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LETTER REPORT

**AN ENERGY-DISPERSIVE X-RAY FLUORESCENCE ANALYSIS OF AN
OBSIDIAN ARTIFACT FROM 41HL80, HALL COUNTY, TEXAS**

6 June 2011

James Barrera
SWCA Environmental
4407 Monterey Oaks Blvd
Bldg 1, Suite 110
Austin, TX 78749

Dear James,

The obsidian artifact was produced from the Cerro Toledo Rhyolite source, the primary domes of which are in the Jemez Mountains, northern New Mexico approximately 540 km west of this site (Shackley 2005). However, obsidian from this source is available in secondary deposits in Quaternary alluvium of the Rio Grande at least as far south as Las Cruces, New Mexico, the nearest point is only about 50 km closer (Church 2000; Shackley 2010). It is impossible to tell from this artifact whether the original material was procured from the primary sources in the Jemez Mountains, or along the Rio Grande.

The samples were analyzed with a ThermoScientific *Quant'X* EDXRF spectrometer in the Archaeological XRF Laboratory, El Cerrito, California. Specific instrumental methods can be found at <http://www.swxrflab.net/analysis.htm>, and Shackley (2005). Analysis of the USGS RGM-1 standard indicates high machine precision for the elements of interest (Govindaraju 1994; Table 1 here). Source assignments were made by reference to laboratory source standards, and Shackley 1995, 2005.

Sincerely,

M. Steven Shackley, Ph.D.
Director

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<http://www.swxrflab.net/>

REFERENCES CITED

Church, T.

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1995 Sources of Archaeological Obsidian in the Greater American Southwest: An Update and Quantitative Analysis. *American Antiquity* 60(3):531-551.

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2010 The Secondary Distribution of Archaeological Obsidian in the Rio Grande Quaternary Sediments, Jemez Mountains to San Antonito, New Mexico: Inferences for Prehistoric Procurement and the Age of Sediments. Poster presentation, 38th International Symposium on Archaeometry, Tampa, Florida.

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

Sample	Ti	Mn	Fe	Zn	Rb	Sr	Y	Zr	Nb	Source
17288.02	944	505	10994	109	209	8	62	171	100	Cerro Toledo
RGM1-S4	1600	269	13258	34	149	108	22	222	6	Rhyolite standard