

LARAMIE GLASS SAND DEPOSIT

Albany County, Wyoming

Introduction

The Laramie Glass Sand Deposit is located approximately two miles easterly from Laramie, Wyoming. The only known production was obtained from a small area of the deposit located in the SE $\frac{1}{4}$ of Section 25, T. 16 N., R. 73 W. Sand from this location was mined during the period 1892-1893 and used in the manufacture of glass at a small plant in Laramie.

Mr. S. H. Knight, in an unpublished report, dated April, 1922, from the files of the Wyoming Geological Survey, gives the following description of the operation:

"Approximately 100,000 boxes of glass were manufactured at Laramie, Wyoming, during the years 1892-93. The plant was constructed at an original cost of \$23,000. The original company was organized in 1886 under the name of the Laramie Glass Company. The organizer of this company failed to make glass owing to his ignorance of the glass making industry. The company later secured a practical glass man from the east who succeeded in making a high grade glass. The failure of the plant was due in part to poor management and in part to competitive freight rates.

"The following figures serve to give some appreciation of the cost of operating this plant.

"The materials utilized by the Laramie Glass Company, laid down at the works cost as follows:

Sand	\$.90 per ton
Limestone	.90 per ton
Soda (Calcined)	10.00 per ton
Slack Coal (Rock Springs)	1.25 per ton
Nut Coal (Rock Springs)	3.00 per ton
Glass Boxes (Average)	.19 each
Hay for packing	10.00 per ton

"The charge used for the manufacture of the best quality glass was as follows:

Sand	1,000 Lbs.
Limestone	400 Lbs.
Soda	400 Lbs.

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"The freight rate on glass in carload lots to Denver was \$0.25 per 100 pounds, and the glass was sold in Denver at the following prices:

Single strength 16 x 20" - \$2.55 per box
of 50 Ft²
Double strength 24 x 36" \$5.50 per box
of 50 Ft² "

Knight further states that the limestone was obtained from a nearby limestone bed which assayed:

Calcium carbonate	98.83%
Magnesium carbonate	.45%
Iron carbonate	.02%
Iron bisulphide	.10%
Aluminum oxide	.43%
Silica	.05%
Total:	99.88%

The soda used in the operation was reported to have been obtained from the Union Pacific soda lakes, which cover about 60 acres of land in the N $\frac{1}{2}$ of Section 4, T. 14 N., R. 75 W. Approximately 10,000 tons of soda were obtained from these dry lake beds.

As part of the Mineral Inventory Survey program, a geologic and topographic map was completed at a scale of 1" = 100' of the immediate mining area, together with an accompanying cross section.

Property

The mining operation for glass sand was conducted in the SE $\frac{1}{4}$ of Section 25, T. 16 N., R. 73 W. This section is under fee ownership of the Union Pacific Railroad Company. Odd numbered sections in the general area are under mineral ownership of the Union Pacific.

Geology

The glass sand bed is from three to four feet in thickness, and occurs approximately 70 feet below the top of the Casper formation of Pennsylvanian Age. (See Lithology Section on accompanying map). The sand is very fine grained and poorly consolidated. It is composed almost entirely of silica, and is generally white in color. A pinkish cast occurs when iron staining is present.

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In the immediate area of the old workings, the glass sand is overlain by a seven foot layer of slabby, calcareous, buff to pink sandstone. Above this occurs a three to four foot layer of massive, lavender colored limestone, which is resistant to weathering. This limestone cap-rock layer forms a gentle westerly dip slope in the area, and was traced for about three miles east of the workings. Small gullies have eroded through the limestone in places, and expose the underlying sands. A red sandstone of 15 to 20 Ft. thickness underlies the glass sand layer.

An excellent exposure of sand of apparent glass quality was found in a limestone quarry located about a mile southeast of the old workings (Section 31, T. 16 N., R. 72 W.). It occurs at the same stratigraphic position as the "glass sand", and lends proof that it extends laterally for some distance.

Reserves and Grade

At the site of the mining operation, the glass sand was obtained along its outcrop on opposite sides of a small mesa. Here the sand is overlain by 10 to 11 feet of limestone and sandstone. After the near surface material was removed, an attempt was made to mine underground as evidenced by several small adits. These are now badly caved, and precluded examination. Surface subsidence, however, indicates these workings were very limited in extent. It appears probable that, at best, a few thousand tons were removed from the combined underground workings.

Based on presently available data, no accurate estimate of reserves can be made. However, where the bed has been protected from erosion, it may reasonably be expected to contain approximately 9,000 tons per acre based on an average thickness of 3.5 feet and a tonnage factor of 17 cubic feet per ton. Although the bed is very thin, lateral extensions over a large area are probable; and, if proven, this would permit an estimate of five to six million tons per section. In the immediate area of the old workings, and within the confines of Section 25, an estimate of 40,000 tons of glass sand appears reasonable.

Analyses for five samples by the Wyoming Natural Resource Board follow:

Sample Number	% <u>SiO₂</u>	% <u>Fe₂O₃</u>	% <u>CaO</u>	% <u>MgO</u>	% <u>Loss on Ignition</u>
A - 1	94.63	0.24	5.13	*	*
A - 2	96.69	0.094	0.19	0.22	0.50
A - 3	92.93	0.108	1.30	0.65	2.23
A - 4	95.75	0.101	0.20	0.19	0.54
A - 5	90.89	0.087	2.90	0.36	2.94

* Not analyzed

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Conclusions

Although this sand is of relatively high purity, its potential economic worth is minimized by the following factors: (1) Open pit mining would require a stripping ratio in the order of four to one to win the thin layer of glass sand. (2) The sand may be too fine grained for general glass making requirements.

Very favorable marketing conditions would be required to make exploitation of this deposit economical.

CLOVERLY SAND DEPOSIT

Location : Section 15, T-20-N, R-73-W, Albany County,
Wyoming

Railroad Service: A truck haul not in excess of miles
to U.P.R.R. main line

Reserves : Several million tons

Analysis : SiO₂ = 95.5%
CaO = 0.32%
MgO = 0.10%
Fe₂O₃ = 1.16% (possible to remove Fe)
Al₂O₃ = 1.09%

Occurrence and
Mining Methods : Bedded deposit, a continuous bed, averag-
ing 15 feet thick, over a large area. The
sand is sufficiently friable to be readily
excavated by open pit mining methods.

Production : None

Ownership : U.P.R.R. Co.

Remarks : The quality of this material appears
sufficient for average glassware.