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## Archaeological X-ray Fluorescence Reports

### Title

An Energy-Dispersive X-Ray Fluorescence Analysis of Obsidian Artifacts from Early Period Sites in the Wheatfields/Sonsela Butte Region along Navajo Route N12, Navajo Nation

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# BERKELEY ARCHAEOLOGICAL



## XRF LAB

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### LETTER REPORT

## AN ENERGY-DISPERSIVE X-RAY FLUORESCENCE ANALYSIS OF OBSIDIAN ARTIFACTS FROM EARLY PERIOD SITES IN THE WHEATFIELDS/SONSELA BUTTE REGION ALONG NAVAJO ROUTE N12, NAVAJO NATION

20 August 2007

Davina Two Bears  
Navajo Nation Archaeology Department  
Northern Arizona University  
PO Box 6013  
Flagstaff, AZ 86011

Dear Davina,

The analysis of the samples here is interesting. It is evenly split between Government Mountain in the San Francisco Volcanic Field to the west and Valles Rhyolite (Cerro del Medio) in the Jemez Mountains to the east (Table 1). The sources are about equidistant from these sites. These two sources are the most frequently exchanged obsidian in the Southwest found throughout the Southwest, northern Mexico, and the Great Plains (Shackley 2005).

The samples were analyzed with a Spectrace (Thermo) *QuanX* EDXRF spectrometer in the Archaeological XRF Laboratory, University of California, Berkeley. Instrumental methods can be found at <http://www.swxrflab.net/anlysis.htm>. 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 source standards at Berkeley (see Shackley 1995, 2005).

Sincerely,

M. Steven Shackley  
Professor and Director

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

## REFERENCES CITED

Govindaraju, K.

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

Shackley, M. Steven

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

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
56-14-19	797	620	7963	110	77	15	78	46	Government Mtn
56-14-20	777	620	7784	102	82	20	79	59	Government Mtn
56-14-23	1069	416	8202	148	10	44	150	56	Valles Rhy
56-13-15	874	620	8545	107	85	18	73	50	Government Mtn
56-13-25	944	409	8449	147	10	39	158	52	Valles Rhy
57-21-59-1	1242	493	10341	165	13	33	170	53	Valles Rhy
57-21-41	715	536	7616	102	80	11	79	55	Government Mtn
57-21-59-2	1033	436	8881	159	9	40	167	59	Valles Rhy
57-21-63	1069	428	9228	157	10	41	160	65	Valles Rhy
57-21-9	768	630	8250	106	77	12	77	58	Government Mtn
RGM1-S3	1605	338	13489	148	119	21	221	14	standard