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Nebraska Mineral Operations Review, 1990

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**NEBRASKA MINERAL
OPERATIONS REVIEW, 1990**

R. R. Burchett and D. A. Eversoll

April 1991

Nebraska Geological Survey
Conservation and Survey Division
Institute of Agriculture and Natural Resources
The University of Nebraska—Lincoln

A total of 3,595 quarries, pits, and mines have been active at various times over approximately the last 90 years in Nebraska (table 1). Of these, there were 369 limestone quarries; 3,038 sand, gravel, and silt pits; 26 clay or shale pits; 99 sandstone pits; 11 quartzite pits; 30 volcanic ash pits; 14 coal mines; one chalk mine; three flint quarries; and five peat pits. These operations have disturbed about 43,394 acres, of which approximately 56 percent have been reclaimed.

During 1990, there were 29 limestone quarries; 667 sand, gravel, and silt or siltstone pits; eight clay or shale pits; and 22 sandstone pits active in Nebraska (table 2). These 726 active mining operations disturbed 660 acres and restored 248 acres during the year. The locations of these quarries, pits, and mines are shown in figure 1.

The Nebraska Oil and Gas Conservation Commission reports that 1,742 wells produced 5,889,722 barrels of oil and 679 million cubic feet of casinghead gas. Approximately 114 million cubic feet of dry gas was produced from 11 wells, and 10 gas wells were shut-in during 1990. Locations of the oil and gas fields are shown in figure 2. Of the 140 wells drilled during the year, 75 were for exploration, 63 for development and 2 classified as miscellaneous service or stratigraphic tests. The largest number of exploration and development wells completed occurred in Kimball County, followed by Cheyenne, Dundy, Hayes, Hitchcock, and Banner counties.

Current information collected by the Conservation and Survey Division (Nebraska Geological Survey), the U.S. Department of Agriculture Soil Conservation Service, and the Nebraska Department of Roads Materials Division has been compiled and placed on open file at the office of the Conservation and Survey Division, 113 Nebraska Hall, 901 North 17th Street, Lincoln, Nebraska 68588-0517.

TABLE 1: CUMULATIVE SUMMARY OF ACTIVE, INACTIVE, AND ABANDONED NEBRASKA QUARRIES, PITS AND MINES: 1900-1990

COUNTY	LIMESTONE			SAND-GRAVEL-SILT			CLAY OR SHALE			SANDSTONE			OTHER MINERALS		
	NO.	ACRES MINED	ACRES RECL.	NO.	ACRES MINED	ACRES RECL.	NO.	ACRES MINED	ACRES RECL.	NO.	ACRES MINED	ACRES RECL.	NO.	ACRES MINED	ACRES RECL.
ADAMS				17	154.8	86.0									
ANTELOPE				25	365.6	146.0									
BANNER				30	172.1	25.0									
BLAINE				8	34.5	21.0									
BOONE				8	99.0	90.5									
BOX BUTTE				1	80.0	0.0				13	57.3	18.0			
BOYD				18	73.7	11.0									
BROWN				45	348.4	152.9							1	2.0	0.0
BUFFALO				125	2056.8	1759.5									
BURT				17	54.4	34.8	1	4.0	0.0	1	3.4	0.5			
BUTLER				23	499.7	423.7									
CASS	156	2426.8	369.6	31	1083.6	667.2	8	25.0	0.0	10	10.5	0.5			
CEDAR	2	5.0	1.3	82	538.3	350.3									
CHASE				43	244.3	136.3				5	19.7	18.5			
CHERRY				17	54.7	9.0				2	8.8	0.0	3	3.0	0.0
CHEYENNE				69	592.1	325.5									
CLAY				10	228.0	133.6									
COLEMAN				26	621.8	472.0									
CUMING				15	634.0	409.0									
CUSTER				16	318.7	81.5							3	7.0	0.0
DAKOTA	6	8.5	0.0	22	315.8	177.0				1	2.0	2.0			
DAWES				37	130.8	27.0									
DAWSON				112	1730.9	1527.1									
DEUEL				37	355.3	115.0									
DIXON	5	32.0	8.0	16	79.0	30.0									
DODGE				44	2194.9	1959.0									
DOUGLAS				37	1539.1	758.1									
DUNDY				66	240.8	167.8									
FILLMORE				9	156.6	146.5									
FRANKLIN				30	343.9	127.0							4	67.0	0.0
FRONTIER				4	25.1	17.0							4	38.0	9.0
FURNAS	5	23.0	0.0	29	249.3	84.0							3	3.1	0.0
GAGE	16	138.7	34.3	58	682.8	291.0	1	2.0	0.0	2	2.0	1.0	3	12.0	0.0
GARDEN				46	97.7	31.3									
GARFIELD				7	50.5	47.5									
GOSPER				11	134.6	133.2							1	3.0	0.0
GREELEY				10	21.1	14.5							1	2.0	2.0
HALL				147	2081.5	1206.5									
HAMILTON				31	354.0	173.5									
HARLAN				10	176.3	126.9							2	26.0	26.0
HAYES				12	113.7	82.8									
HITCHCOCK				33	253.2	131.2				1	2.0	2.0			
HOLT				101	696.6	195.5				2	9.9	4.9			
HOOKER				10	63.3	48.0									
HOWARD				20	256.1	106.0									
JEFFERSON	11	57.0	0.0	34	340.5	161.0	6	45.6	32.5				1	1.0	0.0
JOHNSON	2	12.0	4.0	27	41.9	17.2							1	0.1	0.0
KEARNEY				17	279.0	198.0									

TABLE 1: CUMULATIVE SUMMARY OF ACTIVE, INACTIVE, AND ABANDONED NEBRASKA QUARRIES, PITS AND MINES: 1900-1990

COUNTY	LIMESTONE			SAND-GRAVEL-SILT			CLAY OR SHALE			SANDSTONE			OTHER MINERALS		
	NO.	ACRES MINED	ACRES RECL.	NO.	ACRES MINED	ACRES RECL.	NO.	ACRES MINED	ACRES RECL.	NO.	ACRES MINED	ACRES RECL.	NO.	ACRES MINED	ACRES RECL.
KEITH				88	1137.2	745.7									
KEYA PAHA				41	113.5	53.1				28	83.9	32.3	2	1.0	0.0
KIMBALL				72	342.5	155.3									
KNOX				44	606.4	301.0									
LANCASTER	11	225.7	97.7	35	120.3	84.5	4	49.6	3.6	12	34.2	24.5			
LINCOLN				133	1926.1	1161.8							10	26.3	0.5
LOGAN				2	3.2	0.0									
LOUP				20	114.5	94.8									
MADISON				25	986.8	426.1							1	0.5	0.0
MCPHERSON				2	15.5	0.0									
MERRICK				62	762.9	554.9									
MORRILL				82	527.1	231.4				11	21.2	4.5			
NANCE				14	232.2	104.0									
NEMAHA	60	581.7	108.1	12	61.0	44.4							1	0.1	0.0
NUCKOLLS	2	8.1	0.0	27	233.4	77.3							1	1.0	0.0
OTOE	11	86.0	31.0	13	55.0	54.0	2	19.3	7.0				4	0.3	0.0
PAWNEE	14	135.2	101.2	14	45.3	39.0	1	8.0	0.0				4	3.5	0.0
PERKINS				22	125.2	38.1									
PHELPS				11	170.7	54.0									
PIERCE				19	508.5	300.0									
PLATTE				37	1408.8	908.3									
POLK				19	458.9	410.0									
RED WILLOW	1	2.0	2.0	36	663.0	557.9							4	4.0	4.0
RICHARDSON	26	235.5	70.0	26	207.9	182.7	1	2.0	0.0				4	2.1	0.0
ROCK				22	111.8	72.8									
SALINE	3	14.0	0.0	28	274.5	79.0									
SARPY	18	330.3	89.0	33	1073.5	847.0	2	3.8	0.3	4	7.0	0.0			
SAUNDERS	1	126.2	52.0	70	1259.8	731.5				2	2.5	0.0	1	3.0	0.0
SCOTTS BLUFF				130	715.8	385.8									
SEWARD	4	30.9	4.6	15	41.8	18.0									
SHERIDAN				39	130.7	26.2				5	16.2	0.0			
SHERMAN				10	11.8	9.2									
SIOUX				18	41.4	12.5									
STANTON				14	370.5	204.0									
THAYER	3	23.0	0.0	48	552.0	143.5							1	1.0	0.0
THOMAS				23	271.8	167.4									
THURSTON	2	7.0	0.0	19	36.9	14.0							1	0.4	0.0
VALLEY				13	195.0	105.0							2	3.0	1.0
WASHINGTON	3	167.0	79.5	5	8.0	8.0									
WAYNE				2	4.0	4.0									
WEBSTER	7	8.9	0.0	16	296.0	31.0									
WHEELER				2	12.4	12.4									
YORK				32	566.3	371.5									
TOTALS:	369	4684.5	1052.3	3038	38058.7	23255.5	26	159.3	43.4	99	280.6	108.7	63	210.4	42.5

TABLE 2: SUMMARY OF ACTIVE NEBRASKA QUARRIES, PITS AND MINES FOR 1990

COUNTY	LIMESTONE		SAND-GRAVEL-SILT		CLAY OR SHALE		SANDSTONE		OTHER MINERALS			
	NO.	ACRES MINED	ACRES RECL.	NO.	ACRES MINED	ACRES RECL.	NO.	ACRES MINED	ACRES RECL.	NO.	ACRES MINED	ACRES RECL.
ADAMS				4	1.0	0.0						
ANTELOPE				3	0.5	0.0						
BANNER				18	34.6	0.0						
BLAINE				3	3.0	0.0						
BOONE												
BOX BUTTE								5	3.0	0.0		
BOYD				8	0.5	0.0						
BROWN				20	11.4	0.0						
BUFFALO				13	76.0	53.0						
BURY				6	0.4	0.0		1	0.0	0.0		
BUTLER				6	5.0	11.0						
CASS	11	25.4	2.0	6	99.3	60.0	1	0.0	0.0			
CEDAR				7	102.5	13.8						
CHASE				25	0.8	1.0		2	0.0	0.0		
CHERRY				7	6.0	0.0		1	0.0	0.0		
CHEYENNE				43	5.9	5.5						
CLAY				4	5.7	1.2						
COLFAX				5	4.1	0.0						
CUMING				2	4.0	10.0						
CUSTER				3	7.0	2.0						
DAKOTA				2	0.0	0.0						
DAWES				19	0.0	0.0						
DAWSON				8	13.3	10.5						
DEUEL				20	5.0	0.0						
DIXON	1	0.0	0.0	2	0.0	0.0						
DODGE				5	5.6	11.0						
DOUGLAS				9	2.0	0.0						
DUNDY				36	2.9	0.0						
FILLMORE				1	1.0	0.0						
FRANKLIN				4	4.0	0.0						
FRONTIER				1	0.0	0.0						
FURNAS				4	0.0	0.0						
GAGE	3	0.5	0.5	6	6.0	1.0						
GARDEN				12	0.0	0.0						
GARFIELD				1	2.0	0.0						
GOSPER				1	0.0	0.0						
GREELEY												
HALL				9	4.5	0.0						
HAMILTON				1	5.0	10.0						
HARLAN				4	14.2	3.0						
HAYES				2	0.0	0.0						
HITCHCOCK				5	8.9	3.0						
HOLT				27	1.0	0.0						
HOOVER												
HOWARD				4	0.0	0.0						
JEFFERSON				7	7.5	6.0	3	0.0	0.0			
JOHNSON				1	1.0	0.0						
KEARNEY				4	2.0	0.0						

TABLE 2: SUMMARY OF ACTIVE NEBRASKA QUARRIES, PITS AND MINES FOR 1990

COUNTY	LIMESTONE			SAND-GRAVEL-SILT			CLAY OR SHALE			SANDSTONE			OTHER MINERALS		
	NO.	ACRES MINED	ACRES RECL.	NO.	ACRES MINED	ACRES RECL.	NO.	ACRES MINED	ACRES RECL.	NO.	ACRES MINED	ACRES RECL.	NO.	ACRES MINED	ACRES RECL.
KEITH				15	11.0	2.5									
KEYA PAHA				9	0.0	0.0				4	0.0	0.0			
KIMBALL				49	1.4	0.0									
KNOX				11	2.5	5.0									
LANCASTER	2	0.0	0.0	3	0.0	0.0	3	0.0	0.0	1	0.0	0.0			
LINCOLN				11	18.0	2.0									
LOGAN															
LOUP				4	2.5	1.0									
MADISON				9	14.1	1.0									
MCPHERSON															
MERRICK				6	15.0	0.0									
MORRILL				37	12.7	15.0				7	1.6	1.5			
NANCE				2	8.0	5.5									
NEMAHA				1	0.0	0.0									
NUCKOLLS	2	0.0	0.0	4	0.0	0.0									
OTOE															
PAWNEE	1	5.0	0.0	1	0.5	0.0									
PERKINS				10	0.0	0.0									
PHELPS				4	42.0	0.0									
PIERCE				1	0.0	0.0									
PLATTE				9	0.0	0.0									
POLK				3	3.2	2.5									
RED WILLOW				11	7.0	3.0									
RICHARDSON				6	0.0	0.0									
ROCK				5	0.0	0.0									
SALINE				3	0.0	0.0									
SARPY	3	0.0	0.0	3	0.0	0.0	1	0.0	0.0						
SAUNDERS				10	0.0	0.0									
SCOTT'S BLUFF				11	6.4	0.0									
SEWARD	2	0.0	0.0	2	1.0	0.0									
SHERIDAN				15	10.6	2.0				1	0.0	0.0			
SHERMAN				1	0.0	0.0									
SIOUX				5	0.0	0.0									
STANTON				4	0.0	0.0									
THAYER				7	4.2	0.0									
THOMAS				4	5.3	0.0									
THURSTON				3	0.0	0.0									
VALLEY				2	0.0	0.0									
WASHINGTON	2	2.5	2.5												
WAYNE															
WEBSTER	2	0.5	0.0	4	0.0	0.0									
WHEELER															
YORK				4	2.5	0.0									
TOTALS:	29	33.9	5.0	667	621.5	241.5	8	0.0	0.0	22	4.6	1.5	0	0.0	0.0

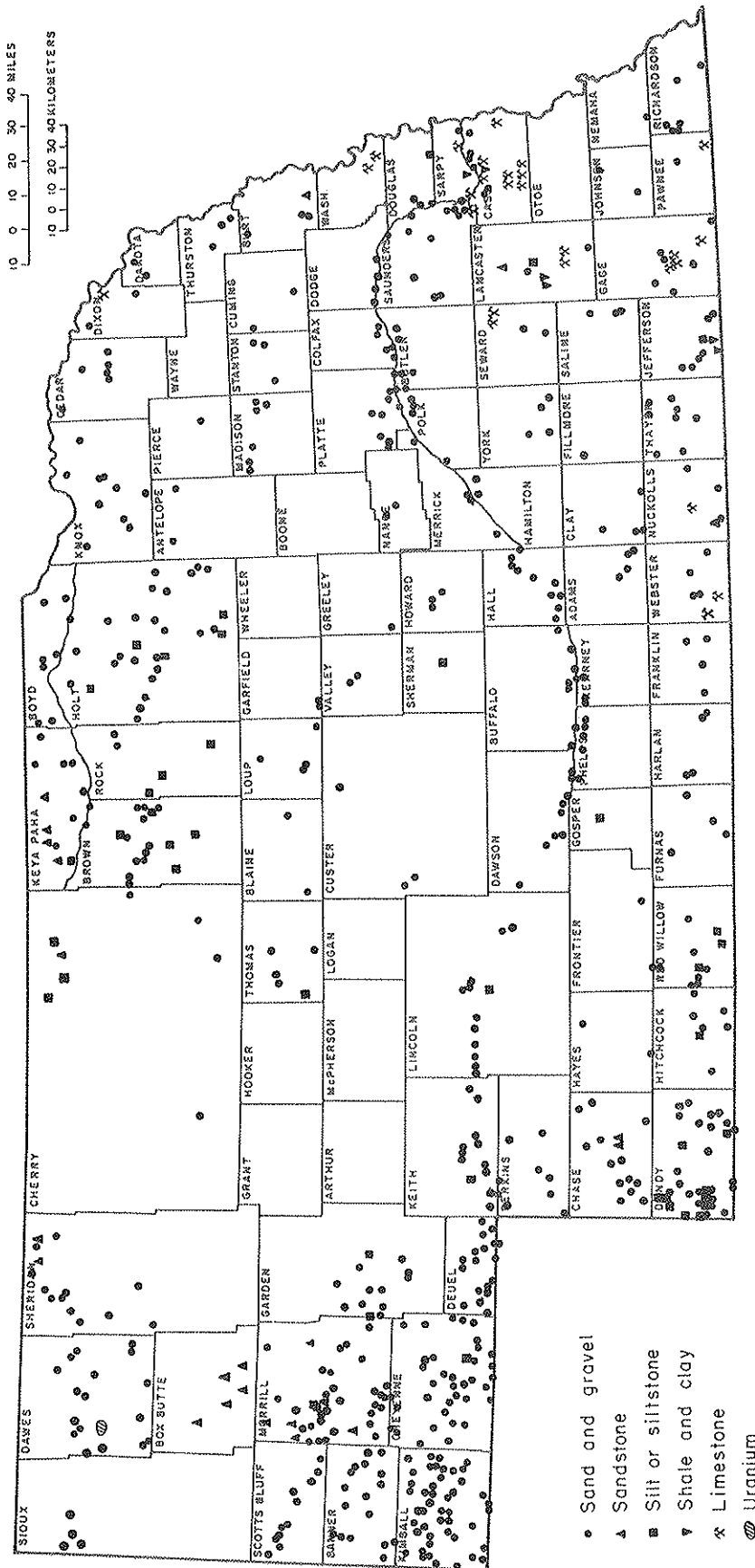


Fig. 1. Location of active quarries, pits, and mines in Nebraska, 1990.

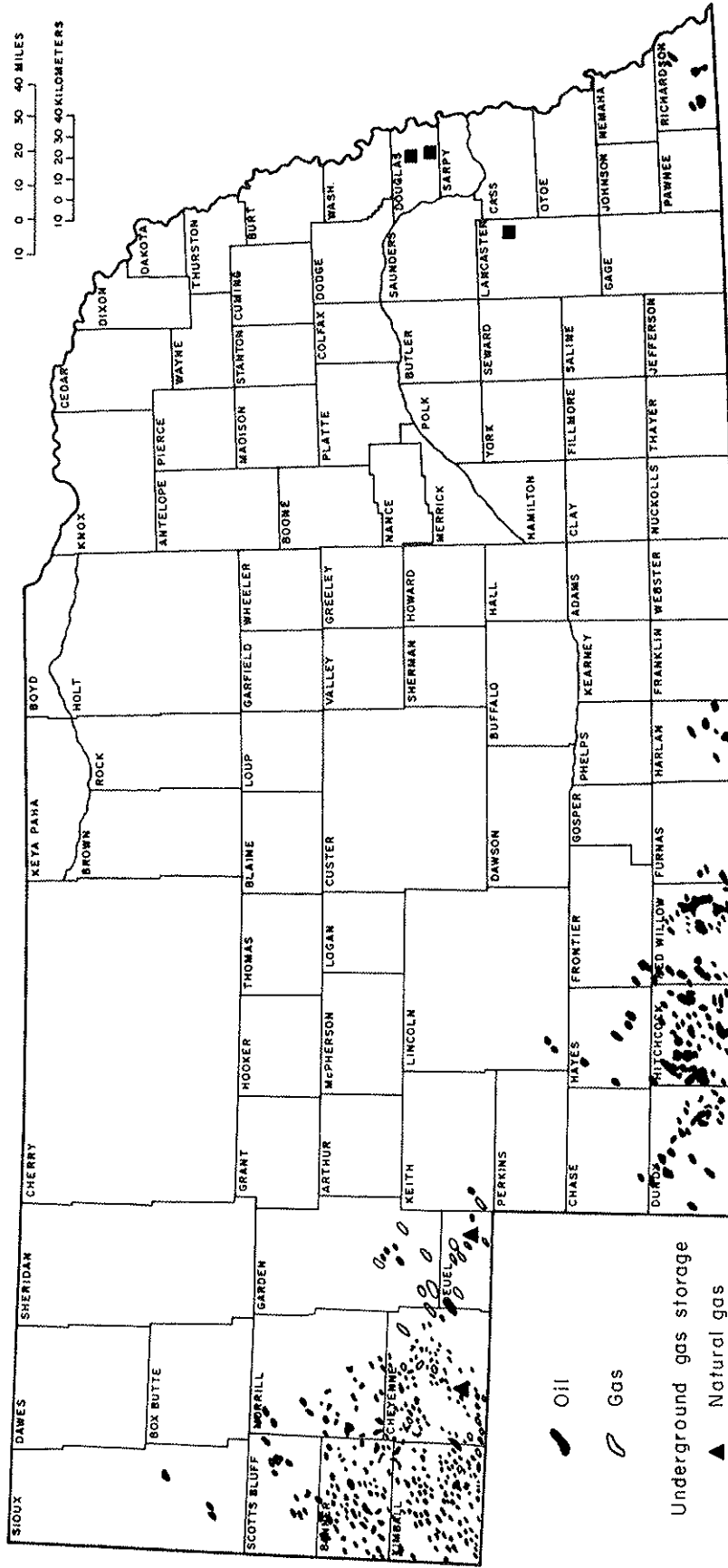


Fig. 2. Location of active oil and gas fields in Nebraska, 1990.

Role of Minerals in State Economy

Few Nebraskans live a single day without using raw mineral products or materials manufactured from, processed by, fertilized with, or in some other way affected by minerals or mineral products. Unlike some natural resources, minerals are not renewable.

The value of mineral production in Nebraska during 1990 was \$236.2 million (figure 3). About 1,600 people are employed by the mining industry in Nebraska, the greater number working in the counties with the largest mineral production value. The 1990 mineral production of Nebraska, as reported by the U.S. Bureau of Mines and the Nebraska Oil and Gas Conservation Commission, follows:

Table 3. Preliminary data on mineral production¹ in Nebraska during 1990

	1990	
	Quantity	Value, thousand dollars
Clays thousand short tons	219 ^P	901 ^P
Lime do	W	W
Sand and gravel:		
Construction do	15,800 ^P	45,700 ^P
Industrial do	W	W
Stone (crushed) do	4,000 ^P	21,200 ^P
Combined value of cement, gem stones, lime, and values indicated by symbol W	XX	38,589 ^P
Natural gas . . . million cubic feet	793	1,793
Petroleum . . thousand 42-gallon barrels . . .	5,890	128,031
Total	XX	\$236,214 ^P

^PPreliminary. XX Not applicable.

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

W Withheld to avoid disclosing company proprietary data; value included with "Combined value" figure.

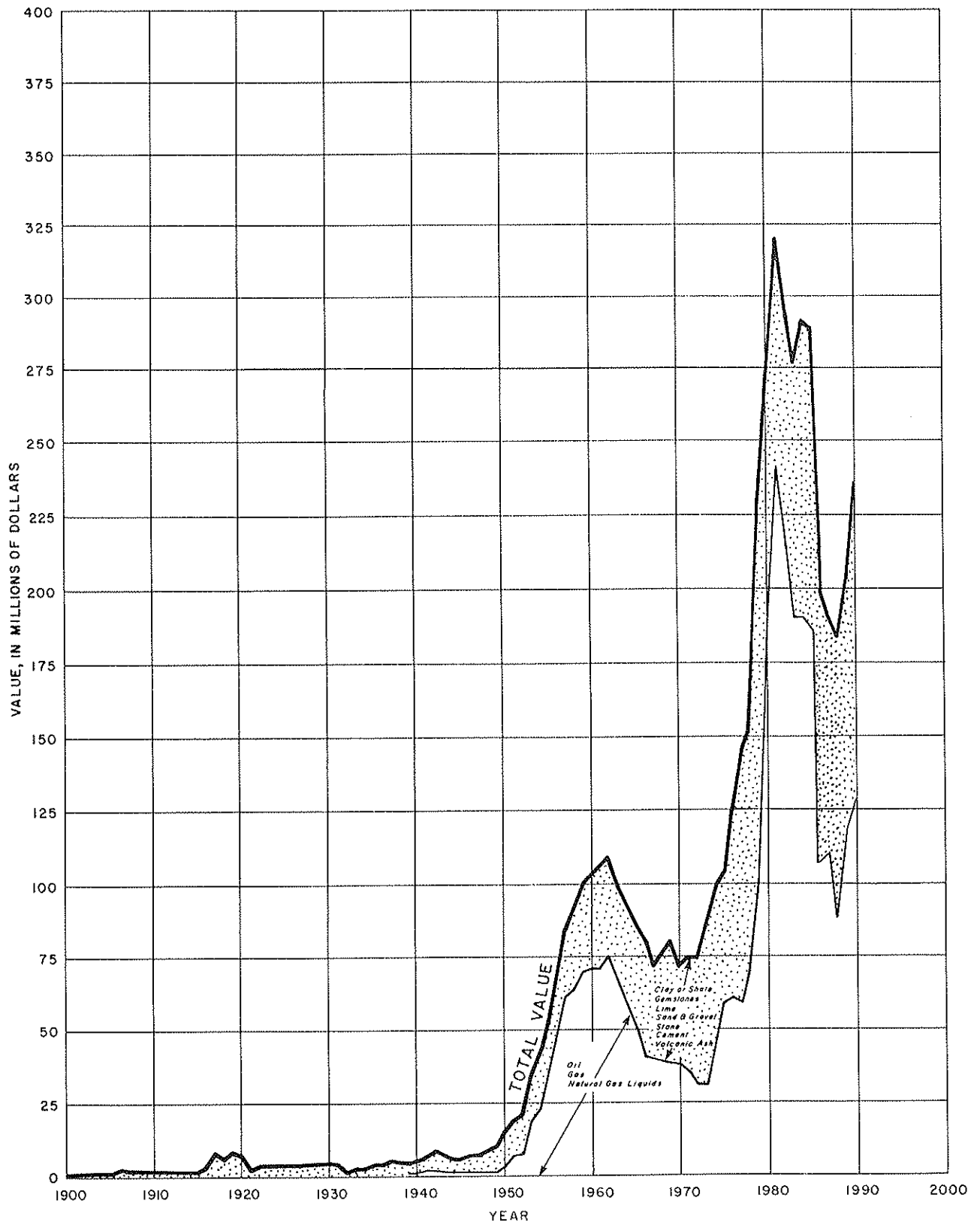


Fig. 3. Value of mineral production in Nebraska.

Mineral Resource Industries

Industrial plants manufacturing products from mineral resources are scattered throughout Nebraska. These plants, whose locations are shown in figure 4, are discussed below:

Agricultural_Lime_Plants. Three firms produce agricultural lime exclusively. They are located near Garland in Seward County, near Nelson in Nuckolls County, and near Ponca in Dixon County. Most crushed limestone plants, largely in southeast Nebraska, produce some agricultural lime.

Brick_Plants. Three firms produce brick in Nebraska: Endicott Clay Products Company near Endicott in Jefferson County; Yankee Hill Brick Manufacturing near Lincoln in Lancaster County; and Omaha Brick Works near Ralston in Douglas County. Common and face brick are the main products of these plants.

Cement_Plants. Cement is produced by Ash Grove Cement Company near Louisville in Cass County. Limestone, shale, and gypsum are the chief raw materials used in cement manufacture.

Concrete_Products_Plants. Many plants across the state produce concrete products such as block, brick, precast and prestressed slabs and construction beams, tile, pipe, vaults, septic tanks, steps, feed bunks, and bunker silos.

Crushed_Limestone_Plants. There are approximately 17 limestone plants in the eastern third of Nebraska. Principal producers are Fort Calhoun Stone Company, Kerford Limestone Company, and Martin Marietta Aggregates. Cass and Washington counties are the leaders in production. Crushed limestone is used for aggregate in concrete, cement manufacture, road base, riprap, agricultural lime, wallstone, and mineral fillers.

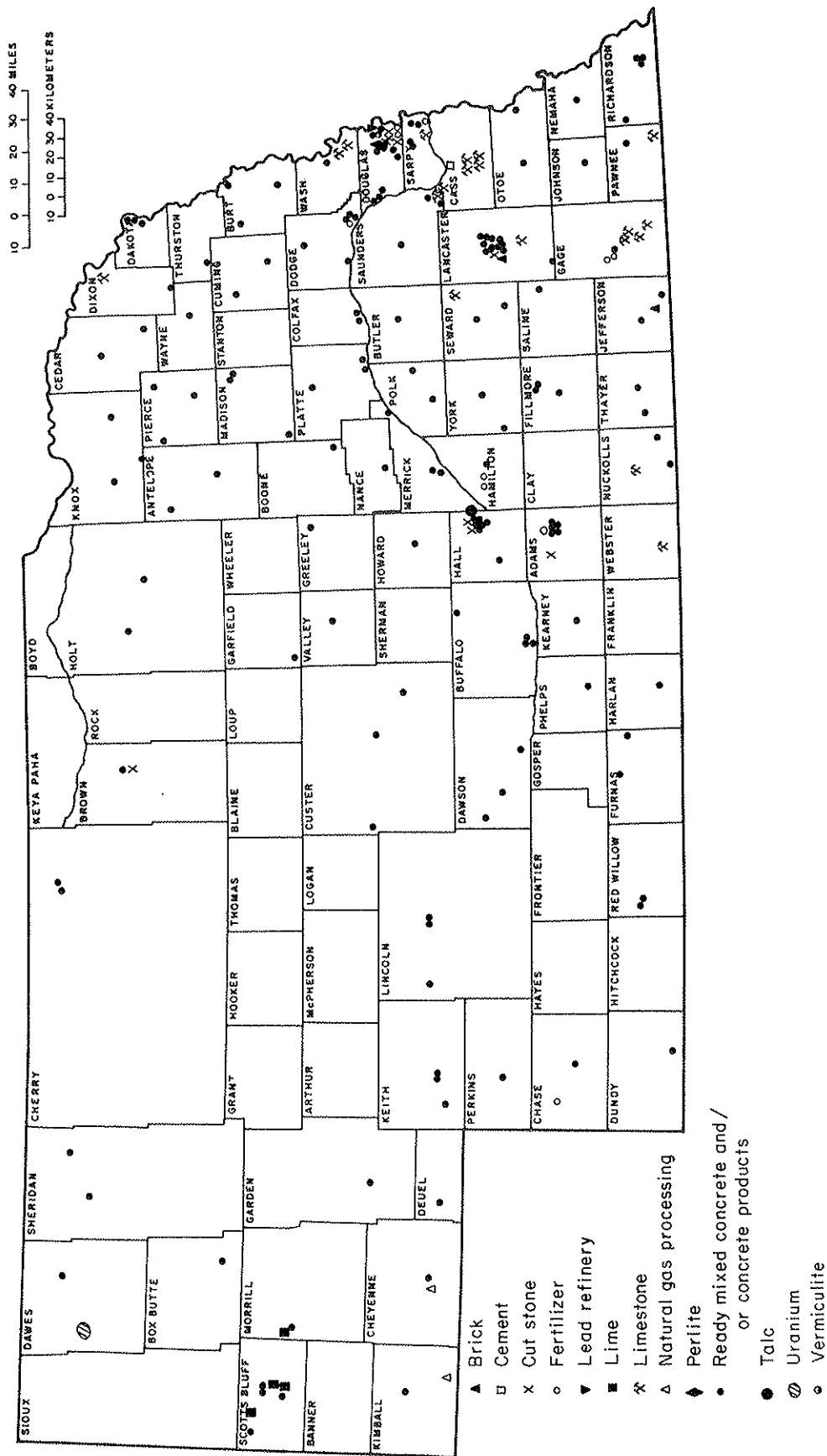


Fig. 4. Location of mineral-resource processing plants in Nebraska, 1990.

Cut-Stone Plants. Stone imported from other states is cut by Nebraska firms. Two of these firms are near Grand Island in Hall County, two near Lincoln in Lancaster County, one near Juniata in Adams County, one near Ainsworth in Brown County, and four near Omaha in Douglas County.

Fertilizer Plants. Some of the larger producers of ammonia, urea, and ammonium nitrate include Arcadian Corporation at La Platte in Sarpy County; Farmland Industries, Inc. at Fremont in Dodge County. A Farmland Industries plant at Hastings in Adams County produces ammonia. Ammonium nitrate is produced by Cominco-American in Beatrice.

Gem and Ornamental Stone Plants. Many small firms around Nebraska cut and polish gems and ornamental stones such as agate, quartz, jasper, chalcedony, chert, and petrified wood.

Glass Plants. Several firms around the state manufacture items from glass produced in other states.

Ground Limestone Plants. Three firms in Nebraska produce finely ground limestone (calcium carbonate) for feed supplements and fillers for cement, paint, and rubber. Kerford Limestone Company and Iowa Limestone Company are west of Weeping Water in Cass County, and Texasgulf is southeast of Weeping Water.

Lead refinery. Operated by ASARCO Inc. and located in Douglas County in Omaha, the refinery has been in existence since 1870 recovering lead, zinc, and precious metals.

Lime Plants. Western Sugar Company produces lime from limestone imported from their quarry in Wyoming. Limekilns are located at Scottsbluff, and Mitchell in Scotts Bluff County, and at Bayard in Morrill County. The lime is used mainly for sugar refining.

Limestone Pelletizing Plant. Ampel Corp. of Des Moines, Iowa, makes limestone pellets. The plant is located on a reclaimed quarry site west of Weeping Water in Cass County. The patented pellets are for agricultural, lawn, and garden use.

Natural Gas Processing Plants. Two natural gas processing plants are located in Nebraska. One, south of Kimball in Kimball County, is operated by Oxy Cities Service NGL, Inc. The other, west of Sidney in Cheyenne County, is operated by Marathon Oil Company. Production from these two plants includes natural gasoline, cycle products, liquid petroleum gases, and ethane.

Perlite Plant. The Zonolite Division of W. R. Grace & Company is the sole manufacturer of expanded perlite in Nebraska. Its plant near Omaha in Douglas County imports crude perlite from other states, expands it, and sells it as filler material, as aggregate for plaster and concrete, and as a horticultural product.

Ready-Mix Concrete Plants. Ready-mix concrete plants located throughout the state produce wet concrete for construction purposes. Some of these plants also manufacture cured concrete products.

Sand and Gravel Plants. All but eight of Nebraska's counties produce sand and gravel. Among the largest producers are Central Sand and Gravel Company in Butler, Madison, Pierce, and Platte counties; Hartford Sand and Gravel Company in Douglas and Dodge counties; Lyman-Richey Sand and Gravel Corporation in Cass, Dodge, Douglas, Morrill, Platte, Sarpy, and Saunders counties; and Western Sand and Gravel Company in Cass, Dodge, and Saunders counties.

Talc Plants. Cyprus Mines Corporation, United Sierra Division's plant near Grand Island in Hall County, is the only producer of ground talc in Nebraska. The unground talc is obtained from outside the state. The product is used in paper, ceramics, rubber, paint, insecticides, textiles, and toilet articles.

Underground Gas Storage Terminals. There are five underground gas storage areas in Nebraska. Two are natural gas storage areas operated by Kansas-Nebraska Natural Gas Co. and are located in Cheyenne and Deuel counties in western Nebraska. The remaining three are liquid propane gas-storage areas, two of which are located in Douglas County near Omaha and one in Lancaster County near Lincoln. The Douglas County storage units are operated by Metropolitan Utilities District. The storage unit near Lincoln is operated by Mid-America Pipeline Company.

Uranium Pilot Plant. Ferret Exploration Company of Nebraska, Inc. produced ore known as yellowcake from their pilot plant located southeast of Crawford in Dawes County.

Vermiculite Plants. The only producer of exfoliated vermiculite is the Construction Products Division of W. R. Grace & Company near Omaha in Douglas County. Montana is the source of crude vermiculite. The expanded product is used principally for insulation, concrete aggregate, and fire-proofing.



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