BERKELEY ARCHAEOLOGICAL XRF LAB

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LETTER REPORT

AN ENERGY-DISPERSIVE X-RAY FLUORESCENCE ANALYSIS OF OBSIDIAN ARTIFACTS FROM LA 141974, HARDING COUNTY, NEW MEXICO

5 September 2007

Dr. Jenna Hamlin
Tierra Right of Way Services
1575 East River Road, Suite 201
Tucson, AZ 85718

Dear Jenna,

The dominance of obsidian from the Valles Caldera in northern New Mexico is rather expected for this northern New Mexico site. (Shackley 2005). While the Cerro Toledo caldera collapse and ash flows distributed glass into the Rio Grande alluvium, the Valles Rhyolite (Cerro del Medio) did not, and so had to be originally procured in the caldera proper (Shackley 2005). One sample was not obsidian.

The samples were analyzed with a Spectrace (ThermoNoran) *QuanX* EDXRF spectrometer in the Archaeological XRF Laboratory, University of California, Berkeley. Specific instrumental methods and source standard data can be found at http://www.swxrflab.net/anlysis.htm, and Shackley (2005). Analysis of the USGS RGM-1 standard indicates high machine precision for the elements of interest (Govnidaraju 1994; Table 1 here).

Sincerely,

M. Steven Shackley
Professor and Director

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REFERENCES CITED

Govindaraju, K.
1994 1994 Compilation of Working Values and Sample Description for 383 Geostandards. *Geostandards Newsletter* 18 (special issue).

Shackley, M.S.
2005 *Obsidian: Geology and Archaeology in the North American Southwest*. University of Arizona Press, Tucson.

Table 1. Elemental concentrations for the archaeological samples. All measurements in parts per million (ppm).

Sample	Ti	Mn	Fe	Rb	Sr	Y	Zr	Nb	Source
168	959	470	8619	163	11	43	155	55	Valles Rhy
258	1006	461	5901	148	11	20	70	49	El Rechuelos
110	884	432	8358	155	9	40	154	60	Valles Rhy
99	896	606	9179	209	7	61	166	108	Cerro Toledo Rhy
222	1049	493	9439	157	8	44	163	59	Valles Rhy
224	980	123	5669	22	26	5	27	0	not obsidian
RGM1-S3	1629	324	13301	151	112	24	218	5	standard