Site Inspection Report for the Abandoned and Inactive Mines in Idaho on U.S. Forest Service Lands (Region 1), Idaho Panhandle National Forest: Volume IV: Prichard Creek and Eagle Creek Drainages, Secondary Properties

John Kauffman
Earl H. Bennett
Victoria E. Mitchell

Idaho Geological Survey
Morrill Hall, Third Floor
University of Idaho
Moscow, Idaho 83844-3014
Site Inspection Report for the Abandoned and Inactive Mines in Idaho on U.S. Forest Service Lands (Region 1), Idaho Panhandle National Forest: Volume IV: Prichard Creek and Eagle Creek Drainages, Secondary Properties

John Kauffman
Earl H. Bennett
Victoria E. Mitchell

Staff Reports present timely information for public distribution. This publication may not conform to the agency's standards.

Idaho Geological Survey
Morrill Hall, Third Floor
University of Idaho
Moscow, Idaho 83844-3014
Report originally prepared in 1999 for the U.S. Forest Service, Region 1, Under Participating Agreement No. FS-01-96-14-2800

Field Inspection conducted by Earl Bennett, John Kauffman, Falma Moye, and William Rember
CONTENTS

1.0 PROJECT OVERVIEW ................................................................. 1
  1.1 INTRODUCTION ................................................................. 1
  1.2 PROJECT OBJECTIVES ......................................................... 1
  1.3 ABANDONED AND INACTIVE MINES DEFINED .............................. 2
  1.4 HEALTH AND ENVIRONMENTAL PROBLEMS AT MINES ............... 2
    1.4.1 Acid Mine Drainage ................................................... 2
    1.4.2 Solubility of Selected Metals ...................................... 3
    1.4.3 The Use of pH and Specific Conductivity to Identify Water Quality Problems .................................................. 5

1.5 METHODOLOGY .................................................................... 6
  1.5.1 Data Sources .................................................................. 6
  1.5.2 Pre-field Screening ....................................................... 6
  1.5.3 Field Inspection Procedures ........................................... 7
    1.5.3.1 Soil, Rock, and Mine Waste Sampling Procedures ......... 8
    1.5.3.2 Water Sampling Procedure ....................................... 8
  1.5.4 Analytical Methods ....................................................... 9
  1.5.5 Standards ..................................................................... 9
    1.5.5.1 Water-Quality Standards ........................................... 9
    1.5.5.2 Soil and Rock Background Standards ......................... 10
  1.5.6 Analytical Results ........................................................ 13
  1.5.7 Sample and Site Identification Numbers ........................... 13

2.0 SUMMIT MINING DISTRICT (PRICHARD-EAGLE CREEK DRAINAGE) ........................................................................ 14
  2.1 INTRODUCTION ................................................................ 14
    2.1.1 Summary of the Summit Mining District (Prichard-Eagle Creeks) Study ............................................................ 14
  2.2 GEOLOGY ............................................................................ 18
  2.3 ECONOMIC GEOLOGY .......................................................... 21
    2.3.1 General Characteristics of the Ore ................................ 21
    2.3.2 Summary of Mill Development ...................................... 22
  2.4 HYDROLOGY AND HYDROGEOLOGY ..................................... 22
  2.5 SUMMARY OF THE SUMMIT MINING DISTRICT ..................... 24
    2.5.1 Summary of Environmental Observations ....................... 24
    2.5.2 Mill Waste Samples ................................ ..................... 24

3.0 MINE DESCRIPTIONS ............................................................... 27
  3.1 MINNIE MOORE MINE (Site No. B8159608) ............................ 27
    3.1.1 Site Location and Access .............................................. 27
    3.1.2 Geologic Features ....................................................... 27
    3.1.3 Site History ............................................................... 27
    3.1.4 Environmental Conditions ........................................... 27
      3.1.4.1 Site Features ....................................................... 27
      3.1.4.2 Sample Locations .................................................. 27
        3.1.4.2.1 Soil Samples ................................................... 27
        3.1.4.2.2 Water Samples ................................................ 27
3.1.5 Structures ........................................... 28
3.1.6 Safety ............................................. 28
3.2 COLUMBUS MINE (Site No. WL-12) ................. 32
  3.2.1 Site Location and Access ....................... 32
  3.2.2 Geologic Features ............................... 32
  3.2.3 Site History ..................................... 32
  3.2.4 Environmental Conditions ..................... 32
    3.2.4.1 Site Features ................................ 32
    3.2.4.2 Sample Locations .......................... 33
      3.2.4.2.1 Soil Samples ............................ 33
      3.2.4.2.2 Water Samples ......................... 33
      3.2.4.2.3 Analytical Results ..................... 33
  3.2.5 Structures ..................................... 33
  3.2.6 Safety ......................................... 33
3.3 ANCHOR MINE (Site No. WL-44) ....................... 37
  3.3.1 Site Location and Access ....................... 37
  3.3.2 Geologic Features .............................. 37
  3.3.3 Site History .................................... 37
  3.3.4 Environmental Conditions ..................... 37
    3.3.4.1 Site Features .............................. 37
    3.3.4.2 Sample Locations .......................... 38
      3.3.4.2.1 Soil Samples ............................ 38
      3.3.4.2.2 Water Samples ......................... 38
  3.3.5 Structures ..................................... 38
  3.3.6 Safety ......................................... 38
3.4 GOLDEN DREAM CLAIMS (Site No. WL-34) ............. 42
  3.4.1 Site Location and Access ....................... 42
  3.4.2 Geologic Features .............................. 42
  3.4.3 Site History .................................... 42
  3.4.4 Environmental Conditions ..................... 42
    3.4.4.1 Site Features ................................ 42
    3.4.4.2 Sample Locations .......................... 43
      3.4.4.2.1 Soil Samples ............................ 43
      3.4.4.2.2 Water Samples ......................... 43
      3.4.4.2.3 Analytical Results ..................... 43
  3.4.5 Structures ..................................... 43
  3.4.6 Safety ......................................... 43
3.5 LIBERTY MINE (Site No. WL-51) ....................... 46
  3.5.1 Site Location and Access ....................... 46
  3.5.2 Geologic Features .............................. 46
  3.5.3 Site History .................................... 46
  3.5.4 Environmental Conditions ..................... 46
    3.5.4.1 Site Features ................................ 46
    3.5.4.2 Sample Locations .......................... 46
3.5.4.2.1 Soil Samples ........................................ 46
3.5.4.2.2 Water Samples .................................... 46
3.5.4.2.3 Analytical Results .................................. 47
3.5.5 Structures ............................................... 47
3.5.6 Safety .................................................. 47
3.6 STONEWALL MINE (Site No. WL-561) ................... 51
  3.6.1 Site Location and Access .............................. 51
  3.6.2 Geologic Features .................................... 51
  3.6.3 Site History .......................................... 51
  3.6.4 Environmental Conditions ........................... 51
    3.6.4.1 Site Features .................................... 51
    3.6.4.2 Sample Locations ................................. 51
    3.6.4.2.1 Soil Samples ................................ 51
    3.6.4.2.2 Water Samples ................................ 51
  3.6.5 Structures ............................................ 51
  3.6.6 Safety ............................................... 51
3.7 TIGER MINE (Site No. WL-90) .......................... 54
  3.7.1 Site Location and Access .............................. 54
  3.7.2 Geologic Features .................................... 54
  3.7.3 Site History .......................................... 54
  3.7.4 Environmental Conditions ........................... 55
    3.7.4.1 Site Features .................................... 55
    3.7.4.2 Sample Locations ................................ 55
    3.7.4.2.1 Soil Samples ................................ 55
    3.7.4.2.2 Water Samples ................................ 55
    3.7.4.2.3 Analytical Results ........................... 55
  3.7.5 Structures ............................................ 55
  3.7.6 Safety ............................................... 56
3.8 DAISY VOLUNTEER MINE (Site No. WL-45) .............. 59
  3.8.1 Site Location and Access .............................. 59
  3.8.2 Geologic Features .................................... 59
  3.8.3 Site History .......................................... 59
  3.8.4 Environmental Conditions ........................... 59
    3.8.4.1 Site Features .................................... 59
    3.8.4.2 Sample Locations ................................ 59
    3.8.4.2.1 Soil Samples ................................ 59
    3.8.4.2.2 Water Samples ................................ 59
  3.8.5 Structures ............................................ 59
  3.8.6 Safety ............................................... 59
3.9 UNNAMED PROSPECT ON SILENT CREEK (Site No. K8229604) 62
  3.9.1 Site Location and Access .............................. 62
  3.9.2 Geologic Features .................................... 62
  3.9.3 Site History .......................................... 62

iv
<table>
<thead>
<tr>
<th>Section</th>
<th>Title</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>3.9.4</td>
<td>Environmental Conditions</td>
<td>62</td>
</tr>
<tr>
<td>3.9.4.1</td>
<td>Site Features</td>
<td>62</td>
</tr>
<tr>
<td>3.9.4.2</td>
<td>Sample Locations</td>
<td>62</td>
</tr>
<tr>
<td>3.9.4.2.1</td>
<td>Soil Samples</td>
<td>62</td>
</tr>
<tr>
<td>3.9.4.2.2</td>
<td>Water Samples</td>
<td>62</td>
</tr>
<tr>
<td>3.9.5</td>
<td>Structures</td>
<td>63</td>
</tr>
<tr>
<td>3.9.6</td>
<td>Safety</td>
<td>63</td>
</tr>
<tr>
<td>3.10</td>
<td>EAGLE CREEK PROSPECT (Site No. WL-17)</td>
<td>65</td>
</tr>
<tr>
<td>3.10.1</td>
<td>Site Location and Access</td>
<td>65</td>
</tr>
<tr>
<td>3.10.2</td>
<td>Geologic Features</td>
<td>65</td>
</tr>
<tr>
<td>3.10.3</td>
<td>Site History</td>
<td>65</td>
</tr>
<tr>
<td>3.10.4</td>
<td>Environmental Conditions</td>
<td>65</td>
</tr>
<tr>
<td>3.10.4.1</td>
<td>Site Features</td>
<td>65</td>
</tr>
<tr>
<td>3.10.4.2</td>
<td>Sample Locations</td>
<td>66</td>
</tr>
<tr>
<td>3.10.4.2.1</td>
<td>Soil Samples</td>
<td>66</td>
</tr>
<tr>
<td>3.10.4.2.2</td>
<td>Water Samples</td>
<td>66</td>
</tr>
<tr>
<td>3.10.5</td>
<td>Structures</td>
<td>66</td>
</tr>
<tr>
<td>3.10.6</td>
<td>Safety</td>
<td>66</td>
</tr>
<tr>
<td>3.11</td>
<td>LUCKY FOUR MINE (Site No. WL-122)</td>
<td>69</td>
</tr>
<tr>
<td>3.11.1</td>
<td>Site Location and Access</td>
<td>69</td>
</tr>
<tr>
<td>3.11.2</td>
<td>Geologic Features</td>
<td>69</td>
</tr>
<tr>
<td>3.11.3</td>
<td>Site History</td>
<td>69</td>
</tr>
<tr>
<td>3.11.4</td>
<td>Environmental Conditions</td>
<td>69</td>
</tr>
<tr>
<td>3.11.4.1</td>
<td>Site Features</td>
<td>69</td>
</tr>
<tr>
<td>3.11.4.2</td>
<td>Sample Locations</td>
<td>69</td>
</tr>
<tr>
<td>3.11.4.2.1</td>
<td>Soil Samples</td>
<td>69</td>
</tr>
<tr>
<td>3.11.4.2.2</td>
<td>Water Samples</td>
<td>69</td>
</tr>
<tr>
<td>3.11.5</td>
<td>Structures</td>
<td>70</td>
</tr>
<tr>
<td>3.11.6</td>
<td>Safety</td>
<td>70</td>
</tr>
<tr>
<td>3.12</td>
<td>UNNAMED PROSPECT (Site No. WL-562)</td>
<td>74</td>
</tr>
<tr>
<td>3.12.1</td>
<td>Site Location and Access</td>
<td>74</td>
</tr>
<tr>
<td>3.12.2</td>
<td>Geologic Features</td>
<td>74</td>
</tr>
<tr>
<td>3.12.3</td>
<td>Site History</td>
<td>74</td>
</tr>
<tr>
<td>3.12.4</td>
<td>Environmental Conditions</td>
<td>74</td>
</tr>
<tr>
<td>3.12.4.1</td>
<td>Site Features</td>
<td>74</td>
</tr>
<tr>
<td>3.12.4.2</td>
<td>Sample Locations</td>
<td>75</td>
</tr>
<tr>
<td>3.12.4.2.1</td>
<td>Soil Samples</td>
<td>75</td>
</tr>
<tr>
<td>3.12.4.2.2</td>
<td>Water Samples</td>
<td>75</td>
</tr>
<tr>
<td>3.12.5</td>
<td>Structures</td>
<td>75</td>
</tr>
<tr>
<td>3.12.6</td>
<td>Safety</td>
<td>75</td>
</tr>
<tr>
<td>3.13</td>
<td>ST. PETER MINE (Site No. WL-112)</td>
<td>77</td>
</tr>
<tr>
<td>3.13.1</td>
<td>Site Location and Access</td>
<td>77</td>
</tr>
<tr>
<td>3.13.2</td>
<td>Geologic Features</td>
<td>77</td>
</tr>
</tbody>
</table>
3.17 GOLDEN EAGLE NO. 3 (Site No. K8169601) ................................................................. 93
  3.17.1 Site Location and Access .......................................................... 93
  3.17.2 Geologic Features ................................................................. 93
  3.17.3 Site History ............................................................................. 93
  3.17.4 Environmental Conditions ....................................................... 93
    3.17.4.1 Site Features .................................................................. 93
    3.17.4.2 Sample Locations ........................................................... 93
      3.17.4.2.1 Soil Samples ........................................................... 93
      3.17.4.2.2 Water Samples ....................................................... 94
  3.17.5 Structures ............................................................................ 94
  3.17.6 Safety .................................................................................. 94
3.18 BUCKEYE BOY MINE (Site No. WL-48) ......................................................... 98
  3.18.1 Site Location and Access ........................................................ 98
  3.18.2 Geologic Features ................................................................ 98
  3.18.3 Site History ........................................................................... 98
  3.18.4 Environmental Conditions ..................................................... 99
    3.18.4.1 Site Features .................................................................. 99
    3.18.4.2 Sample Locations ........................................................... 99
      3.18.4.2.1 Soil Samples ........................................................... 99
      3.18.4.2.2 Water Samples ....................................................... 99
      3.18.4.2.3 Analytical Results .................................................. 99
  3.18.5 Structures ............................................................................ 100
  3.18.6 Safety .................................................................................. 100
3.19 HAWKINS MINE (Site No. WL-59) ................................................................. 104
  3.19.1 Site Location and Access ........................................................ 104
  3.19.2 Geologic Features ................................................................ 104
  3.19.3 Site History ........................................................................... 104
  3.19.4 Environmental Conditions ..................................................... 104
    3.19.4.1 Site Features .................................................................. 104
    3.19.4.2 Sample Locations ........................................................... 104
      3.19.4.2.1 Soil Samples ........................................................... 104
      3.19.4.2.2 Water Samples ....................................................... 104
      3.19.4.2.3 Analytical Results .................................................. 105
  3.19.5 Structures ............................................................................ 105
  3.19.6 Safety .................................................................................. 105
3.20 KELLY PROSPECT (Site No. WL-2) ................................................................. 108
  3.20.1 Site Location and Access ........................................................ 108
  3.20.2 Geologic Features ................................................................ 108
  3.20.3 Site History ........................................................................... 108
  3.20.4 Environmental Conditions ..................................................... 108
    3.20.4.1 Site Features .................................................................. 108
    3.20.4.2 Sample Locations ........................................................... 109
      3.20.4.2.1 Soil Samples ........................................................... 109
      3.20.4.2.2 Water Samples ....................................................... 109
      3.20.4.2.3 Analytical Results .................................................. 109
3.28.5 Structures .................................................. 139
3.28.6 Safety ..................................................... 139

3.29 UNNAMED PROSPECT (Site No. B7319606) ....................... 143
  3.29.1 Site Location and Access ................................ 143
  3.29.2 Geologic Features ...................................... 143
  3.29.3 Site History .......................................... 143
  3.29.4 Environmental Conditions ............................. 143
    3.29.4.1 Site Features .................................... 143
    3.29.4.2 Sample Locations ................................. 143
      3.29.4.2.1 Soil Samples ................................. 143
      3.29.4.2.2 Water Samples ............................... 143
  3.29.5 Structures .......................................... 143
  3.29.6 Safety ............................................. 143

3.30 UNNAMED PROSPECT (Site No. B8159601A) ....................... 145
  3.30.1 Site Location and Access ................................ 145
  3.30.2 Geologic Features .................................... 145
  3.30.3 Site History .......................................... 145
  3.30.4 Environmental Conditions ............................. 145
    3.30.4.1 Site Features .................................... 145
    3.30.4.2 Sample Locations ................................. 145
      3.30.4.2.1 Soil Samples ................................. 145
      3.30.4.2.2 Water Samples ............................... 145
      3.30.4.2.3 Analytical Results ......................... 146
  3.30.5 Structures .......................................... 146
  3.30.6 Safety ............................................. 146

3.31 UNNAMED PROSPECTS (Site Nos. B8159605 and B8159606) ........... 148
  3.31.1 Site Location and Access ................................ 148
  3.31.2 Geologic Features .................................... 148
  3.31.3 Site History .......................................... 148
  3.31.4 Environmental Conditions ............................. 148
    3.31.4.1 Site Features .................................... 148
    3.31.4.2 Sample Locations ................................. 148
      3.31.4.2.1 Soil Samples ................................. 148
      3.31.4.2.2 Water Samples ............................... 148
  3.31.5 Structures .......................................... 148
  3.31.6 Safety ............................................. 148

3.32 UNNAMED PROSPECT (Site No. B8169601) .......................... 150
  3.32.1 Site Location and Access ................................ 150
  3.32.2 Geologic Features .................................... 150
  3.32.3 Site History .......................................... 150
  3.32.4 Environmental Conditions ............................. 150
    3.32.4.1 Site Features .................................... 150
    3.32.4.2 Sample Locations ................................. 150
      3.32.4.2.1 Soil Samples ................................. 150
      3.32.4.2.2 Water Samples ............................... 150

x
3.32.5 Structures ................................................................. 150
3.32.6 Safety ................................................................. 150
3.33 UNNAMED PROSPECT (Site No. B8239602) ....................... 152
  3.33.1 Site Location and Access ................................... 152
  3.33.2 Geologic Features .............................................. 152
  3.33.3 Site History ..................................................... 152
  3.33.4 Environmental Conditions ................................... 152
    3.33.4.1 Site Features ........................................... 152
    3.33.4.2 Sample Locations ...................................... 152
      3.33.4.2.1 Soil Samples .................................... 152
      3.33.4.2.2 Water Samples .................................. 152
  3.33.5 Structures ..................................................... 152
3.33.6 Safety ............................................................ 152
3.34 GOLD ROCK MINE (Site No. WL-13) .................................. 155
  3.34.1 Site Location and Access ................................... 155
  3.34.2 Geologic Features .............................................. 155
  3.34.3 Site History ..................................................... 155
  3.34.4 Environmental Conditions ................................... 155
    3.34.4.1 Site Features ........................................... 155
    3.34.4.2 Sample Locations ...................................... 155
      3.34.4.2.1 Soil Samples .................................... 155
      3.34.4.2.2 Water Samples .................................. 155
  3.34.5 Structures ..................................................... 155
3.34.6 Safety ............................................................ 155
3.35 UNNAMED PROSPECT NEAR BLOOM SPRING (Morbeck(?); Site No. K8209601) ........................................ 157
  3.35.1 Site Location and Access ................................... 157
  3.35.2 Geologic Features .............................................. 157
  3.35.3 Site History ..................................................... 157
  3.35.4 Environmental Conditions ................................... 157
    3.35.4.1 Site Features ........................................... 157
    3.35.4.2 Sample Locations ...................................... 157
      3.35.4.2.1 Soil Samples .................................... 157
      3.35.4.2.2 Water Samples .................................. 158
      3.35.4.2.3 Analytical Results ................................ 158
  3.35.5 Structures ..................................................... 158
3.35.6 Safety ............................................................ 158
3.36 O'NEILL GROUP (Site No. WL-9) .................................... 161
  3.36.1 Site Location and Access ................................... 161
  3.36.2 Geologic Features .............................................. 161
  3.36.3 Site History ..................................................... 161
  3.36.4 Environmental Conditions ................................... 161
    3.36.4.1 Site Features ........................................... 161
    3.36.4.2 Sample Locations ...................................... 161
<table>
<thead>
<tr>
<th>Section</th>
<th>Title</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>3.36.4.2.1</td>
<td>Soil Samples</td>
<td>161</td>
</tr>
<tr>
<td>3.36.4.2.2</td>
<td>Water Samples</td>
<td>162</td>
</tr>
<tr>
<td>3.36.5</td>
<td>Structures</td>
<td>162</td>
</tr>
<tr>
<td>3.36.6</td>
<td>Safety</td>
<td>162</td>
</tr>
<tr>
<td>3.37</td>
<td>PORYPHRY GROUP (Site No. WL-25)</td>
<td>165</td>
</tr>
<tr>
<td>3.37.1</td>
<td>Site Location and Access</td>
<td>165</td>
</tr>
<tr>
<td>3.37.2</td>
<td>Geologic Features</td>
<td>165</td>
</tr>
<tr>
<td>3.37.3</td>
<td>Site History</td>
<td>165</td>
</tr>
<tr>
<td>3.37.4</td>
<td>Environmental Conditions</td>
<td>165</td>
</tr>
<tr>
<td>3.37.4.1</td>
<td>Site Features</td>
<td>165</td>
</tr>
<tr>
<td>3.37.4.2</td>
<td>Sample Locations</td>
<td>166</td>
</tr>
<tr>
<td>3.37.4.2.1</td>
<td>Soil Samples</td>
<td>166</td>
</tr>
<tr>
<td>3.37.4.2.2</td>
<td>Water Samples</td>
<td>166</td>
</tr>
<tr>
<td>3.37.5</td>
<td>Structures</td>
<td>166</td>
</tr>
<tr>
<td>3.37.6</td>
<td>Safety</td>
<td>166</td>
</tr>
<tr>
<td>3.38</td>
<td>UNNAMED PROSPECT (Site No. K8159607)</td>
<td>168</td>
</tr>
<tr>
<td>3.38.1</td>
<td>Site Location and Access</td>
<td>168</td>
</tr>
<tr>
<td>3.38.2</td>
<td>Geologic Features</td>
<td>168</td>
</tr>
<tr>
<td>3.38.3</td>
<td>Site History</td>
<td>168</td>
</tr>
<tr>
<td>3.38.4</td>
<td>Environmental Conditions</td>
<td>168</td>
</tr>
<tr>
<td>3.38.4.1</td>
<td>Site Features</td>
<td>168</td>
</tr>
<tr>
<td>3.38.5</td>
<td>Structures</td>
<td>168</td>
</tr>
<tr>
<td>3.38.6</td>
<td>Safety</td>
<td>168</td>
</tr>
<tr>
<td>3.39</td>
<td>CROWN POINT (Site No. WL-83) and FLAGSTAFF MINE (Site No. WL-72)</td>
<td>170</td>
</tr>
<tr>
<td>3.39.1</td>
<td>Site Location and Access</td>
<td>170</td>
</tr>
<tr>
<td>3.39.2</td>
<td>Geologic Features</td>
<td>170</td>
</tr>
<tr>
<td>3.39.3</td>
<td>Site History</td>
<td>170</td>
</tr>
<tr>
<td>3.39.4</td>
<td>Environmental Conditions</td>
<td>170</td>
</tr>
<tr>
<td>3.39.4.1</td>
<td>Site Features</td>
<td>170</td>
</tr>
<tr>
<td><strong>BIBLIOGRAPHY</strong></td>
<td>172</td>
<td></td>
</tr>
<tr>
<td><strong>APPENDIX A:</strong> FIELD QUESTIONNAIRE</td>
<td>174</td>
<td></td>
</tr>
<tr>
<td><strong>APPENDIX B:</strong> DATABASE FIELDS</td>
<td>188</td>
<td></td>
</tr>
<tr>
<td><strong>APPENDIX C:</strong> GEOCHEMICAL DATA</td>
<td>190</td>
<td></td>
</tr>
<tr>
<td><strong>APPENDIX D:</strong> FIELD FORMS FOR PROPERTIES IN THE STUDY AREA</td>
<td>194</td>
<td></td>
</tr>
<tr>
<td><strong>APPENDIX E:</strong> PROPERTIES THAT COULD NOT BE LOCATED</td>
<td>196</td>
<td></td>
</tr>
<tr>
<td><strong>APPENDIX F:</strong> PROPERTIES DESCRIBED BY USFS PERSONNEL AS HAVING NO PROBLEMS</td>
<td>199</td>
<td></td>
</tr>
</tbody>
</table>
ILLUSTRATIONS

Figure 2.1-1. Location of mining properties with the most significant environmental problems in the Summit mining district (U.S. Geological Survey Thompson Falls 1:100,000-scale map) ........................................... 15

Figure 2.2-1. Geologic map and sections of the Summit mining district, Shoshone County, Idaho (plate 57 from Hosterman, 1956) ......................................................... 19

Figure 3.1-1. Topographic map of the Minnie Moore Mine, Shoshone County, Idaho (U.S. Geological Survey Burke 7.5-minute topographic map) ......................... 29

Figure 3.1-2. Open upper adit at the Minnie Moore Mine (Roll 559693, frame #23) ................................................................. 30

Figure 3.1-3. Water-filled shaft located about 10 feet inside the upper Minnie Moore adit (Roll 559692, frame #1) ................................................................. 30

Figure 3.1-4. Open lower adit at the Minnie Moore Mine (Roll 559692, frame #3) ................................................................. 31

Figure 3.2-1. Topographic map of the Columbus Mine, Shoshone County, Idaho (U.S. Geological Survey Murray 7.5-minute topographic map) ......................... 34

Figure 3.2-2. Portal of the Columbus Mine with the large sloughed area above the adit (Roll 560565, frame #16) ............................... 35

Figure 3.2-3. View inside the Columbus adit (Roll 560565, frame #18) ................................................................. 35

Figure 3.2-4. Looking out across the surface of the waste dump from the Columbus adit (Roll 560565, frame #17) ............................... 36

Figure 3.3-1. Topographic map of the Anchor Mine, Shoshone County, Idaho (U.S. Geological Survey Murray 7.5-minute topographic map) ......................... 39

Figure 3.3-2. Open adit at the Anchor Mine (Roll 214578, frame #13) ................................................................. 40

Figure 3.3-3. View inside the adit, with open door to the right (Roll 214578, frame #12) ................................................................. 40

Figure 3.3-4. Looking down the face of the Anchor waste dump, with ore car rails at the bottom of the frame (Roll 214578, frame #14) ................................................................. 41

Figure 3.4-1. Topographic map of the Golden Dream Mine, Shoshone County, Idaho (U.S. Geological Survey Black Peak 7.5-minute topographic map) ......................... 44

Figure 3.4-2. Open Adit No. 4 at the Golden Dream claims (Roll 560564, frame #2) ................................................................. 45

Figure 3.4-3. Caved Adit No. 5 at the Golden Dream (Roll 560564, frame #3) ................................................................. 45

Figure 3.5-1. Topographic map of the Liberty Mine, Shoshone County, Idaho (U.S. Geological Survey Murray 7.5-minute topographic map) ......................... 48

Figure 3.5-2. Portal and seep at the Liberty Mine (Roll 095640, frame #15) ................................................................. 49

Figure 3.5-3. Corrugated metal roof on the lean-to at the Liberty Mine (Roll 561250, frame #18) ................................................................. 50

Figure 3.6-1. Topographic map of the Stonewall Mine, Shoshone County, Idaho (U.S. Geological Survey Thompson Pass 7.5-minute topographic map) ......................... 52

Figure 3.6-2. Portal of the Stonewall Mine (Roll 095640, frame #22) ................................................................. 53

Figure 3.7-1. Topographic map of the Tiger Mine, Shoshone County, Idaho (U.S. Geological Survey Burke 7.5-minute topographic map) ......................... 57

Figure 3.7-2. Portal and open door at the Tiger Mine (Roll 779968, frame #4) ................................................................. 58

Figure 3.8-1. Topographic map of the Daisy Volunteer Mine, Shoshone County, Idaho (U.S. Geological Survey Murray 7.5-minute topographic map) ......................... 60

Figure 3.8-2. Deadfall- and brush-covered adit at the Daisy Volunteer (Roll 095640,
frame #5). .......................................................... 61
Figure 3.9-1. Topographic map of Site No. K8229604, Shoshone County, Idaho (U.S. Geological Survey Murray 7.5-minute topographic map). ..................................................... 64
Figure 3.10-1. Topographic map of the Eagle Creek Prospect, Shoshone County, Idaho (U.S. Geological Survey Murray 7.5-minute topographic map). ........................................ 67
Figure 3.10-2. Looking into open Adit No. 2 at the Eagle Creek Prospect (Roll 559694, frame #21). ............................................................................................................ 68
Figure 3.10-3. Looking down the face of the small waste dump (Roll 559694, frame #23). .... 68
Figure 3.11-1. Topographic map of the Lucky Four Mine, Shoshone County, Idaho (U.S. Geological Survey Burke 7.5-minute topographic map). ............................................. 71
Figure 3.11-2. Caved upper adit (No. 1) at the Lucky Four Mine (Roll 779968, frame #3). .......................................................... 72
Figure 3.11-3. Picnic area and metal tank on the dump of the lower adit (No. 2) at the Lucky Four Mine (Roll 779968, frame #1). .............................................................. 73
Figure 3.12-1. Topographic map of the unnamed prospect WL-562, Shoshone County, Idaho (U.S. Geological Survey Murray 7.5-minute topographic map). ......................... 76
Figure 3.13-1. Topographic map of the St. Peter Mine, Shoshone County, Idaho (U.S. Geological Survey Thompson Pass 7.5-minute topographic map). ............................ 79
Figure 3.13-2. Part of the L-shaped trench cut into rock at the St. Peter Mine (Roll 560564, frame #16). .......................................................... 80
Figure 3.13-3. Sloughed rock at the head of the trench (Roll 560564, frame #17). .............. 81
Figure 3.14-1. Topographic map of the unnamed prospect WL-15, Shoshone County, Idaho (U.S. Geological Survey Murray 7.5-minute topographic map). ......................... 83
Figure 3.15-1. Topographic map of the C&R Prospect, Shoshone County, Idaho (U.S. Geological Survey Burke 7.5-minute topographic map). ............................................. 86
Figure 3.15-2. Looking east at the nearly caved C&R Adit No. 1 (Roll 559694, frame #4). .......................................................... 87
Figure 3.15-3. Looking west across the top of the waste dump at Adit No. 1 of the C&R Mine (Roll 559694, frame #2). .......................................................... 87
Figure 3.15-4. Looking west down the face of the waste dump at Adit No. 1 of the C&R Mine (Roll 559694, frame #5). .......................................................... 88
Figure 3.16-1. Topographic map of the Samson Mine, Shoshone County, Idaho (U.S. Geological Survey Murray 7.5-minute topographic map). .................................. 91
Figure 3.16-2. Portal of the Samson No. 1 adit, looking west (Roll 561251, frame #11). .......... 92
Figure 3.16-3. Small metal shed on the front edge of the waste dump, looking south (Roll 561251, frame #9). .......................................................... 92
Figure 3.17-1. Topographic map of the Golden Eagle #3 (Site No. K8169601), Shoshone County, Idaho (U.S. Geological Survey Murray 7.5-minute topographic map). .............. 95
Figure 3.17-2. Open adit at the Golden Eagle #3 (Site No. K8169601), looking east (Roll 559694, frame #27). .......................................................... 96
Figure 3.17-3. Looking southwest at the waste dump at the Golden Eagle #3 (Site No. K8169601) (Roll 561251, frame #1). .......................................................... 97
Figure 3.18-1. Topographic map of the Buckeye Boy Mine, Shoshone County, Idaho
Figure 3.18-2. View along part of the prospect trench, with two of the short adits on the left side of the trench (Roll 561250, frame #1). .................................................. 101
Figure 3.18-3. One of the short, open adits at the Buckeye Boy (Roll 561250, frame #2). .................................................. 102
Figure 3.18-4. Iron-stained seep in the Buckeye Boy trench (Roll 561250, frame #3). .................................................. 103
Figure 3.19-1. Topographic map of the Hawkins Mine, Shoshone County, Idaho (U.S. Geological Survey Murray 7.5-minute topographic map). .................................................. 106
Figure 3.19-2. Collecting tank and the trickle of water flowing out of the PVC pipe to the right of the tank at the caved adit of the Hawkins Mine (Roll 214578, frame #11). .................................................. 107
Figure 3.20-1. Topographic map of the Kelly Prospect, Shoshone County, Idaho (U.S. Geological Survey Murray 7.5-minute topographic map). .................................................. 111
Figure 3.20-2. Caved adit and water seep at the Kelly Prospect, looking south (Roll 558550, frame #10). .................................................. 112
Figure 3.20-3. Looking west across the remains of the dump. The adit seep is to the lower right of the frame (Roll 558550, frame #11). .................................................. 113
Figure 3.21-1. Topographic map of the Alberta Prospect, Shoshone County, Idaho (U.S. Geological Survey Prichard 7.5-minute topographic map). .................................................. 115
Figure 3.22-1. Topographic map of the Badger Mine, Shoshone County, Idaho (U.S. Geological Survey Murray 7.5-minute topographic map). .................................................. 117
Figure 3.22-2. Collapsed adit at the Badger Mine (Roll 095640, frame #4). .................................................. 118
Figure 3.23-1. Topographic map of the Chester Consolidated Mine, Shoshone County, Idaho (U.S. Geological Survey Burke 7.5-minute topographic map). .................................................. 121
Figure 3.23-2. View up Wesp Gulch in the vicinity of the Chester Consolidated Mine, showing the downed trees and active erosion along the gulch (Roll 214578, frame #4). .................................................. 122
Figure 3.24-1. Topographic map of the Gold Cliff Mine, Shoshone County, Idaho (U.S. Geological Survey Burke 7.5-minute topographic map). .................................................. 125
Figure 3.24-2. Portal of the Gold Cliff Mine (Roll 095640, frame #20). .................................................. 126
Figure 3.24-3. View of the top edge and eroded face of the waste dump at the Gold Cliff Mine (Roll 095640, frame #21). .................................................. 126
Figure 3.25-1. Topographic map of the Mountain Lion Mine, Shoshone County, Idaho (U.S. Geological Survey Osburn 7.5-minute topographic map). .................................................. 129
Figure 3.25-2. Workings of the Mountain Lion Mine (Figure 18 from Shenon, 1938). .................................................. 130
Figure 3.25-3. Remains of the stamp mill at the Mountain Lion Mine (Roll 095640, frame #10). .................................................. 131
Figure 3.26-1. Topographic map of the Phoenix property, Shoshone County, Idaho (U.S. Geological Survey Burke 7.5-minute topographic map). .................................................. 134
Figure 3.26-2. Small waste dump at the Phoenix property (Roll K3, frame #8). .................................................. 135
Figure 3.27-1. Topographic map of the Snowshoe Prospect, Shoshone County, Idaho (U.S. Geological Survey Murray 7.5-minute topographic map). .................................................. 138
Figure 3.28-1. Topographic map of the United States Silver-Lead Mine, Shoshone County, Idaho (U.S. Geological Survey Murray 7.5-minute topographic map). .................................................. 140
Figure 3.28-2. Depression on the slope at the caved adit of the United States Silver-Lead Mine (Roll K3, frame #15). .................................................. 141

xv
TABLES

Table 1.5-1. Screening Criteria (answer Yes or No to each item). ................................. 7
Table 1.5-2. Standards for contaminants in water. ....................................................... 10
Table 1.5-3. Median values of metals in rock samples from various units of the Belt
Supergroup (data from Gott and Cathrall, 1980). ..................................................... 11
Table 1.5-4. Median values of metals in soil samples from various units of the Belt
Supergroup (data from Gott and Cathrall, 1980). ..................................................... 12
Table 1.5-5. Clark Fork Superfund background levels for selected elements. ................. 13
Table 2.1-1. Summary of secondary sites in the Prichard-Eagle Creek drainage visited
during 1996 field season ................................................................................. 16
Table 2.2-1. Generalized section of the Belt Supergroup (page 14 from Hobbs and others,
1965). ............................................................................................................. 20
Table 2.4-1. Background water samples for the Prichard-Eagle Creek area .................. 23
Table 2.5-1. Dissolved Metals Screen for water samples from the minor properties in the
Prichard-Eagle Creek area .................................................................................. 25
Table 2.5-2. Total metals screen for water samples from the Prichard-Eagle Creek area. .... 26
### PRICHARD-EAGLE CREEK VIDEOTAPE 3
#### SECONDARY SITES

<table>
<thead>
<tr>
<th>Location</th>
<th>Videotape Index</th>
</tr>
</thead>
<tbody>
<tr>
<td>Introduction</td>
<td>00:00:00-00:01:18</td>
</tr>
<tr>
<td>Anchor (Buckskin) Mine (WL-44)</td>
<td>00:01:23-00:05:00</td>
</tr>
<tr>
<td>Liberty Mine (WL-51)</td>
<td>00:05:03-00:07:40</td>
</tr>
<tr>
<td>Unnamed on Silent Creek (K8229604)</td>
<td>00:07:44-00:11:28</td>
</tr>
<tr>
<td>Unnamed prospect (WL-562)</td>
<td>00:11:30-00:16:30</td>
</tr>
<tr>
<td>(misidentified “Old Timer” in field)</td>
<td></td>
</tr>
<tr>
<td>Samson Mine (WL-6)</td>
<td>00:16:35-00:21:25</td>
</tr>
<tr>
<td>Buckeye Boy Mine (WL-48)</td>
<td>00:21:28-00:27:40</td>
</tr>
<tr>
<td>Kelly Prospect (WL-2)</td>
<td>00:27:42-00:31:28</td>
</tr>
<tr>
<td>Phoenix Property (WL-127)</td>
<td>00:31:30-00:34:52</td>
</tr>
</tbody>
</table>
1.0 PROJECT OVERVIEW

1.1 INTRODUCTION

In order to fulfill its obligations under the Clean Water Act and related legislation, the Northern Region of the United States Forest Service (USFS) needs to identify and characterize the abandoned and inactive mines with environmental, health, and/or safety problems that are on or could impact National Forest Service-administered lands. The Northern Region of the USFS administers National Forest lands in the northern part of Idaho, Montana, and parts of North and South Dakota. The Idaho Geological Survey (IGS) is the lead state agency for the collection, interpretation, and distribution of information about the geology and mineral resources of Idaho. The USFS and the IGS, having determined that an inventory and preliminary characterization of abandoned and inactive mines in Idaho would be beneficial to both agencies, have entered into a series of participating agreements to accomplish this work. The first forest inventoried was the Panhandle National Forest. This report, Volume IV, presents the results of the work done in the Summit mining district (Prichard-Eagle Creek drainage). For continuity, the general design of this report follows that used by the Montana Bureau of Mines and Geology for similar studies in Montana.

1.2 PROJECT OBJECTIVES

In 1992, the USFS and IGS entered into an agreement to inventory abandoned and inactive mines on or affecting Forest Service lands in Idaho. Work on the initial phase of the project included developing a computerized database of all such mines and prospects and plotting the locations of these properties on National Forest base maps. Phase 2 work conducted the following year provided the Forest Service with screening forms containing site information from the database and map overlays at 7.5-minute scale for areas of dense mining activity. Phase 3 started in the summer of 1996 and included field examination of properties in the Prichard Creek and Eagle Creek basins (Summit mining district) in Shoshone County and preparation of reports discussing the ownership and operational history of selected mines.

The overall objectives of this inventory and preliminary characterization process, as defined by the USFS, were to:

1. Systematically identify all mine sites with possible human health, environmental, and/or safety related problems that either are on or affecting National Forest Service lands.

2. Identify the human health and environmental risks at each location based on site characterization factors (see Section 1.5), including screening-level soil and water samples taken and analyzed in accordance with Environmental Protection Agency (EPA) protocols and quality control procedures.

3. Based on site characterization factors, identify those sites that are not affecting National Forest Service lands and that can therefore be eliminated from further consideration.
4. Cooperate with other state and federal agencies, and integrate the Northern Region program with their programs.

5. Develop and maintain a data file of site information that will allow the Region to pro-actively respond to governmental and public interest group concerns.

In addition to the USFS objectives outlined above, the IGS objectives included gathering new information associated with these abandoned and inactive mines. The Survey's enabling legislation (Sections 47-201–47-204 of the Idaho Code) designates IGS as the lead state agency for the collection, interpretation, and distribution of all geologic and minerals data for Idaho.

1.3 ABANDONED AND INACTIVE MINES DEFINED

For the purposes of this study, mines, mills, or other processing facilities related to mineral extraction and/or processing are defined as abandoned or inactive as follows:

A mine is considered abandoned if there are no identifiable owners or operators for the facilities, or if the facilities have reverted to federal ownership.

A mine is considered to be inactive if there is an identifiable owner or operator of the facility, but the facility is not currently operating and there are no approved authorizations or permits to operate.

1.4 HEALTH AND ENVIRONMENTAL PROBLEMS AT MINES

A variety of safety, health, and environmental problems may occur at abandoned and inactive mines. These include metals that contaminate ground water, surface water, and soils; airborne dust from abandoned tailings impoundments; eroding mine and mill waste materials that contribute excessive amounts of sediment to surface waters; unstable waste piles with the potential for catastrophic failure; and physical hazards associated with mine openings and dilapidated structures. The most important environmental hazard is the contamination of both surface and subsurface water by metals, acid mine drainage, or sediment loading.

Metals are often transported from a mine by water (ground water discharge or surface runoff) and may be dissolved, suspended, or carried as part of the bedload. When sulfides are present, acid water can form; this, in turn, increases the solubility of metals. This condition, known as acid mine drainage (AMD), is a significant source of metal releases at some mine sites in Idaho.

1.4.1 Acid Mine Drainage

Trexler and others (1975) identified six factors that govern the formation of metal-laden acid mine waters. They are:

1) availability of acid-producing minerals, particularly pyrite,
2) presence of oxygen,
3) moisture in the atmosphere,
4) availability of leachable heavy metals,
5) availability of water to transport the dissolved constituents, and
6) mine characteristics, which affect movement of air and water through the mine workings.

These factors occur not only within the mines themselves, but also within mine dumps and mill tailings piles, making these waste materials potential sources of contamination as well. Formation of acid mine drainage can be reduced if minerals such as calcite, which can neutralize acidity, are present (Trexler and others, 1975; Marvin and others, 1995).

Acid mine drainage is formed by the oxidation and dissolution of sulfides, particularly pyrite (FeS₂) and pyrrhotite (Fe₈₇S). Other sulfides play a minor role in acid generation. Oxidation of iron sulfides forms sulfuric acid (H₂SO₄), sulfate ions (SO₄²⁻), and reduced iron (Fe²⁺). When sulfide-bearing rock is mined, the sulfide minerals are exposed to atmospheric oxygen and oxygen-bearing water. Consequently, the sulfide minerals are oxidized, and acid mine waters are produced (Trexler and others, 1975; Marvin and others, 1995).

The oxidation of the reduced iron is the step that limits how much acid will form. The rate of this reaction can be greatly increased by iron-oxidizing bacteria (*Thiobacillus ferrooxidans*). The oxidized iron produced by biological activity promotes further oxidation and dissolution of pyrite, pyrrhotite, and marcasite (FeS₂, a dimorph of pyrite) (Trexler and others, 1975; Marvin and others, 1995).

Once formed, the acid can dissolve other sulfide minerals to produce high concentrations of copper, lead, zinc, and other metals. Minerals that can contribute heavy metals to acid mine drainage include arsenopyrite, FeAsS; chalcopyrite, CuFeS₂; galena, PbS; tetrahedrite, (CuFe)₁₂Sb₂S₁₃; and sphalerite, (Zn, Fe)S. Aluminum can be leached by the dissolution of aluminosilicates common in soils and waste material found in Idaho. The dissolution of any given metal is controlled by the solubility of that metal (Trexler and others, 1975; Marvin and others, 1995).

### 1.4.2 Solubility of Selected Metals

The following information is paraphrased from Marvin and others (1995, p. 5-6). This report cites the following references as sources for this material: Lindsay (1979), Stumm and Morgan (1981), Hem (1985), and Maest and Metesh (1993).

At a pH above 2.2, ferric hydroxide [Fe(OH)₃] produces a brownish orange color in surface waters and forms a precipitate with a similar color on rocks in affected streams. If other metals, such as copper, lead, cadmium, zinc, and aluminum, are present in the source rock, they may also precipitate with or adsorb onto the ferric hydroxide (Stumm and Morgan, 1981). Alunite [KAl₅(SO₄)₂(0H)₆] and jarosite
[KFe₅(SO₄)₂(OH)₈] will precipitate at pH of less than 4, depending on SO₄²⁻ and K⁺ activities (Lindsay, 1979).

Under acidic conditions, the solubility of the metal controls how much will be released into the environment:

**Manganese** solubility is strongly controlled by the redox state and is limited by the presence of minerals such as pyrolusite and manganite; under reducing conditions, pyrolusite [MnO₂] dissolves and manganite [MnO(OH)] precipitates. Manganese is found in mineralized environments as rhodochrosite [MnCO₃] and its weathering products.

**Aluminum** solubility is most often controlled by alunite [KAl₃(SO₄)₂(OH)₆] or by gibbsite [Al(OH)₃], depending on pH. Aluminum is one of the most common elements in rock-forming minerals such as feldspars, micas, and clays.

**Arsenic** tends to precipitate and adsorb with iron at low pH and de-sorb or dissolve at higher pH. Once oxidized, arsenic will be found in solution in higher pH waters. When the pH is between 3 and 7, the dominant arsenic compound is a monovalent arsenate, H₃AsO₄. Arsenic is abundant in metallic mineral deposits as arsenopyrite [FeAsS], enargite [Cu₃AsS₄], tennantite [Cu₁₂As₄S₁₃], and other minerals.

**Cadmium** solubility data are limited. When the pH of soils is above 7.5, the solubility of cadmium is controlled by the carbonate species octavite [CdCO₃]; when the pH of the soil is below 6, cadmium solubility is controlled by strengite [Cd₃(PO₄)₂]. Octavite is the dominant control on the solubility of cadmium in soils. In water, at low partial pressures of H₂S, CdCO₃ is easily reduced to CdS.

**Copper** solubility in natural waters is controlled primarily by the amount of carbonate present; malachite [Cu₂(OH)₂CO₃] and azurite [Cu₃(OH)₂(CO₃)₂] form when CO₃²⁻ ions are available in sufficient concentrations. In soil, copper combines readily with iron to form cupric ferrite. Other compounds, such as sulfate and phosphates, may also control copper solubility in soils. Copper is present in many ore minerals, including chalcopyrite [CuFeS₂], bornite [Cu₃FeS₄], chalcocite [Cu₂S], and tetrahedrite [Cu₄Sb₄S₁₃].

**Mercury** readily vaporizes under atmospheric conditions and thus is most often found in concentrations well below the 25 μg/L equilibrium concentration. The most stable form of mercury in soil is its elemental form. Mercury is found in low temperature hydrothermal ores as cinnabar [HgS], in
epithermal (hot springs) deposits as native mercury, and as native mercury in man-made deposits where mercury was used to process gold ores.

**Lead** concentrations in natural waters are controlled by the formation of lead carbonate, which has an equilibrium concentration of 50 μg/L when the pH is between 7.5 and 8.5. As with other metals, concentrations in solution increase with decreasing pH. In sulfate soils with a pH of less than 6, the formation of anglesite determines how much lead will remain in solution. The formation of cerussite, a lead carbonate, controls solubility in buffered soils. Lead occurs in the common ore mineral galena [PbS].

**Zinc** solubility is controlled by the formation of zinc hydroxide and zinc carbonate in natural waters. When the pH is above 8, the equilibrium concentration of zinc in water with a high bicarbonate content is less than 100 μg/L. Franklinite may control solubility at pH less than 5 in water and soils, and its formation is strongly affected by sulfate concentrations. Thus, production of sulfate from AMD may ultimately control solubility of zinc in water affected by mining. Sphalerite [ZnS] is common in mineralized systems.

### 1.4.3 The Use of pH and Specific Conductivity to Identify Water Quality Problems

Specific conductance (SC) and pH provide a rapid way to distinguish many "problem" mine sites from those that have no adverse water-related impacts. As a rough screening tool, low pH (<6.0) and high SC (variable) usually occur at sites with problems; neutral or higher pH and low SC indicate sites that are less likely to have serious problems.

Limiting data collection only to pH and SC largely ignores the various controls on solubility and can lead to overlooking some types of problems. Arsenic, for example, is most mobile in waters with higher pH values (>7), and its concentration is strongly dependent on the presence of dissolved iron. Cadmium and lead may also exceed standards in waters with pH values within acceptable limits.

Reliance on SC as an indicator of site conditions can also be misleading in certain situations. The SC value of a sample represents 55 to 75 percent of the total dissolved solids (TDS), depending on the concentration of sulfate. Also, it is necessary to have a statistically significant amount of SC data for a study area in order to define what constitutes a high or low SC value.

In some cases, a water sample with a near-neutral pH and a moderate SC could have one or more dissolved metal species that may exceed standards. The complete evaluation of a mine site for adverse impacts on water and soil should include the collection of samples for analysis of metals, cations, and anions.
1.5 METHODOLOGY

1.5.1 Data Sources

The IGS began compiling a database of mining properties in Idaho in 1979. This work has continued to date, and the database (now digital) contains information on some 8,700 mines and prospects. All or parts of the following databases and information sources have been integrated into this digital information system:

1. the Mineral Industry Location Subsystem (MILS) database (U.S. Bureau of Mines)
2. the Mineral Resources Data System (MRDS) database (U.S. Geological Survey)
3. published compilations of mines and prospects data
4. state publications on Idaho mineral deposits
6. IGS mineral property files
7. all mines and prospects noted on the appropriate USGS 7.5-minute quadrangle maps
8. data held in private collections or company information.

Most of the data for this project were collated with existing data in the IGS Mines and Prospects digital database. As noted, this is the most complete compilation available for information on Idaho's mining properties. The IGS continues to update the database, which now contains an estimated 85-90 percent of the mining properties in the state. During the field visits, the IGS located some (but not many) mines and prospects for which no previous information existed. Also, a very few mines listed in the database were not found.

1.5.2 Pre-field Screening

Field crews visited almost all the mine sites in the study area, emphasizing the properties with the potential to release hazardous substances and those for which there was not enough information available to make that determination without a field visit. The Survey and the USFS developed screening criteria (Table 1.5-1) which they used to determine if a site had the potential to release hazardous substances or posed other environmental or safety hazards. The first page of the Field Form (Appendix A) contains the screening criteria. If any of the answers were "yes" or unknown, the site was visited. Personal knowledge of a site and published information were used initially to answer the questions. Forest Service mineral specialists used these criteria to "screen out" several sites using their knowledge of an area.

Mine sites which were not visited were retained in the database along with the data source(s) that were consulted. However, if these sites were close to a visited site, the geologist usually looked at them to verify that the screening information was correct.

Placer mines were not studied as part of this project. Although mercury was used in amalgamating free gold in placer mines, the complex nature of placer deposits makes detection of mercury
difficult and is beyond the scope of this inventory. Due to their oxidized nature, placer deposits are not likely to contain other anomalous concentrations of heavy metals.

Table 1.5-1. Screening Criteria (answer Yes or No to each item).

<table>
<thead>
<tr>
<th>Yes/No</th>
<th>Screening Criteria</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>Mill site or tailings present.</td>
</tr>
<tr>
<td>2.</td>
<td>Adits with discharge or evidence of discharge.</td>
</tr>
<tr>
<td>3.</td>
<td>Evidence of or strong likelihood for metal leaching or AMD (water stains, stressed or lack of vegetation, waste below water table, etc.)</td>
</tr>
<tr>
<td>4.</td>
<td>Mine waste in floodplain or shows signs of water erosion.</td>
</tr>
<tr>
<td>5.</td>
<td>Residences, high public use area, or environmentally sensitive area (as listed in HRS) within 200 feet of disturbance.</td>
</tr>
<tr>
<td>6.</td>
<td>Hazardous wastes/materials (chemical containers, explosives, etc.)</td>
</tr>
<tr>
<td>7.</td>
<td>Open adits/shafts, highwalls, or hazardous structures/debris.</td>
</tr>
</tbody>
</table>

If the answers to criteria 1 through 6 were all "NO" (based on literature, personal knowledge, or a site visit), the site was not investigated further. Few, if any, properties were screened out at this stage.

1.5.3 Field Inspection Procedures

The sites which could not be screened out by using the criteria in Table 1.5-1 were visited by an IGS geologist. At sites for which little geologic or mining data existed, geologists characterized the geology, collected samples for geochemical analysis, evaluated the deposit, and described workings and processing facilities present. All information required to fill in the Field Questionnaire (Appendix A) was gathered.

When it was determined that a site had a possible environmental problem, more sampling and description were required. Information was collected concerning environmental degradation, hazardous mine openings, the presence of structures, and land ownership. After the potential problems were described, appropriate soil and water samples were collected. All site locations were refined using conventional field methods, and each site was located by latitude and longitude and by Township, Range, and Section. If previously determined, these values were checked and corrected, as needed.

On public lands, sites with ground-water discharge, flowing surface water, or contaminated soils (as indicated by impacts on vegetation) were mapped. The sketch maps show locations of the workings, exposed geology, dumps, tailings, and surface water and geologic sample locations.
Oblique aerial photographs were sometimes substituted or used to supplement the field sketches. The site was photographically recorded using still images and, in some cases, videotape. Videotape records were started halfway through the 1996 field season. At that time, many of the properties covered in this report were considered too insignificant to merit videotaping. However, the videotape records proved especially useful for site description and review, and almost all properties examined in the succeeding field seasons have been videotaped.

1.5.3.1 Soil, Rock, and Mine Waste Sampling Procedures

At sites identified as having a potential problem, the geologist collected soil, rock, and waste samples, as appropriate. Sample locations were selected in areas where waste material was obviously impacting natural material. In most cases a composite sample was gathered to get as representative a sample as possible, or multiple samples were collected. All sample sites were located so as to assess conditions on National Forest lands. Three types of samples were collected:

1) select rock, soil, or waste samples—specimens representing a particular material taken for analysis;

2) composite samples—rock and soil taken systematically from a waste dump or tailings pile for analysis, representing the overall composition of material in the source;

3) leach samples—duplicates of selected composite samples (usually waste rock or mill tailings) for testing leachable metals.

The three types of samples were used to examine the value and metal content of dumps and tailings, and to check the availability of metals during leaching when sample sites were exposed to water. Outcrops and waste materials were not sampled extensively enough to provide reliable estimates of tonnages, grades, or economic feasibility.

1.5.3.2 Water Sampling Procedure

As noted, this project focused on the impacts of mining on surface water, ground water, and soils. The reasoning behind this approach was that a mine disturbance may have high total metal concentrations yet may be releasing few metals into the surface water, ground water, or soil. Conversely, another disturbance could have lower total metal content but be releasing metals in concentrations that adversely impact the environment.

The geologist selected and marked water sample sites based on field parameters (SC, pH, temperature) and observations (such as erosion and staining of soils or stream beds). Sample locations were chosen that would provide the best information on the relative impact of the site to surface water and soils. All sites were accurately located on topographic base maps. Surface water samples were collected at all discharge points at the site, as well as samples from upstream and downstream of the site.
At each water sampling site, the temperature, specific conductivity, and pH were measured. A unique sample number was affixed to the sample bottle. A 500-ml sample was collected (split in the lab into a raw sample and a filtered sample). The field sample was acidified with 0.1N nitric acid and stored in a secured ice box. The samples remained under constant refrigeration and security until analyzed approximately 3-5 days later.

Since monitoring wells were not installed as part of this investigation, the evaluation of metal contamination of ground water was limited to strategic sampling of surface water and soils. In most cases, background water-quality data at a particular mine site was restricted to upstream surface water samples. However, in some drainages background samples were collected at sites with no visible contamination. Background soil samples were not collected. Laboratory leach tests were used to determine if metals might be released from mine waste material, which could provide additional insight to possible ground-water contamination.

1.5.4 Analytical Methods

The Analytical Sciences Laboratory at the University of Idaho performed all of the laboratory analyses using the following EPA-approved protocols and quality assurance standards:

Water Samples (acidified and unfiltered)—Total Recoverable Metal Screen (EPA Test 200.7).
Water Samples (acidified and unfiltered)—Arsenic (EPA Test 206.2), Lead (EPA Test 239.2), and Mercury (ICP, Cold Vapor).
Water Samples (raw and filtered 0.45 micron filter)—Dissolved Metal Screen (EPA Test 200.7).
Soil and Waste Material—Element Screen (EPA Test 3050).
Leachable Metals, TCLP—Metal Screen (EPA Test 1311/6010).

1.5.5 Standards

EPA and various state agencies have developed human health and environmental standards for various metals. To try to put the metal concentrations that were measured into some perspective, they were compared to these developed standards. However, it is understood that the background metal concentrations in mineralized areas may exceed these standards.

1.5.5.1 Water-Quality Standards

The Safe Drinking Water Act (SDWA) directs EPA to develop standards for potable water. Some of these standards are mandatory (primary) and some are desired (secondary). The standards established under the SDWA are often referred to as primary and secondary maximum contaminant levels (MCLs). Similarly, the Clean Water Act (CWA) directs EPA to develop water-quality standards (acute and chronic) that will protect aquatic organisms. These standards may vary with water hardness and are often referred to as the Aquatic Life Standards. The primary and secondary MCLs along with the acute and chronic Aquatic Life Standards for selected metals are listed in Table 1.5-2. As these standards can vary with water hardness, a range of values is given for some elements. Hardness was not measured for this study.
Table 1.5-2. Standards for contaminants in water.

<table>
<thead>
<tr>
<th>Element</th>
<th>Primary MCL (mg/L)</th>
<th>Secondary MCL (mg/L)</th>
<th>Aquatic Life, Acute (mg/L)</th>
<th>Aquatic Life, Chronic (mg/L)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Aluminum</td>
<td>---</td>
<td>0.05-0.2</td>
<td>0.75</td>
<td>0.087</td>
</tr>
<tr>
<td>Arsenic</td>
<td>0.05</td>
<td>---</td>
<td>0.36</td>
<td>0.19</td>
</tr>
<tr>
<td>Barium</td>
<td>2</td>
<td>---</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>Cadmium</td>
<td>0.005</td>
<td>---</td>
<td>0.004/0.009</td>
<td>0.001/0.002</td>
</tr>
<tr>
<td>Chromium</td>
<td>0.1</td>
<td>---</td>
<td>1.7/3.1</td>
<td>0.21/0.37</td>
</tr>
<tr>
<td>Copper</td>
<td>1.3</td>
<td>1</td>
<td>0.018/0.034</td>
<td>0.012/0.021</td>
</tr>
<tr>
<td>Iron</td>
<td>---</td>
<td>0.3</td>
<td>---</td>
<td>1</td>
</tr>
<tr>
<td>Lead</td>
<td>0.015</td>
<td>---</td>
<td>0.082/0.2</td>
<td>0.003/0.008</td>
</tr>
<tr>
<td>Manganese</td>
<td>---</td>
<td>0.05</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>Mercury</td>
<td>0.002</td>
<td>---</td>
<td>0.0024</td>
<td>0.000012</td>
</tr>
<tr>
<td>Nickel</td>
<td>0.1</td>
<td>---</td>
<td>1.4/2.5</td>
<td>0.16/0.28</td>
</tr>
<tr>
<td>Zinc</td>
<td>---</td>
<td>5</td>
<td>0.12/0.21</td>
<td>0.11/0.19</td>
</tr>
</tbody>
</table>

1.5.5.2 Soil and Rock Background Standards

It is useful to have some idea about the natural background values of rocks and soils when interpreting geochemical data. Although no whole rock or soil samples were run for this study, an estimate can be made from the analyses presented by Gott and Cathall (1980). They analyzed 727 rock samples from the Prichard Formation and 1,705 soil samples from above Prichard parent material. The median results from these analyses are presented in Tables 1.5-3 and 1.5-4, along with data for the Burke, Revett, St. Regis, and Wallace Formations. These samples were analyzed by emission spectrophotometry, a much less accurate technique than we use today. However, due to the large number of analyses, the data is still useful, especially for estimating background values. For example, an average sample of soil above the Prichard Formation might contain 54 ppm (mg/Kg) lead, 140 ppm (mg/Kg) zinc, 21 ppm (mg/Kg) copper, 0.13 ppm (mg/Kg) mercury, and 10 ppm (mg/Kg) arsenic. These data were used by the Environmental Protection Agency as background data for their studies of the Bunker Hill Superfund Site (Nick Ceto, 1997, personal communication).

There are no federal standards for concentrations of metals and other constituents in soils; acceptable limits for such are often based on human and/or environmental risk assessments for an area. Since no assessments of this kind have been done, concentrations of metals in soils were
Table 1.5-3. Median values of metals in rock samples from various units of the Belt Supergroup (data from Gott and Cathrall, 1980; ppm = mg/Kg).

<table>
<thead>
<tr>
<th>Element</th>
<th>Prichard Formation</th>
<th>Burke Formation</th>
<th>Revett Formation</th>
<th>St. Regis Formation</th>
<th>Wallace Formation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Iron (percent)</td>
<td>3</td>
<td>1.8</td>
<td>1.4</td>
<td>2.4</td>
<td>2.4</td>
</tr>
<tr>
<td>Magnesium (percent)</td>
<td>0.4</td>
<td>0.1</td>
<td>0.05</td>
<td>0.19</td>
<td>0.48</td>
</tr>
<tr>
<td>Calcium (percent)</td>
<td>---</td>
<td>---</td>
<td>---</td>
<td>---</td>
<td>0.05</td>
</tr>
<tr>
<td>Titanium (percent)</td>
<td>0.3</td>
<td>0.19</td>
<td>0.13</td>
<td>0.19</td>
<td>0.21</td>
</tr>
<tr>
<td>Manganese (ppm)</td>
<td>224</td>
<td>386</td>
<td>381</td>
<td>600</td>
<td>360</td>
</tr>
<tr>
<td>Barium (ppm)</td>
<td>343</td>
<td>360</td>
<td>235</td>
<td>543</td>
<td>378</td>
</tr>
<tr>
<td>Beryllium (ppm)</td>
<td>1.3</td>
<td>---</td>
<td>---</td>
<td>0.9</td>
<td>0.89</td>
</tr>
<tr>
<td>Cobalt (ppm)</td>
<td>5</td>
<td>---</td>
<td>---</td>
<td>---</td>
<td>3.9</td>
</tr>
<tr>
<td>Chromium (ppm)</td>
<td>40</td>
<td>13</td>
<td>8.3</td>
<td>20</td>
<td>23.8</td>
</tr>
<tr>
<td>Molybdenum (ppm)</td>
<td>---</td>
<td>---</td>
<td>---</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>Nickel (ppm)</td>
<td>10</td>
<td>5.5</td>
<td>4.2</td>
<td>10</td>
<td>11</td>
</tr>
<tr>
<td>Strontium (ppm)</td>
<td>---</td>
<td>---</td>
<td>---</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>Vanadium (ppm)</td>
<td>54</td>
<td>26</td>
<td>20</td>
<td>30</td>
<td>36</td>
</tr>
<tr>
<td>Sulfur (percent)</td>
<td>.01</td>
<td>0.007</td>
<td>0.006</td>
<td>0.007</td>
<td>0.009</td>
</tr>
<tr>
<td>Mercury (ppm)</td>
<td>.03</td>
<td>---</td>
<td>0.03</td>
<td>0.03</td>
<td>0.04</td>
</tr>
<tr>
<td>Copper (ppm)</td>
<td>22</td>
<td>6.2</td>
<td>8</td>
<td>9</td>
<td>11</td>
</tr>
<tr>
<td>Lead (ppm)</td>
<td>34</td>
<td>14</td>
<td>10</td>
<td>11</td>
<td>23</td>
</tr>
<tr>
<td>Zinc (ppm)</td>
<td>60</td>
<td>31</td>
<td>15</td>
<td>20</td>
<td>41</td>
</tr>
<tr>
<td>Silver (ppm)</td>
<td>0.4</td>
<td>0.36</td>
<td>0.2</td>
<td>0.2</td>
<td>0.3</td>
</tr>
<tr>
<td>Cadmium (ppm)</td>
<td>0.5</td>
<td>0.3</td>
<td>0.3</td>
<td>0.4</td>
<td>0.5</td>
</tr>
<tr>
<td>Arsenic (ppm)</td>
<td>---</td>
<td>---</td>
<td>---</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>Antimony (ppm)</td>
<td>109</td>
<td>1.1</td>
<td>1.6</td>
<td>2.2</td>
<td>1.1</td>
</tr>
<tr>
<td>No. of Samples</td>
<td>727</td>
<td>402</td>
<td>455</td>
<td>839</td>
<td>998</td>
</tr>
</tbody>
</table>
Table 1.5-4. Median values of metals in soil samples from various units of the Belt Supergroup (data from Gott and Cathrall, 1980; ppm = mg/Kg).

<table>
<thead>
<tr>
<th>Element</th>
<th>Rock Unit</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Prichard Formation</td>
</tr>
<tr>
<td>Iron (percent)</td>
<td>3.1</td>
</tr>
<tr>
<td>Magnesium (percent)</td>
<td>0.61</td>
</tr>
<tr>
<td>Calcium (percent)</td>
<td>0.57</td>
</tr>
<tr>
<td>Titanium (percent)</td>
<td>0.56</td>
</tr>
<tr>
<td>Manganese (ppm)</td>
<td>1,285</td>
</tr>
<tr>
<td>Barium (ppm)</td>
<td>647</td>
</tr>
<tr>
<td>Beryllium (ppm)</td>
<td>1.4</td>
</tr>
<tr>
<td>Cobalt (ppm)</td>
<td>14</td>
</tr>
<tr>
<td>Chromium (ppm)</td>
<td>43</td>
</tr>
<tr>
<td>Molybdenum (ppm)</td>
<td>---</td>
</tr>
<tr>
<td>Niobium (ppm)</td>
<td>9</td>
</tr>
<tr>
<td>Nickel (ppm)</td>
<td>29</td>
</tr>
<tr>
<td>Strontium (ppm)</td>
<td>159</td>
</tr>
<tr>
<td>Vanadium (ppm)</td>
<td>98</td>
</tr>
<tr>
<td>Mercury (ppm)</td>
<td>0.13</td>
</tr>
<tr>
<td>Copper (ppm)</td>
<td>21</td>
</tr>
<tr>
<td>Lead (ppm)</td>
<td>54</td>
</tr>
<tr>
<td>Zinc (ppm)</td>
<td>140</td>
</tr>
<tr>
<td>Silver (ppm)</td>
<td>0.5</td>
</tr>
<tr>
<td>Cadmium (ppm)</td>
<td>1.3</td>
</tr>
<tr>
<td>Arsenic (ppm)</td>
<td>10</td>
</tr>
<tr>
<td>Antimony (ppm)</td>
<td>1</td>
</tr>
<tr>
<td>Sulfur (percent)</td>
<td>0.029</td>
</tr>
<tr>
<td>No. of Samples</td>
<td>1,705</td>
</tr>
</tbody>
</table>
compared to the limits postulated by the U.S. EPA for the Clark Fork Superfund site (Table 1.5-5). The proposed upper limit for lead in soils is 1,000 mg/Kg to 2,000 mg/Kg, and 80 to 100 mg/Kg for arsenic in residential areas.

Table 1.5-5. Clark Fork Superfund background levels for selected elements.

<table>
<thead>
<tr>
<th>Material</th>
<th>As (mg/Kg)</th>
<th>Cd (mg/Kg)</th>
<th>Pb (mg/Kg)</th>
</tr>
</thead>
<tbody>
<tr>
<td>U.S. Mean Soil</td>
<td>6.7</td>
<td>0.7</td>
<td>20.0</td>
</tr>
<tr>
<td>Helena Valley Mean Soil</td>
<td>16.5</td>
<td>0.2</td>
<td>11.5</td>
</tr>
<tr>
<td>Missoula Lake Bed Sediments</td>
<td>n.a.</td>
<td>0.2</td>
<td>34.0</td>
</tr>
<tr>
<td>Blackfoot River</td>
<td>4.0</td>
<td>&lt;0.1</td>
<td>n.a.</td>
</tr>
<tr>
<td>Phytotoxic Concentration</td>
<td>100.0</td>
<td>100.0</td>
<td>1,000.0</td>
</tr>
</tbody>
</table>

1.5.6 Analytical Results

The results of the sample analyses were used to estimate the nature and extent of potential impacts to the environment and human health. Selected results for each site are presented in the discussion; a complete listing of water quality, soil chemistry, and leach test results are presented in Appendix C. It should be noted that the sampling for this study was of a reconnaissance nature only, sufficient for outlining possible problem areas for future study. Sampling density was not sufficient to provide a statistically valid description of any specific site.

The data fields in the current database are presented in Appendix B, and the format (dBase IV) is compatible with the widely used ARC/INFO Geographical Information System (GIS). In addition, all of the field observations and analytical data were entered into a Paradox database, which is compatible with other studies under way by the U.S. Forest Service.

1.5.7 Sample and Site Identification Numbers

All water, tailings, and dump samples were assigned unique numbers. These were constructed according to the following system: 1) an initial letter code identifying the person who took the sample (usually the first letter of the last name); 2) one or two digits for the month (some sample numbers contain a leading zero); 3) two digits for the day on which the sample was taken; 4) the last two digits in the year in which the sample was taken (i.e., “97,” if the samples was taken in 1997); and 5) one to three digits, including leading zeros, identifying the individual sample. Site numbers for properties that did not have a database identification number assigned to them were generated in the same manner.
2.0 SUMMIT MINING DISTRICT (PRICHARD-EAGLE CREEK DRAINAGE)

2.1 INTRODUCTION

The Summit Mining District is one of eleven districts that collectively today are known as the Coeur d’Alene Mining District. The district is located in north Idaho and includes the drainage basins of Prichard Creek and Eagle Creek. The only town in the district is Murray, Idaho. Access to the area is by a paved road which follows the North Fork of the Coeur d’Alene River from the Kingston exit from Interstate 90 to Babins Junction and Prichard. Another route is by paved road (USFS Road 456) from Wallace, Idaho, north up Ninemile Creek and over Dobson Pass into Beaver Creek and hence to Babins Junction. A cutoff from the Beaver Creek Road, called the Kings Pass Road, is a shortcut to Murray. A new road is being constructed along Prichard Creek which will join the paved road in Montana at Thompson Pass. Most of the secondary drainages have dirt roads, especially those with past mining activity.

The study area is in the Wallace District of the Panhandle National Forest, and most of the land is administered by the U.S. Forest Service (USFS). A 5-square-mile area containing the town of Murray is administered by the U.S. Bureau of Land Management (BLM). There are enclaves of private land, mostly on patented mining claims.

The forty-five mining properties discussed in this report (Part 2 of the discussion of the Prichard and Eagle Creek drainages) are located on six 7.5-minute topographic maps (U.S. Geological Survey): the Murray, Prichard, Osburn, Thompson Pass, Burke, and Black Peak quadrangles. The location of these forty-five properties is shown in Figure 2.1-1. Elevations range from 2,387 feet at Prichard to over 6,300 feet on the Idaho-Montana border and at Sunset Peak. The area is heavily forested with dense brush and conifers, and the topography is generally very steep.

2.1.1 Summary of the Summit Mining District (Prichard-Eagle Creeks) Study

There were seventy-four mining properties (Table 2.1-1 and Volume 1 of this report) examined in the Summit district (Prichard and Eagle Creek drainages). At least four mines were not located with certainty. The forty-five sites discussed below are those with less serious environmental problems or with only physical hazards.

Of the forty-five mines in the Prichard-Eagle Creek drainages discussed in this volume, twenty-seven have an environmental impact on or near USFS lands. (Several other mines that are located on or near U.S. Bureau of Land Management property are on drainages that cross U.S. Forest Service land.) Water samples from ten of these properties exceeded one or more water quality standards, but in most cases, these variances were small. Of greater concern for the sites discussed in this volume are the physical hazards. As noted in Table 2.1.1-1, there are eighteen mines with accessible openings. Of greatest concern is the shaft at the Minnie Moore Mine, but the open adits are also dangerous.
Figure 2.1-1. Location of mining properties with the most significant environmental problems in the Summit mining district (U.S. Geological Survey Thompson Falls 1:100,000-scale map).
Table 2.1-1. Summary of secondary sites in the Prichard-Eagle Creek drainage visited during 1996 field season. The properties are listed in the order they are discussed in the text, which is more or less in relative order of importance regarding environmental concerns and/or physical hazards. Environmental concerns are noted as follows: W - samples of adit water or seeps from waste dumps that exceed one or more water quality standards in the Dissolved Metals Screen, the Total Recoverable Metals Screen, or the tests for arsenic, lead or mercury; T or D - tailings or dump samples that exceed background or environmental standards in the element screen, and/or tailings or dump samples that exceed one or more water quality standards in the TCLP for metals test.

Site No.: Idaho Geological Survey file number, or field designation number.
Surface Owner: FS = Forest Service; P = Private; M = mixed Forest Service/Private, or undetermined; BLM = Bureau of Land Management.
Water/Solid Sample: numbers indicate number of samples collected.
Environmental Concerns: W = adit water; D = waste dump; T = tailings.
Physical Conditions: AO = open adit; AG = open adit, gated; AC = caved or otherwise closed adit; SO = open shaft; SC = caved shaft; T = trench or dozer cut; P = prospect pit; Q = quarry. Numbers indicate quantity of each type of opening found at the site.

<table>
<thead>
<tr>
<th>Site No.</th>
<th>Mine/Prospect Name</th>
<th>Surface Owner</th>
<th>Water Sample</th>
<th>Solid Sample</th>
<th>Environmental Concerns</th>
<th>Physical Conditions</th>
</tr>
</thead>
<tbody>
<tr>
<td>B8159608</td>
<td>Minnie Moore Mine</td>
<td>FS</td>
<td></td>
<td>W</td>
<td>2AO, 1AC, 1SO</td>
<td></td>
</tr>
<tr>
<td>WL-12</td>
<td>Columbus Mine</td>
<td>M</td>
<td>4</td>
<td>W</td>
<td>1AO</td>
<td></td>
</tr>
<tr>
<td>WL-44</td>
<td>Anchor Mine (Buckskin Mine)</td>
<td>M</td>
<td></td>
<td>W</td>
<td>1AO</td>
<td></td>
</tr>
<tr>
<td>WL-34</td>
<td>Golden Dream claims</td>
<td>FS</td>
<td>1</td>
<td>W</td>
<td>1AO, 4AC</td>
<td></td>
</tr>
<tr>
<td>WL-51</td>
<td>Liberty Mine</td>
<td>FS or BLM</td>
<td>1</td>
<td>W</td>
<td>1AO</td>
<td></td>
</tr>
<tr>
<td>WL-561</td>
<td>Stonewall Mine</td>
<td>FS</td>
<td></td>
<td>1</td>
<td>1AO</td>
<td></td>
</tr>
<tr>
<td>WL-90</td>
<td>Tiger Mine</td>
<td>P or BLM</td>
<td>1</td>
<td>W</td>
<td>1AO</td>
<td></td>
</tr>
<tr>
<td>WL-45</td>
<td>Daisy Volunteer Mine</td>
<td>P</td>
<td></td>
<td>1</td>
<td>1AO</td>
<td></td>
</tr>
<tr>
<td>K8229604</td>
<td>Unnamed Prospect on Silent Creek</td>
<td>M</td>
<td></td>
<td>W</td>
<td>3AO</td>
<td></td>
</tr>
<tr>
<td>WL-17</td>
<td>Eagle Creek Prospect</td>
<td>FS</td>
<td></td>
<td>W</td>
<td>2AO</td>
<td></td>
</tr>
<tr>
<td>WL-122</td>
<td>Lucky Four Mine</td>
<td>FS</td>
<td></td>
<td>W</td>
<td>1AO, 1AC</td>
<td></td>
</tr>
<tr>
<td>Site No.</td>
<td>Mine/Prospect Name</td>
<td>Surface Owner</td>
<td>Water Sample</td>
<td>Solid Sample</td>
<td>Environmental Concerns</td>
<td>Physical Conditions</td>
</tr>
<tr>
<td>---------</td>
<td>--------------------------------------------------------</td>
<td>---------------</td>
<td>--------------</td>
<td>--------------</td>
<td>------------------------</td>
<td>---------------------</td>
</tr>
<tr>
<td>WL-562</td>
<td>Unnamed Prospect</td>
<td>FS</td>
<td></td>
<td></td>
<td></td>
<td>2AO</td>
</tr>
<tr>
<td>WL-112</td>
<td>St. Peter Mine</td>
<td>FS</td>
<td></td>
<td></td>
<td></td>
<td>1AO, 1T, Pits</td>
</tr>
<tr>
<td>WL-15</td>
<td>Unnamed Prospect on East Fork of Eagle Creek</td>
<td>FS</td>
<td></td>
<td></td>
<td></td>
<td>1AO</td>
</tr>
<tr>
<td>WL-171</td>
<td>C &amp; R Mine</td>
<td>P or BLM</td>
<td>1</td>
<td>W</td>
<td></td>
<td>1AO, 1AC</td>
</tr>
<tr>
<td>WL-6</td>
<td>Samson Mine</td>
<td>FS</td>
<td>3</td>
<td>W</td>
<td></td>
<td>1AG, 1AO, 2AC</td>
</tr>
<tr>
<td>K8169601</td>
<td>Unnamed Prospect on Pennsylvania Gulch</td>
<td>FS</td>
<td></td>
<td></td>
<td></td>
<td>1AO, 1P</td>
</tr>
<tr>
<td>WL-48</td>
<td>Buckeye Boy Mine</td>
<td>P</td>
<td>1</td>
<td>W</td>
<td>several short adits &amp; pits</td>
<td></td>
</tr>
<tr>
<td>WL-59</td>
<td>Hawkins Mine</td>
<td>P or BLM</td>
<td>1</td>
<td>W</td>
<td></td>
<td>1AC</td>
</tr>
<tr>
<td>WL-2</td>
<td>Kelly Prospect</td>
<td>FS</td>
<td>6</td>
<td>W</td>
<td></td>
<td>1AC</td>
</tr>
<tr>
<td>WL-38</td>
<td>Albarta Prospect</td>
<td>FS</td>
<td></td>
<td></td>
<td></td>
<td>IAC or 1P</td>
</tr>
<tr>
<td>WL-56</td>
<td>Badger Mine</td>
<td>M</td>
<td></td>
<td></td>
<td></td>
<td>1AC</td>
</tr>
<tr>
<td>WL-70</td>
<td>Chester Consolidated Mine (Dew Drop Mine)</td>
<td>P</td>
<td></td>
<td></td>
<td></td>
<td>2AC</td>
</tr>
<tr>
<td>WL-111</td>
<td>Gold Cliff Mine</td>
<td>BLM</td>
<td></td>
<td></td>
<td></td>
<td>1AG</td>
</tr>
<tr>
<td>WL-68</td>
<td>Mountain Lion Mine</td>
<td>M</td>
<td></td>
<td></td>
<td></td>
<td>1AC</td>
</tr>
<tr>
<td>WL-127</td>
<td>Phoenix Property</td>
<td>FS</td>
<td></td>
<td></td>
<td></td>
<td>1AC</td>
</tr>
<tr>
<td>WL-10</td>
<td>Snowshoe Prospect</td>
<td>FS</td>
<td></td>
<td></td>
<td></td>
<td>1AC</td>
</tr>
<tr>
<td>WL-18</td>
<td>United States Silver-Lead</td>
<td>FS</td>
<td></td>
<td></td>
<td></td>
<td>1AC, pits</td>
</tr>
<tr>
<td>B7319606</td>
<td>Unnamed Prospect south of Prichard Creek near Murray</td>
<td>FS</td>
<td></td>
<td></td>
<td></td>
<td>1AC</td>
</tr>
<tr>
<td>Site No.</td>
<td>Mine/Prospect Name</td>
<td>Surface Owner</td>
<td>Water Sample</td>
<td>Solid Sample</td>
<td>Environmental Concerns</td>
<td>Physical Conditions</td>
</tr>
<tr>
<td>----------</td>
<td>--------------------------------------------------------</td>
<td>---------------</td>
<td>--------------</td>
<td>--------------</td>
<td>------------------------</td>
<td>---------------------</td>
</tr>
<tr>
<td>B8159601A</td>
<td>Unnamed Prospect south of Prichard Creek near Granite Gulch</td>
<td>M</td>
<td>1</td>
<td></td>
<td></td>
<td>1AC?</td>
</tr>
<tr>
<td>B8159605, B8159606</td>
<td>Unnamed Prospects on Reeder Gulch</td>
<td>P or BLM</td>
<td></td>
<td></td>
<td></td>
<td>2AC</td>
</tr>
<tr>
<td>B8169601</td>
<td>Unnamed Prospect on Bear Gulch</td>
<td>FS</td>
<td></td>
<td></td>
<td></td>
<td>1AC</td>
</tr>
<tr>
<td>B8239602</td>
<td>Unnamed Prospect on Gold Run Gulch</td>
<td>P or BLM</td>
<td></td>
<td></td>
<td></td>
<td>1AC</td>
</tr>
<tr>
<td>WL-13</td>
<td>Gold Rock Mine</td>
<td>FS</td>
<td></td>
<td></td>
<td></td>
<td>numerous small pits</td>
</tr>
<tr>
<td>K8209601</td>
<td>Unnamed Prospect near Bloom Spring (Morbeck claims?)</td>
<td>FS</td>
<td>1</td>
<td>W</td>
<td></td>
<td>several small pits</td>
</tr>
<tr>
<td>WL-9</td>
<td>Oneill Group</td>
<td>M</td>
<td></td>
<td></td>
<td></td>
<td>1T, 2 or more P</td>
</tr>
<tr>
<td>WL-25</td>
<td>Porphyry Group</td>
<td>FS</td>
<td></td>
<td></td>
<td></td>
<td>1T?</td>
</tr>
<tr>
<td>K8159607</td>
<td>Unnamed Prospect on tributary to Granite Gulch</td>
<td>BLM</td>
<td></td>
<td></td>
<td></td>
<td>1AO</td>
</tr>
</tbody>
</table>

2.2 GEOLOGY

The principal references to the geology and ore deposits of the Summit Mining District (Prichard-Eagle Creek drainage) are Hosterman (1956; covers base metal mines) and Shenon (1938; gold mines). Additional references include Ransome (1905), Ransome and Calkins (1908), Umpleby and Jones (1923), and Harrison and others (1986). A brief description of the geologic framework of the area follows.

The metal mines in the district are hosted by metasedimentary rocks of the Belt Supergroup of Precambrian age (Figure 2.2-1). The characteristics of the various units comprising the supergroup is shown in Table 2.2-1. Most important for the mines in the Summit district is the Prichard Formation, which is broken into an upper and lower part by Hosterman (1956) and Harrison and others (1986). Key information on the Prichard is found in Cressman (1982, 1989). Most of the lode mines in the area are hosted in Hosterman’s lower Prichard unit, which consists of “banded dark-gray argillite, laminated in part; partings usually contain many pyrite crystals. Weathers rusty red” (Hosterman, 1956, plate 57; Figure 2.2-1).
<table>
<thead>
<tr>
<th>Group</th>
<th>Formation</th>
<th>Lithology</th>
<th>Thickness (feet)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Missoula</td>
<td>Striped Peak Formation</td>
<td>Interbedded quartzite and argillite with some arenaceous dolomitic beds. Purplish gray and pink to greenish gray. Ripple marks, mud cracks common. Top eroded.</td>
<td>1,500+</td>
</tr>
<tr>
<td></td>
<td>Wallace Formation</td>
<td>Mostly medium- to greenish-gray finely laminated argillite. Some arenaceous dolomite and impure quartzite, and minor gray dolomite and limestone in the middle part.</td>
<td>4,500-6,500</td>
</tr>
<tr>
<td></td>
<td>Upper part</td>
<td>Light-gray more or less dolomitic quartzite interbedded with greenish-gray argillite. Ripple marks, mud cracks abundant.</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Lower part</td>
<td>Light greenish-yellow to light green-gray argillite; thinly laminated. Some carbonate-bearing beds.</td>
<td></td>
</tr>
<tr>
<td>Ravalli</td>
<td>St. Regis Formation</td>
<td>Gradational from thick-bedded pure quartzite at base to interbedded argillite and impure quartzite at top. Red-purple color characteristic; some green-gray argillite. Some carbonate-bearing beds. Ripple marks, mud cracks, and mud-chip breccia common.</td>
<td>1,400-2,000</td>
</tr>
<tr>
<td></td>
<td>Upper part</td>
<td>Thick-bedded vitreous light yellowish-gray to nearly white pure quartzite. Grades into nearly pure and impure quartzite at bottom and top. Cross-stratification common.</td>
<td>1,200-3,400</td>
</tr>
<tr>
<td></td>
<td>Lower part</td>
<td>Light greenish-gray impure quartzite. Some pale red and light yellowish-gray pure to nearly pure quartzite. Ripple marks, swash marks, and pseudo-conglomerate.</td>
<td>2,200-3,000</td>
</tr>
<tr>
<td>Revett Quartzite</td>
<td></td>
<td>Interbedded medium-gray argillite and quartzose argillite and light-gray impure to pure quartzite. Some mud cracks and ripple marks.</td>
<td>12,000+</td>
</tr>
<tr>
<td>Burke Formation</td>
<td>Upper part</td>
<td>Thin- to thick-bedded, medium gray argillite and quartzose argillite; laminated in part. Pyrite abundant. some discontinuous quartzite zones. Base buried.</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Lower part</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Igneous rocks include a series of syenite stocks that trend northeast through Sunset Peak and Granite Gulch. These are a continuation of the Gem Stocks located between Ninemile and Canyon Creeks in the Coeur d'Alene mining district south of the study area. A few lamprophyre dikes have been mapped, especially near Murray.

A series of northwest-trending strike-slip faults, including the Thompson Pass fault, are part of the Lewis and Clark line. These faults are similar to better known structures such as the Osburn fault, which separates the Coeur d'Alene district into two halves and roughly follows the South Fork of the Coeur d'Alene River through the district. Folds generally trend north-south, again mimicking better known structures to the south. Among these folds are the Granite Peak syncline and the Trout Creek anticline. A series of north-south faults include the French Gulch, O’Neill, and Murray Peak faults. The Dobson Pass fault is a major structure that separates the Prichard Formation from the Wallace Formation in the west part of the district and is again a continuation of a major fault that extends up Ninemile Creek north of Wallace, Idaho.

The area has been glaciated. Older terrace gravels associated with Prichard Creek contain placer gold, as do the recent gravels in the active waterways. The recent gravels are the source of most of the richer placer mines in the area, with lower grade deposits found in the older terrace gravels.

2.3 ECONOMIC GEOLOGY

The following summary of the district’s mining history is taken from Hosterman (1956) and Shenon (1938), supplemented by other sources as noted.

2.3.1 General Characteristics of the Ore

Shenon (1938) noted four types of deposits in the area:
- Mineralized shear zones that cross bedding at steep angles
- Quartz veins that lie approximately along bedding
- Quartz veins that lie along low-angle thrust faults (the only example is the Wake Up Jim Mine)
- Placer deposits

Hosterman (1956) gives the order of mineralization in the shear zone-hosted deposits as pyrite, magnetite, chlorite, carbonate, quartz, pyrrhotite, sphalerite, galena, and late quartz. Shenon (1938) lists the order of mineralization in the quartz veins along bedding as coarse-grained white quartz, scheelite, fine-grained white quartz, carbonate, specularite, pyrite, arsenopyrite, sphalerite, chalcopyrite, and galena, with gold deposited last.

Most of the mines that are on U.S. Forest Service-administered land are base metal (primarily lead and zinc), shear zone-hosted deposits. The lode gold mines in the Murray area were primarily quartz veins along bedding. These gold mines are mostly on land administered by the U.S. Bureau of Land Management, but some of these are included in this study because effluent from the properties could impact USFS lands and waterways.
2.3.2 Summary of Mill Development

Most of the properties discussed in this report did not have mills associated with them. Small stamp mills were associated with the Mountain Lion and Buckeye Boy mines, but these mills operated sporadically and no tailings remain at either site.

2.4 HYDROLOGY AND HYDROGEOLOGY

The two major drainages in the Summit District (Figures 2.1-1 and 2.2-1) are Prichard Creek and Eagle Creek. Eagle Creek is divided into two approximately equal forks, the West Fork and the East Fork. Eagle Creek is in turn the major tributary of Prichard Creek. Other sizeable tributaries to Prichard Creek are Granite Gulch, Bear Gulch, and Butte Gulch. Prichard Creek flows into the North Fork of the Coeur d’Alene River at Prichard. A long stretch of Prichard Creek was dredged for gold between 1917 and 1926 (Shenon, 1938), and the bed of the creek was severely disrupted, as evidenced by the substantial dredge spoils near Murray. In places, the creek disappears and flows under the gravels in the streambed. As noted, the most severe threat to the water quality of these streams is from past mining activity; most of these problems were discussed in Volume I of this report. The west side of the district is marked by Beaver Creek, which is a north-flowing drainage that also joins the North Fork of the Coeur d’Alene River near Babins Junction.

As noted, most of the base metal mines in the district are hosted by rocks of the lower Prichard Formation. In places these rocks contain visible sulfides (primarily pyrite and pyrrhotite). These rocks also contain significantly higher values of base metals than some of the other Belt rocks. Table 1.5-3 (based on 727 samples) shows that rocks in the Prichard Formation contain 60 ppm zinc, 34 ppm lead, 3 percent iron, 22 ppm copper, and 0.5 ppm cadmium. Soils above the Prichard reflect this metal content (Table 1.5-4). Based on 1,705 samples, these soils contain 140 ppm zinc, 54 ppm lead, 3.1 percent iron, 21 ppm copper, 1.3 ppm cadmium, and 10 ppm arsenic.

To test whether the high metal content from the Prichard Formation was impacting stream waters, 15 background water samples were collected. The chemical analyses for these samples is shown in Table 2.4-1, along with water quality standards suggested by the Environmental Protection Agency (EPA).

Of the background water quality samples taken, the following meet or are below the suggested thresholds for all metals in the EPA Primary and Secondary MCL and Aquatic Life water standards for all metals in unfiltered samples:

- B7309605 – collected from Bear Gulch Creek
- F7239602 – collected from Columbus Creek, a tributary to the East Fork of Eagle Creek, upstream from adits
- F7239603 – collected from the East Fork of Eagle Creek above the confluence with Tributary Creek
- B8019601 – collected from Cedar Creek, a tributary to Granite Gulch Creek, below the workings of the Silver Strike Mine
Table 2.4-1. Background water samples for the Prichard-Eagle Creek area

<table>
<thead>
<tr>
<th>FIELD NO.</th>
<th>REMARKS (Water Samples)</th>
<th>Al (ppm)</th>
<th>As (ppm)</th>
<th>Ba (ppm)</th>
<th>Cd (ppm)</th>
<th>Cr (ppm)</th>
<th>Cu (ppm)</th>
<th>Fe (ppm)</th>
<th>Pb (ppm)</th>
<th>Mn (ppm)</th>
<th>Hg (ppm)</th>
<th>Ni (ppm)</th>
<th>Zn (ppm)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td><strong>Dissolved metals screen</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>B7239602</td>
<td>Tributary Creek, upstream from Jack Waite adit</td>
<td>---</td>
<td>---</td>
<td>0.002</td>
<td>---</td>
<td>0.0120</td>
<td>0.006</td>
<td>0.0020</td>
<td>---</td>
<td>---</td>
<td>---</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>F7239605</td>
<td>Upstream from Consolidated Silver-Lead Mine</td>
<td>---</td>
<td>---</td>
<td>0.003</td>
<td>---</td>
<td>0.010</td>
<td>0.009</td>
<td>---</td>
<td>---</td>
<td>---</td>
<td>---</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td></td>
<td><strong>Total metals screen</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>B7239602</td>
<td>Tributary Creek, upstream from Jack Waite adit</td>
<td>---</td>
<td>---</td>
<td>---</td>
<td>---</td>
<td>---</td>
<td>---</td>
<td>0.320</td>
<td>0.013</td>
<td>---</td>
<td>---</td>
<td>0.026</td>
<td></td>
</tr>
<tr>
<td>B7309605</td>
<td>Bear Creek</td>
<td>---</td>
<td>0.023</td>
<td>---</td>
<td>---</td>
<td>---</td>
<td>---</td>
<td>0.036</td>
<td>---</td>
<td>---</td>
<td>---</td>
<td>0.004</td>
<td></td>
</tr>
<tr>
<td>B8019601</td>
<td>Tributary to Granite Gulch below Silver Strike Mine</td>
<td>---</td>
<td>0.020</td>
<td>---</td>
<td>---</td>
<td>---</td>
<td>---</td>
<td>0.049</td>
<td>0.003</td>
<td>---</td>
<td>---</td>
<td>---</td>
<td></td>
</tr>
<tr>
<td>B8019602</td>
<td>Granite Gulch at forks</td>
<td>---</td>
<td>---</td>
<td>---</td>
<td>---</td>
<td>---</td>
<td>---</td>
<td>0.037</td>
<td>---</td>
<td>---</td>
<td>---</td>
<td>0.005</td>
<td></td>
</tr>
<tr>
<td>B8019605</td>
<td>Mouth of Granite Gulch</td>
<td>---</td>
<td>0.009</td>
<td>---</td>
<td>---</td>
<td>---</td>
<td>---</td>
<td>0.058</td>
<td>0.002</td>
<td>---</td>
<td>---</td>
<td>0.005</td>
<td></td>
</tr>
<tr>
<td>B8019606</td>
<td>Prichard Creek, main stem</td>
<td>---</td>
<td>0.025</td>
<td>---</td>
<td>---</td>
<td>0.014</td>
<td>---</td>
<td>0.075</td>
<td>0.0069</td>
<td>0.004</td>
<td>---</td>
<td>0.250</td>
<td></td>
</tr>
<tr>
<td>B8019607</td>
<td>East Fork of Eagle Creek at washout</td>
<td>---</td>
<td>0.011</td>
<td>0.004</td>
<td>---</td>
<td>---</td>
<td>---</td>
<td>0.046</td>
<td>0.003</td>
<td>---</td>
<td>---</td>
<td>0.051</td>
<td></td>
</tr>
<tr>
<td>B8019608</td>
<td>Mouth of Cottonwood Creek</td>
<td>---</td>
<td>0.011</td>
<td>---</td>
<td>---</td>
<td>---</td>
<td>---</td>
<td>0.400</td>
<td>0.002</td>
<td>---</td>
<td>---</td>
<td>---</td>
<td></td>
</tr>
<tr>
<td>B8019612</td>
<td>West Fork of Eagle Creek above Cottonwood Creek</td>
<td>---</td>
<td>0.041</td>
<td>---</td>
<td>---</td>
<td>---</td>
<td>---</td>
<td>0.027</td>
<td>0.002</td>
<td>---</td>
<td>---</td>
<td>0.026</td>
<td></td>
</tr>
<tr>
<td>B8309601</td>
<td>Mouth of Butte Gulch</td>
<td>---</td>
<td>---</td>
<td>---</td>
<td>---</td>
<td>---</td>
<td>---</td>
<td>0.046</td>
<td>0.026</td>
<td>---</td>
<td>---</td>
<td>---</td>
<td></td>
</tr>
<tr>
<td>B8309602</td>
<td>Prichard Creek before confluence with Eagle Creek</td>
<td>---</td>
<td>---</td>
<td>---</td>
<td>---</td>
<td>---</td>
<td>---</td>
<td>0.006</td>
<td>0.040</td>
<td>---</td>
<td>---</td>
<td>0.031</td>
<td></td>
</tr>
<tr>
<td>F7239605</td>
<td>Upstream from Consolidated Silver-Lead Mine</td>
<td>---</td>
<td>---</td>
<td>---</td>
<td>0.023</td>
<td>---</td>
<td>---</td>
<td>0.086</td>
<td>0.0026</td>
<td>0.007</td>
<td>---</td>
<td>0.031</td>
<td></td>
</tr>
<tr>
<td>K8159602</td>
<td>Sunrise Mine, upstream from Adit No. 1</td>
<td>---</td>
<td>0.042</td>
<td>---</td>
<td>---</td>
<td>---</td>
<td>---</td>
<td>0.053</td>
<td>---</td>
<td>0.001</td>
<td>0.030</td>
<td>0.021</td>
<td></td>
</tr>
<tr>
<td>B8189601</td>
<td>&quot;Blitz Mine&quot; (Blank sample)</td>
<td>---</td>
<td>---</td>
<td>0.004</td>
<td>---</td>
<td>---</td>
<td>---</td>
<td>0.033</td>
<td>0.002</td>
<td>---</td>
<td>0.040</td>
<td>0.003</td>
<td></td>
</tr>
</tbody>
</table>

**EXPLANATION**

Blank space equals no analysis
Below Detection Limit is ---

**WATER QUALITY STANDARDS**

<table>
<thead>
<tr>
<th></th>
<th>Al (mg/L)</th>
<th>As (mg/L)</th>
<th>Ba (mg/L)</th>
<th>Cd (mg/L)</th>
<th>Cr (mg/L)</th>
<th>Cu (mg/L)</th>
<th>Fe (mg/L)</th>
<th>Pb (mg/L)</th>
<th>Mn (mg/L)</th>
<th>Hg (mg/L)</th>
<th>Ni (mg/L)</th>
<th>Zn (mg/L)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Primary MCL</td>
<td>0.050</td>
<td>2.000</td>
<td>0.005</td>
<td>0.100</td>
<td></td>
<td></td>
<td>0.050</td>
<td>0.002</td>
<td>0.100</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Secondary MCL</td>
<td>0.05-0.2</td>
<td></td>
<td></td>
<td></td>
<td>1.000</td>
<td>0.300</td>
<td>0.050</td>
<td>0.002</td>
<td>5.000</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Aquatic Life, Acute</td>
<td>0.750</td>
<td>0.360</td>
<td>0.004-0.009</td>
<td>1.7-3.1</td>
<td>0.018-0.034</td>
<td>1.000</td>
<td>0.082-0.2</td>
<td>0.0024</td>
<td>1.4-2.5</td>
<td>0.12-0.21</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Aquatic Life, Chronic</td>
<td>0.087</td>
<td>0.190</td>
<td>0.001-0.002</td>
<td>0.21-0.37</td>
<td>0.012-0.021</td>
<td>0.003-0.008</td>
<td>0.000012</td>
<td>0.16-0.28</td>
<td>0.11-0.19</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Estimated Detection Level — Dissolved Metals Screen (33% confidence)</td>
<td>0.1</td>
<td>0.0029</td>
<td>0.001</td>
<td>0.004</td>
<td>0.007</td>
<td>0.007</td>
<td>0.004</td>
<td>0.0015</td>
<td>0.002</td>
<td>0.005</td>
<td>0.017</td>
<td>0.008</td>
</tr>
<tr>
<td>Estimated Detection Level — Total Metals Screen (33% confidence)</td>
<td>---</td>
<td>0.0029</td>
<td>0.004</td>
<td>0.003</td>
<td>0.013</td>
<td>0.035</td>
<td>0.012</td>
<td>0.0015</td>
<td>0.002</td>
<td>0.005</td>
<td>0.02</td>
<td>0.003</td>
</tr>
</tbody>
</table>
• B8019602 – collected from the creek in Granite Gulch just above the confluence with Cedar Creek
• B8019605 – collected from the mouth of Granite Gulch Creek
• B8019612 – collected from the mouth of Cottonwood Creek
• B8309602 – collected from the mouth of Butte Gulch
• F7239605 – collected from a tributary to Tributary Creek, upstream from the Consolidated Silver-Lead Mine
• K8159602 – collected from the head of Cedar Creek

A background water sample (B8019606) collected from the main stem of Prichard Creek exceeds the Aquatic Life Chronic standard for lead and both Aquatic Life standards for zinc.

2.5 SUMMARY OF THE SUMMIT MINING DISTRICT

2.5.1 Summary of Environmental Observations

Most of the samples from these mines did not significantly exceed EPA water standards (Tables 2.5-1 and 2.5-2); for purposes of this discussion, “significantly” is defined as more than ten times the value of the standard. The only samples that meet this criteria are from the Tiger Mine (mercury in the total metals screen) and the Kelly Prospect (copper). Both splits from the Buckeye Mine were high in manganese, with the total metals screen equaling ten times the Secondary MCL. Most of the elements detected in the water samples are also found in the rock units underlying the drainages.

2.5.2 Mill Waste Samples

No mill waste samples were collected from the properties in this report. As stated above, only two of the mines had small stamp mills, and no tailings remain from these operations.
Table 2.5-1. Dissolved Metals Screen for water samples from the minor properties in the Prichard-Eagle Creek area.

<table>
<thead>
<tr>
<th>FIELD NO.</th>
<th>REMARKS (Water Samples)</th>
<th>Al (ppm)</th>
<th>As (ppm)</th>
<th>Ba (ppm)</th>
<th>Cd (ppm)</th>
<th>Cr (ppm)</th>
<th>Cu (ppm)</th>
<th>Fe (ppm)</th>
<th>Pb (ppm)</th>
<th>Mn (ppm)</th>
<th>Hg (ppm)</th>
<th>Ni (ppm)</th>
<th>Zn (ppm)</th>
</tr>
</thead>
<tbody>
<tr>
<td>B7239605</td>
<td>WL-12, Columbus Creek Adit sample</td>
<td>--</td>
<td>--</td>
<td>0.013</td>
<td>--</td>
<td>0.009</td>
<td>0.023</td>
<td>--</td>
<td>--</td>
<td>--</td>
<td>0.019</td>
<td>--</td>
<td></td>
</tr>
<tr>
<td>B7239607</td>
<td>WL-34 Golden Dream Claima</td>
<td>0.180</td>
<td>--</td>
<td>0.024</td>
<td>--</td>
<td>0.016</td>
<td>0.013</td>
<td>0.014</td>
<td>--</td>
<td>0.005</td>
<td>--</td>
<td>0.028</td>
<td></td>
</tr>
<tr>
<td>B8019609</td>
<td>Kelly Prospect</td>
<td>--</td>
<td>--</td>
<td>0.001</td>
<td>--</td>
<td>--</td>
<td>0.010</td>
<td>--</td>
<td>--</td>
<td>--</td>
<td>--</td>
<td>--</td>
<td></td>
</tr>
<tr>
<td>B8019611</td>
<td>Cottonwood Creek below Kelly Prospect</td>
<td>--</td>
<td>--</td>
<td>0.004</td>
<td>--</td>
<td>0.009</td>
<td>0.010</td>
<td>--</td>
<td>--</td>
<td>--</td>
<td>--</td>
<td>--</td>
<td></td>
</tr>
<tr>
<td>B8159607</td>
<td>Tiger Mine portal sample</td>
<td>0.100</td>
<td>0.006</td>
<td>0.005</td>
<td>0.012</td>
<td>--</td>
<td>0.007</td>
<td>--</td>
<td>0.028</td>
<td>--</td>
<td>--</td>
<td></td>
<td></td>
</tr>
<tr>
<td>B8239601</td>
<td>Buckeye Boy mine adit water sample</td>
<td>0.130</td>
<td>0.038</td>
<td>0.005</td>
<td>0.014</td>
<td>--</td>
<td>1.800</td>
<td>0.490</td>
<td>0.051</td>
<td>0.050</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>B8239606</td>
<td>Liberty mine, adit water sample</td>
<td>0.100</td>
<td>0.030</td>
<td>--</td>
<td>0.009</td>
<td>--</td>
<td>0.032</td>
<td>--</td>
<td>0.071</td>
<td>0.024</td>
<td>0.020</td>
<td></td>
<td></td>
</tr>
<tr>
<td>B8279603</td>
<td>Hawkins Mine, adit water sample</td>
<td>--</td>
<td>0.007</td>
<td>0.007</td>
<td>--</td>
<td>--</td>
<td>--</td>
<td>0.015</td>
<td>--</td>
<td>--</td>
<td>--</td>
<td></td>
<td></td>
</tr>
<tr>
<td>F7239601</td>
<td>WL-12, Columbus Creek Adit sample (repeat)</td>
<td>0.120</td>
<td>--</td>
<td>0.013</td>
<td>--</td>
<td>0.008</td>
<td>0.024</td>
<td>--</td>
<td>--</td>
<td>--</td>
<td>0.021</td>
<td>--</td>
<td></td>
</tr>
<tr>
<td>F7239602</td>
<td>Upstream from the Columbus Creek adit</td>
<td>--</td>
<td>--</td>
<td>0.006</td>
<td>--</td>
<td>0.010</td>
<td>0.021</td>
<td>0.019</td>
<td>--</td>
<td>--</td>
<td>0.028</td>
<td>--</td>
<td></td>
</tr>
<tr>
<td>F7239603</td>
<td>Downstream from the Columbus Creek adit</td>
<td>--</td>
<td>--</td>
<td>0.010</td>
<td>--</td>
<td>0.022</td>
<td>0.007</td>
<td>--</td>
<td>--</td>
<td>0.028</td>
<td>--</td>
<td></td>
<td></td>
</tr>
<tr>
<td>K8159601</td>
<td>C &amp; R Adit #1</td>
<td>--</td>
<td>0.010</td>
<td>0.009</td>
<td>0.012</td>
<td>0.023</td>
<td>0.006</td>
<td>--</td>
<td>0.069</td>
<td>--</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>K8209602</td>
<td>Possible adit sample from Bloom Spring</td>
<td>0.200</td>
<td>0.049</td>
<td>0.005</td>
<td>0.008</td>
<td>--</td>
<td>0.010</td>
<td>--</td>
<td>0.031</td>
<td>0.110</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>K8219601</td>
<td>Kelly prospect, adit water sample.</td>
<td>--</td>
<td>0.030</td>
<td>--</td>
<td>--</td>
<td>0.010</td>
<td>0.002</td>
<td>--</td>
<td>0.015</td>
<td>--</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

EXPLANATION
Blank space equals no analysis

Below Detection Limit is --

WATER QUALITY STANDARDS

<table>
<thead>
<tr>
<th></th>
<th>Al (mg/L)</th>
<th>As (mg/L)</th>
<th>Ba (mg/L)</th>
<th>Cd (mg/L)</th>
<th>Cr (mg/L)</th>
<th>Cu (mg/L)</th>
<th>Fe (mg/L)</th>
<th>Pb (mg/L)</th>
<th>Mn (mg/L)</th>
<th>Hg (mg/L)</th>
<th>Ni (mg/L)</th>
<th>Zn (mg/L)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Primary MCL</td>
<td>0.05</td>
<td>2.00</td>
<td>0.005</td>
<td>0.100</td>
<td>0.050</td>
<td>0.002</td>
<td>0.100</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Secondary MCL</td>
<td>0.05-0.2</td>
<td>1.0000</td>
<td>0.005</td>
<td>0.100</td>
<td>0.050</td>
<td>0.002</td>
<td>0.100</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Aquatic Life, Acute</td>
<td>0.750</td>
<td>0.360</td>
<td>0.004-0.009</td>
<td>1.7-3.1</td>
<td>0.018-0.034</td>
<td>1.000</td>
<td>0.082-0.2</td>
<td>0.002</td>
<td>1.4-2.5</td>
<td>0.12-0.21</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Aquatic Life, Chronic</td>
<td>0.087</td>
<td>0.190</td>
<td>0.001-0.002</td>
<td>0.21-0.37</td>
<td>0.012-0.021</td>
<td>0.003-0.008</td>
<td></td>
<td>0.000012</td>
<td>0.16-0.28</td>
<td>0.11-0.19</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Estimated Detection Level (33% confidence)</td>
<td>0.100</td>
<td>0.003</td>
<td>0.001</td>
<td>0.004</td>
<td>0.007</td>
<td>0.004</td>
<td>0.002</td>
<td>0.002</td>
<td>0.005</td>
<td>0.017</td>
<td>0.008</td>
<td></td>
</tr>
</tbody>
</table>
Table 2.5-2. Total metals screen for water samples from the Prichard-Eagle Creek area.

<table>
<thead>
<tr>
<th>FIELD NO.</th>
<th>REMARKS</th>
<th>Al (ppm)</th>
<th>As (ppm)</th>
<th>Ba (ppm)</th>
<th>Cd (ppm)</th>
<th>Cr (ppm)</th>
<th>Cu (ppm)</th>
<th>Fe (ppm)</th>
<th>Pb (ppm)</th>
<th>Mn (ppm)</th>
<th>Hg (ppm)</th>
<th>Ni (ppm)</th>
<th>Zn (ppm)</th>
</tr>
</thead>
<tbody>
<tr>
<td>B7239605</td>
<td>WL-12, Columbus Creek Adit sample</td>
<td>---</td>
<td>0.012</td>
<td>---</td>
<td>---</td>
<td>0.061</td>
<td>0.003</td>
<td>0.006</td>
<td>---</td>
<td>---</td>
<td>0.019</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>B7239607</td>
<td>WL-34 Golden Dream Claims</td>
<td>---</td>
<td>0.025</td>
<td>---</td>
<td>---</td>
<td>0.064</td>
<td>---</td>
<td>0.008</td>
<td>---</td>
<td>---</td>
<td>0.016</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>B8019609</td>
<td>Kelly Prospect</td>
<td>---</td>
<td>---</td>
<td>---</td>
<td>---</td>
<td>0.053</td>
<td>---</td>
<td>---</td>
<td>---</td>
<td>---</td>
<td>---</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>B8019610</td>
<td>Cottonwood Creek above Kelly Prospect</td>
<td>---</td>
<td>---</td>
<td>---</td>
<td>---</td>
<td>0.032</td>
<td>---</td>
<td>---</td>
<td>---</td>
<td>---</td>
<td>---</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>B8019611</td>
<td>Cottonwood Creek below Kelly Prospect</td>
<td>---</td>
<td>0.006</td>
<td>---</td>
<td>0.020</td>
<td>---</td>
<td>0.610</td>
<td>---</td>
<td>0.007</td>
<td>---</td>
<td>0.020</td>
<td>0.024</td>
<td>---</td>
</tr>
<tr>
<td>B8159607</td>
<td>Tiger Mine portal sample</td>
<td>---</td>
<td>0.003</td>
<td>---</td>
<td>---</td>
<td>---</td>
<td>---</td>
<td>0.003</td>
<td>0.00630</td>
<td>0.030</td>
<td>0.008</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>B8239601</td>
<td>Buckeye Boy mine adit water sample</td>
<td>0.0041</td>
<td>0.015</td>
<td>0.004</td>
<td>0.014</td>
<td>---</td>
<td>1.900</td>
<td>---</td>
<td>0.500</td>
<td>0.060</td>
<td>0.014</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>B8239602</td>
<td>Liberty mine, adit water sample.</td>
<td>---</td>
<td>0.009</td>
<td>0.005</td>
<td>0.014</td>
<td>---</td>
<td>0.690</td>
<td>0.005</td>
<td>0.086</td>
<td>---</td>
<td>0.050</td>
<td>0.015</td>
<td>---</td>
</tr>
<tr>
<td>B8279603</td>
<td>Hawkins Mine, adit water sample</td>
<td>---</td>
<td>0.003</td>
<td>---</td>
<td>---</td>
<td>---</td>
<td>0.027</td>
<td>---</td>
<td>---</td>
<td>---</td>
<td>---</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>F7239601</td>
<td>WL-12, Columbus Creek Adit sample (repeat)</td>
<td>---</td>
<td>0.012</td>
<td>---</td>
<td>---</td>
<td>---</td>
<td>0.052</td>
<td>0.002</td>
<td>0.007</td>
<td>---</td>
<td>0.020</td>
<td>0.029</td>
<td>---</td>
</tr>
<tr>
<td>F7239602</td>
<td>Upstream from the Columbus Creek adit</td>
<td>---</td>
<td>0.005</td>
<td>---</td>
<td>---</td>
<td>---</td>
<td>0.089</td>
<td>0.002</td>
<td>0.004</td>
<td>---</td>
<td>0.030</td>
<td>0.015</td>
<td>---</td>
</tr>
<tr>
<td>F7239603</td>
<td>Downstream from the Columbus Creek adit</td>
<td>---</td>
<td>0.004</td>
<td>---</td>
<td>---</td>
<td>---</td>
<td>0.099</td>
<td>---</td>
<td>0.007</td>
<td>---</td>
<td>---</td>
<td>0.017</td>
<td>---</td>
</tr>
<tr>
<td>K8159601</td>
<td>C &amp; R Adit #1</td>
<td>---</td>
<td>0.010</td>
<td>---</td>
<td>---</td>
<td>---</td>
<td>0.043</td>
<td>---</td>
<td>0.003</td>
<td>---</td>
<td>0.040</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>K8209602</td>
<td>Possible adit sample from Bloom Spring.</td>
<td>---</td>
<td>0.008</td>
<td>0.004</td>
<td>---</td>
<td>---</td>
<td>---</td>
<td>---</td>
<td>0.004</td>
<td>---</td>
<td>0.070</td>
<td>0.008</td>
<td>---</td>
</tr>
<tr>
<td>K8219601</td>
<td>Kelly prospect, adit water sample.</td>
<td>---</td>
<td>0.005</td>
<td>0.007</td>
<td>---</td>
<td>0.770</td>
<td>0.170</td>
<td>0.002</td>
<td>0.010</td>
<td>---</td>
<td>0.050</td>
<td>0.010</td>
<td>---</td>
</tr>
<tr>
<td>K8279601</td>
<td>Sampson Adit water sample</td>
<td>---</td>
<td>0.047</td>
<td>0.006</td>
<td>0.013</td>
<td>---</td>
<td>0.051</td>
<td>---</td>
<td>0.018</td>
<td>---</td>
<td>0.050</td>
<td>0.014</td>
<td>---</td>
</tr>
</tbody>
</table>

**EXPLANATION**
Blank space equals no analysis

**Below Detection Limit is ---**

**WATER QUALITY STANDARDS**

<table>
<thead>
<tr>
<th></th>
<th>Al (mg/L)</th>
<th>As (mg/L)</th>
<th>Ba (mg/L)</th>
<th>Cd (mg/L)</th>
<th>Cr (mg/L)</th>
<th>Cu (mg/L)</th>
<th>Fe (mg/L)</th>
<th>Pb (mg/L)</th>
<th>Mn (mg/L)</th>
<th>Hg (mg/L)</th>
<th>Ni (mg/L)</th>
<th>Zn (mg/L)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Primary MCL</td>
<td>0.050</td>
<td>2.000</td>
<td>0.005</td>
<td>0.100</td>
<td>0.050</td>
<td>0.002</td>
<td>0.100</td>
<td>0.002</td>
<td>0.100</td>
<td>5.000</td>
<td>0.002</td>
<td>0.100</td>
</tr>
<tr>
<td>Secondary MCL</td>
<td>0.05-0.2</td>
<td>0.3600</td>
<td>0.004-0.009</td>
<td>1.7-3.1</td>
<td>0.018-0.034</td>
<td>1.000</td>
<td>0.082-0.2</td>
<td>0.002</td>
<td>1.4-2.5</td>
<td>0.12-0.21</td>
<td>0.000012</td>
<td>0.16-0.28</td>
</tr>
<tr>
<td>Aquatic Life, Acute</td>
<td>0.750</td>
<td>0.1900</td>
<td>0.001-0.002</td>
<td>0.21-0.37</td>
<td>0.012-0.021</td>
<td>0.003-0.008</td>
<td>0.000012</td>
<td>0.16-0.28</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Aquatic Life, Chronic</td>
<td>0.0029</td>
<td>0.004</td>
<td>0.003</td>
<td>0.013</td>
<td>0.035</td>
<td>0.012</td>
<td>0.002</td>
<td>0.002</td>
<td>0.00005</td>
<td>0.020</td>
<td>0.003</td>
<td></td>
</tr>
</tbody>
</table>
3.0 MINE DESCRIPTIONS

3.1 MINNIE MOORE MINE (Site No. B8159608)

3.1.1 Site Location and Access (Figure 2.1-1)

The Minnie Moore Mine is located about 1 mile from the end of the Potosi Creek Road, south of and above the town of Murray, at the head of Idaho Gulch, in the NW¼ of the NW¼ of section 21, T. 49 N., R. 5 E., on the Burke 7.5-minute quadrangle (Figure 3.1-1). The mine is at the end of a lower spur road that cuts off from the Potosi Creek road on the ridge above Tiger Gulch. This property is on Forest Service land.

3.1.2 Geologic Features (Figure 2.2-1)

The mine is in banded argillite of the lower Prichard Formation (Hosterman, 1956).

3.1.3 Site History

No history is available for this property.

3.1.4 Environmental Conditions

3.1.4.1 Site Features

The mine was visited by Earl Bennett on August 15, 1996. No video was taken at this site. Documenting photos are Roll 559693, frames #23-25, and Roll 559692, frames #1-6.

An adit about 100 feet below the spur road is open and dry (Figure 3.1-2), but about 10 feet inside the portal, there is a shaft that is full of water (Figure 3.1-3). The depth of the shaft is not known, but it is probably shallow. The dump is not large and indicates about 100-150 feet of workings. About 100 feet lower on the slope and 50 feet to the south is another open, dry adit with the words, “Minnie More #1 Keep Out,” spray-painted on the rock (Figure 3.1-4). The dump at this adit also indicates about 150 feet of workings. On the same level as this adit, and almost directly below the upper adit (50 feet to the north), is a third adit, which is caved and dry. The total disturbed area is less than 0.5 acre.

3.1.4.2 Sample Locations

3.1.4.2.1 Soil Samples

No waste dump samples were collected at this site.

3.1.4.2.2 Water Samples

No water samples were collected at this site.
3.1.5 Structures
There are no structures at this site.

3.1.6 Safety

Although the rock appears to be competent and stable, caving or collapse of the open adits is a potential hazard. The water-filled shaft inside the upper adit is a serious hazard.
Figure 3.1-1. Topographic map of the Minnie Moore Mine, Shoshone County, Idaho (U.S. Geological Survey Burke 7.5-minute topographic map).
Figure 3.1-2. Open upper adit at the Minnie Moore Mine (Roll 559693, frame #23).

Figure 3.1-3. Water-filled shaft located about 10 feet inside the upper Minnie Moore adit. A small dark square in the rubble at the bottom of the frame appears to be a hole through the caved debris plugging the shaft (Roll 559692, frame #1).
Figure 3.1-4. Open lower adit at the Minnie Moore Mine (Roll 559692, frame #3).
3.2 COLUMBUS MINE (Site No. WL-12)

3.2.1 Site Location and Access (Figure 2.1-1)

The Columbus Mine is located on the East Fork of Eagle Creek about $\frac{1}{4}$ mile east of the confluence with Tributary Creek near Columbus Creek, in the SW$\frac{1}{4}$ of section 12, T. 50 N., R. 5 E., on the Murray 7.5-minute quadrangle (Figure 3.2-1). The mine is shown on the quadrangle map as an adit. This prospect is probably on Forest Service land, although there are several patented claims, most likely placer claims, along the East Fork of Eagle Creek at this location.

3.2.2 Geologic Features (Figure 2.2-1)

The mine is in banded argillite of the lower Prichard Formation (Hosterman, 1956).

3.2.3 Site History

The eight original claims in the Columbus Group were purchased in 1906 for $25,000. The Columbus Mining Company of Coeur d'Alene was organized in 1915, and acquired twelve claims from E.P. and J.M. Gallagher for $1,000,000 in stock. In 1921, the Idaho Inspector of Mines noted that the property had “an encouraging showing of high-grade ore” (Campbell, 1922, p. 95). In 1922, the mine had four tunnels, of which the Tributary tunnel was 1,400 feet long and the Eagle tunnel was 1,213 feet long, and eleven open cuts. By the following year, the company reported total workings of 4,000 to 4,500 feet. Utah Lead Company leased the mine in 1924, but apparently did little work. The property appears to have been inactive since the mid-1920s.

3.2.4 Environmental Conditions

3.2.4.1 Site Features

This site was visited by Falma Moye and Earl Bennett on July 23, 1996. No video was taken at this site. Documenting photos are Roll 560565, frames #16-18.

The open adit (Figure 3.2-2) at the mine had been gated, but the gate has been torn off. The adit is supported with large timbers and cribbing as far as can be seen inside the adit, although it is at least partly caved about 20 feet inside the portal (Figure 3.2-3). The adit is probably no more than 200 feet long, based on the small size of the dump. Water flows from the adit at a rate of about 1-2 gallons per minute, follows the east side of the dump (Figure 3.2-4), and then disappears into the waste pile. The waste dump is about 150 feet long along the slope north of the adit and extends to the East Fork of Eagle Creek. There is an abundance of vegetation growing on the dump. The disturbed area covers less than 0.5 acre.
3.2.4.2 Sample Locations

3.2.4.2.1 Soil Samples
No waste dump samples were collected at this site.

3.2.4.2.2 Water Samples

Two samples (B7239605 and F7239601) were collected from the adit water. Upstream sample F7239602 and downstream sample F7239603 were collected from the active waterway of the East Fork of Eagle Creek.

<table>
<thead>
<tr>
<th>Sample No.</th>
<th>Location</th>
<th>Specific Conductivity (μS)</th>
<th>Temperature (°F)</th>
<th>pH</th>
<th>Flow (gpm)</th>
<th>Analyzed (Yes/No)</th>
</tr>
</thead>
<tbody>
<tr>
<td>B7239605</td>
<td>Columbus Mine adit</td>
<td>230</td>
<td>---</td>
<td>6.7</td>
<td>1-2</td>
<td>Yes</td>
</tr>
<tr>
<td>F7239601</td>
<td>Columbus Mine adit</td>
<td>180</td>
<td>---</td>
<td>7.9</td>
<td>1-2</td>
<td>Yes</td>
</tr>
<tr>
<td>F7239602</td>
<td>upstream, East Fork of Eagle Creek</td>
<td>30</td>
<td>---</td>
<td>7.6</td>
<td>---</td>
<td>Yes</td>
</tr>
<tr>
<td>F7239603</td>
<td>downstream, East Fork of Eagle Creek</td>
<td>10</td>
<td>---</td>
<td>7.5</td>
<td>---</td>
<td>Yes</td>
</tr>
</tbody>
</table>

3.2.4.2.3 Analytical Results

Water Samples

In the dissolved metals screen, all four samples exceed the Aquatic Life Acute standard and are within the range of the values for the Aquatic Life Chronic standard for copper. None of the standards were exceeded in any of the samples in the total recoverable metals screen.

3.2.5 Structures
There are no structures at this site.

3.2.6 Safety

The open adit is the only potential hazard. The broken timbers inside the adit indicate a significant potential for caving conditions.
Figure 3.2-1. Topographic map of the Columbus Mine, Shoshone County, Idaho (U.S. Geological Survey Murray 7.5-minute topographic map).
Figure 3.2-2. Portal of the Columbus Mine with the large sloughed area above the adit. Some of the rock debris has fallen around the portal and onto the entryway (Roll 560565, frame #16).

Figure 3.2-3. View inside the Columbus adit. Note the collapsed timbers about 20 feet inside the adit (Roll 560565, frame #18).
Figure 3.2-4. Looking out across the surface of the waste dump from the Columbus adit. The water seeping from the adit can be seen in the lower right of the frame (Roll 560565, frame #17).
3.3 ANCHOR MINE (Site No. WL-44)
Alternative names—Buckskin, Golden Reward.

3.3.1 Site Location and Access (Figure 2.1-1)

The Anchor Mine is located about one mile up Alder Creek due north of Murray, in the SE¼ of the NW¼ of section 32, T. 50 N., R. 5 E., on the Murray 7.5-minute quadrangle (Figure 3.3-1). The mine is located above and east of the main Alder Creek road, and access is from an overgrown spur road. This area is a mixture of patented claims and Forest Service land.

3.3.2 Geologic Features (Figure 2.2-1)

According to Shenon (1938, p. 42-43):
Four nearly parallel shear zones are exposed in the upper tunnel that cuts the Prichard formation, which here contains a number of white quartzite beds. The shear zones strike N. 50° to 65° W., and dip from 70° W. to vertically. One shear zone has been followed for 300 feet. In it there are irregular bodies of high-grade galena ore, but work on the upper level has not yet developed any large shoot. A dense, dark colored lamprophyre dike, 18 feet wide, is exposed in the upper tunnel about 160 feet from the portal. It strikes N. 45° E., almost at right angles to the mineralized shear zones, and is nearly vertical.

3.3.3 Site History

According to Shenon (1938, p. 42):
The Anchor mine is about 1 mile above the mouth of Alder Gulch. It was first located by Dan Daugherty as the Golden Reward, but is now owned by John Murphy, Mike Melley, and H. L. Day. Most of the work has been done on two tunnels. The lower one, the longest, was closed in 1935. The upper tunnel, which is about 190 feet above the lower, has more than 800 feet of workings, including both drifts and crosscuts.

The USBM reported active development at the Anchor property in 1928 and 1929. In 1939, the mine was credited with the Summit district’s zinc-lead production, and it produced 91 tons of zinc-lead one in 1941. In 1948, leasing operations at the Anchor produced 1,107 tons of zinc-lead ore, and about 400 tons were mined the following year.

3.3.4 Environmental Conditions

3.3.4.1 Site Features

The property was visited by Earl Bennett on August 30, 1996. A video segment describing the prospect is on the Prichard-Eagle Creek Videotape, Secondary Sites (Tape 3, index 00:01:23-00:05:00). Documenting photos Roll 214578, frames 12-14.
The property consists of one open, dry adit (probably Shenon's upper adit) (Figure 3.3-2) and a large dump. The portal is made of logs about 6 inches in diameter (Figure 3.3-3). There are some old rails on the substantial dump (Figure 3.3-4), but no other structures. The dump is 200 feet thick on the nose and is about 70 feet long and 35 feet wide. It is well armored and has little fine material. There are trees up to 14 inches in diameter growing up through the dump. The disturbed area covers about 1 acre.

3.3.4.2 Sample Locations

3.3.4.2.1 Soil Samples
   No waste dump samples were collected at this site.

3.3.4.2.2 Water Samples
   No water samples were collected at this site.

3.3.5 Structures
   There are no structures at this site.

3.3.6 Safety

The open adit is the only potential safety hazard.
Figure 3.3-1. Topographic map of the Anchor Mine, Shoshone County, Idaho (U.S. Geological Survey Murray 7.5-minute topographic map).
Figure 3.3-2. Open adit at the Anchor Mine. It is barely visible through the trees at the center of the frame (Roll 214578, frame #13).

Figure 3.3-3. View inside the adit, with open door to the right. A piece of drill pipe is propped against the rock wall on the left (Roll 214578, frame #12).
Figure 3.3-4. Looking down the face of the Anchor waste dump, with ore car rails at the bottom of the frame (Roll 214578, frame #14).
3.4 GOLDEN DREAM CLAIMS (Site No. WL-34)

3.4.1 Site Location and Access (Figure 2.1-1)

The Golden Dream workings are located at the head of Butte Gulch in the SE\(^4\) of the NW\(^4\) of section 30, T. 50 N., R. 6 E., on the Black Peak 7.5-quadrangle (Figure 3.4-1). The adits and pits extend from the top of the ridge down the hill for a considerable distance. Access is via the Tributary Creek road past the Jack Waite Mine to the Idaho-Montana border, then south along the border about 1 mile on Forest Service Road 430.6 to these claims. This prospect is on Forest Service land.

3.4.2 Geologic Features (Figure 2.2-1)

The mine is in banded argillite of the lower Prichard Formation (Hosterman, 1956).

3.4.3 Site History

In 1982, the Golden Dream, owned by Idaho Gold Fields, was leased to Intermountain Minerals Engineers, Inc. (IME). In 1983, IME completed 860 feet of drilling and produced 674 tons of ore in conjunction with the exploration program. The ore was processed at the Nabob mill on Pine Creek, which was under lease to IME. The ore yielded 12 to 16 tons of concentrates averaging 5 ounces of gold and 8 ounces of silver to the ton. IME continued exploring the Golden Dream in 1984. The work consisted of a drilling program to block out gold reserves for production.

3.4.4 Environmental Conditions

3.4.4.1 Site Features

The Golden Dream was examined by Earl Bennett on July 23, 1996. No video was taken at this site. Documenting photos are Roll 560564, frames 1-3, and Roll 560565, frames 24-25.

A series of small pits and adits are located at the head of Butte Gulch. The uppermost adit (Adit No. 1) is caved and dry. Other workings are down the hillside below this adit along a series of access roads and trails. Adit No. 2 is caved and dry. Trees appear to have been planted in this area. Adit No. 3 is caved and dry, and has some rusty rock on the small dump. Adit No. 4 has a pipe coming out of it. The pipe drains into a small pool, but there was no water flowing from the pipe on the day of the visit. The portal to this adit is partially blocked by rock rubble, but the adit is open (Figure 3.4-2) and has cold air coming from it, indicating a connection to other workings. The rock on this dump, which appears to be Burke Formation, is sheared and iron stained. Farther downhill is Adit No. 5, which is caved but has about 1 gallon per minute flowing from it (Figure 3.4-3). The dump at Adit No. 5 is small and overgrown. The total disturbed area covers less than 1 acre.
3.4.4.2 Sample Locations

3.4.4.2.1 Soil Samples
No dump samples were collected at this site.

3.4.4.2.2 Water Samples

A water sample (B7239607) was collected from the water draining from caved Adit No. 5.

<table>
<thead>
<tr>
<th>Sample No.</th>
<th>Location</th>
<th>Specific Conductivity (μs)</th>
<th>Temperature (°F)</th>
<th>pH</th>
<th>Flow (gpm)</th>
<th>Analyzed (Yes/No)</th>
</tr>
</thead>
<tbody>
<tr>
<td>B7239607</td>
<td>Golden Dream, Adit No. 5</td>
<td>110</td>
<td>---</td>
<td>7.0</td>
<td>1</td>
<td>Yes</td>
</tr>
</tbody>
</table>

3.4.4.2.3 Analytical Results

Water Samples

Sample B7239607 slightly exceeds the lower threshold of the Aquatic Life Chronic standard for copper in the dissolved metals screen. The sample is below all standards in the total recoverable metal screen.

3.4.5 Structures
There are no structures at this site.

3.4.6 Safety

Adit No. 4, which is only partially blocked, could be entered and may pose a hazard. The rock is probably unstable, judging from the fact that the other adits are caved.
Figure 3.4-1. Topographic map of the Golden Dream Mine, Shoshone County, Idaho (U.S. Geological Survey Black Peak 7.5-minute topographic map).
Figure 3.4-2. Open Adit No. 4 at the Golden Dream claims. The portal is partially blocked by rock rubble from the slope above, but is accessible. The portal timbers are in relatively good condition (Roll 560564, frame #2).

Figure 3.4-3. Caved Adit No. 5 at the Golden Dream. A seep of about 1 gallon per minute is flowing from beneath the caved debris (Roll 560564, frame #3).
3.5 LIBERTY MINE (Site No. WL-51)

3.5.1 Site Location and Access (Figure 2.1-1)

The Liberty Mine lies west of the Terrible Edith Mine near the head of Cougar Gulch in the SW¼ of the SW¼ of section 33, T. 50 N., R. 5 E., on the Murray 7.5-minute quadrangle (Figure 3.5-1). It is accessed from the Cougar Gulch road. The property is either on Forest Service or BLM land.

3.5.2 Geologic Features (Figure 2.2-1)

The Liberty Mine is in banded argillite of the lower Prichard Formation (Hosterman, 1956).

3.5.3 Site History

The Liberty Mining Co. shipped a small quantity of lead ore from the mine in 1954.

3.5.4 Environmental Conditions

3.5.4.1 Site Features

The property was visited by Falma Moye on July 20, 1996, and by Earl Bennett on August 23, 1996. A video segment describing the property is on the Prichard-Eagle Creek Videotape, Secondary Sites (Tape 3, index 00:05:03-00:07:40). Documenting photos are Roll 561250, frames 17-19, and Roll 095069, frame 15.

The mine consists of a single open adit and waste dump. The adit portal was cribbed with small logs and boards, which are now collapsed (Figure 3.5-2). Water is seeping from the adit and flowing into the grass-covered dump. A collapsed log lean-to with a tin roof (Figure 3.5-3) is just west of the adit on part of the dump, and a large compressor tank is beside the lean-to. The road crosses the dump just south of the lean-to. The site does not impact more than 0.5 acre.

3.5.4.2 Sample Locations

3.5.4.2.1 Soil Samples
   No dump samples were collected at this site.

3.5.4.2.2 Water Samples

Sample B8239606 was collected from the water coming from the adit.

<table>
<thead>
<tr>
<th>Sample No.</th>
<th>Location</th>
<th>Specific Conductivity (μS)</th>
<th>Temperature (°F)</th>
<th>pH</th>
<th>Flow (gpm)</th>
<th>Analyzed (Yes/No)</th>
</tr>
</thead>
<tbody>
<tr>
<td>B8239606</td>
<td>Liberty Mine adit</td>
<td>110</td>
<td>48</td>
<td>7.1</td>
<td>seep</td>
<td>Yes</td>
</tr>
</tbody>
</table>

46
3.5.4.2.3 Analytical Results

Water Samples

In the dissolved metals screen, sample B8239606 exceeds the Aquatic Life Chronic standard for aluminum and the Secondary MCL for manganese, and is within the range of values for the Secondary MCL for aluminum. In the total recoverable metals screen, the sample equals or exceeds all standards for cadmium, and exceeds the Secondary MCLs for iron and manganese. In the test for lead, the sample slightly exceeds the lower threshold of the Aquatic Life Chronic standard.

3.5.5 Structures

There is a lean-to at this site.

3.5.6 Safety

The open adit is the only potential safety hazard.
Figure 3.5-1. Topographic map of the Liberty Mine, Shoshone County, Idaho (U.S. Geological Survey Murray 7.5-minute topographic map).
Figure 3.5-2. Portal and seep at the Liberty Mine. The portal timbers and cribbing have collapsed, but the adit is accessible through an opening above the debris. Water seeping from the adit is visible at the lower left (Roll 095640, frame #15).
Figure 3.5-3. Corrugated metal roof on the lean-to at the Liberty Mine (Roll 561250, frame #18).
3.6 STONEWALL MINE (Site No. WL-561)

3.6.1 Site Location and Access (Figure 2.1-1)

This property is located south of Prichard Creek on the east side of Sullivan Gulch, in the SW¼ of the SW¼ of section 18, T. 49 N., R. 6 E., on the Thompson Pass 7.5-minute quadrangle (Figure 3.6-1). Access is by a trail up the east side of Sullivan Gulch from the Prichard Creek-Thompson Pass road. The property appears to be on Forest Service land.

3.6.2 Geologic Features (Figure 2.2-1)

The mine is near the Thompson Pass fault in quartzite and argillaceous quartzite of the Burke Formation (Hosterman, 1956).

3.6.3 Site History

No information is available on the history of this site.

3.6.4 Environmental Conditions

3.6.4.1 Site Features

The Stonewall property was visited by Falma Moye on July 22, 1996. No video was taken at this site. Documenting photo is Roll 095640, frame 22.

The property contains a single open adit with an unlocked wooden door and large logs framing the portal (Figure 3.6-2). The portal appears to have been retimbered through sloughed debris. The disturbed area is less than 0.25 acre.

3.6.4.2 Sample Locations

3.6.4.2.1 Soil Samples

No waste dump samples were collected at this site.

3.6.4.2.2 Water Samples

No water samples were collected at this site.

3.6.5 Structures

There are no structures at this site.

3.6.6 Safety

The open adit is the only potential safety hazard at this site. The sloughed hillside around the portal indicates the rock may be prone to caving.
Figure 3.6-1. Topographic map of the Stonewall Mine, Shoshone County, Idaho (U.S. Geological Survey Thompson Pass 7.5-minute topographic map).
Figure 3.6-2. Portal of the Stonewall Mine. The wooden door just inside the portal is open (Roll 095640, frame #22).
3.7 TIGER MINE (Site No. WL-90)
Alternative name—Aulbach claim.

3.7.1 Site Location and Access (Figure 2.1-1)

An adit which may be part of the Tiger Mine is located across the Kings Pass Bridge south of Murray and east of the Tiger Gulch road and the Murray Pioneer Cemetery. This adit is in the SE¼ of the NE¼ of section 6, T. 49 N., R. 5 E., on the Burke 7.5-minute quadrangle (Figure 3.7-1). This adit location does not match that of Shenon (1938, p. 41), who states: “The Tiger group of claims is in Tiger Gulch, about a mile southwest of Murray. The property is reached by a trail which rises 700 feet in altitude in a horizontal distance of one-fourth mile.” Information in IGS's mineral property files also indicates that the Tiger Mine was on the West Fork of Tiger Gulch. However, this adit near the mouth of Tiger Gulch may have been driven later. No other workings were found in Tiger Gulch, although the area is heavily timbered and old workings may be obscured. The land here is mixed ownership between private patented claims and the Bureau of Land Management.

3.7.2 Geologic Features (Figure 2.2-1)

The mine is in banded argillite of the Prichard Formation (Hosterman, 1956). According to Shenon (1938, p. 41):

The deposit at the Tiger consists of a shear zone striking N. 10° E. and dipping 80° N.W., which was intensely silicified across a width of 5 or 6 feet. The shear zone crosses a dense, fine-grained, highly altered, lamprophyre dike, in which much quartz, ankerite, disseminated pyrite, and a little sericite and galena have been deposited. The lath-shaped plagioclase crystals that remain have a composition of An₅, whereas biotite is entirely altered to chlorite. Veinlets that cut the rock contain quartz, ankerite, sericite, and sulphides. The bedding in the argillite close to the sheared zone is nearly flat.

3.7.3 Site History

Shenon (1938, p. 41) noted the following information about the mine:

The development work consists of a 400-foot crosscut, from which short drifts have been driven in both directions, and several short workings on the ridge top about 200 feet vertically above the crosscut level. Most of the work at the Tiger was done by Adam Aulbach. It is now owned by his daughter, Mrs. David Sellers of Murray. So far as known, there has been no production.

Most of the work at the property was apparently done before 1930. The No. 4 tunnel, variously listed as separated from the other workings by a vertical distance of between 1,200 and 2,000 feet, may be the adit discussed here.
3.7.4 Environmental Conditions

3.7.4.1 Site Features

The Tiger Mine was visited by Falma Moye on July 16, 1996, and by Earl Bennett on August 15, 1996. No video was taken at this site. Documenting photos are Roll 779968, frame 4.

This open adit had been secured by a wooden door, which is now open (Figure 3.7-2). Water is flowing from the adit at a rate of 2-3 gallons per minute. There is no sign of a dump, which was probably removed during construction of the Kings Pass Road. The adit represents the only remaining disturbed area.

3.7.4.2 Sample Locations

3.7.4.2.1 Soil Samples

No waste dump samples were collected at this site.

3.7.4.2.2 Water Samples

Sample B8159607 was collected from the adit water, which is draining out of a 2-inch-in-diameter PVC pipe.

<table>
<thead>
<tr>
<th>Sample No.</th>
<th>Location</th>
<th>Specific Conductivity (µS)</th>
<th>Temperature (°F)</th>
<th>pH</th>
<th>Flow (gpm)</th>
<th>Analyzed (Yes/No)</th>
</tr>
</thead>
<tbody>
<tr>
<td>B8159607</td>
<td>Tiger Mine adit</td>
<td>30</td>
<td>60</td>
<td>7.2</td>
<td>2-3</td>
<td>Yes</td>
</tr>
</tbody>
</table>

3.7.4.2.3 Analytical Results

Water Samples

In the dissolved metals screen, sample B8159607 equals or exceeds all standards for cadmium. It also exceeds the Aquatic Life Acute standard and is within the range of the values of the Secondary MCL for aluminum. In the total recoverable metals screen, cadmium exceeds the Aquatic Life Chronic standard. In the ICP Cold Vapor test, mercury exceeds the Aquatic Life Chronic standard.

3.7.5 Structures

There are no structures at this site.
3.7.6 Safety

The adit is along a well-traveled road and is accessible because of the open door on the portal. Caving conditions inside would be a potential safety hazard.
Figure 3.7-1. Topographic map of the Tiger Mine, Shoshone County, Idaho (U.S. Geological Survey Burke 7.5-minute topographic map).
Figure 3.7-2. Portal and open door at the Tiger Mine. The water flowing from the adit can be seen at the bottom of the photograph (Roll 779968, frame #4).
3.8 DAISY VOLUNTEER MINE (Site No. WL-45)

3.8.1 Site Location and Access (Figure 2.1-1)

The Daisy Volunteer Mine is located about ½ mile up Buckskin Gulch north of Murray in the SE1/4 of section 31, T. 50 N., R. 5 E., on the Murray 7.5-minute quadrangle (Figure 3.8-1). The mine is on the east side of the gulch where the road switches back to the southwest and is on private land.

3.8.2 Geologic Features (Figure 2.2-1)

The mine is in banded argillites of the lower Prichard Formation (Hosterman, 1956).

3.8.3 Site History

Minor placer production is credited to the property around 1906 or 1908 and between 1935 and 1940. Nothing is known about the adit or its development.

3.8.4 Environmental Conditions

3.8.4.1 Site Features

The site was visited by Falma Moye on July 18, 1996. No video was taken at this site. Documenting photo is Roll 095640, frame 5.

This prospect consists of an adit with a 3-foot by 4-foot opening that is barely discernable behind the downed trees and brushy vegetation that cover the small waste dump (Figure 3.8-2). There is minimal disturbance.

3.8.4.2 Sample Locations

3.8.4.2.1 Soil Samples

No waste dump samples were collected at this site.

3.8.4.2.2 Water Samples

No water samples were collected at this site.

3.8.5 Structures

There are no structures at this site.

3.8.6 Safety

The open adit is the only potential hazard at the mine.
Figure 3.8-1. Topographic map of the Daisy Volunteer Mine, Shoshone County, Idaho (U.S. Geological Survey Murray 7.5-minute topographic map).
Figure 3.8-2. Deadfall- and brush-covered adit at the Daisy Volunteer. The opening is below the end of the horizontal log in the right-center of the frame (Roll 095640, frame #5).
3.9 UNNAMED PROSPECT ON SILENT CREEK (Site No. K8229604)

3.9.1 Site Location and Access (Figure 2.1-1)

This prospect is located at the junction of Silent Creek and the East Fork of Eagle Creek in the NW¼ of the SE¼ of section 12, T. 50 N., R. 5 E., on the Murray 7.5-minute quadrangle (Figure 3.9-1). The road up the East Fork of Eagle Creek (Forest Service Road 152) is just below Adit No. 3. Ownership of the land at the prospect is uncertain. Several patented claims, probably placer claims, line the East Fork but the surrounding land is National Forest.

3.9.2 Geologic Features (Figure 2.2-1)

The mine is in banded argillite of the lower Prichard Formation (Hosterman, 1956).

3.9.3 Site History

Nothing is known about the history of this site.

3.9.4 Environmental Conditions

3.9.4.1 Site Features

This prospect was visited by John Kauffman on August 22, 1996. A video segment describing the property is on the Prichard-Eagle Creek Videotape, Secondary Sites (Tape 3, index 00:07:44-00:11:28). Documenting photos are Roll K2 (561251), frames 19-22.

There are three open, dry adits and a possible short, caved adit at this site. Two adits (No. 1 and No. 2) are on the same level. Adit No. 1 has a fair sized dump (40 feet long, 20 feet wide, 25 feet thick) with 4-inch-in-diameter trees growing on it. Adit No. 2, about 10 feet to the east of Adit No. 1, is partly open and has caved debris filling much of the portal. The dump at this adit, which also has small trees growing from it, is about the same size as the dump at Adit No. 1. West of Adit No. 1 is a shallow cut or possibly a short, caved adit. Adit No. 3 is open and is located 40-50 feet below Adits No. 1 and No. 2. A claim corner on a large tree on the east side of Adit No. 3 dump notes that this is the “Silent Claire” claim. A 4- to 5-foot-deep ditch extends westward from the Adit No. 3 dump for about 200 feet. The ditch may have been for stream diversion, for channeling adit water, or both.

3.9.4.2 Sample Locations

3.9.4.2.1 Soil Samples

No waste dump samples were collected at this site.

3.9.4.2.2 Water Samples

No water samples were collected at this site.
3.9.5 Structures
   There are no structures at this site.

3.9.6 Safety
   The open adits, although not readily visible, are near the road that follows the creek. Caving conditions are a potential hazard to anyone entering these adits.
Figure 3.9-1. Topographic map of Site No. K8229604, Shoshone County, Idaho (U.S. Geological Survey Murray 7.5-minute topographic map).
3.10 EAGLE CREEK PROSPECT (Site No. WL-17)

3.10.1 Site Location and Access (Figure 2.1-1)

This prospect is located high on the slope north of the East Fork of Eagle Creek in the SE¼ of section 18, T. 50 N., R. 5 E., on the Murray 7.5-minute quadrangle (Figure 3.10-1). Access from Forest Service Road 152 on the East Fork of Eagle Creek is by way of FS Road 3019 to the sharp switchback on the ridge between the East and West Forks of Eagle Creek. Just around the corner of the switchback, FS Road 3019C exits to the north and follows the ridge. A 4-wheel-drive road leaves FS Road 3019C near the south edge of section 18, swings east around the head of a steep gully, and terminates. The workings are several hundred feet below the road on the north side of the gully and must be reached on foot. This prospect is on Forest Service land.

3.10.2 Geologic Features (Figure 2.2-1)

The mine is in quartzite of the Revett Formation near the Murray Peak fault. The property is also near the axis of the Eagle Creek syncline (Hosterman, 1956).

3.10.3 Site History

   No information is available on the history of this site.

3.10.4 Environmental Conditions

3.10.4.1 Site Features

This property was visited by John Kauffman on August 16, 1996. No video was taken at this site. Documenting photos are Roll K1 (559694), frames #20-23.

There are two adits and dumps at the site. Adit No. 1 is a short, open adit about 15-20 feet in length. It is 5 feet high, 4 feet wide, and was driven on a bearing of N. 20° E. The dump is barely visible and is overgrown with trees up to two feet in diameter. Below this adit is an open slope with rock outcrops; the adit is located just above where the trees start to grow. The waste dump is very small and insignificant.

Adit No. 2 (Figure 3.10-2) is located about 200 feet downhill from Adit No. 1 and was driven into the cliff face along a bearing of N. 20° E. for about 12 feet. Beyond that, the adit turns to the north or northwest for an unknown distance. From the size of the dump, it probably does not go very far. It appears to follow a flat shear in the quartzite, which shows malachite staining and some vein quartz. The waste dump is about 12 feet long and 8 feet wide. It extends down the slope for about 20 feet, where it has mixed to some extent with talus (Figure 3.10-3). The only artifacts present are a plastic coffee cup and a few boards.

The total disturbed area covers less than 0.5 acre.
3.10.4.2 Sample Locations

3.10.4.2.1 Soil Samples
No waste dump samples were collected at this site.

3.10.4.2.2 Water Samples
No water samples were collected at this site.

3.10.5 Structures
There are no structures at this site.

3.10.6 Safety

The open adits are a potential hazard because of possible caving conditions. However, Adit No. 1 is very short and any hazard is minimal, and the rock at Adit No. 2 is competent and not prone to caving. Neither adit is easily accessible.
Figure 3.10-1. Topographic map of the Eagle Creek Prospect, Shoshone County, Idaho (U.S. Geological Survey Murray 7.5-minute topographic map).
Figure 3.10-2. Looking into open Adit No. 2 at the Eagle Creek Prospect. The horizontal shear along which the adit was driven can be seen on the right side of the opening (Roll 559694, frame #21).

Figure 3.10-3. Looking down the face of the small waste dump. The coarse waste rock debris forms a thin veneer on the slope that becomes mixed with talus from the rock outcrops around the adit (Roll 559694, frame #23).
3.11 LUCKY FOUR MINE (Site No. WL-122)

3.11.1 Site Location and Access (Figure 2.1-1)

The Lucky Four Mine is located about ¾ mile up the West Fork of Granite Gulch near the center of the SW¼ of section 15, T. 49 N., R. 5 E., on the Burke 7.5-minute quadrangle (Figure 3.11-1). An old road, now a 4-wheel-drive trail, branches from the Granite Gulch trail several hundred yards south of Prichard Creek. The workings are on the southeast side of the creek at the end of the old road, which has been washed out in places. This prospect is on Forest Service land.

3.11.2 Geologic Features (Figure 2.2-1)

The mine is on the contact between the banded argillite of the lower Prichard Formation and a monzonitic stock (Hosterman, 1956).

3.11.3 Site History

The property was worked between about 1909 and 1915 by the Lucky Four Mining Co.

3.11.4 Environmental Conditions

3.11.4.1 Site Features

The Lucky Four Mine was visited by Falma Moye on July 17, 1996. No video was taken at the site. Documenting photos are Roll 779968, frames 1-3.

There are two adits at the Lucky Four property, a caved upper adit (No. 1) and a lower adit (No. 2). Some debris, including a compressor tank (Figure 3.11-2), is on the No. 1 dump. A black plastic hose about 2 inches in diameter is coming out of the adit, but no water is draining from the hose. The lower (No. 2) adit is dry and partially caved. Part of the lower dump may have been cut by the creek. There is a campsite with a small table and a metal tank by the lower adit (Figure 3.11-3). Numerous large cedar trees are in the area. Below the campsite, on the upstream and west side of the creek, is what may be another collapsed adit and a small dump on which the road is built. Another collapsed adit may be about 75 feet south of the third adit. The disturbed area is less than 0.5 acre.

3.11.4.2 Sample Locations

3.11.4.2.1 Soil Samples

No waste dump samples were collected at this site.

3.11.4.2.2 Water Samples

No water samples were collected at this site.
3.11.5 Structures
There are no structures at this site.

3.11.6 Safety
The partially open Lucky Four No. 2 Adit is the only potential safety hazard at this site.
Figure 3.11-1. Topographic map of the Lucky Four Mine, Shoshone County, Idaho (U.S. Geological Survey Burke 7.5-minute topographic map).
Figure 3.11-2. Caved upper adit (No. 1) at the Lucky Four Mine. An old compressor tank is lying on the waste dump to the right of the adit (Roll 779968, frame #3).
Figure 3.11-3. Picnic area and metal tank on the dump of the lower adit (No. 2) at the Lucky Four Mine (Roll 779968, frame #1).
3.12 UNNAMED PROSPECT (Site No. WL-562)

3.12.1 Site Location and Access (Figure 2.1-1)

This prospect is located on a tributary of Tributary Creek in the SW¼, SE¼, section 13, and the NW¼ of the NE¼ of section 24, T. 50 N., R. 5 E., on the Murray 7.5-minute quadrangle (Figure 3.12-1). The workings are a little over 1 mile up Tributary Creek from the East Fork of Eagle Creek on the west side of Forest Service Road 152. The lower adit is a few hundred feet above the road, but it is very difficult to find due to heavy vegetation. The prospect is on Forest Service land.

These adits were originally identified as the Old Times (Old Timer) Group, based on Chesson and others' (1984) map, and are identified as the “Old Times Group” on the videotape. However, information in the Idaho Geological Survey's mineral property files indicates that the Old Timer is on the northeast side of the creek, adjacent to the United States Silver-Lead property. The name of this prospect on the southwest side of Tributary Creek is not known.

3.12.2 Geologic Features (Figure 2.2-1)

The mine is in banded argillite of the lower Prichard Formation (Hosterman, 1956).

3.12.3 Site History

Nothing is known about the history of this prospect.

3.12.4 Environmental Conditions

3.12.4.1 Site Features

The property was visited by John Kauffman on August 28, 1996. A video segment describing the property is on the Prichard-Eagle Creek Videotape, Secondary Sites (Tape 3, index 00:11:30-00:16:30). No photos were taken at this site.

There are two adits on a northeast-facing slope at elevations of about 4,020 feet and 4,200 feet, respectively. Adit No. 1 is the lower one, which is on the creek, and Adit No. 2 is the upper.

Although partially open, Adit No. 1 is nearly caved and may be completely caved further inside. Rotted timbers, visible at the portal, mark where the adit goes into the hillside at creek level. It is difficult to tell if any water is actually coming from the adit because the creek crosses the opening and has effectively removed most of the dump. What remains of the dump measures about 5 feet long, 5 feet wide and 3 feet thick.

Adit No. 2 was driven into the hillside about 175 feet above creek level. This adit, which is dry, is to the southeast of Adit No. 1. A small opening, measuring about 2.5 feet by 2.5 feet, is at the
top of a pile of sloughed debris. A small dump (8 feet long, 5 feet wide, and 20 feet thick on the nose) indicates that the adit is not long. The area is heavily covered with underbrush.

The total disturbed area is less than 0.25 acre.

3.12.4.2 Sample Locations

3.2.4.2.1 Soil Samples
No waste dump samples were collected at this site.

3.2.4.2.2 Water Samples
No water samples were collected at this site.

3.12.5 Structures

The remains of a totally collapsed cabin were found near the creek to the left of the lower adit.

3.12.6 Safety

Although Adit No. 1 has a small opening, it appears to be nearly caved inside and would be difficult to enter. The crawl-space opening at Adit No. 2, however, could be entered or could be enlarged for easier access. The possibility of caving conditions would be a potential hazard to anyone entering the adit. However, the adits are well off the road and difficult to locate.
Figure 3.12-1. Topographic map of the unnamed prospect WL-562, Shoshone County, Idaho (U.S. Geological Survey Murray 7.5-minute topographic map).
3.13 ST. PETER MINE (Site No. WL-112)

3.13.1 Site Location and Access (Figure 2.1-1)

The St. Peter Mine is located in Paragon Gulch on the east fork of the headwaters of the gulch, in the SE\textsuperscript{1/4} of section 7, T. 49 N., R. 6 E., on the Thompson Pass 7.5-minute quadrangle (Figure 3.13-1). A trail goes past the turnoff to the upper Paragon workings, crosses the creek, and terminates below the St. Peter workings, which are about 200 feet above the trail end. There is an old collapsed cabin at the end of the trail. The mine is on Forest Service Land.

3.13.2 Geologic Features (Figure 2.2-1)

The mine is in the argillite and argillaceous quartzite of the upper Prichard Formation (Hosterman, 1956).

3.13.3 Site History

The history of this property is discussed in Mitchell (1998). Ore was produced from the property in 1954, but the claims were staked over patented ground that was part of the Paragon Mine.

3.13.4 Environmental Conditions

3.13.4.1 Site Features

The site was visited by Earl Bennett on July 26, 1996. No video was taken at this site. Documenting photos are Roll 560564, frames 16-17.

The mine consists of a single adit on a steep, open hillside. The adit is at the end of an L-shaped trench cut into the rock slope, and both legs of the “L” are about 10 feet long (Figure 3.13-2). The trench exposes a shear zone in the Prichard Formation. The adit is partially open (Figure 3.13-3), but probably caved inside. The dump measures about 50 feet across. About 100 feet west of the adit are some prospect pits, just within the trees at the west edge of the open slope. The disturbed area is less than 0.25 acre.

3.13.4.2 Sample Locations

3.13.4.2.1 Soil Samples

No waste dump samples were collected at this site.

3.13.4.2.2 Water Samples

No water samples were collected at this site.
3.13.5 Structures

A collapsed cabin is at the end of the trail leading to the St. Peter prospect.

3.13.6 Safety

The adit opening is large enough to allow entry, although the workings may be caved inside. If the workings are open, caving conditions would be a potential hazard.
Figure 3.13-1. Topographic map of the St. Peter Mine, Shoshone County, Idaho (U.S. Geological Survey Thompson Pass 7.5-minute topographic map).
Figure 3.13-2. Part of the L-shaped trench cut into rock at the St. Peter Mine (Roll 560564, frame #16).
Figure 3.13-3. Sloughed rock at the head of the trench. The small opening into the adit is at the top of the debris (Roll 560564, frame #17).
3.14 UNNAMED PROSPECT (Site No. WL-15)

3.14.1 Site Location and Access (Figure 2.1-1)

This prospect is on the south side of the East Fork of Eagle Creek directly across the creek from the gravel pit between Cabin Creek and Falls Creek. The adit is in the NW¼ of the SE¼ of section 16, T. 50 N., R. 5 E., on the Murray 7.5-minute quadrangle map (Figure 3.14-1), and its location is accurately noted on the topographic map. The prospect, which can be reached on foot from the East Fork road by crossing the East Fork of Eagle Creek, is on Forest Service land.

3.14.2 Geologic Features (Figure 2.2-1)

The mine is in argillite and argillaceous quartzite of the upper Prichard Formation (Hosterman, 1956).

3.14.3 Site History

Nothing is known about the history of this site.

3.14.4 Environmental Conditions

3.14.4.1 Site Features

This site was visited by Earl Bennett on July 23, 1996. No video was taken at this site. Documenting photo is Roll 560565, frame 15.

The open, dry adit is located on the south bank of the East Fork of Eagle Creek along a shear zone. The dump from the adit has been washed away by the creek. The adit represents the only disturbed area at the site and is less than 0.1 acre.

3.14.4.2 Sample Locations

3.14.4.2.1 Soil Samples

No waste dump samples were collected at this site.

3.14.4.2.2 Water Samples

No water samples were collected at this site.

3.14.5 Structures

There are no structures at this site.

3.14.6 Safety

Although the opening into the adit is narrow, it could be entered. Caving or collapse poses a potential hazard.
Figure 3.14-1. Topographic map of the unnamed prospect WL-15, Shoshone County, Idaho (U.S. Geological Survey Murray 7.5-minute topographic map).
3.15 C&R MINE (Site No. WL-171)

3.15.1 Site Location and Access (Figure 2.1-1)

The C&R Mine is located north of Tamarack Saddle on a west-branching tributary of Granite Gulch Creek in the NE¼ of section 33, T.49 N., R. 5 E., on the Burke 7.5-minute quadrangle (Figure 3.15-1). Access from Dobson Pass is northeast to Tamarack Saddle, then on foot to the northeast for several hundred yards down a logging road to the prospect. The logging road was blocked by numerous downed trees at the time the site was visited. The prospect is either on patented claims or BLM land, with Forest Service land further down Granite Gulch to the north.

3.15.2 Geologic Features (Figure 2.2-1)

The mine is near the contact between the quartzite and argillaceous quartzite of the Burke Formation and granitic intrusive rocks (Hosterman, 1956).

3.15.3 Site History

Five of the claims belonging to the C&R property were patented before 1913. In 1926, the mine had three tunnels and about 7,600 feet of workings, including a 100-foot shaft. Most of the significant work at the property was apparently done before 1930. Around 1950, the management of the C. & R. Mining Company was taken over by Henry L. Day and other people associated with Day Mines, Inc. The claims were later sold to Day Mines, and C. & R. Mining Co. went out of business.

3.15.4 Environmental Conditions

3.15.4.1 Site Features

The site was visited by John Kauffman on August 15, 1996. No video was taken at this site. Documenting photos are Roll K1 (559694), frames 1-5.

The property consists of two adits. One has a moderate-sized waste dump, and the other has a small dump.

Adit No. 1 is the main adit. It has a moderate-size dump and a minor seep. The portal is mostly caved but a small opening (1 foot by 2 feet) is present. The timbers are barely visible (Figure 3.15-2). The adit may be caved behind this opening. The dump measures 40 feet long, 30 feet wide, and 100 feet thick. It is covered with sparse vegetation consisting of weeds and a few trees up to 4 inches in diameter (Figures 3.15-3 and 3.15-4). There is minor iron staining on some of the rocks. A few wooden boards were noted; otherwise no artifacts were present. The site is heavily overgrown, except for the dump.
Adit No. 2 is approximately 320 feet south of Adit No. 1 and is slightly higher in elevation. It is caved, dry, and has a small dump measuring about 5 feet long, 10 feet wide, and 20 feet down the face. A narrow, heavily overgrown trail connects the adits.

The disturbed area at this site is less than 0.5 acre.

3.15.4.2 Sample Locations

3.15.4.2.1 Soil Samples

No dump samples were collected at this site.

3.15.4.2.2 Water Samples

Sample K8159601 was collected from the water draining from Adit No. 1.

<table>
<thead>
<tr>
<th>Sample No.</th>
<th>Location</th>
<th>Specific Conductivity (µS)</th>
<th>Temperature (° F)</th>
<th>pH</th>
<th>Flow (gpm)</th>
<th>Analyzed (Yes/No)</th>
</tr>
</thead>
<tbody>
<tr>
<td>K8159601</td>
<td>C &amp; R Adit No. 1</td>
<td>27</td>
<td>44</td>
<td>8.0</td>
<td>2</td>
<td>Yes</td>
</tr>
</tbody>
</table>

3.15.4.2.3 Analytical Results

Water Samples

In the dissolved metals screen, sample K8159601 exceeds all standards for cadmium and both Aquatic Life standards for copper. In the total recoverable metals screen, the sample is below the specified standards for all metals.

3.15.5 Structures

There are no structures at this site.

3.15.6 Safety

The small opening at Adit No. 1 could easily be enlarged to permit access, assuming the remainder of the adit is not caved. No other potential hazards were found.
Figure 3.15-1. Topographic map of the C&R Prospect, Shoshone County, Idaho (U.S. Geological Survey Burke 7.5-minute topographic map).
Figure 3.15-2. Looking east at the nearly caved C&R Adit No. 1. The opening is just below the center of the frame at the end of the two parallel dead twigs. Portal timbers are barely visible in the rubble (Roll 559694, frame #4).

Figure 3.15-3. Looking west across the top of the waste dump at Adit No. 1 of the C&R Mine. The northeast slope of Sunset Peak is visible in the upper left of the frame (Roll 559694, frame #2).
Figure 3.15-4. Looking west down the face of the waste dump at Adit No. 1 of the C&R Mine. The berm of the access road from Tamarack Saddle can be seen at the base of the dump (Roll 559694, frame #5).
3.16 SAMSON MINE (Site No. WL-6)

3.16.1 Site Location and Access (Figure 2.1-1)

The Samson Mine is located about ¼ mile up Casper Creek from the East Fork of Eagle Creek in the SW¼ of the NW¼ of section 12, T. 50 N., R. 5 E., on the Murray 7.5-minute quadrangle (Figure 3.16-1). The mine is on Forest Service land.

3.16.2 Geologic Features (Figure 2.2-1)

The mine is in banded argillite of the lower Prichard Formation (Hosterman, 1956).

3.16.3 Site History

By 1913, the Samson Mining & Development Company, Ltd., had developed 1,200 feet of workings on seven claims. In 1924, the mine had two tunnels and two shafts, although there was no apparent net increase in the total workings. Development continued until 1930, when the mine had one tunnel, a 100-foot vertical shaft, a 40-foot inclined shaft, and 1,500 feet of workings. The second tunnel was apparently reopened the following year (or a new tunnel started), but little was done at the mine after that.

3.16.4 Environmental Conditions

3.16.4.1 Site Features

This mine was visited by John Kauffman on August 22, 1996. A video segment describing the prospect is on the Prichard-Eagle Creek Videotape, Secondary Sites (Tape 3, index 00:16:35-00:21:25). Documenting photos are Roll K2 (561251), frames 9-16.

There are possibly four adits at the Samson Mine. Adit No. 1 (Figure 3.16-2) is open but secured with an iron gate. Water flowing from the adit pools on the waste dump. There was no seepage found at the base of the waste dump, but it is possible that the adit water may eventually reach the creek. The dump measures 190 feet long, 45 feet wide, and 20 feet thick. Miscellaneous boards, plywood, nails, and other pieces scrap metal are scattered around the site. Trees about 1 foot in diameter are growing on the toe-slope of the dump.

Adit No. 2 is 30 feet to the north of Adit No. 1. It is partially open and may be a decline. A possible collapsed adit (No. 3), which is about 75 feet north of Adit No. 2, is indicated by a small dump and a depression angling up the slope. This dump is about 45 feet long, 30 feet wide, and 5 feet thick. A fourth adit, which is collapsed, was found about 75-100 feet up the slope from Adits No. 1 and No. 2. The dump is relatively small (about 10 feet long, 10 feet wide, and 15 feet thick) and has numerous small trees growing on it. Some of the trees are up to 6 inches in diameter.
The adits were all driven on a bearing of N. 65° W. The disturbed area is about 0.5 acre.

3.16.4.2 Sample Locations

3.16.4.2.1 Soil Samples
No dump samples were collected at this site.

3.16.4.2.2 Water Samples

Samples were taken of the water from Adit No. 1 (K8229601), upstream on Casper Creek (K8229602), and downstream on Casper Creek (K8229603). The upstream sample was taken about 150 feet above the waste dump, and the downstream sample was collected about 150 feet downstream from the dump.

<table>
<thead>
<tr>
<th>Sample No.</th>
<th>Location</th>
<th>Specific Conductivity (μS)</th>
<th>Temperature (°F)</th>
<th>pH</th>
<th>Flow (gpm)</th>
<th>Analyzed (Yes/No)</th>
</tr>
</thead>
<tbody>
<tr>
<td>K8229601</td>
<td>Samson Mine, Adit No. 1</td>
<td>55</td>
<td>46</td>
<td>8.0</td>
<td>1-2</td>
<td>Yes</td>
</tr>
<tr>
<td>K8229602</td>
<td>upstream, Casper Creek</td>
<td>19</td>
<td>50</td>
<td>7.3</td>
<td>4 feet wide, &lt;1 feet deep</td>
<td>No</td>
</tr>
<tr>
<td>K8229603</td>
<td>downstream, Casper Creek</td>
<td>18</td>
<td>51</td>
<td>7.7</td>
<td>---</td>
<td>No</td>
</tr>
</tbody>
</table>

3.16.4.2.3 Analytical Results

Water Samples

Sample K8229601 equals or exceeds all standards for cadmium in the total recoverable metals screen. The dissolved metals screen was not run for this sample. Neither the upstream sample nor the downstream sample was analyzed.

3.16.5 Structures

A small metal-sided storage shed, about 6 feet by 8 feet, is on the front edge of the waste dump (Figure 3.16-3).

3.16.6 Safety

Although Adit No. 1 appears to be open inside, the locked gate is well built and reasonably secure. Partially open Adit No. 2 could be entered and may pose a hazard, particularly if it is a decline.
Figure 3.16-1. Topographic map of the Samson Mine, Shoshone County, Idaho (U.S. Geological Survey Murray 7.5-minute topographic map).
Figure 3.16-2. Portal of the Samson No. 1 adit, looking west. Although it does not show in this photograph, the adit has a locked iron gate at the portal. Water flowing out of the adit turns to the south (left) and pools near the log lying on the dump. The dark vertical line to the left is the edge of the frame; it was miscut during processing (Roll 561251, frame #11).

Figure 3.16-3. Small metal shed on the front edge of the waste dump, looking south. The adit is just to the right of this frame (Roll 561251, frame #9).
3.17 GOLDEN EAGLE NO. 3 (Site No. K8169601)

3.17.1 Site Location and Access (Figure 2.1-1)

This prospect is located on the steep east slope near the head of Pennsylvania Gulch, probably just south of the center of section 10, T. 50 N., R. 5 E., on the Murray 7.5-minute quadrangle (Figure 3.17-1). The exact map location is somewhat uncertain. Access is northward on Forest Service Road 3019 from the East Fork of Eagle Creek road to FS Road 3017, eastward on FS 3017 to FS Road 3017A on the east side of Pennsylvania Gulch, and then northward to where the road loops around the ridge between Pennsylvania Gulch and Goat Gulch. Where FS Road 3017A heads north, it flattens out briefly, and several brushy roads and trails turn off to the left. The upper trail goes up the west side of the nose of the ridge. The prospect is about 50 feet below the end of this trail, probably about ¼ mile from FS Road 3017A. The site is on Forest Service land.

3.17.2 Geologic Features (Figure 2.2-1)

The mine is probably in the argillite and argillaceous quartzite of the upper Prichard Formation (Hosterman, 1956).

3.17.3 Site History

Nothing is known of the history of this site.

3.17.4 Environmental Conditions

3.17.4.1 Site Features

This prospect was visited by John Kauffman on August 16, 1996. Documenting photos are Roll K1 (559694), frame 27, and Roll K2 (561251), frames 1-2.

The prospect consists of a small pit and an adit. The pit is at the end of the access trail. The open, dry adit (Figure 3.17-2) is about 50 feet down the slope from the end of the trail. An old metal door outside the adit was probably used to gate the opening. The adit appears to be no more than 30 feet in length. The waste dump is small and forms a thin veneer on the slope that extends down at least 60 feet (Figure 3.17-3), although the maximum thickness on the slope is no more than 5 feet. The top of the dump is 20 feet long and 5 feet wide. A claim notice on a tree immediately south of the dump records this site as the Golden Eagle #3 located by Billie Jones, 120 Queen St., Wallace, ID, May 20, 1968. The disturbed area is about 0.1 acre.

3.17.4.2 Sample Locations

3.17.4.2.1 Soil Samples

No waste dump samples were collected at this site.
3.17.4.2.2 Water Samples
No water samples were collected at this site.

3.17.5 Structures
There are no structures at this site.

3.17.6 Safety

Although the adit is open, it is short and the rock is reasonably competent and not prone to caving. In addition, the site is not easy to reach and, therefore, the adit should not be a significant hazard.
Figure 3.17-1. Topographic map of the Golden Eagle #3 (Site No. K8169601), Shoshone County, Idaho (U.S. Geological Survey Murray 7.5-minute topographic map).
Figure 3.17-2. Open adit at the Golden Eagle #3 (Site No. K8169601), looking east. A metal door, propped against the right side of the opening, probably was used to close off the adit (Roll 559694, frame #27).
Figure 3.17-3. Looking southwest at the waste dump at the Golden Eagle #3 (Site No. K8169601). The dump material forms a thin veneer that extends down the slope for some distance (Roll 561251, frame #1).
3.18 BUCKEYE BOY MINE (Site No. WL-48)
   Alternative name—Buckeye.

3.18.1 Site Location and Access (Figure 2.1-1)

The Buckeye Boy Mine is located about one mile from the mouth of Dream Gulch in the SW¼ of section 31, T. 50 N., R. 5 E., on the Murray 7.5-quadrangle (Figure 3.18-1). The adits and pits are on the west side of the road. Access from Forest Highway 9 (Prichard Creek Road) is along Dream Gulch. The mine is on patented claims.

3.18.2 Geologic Features (Figure 2.2-1)

Shenon (1938, p. 38) notes:
   Like most of the other gold deposits of the Murray district, the Buckeye Boy vein lies approximately along the bedding of thinly laminated argillite of the Prichard formation. In the No. 3 (lower) tunnel, which was being cleaned out in 1935, the strike of the argillite was N. 20° to 30° E., and the dip was about 15° N.W. A few feet above this level, ore was mined from a flat stope. Several faults are found on the No. 3 level; one, 245 feet from the portal, which strikes N. 40° W. and dips 65° S.W., is marked by 6 inches of dark gray gouge. In the upper tunnel, about 240 feet vertically above No. 3, another flat stope was mined, and about 6 inches of layered quartz is still exposed in one end of the stope. It strikes N. 20° E. and dips about 5° N. This vein appears to be terminated on the north by a steeply dipping east-west fault.

3.18.3 Site History

According to Shenon (1938, p. 37-38):
   The Buckeye Boy mine in Dream Gulch, about a mile from its mouth, was one of the early locations in the Murray district. Several relatively short tunnels develop it, and two were open in 1935.

   The Buckeye Boy mine appears to have been worked first in 1885 [Ransome and Calkins, 1908, pp. 79, 147] and thereafter for many years by Adam Aulbach. It is now owned by Mrs. David Sellers [Ruth Aulbach Sellers] of Murray, but in 1935 it was being operated by Sigmund Thorkelson.

In 1923, the Buckeye Boy group had eight tunnels and two shafts, for a total of about 3,000 feet of workings. The property had a 2-stamp mill equipped with amalgamating plates, but it had not been operated in twenty years. By 1928, there was a total of 3,390 feet of workings on the property. Although the mine was leased to the Prichard Mining & Leasing Company in 1934, this company did little work (Idaho Geological Survey mineral property files).
3.18.4 Environmental Conditions

3.18.4.1 Site Features

The Buckeye Boy was visited by Earl Bennett on August 23, 1996. A video segment describing the property is on the Prichard-Eagle Creek Videotape, Secondary Sites (Tape 3, index 00:21:28-00:27:40). Documenting photos are Roll 561250, frames 1-4.

The mine consists of a series of short adits and pits (Figures 3.18-2 and 3.18-3) along a northeast-trending trench just off the Dream Gulch-Buckskin Gulch Road west of Murray. The northernmost adits and pits have a dump in front of them. A series of lower pits are located south of and below this dump. The upper dump has been bulldozed and disrupted. An iron-stained seep (Figure 3.18-4) oozes from the upper dump and then flows down the road between the upper dump and the lower pits. The total disturbed area is less than 0.75 acre.

3.18.4.2 Sample Locations

3.18.4.2.1 Soil Samples

No waste dump samples were collected at this site.

3.18.4.2.2 Water Samples

Water sample B8239601 was collected from the seep in the road between the upper dump and the lower pits. A piece of metal rail is near the sampling site.

<table>
<thead>
<tr>
<th>Sample No.</th>
<th>Location</th>
<th>Specific Conductivity (µS)</th>
<th>Temperature (°F)</th>
<th>pH</th>
<th>Flow (gpm)</th>
<th>Analyzed (Yes/No)</th>
</tr>
</thead>
<tbody>
<tr>
<td>B8239601</td>
<td>Buckeye Boy adit</td>
<td>110</td>
<td>50</td>
<td>6.7</td>
<td>seep</td>
<td>Yes</td>
</tr>
</tbody>
</table>

3.18.4.2.3 Analytical Results

Water Samples

In the dissolved metals screen, sample B8239601 exceeds the Aquatic Life Chronic standard, equals the Primary MCL, and is within the range of the values for the Aquatic Life Acute standard for cadmium. The sample also exceeds the Secondary MCL and the Aquatic Life Acute standard for iron, exceeds the Secondary MCL for manganese, and exceeds the Aquatic Life Chronic standard and is within the range of the Secondary MCL for aluminum. In the total recoverable metals screen, the sample exceeds the Aquatic Life Chronic and is within the range of values for the Aquatic Life Acute standards for cadmium, exceeds the Secondary MCL and Aquatic Life Acute standard for iron, and exceeds the Secondary MCL for manganese.
3.18.5 Structures
   There are no structures at this site.

3.18.6 Safety

   The short, open adits pose only a minor safety hazard.
Figure 3.18-1. Topographic map of the Buckeye Boy Mine, Shoshone County, Idaho (U.S. Geological Survey Murray 7.5-minute topographic map).
Figure 3.18-2. View along part of the prospect trench, with two of the short adits on the left side of the trench (Roll 561250, frame #1).

Figure 3.18-3. One of the short, open adits at the Buckeye Boy (Roll 561250, frame #2).
Figure 3.18-4. Iron-stained seep in the Buckeye Boy trench (Roll 561250, frame #3).
3.19 HAWKINS MINE (Site No. WL-59)

3.19.1 Site Location and Access (Figure 2.1-1)

This prospect is located just south of the Kings Pass Road bridge across Prichard Creek south of Murray, in the NW¼ of section 6, T. 49 N., R. 5 E., on the Murray 7.5-minute quadrangle (Figure 3.19-1). The adit is beside the road. This property is either on patented claims or BLM land.

3.19.2 Geologic Features (Figure 2.2-1)

The mine is in banded argillite of the lower Prichard Formation (Hosterman, 1956).

3.19.3 Site History

No information is available on the history of this site.

3.19.4 Environmental Conditions

3.19.4.1 Site Features

This site was visited by Earl Bennett on August 27, 1996. No video was taken at this site. Documenting photo is Roll 214578, frame 11.

The adit at this site is caved. There is a water-collecting tank in front of the adit, and water is flowing from a PVC pipe beside the tank (Figure 3.19-2). There is essentially no waste dump remaining at this site. The disturbed area is minimal and insignificant.

3.19.4.2 Sample Locations

3.19.4.2.1 Soil Samples

No dump samples were collected at this site.

3.19.4.2.2 Water Samples

Sample B8279603 was collected from the water discharging from the PVC pipe.

<table>
<thead>
<tr>
<th>Sample No.</th>
<th>Location</th>
<th>Specific Conductivity (µS)</th>
<th>Temperature (°F)</th>
<th>pH</th>
<th>Flow (gpm)</th>
<th>Analyzed (Yes/No)</th>
</tr>
</thead>
<tbody>
<tr>
<td>B8279603</td>
<td>Hawkins Mine adit</td>
<td>40</td>
<td>50</td>
<td>6.3</td>
<td>15</td>
<td>Yes</td>
</tr>
</tbody>
</table>
3.19.4.2.3 Analytical Results

Water Samples

In the dissolved metals screen, sample B8279603 was below all of the standards. In the total recoverable metals screen, the sample exceeds the Aquatic Life Chronic standard for cadmium.

3.19.5 Structures

There are no structures at this site.

3.19.6 Safety

No safety hazards were identified at this site.
Figure 3.19-1. Topographic map of the Hawkins Mine, Shoshone County, Idaho (U.S. Geological Survey Murray 7.5-minute topographic map).
Figure 3.19-2. Collecting tank and the trickle of water flowing out of the PVC pipe to the right of the tank at the caved adit of the Hawkins Mine (Roll 214578, frame #11).
3.20 KELLY PROSPECT (Site No. WL-2)
Alternative name—Frontier Silver, Site No. B7179601.

3.20.1 Site Location and Access (Figure 2.1-1)

The Kelly Prospect is on Cottonwood Creek about two miles from the confluence with the West Fork of Eagle Creek in the SE¼ of the SE¼ of section 3, T. 50 N., R. 5 E., on the Murray 7.5-minute quadrangle (Figure 3.20-1). The prospect is about ¾ mile east of the Crystal Lead Mine. There used to be a road from the West Fork of Eagle Creek to here, but it has been reclaimed. This road went by, and was the main access to, the Crystal Lead. The prospect is on Forest Service land.

3.20.2 Geologic Features (Figure 2.2-1)

The Kelly Prospect is near the contact between the quartzite and argillaceous quartzite of the Burke Formation and the argillite and argillaceous quartzite of the upper Prichard Formation (Hosterman, 1956).

3.20.3 Site History

The Kelly Group was staked by Frank A. Morbeck in September 1968. Two months later, Morbeck sold the claims to Frontier Silver Mines Corp. This company tried to finance development work in the early 1970s. At that time, there was one 800-foot caved adit on the property (Idaho Geological Survey mineral property files).

3.20.4 Environmental Conditions

3.20.4.1 Site Features

The Kelly Prospect was visited by Earl Bennett on July 17, 1996, and again on August 1, 1996, to sample the property, and by John Kauffman on August 21, 1996. Video segments were taken by Bennett and by Kauffman, and are on the Prichard-Eagle Videotape, Secondary Sites (Tape 3, index 00:27:42-00:31:28). Documenting photos are Roll 558550, frames 10-12, and Roll K2 (561251), frames 5-7.

The mine is shown as an adit symbol on the Murray 7.5-minute quadrangle. The adit is caved and has a seep estimated at about 2 gallons per minute (Figure 3.20-2). There is algae and grass growing in the stream of water on the dump. The water flows over the edge of the dump and into Cottonwood Creek. The dump (Figure 3.20-3) measures an estimated 60 feet long, 20 feet wide, and 5 feet thick, but has been disrupted by road construction.

At this property, the road along Cottonwood Creek is again driveable and passes through a replanted burn. When the road was constructed to the burn, the dump at the mine was mostly
removed. The miner objected that his access was destroyed, so the Forest Service installed a large culvert (about 4 feet in diameter) to channel Cottonwood Creek under a new crossing to the adit. The fill for making this road came in part from the old dump. It is only about 200 feet from the road (on the north side of the creek) to the adit.

3.20.4.2 Sample Locations

3.20.4.2.1 Soil Samples
No waste dump samples were collected.

3.20.4.2.2 Water Samples

Water samples were collected from the seep at the caved adit (B8019609 and K8219601), about 50 feet upstream from the dump (K8219602), just upstream of the seep (B8019610), and downstream from the adit and below the culvert (B8019611 and K8219603).

<table>
<thead>
<tr>
<th>Sample No.</th>
<th>Location</th>
<th>Specific Conductivity (µS)</th>
<th>Temperature (° F)</th>
<th>pH</th>
<th>Flow (gpm)</th>
<th>Analyzed (Yes/No)</th>
</tr>
</thead>
<tbody>
<tr>
<td>B8019609</td>
<td>Kelly Prospect, adit</td>
<td>30</td>
<td>---</td>
<td>6.4</td>
<td>&lt;2</td>
<td>Yes</td>
</tr>
<tr>
<td>B8019610</td>
<td>upstream, Cottonwood Creek</td>
<td>10</td>
<td>---</td>
<td>5.9</td>
<td>---</td>
<td>Yes</td>
</tr>
<tr>
<td>B8019611</td>
<td>downstream, Cottonwood Creek</td>
<td>20</td>
<td>---</td>
<td>5.7</td>
<td>---</td>
<td>Yes</td>
</tr>
<tr>
<td>K8219601</td>
<td>Kelly Prospect, adit</td>
<td>70</td>
<td>46</td>
<td>7.4</td>
<td>1-2</td>
<td>Yes</td>
</tr>
<tr>
<td>K8219602</td>
<td>upstream, Cottonwood Creek</td>
<td>90</td>
<td>53</td>
<td>7.4</td>
<td>3-5 feet wide, 0.5 feet deep</td>
<td>No</td>
</tr>
<tr>
<td>K8219603</td>
<td>downstream, Cottonwood Creek</td>
<td>80</td>
<td>52</td>
<td>7.5</td>
<td>---</td>
<td>No</td>
</tr>
</tbody>
</table>

3.20.4.2.3 Analytical Results

Water Samples

Sample B8019609 is below all standards in both the dissolved metals and the total recoverable metals screens. Sample B8019610 is below all standards in the total recoverable metals screen; the dissolved metals screen was not run. Sample B8019611 is below all standards in the dissolved metals screen but exceeds the Secondary MCL for iron in the total recoverable metals screen. Sample K8219601 exceeds both Aquatic Life standards for copper, exceeds the Primary MCL.
and the Aquatic Life Chronic standard for cadmium, and is within the range of the values for the Aquatic Life Acute standard for cadmium in the total recoverable metals screen. The sample was below all the standards in the dissolved metal screen. Samples K8219602 and K8219603 were not analyzed.

3.20.5 Structures
There are no structures at this site.

3.20.6 Safety
There are no safety hazards at this site.
Figure 3.20-1. Topographic map of the Kelly Prospect, Shoshone County, Idaho (U.S. Geological Survey Murray 7.5-minute topographic map).
Figure 3.20-2. Caved adit and water seep at the Kelly Prospect, looking south. The open slope of the replanted burn can be seen above the adit (Roll 558550, frame #10).
Figure 3.20-3. Looking west across the remains of the dump. The adit seep is to the lower right of the frame (Roll 558550, frame #11).
3.21 ALBARTA MINE (Site No. WL-38)

3.21.1 Site Location and Access (Figure 2.1-1)

The Alberta Mine is located on the north side of the Prichard Creek Road at the junction of Eagle Creek and Prichard Creek in the SW¼ of the SW¼ of section 26, T. 50 N., R. 4 E., on the Prichard 7.5-minute quadrangle (Figure 3.21-1). The property is on Forest Service-administered land.

3.21.2 Geologic Features (Figure 2.2-1)

The mine is in quartzite and argillaceous quartzite of the Burke Formation (Hosterman, 1956).

3.21.3 Site History

No information is available on the history of this site.

3.21.4 Environmental Conditions

3.21.4.1 Site Features

The site was visited by Falma Moye on July 18, 1996. No video was taken at this site. Documenting photo is Roll 095640, frame 13.

The site of the adit shown on the topographic map is a gully full of alder trees. There appears to be a manmade excavation, but no adit is evident in the gully. There is an adit higher up near the ridge on the nose of the hill. The disturbed area is minimal.

3.21.4.2 Sample Locations

3.21.4.2.1 Soil Samples

No waste dump samples were collected at this site.

3.21.4.2.2 Water Samples

No water samples were collected at this site.

3.21.5 Structures

There are no structures at this site.

3.21.6 Safety

There are no safety hazards at this site.
Figure 3.21-1. Topographic map of the Alberta Prospect, Shoshone County, Idaho (U.S. Geological Survey Prichard 7.5-minute topographic map).
3.22 BADGER MINE (Site No. WL-56)

3.22.1 Site Location and Access (Figure 2.1-1)

The Badger Mine is located about ¼ mile north of Murray between Buckskin Gulch and Alder Gulch. The mine is in the NE corner of section 6, T. 49 N., R. 5 E., on the Murray 7.5-minute quadrangle (Figure 3.22-1). Access is by going north up the Buckskin Gulch road about ¼ mile, then taking a minor access road to the southeast and around the nose of the ridge. This access road is just above the mine. The Badger appears to be on patented claims with some Forest Service land in the vicinity.

3.22.2 Geologic Features (Figure 2.2-1)

The mine is in banded argillite of the lower Prichard Formation (Hosterman, 1956).

3.22.3 Site History

A little placer gold was recovered from the property in 1939. Nothing else is known about the history of the mine.

3.22.4 Environmental Conditions

3.22.4.1 Site Features

This site was visited by Falma Moye on July 18, 1996. No video was taken at this site. Documenting photo is Roll 095640, frame 4.

The Badger consists of a dry, caved adit (Figure 3:22-2) and a small waste dump. The disturbed area covers less than 0.1 acre.

3.22.4.2 Sample Locations

3.22.4.2.1 Soil Samples

No waste dump samples were collected at this site.

3.22.4.2.2 Water Samples

No water samples were collected at this site.

3.22.5 Structures

There are no structures at this site.

3.22.6 Safety

It is possible that the portal area could be cleaned out and the adit opened to allow entry. However, the adit is probably very short and should not be a safety hazard, even if opened.
Figure 3.22-1. Topographic map of the Badger Mine, Shoshone County, Idaho (U.S. Geological Survey Murray 7.5-minute topographic map).
Figure 3.22-2. Collapsed adit at the Badger Mine. The adit is behind the pile of rock rubble at the center of the frame (Roll 095640, frame #4).
3.23 CHESTER CONSOLIDATED MINE (Site No. WL-70)
Alternative name—Dew Drop, Site No. B8279602.

3.23.1 Site Location and Access (Figure 2.1-1)

The Chester Consolidated Mine is located about ¼ mile up Wesp Gulch along the east section line of section 5, T. 49 N., R. 5 E., on the Burke 7.5-quadrangle (Figure 3.23-1). A short spur road from the road to the Pontiac Mine goes east and across the creek about ¼ mile above the mouth of the gulch. The site is on patented land surrounded by BLM land.

3.23.2 Geologic Features (Figure 2.2-1)

According to Shenon (1938, p. 38):

The ore in the east tunnel came from a small but rich bedding vein in argillite of the Prichard formation. The vein strikes N. 30° E. and dips 12° NW. Near the edges of the stope the quartz is massive and white, and contains many inclusions of argillite. No ore was seen in the west tunnel, but several faults are exposed in it. At 180 feet from the portal, a wide fault zone strikes N. 50° W. and dips 30° to 40° S.W. East of the fault the beds are considerably folded, whereas west of it they are nearly flat.

3.23.3 Site History

According to Shenon (1938, p. 38):

Nearly all the mining has been done in two tunnels on opposite sides of Wesp Gulch. All of the production of about $30,000 was derived in the early days from the tunnel on the east side of the gulch [Stapleton, H.C., personal communication (footnote in original)]. This tunnel is about 125 feet long, but the production came from a flat stope about 50 feet from the portal. The tunnel on the west side of the gulch extends into the hill for 350 feet.

In 1925, some placer gold was recovered from surface material at the Dew Drop.

3.23.4 Environmental Conditions

3.23.4.1 Site Features

The mine was visited by Earl Bennett on August 27, 1996. No video was taken at this site. Documenting photos are Roll 214578, frames 4-5.

An old cabin is visible from the Wesp Gulch Road. There are two possible adits, one on either side of the gulch, about ¼ of a mile north of the cabin. The adits (?) are caved and the dumps heavily overgrown. The entire gulch was severely damaged by the spring floods. There are
numerous downed trees blocking the drainage (Figure 3.23-2) and signs of active erosion in the stream bed.

3.23.4.2 Sample Locations

3.23.4.2.1 Soil Samples
No waste dump samples were collected at this site.

3.23.4.2.2 Water Samples
No water samples were collected at this site.

3.23.5 Structures

The old cabin below the possible adits is the only structure, and it may not be part of this prospect.

3.23.6 Safety
There are no safety hazards at this site.
Figure 3.23-1. Topographic map of the Chester Consolidated Mine, Shoshone County, Idaho (U.S. Geological Survey Burke 7.5-minute topographic map).
Figure 3.23-2. View up Wesp Gulch in the vicinity of the Chester Consolidated Mine, showing the downed trees and active erosion along the gulch (Roll 214578, frame #4).
3.24 GOLD CLIFF MINE (Site No. WL-111)

3.24.1 Site Location and Access (Figure 2.1-1)

The Gold Cliff Mine is located about ½ mile south of Prichard Creek along the east side of Idaho Gulch, in the SW¼ of section 9, T. 49 N., R. 5 E., on the Burke 7.5-minute quadrangle (Figure 3.24-1). The property is accessible from Prichard Creek by the trail up Idaho Gulch. The property is on BLM land.

3.24.2 Geologic Features (Figure 2.2-1)

The mine is in banded argillite of the lower Prichard Formation near the Thompson Pass fault (Hosterman, 1956).

3.24.3 Site History

In 1913, the Gold Cliff Mining & Milling Company's report to the Idaho Mine Inspector claimed that the property had nine tunnels and 7,223 feet of workings.

3.24.4 Environmental Conditions

3.24.4.1 Site Features

The site was visited by Falma Moye on July 22, 1996. No video was taken at this site. Documenting photos are Roll 095640, frames 20-21.

There is one open, gated adit at the mine (Figure 3.24-2). A flat area extends about 30 feet in front of the adit and may have been partly constructed with waste rock. The waste dump extends northward from the flat area and parallels a tributary to Idaho Gulch. The dump has been partially eroded by the tributary creek but appears to have stabilized. Small cedar, white pine, and hemlock saplings are becoming established on the dump. Ore car rails extend across the dump and are bent over the edge where the dump has been eroded (Figure 3.24-3). The disturbed area at the site is less than 0.5 acre.

3.24.4.2 Sample Locations

3.24.4.2.1 Soil Samples

No waste dump samples were collected at this site.

3.24.4.2.2 Water Samples

No water samples were collected at this site.
3.24.5 Structures
There are no structures at this site.

3.24.6 Safety

The adit is gated and should not be hazard. No other potential hazards were identified at this site.
Figure 3.24-1. Topographic map of the Gold Cliff Mine, Shoshone County, Idaho (U.S. Geological Survey Burke 7.5-minute topographic map).
Figure 3.24-2. Portal of the Gold Cliff Mine. The portal is closed by an iron gate, although the cross-bars are widely spaced. A metal tank is standing at the left side of the portal (Roll 095640, frame #20).

Figure 3.24-3. View of the top edge and eroded face of the waste dump at the Gold Cliff Mine. Ore car rails are draped over the edge of the dump (Roll 095640, frame #21).
3.25 MOUNTAIN LION GROUP (Site No. WL-68)
Alternative names—Golden Circle; Gold Circle; Kings Pass Gold Co., Inc.; Three Queens Mining Corp.; Schamel Mine; Lion.

3.25.1 Site Location and Access (Figure 2.1-1)

The Mountain Lion Group lies about 1 mile west of Murray, on the south side of Prichard Creek in the SW¼ of the NW¼ of section 6, T. 49 N., R. 5 E., on the Osburn 7.5-minute quadrangle (Figure 3.25-1). The property is reached from a badly overgrown road that heads west and downhill from the Murray cemetery. The area is a mixture of private patented claims and Forest Service land.

3.25.2 Geologic Features (Figure 2.2-1)

According to Shenon (1938, p. 37):
Two veins are exposed in the workings of the Mountain Lion mine, but all of the production has come from the north vein. This vein is in thin-bedded argillite above a footwall of dark quartzite. The vein curves slightly, but in general strikes eastward and dips about 25° N. It ranges in width from a few inches to more than 3 feet.

3.25.3 Site History

Shenon (1938, p. 36-37) notes:
The Mountain Lion group was located as the Golden Circle by Silas Brown in 1884 [William Wylie, personal communication (footnote in original)]. William Wylie bought the property from Mr. Brown and renamed it the Mountain Lion. Thereafter Mr. Wylie operated the property for many years, but in 1935 it was being operated under option by the Kings Pass Gold Syndicate. The total production is not known, but Mr. Wylie states that he mined $70,000 worth of ore from the stope above the No. 1 level, which was treated in a small 3-stamp mill near the mouth of the No. 1 tunnel.

Shenon (1938, p. 36) also describes the workings:
The property... is developed largely through three tunnels known as the No. 1 (Mill), No. 2 (Rock), and No. 3 tunnels (Fig. 18 [Figure 3.25-2]. The No. 1 tunnel is a crosscut 160 feet long that runs to the north vein. From it one drift was run 90 feet eastward along the vein and another more than 170 feet westward. Above the No. 1 level are stopes that probably connect with the two levels above. The No. 2 tunnel is 580 feet long and from it several short drifts have been driven. The drift 80 feet from the portal is connected by stopes with the No. 3 level. No. 3 tunnel is a crosscut that reaches the north vein at 50 feet. Above it are filled stopes.
Gold ore from the Mountain Lion mine was treated by amalgamation in 1923. A 3-stamp mill ran a short time in 1925 and the gold bullion was shipped to the assay office at Boise. In each of the years 1926, 1934, 1935, and 1939, a little gold ore from the Mountain Lion was treated by amalgamation. In 1940 production from the mine was placer gold. About 72 tons of gold ore were produced from the property in 1941.

The property was leased for a short time in the mid-1930s to the Kings Pass Gold Co., Inc. There was a small (3 tpd) mill which used stamps and amalgamation. In the late 1950s, the mine was operated by Three Queens Gold Mining, Inc. This company recovered most of its ore by hydraulicking and sluice boxes. A 5-stamp mill equipped with amalgamation plates was also used. Small quantities of gold ore were shipped from the mine in 1964 and 1965.

3.25.4 Environmental Conditions

3.25.4.1 Site Features

This site was visited by Falma Moye on July 18, 1996. No video was taken at this site. Documenting photo is Roll 095640, frame 10.

This property consists of an old stamp mill (Figure 3.25-3) and a collapsed adit. The adit is on Forest Service land, and the millsite is on private land. All of the tailings from the stamp mill have been washed away by Prichard Creek. The disturbed area is less than 0.25 acre.

3.25.4.2 Sample Locations

3.25.4.2.1 Soil Samples

No waste dump samples were collected at this site.

3.25.4.2.2 Water Samples

No water samples were collected at this site.

3.25.5 Structures

The wooden mill stands on the slope above Prichard Creek.

3.25.6 Safety

Entry into the old mill (which, although standing, is in disrepair) is the only potential hazard at the site.
Figure 3.25-1. Topographic map of the Mountain Lion Mine, Shoshone County, Idaho (U.S. Geological Survey Osburn 7.5-minute topographic map).
Figure 3.25-3. Remains of the stamp mill at the Mountain Lion Mine. Prichard Creek is in the foreground at the bottom of the frame (Roll 095640, frame #10).
3.26 PHOENIX PROPERTY (Site No. WL-127)

3.26.1 Site Location and Access (Figure 2.1-1)

The Phoenix Property is located on the east side of the West Fork of Granite Gulch at an elevation of about 4,200 feet in the NE¼ of the NE¼ of section 21, T. 49 N., R. 5 E., on the Burke 7.5-minute quadrangle (Figure 3.26-1). A 4-wheel-drive trail leads up the West Fork for about ¾-mile. From there, a foot trail leads up the West Fork as far as the Vendetta Mine, but becomes obscure or does not exist beyond that point. The prospect is on Forest Service land.

3.26.2 Geologic Features (Figure 2.2-1)

The mine is in banded argillite of the lower Prichard Formation (Hosterman, 1956).

3.26.3 Site History

According to Gammell (1946, p. 2):

The initial claim locations on the Phoenix property were reportedly made in 1916. During the period 1917 to 1921, a number of adjoining claims were acquired. In 1922, the Phoenix Mining Company [Phoenix Mining & Milling Co., Ltd.] was formed; the several claims were thereupon grouped and registered as part of the company's holdings. This company initiated exploration work on the property in 1922. A 700-foot adit cross-cut was completed, and some drifts were driven along a fault near the face of the crosscut. The crosscut is now inaccessible. The Phoenix Mining Company is now defunct. As far as is known, no commercial ore bodies have been found on the property.

PROPERTY AND OWNERSHIP

The Phoenix property consists of twelve unpatented lode mining claims held by Norman Ebbly of Wallace, Idaho.

According to the Idaho Inspector of Mines annual reports, the Phoenix Mining & Milling Co., Ltd. (Norman Ebbly, president-manager), was organized in 1905 and continued to hold the property until at least the mid-1950s. In 1954, the property had two tunnels, 1,200 feet and 1,050 feet long.

3.26.4 Environmental Conditions

3.26.4.1 Site Features

The Phoenix property was visited by John Kauffman and Bill Rember on August 27, 1996. A video segment describing the prospect is on Prichard-Eagle Creek Videotape, Secondary Sites (Tape 3, index 00:31:30-00:34:52). Documenting photos are Roll K3, frames 7-8.
Only one adit was found at this site. The adit is caved and dry, and is about 75-100 feet above creek level. A small waste dump (Figure 3.26-2) extends down the steep slope and barely reaches the creek. Trees up to 1 foot in diameter are growing on the dump. The slopes are timbered and brushy. North of and 100 feet uphill from the adit are several small prospect pits. The disturbed area is less than 0.5 acre.

3.26.4.2 Sample Locations

3.26.4.2.1 Soil Samples
No waste dump samples were collected at this site.

3.26.4.2.2 Water Samples
No water samples were collected at this site.

3.26.5 Structures

An old collapsed cabin is present to the left of the adit.

3.26.6 Safety
There are no safety hazards at this site.
Figure 3.26-1. Topographic map of the Phoenix property, Shoshone County, Idaho (U.S. Geological Survey Burke 7.5-minute topographic map).
Figure 3.26-2. Small waste dump at the Phoenix property. The adit, just off the right edge of the frame, is caved (Roll K3, frame #8).
3.27 SNOWSHOE PROSPECT (Site No. WL-10)

3.27.1 Site Location and Access (Figure 2.1-1)

The Snowshoe Prospect is located on the south side of the East Fork of Eagle Creek in the NE\(\frac{1}{4}\) of the SE\(\frac{1}{4}\) of section 12, T. 50 N., R. 5 E., on the Murray 7.5-minute quadrangle (Figure 3.27-1). Access is up the road or trail that follows the East Fork, and the property is about \(\frac{3}{4}\) mile east of the mouth of Casper Creek. The prospect is on Forest Service land, although there are patented claims, probably placer claims, along the creek.

3.27.2 Geologic Features (Figure 2.2-1)

The Snowshoe is in banded argillite of the lower Prichard Formation (Hosterman, 1956).

3.27.3 Site History

Hosterman (1956) noted that the Snowshoe was one of several mines whose workings were partially or completely inaccessible.

3.27.4 Environmental Conditions

3.27.4.1 Site Features

This property was visited by John Kauffman on August 22, 1996. No video was taken at this site. Documenting photos are Roll K2 (561251), frames 17-18.

This prospect consists of a small, caved, dry adit about 120 feet above the creek level on the south slope above an open area along the creek. The creek has been placered, and moss-covered spoil piles line the banks. The open area may be leveled placer workings. The adit was driven about due south into the hillside, probably only 10-20 feet judging from the small size of the waste dump. The waste pile is moss covered, and numerous small trees up to 4 inches in diameter are growing on it. The hillside is well timbered with large trees up to 3 feet in diameter and has moderately thick underbrush. The dump measures 10 feet long, 10 feet wide, and 20 feet thick. The total disturbed area is less than 0.1 acre.

3.27.4.2 Sample Locations

3.27.4.2.1 Soil Samples

No waste dump samples were collected at this site.

3.27.4.2.2 Water Samples

No water samples were collected at this site.
3.27.5 Structures
   There are no structures at this site.

3.27.6 Safety
   There are no safety hazards at this site.
Figure 3.27-1. Topographic map of the Snowshoe Prospect, Shoshone County, Idaho (U.S. Geological Survey Murray 7.5-minute topographic map).
3.28 UNITED STATES SILVER-LEAD MINE (Site No. WL-18)

3.28.1 Site Location and Access (Figure 2.1-1)

This prospect is located on the east side of Tributary Creek about 1\(\frac{3}{4}\) miles south of the East Fork of Eagle Creek in the SE\(\frac{1}{4}\) of the SE\(\frac{1}{4}\) of section 13, T. 50 N., R. 5 E., on the Murray 7.5-minute quadrangle (Figure 3.28-1). Access across Tributary Creek from Forest Service Road 152 has been washed out and the prospect must be reached on foot. This site is on Forest Service land.

3.28.2 Geologic Features (Figure 2.2-1)

The mine is in banded argillite of the lower Prichard Formation (Hosterman, 1956).

3.28.3 Site History

In 1929, the U.S. Bureau of Mines noted that a little development was done on the property. The mine had three tunnels, which were 250 feet, 650 feet, and 850 feet long.

3.28.4 Environmental Conditions

3.28.4.1 Site Features

The site was visited by Bill Rember and John Kauffman on August 28, 1996. No video was taken at this site. Documenting photos are Roll K3, frames 15-17.

This property contains a caved adit with several nearby prospect pits. The adit is about 100 yards above the creek and was driven on a bearing of N. 7° W. The adit is marked by a depression that extends about 50 feet up the slope (Figure 3.28-2). The waste dump extends down the slope about 55 feet and is 30 feet across at the base. The top of the dump is only about 20 feet long and 10 feet wide (Figure 3.28-3). Several large trees and numerous small trees are growing on the dump. The disturbed area is about 0.1 acre.

3.28.4.2 Sample Locations

3.28.4.2.1 Soil Samples

No waste dump samples were collected at this site.

3.28.4.2.2 Water Samples

No water samples were collected at this site.

3.28.5 Structures

There are no structures at this site.

3.28.6 Safety

There are no safety hazards at this site.
Figure 3.28-1. Topographic map of the United States Silver-Lead Mine, Shoshone County, Idaho (U.S. Geological Survey Murray 7.5-minute topographic map).
Figure 3.28-2. Depression on the slope at the caved adit of the United States Silver-Lead Mine (Roll K3, frame #15).
Figure 3.28-3. Small waste dump at the United States Silver-Lead Mine. Several small and a few large trees are growing on the dump (Roll K3, frame #17).
3.29 UNNAMED PROSPECT (Site No. B7319606)

3.29.1 Site Location and Access (Figure 2.1-1)

This prospect, which could be part of the Flagstaff (Site No. WL-80) or Crown Point (Site No. WL-83), is located southwest of Murray above the Kings Pass Road in the NE¼ of the SE¼ of section 1, T. 49 N., R. 4 E., on the Osburn 7.5-minute quadrangle (Figure 3.29-1). The adit is on an old overgrown spur road that parallels, and connects to, the Kings Pass Road. The overgrown road turns south and east off the Kings Pass Road about 0.7 miles west of the Murray cemetery, or 0.2 miles west of Mile Marker No. 1. The site is on Forest Service land.

3.29.2 Geologic Features (Figure 2.2-1)

The prospect is in banded argillite of the lower Prichard Formation (Hosterman, 1956).

3.29.3 Site History

No information is available in the history of this site.

3.29.4 Environmental Conditions

3.29.4.1 Site Features

This prospect was visited by Earl Bennett on July 31, 1996. No video or photos were taken at the site.

The prospect consists of a single adit that is caved and dry. The disturbed area is minimal and insignificant.

3.29.4.2 Sample Locations

3.29.4.2.1 Soil Samples

No waste dump samples were collected at this site.

3.29.4.2.2 Water Samples

No water samples were collected at this site.

3.29.5 Structures

There are no structures at this site.

3.29.6 Safety

There are no safety hazards at this site.
Figure 3.29-1. Topographic map of the Site No. B7319606, Shoshone County, Idaho (U.S. Geological Survey Osburn 7.5-minute topographic map).
3.30 UNNAMED PROSPECT (Site No. B8159601A)

3.30.1 Site Location and Access (Figure 2.1-1)

This prospect is located on the south side of Prichard Creek about 1 mile east of Granite Gulch in the NW¼ of the SE¼ of section 14, T. 49 N., R. 5 E., on the Burke 7.5-minute quadrangle (Figure 3.30-1). Access is on a logging road that turns south and then west off the Prichard Creek Road. There are patented claims, probably placers, along the creek that are surrounded by Forest Service land. Whether the prospect is on patented or Forest Service land is uncertain.

3.30.2 Geologic Features (Figure 2.2-1)

The prospect is in argillite and argillaceous quartzite of the upper Prichard Formation (Hosterman, 1956).

3.30.3 Site History

No information is available about the history of this site.

3.30.4 Environmental Conditions

3.30.4.1 Site Features

The site was visited by Earl Bennett on August 15, 1996. No video or photos were taken at this site.

This prospect consists of a large pit, which is probably a caved adit, and a dump just west of the Monarch Mine. Prichard Creek is visible through the trees to the north. There is water seeping from the back of the pit. The dump (about 80 feet by 60 feet) was bulldozed during construction of the logging road, and there is an old log deck stacked on the dump. At the north end of the dump is a steel cable wrapped around a tree, and about 75 feet north of the cabled tree is a USFS corner marker dated 1994, at T. 49 N., R. 5 E., section 14, PLS-4559. The disturbed area covers less than 0.25 acre.

3.30.4.2 Sample Locations

3.30.4.2.1 Soil Samples

No dump samples were collected at this site.

3.30.4.2.2 Water Samples

A water sample, B8159602, was collected from the seep in the pit.
<table>
<thead>
<tr>
<th>Sample No.</th>
<th>Location</th>
<th>Specific Conductivity (µs)</th>
<th>Temperature (° F)</th>
<th>pH</th>
<th>Flow (gpm)</th>
<th>Analyzed (Yes/No)</th>
</tr>
</thead>
<tbody>
<tr>
<td>B8159602</td>
<td>Site No.</td>
<td>80</td>
<td>54</td>
<td>6.8</td>
<td>seep</td>
<td>No</td>
</tr>
<tr>
<td></td>
<td>B8159601A</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

### 3.30.4.2.3 Analytical Results

Sample B8159602 was not analyzed.

### 3.30.5 Structures

There are no structures at this site.

### 3.30.6 Safety

There are no safety hazards at this site.
Figure 3.30-1. Topographic map of the Site No. B8159601A, Shoshone County, Idaho (U.S. Geological Survey Burke 7.5-minute topographic map).
3.31 UNNAMED PROSPECTS (Site Nos. B8159605 and B8159606)

3.31.1 Site Location and Access (Figure 2.1-1)

These prospects are located about ½ mile up Reeder Gulch from Prichard Creek near the center of section 4, T. 49 N., R. 5 E., on the Burke 7.5-minute quadrangle (Figure 3.31-1). Access is from the logging road that heads north and west off the Prichard Creek road, then turns up Reeder Gulch. The prospects are just off the logging road. This area is a mixture of patented claims and BLM land.

3.31.2 Geologic Features (Figure 2.2-1)

The prospects are in banded argillite of the lower Prichard Formation (Hosterman, 1956).

3.31.3 Site History

No information is available about the history of this site.

3.31.4 Environmental Conditions

3.31.4.1 Site Features

The prospects were visited by Earl Bennett on August 15, 1996. No video or photos were taken at this site.

Prospect B8159605 consists of an old, caved, dry adit and a small waste dump just off the logging road and uphill from Prospect B8159606. Trees 8 inches in diameter are growing on the dump. Prospect B8159606 is just above the first switchback on the Reeder Gulch road. It consists of a caved, dry adit. Portions of the wooden portal are all that remain. The total disturbed area is less than 0.25 acre.

3.31.4.2 Sample Locations

3.31.4.2.1 Soil Samples

No waste dump samples were collected at this site.

3.31.4.2.2 Water Samples

No water samples were collected at this site.

3.31.5 Structures

There are no structures at this site.

3.31.6 Safety

There are no safety hazards at this site.
Figure 3.31-1. Topographic map of the unnamed prospects B8159605 and B8159606, Shoshone County, Idaho (U.S. Geological Survey Burke 7.5-minute topographic map).
3.32 UNNAMED PROSPECT (Site No. B8169601)

3.32.1 Site Location and Access (Figure 2.1-1)

This prospect is located on the north side of Bear Gulch road about 1.5 miles from the Prichard Creek-Thompson Pass road and about ½ mile above the ford on Bear Gulch Creek. The prospect is in the SW¼ of the SE¼ of section 2, T. 49 N., R. 5 E., on the Burke 7.5-minute quadrangle (Figure 3.32-1) and is on Forest Service land.

3.32.2 Geologic Features (Figure 2.2-1)

The prospect is in banded argillite of the lower Prichard Formation (Hosterman, 1956).

3.32.3 Site History

   No information is available on the history of this property.

3.32.4 Environmental Conditions

3.32.4.1 Site Features

The site was visited by Earl Bennett on August 16, 1996. No video was taken at this site. Documenting photo is Roll 559692, frame 19.

The prospect consists of a dry, caved adit and a small waste dump along the north side of Bear Gulch road. The dump does not impinge on the creek. The disturbed area is less than 0.1 acre.

3.32.4.2 Sample Locations

3.32.4.2.1 Soil Samples

   No waste dump samples were collected at this site.

3.32.4.2.2 Water Samples

   No water samples were collected at this site.

3.32.5 Structures

   There are no structures at this site.

3.32.6 Safety

   There are no safety hazards at this site.
Figure 3.32-1. Topographic map of the unnamed prospect B8169601, Shoshone County, Idaho (U.S. Geological Survey Burke 7.5-minute topographic map).
3.33 UNNAMED PROSPECT (Site No. B8239602)

3.33.1 Site Location and Access (Figure 2.1-1)

This prospect is located on the new road up Gold Run Gulch on the slope between Gold Run Gulch and Alder Gulch. It is near the east edge of the NW¼ of the NW¼ of section 5, T. 49 N., R. 5 E., on the Murray 7.5-minute quadrangle (Figure 3.33-1). The road is built over the top of the prospect. This site is either on private or BLM land.

3.33.2 Geologic Features (Figure 2.2-1)

The prospect is in banded argillite of the lower Prichard Formation (Hosterman, 1956).

3.33.3 Site History

No information is available on the history of this site.

3.33.4 Environmental Conditions

3.33.4.1 Site Features

This site was visited by Earl Bennett on August 23, 1996. No video was taken at this site. Documenting photo is Roll 561250, frame 5.

The property contains a caved adit and an overgrown, stable dump (Figure 3.32-2) that is not near any waterway. The logging road up Gold Run Gulch crosses this old property before going west toward Alder Gulch and up the ridge on the east side of the Alder Gulch. The disturbed area is minimal and insignificant.

3.33.4.2 Sample Locations

3.33.4.2.1 Soil Samples

No waste dump samples were collected at this site.

3.33.4.2.2 Water Samples

No water samples were collected at this site.

3.33.5 Structures

There are no structures at this site.

3.33.6 Safety

There are no safety hazards at this site.
Figure 3.33-1. Topographic map of the unnamed prospect B8239602, Shoshone County, Idaho (U.S. Geological Survey Murray 7.5-minute topographic map).
Figure 3.33-2. Overgrown dump at unnamed prospect B8239602 (Roll 561250, frame #5).
3.34 GOLD ROCK MINE (Site No. WL-13)

3.34.1 Site Location and Access (Figure 2.1-1)

This prospect is located on the east side of the West Fork of Eagle Creek, in the W½ of the NW¼ of section 18, T. 50 N., R. 5 E., on the Murray 7.5-minute quadrangle (Figure 3.34-1). The prospect is on Forest Service land.

3.34.2 Geologic Features (Figure 2.2-1)

The mine is in banded argillite of the lower Prichard Formation (Hosterman, 1956).

3.34.3 Site History

No information is available on the history of this mine.

3.34.4 Environmental Conditions

3.34.4.1 Site Features

The prospect was visited by John Kauffman on August 21, 1996. No video was taken at this site. Documenting photo is Roll K2 (561251), frame 8.

There are numerous small cuts and pits on the slope above the West Fork of Eagle Creek. All "dumps" are very small. The pits measure from about 3 feet by 3 feet to about 5 feet by 5 feet. The cuts are 8-10 feet long and 4 feet wide. All are only a foot or two in depth because the sides have sloughed in. Most resemble pits created by uprooted trees, but others appear to have been dug. The entire hillside has trees up to 2 feet in diameter with sparse underbrush. Many of the pits have trees growing near or in them. A placer claim notice is located just off the corner of the West Fork road, but no claim corners were found for the Gold Rock. No trails or roads were present that would indicate any additional workings.

3.34.4.2 Sample Locations

3.34.2.1 Soil Samples

No waste dump samples were collected at this site.

3.34.4.2.2 Water Samples

No water samples were collected at this site.

3.34.5 Structures

There are no structures at this site.

3.34.6 Safety

No safety hazards were found at this site.
Figure 3.34-1. Topographic map of the Gold Rock Mine, Shoshone County, Idaho (U.S. Geological Survey Murray 7.5-minute topographic map).
3.35 UNNAMED PROSPECT NEAR BLOOM SPRING (Morbeck(?); Site No. K8209601)

3.35.1 Site Location and Access (Figure 2.1-1)

This site is located in the upper reaches of the West Fork of Eagle Creek near Bloom Spring. The prospect straddles the line between the SE¼ of section 21 and the NE¼ of section 28, T. 51 N., R. 5 E., on the Murray 7.5-minute quadrangle (Figure 3.35-1). The property is reached by traveling northward from Eagle (Prichard Creek at the mouth of Eagle Creek) on Forest Service Road 978 to Bobtail Peak. From there, FS Road 270 leads to Forest Service Trail 162 near Bloom Spring. The first of the pits described below is several hundred feet east on FS Trail 162. This pit is about 100 feet above the trail. The slope is covered with scrubby subalpine fir and bear grass. The prospects are on Forest Service land.

3.35.2 Geologic Features (Figure 2.2-1)

The prospect is either in the Burke Formation or the Wallace Formation. It is near a north-south-striking fault (Harrison and others, 1986).

3.35.3 Site History

No information is available on the history of this site.

3.35.4 Environmental Conditions

3.35.4.1 Site Features

The site was visited by John Kauffman on August 20, 1996. No video was taken at this site. Documenting photos are Roll K2 (561251), frames 3-4.

The property contains one small, very overgrown prospect pit (about 8 feet long, 5 feet wide, and 2 feet deep) in which the sides have sloughed into the pit (Figure 3.35-2), as well as other smaller pits. The smaller pits are about 100-200 feet east of the first pit. Another very small pit was found below the trail and above an old logging road at Bloom Spring. The pit is about 10 feet long, 4 feet wide, and 2 feet deep. Hunters and campers have developed the spring in the draw west of Bloom Spring, with part of the discharge flowing from a pipe (Figure 3.35-3) into a metal tub. There is no sign of an adit or other workings at this prospect. The disturbed area is insignificant.

3.35.4.2 Sample Locations

3.35.4.2.1 Soil Samples

No dump samples were collected at this site.
3.35.4.2.2 Water Samples

Sample K8209602 was collected from the discharge pipe at spring at the campsite.

<table>
<thead>
<tr>
<th>Sample No.</th>
<th>Location</th>
<th>Specific Conductivity (µS)</th>
<th>Temperature (° F)</th>
<th>pH</th>
<th>Flow (gpm)</th>
<th>Analyzed (Yes/No)</th>
</tr>
</thead>
<tbody>
<tr>
<td>K8209602</td>
<td>Bloom Spring at campsite</td>
<td>33</td>
<td>---</td>
<td>8.0</td>
<td>3</td>
<td>Yes</td>
</tr>
</tbody>
</table>

3.35.4.2.3 Analytical Results

Water Samples

In the dissolved metals screen, sample K8209602 equals or exceeds all standards for cadmium, exceeds the Aquatic Life Chronic standard and is at the upper limit of the Secondary MCL for aluminum, and equals the lower Aquatic Life Chronic threshold for zinc. In the total recoverable metals screen, cadmium is at the lower threshold of the Aquatic Life Acute standard and exceeds the Aquatic Life Chronic standard. Part or all of this metal content may be from the metal discharge pipe.

3.35.5 Structures

There are no structures at this site.

3.35.6 Safety

There are no safety hazards at this site.
Figure 3.35-1. Topographic map of the unnamed prospect K8209601 near Bloom Spring, Shoshone County, Idaho (U.S. Geological Survey Murray 7.5-minute topographic map).
Figure 3.35-2. One of the small brush-filled prospect pits and a small pile of waste rock at unnamed prospect K8209601 (Roll 561251, frame #3).

Figure 3.35-3. Metal tub for collecting water at Bloom Spring. A small-diameter pipe with a steady flow of water can be seen above the left side of the tub (Roll 561251, frame #4).
3.36 ONEILL GROUP (Site No. WL-9)

3.36.1 Site Location and Access (Figure 2.1-1)

The Oneill Group is located on the ridge at the head of White Rock Gulch in the N½ of the SW¼ of section 9, T. 50 N., R. 5 E., on the Murray 7.5-quadrangle (Figure 3.36-1). Several prospect pits are located on the ridge to the east of Little Baldy. The prospects were reached on foot from Forest Service Road 3017 which parallels the East Fork of Eagle Creek high on the slope to the north of the East Fork. The prospects may be on a block of patented claims surrounded by Forest Service land.

3.36.2 Geologic Features (Figure 2.2-1)

The Oneill Group is in quartzite of the Revett Formation (Hosterman, 1956).

3.36.3 Site History

No information is available on the history of this prospect.

3.36.4 Environmental Conditions

3.36.4.1 Site Features

The Oneill claims were visited by John Kauffman on August 16, 1996. No video was taken at this prospect. Documenting photos are Roll K1 (559694), frames 24-26.

This site consists of what appear to be two glory holes (as opposed to adits). The pits are dug in the talus rubble and may extend a little way into bedrock. The sides of both pits have sloughed in. The two dumps are small, show some iron staining, and consist almost exclusively of coarse rock rubble (Figure 3.36-2). This site is near the west edge of a small talus slope and is 100 feet above a fairly overgrown access road. To the west approximately ¼ mile, a 20-foot-long, fairly overgrown trench is just above the access road. Further west on the border between sections 8 and 9, there are at least four shallow pits and trenches just on the south side of the ridge crest at the top of a fair-sized talus slope. There may be more pits in the area, because there probably was at least one for each claim in the group. There are quite a few access roads, which may have been constructed for access while drilling core. All are overgrown with tall brush and trees up to 4 inches in diameter. Some of the roads extend down the north side of the ridge. The total disturbed area, excluding the old access roads, is less than 1 acre.

3.36.4.2 Sample Locations

3.36.4.2.1 Soil Samples

No waste dump samples were collected at this site.
3.36.4.2.2 Water Samples
No water samples were collected at this site.

3.36.5 Structures
There are no structures at this site.

3.36.6 Safety
No safety hazards were found at this site.
Figure 3.36-1. Topographic map of the Oneill Group, Shoshone County, Idaho (U.S. Geological Survey Murray 7.5-minute topographic map).
Figure 3.36-2. Waste dumps of the small pits at the Oneill Group. The dumps consists mostly of coarse rock rubble (Roll 559694, frame #26).
3.37 PORPHYRY GROUP (Site No. WI-25)

Alternative names—Shadow, Toboggan, Independence Group, Champion Lead-Zinc Prospect.

3.37.1 Site Location and Access (Figure 2.1-1)

This property is located high on the slope east of Toboggan Creek near the center of the N1/2 of section 23, T. 50 N., R. 5 E., on the Murray 7.5-minute quadrangle (Figure 3.37-1). A Forest Service road, gated for wildlife management where it meets the East Fork of Eagle Creek road at Tributary Creek, passes about 400 feet below the prospect. A spur logging road cuts back to the northeast from the Forest Service road and passes about 200 feet below the prospect. The claims are on land administered by the Forest Service.

3.37.2 Geologic Features (Figure 2.2-1)

The Porphyry Group is in banded argillite of the lower Prichard Formation near the crest of the Trout Creek anticline.

3.37.3 Site History

The claims in this group were originally staked in 1906 by W.A. Taylor. In 1928, Taylor formed the Independence Mining Company, Limited, to operate the property. However, except for assessment work performed by Taylor, nothing was done at the mine. Independence Mining forfeited its corporate charter in 1932, but Taylor continued to do assessment work on the property (often road construction or repairs to maintain access) during the 1930s. Champion Lead-Zinc, Inc., was organized in 1944 to take over the property. In 1946, the mine had three tunnels and a total of about 165 feet of workings. An examination of the property by the U.S. Bureau of Mines concluded that the visible ore was of too low a grade to be of interest at that time (Idaho Geological Survey mineral property files).

3.37.4 Environmental Conditions

3.37.4.1 Site Features

The Porphyry Group was visited by John Kauffman on August 23, 1996. No video was taken at this site. Documenting photo is Roll K2 (561251), frame #23.

The only indication of a prospect is a skid or bulldozer trail up the nose of the ridge from an elevation of about 4,300 feet to an elevation of 4,700 feet. The skid trail ends on an overgrown road where there is a small cut about 25 feet long that may be the prospect, but there was no sign of any dumps or adits. The slopes are very overgrown and it is possible that other workings are hidden in the brush. No evidence of any claim corners or other markings were noted. The disturbed area is less than 0.25 acre.
3.37.4.2 Sample Locations

3.37.4.2.1 Soil Samples
   No waste dump samples were collected at this site.

3.37.4.2.2 Water Samples
   No water samples were collected at this site.

3.37.5 Structures
   There are no structures at this site.

3.37.6 Safety
   There are no safety hazards at this site.
Figure 3.37-1. Topographic map of the Porphyry Group, Shoshone County, Idaho (U.S. Geological Survey Murray 7.5-minute topographic map).
3.38 UNNAMED PROSPECT (Site No. K8159607)

3.38.1 Site Location and Access (Figure 2.1-1)

This prospect is located on the northwest slope of a west-to-east draining tributary of upper Granite Gulch in the NW¼ of the NE¼ of section 28, T. 49 N., R. 5 E., on the Burke 7.5-minute quadrangle (Figure 3.38-1). There do not appear to be any access roads or trails to this prospect. The prospect is on BLM land.

3.38.2 Geologic Features (Figure 2.2-1)

This prospect is in banded argillite of the lower Prichard Formation (Hosterman, 1956).

3.38.3 Site History

Nothing is known about the history of this site.

3.38.4 Environmental Conditions

3.38.4.1 Site Features

A small open adit was observed (but not visited) from about 1.4 miles away. The dump is estimated to be 20 feet long, 20 feet wide, and 30 feet thick. The disturbed area is estimated be less than 0.2 acre.

3.38.5 Structures

There are no structures at this site.

3.38.6 Safety

The open adit is a potential safety hazard, but the property appears to be relatively inaccessible.
Figure 3.38-1. Topographic map of the Site No. K8159607, Shoshone County, Idaho (U.S. Geological Survey Burke 7.5-minute topographic map).
3.39 CROWN POINT (Site No. WL-83) and FLAGSTAFF MINE (Site No. WL-72)
Alternative name—Four Square Mine.

3.39.1 Site Location and Access (Figure 2.1-1)

These properties were not examined for this study as they are part of the Four Square Mine, which is considered active. The description below, from Shenon (1938), is included for completeness.

According to Shenon (1938, p. 40):
The Crown Point and Flagstaff [Figure 3.39-1] claims are about 2 miles west of Murray, on the south side of Prichard Creek [T. 49 N., R. 4 E., sections 1 and 2 on the Osburn 7.5-minute quadrangle]. Only a few short tunnels have been run on these claims.

3.39.2 Geologic Features (Figure 2.2-1)

These properties are in banded argillite of the lower Prichard Formation (Hosterman, 1956).

3.39.3 Site History

According to Shenon (1938, p. 40)
The Crown Point claim was located by Robert J. Linden, Francis Jenkins, and Adam Aulbach. The Flagstaff, which joins the Crown Point on the north, was located by Charles W. O’Neil. In 1934, both claims were acquired by the Four Square Mine.

3.39.4 Environmental Conditions

3.39.4.1 Site Features

Shenon (1938, p. 40) gives the following description of the property:
The Crown Point and Flagstaff claims cover the extension of the Crown Point vein, which can be traced by intermittent exposures from Duncan Gulch to Prichard Creek (pl. 1 [omitted]). North of Prichard Creek the vein appears to project to the sheared zone on which the Grouse tunnel of the King property is run, although at that place there is not much quartz. The vein strikes about N. 15° to 40° E., and dips about 70° S.E. to vertically. In most places, the dips are nearly vertical.
Figure 3.39-1. Topographic map of the Crown Point and Flagstaff Mines, Shoshone County, Idaho (U.S. Geological Survey Osburn 7.5-minute topographic map).
BIBLIOGRAPHY

Campbell, Stewart, 1922, Twenty-third annual report of the mining industry of Idaho for the year 1921: 152 p.


Appendix A
Field Questionnaire
PART A
(To be completed for all identified sites)

LOCATION AND IDENTIFICATION

ID# _______ Site Name(s) ____________________________
FS Tract # ________________ FS Watershed Code ________________
Forest ___________________ District ______________________
Location based on: GPS ___ Field Map ___ Existing Info ___ Other ___
Lat ______ Long _______ xutm ______ yutm ______ zutm ______
Quad Name _____________ Principal Meridian ____________
Township _____________ Range _____________ Section ___ 1/4 ___ 1/4 ___ 1/4 ___ 1/4
State ____ County ____________ Mining District ____________

Ownership of all disturbances:
   ______ National Forest (NF)
   ______ Mixed private and National Forest (or unknown)
   ______ Private.
      If private only, impacts from the site on National Forest Resources are
   ______ Visually apparent ___ Likely to be significant ___ Unlikely or minimal

If all disturbances are private and impacts to National Forest Resources are unlikely or
minimal - STOP

PART B
(To be completed for all sites on or likely effecting National Forest lands)

SCREENING CRITERIA

Yes  No

   ____  1. Mill site or Tailings present
   ____  2. Adits with discharge or evidence of a discharge
   ____  3. Evidence of or strong likelihood for metal leaching, or AMD (water stains,
       stressed or lack of vegetation, waste below water table, etc.)
   ____  4. Mine waste in floodplain or shows signs of water erosion
   ____  5. Residences, high public use area, or environmentally sensitive area (as listed in
       HRS) within 200 feet of disturbance
   ____  6. Hazardous wastes/materials (chemical containers, explosives, etc)
   ____  7. Open adits/shafts, highwalls, or hazardous structures/debris
   ____  8. Site visit (If yes, take picture of site), Film number(s)

   If yes, provide name of person who visited site and date of visit
   Name: __________________ Date: __________________

   If no, list source(s) of information (If based on personal knowledge,
   provide name of person interviewed and date):

If the answers to questions 1 through 6 are all No - STOP
PART C
(To be completed for all sites not screened out in Parts A or B)

Investigator ____________________________ Date __________
Weather ________________________________

1. GENERAL SITE INFORMATION

Take panoramic picture(s) of site, Film Number(s) ____________________________
Size of disturbed area(s) _____ acres Average Elevation _____ feet
Access: ___ No trail ___ Trail ___ 4wd only ___ Improved road
___ Paved road
Name of nearest town (by road): ________________________________
Site/Local Terrain: ___ Rolling or flat ___ Foothills ___ Mesa ___ Mountains
___ Steep/narrow canyon
Local undisturbed vegetation (Check all that apply): ___ Barren or sparsely vegetated
___ weeds/grasses ___ Brush ___ Riparian/marsh
___ Deciduous trees ___ Pine/spruce/fir
Nearest wetland/bog: ___ On site, ___ 0-200 feet, ___ 200 feet-2 miles, ___ > 2 miles
Acid Producers or Indicator Minerals: ___ Arsenopyrite, ___ Chalcopyrite, ___ Galena,
___ Iron Oxide, ___ Limonite, ___ Marcasite, ___ Pyrite, ___
Pyrrhotite,
___ Sphalerite, ___ Other Sulfide
Neutralizing Host Rock: ___ Dolomite, ___ Limestone, ___ Marble, ___ Other Carbonate

2. OPERATIONAL HISTORY

Dates of significant mining activity __________________________________

<table>
<thead>
<tr>
<th>Commodity(s)</th>
<th>Production (ounces)</th>
</tr>
</thead>
</table>

Years that Mill Operated ___________
Mill Process: ___ Amalgamation, ___ Arrastre, ___ CIP (Carbon-in-Pulp), ___ Crusher
only,
___ Cyanidation, ___ Flotation, ___ Gravity, ___ Heap Leach, ___ Jig Plant, ___ Leach,
___ Retort, ___ Stamp, ___ No Mill, ___ Unknown

<table>
<thead>
<tr>
<th>Commodity(s)</th>
<th>Production (ounces)</th>
</tr>
</thead>
</table>

MILL PRODUCTION

176
3. HYDROLOGY

Name of nearest Stream __________________ which flows into __________________
Springs (in and around mine site): _____ Numerous _____ Several _____ None
Depth to Groundwater ___ ft, Measured at: ___ shaft/pit/hole ___ well ___ wetland
Any waste(s) in contact with active stream ___ Yes ___ No

4. TARGETS (Answer the following based on general observations only)

Surface Water
Nearest surface water intake ___ miles, Probable use _______________________
Describe number and uses of surface water intakes observed for 15 miles
downstream of site:
________________________________________________________________________

Wells
Nearest well ___ miles, Probable use _______________________
Describe number and use of wells observed within 4 miles of site:
________________________________________________________________________

Population
Nearest dwelling ___ miles, Number of months/year occupied ___ months
Estimate number of houses within 2 miles of the site (Provide estimates for 0-200ft,
200ft-1mile, 1-2miles, if possible)
________________________________________________________________________

Recreational Usage
Recreational use on site: ___ High (Visitors observed or evidence such as tire
tracks, trash, graffiti, fire rings, etc.; and good access to site), ___ Moderate
(Some evidence of visitors and site is accessible from a poor road or trail), ___
Low (Little, if any, evidence of visitors and site is not easily accessible)
Nearest recreational area ___ miles, Name or type of area: ______________________

5. SAFETY RISKS

___ Open adit/shaft, ___ Highwall or unstable slopes, ___ Unstable structures,
___ Chemicals, ___ Solid waste including sharp rusted items, ___ Explosives
6. MINE OPENINGS

Include in the following chart all mine openings located on or partially on National Forest lands. Also, include mine openings located entirely on private land if a point discharge from the opening crosses onto National Forest land. In this case, enter data for the point at which the discharge flows onto National Forest land; you do not need to enter information about the opening itself.

<table>
<thead>
<tr>
<th>Opening Number</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Type of Opening</td>
<td></td>
</tr>
<tr>
<td>Ownership</td>
<td></td>
</tr>
<tr>
<td>Opening Length (ft)</td>
<td></td>
</tr>
<tr>
<td>Opening Width (ft)</td>
<td></td>
</tr>
<tr>
<td>Latitude (GPS)</td>
<td></td>
</tr>
<tr>
<td>Longitude (GPS)</td>
<td></td>
</tr>
<tr>
<td>Condition</td>
<td></td>
</tr>
<tr>
<td>Ground water</td>
<td></td>
</tr>
<tr>
<td>Water Sample #</td>
<td></td>
</tr>
<tr>
<td>Photo Number</td>
<td></td>
</tr>
</tbody>
</table>

Comments (When commenting on a specific mine opening, reference opening number used in Table 1):

________________________________________________________________________

________________________________________________________________________

Codes Applicable for all entries: NA= Not applicable, UNK=Unknown, OTHER=Explain in comments, NO=NO or none

Type of opening: ADIT=Adit, SHAFT=Shaft, Pit=Open Pit/Trench' HOLE=Prospect Hole, WELL=Well
Ownership: NF=National Forest, MIX=National Forest and Private (Also, for unknown), PRV=Private
Condition (Enter all that apply): INTACT=Intact, PART=Partially collapsed or filled, COLP=Filled or collapsed, SEAL=Adit plug, GATE=Gated barrier,
Ground water (Water or evidence of water discharging from opening): NO= No water or indicators of water, FLOW=Water flowing, INTER=Indicators of intermittent flow, STAND= Standing water only (In this case, enter an estimate of depth below grade)
7. MINE/MILL WASTE

Include in the following chart all mine/mill wastes located on or partially on National Forest lands. Also, include mine/mill wastes located entirely on private land if it is visually effecting or is very likely to be effecting National Forest resources. In this case enter data for the point at which a discharge from the waste flows onto National Forest land, or where wastes have migrated onto National forest land; only enter as much information about the waste as relevant and practicable.

<table>
<thead>
<tr>
<th>TABLE 2 - DUMPS, TAILINGS, AND SPOIL PILES</th>
</tr>
</thead>
<tbody>
<tr>
<td>Waste Number</td>
</tr>
<tr>
<td>Waste Type</td>
</tr>
<tr>
<td>Ownership</td>
</tr>
<tr>
<td>Area (acres)</td>
</tr>
<tr>
<td>Volume (cu yds)</td>
</tr>
<tr>
<td>Size of Material</td>
</tr>
<tr>
<td>Wind Erosion</td>
</tr>
<tr>
<td>Vegetation</td>
</tr>
<tr>
<td>Surface Drainage</td>
</tr>
<tr>
<td>Indicators of Metals</td>
</tr>
<tr>
<td>Stability</td>
</tr>
<tr>
<td>Location with respect to Floodplain</td>
</tr>
<tr>
<td>Distance to Stream</td>
</tr>
<tr>
<td>Water Sample #</td>
</tr>
<tr>
<td>Waste Sample #</td>
</tr>
<tr>
<td>Soil Sample #</td>
</tr>
<tr>
<td>Photo Number</td>
</tr>
</tbody>
</table>

Codes Applicable for all entries: NA= Not applicable, UNK=Unknown, OTHER= Explain in comments, NO=NO or none
Waste Type: WASTE=Waste rock dump, MILL=Mill tailings SPOIL=Overburden or spoil pile, HIGH=Highwall, PLACER=Placer or hydraulic deposit, POND=Settling pond or lagoon, ORE=Ore Stockpile, HEAP=Heap Leach
Ownership: NF=National Forest, MIX=National Forest and Private (Also, for unknown), PRV=Private
Size of material (if composed of different size fractions, enter the sizes that are present in significant amounts): FINE=Finer than sand, SAND=sand, GRAVEL=>sand and <2", COBBLE=2"-6", BOULD=>6"
Wind Erosion, Potential for: HIGH=Fine, dry material that could easily become airborne, airborne dust, or windblown deposits, MOD=Moderate, Some fine material, or fine material that is usually wet or partially cemented; LOW=Little it any fines, or fines that are wet year-round or well cemented.
Vegetation (density on waste): DENSE=Ground cover > 75%, MOD=Ground cover 25% - 75%, SPARSE=Ground cover < 25%, BARREN=Barren
Surface Drainage (Include all that apply): RILL-Surface flow channels mostly < 1' deep, GULLY=Flow channels >1' deep, SEEP=Intermittent or continuous discharge from waste deposit, POND=Seasonal or permanent ponds on feature, BREACH=Breached, NO=No indicators of surface flow observe
Indicators of Metals (Enter as many as exist): NO= None, VEG=Absence of or stressed vegetation, STAIN=yellow, orange, or red precipitate, SALT=Salt deposits, SULF=Sulfides present
Stability: EMER=Imminent mass failure, LIKE=Potential for mass failure, LOW=mass failure unlikely
Location w/respect to Stream: IN=In contact with normal stream, NEAR=In riparian zone or floodplain, OUT=Out of floodplain

179
8. SAMPLES

Take samples only on National Forest lands.

TABLE 3 - WATER SAMPLES FROM MINE SITE DISCHARGES

<table>
<thead>
<tr>
<th>Sample Number</th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Date sample taken</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Sampler (Initials)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Discharging From</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Feature Number</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Indicators of Metal Release</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Indicators of Sedimentation</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Distance to stream (ft)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Sample Latitude</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Sample Longitude</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Field pH</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Field SC</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Flow (gpm)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Method of measurement</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Photo Number</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Comments: (When commenting on a specific water sample, reference sample number used in Table 3):

Codes Applicable for all entries: NA= Not applicable, UNK=Unknown, OTHER=Explain in comments, NO=NO or none
Discharging From: ADIT=Adit, SHAFT=Shaft, PIT=Pit/Trench, HOLE=Prospect Hole, WASTE=Waste rock dump, MILL=Mill tailings, SPOIL=Overburden or spoil pile, HIGH=Highwall, PLACER=Placer or hydraulic deposit, POND=Settling pond or lagoon, WELL=Well
Feature Number: Corresponding number from Table 1 or Table 2 (Opening Number or Waste Number)
Indicators of Metal Release (Enter as many as exist): NO= None, YEG= Absence of, or stressed vegetation/organisms in and along drainage path, STAIN=yellow, orange, or red precipitate, SALT=Salt deposits, SUU=Sulfides present, TURB=Discolored or turbid discharge
Indicators of Sedimentation (enter as many as exist): NO= None, SLIGHT=Some sedimentation in channel, banks and channel largely intact, MOD=Sediment deposits in channel, affecting flow patterns, banks largely intact, SIGN=Sediment deposits in channel and/or along stream banks extending to nearest stream
Method of Measurement: EST=Estimate, BUCK=Bucket and time, METER=Flow meter
<table>
<thead>
<tr>
<th>Location relative to mine site/features</th>
<th>Upstream (Background)</th>
<th>Downstream</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sample Number</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Date sample taken</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Sampler (Initials)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Stream Name</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Indicators of Metal Release</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Indicators of Sedimentation</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Sample Latitude</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Sample Longitude</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Field pH</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Field SC</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Flow (gpm)Method of measurement</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Method of measurement</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Photo Number</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Comments: *(When commenting on a specific water sample, reference sample number used in Table 4)*:

---

**Codes Applicable for all entries:** NA= Not applicable, UNK=Unknown, OTHER=Explain in comments, NO=NO or none

**Indicators of Metal Release** (*Enter as many as exist*): NO=None, VEG=Absence of, or stressed streamside vegetation/organisms in and along drainage path, STAIN=yellow, orange, or red precipitate, SALT=Salt deposits, SULF=Sulfides present, TURB=Discolored or turbid discharge

**Indicators of Sedimentation** (*Enter as many as exist*): NO=None, SLIGHT=Some sedimentation in channel, natural banks and channel largely intact, MOD=Sediment deposits in channel, affecting stream flow patterns, natural banks largely intact, SIGN=Sediment deposits in channel and/or along stream banks extending 1/2 a mile or more downstream

**Method of Measurement:** EST=Estimate, BUCK=Bucket and time, METER=Flow meter
<table>
<thead>
<tr>
<th>TABLE 5 - WASTE SAMPLES</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sample Number</td>
</tr>
<tr>
<td>Date of sample</td>
</tr>
<tr>
<td>Sampler (Initials)</td>
</tr>
<tr>
<td>Sample Type</td>
</tr>
<tr>
<td>Waste Type</td>
</tr>
<tr>
<td>Feature Number</td>
</tr>
<tr>
<td>Sample Latitude</td>
</tr>
<tr>
<td>Sample Longitude</td>
</tr>
<tr>
<td>Photo Number</td>
</tr>
</tbody>
</table>

Comments: *(When commenting on a specific waste or soil sample, reference sample number used in Table 5):*

**Codes Applicable for all entries:** NA=Not applicable, UNK=Unknown, OTHER=Explain in comments, NO=NO or none
**Sample Type:** SING=Single sample, COMP=Composite sample (enter length)
**Waste Type:** WASTE=Waste rock dump, MILL=Mill tailings, SPOIL=Overburden or spoil pile, HIGH=Highwall, PLACER=Placer or hydraulic deposit, POND=Settling pond or lagoon sludge, ORE=Ore Stockpile, HEAP=Heap Leach
**Feature Number:** Corresponding number from Table 2 (Waste Number)
<table>
<thead>
<tr>
<th>TABLE 6 - SOIL SAMPLES</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sample Number</td>
</tr>
<tr>
<td>Date of sample</td>
</tr>
<tr>
<td>Sampler (Initials)</td>
</tr>
<tr>
<td>Sample Type</td>
</tr>
<tr>
<td>Sample Latitude</td>
</tr>
<tr>
<td>Sample Longitude</td>
</tr>
<tr>
<td>Likely Source of Contamination</td>
</tr>
<tr>
<td>Feature Number</td>
</tr>
<tr>
<td>Indicators of Contamination</td>
</tr>
<tr>
<td>Photo Number</td>
</tr>
</tbody>
</table>

Comments: (When commenting on a specific waste or soil sample, reference sample number used in Table 6):

**Codes Applicable for all entries:** NA= Not applicable, UNK=Unknown, OTHER=Explain in comments, NO=NO or none  
**Sample Type:** SING=Single sample, COMP=composite sample (enter length)  
**Likely Source of Contamination:** ADIT=Adit, SHAFT=Shaft, PIT=Open Pit, HOLE=Prospect Hole, WASTE=Waste rock dump, MILL=Mill tailings, SPOIL=Overburden or spoil pile, PLACER=Placer or hydraulic deposit, POND=Settling pond or lagoon, ORE=Ore Stockpile, HEAP=Heap Leach  
**Feature Number:** Corresponding number from Table 1 or 2 (Opening or Waste Number)  
**Indicators of Contamination (Enter as many as exist):** NO=None, VEG=Absence of vegetation, PATH=Visible sediment path, COLOR=Different color of soil than surrounding soil, SALT=Salt crystals
### TABLE 7 - HAZARDOUS WASTES/MATERIALS

<table>
<thead>
<tr>
<th>Waste Number</th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Type of Containment</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Condition of Containment</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Contents</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Estimated Quantity of Waste</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Comments: *(When commenting on a specific hazardous waste or site condition, reference waste number used in Table 7):*

---

Codes Applicable for all entries: NA= Not applicable, UNK=Unknown, OTHER=Explain in comments, NO=NO or none
Type of Containment: NO=None, LID=drum/barrel/vat with lid, AIR=drum/barrel/vat without lid, CAN=cans/jars, LINE=lined impoundment, EARTH=unlined impoundment
Condition of Containment: GOOD=Container in good condition, leaks unlikely, FAIR=Container has some signs of rust, cracks, damage but looks sound, leaks possible, POOR=Container has visible holes, cracks or damage, leaks likely, BAD=Pieces of containers on site, could not contain waste
Contents: from label if available, or guess the type of waste, e.g., petroleum product, solvent, processing chemical.
Estimated Quantity of Waste: Quantity still contained and quantity released
10. STRUCTURES

For structures on or partially on National forest lands.

TABLE 8 - STRUCTURES

<table>
<thead>
<tr>
<th>Type</th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Number</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Condition</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Photo Number</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Comments:

Codes Applicable for all entries: NA=Not applicable, UNK=Unknown, OTHER=Explain in comments, NO=NO or none
Type: CABIN=Cabin or community service (store, church, etc.), MILL=mill building, MINE=building related to mine operation, STOR=storage shed, FLUME=Ore Chute/flume or tracks for ore transport
Number: Number of particular type of structure all in similar condition or length in feet
Condition: GOOD=all components of structure intact and appears stable, FAIR=most components present but signs of deterioration, POOR= major component (roof, wall, etc) of structure has collapsed or is on the verge of collapsing, BAD=more than half of the structure has collapsed

11. MISCELLANEOUS

Are any of the following present? (Check all that apply): ____ Acrid Odor, ____ Drums, ____ Pipe, ____ Poles, ____ Scrap Metal, ____ Overhead wires, ____ Overhead cables, ____ Headframes, ____ Wooden Structures, ____ Towers, ____ Power Substations, ____ Antennae, ____ Trestles, ____ Powerlines, ____ Transformers, ____ Tramways, ____ Flumes, ____ Tram Buckets, ____ Fences, ____ Machinery, ____ Garbage

Describe any obvious removal actions that are needed at this site:

General Comments/Observations (not otherwise covered)
12. SITE MAP

Prepare a sketch of the site. Indicate all pertinent features of the site and nearby environment. Include all significant mine and surface water features, access roads, structures, etc. Number each important feature at the mine site and use these number throughout this form when referring to a particular feature (Tables 1 and 2). Sketch the drainage routes off the site into the nearest stream.
13. RECORDED INFORMATION

Owner(s) of patented land
Name: ____________________________________________
Address: _________________________________________
Telephone Number: _________________________________

Claimant(s)
Name: ___________________________________________
Address: _________________________________________
Telephone Number: _________________________________

Surface Water (From water rights)
Number of Surface Water Intakes within 15 miles downstream of site used for:
   ___ Domestic, ___ Municipal, ___ Irrigation, ___ Stock,
   ___ Commercial/Industrial, ___ Fish Pond, ___ Mining,
   ___ Recreation, ___ Other

Wells (From well logs)
Nearest well _____ miles
Number of wells within ___ 0-1/4 miles ___ 1/4-1/2 miles, ___ 1/2-1 mile
   ___ 1-2 miles ___ 2-3 miles ___ 3-4 miles of site

Sensitive Environments
List any sensitive environments (as listed in the HRS) within 2 miles of the site or along receiving
stream for 15 miles downstream of site (wetlands, wilderness, national/state park, wildlife refuge,
wild and scenic river, T&E or T&E habitat, etc):

__________________________________________________________________________

Population (From census data)
Population within ___ 0-1/4 miles ___ 1/4-1/2 miles ___ 1/2-1 mile
   ___ 1-2 miles ___ 2-3 miles ___ 3-4 miles of site

Public Interest
Level of Public Interest: ___ Low, ___ Medium, ___ High
Is the site under regulatory or legal action? ___ Yes, ___ No

Other sources of information (MILs #, MRDS #, other sampling data, etc):

__________________________________________________________________________
Appendix B
Database Fields
<table>
<thead>
<tr>
<th>Field</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>NEWLOC</td>
<td>WA 1</td>
</tr>
<tr>
<td>ORANGENUM</td>
<td>451</td>
</tr>
<tr>
<td>MAPLOC</td>
<td>1</td>
</tr>
<tr>
<td>DEPOSIT</td>
<td>Eagle Creek Mine</td>
</tr>
<tr>
<td>MRDSREC</td>
<td>0160790528</td>
</tr>
<tr>
<td>MILSREF</td>
<td></td>
</tr>
<tr>
<td>PERIODPROD</td>
<td></td>
</tr>
<tr>
<td>ORE</td>
<td>Au</td>
</tr>
<tr>
<td>REFERENCE</td>
<td></td>
</tr>
<tr>
<td>LATITUDE</td>
<td>474325</td>
</tr>
<tr>
<td>LONGITUDE</td>
<td>1154916</td>
</tr>
<tr>
<td>HARDFILE</td>
<td>N</td>
</tr>
<tr>
<td>MLA</td>
<td></td>
</tr>
<tr>
<td>NAME</td>
<td>EAGLE CREEK MINE</td>
</tr>
<tr>
<td>SEC</td>
<td>33</td>
</tr>
<tr>
<td>SUBSEC</td>
<td>NESE</td>
</tr>
<tr>
<td>TWN</td>
<td>051 N</td>
</tr>
<tr>
<td>RNG</td>
<td>005 E</td>
</tr>
<tr>
<td>DDDMSS</td>
<td>474325</td>
</tr>
<tr>
<td>DDDMMSS</td>
<td>1154904</td>
</tr>
<tr>
<td>OPTYP</td>
<td>SURFAC</td>
</tr>
<tr>
<td>STATUS</td>
<td>PAST PRO</td>
</tr>
<tr>
<td>COMMO1</td>
<td>GOLD</td>
</tr>
<tr>
<td>COMMO2</td>
<td></td>
</tr>
<tr>
<td>COMMO3</td>
<td></td>
</tr>
<tr>
<td>COMMO4</td>
<td></td>
</tr>
<tr>
<td>COMMO5</td>
<td></td>
</tr>
<tr>
<td>MAPNAME</td>
<td>BURKE</td>
</tr>
<tr>
<td>QUAD</td>
<td>WALLACE</td>
</tr>
<tr>
<td>POP</td>
<td>1KM</td>
</tr>
<tr>
<td>TOE</td>
<td>M</td>
</tr>
<tr>
<td>YFC</td>
<td></td>
</tr>
<tr>
<td>MPF</td>
<td></td>
</tr>
<tr>
<td>SITENAME</td>
<td></td>
</tr>
<tr>
<td>DISTRICT</td>
<td></td>
</tr>
<tr>
<td>COUNTY</td>
<td></td>
</tr>
<tr>
<td>SEQQUAD</td>
<td></td>
</tr>
<tr>
<td>SEQQUADSCSL</td>
<td></td>
</tr>
<tr>
<td>UTMNORTH</td>
<td></td>
</tr>
<tr>
<td>UTMEAST</td>
<td></td>
</tr>
<tr>
<td>UTMZONE</td>
<td></td>
</tr>
<tr>
<td>COMMODIT</td>
<td></td>
</tr>
<tr>
<td>LAT</td>
<td></td>
</tr>
<tr>
<td>LON</td>
<td></td>
</tr>
<tr>
<td>TOWN</td>
<td></td>
</tr>
<tr>
<td>SECTION</td>
<td></td>
</tr>
<tr>
<td>RANGE</td>
<td></td>
</tr>
</tbody>
</table>
Appendix C
Geochemical Data
ACCURACY OF GEOCHEMICAL DATA

The following information was received on the subject of the accuracy and the detection limits for the geochemical data presented in this report:

Date: Fri, 24 Oct 1997 10:48:23 PST8PDT  
From: Kim Anderson <kanderson@asl.fs.uidaho.edu>  
To: Ruth E Vance <rvance@uidaho.edu>  
Subject: Re: detection limit accuracy

That is something I put together some years ago for another client. Also Greg Moller [Technical Director, Analytical Sciences Laboratory] had input. Other than that, the refs are included in the discussions I sent [discussion titled “Practical Quantitation Limits”; see next page].

Good Luck
Kim,

Kim A. Anderson, Ph.D.  
Asst. Prof. / Food Science and Toxicology Dept.  
Chief Chemist / Analytical Sciences Laboratory  
University of Idaho  
Moscow, Idaho 83844-2201  
208-885-7900/FAX 209-885-8937
Practical Quantitation Limits

Sensitivity of an analytical method is often based on its ability to reproducibly detect target analytes above the method noise level. Several similar definitions of this Minimum Detection Level or Limit (MDL) or Limit of Detection (LOD) are currently used. According to the American Chemical Society (ACS) (Principles of Environmental Analysis, p 9):

Limit of detection (LOD) "is defined as the lowest concentration level that can be determined as statistically different from the blank".

Instrument detection limit (IDL) "is the smallest signal above background noise that an instrument can detect reliably and is often equivalent to the LOD".

Method detection limit (MDL) "is the lowest concentration of analyte that can reliably be detected in either a sample or a blank".

ACS recommends the value of LOD be 3σ for a 99% confidence level, where σ is the standard deviation of the measurement.

Limit of Quantitation (LOQ) "is defined as the level above which quantitative results may be obtained with a specified degree of confidence".

ACS recommends an LOQ of 10σ and this imparts a quantitative measurement uncertainty of +/- 30% in the measured value at this 99% confidence level. ACS contends "quantitative interpretation, decision-making and regulatory actions should be limited to data at or above the limit of quantitation". In particular, ACS states: "Analytical chemists must always emphasize to the public that the single most important characteristic of any result obtained from one or more analytical measurements is an adequate statement of its uncertainty level. Lawyers usually attempt to dispense with uncertainty and try to obtain unequivocal statements; therefore, an uncertainty interval must be clearly defined in cases involving litigation and/or enforcement proceedings. Otherwise, a value of 1.001 without a specified uncertainty, for example, may be viewed as legally exceeding a permissible level of 1."

EPA Methods used for regulatory enforcement use the same definition of MDL. "The method detection limit is defined as the minimum concentration of a substance that can be measured and reported with 99% confidence that the value is above zero". Since performance of analytical methodology and therefore detection limits vary significantly with non-controllable laboratory to laboratory variables such as the exact type of analytical instrumentation, EPA promulgates the concept of Practical Quantitation Limits (PQL). A PQL is equal to the MDL multiplied by a factor of ten or greater and are published as a general guide to laboratory method performance. The factors can range from ten to ten thousand depending on sample matrix and are intended to allow the laboratory the flexibility to determine the relative performance of an analytical method in a more complex sample matrix. In confirmation of laboratory variability, EPA methods as well as other published analytical methods often estimate detection limits and quantitation limits using a bench-level expert, performance estimate.

Recognition of the 'average performance' nature of the PQL guidelines, EPA states that PQL's "are the lowest concentrations of analytes in (samples) that can be reliably determined within specified limits of precision and accuracy by the indicated methods under routine laboratory operating conditions. The PQL's listed are generally stated to one significant figure. CAUTION: The PQL values in many cases are based only on a general estimate for the method and not on a determination for the individual compounds; PQL's are not a part of the regulation (40 CFR Part 264 Appendix IX, Footnote 6)."
SEE

FOLDER:

Geochem_data

For data

Page 193
Appendix D
Field Forms for Properties in the Study Area
SEE

FOLDER:

Field_forms

For data
Appendix E
Properties That Could Not Be Located
APPENDIX E: PROPERTIES THAT COULD NOT BE LOCATED

Eagle Creek Mine (Site No. WL-1)

J.D. Kauffman attempted to locate this property on August 21, 1996. The location given was T. 49 N., R. 5 E., section 33, on the Murray 7.5-minute quadrangle.

Spent several hours searching from elevation of about 4,000 feet to 4,400 feet on the hillside west of the West Fork of Eagle Creek, and across the valley from where Thirty-four Creek enters the West Fork. The hills are very steep with somewhat open ridges and noses, and gullies with dense brush. Could not find any evidence of workings, but a claim corner notice was found nailed to a small tree. The aluminum 3-inch by 4-inch tags were bent and barely readable. The words “corner” and “Heile” were all that remained. The notice was along a game trail in thick brush, with no overgrown roads or old trails to indicate the presence of any workings.

Mountain Queen Group (Site No. WL-3)

J.D. Kauffman attempted to locate this property on August 20, 1996. The location given was T. 50 N., R. 5 E., section 7, on the Murray 7.5-minute quadrangle.

Searched from the saddle (at Point 4,370) downslope to elevation about 3,700 feet and all along the side slope back to the nose of ridge (still at an elevation of about 3,700 feet). Found no evidence of workings, trails, or roads that might have led to the property. There are quite a few "pits" on the hillside, but most or all can be attributed to fallen trees that were uprooted and rotted away. No artifacts, alteration on the rocks, or other evidence was found to support a prospect. On the ridge nose just east of Bobtail trail (FS Trail 526) at elevation of about 3,760 feet, there is a small sloughed-in pit 8-10 feet long, about 3-4 feet wide, and 2 feet deep that may have been a prospect pit, although this is not definite. (The pit is about 100-150 feet above where the switchback of the trail reaches the nose of the ridge).

Blaine and Emmett (Site No. WL-20)

Alternative name-Niagara Group.

J.D. Kauffman attempted to locate this property on August 23, 1996. The location given was in T. 50 N., R. 5 E., section 20, on the Murray 7.5-minute quadrangle.

Made a traverse beginning on the East Fork of Eagle Creek just south of Saw Gulch, up the slope to an elevation of about 3,000 feet, then across Saw Gulch and uphill along the nose of the ridge to about 3,500 feet, then back down to the East Fork. Could find no evidence of pits, trenches, or other workings. A narrow trail that crosses the talus slope just above the East Fork appears to be an old wagon road, but it did not lead to any workings. It may be an old road along the south side of the East Fork.

Flagstaff (Site No. WL-22)

J.D. Kauffman attempted to locate this property on August 22, 1996. The location given was T. 50 N., R. 5 E., section 19, on the Murray 7.5-minute quadrangle.
Checked for this prospect along the nose and sides of a ridge on the northwest side of the East Fork of Eagle Creek, across from and just to the southwest of Saw Gulch. Worked back and forth across the ridge to an elevation of about 3,500 feet, then back down to the East Fork to the north and south of the ridge. Found no workings or other evidence of prospecting. There were no roads or trails in the area.

**Silver Chord Mine (Site No. WL-23)**

J.D. Kauffman attempted to locate this property on August 28, 1996. The location given was on the southwest side of Tributary Creek in T. 50 N., R. 5 E., section 24, on the Murray 7.5-minute quadrangle.

About half a dozen or more small, shallow pits were found in the timber above the road. These were all less than 5 feet in diameter and only 1-2 feet deep. Numerous trees were growing in the pits and on the excavated material. Although the pits could have been manmade, they also resemble those that remain after uprooted trees have rotted away. No conclusive evidence was found to be certain these were prospect pits.
Appendix F
Properties Described by USFS Personnel as Having No Problems
Appendix F: Prospects described by USFS personnel as having no problems.

Murray 7.5-Minute Quadrangle

WL-35, Toggan Creek
WL 40, North Hercules (Idaho Northern)
WL-41, Ivah
WL-49, Sheridan
WL-50, Wallace
WL-52, Penn-Idaho
WL-60, Golden Condor

Burke 7.5-Minute Quadrangle

WL-67, Blacktail
WL-76, Ferguson
WL-78, Idaho Silver-Lead
WL-79, Paradox
WL-82, Wibberding-Golden Slipper Mines
WL-99, Averbach (Auerbach, GF&H)
WL-103, Gamma
WL-117, Jewell Prospect (General, Idaho-General)
WL-129, Lily Prospect
WL-130, Silver Circle

Prichard 7.5-Minute Quadrangle

WL-31, Teffi Group Manganese Claims
WL-42, Half Century
WL-47, Shoshone River

Osburn 7.5-Minute Quadrangle

WL-74, Lucky Strike and Lake Creek property