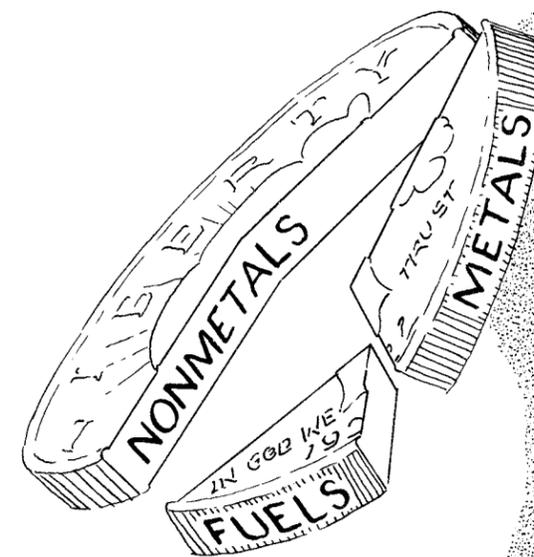




ANNUAL STATISTICAL SUMMARY

GEOLOGICAL SURVEY DIVISION
DEPARTMENT OF CONSERVATION

MICHIGAN'S
MINERAL INDUSTRIES, 1962



\$437,689,000.00

1963

* * * * *

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

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

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

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

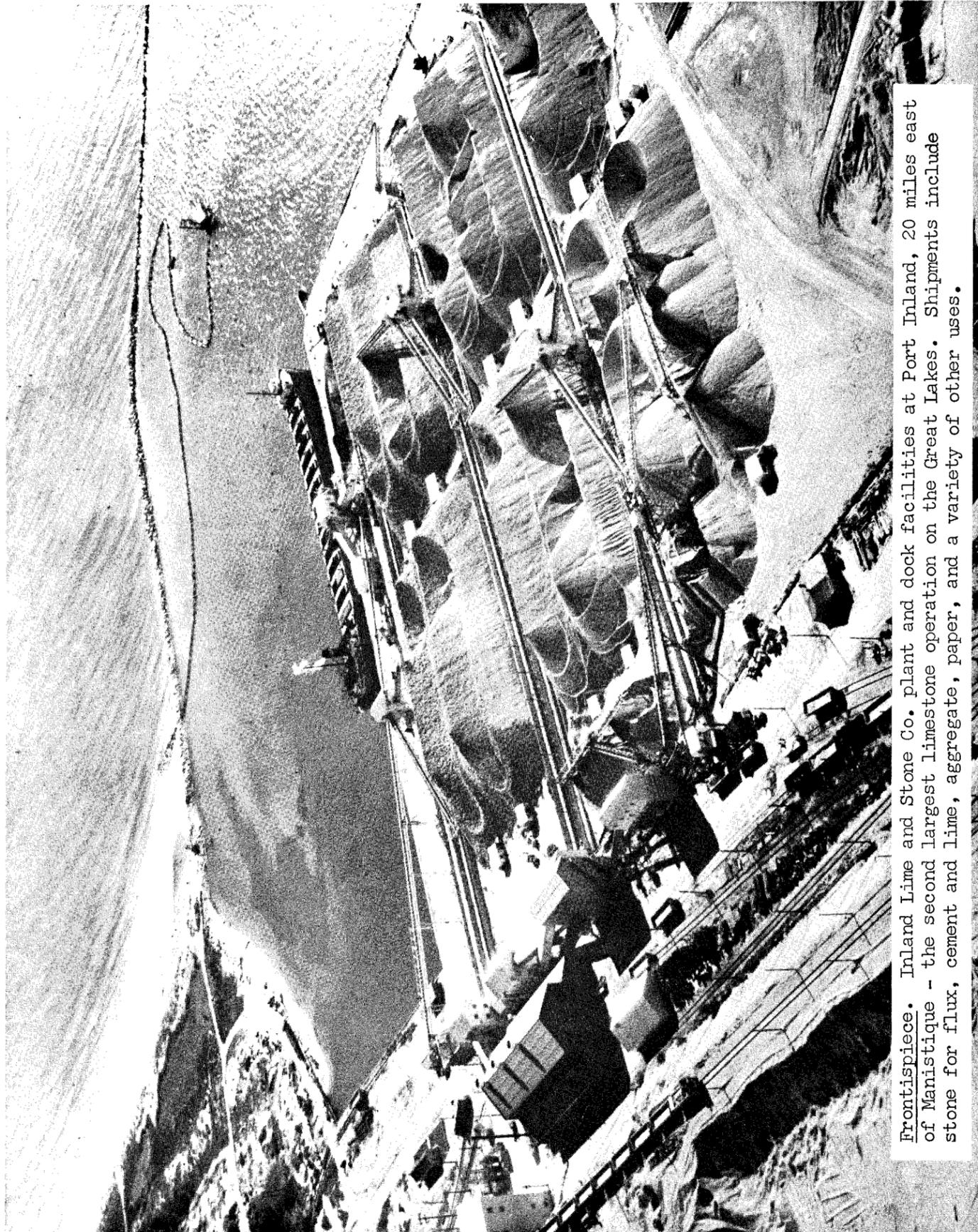
Iron and copper mining properties are appraised annually for general property tax purposes. From time to time, appraisals of other mineral properties are made for the State Tax Commission. Evaluations of mineral venture securities being promoted in the state are prepared upon the request of the State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

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

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

* * * * *

MICHIGAN'S MINERAL INDUSTRIES, 1962



Frontispiece. Inland Lime and Stone Co. plant and dock facilities at Port Inland, 20 miles east of Manistique - the second largest limestone operation on the Great Lakes. Shipments include stone for flux, cement and lime, aggregate, paper, and a variety of other uses.

STATE OF MICHIGAN



DEPARTMENT OF CONSERVATION
GEOLOGICAL SURVEY DIVISION

ANNUAL STATISTICAL SUMMARY

MICHIGAN'S
MINERAL INDUSTRIES, 1962

BY

H. O. SORENSEN AND E. T. CARLSON

LANSING

1963

STATE OF MICHIGAN
George Romney, Governor
DEPARTMENT OF CONSERVATION
Gerald E. Eddy, Director

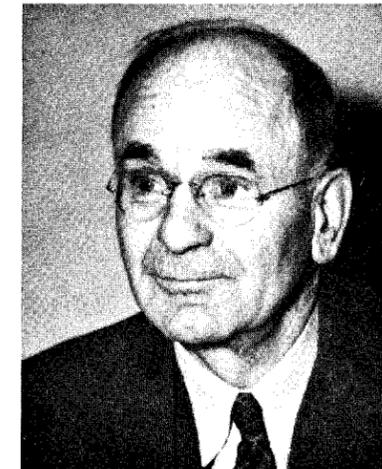
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IN MEMORY



RICHARD A SMITH
Born Nov. 12, 1876. Died June 11, 1963

9th STATE GEOLOGIST OF MICHIGAN
1919 - 1946

This report is affectionately dedicated to Dr.
Smith who ably guided the Geological Survey
through its years of greatest expansion.

Michigan is proud of his record of hard work
and achievement in geological exploration and
the development of our mineral resources. Not
only did he produce a wealth of needed technical
reports, but he also accomplished much in making
scientific knowledge understandable to many
who would otherwise have never appreciated the
value and fascination of geology.

His gentlemanly willingness to listen to the
problems of even the humblest caller, and a
desire to help wherever and whenever possible,
earned "R. A." a wide and esteemed reputation of
dedicated service to all.

FOREWORD

This report on the mineral industries of Michigan is a compilation of mineral production data for the year 1962. It consists of six sections: preliminary estimates of Michigan's mineral production for 1963, news items and developments in 1963; a summary of each of the mineral industries, a break-down of mineral production by counties, a directory of mineral producers, and a picture presentation of mineral operations.

Items on 1963 developments in the various mineral fields were drawn heavily from various trade journals, magazines and publications including: "Michigan Natural Resource Council Technical Committee Reports," "Pit and Quarry," "Rock Products," "Mining World," "Steel," and "World Oil."

The Michigan Geological Survey expresses appreciation to all the mineral and mineral product producers for the production information they have submitted. Without their cooperation in complying to questionnaires sent them in the first month of 1963 and returning them to this office this report would not have been possible.

Lansing 26, Michigan
January, 1967

Harry O. Sorensen, Geologist and head
Emery T. Carlson, Geologist
Economic Geology Section
Geological Survey Division
Department of Conservation

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PRINCIPAL MINES, PITS, & QUARRIES

1963

BEDROCK

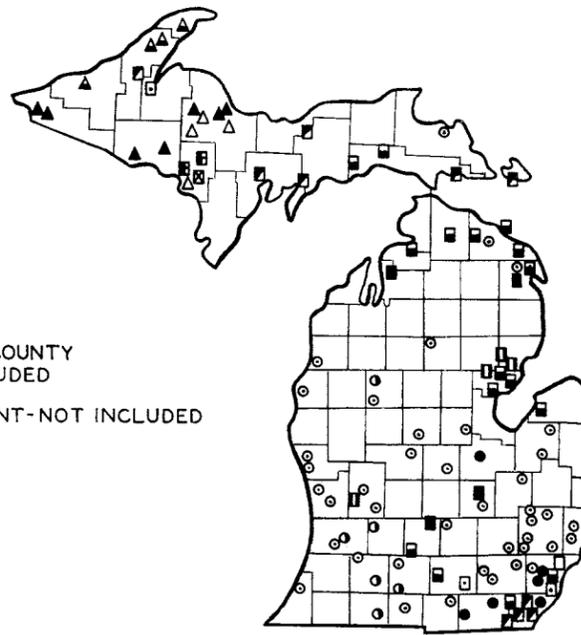
- ▲ COPPER MINE
- ▲ IRON ORE MINE
- △ IRON ORE OPEN PIT
- MARBLE
- ▣ PEGMATITE
- LIMESTONE
- ▣ DOLOMITE
- ▣ SANDSTONE
- ▣ GYPSUM

- SHALE
- SALT MINE

SURFACE

- SAND & GRAVEL
- CLAY
- MARL

NOTE: GYPSUM-QUARRIES IN IOSCO COUNTY, MINES IN KENT COUNTY
 SAND & GRAVEL- ONLY 200,000 + TON/YEAR PITS INCLUDED
 MARL-ONLY SIX LEADING COUNTIES INCLUDED
 PEAT,OIL, GAS, NATURAL SALINES, SALT WELLS, & CEMENT-NOT INCLUDED



THE MINERAL INDUSTRY OF MICHIGAN IN 1963*

(Preliminary)

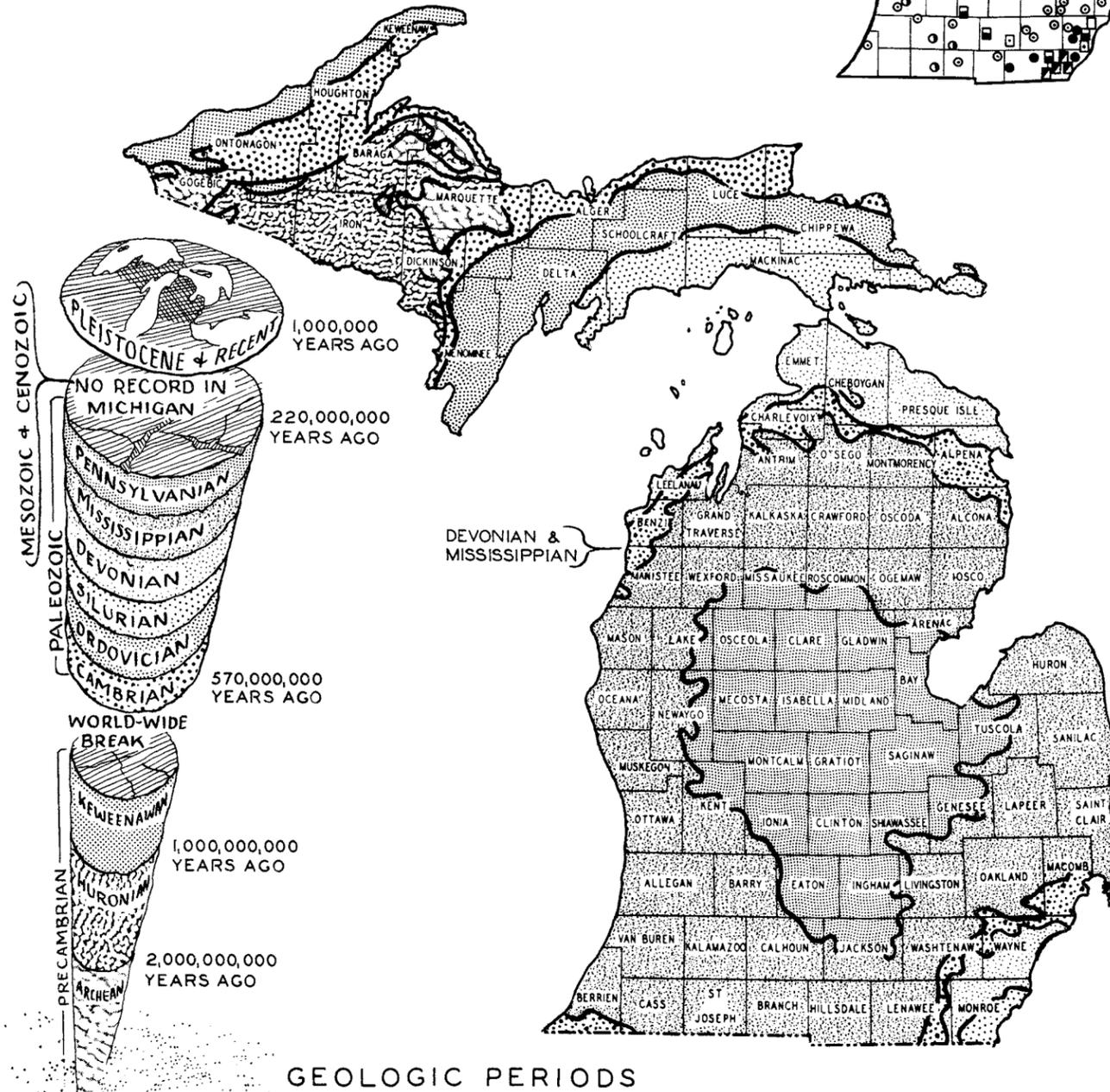
Mineral production in Michigan in 1963 was valued at \$478 million, according to the Bureau of Mines, United States Department of the Interior. Value of output exceeded the 1962 figure by \$31 million. Production of all major mineral commodities increased over 1962 with the exception of petroleum. Iron ore remained first in value, followed by cement, copper, and petroleum.

Nonmetallic minerals accounted for 57 percent of the value of mineral production; metallic minerals, 31 percent; and mineral fuels, 12 percent. In 1962 the percentage distribution was nonmetals, 57 percent; metals, 29 percent; and fuels, the remainder.

Production of copper in terms of recoverable metal was 1 percent larger than in 1962. The preliminary average weighted price for copper in 1963 was 30.8 cents per pound, the same as in 1962. Copper producers operated throughout the year without interruption. Copper Range Co. began reclamation of stamp sands from the old Atlantic Mill, at Portage Lake. The sands were transported to the Freda Mill for processing. White Pine Copper Co. suspended development work on the Southwest orebody to permit continued technical studies required for mine design.

Iron ore shipments were estimated at 10.5 million long tons, compared to 9.4 million in 1962. Value of shipments increased about \$12.6 million over the previous year. Most of the gain was due to increased shipments of pellets and concentrates produced from jaspilite ore. Shipments of this material accounted for about one-third of the total iron ore shipments in 1963, compared to 28 percent in 1962.

The Hanna Mining Co. began producing pellets at its new Groveland agglomerating facility in March. The plant has an annual capacity of 1.25 million tons of pellets. Cleveland-Cliffs Iron Co. began producing pellets at its new Empire project, four miles south of Negaunee. Initial annual capacity of the Empire plant is 1.2 million tons of pellets, with expected ultimate capacity of 3 million tons. Cleveland-Cliffs also began construction of an addition to the Republic concentrator that will expand the plant's annual capacity by 400,000 tons. Upon completion, early in 1964, total annual capacity of the Republic concentrator will be 2.8 million tons of concentrate. Of this amount, 2 million tons will be agglomerated at the Republic mine site and the remainder at the Eagle Mills pelletizing plant. Plans were announced in December for a \$15 million pelletizing plant at Cleveland-Cliffs' Mather underground mine. The project was expected to increase the mine's annual production from 700,000 tons to 2.4 million tons by 1966. Inland Steel Co. ceased mining operations at the Greenwood underground mine near Ishpeming on April 30. Manganese ore was shipped from stockpile at the Cannon mine. No shipments were reported in the previous year. The Lake shipping season for Michigan iron ores opened at Escanaba on April 19 and closed at the same port on December 16. Estimated average mine value for Michigan usable iron ore in 1963 was \$9.35 per ton, compared with \$9.08 in 1962. The gain was attributed chiefly to the higher percentage of jaspilite concentrate shipped. Vessel freight rates to lower Lake ports were reduced 10 cents per ton in August. This reduction did not change the mine value as the freight saving was passed on to the buyer.



GEOLOGIC PERIODS

*Prepared December 20, 1963, by Donald F. Klyce, Industry Economist, under the supervision of Wesley A. Grosh, Acting Area Director, Area III Mineral Resource Office, Minneapolis, Minnesota.

Silver was recovered from copper ore mined at the White Pine mine. High silver-bearing concentrate from a silver-recovery circuit in the White Pine mill were smelted separately for delivery to electrolytic refineries where the silver was recovered.

Portland cement shipments increased 12 percent in quantity and 6 percent in value. Sales of masonry cement increased 9 percent in quantity and 3 percent in value. Clay production rose 8 percent, principally because of increased consumption for cement manufacture. Production of crude gypsum increased 3 percent in quantity and 2 percent in total value. Total production of quicklime and hydrated lime increased 15 percent in quantity and value. Total value of chemicals derived from brines (bromine, calcium-chloride, iodine, magnesium compounds, and potash) increased. Salt production increased 2 percent in quantity and 1 percent in value. Sand and gravel output increased 1 percent in quantity and value. Total production of stone increased 4 percent in quantity and 5 percent in value. Increased consumption of crushed limestone by the cement and steel industries was the chief reason for the gain. Decreases in production of basalt, clacareous marl, and sandstone were recorded.

Petroleum output dropped over 1 million barrels, a 6-percent decrease, compared with 1962. Total production of natural gas liquids decreased slightly. Natural gas output increased 6 percent in quantity and 7 percent in value. Peat production increased 7 percent in quantity and 9 percent in value.

NEWS ITEMS AND DEVELOPMENTS IN 1963

IRON ORE

Michigan's iron mines were appraised for 1963 tax purposes at \$55.3 million, nearly \$13 million less than last year. This figure reflects a five-year downward trend in demand for iron ores and continuing decline in underground reserves.

The Cleveland-Cliffs Iron Company suspended operations at its Cliffs Shaft and Mather mines during January due to dwindling demand for the ore and foreign competition. Both mines are in Ishpeming and Negaunee. The company's Republic and Humboldt pellet plants, however, operated throughout the year at above rated capacity, setting new monthly records. Construction work at the Empire mine, which will be the third pellet property operated by Cleveland-Cliffs, continued and was completed at the year's end. The mine is owned by Empire Iron Mining Company, in a joint venture by Inland Steel Company, McLouth Steel Corporation, International Harvester Company, and The Cleveland-Cliffs Iron Company. Construction was begun in the spring of 1962.

Intensive research and pilot plant studies on the feasibility of concentrating and agglomerating its underground domestic ores that cannot compete with pellets and higher grade foreign ores were conducted by The Cleveland-Cliffs Iron Company. In December plans were announced for the construction of the nation's first pellet plant to agglomerate underground iron ore. The \$15 million project will be a joint venture by The Cleveland-Cliffs Iron Company, McLouth Steel Corporation, and Bethlehem Steel Corporation. It is expected that the plant will be in operation by March, 1965, producing at the rate of 1,200,000 tons of high grade pellets annually. Output of the Mather Mine in Negaunee and Ishpeming will be boosted from its present 700,000 tons annually to more than 2,400,000 tons by 1966 to supply ore for the pelletizing plant.

Inland Steel Company closed its Greenwood Iron mine near Ishpeming in April after efforts to discover additional ore had failed. The mine, opened in 1930, had produced more than 2.3 million tons of ore during its life of 32 years.

Expansion of the Hanna Mining Company's iron ore concentrator and the construction of a pelletizing plant at its Groveland mine near Randville, Dickinson County, were completed and production of pellets begun. The expansion of the concentrator was designed to increase production of concentrates from 700,000 tons to 1,600,000 tons, and pelletizer was designed for a capacity of 1,250,000 tons of pellet output per year.

The Institute of Mineral Research of the Michigan Technological University was given a \$70,763 contract with the U. S. Agency for International Development for the purpose of finding a way to beneficiate low-grade ores for use in making pig iron and steel. The work was to be done for one of the foreign countries served by the agency and is being performed with the understanding that technological developments will not be used to compete with domestic iron ore production.

Mineral Production in Michigan, 1963 (1)		
(Estimated)		
Mineral	Thousand Short Tons (unless other- wise stated)	Value (thousands)
Cement:		
Portland - thousand 376-pound barrels	25,300	\$ 77,500
Masonry - thousand 280-pound barrels	1,660	4,480
Clays	1,900	2,075
Copper (recoverable content of ores, etc.) in short tons	75,185	46,314
Gypsum	1,315	4,900
Iron Ore (usable) thousand long tons, gross weight	10,500	98,175
Lime	1,325	17,690
Manganiferous ore (5 to 35 percent Mn) short tons, gross weight	156,800	(2)
Natural gas - million cubic feet	30,800	6,600
Peat	275,000	2,475
Petroleum (crude) thousand 42-gallon barrels	16,030	45,690
Salt	4,375	33,725
Sand and gravel	48,000	42,450
Silver - fine ounces	(2)	(2)
Stone	29,675	30,475
Value of items that cannot be disclosed:		
Bromine, calcium chloride and calcium-magnesium chloride, gem stones, iodine, magnesium compounds, natural gas liquids, and potassium salts		65,045
Total Michigan		\$477,594

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

(2) Figure withheld to avoid disclosing individual company confidential data.

COPPER

Michigan's copper mines were appraised for 1963 tax purposes at \$14.5 million, an increase of \$336,000 over 1962. The White Pine Mine, the only mine in Ontonagon County, again had the top valuation, \$10,585,000. Copper mines in Houghton and Keweenaw counties were appraised at \$3,221,000 and \$740,000, respectively.

Copper Range Company began reclamation of stamp sands in April from the old Atlantic mill site on the shore of Portage Lake west of Houghton. The sands were transported over the Copper Range Railroad to the company's mill at Freda for milling and recovery of copper. Modern day techniques make possible the recovery of copper lost in the tailings from the earlier mill.

Calumet & Hecla, Inc., continued its program of utilizing all possible sources of copper rock as mill feed. Waste rock with low copper content was taken from the Ahmeek rock pile to supplement mine production. Calumet & Hecla, Inc., early in the year, completed extension of a ventilation cross-cut from the Allouez No. 3 shaft into the newly discovered orebody in the Kingston conglomerate lode. The company then proceeded by drifting along the lode to obtain samples for metallurgical testing and to determine the lateral limits of the body. Drilling to determine the vertical continuity and rake of the body was continued.

PORTLAND CEMENT

Announcement early in the year was made that the Marquette Cement Company of Chicago, Illinois, had acquired 3900 acres of limestone and shale bearing land a few miles north of Alpena in Alpena and Presque Isle counties. The property includes the Rockport facility with quarry and harbor once operated by the Kelley Island Lime and Transport Company. Marquette Cement has offices in downtown Chicago and two cement plants on Lake Michigan, one at Oglesby, Illinois, and the other at Milwaukee, Wisconsin.

Construction of a vertical mine shaft in the floor of Huron Portland Cement Company Alpena limestone quarry for the extraction of shale has been reported as part of a future expansion plan by the company. The expansion plans also include the installation of a 12,000 barrel-per-day finish grinding mill at Alpena.

Penn-Dixie Cement Corporation announced that modernization of their Petoskey plant will be completed by early 1965. A large kiln and grinding, coal handling and auxiliary equipment will be installed.

STONE

Late in the year it was reported that the North Range Mining Company will form a corporation for the purpose of operating the Mitro-Nite Company quarry and production facilities at Felch, Dickinson County. The new corporation will be known as Felch Quarry Company. North Range is currently rebuilding Mitro-Nite's crushing and screening plant and installing new equipment. High-grade extender pigment will be produced by the corporation for the protective coating industry.

GYPSUM

National Gypsum Company announced the renaming of its Tawas City dock for Prescott in memory of the late Senator Charles T. Prescott of Michigan's 28th senatorial district. The renaming of the dock was in response to a resolution adopted by the Michigan Senate and House, according to the announcement.

LIGHTWEIGHT AGGREGATE

A sintering and grading plant costing more than \$1 million was nearing completion by mid-year on the riverfront of Detroit for the Waylite Company, a Chicago based producer. The plant will use fly ash obtained from industrial plants in the Detroit area. This will be processed by Waylite into lightweight aggregate for the concrete industry. Expected production capacity for the plant is reported to be from 1,000 to 1,500 tons per day.

SAND AND GRAVEL

The assets and facilities of the Melvin Herselschwerdt Gravel Company, Chelsea, were purchased by George and Ralph Adams, principal officers of the Adams Concrete Products Company, Inc., of Ypsilanti. The firm, which was renamed the Short Hills Gravel Company, will offer washed stone and sand for concrete, mason and sand, 60-40 washed gravel, washed septic tank stone, and fill or bank run.

Stan Kote of Jackson, Michigan, started production in May of a plastic coated specialty gravel. The material, first to be produced in the eastern United States, is intended for use as a roofing rock and for landscaping. The patented process is being used under license from an Arizona firm, which developed it principally to manufacture multi-colored landscaping rock - a popular product in arid climates.

Within the foundry sand industry the increased use of chemical binders by foundries has resulted in more extensive preparation and control by sand producers. To meet specifications the sand must be processed dry and cool (below 100° F) and as a result most sand producers have installed coolers within the last year.

PETROLEUM

Of considerable interest to the oil and gas industry is the drilling of a deep well in Ogemaw County. Drilling began in December and the well is expected to be bottomed at a depth of 12,000 feet, in Lower Cambrian rocks. This new deep test, a joint venture of three major oil companies, should contribute much needed information relating to the oil and gas bearing potentials of the state's deeper geologic formations.

LEGISLATION:

Legislation Which Became Law

Act. No. 42. Oil and gas interests. Rights, dormant, terminate, procedure.

Act. No. 66. Metallic iron mining. State Geologist to annually report true cash value to State Tax Commission; Tax Commission to assess such properties containing 20% or more of iron ore in conformity with other properties in district; difference to be eliminated in 3 equal adjustments.

Act. No. 68. Underground iron mines. Impose specific tax upon agglomerated or beneficiated ore.

Legislation Which Was Introduced but Failed

House Bill 49. Taxation. Mineral rights assessed separately where separate from surface.

House Bill 120. Mine inspection. Safety board, remedies for dangerous conditions.

House Bill 143. Appropriations. Conservation Department, \$25,000 for mineral exploration in Gogebic County.

House Bill 495. Mineral rights. Separate ownership, require registration and fee.

House Bill 572. State lands. Sand, gravel, mineral rights of non-metallic nature, 100-year private ownership strip.

House Bill 757. Oil, gas, and minerals on state lands. Require minimum royalty of 50% of value. Amend Act. 17, P.A. 1921 (C.L. 299.1-299.6) by adding sec. 5.

Senate Bill 1359. Gas pipelines. Extend public service commission jurisdiction when using highways and other public places.

Interim Study Committee

House Concurrent Resolution 68. A committee to study mineral rights.

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

Standard Series, 15-Minute Quadrangles

New Issues: Boyne City, Boyne Falls, Chambers Island.

Standard Series, 7½-Minute Quadrangles

New Issues: Albordton, Avoca, Banfield, Bedford, Bellevue, Brockway, Brown City, Burr Oak, California, Capac, Ceresco, Clayton, Clear Lake, Colon, Delton, Hillsdale, Jasper, Jedde, Lakeport, Meadow Lake, Nottawa, Pigeon Point, Pioneer, Roseburg, Ruby, Sturgis, Yale.

Reprints: Augusta, Battle Creek.

*For complete listing and index map of published topographic quadrangles, write to the Geological Survey Division, Department of Conservation, Lansing 26, Michigan.

GEOLOGIC PUBLICATIONS, MAPS AND ARTICLES:

"Open-pit iron mining, milling, and costs, Groveland Mine, The Hanna Mining Company, Dickinson County, Michigan," by Leonard H. Heising. U. S. Bureau of Mines, Information Circular 8181 (1963). free

"Sandstone as dimension stone," by Oliver Bowles and William R. Barton. U. S. Bureau of Mines, Information Circular 8182 (1963).

"How to locate reefs in Michigan via gravity work," by R. A. Geyer, Worlds Oil, v. 156, no. 5, pp. 101-104 (April 1963).

"Information on Michigan Silurian oil and gas pools," by G. D. Ells, Geological Survey Division, Michigan Department of Conservation (1963) \$.50

"Summary of operations, oil and gas fields, 1962," by L. W. Price, et al. Geological Survey Division, Michigan Department of Conservation (1963) free

"Developments in Michigan in 1962," (oil and gas) by R. E. Ives and G. D. Ells, Bulletin, American Association of Petroleum Geologists, vol. 47, no. 6, pp. 995-1006 (June 1963).

"Symposium on salt," by the Northern Ohio Geological Society, Cleveland, Ohio (1963). 661 pp. \$12.00

"Guidebook for mineral collectors in the Keweenaw Copper Country," by Kiril Spiroff, Michigan College of Mining and Technology, Houghton (1963) \$.50

"Index to Michigan geologic maps, 1842-1962," by E. A. Kirkby, Geological Survey Division, Michigan Department of Conservation, 62 pp. (in press)

"Aeromagnetic map of central Gogebic County, Michigan, and vicinity," by P. W. Philbin and J. L. Vargo, U. S. Geological Survey. A map released for OPEN FILE (1963). Copy available for examination in the office of Geological Survey Division, Michigan Department of Conservation, Lansing 26, Michigan.

"A look at state's iron mining industry," by W. Been, Michigan Manufacturer and Financial Record, v. III, no. 5, p. 22 (May 1963).

"Ground-water contamination and legal controls in Michigan," U. S. Geological Survey Water-Supply paper 1691 (1963) 79 pp.

"Ground-water resources of the Alma area, Michigan," U. S. Geological Survey Water-Supply Paper 1619-E (1963) 66 pp. \$0.50

The following U. S. Geological Survey Geophysical Investigations Maps (GP) for Michigan quadrangles, authored by J. R. Balsley and others, became available in 1963, at a cost of 50 cents a copy. These maps are overlays for the U. S. Geological Survey geologic maps cited below.

Quadrangle	No.	County	Geologic Map
Phoenix	GP-313	Keweenaw	GQ-34
Delaware	GP-315	Keweenaw	GQ-51
Lake Medora	GP-316	Keweenaw	GQ-52
Fort Wilkins	GP-317	Keweenaw	GQ-74
Ahmeek	GP-318	Keweenaw & Houghton	GQ-27
Mohawk	GP-319	Keweenaw & Houghton	GQ-54
Bruneau Creek	GP-320	Keweenaw	GQ-35
Hancock	GP-321	Houghton	MF-46
Laurium	GP-322	Houghton	MF-47
South Range	GP-323	Houghton	MF-48
Chassell	GP-324	Houghton	MF-43

MICHIGAN
MINERAL PRODUCTION
1962
GENERAL REVIEW

Mineral production in Michigan in 1962 was valued at \$437,689,079. This was a decrease of 1% from 1961. Nonmetallic value decreased 1%, metallic value decreased 1%, and fuel value decreased 3%. Iron ore was first in value, followed by cement, natural salines, and petroleum.

The following table gives the value of Michigan mineral production 1962.

	Value	Per Cent	Rank U.S.*	Per Cent U.S.Total*
Nonmetallics	252,854,062	57.8	4	6.63
Metallics	124,431,465	28.4	4	6.54
Fuels	60,403,552	13.8	23	0.48
TOTAL	437,689,079	100.0	12	2.44

*Based on 1961 data.

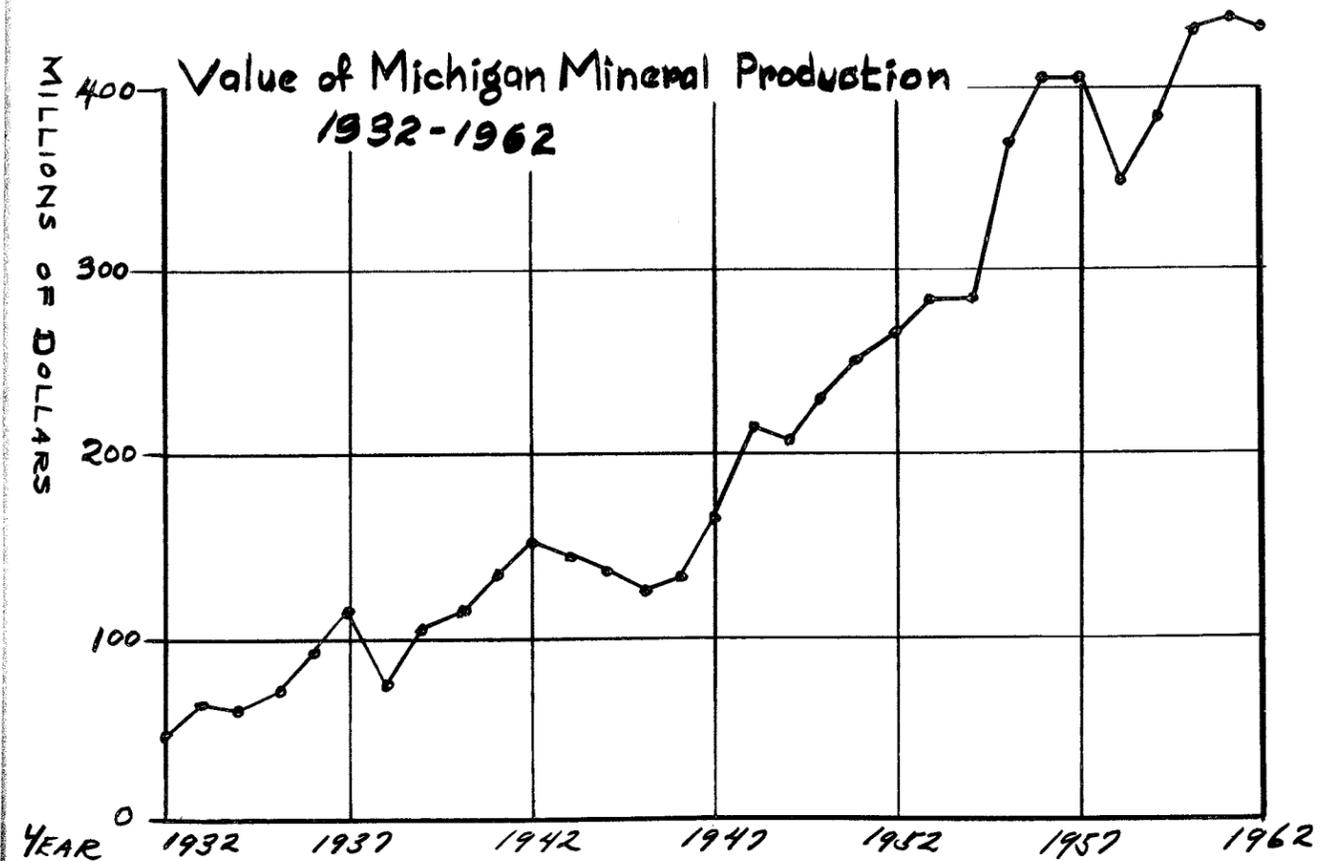


TABLE I
MINERAL PRODUCTION OF MICHIGAN, 1962 (1)

PRODUCT	UNIT	QUANTITY	VALUE	RANK IN U.S. (2)
Iron Ore	Long Tons	9,443,201	\$ 80,005,080	2
Cement	Bbls.	24,198,903	77,601,954	4
Natural Salines (3)			51,290,583	1
Petroleum	Bbls.	17,114,303	49,311,243	16
Copper	Lbs.	143,760,678	43,990,767	6
Sand and Gravel	Tons	47,562,781	42,029,146	2
Salt	Tons	4,273,667	33,342,591	4
Stone (4)	Tons	17,904,474	20,422,503	7
Lime	Tons	1,189,005	15,793,427	2
Clay Products			7,033,870	
Natural Gas	M. cu. ft.	27,766,129	6,652,958	17
Gypsum	Tons	1,278,065	4,791,311	2
Clay and Shale (5)	Tons	2,017,616		9
Peat	Tons	257,693	2,276,702	1
Natural Gas Liquids	Gallons	43,252,973	2,162,649	16
Silver	Oz.	401,491	435,618	7
Marl	Tons	145,854	88,476	3
Miscellaneous (6)			460,201	

TOTAL

\$437,689,079

- (1) Metallic and fuel statistics compiled by Michigan Geological Survey. Non-metallic statistics compiled in cooperation with the United States Bureau of Mines.
- (2) Based on quantity - 1961 data.
- (3) Includes bromine, magnesium compounds, calcium-magnesium chloride, potash, and iodine.
- (4) Does not include 10,383,683 short tons of limestone valued at \$8,533,760 used in the manufacture of cement and lime.
- (5) Used in the manufacture of cement and clay products.
- (6) Includes sulfur, mineral pigments, gem stones, and clay.

TABLE II
MINERAL PRODUCTION OF MICHIGAN, 1961 (1)

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

TOTAL

\$443,263,278

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

METALLIC MINERALS*

The value of metallic minerals was 1 percent lower than in 1961. The decrease was due to a 3.4 million dollar drop in the value of iron ore. Production of copper increased 1.5 million tons.

METALLIC PRODUCTION

Product	Unit	Quantity	Value
Iron Ore	Long Tons	9,443,201	80,005,080
Copper	Lbs.	143,760,678	43,990,767
Silver	Oz.	401,491	435,618
Total			124,431,465

*Metallic statistics compiled by Michigan Geological Survey

IRON ORE

Iron ore shipments totaled 9,443,201 long tons, compared to 9,390,197 in 1961. Value of shipments decreased about 3.4 million. Growing preferences for higher quality iron ores for blast-furnace feed had a considerable effect on iron-ore mining in Michigan. Shift in demand from direct-shipping ores to higher quality concentrates resulted in the closing of two underground mines during the year. Concentrates produced from jaspilite accounted for over a quarter of iron-ore shipments in 1962. The lake shipping season for Michigan ores opened at Escanaba on April 17 and closed at Marquette on December 4.

IRON ORE SHIPMENTS BY RANGES, 1962

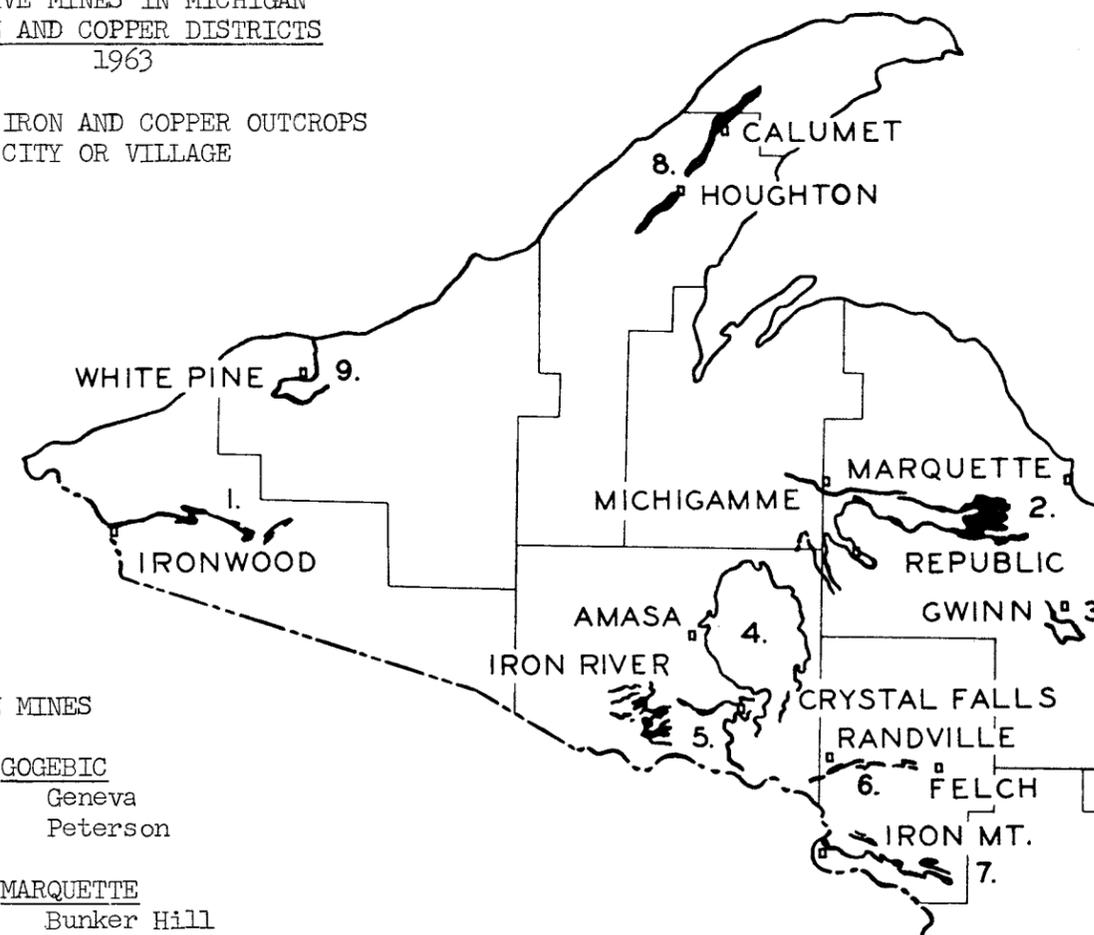
Range	Number of Mines		Iron Ore Shipments (Long Tons)		
	Underground	Open Pit	Direct Shipments	Siliceous	Total
Marquette	8	3	4,386,195	114,252	4,500,447
Menominee	6	1	3,462,371	-	3,462,371
Gogebic	3	-	1,480,383	-	1,480,383
TOTAL	17	4	9,328,949	114,252	9,443,201

Cleveland-Cliffs Iron Co. completed the second 800,000 ton per year concentration unit at the Republic open-pit mine and a third was under construction. Construction of the Empire taconite plant which will have an ultimate capacity of 3,000,000 tons of pellets a year began in May near Palmer.

Hanna Mining Co. completed expansion of its Groveland operation which increased its concentration plant capacity from 700,000 to 1,500,000 tons per year.

ACTIVE MINES IN MICHIGAN
IRON AND COPPER DISTRICTS
1963

— IRON AND COPPER OUTCROPS
□ CITY OR VILLAGE



IRON MINES

1. GOGEBIC
Geneva
Peterson
2. MARQUETTE
Bunker Hill
Champion
Cliffs Shaft
* Empire
Greenwood
* Humboldt
Maas
Mather
* Republic
o Tilden
Tracy

6. FELCH
* Groveland
7. EAST MENOMINEE (not active)

3. GWINN (not active)
4. AMASA OVAL (not active)
5. IRON RIVER - CRYSTAL FALLS
Bristol
Hiawatha
Homer
Sherwood
Wauseca

- COPPER MINES AND RECLAMATION PLANTS
8. NATIVE COPPER
Allouez No. 3
Calumet and Hecla Reclamation
Centennial
Champion
Osceola
Peninsula
Quincy Mining Co. Reclamation
Seneca No. 2

* Low grade iron ore development (open pit)
o Siliceous iron ore (open pit)

9. COPPER SULFIDE
White Pine

IRON ORE SHIPMENTS BY RANGES

1958-1962 (Long Tons)

Year	Marquette	Menominee	Gogebic	Total	
				Quantity	Value
1958	3,722,139	3,095,239	1,393,528	8,210,906	70,704,419
1959	3,529,949	2,477,980	1,250,786	7,258,715	62,117,507
1960	4,944,715	4,121,165	1,889,986	10,955,866	97,072,686
1961	4,142,440	3,885,902	1,361,855	9,390,197	83,375,984
1962	4,500,447	3,462,371	1,480,383	9,443,201	80,005,080

COPPER

Production of copper was 1 percent larger than in 1961. The value was 3 percent higher because the average price used for calculating the value of copper was 30.6 cents per pound in 1962 and 29.9 cents in 1961. Copper producers operated throughout the year with only minor interruption with the exception of the Quincy Mining Co., which was closed down from May 31 to September 3 because of the collapse of a surge bin at their reclamation plant.

COPPER PRODUCTION BY COUNTIES, 1962

County	Mines	Recla- mations	Copper Production (Pounds)		
			Mines	Reclamation	Total
Houghton	4	3	17,707,243	6,364,917	24,072,160
Keweenaw	3	-	13,075,067	-	13,075,067
Ontonagon	1	-	106,613,451	-	106,613,451
TOTAL	8	3	137,395,761	6,364,917	143,760,678

Development of the White Pine Copper Company's southwest orebody continued. The exploration shaft was completed and large-scale testing of development ore begun. Late in the year Calumet and Hecla, Inc. reported the discovery of an orebody in the Kingston conglomerate with indications of a grade of ore higher than any mined in the Michigan copper district in recent years.

COPPER PRODUCTION, 1958-1962

Year	Native Copper	Sands Reclamation	Sulphide Ore	Total	
				Quantity	Value
1958	35,301,708	5,100,407	81,656,908	122,059,023	31,414,330
1959	34,167,881	9,266,420	69,647,232	113,081,533	35,245,252
1960	31,577,880	8,740,414	75,120,243	115,438,537	37,025,756
1961	31,141,849	7,370,561	103,756,178	142,268,588	42,579,566
1962	30,782,310	6,364,917	106,613,451	143,760,678	43,990,767

SILVER

During 1962 part of the refined copper, having a high silver content, was electrolytically refined resulting in a silver recovery of 401,491 ounces, which based on an average yearly price of \$1.085 per ounce was valued at \$435,618.

FUELS*

The value of mineral fuels produced was 3 percent lower than in 1961. The decline was due to lower output of petroleum, down 1.8 million barrels from 1961. Producers of other mineral fuels (natural gas, natural gas products, and peat) reported larger outputs than in 1961.

FUEL PRODUCTION

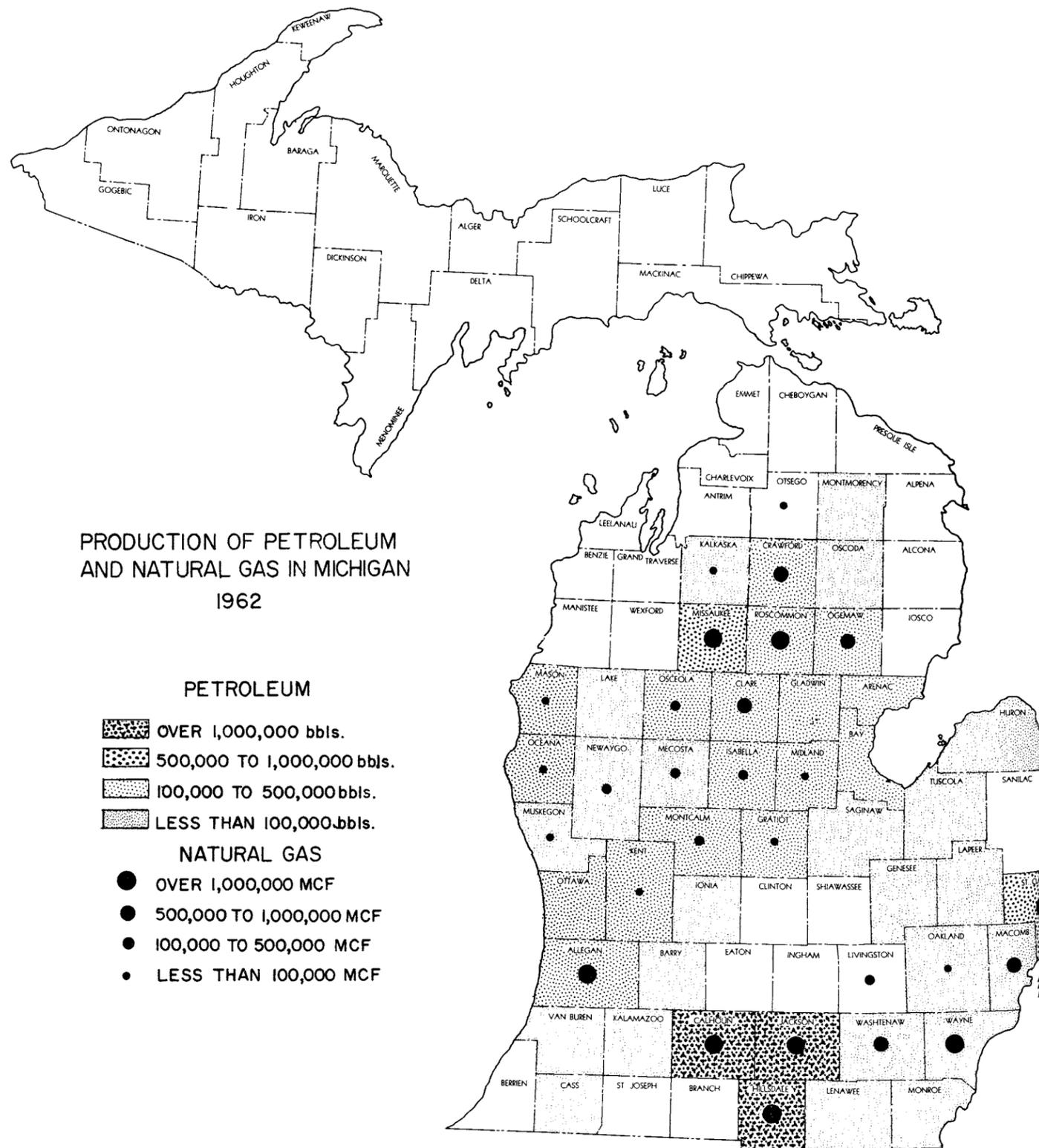
Product	Unit	Quantity	Value
Petroleum	Barrels	17,114,303	49,311,243
Natural gas	M. cu. ft.	27,766,129	6,652,958
Peat	Tons	257,693	2,276,702
Natural gas liquids	Gals.	43,252,973	2,162,649
TOTAL			60,403,552

*Fuel statistics compiled by Michigan Geological Survey

PETROLEUM

Petroleum production was 9 percent less than 1961. During the year 17,114,303 barrels valued at \$49,311,243 were produced. This was the first decline in petroleum production since 1958 when the development of southern Michigan oilfields reversed a downward trend. At the end of 1962, 4,603 producing wells were in 45 counties. Approximately 58 percent of the total output was from Hillsdale, Calhoun, and Jackson counties.

During the year 685 wells were completed (184 oil producers, 62 gas producers, 475 dry holes). Of these completions 294 were wildcat (8 oil producers, 8 gas producers, and 278 dry holes). The remaining 391 completions



were field wells (140 oil producers, 54 gas producers, and 197 dry holes). Fourteen refineries, in nine counties, processed crude oil in Michigan during 1961. The combined nominal daily capacity of all Michigan refineries is approximately 189,939 barrels.

PETROLEUM PRODUCTION AND ACCUMULATED OIL BY FORMATION, 1962

Formation	Production		Accumulated	
	Bbls.	Percent	Bbls.	Percent
Marshall	1,215	.01	67,738	.01
Berea	16,186	.09	2,189,000	.46
Traverse	1,335,105	7.80	90,435,321	18.93
Dundee	3,200,061	18.70	313,009,874	65.53
Detroit River	1,456,054	8.51	35,850,755	7.50
Salina-Niag.	1,110,937	6.49	3,018,076	.63
Trenton	9,994,745	58.40	33,129,367	6.94
TOTAL	17,114,303	100.00	477,700,131	100.00

PETROLEUM AND NATURAL GAS PRODUCTION, 1958-1962

Year	Petroleum		Natural Gas	
	Barrels	Value	M. Cu. Ft.	Value
1958	9,308,018	27,213,388	10,964,377	2,071,720
1959	10,438,608	30,518,107	15,626,227	3,045,976
1960	15,899,206	46,105,421	19,240,168	3,839,709
1961	18,900,947	55,247,081	25,044,786	5,209,662
1962	17,114,303	49,311,243	27,766,129	6,652,958

NATURAL GAS

Natural gas production increased 11 percent to a total of 27,766,129 M. cu. ft., the largest production in history. Of this amount over 17 billion cubic feet was oil well gas. Eighty two percent of the natural gas produced in 1962 was from the Salina-Niagaran and Trenton-Black River formations. St. Clair County with 33 percent of the state's total was the leading producer followed by Calhoun, Hillsdale, and Jackson counties, all of which produced over 2,000,000 M. cu. ft.

GAS PRODUCTION AND ACCUMULATED GAS PRODUCTION BY FORMATIONS - 1962

Formations	Production		Accumulated	
	M. Cu. Ft.	Percent	M. Cu. Ft.	Percent
Drift			8,020	.002
Stray-Marshall	451,113	1.62	211,278,963	51.22
Berea	6,620	.05	9,806,431	2.38
Antrim	23,768	.08	251,406	.06
Traverse	206,613	.74	7,963,983	1.93
Dundee-Reed City	117,606	.42	48,761,057	11.82
Detroit River	4,148,707	14.94	32,513,308	7.88
Salina-Niagaran	11,926,493	42.95	70,809,662	17.16
Trenton-Black River	10,885,208	39.20	31,145,990	7.55
TOTAL	27,766,128	100.00	412,538,820	100.00

NATURAL GAS LIQUIDS - 1962

Michigan in 1962 produced from oil well gas a total of 43,252,973 gallons of natural gas liquids valued at \$2,162,649. Hillsdale County, with 74 percent of the state total, ranked first among the eight producing counties.

NATURAL GAS LIQUIDS PRODUCTION

Year	Quantity (Gallons)	Value
1958	3,511,671	351,167
1959	2,761,551	154,648
1960	12,217,120	684,159
1961	29,601,462	1,687,283
1962	43,252,973	2,162,649

PEAT

Peat production was about 23 percent higher in quantity and 14 percent higher in value than in 1961. Michigan continued to be the leading producer. The peat was sold principally as a soil conditioner. None was sold as a fuel.

PRODUCTION OF PEAT, 1958-1962

Year	Quantity (Short Tons)	Value	Percent of U.S.	Rank in U. S.
1958	107,342	1,683,980	32.7	1
1959	191,661	2,356,656	45.7	1
1960	214,402	2,755,245	45.5	1
1961	209,266	2,002,310	40.0	1
1962	257,693	2,276,702	45.5	1

NONMETALLIC MINERALS

The value of nonmetallic minerals decreased 1%. Substantial increases in value were recorded for natural salines and salt but were offset by decreases in sand and gravel, cement, and stone. Nonmetallic minerals accounted for 58 percent of the state total value.

NONMETALLIC PRODUCTION

Product	Unit	Quantity	Value
Cement	Barrels	24,198,903	77,601,954
Natural salines	-	-	51,290,583
Sand and gravel	Tons	47,562,781	42,029,146
Salt	Tons	4,273,667	33,342,591
Stone	Tons	17,904,474	20,422,503
Lime	Tons	1,189,005	15,793,427
Clay products	-	-	7,033,870
Gypsum	Tons	1,278,065	4,791,311
Clay and shale	Tons	2,017,616	-
Marl	Tons	145,854	88,476
Miscellaneous	-	-	460,201
TOTAL			252,854,062

CEMENT

Cement shipments increased 3 percent in quantity, but the value of shipments dropped 2.5 percent, principally because of a 20-cent drop per barrel in the average mill value of portland cement. Cement was produced by nine plants in Alpena, Bay, Emmet, Lenawee, Monroe, St. Clair, and Wayne counties.

RAW MATERIAL USED IN THE MANUFACTURE OF PORTLAND CEMENT

1962

Raw Material	Short Tons
Limestone	5,111,627
Clay and shale	1,557,256
Gypsum	169,204
Other	32,405
TOTAL	6,870,492

The largest dry-process kiln in Michigan started production June 19 at the Huron Portland Cement Company's plant at Alpena. The new kiln produces 5200 barrels of cement per day and the annual capacity of the plant is 14 million barrels. A plant expansion program is designed to increase the capacity to 22,000,000 barrels a year by 1975.

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

In December Martin Marietta Corporation announced the purchase of the Aetna Portland Cement Company's 3 million-barrel cement plant at Bay City.

CEMENT SHIPMENTS, 1958-1962

Year	No. of Plants	Shipments (Bbls.)	Value	Rank
1958	8	20,911,990	70,542,501	4
1959	8	23,025,928	77,323,974	4
1960	9	22,361,498	77,694,087	4
1961	9	23,462,554	79,638,973	4
1962	9	24,198,903	77,601,954	4

NATURAL SALINES

The value of chemicals (bromine, calcium chloride, iodine, magnesium compounds, and potash) extracted from natural well brines increased 16% in 1962. The highest value was recorded for bromine, followed by magnesium compounds, calcium magnesium chloride, iodine, and potash.

VALUE OF NATURAL SALINES

Year	Value
1958	42,360,677
1959	49,286,176
1960	44,034,486
1961	44,343,198
1962	51,290,583

SAND AND GRAVEL

Sand and gravel production was down about 13 percent from 1961 because of smaller demand for road materials. Sales of sand and gravel for building construction, industrial use, and fill showed modest increases over 1961. The value of sand and gravel was \$42,029,146 compared with \$47,790,111 in 1961.

USES OF SAND AND GRAVEL, 1962

Uses	Quantity (Short Tons)	Value	Percent of Total
Paving and road sand	6,222,861	4,960,145	13.1
Structural sand	4,715,328	3,706,032	9.9
Molding sand	2,004,347	3,468,495	4.3
Fill sand	3,108,069	1,153,500	6.5
Other sand ¹	787,990	1,723,336	1.7
Paving and road gravel	24,630,488	20,612,913	51.8
Structural gravel	4,579,657	5,431,257	9.6
Fill gravel	938,022	453,847	1.9
Other gravel ²	576,019	519,621	1.2
TOTAL	47,562,781	42,029,146	100.0

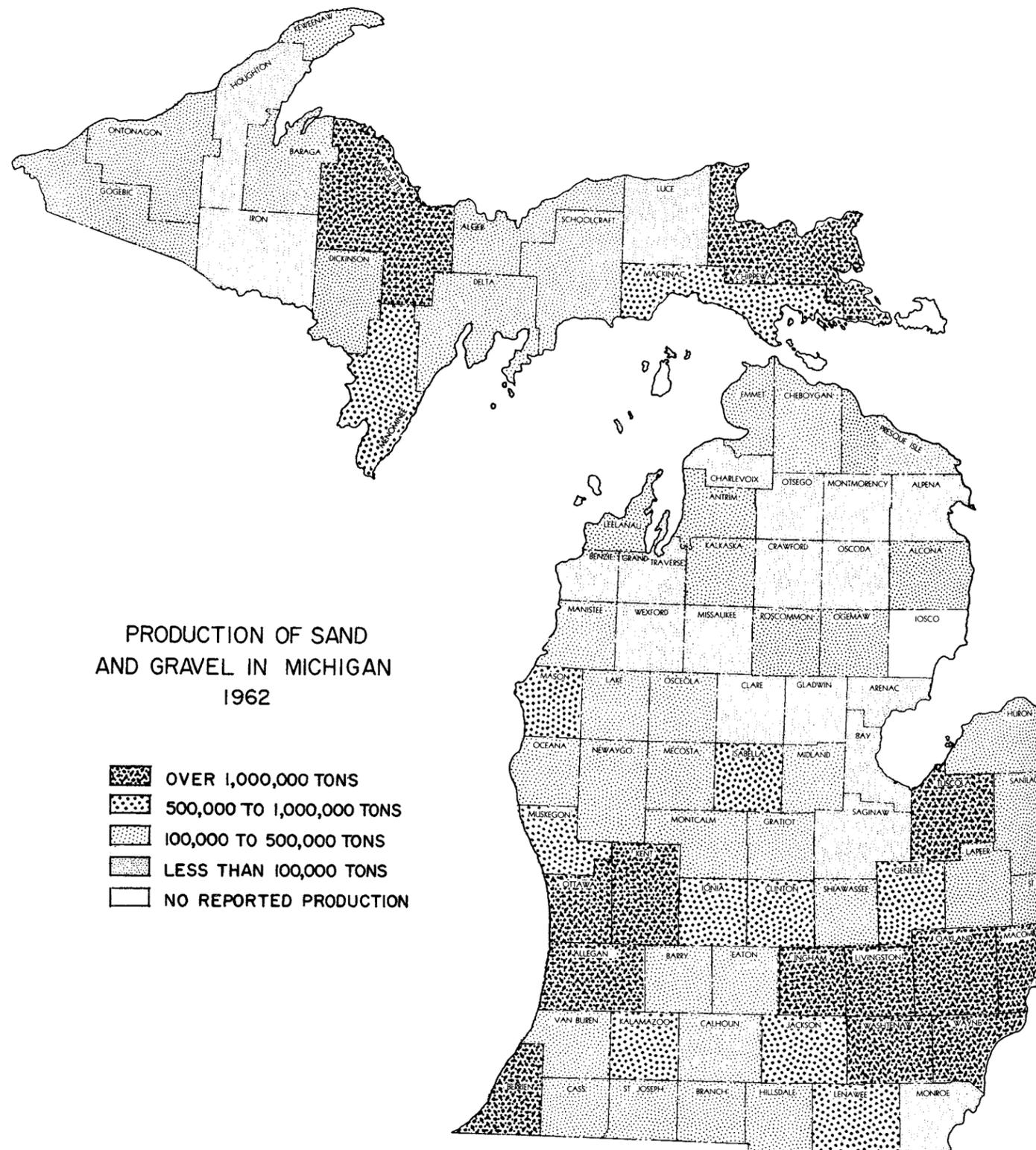
1 Includes - grinding and polishing, glass, engine, blast, and other sand.
2 Includes - railroad ballast, and miscellaneous gravel.

Production of sand and gravel was reported from 82 of Michigan's 83 counties. Approximately forty-six percent of the total production was from 10 counties; in order of rank - Oakland, Livingston, Kent, Wayne, Ottawa, Tuscola, Ingham, Washtenaw, Macomb, and Allegan. Thirteen percent of the state total was produced in Oakland County. Each of the other counties produced more than 1,000,000 tons. About 75 percent of the state's total was reported by commercial producers and the remaining 25 percent was noncommercial production by county road commissions and other governmental agencies. Sixty-five percent of the total sand and gravel output was used in road construction and 20 percent for structural purposes.

SAND AND GRAVEL PRODUCTION, 1958-1962

Year	Building Use	Paving and Road Use	Molding Sand	Others*	Total	
					Quantity	Value
1958	7,960,834	27,653,570	1,792,447	2,464,351	39,871,202	34,615,648
1959	9,133,388	33,530,911	1,918,507	3,469,010	48,051,816	41,192,632
1960	8,642,775	31,610,214	1,699,124	4,958,082	46,910,195	39,304,400
1961	8,808,031	38,816,429	1,693,079	5,285,799	54,603,338	47,790,111
1962	9,294,985	30,853,349	2,004,347	5,410,100	47,562,781	42,029,146

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



SALT

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

During 1962, 4,273,667 short tons of salt valued at \$33,342,591 were produced. This was an increase of 10 percent in production over 1961, principally due to a greater demand for salt in highway ice control. Wayne ranked first of the six counties producing salt -- followed by Midland, St. Clair, Manistee, Muskegon, and Gratiot.

Fifty-three percent of the salt was used by chemical plants in Wayne, Midland, and Muskegon counties. Over 2.4 million tons of salt were used in the manufacture of soda ash, chlorine, and other chemicals. Twenty-one percent of the total production was dried and evaporated salt.

International Salt Company's new thermoadhesive process was in full operation producing a grade of rock salt equal or superior to any of the southern rock salt.

SALT PRODUCTION, 1958-1962

Year	Quantity Short Tons	Value	Percent U.S. Total	Rank in U.S.
1958	4,266,688	33,018,368	19.5	1
1959	4,485,145	35,724,796	17.8	3
1960	4,087,760	33,759,466	16.0	3
1961	3,885,130	31,283,571	15.1	4
1962	4,273,667	33,342,591	-	-

STONE

Stone production was 17,904,474 short tons valued at \$20,422,503 in 1962 compared to 18,815,855 short tons valued at \$21,991,980 in 1961. The decline was due to a smaller demand for roadstone and material for concrete aggregate. Approximately 90 percent of the limestone and dolomite produced in Michigan in 1961 was quarried in Presque Isle, Mackinac, and Chippewa counties. Dimensional limestone was produced in Charlevoix, Eaton, Huron, and Presque Isle counties. Sandstone for rough construction, rubble, and flagging stone was quarried in Alger, Baraga, and Jackson counties. Basalt was crushed and used for road construction in Dickinson, Houghton, and Ontonagon counties.

STONE PRODUCTION, 1962*

Commodity	Quantity (Short Tons)	Value
Limestone + dolomite		
Crushed	17,803,435	20,228,958
Dimensional	7,798	51,603
Sandstone		
Crushed	5,317	3,652
Dimensional	15,223	65,156
Basalt		
Crushed	72,701	73,134
TOTAL	17,904,474	20,422,503

* Does not include 10,383,683 short tons of limestone valued at \$8,533,760 used in the manufacture of cement and lime.

USES OF CRUSHED LIMESTONE AND DOLOMITE, 1962

Uses	Percent of Total	Quantity (Short Tons)	Value
Flux	59.4	10,512,738	11,068,740
Concrete and rd. metal	20.8	3,729,510	4,609,356
Chemical*	15.6	2,791,898	3,269,787
Agricultural	2.8	507,152	849,856
Other**	1.4	262,137	431,219
TOTAL	100.0	17,803,435	20,228,958

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

** Includes: Riprap, R.R. ballast, whiting, asphalt, dust for coal mines, mineral food, poultry grit, and ornamental concrete.

USES OF CRUSHED LIMESTONE AND DOLOMITE
1958-1962 (Short Tons)

Year	Flux	Concrete + Road Metal	Chemical*	Agriculture	Others**	Quantity	Value
1958	8,821,169	6,063,671	2,985,530	486,653	165,049	18,522,072	19,754,092
1959	10,805,705	5,311,121	3,729,465	434,116	131,526	20,411,933	22,432,225
1960	12,292,426	5,306,573	2,971,051	572,921	182,041	21,325,012	24,104,405
1961	10,565,419	4,649,369	2,839,444	520,680	166,458	18,741,370	21,749,506
1962	10,512,738	3,729,510	2,791,898	507,152	262,137	17,803,435	20,228,958

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

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

LIME

Production of lime increased 2 percent to 1,189,005 tons valued at \$15,793,427. Lime was produced in 13 plants in 12 counties during the year. Wayne County ranked first in production. The principal markets for lime were chemical, metallurgical, paper, water treatment, and sugar plants.

PRODUCTION OF LIME 1959-1962

Year	Production	Value	Rank
1959	861,808	11,747,657	4
1960	1,177,431	15,730,384	4
1961	1,169,036	15,526,791	3
1962	1,189,005	15,793,427	-

CLAY AND SHALE

Clay and shale were used for the manufacture of cement, brick, tile, pottery, and lightweight aggregate. During 1962 2,017,616 short tons of clay and shale, valued at \$2,278,127 were produced. Wayne County led in production and value with 28 percent of the state's total output, followed by Alpena, Monroe, and Saginaw counties. Approximately 77 percent of all raw clay and shale produced was used by the cement industry.

PRODUCTION OF CLAY AND SHALE AND CLAY PRODUCTS, 1958-1962

Year	Raw Clay and Shale Quantity (Short Tons)	Value	Value Clay Products
1958	1,948,444	2,191,909	6,786,247
1959	2,050,760	2,311,917	6,745,027
1960	1,989,149	2,250,950	6,587,345
1961	2,007,011	2,256,061	6,927,050
1962	2,017,616	2,278,127	7,033,870

GYPSUM

The output of crude gypsum continued to decline and the value was 6 per cent less than in 1961. Gypsum was quarried in Iosco County and mined in Kent County. The raw material was processed in Gypsum mills at National City; Grand Rapids; River Rouge; East Chicago, Indiana; Waukegan, Illinois; and Loraine, Ohio. Raw gypsum was also used as a retarder in cement manufacture.

Among the significant new developments during 1962 was the total introduction of ammonium nitrate, a low cost blasting agent, into the underground mines. The Grand Rapids Gypsum Company installed and operated successfully a pneumatic system for conveying fine ground gypsum for a distance of one-quarter mile.

GYPSUM PRODUCTION, 1958-1962

Year	Quantity (Short Tons)	Value	Percent of U. S.	Rank in U. S.
1958	1,330,889	4,924,431	14	2
1959	1,721,453	6,595,256	16	1
1960	1,462,781	5,608,519	15	2
1961	1,294,619	5,095,210	14	2
1962	1,278,065	4,791,311	-	-

MARL

Marl production decreased to 145,854 tons valued at \$88,476 in 1962. Commercial marl production was reported in 16 counties during 1962. Calhoun County ranked first, followed by Kalamazoo, Allegan, Barry, and Cass. These counties produced 77 percent of the state output. All marl was used for agricultural purposes.

MARL PRODUCTION, 1958-1962

Year	Quantity (Short Tons)	Value	Ranked in U.S.
1958	230,105	130,231	4
1959	201,387	118,240	4
1960	159,345	91,173	4
1961	157,351	99,578	3
1962	145,854	88,476	-

PRODUCTION AND VALUE
OF
MINERALS AND MINERAL PRODUCTS
BY COUNTIES

1962

All counties reported mineral production for 1962. Wayne, Marquette, Midland, Ontonagon, Alpena, and Iron counties led all others in value, contributing 47 per cent of the state's total.

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

All indicated tonnage is in short tons (2,000 lbs.) with the exception of iron ore, which is reported in long tons (2,240 lbs.). Mineral producers contributing production data for 1962 are listed, by county, below production data. Location of the operation, when known, is given by section, township and range, or nearest city to operation.

	Quantity	Value
ALCONA (71)		
Sand and gravel	252,841 tons	\$ 146,017
Alcona Co. Rd. Comm.	NE SW 7 25N 6E SE SW 7 26N 9E NW NE 11 26N 9E	Sand and gravel
Mich. State Hwy. Dept.		Sand and gravel
ALGER (76)		
Sand and gravel	136,837 tons	\$ 63,199
Stone	6,666 tons	3,333
Total value		\$ 66,532
Alger Co. Rd. Comm.	6 47N 20W	Sand and gravel Sandstone
Mich. State Hwy. Dept.		Sand and gravel
I. L. Whitehead Co.		Sand and gravel

	<u>Quantity</u>	<u>Value</u>
ALLEGAN (33)		
Sand and gravel (10th, 2%)	1,144,662 tons	\$ 827,241
Petroleum	234,332 bbls.	674,876
Natural gas (5th, 5.8%)	1,604,105 M.cu.ft.	384,985
Marl (3rd, 12%)	17,919 tons	9,460
Total Value		\$ 1,896,562
Allegan Co. Rd. Comm.	Sand and gravel	
City Manager, Allegan	Sand and gravel	
Cleo L. Arndt	Sand and gravel	
Gerald Arnsman	Marl	
Bernard Damveld	Marl	
Huitt and Son	Sand and gravel	
Mich. State Hwy. Dept.	Sand and gravel	
Emil Pavlak	Marl	
Pickitt and Schreur	Sand and gravel	
	Sand and gravel	
	Sand and gravel	
	Sand and gravel	
Harold O. Voss	Sand and gravel	
Ben Waanders	Sand and gravel	
John G. Yerington	Sand and gravel	

	<u>Quantity</u>	<u>Value</u>
ALPENA (5)		
Cement (1st), Stone, Sand and gravel, Shale (1st)		
Huron Portland Cement Co.	Shale	
	Cement	
	Limestone - crushed	
Percy McKinnon	Sand and gravel	
Mich. State Hwy. Dept.	Sand and gravel	

	<u>Quantity</u>	<u>Value</u>
ANTRIM (72)		
Sand and gravel	139,348 tons	\$ 119,906
Shale		
Antrim Co. Rd. Comm.	Sand and gravel	
Mich. State Hwy. Dept.	Sand and gravel	
Penn-Dixie Portland Cement Co.	Shale	

	<u>Quantity</u>	<u>Value</u>
ARENAC (40)		
Petroleum	367,179 bbls.	\$ 1,057,476
Stone	195,603 tons	250,897
Sand and gravel	69,000 tons	43,633
Total value		\$ 1,352,006
Arenac Co. Rd. Comm.	Limestone	
Bay Co. Rd. Comm.	Sand and gravel	
Eastman Gravel Pit	Limestone	
Iosco Co. Rd. Comm.	Sand and gravel	
Mich. State Hwy. Dept.	Limestone	
	Sand and gravel	
BARAGA (59)		
Iron ore	35,584 tons	\$ 250,511
Sand and gravel	149,188 tons	111,143
Stone	111 tons	3,103
Total value		\$ 364,757
Baraga Co. Rd. Comm.	Sand and gravel	
Champion Inc.	Sand and gravel	
Cleveland-Cliffs Iron Co.	Iron ore	
Ohio Mine	Sand and gravel	
Fox Valley Const. Co.	Sandstone	
Superior Natural Red Stone Quarry		

	<u>Quantity</u>	<u>Value</u>
BARRY (56)		
Sand and gravel	399,263 tons	\$ 356,115
Petroleum	16,211 bbls.	46,688
Marl (4th, 10%)	14,326 tons	9,495
Total value		\$ 412,298
Barry Co. Rd. Comm.	Sand and gravel	
Bender Gravel Co.	Sand and gravel	
Cole Gravel Co.	Sand and gravel	
William Currier	Marl	
E. R. Hamilton	Marl	
Nashville Gravel Co.	Sand and gravel	
Pickitt and Schreur Inc.	Sand and gravel	

	<u>Quantity</u>	<u>Value</u>
BAY (18)		
Cement, Petroleum (10th, 2.3%)		
Lime, Sand and gravel		\$ 7,176,248
Aetna Portland Cement Co.	NE 14 14N 5E	Cement
Mich. State Hwy. Dept.		Sand and gravel
Monitor Sugar Co. Div.	SE NE 31 14N 5E	Lime

BENZIE (79)		
Sand and gravel	49,771 tons	\$ 32,418
Benzie Co. Rd. Comm.		Sand and gravel
Mich. State Hwy. Dept.		Sand and gravel

BERRIEN (48)		
Sand and gravel	1,108,091 tons	\$ 1,039,866
Marl	5,930 tons	2,965
Total value		\$ 1,042,831

Arrowhead Silica Corp.	Bridgman	Sand
J. V. Burkett	St. Joseph	Sand and gravel
B. W. Crosby	23 8S 20W	Marl
Gridley Gravel Co.	Berrien Springs	Sand and gravel
Ireland and Lester Co.	NW NW 24 4S 19W	Sand and gravel
Kiell Excavating Co.	Niles (2 mi. N. on U.S. 31)	Sand and gravel
Martin Bros. Marl Co.	21 8S 20W	Marl
Mich. State Hwy. Dept.		Sand and gravel
Manley Sand Div.	5 & 8 6S 19W	Sand
Rynd Gravel Co.	NE 27 3S 17W	Sand and gravel
John G. Yerington	SE SE 28 6S 18W	Sand and gravel
	NE SW 36 7S 18W	
	Anderson Pit	
	Popovich Pit	
	Rohde Pit	

	<u>Quantity</u>	<u>Value</u>
BRANCH (69)		
Sand and gravel	289,761 tons	\$ 182,811
Marl	2,750 tons	1,650
Total value		\$ 184,461
Branch Co. Rd. Comm.	NE SE 19 6S 6W	Sand and gravel
Frisbie Bros.		Marl
Mich. State Hwy. Dept.		Sand and gravel
Stukey Contractors, Inc.	SW SE 4 6S 6W	Sand and gravel
Thompson Gravel Co.	Coldwater	Sand and gravel
Union City Gravel Co.	NE 9 5S 7W	Sand and gravel
Woodward Bldg. Mtls.	NW SW 21 6S 6W	Sand and gravel

CALHOUN (13)		
Petroleum (2nd, 19.8%)	3,399,048 bbls.	\$ 9,789,258
Natural gas (2nd, 13.0%)	3,597,230 M.cu.ft.	863,335
Sand and gravel	371,358 tons	306,404
Marl (1st, 25%)	36,373 tons	21,824
Total value		\$10,980,821

Carl Avery	2 Pits near Marshall	Marl
Battle Creek Gravel Co.	SW NE 15 1S 7W	Sand and gravel
	NW SE 33 1S 8W	
Case Bros.	Turtle Lake Pit	Marl
Cole Bros.	SW NE 33 1S 8W	Sand and gravel
Emil Combs	NE SE 18 4S 5W	Sand and gravel
Mich. State Hwy. Dept.		Sand and gravel
Pickitt and Schreur		Sand and gravel
Harlan Spoor	23 4S 7W	Marl
Stukey Contractors, Inc.		Sand and gravel

CASS (55)		
Sand and gravel	369,456 tons	\$ 292,451
Petroleum	41,607 bbls.	119,828
Marl (5th, 9%)	12,886 tons	8,926
Total value		\$ 421,205

LaVerne Brizendine	Riggs Pit	Marl
	Dibble Pit	
	Jewell Pit	
Cass Co. Rd. Comm.	NE NE 20 5S 13W	Sand and gravel
	NE SE 16 6S 15W	
	SE SE 17 6S 13W	
Nieb Concrete Products Co.	NW NW 15 7S 16W	Sand and gravel

		<u>Quantity</u>	<u>Value</u>
CASS (Contd.)			
Piphers Marl Service Poehlman and Sons Stukey Contractors Inc. Walkden Gravel Co. John G. Yerington	Long Lake, Porter Twp. 12 & 13 7S 16W SE SE 35 5S 16W NE SW 28 7S 13W	Marl Marl Sand and gravel Sand and gravel Sand and gravel	

CHARLEVOIX (77)			
Sand and gravel Stone		44,358 tons 9,400 tons	\$ 26,828 20,740
Total value			\$ 47,568
Charlevoix Co. Rd. Comm. Charlevoix Lime and Stone Co. Mich. State Hwy. Dept.	29 34N 8W	Sand and gravel Limestone - crushed Sand and gravel	

CHEBOYGAN (66)			
Sand and gravel, Stone			\$ 219,351
Afton Stone and Lime Co. Cheboygan Co. Rd. Comm.	SE 25 35N 2W SW SW 7 35N 2W SW NE 29 34N 2W SW SW 14 37N 1W	Limestone - crushed Sand and gravel	
Hugh H. Mason and Sons Mich. State Hwy. Dept.	SE SW 32 33N 3W	Sand and gravel Sand and gravel	

CHIPPEWA (22)			
Stone (3rd), Lime (3rd), Sand and gravel			\$ 4,642,069
Champion Inc. Drummond Dolomite, Inc. Fox Valley Constr. Co. Mich. State Hwy. Dept. Thornton Constr. Co., Inc. I. L. Whitehead Co.	E SW 36 42N 5E N NW 23 45N 2W	Sand and gravel Dolomite - crushed Sand and gravel Sand and gravel Sand and gravel Sand and gravel	

		<u>Quantity</u>	<u>Value</u>
CLARE (37)			
Petroleum (6th, 2.9%) Natural gas Sand and gravel Total value		490,187 bbls. 506,687 M.cu.ft. 8,962 tons	\$ 1,411,739 121,605 12,547 \$ 1,545,891
Mich. State Hwy. Dept.		Sand and gravel	

CLINTON (60)			
Sand and gravel Shale		504,457 tons	\$ 364,268
American Vitrified Prod. Boichot Concrete Prod. Clinton Co. Rd. Comm. Gillette Sand and Gravel Grand Ledge Clay Products Mich. State Hwy. Dept. Pickitt and Schreur Walling Gravel Co.	SE 34 5N 4W NE SW 3 5N 2W SE 34 5N 4W SE NW 34 8N 2W	Shale Sand and gravel Sand and gravel Sand and gravel Shale Sand and gravel Sand and gravel Sand and gravel	

CRAWFORD (52)			
Petroleum Natural gas Natural gas liquids (3rd, 4.4%) Sand and gravel Total value		134,099 bbls. 651,805 M.cu.ft. 1,886,148 gals. 72,072 tons	\$ 386,205 156,433 94,307 38,263 \$ 675,208
Crawford Co. Rd. Comm.	SE NW 27 25N 2W NW SW 9 25N 3W SW SW 27 26N 3W S SW 28 26N 3W	Sand and gravel	
Jackson Sand and Gravel		Sand and gravel	

		<u>Quantity</u>	<u>Value</u>
DELTA (61)			
Sand and gravel, Stone			\$ 287,604
Bichler Bros.	NE 12 39N 23W SW 1 39N 23W	Sand and gravel Limestone - crushed	
Cloverland Milling and Supply Co.	NE SE 16 40N 22W	Sand and gravel	
Delta Co. Rd. Comm.	SE SW 10 37N 24W NE NE 5 38N 24W SW NE 12 39N 23W NE SW 24 40N 20W NW NE 28 40N 23W	Sand and gravel	
Gunnar F. Holmberg Mich. State Hwy. Dept.		Sand and gravel Sand and gravel	

DICKINSON (23)			
Iron Ore		467,027 tons	\$ 4,203,318
Stone		8,897 tons	116,816
Sand and gravel		100,496 tons	89,516
Total value			<u>\$ 4,409,650</u>
Champion, Inc. Dickinson Co. Rd. Comm.	SE NW 7 41N 27W C SE 20 42N 28W SE 28 42N 30W	Sand and gravel Stone Sand and gravel	
M. A. Hanna Co. Groveland Open Pit Mich. Metro-Mining Co. Superior Rock Prod. Co.	31 42N 29W NW 35 42N 28W SW SE 30 42N 29W	Iron ore Dolomite - crushed Dolomite - crushed	

EATON (31)			
Clay products (3rd), Sand and gravel, Stone, Shale			\$ 2,003,716
American Vitrified Prod.	NE 10 4N 4W	Tile	
Cheney Limestone Co.	NE 29 1N 6W	Limestone - crushed	
Eaton Co. Rd. Comm.	SE NW 5 1N 3W NE NE 19 1N 5W SE SW 32 2N 3W SE NW 23 4N 6W	Sand and gravel	
Gilliland Constr. Co. Grand Ledge Clay Prod. Mich. State Hwy. Dept. Pryor Bros. Stukey Contractors, Inc. Vermontville Gravel Co. Whittum Gravel Co.	SE 3 4N 6W W NE 20 3N 6W NE SE 5 1N 3W	Sand and gravel Shale - tile Sand and gravel Sand and gravel Sand and gravel Sand and gravel	

		<u>Quantity</u>	<u>Value</u>
EMMET (15)			
Cement, Stone Sand and gravel			
Emmet Co. Rd. Comm. Mich. State Hwy. Dept. Penn-Dixie Cement Corp.	2 34N 6W	Sand and gravel Sand and gravel Limestone - crushed Portland Cement	
GENESEE (53)			
Sand and gravel		720,377 tons	\$ 626,204
Petroleum		2,857 bbls.	8,228
Total value			<u>\$ 634,432</u>
Ferguson Excavating Co. Kurtz Gravel Co.	Richfield Twp. SE SW 1 8N 7E SE NE 20 8N 7E	Sand and gravel Sand and gravel	
A. F. Leffler and Sons Mathews Gravel Co. Mich. State Hwy. Dept. Otisville Stone Co. John Post and Sons Saginaw Core Sand Co. Justus Snellenberger	NW NW 2 9N 8E SW SE 1 8N 7E S NE 13 9N 8E SW NW 7 6N 5E SE NE 28 9N 8E SE 16 9N 5E	Sand and gravel Sand and gravel Sand and gravel Sand and gravel Sand and gravel Sand and gravel Sand and gravel	
GLADWIN (42)			
Petroleum (9th, 2.5%) Sand and gravel		434,587 bbls. 6,272 tons	\$ 1,251,611 6,781
Total value			<u>\$ 1,258,392</u>
Mich. State Hwy. Dept.		Sand and gravel	
GOGEBIC (12)			
Iron (3rd, 15.9%) Sand and gravel		1,480,383 tons 354,941 tons	\$ 11,994,917 342,338
Total value			<u>\$ 12,337,255</u>
Champion Inc. Fox Valley Const. Co. Gogebic Co. Rd. Comm.	NW SE 17 45N 38W NE SW 17 45N 38W SW SE 13 45N 39W SE SW 8 48N 46W	Sand and gravel Sand and gravel Sand and gravel	

		<u>Quantity</u>	<u>Value</u>
GOGEBIC (Contd.)			
Gogebic Oil Co.	33 47N 46W		Sand and gravel
Ironwood City Hwy. Dept.	NE SE 34 47N 47W		Sand and gravel
Mich. State Hwy. Dept.			Sand and gravel
Pickands Mather and Co.			Iron ore
Geneva-Davis Mine	18, 19 47N 46W		
Newport-Bonnie Mine	24 47N 46W		
Peterson Mine	16, 17 47N 46W		

		<u>Quantity</u>	<u>Value</u>
GRAND TRAVERSE (81)			
Sand and gravel			
Mich. State Hwy. Dept.			Sand and gravel
Wysong Gravel Co.	4 27N 11W		Sand and gravel
	NW NE 36 28N 11W		

		<u>Quantity</u>	<u>Value</u>
GRATIOT (21)			
Bromine (3rd), Salt, Magnesium compounds, Calcium-magnesium chloride, Petroleum, Sand and gravel, Natural gas			
Rich Cousineau			Sand and gravel
Gratiot Co. Rd. Comm.	NW SE 34 11N 4W		Sand and gravel
	NW NW 18 12N 4W		
Mich. Chemical Corp.	St. Louis		Bromine, Calcium- magnesium chloride, Magnesium compounds, Salt
Mich. State Hwy. Dept.			Sand and gravel
G. C. Nelson	North Star		Sand and gravel
North Star Gravel Co.	NW SE 22 10N 2W		Sand and gravel
	NE SE 34 11N 4W		
P. and B. Gravel Co.	9 10N 1W		Sand and gravel

	<u>Quantity</u>	<u>Value</u>
HILLSDALE (9)		
Petroleum (1st, 23%)	3,911,239 bbls.	\$ 11,264,368
Natural gas liquids (1st, 74%)	30,432,373 gals.	1,521,619
Natural gas (3rd, 11.7%)	3,242,017 M.cu.ft.	778,084
Sand and gravel	488,350 tons	423,171
Marl	1,632 tons	1,287
Total value		\$ 13,988,529

Bundy Hill Gravel Co.	7 & 8 5S 1W	Sand and gravel
H. Eckley	8S 2W	Sand and gravel
Hillsdale Co. Rd. Comm.	NE NE 15 5S 2W	Sand and gravel
	NE SE 11 5S 3W	
	SE NW 22 5S 4W	
	SE SE 9 6S 3W	
	NE NW 9 6S 3W	
	SW SE 5 7S 2W	
	NW NE 10 7S 2W	
	SW SE 25 7S 2W	
	NW NE 33 7S 3W	
	SE SE 1 7S 4W	
	SE NE 30 7S 4W	
John Hess	14 5S 3W	Marl
Hoover Bros.	NE SE 23 8S 2W	Sand and gravel
Northwest Material, Inc.	SW 23 8S 2W	Sand and gravel
Art Russell's Concrete	14 6S 3W	Sand and gravel
Lowell W. Stukey	6S 4W	Marl

	<u>Quantity</u>	<u>Value</u>
HOUGHTON (17)		
Copper (2nd, 17%)	24,072,160 lbs.	\$ 7,366,081
Stone	62,431 tons	59,367
Sand and gravel	39,051 tons	44,586
Total value		\$ 7,470,034

Calumet and Hecla, Inc.		Copper
Centennial Mine	18 56N 32W	
Osceola Mine	23 56N 33W	
Reclamation	Hubbell	
Copper Range Co.		Copper
Champion Mine	31 54N 34W	
Houghton Co. Rd. Comm.	SE 15 54N 34W	Trap rock - crushed
	NW NE 17 56N 32W	
	Arcadian Mine	
	SE NW 17 53N 35W	Sand and gravel
	NE NW 5 56N 32W	
	NW NW 12 56N 33W	
Mich. State Hwy. Dept.		Sand and gravel
Quincy Mining Co.		
Reclamation	Mason	Copper
Superior Sand and Gravel Co.	NE SW 27 55N 34W	Sand and gravel

	<u>Quantity</u>	<u>Value</u>
HURON (49)		
Stone (5th), Sand and gravel, Lime, Petroleum		\$ 995,863
Huron Co. Rd. Comm.	SE SE 17 16N 13E	Sand and gravel
Mich. State Hwy. Dept.		Sand and gravel
Michigan Sugar Co.	Sebewaing	Lime
Ed Murawski	NW SW 31 17N 14E	Sand and gravel
Vollmer Sand and Gravel	NE SE 20 15N 11E	Sand and gravel
Wagner Sand and Gravel	SE NE 20 16N 13E	Sand and gravel
	NE SW 27 16N 15E	
	SW SW 22 16N 15E	
The Wallace Stone Co.	SW NE 5 16N 10E	Limestone - crushed and dimensional

	<u>Quantity</u>	<u>Value</u>
INGHAM (45)		
Sand and gravel (7th, 3%)	1,272,500 tons	\$ 995,319
Lime	6,735 tons	121,000
Total value		\$ 1,116,319
Board of Water and Light	Lansing	Lime
Cheney Gravel Co.	SW SE 11 3N 2W	Sand and gravel
Fisher Supply Co.		Sand and gravel
Ford and Co.	SE 19 3N 2W	Sand and gravel
O. E. Gooding and Co.		Sand and gravel
S. E. Ketchum and Sons	NW 36 3N 2W	Sand and gravel
Mason Gravel Co.	25 2N 2W	Sand and gravel
Mich. State Hwy. Dept.		Sand and gravel
Scarlett Gravel Co.	25 3N 2W	Sand and gravel
Skyway Sand and Gravel Co.		Sand and gravel
Ronald Weaver	11 1N 2W	Sand and gravel
	14, 34 2N 1E	
	9 2N 1W	
	7, 24, 25, 34 2N 2W	
	25, 35 3N 2W	
West Lansing Gravel Co.	NE 10 4N 2W	Sand and gravel

	<u>Quantity</u>	<u>Value</u>
IONIA (54)		
Sand and gravel	670,225 tons	\$ 527,202
Petroleum	1,002 bbls.	2,886
Total value		\$ 530,088
Central Mich. Sand and Gravel		Sand and gravel
Ionia Co. Rd. Comm.	SW NW 29 6N 5W	Sand and gravel
	NW SE 24 7N 6W	
	SW NE 14 7N 5W	
	SW NE 28 8N 8W	
	SE NE 2 4N 7W	
	SW NW 19 8N 5W	
	30 7N 5W	
Harold L. Martin		Sand and gravel
Mich. State Hwy. Dept.		Sand and gravel
Pickitt and Schreur, Inc.		Sand and gravel

	<u>Quantity</u>	<u>Value</u>
IOSCO (25)		
Gypsum (1st)		
National Gypsum Co.	35 22N 6E	Gypsum
U. S. Gypsum Co.	27 21N 7E	Gypsum

	<u>Quantity</u>	<u>Value</u>
IRON (6)		
Iron (2nd, 32%)	2,986,344 tons	\$ 21,997,028
Sand and gravel	81,489 tons	74,707
Total value		\$ 22,071,735
M. A. Hanna Co.		Iron ore
Cannon Mine	36 43N 35W	
Hiawatha Mine 1 & 2	35, 36 43N 35W	
Homer Mine	22, 23 43N 35W	
Wauseca-Aronson Mine	23 43N 35W	
Inland Steel Co.		Iron ore
Bristol Mine	19, 20 43N 32W	
Sherwood Mine	23 43N 35W	
Iron Co. Rd. Comm.	SW SW 29 42N 32W	Sand and gravel
	NW NE 18 43N 32W	
	SW SW 7 43N 35W	
	SE NW 1 43N 36W	
	SW SE 8 44N 33W	
	SE NW 15 44N 33W	
	NE NE 22 44N 33W	
	NE NW 36 44N 34W	
	NW NW 10 44N 37W	
	NW SW 20 45N 33W	

		<u>Quantity</u>	<u>Value</u>
IRON (Contd.)			
Mich. State Hwy. Dept. Republic Steel Corp. Tobin-Columbia Mine	30, 31 43N 32W	Sand and gravel Iron ore	
ISABELLA (32)			
Petroleum (7th, 3%)		486,842 bbls.	\$ 1,402,105
Sand and gravel		765,238 tons	525,020
Natural gas		106,673 M.cu.ft.	25,602
Natural gas liquids		331,959 gals.	16,598
Marl		2,500 tons	1,500
Total value			\$ 1,970,825
Gatehouse Bros.	35 15N 6W	Marl	
George Hubscher and Son	22 14N 5W 7 16N 3W	Sand and gravel	
Isabella Co. Hwy. Dept. C. Utterback	35 15N 6W	Sand and gravel Sand and gravel	
JACKSON (16)			
Petroleum (3rd, 15%)		2,611,876 bbls.	\$ 7,522,203
Natural gas (4th, 8%)		2,231,750 M.cu.ft.	534,908
Sand and gravel		509,008 tons	413,041
Stone		38,763 tons	115,272
Marl		2,800 tons	1,680
Total value			\$ 8,587,104
Barnes Brothers	Horton	Marl	
Jackson Co. Rd. Comm.	SE SE 29 1S 1W	Sand and gravel	
Jeffery Limestone Co.	SE 30 2S 2W	Limestone - crushed	
Klumpp Bros. Gravel Co.	SE SE 1 2S 2E	Sand and gravel	
Mich. State Hwy. Dept.		Sand and gravel	
Original Sandstone Quarry	NE NW 6 4S 2E	Sandstone	
Palmer Sand and Gravel	SW NW 8 3S 1E	Sand and gravel	
Ray Sandstone Quarry	NE NW 6 4S 2E	Sandstone	
Star Sandstone Co.	SW SE 31 3S 2E	Sandstone	
Gordon D. Stevick	NW SE 26 2S 1W SE SW 17 3S 2E	Sand and gravel	
Willson Bros.	Rives Junction	Sand and gravel	

		<u>Quantity</u>	<u>Value</u>
KALAMAZOO (44)			
Sand and gravel		977,611 tons	\$ 1,153,915
Marl (2nd, 21%)		31,078 tons	18,228
Petroleum		145 bbls.	418
Total value			\$ 1,172,561
American Aggregates Corp.	SW NW 15 1S 11W	Sand and gravel	
Lee Bertrand	Paw Paw Lake	Marl	
Roy Coville	18 3S 9W	Marl	
Consumers Sand and Gravel Co.	SE NE 13 2S 11W	Sand and gravel	
David Flora	Schoolcraft	Marl	
Gravel Producers, Inc.	Portage and Cooper Twps.	Sand and gravel	
Casper Haas Co.	NE SE 8 2S 11W	Sand and gravel	
Kenneth Harter		Marl	
Hayward Dry Marl		Marl	
Kalamazoo Co. Rd. Comm.	NE NW 34 1S 11W	Sand and gravel	
Mich. State Hwy. Dept.		Sand and gravel	
Peters Construction Co.		Sand and gravel	
Pickitt and Schreur Inc.	NE NW 34 1S 11W	Sand and gravel	
Fred Runz	30 4S 10W	Marl	
KALKASKA (62)			
Sand and gravel		159,980 tons	\$ 197,909
Petroleum		22,996 bbls.	66,217
Natural gas		62,167 M.cu.ft.	13,720
Total value			\$ 277,846
Kalkaska Co. Rd. Comm.	25N 8W	Sand and gravel	
Mich. State Hwy. Dept.		Sand and gravel	
KENT (27)			
Sand and gravel (3rd, 4%), Gypsum, Petroleum, Natural gas			\$ 2,787,026
Bestwall Gypsum Co.	SW 34 7N 12W	Gypsum	
Coit Ave. Gravel Co.	29 8N 11W	Sand and gravel	
Rich Cousineau		Sand and gravel	
Cross and White		Sand and gravel	
Ed DeVries and Sons	NE 22 7N 12W	Sand and gravel	
Grand Rapids, City Engineer		Sand and gravel	
Grand Rapids Gravel Co.	NE NW 16 6N 12W SW SW 33 7N 12W	Sand and gravel	
	Pit No. 12		
	Pit No. 14		
Kent Co. Rd. Comm.		Sand and gravel	

	Quantity	Value
KENT (Contd.)		
Mich. State Hwy. Dept. Paul C. Miller		Sand and gravel
Northeast Gravel Co.	NE SW 24 8N 11W	Sand and gravel
Pickitt and Schreur	NE NW 25 5N 12W	Sand and gravel
	NE NE 10 6N 9W	Sand and gravel
	SW SE 23 8N 11W	
Riverside Sand and Gravel Co.	SE SE 33 7N 12W	Sand and gravel

	Quantity	Value
KEWEENAW (24)		
Copper (3rd, 9%)	13,075,067 lbs.	\$ 4,000,970
Sand and gravel	219,500 tons	127,995
Total value		\$ 4,128,965
Calumet and Hecla, Inc.		Copper
Ahmeek No. 2	28 57N 32W	
Allouez No. 3	32 57N 32W	
Peninsula	28 57N 32W	
Seneca No. 2	27 57N 32W	
Keweenaw Co. Rd. Comm.		Sand and gravel

	Quantity	Value
LAKE (74)		
Sand and gravel, Petroleum		
Rich Cousineau		Sand and gravel
Lake Co. Rd. Comm.	SE NE 23 18N 13W	Sand and gravel
	NW SE 10 20N 14W	
Mich. State Hwy. Dept.		Sand and gravel

	Quantity	Value
LAPEER (57)		
Sand and gravel, Calcium- magnesium chloride, Petroleum		\$ 401,870
O. E. Gooding and Co.		Sand and gravel
Lapeer Co. Rd. Comm.	NE SE 11 6N 10E	Sand and gravel
	NE NW 1 8N 9E	
	SE SW 30 8N 10E	
	SW SE 16 9N 10E	
	NW SW 28 9N 12E	
Mich. State Hwy. Dept.		Sand and gravel
Pine Sand and Gravel	NW 12 7N 10E	Sand and gravel
Wilkinson Chemical Co.	28 10N 10E	Calcium-magnesium chloride

	Quantity	Value
LEELANAU (75)		
Sand and gravel	112,392 tons	\$ 66,978
Leelanau Co. Rd. Comm.	NE NW 16 28N 13W	Sand and gravel
	SW SE 12 29N 13W	
	SW NW 19 32N 10W	
Mich. State Hwy. Dept.		Sand and gravel

	Quantity	Value
LENAWEE (30)		
Cement, Sand and gravel, Clay products, Petroleum, Clay		\$ 2,050,671
Adrian Sand and Gravel	Adrian	Sand and gravel
Brady's Sand and Gravel	SE 32 5S 4E	Sand and gravel
Comfort Brick and Tile Co.	SW 2 6S 5E	Clay and tile
O. E. Gooding and Co.	SW NE 13 8S 1E	Sand and gravel
Lenawee Co. Rd. Comm.	SE SE 4 6S 4E	Sand and gravel
Mich. State Hwy. Dept.		Sand and gravel
Peninsular Portland Cement	NE 5 5S 1E	Portland Cement
	SW 5 7S 1E	Clay
Pickitt and Schreur, Inc.		Sand and gravel
Stamm Bros. Gravel Co.	SW NE 19 7S 3E	Sand and gravel
Tecumseh Gravel Co.	SW NE 4 6S 4E	Sand and gravel
Tecumseh Materials Div.	NE SE 4 6S 4E	Sand and gravel

	Quantity	Value
LIVINGSTON (26)		
Sand and gravel	3,477,906 tons	\$ 3,674,134
Natural gas	398,491 M.cu.ft.	95,638
Total value		\$ 3,769,772
American Aggregates Corp.	NE NE 11 1N 6E	Sand and gravel
	NE 24 2N 6E	
D. and J. Gravel Co.	SW SW 32 3N 4E	Sand and gravel
Fenton Gravel Co., Inc.		Sand and gravel
O. E. Gooding and Co.		Sand and gravel
Mich. State Hwy. Dept.		Sand and gravel

		<u>Quantity</u>	<u>Value</u>
LUCE (82)			
Sand and gravel		19,746 tons	\$ 14,420
Luce Co. Rd. Comm.	SW SE 11 45N 10W	Sand and gravel	
MACKINAC (20)			
Stone (2nd), Sand and gravel			\$ 5,873,198
Gilliland Constr. Co.		Sand and gravel	
Inland Lime and Stone Co.	6 42N 12W	Limestone - crushed	
Mackinac Aggregates Corp.	7 & 8 42N 1W	Sand and gravel	
Mackinac Co. Hwy. Dept.		Sand and gravel	
Mike Mangene	SE NE 24 42N 1E	Sand and gravel	
Michigan Limestone Div.			
U.S. Steel Corp.	10 42N 1E	Dolomite - crushed	
Mich. State Hwy. Dept.		Sand and gravel	
Lawrence Tamlyn	SW SW 6 40N 3W	Sand and gravel	
I. L. Whitehead Co.	NW NE 36 42N 5W	Sand and gravel	

		<u>Quantity</u>	<u>Value</u>
MACOMB (47)			
Sand and gravel (9th, 3%)		1,191,369 tons	\$ 928,943
Natural gas		500,581 M.cu.ft.	120,139
Petroleum		2,473 bbls.	7,122
Total value			\$ 1,056,204
Advance Bldg. Materials Inc.	NE NW 8 4N 12E	Sand and gravel	
	SE NE 31 3N 12E		
Great Lakes Gravel Co.	NW NW 31 3N 12E	Sand and gravel	
Hygrade Sand and Gravel Co.	NE 8 4N 12E	Sand and gravel	
Macomb Co. Rd. Comm.	8 4N 12E	Sand and gravel	
	22 5N 12E		
	19 5N 13E		
Ray Malow	SE SE 5 4N 12E	Sand and gravel	
Macomb Sand and Gravel	SW SW 30 3N 12E	Sand and gravel	
Maertens Sand and Gravel	SE NE 30 3N 12E	Sand and gravel	
	SE SW 5 4N 12E		
Louis Marsack and Sons	NW NW 3 1N 13E	Sand and gravel	
Mich. State Hwy. Dept.		Sand and gravel	
Molesworth Contracting	Carter Pit	Sand and gravel	
Morgan Sand and Gravel	30 3N 12E	Sand and gravel	
S. K. Rogers	21 3N 14E	Sand and gravel	
Smith Sand and Gravel Co.	NW SE 8 4N 12E	Sand and gravel	
Underwood Sand and Gravel Co.	19 3N 12E	Sand and gravel	

		<u>Quantity</u>	<u>Value</u>
MANISTEE (10)			
Salt (4th), Magnesium compounds (1st), Bromine (2nd), Sand and gravel, Lime, Calcium chloride			\$ 13,970,826
Frank L. Gauthier	23 23N 16W	Sand and gravel	
Gronlund Gravel Co.	SE 7 23N 14W	Sand and gravel	
	SW NE 7 23N 14W		
Great Lakes Chemical Corp.	SE SW 18 21N 16W	Bromine	
Manistee Co. Rd. Comm.	6 & 7 23N 14W	Sand and gravel	
Manistee Salt Works	Manistee	Salt	
Michigan Chemical Corp.	NW 7 21N 16W	Bromine	
Mich. State Hwy. Dept.		Sand and gravel	
Morton Chemical Co.	12 21N 7W	Bromine, Calcium-chloride, Magnesium compounds	
Morton Salt Co.	Manistee	Salt	
Sand Products Corp.	N $\frac{1}{2}$ 11 21N 17W	Sand	
Sievert Bros.	Manistee	Sand and gravel	
Standard Lime and Cement Co.	SE 18 21N 16W	Magnesium compounds	

		<u>Quantity</u>	<u>Value</u>
MARQUETTE (2)			
Iron (1st, 47%)		4,464,863 tons	\$ 41,559,306
Sand and gravel		1,053,981 tons	826,658
Total value			\$ 42,385,964
Champion, Inc.		Sand and gravel	
The Cleveland-Cliffs Iron Co.		Iron ore	
Athens-Bunker Hill Mine	6 47N 26W		
Cliffs Shaft Mine	3, 9, 10 47N 27W		
Humbolt Open Pit	10, 15 47N 29W		
Maas Mine	31 48N 26W		
Mather "A" Mine	2 47N 27W		
Mather "B" Mine	1 47N 27W		
Republic Open Pit	7 46N 29W		
Tilden Open Pit	26 47N 27W		
Hocking Constr. Co.		Sand and gravel	
Kenneth Hogins and Sons		Sand and gravel	
Inland Steel Co.		Iron ore	
Greenwood Mine	14,23 47N 28W		
City of Ishpeming		Sand and gravel	
Jones and Laughlin Steel Corp.		Iron ore	
Tracy Mine	7, 8 48N 26W		
Lake Superior and Ishpeming R.R.		Sand and gravel	
A. Lindberg and Sons, Inc.	SE SE 8 47N 24W	Sand and gravel	
	NW NW 17 47N 25W		
	NE NW 5 47N 26W		
	SE SE 36 48N 28W		
City Engineer, Marquette		Sand and gravel	

		<u>Quantity</u>	<u>Value</u>
MARQUETTE (Contd.)			
Marquette Co. Rd. Comm.	NE NW 1 45N 23W SE SW 36 46N 23W NW SE 4 47N 29W	Sand and gravel	
North Range Mining Co. Champion	31 48N 29W	Iron ore	
I. L. Whitehead Co.		Sand and gravel	

MASON (11)

Calcium chloride (1st), Magnesium compounds (2nd),
Lime (2nd), Sand and gravel, Petroleum, Bromine,
Natural gas, Natural gas liquids

The Dow Chemical Co.	NW SW 23 18N 18W	Bromine, Calcium chloride, Magnesium compounds, Lime
Harbison-Walker Refrac- tories	NE SE 23 18N 18W	Magnesium compounds
Mason Co. Rd. Comm.	SW SW 11 18N 15W 18 18N 16W	Sand and gravel
Mich. State Hwy. Dept. Sargent Sand Co.	SW 33 19N 18W	Sand and gravel Sand

MECOSTA (65)

Sand and gravel	192,432 tons	\$ 117,817
Petroleum	31,351 bbls.	90,291
Natural gas	150,280 M.cu.ft.	36,067
Marl	3,375 tons	2,025
Total value		<u>\$ 246,200</u>

Central Concrete Products Co., Inc.		Sand and gravel
Rich Cousineau		Sand and gravel
Mecosta Co. Rd. Comm.	NE NE 32 15N 9W	Sand and gravel
Mich. State Hwy. Dept.		Sand and gravel
Orville Truman	13N 8W	Marl

		<u>Quantity</u>	<u>Value</u>
MENOMINEE (51)			
		Lime, Sand and gravel	\$ 824,964
Fox Valley Const. Co.		Sand and gravel	
Menominee Co. Rd. Comm.	SE NE 33 35N 26W NE NE 9 39N 25W	Sand and gravel	
Mich. State Hwy. Dept. Limestone Products Div., Northwestern-Hanna Fuel Co.	Menominee	Sand and gravel Lime	
I. L. Whitehead Co.		Sand and gravel	
Wurth Concrete and Aggregates		Sand and gravel	

MIDLAND (3)

		Bromine (1st), Magnesium compounds (3rd), Calcium chloride (2nd), Salt (2nd), Petroleum, Iodine (1st), Potash (1st), Sand and gravel, Natural gas, Natural gas liquids
The Dow Chemical Co.	Midland	Bromine, Calcium chloride, Iodine, Magnesium compounds, Potash, Salt
Fisher Sand and Gravel Co.	NE NW 19 14N 2E	Sand and gravel
Mich. State Hwy. Dept.		Sand and gravel
Saginaw Core Sand Co.	SE 21 13N 2E	Sand

MISSAUKEE (28)

Petroleum (5th. 4%)	658,522 bbls.	\$ 1,896,543
Natural gas	1,018,124 M.cu.ft.	244,350
Sand and gravel	10,800 tons	7,020
Natural gas liquids	114,644 gals.	5,732
Total value		<u>\$ 2,153,645</u>
Missaukee Co. Hwy. Dept.		Sand and gravel

		<u>Quantity</u>	<u>Value</u>
MONROE (8)			
Cement (2nd), Clay products (2nd), Stone (4th), Petroleum, Sand and gravel, Clay (3rd)			\$ 18,007,027
Dundee Cement Co.	7 6S 7E	Cement	
		Limestone	
		Clay	
The France Stone Co.	SE 7 7S 9E	Dolomite - crushed	
Maybee Stone Co.	29 5S 8E	Dolomite - crushed	
Mich. State Hwy. Dept.		Sand and gravel	
Michigan Stone Co.	SW 25 8S 6E	Dolomite - crushed	
Monroe Co. Rd. Comm.	SW 13 6S 7E	Dolomite - crushed	
F. W. Ritter Sons Co. Inc.	SE 16 5S 10E	Clay - pottery	

		<u>Quantity</u>	<u>Value</u>
MONTCALM (36)			
Petroleum (8th, 3%)		461,013 bbls.	\$ 1,349,717
Sand and gravel		358,120 tons	159,324
Natural gas		238,979 M.cu.ft.	57,355
Total value			\$ 1,566,396
Rich Cousineau		Sand and gravel	
Mich. State Hwy. Dept.		Sand and gravel	
Montcalm Co. Rd. Comm.	NE SE 13 10N 6W	Sand and gravel	
	NE NE 24 10N 6W		
	NE NW 10 11N 8W		
	SE SE 8 12N 5W		

		<u>Quantity</u>	<u>Value</u>
MONTMORENCY (83)			
Sand and gravel, Petroleum			
Gilliland Constr. Co.		Sand and gravel	
Mich. State Hwy. Dept.		Sand and gravel	

		<u>Quantity</u>	<u>Value</u>
MUSKEGON (35)			
Sand and gravel, Salt, Lime, Petroleum, Natural gas			\$ 1,879,205
Hooker Electro-Chemical Co.	NE 31 12N 17W	Salt	
Mich. State Hwy. Dept.		Sand and gravel	
Paul C. Miller		Sand and gravel	
Muskegon Gravel Co.	SW SW 33 10N 13W	Sand and gravel	
Nugent Sand Co.	3 9N 17W	Sand	
Sand Products Corp.	E $\frac{1}{2}$ 28 10N 17W	Sand	
Whitehall Gravel Co.		Sand and gravel	

		<u>Quantity</u>	<u>Value</u>
NEWAYGO (63)			
Sand and gravel		159,555 tons	\$ 114,917
Petroleum		38,110 bbls.	109,757
Natural gas		180,151 M.cu.ft.	43,236
Marl		2,700 tons	1,620
Total value			\$ 269,530
Rich Cousineau	Paris	Sand and gravel	
Grant Tufa Lime Co.	29 11N 11W	Marl	
K. and V. Gravel Co.	NE NW 21 12N 12W	Sand and gravel	
Mich. State Hwy. Dept.		Sand and gravel	
Newaygo Co. Rd. Comm.		Sand and gravel	

		<u>Quantity</u>	<u>Value</u>
OAKLAND (19)			
Sand and gravel (1st, 13%)		6,372,439 tons	\$ 6,080,686
Petroleum		3,821 bbls.	11,004
Natural gas		232 M.cu.ft.	56
Total value			\$ 6,091,746
American Aggregates Corp.	NE NW 22 5N 10E	Sand and gravel	
Floyd Beardslee	S $\frac{1}{2}$ SE 2 2N 10E	Sand and gravel	
	NE NW 11 2N 10E		
Ray Betham and Son	South Lyon	Sand and gravel	
Dachille Trucking Co.		Sand and gravel	
Foley and Beardslee	NW NW 7 3N 9E	Sand and gravel	
	SW SE 36 4N 8E		
Faulkender Sand and Gravel, Inc.		Sand and gravel	
J. Gladstone Inc.	NE 8 3N 11E	Sand and gravel	
O. E. Gooding and Co.	NW NE 33 2N 7E	Sand and gravel	
	NE SE 34 2N 7E		
	SW SW 32 5N 9E		
Holly Sand and Gravel Div.	NE SE 32 5N 8E	Sand and gravel	

		<u>Quantity</u>	<u>Value</u>
OAKLAND (Contd.)			
John R. Sand and Gravel Co.	SE 4 4N 10E		Sand and gravel
Kemler Bros.	SW SW 36 5N 11E		Sand and gravel
Koenig Coal and Supply Co.	NW 1 3N 8E		Sand and gravel
	SW SE 24 5N 10E		
Mich. State Hwy. Dept.			Sand and gravel
Mickelson Corp.	NE NW 21 3N 8E		Sand and gravel
New Hudson Sand & Gravel	NW NE 33 2N 7E		Sand and gravel
Oxford Mining Co.	4 4N 8E		Sand and gravel
Oakland Co. Rd. Comm.			Sand and gravel
Orvis Bros	Milford		Sand and gravel
Salem Gravel and Const. Co., Inc.	E NE 2 4N 9E		Sand and gravel
South Flint Gravel Co.	Holly		Sand and gravel
Underwood Sand and Gravel Co.	SW 2 3N 10E		Sand and gravel
Walker Sand and Gravel	NE SE 34 2N 7E		Sand and gravel
	SE SW 2 2N 11E		
F. S. Ward	NW NE 7 3N 9E		Sand and gravel
Wilkinson Sand and Gravel Co.	SE NW 35 3N 10E		Sand and gravel

		<u>Quantity</u>	<u>Value</u>
OCEANA (50)			
Petroleum		273,329 bbls.	\$ 787,188
Sand and gravel		176,610 tons	119,671
Natural gas		7,700 M.cu.ft.	1,848
Total value			\$ 908,707
Beckman Bros.	NE SW 24 14N 17W		Sand and gravel
Mich. State Hwy. Dept.			Sand and gravel
Oceana Co. Hwy. Dept.	SE NE 35 14N 15W		Sand and gravel

		<u>Quantity</u>	<u>Value</u>
OGEMAW (39)			
Petroleum		399,186 bbls.	\$ 1,148,556
Natural gas		720,023 M.cu.ft.	172,806
Sand and gravel		119,325 tons	53,318
Total value			\$ 1,374,680
Ehinger Bros.	West Branch		Sand and gravel
Mich. State Hwy. Dept.			Sand and gravel
Ogemaw Co. Rd. Comm.	NE SE 3 21N 1E		Sand and gravel
	NE SE 6 21N 2E		
	NW SW 5 22N 2E		
	NE SE 6 22N 2E		
	NW SE 33 22N 3E		

		<u>Quantity</u>	<u>Value</u>
ONTONAGON (4)			
Copper (1st, 74%)		106,613,451 lbs.	\$ 32,623,716
Silver			435,618
Sand and gravel		223,876 tons	175,113
Stone		6,773 tons	6,773
Total value			\$ 33,241,220
Champion Inc.			Sand and gravel
Mich. State Hwy. Dept.			Sand and gravel
Ontonagon Co. Rd. Comm.			Sand and gravel
			Stone
			Copper
White Pine Copper Co.			
White Pine Mine	4, 5, 9 5N 42W		
I. L. Whitehead Co.			Sand and gravel

		<u>Quantity</u>	<u>Value</u>
OSCEOLA (41)			
Petroleum		373,650 bbls.	\$ 1,076,112
Sand and gravel		258,183 tons	189,158
Natural gas		290,743 M.cu.ft.	69,778
Marl		3,913 tons	3,325
Total value			\$ 1,338,373
Rich Cousineau			Sand and gravel
C. Stanley Hooker	NW NE 24 20N 10W		Marl
	SW SW 1 20N 8W		
Mich. State Hwy. Dept.			Sand and gravel
The Wallace Stone Co.			
Hersey Sand and Gravel Div.	NW SW 20 17N 9W		Sand and gravel

		<u>Quantity</u>	<u>Value</u>
OSCODA (80)			
Sand and gravel		37,500 tons	\$ 20,625
Petroleum		1,812 bbls.	5,219
Total value			\$ 25,844
Oscoda Co. Hwy. Dept.			Sand and gravel

	Quantity	Value
OTSEGO (78)		
Sand and gravel	36,390 tons	\$ 39,982
Natural gas	23,768 M.cu.ft.	5,704
Total value		\$ 45,686

Hutchins Sand and Gravel	SE NE 17 29N 3W	Sand and gravel
Mich. State Hwy. Dept.		Sand and gravel
Otsego Co. Rd. Comm.	SW NW 16 29N 3W	Sand and gravel
	NW SW 2 30N 3W	
	NW NW 3 31N 3W	
	NW NE 29 31N 3W	

	Quantity	Value
OTTAWA (29)		
Sand and gravel (5th, 4%)	1,841,446 tons	\$ 1,643,184
Petroleum	174,533 bbls.	502,655
Marl	1,748 tons	1,159
Total value		\$ 2,146,998

Construction Aggregates Corp.	SE SW 16 8N 15W	Sand and gravel
	7 14N 7W	
Henry DeWent	SW SW 22 6N 13W	Sand and gravel
Grand Valley Gravel Co.	NE NE 32 7N 13W	Sand and gravel
William Huizenga	24 5N 15W	Sand and gravel
Tom Johnston Gravel Co.	7 7N 14W	Sand and gravel
Henry Koster	23 6N 13W	Marl
Ralph Meyers		Marl
Paul C. Miller		Sand and gravel
Ottawa Co. Hwy. Dept.	NE SW 24 5N 15W	Sand and gravel
	NW NE 22 6N 13W	
	NE 36 5N 13W	
Pickitt and Schreur Inc.		Sand and gravel
Standard Sand Co.	NW 4 7N 16W	Sand

	Quantity	Value
PRESQUE ISLE (14)		
Stone (1st), Sand and gravel		
Michigan Limestone Div.		
U. S. Steel Corp.	23 35N 5E	Limestone - crushed
Onaway Stone Co.	5 34N 2E	Limestone - dimensional
Presque Isle Co. Rd. Comm.	NE NE 19 33N 5E	Sand and gravel
	SW SE 18 35N 2E	
Presque Isle Corp.	2 33N 8E	Limestone - crushed
Straits Aggregate and Equipment Corp.	NE NW 19 34N 4E	Sand and gravel
	NW SW 26 35N 5E	

	Quantity	Value
ROSCOMMON (46)		
Petroleum	217,355 bbls.	\$ 625,982
Natural gas	1,244,968 M.cu.ft.	298,792
Sand and gravel	307,272 tons	142,135
Natural gas liquids	368,805 gals.	18,440
Total value		\$ 1,085,349

Beckett Sand and Gravel	Roscommon	Sand and gravel
Mich. State Hwy. Dept.		Sand and gravel
Roscommon Co. Hwy. Dept.		Sand and gravel
Delmar Stanley Gravel Co.	SE SE 24 24N 4W	Sand and gravel
Jessee Stanley Gravel Co.	Houghton Lake	Sand and gravel

	Quantity	Value
SAGINAW (68)		
Petroleum, Lime, Sand and gravel, Clay		\$ 207,090

Aetna Portland Cement Co.	SW 35 12N 3E	Clay
Mich. State Hwy. Dept.		Sand and gravel
Michigan Sugar Co.	Carrollton	Lime
Minco Products Corp.	NW NW 1 11N 3E	Clay

	Quantity	Value
ST. CLAIR (7)		
Salt (3rd), Petroleum (4th, 6%), Cement, Natural gas, Natural gas liquids, Sand and gravel, Clay		\$ 18,494,884

Click Bros. Gravel	NE NW 27 7N 15E	Sand and gravel
The Diamond Crystal Salt Co.	St. Clair	Evaporated salt
O. E. Gooding and Co.		Sand and gravel
Fred Kaatz		Sand and gravel
City Engineer, Marysville		Sand and gravel
McGaw Block Co.		Sand and gravel
Mich. State Hwy. Dept.		Sand and gravel
Molesworth Contracting	NE SE 8 7N 15E	Sand and gravel
	ShIPLEY Pit	
	Hewitt Pit	
	Sparling Pit	
	JezerSKI Pit	
	Grilliot Pit	
Morton Salt Co.	Marysville	Evaporated salt
Peerless Cement Corp.	Port Huron	Portland Cement
	32 6N 16E	Clay
Port Huron Sand and Gravel		Sand and gravel

		<u>Quantity</u>	<u>Value</u>
ST. JOSEPH (67)			
Sand and gravel		198,339 tons	\$ 212,099
Marl		5,525 tons	3,013
	Total value		<u>\$ 215,112</u>
Aggregates Processors, Inc.	NE 7 8S 11W		Sand and gravel
Coy Drake	12 5S 12W		Marl
Mich. State Hwy. Dept.			Marl
Pickitt and Schreur Inc.			Sand and gravel
Robert Bros. Marl	6S 12W		Marl
Stukey Contractors			Sand and gravel
Clifford Williams			Marl

		<u>Quantity</u>	<u>Value</u>
SANILAC (64)			
Sand and gravel		399,189 tons	\$ 221,879
Lime		2,096 tons	35,587
	Total value		<u>\$ 257,466</u>
William Albrecht Jr.			Sand and gravel
Mich. State Hwy. Dept.			Sand and gravel
Michigan Sugar Co.	Croswell Plant		Lime
Molesworth Contracting			Sand and gravel
Don Reynolds			Sand and gravel
Sanilac Co. Rd. Comm.	SW SW 23 9N 14E		Sand and gravel

		<u>Quantity</u>	<u>Value</u>
SCHOOLCRAFT (70)			
Sand and gravel		206,468 tons	\$ 146,662
Champion Inc.			Sand and gravel
Mich. State Hwy. Dept.			Sand and gravel
Schoolcraft Co. Rd. Comm.	SE SW 7 41N 17W		Sand and gravel

		<u>Quantity</u>	<u>Value</u>
SHIAWASSEE (43)			
Clay products, Sand and gravel, Shale			
Fuoss Gravel Co.	SW SW 30 6N 3E		Sand and gravel
Mich. State Hwy. Dept.			Sand and gravel
The Michigan Vitrified Tile Co.	SE 22 7N 3E		Shale - tile
Schenk Gravel Co.	NW NW 2 6N 4E		Sand and gravel
	NE NE 2 6N 4E		
Ronald Weaver Gravel Co.	Various		Sand and gravel

		<u>Quantity</u>	<u>Value</u>
TUSCOLA (34)			
Sand and gravel (6th, 3%)		1,430,689 tons	\$ 1,598,543
Petroleum		85,387 bbls.	245,915
Lime		3,213 tons	50,533
	Total value		<u>\$ 1,894,991</u>
Anderson Sand and Gravel Co.	NW SW 19 11N 9E		Sand and gravel
	NE NE 20 11N 9E		
Bernthel Sand and Gravel Co.	SW SE 6 11N 9E		Sand and gravel
Cass City Concrete Prod.	SE SW 4 13N 11E		Sand and gravel
Comstock Constr. Co.	8 11N 10E		Sand and gravel
Great Lakes Foundry Sand Co.	Near Vassar		Sand
Hile Bros	NW SE 3 12N 8E		Sand and gravel
C. R. Hunt	SE 33 14N 11E		Sand and gravel
Mich. State Hwy. Dept.			Sand and gravel
Michigan Sugar Co.	Caro		Lime
Peterhans Bros. Sand and Gravel	SW NE 35 13N 9E		Sand and gravel
Powell Sand and Gravel	23 13N 7E		Sand and gravel
Sargent Sand Co.	5 10N 9E		Sand and gravel
Tuckey's Sand and Gravel	33 14N 10E		Sand and gravel
Tuscola Co. Rd. Comm.			Sand and gravel
Vaughans Gravel and Excavating	NE NE 25 12N 8E		Sand and gravel

		<u>Quantity</u>	<u>Value</u>
VAN BUREN (58)			
Sand and gravel		366,394 tons	\$ 319,071
Petroleum		18,373 bbls.	52,914
Marl		399 tons	319
	Total value		<u>\$ 372,304</u>
John Budzen Cement Prod.			Sand and gravel
Clarence Harter	33 2S 13W		Marl
Klett Construction Co.	Hartford		Sand and gravel
Masterson Sand Co.	NE 5 2S 17W		Sand
Standard Sand Co.	2S 17W		Sand and gravel
Stukey Contractors Inc.			Sand and gravel
John G. Yerington	NE SE 24 3S 15W		Sand and gravel
	North Gravel Hill Pit		

	<u>Quantity</u>	<u>Value</u>
WASHTENAW (38)		
Sand and gravel (8th, 3%)	1,261,467 tons	\$ 1,168,359
Natural gas	703,798 M.cu.ft.	168,912
Petroleum	34,698 bbls.	99,930
Total value		\$ 1,437,201
Dexter Gravel Co.	SW SE 5 2S 5E	Sand and gravel
O. E. Gooding and Co.	Various	Sand and gravel
Killins Gravel Co.	SE SE 25 2S 3E	Sand and gravel
	SW SW 25 2S 5E	
	32 2S 7E	Sand and gravel
Kruse Gravel Pit		Sand and gravel
Mich. State Hwy. Dept.		Sand and gravel
Thumms Sand and Gravel	SW NE 25 3S 7E	Sand and gravel
Washtenaw Co. Rd. Comm.	24 3S 5E	Sand and gravel
Washtenaw Sand and Gravel	4984 Earhardt Rd.	Sand and gravel
Whittaker and Gooding Co.	SW NW 10 2S 5E	Sand and gravel
	NE NE 15 3S 6E	
	SW NE 19 2S 7E	

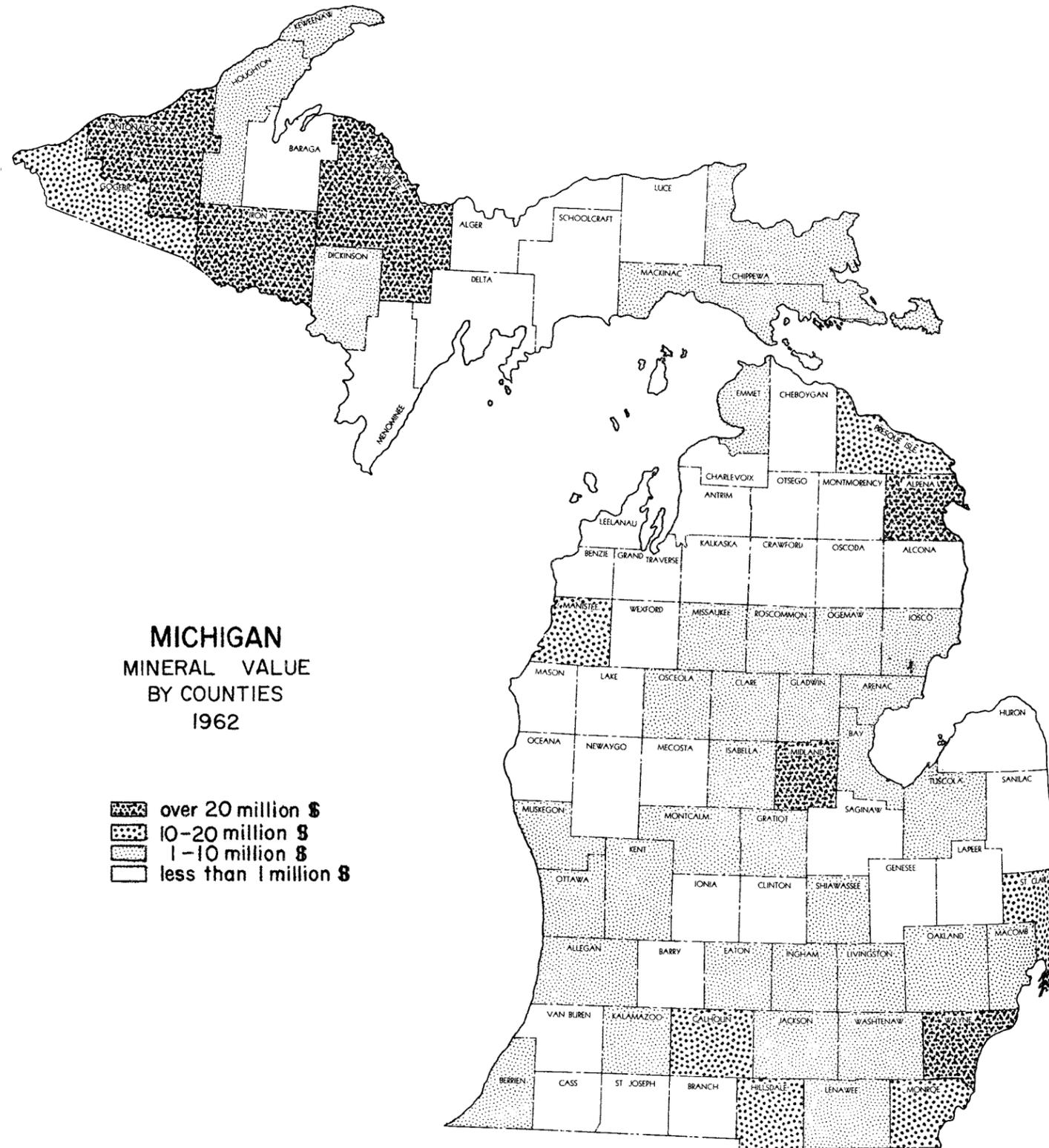
	<u>Quantity</u>	<u>Value</u>
WAYNE (1)		
Cement (3rd), Salt (1st), Lime (1st), Sand and gravel (4th, 4%), Clay products (1st), Stone, Natural gas, Petroleum, Clay		\$ 42,476,044
Allied Chemical Corp.	Trenton	Lime
Clippert Brick Co.	NW 21 2S 11E	Clay, brick
Flat Rock Clay Prod.	NW SE 30 4S 10E	Clay, tile
Huron River Quarry Corp.	36 4S 9E	Dolomite - crushed
International Salt Co. Inc.	SW 32 2S 11E	Rock salt
Lightweight Aggregate Corp.	NE 27 1S 9E	Clay - lightweight aggregate
Manning and Locklin Gravel Co.	NW SW 2 1S 8E	Sand and gravel
Michigan Foundation Quarry Co.	7 4S 11E	Limestone - crushed
Michigan Silica Co.	SW NE 15 5S 10E	Silica sand
Mich. State Hwy. Dept.		Sand and gravel
Moore Bros. Sand and Gravel	E SE 9 3S 9E	Sand and gravel
Al Morgan Sand	Various pits	Sand
Northville Sand and Gravel	SE NE 8 1S 8E	Sand and gravel
Peerless Cement Corp.	Detroit	Cement
Penn Salt Chemical Corp.	Wyandotte	Salt
Thomson Sand and Gravel	8 1S 8E	Sand and gravel
Wayne Sand and Gravel Co.	NW SE 12 3S 8E	Sand and gravel
Wyandotte Chemical Corp.	Wyandotte	Salt, cement, lime

	<u>Quantity</u>	<u>Value</u>
WEXFORD (73)		
Sand and gravel	75,088 tons	\$ 79,948
Leo Dunbar Mich. State Hwy. Dept. Wexford Gravel Co.	SW NE 15 21N 9W Cadillac	Sand and gravel Sand and gravel Sand and gravel
UNDISTRIBUTED		
Alpena, Emmet, Grand Traverse, Gratiot, Iosco, Lake, Mason, Midland, Montmorency, Presque Isle, Shiawassee Counties		\$ 109,157,683
Sand and gravel, Mineral pigments, Sulfur, Gem stones, Peat		4,748,579
Total value		\$ 113,906,262
Aurora Gasoline Co.		Sulfur
The Cleveland-Cliffs Iron Co.		Mineral pigments
The Dyer Company		Sand and gravel
The Hanna Mining Co.		Mineral pigments
Holloway Sand and Gravel Co., Inc.		Sand and gravel
Leonard Refinery, Inc.		Sulfur
Pickands Mather and Co.		Mineral pigments
Straits Aggregate and Equipment Corp.		Sand and gravel
U. S. Department of Agriculture		Sand and gravel
West Shore Constr. Co., Inc.		Sand and gravel
TOTAL STATE VALUE		\$ 437,689,079

COUNTY MINERAL PRODUCTION

1962

County	Rank	Value	County	Rank	Value
Alcona	71	\$ 146,017	Gladwin	42	\$ 1,258,392
Alger	76	66,532	Gogebic	12	12,337,255
Allegan	33	1,896,562	Grand Traverse	81	-
Alpena	5	-	Gratiot	21	-
Antrim	72	119,906	Hillsdale	9	13,988,529
Arenac	40	1,352,006	Houghton	17	7,470,034
Baraga	59	364,757	Huron	49	995,863
Barry	56	412,298	Ingham	45	1,116,319
Bay	18	7,176,248	Ionia	54	530,088
Benzie	79	32,418	Iosco	25	-
Berrien	48	1,042,831	Iron	6	22,071,735
Branch	69	184,461	Isabella	32	1,970,825
Calhoun	13	10,980,821	Jackson	16	8,587,104
Cass	55	421,205	Kalamazoo	44	1,172,561
Charlevoix	77	47,568	Kalkaska	62	277,846
Cheboygan	66	219,351	Kent	27	2,787,026
Chippewa	22	4,642,069	Keweenaw	24	4,128,965
Clare	37	1,545,891	Lake	74	-
Clinton	60	364,268	Lapeer	57	401,870
Crawford	52	675,208	Leelanau	75	66,978
Delta	61	287,604	Lenawee	30	2,050,671
Dickinson	23	4,409,650	Livingston	26	3,769,772
Eaton	31	2,003,716	Luce	82	14,420
Emmet	15	-	Mackinac	20	5,873,198
Genesee	53	634,432	Macomb	47	1,056,204



County	Rank	Value	County	Rank	Value
Manistee	10	13,970,826	Shiawassee	43	-
Marquette	2	42,385,964	Tuscola	34	\$ 1,894,991
Mason	11	-	Van Buren	58	372,304
Mecosta	65	246,200	Washtenaw	38	1,437,201
Menominee	51	824,964	Wayne	1	42,476,044
Midland	3	-	Wexford	73	79,948
Missaukee	28	2,153,645	Undistributed		113,906,262
Monroe	8	18,007,027			
Montcalm	36	1,566,396	TOTAL STATE VALUE		\$ 437,689,079
Montmorency	83	-			
Muskegon	35	1,879,205			
Newaygo	63	269,530			
Oakland	19	6,091,746			
Oceana	50	908,707			
Ogemaw	39	1,374,680			
Ontonagon	4	33,241,220			
Osceola	41	1,338,373			
Oscoda	80	25,844			
Otsego	78	45,686			
Ottawa	29	2,146,998			
Presque Isle	14	-			
Roscommon	46	1,085,349			
Saginaw	68	207,090			
St. Clair	7	18,494,884			
St. Joseph	67	215,112			
Sanilac	64	257,466			
Schoolcraft	70	146,662			

MICHIGAN MINERAL PRODUCERS
1962

CEMENT

<u>Name and Address</u>	<u>Plant Location</u>
Aetna Portland Cement Company P. O. Box 392 Bay City, Michigan	Bay City, Bay Co.
Dundee Cement Co. Dundee, Michigan	Dundee, Monroe Co.
Huron Portland Cement Co. Division of National Gypsum Co. 1325 Fort Building Detroit, Michigan	Alpena, Alpena Co.
Peerless Cement Company Division of American Cement Corp. 1144 Free Press Building Detroit 26, Michigan	Detroit, Wayne Co. (2 plants) Port Huron, St. Clair Co.
Peninsular Portland Cement Div. General Portland Cement Co. 709 Clay St. Fort Wayne 2, Indiana	Cement City, Lenawee Co.
Penn-Dixie Cement Corporation P. O. Box No. 152 Nazareth, Pennsylvania	Petoskey, Emmet Co.
Wyandotte Chemical Corp. 1609 Biddle Avenue Wyandotte, Michigan	Wyandotte, Wayne Co.

CLAY*

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

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

CLAY PRODUCTS

<u>Name and Address</u>	<u>Raw Material</u>	<u>Plant Location</u>
American Vitrified Products Co. 701 National City Bank Bldg. Cleveland, Ohio	Shale	Grand Ledge, Eaton Co. (Tile)
Clippert Brick Co. Wyoming and Southern Ave. Detroit 10, Michigan	Clay	Near Dearborn, Wayne Co. (Brick)
Comfort Brick and Tile Co. Rogers Highway Tecumseh, Michigan	Clay	Tecumseh, Lenawee Co. (Tile)
Flat Rock Clay Products Co. 26280 Arsenal Rd. Flat Rock 3, Michigan	Clay	Flat Rock, Wayne Co. (Tile)
Grand Ledge Clay Products Co. West Jefferson Street Grand Ledge, Michigan	Shale	Grand Ledge, Eaton Co. (Tile)
Lightweight Aggregate Corp. 12720 Farmington Road Livonia, Michigan	Clay	Livonia, Wayne Co. (Lightweight Aggregate)
The Michigan Vitrified Tile Co. P. O. Box 450 Findlay, Ohio	Shale	Corunna, Shiawassee Co. (Tile)
F. W. Ritter Sons Co., Inc. South Rockwood, Michigan	Clay	South Rockwood, Monroe Co. (Pottery)

COPPER

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

GYPSUM

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

IRON ORE

<u>Name and Address</u>	<u>Mine Locations (Counties)</u>
The Cleveland-Cliffs Iron Co. 14th Floor Union Commerce Bldg. Cleveland 14, Ohio	Marquette
M. A. Hanna Company 1300 Leader Bldg. Cleveland 14, Ohio	Iron, Dickinson
Inland Steel Company 38 South Dearborn St. Chicago 3, Illinois	Iron, Marquette
Jones and Laughlin Steel Corp. 401 Liberty Avenue Gateway Center Pittsburgh 30, Pennsylvania	Marquette
North Range Mining Company Negaunee, Michigan	Marquette
Pickands Mather and Company 2000 Union Commerce Bldg. Cleveland 14, Ohio	Gogebic
Republic Steel Corporation Republic Building Cleveland 1, Ohio	Iron

LIME

<u>Name and Address</u>	<u>Plant Location</u>
Allied Chemical Corp. The Solvay Process Div. P. O. Box 271 Syracuse 1, New York	Detroit, Wayne Co.
Board of Water and Light 206 S. Cedar St. Lansing, Michigan	Lansing, Ingham Co.
The Dow Chemical Co. Ludington Division Midland, Michigan	Ludington, Mason Co.
Limestone Products Division Northwestern-Hanna Fuel Co. 2150 North Prospect Avenue Milwaukee 1, Wisconsin	Menominee, Menominee Co.
Michigan Sugar Company Saginaw, Michigan	Sebewaing, Huron Co. Carrollton, Saginaw Co. Croswell, Sanilac Co. Caro, Tuscola Co.
Monitor Sugar Div. Robert Gage Coal Co. 2600 South Euclid Avenue Bay City, Michigan	Bay City, Bay Co.
Packing Corp. of America Filer City, Michigan	Filer City, Manistee Co.
Union Carbide Olefins Co. 270 Park Ave., 27th Floor New York 17, New York	Sault Ste Marie, Chippewa Co. Montague, Muskegon Co.
Wyandotte Chemicals Corp. 1609 Biddle Avenue Wyandotte, Michigan	Wyandotte, Wayne Co.

MARL

<u>Name</u>	<u>Address</u>	<u>Pit Location (County)</u>
<u>A</u>		
Gerald Arnsmann	R.R. #1, Hopkins	Allegan
Carl Avery	R.R. #1, Athens	Calhoun
<u>B</u>		
Barnes Brothers	Horton	Jackson
Lee Bertrand	R. #2, Lawton	Kalamazoo
Laverne Brizendine	308 Pennsylvania Ave., Dowagiac	Cass

Marl (Cont'd.)

<u>Name</u>	<u>Address</u>	<u>Pit Location (County)</u>
<u>C</u>		
Case Brothers	R.R. #1, Sherwood	Calhoun, St. Joseph
Ray Coville	R.R. #1, Climax	Kalamazoo
B. W. Crosby	Three Oaks	Berrien
William Currier	R.R. #1, Caledonia	Barry
<u>D</u>		
Bernard Damveld	R.R. #1, Dorr	Allegan
Calvin Dixon	Bronson	Branch
Coy Drake	R.R. #1, Three Rivers	St. Joseph
<u>E</u>		
David Flora	R.R. #2, Schoolcraft	Kalamazoo
Frost and Cummings Marl Company	Blanchard	Mecosta
Frisbie Bros.	R.F.D., Colon	St. Joseph
<u>G</u>		
Gatehouse Bros.	Weidman	Isabella
Grant Tufa Lime Co.	Box 46, Grant	Newaygo
Raymond Gross	Wayland	Allegan
<u>H</u>		
E. R. Hamilton	R.R. #3, Nashville	Barry
Clarence Harter	R.R. #3, Paw Paw	Van Buren
Kenneth Harter	R.R. #2, Otsego	Allegan
Hayward Dry Marl	R.R. #3, Quincy	Kalamazoo
John Hess	R.R. #1, Hanover	Hillsdale
C. Stanley Hooker	608 Colfax St., Cadillac	Osceola
<u>K</u>		
Henry Koster	1074 Chicago Drive, Jenison	Ottawa
<u>L</u>		
Ted Lambrix	R.R. #3, Hart	Oceana
Ray Luegge	R.R. #1, Three Rivers	St. Joseph
<u>M</u>		
Martin Bros. Marl Co.	R.R. #2, Box 46, Three Oaks	Berrien
Claude Mastin	Climax	Kalamazoo
Ralph Meyers	R.F.D. #2, West Olive	Ottawa

Marl (Cont'd.)

<u>Name</u>	<u>Address</u>	<u>Pit Location (County)</u>
	<u>O</u>	
Outman Bros.	Six Lakes	Montcalm
	<u>P</u>	
Emil Pavlak Pipher Marl Service Pohlman and Sons	R.R. #2, Hopkins Jones R.R. #2, Cassopolis	Allegan Cass Cass
	<u>R</u>	
Robert Brothers Marl Fred Rumz	R.R. #1, Three Rivers R.R. #2, Vicksburg	St. Joseph Kalamazoo
	<u>S</u>	
Schau Bros.	2882 Bronson Blvd., Kalamazoo	Barry
Murland Smart Harlan Spoor Stewart and Schaefer	Burr Oak R.R. #1, Burlington R.R. #1, Weidman	St. Joseph Calhoun Isabella
	<u>T</u>	
Orville Truman	Mecosta	Mecosta
	<u>W</u>	
Clifford Williams	Nottawa	St. Joseph
	<u>Z</u>	
Zylstra Bros.	Howard City	Montcalm

NATURAL SALINES

<u>Name and Address</u>	<u>Product</u>	<u>Plant Location</u>
The Dow Chemical Company Midland, Michigan	Bromine, Magnesium Com- pounds, Calcium Chloride, Potash, Iodine	Midland, Midland Co.
	Bromine, Magnesium Com- pounds, Calcium Chloride	Ludington, Mason Co.
Great Lakes Chemical Corp. Filer City, Michigan	Bromine	Filer City, Manistee Co.

Natural Salines (Cont'd.)

<u>Name and Address</u>	<u>Product</u>	<u>Plant Location</u>
Harbison-Walker Refrac- tories Co. 307 Fifth Ave. Pittsburgh 22, Pa.	Magnesium Compounds	Ludington, Mason Co.
Kaiser Aluminum and Chemical Co. 1625 Eye Street, N.W. Washington, D. C.	Magnesium Compounds	Midland, Midland Co.
Michigan Chemical Corp. 500 North Bankson St. Louis, Michigan	Bromine, Magnesium Com- pounds, Calcium-Magnesium Chloride	St. Louis, Gratiot Co.
	Bromine	East Lake, Manistee Co.
Morton Chemical Co. Ringwood, Illinois	Bromine, Magnesium Com- pounds, Calcium Chloride	Manistee, Manistee Co.
Standard Lime and Cement Company 2000 1st Nat'l. Bank Bldg. Baltimore 3, Maryland	Magnesium Compounds	Stronack, Manistee Co.
Wilkinson Chemical Co. Mayville, Michigan	Calcium-Magnesium Chloride	Near Mayville, Tuscola Co.

PEAT

<u>Name and Address</u>	<u>Pit Location</u>
George Alber Summerfield Road Petersburgh, Michigan	Near Petersburgh, Monroe Co.
Al-Par Peat Ovid, Michigan	Near Ovid, Clinton Co.
Anderson Peat Company 2562 Graham Road Inlay City, Michigan	Near Inlay City, Lapeer Co.
Appleman and Yarger Peat Co. 13316 Ida Center Road Ida, Michigan	Near Ida, Monroe County
Jack Coddington 15510 Santa Rosa Detroit, Michigan	Near Farmington, Oakland Co.

Peat (Cont'd.)

<u>Name and Address</u>	<u>Pit Location</u>
Craven's Peat Farm 5864 S. 30th St. Kalamazoo, Michigan	Near Kalamazoo, Kalamazoo Co.
Diekman's Peat Moss Co. 1654 28th Street, S.W. Grand Rapids, Michigan	Near Wyoming, Kent Co.
Charles E. Douglas Wayland, Michigan	Near Wayland, Allegan Co.
Fletcher and Rickard 54001 Grand River Road New Hudson, Michigan	Near New Hudson, Oakland Co.
Geoman Nursery 3413 Jefferson Avenue, S.E. Grand Rapids, Michigan	Near Grand Rapids, Kent Co.
Gibbs Peat Company Route 2, 6120 Shappie Road Clarkston, Michigan	Near Clarkston, Oakland Co.
Grant's Trucking and Loading 3192 Rochester Road Troy, Michigan	Near Troy, Oakland Co.
Great Lakes Peat Moss Company 51 West Miller Street Sandusky, Michigan	Near Sandusky, Sanilac Co.
Green Thumb Peat Company, Inc. 247 South Stringer Road Sandusky, Michigan	Near Sandusky, Sanilac Co.
Gummer's Peat Company Route #2 Lakeview, Michigan	Near Lakeview, Montcalm Co.
Hiler Peat Humus Co. Route #4 Benton Harbor, Michigan	Near Bainbridge Center, Berrien Co.
Hilu Peat Company 3040 Clinton Trail Charlotte, Michigan	Near Charlotte, Eaton Co.
Hofman Peat Co. Gittings Ha Ha Estate Route 650 Brookville, Md.	Near Imlay City, Lapeer Co.

Peat (Cont'd.)

<u>Name and Address</u>	<u>Pit Location</u>
Kerr's Peat Moss Route #1 Three Rivers, Michigan	Near Three Rivers, St. Joseph Co.
Katerberg Landscape Service 3610 Michigan Rd., N.E. Grand Rapids, Michigan	Near Grand Rapids, Kent Co.
Michigan Peat, Inc. 67 West 44th Street New York 36, N. Y.	Near Capac, Lapeer and St. Clair counties Near Minden City, Sanilac Co.
Griffin H. Munger 3045 West Michigan Ave. Ypsilanti, Michigan	Near Ypsilanti, Washtenaw Co.
Albert H. Roodbergen 6262 East "QR" Avenue Scotts, Michigan	Near Scotts, Kalamazoo County
Rushland Peat Company 2156 West Caro Road Caro, Michigan	Near Caro, Tuscola County
Leo Russell Dirt Farm 42201 12 Mile Road Novi, Michigan	Near Novi, Oakland County
Soulliere Peat and Sod Co. 23650 23 Mile Road Mt. Clemens, Michigan	Near Imlay City, Lapeer Co.
Tecumseh Peat Co. R.R. #1, Whig Rd. Adrian, Michigan	Near Adrian, Lenawee Co.
Twin Lakes Nursery 3650 Michigan Road, N. E. Grand Rapids 6, Michigan	Near Grand Rapids, Kent Co.
West Lansing Gravel Co. 1911 Pattengill Avenue Lansing, Michigan	Near Lansing, Ingham Co.
Winn's Peat Corporation 6476 Bishop Road Lansing, Michigan	Near Delhi, Ingham Co.

SALT

Name and Address	Product	Plant Location
Allied Chemical and Dye Corp. The Solvay Process Division P. O. Box 271 Syracuse 1, New York	Salt Brine* (Soda Ash)	Detroit, Wayne Co.
Diamond Crystal Salt Co. 916 S. Riverside St. Clair, Michigan	Evaporated Salt	St. Clair, St. Clair Co.
The Dow Chemical Co. Midland, Michigan	Salt Brine (Chlorine, other chemicals)	Midland, Midland Co.
Hooker Chemical Corp. P. O. Box 295 Montague, Michigan	Salt Brine (Chlorine, caustic soda, Hydrogen)	Montague, Muskegon Co.
International Salt Co., Inc. Clarks Summit, Pa.	Rock Salt	Detroit, Wayne Co.
Manistee Salt Works 800 South VandeVenter Ave. St. Louis 10, Missouri	Evaporated Salt	Manistee, Manistee Co.
Michigan Salt Company 500 North Bankson St. Louis, Michigan	Evaporated Salt	St. Louis, Gratiot Co.
Morton Salt Company 110 North Wacker Drive Chicago 3, Illinois	Evaporated Salt	Manistee, Manistee Co. Marysville, St. Clair Co.
Pennsalt Chemicals Corp. 3 Penn Center Philadelphia 2, Pa.	Salt Brine (Chlorine, Caustic Soda, Hydrogen)	Wyandotte, Wayne Co.
Wyandotte Chemical Corp. 1609 Biddle Ave. Wyandotte, Michigan	Salt Brine (Chlorine, Soda Ash)	Wyandotte, Wayne Co.

* Artificial brine piped across Detroit River from Canada.

SAND AND GRAVEL

Name and Address	Pit Location
<u>A</u>	
A. and R. Gravel Co., 2073 Drawry Lane, Route #2, Pontiac	Oakland
Adrian Sand and Gravel, Adrian	Lenawee
Advance Bldg. Materials Co., 46461 Ryan Road, Utica	Macomb

Sand and Gravel (Cont'd.)

Name and Address	Pit Location
<u>A continued</u>	
Aggregate Processors, Inc., Box 566, White Pigeon William Albrecht Jr., Sandusky American Aggregates Corp., Greenville, Ohio	St. Joseph Sanilac Kalamazoo, Livingston, Oakland Tuscola
Anderson Sand and Gravel Co., 1700 S. Werdock St., Saginaw	Tuscola
Arrowhead Silica Corp., 128 S. 15th St., Chesterton, Indiana	Berrien
Cleo L. Arndt, Route #2, Fennville	Allegan
<u>B</u>	
Bark River Construction Co., Bark River	Delta
Battle Creek Gravel Co., 3800 Dickman Highway, Battle Creek	Calhoun
Beardslee, Floyd, 725 E. Square Lake Rd., Pontiac	Oakland
Beckett Sand and Gravel, 19 E. Federal Hwy. Roscommon	Roscommon
Beckman Brothers, Shelby	Oceana
Bender Gravel Co., 822 Benton St., Hastings	Barry
Bernthal Gravel Co., R.F.D. #2, Reese	Tuscola
Ray Betham and Son, 12040 Mettetal, Detroit	Oakland
Bichler Bros., 1615 Ludington, Escanaba	Delta
Blades Construction Co., Beaverton	Clare
Boichot Concrete Products Corp., 1800 Turner St., Lansing	Clinton
Brilinski Sand and Gravel, 9205 2nd Ave., Alpena	Alpena
Brady's Sand and Gravel, Tecumseh	Lenawee
Budzen Cement Products, Paw Paw	Van Buren
Bundy Hill Gravel Co., Somerset Center	Hillsdale
J. V. Burkett, St. Joseph	St. Joseph
<u>C</u>	
Caspian Lbr. Co., Caspian	Various
Cass City Concrete Products Co., Cass City	Tuscola
Castle Hill Gravel, 4495 Butterfield Hwy., Olivet	Eaton
Catsman Co., 3315 Deming Rd., Flint	Genesee
Central Concrete Products Co., Inc., Route #2, Big Rapids	Mecosta
Central Michigan Sand and Gravel, P. O. Box 5, East Lansing	Ionia
Champion, Inc., 105 East A St., Iron Mountain	Baraga, Chippewa, Delta, Dickinson, Gogebic, Mar- quette, Ontonagon, Schoolcraft
Cheney Gravel Co., Inc., 691 N. College Rd., Mason	Ingham
Click Bros. Gravel, 8783 Bryce Rd., Goodells	St. Clair
Cloverland Milling and Supply Co., 801 Superior Ave., Gladstone	Delta

Sand and Gravel (Cont'd.)

<u>Name and Address</u>	<u>Pit Location</u>
<u>C continued</u>	
Coit Avenue Gravel Co., 4772 Coit Ave., N.E., Grand Rapids	Kent
Cole Brothers, R.R. #3, B 486, Battle Creek	Calhoun
Cole Gravel Co., Route #1, Wayland	Barry
Clarence Cole, R.R. #2, Caro	Tuscola
Combs, Emil, Route #1, Tekonsha	Calhoun
Comstock Constr. Co., Box 172, Bay City	Tuscola
Construction Aggregates Corp., 120 S. LaSalle St., Chicago, Illinois	Ottawa (Dredge)
Consumers Sand and Gravel, Kalamazoo	Kalamazoo
Rich Cousineau, R.R. #1, Paris	Gratiot, Kent, Lake, Mecosta, Montcalm, Oakland, Osceola
Cross and White, 3849 Three Mile Rd., Grand Rapids	Kent
H. C. Cushman, Star Route, Sears	Osceola
<u>D</u>	
D. and J. Gravel Co., Route #2, Howell	Livingston
Dachill Trucking Co., 18945 W. 8 Mile Rd., Detroit	Oakland
Van E. Daily, 410 W. Sibley St., Howell	Livingston
Emil DeSander, 321 W. Sheridan Rd., Lansing	Clinton
Edward DeVries and Sons, 959 Bristol Ave., Grand Rapids	Kent
DeWent, Henry, U. S. 21, Hudsonville	Ottawa
DeWitt Gravel Co., U.S. 27, Lansing	Clinton
Dexter Gravel Co., 7100 Dexter Ann Arbor Rd., Dexter	Washtenaw
Dale Douthett, Three Oaks	Berrien
Leo Dunbar, 7658 U.S. 131, Cadillac	Wexford
Dyer Company, McBrides	Various
<u>E</u>	
Eastman Gravel Pit, Route #1, Standish	Arenac
H. Eckley, Pioneer, Ohio	Hillsdale
Ehinger Bros., West Branch	Ogemaw
W. L. Emery Co., 1375 E. Jefferson Ave., Detroit	Wayne (Dredge)
<u>F</u>	
Faulkender Sand and Gravel, Inc., 1741 School Rd., Rochester	Oakland
Fenton Gravel Co., Inc., 11301 Fenton Hill Road, Fenton	Livingston
Ferguson Excavating Co., 5360 N. State Rd., Davison	Genesee
Fiser Supply Co., 1617 E. Jolly Rd., Lansing	Ingham
Fisher Sand and Gravel Co., 921 S. Jefferson Ave., Midland	Midland
Fleming Gravel Co., Box 149, Allegan	Calhoun, Ionia
Foley and Beardslee, Route #3, Clarkston	Oakland
Ford and Co., 5960 S. Cedar, Lansing	Ingham
Fox Valley Construction Co., Box 827, Appleton, Wisc.	Baraga, Chippewa, Gogebic, Menominee
Fuoss Gravel Co., Route #1, Durand	Shiawassee

Sand and Gravel (Cont'd.)

<u>Name and Address</u>	<u>Pit Location</u>
<u>G</u>	
Gauthier, Frank L., Onkama	Manistee
George, Jerry, Harrisville	Alcona
Gillett Sand and Gravel, R. #1, Haslett	Clinton
Gilliland Construction Co., R. #2, Alpena	Eaton, Mackinac, Montmorency, Kent
Gillisee Constr. Co., Grand Rapids	Kent
J. Gladstone and Son, 630 Brewster Rd., Rochester	Oakland
Gogebic Oil Co., Bessemer	Gogebic
O. E. Gooding Co., 5800 Cherry Hill Rd., Ypsilanti	Ingham, Jackson, Lapeer, Lenawee, Livingston, Oakland, St. Clair, Tuscola, Washtenaw
Grand Ledge Sand and Gravel, Box 78, Grand Ledge	Eaton
Grand Rapids Gravel Co., 2100 Chicago Dr., S.W., Grand Rapids	Kent
Grand Valley Gravel Co., R.F.D. #5, Grand Rapids	Kent
Gravel Producers, Inc., 126 E. Kilgore Rd., Kalamazoo	Kalamazoo
Great Lakes Foundry Sand Co., 1217 Francis Palms Bldg., Detroit	Tuscola
Great Lakes Gravel Co., Inc., 2900 Auburn Rd., Utica	Macomb
Gridley Gravel Co., Berrien Springs	Berrien
Gronlund Gravel Co., Bear Lake	Manistee
<u>H</u>	
Casper Haas Co., 1800 Ravine Rd., Kalamazoo	Kalamazoo
Hatch Gravel Crushing Co., 128 W. Campbell St., Alpena	Alpena
Hersey Sand and Gravel Div., The Wallace Stone Co., Hersey	Osceola
C. E. Hess and Sons, Box 180, Dowagiac	Cass
Highland Aggregate, 8695 N. Milford Rd., Holly	Oakland
Hile Bros., Route #2, Caro	Tuscola
Hocking Constr. Co., South Range	Marquette
Kenneth Hogins and Sons, Marquette	Marquette
Holloway Sand and Gravel Co., 10930 6 Mile Rd., Northville	Various
Holly Sand and Gravel Division, Davisburg	Oakland
Gunnar F. Holmberg, R.F.D. #1, Gladstone	Delta
Hoover Bros., 1139 Tripp Rd., Waldron	Hillsdale
George Hubscher and Son, Box 411, Mt. Pleasant	Isabella
Huitt and Sons, 322 Water St., Allegan	Allegan
Huizenga Gravel Co., 1861 Fillmore St., Jenison	Ottawa
C. R. Hunt, Cass City	Tuscola
Huron Gravel Co., 2900 Inwood Rd., Romeo	Macomb
Hutchins Sand and Gravel, 320 S. Maple, Gaylord	Otsego
Hygrade Sand and Gravel Corp., 5000 E. 31 Mile Rd., Romeo	Macomb

Sand and Gravel (Cont'd.)

Name and Address	Pit Location
<u>I</u>	
Ireland and Lester Co., 220 N. Wayne St., St. Joseph Ironwood Concrete Products Co., Stockbridge, Wisc.	Berrien (Dredge) Gogebic
<u>J</u>	
Jackson Sand and Gravel, R.F.D. #2, Reading	Crawford
John R. Sand and Gravel Co., 2272 Seymour Lake Rd., Oxford	Oakland
Tom Johnston Gravel Co., 114 LaFayette St., Grand Haven	Ottawa
<u>K</u>	
K. and V. Gravel Co., R. #4, Fremont	Newaygo
Fred Kaatz, 62701 Richmond Rd., Richmond	St. Clair
Kaiser Sand and Gravel Co., 4767 N. Okemos Rd., Okemos	Ingham
Keill Excavating, 2046 M. 140, Niles	Berrien
Kemler Bros., 5900 Cobo Creek Ct., Rochester	Oakland
S. E. Ketchum and Sons, R. 33, Mason	Ingham
Killins Gravel Co., 1150 No. State St., Ann Arbor	Washtenaw
Klett Construction Co., Hartford	Van Buren
Klumpp Bros., 4950 Loveland Rd., Grass Lake	Jackson
Koenig Coal and Supply Co., 1486 Gratiot Ave., Detroit	Oakland
Jack Koetje, 6803 N. Westnedge Ave., Kalamazoo	Kalamazoo
Kruse Gravel Pit, 1090 Clark Rd., Ypsilanti	Washtenaw
Kurtz Gravel Co., G-5300 N. Dort Hwy., Flint	Genesee
<u>L</u>	
LaMar Gravel Co., Inc., R.F.D. 2, Three Rivers	St. Joseph
A. S. Leffler and Son, Davison	Genesee
A. Lindberg and Sons, Inc., Box 154, Ishpeming	Marquette
<u>M</u>	
Mackinac Aggregates Corp., 1150 N. State St., St. Ignace	Mackinac
Macomb Sand and Gravel, 3295 Auburn Rd., Utica	Macomb
Maertens Sand and Gravel Co., 1036 Buckingham, Grosse Pointe	Macomb
McKinnon Gravel Co., State St., Alpena	Alpena
McGaw Sand and Gravel, Yale	St. Clair
Ray W. Malow, Utica	Macomb
Mike Mangene, Cedarville	Mackinac
Manley Bros. Inc., 114 S. 116th St., Chesterton	Berrien
Manley Sand Division, Martin-Marietta Corp., Rockton, Illinois	Berrien
Manning-Locklin Gravel Co., Box 216, Northville	Wayne
Louis Marsack and Sons, 23633 Deanhurst, St. Clair Shores	Macomb
H. L. Martin Gravel Co., Box 54, Westphalia	Ionia
Mason Gravel Co., Mason	Ingham
Masterson Sand Co., R. #1, Covert	Van Buren

Sand and Gravel (Cont'd.)

Name and Address	Pit Location
<u>M continued</u>	
Mathews Gravel Co., 7450 E. Stanley Rd., Otisville	Genesee
Michigan Silica Co., Rockwood	Wayne
Michelson Corp., 1745 Seymore Lake Rd., Oxford	Oakland
Paul C. Miller, 10300 Sparta Ave., Sparta	Kent, Muskegon, Ottawa
Vern Molesworth, 106 Park Avenue, Yale	Macomb, Samilac, St. Clair
Moore Bros. Sand and Gravel, 7635 Wayne Rd., Wayne	Wayne
Morgan Sand and Gravel Co., 45095 Ryan Rd., Utica	Macomb
Al Morgan's Sand, 26291 Pennsylvania Rd., Romulus	Wayne
Edward Murawski, Fillion	Huron
Muskegon Gravel Co., 539 S. Dangle Rd., Muskegon	Muskegon
<u>N</u>	
Nashville Gravel Co., R. #2, Nashville	Barry
G. C. Nelson, North Star	Gratiot
New Hudson Sand and Gravel, New Hudson	Oakland
Nieb Concrete Products, Niles Sand and Gravel Div., 1406 South 11th St., Niles	Cass
North Star Gravel Co., Summer	Gratiot
Northeast Gravel and Excavating Co., 4300 Cannosburg Rd., Belmont	Kent
Northville Sand and Gravel Co., 18275 Beck Rd., Northville	Wayne
Northwest Materials, Inc., Bryan, Ohio	Hillsdale
Nugent Sand Co., Inc., 2875 Lincoln St., Muskegon	Muskegon
<u>O</u>	
Oakland Sand and Gravel Co., 741 Glengary Rd., R. #4, Walled Lake	Oakland
Okemos Sand and Gravel, 1873 Hamilton Rd., Okemos	Ingham
Orvis Bros., 835 Atlantic Ave., Milford	Oakland
Otisville Stone Co., Otisville	Genesee
Oxford Mining Co., Davisburg	Oakland
<u>P</u>	
P. and B. Gravel Co., R. #3, Ithaca	Gratiot
Paas Bros. Sand and Gravel, R. #1 Hoffman Rd., Three Rivers	St. Joseph
Palmer Sand and Gravel, 2531 E. South, Jackson	Jackson
Paris Gravel Co., Paris	Mecosta
Peters Construction Co., Kalamazoo	Kalamazoo
Peterson Bros., Beaverton	Gladwin
Peterhan's Bros. Sand and Gravel, R. #2, Caro	Tuscola
Pickitt and Schreur, Box 149, Allegan	Allegan, Barry, Calhoun, Clinton, Ionia, Kalamazoo, Kent, Lenawee, Ottawa, St. Clair, Washtenaw
Piispanen Bros., R. #1, Box 80, Bessemer	Gogebic

Sand and Gravel (Cont'd.)

Name and AddressPit LocationP continued

Pine Sand and Gravel, 2690 Inlay City Rd., Lapeer
 Port Huron Sand and Gravel, 2854 20th Ave., Port Huron
 Portage Lake Gravel, 7628 Toma Road, Dexter
 John Post and Sons, R. #2, Swartz Creek
 Powell Sand and Gravel, Fairgrove
 Pryor Bros., 725 N. Cochran, Charlotte

Lapeer
 St. Clair
 Washtenaw
 Genesee
 Tuscola
 Eaton

R

Ray Industries, Inc., P. O. Box 165, Oxford
 Don Reynolds, 2405 Peck Rd., Crosswell
 Bernie Rief, Fraser
 Riverside Sand and Gravel Co., 1050 Maynard Ave., S.W.,
 Grand Rapids
 Rock's Sand and Gravel, Grand Rapids
 S. K. Rogers, 48301 Sugar Bush Rd., New Baltimore
 Walter Rosevear Pit, West Branch
 Rosteck Contractors, 32634 Utica Rd., Fraser
 Art Russell's Concrete Products, R.F.D. #1, Hillsdale
 Ryno Sand and Gravel, R. #1, Coloma

Macomb
 Sanilac
 Macomb
 Kent
 Kent
 Macomb
 Ogemaw
 Macomb
 Hillsdale
 Berrien

S

Saginaw Core Sand Co., Saginaw
 Salem Gravel and Construction Co., Inc., 17243 W.
 McNichols Road, Detroit 35
 Sand Products Corp., 2489 First National Bank Bldg.,
 Detroit
 Saranac Sand and Gravel Co., Saranac
 Sargent Sand Co., 2840 Bay Rd., Saginaw
 Scarlett Gravel, 1721 S. Cedar, Holt
 Scio Gravel Co., 2911 W. Delhi, Box 233, Ann Arbor
 Sergeant and Sons, 4830 Markey Rd., Houghton Lake
 Severt Bros., Manistee
 Shenk Gravel Co., Durand
 Lawrence B. Skinner, 4536 Packard Rd., Ypsilanti
 Sky-Way Sand and Gravel Co., 4060 E. Holt Rd., Holt
 Slaters Bald Mtn., 53 N. Parke, Pontiac
 Smith Sand and Gravel Co., Inc., 65985 Mound Rd., Romeo
 Justus Snellenberger, 1545 W. Fry Road, Burt
 South Flint Gravel Co., 6090 Belford Rd., Holly
 Stamm Bros. Gravel Co., R. #1, Adrian
 Standard Sand Co., 14201 Lake Shore Ave., P. O. Box 290,
 Grand Haven
 Delmar Stanley Gravel Co., R. #1, Roscommon
 Jessee Stanley Gravel, Houghton Lake
 Gordon O. Stevick, 424 Patty Ave., Jackson
 Frank H. Stoerk, Pierson
 Straits Aggregate and Equipment Corp., R. #1, Box 119-A,
 Oscoda

Genesee, Midland
 Oakland
 Manistee, Muskegon
 Ionia
 Mason, Tuscola
 Ingham
 Washtenaw
 Roscommon
 Manistee
 Shiawassee
 Washtenaw
 Ingham
 Oakland
 Macomb
 Genesee
 Oakland
 Lenawee
 Ottawa, Van Buren
 Roscommon
 Roscommon
 Jackson
 Montcalm
 Presque Isle and various

Sand and Gravel (Cont'd.)

Name and AddressPit LocationS continued

Stony Lake Sand and Gravel, Route #1, Augusta
 Stukey Contractors, Inc., Coldwater

Kalamazoo
 Branch, Calhoun, Cass,
 Eaton, Ingham, St. Joseph,
 Van Buren
 Houghton
 Barry

Superior Sand and Gravel Co., 1028 Ethel Ave., Hancock
 Sutherland Excavating Co., Cloverdale

T

Lawrence Tamlyn, 125 Burdette St., St. Ignace
 Tecumseh Gravel Co., P.O. Box 496, Tecumseh
 Tecumseh Materials Div., The Maybee Stone Co., Tecumseh
 Thompson Construction Co., 234 Garfield, Coldwater
 Thompson Sand and Gravel, 47399 W. 7 Mile Road,
 Northville
 Thornton Construction Co., 1028 Ethel Ave., Hancock
 Lamar Thumm, 117 S. Grove St., Ypsilanti
 Tuckey's Sand and Gravel, Cass City
 Twin Lakes Sand and Gravel Co., R.F.D. #1, Riverdale

Mackinac
 Lenawee
 Lenawee
 Branch
 Wayne
 Chippewa
 Washtenaw
 Tuscola
 Gratiot

U

Underwood Sand and Gravel Co., 2255 Hamlin Rd., Utica
 Union City Gravel Co., Union City
 U. S. Aggregates, 4461 W. Jefferson Ave., Detroit 9
 C. E. Utterback, R.F.D. #2, Mt. Pleasant

Oakland, Macomb
 Branch
 Oakland
 Isabella

V

Shirley VanDeusen, R. #1, Standish
 Chuck Vaughan Gravel and Excavating, 2685 Deckerville
 Rd., Caro
 Vermontville Gravel Co., R. #1, Vermontville
 Vollmar Sand and Gravel, Pigeon
 Harold O. Voss, R. #2, Fennville

Arenac
 Tuscola
 Eaton
 Huron
 Allegan

W

Ben Waanders, R.F.D. #5, Box 30, Allegan
 Wagner Ready-Mix, 220 North 3rd St., Harbor Beach
 Walkden Gravel Co., 304 Berrien St., Buchanan
 Walker Sand and Gravel Co., P.O. Box 176, New Hudson
 Walling Gravel Co., P.O. Box 52, St. Johns
 Walsh Sand and Gravel Co., 3301 13th St., Menominee
 F. S. Ward, Box 185, Clarkston
 Washtenaw Sand and Gravel, Inc., 4984 Earhardt,
 Ann Arbor
 Wayne Sand and Gravel Co., 39891 Ecorse Rd., Wayne
 Ronald Weaver, Box 116, Dansville

Allegan
 Huron
 Berrien, Cass
 Oakland
 Clinton
 Menominee
 Oakland
 Washtenaw
 Wayne
 Ingham, Shiawassee

Sand and Gravel (Cont'd.)

<u>Name and Address</u>	<u>Pit Location</u>
<u>W continued</u>	
West Lansing Gravel Co., 1911 Pattengill Ave., Lansing	Ingham
West Shore Construction Co., Zeeland	Various
Wexford Gravel Co., P.O. Box 472, Cadillac	Wexford
Whitehall Gravel Co., Whitehall	Muskegon
I. L. Whitehead Co., Sault Ste. Marie	Alger, Chippewa, Mackinac, Marquette, Menominee, Ontonagon
Whittaker and Gooding Co., 5800 Cherry Hill Rd., Ypsilanti	Washtenaw
Whittum Gravel Co., Eaton Rapids	Eaton
Wilkinson Sand and Gravel Co., 2284 Auburn Rd., Pontiac	Oakland
Willson Bros., Rives Junction	Jackson
Wolverine Contractors, Inc., 19440 James Couzens Highway, Detroit	Macomb, Oakland
Woodward Building Materials, 120 W. Chicago St., Coldwater	Branch
Wurth Concrete and Aggregates, Menominee	Menominee
Wysong Gravel Co., 6972 Peninsula Drive, Traverse City	Grand Traverse

Y

John G. Yerington, R. #3, Box 34, Benton Harbor	Allegan, Berrien, Cass, Van Buren
Youngs Sand and Gravel, 9095 S. Huron River Drive, Ypsilanti	Washtenaw

Z

Zahns Sand and Gravel, 2315 Ellsworth Rd., Ann Arbor	Washtenaw
Zeilinger Trucking, 305 N. Franklin St., Frankenmuth	Saginaw

STONE

<u>Name and Address</u>	<u>Type of Stone</u>	<u>Quarry Location</u>
Afton Stone and Lime Co. Afton, Michigan	Limestone, crushed	North of Afton Sec. 25, T.35N., R.2W., Cheboygan County
Alger Co. Rd. Comm. Munising, Michigan	Sandstone, dimensional	
Arenac Co. Rd. Comm. Omer, Michigan	Limestone, crushed	Northeast of AuGres Sec. 5, T.19N., R.7E., Arenac County
Bichler Brothers 1615 Ludington Escanaba, Michigan	Limestone, crushed	Sec. 1, T.39N., R.23E., Delta County

Stone (Cont'd.)

<u>Name and Address</u>	<u>Type of Stone</u>	<u>Quarry Location</u>
Bay Co. Rd. Comm. Bay City, Michigan	Limestone, crushed	Near Omer Sec. 34, T.20N., R.5E., Arenac County
C. and D. Stone Co. AuGres, Michigan	Limestone, crushed	Northeast of AuGres Sec. 5, T.19N., R.7E., Arenac County
Canary Hill Stone Quarry R. #2 Hillsdale, Michigan	Sandstone, dimensional	West of Hillsdale Hillsdale County
Charlevoix Lime and Stone Co. Vanderbilt, Michigan	Limestone, crushed	North of Afton Sec. 25, T.35N., R.2W., Cheboygan County
Cheney Limestone Co. P. O. Box 125 Bellevue, Michigan	Limestone, crushed and dimensional	West of Bellevue Sec. 20, T.1N., R.6W., Eaton County
DeRoche Brothers Keweenaw Bay, Michigan	Sandstone, dimensional	Sec. 34, T.52N., R.33W., Baraga County
Dickinson Co. Road Comm. Iron Mountain, Michigan	Basalt, crushed	
Drummond Dolomite, Inc. P. O. Box 688 Sheboygan, Wisconsin	Dolomite, crushed	West end Drummond Island Sec. 3, 10, T.41N., R.5E., Chippewa County
Dundee Cement Co. Dundee, Michigan	Limestone, crushed	Dundee Sec. 1, T.6S., R.6E., Dundee County
The France Stone Co. 1800 Toledo Trust Bldg. Toledo 14, Ohio	Dolomite, crushed	Monroe Sec. 7, T.7S., R.9E., Monroe County
Gierke Brothers Fairport, Michigan	Dolomite, dimensional	North of Fairport Sec. 4, T.37N., R.19W., Delta County
Houghton Co. Rd. Comm. Hancock, Michigan	Basalt, crushed	Houghton County
Huron Portland Cement Co. 1325 Ford Bldg. Detroit, Michigan	Limestone, crushed	Alpena Sec. 24, T.31N., R.8E., Alpena County
Inland Lime and Stone Co. Div. Inland Steel Co. Gulliver, Michigan	Limestone, crushed	North of Port Inland Sec. 6, T.42N., R.12W., Mackinac County

Stone (Cont'd.)

<u>Name and Address</u>	<u>Type of Stone</u>	<u>Quarry Location</u>
Iosco Co. Rd. Comm. P. O. Box 31 East Tawas, Michigan	Limestone, crushed	Northeast of AuGres Sec. 24, T.20N., R.7E., Arenac County
Jeffry Limestone Co. Box 107 Parma, Michigan	Limestone, crushed	Northeast of Parma Sec. 30, T.2S., R.2W., Jackson County
Limestone Mountain Co. 1028 Ethel Avenue Hancock, Michigan	Dolomite, crushed	Near Pelkie Sec. 23, T.51N., R.35W., Houghton County
A. Lindberg and Sons, Inc. Box 154 Ishpeming, Michigan	Dolomite, crushed	NE SE 24, T.46N., R.18W., Alger County
Maybee Stone Co. Maybee, Michigan	Dolomite, crushed	Near Maybee Sec. 29, T.5S., R.8E., Monroe County
Michigan Metro-Mining Co. 318 Teal Lake Ave. Negaunee, Michigan	Dolomite, crushed	Near Felch Sec. 26, T.42N., R.28W., Dickinson County
Michigan Foundation Quarry Co. 110 W. Jefferson Avenue Trenton, Michigan	Limestone, crushed	Trenton Sec. 7, T.4S., R.11E., Wayne County
Michigan Limestone Div. U. S. Steel Corporation 800 Northland Towers P. O. Box 5010 Detroit 35, Michigan	Limestone, crushed	Near Rogers City Sec. 23, T.35N., R.5E., Presque Isle County
	Dolomite, crushed	Near Cedarville Sec. 10, T.42N., R.1E., Mackinac County
Michigan Silica Co. Rockwood, Michigan	Sandstone, crushed	Near Rockwood Sec. 15, T.5S., R.10E., Wayne County
Michigan Stone Co. R. #2 Ottawa Lake, Michigan	Dolomite, crushed	East of Ottawa Lake Sec. 25, T.8S., R.6E., Monroe County
Monroe County Rd. Comm. Monroe, Michigan	Dolomite, crushed	East of Dundee Sec. 13, T.6S., R.7E., Monroe County
Onaway Stone Co. Onaway, Michigan	Limestone, dimensional	North of Onaway Sec. 5, T.34N., R.2E., Presque Isle County

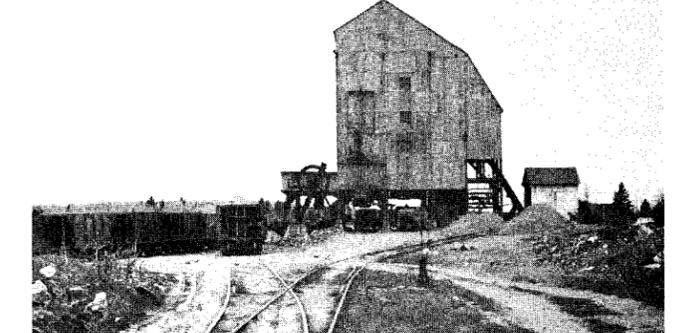
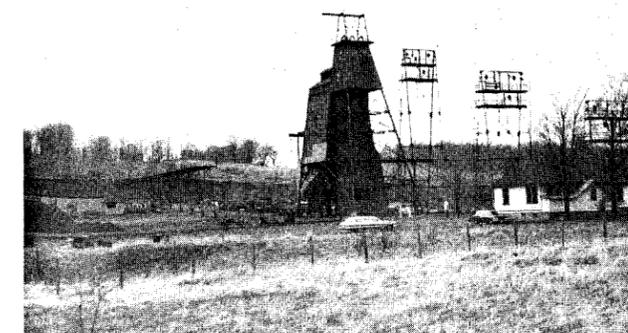
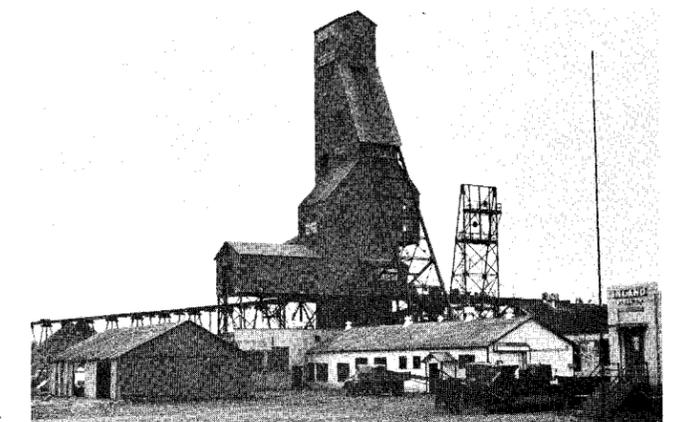
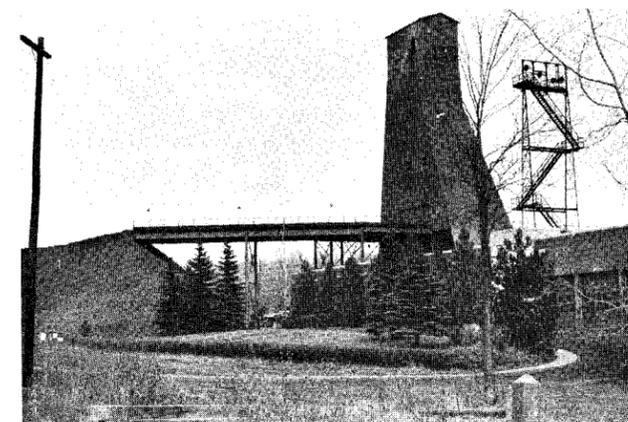
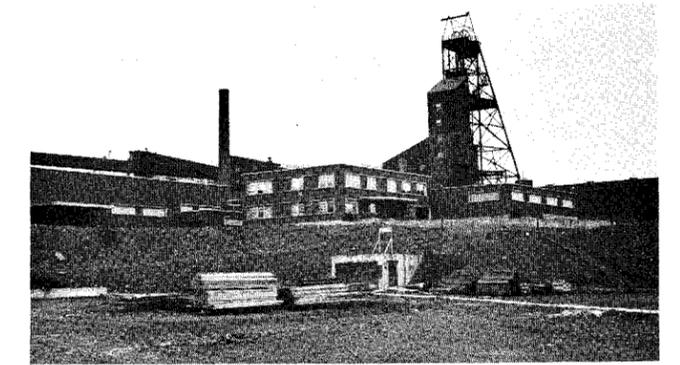
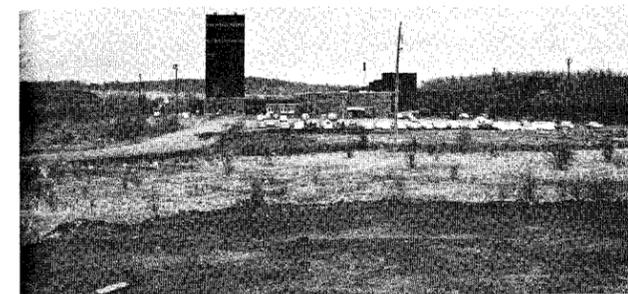
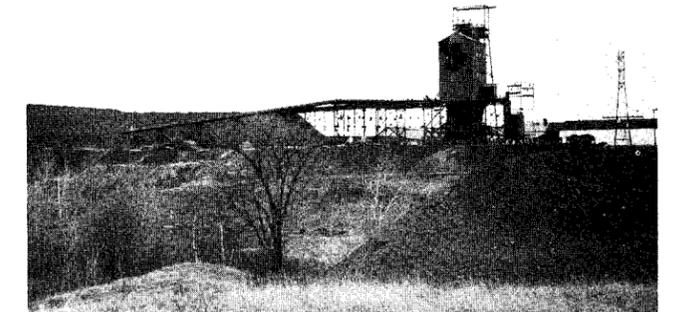
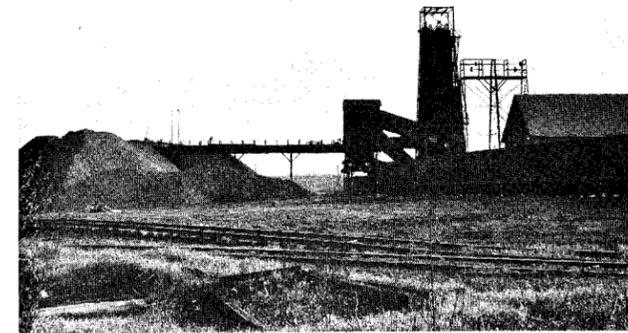
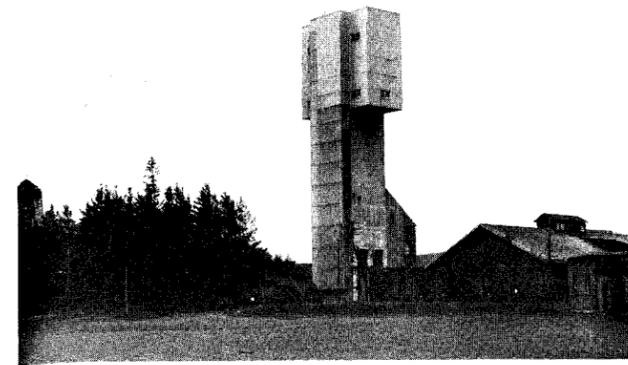
Stone (Cont'd.)

<u>Name and Address</u>	<u>Type of Stone</u>	<u>Quarry Location</u>
Ontonagon Co. Rd. Comm. Ontonagon, Michigan	Basalt, crushed	
The Original Sandstone Quarry Napoleon, Michigan	Sandstone	East of Napoleon Sec. 6, T.4S., R.2E., Jackson County
Penn-Dixie Cement Corp. Nazareth, Pa.	Limestone, crushed	West of Petoskey Sec. 3, T.34N., R.6W., Emmet County
Presque Isle Corporation P. O. Box 426 Alpena, Michigan	Limestone, crushed	Sec. 2, T.33N., R.8E., Presque Isle County
Ray Sandstone Quarry 303 Nottawaseppe St. Napoleon, Michigan	Sandstone	East of Napoleon Sec. 6, T.4S., R.2E., Jackson County
Star Stone Co. Box 102 Napoleon, Michigan	Sandstone	East of Napoleon Sec. 31, T.3S., R.2E., Jackson County
Superior Natural Red Stone Quarry Pelkie, Michigan	Sandstone	North of Baraga Sec. 2, T.52N., R.33W., Baraga County
Thornton Construction Co., Inc. 1028 Ethel Ave. Hancock, Michigan	Dolomite, crushed	Sec. 6, T.44N., R.8W., Mackinac County NW SE 5, T.38N., R.26W., Menominee County
	Granite, crushed	Sec. 17, T.47N., R.25W., Marquette County
The Wallace Stone Co. Bayport, Michigan	Limestone, crushed and dimensional	Southeast of Bayport Sec. 5 and 6, T.16N., R.10E., Huron County
	SULFUR	
<u>Name and Address</u>		<u>Location</u>
Leonard Refineries, Inc. Alma, Michigan		Alma, Gratiot County
Marathon Oil Company 15911 Wyoming Avenue Detroit, Michigan		Detroit, Wayne County

IRON MINES

Photo

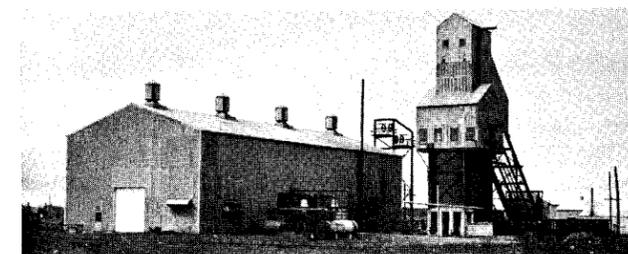
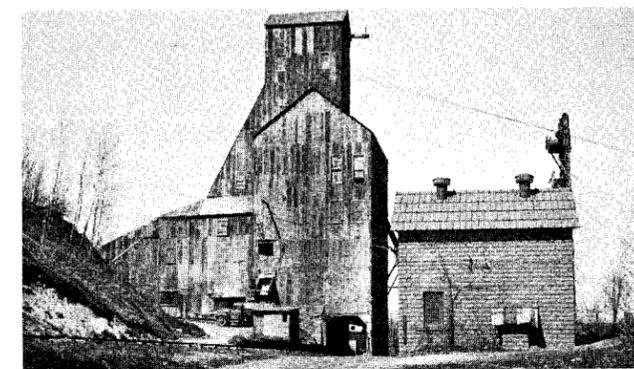
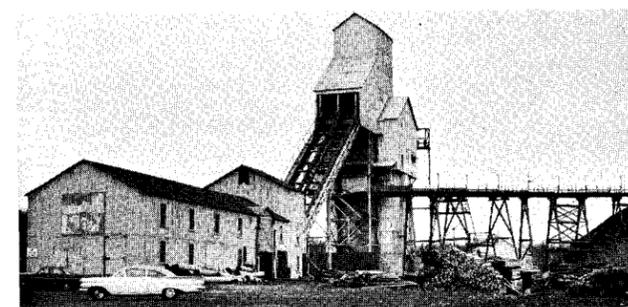
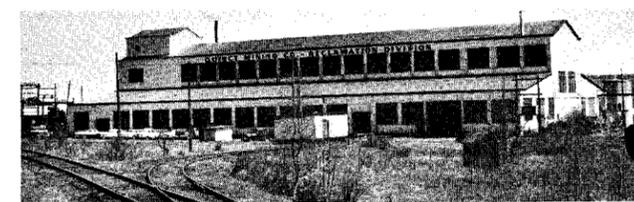
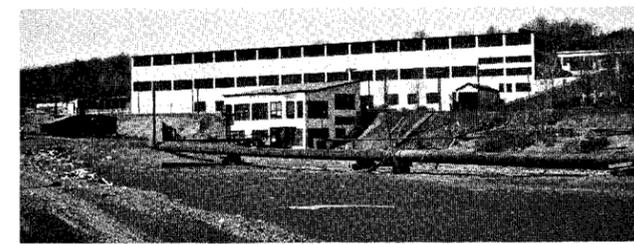
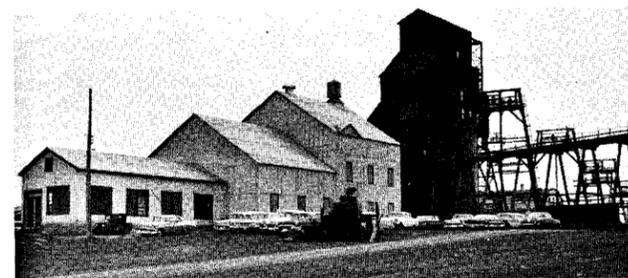
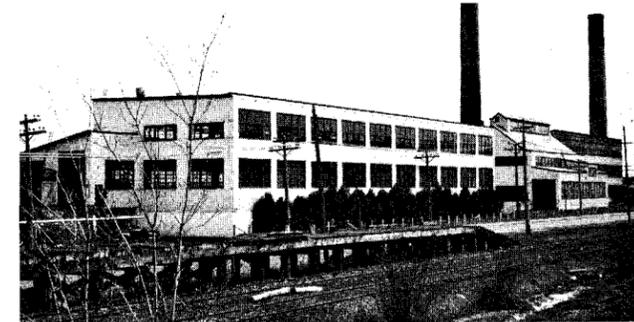
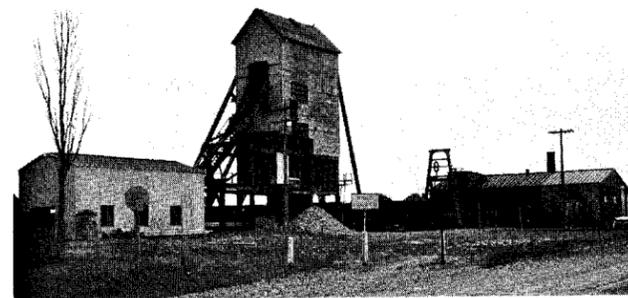
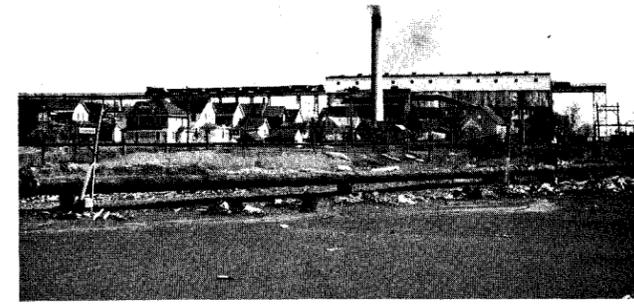
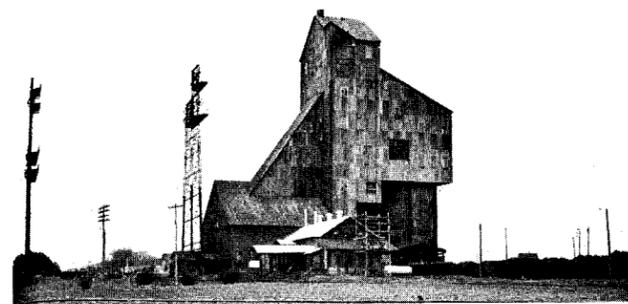
1. "C" Shaft of the Cliffs Shaft Iron Mine at Ishpeming. Cleveland-Cliffs Iron Company. Michigan's first Koepe hoist.
(NW NW 10, 47N, 27W, Marquette County)
2. Old head frame of the Wauseca-Aronson Iron Mine, north of Iron River. M. A. Hanna Company. (SW NE 23, 43N, 35W, Iron County)
3. The new Homer-Wauseca shaft northeast of Iron River. M. A. Hanna Company. Michigan's second Koepe hoist.
(NW NW 26, 43N, 35W, Iron County)
4. Sherwood Iron Mine just north of Iron River. Operated by Inland Steel Company. (SE NE 23, 43N, 35W, Iron County)
5. Abandoned Tobin Iron Mine near Crystal Falls. Republic Steel Company. (NE NW 31, 43N, 32W, Iron County)
6. Hiawatha No. 1 Iron Mine in Stambaugh. M. A. Hanna Company.
(SW SE 35, 43N, 35W, Iron County)
7. Hiawatha No. 2 Iron Mine in Stambaugh. M. A. Hanna Company.
(NE NE 2, 42N, 35W, Iron County)
8. Tracy Iron Mine at Negaunee. Jones & Laughlin Steel Corporation.
(SW SW 5, 47N, 26W, Marquette County)
9. Abandoned Greenwood Iron Mine. Inland Steel Company. Located west of Ishpeming. (SW SE 14, 47N, 28W, Marquette County)
10. Champion Iron Mine at Champion North Range Mining Company.
(SW 31, 48N, 29W, Marquette County)



COPPER MINES

Photo

1. Head frame of both Ahmeek No. 3 and No. 4 shafts on the Kearsarge amygdaloid lode at Mohawk. No. 3 ceased operation in 1959. Calumet & Hecla, Inc. (SE SW 28, 57N, 32W, Houghton County)
2. Centennial No. 3 shaft is an exploration on the Calumet & Hecla conglomerate lode located just north of Calumet. Calumet & Hecla, Inc. (SW SE 12, 56N, 33W, Houghton County)
3. Centennial No. 2 shaft is on the southern extremity of the workings on the Kearsarge amygdaloid lode just northeast of Laurium. Calumet & Hecla, Inc. (NW NW 18, 56N, 32E, Houghton County)
4. Allouez No. 3 shaft on the Houghton conglomerate and the Allouez conglomerate lodes. The exploration of the Kingston conglomerate is also taking place from this shaft. Calumet & Hecla, Inc. (NW SE 31, 57N, 32W, Keweenaw County)
5. Seneca No. 2 shaft on the northern extremity of the mined area of the Kearsarge amygdaloid lode, about one mile northeast of Mohawk. Calumet & Hecla, Inc. (NE NE 27, 57N, 32W, Keweenaw County)
6. Osceola No. 13 shaft at Osceola on the Osceola amygdaloid lode. Calumet & Hecla, Inc. (SE SW 23, 56N, 33W, Keweenaw County)
7. Ahmeek Mill at Hubbell. Mills and treats all the ore mined by Calumet & Hecla, Inc. (NW NE 13, 55N, 33W, Houghton County)
8. Calumet & Hecla smelter at Hubbell. (NW SW 7, 55N, 32W, Houghton County)
9. Calumet & Hecla Tamarack Reclamation Plant at Hubbell. Reclaims copper from coarse rejects from old mill tailings. (NW SW 13, 55N, 33W, Houghton County)
10. Quincy Mining Company Reclamation Plant at Mason. Reclaims copper from coarse rejects of the old Quincy Mill. (NE SW 23, 55N, 33W, Houghton County)
11. Head frame of No. 3 shaft of Champion Mine on the Baltic lode at Painesdale. Copper Range Company. (NW NE 31, 54N, 34W, Houghton County)
12. Head frame of the abandoned Algoma Mine near Mass. Algoma Mining Company. (SW NE 3, 50N, 38W, Ontonagon County)



LIMESTONE

Photo

1. Inland Lime and Stone quarries 7 miles northeast of Port Inland (frontispiece) which is just outside the upper right corner of this photo. Right margin of picture approximates the north-south boundary between Mackinac and Schoolcraft counties. The new smaller quarry is about 1 mile long and 600 feet wide.
2. North face at Inland quarry after blasting. Stone is high-calcium limestone of Niagaran (Silurian) age.
3. Crushed marble operation at Felch. Formerly operated by Metro-Nite Company, but now being rebuilt to produce high-grade extender pigment for the protective coating industry.

SAND AND GRAVEL

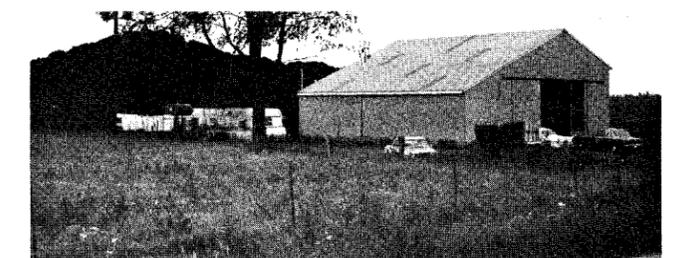
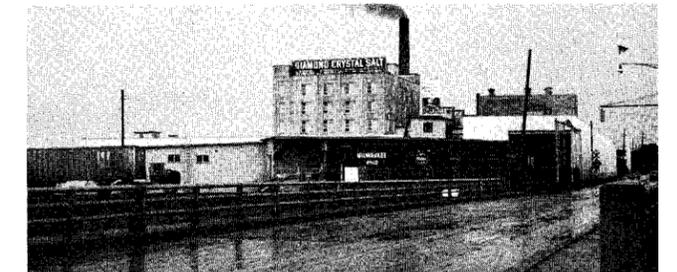
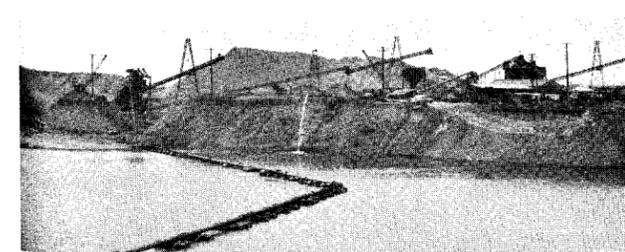
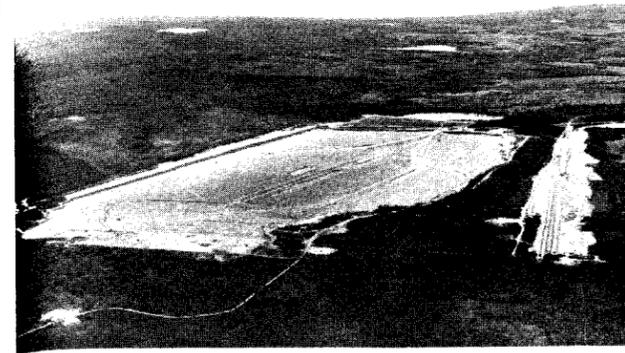
4. New Romeo plant of the American Aggregate Corp. having a heavy-media separation unit for removal of harmful chert, shale, clay, etc.
5. Gravel plant of H. Lindberg and Sons, Inc., approximately 5 miles southwest of Marquette on County Rd. 480.
6. Macomb County Rd. Commission portable gravel plant. Operating in outwash 4 miles west and 2 miles south of Romeo.
- 7 & 8. Pit (7) and plant (8) of Advance Building Material, Inc., 3 miles west and one mile south of Romeo.

SALT

9. Diamond Crystal Salt plant at St. Clair. Produces salt by Alberger, Vacuum Pan, and circular grainer processes.
10. Diamond Crystal Salt Well No. 19, just south of Pine River about one mile southeast of main plant in St. Clair.

PEAT

11. Anderson Peat Co., $3\frac{1}{2}$ miles east and 1 mile south of Imlay City. Lapeer County.
12. Hofman Peat Co., about 2 miles northeast of Imlay City.



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Michigan Geological Survey

FULL TIME TECHNICAL STAFF

DIVISION CHIEF and STATE GEOLOGIST

(appointment pending)

OIL AND GAS

L. W. Price, Geologist and Asst. Chief

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R. M. Acker, geologist and head

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F. W. Terwilliger, geologist in charge

R. M. Lorenz, geologist

D. R. Brackenbury, geologist

S. L. Alguire, geologist

Mt. Pleasant District

V. F. Sargent, geologist in charge

S. A. Dyer, geologist

B. N. Gunning, geologist

Plainwell District

B. C. Ackerman, geologist in charge

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Cadillac District

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G. D. Ells, geologist

B. L. Champion, geologist

W. E. Mantek, geologist

L. D. Taylor, cartographic draftsman

MINES & PRECAMBRIAN GEOLOGY

H. J. Hardenberg, Geologist and Asst. Chief

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H. O. Sorensen, geologist and head

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WATER

J. G. Rulison, geologist and head

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J. R. Eyerlay, geologist

GENERAL GEOLOGY

R. W. Kelley, geologist and head

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UPPER PENINSULA OFFICE -- ESCANABA

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