

## *Department of Geology and Mineral Industries*

### BAKER FIELD OFFICE

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Malheur County  
Unclassified District

TEAGUE MINERAL PRODUCTS  
(bentonite and zeolite)  
By Mark L. Ferns, June 16, 1986

The following information is a summary of discussions between Glen Teague and Dave Leppert of Teague Mineral Products, Dave Rath, International Minerals and Chemicals Corp. and DOGAMI staff and board members during a visit at the plant and mine site on June 3, 1986.

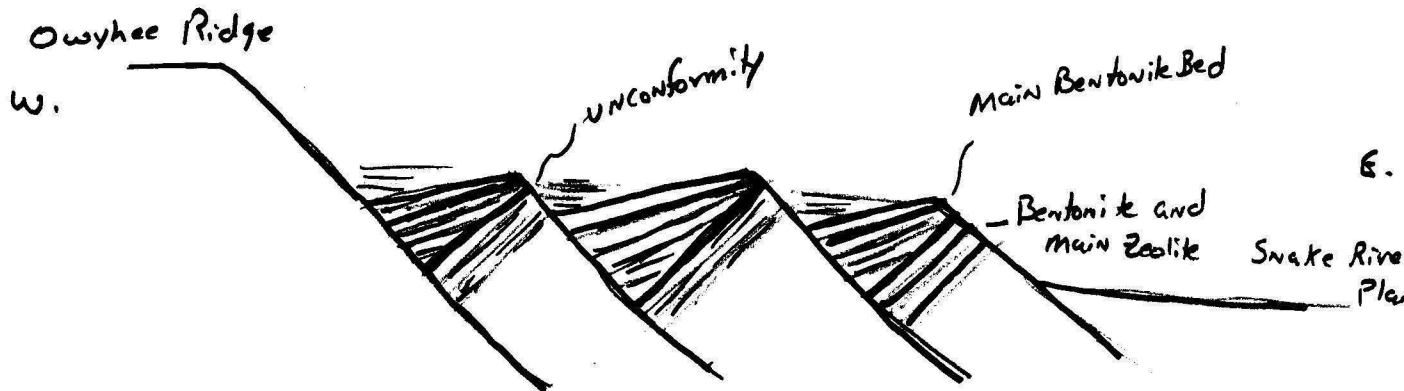
Owner: Teague Mineral Products, Rt. 2 Box 350, Adrian, Oregon 97901. Phone (503) 339-4385.

Operator: Teague Mineral Products.

Locations: Milling and bagging plant is located above the west bank of the Snake River, south of Adrian, Oregon in Sec. 34, T. 22 S., R. 46 E. Visited bentonite and zeolite pits are located on the low bench east of Owyhee Ridge to the south in T. 23 S., R. 46 E. Other operating pits are located to the south in both Oregon and Idaho near Sheaville, Oregon.

Geology: Bentonite and zeolite occur in altered tuff beds within the Sucker Creek Formation (Miocene Age). According to Dave Leppert, a geologist working for Teague Mineral Products, the main economic bentonite bed lies

above a regionally extensive unconformity in the Sucker Creek area. The bentonite is believed to have been formed by alteration of a tuff unit in a sequence of beds deposited in saline lakes that occupied a series of half-grabens. Post-depositional faulting has tilted the main bentonite bed(s).



The main bentonite bed is reported to crop out sporadically over a large area.

Teague Mineral Products is now mining at their GB Pit, (Sec. 16, T. 23 S., R. 46 E.), where the exposed stratigraphy is said to be characteristic of the bentonite bed. Here lag gravels overlie a weathered substandard green bentonite (suitable for agricultural uses) which in turn overlies a dark gray bentonite bed reported to be 30 feet in thickness. The top of the gray bentonite contains scattered aggregates and seams of crystalline gypsum. According to Teague, the drill holes indicate that bentonite overlies a sequence of limey lake sediments.

This same sequence is reported to occur elsewhere on the Teague holdings.

The zeolite beds (primarily clinoptilolite) occur in the lower member of the Sucker Creek. The Sucker Creek Pit (SW $\frac{1}{4}$ SE $\frac{1}{4}$ , Sec. 21, T. 23 S., R. 46 E.) shows the zeolite to occur as a replacement mass in tuff. The zeolitized tuff is areally associated with silicified zones which were previously mined as Picture Rock. The tuff overlies a welded ash-flow tuff and dips steeply to the west. According to Leppert, this is not the same ashflow which is exposed to the west near the top of Owyhee Ridge.

Product Uses: Teague has recently expanded his grinding and bagging plant at Adrian. He is currently mining and producing both zeolite and bentonite; and is generally considered to be the largest (if not only) clinoptilolite producer in the U. S. Teague is producing zeolite for use as cat litter and is actively pursuing other markets. Dave Leppert who is their zeolite marketing expert is now promoting a product called Stench Quench for use in absorbing noxious odors. Teague Minerals is also promoting the use of natural zeolites in hazardous waste cleanup applications.

Bentonite is being produced for a number of uses. Teague currently has a contract with American Colloid to provide 3000 tons of bentonite for Enviro Safe Services Inc. hazardous waste site at Grandview. Teague is also

the sole source of bentonite for the Arlington hazardous waste site. Other bentonite uses include feed additives for the low grade material and irrigation pond and canal sealant.

Teague is trying to break into the drilling mud market with IMC, although demand for drilling mud has slackened considerably with the drop in oil prices. Bentonite from the GB Pit is reported to yield 105 barrels of drill mud per ton compared with the industry specification of 90 barrels. The Teague bentonite is reported to contain more Mg+ than the Wyoming bentonites and is believed by Teague to be more suitable for off-shore drilling than the Wyoming bentonite.

Reserves: Teague is reluctant to provide reserve figures for public consumption. They have drilled the GB Pit on 25 foot centers and have outlined a mineable 30 foot thick bentonite bed over a number of acres. Their drilling indicates reserves sufficient to last for a number of years at their current rate of mining.

Mining and Reclamation: Overburden is removed and stock-piled for reclamation use after mining. The ore is strip-mined in 4 to 5 inch layers. Each succeeding layer is tilled with a farm-type cultivator, left to dry for several days then removed with a scraper.

Following mining the pits are contoured to specifications, the top soil is replaced and the soil is replanted. Teague uses the seeds of grasses and brush growing in the area.

references:

Corcoran, R. E., and others, 1962, Geology of the Mitchell Butte Quadrangle, Oregon; Oregon Dept. of Geology and Mineral Industries Geologic Map GMS-2, Scale 1:125,000.

Kittleman, R. R., and others, 1962, Geologic map of the Owyhee Region, Malheur County, Oregon; University Oregon Museum Nat. Hist. Bull. 8, Scale 1:125,000.

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