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LETTER REPORT

AN ENERGY-DISPERSIVE X-RAY FLUORESCENCE ANALYSIS OF OBSIDIAN ARTIFACTS FROM FOUR SITES IN FREMONT AND PARK COUNTIES, WYOMING

3 October 2015

Dr. Laura Scheiber
Department of Anthropology
Indiana University
Bloomington, IN 47405

Dear Laura,

While most of the artifacts were produced from Obsidian Cliff, Wyoming obsidian, one sample was produced from Teton Pass, Wyoming, one from Horse Creek, Fremont County, Wyoming, and one from Owyhee in Owyhee County, western Idaho (see Table 1). Specific instrumental methods can be found at <http://www.swxrflab.net/anlysis.htm>, and Shackley (2005). Source assignment was made by comparison to source standard data in the laboratory, Nelson and Tingey (1997), and Skinner (2007). 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

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REFERENCES CITED

Nelson, F.W., and D.G. Tingey

1997 X-Ray Fluorescence Analysis of Obsidians in Western North America, Mexico, and Guatemala: Data Base for Source Identification. Manuscript in possession of the author.

Shackley, M.S.

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

Skinner, C.

2007 Yellowstone National Park Obsidian Project, Wyoming. Online report:

http://www.obsidianlab.com/research/research_yellowstone.html

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

Sample	Site	Ti	Mn	Fe	Rb	Sr	Y	Zr	N	Ba	Source
RTK-30-2	FR6917	996	34	1039	11	11	27	81	12	144	Teton Pass, WY
			3	2	8	9				3	
RTK-44	FR6917	889	24	1093	24	13	72	16	40	0	Obsidian Cliff, WY
			5	1	2			5			
RTK-48	FR6917	754	57	7248	29	22	65	60	48	77	Horse Creek, WY
			8		0						
RTK-30-1	FR7091	907	26	1194	26	13	81	17	48	0	Obsidian Cliff, WY
			7	5	2			7			
RTK-85	FR7091	875	25	1114	24	11	78	17	52	5	Obsidian Cliff, WY
			6	5	7			3			
RTK-67	FR7091	875	25	1108	25	11	78	18	48	0	Obsidian Cliff, WY
			3	8	1			7			
RTK-40	FR7091	102	25	1170	25	16	75	18	50	21	Obsidian Cliff, WY
			9	4	1	4		4			
RTK-59	FR7091	929	26	1165	25	12	78	18	52	2	Obsidian Cliff, WY
			4	2	8			1			
RTK-71	FR7091	993	26	1182	26	14	76	17	45	16	Obsidian Cliff, WY
			6	6	1			1			
4	FR7120	144	47	1078	23	54	23	12	22	141	Owyhee, ID
			7	0	6	7		2			
HM-T7	not assigned	866	25	1095	24	12	79	17	51	23	Obsidian Cliff, WY
			1	6	6			2			
HM-T1	not assigned	935	25	1153	26	12	76	17	46	44	Obsidian Cliff, WY
			5	0	3			9			
HM-T6	not assigned	920	25	1140	25	12	77	17	48	34	Obsidian Cliff, WY
			2	4	5			3			
RGM1-S4		155	28	1315	14	11	25	21	3	818	standard
			0	9	7	0		7			