

Obsidian Movement Into the Lower Spokane River Corridor



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ABSTRACT

Obsidian is a glassy stone known for its excellent flint knapping qualities. It is known to have been traded widely and can be used to trace human interaction. This small study identifies the sources of obsidian used to produce artifacts found in the lower Spokane River canyon. X-ray fluorescence analysis identified six sources for the raw material. Results show that Spokane ancestors had access to material sourced up to 400 miles away.

INTRODUCTION

Obsidian is an extrusive igneous rock formed from lava that cools quickly as it breaches the earth's surface (Mottana et al. 1978:314). Its glassy properties make it a highly sought after material for tool making and was traded widely in prehistory (Ambroz 1997:1). Obsidian did not occur naturally in the Spokane area, but has been found in archaeological contexts. Through the use of trace element analysis, the extent of anthropogenic transport of obsidian into the Spokane River corridor can be determined (Ambroz 1997:15).

TRACE ELEMENT ANALYSIS

X-ray fluorescence of an obsidian artifact determines the types and levels of trace elements present in the sample. These trace element profiles can then be compared to reference samples from obsidian sources to find the most probable source of the unknown artifact (Skinner 2015). The analysis is non-destructive.

MATERIALS AND METHODS

Fifteen obsidian artifacts were analyzed for this project. All pieces were either surface finds or recovered through excavation from recorded archaeological sites along a seven mile stretch of the lower Spokane River corridor in Lincoln and Stevens Counties, Washington (Figure 1). Each sample underwent x-ray fluorescence (trace element) analysis at either *Northwest Research Obsidian Studies* or *Geochemical Research Laboratory*. Resulting trace element profiles were considered reliable if the mean artifact measurements fell within 2 standard deviations of the mean values for the source profiles (Hughes 2015).

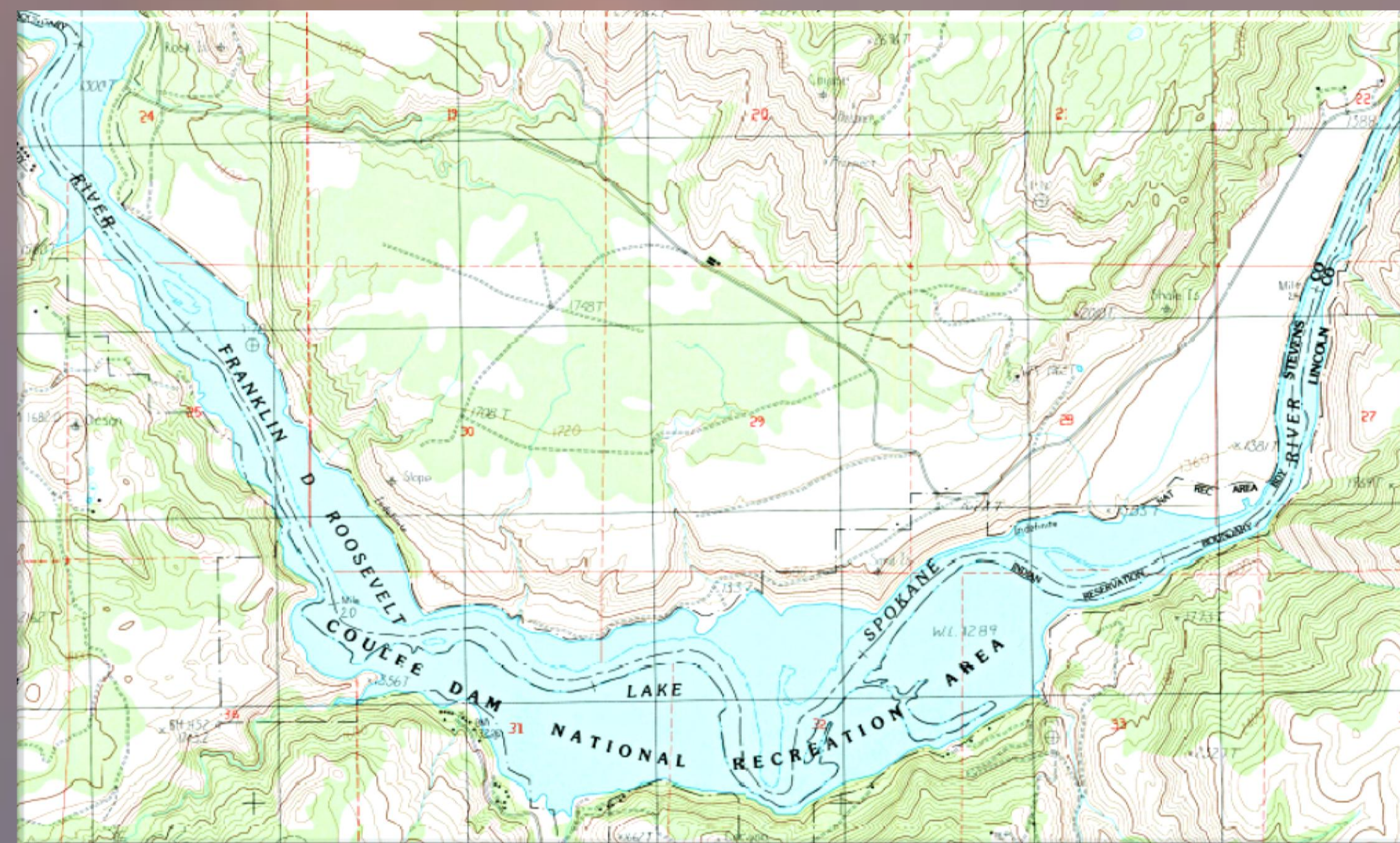


Figure 1. Study Area

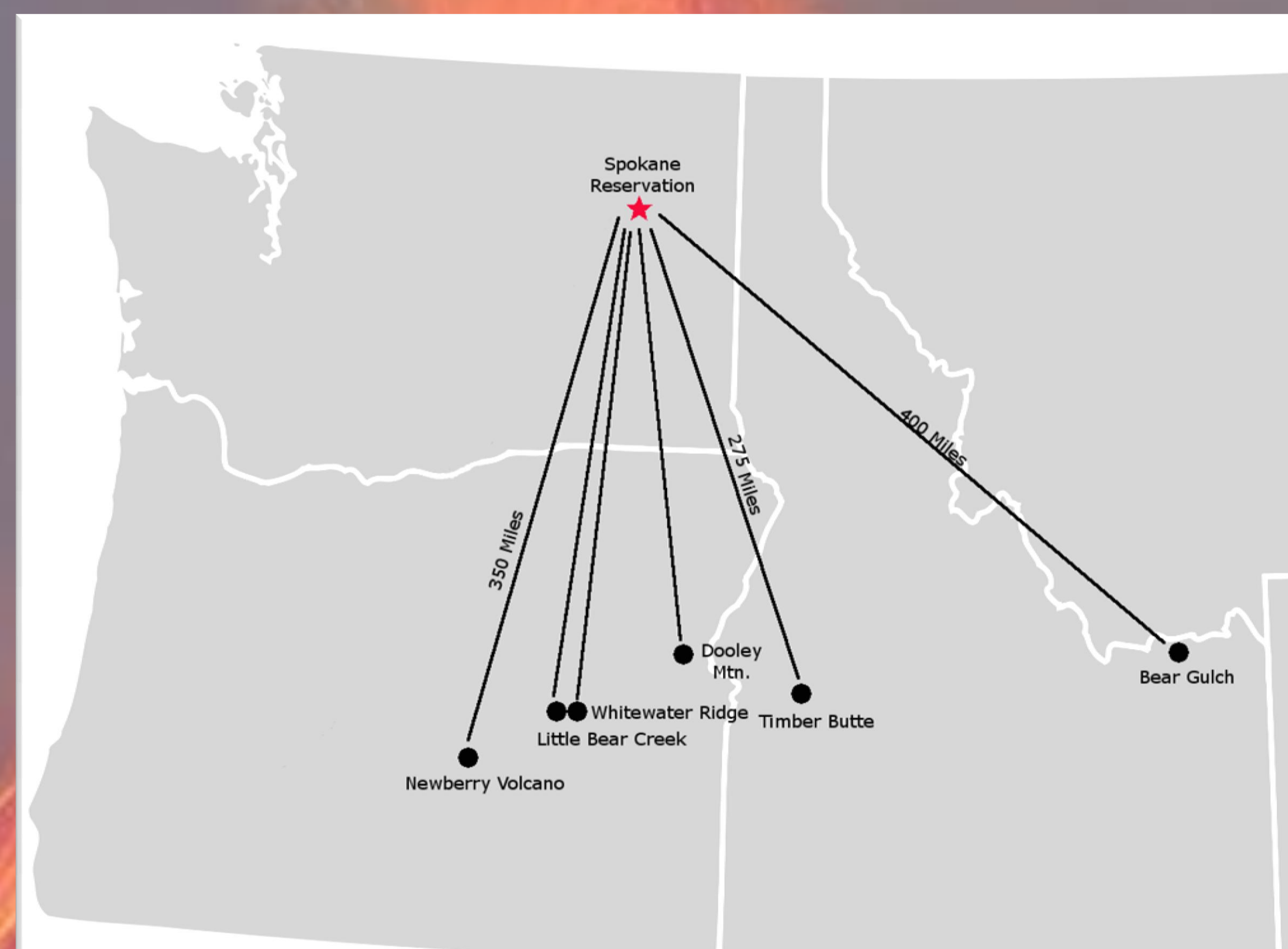


Figure 2. Geographic Distribution of Results

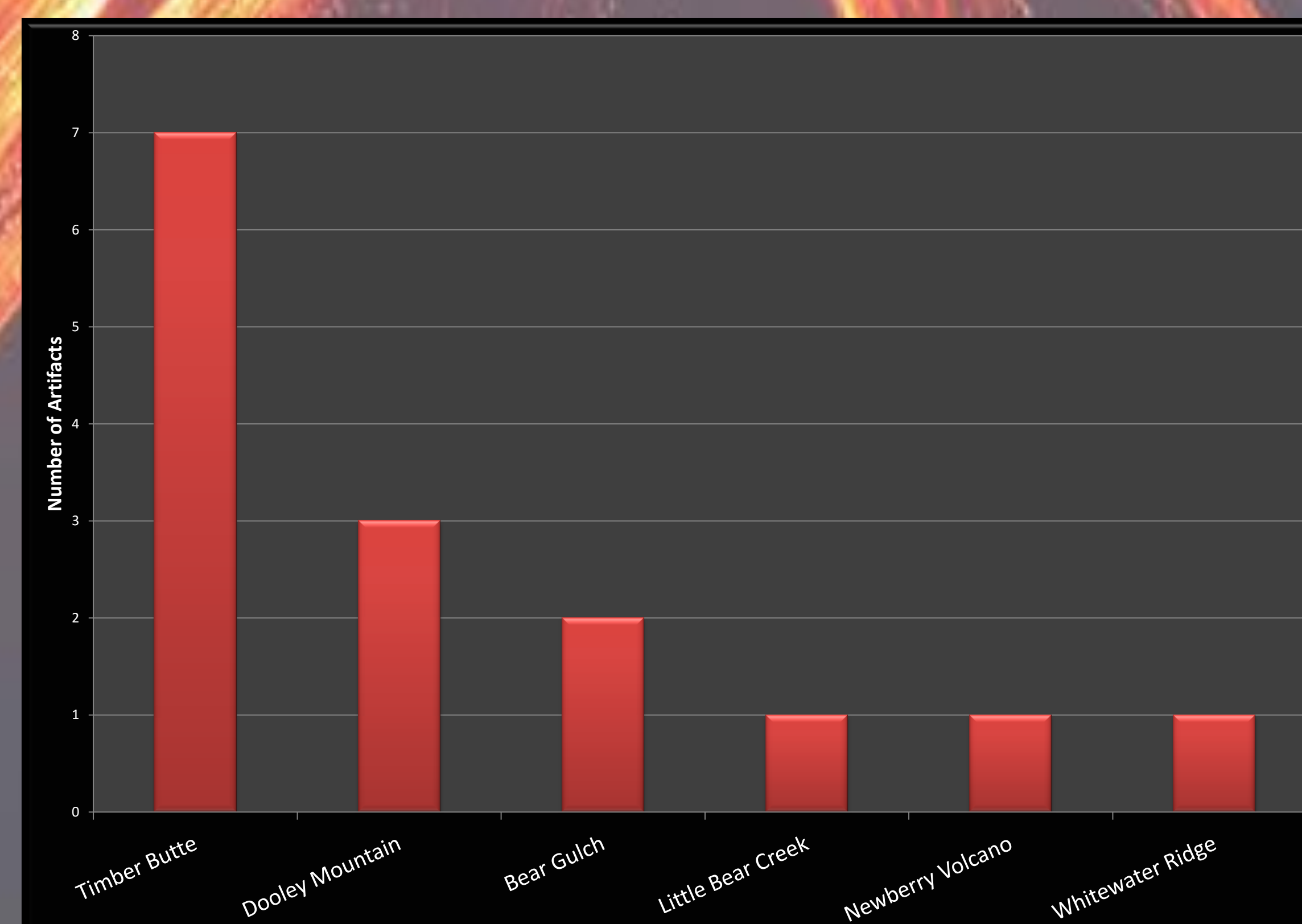


Figure 3. Artifact Occurrence by Source

RESULTS

Seven sources were represented by the artifacts submitted for x-ray fluorescence (Figure 2). Four of the sources are located in Oregon (Newberry Volcano, Little Bear Creek, Whitewater Ridge, and Dooley Mountain), and two are in southern Idaho (Timber Butte and Bear Gulch). Timber Butte was the source of most of the artifacts (n=7), followed by Dooley Mountain (n=3), and Bear Gulch (n=2). The remaining three sources were correlated with one artifact each (Figure 3).

DISCUSSION

The fine, glassy properties of obsidian made it a highly prized stone for tool making in pre-contact times. For this reason, it was traded widely into areas where it did not occur naturally. While the recognition of the geographic movement of obsidian is not new, this information sheds light on the interaction sphere of the Spokane Tribe's ancestors. This small study demonstrates that obsidian used to make artifacts in the lower Spokane River area was transported from as far as 400 miles, as in the case of Bear Gulch. The most common source, Timber Butte, is located approximately 275 miles away. These distances show that obsidian was a valuable item that was transported and likely traded through contact with other regional groups.

ACKNOWLEDGMENTS

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REFERENCES CITED

- Ambroz, Jessica Ann
1997 Characterization of Archaeologically Significant Obsidian Sources in Oregon by Neutron Activation Analysis. Unpublished Master's Thesis. University of Missouri-Columbia.
- Hughes, Richard E.
2015 Energy Dispersive X-ray Fluorescence Analysis of Obsidian from Five Archaeological Sites. On file at Spokane Tribe of Indians Preservation Program, Wellpinit, Washington.
- Mottana, Annibale, Rodolfo Crespi, and Giuseppe Liborio
1978 *Simon & Schuster's Guide to Rocks and Minerals*. Fireside Books, New York.
- Skinner, Craig E.
2015 X-Ray Fluorescence Analysis of Artifact Obsidian from 45SR21 and 45LI720, Stevens and Lincoln Counties, Washington. On file at Spokane Tribe of Indians Preservation Program, Wellpinit, Washington.