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## Archaeological X-ray Fluorescence Reports

### Title

AN ENERGY-DISPERSIVE X-RAY FLUORESCENCE ANALYSIS OF OBSIDIAN ARTIFACTS FROM LA 1 87467 AND LA 190067, LORDSBURGMESA, SOUTHWESTERN NEW MEXICO

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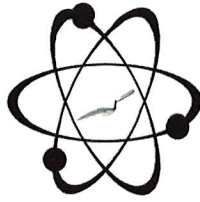
Shackley, M. Steven

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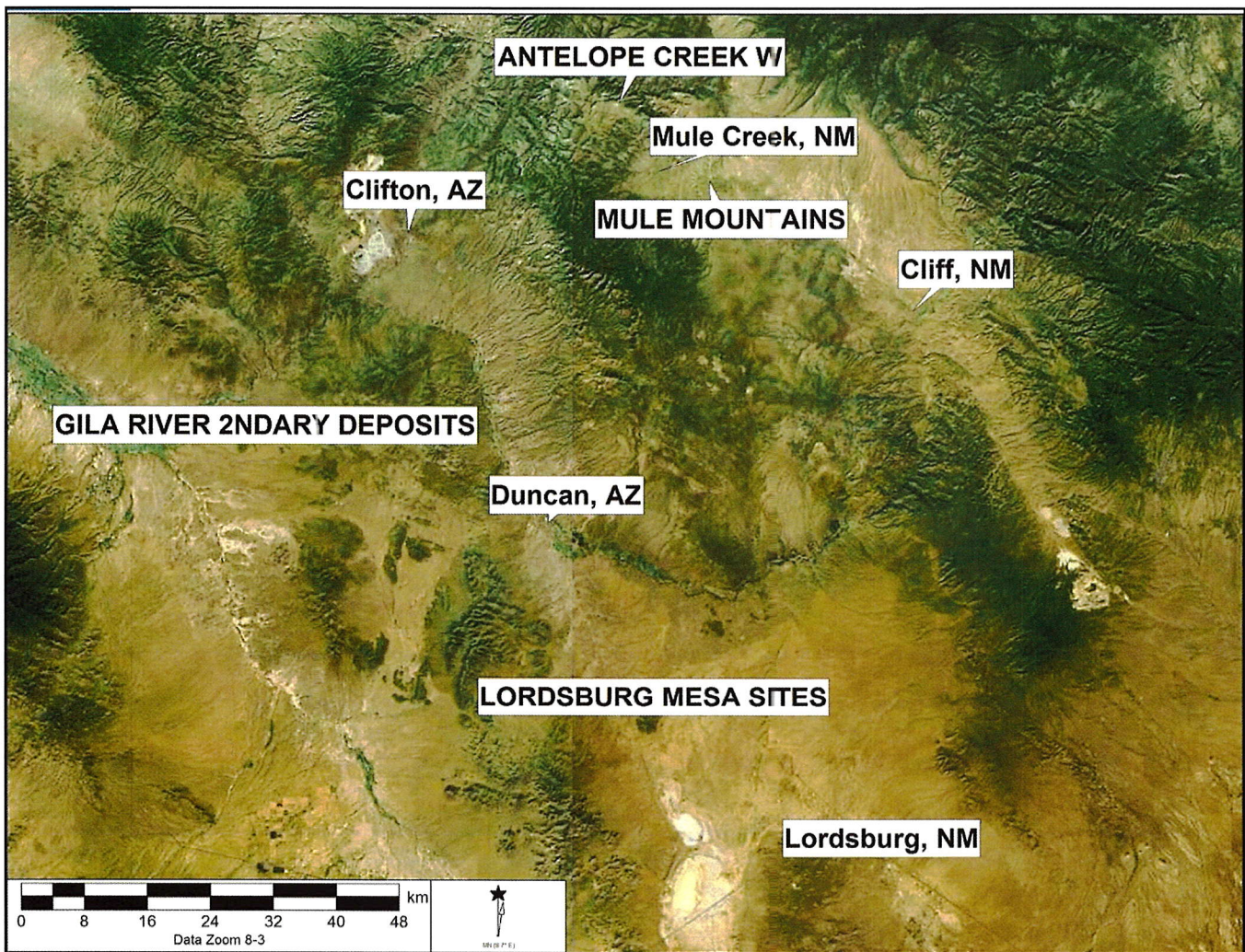
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## LETTER REPORT

# AN ENERGY-DISPERSIVE X-RAY FLUORESCENCE ANALYSIS OF OBSIDIAN ARTIFACTS FROM LA 187467 AND LA 190067, LORDSBURG MESA, SOUTHWESTERN NEW MEXICO



Location of the archaeological sites and obsidian source (capitals) and relevant features (lower case)

8 October 2021

Meaghan Trowbridge  
SWCA Environmental Consultants  
5647 Jefferson Street, NE  
Albuquerque, NM 87109

Dear Megan:

All the artifacts were produced from two of the sources in the Mule Creek Obsidian Complex, Mogollon-Datil volcanic province, western New Mexico (Antelope Creek and Mule Mountains), although obsidian from these sources are also available as secondary deposits in San Francisco and Gila River Quaternary alluvium in eastern Arizona (Shackley 1992, 1998; Shackley et al. 2018; Table 1, Figure 1, and cover image herein). The cortex on sample #12 from LA 187467 appears to be typical of the secondary deposit obsidian in Gila River alluvium (Shackley 1992, 1998).

Specific instrumental methods can be found at <http://www.swxrflab.net/analysis.htm>, and Shackley (2005). Source assignment was made by comparison to source standard data in the laboratory. Analysis of the USGS RGM-1 standard indicates high machine precision for the elements of interest (Table 1 here).

Sincerely,



M. Steven Shackley, Ph.D.  
Director

VOICE: 510-393-3931  
INTERNET: shackley@berkeley.edu  
<http://www.swxrflab.net/>

## REFERENCES CITED

- Shackley, M.S. 1992, The upper Gila River gravels as an archaeological obsidian source region: implications for models of exchange and interaction. *Geoarchaeology* 7:315-326.
- Shackley, M.S. 1998, Intrasource chemical variability and secondary depositional processes in sources of archaeological obsidian: lessons from the American Southwest. In Shackley, M.S. (Ed.) *Archaeological Obsidian Studies: Method and Theory*, pp. 83-102. New York: Springer.
- Shackley, M.S. 2005 *Obsidian: Geology and Archaeology in the North American Southwest*. Tucson: University of Arizona Press.
- Shackley, M.S., L.E. Morgan, and D. Pyle, 2018 Elemental, isotopic, and geochronological variability in Mogollon-Datil volcanic province archaeological obsidian, southwestern USA: solving issues of intrasource discrimination. *Geoarchaeology* 33:486-497.

Table 1. Elemental concentrations for the archaeological samples and USGS RGM-1 rhyolite standard. All measurements in parts per million (ppm).

SAMPLE	Site (LA)	Ti	Mn	Fe	Rb	Sr	Y	Zr	Nb	Ba	Pb	Th	Source
12	187467	1139	490	9334	197	22	26	126	37	78	26	38	Mule Mtns - Mule Cr, NM
20	187467	972	350	10154	245	27	41	117	26	61	26	29	Antelope Cr - Mule Cr, NM
26	187467	1171	470	12439	284	25	41	122	27	104	36	34	Antelope Cr - Mule Cr, NM
45	190067	954	377	10046	254	25	43	117	24	49	30	29	Antelope Cr - Mule Cr, NM
46-1	190067	1068	473	11954	300	21	41	115	26	65	41	39	Antelope Cr - Mule Cr, NM
46-2	190067	1379	395	10350	239	22	41	99	21	50	31	33	Antelope Cr - Mule Cr, NM
48-1	190067	1028	450	11671	283	22	39	115	32	91	38	50	Antelope Cr - Mule Cr, NM
48-2	190067	1139	450	11771	272	27	39	117	24	21	36	33	Antelope Cr - Mule Cr, NM
RGM1-S4		1619	287	13162	150	103	29	217	11	816	24	22	standard

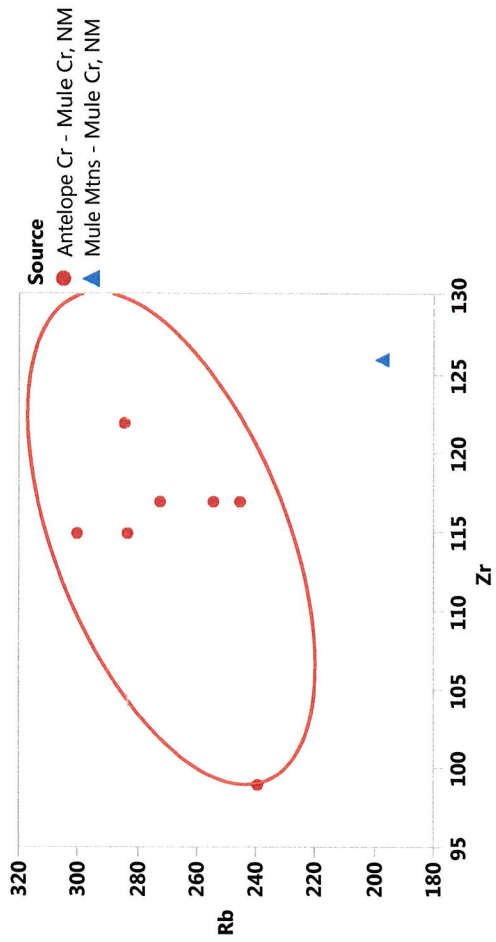
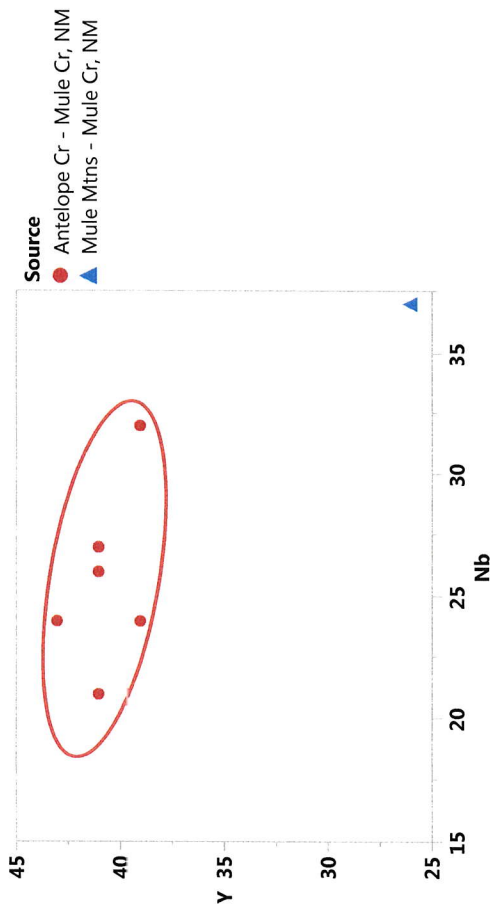


Figure 1. Nb/Y and Zr/Rb bivariate plot of the archaeological samples. Confidence ellipses at 90%.