LETTER REPORT

AN ENERGY-DISPERSIVE X-RAY FLUORESCENCE ANALYSIS OF FOUR OBSIDIAN PROJECTILE POINTS FROM THE MAXWELL MUSEUM OF ANTHROPOLOGY COLLECTIONS

1 September 2013

Dr. Bruce Huckell
Maxwell Museum of Anthropology
University of New Mexico
Albuquerque, NM 87131

Dear Bruce,

The four obsidian projectile points were produced from two of the sources in the Jemez Mountains, northern New Mexico; El Rechuelos, a pre-caldera source dating between 2.01-2.07 m.y. and Cerro Toledo Rhyolite the primary caldera event dating between 1.2-1.6 m.y. (Gardner et al. 1986; Spell et al. 1996: Table 1 here). The samples were analyzed using the Thermo Scientific Quant’X EDXRF spectrometer in the Geoarchaeological XRF Laboratory, Albuquerque, New Mexico. Source assignments were made by comparison to published source standard data and the source standard collection at this laboratory (Shackley 1995, 2005). Instrumental methods can be found at http://www.swxrflab.net/analysis.htm. Analysis of the USGS RGM-1 standard indicates high machine precision for the elements of interest (Govindaraju 1994; Table 1 here).

Sincerely,

M. Steven Shackley, Ph.D.
Director

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http://www.swxrflab.net/
REFERENCES CITED


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

<table>
<thead>
<tr>
<th>Sample</th>
<th>Ti</th>
<th>Mn</th>
<th>Fe</th>
<th>Zn</th>
<th>Rb</th>
<th>Sr</th>
<th>Y</th>
<th>Zr</th>
<th>Nb</th>
<th>Ba</th>
<th>Pb</th>
<th>Th</th>
<th>Source</th>
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<tbody>
<tr>
<td>4</td>
<td>943</td>
<td>39</td>
<td>7850</td>
<td>42</td>
<td>158</td>
<td>12</td>
<td>24</td>
<td>69</td>
<td>47</td>
<td>673</td>
<td>27</td>
<td>19</td>
<td>El Rechuelos</td>
</tr>
<tr>
<td>16</td>
<td>103</td>
<td>41</td>
<td>8551</td>
<td>64</td>
<td>158</td>
<td>12</td>
<td>25</td>
<td>70</td>
<td>48</td>
<td>&lt;1</td>
<td>25</td>
<td>22</td>
<td>El Rechuelos</td>
</tr>
<tr>
<td>20</td>
<td>955</td>
<td>50</td>
<td>1086</td>
<td>123</td>
<td>206</td>
<td>10</td>
<td>65</td>
<td>177</td>
<td>105</td>
<td>1</td>
<td>33</td>
<td>28</td>
<td>Cerro Toledo Rhy.</td>
</tr>
<tr>
<td>29</td>
<td>926</td>
<td>47</td>
<td>1036</td>
<td>100</td>
<td>205</td>
<td>10</td>
<td>64</td>
<td>171</td>
<td>99</td>
<td>48</td>
<td>34</td>
<td>23</td>
<td>Cerro Toledo Rhy.</td>
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<tr>
<td>RGM1-S4</td>
<td>167</td>
<td>28</td>
<td>1331</td>
<td>37</td>
<td>148</td>
<td>108</td>
<td>23</td>
<td>218</td>
<td>9</td>
<td>857</td>
<td>20</td>
<td>11</td>
<td>standard</td>
</tr>
</tbody>
</table>

Variability in Ba concentrations often due to environmental contamination (Shackley and Dillian 2002).