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An Energy-Dispersive X-Ray Fluorescence Analysis of Obsidian Artifacts from Site CS-TL-01 on the Coles Sam Road Project, Naval Weapons Station China Lake, Inyo County, California

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LETTER REPORT

AN ENERGY-DISPERSIVE X-RAY FLUORESCENCE ANALYSIS OF OBSIDIAN ARTIFACTS FROM SITE CS-TL-01 ON THE COLES SAM ROAD PROJECT, NAVAL WEAPONS STATION CHINA LAKE, INYO COUNTY, CALIFORNIA

25 February 2015

Simone Schinsing
Epsilon Systems Solutions
901 Heritage Drive, Ste 204
Ridgecrest, CA 93555

Dear Simone:

As before, I have taken the liberty of sending a letter report in the interest of time. The mix of sources is similar to the previous projects, with somewhat more obsidian procured from Sugarloaf dome in the Coso Volcanic Field (Table 1, Figure 1; Shackley 2014a, 2014 b, 2014c). I refer you to the previous report for more detailed discussion of sources and source assignment (Shackley 2014a; see Table 1, and Figure 1 here). Specific instrumental methods can be found at <http://www.swxrflab.net/anlysis.htm>, and Shackley (2005). Source assignment was made by comparison to Ericson and Glascock (2004) and Hughes (1988). Again, since I have no Coso Volcanic Field source standard library at this lab, the correlation is a bit variable, but likely the source assignments are accurate. 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

REFERENCES CITED

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2004 Subsource Characterization: Obsidian Utilization of Subsources of the Coso Volcanic Field, Coso Junction, California, USA. *Geoarchaeology* 19:779-805.

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1988 The Coso Volcanic Field Reexamined: Implications for Obsidian Sourcing and Hydration Dating Research. *Geoarchaeology* 3:253-265.

Shackley, M.S.

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

2014a Source Provenance of Obsidian Artifacts from Five Sites on the Naval Weapons Station China Lake, Inyo, Kern, and San Bernardino Counties, California. Report prepared for Epsilon Systems Solutions, Inc., Ridgecrest, California.

2014b An Energy-Dispersive X-Ray Fluorescence Analysis of Obsidian Artifacts from Nine Sites on the Naval Weapons Station China Lake, Inyo, Kern, And San Bernardino Counties, California. Report prepared for Epsilon Systems Solutions, Inc., Ridgecrest, California.

2014c An Energy-Dispersive X-Ray Fluorescence Analysis of Obsidian Artifacts from Two Sites on The Coles Sam Road Project, Naval Weapons Station China Lake, Inyo County, California. Report prepared for Epsilon Systems Solutions, Inc., Ridgecrest, California.

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

SAMPLE	Ti	Mn	Fe	Zn	Rb	Sr	Y	Zr	N ^b	Pb	Th	SOURCE
1	486	27 0	1184 4	84	26 7	13	54	13 7	50	32	33	West Sugarloaf
2	428	24 8	1175 0	77	32 6	8	69	12 3	71	38	35	West Cactus Pk
3	486	28 0	1211 6	85	25 6	18	50	15 0	47	31	41	West Sugarloaf
4	470	25 2	1178 0	60	26 2	13	57	13 4	47	31	33	West Sugarloaf
5	401	25 8	1158 9	77	25 5	14	45	11 1	41	33	37	Sugarloaf
6	502	30 9	1205 7	19 9	25 3	14	44	10 7	47	32	28	Sugarloaf
7	506	26 6	1172 5	65	23 4	15	47	14 3	40	26	24	West Sugarloaf
8	483	27 8	1218 4	96	34 5	10	68	12 8	72	41	42	West Cactus Pk
9a	609	27 9	1246 6	66	25 6	18	53	15 6	47	28	28	West Sugarloaf
9b	392	27	1221	12	27	15	53	13	49	35	39	West Sugarloaf

		3	2	6	7			4				
RGM1-	157	28	1379	33	14	10	24	21	11	20	10	standard
S4	2	6	2		8	9		6				

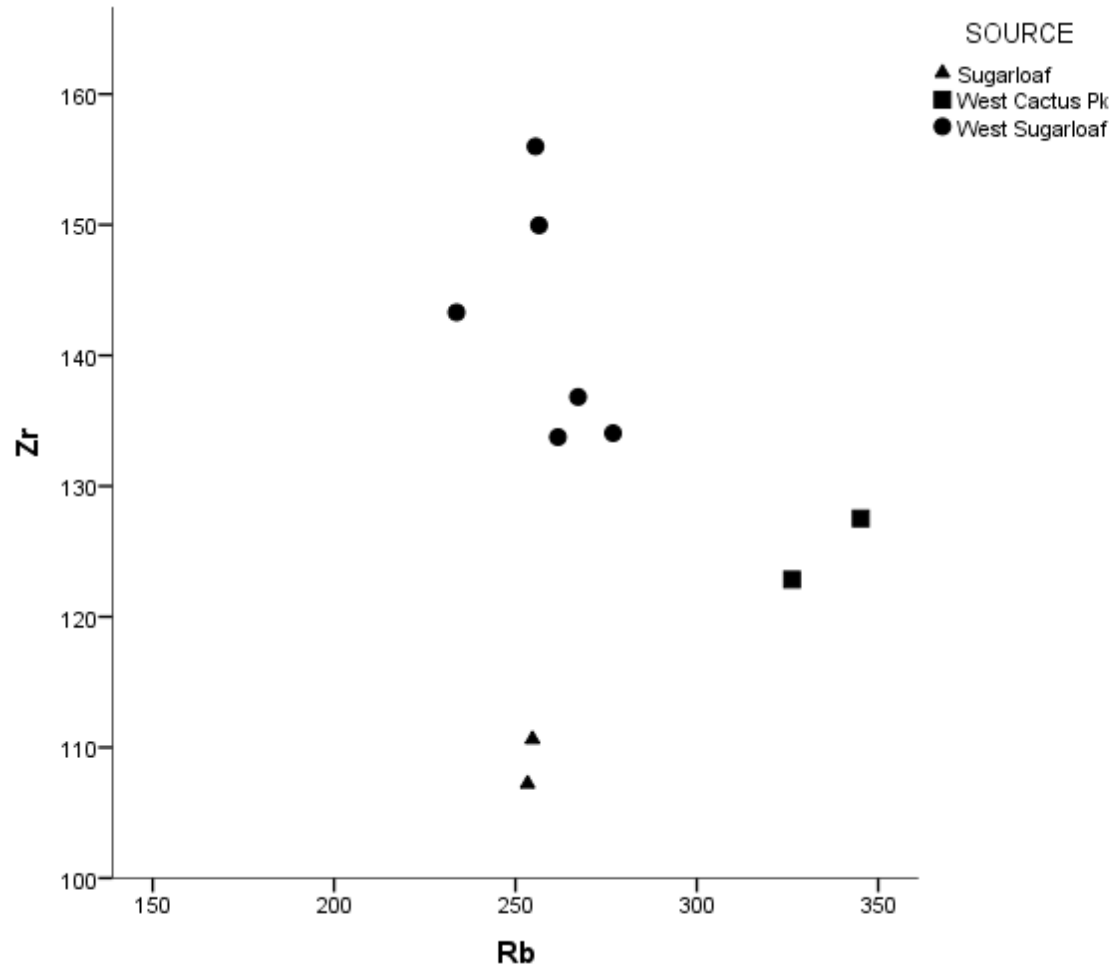


Figure 1. Rb versus Zr bivariate plot of archaeological samples (after Hughes 1988).