Michigan 49502	(2)	SW side Grand Rapids in Sec. 34, T7N, R12W Mine & Mill <u>KENT COUNTY</u>	At mine
Michigan Gypsum Co. 2840 Bay Road Saginaw, Michigan 48601	(3)	4 Mi. SW of National City in Sec. 31, T21N, R5E, open pit and plant <u>IOSCO COUNTY</u>	E of Pit, in SW¼ Sec. 32, T21N, R5E <u>IOSCO COUNTY</u>
National Gypsum Co. 325 Delaware Avenue Buffalo, New York 14202	(4)	8 Mi. W of Tawas City Sec. 26 & 35, T22N, R6E, open pit <u>IOSCO COUNTY</u>	2 Mi. S of Nat'l. City Sec. 16, T21N, R6E <u>IOSCO COUNTY</u>
United States Gypsum Co. 101 S. Wacker Drive Chicago, Illinois 60606	(5)	W of Alabaster, Sec. 22 & 27, T21N, R7E, open pit <u>IOSCO COUNTY</u>	Detroit, Michigan <u>WAYNE COUNTY</u>

Figure 10

MICHIGAN GYPSUM MINES - 1977

GYPSUM COMPANIES

- 1. GEORGIA-PACIFIC CORP.
- 2. GRAND RAPIDS GYPSUM CO.
- 3. MICHIGAN GYPSUM CO.
- 4. NATIONAL GYPSUM CO.
- 5. UNITED STATES GYPSUM CO.

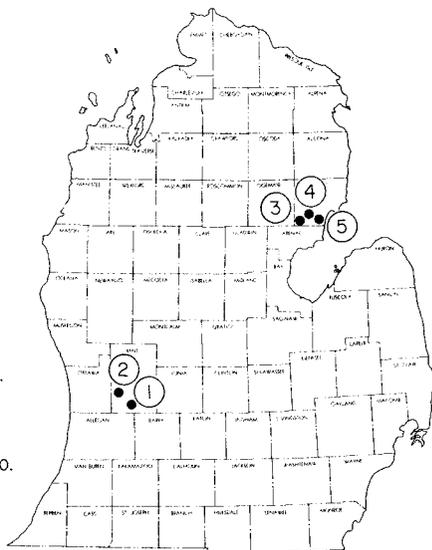
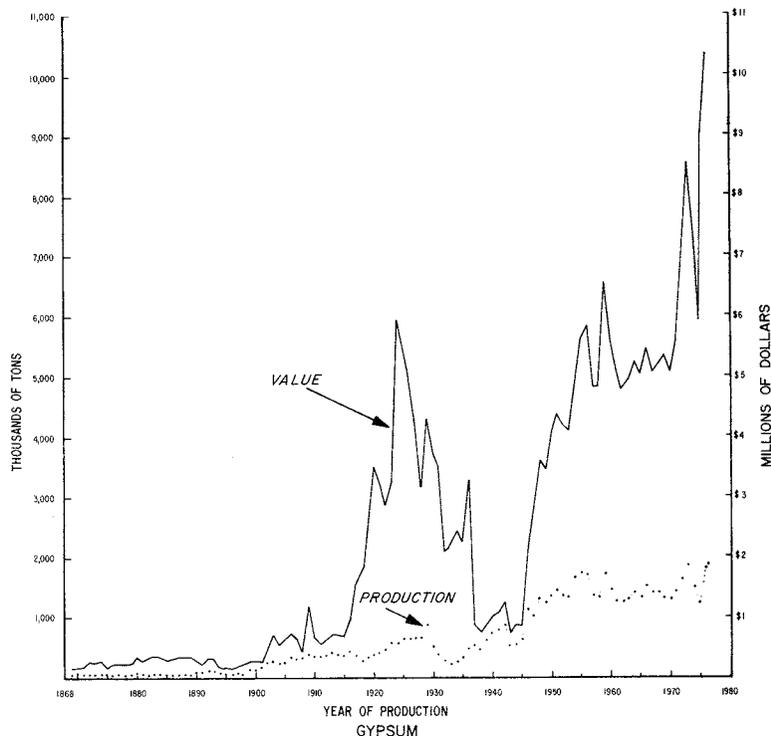


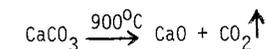
Figure 11

PRODUCTION AND VALUE OF MICHIGAN GYPSUM 1868 - 1976



LIME

Lime is a mineral product which is produced by heating limestone (CaCO₃) in a kiln to about 900°C which causes the limestone to form lime (CaO) and the gas carbon dioxide (CO₂). Chemistry books illustrate the process like this:



The producers of lime in Michigan report that their lime is produced for the following uses and products: 1) Alkalies (ammonium, potassium, and sodium compounds); 2) Steel (basic oxygen converters, electric furnaces, open-hearth furnaces); 3) Water purification and softening; 4) Food and food products; 5) Paper and pulp (include bleach and filler used in paper); 6) Sewage and trade-wastes treatment (include neutralization of waste acids); 7) Sugar refining; and 8) Other chemical and industrial uses and products. Some years lime is also produced to be used to remove sulfur from stack gases and in the manufacturing of plastics.

The limekilns operate with limestone which is sometimes transported great distances to them from the location where it is extracted from the ground.

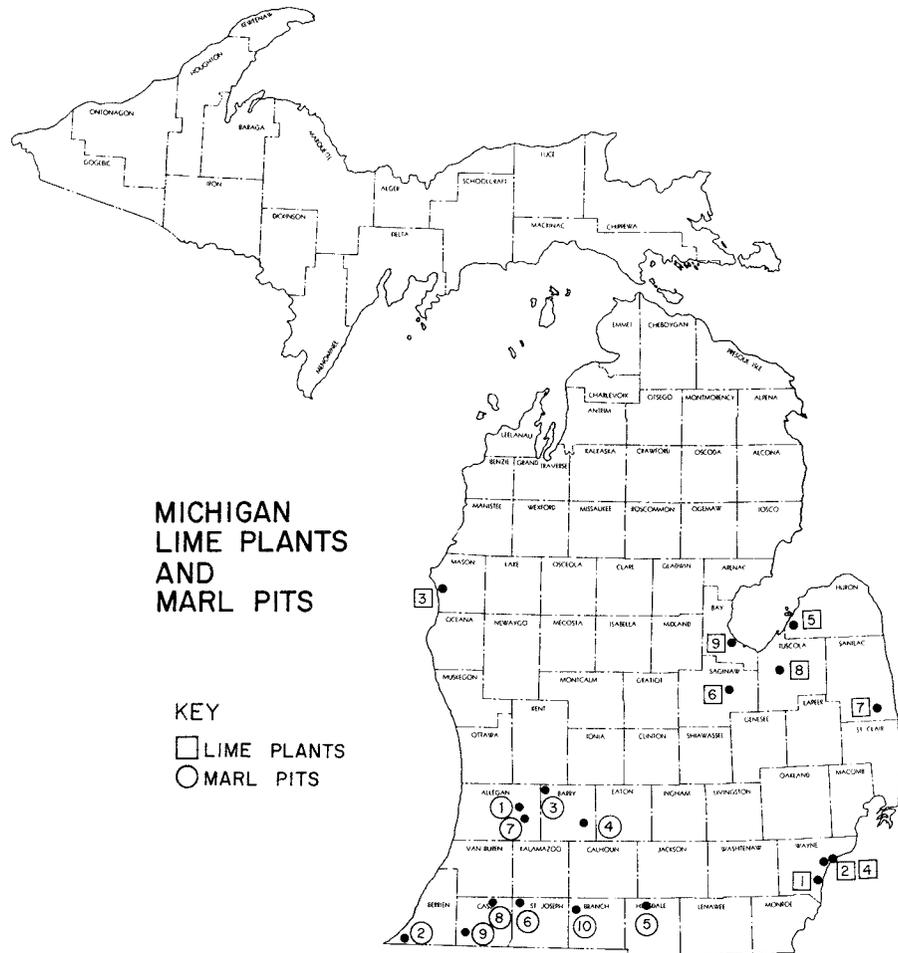
LIME PRODUCING COMPANIES

Name of Operation	Map No.	Limekiln Location	Reported products and uses (see above)
BASF Wyandotte Corp. 1609 Biddle Ave. Wyandotte, Michigan 48192	(1)	Wyandotte <u>WAYNE COUNTY</u>	1
Detroit Lime Co. 9300 Dix Avenue Detroit, Michigan 48209	(2)	River Rouge <u>WAYNE COUNTY</u>	2, 3, 8
Dow Chemical Co. Ludington Division 2020 Dow Center Midland, Michigan 48640	(3)	Ludington <u>MASON COUNTY</u>	1
Marblehead Lime Co. 300 W. Washington St. Chicago, Illinois 60606	(4)	River Rouge <u>WAYNE COUNTY</u>	2, 3, 4, 5, 6, 8
Michigan Sugar Co. Box 960 Saginaw, Michigan 48606	(5)	Sebewaing <u>HURON COUNTY</u>	7
	(6)	Carrollton <u>SAGINAW COUNTY</u>	7
	(7)	Croswell <u>SANILAC COUNTY</u>	7
	(8)	Caro <u>TUSCOLA COUNTY</u>	7
Monitor Sugar 2600 S. Euclid Avenue Bay City, Michigan 48706	(9)	Bay City <u>BAY COUNTY</u>	7

MARL

Marl is a non-consolidated calcium carbonate rich material which was deposited in a lake or marsh area by plant and/or animal life. Michigan's glacial overburden has a number of present and former lakes which contain large accumulations of marl. There are now eleven companies which produce marl for use as a soil conditioner. Formerly, marl was also produced in Michigan for the manufacture of cement and lime, and to be used as an ingredient in tooth powder, scouring powder, and in paints. Another name for marl is bog line.

Figure 12 LIME PLANTS AND MARL PITS 1977



MICHIGAN LIME PLANTS AND MARL PITS

KEY

- LIME PLANTS
- MARL PITS

MARL COMPANIES

Name of Operation	Map No.	Pit and County
Brenner, Kevin R#2, Miner Lake Allegan, Michigan 49010	(1)	Sec. 34, T2N, R13W 1 Mi. SE of Allegan <u>ALLEGAN COUNTY</u>
Crosby Marl Co. R#2 Box 5 Three Oaks, Michigan 49128	(2)	Sec. 14, T8S, R20W 2½ Mi. S of Three Oaks <u>BERRIEN COUNTY</u>
Currier, William R#1 Middleville, Michigan 49333	(3)	Sec. 6, T4N, R10W 4 Mi. NE of Middleville <u>BARRY COUNTY</u>
Hamilton, Darrell L. 5690 S. Clark Rd. Nashville, Michigan 49073	(4)	Sec. 6, T2N, R7W <u>BARRY COUNTY</u>
Hess, John R#1 Hanover, Michigan 49241	(5)	Sec. 14, T5S, R3W 4 Mi. N of Jonesville <u>HILLSDALE COUNTY</u>
Kerr Peat & Marl R#1, P. O. Box 76 Three Rivers, Michigan 49093	(6)	Sec. 13, T6S, R12W 1 Mi. W of Three Rivers <u>ST. JOSEPH COUNTY</u>
Paviak, Emil R#2 2980 18th Street Hopkins, Michigan 49328	(7)	Sec. 12, T2N, R12W 3 Mi. NW of Martin <u>ALLEGAN COUNTY</u>
Pipher's Marl Service R#1 Box 128 Jones, Michigan 49061	(8)	Sec. 15, T5S, R14W 2 Mi. SW of Nicholsville <u>CASS COUNTY</u>
Poehlman & Sons R#2 Cassopolis, Michigan 49031	(9)	Sec. 13, T7S, R16W 6 Mi. SW of Cassopolis <u>CASS COUNTY</u>
Taylor and Son R#1 Orland, Indiana 46776	(10)	Sec. 16, T8S, R5W 1½ Mi. S of California <u>BRANCH COUNTY</u>

NATURAL BRINES

Natural brines, or natural salines are naturally occurring waters within the ground which are rich in chlorides and calcium, magnesium, sodium, and minor amounts of potassium, bromine, and iodine. Several chemical companies operate numerous brine wells and process the brine into various chemical compounds. Michigan is one of two producers of iodine in the U.S. and ranks in first or second place in the production of bromine, magnesium compounds, and calcium-magnesium chlorides.

Natural brines are also used for dust and ice control and stabilization of roads. Several county road commissions operate one or more brine wells for this purpose. Some oil well operators which produce brine as a byproduct also supply brine for road uses, others return the brine to the bedrock formations through brine disposal or injection wells.

Chemical companies produce natural brines from several geological formations in Michigan. These are the Lower Mississippian System Marshall Sandstone, Middle Devonian System Dundee Limestone, and the Filer and Sylvania Sandstones both from the Detroit River Group. The accompanying map shows the locations of these operations.

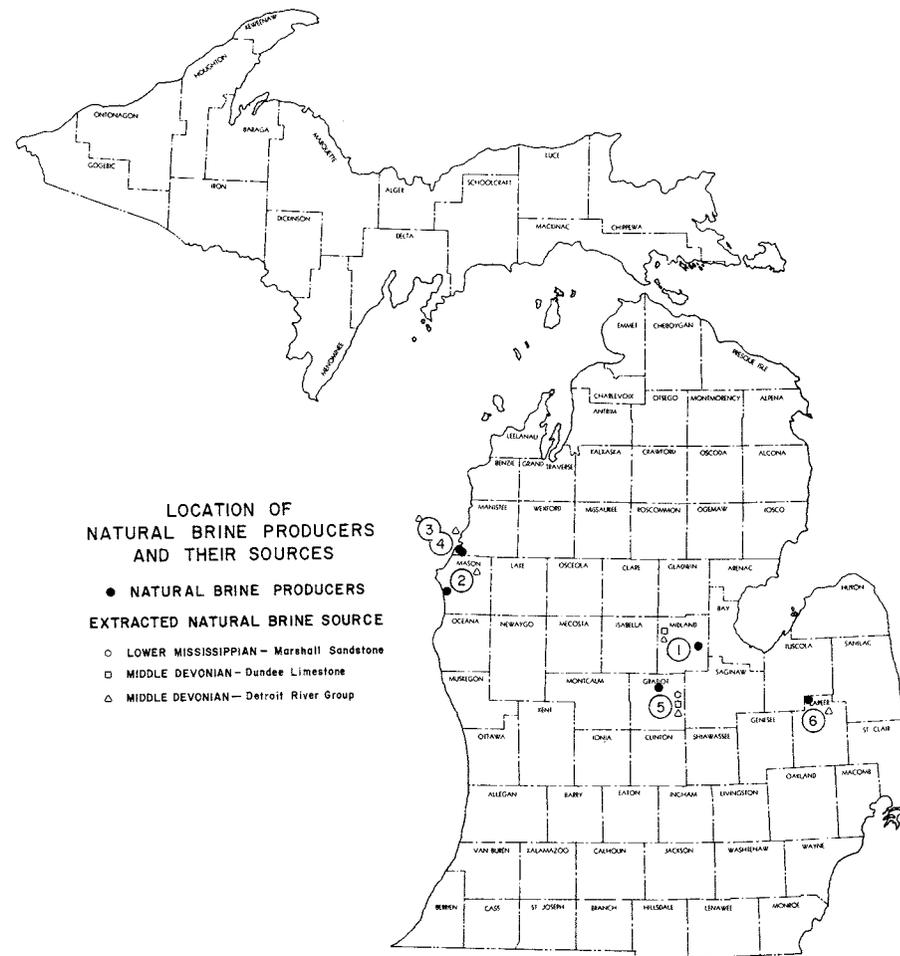
Companies Producing and Utilizing Natural Brines

Name of Operation	Map No.	Products	Plant Location
Dow Chemical Co., The 2020 Dow Center Midland, Michigan 48640	(1)	Bromine, bromine compounds, magnesium compounds, calcium chloride, iodine, potash	South side of Midland T14N, R2E, <u>MIDLAND COUNTY</u>
	(2)	Bromine, magnesium compounds, calcium chloride	1 Mi. SE of Ludington SW $\frac{1}{4}$, Sec. 23, T18N, R18W <u>MASON COUNTY</u>
Morton Chemical Co. Div. of Morton Norwich Prod. Inc. 110 N. Wacker Dr. Chicago, Illinois 60606	(3)	Bromine, magnesium compounds, calcium chloride	At Manistee Sec. 12, T21N, R17W <u>MANISTEE COUNTY</u>
Martin-Marietta Chemicals Refractories Div. Executive Plaza II Hunt Valley, Maryland 21030	(4)	Magnesium compounds	1 Mi. NW of Stronach SE $\frac{1}{4}$ Sec. 18, T21N, R16W <u>MANISTEE COUNTY</u>
Velsicol Chemical Corp. 341 E. Ohio Street Chicago, Illinois 60611	(5)	Bromine, calcium chloride, calcium magnesium chloride, magnesium compounds, evaporated salt	W side of St. Louis in Sec. 24, T12N, R3W <u>GRATIOT COUNTY</u>
Wilkinson Chemical Co. 8290 Lapeer Rd. Mayville, Michigan 48744	(6)	Calcium-magnesium chloride	S of Mayville Sec. 21, T10N, R10E <u>LAPEER COUNTY</u>

Counties which operate brine wells for brine to use on roads.

Crawford	Ionia	Lapeer	Sanilac
Eaton	Jackson	Lenawee	Tuscola
Huron	Kalkaska	Oakland	Washtenaw

Figure 13 NATURAL BRINE PRODUCERS 1977



PEAT

Peat is an accumulation of various dead plant materials, particularly mosses, in a bog which forms an organic soil containing less than 30 percent mineral soil. Michigan ranks first in peat production in the U.S. and has 17 peat producers which process various types of peat for use as a soil conditioner. Historically, peat has been used as a fuel and is presently being studied in Minnesota to be used in power plants as it is in some parts of Europe. With other fuel supplies diminishing and the advancement of technology, peat may become the fuel of the future in Michigan.

The accompanying map indicates the location of the current peat operations and the approximate acreages of organic soils in the 83 counties of the state. It should be noted that not all organic soils meet the organic content requirements of peat.

In 1976, William A. Walden, a geologist on the Geological Survey Division staff, prepared an Intradivisional Information Circular entitled "Report on Michigan Peat Reserves." This short unedited report is an updating on Michigan's peat reserves and separates peat from organic soils which have sometimes been classified together as peat in the past. Copies of this report are available for reading in the Survey's Lansing office or arrangements may be made for a loan copy.

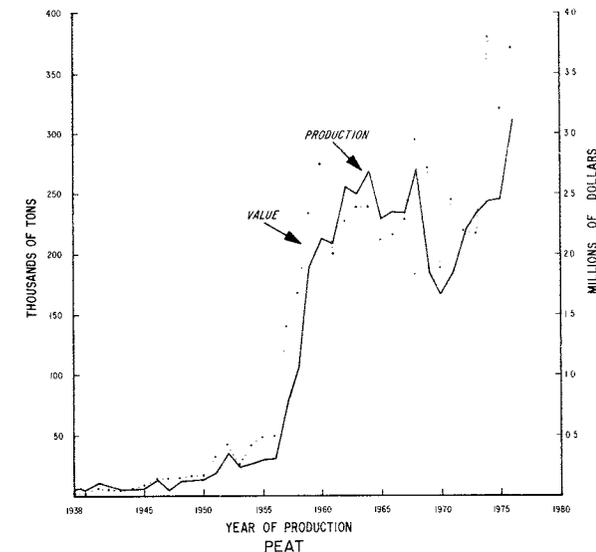
PEAT COMPANIES

Name of Operation	Map No.	Kind of Peat	Location
Al-Par Peat 9551 Krouse Ovid, Michigan 48866	(1)	reed-sedge packaged	6 Mi. NE of Ovid Sec. 18, T8N, R2E SHIAWASSEE COUNTY
Anderson Peat Co. 332 Graham Rd. Imlay City, Michigan 48444	(2)	reed-sedge bulk & packaged	3 Mi. E of Imlay City Sec. 23, T7N, R12E LAPEER COUNTY
Appleman Farms 717 Pickard Rd. Temperence, Michigan 48182	(3)	reed-sedge bulk	6 Mi. SE of Petersburg Sec. 1, T8S, R6E MONROE COUNTY
Douglas, Charles E. Wayland, Michigan 49438	(4)	reed-sedge bulk	3 Mi. NE of Wayland Sec. 26, T4N, R11W ALLEGAN COUNTY
Fletcher and Rickard 25800 Haas Road New Hudson, Michigan 48165	(5)	humus bulk	3 Mi. E of South Lyon Sec. 23, T1N, R7E OAKLAND COUNTY
Gummer's Peat Co. R#2 Lakeview, Michigan 48850	(6)	moss, reed-sedge bulk & packaged	11 Mi. N of Lakeview Sec. 28, T13N, R8W MECOSTA COUNTY
Hilu Peat Company 3040 Clinton Trail R#3 Charlotte, Michigan 48813	(7)	reed-sedge bulk	2 Mi. SE of Charlotte Sec. 21, T2N, R4W EATON COUNTY
Kerr Peat and Marl R#1 Box 76 Three Rivers, Michigan 49093	(8)	reed-sedge bulk	2 Mi. NW of Three Rivers Sec. 13, T6S, R12W ST. JOSEPH COUNTY

PEAT (CONT'D.)

Name of Operation	Map No.	Kind of Peat	Location
Link, Norman E. R#1 Petersburg, Michigan 49270	(9)	humus bulk	4 Mi. SE of Petersburg Sec. 24, T7S, R6E MONROE COUNTY
Michigan Peat, Inc. P. O. Box 66388 Houston, Texas 77006	(10) (11)	reed-sedge packaged	4 Mi. SW of Minden Sec. 20, T14N, R14E 1 Mi. E of Sandusky Sec. 3, T11N, R14E 2 Mi. SE of Sandusky Sec. 11, T11N, R14E SANILAC COUNTY
Oxford Peat Company 1430 E. Drahner Road Oxford, Michigan 48051	(13)	reed-sedge bulk & packaged	Near Oxford T5N, R10E OAKLAND COUNTY
Quality Peat R#2 Three Rivers, Michigan 49093	(14)	moss bulk	3 Mi. N of Three Rivers Sec. 24, T5S, R12W ST. JOSEPH COUNTY
Scenic Lakes, Inc. P. O. Box 926 East Lansing, Michigan 48823	(15)	humus packaged	3 Mi. S of Laingsburg Secs. 4, 10, 16 T5N, R1E SHIAWASSEE COUNTY
Wicker's Inc. 6498 Bishop Road Lansing, Michigan 48910	(16)	moss bulk	SW side of Lansing Sec. 7, T4N, R2W INGHAM COUNTY
Wonderland Peat 3843 Michigan Rd., NE Grand Rapids, Michigan 49506	(17)	moss bulk	Near Grand Rapids KENT COUNTY

Figure 14 PRODUCTION AND VALUE OF MICHIGAN PEAT 1938-1976



SALT DEPOSITS

Bedded salt is extracted by two different methods in Michigan: Dry mining and Solution mining.

Dry mining is the conventional type of underground mining which most people think of when the word mining is used. The International Salt Co., Inc. uses this method to produce rock salt in Michigan. Their Detroit Mine underlies about 900 acres of Detroit and Melvindale at a depth of approximately 1100 feet. Since 1910 about 36 million tons of salt have been produced from this mine.

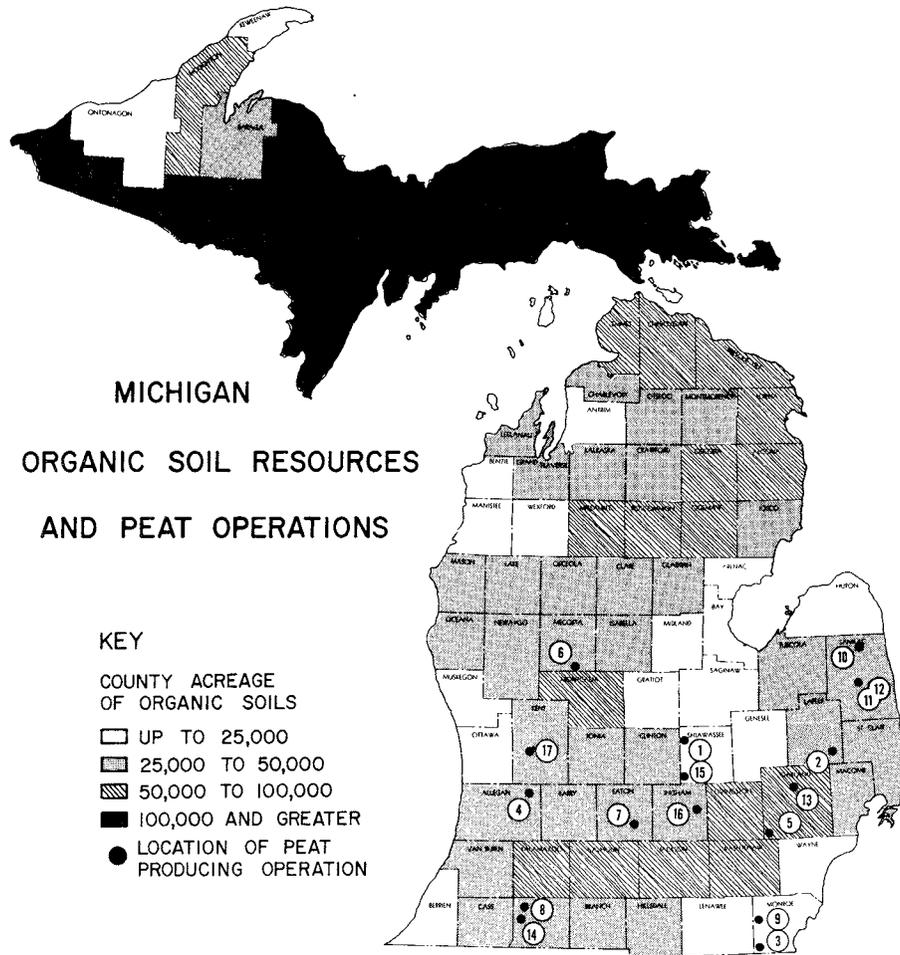
Solution mining of bedded salt is done by pumping water into a known bed of solid salt within the bedrock in the ground. The salt is dissolved by the water and produces an artificial brine, or sodium chloride rich water. The artificial brine is then pumped out of the ground and salt and other chemicals are removed from it by different methods. The remaining salt and chemical companies listed use this method.

The accompanying map shows the extent of the various ages of bedded salt deposits. The location and type of extraction and geologic age of the salt beds are indicated.

Companies producing and utilizing bedded salt.

Company and Address	Map No.	Product	Location
BASF Wyandotte Corp. 1609 Biddle Avenue Wyandotte, Michigan 48192	(1)	Salt brine (chlorine, soda ash)	At Wyandotte <u>WAYNE COUNTY</u>
Diamond Crystal Salt Co. 916 S. Riverside St. Clair, Michigan 48079	(2)	Evaporated salt	At St. Clair, Sec. 31, T5N, R17E <u>ST. CLAIR COUNTY</u>
Dow Chemical Co. 2020 Dow Center Midland, Michigan 48640	(3)	Salt brine (chlorine, natural salines)	At Midland <u>MIDLAND COUNTY</u>
Hardy Salt Co. P. O. Drawer 449 St. Louis, MO. 63166	(4)	Evaporated salt	At Manistee <u>MANISTEE COUNTY</u>
Hooker Chemical and Plastics Corp. P. O. Box 295 Montague, Michigan 49437	(5)	Salt brine (chlorine, caustic soda, hydrogen)	At Montague NE $\frac{1}{2}$ Sec. 31, T12N, R17W <u>MUSKEGON COUNTY</u>
International Salt Co., Inc. Clarks Summit, PA. 18411 Detroit Mine: 12841 Saunders St. Detroit, Michigan 48217	(6)	Rock salt	At Detroit SE $\frac{1}{4}$, Sec. 32, T2S, R11E <u>WAYNE COUNTY</u>
Morton Salt Co. Div. Morton-Norwich Products, Inc. 110 N. Wacker Drive Chicago, Illinois 60606	(7)	Evaporated salt, salt brine	At Manistee E $\frac{1}{2}$ Sec. 12, T21N, R17W <u>MANISTEE COUNTY</u>
	(8)	Evaporated salt	At Marysville SE $\frac{1}{4}$, Sec. 29, T6N, R17E <u>ST. CLAIR COUNTY</u>
Pennwalt Corp. 4655 Biddle Wyandotte, Michigan 48192	(9)	Salt brine (chlorine, caustic soda, hydrogen)	At Wyandotte <u>WAYNE COUNTY</u>

Figure 15 ORGANIC SOIL RESOURCES AND OPERATIONS 1977



KEY

COUNTY ACREAGE
OF ORGANIC SOILS

□ UP TO 25,000

▨ 25,000 TO 50,000

▩ 50,000 TO 100,000

■ 100,000 AND GREATER

● LOCATION OF PEAT
PRODUCING OPERATION

SAND AND GRAVEL

Sand and Gravel are important nonmetallic mineral commodities in this State. Michigan consistently ranks in the top 2nd to 4th place in the U.S. in the value of sand and gravel produced annually. In 1976 over 47 million short tons of sand and gravel valued at over 79 million dollars were produced. The 1977 preliminary figures are greater for both production and value. These values include both construction sand and gravel and industrial sand.

When the glaciers grew and pushed across the state many thousands of years ago they bulldozed around a tremendous amount of broken rock, sand, and clay. When the glaciers finally melted away about 10,000 to 15,000 years ago they left the materials behind in a number of forms. Some of the material was left as a mixture in the form of end moraines, ground moraines, etc. In other locations the melt waters reworked the material and sorted out areas of sand, areas of gravel, and some of mostly clay. Along the shores of the Great Lakes the water and wave action has done more sorting and breaking down of materials and the prevailing westerly winds have built large sand dunes along the western coast of the state. It is in the sorted out areas where good deposits of clean sand, sand and gravel, or clay are now available for extraction for use by man.

Construction sand and gravel and industrial sand are actually separate commodities with different specifications and uses. Thus, they are handled separately on the following pages.

CONSTRUCTION SAND AND GRAVEL

Just under 42 million short tons of construction sand and gravel, valued at slightly over 58 million dollars, were produced in Michigan in 1976, down slightly in both production and value from 1975. The production rate rises and falls with the economy. As construction, especially of roads, increases or decreases, so does the rate of production of construction sand and gravel.

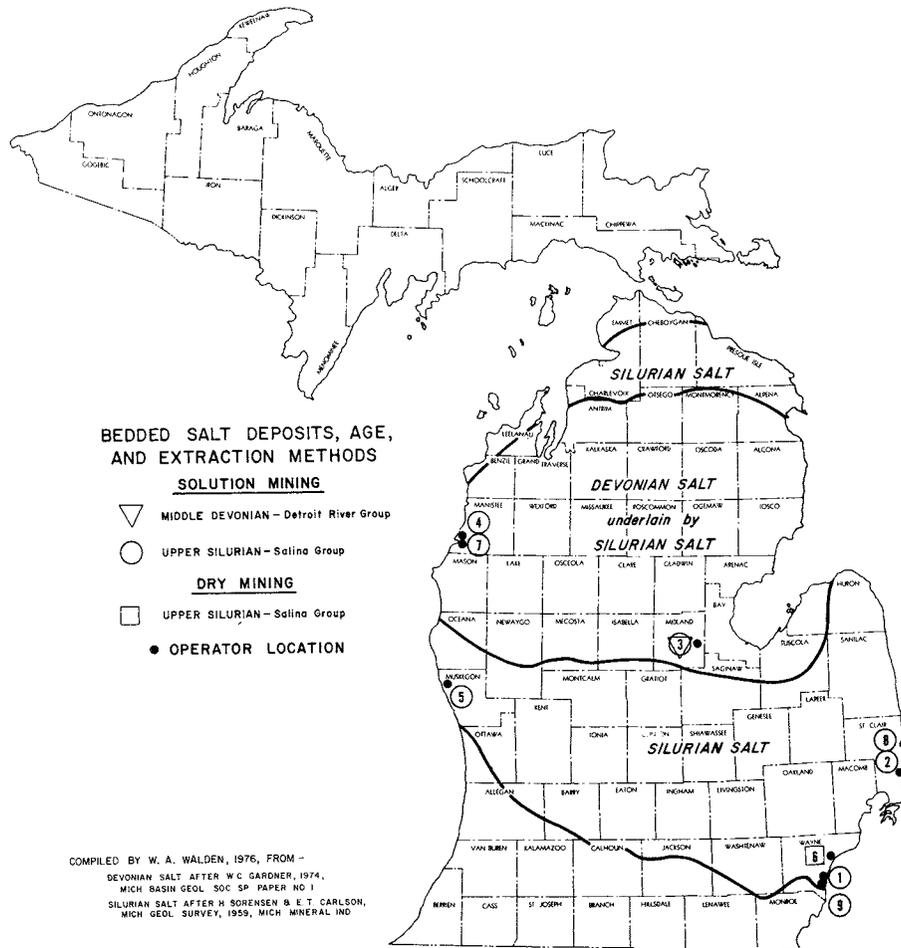
Generally, sand and gravel is a relatively heavy, bulky commodity and the per ton value is low, so the cost of transportation becomes a very important item. Thus, the distance between the source pit and the construction site is usually kept to a minimum. Unfortunately, not all areas of the state are blessed with abundant sand and gravel deposits so costs vary greatly depending upon location.

The use of construction sand and gravel is greater in urban areas due to more construction there, but urban areas frequently build over sand and gravel deposits, forcing the transportation of building materials from more distant, but usable, sites. If more geologic insight were used in urban and highway planning and zoning, known areas of good sand and gravel deposits, or other potentially usable minerals, may be excluded from urbanization until the mineral commodities are extracted and the mining surface reclaimed. This would result in more efficient utilization of our nonrenewable resources. Like the old saying "Gold is where you find it", we do not have the choice of obtaining minerals where we would like them to be, but must be able to obtain them from where they actually are.

Following is a list of the known construction sand and gravel producers in the state, information on their types of operations and counties in which they operate. Also included is a list of State owned sand and gravel pits which are periodically leased and operated by various operators. Additional sand and gravel pit locations are frequently established by lease on Federally owned lands also.

A more comprehensive listing of active and inactive, privately and publicly owned sand and gravel pits is available. The list is arranged by county, includes county maps showing pit locations, and abrasion and soundness test results are given when available. Copies of the "Aggregate Source Inventory" may be obtained for \$12.00 plus postage and sales tax, prepaid, from: Publications Unit, Contract Section, Dept. of State Highways and Transportation, P. O. Box 30050, Lansing, Michigan. 48909.

Figure 16 **BEDDED SALT DEPOSITS AND OPERATIONS 1977**



CONSTRUCTION SAND AND GRAVEL

Type of Operations: (HMS) - Heavy media separation equipment
 D - Dredge
 D1 - Dragline
 F - Front end loader
 Sh - Shovel
 BR - Bank Run
Crushing and Screening equipment
 S - Stationary
 P - Portable

Name of Operation/Office Address	Type of Operation	County
A A.B.C. Sand Co. 36444 Cowan Rd. Westland, Michigan 48181	(D-1)	WAYNE
Abram, Rueben, Excavating Gould City, Michigan 49838	(BR)	MACKINAC
Adrian Sand & Gravel Company 7831 Sylvania Avenue Sylvania, Ohio 43560	(P)	LENAWEE
Aggregate Materials Corp. 598 Conrad Rd. Niles, Michigan 49120		CASS
Aggregate Processors, Inc. Box 566 White Pigeon, Michigan 49099	(D)	ST. JOSEPH
Ajax Materials Corporation 5700 E. Nevada Detroit, Michigan 48234	(S, BR)	OAKLAND
Albert Sand & Gravel, Inc. 4621 Wilcox Road Holt, Michigan 48842	(D, S)	LIVINGSTON
Albrecht Sand & Gravel Co. 3790 W. Sanilac Rd. Sandusky, Michigan 48471	(P)	SANILAC
Alcona County Road Commission 301 N. Lake Street Lincoln, Michigan 48742	(P)	ALCONA
Alger County Road Commission Drawer 359 Munising, Michigan 49862	(P, BR)	ALGER
Allied Chemical Corporation P. O. Box 145 13501 Huron River Romulus, Michigan 48174	(P, BR)	LAPEER
Alpena Aggregate, Inc. 7590 Weiss Road Alpena, Michigan 49707	(P)	ALPENA
Alpena County Road Commission 1400 N. Bagley Alpena, Michigan 49707	(F, P, BR)	ALPENA

CONSTRUCTION SAND AND GRAVEL (CONT'D.)

Name of Operation/Office Address	Type of Operation	County
American Aggregates Corporation Drawer 160 Greenville, Ohio 45331	(D1, S) (D, Sh, F, S) (D1, S) (D, D1, S)	KALAMAZOO, LIVINGSTON (HMS), MACOMB (HMS), OAKLAND (HMS)
Andersen Sand & Gravel Co. 1705 Boxwood Street P. O. Box 1806 Saginaw, Michigan 48601	(D, S)	TUSCOLA
Anderson Gravel & Excavating Co. 233 Thurman Belding, Michigan 48809	(F, P, BR)	MONTCALM
Arenac County Road Commission 116 Bridge Street Omer, Michigan 48749	(F, BR)	ARENAC
B & K Sand & Gravel Rt. #1 Wallace, Michigan 49893	(S)	MENOMINEE
Balkema, Henry, Sand & Gravel 7758 Kilowatt Dr. Kalamazoo, Michigan 49001	(F, BR, P)	KALAMAZOO
Baraga County Road Commission P. O. Box 227 L'Anse, Michigan 49946	(D1, F, P, BR)	BARAGA
Barry County Road Commission P. O. Box 158 1845 W. Gun Lake Road Hastings, Michigan 49058	(F, Sh, BR, P)	BARRY
Bartlett, Norman, Sand & Gravel Rt. #3, Box 86 East Jordan, Michigan 49727	(F, BR, P)	CHARLEVOIX
Beckman Bros., Inc. 3455 W. Baker Road Shelby, Michigan 49455	(F, D1, P, S)	OCEANA
Bedrock Aggregates 4225 W. Columbia Rd. Mason, Michigan 48842		INGHAM
Beeman Trucking & Bulldozing Co. Rt. #1 Grawn, Michigan 49637	(F, P, BR)	GRAND TRAVERSE
Bennett Excavating & Gravel Co. Inc. 10835 Hamburg Road Hamburg, Michigan 48139	(D1, P)	WASHTENAW
Bentley Sand and Gravel Co. 9220 Bennet Lake Road Fenton, Michigan 48430	(F, S)	LIVINGSTON

CONSTRUCTION SAND AND GRAVEL (CONT'D.)

CONSTRUCTION SAND AND GRAVEL (CONT'D.)

Name of Operation/Office Address	Type of Operation	County
Benzie County Road Commission 13118 Main St. Honor, Michigan 49640	(P)	BENZIE
Bernthal Sand & Gravel, Inc. 2021 Gates St. P. O. Drawer L Reese, Michigan 48757	(F, D, S)	TUSCOLA
Bichler Gravel & Concrete Co. Box 263 Escanaba, Michigan 49829	(F, S)	DELTA
Blumke Excavating Co., Inc. Box 126A Alanson, Michigan 49706	(S)	EMMET
Boerman, John, Sand & Gravel Route 4 Allegan, Michigan 49010		ALLEGAN
Boichot Concrete Corporation 1800 Turner Street P. O. Box 5247 Lansing, Michigan 48906	(D, BR, S)	CLINTON (HMS)
Brade Ready-Mix & Concrete Co. 4900 N. Van Dyke Kinde, Michigan 48445	(D1, S, BR)	HURON
Branch Co. Road Commission 23 E. Garfield Coldwater, Michigan 49036		BRANCH
Brewers City Dock, Inc. 24 Pine Avenue Holland, Michigan 49423	(F, S)	ALLEGAN
Briggs Ready-Mix & Gravel 311 State Street Charlotte, Michigan 48813	(D, S, BR)	EATON (HMS)
Britton, Don, Inc. 1480 Westwood Road Marquette, Michigan 49855	(F, BR)	MARQUETTE
Brow, Gene, Construction Co. P.O. Box 5 Seney, Michigan 49883	(D1, F, P)	LUCE, MACKINAC
Brownell Sand & Gravel Co. 14020 Morley Rd. Manitou Beach, Michigan 49253		LENAWEE
Budzen Cement Products, Inc. Route 1 Paw Paw, Michigan 49079	(F, S)	VAN BUREN

Name of Operation/Office Address	Type of Operation	County
Bunting Sand & Gravel Prod., Inc. 3247 Cook Road West Branch, Michigan 48661	(F, Sh, P)	OGEMAW
C C & L Gravel Co. 10660 Linden Dr. Grand Rapids, Michigan 49503		OTTAWA
Calhoun County Road Commission County Building 13300 - 15 Mile Rd. Marshall, Michigan 49068		CALHOUN
Carter, George S. Co., Inc. 5800 Van Dyke Road Almont, Michigan 48003	(P)	MACOMB
Cash & Carry Gravel Co. P. O. Box 1105A Holland, Michigan 49423	(P)	ALLEGAN
Caspian Construction Co. 100 W. Caspian Caspian, Michigan 49115	(P)	DELTA, DICKINSON, GOGEBIC, MARQUETTE
Cass County Road Commission P. O. Box 68 Cassopolis, Michigan 49031	(F, P, D)	CASS
Central Michigan Sand & Gravel Co. R#1 Ovid, Michigan 48866	(F, S, BR)	SHIAWASSEE (HMS)
Certified Sand & Gravel 230 S. Michigan Rd. Coldwater, Michigan 49036	(D, S)	BRANCH
Champion, Inc. 105 E. "A" Street P. O. Box 490 Iron Mountain, Michigan 49801	(Sh, S)	DICKINSON
Charlevoix County Road Commission Box 39 1051 E. Division Boyne City, Michigan 49712	(F, P, BR)	CHARLEVOIX
Cheboygan Cement Products, Inc. 702 Lafayette Avenue Cheboygan, Michigan 49721	(F, P)	CHEBOYGAN
Cheboygan County Road Commission 729 N. Main Cheboygan, Michigan 49721	(Sh, BR, P)	CHEBOYGAN

CONSTRUCTION SAND AND GRAVEL (CONT'D.)

Name of Operation/Office Address	Type of Operation	County
Clare County Road Commission 3900 Mannsiding Road Box 526 Harrison, Michigan 48625	(F, BR)	CLARE
Click Sand & Gravel P. O. Box 273 Port Huron, Michigan 48079	(D)	ST. CLAIR
Coit Avenue Gravel Company, Inc. 4772 Coit Avenue NE Grand Rapids, Michigan 49505	(D, S, BR)	KENT
Cole Brothers Contr., Inc. 4100 Dickman Road Battle Creek, Michigan 49015	(F, P, S)	CALHOUN, JACKSON
Combs, Emil Gravel & Ready Mix R#1 Tekonsha, Michigan 49092	(D1, S, BR)	CALHOUN
Compton Sand and Gravel Co. 203 Brook Dr. Romeo, Michigan 48065	(D1, P, BR)	MACOMB, OAKLAND
Concrete Services, Inc. W. Front Street Traverse City, Michigan 49684	(D1, F, S)	GRAND TRAVERSE
Construction Aggregates Corp. P. O. Box 68 Ferrisburg, Michigan 49409	(D1, S, D, BR)	OTTAWA (HMS)
Consumers Sand & Gravel Co. P. O. Box 231, Nazareth Rd. Kalamazoo, Michigan 49005	(D, S)	KALAMAZOO
Contractors Gravel Co. Box 83 Sparta, Michigan 49345	(D1, S, BR)	KENT
Corey & Hartwig, Inc. 4353 Pratt Road Hadley, Michigan 48440	(P, S, BR)	LAPEER
Cousineau Gravel Co., Inc. P. O. Box 222 Big Rapids, Michigan 49307	(F, P, S)	KENT, MECOSTA, NEWAYGO, OSCEOLA
Covington Construction Co. Covington, Michigan 49919	(F, BR)	BARAGA
Crandell Trucking Co. 800 Island Highway Charlotte, Michigan 48813	(F, P, BR)	EATON, IONIA
D D. & B. Service, Inc. R#1 Eckerman, Michigan 49728		CHIPPEWA

CONSTRUCTION SAND AND GRAVEL (CONT'D.)

Name of Operation/Office Address	Type of Operation	County
D. & J. Gravel Co., Inc. R#2 4950 Mason Road Howell, Michigan 48843	(D, S)	LIVINGSTON
DeBoer Materials R#1, Box 81 Three Rivers, Michigan 49093	(S)	ST. JOSEPH
Delta County Road Commission P. O. Box 298 Escanaba, Michigan 49829	(P)	DELTA
Dennison Construction Co. 7205 Simons Lexington, Michigan 48450	(F, BR)	SANILAC, GLADWIN
Devries, E., & Sons Sand & Gravel 959 Bristol Avenue NW Grand Rapids, Michigan 49504	(F, S, BR, D)	KENT
DeVries, Jack, Excavating Co. 6490 East Fulton Ada, Michigan 49301		KENT
DeWent Gravel Company 5725 Marlin Avenue Hudsonville, Michigan 49426	(D1, F, S, BR)	OTTAWA
Dickinson Co. Hwy. Dept. 1107 S. Milwaukee Avenue Iron Mountain, Michigan 49801	(P, BR)	DICKINSON
Drenth Brothers, Inc. P. O. Box 197 Ellsworth, Michigan 49729	(F, P, BR)	ANTRIM
Dubey, Earl, & Sons Rt. #3 Alpena, Michigan 49707		ALPENA
Du-Pine Company 1241 South Maple Road Ann Arbor, Michigan 48105	(D1, F, P)	WASHTENAW
Dunbar Sand & Gravel P. O. Box 246 Cadillac, Michigan 49601	(D1, F, S, BR, D)	WEXFORD
Dyer Company Box 98 McBrides, Michigan 48852	(D1, P)	MONTCALM

CONSTRUCTION SAND AND GRAVEL (CONT'D.)

Name of Operation/Office Address	Type of Operation	County
E Eastman Gravel Pit R#1 422 Stover Road Standish, Michigan 48658	(D, S)	ARENAC
Eichenberg, Howard, Contracting R#1 1322 Osborn White Cloud, Michigan 49349	(P, BR)	NEWAYGO
Emmet County Road Commission Box 0 Petoskey, Michigan 49770	(D1, P, BR)	EMMET
F Fayas & Sons, Inc. P. O. Box 2187 609 Carpenter Kingsford, Michigan 49801	(F, S, BR)	DICKINSON
Fenton Gravel Co., Inc. 11301 Fenton Hill Road Fenton, Michigan 48430	(D1, F, P)	LIVINGSTON
Fischer Gravel Co. 2604 S. Snyder Road Wellston, Michigan 49689	(P, BR)	MANISTEE
Fisher Sand & Gravel Co. 921 S. Jefferson Avenue Midland, Michigan 48640	(D1, P)	CLARE, ISABELLA
Fitzgerald Gravel Co. 3990 E. Six Mile Creek Owosso, Michigan 48867	(D1, F, BR)	SHIAWASSEE
Fleming Gravel Company 122nd Avenue R#3 Allegan, Michigan 49010	(F, D, P)	KENT
Fox Valley Construction Co. Box 1274 103 W. College Avenue Appleton, Wisconsin 54911	(F, P)	HOUGHTON, MENOMINEE, MARQUETTE
Franke Septic Tank Co. R#1 Tustin, Michigan 49688		WEXFORD
Fransted Construction 4275 Wold Lake Rd. Grass Lake, Michigan 49240		JACKSON

CONSTRUCTION SAND AND GRAVEL (CONT'D.)

Name of Operation/Office Address	Type of Operation	County
Fuoss Gravel Company R#1 Durand, Michigan 48429	(D, D1, F, S, P, BR)	SHIAWASSEE
G Gillisse Gravel Company P. O. Box 278 Grandville, Michigan 49418	(D1, S,)	KENT
Glancy, R. E., Inc. 1055 S. Bay Drive Tawas City, Michigan 48763	(F, P)	ALCONA, ALPENA, EMMET, GLADWIN, IOSCO, OGEAW, OSCODA, MONTMORENCY
Globe Industries Inc. Mill Street Ironwood, Michigan 49938	(P, BR)	GOGEBIC
Gogebic County Road Commission New County Building Bessemer, Michigan 49911	(Sh, P, BR)	GOGEBIC
Gordon, James A. R#3, Box 123 Sault Ste. Marie, Michigan 49783	(BR)	CHIPPEWA
Grand Rapids Gravel Co. 2700-28th Street SW Grand Rapids, Michigan 49509	(D1, S)	KENT
Grand Traverse County Road Comm. 3949 Silver Lake Road Traverse City, Michigan 49684	(F, P)	GRAND TRAVERSE
Grand Valley Gravel Company 10578 Linden Drive NW Grand Rapids, Michigan 49540	(F, S)	OTTAWA
Gratiot County Road Comm. 920 E. Center Street Ithaca, Michigan 48847	(F, BR)	GRATIOT, MONTCALM
Great Lakes Gravel Co. 490 Spaulding SE Grand Rapids, Michigan 49506	(F, S)	KENT
Great Lakes Gravel Co., Inc. 1455 E. Romeo Road Leonard, Michigan 48038	(F, P, BR)	OAKLAND
Gronlund Gravel Company R#2, Box 28 Bear Lake, Michigan 49614	(P)	MANISTEE
H Halliday Sand & Gravel, Inc. Route #79, Box 331 Houghton Lake, Michigan 48629	(P)	OGEAW, ROSCOMMON
Haltunen Sand & Gravel Box 155 Copper City, Michigan 49917	(F, P)	HOUGHTON

CONSTRUCTION SAND AND GRAVEL (CONT'D.)

CONSTRUCTION SAND AND GRAVEL (CONT'D.)

Name of Operation/Office Address	Type of Operation	County
Hamilton Block & Redi-Mix, Inc. R#3, 4510-132nd. Hamilton, Michigan 49419	(P)	ALLEGAN
Harris Excavation Company Route 1 Greenville, Michigan 48838	(P)	MONTCALM
Havelka Construction Co. R#1 Wallace, Michigan 49893	(D1, BR, D, P)	MENOMINEE
Hayes Washed Sand & Gravel Co., Inc. 15205 Middlebelt Road Livonia, Michigan 48154	(D1, F, P, BR)	OAKLAND
Hersey Sand & Gravel, J. P. Burroughs & Son, Inc. Aggregate Division P.O. Box 1468 Saginaw, Michigan 48605	(F, S BR)	OSCEOLA (HMS)
Hillsdale County Road Comm. P.O. Box 357 294 Hudson Road Hillsdale, Michigan 49242	(F, P, BR)	HILLSDALE
Hillsdale Sand and Gravel Co. c/o Miller Bros. Construction Archbold, Ohio 43502		HILLSDALE
Hocking, George, Construction Co. Box 488 3rd and Champion Street South Range, Michigan 49963	(P)	HOUGHTON
Hodgkiss & Douma, Inc. P. O. Box 311 Petoskey, Michigan 49770	(F, P, BR)	CHARLEVOIX, EMMET
Hoffman Bros., Inc. 1355 Dickman Road Battle Creek, Michigan 49015	(F, BR)	CALHOUN
Holloway Sand & Gravel Co., Inc. Div. of Holloway Construction Co. 29250 Wixom Rd. Wixom, Michigan 48096	(D1, P)	OAKLAND, WASHTENAW, GENESEE, OSCODA
Holly Sand & Gravel, Aggregate Division of J. P. Burroughs & Son, Inc. P. O. Box 1468 Saginaw, Michigan 48605	(F, S, BR)	OAKLAND (HMS)
Holmberg Concrete Mounted Route - Kipling Gladstone, Michigan 49837	(D1, S)	DELTA

Name of Operation/Office Address	Type of Operation	County
Hoogerhyde Sand & Gravel Co R#1, Box 92 Gaylord, Michigan 49735	(F, P)	OTSEGO
Houghton County Road Comm. P.O. Box 269 Hancock, Michigan 49930	(F, P)	HOUGHTON
Hubscher & Son, Inc. P. O. Box 411 Mt. Pleasant, Michigan 48858	(D, D1, P, BR, S)	CLARE, GRATIOT, ISABELLA
Huizenga Gravel Company 10015 Gordon Zeeland, Michigan 49464	(D1, S)	OTTAWA
Hunt Construction Company 4452 West Street Cass City, Michigan 48726	(D1, P)	TUSCOLA
Hutfilz, Walter 2850 Bay Road Saginaw, Michigan 48601		SAGINAW
I Indiana Hwy. Materials, Inc. 705 S. Beiger St. Mishawaka, Indiana 46544	(D1, F, P)	CASS
Ionia County Road Comm. 169 E. Riverside Dr. Ionia, Michigan 48846	(F, P, BR, D)	IONIA
Iosco County Road Comm. 810 W. Westover East Tawas, Michigan 48730	(F, P, BR)	IOSCO
Irish Hills Gravel Co. 1100 S. Jackson Cement City, Michigan 49200	(D1, F, S)	LENAWEE
Iron County Road Comm. County Court House Crystal Falls, Michigan 49920	(D1, P, S)	IRON
Iron Mountain, City of Iron Mountain, Michigan 49801		DICKINSON
Iron River Lumber & Fuel Co. 744 N. 5th. Ave. Iron River, Michigan 49935	(P, BR)	IRON
Ironwood Concrete Products Co. P. O. Box 486 Ironwood, Michigan 49938	(S)	GOGEBIC
Isabella County Road Comm. R#7 2261 E. Remus Road Mt. Pleasant, Michigan 48858	(F, P, BR)	ISABELLA

CONSTRUCTION SAND AND GRAVEL (CONT'D.)

Name of Operation/Office Address	Type of Operation	County
J John R. Sand & Gravel Co. 1717 East Dryden Road Metamora, Michigan 48455	(D1, S)	LAPEER
Johnson, Norman, Company R#1, Box 111 Daggett, Michigan 49821	(F, BR)	MENOMINEE
Jolly Road Sand Company 1842 Jolly Road Mason, Michigan 48854	(F, BR)	INGHAM
K K & V Gravel Company 403 Cherokee Drive Fremont, Michigan 49412	(S)	NEWAYGO
Kalkaska County Road Commission 1049 Island Lake Road Kalkaska, Michigan 49646	(D1, BR)	KALKASKA
Kalin, Gerald, Contractors 3403 Niles Road St. Joseph, Michigan 49805		CASS
Karber Gravel Company 917 Church Street St. Johns, Michigan 48879	(D, S)	CLINTON
Kent County Road Commission 1500 Scribner Ave. NW Grand Rapids, Michigan 49504	(BR)	KENT
Keweenaw County Road Commission Mohawk, Michigan 49950	(F, P)	KEWEENAW, HOUGHTON
Kiell Excavating Company 2046 M-140 Niles, Michigan 49120	(F, BR)	BERRIEN
Kish, Ernest, Sand & Gravel 13164 Seymour Rd. Montrose, Michigan 48457		GENESEEE
Klumpp Bros. Gravel Co. 3342 Page Avenue Jackson, Michigan 49203	(Sh, S)	JACKSON
Koboski Coal Company, Inc. 114 Washington Street Petoskey, Michigan 49770	(S)	EMMET
Koenig Fuel & Supply Co. 1955 Lakeville Road Oxford, Michigan 48051	(D1, S, BR, D)	OAKLAND (HMS)
Kruse Gravel Company 1090 W. Clark Road Ypsilanti, Michigan 48197	(D1, F, S, BR)	WASHTENAW

CONSTRUCTION SAND AND GRAVEL (CONT'D.)

Name of Operation/Office Address	Type of Operation	County
Krygoski Construction Co. P. O. Box 116, 2511 - 10th Menominee, Michigan 49858	(D1, F, P)	MARQUETTE
Kurtz Gravel Company G-5300 N. Dort Highway Flint, Michigan 48505	(D1, S, BR, P)	OAKLAND
L Lake City Redi-Mix, Inc. P. O. Box 333 Lake City, Michigan 49651	(P, BR)	MISSAUKEE
Lake Construction Company P. O. Box 427 Indian River, Michigan 49749	(F, BR, P)	ALCONA, CHEBOYGAN, OTSEGO
Lake County Road Commission P. O. Box 245 1180 N. Michigan Ave. Baldwin, Michigan 49304	(D1, P)	LAKE
Lake Sand and Gravel Co. P. O. Box 829 Baldwin, Michigan 49304		LAKE
Lamar Gravel Co., Inc. R#2 Grawn, Michigan 49637	(P)	GRAND TRAVERSE
Lapeer Co. Road Comm. Box 327 Lapeer, Michigan 48446		LAPEER
Leelanau County Road Comm. P. O. Box 337 Suttons Bay, Michigan 49682	(D1, P)	LEELANAU
Liberty Sand Company Box 1046 Ann Arbor, Michigan 48105	(F, S, BR)	WASHTENAW
Lindberg, A., & Sons, Inc. 560 Mather Avenue Ishpeming, Michigan 49849	(F, Sh, P, S, BR)	ALGER, DICKINSON, MARQUETTE
Livingston County Road Comm. 918 North Street Howell, Michigan 48843	(S, BR, P)	LIVINGSTON, SHIAWASSEE
Luce County Road Comm. P. O. Box 401 Newberry, Michigan 49868	(D1, F, P, BR)	LUCE
Lyon Sand & Gravel Co. (Div. E. C. Levy Company) 51455 W. Twelve Mile Road Wixom, Michigan 48906	(F, S)	OAKLAND (HMS)
M Mabry & Melton Sand & Gravel Co. 4145 Lapeer Pontiac, Michigan 48057	(F, P)	OAKLAND

CONSTRUCTION SAND AND GRAVEL (CONT'D.)

Name of Operation/Office Address	Type of Operation	County
Mackinac County Road Comm. State A Street St. Ignace, Michigan 49781	(F, BR, P)	MACKINAC
Mackinac Gravel Co. P. O. Box 427 Indian River, Michigan 49749		CHIPPEWA, CHEBOYGAN
Manistee County Road Comm. 425 Parkdale Avenue Manistee, Michigan 49660	(BR, P)	MANISTEE
Marquette County Road Comm. N. Second Street Ishpeming, Michigan 49849	(F, Sh, P, BR)	MARQUETTE
Marsack Sand & Gravel, Inc. 20900 - 14 Mile Road Roseville, Michigan 48066	(D1, S, BR)	MACOMB
Martin Aggregates, Inc. 1520 E. Main Lansing, Michigan 48912	(D1, S)	CLINTON
Marvic, M., and Sons 1514 N. 16th. St. Escanaba, Michigan 49829	(Sh, P)	DELTA
Mason County Road Comm. P. O. Box 247 Scottville, Michigan 49454	(P)	LAKE, MASON
Mason Gravel Co. R#4, Box 289 Gaylord, Michigan 49735	(Sh, D, P)	OTSEGO
McGuire, John Lakeshore Road Ontonagon, Michigan 49953		ONTONAGON
McMahon Brothers Box 530 Iron River, Michigan 49935		DELTA, MACKINAC
Mecosta County Road Comm. 120 N. DeKraft Avenue Big Rapids, Michigan 49307	(P)	MECOSTA
Menominee County Road Comm. 3222-10th Street Menominee, Michigan 49858	(P, BR)	MENOMINEE, BARAGA
Michigan Aggregates Corp. Rt. 1 Jerome, Michigan 49249	(D1, F, S)	HILLSDALE, (HMS)
Mickelson Corporation 435 Granger Road Oxford, Michigan 48051	(F, D1, P, S, BR)	OAKLAND (HMS)

CONSTRUCTION SAND AND GRAVEL (CONT'D.)

Name of Operation/Office Address	Type of Operation	County
Middleton Gravel Co. 713 Burroughs Flint, Michigan 48507		OAKLAND
Mid-Michigan Materials, Inc. 406 Park Avenue Yale, Michigan 48097	(F, S, BR)	SANILAC
Mil-Co. Trucking 509 Jackson Street Archbold, Ohio 43502	(D1, F, S)	HILLSDALE
Miller, Dave 2323 Gerald H. Miller Rd. Prescott, Michigan 48756	(D1, P, BR)	OGEMAW
Miller, George, & Sons, Inc. 3300 Hollywood Rd. St. Joseph, Michigan 49085	(D1, P, BR)	CASS, KALAMAZOO, CALHOUN, ST. JOSEPH, VAN BUREN
Miller, Paul C. 1110½ - 13 Mile Rd. Sparta, Michigan 49345	(D1, F, P)	OCEANA, OTTAWA, MUSKEGON
Miller Prod. & Supply Co. P. O. Box 548 North U. S. -2 Iron Mountain, Michigan 49801	(F, P)	DICKINSON
Miller Sand & Gravel Co. 1466 - 120 Avenue West Hopkins, Michigan 49328	(D1, F, S, BR)	ALLEGAN
Millington Gravel Co. P. O. Box 1 Millington, Michigan 48746	(D1, F, S)	TUSCOLA
Missaukee County Road Comm. P. O. Box A Lake City, Michigan 49651	(F, BR)	MISSAUKEE
Molesworth Contracting Co. P. O. Box 159 Yale, Michigan 48097	(D1, P)	LAPEER, OAKLAND, SANILAC, ST. CLAIR, TUSCOLA
Montmorency County Road Comm. Rt. #2, Box 50 Atlanta, Michigan 49709	(BR)	MONTMORENCY
Moore Bros. Sand & Gravel 3701 Henry Russ Rd. Romulus, Michigan 48174	(D, S)	WAYNE
Morgan Sand & Gravel Co. 1875 Old U.S. 23 Brighton, Michigan 48116	(F, D, S, BR)	LIVINGSTON, MACOMB, MONROE
Muskegon Gravel & Redimix Co. R. R. #1, Box 183 Ravenna, Michigan 49451	(S)	OTTAWA

CONSTRUCTION SAND AND GRAVEL (CONT'D.)

CONSTRUCTION SAND AND GRAVEL (CONT'D.)

Name of Operation/Office Address	Type of Operation	County	Name of Operation/Office Address	Type of Operation	County
N Nashville Gravel Company 9000 Huntington Rd. Battle Creek, Michigan 49017	(D, F, S)	CALHOUN (HMS)	Ottawa County Road Comm. 616 N. 6th Street Grand Haven, Michigan 49417	(D1, F, BR)	OTTAWA
National Aggregates Corp. 6911 M-52 Hwy. Blanchester, Michigan 48158	(F, S, BR)	WASHTENAW	Oxford Mining Company 9820 Andersonville Road Davisburg, Michigan 48019	(D1, S, BR)	OAKLAND
Natural Aggregates Corp. 63545 Mound Road Rowe, Michigan 48065	(D, S, BR)	LIVINGSTON (HMS), MACOMB (HMS)	Ozanich Sand & Gravel Box 115 Engadine, Michigan 49827	(P)	HACKINAC
Neadow, James R#1 Cooks, Michigan 49817	(F, BR, S)	SCHOOLCRAFT	P P. & B. Gravel Company R#3 Ithaca, Michigan 48847	(D, Sh, P, S, BR)	GRATIOT
Nieb Concrete Prod. Company (Niles Sand & Gravel Div.) 2779 Hoyt Drive Niles, Michigan 49120	(F, S)	CASS	Page1 Sand & Gravel, Inc. 11580 Brooks Rd. Lennon, Michigan 48449		SHIAWASSEE
Niemi & Co., Inc. 2492 N. Harrison Harrison, Michigan 48625	(BR)	CLARE	Palmer Sand & Gravel 2531 E. South Street Jackson, Michigan 49201	(D1, S)	JACKSON
Northeast Gravel Company 4300 Cannonsburg Road N.E. Belmont, Michigan 49306	(D1, S)	KENT	Paquin & Sons, Inc. R#1 Gladstone, Michigan 49837	(D1, F, P)	DELTA
Nurmella Sand & Gravel, Inc. Star Rt., Box 3 Michiganme, Michigan 49861		BARAGA	Paris Gravel Company, Inc. R#1, Box 282 Big Rapids, Michigan 49307	(D1, S, D, BR)	MECOSTA
O Oceana County Road Comm. P. O. Box 112 Hart, Michigan 49420	(D1, F, P, BR)	OCEANA	Parker, Russell G. 295 Hayes N. W. Comstock Park, Michigan 49321		KENT
Ogemaw County Road Comm. 1250 S. M-33 West Branch, Michigan 48661	(D1, BR)	OGEMAW	Peninsula Asphalt Corp. Rt. 1 Maple City, Michigan 49664	(S)	LEELANAU
Olson, Rudy Box 12 Quinnisec, Michigan 49876		DICKINSON	Peterhans, H. O., Sand & Gravel 530 Pearl Street Caro, Michigan 48723	(D1, BR)	TUSCOLA
Ontonagon County Road Comm. 415 Spar Street Ontonagon, Michigan 49953	(Sh, P, BR)	ONTONAGON	Peters Construction Co. 3325 E. Kilgore Road Kalamazoo, Michigan 49002	(D1, F, BR)	KALAMAZOO
Osceola County Road Comm. 800 S. Chestnut St. Reed City, Michigan 49677	(F, P, BR)	OSCEOLA	Petersen Gravel & Excav. 350 Norwood Rockford, Michigan 49341	(S, BR)	KENT
Otisville Stone Company 300 Center Street Otisville, Michigan 48463	(D1, S, BR)	GENESEE	Pickitt & Schreur Div. Reith Riley Const. P. O. Box 1108 Elkhart, Indiana 46514	(P)	ALLEGAN (HMS), ALPENA, CALHOUN, KALAMAZOO, KENT
Otsego County Road Comm. P. O. Box 537 Gaylord, Michigan 49735	(F, P)	OTSEGO	Portable Aggregate Producers, Inc. 4500 E. Nevada Detroit, Michigan 48230	(D1, F, P)	LIVINGSTON, OAKLAND

CONSTRUCTION SAND AND GRAVEL (CONT'D.)

Name of Operation/Office Address	Type of Operation	County
Presque Isle County Road Comm. 1164 S. Bradley Hwy. Rogers City, Michigan 49779		PRESQUE ISLE
Proksch Construction Co. P. O. Box 151 Iron River, Michigan 49935	(F, P)	CHIPPEWA, DELTA, IRON, MACKINAC, SCHOOLCRAFT
Pryor Brothers, Inc. P. O. Box 89 Grand Ledge, Michigan 48837	(S, BR)	CLINTON, EATON
R Randall, Clayton Box 44, C Lake Rd. Ironwood, Michigan 49504		GOGEBIC
Raymond Excavating Co., Inc. 800 Gratiot Blvd. Marysville, Michigan 48040	(D1, F, BR)	ST. CLAIR
Ray's Aggregate Co. 2040 Packard Hwy. Charlotte, Michigan 48813	(P)	CALHOUN
Reyhl Sand & Gravel Co. 450 W. Highland Rd. Howell, Michigan 48843	(F, BR)	LIVINGSTON
Richmond Sand & Gravel Box 178 Richmond, Michigan 48062	(D)	MACOMB
Reith-Riley Const. Co., Inc. P. O. Box 1108 Elkhart, Indiana 46514	(D1, F, Sh, P)	BERRIEN, BRANCH, CALHOUN, CASS, EATON, KALAMAZOO, KENT, OCEANA, OTTAWA, ST. JOSEPH
Riverside Sand and Gravel Co. 1050 Maynard Avenue SW Grand Rapids, Michigan 49504	(F, Sh, BR)	KENT
Riverview Gravel Co. 805 Taylor Street Jeninson, Michigan 49428	(F, P, BR)	OTTAWA
Rocks Ready-Mix Concrete Co., Inc. 2401 Chicago Drive Grand Rapids, Michigan 49509	(D1, P)	KENT
Roscommon Co. Road Comm. Box 117 Roscommon, Michigan 48653	(BR)	ROSSCOMMON
Roslund Gravel Company 6902 Jerome Road Alma, Michigan 48801	(D, BR)	GRATIOT

CONSTRUCTION SAND AND GRAVEL (CONT'D.)

Name of Operation/Office Address	Type of Operation	County
S St. Joseph County Road Comm. Rt. #1 Centreville, Michigan 49032	(F, P, BR)	ST. JOSEPH
Saginaw County Road Comm. 3020 Sheridan Saginaw, Michigan 48601	(D, D1, F, BR)	SAGINAW
Salem Sand & Gravel Aggregates Division of J. P. Burroughs & Son, Inc. P. O. Box 1468 Saginaw, Michigan 48605	(D, F, S, BR)	OAKLAND
Sanderson, C.G., Company 3204 Lakeshore Drive Sault Ste. Marie, Michigan 49783	(F, P, BR)	CHIPPEWA
Sargent Sand Company 2840 Bay Road Saginaw, Michigan 48605	(D1, F, S, BR)	TUSCOLA, SAGINAW
Schinella - Mottes Construction Co. P. O. Box 498, West U.S.2 Iron River, Michigan 49935		IRON
Schlegel, Carl, Inc. 16527 Wood Lansing, Michigan 48906	(F, P, BR, S)	CLINTON, INGHAM
Schnurer Excavators, Inc. Rt. 1, Box 459 Manistique, Michigan 49854		SCHOOLCRAFT
Schoolcraft County Road Comm. Box 152 Manistique, Michigan 49854	(D, F, P, BR)	SCHOOLCRAFT
Schworm, Inc. P. O. Box 162 - M-37 South Traverse City, Michigan 49684	(F, P)	VARIOUS, GRAND TRAVERSE
See's Sand & Gravel, Inc. 4500-31 Mile Road Romeo, Michigan 48065	(S)	MACOMB
Shiawassee County Road Comm. 112 E. McArthur Street Corunna, Michigan 48817	(D1, F, BR)	SHIAWASSEE
Shook Paving Company 8281 Snows Lake Road Greenville, Michigan 48838	(P)	MONTCALM
Sievert Brothers, Inc. 200 E. River Street Manistee, Michigan 49660	(D1, F, P)	LAKE, MANISTEE

CONSTRUCTION SAND AND GRAVEL (CONT'D.)

Name of Operation/Office Address	Type of Operation	County
Smith, Bill, Sand & Gravel, Inc. P. O. Box 23 Otsego, Michigan 49078	(D1, F, P, BR, S)	ALLEGAN, VAN BUREN
Smith, D. L., Sand & Gravel, Inc. Route #3, Box 280 East Jordon, Michigan 49727	(F, BR)	CHARLEVOIX
Snider Construction Co., Inc. Box 25, 5791 LaVern Avenue Levering, Michigan 49755	(P)	EMMET
Soo Gravel & Asphalt Co. 1107 W. Easterday Ave. Sault Ste. Marie, Michigan 49783		CHIPPEWA
South Flint Gravel Co., Inc. P. O. Box G Holly, Michigan 48442		OAKLAND
Spartan Aggregates, Inc. P. O. Box 25 Holt, Michigan 48842	(D1, F, P)	CLINTON, EATON, INGHAM, JACKSON, OTTAWA, TUSCOLA, SHIAWASSEE
Standard Aggregate Company 1384 Lake Lansing Rd. Lansing, Michigan 48912	(D, S)	CLINTON
Standard Gravel Company, Inc. Division of Whittaker & Gooding 5800 Cherry Hill Road Ypsilanti, Michigan 48197	(F, P)	WASHTENAW
Stevick Gravel Company 7591 S. Meridian Road Clark Lake, Michigan 49234	(P)	JACKSON
Stidham Gravel Company 227 S. Michigan Avenue Hastings, Michigan 49058	(F, S, BR)	BARRY
Stockwell Sand & Gravel R#1 St. Johns, Michigan 48879	(D1, BR)	CLINTON
Stony Lake Sand & Gravel R#1 Augusta, Michigan 49012	(F, Sh, S)	KALAMAZOO
Straits Aggregates & Equip. Corp. 120 Oak Street Tawas, Michigan 48763	(F, S, P)	PRESQUE ISLE (HMS)
Strausberg, Frank, & Son Co. 3 Iota Place Saginaw, Michigan 48603	(P)	TUSCOLA

CONSTRUCTION SAND AND GRAVEL (CONT'D.)

Name of Operation/Office Address	Type of Operation	County
St. Joseph County Road Comm. Rt. #1 Centreville, Michigan 49032	(P, BR)	ST. JOSEPH
Superior Sand & Gravel, Inc. 1028 Ethel Avenue Hancock, Michigan 49930	(F, P, BR)	HOUGHTON
Tanton Ready-Mix 2740 E. Deckerville Rd. Deckerville, Michigan 48427	(F, Sh, S, BR)	HURON
Taylor Lumber Co. 360 Meridian Road Cedarville, Michigan 49719		MACKINAC
Tecumseh Gravel Company P. O. Box 247, 6395 Green Hwy. Tecumseh, Michigan 49286	(D, S)	LENAWEE
Tharp & Kosiba 445 Brown Road Pontiac, Michigan 48053	(P)	OAKLAND
Thelen Gravel & Redi-Mix, Inc. 5900 Clarksville Rd. Portland, Michigan 48875	(F, S, BR)	IONIA
Theut Concrete Products 138 E. Harrington Croswell, Michigan 48422		SANILAC
Thompson Construction Co., Inc. 234 W. Garfield Coldwater, Michigan 49036	(S, F, BR)	BRANCH
Thomson Sand & Gravel, Inc. 48399 W. 7 Mile Rd. Northville, Michigan 48167	(D1, F, P, BR)	WAYNE
Three S Gravel Company 2252 White Street Niles, Michigan 49120	(D1, F, BR)	CASS
Tip-Top Gravel Company Rt. #1 9741 Fulton Street Ada, Michigan 49301	(F, P, BR)	KENT
Tod Gravel Company 6498 W. M-21 Rt. #1 Ovid, Michigan 48866		SHIAWASSEE
Traverse City Sand & Gravel Co., Inc. 1142 S. Airport Traverse City, Michigan 49684	(F, P)	GRAND TRAVERSE, LEELANAU

CONSTRUCTION SAND AND GRAVEL (CONT'D.)

Name of Operation/Office Address	Type of Operation	County
Tri-City Aggregates, Inc. 14300 Shields Road Holly, Michigan 48442	(F, P, BR)	OAKLAND
Tuckey Block Company 6038 E. Cass City Road Cass City, Michigan 48726	(D, P, BR)	TUSCOLA
Tuscola County Road Comm. 1733 S. Mertz Rd. Caro, Michigan 48723	(BR)	TUSCOLA
U Underwood Sand & Gravel Co. 2255 Hamlin Road Utica, Michigan 48087	(D, F, S, BR)	OAKLAND
V Van Buren County Road Comm. Box 156 Lawrence, Michigan 49064	(D1, F, Sh, P, BR)	VAN BUREN
Vergote & Sons Sand & Gravel 44680 Elizabeth Mt. Clemens, Michigan 48043	(F, S)	MACOMB
Vertz, Fred W. Trout Lake, Michigan 49793	(F, BR, P)	MACKINAC
Vollmer Sand & Gravel 136 S. Caseville Road Pigeon, Michigan 48755	(D, F, S)	HURON
W Wagner Ready-Mix 8260 Sand Beach Rd. Harbor Beach, Michigan 48441	(F, Sh, S, BR)	HURON
Walker Industries 900 Bogie Lake Road Milford, Michigan 48042	(D1, F, P)	OAKLAND
Washtenaw County Road Comm. 555 N. Zeeb Road Ann Arbor, Michigan 48106	(D1, F, P, BR)	WASHTENAW
Washtenaw Sand & Gravel, Inc. 4984 Earhardt Ann Arbor, Michigan 48103	(S)	WASHTENAW
Wayne Sand & Gravel, Inc. P. O. Box 267, 39891 Ecorse Wayne, Michigan 48184	(D, S)	WAYNE
Weaver, Ronald, Gravel Co., Inc. P. O. Box 116 Dansville, Michigan 48819	(D1, P)	CLINTON, EATON, INGHAM, LIVINGSTON, SHIAWASSEE
Weber's Sand & Gravel 350 W. Silverbell Road Pontiac, Michigan 48057	(D1, F, P, S, BR)	LAPEER, OAKLAND

CONSTRUCTION SAND AND GRAVEL (CONT'D.)

Name of Operation/Office Address	Type of Operation	County
Wedenoja, Melvin Hannu Road Ironwood, Michigan 49938		GOGEBIC
Weldon's Transit Mix, Inc. 1184 N. County Farm Road Harrison, Michigan 48625	(F, S)	CLARE
West Branch Sand & Gravel 3350 Rau West Branch, Michigan 48661	(D, S)	OGEMAW
West Shore Constr. Co., Inc. 188 Jefferson St. P. O. Box 77 Zeeland, Michigan 49464	(F, P)	OTTAWA
Western Materials Div. of Medusa Aggregates Co. Box H, 4780 South Hill Rd. New Hudson, Michigan 48165	(D1, F, P, S)	OAKLAND (HMS)
Wexford County Road Comm. P. O. Box 88, 1288 N. Mitchell St. Cadillac, Michigan 49601	(F, P, BR)	WEXFORD
Wexford Gravel Co. 300 Haynes St. Cadillac, Michigan 49601	(F, P, BR)	WEXFORD
Wheeler Transit Mix Rt. #1, Box 141 Greenville, Michigan 48838	(F, S, BR)	MONTCALM
Whit Pond Gravel Company Div. of Kuert Concrete Inc. 3113 Lincoln Way West South Bend, Indiana 46628	(D1, S, BR)	CASS
White, Alden, & Sons Rt. #3, Box 343 Watervliet, Michigan 49098	(F, Sh, P)	BERRIEN
Whithead, I. L., Co. 1107 W. Easterday Avenue Sault Ste. Marie, Michigan 49783	(P)	CHIPPEWA, MACKINAC
Whittaker & Gooding Co. 5800 Cherry Hill Road Ypsilanti, Michigan 48197	(Sh, S)	WASHTENAW (HMS)
Whittum's Gravel Company Rt. #4, 4728 Whittum Rd. Eaton Rapids, Michigan 48827	(F, S, BR)	EATON
Wiggins & Sons Merritt, Michigan 49667	(F, P, D)	ANTRIM, CRAWFORD, MANISTEE, MISSAUKEE

CONSTRUCTION SAND AND GRAVEL (CONT'D.)

STATE OWNED PITS

Name of Operation	Type of Operation	County
Williams Brothers Asphalt Paving Co., Inc. P. O. Box 54 Saranac, Michigan 48881	(D1, F, P, D)	HURON, IONIA, LAPEER
Williams Redi-Mix Rt. #1 Crystal Falls, Michigan 49920		IRON
Winkelman Excavating Company Box 16 Lewiston, Michigan 49756	(D1, P)	MONTMORENCY
Wolverine Gravel Co. 3790 Puite S.W. Grandville, Michigan 49418		OTTAWA
Yerington Construction Co. Rt. #3, Box 34 Benton Harbor, Michigan 49022	(D1, P, S)	ALLEGAN, BARRY, BERRIEN, CASS, VAN BUREN



There are a number of state owned sand and gravel pits which are frequently mined by private firms through obtaining a mineral permit. These pits are on lands under the jurisdiction of the D.N.R. and are mined according to a mine plan which includes the overall reclamation of the pit site upon completion of the sand and gravel removal operations. For information concerning specific locations, contact the nearest D.N.R. Area Forester, or D.N.R. Forest Management Division, P. O. Box 30028, Lansing, Michigan 48909.

Following is a listing of the current D.N.R. sand and gravel pits arranged by county.

ALCONA

Pit No.	Description	Sec.	Town	Range
3	SE SW	10	25 N	9 E
12	NE NW	3	25 N	9 E
122	NE SE	35	25 N	5 E
123	NW SW	36	25 N	5 E
132	NE NW	34	27 N	7 E
180	SE NE	24	27 N	5 E
204	SW SW	19	27 N	5 E
205	W $\frac{1}{2}$ SW & SW NW	32	25 N	9 E
232	NE NE	12	25 N	6 E
236	NE SE	25	27 N	7 E
280	SE NE	24	25 N	7 E
285	SW SW	31	25 N	6 E
313	SW SE	19	27 N	5 E
329	SE NW	6	26 N	9 E
333	S $\frac{1}{2}$ SW & SE	5	26 N	8 E
338	SE	32	26 N	5 E
393	S $\frac{1}{2}$ NE	30	26 N	5 E
394	W $\frac{1}{2}$ SW	30	26 N	5 E
414	SW SW	32	27 N	5 E

ALGER

Pit No.	Description	Sec.	Town	Range
65	SW NW	25	44 N	21 W
66	NE NE	11	45 N	21 W
68	SW NW	19	46 N	17 W
70	SW NE	23	46 N	17 W
98	City of Munising	Lot 2	47 N	19 W
147	NW SE	30	45 N	21 W
215	NE SE	15	46 N	17 W
225	NE SE	15	47 N	17 W
247	SE NW	19	46 N	17 W
319	SW NE	15	46 N	17 W

ALLEGAN

None

ALPENA

Pit No.	Description	Sec.	Town	Range
18	NW SW	2	29 N	6 E
19	NE NE SE	3	29 N	6 E
20	NE NE	23	29 N	6 E
21	SW NW SE	21	30 N	6 E
22	NW NW	34	32 N	8 E

ALPENA (Cont'd.)

Pit No.	Description	Sec.	Town	Range
27	SE SW	33	30 N	6 E
	NE SW	33	30 N	6 E
173	NW NW	31	32 N	5 E
173-A	W $\frac{1}{2}$ SW	30	32 N	5 E
320	SW SW	31	29 N	9 E
321	SE NE	16	31 N	9 E
359	SW SE	14	29 N	6 E
407	SE SW	31	29 N	9 E
408	NE NE & NE SW	12	31 N	6 E
409	NE NW	30	32 N	5 E
451	E $\frac{1}{2}$ NE	16	30 N	6 E
463	SW SW	22	32 N	6 E
464	NW NW	23	30 N	6 E

ANTRIM

Pit No.	Description	Sec.	Town	Range
107	N $\frac{1}{2}$ SW	14	30 N	8 W
248	NW SW	36	32 N	9 W

ARENAC

Pit No.	Description	Sec.	Town	Range
Bay Co. Rd. Comm. Ls. quarry	S $\frac{1}{2}$ S $\frac{1}{2}$	34	20 N	5 E

BARAGA

Pit No.	Description	Sec.	Town	Range
53	NW NW	12	48 N	32 W
152	SW NE	16	50 N	33 W
217	NE SW	1	51 N	31 W
238	SW NE	18	48 N	31 W
334	SW SW	18	50 N	32 W
339	W $\frac{1}{2}$ SE	3	50 N	35 W
399	NE NE	30	49 N	32 W
445	SW SE	8	47 N	34 W
453	SE SW & SW SE	32	48 N	34 W
460	NW NE	18	48 N	31 W

BARRY

Pit No.	Description	Sec.	Town	Range
47	SW SW	35	3 N	10 W
209	NW SE	4	2 N	10 W

BAY

None

BENZIE

Pit No.	Description	Sec.	Town	Range
48	SW NW	29	26 N	15 W
374	SW NW	17	26 N	13 W

None

BERRIEN

None

BRANCH

None

CALHOUN

None

CASS

CHARLEVOIX

Pit No.	Description	Sec.	Town	Range
244	Lot 2			
	NW SE	31	34 N	8 W
272	SW NW	9	32 N	4 W
341	SE SE	13	37 N	11 W
342	SE NE	35	38 N	10 W
344	NW NW	27	38 N	10 W
381	N $\frac{1}{2}$ SW	33	34 N	7 W
403	SW SW	21	38 N	10 W
422	SW SW	36	33 N	4 W
	SW SW	11	37 N	10 W
	NW NW	31	33 N	4 W
441	NW NW, except 1 acre in NW corner	6	33 N	4 W

CHEBOYGAN

Pit No.	Description	Sec.	Town	Range
1	SE NE	2	34 N	1 W
2	SE SW	29	34 N	3 W
8	NE NW	10	35 N	1 E
9	NE NW	24	36 N	1 E
51	SW SW	14	37 N	1 W
52	SE NE	23	35 N	1 E
54	NW NE	36	38 N	3 W
214	NE NE	4	33 N	1 E
220	SW NW	3	38 N	3 W
223	SE NE	21	35 N	1 E
259	SE NW	14	36 N	1 W
265	SW NW	1	33 N	2 W
290	NE NE	24	35 N	1 E
351	NW NE	2	34 N	1 W
362	NW NW	35	37 N	1 E
398	W $\frac{1}{2}$ SW SE	29	38 N	1 E
	NW NE	32	38 N	1 E
457	N $\frac{1}{2}$ NW SW	17	34 N	2 W
458	SE SE	27	34 N	3 W

CHIPPEWA

Pit No.	Description	Sec.	Town	Range
73	SE SE	18	45 N	2 W
74	NW SW	16	41 N	7 E
104	NE SE	18	43 N	2 E
105	SE SW	1	47 N	1 E
131	NE SE	30	47 N	2 E

CHIPPEWA (Cont'd.)

Pit No.	Description	Sec.	Town	Range
153	NE SW	30	45 N	1 W
192	N $\frac{1}{2}$ NE	4	44 N	1 W
192	S $\frac{1}{2}$ SE	33	45 N	1 W
241	NE SE	31	42 N	5 E
251	NW NE	30	44 N	5 W
254	SE NW	3	41 N	6 E
322	NW SW	32	42 N	5 E
417	NW NE	3	41 N	6 E
433	NW SW	20	42 N	6 E (pit depleted?)
	SW NW	7	41 N	6 E
446	SW NW	7	41 N	6 E
466	N $\frac{1}{2}$ N $\frac{1}{2}$	22	41 N	7 E

CLARE

Pit No.	Description	Sec.	Town	Range
38	NE SW	1	20 N	5 W
230	W $\frac{1}{2}$ NW NE NW	3	20 N	5 W
270	E $\frac{1}{2}$ NW	18	20 N	4 W
309	N $\frac{1}{2}$ SE	4	18 N	4 W
323	S $\frac{1}{2}$ NW	7	20 N	4 W
370	SW NE & SE	32	20 N	4 W
	SW SE & E $\frac{1}{2}$ SW	4	20 N	5 W

CLINTON

None

CRAWFORD

Pit No.	Description	Sec.	Town	Range
26	SW of NE & SE of NW	9	25 N	4 W
28	SW SE	2	26 N	1 W
29	NW NW	34	26 N	3 W
30	NW SW	4	26 N	4 W
31	NE SE	5	26 N	4 W
32	NW NE	24	27 N	2 W
33	SE NE	25	27 N	3 W
34	NE NW	25	27 N	3 W
35	SE NE	21	28 N	2 W
36	SW NW	29	28 N	4 W
166	SE SE	28	28 N	3 W
199	NE NE (16) & SE SE (9)	9 & 16	25 N	3 W
206	Part of SW NW	27	25 N	2 W
261	SW NE	2	27 N	4 W
267	NE NE	8	25 N	4 W
275	NE SW	27	25 N	2 W
278	SW SW	28	26 N	3 W
311	Part of N $\frac{1}{2}$ of NW	32	25 N	2 W
317	NW NE	36	26 N	2 W
324	NE NE	21	28 N	2 W
350	SW of NE & NW SE	34	26 N	4 W
357	NE SW	2	26 N	1 W
375	NE NE	24	27 N	2 W
378	NW of SE & SW of NE	15	28 N	4 W
435	SE NW SW & NE SW SW SW	27	25 N	2 W

DELTA

Pit No.	Description	Sec.	Town	Range
91	NW NE	14	40 N	23 W
92	SE NE	6	42 N	20 W
93	SE NE	7	43 N	18 W
154	NW SE	22	41 N	22 W
158	Lot 3 NE of SW	24	40 N	20 W
163	NE NW	22	41 N	22 W
202	SE SW	6	43 N	22 W
213	SW SE	22	42 N	22 W
252	E $\frac{1}{2}$ NW	15	42 N	21 W
287	NE NW	23	43 N	23 W
293	NE NW	20	43 N	20 W
318	SW NW	25	43 N	23 W
330	SE SE	26	42 N	21 W
352	NW NW	35	43 N	23 W
438	Lots 3 & 4 N $\frac{1}{2}$ NW	11	40 N	22 W
447	SE SW	14	39 N	18 W

DICKINSON

Pit No.	Description	Sec.	Town	Range
59	SW SW	30	41 N	29 W
60	SW SW	26	43 N	27 W
61	NW NE	12	43 N	28 W
62	NE SW	20	43 N	29 W
63	NW SE	26	44 N	28 W
64	SW SW	22	44 N	30 W
164	NE of SW & NW of SE	30	42 N	29 W
167	NW NW	29	42 N	29 W
182	SW NW	18	39 N	28 W
184	SE NE	32	43 N	28 W
185	S $\frac{1}{2}$ of N $\frac{1}{2}$ of NE	33	42 N	30 W
186	SE SE	35	40 N	28 W
188	NE SE	30	42 N	29 W
193	Village of Breitung Skidmore Addition #3 Block 20: Lots 48 & 49			
250	W $\frac{1}{2}$ SE	36	41 N	28 W
283	NW NW	7	39 N	28 W
284	Kingsford Reality Co. Subd'n. Block 7: Lots 4 to 22 incl.			
340	NE SW	20	41 N	29 W
345	SE SE	30	41 N	29 W
395	SW NW	33	41 N	29 W
400	NE NW	32	41 N	29 W
402	SE SW	21	44 N	27 W
455	SE SE	17	42 N	28 W

EATON

None

EMMET

Pit No.	Description	Sec.	Town	Range
55	Village of Levering Hunt & Walker Addition Lot 4 (Part of NE NE)	3	37 N	4 W
56	SW SE	36	38 N	6 W
201	NE NW	27	39 N	4 W
234	NW NE	25	37 N	5 W
368	NW NW	31	37 N	5 W
385	NE NE NE	1	36 N	5 W
418	NE NW	25	39 N	4 W

GENESEE				
None				
GLADWIN				
<u>Pit No.</u>	<u>Description</u>	<u>Sec.</u>	<u>Town</u>	<u>Range</u>
237	SE SE	12	20 N	2 W
371	SW SE	10	20 N	2 W
GOGEBIC				
<u>Pit No.</u>	<u>Description</u>	<u>Sec.</u>	<u>Town</u>	<u>Range</u>
82	NW NW	12	48 N	44 W
83	NE SE	16	48 N	44 W
84	SE NW	28	44 N	39 W
85	SE NW	32	48 N	45 W
87	NW SW	13	48 N	44 W
263	Undivided $\frac{1}{2}$ interest in			
	NE SE	26	45 N	40 W
289	SW NW	5	45 N	43 W
294	NE NE	11	48 N	44 W
315	NE SE	8	45 N	43 W
316	SE SW	27	45 N	43 W
347	SW SW	23	46 N	44 W
360	SE of SW & SW of SE	28	44 N	39 W
366	SE NE	3	46 N	44 W
416	SW SE	8	48 N	46 W
432	SE NE	14	48 N	44 W
434	$N\frac{1}{2}$ SW & SE SW	26	47 N	44 W
GRAND TRAVERSE				
<u>Pit No.</u>	<u>Description</u>	<u>Sec.</u>	<u>Town</u>	<u>Range</u>
67	SW SW	31	26 N	10 W
111	NE SE	8	27 N	11 W
GRATIOT				
None				
HILLSDALE				
None				
HOUGHTON				
<u>Pit No.</u>	<u>Description</u>	<u>Sec.</u>	<u>Town</u>	<u>Range</u>
100	NE NE	19	47 N	37 W
273	NE	11	52 N	36 W
274	$E\frac{1}{2}$ of SE	11	52 N	36 W
310	City of Hancock	11		
	$W\frac{1}{2}$ of NW	27	55 N	34 W
456	NE NW	3	51 N	35 W
HURON				
None				
INGHAM				
None				

IONIA				
None				
IOSCO				
<u>Pit No.</u>	<u>Description</u>	<u>Sec.</u>	<u>Town</u>	<u>Range</u>
17	NE SE	6	24 N	9 E
115	NE NE	20	24 N	5 E
115-A	NE NW NE	20	24 N	5 E
117	NE NE	15	24 N	6 E
286	SE SW	10	24 N	5 E
IRON				
<u>Pit No.</u>	<u>Description</u>	<u>Sec.</u>	<u>Town</u>	<u>Range</u>
89	NE SW	35	43 N	31 W
90	City of Iron River Part of SW of NW	26	43 N	35 W
203	NW NE	31	43 N	35 W
239	SE of NW & NE of SW	34	42 N	31 W
348	SE SW	36	43 N	31 W
364	NE NE	2	44 N	32 W
365	SE NW	20	46 N	34 W
396	NE NE	19	44 N	33 W
428	SE NW, SW NE	8	45 N	31 W
429	NW SE	10	45 N	31 W
430	NE NW	17	45 N	31 W
ISABELLA				
None				
JACKSON				
None				
KALAMAZOO				
None				
KALKASKA				
<u>Pit No.</u>	<u>Description</u>	<u>Sec.</u>	<u>Town</u>	<u>Range</u>
37	SW SW	3	25 N	5 W
155	SW NW	16	26 N	8 W
175	NE SW	16	26 N	8 W
194	NE NW	26	25 N	8 W
226	NE NE	19	26 N	8 W
235	SW NE	13	28 N	7 W
245	NE NW	31	27 N	5 W
325	SW SW	36	25 N	6 W
454	$E\frac{1}{2}$ SE NE	33	25 N	6 W
KENT				
None				
KEWEENAW				
<u>Pit No.</u>	<u>Description</u>	<u>Sec.</u>	<u>Town</u>	<u>Range</u>
373	SE SE	5	57 N	32 W
392	NE SE	5	57 N	32 W

LAKE

Pit No.	Description	Sec.	Town	Range
69	SW SW	29	20 N	13 W
150	SW NE NW	19	17 N	13 W
159	SW NW	2	18 N	13 W
221	NW SE	1	18 N	13 W
258	S½ SW	29	17 N	12 W

LAPEER

Pit No.	Description	Sec.	Town	Range
144	SE NW	13	6 N	9 E
145	SE SE	31	6 N	9 E

LEELANAU

Pit No.	Description	Sec.	Town	Range
296	S½ of SE SE	19	28 N	11 W

LENAWEE

None

LIVINGSTON

Pit No.	Description	Sec.	Town	Range
139	N½ of NE W of Teahen Rd.	11	1 N	5 E
140	N½ of NE NE	33	2 N	5 E
141	S½ of NE NE & N½ SE NE	33	2 N	5 E
142	SW SE	2	1 N	6 E

LUCE

Pit No.	Description	Sec.	Town	Range
106	SE NE	14	45 N	10 W
136	NE NW	1	48 N	8 W
376	SE NE	3	49 N	11 W
442	NE SW	20	48 N	8 W
443	SE NW	5	49 N	11 W
465	SE SE	5	49 N	10 W

MACKINAC

Pit No.	Description	Sec.	Town	Range
72	SW SW	26	43 N	8 W
99	SE NE	15	42 N	4 W
101	NE SE	22	43 N	3 W
102	SE SE	5	43 N	11 W
174	SE SE	19	43 N	12 W
178	NE NW	18	44 N	12 W
179	SW SE	5	43 N	11 W
190	NW SE	32	44 N	7 W
195	NE & N½ of SE	26	42 N	2 W
200	NW NE	32	43 N	11 W
212	NE SE	32	42 N	11 W
218	NW NE	30	43 N	10 W
228	SW SW SE	16	42 N	5 W
240	SE NW	33	41 N	4 W

MACKINAC (Cont'd.)

Pit No.	Description	Sec.	Town	Range
249	W½ of NE except S½ of NW of NE	18	44 N	12 W
257	SW NE	22	43 N	3 W
260	SE NE	30	42 N	12 W
282	NE NE	28	43 N	5 W
298	NW	30	42 N	4 W
299	SE NW	18	44 N	12 W
312	SW SW	7	44 N	12 W
361	Lot 6 Bois Blanc Is.	19	39 N	1 & 2 W
363	SE SE	5	42 N	1 E
379	NW SE	31	43 N	10 W
380	Lot 2 Boix Blanc Is.	23	39 N	1 & 2 W
391	NW SE	6	43 N	7 W
419	SW SE	27	42 N	12 W
420	NW SE	12	44 N	9 W
437	SW NW	23	42 N	12 W
439	SE NW	23	42 N	12 W
440	SE SW	10	43 N	8 W
448	NW SE	27	44 N	8 W
449	NW NE	31	43 N	10 W
461	SE NW	1	41 N	12 W

MACOMB

None

MANISTEE

Pit No.	Description	Sec.	Town	Range
25	NW SW	20	24 N	13 W
146	N½ NE NW	13	21 N	13 W

MARQUETTE

Pit No.	Description	Sec.	Town	Range
57	SW SW	4	46 N	23 W
58	W½ of NE SW	5	46 N	23 W
94	NE SW	3	42 N	24 W
95	Lot 5 NW NW	5	42 N	24 W
96	S½ NE	9	42 N	24 W
97	N½ NW	17	47 N	25 W
222	NE SE	20	46 N	25 W
262	SE SE	5	46 N	25 W
269	SW NW	33	46 N	28 W
277	NE NW	5	42 N	24 W
288	NW	10	45 N	25 W
300	SE SE	23	46 N	26 W
301	SE SE	24	48 N	30 W
384	NE SE	32	47 N	23 W
386	NW NE NE	26	44 N	26 W
397	NE NE	2	48 N	29 W
423	SW NE	10	45 N	29 W
425	SW NE	31	46 N	28 W
431	NE SW	30	46 N	28 W
444	NE NE	30	45 N	27 W
468	SW NE NW	2	46 N	28 W

None

MASON

MECOSTA

Pit No.	Description	Sec.	Town	Range
49	SW SE	12	15 N	8 W
71	NW SE	27	16 N	10 W

MENOMINEE

Pit No.	Description	Sec.	Town	Range
86	NE NE	18	36 N	25 W
88	SE NE	24	37 N	26 W
148	SW NE	8	37 N	25 W
181	NE SE	34	36 N	28 W
191	SE SW	14	37 N	28 W
268	NW SW	2	40 N	26 W
302	SW NE	22	41 N	26 W
303	NW NE	18	35 N	25 W
304	NW NE	17	36 N	27 W
305	NE of NE except			
	NW NE NE	10	35 N	28 W
343	N $\frac{1}{2}$ NE	36	36 N	25 W
346	NW NW	5	35 N	28 W
358	Lot 3 NE SE & SE NE	1	35 N	29 W
367	SE NE	15	38 N	26 W
401	NW SW	22	37 N	28 W
412	SE NE	7	34 N	28 W
421	SE SE	12	36 N	25 W
424	NE NE	13	40 N	26 W
427	NE SW	17	36 N	27 W
452	NE SW	3	40 N	26 W
459	NE SW	27	39 N	25 W

MIDLAND

Pit No.	Description	Sec.	Town	Range
382	SW NW	7	14 N	2 W

MISSAUKEE

Pit No.	Description	Sec.	Town	Range
44	N $\frac{1}{2}$ NW	17	21 N	8 W
45	NW NW	5	23 N	5 W
46	N $\frac{1}{2}$ SW	13	23 N	8 W
161	N $\frac{1}{2}$ NW	13	23 N	8 W
276	N $\frac{1}{2}$ SE	12	24 N	5 W
337	SW NE	1	21 N	5 W
467	N $\frac{1}{2}$ NW NW SW & S $\frac{1}{2}$ SW SW NW	18	24 N	7 W

None

MONROE

MONTCALM

Pit No.	Description	Sec.	Town	Range
120	E $\frac{1}{2}$ SE	34	9 N	8 W
121	NE S	34	9 N	8 W

MONTMORENCY

Pit No.	Description	Sec.	Town	Range
13	NE SW	21	29 N	3 E
14	SE SW	21	29 N	3 E

MONTMORENCY (Cont'd.)

Pit No.	Description	Sec.	Town	Range
15	NE NE	21	31 N	3 E
16	NW NE	34	32 N	2 E
77	NW SW	6	29 N	3 E
109	SE NE	4	29 N	1 E
157	NE NW	30	31 N	4 E
162	SW of NW & NW of SW	31	31 N	1 E
297	NE NE	36	30 N	3 E
326	SW SW	14	31 N	2 E
331	E $\frac{1}{2}$ of SE	15	32 N	2 E
	NE NE	22		
332	S $\frac{1}{2}$ SE NW & N $\frac{1}{2}$ NE SW	22	29 N	2 E
372	SE SE	25	32 N	4 E
377	S $\frac{1}{2}$ NE	23	29 N	3 E
411	SW SW	1	30 N	2 E

None

MUSKEGON

NEWAYGO

Pit No.	Description	Sec.	Town	Range
172	NW SW	23	13 N	11 W
390	Govt. Lot 2 ex Shaw Pk.	19	12 N	12 W

OAKLAND

Pit No.	Description	Sec.	Town	Range
143	NE SE	24	4 N	10 E

OCEANA

Pit No.	Description	Sec.	Town	Range
168	SW SW	3	14 N	18 W
169	SE SE	4	14 N	18 W
170	NE NE	9	14 N	18 W
171	NW NW	10	14 N	18 W

OGEMAW

Pit No.	Description	Sec.	Town	Range
50	NE NW	23	24 N	2 E
176	NW NW	12	24 N	4 E
208	SW SE	10	24 N	4 E
216	NW SE NE	25	24 N	4 E
243	SW SE	31	24 N	4 E
281	NE NW	15	24 N	4 E
335	NW NE SW	14	24 N	4 E
354	SE NW	5	22 N	2 E
369	SW SW	14	24 N	4 E

ONTONAGON

Pit No.	Description	Sec.	Town	Range
75	NW SE	3	46 N	39 W
76	NE SE	14	47 N	39 W
78	SE NE	24	47 N	40 W
79	SW SW	24	47 N	40 W
80	NW of SW & SW of SW	16	49 N	38 W
81	NE SE	24	51 N	38 W
133	NW SW	34	51 N	42 W
134	NE SE E of Creek	4	50 N	43 W
134-A	NE SE W of Creek	4	50 N	43 W
207	SW NW	19	47 N	39 W
253	Metes & bounds in NE NE	35	51 N	38 W
264	NE SE SE	14	47 N	39 W
306	E½ NE NW	19	47 N	39 W
307	Undivided 3/4 interest in NE NW & NW NW	15	51 N	37 W
308	SE NW	21	47 N	38 W
383	N½ SW	9	51 N	37 W

OSCEOLA

Pit No.	Description	Sec.	Town	Range
126	N½ SE	36	17 N	7 W
129	SE SW	24	19 N	9 W
279	NW NE	11	19 N	9 W

OSCODA

Pit No.	Description	Sec.	Town	Range
112	NE SE	18	27 N	1 E
118	SW NW	32	25 N	1 E
119	SE of SW & SW of SE	7	27 N	4 E
183	SE SE	18	27 N	1 E
187	SW SW	12	25 N	4 E
227	SE NE	21	27 N	4 E
	SW NW	22		
229	SW SW	28	28 N	3 E
	N½ NW	33		
233	NW SE	22	27 N	4 E
353	SW SW	12	28 N	1 E
387	SE SE	35	26 N	1 E
404	SE NE	24	28 N	2 E
	SW NW	19	28 N	3 E
405	S½ S½ SE	24	28 N	2 E
39	W½ SW	33	26 N	5 E?
413	NW NW	36	25 N	4 E
426	SW SE	21	25 N	4 E

OTSEGO

Pit No.	Description	Sec.	Town	Range
10	NE SE	31	30 N	1 W
11	NE NE	34	30 N	1 W
116	N½ NE SW	30	31 N	4 W
137	Lot 5 SE E of US-27	5	29 N	3 W
160	SW SE	18	32 N	1 W
349	NW SW	10	32 N	1 W
355	NW NW	10	32 N	1 W
415	NE SE	25	32 N	1 W
450	SW SE & SE SW	26	29 N	4 W

None

OTTAWA

Pit No.	Description	Sec.	Town	Range
4	NE NW	19	35 N	2 E
5	NW NE	26	35 N	3 E
6	NE SW	29	36 N	2 E
7	NW SE	29	36 N	3 E
108	NE SW & S½ SW	12	34 N	2 E
156	W½ NE	22	34 N	7 E
197	SW	13	34 N	7 E
224	NE NE	23	34 N	6 E
246	NE NW	26	35 N	3 E
327	NW NE	28	36 N	3 E
389-A	E½ SE SW	7	34 N	4 E
462	SW NW	22	34 N	7 E

PRESQUE ISLE

ROSCOMMON

Pit No.	Description	Sec.	Town	Range
39	NW NW	24	22 N	1 W
40	NW SW	29	22 N	4 W
41	E½ SW NW	17	23 N	2 W
113	NW NE	28	21 N	1 W
114	SW SW	24	24 N	4 W
125	SE NE	18	23 N	2 W
127	SE SW	33	23 N	1 W
165	SW SE	11	22 N	1 W
189	SW SE	33	23 N	1 W
196	NE NW	3	22 N	1 W
231	SW SW	17	23 N	2 W
242	NW SE NE	26	24 N	1 W
266	S½ SE SW	11	22 N	1 W
271	SE NW NW	3	22 N	1 W
295	NW	30	22 N	4 W
328	E½ SW SE	32	23 N	4 W
336	NW NW	32	23 N	4 W
356	NE SE	22	23 N	2 W

None

SAGINAW

None

ST. CLAIR

None

ST. JOSEPH

SANILAC

Pit No.	Description	Sec.	Town	Range
211	NE NE	8	13 N	14 E

SCHOOLCRAFT

Pit No.	Description	Sec.	Town	Range
103	N½ NW	28	42 N	17 W
135	W½ of E½ of NE	15	41 N	17 W

SCHOOLCRAFT (Cont'd.)

Pit No.	Description	Sec.	Town	Range
255	NE NE	13	44 N	13 W
256	NE NW	13	44 N	13 W
292	NE NW	15	41 N	17 W
	SE NW			
314	W $\frac{1}{2}$ SE	4	41 N	13 W

SHIAWASSEE

None

TUSCOLA

Pit No.	Description	Sec.	Town	Range
130	W $\frac{1}{2}$ NE NE	12	10 N	8 E
210	NW NW	18	10 N	9 E

VAN BUREN

None

WASHTENAW

None

WAYNE

None

WEXFORD

Pit No.	Description	Sec.	Town	Range
24	NW	7	24 N	10 W
110	SW SE	35	24 N	9 W
151	SW NW	11	22 N	9 W
198	NE NE	16	24 N	9 W
291	S $\frac{1}{2}$ NE	14	22 N	12 W
388	NE SW	20	22 N	11 W
410	NE SE	20	22 N	11 W
	NW SE	20	22 N	11 W
436	SE SE	32	23 N	11 W

INDUSTRIAL SAND

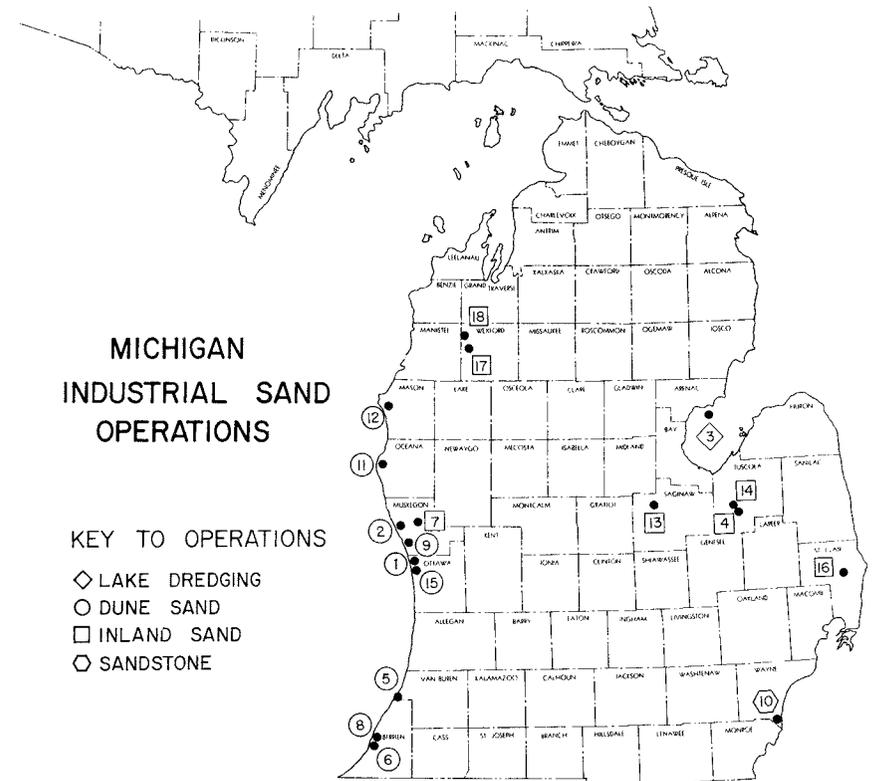
Michigan's 1976 production of Industrial Sand was nearly 5½ million short tons worth almost 21 million dollars. Both the volume and the value were up from the 1975 production figures of just under 4 3/4 million tons valued at just over 16½ million dollars.

Industrial sand uses include the following: Foundry molding, glass making, sand blasting, fire or furnace sand, engine or traction sand, and metallurgical sand. Only sand deposits meeting specific standards of purity, grain size and shape are usable.

The 18 industrial sand mining operations in Michigan produce material from several types of deposits. These include: 1) Sand dunes along the Lake Michigan shore and some inland dunes; 2) Glacial outwash or other melt-water sorted deposits; 3) High purity consolidated sandstone; 4) and sand dredged out of Saginaw Bay of Lake Huron.

Those readers who are interested in a more comprehensive discussion of industrial sand are referred to the 1975 booklet, "Michigan's Industrial Sand Resources," by Jerry D. Lewis. The publication is Circular 11 of the Geological Survey Division, Michigan Department of Natural Resources, Lansing. Cost is fifty cents, plus tax. Copies are available by mail from the Information Services Center, Michigan D.N.R., Box 30028 Lansing, MI 48909.

Figure 17 MICHIGAN INDUSTRIAL SAND OPERATIONS



INDUSTRIAL SAND PRODUCERS

Name of Operation	Map No.	Type Plant & Use	Location
Construction Agg. Corp. P. O. Box 6830 Ferrysburg, Michigan 49409	(1)	<u>Plant:</u> Stationary <u>Uses:</u> Molding	SE $\frac{1}{4}$ NW $\frac{1}{4}$ Sec. 17, T8N, R16W OTTAWA COUNTY
C. W. C. Casting Div. of Textron, Inc. 2672 Henry St. Muskegon, Michigan 49441	(2)	<u>Plant:</u> None <u>Uses:</u> Molding	Sec. 14, T9N, R17W MUSKEGON COUNTY
Erie Sand Steamship Co. P. O. Box 153 Foot of Sassafras St. Erie, Pennsylvania 16512	(3)	<u>Plant:</u> Ship dredge <u>Uses:</u> Foundry (molding), metallurgical	Dredge SAGINAW BAY of LAKE HURON
Great Lakes Minerals Co. P. O. Box 1 Vassar, Michigan 48768	(4)	<u>Plant:</u> Stationary <u>Uses:</u> Molding, engine	SW $\frac{1}{4}$ NE $\frac{1}{4}$ Sec. 11 W $\frac{1}{2}$, NE $\frac{1}{4}$ Sec. 22 E $\frac{1}{2}$ NW $\frac{1}{4}$ Sec. 22 T11N, R8E Sec. 27, T12N, R8E TUSCOLA COUNTY
Harris Trucking, Inc. P. O. Box 897 Benton Harbor, Michigan 49022	(5)	<u>Plant:</u> None <u>Uses:</u> Molding	W $\frac{1}{2}$ SE $\frac{1}{4}$ SW $\frac{1}{4}$, Sec. 29 T2S, R17W VAN BUREN COUNTY
Martin Marietta Corp. Industrial Sand Div. 110 E. Main Street Rockton, Illinois 61072	(6)	<u>Plant:</u> Stationary <u>Uses:</u> Glass, molding	NW $\frac{1}{4}$ Sec. 18, T6S, R19W BERRIEN COUNTY
McCormick Sand Corp. P. O. Box 506 2875 Lincoln St. Muskegon, Michigan 49443	(7)	<u>Plant:</u> Portable <u>Uses:</u> Molding, glass	SE $\frac{1}{4}$ Sec. 16, T11N, R16W MUSKEGON COUNTY
Manley Brothers of Indiana, Inc., Bridgman Div. P. O. Box 538 Chesterton, Indiana 46304	(8)	<u>Plant:</u> Stationary <u>Uses:</u> Molding, furnace, engine	SW $\frac{1}{4}$ Sec. 5, & NW $\frac{1}{4}$ Sec. 6, T6S, R19W BERRIEN COUNTY
Nugent Sand Co., Inc. P. O. Box 506 2875 Lincoln St. Muskegon, Michigan 49443	(9)	<u>Plant:</u> Dredge, stationary <u>Uses:</u> Molding, engine, & blast	NE $\frac{1}{4}$ Sec. 3, T9N, R17W MUSKEGON COUNTY
Ottawa Silica Company 33620 Streicher Rd. Rockwood, Michigan 48173	(10)	<u>Plant:</u> Stationary <u>Uses:</u> Glass, molding, aggregate	SW $\frac{1}{4}$ NE $\frac{1}{4}$ Sec. 15, T5S, R10E WAYNE COUNTY
Sand Products Corp. 2489 First Nat'l. Bldg. Detroit, Michigan 48226	(11)	<u>Plant:</u> Portable <u>Uses:</u> Molding	NW $\frac{1}{4}$ Sec. 17, & NE $\frac{1}{4}$ Sec. 18 T15N, R18W OCEANA COUNTY

INDUSTRIAL SAND PRODUCERS (CONT'D)

Name of Operation	Map No.	Type Plant & Use	Location
Sargent Sand Co. 2840 Bay Road Saginaw, Michigan 48605	(12)	<u>Plant:</u> Stationary, dredge <u>Uses:</u> Engine, metallurgical	NE $\frac{1}{4}$ Sec. 29, T19N, R18W MASON COUNTY
	(13)	<u>Plant:</u> None <u>Uses:</u> Metallurgical, fill, core	Near Hemlock SAGINAW COUNTY
	(14)	<u>Plant:</u> Stationary <u>Uses:</u> Engine, oil (hydrofrac)	Near Vassar TUSCOLA COUNTY
Standard Sand Co. P. O. Box 290 Grand Haven, Michigan 49417	(15)	<u>Plant:</u> Stationary <u>Uses:</u> Molding, engine	Parts of Sec. 4 & 5 T7N, R16W OTTAWA COUNTY
Strauchman Industries 2110 Burns Rd. Smiths Creek, Michigan 48074	(16)	<u>Plant:</u> _____ <u>Uses:</u> Molding	Sec. 18, T6N, R16E ST. CLAIR COUNTY
Wexford Sand Co. 2840 Bay Rd. Saginaw, Michigan 48605	(17) (18)	<u>Plant:</u> Stationary <u>Uses:</u> Metallurgical	SE $\frac{1}{4}$ Sec. 34, T23N, R12W SW $\frac{1}{4}$ Sec. 30, T24N, R12W WEXFORD COUNTY

STONE

Under this heading we include the subheadings of Limestone and Dolomite, Sandstone, and Miscellaneous Stone which includes Traprock, or Basalt, and Marble. The total stone production in 1976 amounted to nearly 41½ million short tons valued at over \$82 million.

LIMESTONE AND DOLOMITE

Limestone and Dolomite are quarried for a number of uses in Michigan, the largest uses are for crushed construction and road aggregate, flux stone for steel making, and raw material for making cement and lime. Other uses include riprap, dimension building stone, agricultural limestone, and railroad ballast.

Most of the larger quarries are located along the shores of Lakes Michigan and Huron which allow less expensive boat transportation of the processed stone to the down-lake markets. Many smaller quarries are scattered throughout the state wherever good limestone or dolomite occurs near the land surface in an area of possible economic use. The accompanying map indicates the location of the limestone and dolomite resources and quarries.

LIMESTONE AND DOLOMITE COMPANIES

Name of Operation	Map No.	Type of Stone and Use	Quarry Location
Afton Stone Inc. Afton, Michigan 49705	(1)	Limestone, crushed, concrete aggregate	1 Mi. N of Afton Sec. 36, T35N, R2W <u>CHEBOYGAN COUNTY</u>
A. O. Company Div. of Sand Products Corp. P. O. Box 442 1st. Nat. Bank Bldg. St. Ignace, Michigan 49781	(2)	Limestone, riprap	7½ Mi. N of Epoufette Sec. 34, T44N, R7W <u>MACKINAC COUNTY</u>
Arenac Co. Rd. Comm. 116 Bridge Street Omer, Michigan 48749	(3)	Limestone, crushed, road aggregate, riprap	3 Mi. NE of Au Gres Sec. 5, T19N, R7E <u>ARENAC COUNTY</u>
Bay Co. Rd. Comm. 2521 S. Huron Rd. Kawkawlin, Michigan 48631	(4)	Limestone, crushed, construction aggregate	3 Mi. N of Omer Sec. 1, T19N, R5E <u>ARENAC COUNTY</u>
Cheney Limestone Co. P. O. Box 6 8038 Pease Rd. Bellevue, Michigan 49021	(5)	Limestone, rubble, crushed aggregate and agricultural	W of Bellevue Sec. 29, T1N, R6W <u>EATON COUNTY</u>
Drummond Dolomite Inc. Div. of Bethlehem Steel Corp. 701 East Third St. Bethlehem, Pennsylvania 18016	(6)	Dolomite, crushed flux stone, construction aggregate	W end of Drummond Island Secs. 3 & 10, T41N, R5E <u>CHIPPEWA COUNTY</u>
Dundee Cement Co. P. O. Box 122 Dundee, Michigan 48131	(7)	Limestone, crushed, cement and road aggregate	2 Mi. N of Dundee Sec. 6, T6S, R7E <u>MONROE COUNTY</u>

LIMESTONE AND DOLOMITE (CONT'D.)

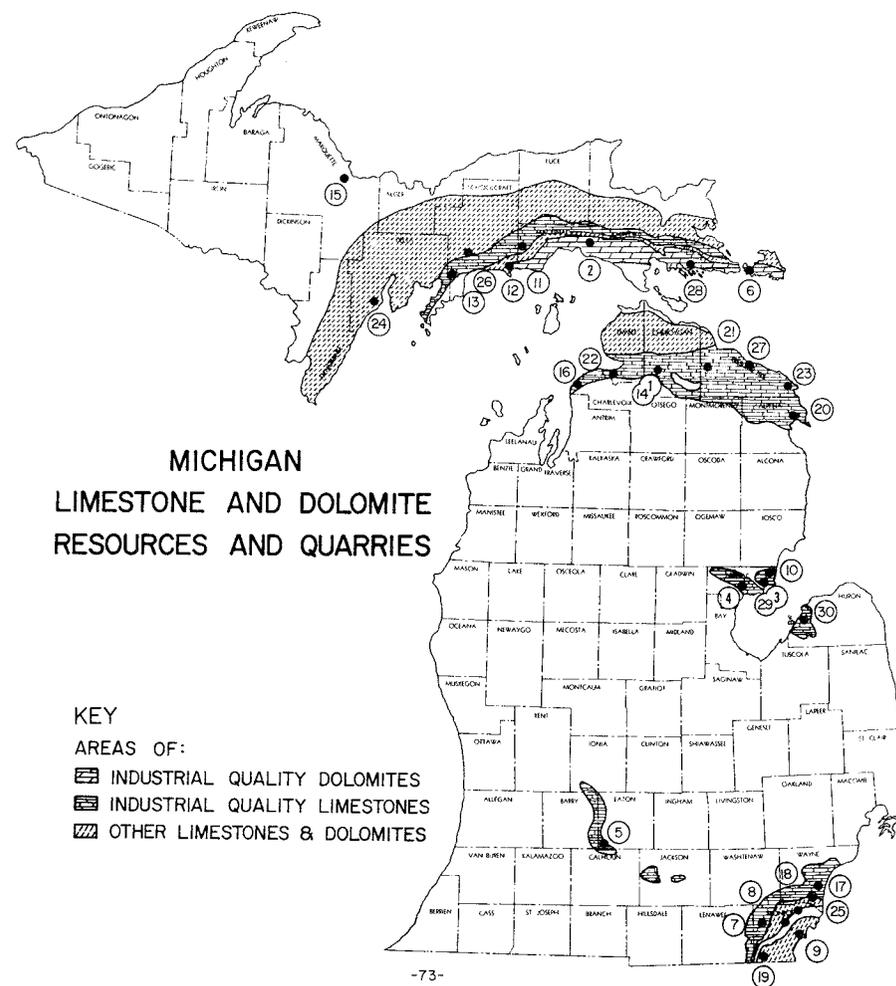
Name of Operation	Map No.	Type of Stone and Use	Quarry Location
France Stone Co. P. O. Box 1928 1800 Toledo Trust Bldg. Toledo, Ohio 43603	(8)	Dolomite, crushed macadam aggregate, riprap and agricultural	At Grape Sec. 13, T6S, R7E (PC685) <u>MONROE COUNTY</u>
	(9)	Dolomite, crushed macadam aggregate, railroad ballast, and riprap	At Monroe Sec. 7, T7S, R9E <u>MONROE COUNTY</u>
Glancy, R. E., Inc. 1055 S. Bay Drive Tawas City, Michigan 48763	(10)	Limestone, crushed, road aggregate, rip- rap	5 Mi. S of Alabaster Sec. 14, T20N, R7E <u>ARENAC COUNTY</u>
Inland Lime and Stone Co. Div. of Inland Steel Co. Gulliver, Michigan 49840	(11)	Limestone, construction aggregate, flux, riprap, railroad bal- last, chemical, cement and lime manufacture	N of Port Inland Sec. 6, T42N, R12W <u>MACKINAC COUNTY</u>
	(12)	Dolomite, flux stone, railroad ballast, and filter stone	W. of Port Inland, Parts of Secs. 10, 11, 13, T41N, R13W <u>SCHOOLCRAFT COUNTY</u>
Inwood Stone Products Co. P.O. Box 24 Cooks, Michigan 49817	(13)	Dolomite, dimensional (dressed)	3 Mi. NE of Cooks Sec. 8, T41N, R17W <u>SCHOOLCRAFT COUNTY</u>
Limestone Products Co. 7736 Mill Street Vanderbilt, Michigan 49795	(14)	Limestone, agricultural, construction aggregate,	1 Mi. N of Afton Sec. 36, T35N, R2W <u>CHEBOYGAN COUNTY</u>
Lindberg, A., & Sons, Inc. 560 Mather Avenue Ishpeming, Michigan 49849	(15)	Dolomite, crushed con- struction aggregate	Hwy. 480 Sec. 8, T47N, R25W <u>MARQUETTE COUNTY</u>
Medusa Cement Co. Div. of Medusa Corp. P. O. Box 367 Charlevoix, Michigan 49720	(16)	Limestone, cement	2 Mi. W of Charlevoix Sec. 28, T34N, R8W <u>CHARLEVOIX COUNTY</u>
Mich. Foundation Quarry Co., Inc., 110 W. Jefferson Avenue Trenton, Michigan 48183	(17)	Limestone, construction aggregate, agricultural, flux, riprap	At Trenton Sec. 7, T4S, R11E <u>WAYNE COUNTY</u>
Michigan Stone Co. Rt. #2 Ottawa Lake, Michigan 49267	(18)	Dolomite, crushed con- struction aggregate, riprap, and railroad ballast	½ Mi. N of Maybee Sec. 29, T5S, R8E <u>MONROE COUNTY</u>
	(19)	Dolomite, crushed construction aggregate, riprap, and railroad ballast	E. of Ottawa Lake Sec. 25, T8S, R6E <u>MONROE COUNTY</u>
National Gypsum Co. Cement Div. Alpena, Michigan 49707	(20)	Limestone, cement	At Alpena Sec. 13, T31N, R8E <u>ALPENNA COUNTY</u>

LIMESTONE AND DOLOMITE (CONT'D.)

Name of Operation	Map No.	Type of Stone and Use	Quarry Location
Onaway Stone Co. c/o Cherryland Cut Stone Co. Route 4 Box 529 Traverse City, Michigan 49684	(21)	Limestone, dimensional (rough and dressed)	1 Mi. N of Onaway Sec. 5, T34N, R2E <u>PRESQUE ISLE COUNTY</u>
Penn-Dixie Industries, Inc. 1111 S. Main St. Kokomo, Indiana 46901	(22)	Limestone, cement	3.5 Mi. W of Petoskey Sec. 3, T34N, R6W <u>EMMET COUNTY</u>
Presque Isle Corp. P. O. Box 426 Alpena, Michigan 49707	(23)	Limestone, flux, construction aggregate, lime	7 Mi. N of Lakeport Sec. 2, T33N, R8E <u>PRESQUE ISLE COUNTY</u>
Proksch Construction Co. P. O. Box 151 Iron River, Michigan 49935	(24)	Dolomite, crushed construction aggregate	1½ mi. N of Wells Sec. 12, T39N, R23W <u>DELTA COUNTY</u>
Rockwood Stone Co., Inc. P. O. Box 113 Rockwood, Michigan 48173	(25)	Dolomite, aggregate, riprap	NE¼ Sec. 15, T5S, R10E <u>WAYNE COUNTY</u>
Schoolcraft Co. Rd. Comm. P.O. Box 152 Manistique, Michigan 49854	(26)	Dolomite, road aggregate	4½ Mi. N of Manistique Sec. 14, T42N, R16W <u>SCHOOLCRAFT COUNTY</u>
U.S. Steel Corporation Limestone Operations Rogers City, Michigan 49779	(27)	Limestone, crushed construction aggregate, riprap, railroad ballast, cement, lime, flux, chemical, agricultural	At Rogers City Sec. 23, T35N, R5E <u>PRESQUE ISLE COUNTY</u>
	(28)	Dolomite, crushed con- struction aggregate, riprap, lime, flux, ag- ricultural	4 Mi. E. of Cedarville Sec. 10, T42N, R1E <u>MACKINAC COUNTY</u>
Van Deusen Stone Co. 234 S. Huron Road Au Gres, Michigan 48703	(29)	Limestone, crushed construction aggregate and riprap	3 Mi. NE of Au Gres Sec. 5, T19N, R7E <u>ARENAC COUNTY</u>
Wallace Stone Co. Div. J. P. Burroughs & Son, Inc. P. O. Box 1468 Saginaw, Michigan 48605	(30)	Limestone, crushed construction aggregate, agricultural, riprap, and railroad ballast	3 Mi. W of Pigeon Secs. 5 & 6, T16N, R10E <u>HURON COUNTY</u>

Figure 18

LIMESTONE AND DOLOMITE RESOURCES AND QUARRIES 1977



MISCELLANEOUS STONE

This heading currently includes only Traprock or Basalt, and Marble. The traprock is actually waste rock from old copper mines and is processed for construction aggregate. Marble is mined for use as a flux stone and as landscape aggregate. In the recent past the following were also mined: Granite, Pink Feldspar, and Amphibolite.

The Miscellaneous Stone quarry locations are included on the map entitled "Michigan Miscellaneous Stone and Sandstone Operations".

MISCELLANEOUS STONE COMPANIES

Name of Operation	(Map No.)	Type of Stone and Use	Quarry Location
Felch Quarry Corp. P. O. Box 845 Iron Mountain, Michigan 49801	(1)	Marble, terrazzo and exposed aggregate and flux stone	½ Mi. SE of Felch Sec. 33, T42, R28W <u>DICKINSON COUNTY</u>
Houghton Co. Rd. Comm. P. O. Box 269 Hancock, Michigan 49930	(2)	Trap rock, construction aggregate	Near Winona Sec. 29, T52N, R36W
	(3)	Trap rock, construction aggregate	Near Baltic Sec. 21, T54N, R34W
	(4)	Trap rock, construction aggregate	Near Atlantic Sec. 10, T54N, R34W
	(5)	Trap rock, construction aggregate	Near Calumet Sec. 14, T56N, R33W <u>HOUGHTON COUNTY</u>

SANDSTONE

Sandstone is currently mined by two producers in Jackson County for use as rough dimensional stone. There is one sandstone producer in Wayne County who turns out industrial sand for use in glass making and as foundry sands, and also produces sandstone aggregate material.

Around the turn of the century there were at least two large sandstone quarries located in the Upper Peninsula which produced brown and red dimensional sandstone blocks which were used for fancy building fronts. Another abandoned industry quarried a gritty sandstone for the manufacture of grindstones in Huron County.

The current sandstone producers are located on the map showing "Miscellaneous Stone and Sandstone Operations."

SANDSTONE COMPANIES

Name of Operation	Map No.	Type and use of stone	Quarry Location
Jude Sandstone Co. 338 Austin Road Napoleon, Michigan 49261	(6)	Sandstone, rough dimensional	½ Mi. E. of Napoleon Sec. 6, T4S, R2E and Sec. 31, T3S, R2E <u>JACKSON COUNTY</u>
Napoleon Sandstone Quarry P. O. Box 119 Napoleon, Michigan 49261	(7)	Sandstone, dressed and rough dimensional	½ Mi. E of Napoleon Sec. 6, T4S, R2E <u>JACKSON COUNTY</u>
Ottawa Silica Co. Michigan Silica Division 33620 Streicher Road Rockwood, Michigan 48173	(8)	Sandstone, glass and foundry use, and aggregate	At Rockwood Secs. 14, 15, 22 & 23 T5S, R10E <u>WAYNE COUNTY</u>

Figure 19 MICHIGAN MISCELLANEOUS STONE AND SANDSTONE OPERATIONS - 1977



MICHIGAN MISCELLANEOUS STONE AND SANDSTONE OPERATIONS

KEY

MISCELLANEOUS STONE
○ MARBLE
△ TRAP ROCK (BASALT)

SANDSTONE
⬡ SANDSTONE OPERATIONS

SULFUR

Some sulfur crystals are found in vugs in dolomite rock within the Detroit River Group of middle Devonian age in parts of southeastern Michigan. However, the sulfur produced in Michigan is a byproduct of oil refinery operations.

Name & Address of Producer	Nearest Town	County
Total Petroleum, Inc. Alma, Michigan 48801	Alma	<u>GRATIOT</u>
Marathon Oil Company 1300 S. Fort Street Detroit, Michigan 48217	Detroit	<u>WAYNE</u>

MINERAL PRODUCERS LISTED BY COUNTY

1977

Mineral producers are listed below by county. Location of the operation, when known, is given by section, township, and range, or nearest city to operation, or pit name. Sand and gravel operators using portable equipment sometimes work in several locations each year, thus they may not be still operating in the reported locations at a later date.

ALCONA

Alcona Co. Road Comm.	Various	36 26N 8E	Sand and gravel
Glancy, R. E., Inc.			" " "
Lake Construction Co.			" " "
Straits Aggregate and Equipment Corp.			" " "

ALGER

Alger Co. Road Comm.	Various	27 47N 21W	Sand and gravel
Lindberg, A., and Sons, Inc.			" " "

ALLEGAN

Boerman, John, Sand and Gravel	Wedge pit		Sand and gravel
Brenner, Kevin	Belden pit	34 2N 13W	Marl
Brewers City Dock, Inc.	(Both pits closed 10/77)	E SW 16 1N 12W	Sand and gravel
		NE SW 11 2N 14W	" " "
Cash & Carry Gravel Co.	Middlemass-Heath pit	26 3N 14W	" " "
Douglas, Charles E.		26 4N 11W	Peat
Flemming Gravel Co.			Sand and gravel
Hamilton Block & Redi-Mix, Inc.		26 4N 15W	" " "
Miller Sand & Gravel Co.		11 & 14 3N 12W	" " "
Pavlak, Emil		34 3N 13W, NE SW 12 2N 12W	Marl
Pickett & Schreur	Various		Sand and gravel
Smith, Bill, Sand & Gravel, Inc.		24 1N 12W, 17 1N 14W	" " "
Yerington Construction Co.	Maurer pit, Leicht pit		" " "

ALPENA

Alpena Aggregate, Inc.		32 32N 8E	Sand and gravel
Alpena Co. Road Comm.		20 31N 8E	" " "
Dubey, Earl, & Sons			" " "
Glancy, R. E., Inc.			" " "
National Gypsum Co., Cement Div.		NE 30 31N 7E	Shale
		24 31N 8E	Cement
		13 31N 8E	Limestone, crushed
Pickett & Schreur			Sand and gravel

ANTRIM

Drenth Bros., Inc.		NW SE 14 32N 8W	Sand and gravel
Medusa Cement Co.		NW SW 24 32N 8W	Shale
Wiggins and Sons	Antrim pit		Sand and gravel

ARENAC

Arenac Co. Road Comm		25 12N 5E	Limestone, crushed; Sand and gravel
Bay County Road Comm		1 19N 5E	Limestone, crushed
Eastman Gravel pit		36 19N 5E	Sand and gravel
Glancey, R. E., Inc.		14 20N 7E	Limestone, crushed
Van Deusen Stone Co.		NW 5 19N 7E	" " "

BARAGA

Baraga Co. Road Comm.		20 48N 31W	15 48N 33W	Sand and gravel
		NW 23 51N 31W	7 49N 33W	" " "
Covington Construction Co.				" " "
Menominee Co. Road Comm.	Roland Lake pit			" " "
Nurmella Sand & Gravel, Inc.		20 48N 31W		" " "

BARRY

Barry Co. Road Comm.	Various			Sand and gravel
Currier, William		6 4N 10W		Marl
Hamilton, Darrell L.		6 2N 7W		"
Stidham Gravel Co.		12 3N 9W		Sand and gravel
Yerington Construction Co.		29 4N 10W, SW SW	3 4N 10W	" " "

BAY

Aetna Cement Corp.		NE 14 14N 5E		Cement
Monitor Sugar Co.	Bay City			Lime

BENZIE

Benzie Co. Road Comm.		8 26N 14W		Sand and gravel
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BERRIEN

Crosby Marl Co.		14 8S 20W		Marl
Kiell Excavating Co.		14 7S 17W		Sand and gravel
Manley Brothers of Indiana, Inc.		SW 5 & NW 6 6S 19W		Industrial sand
Martin-Marietta		NW 18 6S 19W		" " "
Miller, George, & Sons, Inc.	St. Joseph			Sand and gravel
Reith-Riley Construction Co., Inc.		SE NE 1 8S 18W		" " "
White, Alden, & Sons, Inc.		27 3S 17W		" " "
Yerington Construction Co.	NE SW 16S 19W, SE NW 13 6S 19W, 7 4S 18W			" " "

BRANCH

Branch Co. Road Comm.		27 6S 6W		Sand and gravel
Certified Sand & Gravel	Coldwater pit			" " "

BRANCH - (Cont'd.)

Cole Brothers Contr., Inc.						Sand and gravel
Reith -Riley Constr. Co., Inc.						" " "
Taylor and Son		NE 16	8S 5W			Marl
Thompson Constr. Co., Inc.		SE 20	6S 6W			Sand and gravel

CALHOUN

Calhoun Co. Road Comm.	Various					Sand and gravel
Cole Brothers Contr., Inc.	S $\frac{1}{2}$ 4 2S	8W		SW NW 25	4S 6W	" " "
Combs, Emil, Grav. & Ready-Mix						" " "
Hoffman Brothers, Inc.					11 2S 8W	" " "
Miller, George, & Sons, Inc.	Calhoun pit					" " "
Nashville Gravel Co.					15 & 16 1S 7W	" " "
Pickitt & Schreur						" " "
Ray's Aggregate Co.	Schaeffer pit					" " "
Rieth-Riley Construction Co., Inc.	Corstline-Paulsen pit			NE NW 16	2S 7W	" " "
				SE SW 4	2S 6W	" " "

CASS

Aggregate Materials Corp.					1 8S 16W	Sand and gravel
Cass Co. Road Comm.	Various				21 6S 14W	" " "
Indiana Hwy. Materials, Inc.					1 8S 16W	" " "
Kalin, Gerald, Contr.						" " "
Miller, George, & Sons, Inc.	Cass County pit					" " "
Nieb Concrete Prod. Co.					16 7S 16W	" " "
Pipher's Marl Service					15 5S 14W	Marl
Poehlman & Son					13 7S 16W	" " "
Rieth-Riley Construction Co., Inc.	Norris, Roseland pits					Sand and gravel
Three S Gravel Co.						" " "
Whit Pond Gravel Co.					23 6S 15W	" " "
Yerington Construction Co.	Silver Creek, Rogers pits			SW NE 10	5S 16W	" " "
				NW SE 10	5S 16W	" " "

CHARLEVOIX

Bartlett, Norman, Sand & Gravel					NW SW 30 32N 6W	Sand and gravel
Charlevoix Co. Road Comm.						" " "
Hodgkiss and Duoma, Inc.					12 34N 7W	" " "
Medusa Cement Co. (Div. of Medusa Corp.)					SW 28 34N 8W	Cement, Limestone
Smith, D. L., Sand & Gravel, Inc.					NW NW 28 32N 7W	Sand and gravel

CHEBOYGAN

Afton Stone, Inc.					36 35N 2W	Limestone, crushed
Cheboygan Cement Prod., Inc.					SW SW 14 37N 1W	Sand and gravel
Cheboygan County Road Comm.	33 37N	2W,			19 34N 2W	" " "
Lake Construction Co.						" " "
Limestone Products Co.					SE 36 35N 2W	Limestone, crushed
Mackinac Gravel Co.					19 34N 3W	Sand and gravel

CHIPPEWA

D. & B Service, Inc.					18 46N 3W	Sand and gravel
Drummond Dolomite, Inc.	3 & 10	41N 5E			23 47N 1W	Dolomite, crushed
Gordon, James A.						Sand and gravel
Mackinac Gravel Co.						Sand and gravel
Proksch Construction Co.						Sand and gravel
Sanderson, C. G., Co.					25 44N 1W	" " "
Soo Gravel and Asphalt Co.						" " "
Whitehead, I. L., Co.						" " "

CLARE

Clare Co. Road Comm.	Various					Sand and gravel
Fisher Sand & Gravel Co.					SW SE 22 18N 4W	" " "
Hubscher & Son, Inc.					32 17N 4W	" " "
Niemi & Co., Inc.	McQuestion pit					" " "
Weldon's Transit Mix, Inc.					28 19N 4W	" " "

CLINTON

Boichot Concrete Corp.					3 5N 2W	Sand and gravel
Grand Ledge Clay Prod. Co.					NE SW 34 5N 4W	Shale
Gratiot Co. Road Comm.						Sand and gravel
Karber Gravel Co.					SE NW 34 8N 2W	" " "
Martin Aggregates, Inc.					25 8N 2W	" " "
Pryor Bros., Inc.					29 5N 4W	" " "
Schlegel, Carl, Inc.	Pohl, Turner pits					" " "
Spartan Aggregates, Inc.	Smith pit					" " "
Standard Aggregate Co.					NE NW 36 8N 2W	" " "
Stockwell Sand & Gravel					27 8N 3W	" " "
Weaver, Ronald, Gravel Co., Inc.	Miller pit	W E 33	8N 1W	NW 7	5N 2W	" " "

CRAWFORD

Wiggins & Sons						Crawford pit	Sand and gravel
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DELTA

Bichler Gravel & Concrete Co.					23 39N 23W	Sand and gravel
Caspian Construction Co.						" " "
Delta Co. Road Comm.	Various				NE NW 8 40N 23W	" " "
Holmberg Concrete					15 40N 22W	" " "
Marvic, M., and Sons					24 40N 22W	" " "
McMahon Bros.					27 39N 24W	" " "
Paquin & Sons, Inc.					12 39N 23W	Limestone
Proksch Construction Co.	Various					Sand and gravel

DICKINSON

Caspian Construction Co.						Sand and gravel
Champion, Inc.					NE NE 19 40N 30W	" " "
Dickinson Co. Highway Department	Various					" " "
Fayas & Sons, Inc.					5 39N 30W	mine waste rock
Felch Quarry Corp.					33 42N 28W	Sand and gravel
Hanna Mining Co.	Open pit				31 42N 29W	Marble, crushed
Groveland Mine						Iron Ore

DICKINSON - (Cont'd.)

Iron Mountain, City of,	Ozzellos pit				Sand and gravel
Lindberg, A., & Sons, Inc.		5 + 6	40N	30W	" " "
Miller Prod. & Supply Co.		7	40N	30W	" " "
Olson, Rudy		12	39N	29W	" " "

EATON

Briggs Ready-Mix & Gravel		13	2N	5W	Sand and gravel
Cheney Limestone Co.		28 & 29	1N	6W	Limestone, crushed
Crandell Trucking Co.		32	2N	4W	Sand and gravel
Grand Ledge Clay Products		SE 3	4N	4W	Shale
Hilu Peat Co.		NW NW 22	2N	4W	Peat
Pryor Bros., Inc.					Sand and gravel
Reith-Riley Constr. Co., Inc.	Nye pit	32	1N	5W	" " "
Spartan Aggregates, Inc.					" " "
Weaver, Ronald, Gravel Co., Inc.	Various, Burley pit,	E NW 13	2N	3W	" " "
Whittum's Gravel Co.		8	1N	3W	" " "

EMMET

Blumke Excavating Co., Inc.		16	35N	4W	Sand and gravel
Emmet Co. Road Comm.	Various				" " "
Glancy, R.E., Inc.					" " "
Hodgkiss and Douma, Inc.		22	36N	5W	" " "
Koboski Coal Co., Inc.		2	34N	6W	Cement
Penn-Dixie Industries, Inc.		3	34N	6W	Limestone
		8	34N	6W	Shale
Snider Constr. Co., Inc.		NW NE 27	38N	4W	Sand and gravel

GENESEE

Holloway Sand and Gravel Co., Inc.	Genesee Cty pit				Sand and gravel
Kish, Ernest, Sand & Gravel		9	9N	9E	" " "
Otisville Stone Co.		N½ 22	9N	8E	" " "

GLADWIN

Dennison Construction Co.					Sand and gravel
Glancy, R. G., Inc.					" " "

GOGEBIC

Caspian Construction Co.					Sand and gravel
Globe Industries, Inc.					" " "
Gogebic Co. Road Comm.	Various	NW NW 25	45N	41W	" " "
Ironwood Concrete Prod. Co.		13	47N	47W, 33	48N 46W
Randall, Clayton	Randall pit				" " "
Wedenoja, Melvin		10	47N	47W	" " "

GRAND TRAVERSE

Beeman Trucking & Bulldozing Co.		36	26N	12W	Sand and gravel
Concrete Services, Inc.		8	27N	11W,	4 27N 11W
Grand Traverse Co. Road Comm.					9 27N 11W
Lamar Gravel Co., Inc.					27 26N 11W
Schworm, Inc.	Various				" " "
Traverse City S. & G. Co., Inc.		16	27N	11W	" " "

GRATIOT

Gratiot Co. Rd. Comm.	Barton, Beracy, White pits	SW NW 22	12N	4W	Sand and gravel
Hubscher & Son, Inc.	Gratiot Pit				" " "
P. & B. Gravel Co.	Various	10 9N	1W,	NW SE 9	10N 1W
Roslund Gravel Co.	St. Louis, Elm Hall pits				" " "
Total Petroleum, Inc.	Alma				" " "
Velsicol Chemical Co.		24	12N	3W	Sulfur
					Bromine, Calcium chloride, Calcium-Magnesium chloride, Magnesium compounds, Salt

HILLSDALE

Hess, John		14	53	3W	Marl
Hillsdale Co. Road Comm.	Various				Sand and gravel
Hillsdale Sand & Gravel Co.		23	9S	2W	" " "
Michigan Aggregates Corp.	Bundy Hill pit				" " "
Mil-Co Trucking		23	9S	2W	" " "

HOUGHTON

Fox Valley Construction Co.	Norbeck pit	N SE 33	54N	34W	Sand and gravel
Haltunen Sand & Gravel				5 56N 32W	" " "
Hocking, George, Constr. Co.	Boston pit,	Various			" " "
Houghton Co. Road Comm.		Various			" " "
		10	54N	34W,	NW 21 54N 34W
		14	56N	33W,	NW SE 29 52N 36W
Keweenaw Co. Road Comm.	Copper City pit				Sand and gravel
Superior Sand & Gravel, Inc.		NE SW 27	55N	34W	" " "

HURON

Brade Ready-Mix & Concrete Co.		N SE 16	16N	13E	Sand and gravel
Michigan Sugar Co.	Sebewaing		5 15N	9E	Lime
Tanton Ready-Mix			33	16N 13E	Sand and gravel
Vollmer Sand & Gravel			22	15N 11E	" " "
Wagner Ready-Mix		27	15N 13E,	27	16N 15E
Wallace Stone Co.					" " "
Div. J. P. Burroughs		5 & 6	6	16N 10E	Limestone, crushed
Williams Brothers Asphalt Paving Co., Inc.			21	16N 13E	Sand and gravel

INGHAM

Bedrock Aggregates	Snider Farm pit				Sand and gravel
Jolly Road Sand Co.		34	4N 1W	" "	" "
Schlegel, Carl, Inc.	Standard pit			" "	" "
Spartan Aggregates, Inc.	Hills, Scarlett pits	16	2N 1W	" "	" "
Weaver, Ronald, Gravel Co., Inc.	Various, Curtis, Nims, Stillson, Grovenburg, Gennings pits			" "	" "
Wicker's, Inc.	Standard pit	SW	NW 7 4N 2W		Peat

IONIA

Crandell Trucking Co.					Sand and gravel
Ionia Co. Road Comm.		NE	1 8N 6W	" "	" "
		SE	24 8N 6W	" "	" "
		NE	19 5N 5W	" "	" "
Thelen Gravel & Redi-Mix, Inc.			27 5N 5W	" "	" "
Williams Bros. Asphalt Pav. Co., Inc.	Pit #1, Kutchey, Fletcher pits		6 6N 7W	" "	" "

IOSCO

Glancy, R.E., Inc.	Burge pit				Sand and gravel
Iosco Co. Road Comm.	Various			" "	" "
Michigan Gypsum Co.			31 21N 5E		Gypsum
National Gypsum Co.		26 &	35 22N 6E		" "
U.S. Gypsum Co.		22 &	27 21N 7E		" "

IRON

Inland Steel Co., Sherwood Mine - Underground		23 &	24 43N 35W		Iron Ore
Iron Co. Road Comm.	Various		16 42N 33W		Sand and gravel
Iron River Lumber & Fuel Co.			6 43N 35W		" "
Proksch Constr. Co.			26 43N 35W		" "
Schninella-Mottes Constr. Co.	Various				" "
Williams Redi-Mix			7 43N 32W		" "

ISABELLA

Fisher Sand & Gravel Co.	Oil City pit				Sand and gravel
Hubscher & Son, Inc.	Wing Rd. pit,	SW	SW 4 16N 3W, E SW	20 14N 4W	" "
Isabella Co. Road Comm.	Various			16 14N 4W	" "

JACKSON

Cole Brothers Contr. Inc.		18	4S 1E		Sand and gravel
Fransted Construction		17	3S 2E		" "
Jude Sandstone Co.		NW	NE 6 4S 2E		Sandstone
		SW	SE 31 3S 2E		" "
Klumpp Bros. Gravel Co.			12 2S 2E		Sand and gravel
Napoleon Sandstone Qy.		NW	NE 6 4S 2E		Sandstone
Palmer Sand & Gravel			8 3S 2E		Sand and gravel
Spartan Aggregates, Inc.					" "
Stevick Gravel Co.		18	4S 1E		" "

KALAMAZOO

American Aggregates Corp.	Kalamazoo 314 pit				Sand and gravel
Balkema, Henry, Sand & Gravel	Kalamazoo				" " "
Consumers Sand & Gravel Co.		13	2S 11W		" " "
Hayward Dry Marl		8	4S 10W		Marl
Miller, George, & Sons, Inc.					Sand and gravel
Peters Constr. Co.	Holton & Peters pit				" " "
Pickitt & Schreur					" " "
Rieth-Riley Constr. Co., Inc.	Am. Agg. pit				" " "
Stone Lake Sand & Gravel		22	1S 9W		" " "

KALKASKA

Kalkaska Co. Road Comm.		SE	14 27N 8W		Sand and gravel
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KENT

Coit Ave. Gravel Co., Inc.		23	8N 11W	29	8N 11W	and and gravel
Contractors Gravel Co.				23	9N 12W	" " "
Cousineau Gravel Co., Inc.	Buckner, Gronkey pits			NE	22 7N 12W	" " "
DeVries, E., & Sons S&G				34	7N 12W	" " "
DeVries, Jack, Exc. Co.						" " "
Fleming Gravel Co.				NW	24 6N 11W	Gypsum
Georgia-Pacific Corp.						Sand and gravel
Gillisse Gravel Co.	Gillissee pit					" "
Grand Rapids Gravel Co.	Various			34	7N 10W	Gypsum
Grand Rapids Gypsum Co.				31	7N 10W	Sand and gravel
Great Lakes Gravel Co.				N	SW 36 5N 9W	" " "
Kent Co. Road Comm.				W	SW 20 5N 9W	" " "
					NE 10 5N 10W	" " "
				NW	SE 32 5N 11W	" " "
				NE	SW 20 5N 12W	" " "
				N	NE 17 6N 9W	" " "
				NW	SE 5 6N 12W	" " "
				S	SW 13 7N 9W	" " "
				NE	NE 32 7N 9W	" " "
				SW	SW 11 8N 9W	" " "
				SW	NE 26 8N 10W	" " "
				NE	NW 13 8N 11W	" " "
				NE	NE 25 9N 11W	" " "
				W	NE 23 10N 10W	" " "
				W	NE 11 10N 11W	" " "
				SE	NW 14 10N 11W	" " "
				NW	NW 15 10N 12W	" " "
				SE	SW SE 36 5N 9W	" " "
				NE	SW 24 8N 11W	Sand and gravel
Northeast Gravel Co.						" " "
Parker, Russel G.						" " "
Petersen Gravel & Excav.						" " "
Pickett & Schreur Inc.	Various					" " "
	Lowell & Katz pits					" " "
Rieth-Riley Constr. Co., Inc.				N	NW 2 9N 11W	" " "
Riverside Sand & Gravel Co.					19 8N 11W	" " "
Rocks Ready Mix Concrete Co., Inc.						" " "
Tip-Top Gravel Co.		6 &	7 6N 9W			" " "
Wonderland Peat		S	23 7N 11W			Peat

KEWEENAW

Keweenaw Co. Road Comm. 1 57N 31W, 24 58N 31W Sand and gravel

LAKE

Lake Co. Road Comm. SE NE 29 17N 12W, SE NW 12 19N 12W, 23 18N 13W Sand and gravel
 Lake Sand & Gravel Co. 5 18N 13W " " "
 Mason Co. Road Comm. 27 20N 14W " " "
 Sievert Brothers Inc. 3 20N 14W " " "

LAPEER

Allied Chemical Corp. (Closed early 1978) 16 7N 11E Sand and gravel
 Anderson Peat Co. 23 7N 12E Peat
 Corey & Hartwig, Inc. SW 20 7N 10E Sand and gravel
 John R. Sand & Gravel Co. Metamora pit 10 6N 10E " " "
 Lapeer Co. Road Comm. Various
 Lester, William SW SW 25 7N 12E Peat
 Molesworth Contr. Co. S SE 22 9N 12E Sand and gravel
 Weber's Sand & Gravel Peake pit 5 6N 11E " " "
 Wilkinson Chemical Co. 21 10N 10E Calcium-magnesium chloride
 Sand and gravel
 Williams Bros. Asphalt Oshea pit
 Pav. Co.

LEELANAU

Leelanau Co. Road Comm. 32 30N 12W, SW SW 22 28N 13W Sand and gravel
 Peninsula Asphalt Corp. Kasson pit " " "
 Traverse City Sand & Gravel Co., Inc. NE 25 38N 12W " " "

LENAWEE

Adrian Sand & Gravel Co. NE SE 4 6S 4E, SE 16 7S 3E Sand and gravel
 Brownell Sand & Gravel Co. 25 5S 1E " " "
 Irish Hills Gravel Co. 25 5S 1E " " "
 Tecumseh Gravel Co. Tecumseh pit

LIVINGSTON

Albert Sand & Gravel, Inc. Sand and gravel
 American Aggregates Corp. Brighton 310 pit " " "
 Bentley Sand & Gravel Co. 5 4N 6E " " "
 D. & J. Gravel Co., Inc. SW SW 32 3N 4E " " "
 Fenton Gravel Co., Inc. Fenton pit " " "
 Livingston Co. Road Comm. 23 2N 5E NW NW 36 4N 5E " " "
 13 3N 6E 4 2N 4E " " "
 NW SE 32 2N 5E " " "
 NE 16 2N 6E " " "
 Morgan Sand & Gravel Co. Milford pit " " "
 Natural Aggregates Corp. Kensington Rd. pit " " "
 Portable Agg. Prod. Inc. Mather pit " " "
 Reyhl Sand & Gravel Mather pit
 Weaver, Ronald, Gravel Co., Inc. Kobart pit SW NE 6 3N 3E " " "

LUCE

Brow, Gene, Constr. Co. Brow No. 2 pit, 24 45N 11W Sand and gravel
 Luce Co. Road Comm. 14 45N 11W, 26 46N 10W " " "

MACKINAC

A. O. Company SW 34 44N 7W Limestone
 Abram, Rueben, Excavating 13 43N 12W Sand and gravel
 Brow, Gene, Constr. Co. 18 43N 11W " " "
 Inland Lime & Stone Co. 6 42N 12W Limestone, crushed
 Mackinac County Road Comm. Various Sand and gravel
 McMahon Brothers Feske pit " " "
 Ozanich Sand & Gravel 17 43N 10W " " "
 Proksch Constr. Co. 30 42N 12W " " "
 Taylor Lumber Co. 19 42N 1E " " "
 U. S. Steel Corp. 10 42N 1E Dolomite, crushed
 Vertz, Fred W. SW SE 10 43N 4W Sand and gravel
 Whitehead, I. L., Co. Various " " "

MACOMB

American Aggregates Corp. Romeo 312 pit SW NW 4 4N 12E Sand and gravel
 Carter, George S., Co., Inc. " " "
 Compton Sand & Gravel Co. 7 4N 12E " " "
 Marsack Sand & Gravel, Inc. 3 1N 13E " " "
 Morgan S & G Co. 30 3N 12E " " "
 Natural Aggregates Corp. NW NE 8 4N 12E " " "
 Richmond S & G Co. SW 3 4N 14E " " "
 See's Sand & Gravel, Inc. 8 4N 14E " " "
 Vergote & Sons Sand & Gravel " " "

MANISTEE

Fischer Gravel Co. 13 21N 13W Sand and gravel
 Gronlund Gravel Co. 7 23N 14W " " "
 Hardy Salt Co. Manistee Salt, evaporated
 Manistee Co. Road Comm. Various Sand and gravel
 Martin-Marietta Chemicals SE 18 21N 16W Magnesium compounds
 Refractories Div. Bromine, Magnesium compounds,
 Calcium chloride
 Morton Chemical Co. Manistee 12 21N 17W Salt, evaporated
 and brine
 Morton Salt Co. Manistee E 1/2 Sec. 12 21N 17W Sand and gravel
 Sievert Bros., Inc. Fischer pit Sand and gravel
 Wiggins & Sons Fischer pit " " "

MARQUETTE

Britton, Don, Inc. 17 48N 25W Sand and gravel
 Caspian Construction Co. 28 45N 25W " " "

MARQUETTE (Cont'd.)

Cleveland-Cliffs Iron Co. Empire Mine	open pit	19, 20, 25, 30	47N 26W	Iron Ore
Mather Mine	underground	1 & 2	47N 27W	" "
Republic Mine	open pit	7 & 18	46N 29W	" "
Tilden Mine	open pit	26	47N 27W	" "
Fox Valley Constr. Co. Krygoski Construction Co. Lindberg, A., & Sons, Inc.	Champion pit	30 47N 26W,	35 48N 26W SE SE 8 47N 25W SE SE 8 47N 25W	Sand and gravel " " " Dolomite, crushed Sand and gravel
Marquette Co. Road Comm.	Various		12 42N 26W	

MASON

Dow Chemical Co., The	Ludington	NW SW 23	18N 18W	Calcium chloride Magnesium com- pounds, Lime, Bromine Sand and gravel Industrial sand
Mason Co. Road Comm. Sargent Sand Co.	Various	NE 29	19N 18W	

MECOSTA

Cousineau Gravel Co., Inc. Gummer's Peat Co. Mecosta Co. Road Comm. Paris Gravel Co., Inc.	Aymor pit (closed 8/77) Various	N½ SE 28	13N 8W 27 16N 10W	Sand and gravel Peat Sand and gravel " " "
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MENOMINEE

B. & K. Sand and Gravel Fox Valley Constr. Co. Havelka Construction Co. Johnson, Norman, Co. Menominee Co. Road Comm.	Daggett pit	NW SW 9	26 34N 27W 35N 26W 19 33N 27W	Sand and gravel " " " " " " " " "
		NW SE 29	25N 26W,	NW NE 33 38N 25W
		NW NE 27	38N 26W,	NW SW 11 33N 27W
		NW NW 10	39N 25W,	SE SE 24 38N 26W
		SW SW & SW SE,	20 39N 27W,	NE SW 15 36N 26W
		E SE 11	36N 26W,	NE SW 3 40N 26W
		SE NW 15	36N 26W,	NE SW 13 36N 27W
		SE NE 26	32N 28W,	NE NE 23 39N 25W
		NE SW 2	33N 27W,	SE SE 8 34N 25W
		SE SE 22	35N 26W,	SE SW 2 33N 27W
		Marcusen pit, NE NE 35	34N 37W,	NW NW 10 39N 25W
		Wyman pit, SE NW & SW NE,	23 39N 25W	" " "
		S SW 2	39N 25W,	SW NE 11 38N 26W

MIDLAND

Dow Chemical Co., The	Midland	14N R2E	Bromine, Bromine compounds, Mag- nesium compounds Calcium chloride Salt brine, Iodine
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MISSAUKEE

Lake City Redi-Mix, Inc. Missaukee Co. Road Comm. Wiggins & Sons	Various	34 23N 7W	Sand and gravel
		5 22N 5W	" " "

MONROE

Appleman Farms Dundee Cement Co.		1 8S 6E	Peat
		NW 6 6S 7E	Cement, Limestone
		6 6S 7E	Clay
France Stone Co. Monroe Quarry Grape Quarry Link, Norman E. Michigan Stone Co. Maybe Quarry Ottawa Lake Quarry Morgan Sand & Gravel Co. Ritter, F. W., & Sons, Co.		7 7S 9E 13 6S 7E 24 7S 6E 29 5S 8E SW 25 8S 6E NE SW 16 5S 10E	Dolomite, crushed " Peat Dolomite, crushed " Sand and gravel Clay

MONTCALM

Anderson Gravel & Excav. Co. Dyer Co.	McCrea pit	9N 8W,	33 9N 8W NW SW 4 11 10W SE 36 11N 6W SE 19 12N 5W N NE 1 11N 5W 34 9N 8W 34 9N 8W	Sand and gravel " " " " " " " " " " " " " " " " " "
Gratiot Co. Rd. Comm. Harris Excavating Co. Shook Paving Co. Wheeler Transit Mix				

MONTMORENCY

Glancy, R. E., Inc. Montmorency Co. Road Comm. Winkleman Excavating Co.	Various	11 30N .3E	Sand and gravel " " " " " "
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MUSKEGON

C. W. C. Casting, Div. of Textron, Inc. Hooker Chemical Co. McCormick Sand Corp. Miller, Paul C. Nugent Sand Co.	Montague McNitt pit	14 9N 17W NE 31 12N 17W SE 16 11N 16W NE 3 9N 17W	Industrial Sand Salt brine Industrial Sand Sand and gravel Industrial Sand
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NEWAYGO

Cousineau Gravel Co., Inc. Eichenberg, Howard, Contr. K. & V. Gravel Co.	Cousineau pit, Graham pit DeLong pit, Mullenix pit	6 12N 11W	Sand and gravel " " " " " "
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OAKLAND

Ajax Materials Corp.		36	4N	10E	Sand and gravel
American Aggregates Corp.	Oxford 311 pit, Milford 315 pit				" " "
Compton Sand & Gravel Co.	Mt. Vernon pit				" " "
Fletcher & Rickard		23	1N	7E	Peat
Great Lakes Gravel Co., Inc.		36	5N	11E	Sand and gravel
Hayes Washed Sand & Gravel Co., Inc.	Kent Lake pit				" " "
Holloway Sand & Gravel Co., Inc.	Haus Rd pit				" " "
Holly Sand & Gravel		4	4N	8E	" " "
Koenig Fuel & Supply Co.	Oxford pit				" " "
Kurtz Gravel Co.		30	5N	8E	" " "
Lyon Sand & Gravel Co.	E. C. Levy pit	18	1N	8E	" " "
Mabry & Melton S. & G. Co.	Underwood pit				" " "
Mickelson Corp.		NE SE 20	5N	10E	" " "
Middleton Gravel Co.	Middleton pit				Sand and gravel
Molesworth Contr. Co.	Portable Agg. pit		2N	8E	" " "
	Carter pit		5N	10E	" " "
			4N	8E	" " "
Oxford Mining Co.		E NW 26	5N	10E	Peat
Oxford Peat Co.			2N	8E	Sand and gravel
Portable Agg. Prod., Inc.	Sleeth Rd. pit	8	2N	8E	" " "
Salem Sand & Gravel					" " "
South Flint Gravel, Inc.		12	5N	7E	" " "
Tharp & Kosiba					" " "
Tri-City Agg., Inc.	Buffalo pits 1 & 2		5N	8E	" " "
Underwood Sand & Gravel Co.	SE 11 3N 8E, NW 2		3N	10E	" " "
Walker Industries	Lakeshore pit				" " "
Weber's Sand & Gravel		26	4N	10E	" " "
Western Materials		33	NE 7E, 34 & 35	2N 7E	" " "

OCEANA

Beckman Brothers, Inc.		24	14N	17W	Sand and gravel
Miller, Paul C.					" " "
Oceana Co. Road Comm.		SE NE 5	13N	15W	" " "
Reith-Riley Constr. Co., Inc.	Beckman Bros. pit				" " "
Sand Products Corp.		NW 17 & NE 18	15N	18W	Industrial Sand

OGEMAW

Bunting Sand & Gravel Prod., Inc.	Ewing pit				Sand and gravel
Glancy, R. E., Inc.	Ogemaw pit				" " "
Halliday Sand & Gravel, Inc.					" " "
Miller, Dave	Steen pit				" " "
Ogemaw Co. Road Comm.		SW 5	22N	2E	" " "
West Branch Sand & Gravel		NE SE 6	21N	2E	" " "

ONTONAGON

Copper Range Co., White Pine Div.		4, 5, 9	50N	42W	Copper, silver
McGuire, John					Sand and gravel
Ontonagon Co. Road Comm.	Various				" " "

OSCEOLA

Cousineau Gravel Co., Inc.	Youngs pit				17N 9W	Sand and gravel
Hersey Sand & Gravel		17 & 19	17N	9W	" " "	" " "
Osceola Co. Road Comm.		11	17N	9W	" " "	" " "

OSCODA

Glancy, R. E., Inc.	Oscoda pit					Sand and gravel
Holloway Sand & Gravel Co., Inc.	Sleegh pit					" " "

OTSEGO

Hoogerhyde Sand & Gravel Co.					3	30N	3W	Sand and gravel
Lake Constr. Co.								" " "
Mason Gravel Co.		2	30N	3W,	11	30N	3W	" " "
Otsego Co. Road Comm.	Various							" " "

OTTAWA

C and L Gravel Co.					29	7N	13W	Sand and gravel
Construction Agg. Corp.		SW NE 17	8N	16W	"	"	"	"
		SE NW 17	8N	16W	Industrial	Sand		
DeWent Gravel Co.		SW SW 23	6N	13W	Sand and gravel			
Grand Valley Gravel Co.			29	7N	13W	"	"	"
Huizenga Gravel Co.		W ₂ NE 3	6N	13W	"	"	"	"
Miller, Paul C.		NE NW 4	9N	13W	"	"	"	"
Muskegon Gravel and Redi Mix Co.			5	9N	13W	"	"	"
Ottawa Co. Road Comm.	Various							" " "
Rieth-Riley Constr. Co., Inc.		SE SW 4	6N	13W	"	"	"	"
Riverview Gravel Co.			2	7N	13W	"	"	"
Spartan Aggregates, Inc.	Bass River pit							" " "
Standard Sand Co.		E ₂ SW 2	6N	13W	Industrial	Sand		
West Shore Constr. Co., Inc.			2	6N	13W	Sand and gravel		
Wolverine Gravel Co.								" " "

PRESQUE ISLE

Onaway Stone Co.		NW NW 5	34N	2E	Limestone, di-			
					mensional			
Presque Isle Co. Road Comm.					Sand and gravel			
Presque Isle Corp.		NW 2	33N	8E	Limestone,			
					crushed			
Straits Agg. & Equip. Corp.					Sand and gravel			
U.S. Steel Corp.		SE NE 23	35N	5E	Limestone,			
					crushed			

ROSCOMMON

Halliday Sand & Gravel, Inc.						Sand and gravel
Roscommon Co. Road Comm.	Various					" " "

SAGINAW

Erie Sand Steamship Co.	Saginaw Bay				Industrial Sand
Hutfilz, Walter					Sand and gravel
Martin-Marietta		1	11N	3E	Clay
Michigan Sugar Co.	Carrollton				Lime
Saginaw Co. Road Comm.	Various				Sand and gravel
Sargent Sand Co.	Near Hemlock				Industrial Sand

ST. CLAIR

Click Sand and Gravel		27	7N	15E	Sand and gravel
Diamond Crystal Salt Co.		31	5N	17E	Salt, evaporated
Molesworth Contr. Co.	NE SE 8 7N 15E, SE SE5	8N	14E		Sand and gravel
Morton Salt Co.		29	6N	17E	Salt, evaporated
Raymond Excavating Co., Inc.	Smock pit				Sand and gravel
Strauchman Industries		18	6N	16E	Industrial Sand

ST. JOSEPH

Aggregate Processors, Inc.		24	8S	12W	Sand and gravel	
DeBoer Materials		14	6S	12W	" " "	
Kerr Peat and Marl		13	6S	12W	Marl, Peat	
Miller, George, & Sons, Inc.	St. Joseph pit				Sand and gravel	
Quality Peat		24	5S	12W	Peat	
Reith-Riley Constr. Co.		NE SE	24	6S	11W	Sand and gravel
St. Joseph Co. Road Comm.	Various	26	6S	11W	" " "	

SANILAC

Albrecht Sand & Gravel Co.		31	12N	12E	Sand and gravel
Dennison Construction Co.		13	9N	16E	" " "
Michigan Peat	Minden & Sandusky	11	11N	14E	Peat
		20	14N	14E	"
		3	11N	14E	"
Michigan Sugar Co.	Croswell				Lime
Mid-Michigan Materials, Inc.		31	9N	16E	Sand and gravel
Molesworth Contr. Co.	Worth pit		9N	16E	" " "
Theut Concrete Prod.					" " "

SCHOOLCRAFT

Inland Lime & Stone Co.	2, 3, 10, 11,	13	41N	13W	Dolomite, crushed	
Inwood Stone Products Co.		8	41N	17W	Dolomite, dimensional	
Neadow, James		27	42N	17W	Sand and gravel	
Proksch Constr. Co.		5	43N	13W	" " "	
Schnurer, Carl, Inc.					" " "	
Schoolcraft Co. Road Comm.	Various	SE SW	14	42N	16W	Dolomite, crushed

SHIAWASSEE

Al-Par Peat Co.		18	8N	2E	Peat
Central Michigan Sand & Gravel Co.	Orlando pit				Sand and gravel
Fitzgerald Gravel Co.	Various	22	8N	2E	" " "

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SHIAWASSEE (Cont'd.)

Fuoss Gravel Co.		19	7N	2E	Sand and gravel
Livingston Co. Road Comm.		30	5N	3E	" " "
Michigan Brick, Inc.	SE	22	7N	3E	Shale
Page Sand & Gravel, Inc.		36	7N	4E	Sand and gravel
Scenic Lakes, Inc.	4, 10 &	16	5N	1E	Peat
Shiawassee Co. Road Comm.		16	5N	2E	Sand and gravel
Spartan Aggregates, Inc.					" " "
Tod Gravel Co.		13	7N	1E	" " "
Weaver, Ronald, Gravel Co., Inc.	GRG, Eyde pits				" " "

TUSCOLA

Andersen Sand & Gravel Co.		20	9N	11E	Sand and gravel
Bernthal Sand & Gravel, Inc.		25	12N	8E	" " "
Great Lakes Minerals Co.	SE NE 11, W NE 22 & E NW 22	27	12N	8E	Industrial Sand
Hunt Construction Co.		34	14N	11E	Sand and gravel
Michigan Sugar Co.	Caro				Lime
Millington Gravel Co.	Millington pit				Sand and gravel
Molesworth Contr. Co.			12N	11E	" " "
Page Sand & Gravel, Inc.					" " "
Peterhans, H. O., S. & G.		13	12N	8E	" " "
Sargent Sand Co.	Vassar Twp., parts of several sections	11N	8E		Industrial Sand
Spartan Aggregates, Inc.	Stratton pit				Sand and gravel
Strausberg, Frank, & Son Co.	Baskman pit				" " "
Tuckey Block Co.	Richmond pit				" " "
Tuscola Co. Road Comm.		33	14N	11E	" " "
		14	12N	9E	" " "

VAN BUREN

Budzen Cement Prod., Inc.		13	3S	14E	Sand and gravel	
Harris Trucking, Inc.		29	2S	17W	Industrial Sand	
Miller, George, & Sons, Inc.	Various				Sand and gravel	
Smith, Bill, S & G, Inc.		24	3S	14W	" " "	
Van Buren Co. Road Comm.	Various				" " "	
Yerington Construction Co.	North Around pit,	NE SE	24	3S	15W	" " "

WASHTENAW

Bennett Excavating & Gravel Co., Inc.		24	3S	5E	Sand and gravel	
Du-Pine Co.		E NE	24	3S	5E	" " "
Holloway Sand & Gravel Co., Inc.	NE 4 3S 5E, SE SE 12 & E NE 13	1S	7E		" " "	
Kruse Gravel Co.		32	2S	7E	" " "	
Liberty Sand Co.		25	2S	5E	" " "	
National Aggregates Corp.		12	3S	3E	" " "	
Standard Gravel Co., Inc.	NW SW	21	3S	4E	" " "	
Washtenaw Co. Road Comm.		21	5S	2E	" " "	
Washtenaw Sand & Gravel, Inc.					" " "	
Whittaker & Gooding Co.	Scio pit	E SW	3	2S	5E	" " "

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SELECTED MINERAL COMMODITIES BY GEOLOGICAL SYSTEMS

WAYNE

A.B.C. Sand Co.				5	2S	9E	Sand and gravel
Amcord Cement Co.				28	2S	9E	Cement
	NW	Ext.	Sec.	36	2S	10E	Clay
							Lime, Salt brine
							Lime
BASF Wyandotte Corp.	Wyandotte						
Detroit Lime Co.	River Rouge						
International Salt Co., Inc.	Detroit Mine	SW	Ext.	Sec.	32	2S 11E	Rock Salt
Levy Co.	Detroit						Cement
Marathon Oil Co.	Detroit						Sulfur
Marblehead Lime Co.	River Rouge						Lime
Mich. Foundation Quarry Co.	Trenton	NW	NW	7	4S	11E	Limestone, crushed
Moore Bros. Sand & Gravel							Sand and gravel
Ottawa Silica Co.		SW	NE	15	5S	10E	Sandstone, crushed (Industrial-silica sand)
							Salt brine
							Dolomite, crushed
Pennwalt Corp.	Wyandotte						Sand and gravel
Rockwood Stone Co., Inc.	Rockwood	NW	NE	8	1S	8E	" " "
Thompson Sand & Gravel, Inc.							" " "
Wayne Sand & Gravel, Inc.							" " "
Wyandotte Cement, Inc.	Wyandotte						Cement

WEXFORD

Dunbar Sand & Gravel							Sand and gravel
Franke Septic Tank Co.							" " "
Wexford Gravel Co.							" " "
Wexford Sand Co.							Industrial Sand
Wexford Co. Road Comm.	Various	30	24N	12W,	34	23N 12W	Sand and gravel

COMMODITY

GEOLOGICAL SYSTEM

PRODUCER

COPPER

PRECAMBRIAN

Upper Keweenaw (PE Y)	White Pine Division, Copper Range Co.
Nonesuch Shale.....	White Pine Mine

IRON

PRECAMBRIAN

Upper Huronian (PE X)	Hanna Mining Co.
Riverton Iron-Formation.....	Groveland Mine
Middle Huronian: (PE X)	Cleveland Cliffs Iron Co.
Negaunee Iron-Formation.....	Empire Mine
	Mather Mine
	Republic Mine
	Tilden Mine
Vulcan Iron-Formation.....	Inland Steel Co.
	Sherwood Mine

CLAY AND SHALE

Quaternary System	Aetna Cement Corp.
Pleistocene Clay.....	Amcord, Inc.
	Dundee Cement Co.
	Ritter and Sons Co., Inc.

PENNSYLVANIAN SYSTEM

Lower Pennsylvanian	
Saginaw Formation.....	Grand Ledge Clay Products Co.
	Michigan Brick, Inc.

DEVONIAN SYSTEM

Upper Devonian	
Antrim Shale.....	National Gypsum Co. (Cement Div.)
Ellsworth Shale.....	Medusa Cement Co.
Middle Devonian	
Traverse Group	
Bell Shale.....	National Gypsum Co. (Cement Div.)
Gravel Point Shale (Alpena Limestone).....	Penn-Dixie Industries, Inc.

GYPSUM

MISSISSIPPIAN SYSTEM

Upper Mississippian	
Michigan Formation.....	Georgia-Pacific Corp.
	Grand Rapids Gypsum Co.
	Michigan Gypsum Co.
	National Gypsum Co.
	United States Gypsum Co.

MARL

Quaternary System
Pleistocene Recent.....All Operations

NATURAL BRINES

MISSISSIPPIAN SYSTEM

Lower Mississippian
Marshall Sandstone..... Velsicol Chemical Co.

DEVONIAN SYSTEM

Middle Devonian
Detroit River Group.....Dow Chemical Co. - Ludington
(Includes the Sylvania and/or
Filer Sandstones) Dow Chemical Co. - Midland
Martin Marietta Co.
Morton Chemical Co. - Manistee
Velsicol Chemical Co. - Manistee
Wilkinson Chemical Co.

Dundee Limestone.....Dow Chemical Co. - Midland
Michigan Chemical Co.

PEAT

Quaternary System
Pleistocene-Recent.....All Operations

SALT

DEVONIAN SYSTEM

Middle Devonian
Detroit River Group.....Dow Chemical Co. - Midland

SILURIAN SYSTEM

Upper Silurian
Salina Group.....BASF Wyandotte Corp.
Diamond Crystal Salt Co.
Dow Chemical Co. - Midland
Hardy Salt Co.
Hooker Chemical Corp.
International Salt Co., Inc.
Morton Salt Co. - Manistee
Morton Salt Co. - St. Clair
Pennwalt Corp.

SAND AND GRAVEL

Quaternary System
Pleistocene-Recent.....All Operations

STONE-DOLOMITE

DEVONIAN SYSTEM

Middle Devonian
Detroit River Group.....France Stone Co. - Ida
Michigan Foundation Quarry Co., Inc.
Michigan Stone Co. - Maybee

SILURIAN SYSTEM

Upper Silurian
Bass Islands Group.....France Stone Co. - Monroe
Michigan Stone Co. - Ottawa Lake
Rockwood Stone Co.

Middle Silurian

Engadine Dolomite.....Drummond Dolomite, Inc.
Inland Lime and Stone Co.
U.S. Steel Corp. - Cedarville
Hendricks Dolomite.....Inwood Stone Products Co.

ORDOVICIAN SYSTEM

Middle Ordovician
Trenton-Black River Group..... Proksch Construction Co.
Schoolcraft County Rd. Comm.

STONE-LIMESTONE

MISSISSIPPIAN SYSTEM

Upper Mississippian
Bayport Limestone.....Arenac County Road Comm.
Bay County Road Comm.
Cheney Limestone Co.
Van Deusen Stone Co.
Wallace Stone Co.
U.S. Steel Corp. - Rogers City

DEVONIAN SYSTEM

Middle Devonian
Traverse Group.....Afton Stone, Inc.
Limestone Products Co.
Medusa Cement Co.
National Gypsum Co. (Cement Div.)
Onaway Stone Co.
Penn-Dixie Industries, Inc.
Dundee Limestone.....Dundee Cement Co.
Presque Isle Corp.
U.S. Steel Corp. Rogers City

SILURIAN SYSTEM

Middle Silurian
Hendricks Dolomite
Fiborn Limestone Member.....Inland Lime and Stone Co.

STONE MISCELLANEOUS (Marble)

PRECAMBRIAN

Middle Precambrian (PE X)
Randville (marble).....Felch Quarry Corp.

STONE-SANDSTONE

MISSISSIPPIAN SYSTEM

Lower Mississippian
Marshall Sandstone.....Jude Sandstone Co.
Napoleon Sandstone Quarry

DEVONIAN SYSTEM

Middle Devonian
Detroit River Group
Sylvania Sandstone.....Ottawa Silicia Co.

STRATIGRAPHIC SUCCESSION IN MICHIGAN

PALEOZOIC THROUGH RECENT



MICHIGAN DEPARTMENT OF NATURAL RESOURCES

GEOLOGICAL SURVEY DIVISION
Arthur E. Slaughter, State Geologist and Chief

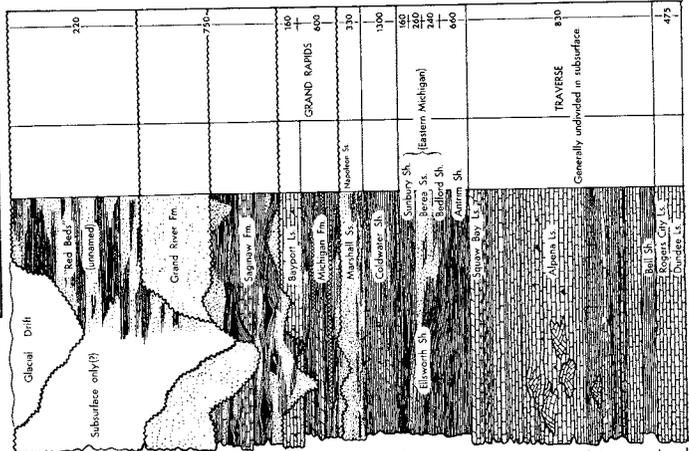
ACKNOWLEDGMENT: Compiled with the consent of institutions in this department, the U. S. Geological Survey, Michigan's universities, other state Geological Surveys, and the Geological Survey of Canada. Michigan State University, detailed notes of Mesozoic age and unpublished geological reports.

GEOLOGIC NAMES COMMITTEE
Gustaf B. Ek, Chairman; Nelson W. Kelly, Secretary;
Harry J. Hildebrand, I. David Johnson, Harry O. Sorenson

SUBSURFACE NOMENCLATURE

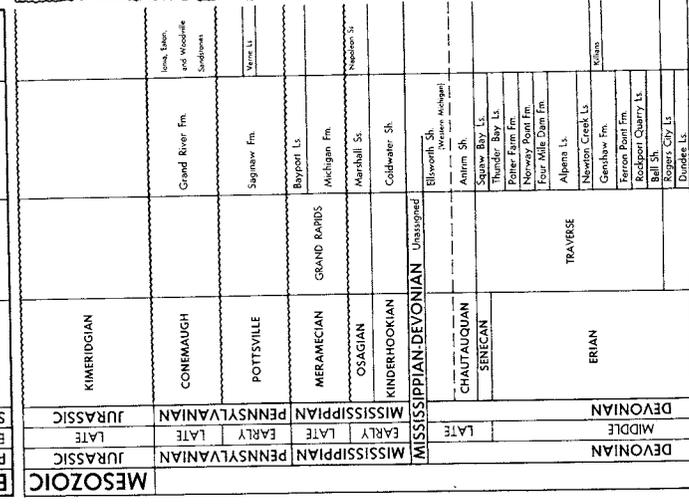
ROCK-STRATIGRAPHIC		
FORMATION	MEMBER	GROUP
Approximate maximum thickness, in feet, of rock units in the subsurface. NO SCALE.		

DOMINANT LITHOLOGY



OUTCROP NOMENCLATURE

ROCK-STRATIGRAPHIC		
FORMATION	GROUP	MEMBER
Lime, chert, and woodchert Sandstones		
Verm. Ls.		



INFORMAL TERMS

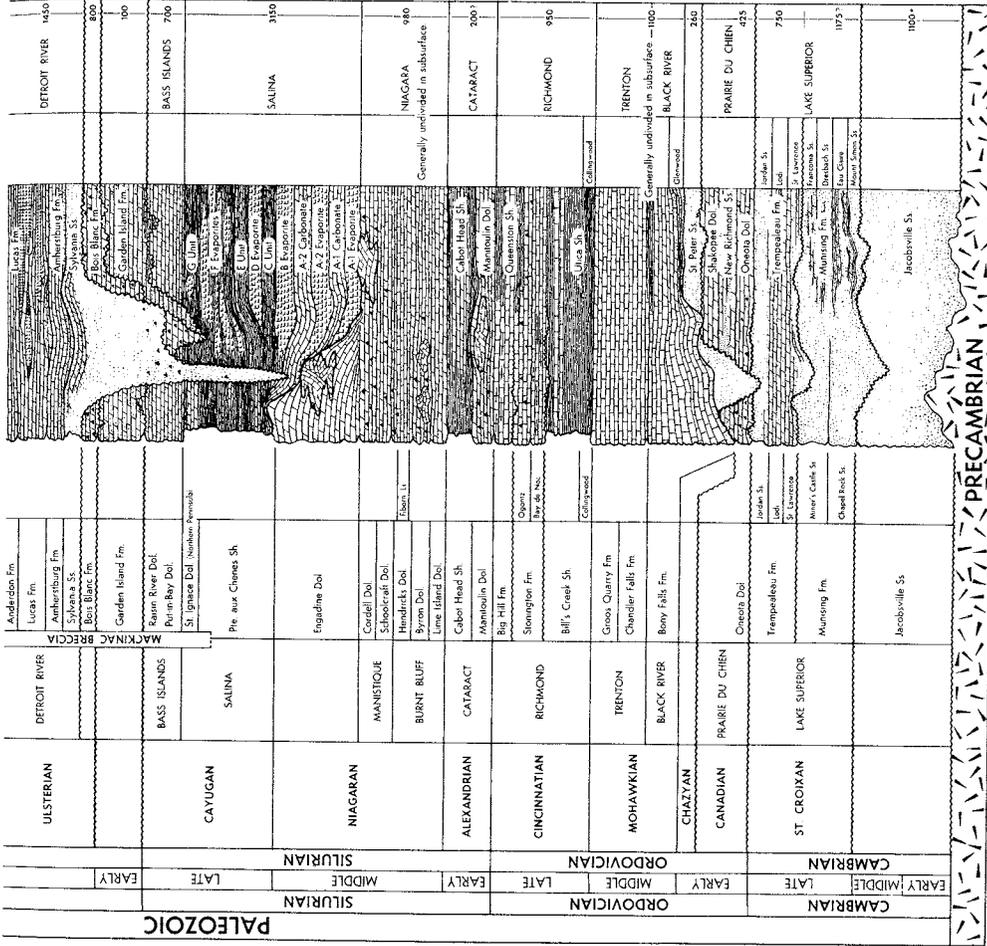
Principal oil and gas pays, and informal terms used in petroleum exploration and applied to pairs of formations or groups in the subsurface

STRATIGRAPHIC POSITION	INFORMAL TERMS	PAYS
Basal sandstones of Saginaw Fm.	Perme. sandstone	
In lower part of Michigan	Red top Brown line Marathon Red top	Gas Gas & Oil Gas & Oil
Marshall Sh.	Collateral line	Gas
Coldwater Sh.	Collateral and rock	Gas
Ellsworth Sh.	"Three" (Western Michigan)	Oil & Gas
Beres Sh.	Beres and (Eastern Michigan)	Oil & Gas
Squaw Bay Ls.	Squaw Bay	Oil & Gas
Upper part of Traverse Group in Western Michigan	Traverse formation Traverse line Stony Unit zone	Oil & Gas Oil & Gas Oil & Gas
Rogers City Ls.		Oil & Gas
Dundee Ls.		Oil & Gas
Dundee Ls. (?) Upper part of Lucas Fm. (?)	Red City zone	Oil & Gas
In Lucas Fm.	massive sh. big art. oil zone sandstone big white Richard zone	Oil & Gas Oil & Gas Oil & Gas Oil & Gas

PLEISTOCENE NOMENCLATURE		STAGE	
SYSTEM	SERIES	RECENT	RECENT
QUATERNARY	PLEISTOCENE	Wisconsin	Valley, Stage
		Marquette	Two Creeks Interstade
		Chazy	Minikata Stage (P. Huron?)
Sarganton Interglaciation		Chazy Stage	
Illinoian Glaciation		Traverse Stage	

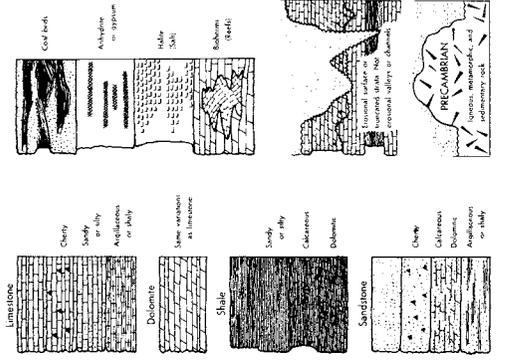
MESOZOIC		DEVONIAN	
PERIOD	EPOCH	SYSTEM	SYSTEM
DEVONIAN	LATE	JURASSIC	JURASSIC
	EARLY	PENNSYLVANIAN	PENNSYLVANIAN
MISSISSIPPIAN	LATE	MISSISSIPPIAN	MISSISSIPPIAN
	EARLY	MISSISSIPPIAN	MISSISSIPPIAN
KIMBERGIAN	LATE	MISSISSIPPIAN	MISSISSIPPIAN
	EARLY	MISSISSIPPIAN	MISSISSIPPIAN

Table 4 (available separately as Chart 1)



STRATIGRAPHIC POSITION	INFORMAL TERMS	PAYS
Amherstburg Fm.	Black line	
Part of Salina Group L. Unit	L. zone or Knappa zone	Oil
Divisions of A. 2 Carbonate in Western Michigan	A. 2 dolomite A. 2 flag	Gas
A. 1 Carbonate	A. 1 dolomite	Oil & Gas
Upper part of Niagara Series	Lower Niagara Upper Niagara White Niagara	Oil & Gas
Part of Niagara Series	Clinton shale Lower Niagara	Oil & Gas
Trenton Group	Black River formation Black River shale Top Trenton part	Oil & Gas
Onondaga Dol.		Oil

EXPLANATION

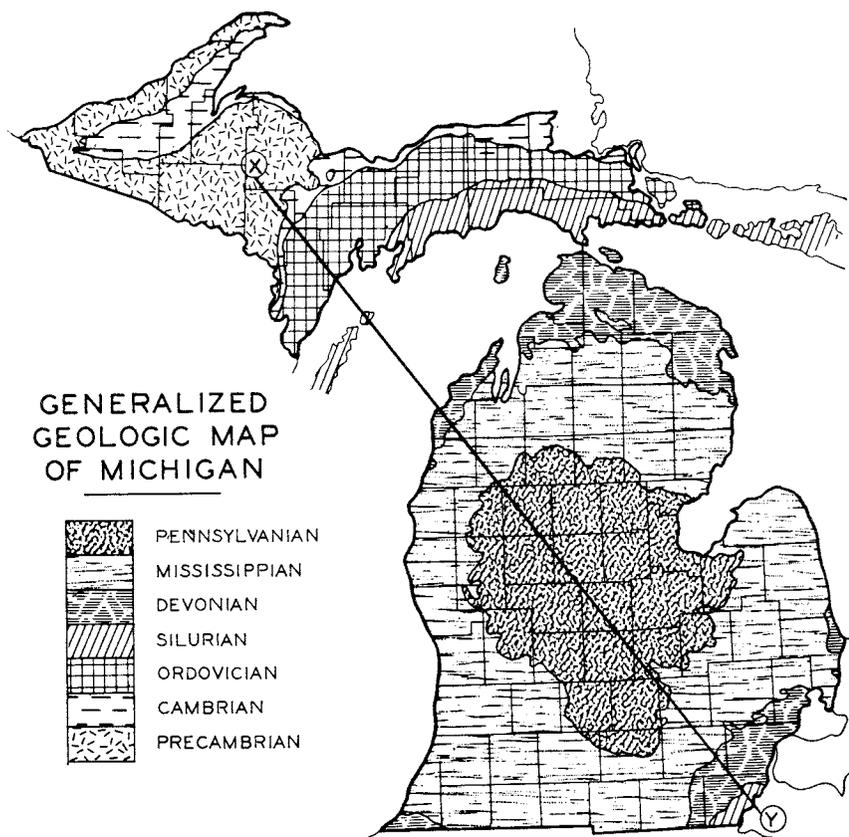


GEOLOGIC NAMES COMMITTEE: Harry O. Sorenson, Chairman and Chairman; Nelson W. Kelly, Secretary and Secretary; Gustaf B. Ek, I. David Johnson, Harry O. Sorenson, and Arthur E. Slaughter, Members. The committee was organized in 1954 to recommend uniformity in the use of geological names in Michigan. It is composed of representatives from the Michigan Department of Natural Resources, the U. S. Geological Survey, and other state Geological Surveys.

CHART 1
1964

Figure 20

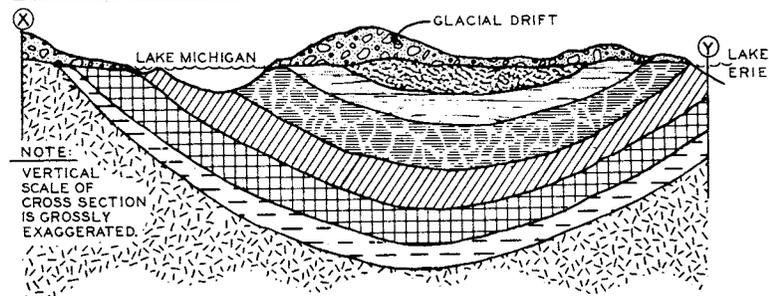
SOME SUGGESTED READINGS



GENERALIZED GEOLOGIC MAP OF MICHIGAN

- PENNSYLVANIAN
- MISSISSIPPIAN
- DEVONIAN
- SILURIAN
- ORDOVICIAN
- CAMBRIAN
- PRECAMBRIAN

CROSS SECTION X-Y



FROM INDUSTRY

Limestone --

"Limestone Purifies Water", 1977, 33 p.
National Limestone Institute, Inc.
Suite 501, 3251 Old Lee Highway
Fairfax, VA 22030

This booklet discusses uses of limestone, its effect upon rainfall, aquatic life, etc., and is best described by a partial list of the Table of Contents: Introduction; Limestone and its uses; Limestone benefits aquatic life - streams - ponds and lakes; Reaction of pH and water acidity; Neutralization of coal mine drainage; The threats of acid rain; A matter of priorities; Guidance.

Cement and Disposal of Waste-Oils and PCB's

Patzius, Terry; "Disposal of Waste-Oils and PCB's in Cement Kilns", 1978, Pit and Quarry, Vol. 70. No. 8, Feb. pp. 88-90.

Article describes how the experimental disposal of waste-oils and PCB's was done by introducing the materials into a high temperature cement kiln. Tests proved that this was an efficient way to dispose of PCB's, and the waste-oils accounted for a 9% kiln fuel savings. PCB's helped produce a lower alkaline cement product.

FROM MICHIGAN DEPARTMENT OF NATURAL RESOURCES, GEOLOGICAL SURVEY DIVISION

Industrial Sand

Ayres, Lewis, Norris and May, Inc.; Chapman, Michael J.; "An Economic Study of Coastal Sand Dune Mining in Michigan", Report of Investigation 20, 1978, 19+ pg., \$2.00. This report covers a study required by the Sand Dune Protection and Management Act (Act 222, Public Acts of 1976), and discusses the various aspects of sand dune mining, uses of sand, various properties which determine how the sand can be used, etc.

Reclamation

Shetron, S.G.; et al., "Establishing Vegetation on Alkaline Iron and Copper Tailings" Report of Investigation 17, 1977, 13+ pg., \$2.00. This report covers the methods used and results realized from a five year research program to establish vegetation on mine tailings as part of a mine reclamation program.

List of Publications

Currie, William W.; "Annotated List of the Publications of the Michigan Geological Survey 1838-1977", Circular 16, 1978, 38+ pg., \$2.00. This well organized list is indexed by author, mineral, and county.

Price Lists

"Available Maps of the Michigan Geological Survey", Map List 1, 1978, free. A detailed listing of available geological maps and their prices.

"Publications Available from the Geological Survey Division", List 20, 1978, free. A detailed list of available publications and their prices.

Limestone

Johnson, Allen M., and Sorensen, Harry O.; "Drill Core Investigation of the Fiborn Limestone Member in Schoolcraft, Mackinac, and Chippewa Counties, Michigan", Report of Investigation 18, 1978, 51+ pg., \$2.00. From the abstract "Progress on evaluation of high-purity, high-calcium limestones of the Middle Silurian Fiborn member of the Henricks Formation, Burnt Bluff Group in the eastern portion of the Northern Peninsula is presented". This publication covers part of the work done as a joint effort of the Geological Survey Division and the Institute of Mineral Research at Michigan Technological University, Houghton, Michigan.

Sand Dunes

"Designated Sand Dune Areas", Series I, 1978. This booklet lists, and has maps of, the designated sand dune areas in Michigan as required by the Sand Dune Protection and Management Act (Act No. 222, P. A. 1976). The Act is included. This booklet is ONLY available directly from---Reclamation and Mining Control Unit, Geological Survey Division, Michigan Department of Natural Resources, Box 30028, Lansing, Michigan, 48909.

FROM THE U.S. BUREAU OF MINES

Statistics and Industry Information

Peterson, Edward C.; Middlewood, Esther A.; "Minerals in the Economy of Michigan", State Mineral Profiles 7, 1978, 14+ pg., free. This brief booklet includes a number of short accountings of happenings within the State's mineral industry in 1977. Production figures are given, as well as state and federal legislation and program changes, state and federal income from mineral royalties and severance taxes, etc. This will prove to be a handy new annual series produced by the U.S.B.M

Peterson, Edward C.; Middlewood, Esther, A.; "The Mineral Industry of Michigan", from "1975 Minerals Yearbook", 1978, U.S. Bureau of Mines and "Annual Statistical Summary 25, Michigan Department of Natural Resources, Geological Survey Division, 26 pg., free. This annual booklet presents detailed mineral commodity production and value information as well as industry news and law changes which affect the mineral industry.

"Mineral Commodity Profiles", U.S.B.M 1977 + 1978, free. These short publications are described as "A new series presenting timely data on selected mineral raw materials". As of December 1978 there were 25 booklets in this series, a number of which cover materials found or produced in Michigan. Consult the U.S.B.M. for the current listing.

Unless a specific address is given, these publications may be ordered from their proper agency address below.

Michigan Department of Natural Resources
Information Services Center
Box 30028
Lansing, MI 48909
(Michigan residents add 4% state sales tax)

U.S. Bureau of Mines
State Liaison Office - Michigan
Room 200, Corr Building
300 E. Michigan Ave.
Lansing, MI 48933

Popular Books about the Geology of the State

These books may be ordered from your local bookstore.

Dorr, John A., and Eschman, Donald F.; "Geology of Michigan", 1970, 484 pg., \$15.00.
The University of Michigan Press
839 Greene Street
Ann Arbor, MI 48106

This hardbound textbook explains the geology of Michigan and includes many illustrations and lists of collecting areas, museums, etc. General geology concepts are explained and Michigan examples are given.

Paull, Rachel Krebs, and Paull, Richard A.; "Geology of Wisconsin and Upper Michigan", 1977, 232 pg., \$6.95.
Kendall/Hunt Publishing Company
2460 Kerper Boulevard
Dubuque, Iowa 52001

This well written, and illustrated, softbound book covers the geology of Wisconsin and Upper Michigan and parts of adjacent states. Concepts of general geology are explained and a 13 page glossary of geological terms are included. One nice feature of this book is that it covers the geology of an area beyond stateline boundaries.

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Gypsum 1867-1977

Peat 1938-1977

Stone 1939-1977

Copper 1845-1977

Lime 1904-1977

Marl 1938-1977

Cement 1896-1977

Iron Ore 1854-1977

