

**APPENDIX B:
SOUTHEASTERN OREGON OBSIDIAN SOURCES**

IN

**CHANGING OBSIDIAN SOURCES AT THE LOST DUNE AND
MCCOY CREEK SITES, BLITZEN VALLEY, SOUTHEASTERN
OREGON**

by

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In this appendix, we present geographic and geochemical summary data for selected obsidian sources located in the general region of the Lost Dune and McCoy Creek sites. With the exception of the Burns, Massacre Lake/Guano Valley, and Riley sources (Hughes 1985, 1986; Skinner 1983), the geochemistry of the sources reported here has not been previously presented in the literature. Several of the source locales were found using the brief descriptions provided by Sappington (1981a, 1981b).

The diagnostic trace elements that are reported here are those that are most often used to characterize obsidian sources in this region. Reported trace element values for artifacts commonly show more compositional variability than source specimens because of less than optimal target geometry, the presence of surface residues, small physical size, and the larger numbers and more randomly collected population of analyzed artifacts relative to source reference samples.

Please note that geochemical and geoarchaeological studies of most of these sources are actively underway and that future interpretations of the analytical data may vary slightly from those presented here. Further information concerning obsidian source research at Oregon obsidian sources may be found at www.obsidianlab.com.

References:

Hughes, Richard E.

1986a *Diachronic Variability in Obsidian Procurement Patterns in Northeast California and Southcentral Oregon*. University of California Publications in Anthropology 17, Berkeley, California.

1986b Energy-Dispersive X-Ray Fluorescence Analysis of Obsidian from Dog Hill and Burns Butte. *Northwest Science* 60:73–80.

Sappington, Robert L.

1981a A Progress Report on the Obsidian and Vitrophyre Sourcing Project. *Idaho Archaeologist* 4(4):4–17.

1981b Additional Obsidian and Vitrophyre Source Descriptions from Idaho and Adjacent Areas. *Idaho Archaeologist* 5(1):4–8.

Skinner, Craig E.

1983 *Obsidian Studies in Oregon: An Introduction to Obsidian and An Investigation of Selected Methods of Obsidian Characterization Utilizing Obsidian Collected at Prehistoric Quarry Sites in Oregon*. Unpublished Master's Terminal Project, Interdisciplinary Studies, University of Oregon, Eugene, Oregon.

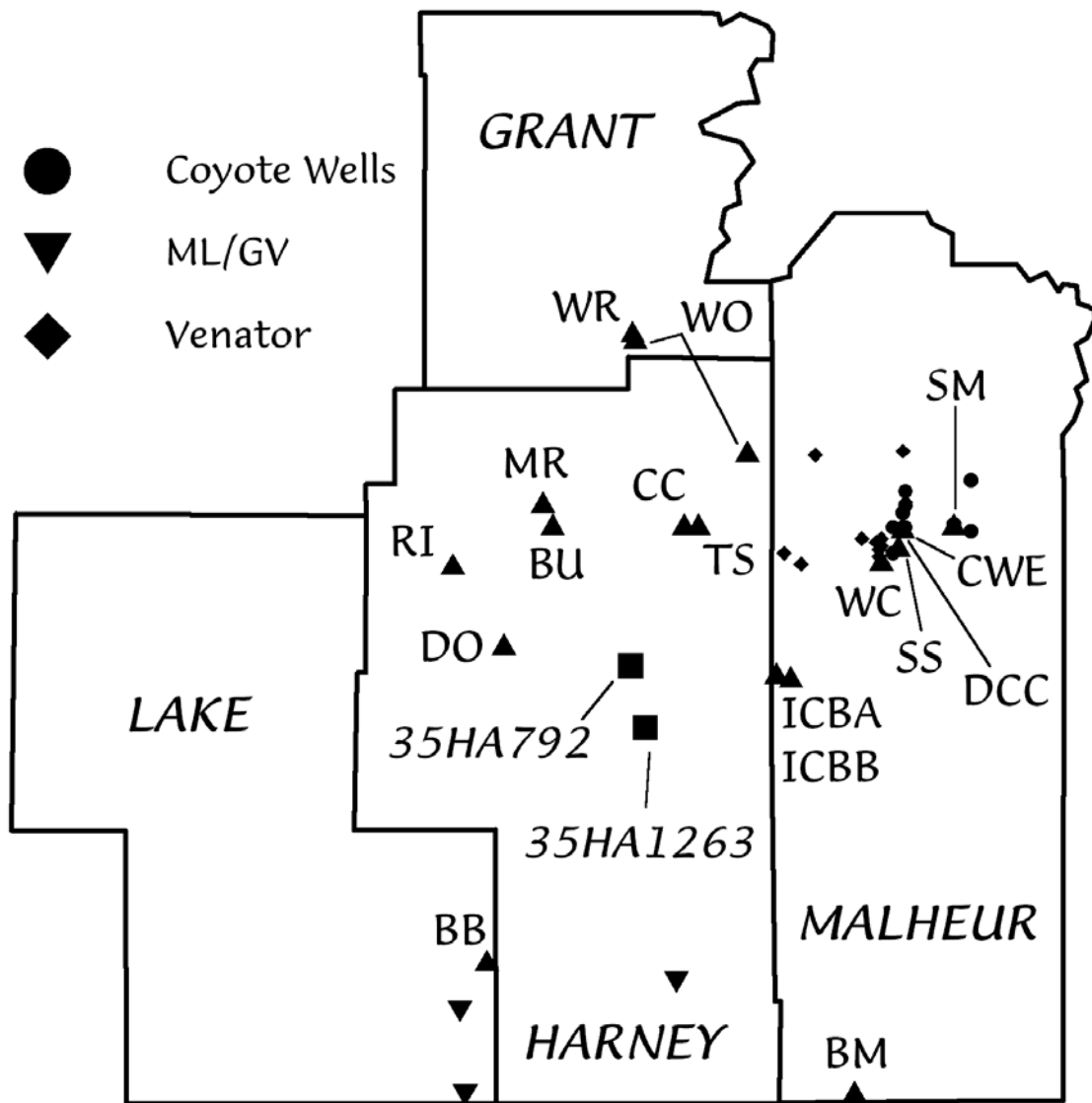


Figure B-1. Generalized locations of selected obsidian sources in Grant, Lake, Harney, and Malheur counties, southeast Oregon.. Abbreviations are the same as those used in Table B-1. Several of these sources (i.e., Coyote Wells, Massacre Lake/Guano Valley, and Venator) are associated with geographically widespread and incompletely mapped ash-flow deposits. The Whitehorse 2 source is currently known only from analyzed cortex flakes and is not shown on the map.

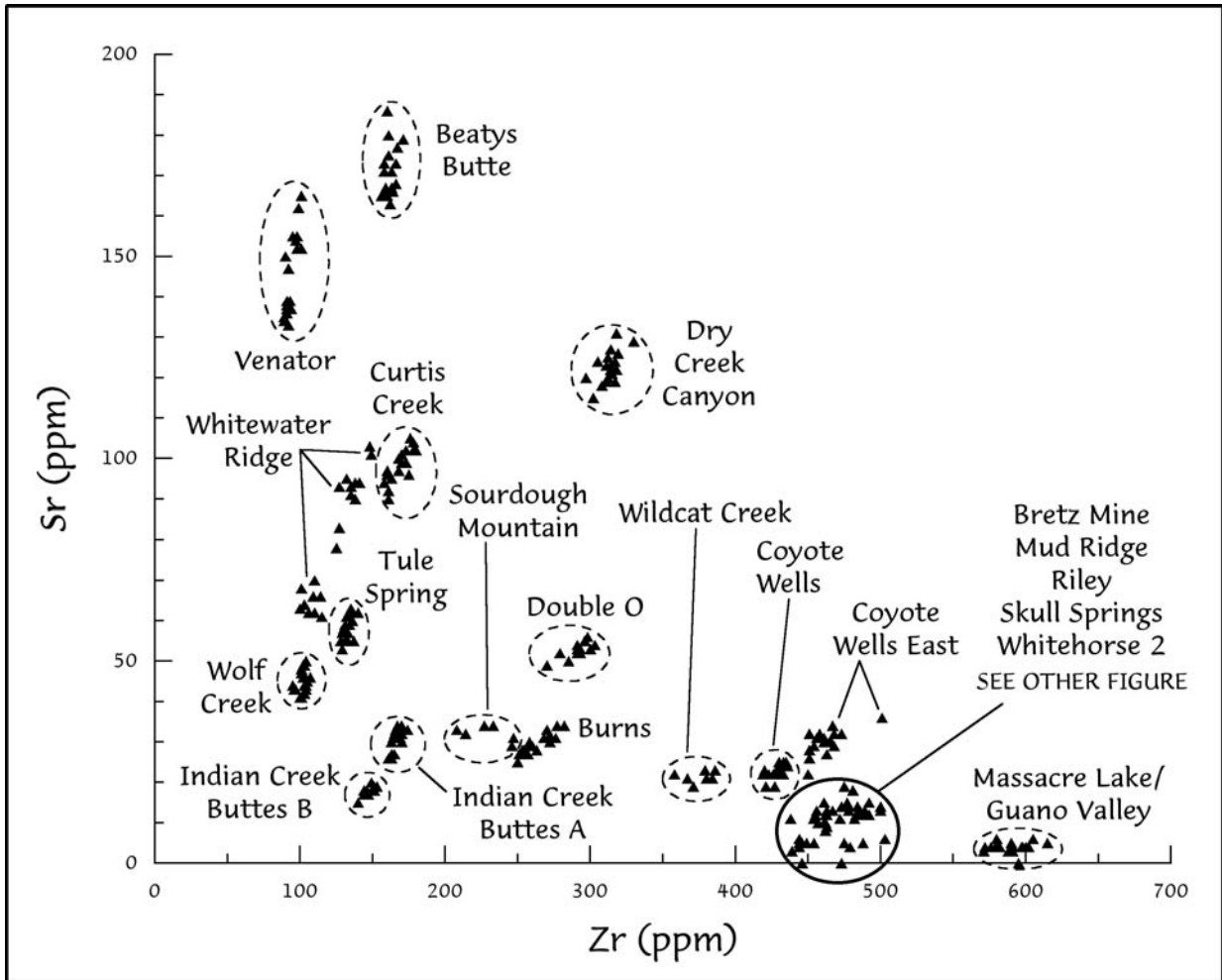


Figure B-2. Scatterplot of strontium (Sr) plotted versus zirconium (Zr) for all sources summarized in Table B-1. A maximum of 20 randomly selected samples from each source is shown. Individual sources that are not clearly distinguishable in this scatterplot are easily separable when additional trace elements or peak ratios are considered (see Figure B-3).

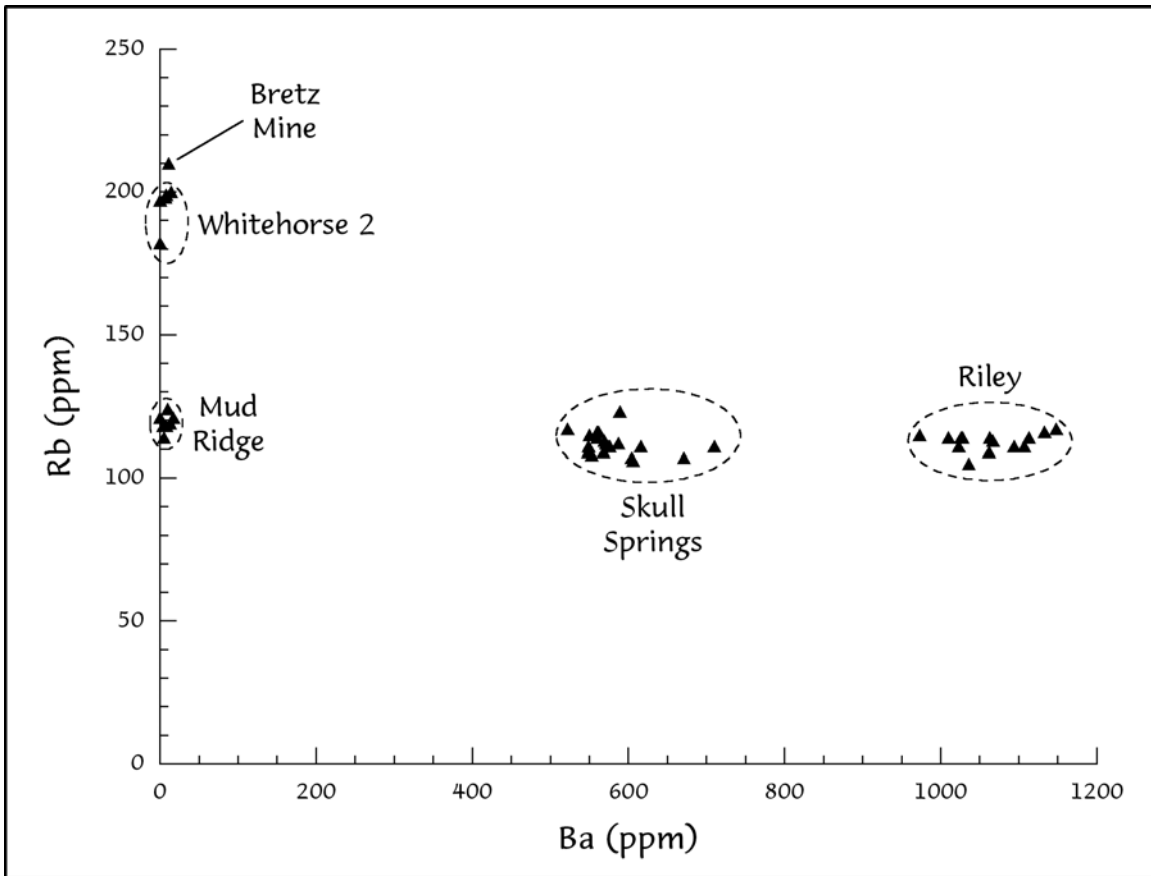


Figure B-3. Scatterplot of barium (Ba) plotted versus rubidium (Rb) for sources not easily distinguishable in Figure B-2.

Table B-1
SUMMARY OF RESULTS OF NONDESTRUCTIVE X-RAY FLUORESCENCE ANALYSIS OF GEOLOGIC SOURCE
SAMPLES OF OBSIDIAN IDENTIFIED AT THE LOST DUNE AND MCCOY CREEK SITES

Geochemical Source	N=	Peak Ratios		Trace Element Concentrations (parts per million) ^a						
		Fe:Mn	Fe:Ti	Zn	Rb	Sr	Y	Zr	Nb	Ba
Beatys Butte (BB)	64	33.5 ± 5.4	38.7 ± 4.6	35 ± 5	129 ± 5	175 ± 14	15 ± 1	161 ± 4	11 ± 1	965 ± 54
Bretz Mine (BM)	1	67.0 ± 0	73.7 ± 0	199 ± 0	210 ± 0	6 ± 0	90 ± 0	503 ± 0	11 ± 0	11 ± 0
Burns (BU)	75	49.9 ± 3.2	44.4 ± 1.4	49 ± 7	125 ± 5	29 ± 2	44 ± 2	259 ± 9	30 ± 2	563 ± 49
Coyote Wells	34	36.5 ± 1.1	47.8 ± 2.0	86 ± 7	115 ± 4	23 ± 4	62 ± 2	431 ± 7	31 ± 2	831 ± 25
Coyote Wells East (CWE)	21	32.6 ± 0.8	52.4 ± 2.7	115 ± 8	108 ± 4	30 ± 2	69 ± 2	461 ± 11	32 ± 2	1156 ± 55
Curtis Creek (CC)	17	46.9 ± 1.4	42.5 ± 1.8	39 ± 6	118 ± 4	98 ± 4	30 ± 1	169 ± 7	11 ± 2	1426 ± 49
Double O (DO)	13	68.6 ± 3.5	36.5 ± 1.5	39 ± 3	166 ± 8	53 ± 2	37 ± 3	291 ± 8	18 ± 2	849 ± 60
Dry Creek Canyon (DCC)	21	59.7 ± 2.0	30.2 ± 0.9	42 ± 5	143 ± 5	123 ± 4	30 ± 2	313 ± 7	18 ± 2	963 ± 37
Indian Creek Buttes A (ICBA)	41	48.2 ± 1.9	84.0 ± 4.2	57 ± 6	180 ± 4	31 ± 3	54 ± 2	166 ± 3	31 ± 2	75 ± 15
Indian Creek Buttes B (ICBB)	9	44.5 ± 1.7	99.5 ± 7.0	58 ± 6	188 ± 5	18 ± 2	57 ± 3	147 ± 4	34 ± 2	171 ± 20
Massacre L./Guano Valley (ML/GV)	116	22.6 ± 1.1	42.3 ± 1.2	141 ± 11	228 ± 9	4 ± 1	91 ± 3	590 ± 16	33 ± 2	7 ± 7
Mud Ridge (MR)	7	70.9 ± 2.1	96.4 ± 1.7	95 ± 7	119 ± 3	4 ± 2	76 ± 2	445 ± 4	48 ± 1	8 ± 5
Riley (RI)	14	32.7 ± 0.9	59.5 ± 2.2	89 ± 8	113 ± 3	11 ± 1	60 ± 2	459 ± 7	25 ± 2	1063 ± 49
Skull Springs (SS)	17	31.0 ± 0.9	65.5 ± 2.9	139 ± 8	113 ± 4	14 ± 2	74 ± 2	484 ± 10	33 ± 2	582 ± 40
Sourdough Mountain (SM)	6	51.7 ± 5.4	40.3 ± 1.6	38 ± 6	135 ± 3	32 ± 2	38 ± 1	236 ± 24	22 ± 2	467 ± 39
Tule Spring (TS)	43	41.0 ± 1.3	49.6 ± 3.3	35 ± 5	130 ± 4	58 ± 2	32 ± 2	132 ± 4	12 ± 2	1110 ± 62
Venator (VE)	85	16.5 ± 2.4	89.1 ± 16.0	50 ± 6	105 ± 4	142 ± 12	28 ± 2	94 ± 4	13 ± 2	886 ± 55
Whitehorse 2	5	50.6 ± 0.9	98.6 ± 6.7	95 ± 9	195 ± 7	4 ± 2	67 ± 2	473 ± 13	33 ± 1	6 ± 5
Whitewater Ridge (WR)	409	42.4 ± 14.5	47.4 ± 8.0	36 ± 6	119 ± 6	79 ± 14	26 ± 3	122 ± 13	11 ± 3	1451 ± 116
Wildcat Creek (WC)	8	35.7 ± 0.8	46.3 ± 2.7	84 ± 8	119 ± 3	22 ± 1	63 ± 3	376 ± 9	32 ± 2	715 ± 25
Wolf Creek (WO)	165	35.4 ± 1.9	59.1 ± 4.2	33 ± 5	131 ± 5	45 ± 2	27 ± 1	103 ± 3	10 ± 2	1027 ± 47

^a Standard deviation is computed only from calculated trace element values and does not include analytical uncertainties.