

POTENTIAL CEMENT PLANT LOCATIONS, SOUTHEASTERN WYOMING

Cement production requires a source of high-calcium limestone, gypsum, and varying but smaller quantities of shale or marl.

Cement production and marketing economics require that the plant be near rail transportation and near the sources of raw material.

In southeastern Wyoming, high-calcium limestones are found along the east and west flanks of the Laramie Mountains and in the Hartville uplift (limestone-bearing formations are shown in dark blue on accompanying map). Supplies in these areas are adequate to support large scale cement production.

Gypsum resources are less common in the area. Gypsum is found in isolated occurrences in the southern and eastern parts of the Laramie Basin, near Farthing (Iron Mountain) in northwestern Laramie County, east of Harriman in southwestern Laramie County, in the Richeau Hills in southwestern Platte County, and near Glendo in northwestern Platte County, as well as in the McGill and Flat Top Anticlines and south of Marshall in northern Albany County (gypsum-bearing formations are shown in light blue on the accompanying map).

Marl from the Niobrara Formation (Cretaceous) has been used by the Laramie cement plant. Where mined, west of Laramie, this unit contains the required proportion of limestone and shale used in certain grades of cement. Elsewhere in Wyoming, this unit has not been tested for use as cement rock. The Niobrara Formation is present at the surface in northern and central Albany County, and in a few isolated exposures along the east flank of the Laramie Mountains in western Platte and Laramie Counties. Marl suitable for cement may be found in other units, or shale may be added to limestone in the kiln to produce the desired cement. Shales are found throughout southeastern Wyoming, except in southern Laramie County.

Rail transportation is necessary to the location of cement plants, so the rail lines in the area are outlined in orange on the accompanying map. Three railroads serve the area (Burlington Northern, Chicago North Western, and Union Pacific). Through interchange, all have access to the Denver area, and both the Union Pacific and Burlington Northern have direct lines to Denver.

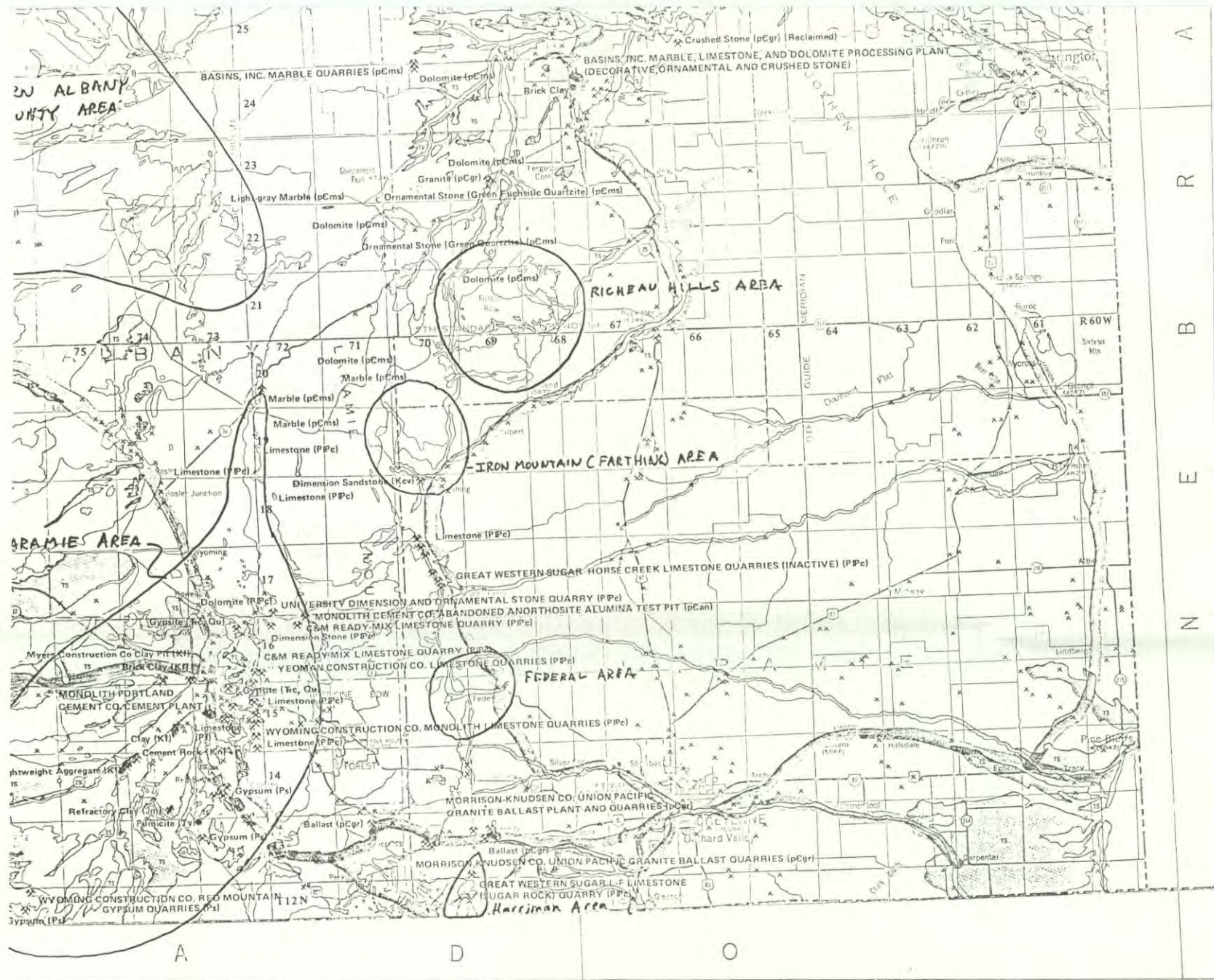
Areas in southeastern Wyoming containing cement raw material occurrences and rail access include:

1. Laramie Area, southern Laramie Basin
2. Northern Albany County
3. Glendo Area
4. Farthing (Iron Mountain) Area
5. Harriman area
6. West of Federal, Laramie County
7. Richeau Hills, southwestern Platte County

These are listed in order of potential, particularly with respect to the presence of known occurrences of gypsum and marl, since limestone in large quantities is present in all areas.

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SMALL EXTENT (NOT TO SCALE) COLOR DENOTES TYPE OF MATERIAL.

- ⊗ ACTIVE QUARRY
- ⊗ INACTIVE QUARRY
- ⊗ ACTIVE MILL

AGGREGATE

- ⊗ PIT OR QUARRY FOR DOLOMITE AGGREGATE
- ⊗ PIT OR QUARRY FOR GRANITE AGGREGATE
- ⊗ PIT OR QUARRY FOR LIMESTONE AGGREGATE
- ⊗ PIT OR QUARRY FOR QUARTZITE AGGREGATE

FORMATION NAMES OR ROCK TYPES

CENOZOIC	MESOZOIC	PALEOZOIC	PRECAMBRIAN
Qu Quaternary undivided	Kle Lewis Shale	Pp Phosphoria Formation	pCu Precambrian undivided
Qa Quaternary alluvium	Kmv Mesaverde Group	Pf Forelle Limestone	pCan Anorthosite
Ot Quaternary terrace deposit	Kc Cody Shale	Ps Satanka Shale	pCgr Granite
Qhs Quaternary hot spring deposit	Kav Adaville Formation	Pm Minnekahta Limestone	pEmk Mafic dikes
Qi Quaternary alkalic igneous rocks.	Kn Niobrara Formation	PPc Casper Formation	pEms Metasedimentary rocks
Tu Tertiary undivided	Kf Frontier Formation	PPh Hartville Formation	pEgn Gneiss
Tnp North Park Formation	Kbr Bear River Formation	PPm Minnelusa Formation	
Tsr Split Rock Formation	Kcv Cloverly Formation	Mm Madison Limestone	
Twi Wiggins Formation	Kik Inyan Kara Group	Mp Pahasapa Limestone	
Twb Wagon Bed Formation	Jm Morrison Formation	MDg Guernsey Formation	
Ta Aycross Formation	Js Sundance Formation	Ob Bighorn Dolomite	
Tw Wasatch Formation	Jg Gypsum Spring Formation	Ef Flathead Sandstone	
Tf Fowkes Formation	Ta Alcoya Limestone		
Tfu Fort Union Formation	Tie Chugwater Formation		
Tha Hanna Formation	TPs Spearfish Formation		
Tv Tertiary volcanics undivided	TPg Goose Egg Formation		
Ti Tertiary intrusives undivided			

SELECTED REFERENCES

Case, J.C. and others, 1984, Windblown sand deposits of Wyoming as plotted on the 1°x2° maps of Wyoming: Geological Survey of Wyoming Open File Reports 84-1 through 84-12, scale 1:250,000.

Harris, R.E., Hausel, W.D., and Meyer, J.E., 1985, Metallic and industrial minerals map of Wyoming: Geological Survey of Wyoming Map Series MS-14, scale 1:500,000.

Harris, R.E., and Meyer, J.E., 1985, Selected references on construction materials in Wyoming: Geological Survey of Wyoming Open File Report 85-2, 15 p.

Love, J.D., and Christiansen, A.C., 1985, Geologic map of Wyoming: U.S. Geological Survey map, scale 1:500,000.

Osterwald, F.W., Osterwald, D.B., Long, J.S., and Wilson, W.H., 1966, Mineral resources of Wyoming: Geological Survey of Wyoming Bulletin 50, 287 p.








Wyoming Highway Department published and unpublished sand and gravel inventory reports. (See Geological Survey of Wyoming Open File Report 85-2 for complete listing.)

Base map modified from U.S. Geological Survey, 1966 Edition.
Cartography by Phyllis A. Ranz









EXPLANATION

AGGREGATE RAW MATERIALS (EXCLUDING STONE)

-  WINDBLOWN SAND
Recent stabilized and unstabilized windblown sand deposits.
-  ALLUVIAL SAND AND GRAVEL
Recent stream deposits containing varying proportions of sand, gravel, silt, and clay.
-  GLACIAL SAND AND GRAVEL
Pleistocene glacial moraine, outwash, and related deposits sometimes containing a high proportion of gravel and coarser material.
-  TERRACE SAND AND GRAVEL
Quaternary terrace gravel with a variable proportion of finer material.
-  OLDER SAND AND GRAVEL
Includes Pleistocene to Pliocene gravel in Jackson Hole, Pliocene terraces in the Overthrust Belt, Pliocene to Miocene deposits in southeastern Wyoming, Oligocene Bishop Conglomerate in southwestern Wyoming, Eocene conglomerate in southern Wyoming, Eocene Kingsbury Conglomerate in northcentral Wyoming, and Paleocene Pinyon Conglomerate in northwestern Wyoming.
-  SAND AND GRAVEL OF VARIOUS ORIGINS
Undifferentiated sand and gravel deposits of various origins, mapped in and near Yellowstone National Park, and in isolated areas in the rest of Wyoming.
-  BAKED AND FUSED ROCK
Rock baked or melted by naturally-ignited coal fires, sometimes called clinker or scoria; useful for aggregate in areas lacking other aggregate sources. Also used as an ornamental rock in landscaping.

STONE

-  GRANITE
Locally suitable for dimension, decorative, and ornamental stone. Also used as crushed aggregate and ballast. Includes light-colored rock types not lithologically defined as granite, such as quartz monzonite, granodiorite, phonolite, and nepheline syenite.
-  LARAMIE RANGE ANORTHOSITE AND SYENITE
Locally suitable for monument, dimension, decorative and ornamental stone, and crushed aggregate.
-  LIMESTONE AND DOLOMITE
Includes Permian Minnekahta Limestone, parts of Permian-Pennsylvanian Casper and Minnelusa Formations, Mississippian Madison and Pahasapa Limestones, Mississippian-Devonian Guernsey Formation, Ordovician Bighorn Dolomite, and isolated occurrences in Precambrian metamorphic rocks.
-  BASALT
Locally suitable for dimension stone and crushed aggregate. Found in and immediately south of Yellowstone National Park and west of the Sierra Madre.
-  OTHER DIMENSION, DECORATIVE, AND ORNAMENTAL STONE
Includes marble, quartzite, sandstone, travertine, and leucite-bearing igneous rocks.
- GYPSUM
-  GYPSUM-BEARING STRATA
Used in cement, drywall, plaster, and other construction applications. Includes Jurassic Gypsum Spring, Triassic Chugwater, Triassic-Permian Spearfish and Goose Egg, and Permian Satanka Formations.

MISCELLANEOUS SYMBOLS

-  OCCURRENCE OF SPECIALTY OR MISCELLANEOUS CONSTRUCTION MATERIAL
-  PIT OR QUARRY FOR SAND, GRAVEL, OR UNSPECIFIED AGGREGATE.