Final Uranium Leasing Program Programmatic Environmental Impact Statement

Volume 2: Chapter 5 through Appendix H

DOE/EIS-0472
March 2014
Final Uranium Leasing Program Programmatic Environmental Impact Statement

Volume 2: Chapter 5 through Appendix H

DOE/EIS-0472
March 2014
CONTENTS

NOTATION ................................................................................................................................... xxxiii
CONVERSION TABLE ........................................................................................................ xli
VOLUME 1: CHAPTERS 1 THROUGH 4

1 INTRODUCTION ........................................................................................................ 1-1
1.1 Background .......................................................................................................... 1-1
1.2 Current Status of the ULP .................................................................................... 1-6
1.2.1 DOE ULP Administrative Process ................................................................ 1-7
1.2.2 Lease Requirements ..................................................................................... 1-13
1.3 Site-Specific Information for the ULP Lease Tracts ........................................... 1-14
1.3.1 ULP Lease Tract 5 ................................................................................... 1-14
1.3.2 ULP Lease Tract 5A ................................................................................ 1-17
1.3.3 ULP Lease Tract 6 ................................................................................... 1-17
1.3.4 ULP Lease Tract 7 ................................................................................... 1-19
1.3.5 ULP Lease Tract 8 ................................................................................... 1-21
1.3.6 ULP Lease Tract 8A .................................................................................. 1-21
1.3.7 ULP Lease Tract 9 ................................................................................... 1-23
1.3.8 ULP Lease Tract 10 ................................................................................... 1-25
1.3.9 ULP Lease Tract 11 ................................................................................... 1-25
1.3.10 ULP Lease Tract 11A ............................................................................. 1-27
1.3.11 ULP Lease Tract 12 ................................................................................ 1-27
1.3.12 ULP Lease Tract 13 ................................................................................ 1-28
1.3.13 ULP Lease Tract 13A ............................................................................. 1-30
1.3.14 ULP Lease Tract 14 ................................................................................ 1-30
1.3.15 ULP Lease Tract 15 ................................................................................ 1-31
1.3.16 ULP Lease Tract 15A ............................................................................. 1-31
1.3.17 ULP Lease Tract 16 ................................................................................ 1-32
1.3.18 ULP Lease Tract 16A ............................................................................. 1-33
1.3.19 ULP Lease Tract 17 ................................................................................ 1-33
1.3.20 ULP Lease Tract 18 ................................................................................ 1-34
1.3.21 ULP Lease Tract 19 ................................................................................ 1-36
1.3.22 ULP Lease Tract 19A ............................................................................. 1-36
1.3.23 ULP Lease Tract 20 ................................................................................. 1-37
1.3.24 ULP Lease Tract 21 ................................................................................ 1-37
1.3.25 ULP Lease Tract 22 ................................................................................ 1-38
1.3.26 ULP Lease Tract 22A ............................................................................. 1-39
1.3.27 ULP Lease Tract 23 ................................................................................ 1-39
1.3.28 ULP Lease Tract 24 ................................................................................ 1-40
1.3.29 ULP Lease Tract 25 ................................................................................ 1-40
CONTENTS (Cont.)

1.3.30 ULP Lease Tract 26 ................................................................. 1-41
1.3.31 ULP Lease Tract 27 ................................................................. 1-42
1.4 Purpose and Need for Agency Action ........................................... 1-43
1.5 Proposed Action ........................................................................... 1-44
1.6 Scope of the ULP PEIS ................................................................. 1-44
1.7 NEPA Process for the ULP PEIS ..................................................... 1-45
1.7.1 Public Scoping Process ............................................................... 1-45
1.7.1.1 Comments Considered Within the ULP PEIS Scope ............... 1-46
1.7.1.2 Comments Considered Outside the ULP PEIS Scope .......... 1-49
1.7.2 Public Comment Process ............................................................ 1-49
1.7.3 Nine Topics of Interest Based on Public Comments Received ... 1-51
1.8 Other Related, Similar, Connected, or Cumulative Actions .......... 1-61
1.9 Consultation ................................................................................... 1-62
1.10 Cooperating and Commenting Agencies ..................................... 1-63
1.11 Organization of the ULP PEIS ..................................................... 1-65

2 PROPOSED ACTION AND ALTERNATIVES ....................................... 2-1
2.1 Uranium Mining Methods and Phases ........................................... 2-3
2.1.1 Exploration ............................................................................... 2-3
2.1.2 Mine Development and Operations .......................................... 2-4
2.1.2.1 Surface-Plant Area Construction and Operations .............. 2-5
2.1.2.2 Mining Method – Underground Mining .............................. 2-12
2.1.2.3 Mining Method – Surface Open-Pit Mining ..................... 2-13
2.1.3 Reclamation .............................................................................. 2-13
2.1.4 Ore Processing .......................................................................... 2-14
2.1.4.1 Piñon Ridge Mill ................................................................. 2-14
2.1.4.2 White Mesa Mill ................................................................. 2-16
2.2 Five Alternatives Evaluated ......................................................... 2-17
2.2.1 Alternative 1 ............................................................................ 2-17
2.2.1.1 Basis for Impacts Analyses for Alternative 1 ...................... 2-19
2.2.2 Alternative 2 ............................................................................ 2-20
2.2.2.1 Basis for Impacts Analyses for Alternative 2 ...................... 2-21
2.2.3 Alternative 3 ............................................................................ 2-21
2.2.3.1 Basis for Impacts Analyses for Alternative 3 ...................... 2-24
2.2.4 Alternative 4 ............................................................................ 2-26
2.2.4.1 Basis for Impacts Analyses for Alternative 4 ...................... 2-27
2.2.5 Alternative 5 ............................................................................ 2-30
2.2.5.1 Basis for Impacts Analyses for Alternative 5 ...................... 2-30
2.3 Alternatives Considered but Not Evaluated in Detail .................... 2-32
2.4 Summary and Comparison of the Potential Impacts from the Five Alternatives ....................................................... 2-33
## CONTENTS (Cont.)

<table>
<thead>
<tr>
<th>Section</th>
<th>Title</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>2.4.1</td>
<td>Air Quality</td>
<td>2-33</td>
</tr>
<tr>
<td>2.4.2</td>
<td>Acoustic Environment</td>
<td>2-38</td>
</tr>
<tr>
<td>2.4.3</td>
<td>Soil Resources</td>
<td>2-38</td>
</tr>
<tr>
<td>2.4.4</td>
<td>Water Resources</td>
<td>2-39</td>
</tr>
<tr>
<td>2.4.5</td>
<td>Human Health</td>
<td>2-40</td>
</tr>
<tr>
<td>2.4.6</td>
<td>Ecological Resources</td>
<td>2-42</td>
</tr>
<tr>
<td>2.4.6.1</td>
<td>Vegetation</td>
<td>2-43</td>
</tr>
<tr>
<td>2.4.6.2</td>
<td>Wildlife</td>
<td>2-44</td>
</tr>
<tr>
<td>2.4.6.3</td>
<td>Aquatic Biota</td>
<td>2-46</td>
</tr>
<tr>
<td>2.4.6.4</td>
<td>Threatened, Endangered, and Sensitive Species</td>
<td>2-47</td>
</tr>
<tr>
<td>2.4.7</td>
<td>Land Use</td>
<td>2-48</td>
</tr>
<tr>
<td>2.4.8</td>
<td>Socioeconomics</td>
<td>2-49</td>
</tr>
<tr>
<td>2.4.9</td>
<td>Environmental Justice</td>
<td>2-49</td>
</tr>
<tr>
<td>2.4.10</td>
<td>Transportation</td>
<td>2-50</td>
</tr>
<tr>
<td>2.4.11</td>
<td>Cultural Resources</td>
<td>2-51</td>
</tr>
<tr>
<td>2.4.12</td>
<td>Visual Resources</td>
<td>2-53</td>
</tr>
<tr>
<td>2.4.13</td>
<td>Waste Management</td>
<td>2-54</td>
</tr>
<tr>
<td>2.4.14</td>
<td>Cumulative Impacts</td>
<td>2-54</td>
</tr>
<tr>
<td>2.5</td>
<td>Irreversible and Irretrievable Commitment of Resources</td>
<td>2-72</td>
</tr>
<tr>
<td>2.6</td>
<td>Preferred Alternative Identified</td>
<td>2-72</td>
</tr>
<tr>
<td>3</td>
<td>AFFECTED ENVIRONMENT</td>
<td>3-1</td>
</tr>
<tr>
<td>3.1</td>
<td>Air Quality</td>
<td>3-1</td>
</tr>
<tr>
<td>3.1.1</td>
<td>Climate</td>
<td>3-1</td>
</tr>
<tr>
<td>3.1.1.1</td>
<td>General Climate</td>
<td>3-1</td>
</tr>
<tr>
<td>3.1.1.2</td>
<td>Wind</td>
<td>3-2</td>
</tr>
<tr>
<td>3.1.1.3</td>
<td>Temperature</td>
<td>3-5</td>
</tr>
<tr>
<td>3.1.1.4</td>
<td>Precipitation</td>
<td>3-5</td>
</tr>
<tr>
<td>3.1.1.5</td>
<td>Severe Weather</td>
<td>3-5</td>
</tr>
<tr>
<td>3.1.2</td>
<td>Existing Air Emissions</td>
<td>3-8</td>
</tr>
<tr>
<td>3.1.3</td>
<td>Existing Air Quality</td>
<td>3-11</td>
</tr>
<tr>
<td>3.1.4</td>
<td>Regulatory Environment</td>
<td>3-14</td>
</tr>
<tr>
<td>3.1.4.1</td>
<td>Prevention of Significant Deterioration</td>
<td>3-14</td>
</tr>
<tr>
<td>3.1.4.2</td>
<td>Visibility Protection</td>
<td>3-18</td>
</tr>
<tr>
<td>3.1.4.3</td>
<td>General Conformity</td>
<td>3-18</td>
</tr>
<tr>
<td>3.1.4.4</td>
<td>Air Quality-Related Values</td>
<td>3-18</td>
</tr>
<tr>
<td>3.2</td>
<td>Acoustic Environment</td>
<td>3-20</td>
</tr>
<tr>
<td>3.2.1</td>
<td>Sound Fundamentals</td>
<td>3-20</td>
</tr>
<tr>
<td>3.2.2</td>
<td>Background Noise Levels</td>
<td>3-21</td>
</tr>
<tr>
<td>3.2.3</td>
<td>Noise Regulations</td>
<td>3-22</td>
</tr>
<tr>
<td>3.3</td>
<td>Geological Setting and Soil Resources</td>
<td>3-23</td>
</tr>
<tr>
<td>3.3.1</td>
<td>Geological Setting</td>
<td>3-23</td>
</tr>
</tbody>
</table>
CONTENTS (Cont.)

1
2
3

4 3.3.1.1 Physiography ................................................................. 3-23
5 3.3.1.2 Structural Geology.......................................................... 3-24
6 3.3.1.3 Bedrock Geology ............................................................ 3-27
7 3.3.1.4 Seismicity ....................................................................... 3-34
8 3.3.1.5 Topography and Geology of the Lease Tracts .................. 3-35
9 3.3.1.6 Paleontological Resources ........................................... 3-40
10 3.3.2 Soil Resources .................................................................. 3-42
11 3.3.2.1 Gateway Lease Tracts .................................................... 3-43
12 3.3.2.2 Uravan Lease Tracts ........................................................ 3-45
13 3.3.2.3 Paradox Lease Tracts ..................................................... 3-47
14 3.3.2.4 Slick Rock Lease Tracts .................................................. 3-51
15 3.4 Water Resources .................................................................. 3-53
16 3.4.1 Surface Water .................................................................... 3-53
17 3.4.1.1 Stream and Drainage Systems ........................................... 3-53
18 3.4.1.2 Existing Water Quality .................................................... 3-59
19 3.4.2 Groundwater ....................................................................... 3-68
20 3.4.3 Water Management ........................................................... 3-76
21 3.5 Human Health ...................................................................... 3-79
22 3.5.1 Exposure to Radiation ......................................................... 3-79
23 3.5.1.1 Radiation and Its Effects .................................................... 3-79
24 3.5.1.2 Baseline Radiological Dose and Risk ................................. 3-83
25 3.5.2 Exposure to Hazardous Chemicals ....................................... 3-88
26 3.5.2.1 Chemical Hazards ............................................................ 3-88
27 3.5.2.2 Baseline Chemical Risks .................................................. 3-89
28 3.6 Ecological Resources ............................................................. 3-93
29 3.6.1 Vegetation .......................................................................... 3-93
30 3.6.1.1 Wetlands and Floodplains ................................................. 3-107
31 3.6.2 Wildlife .............................................................................. 3-114
32 3.6.2.1 Amphibians and Reptiles .................................................. 3-115
33 3.6.2.2 Birds .............................................................................. 3-115
34 3.6.2.3 Mammals ....................................................................... 3-130
35 3.6.3 Aquatic Biota ...................................................................... 3-145
36 3.6.4 Threatened, Endangered, and Sensitive Species ................ 3-153
37 3.6.4.1 Species Listed under the Endangered Species Act .......... 3-153
38 3.6.4.2 Sensitive and State-Listed Species .................................... 3-175
39 3.7 Land Use ............................................................................... 3-178
40 3.7.1 Specially Designated Areas and Lands with Wilderness
41 Characteristics ........................................................................... 3-179
42 3.7.2 Agriculture ......................................................................... 3-183
43 3.7.3 Rangeland Resources .......................................................... 3-190
44 3.7.3.1 Livestock Grazing ............................................................ 3-190
45 3.7.3.2 Wild Horses and Burros .................................................... 3-190
46 3.7.4 Mineral Resources and Mining ........................................... 3-191
## CONTENTS (Cont.)

<table>
<thead>
<tr>
<th>Section</th>
<th>Title</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>3.7.4.1</td>
<td>Uranium</td>
<td>3-191</td>
</tr>
<tr>
<td>3.7.4.2</td>
<td>Coal</td>
<td>3-195</td>
</tr>
<tr>
<td>3.7.4.3</td>
<td>Oil and Gas</td>
<td>3-195</td>
</tr>
<tr>
<td>3.7.4.4</td>
<td>Other Minerals and Mineral Materials</td>
<td>3-196</td>
</tr>
<tr>
<td>3.7.5</td>
<td>Timber Harvest</td>
<td>3-196</td>
</tr>
<tr>
<td>3.7.6</td>
<td>Recreation</td>
<td>3-197</td>
</tr>
<tr>
<td>3.8</td>
<td>Socioeconomics</td>
<td>3-198</td>
</tr>
<tr>
<td>3.8.1</td>
<td>Economic Environment</td>
<td>3-200</td>
</tr>
<tr>
<td>3.8.1.1</td>
<td>ROI Employment and Unemployment</td>
<td>3-200</td>
</tr>
<tr>
<td>3.8.1.2</td>
<td>Employment by Sector</td>
<td>3-201</td>
</tr>
<tr>
<td>3.8.1.3</td>
<td>Personal Income</td>
<td>3-202</td>
</tr>
<tr>
<td>3.8.2</td>
<td>Social Environment</td>
<td>3-205</td>
</tr>
<tr>
<td>3.8.2.1</td>
<td>Population</td>
<td>3-205</td>
</tr>
<tr>
<td>3.8.2.2</td>
<td>ROI Housing</td>
<td>3-205</td>
</tr>
<tr>
<td>3.8.2.3</td>
<td>ROI Community and Social Services</td>
<td>3-206</td>
</tr>
<tr>
<td>3.8.3</td>
<td>Recreation and Tourism Economy</td>
<td>3-211</td>
</tr>
<tr>
<td>3.9</td>
<td>Environmental Justice</td>
<td>3-213</td>
</tr>
<tr>
<td>3.10</td>
<td>Transportation</td>
<td>3-218</td>
</tr>
<tr>
<td>3.11</td>
<td>Cultural Resources</td>
<td>3-224</td>
</tr>
<tr>
<td>3.11.1</td>
<td>Cultural History of Southwestern Colorado</td>
<td>3-224</td>
</tr>
<tr>
<td>3.11.2</td>
<td>Cultural Resource Inventories</td>
<td>3-228</td>
</tr>
<tr>
<td>3.11.3</td>
<td>Traditional Cultural Properties</td>
<td>3-236</td>
</tr>
<tr>
<td>3.12</td>
<td>Visual Resources</td>
<td>3-238</td>
</tr>
<tr>
<td>3.12.1</td>
<td>Regional Setting</td>
<td>3-239</td>
</tr>
<tr>
<td>3.12.2</td>
<td>Lease Tracts</td>
<td>3-241</td>
</tr>
<tr>
<td>3.12.2.1</td>
<td>North Group</td>
<td>3-250</td>
</tr>
<tr>
<td>3.12.2.2</td>
<td>North Central Group and South Central Group</td>
<td>3-252</td>
</tr>
<tr>
<td>3.12.2.3</td>
<td>South Group</td>
<td>3-254</td>
</tr>
<tr>
<td>3.12.3</td>
<td>Visual Resource Management</td>
<td>3-255</td>
</tr>
<tr>
<td>3.13</td>
<td>Waste Management</td>
<td>3-257</td>
</tr>
</tbody>
</table>

## 4 ENVIRONMENTAL IMPACTS

<table>
<thead>
<tr>
<th>Subsection</th>
<th>Title</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>4.1</td>
<td>Alternative 1</td>
<td>4-1</td>
</tr>
<tr>
<td>4.1.1</td>
<td>Air Quality</td>
<td>4-1</td>
</tr>
<tr>
<td>4.1.2</td>
<td>Acoustic Environment</td>
<td>4-2</td>
</tr>
<tr>
<td>4.1.3</td>
<td>Geology and Soil Resources</td>
<td>4-4</td>
</tr>
<tr>
<td>4.1.3.1</td>
<td>Potential Soil Impacts Common to All Alternatives</td>
<td>4-4</td>
</tr>
<tr>
<td>4.1.3.2</td>
<td>Soil Impacts under Alternative 1</td>
<td>4-8</td>
</tr>
<tr>
<td>4.1.3.3</td>
<td>Impacts on Paleontological Resources under Alternative 1</td>
<td>4-8</td>
</tr>
<tr>
<td>4.1.4</td>
<td>Water Resources</td>
<td>4-9</td>
</tr>
<tr>
<td>4.1.5</td>
<td>Human Health</td>
<td>4-10</td>
</tr>
<tr>
<td>4.1.5.1</td>
<td>Conceptual Site Exposure Model</td>
<td>4-10</td>
</tr>
</tbody>
</table>
CONTENTS (Cont.)

4.1.5.2 Potential Human Health Impacts from Alternative 1 ................. 4-14
4.1.5.3 Worker Exposure – Reclamation Workers ................................. 4-15
4.1.5.4 General Public Exposure – Residential Scenario ....................... 4-17
4.1.5.5 General Public Exposure – Recreationist Scenario .................... 4-24
4.1.5.6 General Public Exposure – Individual Receptor Entering an Inactive Underground Mine Portal ........................................ 4-26
4.1.6 Ecological Resources ................................................................................. 4-26
4.1.6.1 Vegetation ................................................................................... 4-26
4.1.6.2 Wildlife ....................................................................................... 4-30
4.1.6.3 Aquatic Biota .............................................................................. 4-32
4.1.6.4 Threatened, Endangered, and Sensitive Species......................... 4-32
4.1.7 Land Use .................................................................................................... 4-50
4.1.8 Socioeconomics ......................................................................................... 4-50
4.1.8.1 Recreation and Tourism .............................................................. 4-51
4.1.9 Environmental Justice ................................................................................ 4-52
4.1.10 Transportation ............................................................................................ 4-53
4.1.11 Cultural Resources ..................................................................................... 4-53
4.1.12 Visual Resources ........................................................................................ 4-54
4.1.12.1 Vegetation and Landform Alterations ........................................ 4-55
4.1.12.2 Removal of Structures and On-Site Materials ............................ 4-56
4.1.12.3 Roads .......................................................................................... 4-56
4.1.12.4 Workers, Vehicles, and Equipment ............................................ 4-57
4.1.12.5 Lighting ....................................................................................... 4-57
4.1.12.6 Impacts on Lands Surrounding the Lease Tracts ......................... 4-57
4.1.13 Waste Management .................................................................................... 4-67
4.2 Alternative 2 ........................................................................................................... 4-67
4.2.1 Air Quality ................................................................................................. 4-68
4.2.2 Acoustic Environment ............................................................................... 4-68
4.2.3 Geology and Soil Resources ...................................................................... 4-68
4.2.3.1 Paleontological Resources .......................................................... 4-68
4.2.4 Water Resources ......................................................................................... 4-68
4.2.5 Human Health ............................................................................................ 4-69
4.2.6 Ecological Resources ................................................................................. 4-69
4.2.6.1 Vegetation ................................................................................... 4-69
4.2.6.2 Wildlife ....................................................................................... 4-69
4.2.6.3 Aquatic Biota .............................................................................. 4-69
4.2.6.4 Threatened, Endangered, and Sensitive Species......................... 4-70
4.2.7 Land Use .................................................................................................... 4-70
4.2.8 Socioeconomics ............................................................................................ 4-70
4.2.9 Environmental Justice ................................................................................ 4-70
4.2.10 Transportation ............................................................................................ 4-70
4.2.11 Cultural Resources ..................................................................................... 4-71
4.2.12 Visual Resources ......................................................................................... 4-71
CONTENTS (Cont.)

4.2.13 Waste Management ................................................................. 4-71

4.3 Alternative 3 .............................................................. 4-71

4.3.1 Air Quality .............................................................................. 4-72

4.3.1.1 Exploration .............................................................................. 4-72

4.3.1.2 Mine Development and Operations ...................................... 4-72

4.3.1.3 Reclamation ............................................................................. 4-75

4.3.2 Acoustic Environment .............................................................. 4-76

4.3.2.1 Exploration .............................................................................. 4-76

4.3.2.2 Mine Development and Operations ...................................... 4-76

4.3.2.3 Reclamation ............................................................................. 4-79

4.3.3 Geology and Soil Resources .............................................................. 4-80

4.3.3.1 Exploration .............................................................................. 4-80

4.3.3.2 Mine Development and Operations ...................................... 4-80

4.3.3.3 Reclamation ............................................................................. 4-81

4.3.3.4 Paleontological Resources .............................................................. 4-81

4.3.4 Water Resources .............................................................. 4-82

4.3.4.1 Exploration .............................................................................. 4-82

4.3.4.2 Mine Development and Operations ...................................... 4-83

4.3.4.3 Reclamation ............................................................................. 4-88

4.3.5 Human Health .............................................................. 4-89

4.3.5.1 Worker Exposures – Uranium Miners ...................................... 4-89

4.3.5.2 Worker Exposure – Reclamation Workers ................................ 4-91

4.3.5.3 General Public Exposure – Residential Scenario ...................... 4-92

4.3.5.4 General Public Exposures – Recreationist Scenario .............. 4-101

4.3.5.5 Intentional Destructive Acts .............................................................. 4-103

4.3.6 Ecological Resources .............................................................. 4-104

4.3.6.1 Vegetation .............................................................................. 4-104

4.3.6.2 Wildlife ................................................................................. 4-108

4.3.6.3 Aquatic Biota ........................................................................... 4-125

4.3.6.4 Threatened, Endangered, and Sensitive Species ..................... 4-131

4.3.7 Land Use .............................................................................................. 4-154

4.3.8 Socioeconomics .............................................................. 4-154

4.3.8.1 Recreation and Tourism .............................................................. 4-156

4.3.9 Environmental Justice .............................................................. 4-159

4.3.9.1 Exploration .............................................................................. 4-159

4.3.9.2 Mine Development and Operations ...................................... 4-160

4.3.9.3 Reclamation ............................................................................. 4-161

4.3.10 Transportation .............................................................. 4-161

4.3.10.1 General Approach and Assumptions ...................................... 4-161

4.3.10.2 Routine Transportation Risks ...................................................... 4-163

4.3.10.3 Transportation Accident Risks ...................................................... 4-172

4.3.10.4 Accidental Release of Uranium during Transportation .............. 4-175

4.3.11 Cultural Resources .............................................................. 4-176
## CONTENTS (Cont.)

1. **4.3.11.1** Exploration................................................................. 4-177
2. **4.3.11.2** Mine Development and Operations ................................. 4-177
3. **4.3.11.3** Reclamation ................................................................ 4-179
4. **4.3.12** Visual Resources............................................................... 4-179
5. **4.3.12.1** Exploration................................................................. 4-180
6. **4.3.12.2** Mine Development and Operations ................................. 4-180
7. **4.3.12.3** Reclamation ................................................................ 4-184
8. **4.3.12.4** Impacts on Surrounding Lands ......................................... 4-184
9. **4.3.13** Waste Management........................................................... 4-192
10. **4.4** Alternative 4....................................................................... 4-193
11. **4.4.1** Air Quality ...................................................................... 4-193
12. **4.4.1.1** Exploration................................................................. 4-193
13. **4.4.1.2** Mine Development and Operations ................................. 4-193
14. **4.4.1.3** Reclamation ................................................................ 4-196
15. **4.4.2** Acoustic Environment......................................................... 4-196
16. **4.4.2.1** Exploration................................................................. 4-196
17. **4.4.2.2** Mine Development and Operations ................................. 4-197
18. **4.4.2.3** Reclamation ................................................................ 4-199
19. **4.4.3** Geology and Soil Resources ............................................... 4-200
20. **4.4.3.1** Exploration................................................................. 4-200
21. **4.4.3.2** Mine Development and Operations ................................. 4-200
22. **4.4.3.3** Reclamation ................................................................ 4-200
23. **4.4.3.4** Paleontological Resources ............................................. 4-200
24. **4.4.4** Water Resources ............................................................... 4-201
25. **4.4.4.1** Exploration................................................................. 4-201
26. **4.4.4.2** Mine Development and Operations ................................. 4-201
27. **4.4.4.3** Reclamation ................................................................ 4-202
28. **4.4.5** Human Health.................................................................. 4-203
29. **4.4.5.1** Worker Exposure – Uranium Miners ............................... 4-203
30. **4.4.5.2** Worker Exposure – Reclamation Workers ........................ 4-204
31. **4.4.5.3** General Public Exposure – Residential Scenario ................ 4-205
32. **4.4.5.4** General Public Exposure – Recreationist Scenario ............. 4-210
33. **4.4.6** Ecological Resources.......................................................... 4-211
34. **4.4.6.1** Vegetation................................................................... 4-211
35. **4.4.6.2** Wildlife ...................................................................... 4-212
36. **4.4.6.3** Aquatic Biota ................................................................. 4-213
37. **4.4.6.4** Threatened, Endangered, and Sensitive Species ............... 4-213
38. **4.4.7** Land Use ........................................................................ 4-213
39. **4.4.8** Socioeconomics ................................................................. 4-215
40. **4.4.8.1** Recreation and Tourism .................................................. 4-217
41. **4.4.9** Environmental Justice........................................................ 4-217
42. **4.4.9.1** Exploration................................................................. 4-217
43. **4.4.9.2** Mine Development and Operations ................................. 4-217

---

March 2014
CONTENTS (Cont.)

4.4.9.3 Reclamation ................................................................. 4-217
4.4.10 Transportation ................................................................. 4-217
  4.4.10.1 Routine Transportation Risks ....................................... 4-217
  4.4.10.2 Transportation Accident Risks ................................... 4-220
4.4.11 Cultural Resources .......................................................... 4-221
4.4.12 Visual Resources ............................................................. 4-222
  4.4.12.1 Exploration, Mine Development and Operations, and Reclamation ........................................ 4-222
  4.4.12.2 Impacts on Surrounding Lands ................................... 4-222
4.4.13 Waste Management .......................................................... 4-234
4.5 Alternative 5 ........................................................................ 4-235
  4.5.1 Air Quality ....................................................................... 4-235
    4.5.1.1 Exploration ............................................................... 4-235
    4.5.1.2 Mine Development and Operations ................................ 4-235
    4.5.1.3 Reclamation ............................................................ 4-237
  4.5.2 Acoustic Environment ....................................................... 4-238
    4.5.2.1 Exploration ............................................................... 4-238
    4.5.2.2 Mine Development and Operations ................................ 4-238
    4.5.2.3 Reclamation ............................................................ 4-240
  4.5.3 Geology and Soil Resources ............................................. 4-241
    4.5.3.1 Paleontological Resources ........................................... 4-241
  4.5.4 Water Resources ............................................................. 4-241
    4.5.4.1 Exploration ............................................................... 4-241
    4.5.4.2 Mine Development and Operations ................................ 4-242
    4.5.4.3 Reclamation ............................................................ 4-242
  4.5.5 Human Health ................................................................. 4-242
    4.5.5.1 Worker Exposure – Uranium Miners .............................. 4-243
    4.5.5.2 Worker Exposure – Reclamation Workers ...................... 4-244
    4.5.5.3 General Public Exposure – Residential Scenario ........... 4-245
    4.5.5.4 General Public Exposure – Recreationist Scenario .......... 4-250
  4.5.6 Ecological Resources ....................................................... 4-251
    4.5.6.1 Vegetation ............................................................... 4-251
    4.5.6.2 Wildlife .................................................................... 4-252
    4.5.6.3 Aquatic Biota ............................................................ 4-252
    4.5.6.4 Threatened, Endangered, and Sensitive Species .......... 4-253
  4.5.7 Land Use ........................................................................... 4-253
  4.5.8 Socioeconomics ............................................................... 4-253
    4.5.8.1 Recreation and Tourism ............................................. 4-255
  4.5.9 Environmental Justice ..................................................... 4-255
    4.5.9.1 Exploration ............................................................... 4-255
    4.5.9.2 Mine Development and Operations ............................... 4-255
    4.5.9.3 Reclamation ............................................................ 4-255
  4.5.10 Transportation ............................................................... 4-256
## CONTENTS (Cont.)

1  
2  
3  
4 4.5.10.1 Routine Transportation Risks ..................................................... 4-256 
5 4.5.10.2 Transportation Accident Risks .................................................... 4-259 
6 4.5.11 Cultural Resources ..................................................................................... 4-259 
7 4.5.12 Visual Resources ........................................................................................ 4-260 
8 4.5.12.1 Exploration, Mine Development and Operations, and Reclamation ................................................................. 4-260 
9 4.5.12.2 Impacts on Surrounding Lands ........................................................................ 4-260 
10 4.5.13 Waste Management .................................................................................... 4-260 
11 4.6 Measures To Minimize Potential Impacts from ULP Mining Activities 4-261 
12 4.7 Cumulative Impacts ............................................................................................... 4-261 
13 4.7.1 Reasonably Foreseeable Future Actions ................................................ 4-276 
14 4.7.1.1 Piñon Ridge Mill ......................................................................... 4-276 
15 4.7.1.2 Planned Uranium Exploration .................................................... 4-278 
16 4.7.1.3 Coal Mining ................................................................................ 4-278 
17 4.7.1.4 Uranium Mill Remediation ................................................................. 4-281 
18 4.7.1.5 Reforestation Projects ........................................................................ 4-284 
19 4.7.1.6 Western Area Power Administration ROW Maintenance ........ 4-284 
20 4.7.1.7 Construction of Agricultural Water Facilities ............................. 4-285 
21 4.7.1.8 Other Future Projects .................................................................. 4-285 
22 4.7.2 Present and Ongoing Actions ..................................................................... 4-287 
23 4.7.2.1 White Mesa Mill ......................................................................... 4-287 
24 4.7.2.2 Uranium Mining ......................................................................... 4-289 
25 4.7.2.3 Coal and Other Mineral Mining .................................................. 4-303 
26 4.7.2.4 Oil and Gas Exploration and Extraction ..................................... 4-303 
27 4.7.2.5 Long-Term Grazing Permits and Allotments .................................... 4-304 
28 4.7.2.6 Power Generation and Transmission .......................................... 4-304 
29 4.7.2.7 Potash Exploration ...................................................................... 4-306 
30 4.7.2.8 Lisbon Natural Gas Processing Plant ........................................... 4-308 
31 4.7.2.9 Paradox Valley Desalinization Plant .......................................... 4-308 
32 4.7.2.10 Cameo Station Power Plant ........................................................ 4-309 
33 4.7.2.11 Reconstruction of the Hanging Flume Replica ........................... 4-309 
34 4.7.3 General Trends........................................................................................... 4-309 
35 4.7.3.1 Population Growth ...................................................................... 4-310 
36 4.7.3.2 Energy Demand ........................................................................... 4-310 
37 4.7.3.3 Water Use and Availability ............................................................. 4-311 
38 4.7.3.4 Climate ................................................................................................... 4-311 
39 4.7.4 Cumulative Impacts from the ULP Alternatives .............................. 4-312 
40 41 42
## CONTENTS (Cont.)

### VOLUME 2: CHAPTER 5 THROUGH APPENDIX H

<table>
<thead>
<tr>
<th>Volume</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>5</td>
<td>5-1</td>
</tr>
<tr>
<td>6</td>
<td>6-1</td>
</tr>
<tr>
<td>7</td>
<td>7-1</td>
</tr>
<tr>
<td>8</td>
<td>8-1</td>
</tr>
</tbody>
</table>

#### 5 APPLICABLE LAWS AND REQUIREMENTS

- 5.1 Applicable Federal Laws and Regulations                  | 5-1 |
- 5.2 State of Colorado Environmental Laws                     | 5-7 |
- 5.3 County Environmental Ordinances and Plans                | 5-7 |
- 5.4 Memoranda of Understanding                                | 5-7 |

#### 6 CONSULTATION PROCESS FOR THE DOE ULP PEIS

- 6.1 Tribal Government-to-Government Consultation              | 6-1 |
- 6.2 Consultation for the ESA                                  | 6-3 |
- 6.3 Consultation for the NHPA                                 | 6-4 |

#### 7 INDEX

**8 REFERENCES**

**APPENDIX A: Examples of Existing Leases for the Uranium Leasing Program**

**APPENDIX B: Summary of the Public Scoping Process for the ULP PEIS**

**APPENDIX C: Emission Inventories, Costs, and Other Estimates Used as a Basis for the ULP PEIS Impact Analyses**

**APPENDIX D: Impact Assessment Methodologies**

**APPENDIX E: Correspondence Associated with Endangered Species Act (ESA) Consultation, Biological Opinion, and Biological Assessment**

**APPENDIX F: Correspondence Associated with Tribal and National Historic Preservation Act (NHPA) Consultation**

**APPENDIX G: List of Preparers**

**APPENDIX H: Contractor Disclosure Statement**
CONTENTS (Cont.)

VOLUME 3: APPENDIX I

APPENDIX I: Comment Response Document ................................................................. I-1

I.1 Public Comment Process ....................................................................................... I-1
I.2 Summary of Changes to the Draft PEIS ................................................................. I-2
I.3 Topics of Interest ................................................................................................... I-4
I.4 Comments and Responses ...................................................................................... I-16
  I.4.1 Organizations That Submitted Comments in Writing via Letter, E-mail, or Web Portal or Orally at One of the Public Hearings ........................................................................... I-16
  I.4.2 Individuals Who Submitted Comments in Writing via Letter, E-mail, or Web Portal or Orally at One of the Public Hearings ......................................................... I-16
I.5 Members of the Public ............................................................................................ I-147

FIGURES

1.2-1 Locations of the 31 ULP Lease Tracts in Colorado ................................................. 1-11
1.3-1 Location of C-JD-5 Mine on Lease Tract 5 ............................................................ 1-16
1.3-2 Location of C-JD-6 Mine on Lease Tract 6 ............................................................ 1-18
1.3-3 Location of C-JD-7 Mine on Lease Tract 7 ............................................................ 1-20
1.3-4 Location of C-JD-8 Mine on Lease Tract 8 ............................................................ 1-22
1.3-5 Location of C-JD-9 Mine on Lease Tract 9 ............................................................ 1-24
1.3-6 Location of C-SR-11 Mine on Lease Tract 11 ....................................................... 1-26
1.3-7 Location of C-SR-13 Mine on Lease Tract 13 ....................................................... 1-29
1.3-8 Location of C-SM-18 Mine on Lease Tract 18 ....................................................... 1-35
1.7-1 NEPA Process for the ULP PEIS ......................................................................... 1-45
2-1 Thirteen Human Health and Environmental Resource Areas That Are Evaluated for Potential Impacts from Exploration, Mine Development and Operations, and Reclamation .................................................................................. 2-2
2.1-1 Photograph of Mine Plant Surface Configuration at Lease Tract 5 ....................... 2-6
### FIGURES (Cont.)

<table>
<thead>
<tr>
<th>Figure</th>
<th>Description</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>2.1-2</td>
<td>Photograph of Mine Plant Surface Configuration at Lease Tract 7</td>
<td>2-7</td>
</tr>
<tr>
<td>2.1-3</td>
<td>Photograph of Mine Plant Surface Configuration at Lease Tract 8</td>
<td>2-8</td>
</tr>
<tr>
<td>2.1-4</td>
<td>Photograph of Former Mine Plant Surface Configuration at Lease Tract 13A</td>
<td>2-9</td>
</tr>
<tr>
<td>2.1-5</td>
<td>Schematic of a Generic Mine Plant Surface Configuration</td>
<td>2-10</td>
</tr>
<tr>
<td>2.1-6</td>
<td>Locations of White Mesa Mill and Proposed Piñon Ridge Mill</td>
<td>2-15</td>
</tr>
<tr>
<td>2.2-1</td>
<td>Locations of Lease Tracts Evaluated under Alternatives 1 and 2</td>
<td>2-18</td>
</tr>
<tr>
<td>2.2-2</td>
<td>Locations of Lease Tracts Evaluated under Alternative 3</td>
<td>2-22</td>
</tr>
<tr>
<td>3.1-1</td>
<td>Wind Roses at the Proposed Piñon Ridge Mill, Montrose County, Colorado,</td>
<td>3-3</td>
</tr>
<tr>
<td></td>
<td>April 2008–March 2011: (a) Site 1, 33-ft Level; and (b) Site 2, 98-ft Level</td>
<td></td>
</tr>
<tr>
<td>3.1-2</td>
<td>Wind Rose at 20-ft Level at Nucla, Montrose County, Colorado, 2006–2010</td>
<td>3-4</td>
</tr>
<tr>
<td>3.1-3</td>
<td>Monitored PM$_{10}$ Concentrations at Sites 1 and 2 of the Proposed Piñon</td>
<td>3-15</td>
</tr>
<tr>
<td></td>
<td>Ridge Mill, April 2008–March 2010</td>
<td></td>
</tr>
<tr>
<td>3.1-4</td>
<td>PSD Class I Areas and Colorado Sensitive Class II Areas around the</td>
<td>3-17</td>
</tr>
<tr>
<td></td>
<td>ULP Lease Tracts</td>
<td></td>
</tr>
<tr>
<td>3.3-1</td>
<td>Physiographic Map of the Colorado Plateau</td>
<td>3-23</td>
</tr>
<tr>
<td>3.3-2</td>
<td>Extent of the Paradox Basin and the Paradox Fold and Fault Belt in</td>
<td>3-25</td>
</tr>
<tr>
<td></td>
<td>Southwestern Colorado and Southeastern Utah</td>
<td></td>
</tr>
<tr>
<td>3.3-3</td>
<td>Shaded Relief Map Showing Location of ULP Lease Tracts</td>
<td>3-26</td>
</tr>
<tr>
<td>3.3-4</td>
<td>Extent of the Uravan Mineral Belt in Relation to Known</td>
<td>3-28</td>
</tr>
<tr>
<td></td>
<td>Uranium-Vanadium Deposits</td>
<td></td>
</tr>
<tr>
<td>3.3-5</td>
<td>Geologic Map Covering the ULP Lease Tracts</td>
<td>3-29</td>
</tr>
<tr>
<td>3.3-6</td>
<td>Generalized Stratigraphy of the Paradox Basin</td>
<td>3-31</td>
</tr>
<tr>
<td>3.3-7</td>
<td>Topography of the Gateway Lease Tracts</td>
<td>3-36</td>
</tr>
<tr>
<td>3.3-8</td>
<td>Topography of the Uravan Lease Tracts</td>
<td>3-37</td>
</tr>
</tbody>
</table>
### FIGURES (Cont.)

<table>
<thead>
<tr>
<th>Figure</th>
<th>Title</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>3.3-9</td>
<td>Topography of the Paradox Lease Tracts</td>
<td>3-39</td>
</tr>
<tr>
<td>3.3-10</td>
<td>Topography of the Slick Rock Lease Tracts</td>
<td>3-41</td>
</tr>
<tr>
<td>3.3-11</td>
<td>Soils within and around the Gateway Lease Tracts</td>
<td>3-44</td>
</tr>
<tr>
<td>3.3-12</td>
<td>Soils within and around the Uravan Lease Tracts</td>
<td>3-46</td>
</tr>
<tr>
<td>3.3-13</td>
<td>Soils within and around the Paradox Lease Tracts</td>
<td>3-48</td>
</tr>
<tr>
<td>3.3-14</td>
<td>Soils within and around the Slick Rock Lease Tracts</td>
<td>3-52</td>
</tr>
<tr>
<td>3.4-1</td>
<td>Average Annual Precipitation in Colorado, 1961–1990</td>
<td>3-54</td>
</tr>
<tr>
<td>3.4-2</td>
<td>Map of Surface Water Features in the Region of the DOE ULP Lease Tracts</td>
<td>3-55</td>
</tr>
<tr>
<td>3.4-3</td>
<td>Seasonal Hydrograph and Monthly Discharge Values in the Dolores River near Bedrock, Colorado, 1990–2010</td>
<td>3-57</td>
</tr>
<tr>
<td>3.4-4</td>
<td>Seasonal Hydrograph and Monthly Discharge Values in the San Miguel River near Uravan, Colorado, 1990–2010</td>
<td>3-58</td>
</tr>
<tr>
<td>3.4-5</td>
<td>Location of Impaired Water Bodies</td>
<td>3-66</td>
</tr>
<tr>
<td>3.4-6</td>
<td>Conceptual Diagram of the Hydrogeologic Stratigraphy of the Paradox Basin</td>
<td>3-70</td>
</tr>
<tr>
<td>3.4-7</td>
<td>Locations of 88 Domestic Wells and One Municipal Well in and near the Lease Tracts</td>
<td>3-74</td>
</tr>
<tr>
<td>3.5-1</td>
<td>Location of the Proposed Piñon Ridge Mill</td>
<td>3-87</td>
</tr>
<tr>
<td>3.6-1</td>
<td>Level IV Ecoregions in the Vicinity of DOE ULP Lease Tracts</td>
<td>3-94</td>
</tr>
<tr>
<td>3.6-2</td>
<td>Land Cover Types in the Vicinity of DOE ULP Lease Tracts 26 and 27</td>
<td>3-96</td>
</tr>
<tr>
<td>3.6-3</td>
<td>Land Cover Types in the Vicinity of DOE ULP Lease Tracts 18–20, 24, and 25</td>
<td>3-97</td>
</tr>
<tr>
<td>3.6-4</td>
<td>Land Cover Types in the Vicinity of DOE ULP Lease Tracts 5–8, 17, and 21–23</td>
<td>3-98</td>
</tr>
<tr>
<td>3.6-5</td>
<td>Land Cover Types in the Vicinity of DOE ULP Lease Tracts 10–16</td>
<td>3-99</td>
</tr>
</tbody>
</table>
FIGURES (Cont.)

<table>
<thead>
<tr>
<th>Figure</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>3.6-6</td>
<td>NWI Wetlands Mapped in the Vicinity of Lease Tracts 13 and 14 ................. 3-108</td>
</tr>
<tr>
<td>3.6-7</td>
<td>Wild Turkey Activity Areas within the Three-County Study Area That Encompasses the Lease Tract Boundaries ......................... 3-128</td>
</tr>
<tr>
<td>3.6-8</td>
<td>Desert Bighorn Sheep Activity Areas within the Three-County Study Area That Encompasses the Lease Tract Boundaries ......................... 3-135</td>
</tr>
<tr>
<td>3.6-9</td>
<td>Elk Activity Areas within the Three-County Study Area That Encompasses the Lease Tract Boundaries ............................................. 3-138</td>
</tr>
<tr>
<td>3.6-10</td>
<td>Elk Winter Activity Areas within the Lease Tracts ...................................................... 3-139</td>
</tr>
<tr>
<td>3.6-11</td>
<td>Mule Deer Activity Areas within the Three-County Study Area That Encompasses the Lease Tract Boundaries ...................................................... 3-141</td>
</tr>
<tr>
<td>3.6-12</td>
<td>Mule Deer Winter Activity Areas within the Lease Tracts ...................................................... 3-142</td>
</tr>
<tr>
<td>3.6-13</td>
<td>Pronghorn Activity Areas within the Three-County Study Area That Encompasses the Lease Tract Boundaries ...................................................... 3-144</td>
</tr>
<tr>
<td>3.6-14</td>
<td>Locations of Designated Critical Habitat for the Colorado River Endangered Fishes in the Vicinity of the ULP Lease Tracts ......................... 3-167</td>
</tr>
<tr>
<td>3.6-15</td>
<td>Distribution of Proposed Critical Habitat for the Gunnison Sage-Grouse in the Vicinity of the ULP Lease Tracts ...................................................... 3-169</td>
</tr>
<tr>
<td>3.6-16</td>
<td>Recorded Occurrences and Distribution of Potentially Suitable Habitat for the Mexican Spotted Owl in the Vicinity of the ULP Lease Tracts ................. 3-170</td>
</tr>
<tr>
<td>3.6-17</td>
<td>Distribution of Potentially Suitable Habitat for the Southwestern Willow Flycatcher in the Vicinity of the ULP Lease Tracts ...................................................... 3-172</td>
</tr>
<tr>
<td>3.6-18</td>
<td>Distribution of Potentially Suitable Habitat for the Western Yellow-Billed Cuckoo and Canada Lynx in the Vicinity of the ULP Lease Tracts ......................... 3-173</td>
</tr>
<tr>
<td>3.6-19</td>
<td>Distribution of Potentially Suitable Habitat for the Gunnison’s Prairie Dog in the Vicinity of the ULP Lease Tracts ...................................................... 3-174</td>
</tr>
<tr>
<td>3.7-1</td>
<td>Specially Designated Areas on Public Lands near the ULP Lease Tracts ................. 3-180</td>
</tr>
<tr>
<td>3.7-2</td>
<td>Land with Wilderness Characteristics near the ULP Lease Tracts ...................................................... 3-184</td>
</tr>
</tbody>
</table>
FIGURES (Cont.)

3.7-3 Wild and Scenic River Segments near the ULP Lease Tracts ............................................................. 3-185
3.7-4 Permitted Oil and Gas Wells and Mines within 25 mi of the ULP Lease Tracts .................................................. 3-192
3.8-1 ROI Population from 1960–2010 ........................................................................................................ 3-200
3.9-1 Minority Populations within the 50-mi Radius surrounding the Proposed Lease Tracts ........................................... 3-216
3.9-2 Low-Income Populations within the 50-mi Radius surrounding the Proposed Lease Tracts ........................................... 3-217
3.10-1 Road Network by the Lease Tract and Uranium Mills ........................................................................ 3-219
3.10-2 Local Road Network around the Slick Rock Lease Tracts ........................................................................ 3-220
3.10-3 Local Road Network around the Paradox and Uravan Lease Tracts ......................................................... 3-221
3.10-4 Local Road Network around the Gateway Lease Tracts ........................................................................ 3-222
3.12-1 Locations of the Four Lease Tract Groups: North; North Central; South Central; and South ................................................. 3-240
3.12-2 View from the Western Edge of Lease Tract 26 Facing Southwest ......................................................... 3-242
3.12-3 View from Mesa Top near Lease Tract 19 Facing West ........................................................................ 3-243
3.12-4 View of Lease Tract 16A .................................................................................................................. 3-244
3.12-5 View of the Cotter Mine on Lease Tract 11 ........................................................................................... 3-245
3.12-6 View of the New Verde Mine Reclamation Site on Lease Tract 26 .............................................................. 3-246
3.12-7 View of Lease Tract 19 Facing West .................................................................................................. 3-247
3.12-8 View of Entrance to Underground Mine at Lease Tract 18 ................................................................. 3-248
3.12-9 Composite Viewshed of Four Lease Tract Groups ............................................................................. 3-249
3.12-10 Composite Viewshed with Overlay of Sensitive Visual Resource Areas ................................................. 3-251
4.1-1 Conceptual Exposure Model for the Exploration, Mining Development and Operations, and Reclamation Phases at the ULP Lease Tracts ..................................................... 4-11
FIGURES (Cont.)

4.1-2 Existing Structures in the ULP Lease Tract Surrounding Area ....................................... 4-18
4.1-3 Viewshed Analysis for Portions of the North Lease Group under Alternative 1 ........ 4-60
4.1-4 Viewshed Analysis for the North Central Lease Group under Alternative 1 .......... 4-61
4.1-5 Viewshed Analysis for the South Central Lease Group under Alternative 1 .......... 4-63
4.1-6 Viewshed Analysis for the South Lease Group under Alternative 1 ...................... 4-66
4.3-1 Viewshed Analysis for the North Central Lease Group under Alternative 3 ........ 4-186
4.3-2 Viewshed Analysis for the South Central Lease Group under Alternative 3 ........ 4-188
4.3-3 Viewshed Analysis for the South Lease Group under Alternative 3 ...................... 4-191
4.4-1 Viewshed Analysis for the North Lease Group under Alternative 4 ...................... 4-224
4.4-2 Viewshed Analysis for the North Central Lease Group under Alternative 4 ........ 4-226
4.4-3 Viewshed Analysis for the South Central Lease Group under Alternative 4 ........ 4-229
4.4-4 Viewshed Analysis for the South Lease Group under Alternative 4 ...................... 4-233
4.7-1 Region of Influence for Cumulative Effects ............................................................... 4-275
4.7-2 Uranium Mining and Oil and Gas Wells within the Region of Influence for Cumulative Effects .......................................................... 4-277
D.5-1 Designated Grouping of the ULP Lease Tracts Used as a Basis for Human Health Impacts Evaluation .................................................. D-10

TABLES

1.1-1 Summary of Three Leasing Programs Administered between 1949 and 2008 ...... 1-2
1.1-2 Summary of Uranium Ore Production from 1974 to 2008 ................................. 1-3
1.2-1 Summary of the 31 DOE ULP Lease Tracts in 2011 ........................................ 1-8
1.3-1 Estimated Remaining Ore Reserve at the ULP Lease Tracts ............................. 1-15
TABLES (Cont.)

1.7-1 Draft ULP PEIS Public Hearing Locations in Colorado, Dates, and Attendance .............................................................................................................. 1-50

2.2-1 Lease Tracts Evaluated under Alternatives 1 and 2................................................. 2-19

2.2-2 Lease Tracts Evaluated under Alternative 3 ............................................................. 2-23

2.2-3 Number of Mines, Ore Production Rate, Disturbed Surface Area, Number of Workers, and Water Usage Assumed for the Peak Year of Operations under Alternative 3 ............................................................................................................ 2-26

2.2-4 Number of Mines, Ore Production Rate, and Disturbed Surface Area Assumed for the Peak Year of Operations under Alternative 4........................................ 2-28

2.2-5 Amount of Water To Be Utilized per Mine under Alternative 4............................... 2-30

2.2-6 Number of Mines, Ore Production Rate, and Disturbed Surface Area Assumed for the Peak Year of Operations under Alternative 5............................... 2-31

2.2-7 Assumed Amount of Water To Be Utilized per Mine under Alternative 5 ............... 2-32

2.4-1 Meaning of Qualitative Terms Used To Describe Potential Impact Levels .............. 2-34

2.4-2 Summary of Known Cultural Resource Sites by Lease Tract Cluster ...................... 2-52

2.4-3 Summary of Potential Impacts on Known Cultural Resource Sites ....................... 2-52

2.4-4 Comparison of the Potential Impacts on Air Quality, the Acoustic Environment, and Soil Resources from Alternatives 1 through 5 ........................................ 2-57

2.4-5 Comparison of the Potential Impacts on Water Resources, Land Use, and Waste Management from Alternatives 1 through 5.............................................. 2-60

2.4-6 Comparison of the Potential Impacts on Human Health from Alternatives 1 through 5 ........................................................................................................... 2-62

2.4-7 Comparison of the Potential Impacts on Ecological Resources from Alternatives 1 through 5 ......................................................................................... 2-65

2.4-8 Comparison of the Potential Impacts on Socioeconomics, Environmental Justice, and Transportation from Alternatives 1 through 5................................. 2-68
<table>
<thead>
<tr>
<th>Table No.</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>2.4-9</td>
<td>Comparison of the Potential Impacts on Cultural Resources and Visual Resources from Alternatives 1 through 5</td>
</tr>
<tr>
<td>2.5-1</td>
<td>Estimated Amount of Resources Assumed To Be Irreversible and Irretrievable as a Result of the Implementation of the ULP Alternatives</td>
</tr>
<tr>
<td>3.1-1</td>
<td>Temperature and Precipitation Data Summaries at Selected Meteorological Stations around the ULP Lease Tracts, in Order of Meteorological Station Starting from North to South</td>
</tr>
<tr>
<td>3.1-3</td>
<td>National Ambient Air Quality Standards, Colorado State Ambient Air Quality Standards, and Background Concentration Levels Representative of the ULP Lease Tracts in Mesa, Montrose, and San Miguel Counties, Colorado</td>
</tr>
<tr>
<td>3.1-4</td>
<td>Maximum Allowable PSD Increments for PSD Class I and Class II Areas</td>
</tr>
<tr>
<td>3.2-1</td>
<td>Colorado Limits on Maximum Permissible Noise Levels</td>
</tr>
<tr>
<td>3.3-1</td>
<td>Geologic Units in the Lease Tracts and Their PFYC Ranking</td>
</tr>
<tr>
<td>3.4-1</td>
<td>Range in Reported Peak Discharge Values for Intermittent and Ephemeral Streams in the Region of the DOE ULP Lease Tracts</td>
</tr>
<tr>
<td>3.4-2</td>
<td>Impaired Water Bodies on the Colorado 2012 303(d) and M&amp;E Lists or in the Process of Implementing TMDL within the Upper Dolores, San Miguel, and Lower Dolores Watersheds</td>
</tr>
<tr>
<td>3.4-3</td>
<td>COC Concentrations in the Dolores River at SRE and SRW Sites near Slick Rock Lease Tract 13</td>
</tr>
<tr>
<td>3.4-4</td>
<td>Depths to Groundwater Observed in USGS Monitoring Wells Located within the Upper Dolores, San Miguel, and Lower Dolores Basins</td>
</tr>
<tr>
<td>3.4-5</td>
<td>Monitoring Data Collected at Springs Located within the Vicinity of the DOE ULP Tracts</td>
</tr>
<tr>
<td>3.4-6</td>
<td>Domestic and Municipal Wells in the Area 5 mi from the DOE ULP Lease Tracts</td>
</tr>
</tbody>
</table>
TABLES (Cont.)

<table>
<thead>
<tr>
<th>Table No.</th>
<th>Title</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>3.4-7</td>
<td>COC Concentrations in Groundwater at SRE and SRW Sites near Slick Rock Lease Tract 13</td>
<td>3-77</td>
</tr>
<tr>
<td>3.4-8</td>
<td>Water Use by Category for Mesa, Montrose, and San Miguel Counties in 2005</td>
<td>3-78</td>
</tr>
<tr>
<td>3.5-1</td>
<td>Uranium-Mining-Related Regulations and Guidelines for Workers and Members of the Public</td>
<td>3-84</td>
</tr>
<tr>
<td>3.5-2</td>
<td>Comparison of Radiation Exposures from Natural Background Sources near ULP Lease Tracts Versus the U.S. National Average</td>
<td>3-86</td>
</tr>
<tr>
<td>3.5-3</td>
<td>Estimated Radiation and Chemical Exposures for Receptors in the DOE Lease Tracts Based on Environmental Monitoring Data from Energy Fuels Resources Corp.</td>
<td>3-90</td>
</tr>
<tr>
<td>3.6-1</td>
<td>Land Cover Types within DOE ULP Lease Tracts</td>
<td>3-100</td>
</tr>
<tr>
<td>3.6-2</td>
<td>Descriptions of Land Cover Types</td>
<td>3-104</td>
</tr>
<tr>
<td>3.6-3</td>
<td>Noxious Weeds Occurring on or in the Vicinity of ULP Lease Tracts</td>
<td>3-106</td>
</tr>
<tr>
<td>3.6-4</td>
<td>Wetlands Mapped by the National Wetlands Inventory within ULP Lease Tracts</td>
<td>3-109</td>
</tr>
<tr>
<td>3.6-5</td>
<td>Descriptions of Wetland Types</td>
<td>3-113</td>
</tr>
<tr>
<td>3.6-6</td>
<td>Number of Wildlife Species in the Three-County Study Area</td>
<td>3-115</td>
</tr>
<tr>
<td>3.6-7</td>
<td>Amphibian and Reptile Species Expected To Occur within the Lease Tract Boundaries</td>
<td>3-116</td>
</tr>
<tr>
<td>3.6-8</td>
<td>Songbird Species Expected To Occur within the Lease Tract Boundaries</td>
<td>3-119</td>
</tr>
<tr>
<td>3.6-9</td>
<td>Raptor Species Expected To Occur within the Lease Tract Boundaries</td>
<td>3-126</td>
</tr>
<tr>
<td>3.6-10</td>
<td>Upland Game Bird Species Expected To Occur within the Lease Tract Boundaries</td>
<td>3-127</td>
</tr>
<tr>
<td>3.6-11</td>
<td>Acreages of Wild Turkey Activity Areas within the Three-County Study Area and the Combined Boundary for the Lease Tracts</td>
<td>3-129</td>
</tr>
</tbody>
</table>
TABLES (Cont.)

3.6-12 Descriptions of Big Game Activity Areas in Colorado ........................................ 3-131
3.6-13 Habitat Information for Big Game Species Expected To Occur within the Lease Tract Boundaries................................................................................................. 3-132
3.6-14 Acreages of American Black Bear Activity Areas within the Three-County Study Area and the Combined Boundary for the Lease Tracts ........................................ 3-133
3.6-15 Acreages of Desert Bighorn Sheep Activity Areas within the Three-County Study Area and the Combined Boundary for the Lease Tracts ........................................ 3-136
3.6-16 Acreages of Elk Activity Areas within the Three-County Study Area and the Combined Boundary for the Lease Tracts .......................................................... 3-140
3.6-17 Acreages of Mule Deer Activity Areas within the Three-County Study Area and the Combined Boundary for the Lease Tracts .................................................. 3-143
3.6-18 Acreages of Pronghorn Activity Areas within the Three-County Study Area and the Combined Boundary for the Lease Tracts .................................................. 3-145
3.6-19 Bat Species Reported from Abandoned Mines within the ULP Lease Tracts .......... 3-146
3.6-20 Small Game, Furbearer, and Nongame Mammal Species Expected To Occur within the Lease Tract Boundaries ......................................................................... 3-147
3.6-21 Threatened, Endangered, and Sensitive Species That May Occur in the Vicinity of the ULP Lease Tracts ................................................................................... 3-154
3.6-22 Species Listed, Proposed for Listing, or Candidates for Listing under the ESA That May Occur in the Vicinity of the ULP Lease Tracts ............................................. 3-165
3.6-23 Number of Sensitive Species That May Occur on or near ULP Lease Tracts .................................................. 3-176
3.7-1 Specially Designated Areas on Public Lands within 25 mi of the ULP Lease Tracts ..................................................................................................................... 3-181
3.7-2 Lands with Wilderness Characteristics within 25 mi of the ULP Lease Tracts ....... 3-182
3.7-3 Eligible Wild and Scenic River Segments within 25 mi of the ULP Lease Tracts ..................................................................................................................... 3-186
### TABLES (Cont.)

<table>
<thead>
<tr>
<th>Number</th>
<th>Description</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>3.7-4</td>
<td>Number of Farms and Acreage of Agricultural Lands by County</td>
<td>3-189</td>
</tr>
<tr>
<td>3.7-5</td>
<td>Active Uranium Mining Permits in Southwestern Colorado</td>
<td>3-193</td>
</tr>
<tr>
<td>3.7-6</td>
<td>Uranium Projects in Southwestern Utah, 2010</td>
<td>3-194</td>
</tr>
<tr>
<td>3.8-1</td>
<td>ROI Employment, 2001–2010</td>
<td>3-201</td>
</tr>
<tr>
<td>3.8-2</td>
<td>ROI and State Unemployment Data, 2001–2011</td>
<td>3-201</td>
</tr>
<tr>
<td>3.8-3</td>
<td>ROI Employment by Sector, 2009</td>
<td>3-203</td>
</tr>
<tr>
<td>3.8-4</td>
<td>ROI Personal Income, 2000–2009</td>
<td>3-204</td>
</tr>
<tr>
<td>3.8-5</td>
<td>ROI Population, 2000–2023</td>
<td>3-204</td>
</tr>
<tr>
<td>3.8-6</td>
<td>ROI Urban Population and Income, 1999–2010</td>
<td>3-206</td>
</tr>
<tr>
<td>3.8-7</td>
<td>ROI Housing Characteristics, 2000 and 2009</td>
<td>3-207</td>
</tr>
<tr>
<td>3.8-8</td>
<td>ROI Jurisdictions</td>
<td>3-208</td>
</tr>
<tr>
<td>3.8-9</td>
<td>ROI School District Data, 2010</td>
<td>3-208</td>
</tr>
<tr>
<td>3.8-10</td>
<td>ROI Physicians, 2010</td>
<td>3-209</td>
</tr>
<tr>
<td>3.8-11</td>
<td>ROI Public Safety Employment, 2009</td>
<td>3-210</td>
</tr>
<tr>
<td>3.8-12</td>
<td>ROI and County Crime Rates, 2009</td>
<td>3-210</td>
</tr>
<tr>
<td>3.9-1</td>
<td>Minority and Low-Income Populations within the 50-mi Radius</td>
<td>3-215</td>
</tr>
<tr>
<td>3.10-1</td>
<td>Annual Average Daily Traffic Volumes for Major Roads near the Lease Tracts, 2010</td>
<td>3-223</td>
</tr>
<tr>
<td>3.11-1</td>
<td>Cultural Resource Survey Coverage of the Lease Tracts</td>
<td>3-230</td>
</tr>
<tr>
<td>3.11-2</td>
<td>Correlation of Lease Tract Cluster Designations</td>
<td>3-231</td>
</tr>
<tr>
<td>3.11-3</td>
<td>Cultural Resource Survey Coverage, Site Tallies, and Site Density within 15 mi of Lease Tract Clusters</td>
<td>3-231</td>
</tr>
</tbody>
</table>
TABLES (Cont.)

3.11-4 Cultural Resource Survey Coverage, Site Tallies, and Site Density within Each Lease Tract Cluster ................................................................. 3-231

3.11-5 Eligible and Potentially Eligible Sites in the Lease Tracts ........................................ 3-233

3.12-1 Sensitive Visual Resource Areas with Potential Views of the North Group ........... 3-252

3.12-2 Sensitive Visual Resource Areas with Potential Views of the North Central Group ........................................................................................................ 3-253

3.12-3 Sensitive Visual Resource Areas with Potential Visibility of the South Central Group ........................................................................................................ 3-254

3.12-4 Sensitive Visual Resource Areas with Potential Views of the South Group .......... 3-256

4.1-1 Peak-Year Air Emissions from Reclamation under Alternative 1 ......................... 4-3

4.1-2 Potential Impacts from Mining Activities on Soil Resources ................................. 4-5

4.1-3 Potential Human Receptors, Uranium Sources, and Exposure Pathways to Exploration, Mining Development and Operations, and Reclamation Phases at the ULP Lease Tracts .............................................................................. 4-12

4.1-4 Dimensions of the Waste-Rock Piles per Mine Size Assumed for Human Health Impact Analysis .................................................................................. 4-16

4.1-5 Estimated Upper-Bound Emission Rates of Particulates, Radon, and Radionuclides for the Four Assumed Waste-Rock Pile Sizes ............................ 4-20

4.1-6 Potential Maximum Radiation Doses and LCF Risks to a Resident as a Result of the Emission of Radon from the Four Assumed Waste-Rock Pile Sizes ........ 4-20

4.1-7 Potential Maximum Radiation Doses and LCF Risks to a Resident as a Result of the Emission of Particulates from the Four Assumed Waste-Rock Pile Sizes ........................................................................................................ 4-21

4.1-8 Potential Maximum Total Doses and LCF Risks to a Resident as a Result of the Emission of Radon and Particulates from the Four Assumed Waste-Rock Pile Sizes ........................................................................................................ 4-21

4.1-9 Seed Mixture Developed for Reseeding on the DOE ULP Lease Tracts .............. 4-28
TABLES (Cont.)

<table>
<thead>
<tr>
<th>Table</th>
<th>Description</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>4.1-10</td>
<td>Potential Effects of the Uranium Leasing Program under Alternative 1 on Threatened, Endangered, and Sensitive Species</td>
<td>4-33</td>
</tr>
<tr>
<td>4.1-11</td>
<td>Socioeconomic Impacts of Uranium Mining Reclamation in the Region of Influence under Alternative 1</td>
<td>4-51</td>
</tr>
<tr>
<td>4.3-1</td>
<td>Peak-Year Air Emissions from Mine Development, Operations, and Reclamation under Alternative 3</td>
<td>4-73</td>
</tr>
<tr>
<td>4.3-2</td>
<td>Radiation Doses and LCF Risks Received by Underground Uranium Miners under Alternative 3</td>
<td>4-91</td>
</tr>
<tr>
<td>4.3-3</td>
<td>Radon Emission Rates per Type of Mine during Mine Operations Assumed for Alternative 3</td>
<td>4-94</td>
</tr>
<tr>
<td>4.3-4</td>
<td>Potential Maximum Radon Levels, Radiation Doses, Radon Concentrations, and LCF Risks to a Resident Associated with the Emission of Radon from Four Uranium Mine Sizes under Alternative 3</td>
<td>4-96</td>
</tr>
<tr>
<td>4.3-5</td>
<td>Collective Doses and LCF Risks to the General Public from Radon Emissions from Uranium Mines during the Peak Year of Operations under Alternative 3</td>
<td>4-99</td>
</tr>
<tr>
<td>4.3-6</td>
<td>Summary of Potential Impacts on Wildlife Associated with Alternative 3</td>
<td>4-118</td>
</tr>
<tr>
<td>4.3-7</td>
<td>Potential Impacts on Aquatic Biota Associated with Alternative 3</td>
<td>4-127</td>
</tr>
<tr>
<td>4.3-8</td>
<td>Potential Effects of the Uranium Leasing Program under Alternative 3 on Threatened, Endangered, and Sensitive Species</td>
<td>4-132</td>
</tr>
<tr>
<td>4.3-9</td>
<td>Socioeconomic Impacts of Uranium Mine Development, Operations, and Reclamation in the Region of Influence under Alternative 3</td>
<td>4-155</td>
</tr>
<tr>
<td>4.3-10</td>
<td>Recreation Sector Activity in the Region of Influence in 2012</td>
<td>4-158</td>
</tr>
<tr>
<td>4.3-11</td>
<td>Impacts from Reductions in Recreation Sector Employment Resulting from Uranium Mining Development in the Region of Influence, 2012</td>
<td>4-159</td>
</tr>
<tr>
<td>4.3-12</td>
<td>Distances from Lease Tracts to Ore Processing Mills</td>
<td>4-164</td>
</tr>
<tr>
<td>4.3-13</td>
<td>Peak-Year Collective Population Transportation Impacts under Alternative 3</td>
<td>4-165</td>
</tr>
</tbody>
</table>
TABLES (Cont.)

4.3-14 Potential Haul Truck Traffic on Local Roads......................................................... 4-166

4.4-15 Potential Number of Truck Shipments to the White Mesa Mill Passing
through Collector Road Intersections with U.S. and State Highways ....................... 4-167

4.3-16 Potential Number of Truck Shipments to the Piñon Ridge Mill Passing
through Collector Road Intersections with U.S. and State Highways ....................... 4-169

4.3-17 Single-Shipment Collective Population Impacts from Transporting Ore from
Lease Tracts to Piñon Ridge Mill ........................................................................... 4-173

4.3-18 Single-Shipment Collective Population Impacts from Transporting Ore from
Lease Tracts to White Mesa Mill ............................................................................ 4-174

4.3-19 Hypothetical Single-Shipment Radiological Impacts on Individual Receptors ....4-175

4.3-20 Cultural Resource Sites That Could Be Directly Affected under Alternative 3 ....4-178

4.4-1 Peak-Year Air Emissions from Mine Development, Operations, and
Reclamation under Alternative 4 ............................................................................ 4-194

4.4-2 Radon Emission Rates per Type of Mine during Mine Operations
Assumed for Alternative 4 ...................................................................................... 4-208

4.4-3 Collective Doses and LCF Risks to the General Public from Radon Emissions
from Uranium Mines during the Peak Year of Operations under Alternative 4 ....4-209

4.4-4 Potential Effects of the Uranium Leasing Program under Alternative 4 on
Threatened, Endangered, and Sensitive Species That Would Not Be Affected
under Alternative 3 ................................................................................................. 4-214

4.4-5 Socioeconomic Impacts from Uranium Mine Development, Operations, and
Reclamation in the Region of Influence under Alternative 4 ................................. 4-215

4.4-6 Peak-Year Collective Population Transportation Impacts under Alternative 4...... 4-219

4.4-7 Cultural Resource Sites That Could Be Directly Affected under Alternative 4 ....4-222

4.5-1 Peak-Year Air Emissions from Mine Development, Operations, and
Reclamation under Alternative 5 ........................................................................... 4-236

4.5-2 Radon Emission Rates per Type of Mine during Mine Operations Assumed
for Alternative 5 ................................................................................................. 4-246
TABLES (Cont.)

4.5-3 Potential Maximum Radiation Doses, Radon Concentrations, and LCF Risks to a Resident Associated with the Emission of Radon from Three Sizes of Uranium Mines ................................................................. 4-247

4.5-4 Collective Doses and LCF Risks to the General Public from Radon Emissions from Uranium Mines during the Peak Year of Operations under Alternative 5 ........................................ 4-248

4.5-5 Socioeconomic Impacts of Uranium Mine Development, Operations, and Reclamation in the Region of Influence under Alternative 5 .............................................................. 4-254

4.5-6 Peak-Year Collective Population Transportation Impacts under Alternative 5 ........................................ 4-257

4.5-7 Cultural Resource Sites Expected To Be Directly Affected under Alternative 5 ......................................................... 4-260

4.6-1 Measures Identified to Minimize Potential Impacts from Uranium Mining at the ULP Lease Tracts ........................................................................................................ 4-262

4.7-1 Potential Environmental Impacts of the Proposed Piñon Ridge Mill .............................................................. 4-279

4.7-2 Potential Environmental Impacts of the Proposed Book Cliff Mine ......................................................... 4-282

4.7-3 Potential Environmental Impacts from Operation of the White Mesa Mill ........................................ 4-288

4.7-4 Potential Environmental Impacts of the Daneros Mine ................................................................................ 4-291

4.7-5 Potential Environmental Impacts of the Whirlwind Mine ........................................................................ 4-293

4.7-6 Summary of Exploration Plans for the ULP Lease Tracts ................................................................................... 4-297

4.7-7 Summary of Reclamation Plans Implemented in 2009 to 2011 for the ULP Lease Tracts ...................................................................................................................... 4-299

4.7-8 Potential Environmental Impacts of Oil and Gas Exploration and Development ................................................................................................................. 4-305

4.7-9 Potential Environmental Impacts of Livestock Grazing .......................................................................................... 4-307

4.7-10 General Trends in the Region of Influence for Cumulative Effects .................................................................................. 4-310

4.7-11 Summary of Major Projects and Activities in the Region of Influence for Cumulative Effects ....................................................... 4-314
TABLES (Cont.)

<table>
<thead>
<tr>
<th>Table</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>4.7-12</td>
<td>Potential Impacts of Select Projects Considered with the DOE ULP Alternatives</td>
</tr>
<tr>
<td>5.2-1</td>
<td>Potentially Applicable State Requirements</td>
</tr>
<tr>
<td>5.3-1</td>
<td>Potentially Applicable County Requirements</td>
</tr>
<tr>
<td>6.1-1</td>
<td>Indian Tribal Governments Contacted by DOE with Regard to Their Interest in Being Consulted on the ULP PEIS</td>
</tr>
<tr>
<td>6.3-1</td>
<td>NHPGA Consultation Efforts</td>
</tr>
<tr>
<td>B-1</td>
<td>Public Scoping Meeting Locations, Dates, and Attendance</td>
</tr>
<tr>
<td>B-2</td>
<td>Public Scoping Comments Considered To Be Within the Scope of the ULP PEIS</td>
</tr>
<tr>
<td>B-3</td>
<td>Public Scoping Issues Considered To Be Outside the Scope of the ULP PEIS</td>
</tr>
<tr>
<td>C.1-1</td>
<td>Number of Mines Considered per Mine Size and Alternative</td>
</tr>
<tr>
<td>C.1-2</td>
<td>Total Disturbed Acreage per Mine Size and Alternative during Exploration</td>
</tr>
<tr>
<td>C.1-3</td>
<td>Assumed Workforce per Labor Category and Alternative during Exploration</td>
</tr>
<tr>
<td>C.1-4</td>
<td>Assumed Total Costs per Alternative during Exploration</td>
</tr>
<tr>
<td>C.1-5</td>
<td>Assumed Equipment and Total Hours Operated per Mine Size and Alternative during Exploration</td>
</tr>
<tr>
<td>C.1-6</td>
<td>Assumed Total Material Amounts per Alternative during Exploration</td>
</tr>
<tr>
<td>C.1-7</td>
<td>Assumed Annual Air Emissions on an Individual Mine Basis during Exploration</td>
</tr>
<tr>
<td>C.1-8</td>
<td>Assumed Total Air Emissions during Exploration</td>
</tr>
<tr>
<td>C.1-9</td>
<td>Wastes Generated per Alternative during Exploration</td>
</tr>
<tr>
<td>C.2-1</td>
<td>Estimated Material Amounts and Labor Time per Mine Size during Development</td>
</tr>
<tr>
<td>C.2-2</td>
<td>Estimated Materials and Labor Time per Alternative during Development</td>
</tr>
</tbody>
</table>
### TABLES (Cont.)

<table>
<thead>
<tr>
<th>Table</th>
<th>Description</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>C.2-3</td>
<td>Number of Workers per Mine Size and Worker Salary per Labor Category</td>
<td>C-12</td>
</tr>
<tr>
<td>C.2-4</td>
<td>Annual Worker Salaries per Labor Category and Mine Size</td>
<td>C-12</td>
</tr>
<tr>
<td>C.2-5</td>
<td>Number and Cost of Capital Equipment Units per Mine Size</td>
<td>C-13</td>
</tr>
<tr>
<td>C.2-6</td>
<td>Total Capital Equipment Costs per Alternative</td>
<td>C-14</td>
</tr>
<tr>
<td>C.2-7</td>
<td>Estimated Total Capital Costs per Mine Size</td>
<td>C-15</td>
</tr>
<tr>
<td>C.2-8</td>
<td>Estimated Total Capital Costs per Alternative</td>
<td>C-16</td>
</tr>
<tr>
<td>C.2-9</td>
<td>Assumed Annual Air Emissions on an Individual Mine Basis during Development</td>
<td>C-17</td>
</tr>
<tr>
<td>C.2-10</td>
<td>Estimated Annual Air Emissions per Alternative during Development</td>
<td>C-18</td>
</tr>
<tr>
<td>C.2-11</td>
<td>Wastes Generated per Alternative during Development</td>
<td>C-18</td>
</tr>
<tr>
<td>C.2-12</td>
<td>Total Worker Peak-Year Annual Wages per Mine Size and Alternative</td>
<td>C-19</td>
</tr>
<tr>
<td>C.2-13</td>
<td>Peak-Year Annual Water Usage per Mine Size and Alternative during Operations</td>
<td>C-19</td>
</tr>
<tr>
<td>C.2-14</td>
<td>Total Peak-Year Annual Cost of Operations per Alternative</td>
<td>C-20</td>
</tr>
<tr>
<td>C.2-15</td>
<td>Assumed Annual Air Emissions on an Individual Mine Basis during Operations</td>
<td>C-20</td>
</tr>
<tr>
<td>C.2-16</td>
<td>Estimated Peak-Year Annual Air Emissions per Alternative during Operations</td>
<td>C-21</td>
</tr>
<tr>
<td>C.3-1</td>
<td>Assumed Workforce per Labor Category, Team, JD-7 Mine, and Alternative during Reclamation</td>
<td>C-22</td>
</tr>
<tr>
<td>C.3-2</td>
<td>Total Disturbed Acreage per Mine Size and Alternative during Reclamation</td>
<td>C-22</td>
</tr>
<tr>
<td>C.3-3</td>
<td>Assumed Total Costs per Alternative during Reclamation</td>
<td>C-23</td>
</tr>
<tr>
<td>C.3-4</td>
<td>Assumed Equipment and Total Hours of Operation per Mine Size and Alternative during Reclamation</td>
<td>C-24</td>
</tr>
<tr>
<td>C.3-5</td>
<td>Assumed Amounts of Materials per Mine Size and Alternative during Reclamation</td>
<td>C-25</td>
</tr>
<tr>
<td>Table</td>
<td>Description</td>
<td></td>
</tr>
<tr>
<td>-------</td>
<td>-------------</td>
<td></td>
</tr>
<tr>
<td>C.3-6</td>
<td>Assumed Annual Air Emissions on an Individual Mine Basis during Reclamation</td>
<td>C-26</td>
</tr>
<tr>
<td>C.3-7</td>
<td>Assumed Total Air Emissions during Reclamation</td>
<td>C-27</td>
</tr>
<tr>
<td>C.3-8</td>
<td>Wastes Generated per Alternative during Reclamation</td>
<td>C-27</td>
</tr>
<tr>
<td>D.5-1</td>
<td>Meteorological Data Used in the COMPLY-R Calculations</td>
<td>D-15</td>
</tr>
<tr>
<td>D.5-2</td>
<td>Comparison of the Radon Doses Calculated by CAP88-PC and Those Calculated by COMPLY-R</td>
<td>D-15</td>
</tr>
<tr>
<td>D.10-1</td>
<td>Individual Exposure Scenarios</td>
<td>D-31</td>
</tr>
<tr>
<td>D.10-2</td>
<td>Mine Size for Each Lease Tract as Assumed for the Transportation Analysis for Alternatives 3, 4, and 5</td>
<td>D-34</td>
</tr>
<tr>
<td>E-1</td>
<td>Endangered Species Act Consultation Correspondence</td>
<td>E-3</td>
</tr>
<tr>
<td>F-1</td>
<td>Consultation Correspondence</td>
<td>F-3</td>
</tr>
<tr>
<td>F-2</td>
<td>Correspondence Regarding the Establishment of a Programmatic Agreement for Section 106 Consultation</td>
<td>F-94</td>
</tr>
<tr>
<td>G-1</td>
<td>DOE Management Team</td>
<td>G-3</td>
</tr>
<tr>
<td>G-2</td>
<td>ULP PEIS Preparers</td>
<td>G-4</td>
</tr>
<tr>
<td>I.1-1</td>
<td>Draft ULP PEIS Public Hearing Locations in Colorado, Dates, and Estimated Attendance</td>
<td>I-2</td>
</tr>
<tr>
<td>I.4-1</td>
<td>Organizations That Submitted Comments in Writing via Letter, E-mail, or Web Portal or Orally at One of the Public Hearings for ULP</td>
<td>I-17</td>
</tr>
<tr>
<td>I.4-2</td>
<td>Individuals Who Submitted Comments in Writing via Letter, E-mail, or Web Portal or Orally at One of the Public Hearings for ULP</td>
<td>I-17</td>
</tr>
</tbody>
</table>
This page intentionally left blank
NOTATION

The following is a list of acronyms and abbreviations, chemical names, and units of measure used in this document. Some acronyms used only in tables may be defined only in those tables.

ACRONYMS AND ABBREVIATIONS

AADT annual average daily traffic
ACEC Area of Critical Environmental Concern
ACHP American Council on Historic Preservation
AEA Atomic Energy Act
AEC Atomic Energy Commission
APE area of potential effects
AQCR Air Quality Control Region
AQRV air-quality-related value
ATSDR Agency for Toxic Substances and Disease Registry
AUM animal unit month
BA biological assessment
BLM Bureau of Land Management
BLS Bureau of Labor Statistics
BMP best management practice
BO biological opinion
BOR Bureau of Reclamation
CAA Clean Air Act
CAAQS Colorado Ambient Air Quality Standards
CASTNET Clean Air Status and Trends Network
CCCD Colorado Center for Community Development
CDA Colorado Department of Agriculture
CDNR Colorado Department of Natural Resources
CDOT Colorado Department of Transportation
CDOW Colorado Division of Wildlife
CDPHE Colorado Department of Public Health and Environment
CDRMS Colorado Division of Reclamation, Mining, and Safety
CDWR Colorado Division of Water Resources
CEDE committed effective dose equivalent
CERCLA Comprehensive Environmental Response, Compensation, and Liability Act
CEQ Council on Environmental Quality
CFR Code of Federal Regulations
CNHP Colorado Natural Heritage Program
COGCC Colorado Oil and Gas Conservation Commission
CPW Colorado Parks and Wildlife (formerly CDOW)
| CRD | Comment Response Document |
| CRS | *Colorado Revised Statutes* |
| CWA | Clean Water Act |
| CWCB | Colorado Water Conservation Board |
| DCF | dose conversion factor |
| DEM | Digital Elevation Model |
| DNL | day-night average sound level |
| DOE | U.S. Department of Energy |
| DOE-LM | DOE Office of Legacy Management |
| DOI | U.S. Department of the Interior |
| DOT | U.S. Department of Transportation |
| DPS | distinct population segment (USFWS) |
| DRI | Desert Research Institute |
| EA | environmental assessment |
| EDE | effective dose equivalent |
| EF | enhanced Fujita (scale) |
| EFR | Energy Fuels Resources |
| EIA | Energy Information Administration |
| EIS | environmental impact statement |
| EMF | electromagnetic field |
| E.O. | Executive Order |
| EPA | U.S. Environmental Protection Agency |
| EPP | environmental protection plan |
| EPS | Economic and Planning Systems |
| ERNA | Ecological Research Natural Area |
| ESA | Endangered Species Act |
| FGR | Federal Guidance Report |
| FLM | Federal Land Manager |
| FONSI | Finding of No Significant Impact |
| FR | *Federal Register* |
| FTW | full-time worker |
| GAO | Government Accountability Office |
| GHG | greenhouse gas |
| GIS | geographic information system |
| HA | herd area |
| HAP | hazardous air pollutant |
| HEAST | Health Effect Assessment Summary Tables |
| HFC | hydrofluorocarbon |
| HI | hazard index |
| HMA | herd management area |
| HMR | hazardous materials regulation (DOT) |
1 HQ hazard quotient
2 I- Interstate (Highway)
3 ICRP International Commission on Radiological Protection
4 IDA intentional destructive act
5 IPaC Information, Planning, and Conservation System (USFWS)
6 IRIS Integrated Risk Information System
7 ISM Integrated Safety Management
8 KOP key observation point
9 KREX KREX News Channel
10 L_{90} sound level exceeded 90% of the time
11 LCF latent cancer fatality
12 L_{dn} day-night average sound level
13 L_{eq} equivalent continuous sound level
14 Lg surface wave
15 LHA landscape health assessment
17 LSA low specific activity
18 M&E Monitoring & Evaluation (List)
19 MLg surface wave magnitude
20 MOU Memorandum of Understanding
21 MSHA Mine Safety and Health Administration
22 NAAQS National Ambient Air Quality Standard(s)
23 NAICS North American Industry Classification System
24 NCA National Conservation Area
25 NCDC National Climatic Data Center
26 NCRP National Council on Radiation Protection
27 NED National Elevation Data
28 NEPA National Environmental Policy Act
29 NESHAP National Emission Standards for Hazardous Air Pollutants
30 NHPA National Historic Preservation Act
31 NLCS National Landscape Conservation System (BLM)
32 NMFS National Marine Fisheries Service
33 NOI Notice of Intent
34 NP National Park
35 NPDES National Pollutant Discharge Elimination System
36 NPS National Park Service
37 NRC U.S. Nuclear Regulatory Commission
38 NRCS Natural Resources Conservation Service
39 NRHP National Register of Historic Places
40 NWCC National Wind Coordinating Committee
41 NWI National Wetlands Inventory
<table>
<thead>
<tr>
<th>No.</th>
<th>Abbreviation</th>
<th>Full Form</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>OAHP</td>
<td>Office of Archaeology and Historic Preservation (Colorado)</td>
</tr>
<tr>
<td>2</td>
<td>OHV</td>
<td>off-highway vehicle</td>
</tr>
<tr>
<td>3</td>
<td>OMP</td>
<td>operations and maintenance plan</td>
</tr>
<tr>
<td>4</td>
<td>ONA</td>
<td>Outstanding Natural Area</td>
</tr>
<tr>
<td>5</td>
<td>ORV</td>
<td>Outstanding Remarkable Value</td>
</tr>
<tr>
<td>6</td>
<td>PA</td>
<td>programmatic agreement</td>
</tr>
<tr>
<td>7</td>
<td>PEA</td>
<td>programmatic environmental assessment</td>
</tr>
<tr>
<td>8</td>
<td>PEIS</td>
<td>programmatic environmental impact statement</td>
</tr>
<tr>
<td>9</td>
<td>PFC</td>
<td>perfluorocarbon</td>
</tr>
<tr>
<td>10</td>
<td>PFYC</td>
<td>Potential Fossil Yield Classification</td>
</tr>
<tr>
<td>11</td>
<td>P.L.</td>
<td>Public Law</td>
</tr>
<tr>
<td>12</td>
<td>PLS</td>
<td>pure live seed</td>
</tr>
<tr>
<td>13</td>
<td>PM</td>
<td>particulate matter</td>
</tr>
<tr>
<td>14</td>
<td>PM2.5</td>
<td>particulate matter with a mean aerodynamic diameter of 2.5 µm or less</td>
</tr>
<tr>
<td>15</td>
<td>PM10</td>
<td>particulate matter with a mean aerodynamic diameter of 10 µm or less</td>
</tr>
<tr>
<td>16</td>
<td>PSD</td>
<td>Prevention of Significant Deterioration</td>
</tr>
<tr>
<td>17</td>
<td>QDEH</td>
<td>Queensland Department of Environment and Heritage</td>
</tr>
<tr>
<td>18</td>
<td>RCRA</td>
<td>Resource Conservation and Recovery Act</td>
</tr>
<tr>
<td>19</td>
<td>RfC</td>
<td>reference dose concentration</td>
</tr>
<tr>
<td>20</td>
<td>RfD</td>
<td>reference dose</td>
</tr>
<tr>
<td>21</td>
<td>RILOR</td>
<td>reclamation in lieu of royalties</td>
</tr>
<tr>
<td>22</td>
<td>RMP</td>
<td>resource management plan</td>
</tr>
<tr>
<td>23</td>
<td>RNA</td>
<td>Research Natural Area</td>
</tr>
<tr>
<td>24</td>
<td>ROD</td>
<td>Record of Decision</td>
</tr>
<tr>
<td>25</td>
<td>ROI</td>
<td>region of influence</td>
</tr>
<tr>
<td>26</td>
<td>ROW</td>
<td>right-of-way</td>
</tr>
<tr>
<td>27</td>
<td>SAAQS</td>
<td>State Ambient Air Quality Standard(s)</td>
</tr>
<tr>
<td>28</td>
<td>SDWA</td>
<td>Safe Drinking Water Act</td>
</tr>
<tr>
<td>29</td>
<td>SH</td>
<td>State Highway</td>
</tr>
<tr>
<td>30</td>
<td>SHPO</td>
<td>State Historic Preservation Office</td>
</tr>
<tr>
<td>31</td>
<td>SIP</td>
<td>State Implementation Plan</td>
</tr>
<tr>
<td>32</td>
<td>SJPLC</td>
<td>San Juan Public Lands Center</td>
</tr>
<tr>
<td>33</td>
<td>SRE</td>
<td>Slick Rock East</td>
</tr>
<tr>
<td>34</td>
<td>SRMA</td>
<td>Special Recreation Management Area</td>
</tr>
<tr>
<td>35</td>
<td>SRW</td>
<td>Slick Rock West</td>
</tr>
<tr>
<td>36</td>
<td>SVRA</td>
<td>sensitive visual resource area</td>
</tr>
<tr>
<td>37</td>
<td>SWCTR</td>
<td>Southwest Colorado Travel Region</td>
</tr>
<tr>
<td>38</td>
<td>SWMP</td>
<td>stormwater management plan</td>
</tr>
<tr>
<td>39</td>
<td>SWReGAP</td>
<td>Southwest Regional Gap Analysis Project</td>
</tr>
<tr>
<td></td>
<td>Acronym</td>
<td>Full Name</td>
</tr>
<tr>
<td>---</td>
<td>---------</td>
<td>-----------</td>
</tr>
<tr>
<td>1</td>
<td>TDS</td>
<td>total dissolved solids</td>
</tr>
<tr>
<td>2</td>
<td>TEDE</td>
<td>total effective dose equivalent</td>
</tr>
<tr>
<td>3</td>
<td>THC</td>
<td>total hydrocarbons</td>
</tr>
<tr>
<td>4</td>
<td>TIS</td>
<td>traffic impact study</td>
</tr>
<tr>
<td>5</td>
<td>TMDL</td>
<td>total maximum daily load</td>
</tr>
<tr>
<td>6</td>
<td>TSCA</td>
<td>Toxic Substances Control Act</td>
</tr>
<tr>
<td>7</td>
<td>TSP</td>
<td>total suspended particulates</td>
</tr>
<tr>
<td>8</td>
<td>UCC</td>
<td>Union Carbide Corporation</td>
</tr>
<tr>
<td>9</td>
<td>UDEQ</td>
<td>Utah Department of Environmental Quality</td>
</tr>
<tr>
<td>10</td>
<td>UDNR</td>
<td>Utah Department of Natural Resources</td>
</tr>
<tr>
<td>11</td>
<td>UDOGM</td>
<td>Utah Division of Oil, Gas, and Mining</td>
</tr>
<tr>
<td>12</td>
<td>UDOT</td>
<td>Utah Department of Transportation</td>
</tr>
<tr>
<td>13</td>
<td>UDWR</td>
<td>Utah Division of Wildlife Resources</td>
</tr>
<tr>
<td>14</td>
<td>UGS</td>
<td>Utah Geological Survey</td>
</tr>
<tr>
<td>15</td>
<td>ULP</td>
<td>Uranium Leasing Program</td>
</tr>
<tr>
<td>16</td>
<td>UMTRCA</td>
<td>Uranium Milling Tailings Radiation Control Act</td>
</tr>
<tr>
<td>17</td>
<td>UNSCEAR</td>
<td>United Nations Scientific Committee on the Effects of Radiation</td>
</tr>
<tr>
<td>18</td>
<td>US</td>
<td>U.S. Highway</td>
</tr>
<tr>
<td>19</td>
<td>USACE</td>
<td>U.S. Army Corps of Engineers</td>
</tr>
<tr>
<td>20</td>
<td>USC</td>
<td>United States Code</td>
</tr>
<tr>
<td>21</td>
<td>USDA</td>
<td>U.S. Department of Agriculture</td>
</tr>
<tr>
<td>22</td>
<td>USFS</td>
<td>U.S. Forest Service</td>
</tr>
<tr>
<td>23</td>
<td>USFWS</td>
<td>U.S. Fish and Wildlife Service</td>
</tr>
<tr>
<td>24</td>
<td>USGRCP</td>
<td>U.S. Global Research Change Research Program</td>
</tr>
<tr>
<td>25</td>
<td>USGS</td>
<td>U.S. Geological Survey</td>
</tr>
<tr>
<td>26</td>
<td>VOC</td>
<td>volatile organic compound</td>
</tr>
<tr>
<td>27</td>
<td>VRI</td>
<td>visual resource inventory</td>
</tr>
<tr>
<td>28</td>
<td>VRM</td>
<td>visual resource management</td>
</tr>
<tr>
<td>29</td>
<td>WA</td>
<td>Wilderness Area</td>
</tr>
<tr>
<td>30</td>
<td>WAPA</td>
<td>Western Area Power Administration</td>
</tr>
<tr>
<td>31</td>
<td>WHO</td>
<td>World Health Organization</td>
</tr>
<tr>
<td>32</td>
<td>WL</td>
<td>working level</td>
</tr>
<tr>
<td>33</td>
<td>WLM</td>
<td>working level month</td>
</tr>
<tr>
<td>34</td>
<td>WRCC</td>
<td>Western Regional Climate Center</td>
</tr>
<tr>
<td>35</td>
<td>WSA</td>
<td>Wilderness Study Area</td>
</tr>
<tr>
<td>36</td>
<td>WSR</td>
<td>National Wild and Scenic Rivers</td>
</tr>
</tbody>
</table>
CHEMICALS

CH₄ methane
CO carbon monoxide
CO₂ carbon dioxide
CO₂e carbon dioxide equivalent
K-40 potassium-40
NO₂ nitrogen dioxide
N₂O nitrous oxide
NOₓ nitrogen oxides
O₃ ozone
Pb lead
SF₆ sulfur hexafluoride
SO₂ sulfur dioxide
U₃O₈ uranium oxide (triuranium octoxide)
V₂O₅ vanadium oxide (divanadium pentoxide)

UNITS OF MEASURE

ac-ft acre-foot (feet)
bbl barrel(s)
ºC degree(s) Celsius
Ci curie(s)
cm centimeter(s)
cm³ cubic centimeter(s)
d day(s)
dB decibel(s)
dBA a-weighted decibel(s)
ºF degree(s) Fahrenheit
ft foot (feet)
ft³ cubic foot (feet)
g gram(s)
gal gallon(s)
<table>
<thead>
<tr>
<th>1</th>
<th>h</th>
<th>hour(s)</th>
</tr>
</thead>
<tbody>
<tr>
<td>2</td>
<td>ha</td>
<td>hectare(s)</td>
</tr>
<tr>
<td>3</td>
<td>hp</td>
<td>horsepower</td>
</tr>
<tr>
<td>4</td>
<td>Hz</td>
<td>hertz</td>
</tr>
<tr>
<td>5</td>
<td>in.</td>
<td>inch(es)</td>
</tr>
<tr>
<td>6</td>
<td>in.³</td>
<td>cubic inch(es)</td>
</tr>
<tr>
<td>7</td>
<td>kg</td>
<td>kilogram(s)</td>
</tr>
<tr>
<td>8</td>
<td>km</td>
<td>kilometer(s)</td>
</tr>
<tr>
<td>9</td>
<td>km²</td>
<td>square kilometer(s)</td>
</tr>
<tr>
<td>10</td>
<td>L</td>
<td>liter(s)</td>
</tr>
<tr>
<td>11</td>
<td>lb</td>
<td>pound(s)</td>
</tr>
<tr>
<td>12</td>
<td>m</td>
<td>meter(s)</td>
</tr>
<tr>
<td>13</td>
<td>m²</td>
<td>square meter(s)</td>
</tr>
<tr>
<td>14</td>
<td>m³</td>
<td>cubic meter(s)</td>
</tr>
<tr>
<td>15</td>
<td>mg</td>
<td>milligram(s)</td>
</tr>
<tr>
<td>16</td>
<td>mGy</td>
<td>milligray</td>
</tr>
<tr>
<td>17</td>
<td>mi</td>
<td>mile(s)</td>
</tr>
<tr>
<td>18</td>
<td>mi²</td>
<td>square mile(s)</td>
</tr>
<tr>
<td>19</td>
<td>min</td>
<td>minute(s)</td>
</tr>
<tr>
<td>20</td>
<td>mm</td>
<td>millimeter(s)</td>
</tr>
<tr>
<td>21</td>
<td>mo</td>
<td>month(s)</td>
</tr>
<tr>
<td>22</td>
<td>mph</td>
<td>mile(s) per hour</td>
</tr>
<tr>
<td>23</td>
<td>mrem</td>
<td>millirem</td>
</tr>
<tr>
<td>24</td>
<td>MW</td>
<td>megawatt(s)</td>
</tr>
<tr>
<td>25</td>
<td>pCi</td>
<td>picocurie(s)</td>
</tr>
<tr>
<td>26</td>
<td>ppb</td>
<td>part(s) per billion</td>
</tr>
<tr>
<td>27</td>
<td>ppm</td>
<td>part(s) per million</td>
</tr>
<tr>
<td>28</td>
<td>rem</td>
<td>roentgen equivalent man</td>
</tr>
<tr>
<td>29</td>
<td>s</td>
<td>second(s)</td>
</tr>
<tr>
<td>30</td>
<td>yr</td>
<td>year(s)</td>
</tr>
<tr>
<td>31</td>
<td>µg</td>
<td>microgram(s)</td>
</tr>
<tr>
<td>32</td>
<td>µm</td>
<td>micrometer(s)</td>
</tr>
<tr>
<td>33</td>
<td>µmho(s)</td>
<td>micromho(s)</td>
</tr>
<tr>
<td>34</td>
<td>µS</td>
<td>microsievert(s)</td>
</tr>
</tbody>
</table>
This page intentionally left blank
## CONVERSION TABLE
### ENGLISH/METRIC AND METRIC/ENGLISH EQUIVALENTS

<table>
<thead>
<tr>
<th>Multiply</th>
<th>By</th>
<th>To Obtain</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>English/Metric Equivalents</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>acres</td>
<td>0.004047</td>
<td>square kilometers (km²)</td>
</tr>
<tr>
<td>acre-feet (ac-ft)</td>
<td>1.234</td>
<td>cubic meters (m³)</td>
</tr>
<tr>
<td>cubic feet (ft³)</td>
<td>0.02832</td>
<td>cubic meters (m³)</td>
</tr>
<tr>
<td>cubic yards (yd³)</td>
<td>0.7646</td>
<td>cubic meters (m³)</td>
</tr>
<tr>
<td>degrees Fahrenheit (°F) –32</td>
<td>0.5555</td>
<td>degrees Celsius (°C)</td>
</tr>
<tr>
<td>feet (ft)</td>
<td>0.3048</td>
<td>meters (m)</td>
</tr>
<tr>
<td>gallons (gal)</td>
<td>3.785</td>
<td>liters (L)</td>
</tr>
<tr>
<td>gallons (gal)</td>
<td>0.003785</td>
<td>cubic meters (m³)</td>
</tr>
<tr>
<td>inches (in.)</td>
<td>2.540</td>
<td>centimeters (cm)</td>
</tr>
<tr>
<td>miles (mi)</td>
<td>1.609</td>
<td>kilometers (km)</td>
</tr>
<tr>
<td>miles per hour (mph)</td>
<td>1.609</td>
<td>kilometers per hour (kph)</td>
</tr>
<tr>
<td>pounds (lb)</td>
<td>0.4536</td>
<td>kilograms (kg)</td>
</tr>
<tr>
<td>short tons (tons)</td>
<td>907.2</td>
<td>kilograms (kg)</td>
</tr>
<tr>
<td>short tons (tons)</td>
<td>0.9072</td>
<td>metric tons (t)</td>
</tr>
<tr>
<td>square feet (ft²)</td>
<td>0.09290</td>
<td>square meters (m²)</td>
</tr>
<tr>
<td>square yards (yd²)</td>
<td>0.8361</td>
<td>square meters (m²)</td>
</tr>
<tr>
<td>square miles (mi²)</td>
<td>2.590</td>
<td>square kilometers (km²)</td>
</tr>
<tr>
<td>yards (yd)</td>
<td>0.9144</td>
<td>meters (m)</td>
</tr>
<tr>
<td><strong>Metric/English Equivalents</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>centimeters (cm)</td>
<td>0.3937</td>
<td>inches (in.)</td>
</tr>
<tr>
<td>cubic meters (m³)</td>
<td>0.00081</td>
<td>acre-feet (ac-ft)</td>
</tr>
<tr>
<td>cubic meters (m³)</td>
<td>35.31</td>
<td>cubic feet (ft³)</td>
</tr>
<tr>
<td>cubic meters (m³)</td>
<td>1.308</td>
<td>cubic yards (yd³)</td>
</tr>
<tr>
<td>cubic meters (m³)</td>
<td>264.2</td>
<td>gallons (gal)</td>
</tr>
<tr>
<td>degrees Celsius (°C) +17.78</td>
<td>1.8</td>
<td>degrees Fahrenheit (°F)</td>
</tr>
<tr>
<td>hectares (ha)</td>
<td>2.471</td>
<td>acres</td>
</tr>
<tr>
<td>kilograms (kg)</td>
<td>2.205</td>
<td>pounds (lb)</td>
</tr>
<tr>
<td>kilograms (kg)</td>
<td>0.001102</td>
<td>short tons (tons)</td>
</tr>
<tr>
<td>kilometers (km)</td>
<td>0.6214</td>
<td>miles (mi)</td>
</tr>
<tr>
<td>kilometers per hour (kph)</td>
<td>0.6214</td>
<td>miles per hour (mph)</td>
</tr>
<tr>
<td>liters (L)</td>
<td>0.2642</td>
<td>gallons (gal)</td>
</tr>
<tr>
<td>meters (m)</td>
<td>3.281</td>
<td>feet (ft)</td>
</tr>
<tr>
<td>meters (m)</td>
<td>1.094</td>
<td>yards (yd)</td>
</tr>
<tr>
<td>metric tons (t)</td>
<td>1.102</td>
<td>short tons (tons)</td>
</tr>
<tr>
<td>square kilometers (km²)</td>
<td>247.1</td>
<td>acres</td>
</tr>
<tr>
<td>square kilometers (km²)</td>
<td>0.3861</td>
<td>square miles (mi²)</td>
</tr>
<tr>
<td>square meters (m²)</td>
<td>10.76</td>
<td>square feet (ft²)</td>
</tr>
<tr>
<td>square meters (m²)</td>
<td>1.196</td>
<td>square yards (yd²)</td>
</tr>
</tbody>
</table>
5 APPLICABLE LAWS AND REQUIREMENTS

This chapter presents the laws and other requirements that could affect implementation of the alternatives for managing the ULP described in the ULP PEIS.

A number of Federal environmental laws could potentially affect environmental protection, health, safety, compliance, and consultation at the lease tracts discussed in the ULP PEIS. In addition to certain environmental requirements that have been delegated to state authorities for enforcement and implementation, state legislatures have adopted laws to protect health and safety and the environment. County governments often use the powers delegated to them to pass ordinances and plans to protect their citizens and resources. It is DOE policy to conduct its operations in a manner that assures the protection of public health, safety, and the environment through compliance with all applicable Federal, state, and county requirements.

Federal environmental, cultural, and health and safety laws are summarized in Section 5.1. State of Colorado potentially applicable laws are listed in Section 5.2; ordinances and plans for Mesa, Montrose, and San Miguel Counties in Colorado, where the lease tracts are located, are presented in Section 5.3, and DOE MOU with BLM and CDRMS are presented in Section 5.4.

5.1 APPLICABLE FEDERAL LAWS AND REGULATIONS

This section describes the Federal environmental, cultural, safety, and health laws that could apply to the alternatives for the management of the ULP described in the ULP PEIS.

American Indian Religious Freedom Act of 1978 (42 USC 1996). This act reaffirms American Indian religious freedom under the First Amendment and sets U.S. policy to protect and preserve the inherent and constitutional right of American Indians to believe, express, and exercise their traditional religions. The Act requires that Federal actions avoid interfering with access to sacred locations and traditional resources that are integral to the practice of tribal religions.

Antiquities Act of 1906, as amended (16 USC 431 to 433). This act protects historic and prehistoric ruins, monuments, and antiquities, including paleontological resources, on Federally controlled lands from appropriation, excavation, injury, and destruction without permission.

Archaeological and Historic Preservation Act of 1974, as amended (16 USC 469 to 469c). This act provides for the preservation of historical and archaeological data (including relics and specimens) that might otherwise be irreparably lost or destroyed as the result of Federal actions. Under the law, Federal agencies must notify the Secretary of Interior whenever
they find that a Federal project may cause loss or destruction of significant scientific, prehistoric, or archeological data.

**Archaeological Resources Protection Act of 1979, as amended (16 USC 470 et seq.).** This act requires a permit for any excavation or removal of archaeological resources from Federal or American Indian lands. Excavations must be undertaken for the purpose of furthering archaeological knowledge in the public interest, and resources removed remain the property of the United States.

**Atomic Energy Act of 1954 (42 USC 2011 et seq.).** The AEA provides the statutory framework for DOE, as the successor agency to the AEC, to ensure a supply of domestic uranium adequate to meet the defense needs of the United States. The AEA also authorizes DOE to exercise regulatory authority over activities it conducts or those conducted on its behalf. An extensive system of standards and requirements has been established through DOE directives to protect health and minimize danger to life and property from activities under DOE’s jurisdiction.

**Bald and Golden Eagle Protection Act of 1973, as amended (16 USC 668 through 668d).** The Bald and Golden Eagle Protection Act, as amended, makes it unlawful to take, pursue, molest, or disturb bald (American) and golden eagles, their nests, or their eggs anywhere in the United States. The DOI regulates activities that might adversely affect bald and golden eagles.

**Clean Air Act of 1970, as amended (42 USC 7401 et seq.).** The CAA is intended to “protect and enhance the quality of the nation’s air resources so as to promote the public health and welfare and the productive capacity of its population.” Section 118 of the CAA requires that each Federal agency with jurisdiction over any property or facility engaged in any activity that might result in the discharge of air pollutants comply with “all Federal, state, interstate, and local requirements” with regard to the control and abatement of air pollution.

Section 109 of CAA directs the EPA to set NAAQS for criteria pollutants. These standards were established for PM, SO₂, CO, ozone, NO₂, and lead. Section 111 of the CAA requires the establishment of national standards of performance for new or modified stationary sources of atmospheric pollutants, and Section 160 requires that specific emission increases be evaluated prior to permit approval to prevent significant deterioration of air quality. Specific standards for releases of hazardous air pollutants (including radionuclides) are required per Section 112. Radionuclide emissions are regulated under the NESHAP Program under 40 CFR Part 61.

**Clean Water Act of 1972, as amended (33 USC 1251 et seq.).** The CWA provides water quality standards for the nation’s waterways, guidelines and limitations for effluent discharges from point-source discharges, and the NPDES permit program that is administered by
the EPA or by states under their own laws. Sections 401 through 405 of the Water Quality Act of 1987 added Section 402(p) to the CWA, which requires the EPA to establish regulations for permits for stormwater discharges associated with industrial activities. Section 404 of the CWA requires permits for the discharge of dredge or fill materials into navigable waters.

Sections 303(d) and 305(b) update water quality conditions for all water bodies every 2 years. The water body that is identified as impaired will be required to be investigated for development of TMDL, which will be implemented to correct the impairment.

**Comprehensive Environmental Response, Compensation, and Liability Act of 1980** *(42 USC 9604; also known as Superfund).* CERCLA provides, among other things, authority for Federal and state governments to respond directly to hazardous substance incidents. The act requires reporting of spills, including radioactive spills, to the National Response Center.

**Endangered Species Act of 1973, as amended (16 USC 1531 et seq.).** The ESA provides a program for the conservation of threatened and endangered species and the ecosystems on which those species rely. The act is intended to prevent the further decline of endangered and threatened species and to restore those species and their critical habitats. Section 7 requires Federal agencies to assure that any action authorized, funded, or carried out by them is not likely to jeopardize the continued existence of listed species or result in the destruction or adverse modification of their critical habitat.

**Emergency Planning and Community Right-to-Know Act of 1986** *(USC 11001 et seq.; also known as Superfund Amendments and Reauthorization Act [SARA] Title III).* This act requires emergency planning and notice to communities and Government agencies concerning the presence and release of specific chemicals. Its provisions help increase the public’s knowledge of and access to information on chemicals at individual facilities, their uses, and releases into the environment. States and communities can use the information to improve chemical safety and protect public health and the environment.

**Federal Cave Resources Protection Act of 1988** *(16 USC 4301 et seq.).* This act established requirements for the management and protection of caves and their resources on Federal lands, including allowing the land managing agencies to withhold the location of caves from the public and requiring permits for any removal or collection activities in caves on Federal lands.

**Federal Insecticide, Fungicide, and Rodenticide Act** *(7 USC 136 et seq.)*. This act regulates the use, registration, and disposal of several classes of pesticides to ensure that they are applied in a manner that protects the public, workers, and the environment. Implementing regulations include recommended procedures for the disposal and storage of pesticides and worker protection standards.
Federal Land Policy and Management Act, as amended (43 USC 1701 et seq.). This act is the principal law governing how the BLM manages public lands. It guides the BLM in managing, protecting, developing, and enhancing public land and specifically requires the agency to manage public land resources for multiple uses and sustained yield for both present and future generations. The act governs the issuance of ROWs on public land and reclamation of public land.

Federal Mine Safety and Health Act of 1977, as amended (30 USC 801 et seq.). The Federal Mine Safety and Health Act authorizes the Secretary of Labor to establish mandatory health and safety standards for mines, including related surface operations. The act defines a mine as “(a) an area of land from which minerals are extracted in nonliquid form or, if in liquid form, are extracted with workers underground, (b) private ways and roads appurtenant to such [an] area, and (c) lands, excavations, underground passageways, shafts, slopes, tunnels and workings, structures, facilities, equipment, machines, tools, or other property including impoundments, retention dams, and tailings ponds, on the surface or underground, used in, or to be used in, or resulting from, the work of extracting such minerals from their natural deposits in nonliquid form, or if in liquid form, with workers underground, or used in, or to be used in, the milling of such minerals, or the work of preparing coal or other minerals, and includes custom coal preparation facilities.”

Fish and Wildlife Coordination Act (16 USC 661 et seq.). The Fish and Wildlife Coordination Act promotes effective planning and cooperation among Federal, state, public, and private agencies for the conservation and rehabilitation of the nation’s fish and wildlife. The act requires consultation with the USFWS and state authorities whenever a Federal action involves impounding, diverting, channel deepening, or otherwise controlling or modifying the waters of any stream or other body of water.

Noxious Weed Act of 1974, as amended (7 USC 2801 et seq.). The act authorizes the Secretary of Agriculture to designate plants as noxious weeds by regulation. The movement of all such designated weeds in interstate or foreign commerce is prohibited except under permit. The 1990 amendment requires Federal agencies to develop and adequately fund a program for managing undesirable plants in order to control these plants on Federal lands under their jurisdiction.

Migratory Bird Treaty Act of 1918, as amended (16 USC 703 et seq.). This act, as amended, is intended to protect birds that have common migration patterns between the United States and Canada, Mexico, Japan, and Russia. The act stipulates that it is unlawful at any time, by any means, or in any manner to “kill any migratory bird unless and except as permitted by regulation.”
National Environmental Policy Act of 1969, as amended (42 USC 4321 et seq.).
NEPA establishes a national policy that promotes the awareness of the consequences of human activity on the environment and the consideration of environmental impacts during the planning and decision-making stages of a project. It requires Federal agencies to prepare an EIS for “major Federal actions significantly affecting the quality of the human environment.”

National Historic Preservation Act of 1966, as amended (16 USC 470 et seq.). NHPA provides that sites with significant national historic value be placed on the NRHP maintained by the Secretary of the Interior. Section 106 of the act requires a Federal agency to determine whether its proposed undertaking is the type of activity that could affect historic properties. If so, the agency must consult with the appropriate SHPO or Tribal Historic Preservation Officer. If an adverse effect is found, the consultation often ends with the execution of a Memorandum of Agreement that indicates how the adverse effect will be resolved.

Native American Graves Protection and Repatriation Act of 1990 (25 USC 3001). This act establishes a means for American Indians to request the return or repatriation of human remains and other cultural items presently held by Federal agencies or Federally assisted museums or institutions. The act also contains provisions regarding the intentional excavation and removal of, inadvertent discovery of, and illegal trafficking in American Indian human remains and cultural items. The law requires the establishment of a review committee with monitoring and policy-making responsibilities, the development of regulations for repatriation, and the development of procedures to handle unexpected discoveries of graves or grave items during activities on Federal or tribal lands. All Federal agencies that manage land and/or are responsible for archaeological collections obtained from their lands or generated by their activities must comply with this act.

Noise Control Act of 1972, as amended (42 USC 4901 et seq.). Section 4 of the Noise Control Act of 1972, as amended, directs all Federal agencies to carry out “to the fullest extent within their authority” programs within their jurisdictions in a manner that furthers a national policy that promotes an environment free from noise that would jeopardize health and welfare.

Occupational Safety and Health Act of 1970 (29 USC 651 et seq.). This act establishes standards for safe and healthful working conditions in places of employment throughout the United States. The act is administered and enforced by the Occupational Safety and Health Administration in the U.S. Department of Labor.

Paleontological Resources Preservation Act (16 USC 470aaa et seq.). This act promotes the preservation and use of paleontological resources on Federal lands by prohibiting the following: (1) taking or damaging paleontological resources located on Federal lands without a permit or permission; (2) selling or purchasing such resources received from Federal lands; and (3) submitting false records or identification for such resources removed from Federal lands.
Pollution Prevention Act of 1990 (42 USC 13101 et seq.). This act establishes a national policy for waste management and pollution control. Source reduction is given first preference, followed by environmentally safe recycling, then by treatment, and finally by disposal.

Resource Conservation and Recovery Act of 1976, as amended (42 USC 6901 et seq.). Under this act (abbreviated RCRA), which amended the Solid Waste Disposal Act of 1965, the EPA defines and identifies hazardous waste; establishes standards for its transportation, treatment, storage, and disposal; and requires permits for persons engaged in hazardous waste activities. Section 3006 of RCRA allows states to establish and administer these permit programs with EPA approval. The Federal Facility Compliance Act of 1992 (42 USC 6961 et seq.) amended RCRA to require that all Federal agencies having jurisdiction over a solid waste facility or disposal site, or engaged in the management of solid or hazardous waste, are subject to all applicable Federal, state, and local laws, regulations, and ordinances addressing solid and hazardous waste.

Safe Drinking Water Act of 1974, as amended (42 USC 300(f) et seq.). The primary objective of the Safe Drinking Water Act (SDWA) is to protect the quality of public drinking water supplies and sources of drinking water. The implementing regulations, administered by the EPA unless delegated to states, establish standards applicable to public water systems. These regulations include maximum contaminant levels (including those for radioactivity) in public water systems that have at least 15 service connections used by year-round residents or that regularly serve at least 25 year-round residents.

Theft and Destruction of Government Property (18 USC 641 and 1361). This legislation makes it illegal to steal or damage any property of the Federal Government and establishes provisions for fines and imprisonment.

Toxic Substances Control Act of 1976 (15 USC 2601 et seq.). This act (abbreviated TSCA) provides the EPA with the authority to require testing of chemical substances entering the environment and to regulate them as necessary. The law complements and expands existing toxic substance laws such as Section 112 of the CAA and Section 307 of the CWA. TSCA requires compliance with inventory reporting and chemical control provisions of the legislation to protect the public from the risks of exposure to chemicals.

Wild and Scenic Rivers Act (16 USC 1271 et seq.). The act establishes a National Wild and Scenic Rivers System and prescribes the methods and standards through which additional rivers may be added to the system. Rivers may be designated by Congress or, under certain conditions, the Secretary of the Interior; designated segments need not include the entire river. Each river is administered by either a Federal or state agency; for Federally administered rivers...
in the lower 48 states, the designated boundaries generally average one quarter mile on either
bank in order to protect river-related values.

5.2 STATE OF COLORADO ENVIRONMENTAL LAWS

Certain environmental requirements are implemented by states under their own state
laws, as authorized by the EPA to state authorities for implementation and enforcement. It is
DOE policy to conduct its operations in an environmentally safe manner that complies with all
applicable requirements, including applicable state requirements. A list of state environmental
laws potentially applicable to the alternatives for the management of the ULP, described in the
ULP PEIS, is provided in Table 5.2-1.

5.3 COUNTY ENVIRONMENTAL ORDINANCES AND PLANS

Under Colorado state law, county planning commissions are authorized to make and
adopt a master plan for the physical development of the unincorporated territory of the county.
The lease tracts that are the subject of the ULP PEIS are located in Mesa, Montrose, and
San Miguel Counties. County ordinances, plans, and permit requirements that could apply to the
ULP management alternatives described in the ULP PEIS are listed in Table 5.3-1.

5.4 MEMORANDA OF UNDERSTANDING

In recognition of their shared roles and responsibilities and under their respective
authorities, the DOE-LM Office of Site Operations and the CDRMS entered into an MOU in
September 2012. The purpose of the MOU is to identify those roles and responsibilities, promote
agency coordination in matters affecting the ULP, eliminate duplication, simplify administrative
processes, and minimize or eliminate the adverse environmental effects of ULP mining
operations.

The MOU between DOE and CDRMS states that DOE has sole authority over the
selection of lessees as well as the negotiation, issuance, management, and termination of leases;
DOE is also the lead bonding authority. To allow for its independent review, each agency is to
receive copies of lessee documents pertaining to “site-specific Exploration Plans/Notices of
Intent and Reclamation Permits/Plans of Operation.” DOE has the authority and responsibility to
assure that lessees conduct all operations in compliance with the lease and with all applicable
laws and regulations, while the CDRMS has the authority and responsibility to assure that
operators conduct uranium and vanadium mining operations in compliance with applicable State
of Colorado laws and regulations. Each agency is to conduct its inspections of operations in
order to fulfill its regulatory oversight responsibilities, to notify the other agency of
noncompliance issues, and to retain its enforcement authorities.
In 2010, the DOE-LM Office of Site Operations entered into a MOU with the BLM concerning the management of withdrawn lands. The MOU identifies the individual and shared roles and responsibilities of each agency with respect to the ULP.

Pursuant to this 2010 MOU, DOE has sole authority over the selection of lessees as well as lease negotiation, issuance, management, and termination. DOE is responsible for assuring that all lease-wide stipulations it has agreed to with the BLM are incorporated into leases or, as appropriate, are included as stipulations in Exploration and Mining Plan approvals. DOE also has sole authority to assure that lessees conduct operations in compliance with lease language and all applicable laws and regulations; DOE must notify the BLM of any noncompliance and subsequent response actions. The BLM is to notify DOE of noncompliance, safety, and other issues noted by its staff members while they are performing their duties on the leased premises.

The MOU provides that DOE is to reclaim all leased tracts when they are no longer required to support the DOE mission and that DOE shall consult with the BLM prior to reclamation in order to ensure that all involved lands are reclaimed to BLM standards and needs.
**TABLE 5.2-1 Potentially Applicable State Requirements**

<table>
<thead>
<tr>
<th>Law</th>
<th>Citation</th>
<th>Requirement</th>
</tr>
</thead>
<tbody>
<tr>
<td>Agreements for Transfer of Functions from Federal Government to State Government</td>
<td><em>Colorado Revised Statutes</em> (CRS), Title 25, “Health,” Article 11, “Radiation Control,” Section 102, Agreements for transfer of functions from Federal Government to State Government</td>
<td>Authorizes the governor to enter into agreements with the Federal Government allowing the state to assume responsibilities within the state relating to the protection of persons and property from the hazards of radioactive materials and other sources of radiation.</td>
</tr>
<tr>
<td>Colorado Air Pollution Prevention and Control Act</td>
<td>CRS, Title 25, “Health,” Article 7, “Air Quality Control,” Section 101 <em>et seq.</em></td>
<td>Requires development of an air quality control program in which the benefits of the air pollution control measures utilized bear a reasonable relationship to the economic, environmental, and energy impacts and other costs of such measures.</td>
</tr>
<tr>
<td>Colorado Mined Land Reclamation Act</td>
<td>CRS, Title 34, “Mineral Resources,” Article 32, “Colorado Mined Land Reclamation Act,” Section 101 <em>et seq.</em></td>
<td>Requires permits for new mining operations and establishes procedures for renewals of existing permits; requires an environmental protection plan for uranium mines; establishes that uranium stockpile areas are subject to rules developed to prevent off-site impacts.</td>
</tr>
<tr>
<td>Colorado Natural Areas Act</td>
<td>CRS, Title 33, “Parks and Wildlife,” Article 33, “Colorado Natural Areas,” Section 101 <em>et seq.</em></td>
<td>Establishes a statewide natural areas program to identify and protect certain natural areas.</td>
</tr>
<tr>
<td>Colorado Noxious Weed Act</td>
<td>CRS, Title 35, “Agriculture, Article 5.5, “Colorado Noxious Weed Act,” Section 111, Cooperation with Federal and state agencies</td>
<td>Authorizes local governing bodies of county and municipality governing bodies to enter into cooperative agreements with Federal and state agencies for the integrated management of noxious weeds within their respective territorial jurisdictions.</td>
</tr>
<tr>
<td>Colorado Water Quality Control Act</td>
<td>CRS, Title 25, “Health,” Article 8, “Water Quality Control,” Section 506, Nuclear and radioactive wastes</td>
<td>Requires a permit to discharge, deposit, or dispose of any radioactive waste underground in liquid, solid, or explosive form.</td>
</tr>
<tr>
<td>Law</td>
<td>Citation</td>
<td>Requirement</td>
</tr>
<tr>
<td>---------------------------------</td>
<td>--------------------------------------------------------------------------</td>
<td>-----------------------------------------------------------------------------</td>
</tr>
<tr>
<td>Groundwater Use</td>
<td>CRS, Title 37, “Water and Irrigation,” Article 90, “Underground Water,” Section 107, Application for use of groundwater</td>
<td>Requires anyone desiring to appropriate groundwater in designated groundwater basins to file an application prior to doing so.</td>
</tr>
<tr>
<td>Historical, Prehistorical, and Archaeological Resources</td>
<td>CRS, Title 24, “Government, State,” Article 80, “State History, Archives, and Emblems,” Part 4, “Historical, Prehistorical, and Archaeological Resources,” Section 406, Permits</td>
<td>Requires permits for the investigation, excavation, gathering, or removal from the natural state of any historical, prehistorical, and archaeological resources within the state.</td>
</tr>
<tr>
<td>Maximum Permissible Noise Levels</td>
<td>CRS, Title 25, “Health,” Article 12, “Noise Abatement,” Section 103, Maximum permissible noise levels</td>
<td>Establishes the dB(A) and time periods that constitute permissible noise levels.</td>
</tr>
<tr>
<td>Nongame, Endangered, or Threatened Species Conservation Act</td>
<td>CRS, Title 33, “Parks and Wildlife,” Article 2, “Nongame and Endangered Species Conservation,” Section 101 et seq.</td>
<td>Authorizes regulations that establish (1) limitations relating to the taking, possession, transportation, exportation, processing, sale or offering for sale, or shipment regarding nongame wildlife and (2) a list of those species indigenous to the state determined to be endangered or threatened.</td>
</tr>
<tr>
<td>Pesticide Act</td>
<td>CRS, Title 35, “Agriculture,” Article 9, “Pesticide Act,” Section 101 et seq.</td>
<td>Controls the use of pesticides in the state.</td>
</tr>
</tbody>
</table>
## TABLE 5.3-1 Potentially Applicable County Requirements

<table>
<thead>
<tr>
<th>Ordinance/Plan/Permit</th>
<th>Citation</th>
<th>Requirements</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Mesa County</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Land Development Code</td>
<td>2000 Mesa County Land Development Code/Road and Bridge Standards and Specifications</td>
<td>Establishes land use regulations and development review and approval procedures; requires permits for surface alterations, utility installation, stormwater construction, and driveways. Mining and extractive uses shall be subject to the Mesa County Mineral and Energy Resource Master Plan.</td>
</tr>
<tr>
<td>Noxious Weed Management Plan</td>
<td>Mesa County 2009-204</td>
<td>Lists the noxious weeds covered by the plan and promotes noxious weed management.</td>
</tr>
<tr>
<td><strong>Montrose County</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Montrose County Zoning Resolution</td>
<td>Montrose County Zoning Resolution</td>
<td>Establishes county land use zones and requirements for those zones. The exploration of mineral resources and mining of minerals (other than sand and gravel) existing as of October 13, 1994, or the subsequent expansion of existing operations within existing property lines, is a use-by-right in the General Agricultural District; new mineral resource development and extraction operations and facilities are a special use within that district. Applications, a complete site plan, and an impact mitigation plan are required for special uses. Permits are required for any work performed within the public ROWs of Montrose County and within county road access.</td>
</tr>
<tr>
<td>Ordinance/Plan/Permit</td>
<td>Citation</td>
<td>Requirements</td>
</tr>
<tr>
<td>----------------------</td>
<td>----------</td>
<td>--------------</td>
</tr>
<tr>
<td><strong>San Miguel County</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>San Miguel County Land Use Code</td>
<td>Section 3-1, General</td>
<td>Requires a building permit or exemption to erect, construct, reconstruct, excavate for a foundation, or alter or change the use of any building or other structure or improvements of land.</td>
</tr>
<tr>
<td></td>
<td>Section 5-11, Conditional Uses on Federal Lands</td>
<td>Establishes the standards for reviewing mineral exploration and mining on Federal land that is subject to Federal and state laws and regulations.</td>
</tr>
<tr>
<td></td>
<td>Section 5-16, Mining</td>
<td>Contains provisions to mitigate the impacts of mining and protect the health, safety, and welfare of residents and travellers on county roads, streets, and highways used for hauling mined material.</td>
</tr>
<tr>
<td></td>
<td>Section 5-321N, Development or Improvement of Roads, Driveways, and Recreational Trails</td>
<td>Requires that any proposed access to a county road must be issued a Driveway Access Permit.</td>
</tr>
<tr>
<td></td>
<td>Section 5-607, Sewage Disposal</td>
<td>Requires a permit for new or replaced septic systems.</td>
</tr>
</tbody>
</table>
6 CONSULTATION PROCESS FOR THE DOE ULP PEIS

DOE is complying with E.O. 13175, Section 7 of the ESA, and Section 106 of the NHPA by engaging in consultations with respective tribes, government agencies, and local historical groups. Sections 6.1, 6.2, and 6.3 describe the consultation efforts undertaken to date.

6.1 TRIBAL GOVERNMENT-TO-GOVERNMENT CONSULTATION

The Federal Government formally recognized its relationship with Indian tribal governments on November 6, 2000, with E.O. 13175, Consultation and Coordination with Indian Tribal Governments. In addition, DOE Order 144.1, DOE American Indian Policy, and memos from the DOE Secretary require that DOE consult and coordinate with Indian tribal governments, Indian tribal communities, and tribal individuals whose interests might be directly and substantially affected by DOE activities. On January 9, 2012, DOE initiated consultation and communication on the ULP PEIS with six Indian tribal governments that are known to have interests in the area and were identified for a previous NEPA effort. These six tribes are: (1) the Hopi Nation; (2) the Navajo Nation; (3) the Southern Ute Indian Tribe; (4) the Ute Indian Tribe; (5) the Ute Mountain Ute Tribe; and (6) the White Mesa Ute Community. DOE sent follow-up letters to each of the six tribes on May 2, 2012. Those letters expressed DOE’s desire to continue to look into ways to improve the government-to-government consultation process with the Indian tribal governments and encouraged the tribes to participate during the public participation opportunities provided in the NEPA process for the ULP PEIS. Two tribes (the Navajo Nation and the Southern Ute Indian Tribe) chose to participate in the development of this ULP PEIS as cooperating agencies, while the remaining four chose to participate only as commenting agencies.

On September 28, 2012, DOE also contacted 19 additional tribes to consult on the ULP PEIS. These 19 tribes were identified based on BLM’s previous activities in the areas around the ULP lease tracts and its knowledge of the ancestral range of tribes connected with the Mesa Verde region. DOE sent follow-up letters to each of the 19 tribes on November 20, 2012, similar to the May 2, 2012, letters to the six tribes contacted above. Three tribes (the Pueblo of Acoma Tribe, the Pueblo de Cochiti Tribe, and the Pueblo of Isleta Tribe) chose to participate in the development of this ULP PEIS as cooperating agencies, while the remaining 16 chose to participate only as commenting agencies. The list of cooperating and commenting agencies for the ULP PEIS, and their respective roles on their participation with regard the ULP PEIS process, are included in Section 1.9.

Since January 2012, monthly telephone conferences, as needed, have been held between DOE and the cooperating agencies to develop the Draft ULP PEIS.

All letters were sent to the tribes by Mr. David W. Geiser, Director, DOE-LM. Facsimiles of all the letters sent are presented in Appendix F. Table 6.1-1 lists the tribes and the lead for each tribe.
### TABLE 6.1-1  Indian Tribal Governments Contacted by DOE with Regard to Their Interest in Being Consulted on the ULP PEIS

<table>
<thead>
<tr>
<th>Name of Tribe</th>
<th>Tribal Lead</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 Hopi Tribal Council</td>
<td>The Honorable Leroy Shingoitewa</td>
</tr>
<tr>
<td>2 Jicarilla Apache Tribal Council</td>
<td>The Honorable Levi Pestata</td>
</tr>
<tr>
<td>3 Kewa Pueblo</td>
<td>The Honorable Sisto Quintana</td>
</tr>
<tr>
<td>4 Navajo Nation</td>
<td>The Honorable Ben Shelley</td>
</tr>
<tr>
<td>5 Pueblo de Cochiti</td>
<td>The Honorable Phillip Quintana</td>
</tr>
<tr>
<td>6 Pueblo of Acoma</td>
<td>The Honorable Randall Vicente</td>
</tr>
<tr>
<td>7 Pueblo of Isleta</td>
<td>The Honorable Frank E. Lujan</td>
</tr>
<tr>
<td>8 Pueblo of Jemez</td>
<td>The Honorable Joshua Madalena</td>
</tr>
<tr>
<td>9 Pueblo of Laguna</td>
<td>The Honorable Richard B. Luarkie</td>
</tr>
<tr>
<td>10 Pueblo of Nambe</td>
<td>The Honorable Phillip A. Perez</td>
</tr>
<tr>
<td>11 Pueblo of Picuris</td>
<td>The Honorable Gerald Nailor</td>
</tr>
<tr>
<td>12 Pueblo of Pojoaque</td>
<td>The Honorable George Rivera</td>
</tr>
<tr>
<td>13 Pueblo of San Felipe</td>
<td>The Honorable Anthony Ortiz</td>
</tr>
<tr>
<td>14 Pueblo of San Ildefonso</td>
<td>The Honorable Terry Aguilar</td>
</tr>
<tr>
<td>15 Pueblo of Sandia</td>
<td>The Honorable Malcolm Montoya</td>
</tr>
<tr>
<td>16 Pueblo of Santa Ana</td>
<td>The Honorable Ernest J. Lujan</td>
</tr>
<tr>
<td>17 Pueblo of Santa Clara</td>
<td>The Honorable Walter Dasheno</td>
</tr>
<tr>
<td>18 Pueblo of Taos</td>
<td>The Honorable Loriano B. Romero</td>
</tr>
<tr>
<td>19 Pueblo of Tesuque</td>
<td>The Honorable Ramos Romero</td>
</tr>
<tr>
<td>20 Pueblo of Zia</td>
<td>The Honorable Wilfred Shije</td>
</tr>
<tr>
<td>21 Southern Ute Indian Tribe</td>
<td>The Honorable Pearl Casias</td>
</tr>
<tr>
<td>22 Ute Indian Tribe</td>
<td>The Honorable Irene Cuch</td>
</tr>
<tr>
<td>23 Ute Mountain Ute Tribe</td>
<td>The Honorable Gary Hayes</td>
</tr>
<tr>
<td>24 White Mesa Ute Community</td>
<td>The Honorable Elayne Atcitty</td>
</tr>
<tr>
<td>25 Zuni Pueblo Tribe</td>
<td>The Honorable Arlen P. Quetawki, Sr.</td>
</tr>
</tbody>
</table>
6.2 CONSULTATION FOR THE ESA

DOE has entered into consultation with the USFWS, in compliance with Section 7 of the ESA, concerning DOE’s management of the ULP. Section 7 of the ESA requires Federal agencies to consider the effect of their undertakings on species listed under the ESA and to consult with the USFWS to ensure that their actions, or the actions that they fund, authorize, or permit, are not likely to jeopardize the continued existence of any listed species or result in the destruction or adverse modification of the critical habitat of such species.

DOE initiated the informal consultation with a letter dated November 7, 2011, from Ms. Tracy A. Ribeiro of DOE to Ms. Patty Gelatt indicating the need for consultation with the USFWS (see Appendix E, Table E-1). A response from Ms. Pamela Repp of the USFWS was received on November 17, 2011 (see Appendix E, Table E-1). The USFWS letter acknowledged receipt of the DOE letter requesting informal consultation. A meeting between DOE and the USFWS was held in the Grand Junction Office of the USFWS on November 9, 2011. The following points summarize the proceedings of that meeting.

- Since the ESA consultation is in support of a NEPA evaluation, the USFWS does not enter into formal consultation until a preferred alternative has been identified. Informal consultation based on current information regarding a preferred alternative can be conducted, and consultation might need to be redone if later in the PEIS process, the preferred alternative is different.

- The USFWS would respond in writing to DOE’s letter of request to enter into informal consultation with the USFWS.

- Prior to the November 9, 2011 meeting, the USFWS had performed a preliminary review of the list of species provided on the DOE letter dated November 7, 2011 (described above). The USFWS provided initial feedback on which species it determined were not an issue based on the species locales. The USFWS also provided initial feedback on which species DOE should continue to review.

- The biological assessment (BA) that would be prepared by DOE should consider the entire 25,000 acres (10,000 ha).

- The BA would consider all listed species, even those not potentially present in the area.

In addition to the above discussion, the USFWS also discussed potential activities that could lead to water depletion and that could, in turn, adversely affect the four endangered fish species in the Colorado River; they asked that both water quality and water depletion be addressed in the BA. The USFWS has determined that there would be no impact on these four species and that consultation is not required for them if the water-related activities deplete less than 0.1 ac-ft/yr (32,585 gal/yr). Further, water rights have no bearing on water depletion.
determinations; that is, any amounts of water depleted from the Colorado River Basin as a result of ULP activities must be addressed, regardless of water rights or ownership.

Water quality as it relates to the listed fish species is evaluated in the BA. With regard to water that would be brought onto the ULP lease tracts to support mining operations, some public water entities had previously consulted with the USFWS about water depletions. If the ULP lessees obtain water from these public water entities, these volumes will not need to be entered into the total volume counted as water depleted. However, since it will not be possible to determine the exact source of the water to be utilized for future ULP mining activities, the evaluation in the BA assumes that all consumptive water utilized is water depleted from the Colorado River basin. For water that would be removed during mining operations and then ponded, treated, and released, the water depletions and water quality related to the temporarily ponded water are also evaluated in the BA. Cumulative depletions for mining actions on the ULP lease tracts are also evaluated.

DOE has kept the USFWS informed about the ULP PEIS schedule, provided the USFWS with up-to-date information on the ESA consultation and the BA preparation relative to the overall ULP PEIS project schedule, and provided the USFWS with status updates on June 19, July 10, October 17, and November 19, 2012. DOE submitted the Final BA on May 14, 2013. DOE received the biological opinion (BO) from the USFWS on August 13, 2013. The USFWS indicated that with the findings as stated in the BO, the formal and informal consultation on the DOE ULP is concluded. The USFWS concurred with DOE’s determination that was presented in the Final BA (dated May 14, 2013; see Appendix E for the full version).

The USFWS, through the BO, indicated the following recommendations be considered by DOE for inclusion in the Final ULP PEIS: (1) reinitiate consultation if conditions changed from those described in the discussion on the Gunnison sage-grouse and the yellow-billed cuckoo; (2) conduct surveys prior to on-the-ground ULP activities that could have impacts on the Gunnison’s prairie dog; (3) promote conservation of sensitive plant species; (4) conduct annual monitoring of retention and sedimentation ponds; and (5) make corrections to errors found (e.g., map or text). These recommendations have been incorporated into this PEIS.

6.3 CONSULTATION FOR THE NHPA

DOE has initiated programmatic consultation, in compliance with Section 106 of the NHPA, concerning DOE’s management of the ULP. Section 106 of the NHPA requires Federal agencies to consider the effect of their undertakings on historic properties and to consult with the appropriate SHPO, American Council on Historic Preservation (ACHP), and other parties that have an interest in the effects of the undertaking on historic properties. For the ULP, per the procedure that has historically been and is currently still being carried out, DOE has addressed consultation through the BLM and the lessees on specific undertakings when ULP activities/plans have been proposed. However, since the NHPA allows for the utilization of a programmatic agreement (PA) to govern large or complex projects, and since PAs can be used when effects on historic properties are expected to be similar and repetitive or regional in scope.
or when these effects cannot be fully determined prior to approval of an undertaking, DOE has initiated the development of a PA for the ULP.

DOE initiated discussion regarding a PA with the BLM and the Colorado SHPO on May 30, 2013, in a teleconference. During the call, the ULP activities were summarized, and the related cultural resource activities were discussed. The SHPO suggested that a PA using a phased approach could be utilized, and the initial list of consulting parties was discussed. Following the teleconference, the BLM and DOE entered into discussions on how best to address coordination of efforts between the three BLM Field Offices and DOE. On July 22, 2013, Mr. David Shafer of DOE sent letters to the ACHP, the Colorado SHPO, and the BLM that formally requested the initiation of consultation with these entities, invited them to be a consulting party, and proposed pursuing a PA. On August 9, 2013, similar letters were sent to the 25 tribal groups originally contacted for government-to-government consultation and the local historical commissions for Mesa and San Miguel Counties. The letters to the tribes were addressed to the tribal leader, and copies were sent to the cultural resources contact, if known. Facsimiles of all the letters sent are presented in Appendix F (see Table F-2). During the weeks of August 19–23 and August 26–30, 2013, DOE-LM made calls to the ACHP, the tribes, and the historical commissions from which responses had not yet been received. On September 16 and 17, 2013, an e-mail or second letter was sent to the tribes and historical commissions from which responses had not yet been received. On October 8, 2013, DOE provided the initial version of the PA to the groups that had agreed to be consulting parties and hosted a conference call to discuss any questions or concerns. All communications after this first conference call were distributed to all of the initially identified parties, regardless of their response status, to ensure that the PA effort was made known and to encourage full participation. DOE issued two iterative versions of the PA on October 27, 2013, and November 29, 2013 requesting input and review. DOE hosted a second conference call on November 4, 2013 to again address any questions or concerns. DOE requested responses to the latest revision of the PA by December 12, 2013. The PA will be revised to address input and review from the consulting parties, and then routed to the responsive parties for concurrence. DOE-LM plans to have the PA in place before issuance of the ULP PEIS ROD. The DOE-LM contact efforts and responses from the groups invited to be consulting parties are summarized in Table 6.3-1.
### TABLE 6.3-1 NHPA Consultation Efforts

<table>
<thead>
<tr>
<th>Group</th>
<th>Contact Attempts (if no response yet received)</th>
<th>Response to Invitation To Be a Consulting Party</th>
</tr>
</thead>
<tbody>
<tr>
<td>CO SHPO</td>
<td></td>
<td>Yes</td>
</tr>
<tr>
<td>BLM</td>
<td></td>
<td>Yes</td>
</tr>
<tr>
<td>ACHP</td>
<td></td>
<td>No</td>
</tr>
</tbody>
</table>
| White Mesa Ute Tribe                 | 08/09/2013 – Invitation letter was sent  
At least one phone call was made to Tribal Elder’s office and to Cultural Resource lead (if known)  
09/16/2013 – Follow-up letter was sent  
10/29/2013 – A letter was sent inviting participation in the PA process, providing a status of the PA process to date, inviting participation in a conference call on 11/04/2013, and providing a copy of the PA for input and review  
11/06/2013 – A letter was sent inviting participation in the PA process and providing a summary of the conference call  
12/03/2013 – A letter was sent inviting participation in the PA process and providing an updated version of the PA for input and review                                                                                          |                                               |
| Southern Ute Indian Tribe            |                                                                                                                                                                                      | Yes                                           |
| Ute Indian Tribe (Uintah & Ouray Reservation) | 08/09/2013 – Invitation letter was sent  
At least one phone call was made to Tribal Elder’s office and to Cultural Resource lead (if known)  
09/16/2013 – Follow-up e-mail was sent  
10/16/2013 – An e-mail was sent that provided a status of the PA to date  
10/27/2013 – An e-mail was sent inviting participation in the PA process and providing a copy of the PA for input and review  
10/28/2013 – An e-mail invitation was sent for participation in a conference call on 11/04/2013  
11/06/2013 – An e-mail was sent inviting participation in the PA process and providing a summary of the conference call  
11/29/13 – An e-mail was sent inviting participation in the PA process and providing an updated version of the PA for input and review                                                                                          |                                               |
## TABLE 6.3-1 (Cont.)

<table>
<thead>
<tr>
<th>Group</th>
<th>Contact Attempts (if no response yet received)</th>
<th>Response to Invitation To Be a Consulting Party</th>
</tr>
</thead>
<tbody>
<tr>
<td>The Navajo Nation</td>
<td>Yes</td>
<td></td>
</tr>
<tr>
<td>Hopi Tribe</td>
<td>No</td>
<td></td>
</tr>
<tr>
<td>Ute Mountain Ute Tribe</td>
<td>Yes</td>
<td></td>
</tr>
<tr>
<td>Jicarilla Apache Tribal Council</td>
<td>No</td>
<td></td>
</tr>
</tbody>
</table>
| Kewa Pueblo                   | 08/09/2013 – Invitation letter was sent  
At least one phone call was made to Tribal Elder’s office and to Cultural Resource lead (if known)  
09/16/2013 – Follow-up letter was sent  
10/29/2013 – A letter was sent inviting participation in the PA process, providing a status of the PA process to date, inviting participation in a conference call on 11/04/2013, and providing a copy of the PA for input and review  
11/06/2013 – A letter was sent inviting participation in the PA process and providing a summary of the conference call  
12/03/2013 – A letter was sent inviting participation in the PA process and providing an updated version of the PA for input and review |                                               |
| Pueblo of Acoma               | 08/09/2013 – Invitation letter was sent  
At least one phone call was made to Tribal Elder’s office and to Cultural Resource lead (if known)  
09/16/2013 – Follow-up e-mail was sent  
10/16/2013 – An e-mail was sent that provided a status of the PA to date  
10/27/2013 – An e-mail was sent inviting participation in the PA process and providing a copy of the PA for input and review  
10/28/2013 – An e-mail invitation was sent for participation in a conference call on 11/04/2013  
11/06/2013 – An e-mail was sent inviting participation in the PA process and providing a summary of the conference call  
11/29/13 – An e-mail was sent inviting participation in the PA process and providing an updated version of the PA for input and review |                                               |
### TABLE 6.3-1 (Cont.)

<table>
<thead>
<tr>
<th>Group</th>
<th>Contact Attempts</th>
<th>Response to Invitation To Be a Consulting Party</th>
</tr>
</thead>
</table>
| Pueblo de Cochiti  | 08/09/2013 – Invitation letter was sent  
At least one phone call was made to Tribal Elder’s office  
and to Cultural Resource lead (if known)  
09/16/2013 – Follow-up e-mail was sent  
10/16/2013 – An e-mail was sent that provided a status of the PA to date  
10/27/2013 – An e-mail was sent inviting participation in the PA process and providing a copy of the PA for input and review  
10/28/2013 – An e-mail invitation was sent for participation in a conference call on 11/04/2013  
11/06/2013 – An e-mail was sent inviting participation in the PA process and providing a summary of the conference call  
11/29/13 – An e-mail was sent inviting participation in the PA process and providing an updated version of the PA for input and review | Yes                                           |
| Pueblo of Isleta   |                                                                                 | Yes                                           |
| Pueblo of Jemez    |                                                                                 | Yes                                           |
| Pueblo of Laguna   |                                                                                 | Yes                                           |
| Pueblo of Nambe    | 08/09/2013 – Invitation letter was sent  
At least one phone call was made to Tribal Elder’s office  
and to Cultural Resource lead (if known)  
09/16/2013 – Follow-up letter was sent  
10/29/2013 – A letter was sent inviting participation in the PA process, providing a status of the PA process to date, inviting participation in a conference call on 11/04/2013, and providing a copy of the PA for input and review  
11/06/2013 – A letter was sent inviting participation in the PA process and providing a summary of the conference call  
12/03/2013 – A letter was sent inviting participation in the PA process and providing an updated version of the PA for input and review | Yes                                           |
<table>
<thead>
<tr>
<th>Group</th>
<th>Contact Attempts (if no response yet received)</th>
<th>Response to Invitation To Be a Consulting Party</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pueblo of Picuris</td>
<td>08/09/2013 – Invitation letter was sent&lt;br&gt;At least one phone call was made to Tribal Elder’s office&lt;br&gt;and to Cultural Resource lead (if known)&lt;br&gt;09/16/2013 – Follow-up e-mail was sent&lt;br&gt;10/16/2013 – An e-mail was sent that provided a status of the PA to date&lt;br&gt;10/27/2013 – An e-mail was sent inviting participation in the PA process and providing a copy of the PA for input and review&lt;br&gt;10/28/2013 – An e-mail invitation was sent for participation in a conference call on 11/04/2013&lt;br&gt;11/06/2013 – An e-mail was sent inviting participation in the PA process and providing a summary of the conference call&lt;br&gt;11/29/13 – An e-mail was sent inviting participation in the PA process and providing an updated version of the PA for input and review</td>
<td>Yes</td>
</tr>
<tr>
<td>Pueblo of Pojoaque</td>
<td></td>
<td>Yes</td>
</tr>
<tr>
<td>Pueblo of San Felipe</td>
<td></td>
<td>Yes</td>
</tr>
<tr>
<td>Pueblo of San Ildefonso</td>
<td>08/09/2013 – Invitation letter was sent&lt;br&gt;At least one phone call was made to Tribal Elder’s office&lt;br&gt;and to Cultural Resource lead (if known)&lt;br&gt;09/16/2013 – Follow-up e-mail was sent&lt;br&gt;10/16/2013 – An e-mail was sent that provided a status of the PA to date&lt;br&gt;10/27/2013 – An e-mail was sent inviting participation in the PA process and providing a copy of the PA for input and review&lt;br&gt;10/28/2013 – An e-mail invitation was sent for participation in a conference call on 11/04/2013&lt;br&gt;11/06/2013 – An e-mail was sent inviting participation in the PA process and providing a summary of the conference call&lt;br&gt;11/29/13 – An e-mail was sent inviting participation in the PA process and providing an updated version of the PA for input and review</td>
<td>Yes</td>
</tr>
<tr>
<td>Pueblo of Sandia</td>
<td></td>
<td>No</td>
</tr>
<tr>
<td>Pueblo of Santa Ana</td>
<td></td>
<td>No</td>
</tr>
<tr>
<td>Pueblo of Santa Clara</td>
<td></td>
<td>Yes</td>
</tr>
<tr>
<td>Pueblo of Taos</td>
<td></td>
<td>Yes</td>
</tr>
</tbody>
</table>
TABLE 6.3-1 (Cont.)

<table>
<thead>
<tr>
<th>Group</th>
<th>Contact Attempts (if no response yet received)</th>
<th>Response to Invitation To Be a Consulting Party</th>
</tr>
</thead>
</table>
| Pueblo of Tesuque                    | 08/09/2013 – Invitation letter was sent  
At least one phone call was made to Tribal Elder’s office and to Cultural Resource lead (if known)  
09/16/2013 – Follow-up e-mail was sent  
10/16/2013 – An e-mail was sent that provided a status of the PA to date  
10/27/2013 – An e-mail was sent inviting participation in the PA process and providing a copy of the PA for input and review  
10/28/2013 – An e-mail invitation was sent for participation in a conference call on 11/04/2013  
11/06/2013 – An e-mail was sent inviting participation in the PA process and providing a summary of the conference call  
11/29/13 – An e-mail was sent inviting participation in the PA process and providing an updated version of the PA for input and review | Yes, requested to be a signatory party |
| Pueblo of Zia                        | 08/09/2013 – Invitation letter was sent  
At least one phone call was made to Tribal Elder’s office and to Cultural Resource lead (if known)  
09/16/2013 – Follow-up e-mail was sent  
10/16/2013 – An e-mail was sent that provided a status of the PA to date  
10/27/2013 – An e-mail was sent inviting participation in the PA process and providing a copy of the PA for input and review  
10/28/2013 – An e-mail invitation was sent for participation in a conference call on 11/04/2013  
11/06/2013 – An e-mail was sent inviting participation in the PA process and providing a summary of the conference call  
11/29/13 – An e-mail was sent inviting participation in the PA process and providing an updated version of the PA for input and review | Yes |
| The Zuni Tribe of the Zuni Reservation |                                                                                                                                  | Yes, requested to be a signatory party |
| San Miguel Historical Commission     |                                                                                                                                                                                                                                          | Yes |
| Mesa County Historical Commission    |                                                                                                                                                                                                                                          | Yes |
**TABLE 6.3-1 (Cont.)**

<table>
<thead>
<tr>
<th>Group</th>
<th>Contact Attempts (if no response yet received)</th>
<th>Response to Invitation To Be a Consulting Party</th>
</tr>
</thead>
<tbody>
<tr>
<td>Rimrocker Historical Society of Western Montrose County</td>
<td></td>
<td>Yes</td>
</tr>
</tbody>
</table>
| Assiniboine and Sioux Tribes, Fort Peck Indian Reservation | 08/09/2013 – Invitation letter was sent  
At least one phone call was made to Tribal Elder’s office  
and to Cultural Resource lead (if known)  
09/17/2013 – Follow-up e-mail was sent  
10/16/2013 – An e-mail was sent that provided a status of the PA to date  
10/27/2013 – An e-mail was sent inviting participation in the PA process and providing a copy of the PA for input and review  
10/28/2013 – An e-mail invitation was sent for participation in a conference call on 11/04/2013  
11/06/2013 – An e-mail was sent inviting participation in the PA process and providing a summary of the conference call  
11/29/13 – An e-mail was sent inviting participation in the PA process and providing an updated version of the PA for input and review |
7 INDEX

A

acoustic environment
affected environment (Section 3.2)
best management practices (Section 4.6.3)
comparison across alternatives (Table 2.4-4, Section 2.4.2)
impacts under Alternatives 1, 2, 3, 4, 5 (Sections 4.1.2, 4.2.2, 4.3.2, 4.4.2, 4.5.2)
methodology (Appendix D.2)
affected environment (Chapter 3)
agricultural land
affected environment (Section 3.7.2)
air quality
affected environment (Section 3.1)
best management practices (Section 4.6, Table 4.6-1)
comparison across alternatives (Table 2.4-4, Section 2.4.1)
impacts under Alternatives 1, 2, 3, 4, 5 (Sections 4.1.1, 4.2.1, 4.3.1, 4.4.1, 4.5.1)
methodology (Appendix D.1)
regulatory environment (Section 3.1.4)
Alternative 1
description (Section 2.2.1)
impacts (Section 4.1)
Alternative 2
description (Section 2.2.2)
impacts (Section 4.2)
Alternative 3
description (Section 2.2.3)
impacts (Section 4.3)
Alternative 4 (preferred alternative)
description (Sections 1.4, 2.2.4)
identification as preferred (Section 2.6)
impacts (Section 4.4)
Alternative 5 (No Action Alternative)
description (Section 2.2.5)
impacts (Section 4.5)
alternatives considered but not evaluated (Section 2.3)
American Indian tribes, see Native Americans
amphibians, see reptiles and amphibians
aquatic biota or species (Section 2.4.6.3)
affected environment (Section 3.6.3)
impacts under Alternatives 1, 2, 3, 4, 5 (Sections 4.1.6.3, 4.2.6.3, 4.3.6.3, 4.4.6.3, 4.5.6.3)
methodology (Appendix D.6.2)
B
basis for impact analyses (Appendix C)
exploration (Section C.1)
mine development and operations phase (Section C.2)
reclamation phase (Section C.3)
best management practices (Section 4.6, Table 4.6-1)
biological assessment (Appendix E)
biological opinion (Appendix E)
birds
affected environment (Section 3.6.2.2)
protective regulations (Section 3.6.2.2.5)
Book Cliff (coal) Mine
cumulative impacts (Section 4.7.1.3, Table 4.7-6)

C
Cameo Station Power Plant
cumulative impacts (Section 4.7.2.10)
climate
affected environment (Section 3.1.1)
coal mining, see Book Cliff Mine and see mineral and coal resources and mining
Colorado state and county laws (Sections 5.5, 5.6)
comments and responses (Appendix I)
community services
methodology (Appendix D.8.4)
contractor disclosure statement (Appendix H)
consultation process (Sections 1.9, 6)
correspondence (Appendix E, Table E-1, Appendix F)
NHPA (National Historic Preservation Act) related (Section 6.3)
with Native American tribes (Sections 1.9, 1.10, 6.1; Appendix F)
with U.S. Fish and Wildlife Service (Sections 1.9, 1.10, 6.2; Appendix E, Table E-1)
cooperating agencies (Section 1.10)
criteria pollutant emissions, see air quality
Clean Air Act (Chapter 5)
existing air quality and emissions (Sections 3.1.2, 3.1.3)
impacts under Alternatives 1, 2, 3, 4, 5 (Sections 4.1.1, 4.2.1, 4.3.1, 4.4.1, 4.5.1)
methodology (Appendix D.1)
regulations (Section 3.1.4)
cultural resources
affected environment (Section 3.11)
best management practices (Section 4.6, Table 4.6-1)
comparison across alternatives (Table 2.4-9, Section 2.4.11)
history (Section 3.11.1)
impacts under Alternatives 1, 2, 3, 4, 5 (Sections 4.1.11, 4.2.11, 4.3.11, 4.4.11, 4.5.11)
inventories at lease tracts (Section 3.11.2)
methodology (Appendix D.11)
traditional cultural properties (Section 3.11.3)
cumulative impacts (Sections 2.4.14, 4.7)
  impacts from projects in region of influence for cumulative impacts (Table 4.7-12)
  impacts from proposed action (Section 4.7.3)
  list of projects in region of influence for cumulative impacts (Table 4.7-11)
  methodology (Appendix D.14)
  reasonably foreseeable future actions (Section 4.7.1)

Daneros Mine
  cumulative impacts (Section 4.7.2.2.1, Table 4.7-4)
Ditch Bill easements
  cumulative impacts (Section 4.7.1.8)
DOE ULP administrative process (Section 1.2.1)
doses, exposure, and risk
  human-health-related
    comparison across alternatives (Section 2.4.5)
    methodology (Appendix D.5)
    under Alternatives 1, 2, 3, 4, 5 (Sections 4.1.5, 4.2.5, 4.3.5, 4.4.5, 4.5.5)
  transportation-related
    comparison across alternatives (Section 2.4.10)
    methodology (Appendix D.10)
    under Alternatives 1, 2, 3, 4, 5 (Sections 4.1.10, 4.2.10, 4.3.10, 4.4.10, 4.5.10)

ecological resources
  affected environment (Section 3.6)
  best management practices (Section 4.6, Table 4.6-1)
  comparison across alternatives (Table 2.4-7, Section 2.4.6)
  impacts under Alternatives 1, 2, 3, 4, 5 (Sections 4.1.6, 4.2.6, 4.3.6, 4.4.6, 4.5.6)
  methodology (Appendix D.6)
ecoregions (Figure 3.6-1)
education
  affected environment (Section 3.8.2.3.1)
emissions, see criteria pollutant emissions
employment, unemployment, and income
  affected environment (Section 3.8.1)
methodology (Appendix D.8.1)
endangered species, see threatened, endangered, and sensitive species
Energy Queen Mine
  cumulative impacts (Section 4.7.2.2.4)
environmental justice
  affected environment (Section 3.9)
comparison across alternatives (Table 2.4-8, Section 2.4.9)
impacts under Alternatives 1, 2, 3, 4, 5 (Sections 4.1.9, 4.2.9, 4.3.9, 4.4.9, 4.5.9)
methodology (Appendix D.9)
ESA (Endangered Species Act) (Sections 1.9, 1.10, 6.2; Appendix E, Table E-1)
Executive Order 13175
consultation (Sections 1.8 and 6)
exploration phase, see uranium mining phases

F

Federal laws (Section 5.1)
firefighters, see public safety
fish, see aquatic biota or species
floodplains (Section 3.6.1.1)
geological setting (Section 3.3.1)
lease requirements (Section 1.2.2)
Fry Canyon Mill CERCLA remediation
cumulative impacts (Section 4.7.1.4)
future actions, see uranium mining phases—reclamation
future projects
list (Section 4.7.1.9)
cumulative impacts (Section 4.7.1.9)

G

Gateway lease tracts
soil (Section 3.3.2.1)
geologic and soil resources
affected environment (Section 3.3)
best management practices (Section 4.6, Table 4.6-1)
comparison across alternatives (Table 2.4-4, Section 2.4.3)
geology (Section 3.3.1.5)
impacts under all alternatives (Section 4.1.3.1)
impacts under Alternatives 1, 2, 3, 4, 5 (Sections 4.1.3, 4.1.3.2, 4.2.3, 4.3.3, 4.4.3, 4.5.3)
methodology (Appendix D.3)
physiography (Section 3.3.1.1)
soil (Section 3.3.2)
grazing permits
cumulative impacts (Section 4.7.2.5, Table 4.7-9)
groundwater
affected environment (Section 3.4.2)

H

Hanging Flume replica reconstruction
cumulative impacts (Section 4.7.1.7)
health care

affected environment (Section 3.8.2.3.2)

housing

affected environment (Section 3.8.2.2)

methodology (Appendix D.8.3)

human health

affected environment (Section 3.5)

best management practices (Section 4.6, Table 4.6-1)

comparison across alternatives (Table 2.4-6, Section 2.4.5)

conceptual model (Section 4.1.5.1)

impacts under Alternatives 1, 2, 3, 4, 5 (Sections 4.1.5.2, 4.2.5, 4.3.5, 4.4.5, 4.5.5)

I

income, see employment, unemployment, and income

intentional destructive acts (Section 4.3.5.5)

irreversible and irretrievable commitment of resources (Section 2.5)

J

JD-7 Mine, see open-pit mine

K

No entries

L

land cover (Figure 3.6-2, Tables 3.6-1 and 3.6-2)

affected environment, see vegetation (Section 3.6.1)

land use

affected environment (Section 3.7, Figure 3.7-1)

comparison across alternatives (Table 2.4-5, Section 2.4.7)

impacts under Alternatives 1, 2, 3, 4, 5 (Sections 4.1.7, 4.2.7, 4.3.7, 4.4.7, 4.5.7)

methodology (Appendix D.7)

La Sal Mines Complex

cumulative impacts (Section 4.7.2.2.2)

latent cancer fatality (LCF), see doses, exposure, and risks

laws and regulations (Chapter 5)

leases, see ULP sample leases

lease tracts, see ULP lease tracts

Lisbon Natural Gas Processing Plant

cumulative impacts (Section 4.7.2.8)

low-income populations, see environmental justice
M

mammals
 affected environment (Section 3.6.2.3)
 map of lease tract site locations (Figure 1.4-1)
 methodology for impact assessments (Appendix D)
 mine development and operations, see uranium mining phases
 mineral and coal resources and mining
 affected environment (Section 3.7.4)
 coal (Section 3.7.4.2)
 oil and gas (Section 3.7.4.3)
 other minerals and mineral materials (Section 3.7.4.4)
 uranium (Section 3.7.4.1)
 future cumulative impacts
 coal (Section 4.7.2.3)
 oil and gas (Section 4.7.2.4, Table 4.7-8)
 minority populations, see environmental justice

N

Native American tribes
 consultations (Sections 1.9, 1.10, 6.1; Appendix F)
 traditional cultural properties (Section 3.11.3)
 NEPA process, see scoping process
 NHPA (National Historic Preservation Act) consultation (Section 6.3)
 No Action Alternative, see Alternative 5
 noise, see acoustic environment
 NRHP (National Register of Historic Places) significance criteria (Section 3.11)

O

oil and gas exploration, see mineral and coal resources and mining
 open-pit mine (Figure 2.1-2; Section 2.1.2.3)
 organization of PEIS (Section 1.11)

P

Paradox lease tracts
 soil (Section 3.3.2.3)
 Paradox Valley Desalinization Plant
 cumulative impacts (Section 4.7.2.9)
 PEIS scope (Section 1.6)
 PEIS organization (Section 1.11)
 Piñon Ridge Mill (Section 2.1.4.1)
 cumulative impacts (Section 4.7.1.1, Table 4.7-1)
 police, see public safety
pollutant emissions, see criteria pollutant emissions
population
affected environment (Section 3.8.2.1)
methodology (Appendix D.8.2)
potash exploration
cumulative impacts (Section 4.7.2.7)
power generation and transmission
cumulative impacts (Section 4.7.2.6)
preferred alternative, see Alternative 4 (Section 2.2.4)
preparers (Appendix G)
proposed action, see Alternative 4 (Sections 1.5, 2.2.4)
public participation in scoping process, see scoping process
public safety
affected environment (Section 3.8.2.3.3)
purpose and need for agency action (Section 1.4)

Q

No entries

R

radiation or radiological doses or impacts, see doses, exposure, and risks
rangeland resources
affected environment (Section 3.7.3)
reclamation in lieu of royalties, see RILOR plans
recreation and tourism
affected environment (Sections 3.7.6, 3.8.3)
impacts under Alternatives 1, 3, 4, 5 (Section 4.1.8.1, 4.3.8.1, 4.4.8.1, 4.5.8.1)
methodology (Appendix D.8.5)
references for main text (Chapter 8)
reforestation projects
cumulative impacts (Section 4.7.1.5)
regulations and laws (Chapter 5)
reptiles and amphibians
affected environment (Section 3.6.2.1)
resource areas being evaluated (Figure 2-1)
responses to comments (Appendix I)

S

scope of ULP PEIS (Section 1.6)
scoping process (Section 1.7.1)
comments within PEIS scope (Section 1.7.1.1)
comments outside PEIS scope (Section 1.7.1.2)
public comment process (Section 1.7.2, Appendix I)
public scoping process (Section 1.7.1, Appendix B)
seismicity (Section 3.3.1.4)
sensitive species, see threatened, endangered, and sensitive species
sensitive visual resource areas (SVRAs), see visual resources
site-specific information on lease tracts (Section 1.3)
Slick Rock lease tracts
soil (Section 3.3.2.4)
socioeconomics or socioeconomic resources
affected environment (Section 3.8)
comparison across alternatives (Table 2.4-8, Section 2.4.8)
impacts under Alternatives 1, 2, 3, 4, 5 (Sections 4.1.8, 4.2.8, 4.3.8, 4.4.8, 4.5.8)
methodology (Appendix D.8)
soil resources, see geologic and soil resources
surface water
affected environment (Section 3.4.1)
terrestrial ecology, see wildlife or vegetation
threatened, endangered, and sensitive species (Section 2.4.6.4); also see ecological resources
affected environment (Section 3.6.4, Table 3.6-21)
impacts under Alternatives 1, 2 (Section 4.1.6.4, Table 4.1-10, Section 4.2.6.4)
impacts under Alternative 3 (Section 4.3.6.4, Table 4.3-6)
impacts under Alternative 4 (Section 4.4.6.4, Table 4.4-4)
impacts under Alternative 5 (Section 4.5.6.4)
methodology (Appendix D.6.3)
non-ESA sensitive species (Section 3.6.4.2)
timber
affected environment (Section 3.7.5)
tourism, see recreation and tourism
traffic, see transportation
transportation
affected environment (Section 3.10)
best management practices (Section 4.6, Table 4.6-1)
comparison across alternatives (Table 2.4-8, Section 2.4.10)
impacts under Alternatives 1, 2, 3, 4, 5 (Sections 4.1.10, 4.2.10, 4.3.10, 4.4.10, 4.5.10)
methodology (Appendix D.10)
tribal consultations, see Native American tribes

T

timber
affected environment (Section 3.7.5)
tourism, see recreation and tourism
traffic, see transportation
transportation
affected environment (Section 3.10)
best management practices (Section 4.6, Table 4.6-1)
comparison across alternatives (Table 2.4-8, Section 2.4.10)
impacts under Alternatives 1, 2, 3, 4, 5 (Sections 4.1.10, 4.2.10, 4.3.10, 4.4.10, 4.5.10)
methodology (Appendix D.10)

ULP background (Section 1.1)
ULP current status (Section 1.2)
ULP lease tracts
summary (Table 1.2-1)
locations (Figure 1.2-1, Section 1.3)
site-specific information (Section 1.3)  
ULP sample leases (Appendix A)  
underground mining, see uranium mining methods  
uranium exploration and mining in the future  
cumulative impacts (Sections 4.7.1.2, 4.7.2.2.6)  
uranium mining methods (Section 2.1)  
surface plant (Section 2.1.2.1)  
underground (Section 2.1.2.2)  
open pit (Section 2.1.2.3, also see open-pit mine)  
uranium mining phases  
exploration (Section 2.1.1)  
mine development and operations (Section 2.1.2)  
reclamation (Section 2.1.3)  
ore processing (Section 2.1.4)  
uranium ore production summary (Table 1.1-2)  
Uravan Mineral Belt (Section 3.3.2.2)  
Vegetation, see ecological resources (Section 2.4.6.1)  
affected environment (Section 3.6.1)  
impacts under Alternatives 1, 2, 3, 4, 5 (Sections 4.1.6.1, 4.2.6.1, 4.3.6.1, 4.4.6.1, 4.5.6.1)  
very large mine, see open-pit mine  
visual resources  
affected environment (Section 3.12)  
best management practices (Section 4.6, Table 4.6-1)  
comparison across alternatives (Table 2.4-9, Section 2.4.12)  
four lease tract groups/areas (Section 3.12.2)  
composite viewshed (Figure 3.12-9)  
locations on map (Figure 3.12-1)  
photographs of views (Figures 3.12-2 through 8)  
impacts under Alternatives 1, 2 (Sections 4.1.12, 4.2.12)  
impacts under Alternative 3 (Section 4.3.12)  
on three lease tract groups (Sections 4.3.12.4.1, 4.3.12.4.2, 4.3.12.4.3)  
impacts under Alternative 4  
on four lease tract groups (Sections 4.4.12.2.1, 4.4.12.2.2, 4.4.12.2.3, 4.4.12.2.4)  
impacts under Alternative 5 (Section 4.5.12)  
management (Section 3.12.3)  
methodology (Appendix D.12)  
regional setting (Section 3.12.1)  
sensitive visual resource areas or SVRAs (Figure 3.12-10)  
Waste management
affected environment (Section 3.13) 1
comparison across alternatives (Table 2.4-5, Section 2.4.13) 2
impacts under Alternatives 1, 2, 3, 4, 5 (Sections 4.1.13, 4.2.13, 4.3.13, 4.4.13, 4.5.13) 3
methodology (Appendix D.13) 4
water resources
affected environment (Section 3.4) 5
best management practices (Section 4.6, Table 4.6-1) 6
comparison across alternatives (Table 2.4-5, Section 2.4.4) 7
impacts under Alternatives 1, 2, 3, 4, 5 (Sections 4.1.4, 4.2.4, 4.3.4, 4.4.4, 4.5.4) 8
management (Section 3.4.3) 9
methodology (Appendix D.4) 10
Western Area Power Administration (WAPA) 11
ROW maintenance cumulative impacts (Section 4.7.1.6) 12
wetlands (Section 3.6.1.1) 13
Executive Order 11990 (Chapter 5) 14
geological setting (Section 3.3.1) 15
lease requirements (Section 1.2.2) 16
NWI mapping (Figure 3.6-6, Table 3.6-3) 17
Whirlwind Mine
cumulative impacts (Section 4.7.2.2.3, Table 4.7-5) 18
White Mesa Mill (Section 2.1.4.2) 19
cumulative impacts (Section 4.7.2.1, Table 4.7-3) 20
wilderness lands
affected environment (Section 3.7.1, Figure 3.7-1, Table 3.7-1) 21
wildlife, see ecological resources (Section 2.4.6.2) 22
affected environment (Section 3.6.2) 23
impacts under Alternatives 1, 2, 3, 4, 5 (Sections 4.1.6.2, 4.2.6.2, 4.3.6.2, 4.4.6.2, 4.5.6.2) 24
methodology (Appendix D.6.2) 25
wild horses and burros
affected environment (Section 3.7.3.2) 26
WIPP Vicinity (Section 1.4.3.7, Chapter 11) 27
X, Y, Z 28
No entries 29
8 REFERENCES


Final ULP PEIS

8: References


BLM, 2009d, "Wild and Scenic River Eligibility Report for the Grand Junction Field Office." 


BLM, 2011k, *Uncompahgre Field Office Recreation: Visitation and Land Use*.


BLM, undated, A Recreation and Visitors Strategy, Colorado Recreation Program.


BOR (Bureau of Reclamation), 2009, McPhee Dam. Available at http://www.usbr.gov/projects/PrintFacilityAttributes.jsp?fac_Name=McPhee%20Dam.


CDPHE, 2008b, *Total Maximum Daily Load Assessment San Miguel River Segments (cogusm03a, cogusm03b, cogusm06a, cogusm06b) Zinc and Cadmium, San Miguel County, Colorado*, Technical Report, Water Quality Control Division.


CDPHE, 2012c, Search results of public water supply systems within 5 miles from the ULP lease tracts, by the Source Water Assessment and Protection Program, CDPHE, Dec.


CDRMS 2012f, Uranium Mining in Colorado 2012 (Updated July 18, 2012), Denver, Colo.


CDWR, 2007, General Information about Well Permits in Division IV, Jan. 17.


Cember, H., 1983, Introduction to Health Physics, Pergamon Press, Elmsford, N.Y.


CEQ (Council on Environmental Quality), 1997, Environmental Justice Guidance under the National Environmental Policy Act, Executive Office of the President, Washington, D.C.

CGS (Colorado Geological Survey), 2003, Ground Water Atlas of Colorado, Special Publication 53, Division of Minerals and Geology, Department of Natural Resources, Denver, Colo.


Holsinger, K., 2012, *ULP PEIS: T&E Question*, e-mail from Holsinger (Uncompahgre Field Office, Montrose, Colo.) to G.M. Jones (Bureau of Land Management), Aug. 27.


Hurshman, T., 1994, personal communication between Hurshman (Bureau of Land Management, Montrose District Office) and R. Bleil (Rust Geotech), Oct. 17.


Miller, D., 2012, *Data Request*, e-mail from Miller (Antiquities Section of Utah State History, Salt Lake City, Utah) to D. O’Rourke (Argonne National Laboratory, Argonne, Ill.), March 22.


Montrose County, 2010, *Montrose County Socioeconomic Impact Study*, Department of Community Development and Board of County Commissioners, March 31.


NRCS, 2012a, *Custom Soil Resource Report for Mesa County Area, Colorado; and Uncompahgre National Forest Area, Colorado, Parts of Mesa, Montrose, Ouray, and San Miguel Counties: Cross Section through Gateway Lease Tracts (Parts 1 and 2)*, U.S. Department of Agriculture, Jan. 9.


Rogers, Z., 2011, personal communication from Rogers (Energy Fuels Resources Corporation, Lakewood, Colo.) to Y.-S. Chang (Argonne National Laboratory, Argonne, Ill.), Nov. 8.


Spendrup, J., 2013, personal communication from Spendrup (Spendrup Fan Co., Grand Junction, Colo.) to Y.-S. Chang (Argonne National Laboratory, Argonne, Ill.), Aug. 27.


UGS (Utah Geological Survey), 2011, *Utah Mining 2010*, Circular 114, Utah Department of Natural Resources.


U.S. Bureau of the Census, 2011b, *State and County Quickfacts*.

U.S. Bureau of the Census, 2011c, *USA Counties*.


U.S. Bureau of the Census, 2011g, 2010 Census Summary File 1: Table P5.


USGS, 2005, *Southwest Regional GAP Analysis Project—Land Cover Descriptions*, RS/GIS Laboratory, College of Natural Resources, Utah State University, Logan, Utah.


USGS, 2012b, *Glossary of Terms on EQ Maps*, Earthquake Hazards Program.


White, D., 2014, personal communication from White (Energy Fuels Resources (USA) Inc., Lakewood, Colo.) to M. Picel (Argonne National Laboratory, Argonne, Ill.), Jan. 8.


Williams, G., 2013, personal communication from Williams (Cotter Corporation, Nucla, Colo.) to Y.-S. Chang (Argonne National Laboratory, Argonne, Ill.), Aug. 13.


APPENDIX A:

EXAMPLES OF EXISTING LEASES FOR THE URANIUM LEASING PROGRAM
This page intentionally left blank
APPENDIX A:

EXAMPLES OF EXISTING LEASES FOR THE
URANIUM LEASING PROGRAM

Facsimiles of two generic leases are shown in this appendix. The leases could be modified in the future as a result of the ULP PEIS process. The first lease agreement was used for leases prior to May 2008 (i.e., the original leases issued in 1974, and the continuation of those leases up to and including the issuance of new leases for the 13 “active” lease tracts on April 30, 2008). The second lease agreement was used for the competitive bid solicitation process that DOE completed in June 2008 for the remaining lease tracts that were “inactive” at that time. As discussed in Section 1.2.1, the one primary difference between these two lease agreements is the manner in which the production royalty for each lease is calculated. Please note that for both leases, each lessee is required to pay an annual royalty fee, which is basically an annual rent payment, for which the amount is established by DOE and which is paid at the beginning of each lease year just to hold the lease for that year.

For the “active” leases (see the first lease shown in this appendix [page A-5]), the lessee must pay a production royalty, paid on a monthly basis during periods of active ore production, for ore produced from the lease tract and shipped to a uranium mill or other processing facility. This production royalty is a combination of a “base” royalty, calculated as a three percentage (2%, 10%, and 14%) step-function applied to the value of the ore produced, plus a bid royalty, calculated by applying the lessee’s royalty bid percentage to the value of the ore produced. The base royalty is applied to the lease tract’s total ore production, and the bid royalty is applied to the lease tract’s ore production up to the “bid quantity,” which is an amount specified for each lease tract in pounds of uranium produced.

For the newer leases (see the second lease shown in this appendix [page A-29]), the lessee must pay just the bid royalty, as calculated above; however, the bid royalty is applied to the lease tract’s total ore production.
THIS LEASE AGREEMENT, effective as of this 30th day of April, 2008, by and between the UNITED STATES OF AMERICA (hereinafter “Government”), represented by the UNITED STATES DEPARTMENT OF ENERGY (hereinafter “DOE”), whose principal place of business for the purpose of this Lease is 2597 B ¾ Road, Grand Junction, Colorado 81503 and ___________________________, whose principal place of business for the purpose of this Lease is ___________________________ (hereinafter “Lessee”):

WITNESSETH THAT:

DOE represents that it is in possession of certain Government owned uranium mining property in ______ County, _____________ more particularly described as Lease Tract C–X–X in Appendix “A” which is attached hereto and hereby made a part this Agreement (the “Property”).

DOE desires that said property be explored, developed, and operated for the production of uranium-bearing ores.

This Lease is authorized by Section 67 of the Atomic Energy Act of 1954, as amended, and is issued pursuant to the provisions of the DOE’s regulations governing the issuance of leases for mining deposits of uranium in lands held by the DOE (10 CFR Part 760).

NOW, THEREFORE, the parties do hereby agree as follows:

I. GRANT OF LEASE.

For considerations hereinafter stated and performance by the Lessee of the terms and conditions hereinafter provided, the DOE does hereby lease the Property to the Lessee, for the purposes of exploring for, developing, mining, and removing deposits of uranium, vanadium, and associated minerals, the Property described in Appendix “A”, which is attached hereto and hereby made a part hereof, subject to the terms and conditions hereinafter set forth. The rights hereby granted are limited to exploration, development, mining, and removal of ore from within the vertical planes of the boundary lines of the Property, and the Lessee shall have no right hereunder to extend its workings beyond such vertical planes. Access to the Property is not guaranteed by the Government. The Lessee shall be responsible for securing such access.

II. TERM. This Lease shall remain in effect for a period of ten (10) years from the aforementioned effective date, except as it may be sooner relinquished or cancelled pursuant to
other provisions of this Lease. Near the end of that 10-year period, DOE will re-evaluate the leasing program to determine if the leases/leasing program should continue.

III. DEFINITIONS. As used herein:

(a) The term “Government” means the Government of the United States of America, including its authorized representatives associated with the Uranium Leasing Program.

(b) The term “DOE” means the United States Department of Energy, or duly authorized representatives thereof, including the Realty Officer except for the purpose of deciding an appeal under Article XXVII “DISPUTES”.

(c) The term “Realty Officer” means a person with the authority to enter into, administer, and/or terminate contracts and make related determinations and findings. The term includes certain authorized representatives of the Realty Officer acting within the limits of their authority as delegated by the Realty Officer.

(d) The term “associated minerals” means any minerals, other than the minerals covered by this Lease, which are (i) so intermingled with the deposits of the mineral or minerals for which this Lease is issued that separate development is, in the opinion of the Realty Officer, not warranted for mining or for economic reasons, or (ii) of such poor quality and in such small quantity that separate development is, in the opinion of the Realty Officer, undesirable for mining or for economic reasons.

(e) The term “applicable statutes and regulations” means all applicable Federal, state, and local statutes, regulations, and standards. These statutes include but are not limited to, those relating to mine safety; radiation; air, water, and land pollution; disposal of liquid and solid waste; and workmen’s and unemployment compensation.

(f) The term “Exploration Plan” as described in Article XII “EXPLORATION PLAN” and Appendix “C” means a plan of activity proposed by the Lessee for the purpose of conducting approved operations to explore, test, or prospect for minerals covered by this Lease.

(g) The term “Mining Plan” as referenced in Article XIII “MINING PLAN” and Appendix “C” means a plan of activity proposed by the Lessee for the purpose of conducting surface and underground operations to develop or extract the minerals covered by this Lease.

IV. GENERAL PERFORMANCE REQUIREMENT. The Lessee shall conduct all activities in accordance with the terms and conditions of this Lease and with those in 10 CFR Part 760. Furthermore, the Lessee shall conduct exploration, development, and mining activities on the Property with all reasonable diligence, skill, and care, as is required to systematically advance lease operations toward, and ultimately achieve and maintain, production of uranium ore consistent with good and safe mining practice, and in accordance with market conditions. Reasonable diligence shall be assessed by the Realty Officer at his sole discretion on the basis of the Lessee’s ongoing lease activities or the lack thereof. Site permitting activities and the
performance of cultural resource surveys and/or threatened and endangered species surveys shall be accepted by the Realty Officer as evidence supporting reasonable diligence.

V. ROYALTIES. The Lessee shall pay or cause to be paid, as directed by the DOE, the royalties specified in Appendix “B”, which is attached hereto and hereby made a part hereof, at the rates and in the manner set forth therein.

VI. INTEREST ON OVDUE PAYMENTS — FORFEITURE FOR NON-PAYMENT.

(a) All amounts that become payable by the Lessee to the Government under this Lease shall bear simple interest from the date due until paid unless paid within thirty (30) days of becoming due. The interest rate shall be established by DOE (on a quarterly basis as required) as the Federal Short-Term Rate (applied to and applicable to the calendar quarter in which the amount becomes due) plus three (3) percent. The Federal Short-Term Rate is the rate published monthly by the Internal Revenue Service pursuant to Section 1274(d) of the Internal Revenue Code. Additional interest shall be assessed for each subsequent calendar quarter until the amount is paid.

(b) Amounts shall be due at the earlier of the following dates:

(1) The date fixed under this Lease.

(2) The date of the first written demand for payment consistent with this Lease, including any demand resulting from a default cancellation.

(c) Notwithstanding the provisions of paragraphs (a) and (b) of this Article VI, and irrespective of interest payments made by the Lessee to DOE pursuant thereto, the Realty Officer, in his sole discretion, may cancel this Lease for failure by the Lessee to pay the entire principle amount of any annual royalty, base royalty, or bid royalty within sixty (60) calendar days after payment thereof is due from the Lessee to the DOE under the terms of this Lease. Such cancellation shall be effective upon Lessee’s receipt of a written notice thereof from the Realty Officer. Failure of DOE to exercise its right to cancel shall not be deemed to be a waiver thereof.

VII. USE OF SURFACE.

(a) Subject to the other provisions of this Lease, the rights granted to the Lessee herein include the right to use so much of the surface of the Property as is required for the exploration for, and development, mining, and removal of ore, including the right to erect such buildings and other structures and install such machinery and other facilities as may be required for such operations; provided, that the Lessee shall recognize existing uses and commitments in the form of grazing, timbering, Bureau of Land Management special use permits, and public recreation, and improvements such as water developments, ditches, roads, trails, pipelines, telephone, telegraph, and power lines, fences, and rights-of-way; and Lessee shall conduct its operations so as to interfere as little as possible with such existing uses and improvements.
(b) The Property shall at all times be subject to other lawful uses heretofore or hereafter granted by the Government, through any authorized agency; provided, that such uses shall not prevent, obstruct, or unduly interfere with any right granted under this Lease.

VIII. LEASES FOR OTHER MINERALS. The granting of this Lease shall not preclude the issuance by the Government of other leases of the Property for the purposes of mining and extracting oil, gas, oil shale, coal, phosphate, potassium, sodium, sulphur, or other minerals which are or may in the future be leasable pursuant to Federal mineral leasing laws; provided, that any such leases hereafter issued shall provide that operations under such leases shall not prevent, obstruct, or unduly interfere with any right granted under this Lease.

IX. USE OF SALABLE MINERALS. No salable minerals, such as sand, gravel, or stone, found on the lands leased hereunder shall be used by the Lessee in its operations unless such salable minerals have been purchased from the Government under the provisions of the Materials Act of July 31, 1947, 30 U.S.C. 601, as amended, or from the owner of such salable minerals if other than the Government.

X. SECURITY AND SAFETY. The Lessee shall secure and post all areas that might reasonably be considered hazardous to the general public, including, but not limited to ore stockpile areas, loading areas, mining openings, and mine-rock waste piles, in accordance with all applicable statutes and regulations and specific requirements and stipulations set forth in Appendix “C”. If necessary, the Lessee agrees to construct fences or other barriers around the perimeter of safety-hazard areas to minimize the potential for intrusion by humans, livestock, and wildlife. Radioactive materials exposed by the Lessee’s operation shall be managed to ensure that the exposure of humans and ecosystems is as low as reasonably achievable.

XI. ENVIRONMENTAL REQUIREMENTS. The Lessee, at the Lessee’s expense, shall comply with all applicable statutes and regulations and abide by the specific requirements and stipulations set forth in Appendix “C”, which is attached hereto and hereby made a part hereof.

XII. EXPLORATION PLAN.

(a) Prior to commencing any surface-disturbing operations to explore, test, or prospect for minerals covered by this Lease, the Lessee shall file with the Realty Officer three (3) copies of a plan for the proposed exploration activities and shall obtain the Realty Officer’s approval of such plan. The Exploration Plan shall be consistent with the “Notice of Intent to Conduct Prospecting Operations” (hereinafter “Notice”) to be filed with the Colorado Mined Land Reclamation Board (hereinafter MLRB) in accordance with “Rule 5” of the “Mineral Rules and Regulations” of the Colorado MLRB, as these rules may be amended. The Exploration Plan shall include all information required by the “Notice”, and in addition, must specifically include the following information:

(1) A site-specific environmental analysis;
(2) A description of specific measures to be taken to assure compliance with the requirements of Article XI “ENVIRONMENTAL REQUIREMENTS”, including methods of reclamation contemplated by the Lessee; and

(3) The specific information outlined in Appendix “C” of this Lease.

(b) All Exploration Plans submitted to the Realty Officer pursuant to this Article XII and all proposed activities contained therein shall be reviewed by DOE in accordance with 10 CFR Part 1021 “National Environmental Policy Act Implementing Procedures”.

(c) If preparation and filing of an Exploration Plan for the entire operation is dependent upon factors which cannot or will not be determined except during the progress of exploration activities, partial plans may be submitted and approved from time to time; provided however, that the Lessee shall not perform exploration activities not described in an approved plan.

(d) Changes may be made in the approved Exploration Plan by mutual written agreement of the Lessee and the Realty Officer. Approval is contingent upon the Lessee notifying all other appropriate agencies (as outlined in Appendix “C”) of the proposed changes.

XIII. MINING PLAN.

(a) Prior to constructing any surface installation or commencing mine development on the leased lands, the Lessee shall file with the Realty Officer three (3) copies of a plan for the proposed mining operations and shall obtain the Realty Officer’s approval of such plan. Such mining plan shall be consistent with the “Reclamation Permit Application” (hereinafter “Application”) to be filed with the Colorado MLRB in accordance with “Rule 1.4” and “Rule 6” of the “Mineral Rules and Regulations” of the Colorado MLRB, as these rules may be amended. The Mining Plan shall include all information required by the “Application”, and in addition, must specifically include the following information:

(1) A site-specific environmental analysis;

(2) A description of specific measures to be taken to assure compliance with the requirements of Article XI “ENVIRONMENTAL REQUIREMENTS”, including methods of reclamation contemplated by the Lessee; and

(3) The specific information outlined in Appendix “C” of this Lease.

(b) All Mining Plans submitted to the Realty Officer pursuant to this Article XIII and all proposed activities contained therein shall be reviewed by DOE in accordance with 10 CFR Part 1021 “National Environmental Policy Act Implementing Procedures”.

(c) If preparation and filing of a Mining Plan for the entire operation is dependent on factors which cannot or will not be determined except during the progress of mining activities, a
partial plan may be submitted and approved from time to time; provided however, that the Lessee shall not perform mining activities not described in an approved plan.

(d) Changes may be made in the approved Mining Plan by mutual written agreement of the Lessee and the Realty Officer. Approval is contingent upon the Lessee notifying all other appropriate agencies (as outlined in Appendix “C”) of the proposed changes.

XIV. PERFORMANCE BOND.

(a) Upon approval of an Exploration Plan or Mining Plan, and prior to commencing any surface-disturbing operations, the Lessee shall be required to file a suitable performance bond of not less than $________ with satisfactory surety, payable to the United States Department of Energy. The bond shall be conditioned upon the faithful compliance with all applicable statutes and regulations, the terms and conditions of this Lease, and any Exploration Plans and Mining Plans, including amendments and supplements thereto, which have been approved by the Realty Officer.

(b) The Realty Officer shall set the amount of the initial bond and may, from time to time, require an increase or allow a decrease in the amount of the bond, as in his judgment the circumstances may require. In determining the amount of the bond, the Realty Officer shall take into consideration all applicable statutes and regulations and the character and nature of the reclamation requirements of the Lease, including the requirements of any approved Exploration Plans and Mining Plans and partial or supplementary plans, and the estimated costs of such reclamation.

(c) The Lessee and his sureties shall be liable for any damage to the Government resulting from the Lessee’s failure to complete any work required upon the expiration, relinquishment, or cancellation of this Lease.

XV. INSPECTION. The DOE reserves the right, through its officers, employees, agents, and contractors, to enter upon the leased property and into all parts of any of Lessee’s mines therein at all reasonable times for inspection and other purposes subject to the Lessee’s standard operating procedures.

XVI. GOOD FAITH NEGOTIATIONS. At the request of the Realty Officer, the Lessee will negotiate in good faith with the DOE to reach an agreement under which the Lessee, for appropriate compensation, would correct undesirable conditions existing on the Property as a result of pre–1974 mining activities and such other conditions that may be identified from time to time by the Realty Officer. If for any reason, the Lessee is unable to perform the work required to correct such conditions in a timely manner, DOE reserves the right to contract with another entity to enter upon the leased property and perform said work.
XVII. INDEMNIFICATION OF GOVERNMENT.

(a) The Government, including its employees, all tiers of contractors, agents, and authorized representatives shall not be responsible for any mechanics’ or miners’ liens or other liens, encumbrances, or liabilities incurred by the Lessee in connection with the operation of the Property. The Lessee assumes all responsibility for and will hold the Government harmless from any and all claims and liability of any nature arising from the operation or occupancy of the premises.

(b) The Lessee agrees to protect and indemnify the Government against any payroll taxes or contributions imposed with respect to any employee of the Lessee by any applicable law dealing with old age pensions, unemployment compensation, accident compensation, health insurance and related subjects. The Lessee also agrees, at its own cost and expense, to insure to each person employed in, about, or upon the Property, the compensation provided for by law with respect to workmen's compensation and employer’s liability insurance, properly safeguarding the Government, including its employees, all tiers of contractors, agents, and authorized representatives, against liability for injuries to persons, including injuries resulting in death, and loss of and damage to property in policies and amounts acceptable to the DOE and to furnish to the DOE written evidence of such insurance.

XVIII. REPORTING REQUIREMENTS.

(a) The Lessee shall provide the Realty Officer with copies of all permits and correspondence from local, state, or other Federal agencies or entities which pertain to the Lessee’s activities on the Property.

(b) The Lessee shall provide to the Realty Officer, within twenty calendar days after the end of each month, an accurate record of the tonnage and U₃O₈ and V₂O₅ grades of each lot of ore delivered from the Property to a mill, buying station, or other purchaser during the previous month, including copies of all settlement sheets furnished to the Lessee for ores so delivered.

(c) The Lessee shall provide to the Realty Officer as soon as practicable after the end of each calendar quarter, the following documents, records, and/or maps:

(1) A formal (written and signed) summary of all activities conducted on the Property during such calendar quarter that, among other things, documents the Lessee’s reasonable diligence required by Article IV “GENERAL PERFORMANCE REQUIREMENT”.

(2) A map or maps showing the location of all exploration holes drilled on the Property during such calendar quarter, together with copies of any logs and assay records applicable to such drill holes.
(3) A mine map or maps showing the progress of mining on the Property as of the end of such calendar quarter.

(4) Lessee’s estimate of the tonnage and U₃O₈ and V₂O₅ grades of all ores stockpiled on the Property as of the end of such calendar quarter.

(5) If no activity occurs on the Property during a calendar quarter, a letter submitted to the Realty Officer stating that no activity has occurred shall satisfy this reporting requirement.

(d) The Lessee further agrees to provide to the Realty Officer the results of any inspections of Lessee’s mines or other facilities located on the Property, conducted by personnel of local, state, or other Federal agencies under applicable statutes and regulations. Furthermore, the Lessee agrees to notify the Realty Officer of any planned or scheduled inspections to be performed by local, state, or other federal agencies as soon as such schedule is known so that the Realty Officer may participate in said inspection if so desired.

(e) The Lessee is hereby notified that information obtained by DOE from the Lessee under this section shall be subject to the provisions of the Freedom of Information Act (5 U.S.C. 552).

XIX. TAXES. The Lessee agrees to pay when due all taxes lawfully assessed and levied pursuant to state or Federal law upon improvements, output of mines, and other interests, property, and assets of the Lessee in or upon the Property.

XX. ASSIGNMENT. The Lessee agrees that no transfer of this Lease, or of any interest therein or claim thereunder, by assignment, sublease, operating agreement, or otherwise, shall occur unless and until approved in writing by the Realty Officer.

XXI. RELINQUISHMENT OF LEASE. This Lease may be surrendered by the Lessee upon the Lessee’s filing with the DOE, and the Realty Officer’s approval of, a written application for relinquishment. Approval of the application shall be contingent upon the delivery of the Property to the DOE in a condition satisfactory to the Realty Officer, in accordance with the terms of this Lease, and upon the continued liability of the Lessee to make payment of all royalty and other debts theretofore accrued and due the DOE.

XXII. CANCELLATION OF LEASE. DOE may cancel this Lease if the Realty Officer determines that the Lessee has failed to comply with any provision of this Lease including reasonable diligence. Failure of DOE to exercise its rights to cancel shall not be deemed to be a waiver thereof.

XXIII. DELIVERY OF PREMISES. At the expiration of this Lease, or upon its earlier relinquishment or cancellation as herein provided, the Lessee shall, within one hundred eighty (180) days or other period mutually agreed to by the Lessee and Realty Officer, surrender the Property in a condition satisfactory to the Realty Officer, and shall, unless otherwise directed by
the Realty Officer in writing, remove from the Property at Lessee’s expense all structures, machinery, equipment, tools, and improvements placed thereon by the Lessee; provided, that the Lessee shall not remove any timbers or improvements which are determined by the Realty Officer to be required to be left in the mine workings to protect such workings as a mining property. Furthermore, prior to the surrender of the Property, the Lessee shall remove from the Property at Lessee’s expense all stockpiles of ore and/or protore materials placed thereon by the Lessee and remit the required royalties to DOE in accordance with Article V “ROYALTIES” and Appendix “B”. Otherwise, the Lessee shall at the Lessee’s expense return all stockpiles of ore and/or protore materials to a suitable location within the underground mine workings on the Property or other location on the Property as designated by the Realty Officer.

XXIV. EXAMINATION OF RECORDS.

(a) The DOE and the Comptroller General of the United States or duly authorized representatives of either shall, until three (3) years after final payment under this Lease, have access to and the right to examine any of the Lessee’s directly pertinent books, documents, papers, or other records involving transactions related to this Lease. The Lessee shall make these records and documents available to the Government, at the Lessee’s offices, at all reasonable times, without any charge.

(b) The Lessee agrees to include in first-tier subcontracts under this Lease a clause to the effect that the DOE or the Comptroller General or duly authorized representatives of either shall, until three (3) years after final payment under the subcontract, have access to and the right to examine any of the subcontractor’s directly pertinent books, documents, papers, or other records involving transactions related to the subcontract.

(c) The periods of access and examination in paragraphs (a) and (b) above for records relating to (1) appeals under Article XXVII “DISPUTES”, (2) litigation or settlement of claims arising from the performance of this Lease, or (3) costs and expenses of this Lease to which the DOE or the Comptroller General or duly authorized representatives of either has taken exception shall continue until such appeals, litigation, claims, or exceptions are disposed of.

XXV. OFFICIALS NOT TO BENEFIT. No member of or delegate to Congress, or resident commissioner, shall be admitted to any share or part of this Lease, or to any benefit arising from it. However, this clause does not apply to this Lease to the extent that this Lease is made with a corporation for the corporation's general benefit.

XXVI. COVENANT AGAINST CONTINGENT FEES. The Lessee warrants that no person or selling agency has been employed or retained to solicit or secure this Lease upon an agreement or understanding for a commission, percentage, brokerage, or contingent fee, excepting bona fide employees or bona fide established commercial or selling agencies maintained by the Lessee for the purpose of securing business. For breach or violation of this warranty, the Government shall have the right to cancel this Lease without liability, or in its discretion to require the Lessee to pay to DOE the full amount of such commission, percentage, brokerage, or contingent fee.
XXVII. DISPUTES.

(a) Except as otherwise provided in this Lease, any dispute concerning a question of fact arising under this Lease which is not disposed of by agreement shall be decided by the Realty Officer, who shall reduce his decision to writing and mail or otherwise furnish a copy thereof to the Lessee. The decision of the Realty Officer shall be final and conclusive unless within 30 days from the date of receipt of such copy, the Lessee mails or otherwise furnishes to the Realty Officer a written appeal addressed to the DOE. The decision of the DOE for the determination of such appeals shall be final and conclusive unless determined by a court of competent jurisdiction to have been fraudulent, or capricious, or arbitrary, or so grossly erroneous as necessarily to imply bad faith, or not supported by substantial evidence. In connection with any appeal proceeding under this clause, the Lessee shall be afforded an opportunity to be heard, and to offer evidence in support of its appeal. Pending final decision of a dispute hereunder, the Lessee shall abide by the Realty Officer’s decision.

(b) The provisions of paragraph (a) above does not preclude consideration of questions of law; provided, that nothing in this Lease shall be construed as making final the decision of any administrative official, representative, or board on a question of law.

XXVIII. HEIRS AND SUCCESSORS-IN-INTEREST. Each obligation hereunder shall extend to and be binding upon, and every benefit hereof shall inure to, the heirs, executors, administrators, successors, or assigns of the respective parties hereto.

IN WITNESS WHEREOF, the parties hereto have executed this Lease, effective as of the date first above written, intending to be legally bound thereby.

UNITED STATES OF AMERICA
UNITED STATES DEPARTMENT OF ENERGY ___________________________ (LESSEE)

By ___________________________ By ________________________________
Title ___________________________ Title ________________________________
Date ___________________________ Date ________________________________
APPENDIX A

DESCRIPTION OF LEASED PROPERTY

The leased property described herein was referred to as “MINING LEASE NO. AT(05–1)–ML–60.8–_____” during the period from 1974 to the enactment of this Lease.

A full legal description of the lease premises along with all other site-specific and/or lease-specific information will be included in this Appendix “A”.

ROYALTIES

(a) At the beginning of each lease year during the term of this Lease, there shall become due and payable to the DOE an annual royalty of $__________. Annual royalties paid pursuant to this article shall be credited against base royalties and royalty bid payments which become payable during the term of this Lease. Annual royalties so paid shall not be refunded upon the expiration, relinquishment, or cancellation of this Lease. Additionally, annual royalty payments made during the lease term of MINING LEASE NO. AT(05–1)–ML–60.8–C–X–X that have not been applied against past production royalty payments, shall be brought forward and credited against base royalties and royalty bid payments which become payable during the term of this Lease.

(b) The Lessee agrees to pay to the DOE a base royalty, per dry ton of ore delivered from the Property to a mill or other receiving station, determined as provided in paragraph (h) of this Appendix “B”, in the amount of (a) Two percent (2%) of the value per dry ton up to and including a value of Fifty Dollars ($50.00) per dry ton, plus (b) Ten percent (10%) of the value per dry ton in excess of Fifty Dollars ($50.00) per dry ton and up to and including One Hundred Twenty-Five Dollars ($125.00) per dry ton, plus (c) Fourteen percent (14%) of the value per dry ton in excess of a value of One Hundred Twenty-Five Dollars ($125.00) per dry ton.

(c) The Lessee agrees to pay to the DOE, in addition to the base royalty required to be paid pursuant to paragraph (b) of this Appendix “B”, a royalty bid payment, per dry ton of ore delivered from the Property to a mill or other receiving station, in the amount of _______ percent (%) of the value per dry ton, determined as provided in paragraph (g) of this Appendix “B”; provided, that such royalty bid payments shall not be payable with respect to ores mined from the Property and delivered to a mill or other receiving station after royalty bid payments have been made for ores containing a total of _______ pounds of U$_3$O$_8$ so delivered by the Lessee from the Property.

(d) Unless otherwise authorized by DOE in writing, all ores mined from the Property shall be stockpiled on the Property until such time as they are delivered to a mill or other receiving station.

(e) With respect to ores which are mined from the Property and delivered to a mill or other receiving station which is owned or controlled by the Lessee, the Lessee agrees to make base royalty and royalty bid payments, for all lots of such ore assayed or fed to process during each calendar month, within twenty (20) calendar days after the end of such calendar month. Such base royalty and royalty bid payments shall be treated as provisional payments with respect to any lot of ore for which the DOE requests an umpire assay, and an appropriate adjustment shall be made in the first base royalty and royalty bid payment following Lessee’s receipt of the results of such umpire assay for such lot of ore.
(f) With respect to ores which are mined from the Property and delivered to a mill or other receiving station not owned or controlled by the Lessee, the Lessee agrees:

1. That the DOE may receive base royalty and royalty bid payments directly from the owner or controller of the mill or other receiving station to which such ores are shipped by the Lessee if the DOE makes arrangements therefore satisfactory to the Lessee.

2. That, in the absence of such arrangements, the Lessee shall make base royalty and royalty bid payments for all lots of such ore assayed or fed to process (includes delivery of such ore to an ore-buying station or sample plant) during each calendar month, within twenty (20) calendar days after payment for such lots is mailed to the Lessee; provided, that an appropriate extension of such twenty (20) day period shall be granted by the Realty Officer for any undue delay in the mails which causes a delay in delivery to the Lessee of payment for such lots of ore. Such base royalty and royalty bid payments shall be treated as provisional payments with respect to any lot of ore for which the DOE requests an umpire assay, and an appropriate adjustment shall be made in the first base royalty and royalty bid payment following finalization of payment to the Lessee for such ore.

(g) Payments of base royalty and royalty bid amounts due the DOE shall be deemed to have been made when received at the DOE Legacy Management Office in Grand Junction, Colorado.

(h) DOE shall establish the prices for uranium and vanadium that shall be used to calculate the fair-market value of lease tract ores. These prices shall be established on a quarterly basis, on or before the twentieth (20th) day after the end of the previous calendar quarter (in January, April, July, and October), and shall remain in effect during the calendar quarter in which they are established. DOE shall establish these prices as follows:

1. Using an Excel spreadsheet, DOE shall monitor, record, and track the spot-market and long-term-market prices for uranium (quoted as dollars per pound U₃O₈) as reported weekly in Ux Weekly. The spreadsheet will then (i) automatically calculate the monthly and quarterly arithmetic average prices for uranium (both spot-market and long-term-market), and (ii) automatically calculate a quarterly weighted-average price for uranium by applying the appropriate purchase contract percentages to the respective quarterly average prices. Using this spreadsheet, DOE shall also monitor, record, and track the Total Purchased (Weighted-Average Price) for uranium as reported annually by the Energy Information Administration in Table S1b. Weighted-Average Price of Uranium Purchased by Owners and Operators of U.S. Civilian Nuclear Power Reactors (quoted as Dollars per Pound U₃O₈ Equivalent). The spreadsheet will then automatically calculate the arithmetic average between the quarterly weighted-average price for uranium and the Total Purchased (Weighted-Average Price) for uranium. The resulting figure is reported as the annualized quarterly weighted-average price for uranium.

2. Using the same Excel spreadsheet, DOE shall monitor, record, and track the market price of vanadium (quoted as dollars per pound V₂O₅) as reported twice weekly in Metal Bulletin (Non-Ferrous Primary Metals, Noble Alloys and Ores, Vanadium pentoxide). The
spreadsheet will then (i) automatically calculate the monthly and quarterly arithmetic average prices for vanadium, and (ii) automatically apply an adjustment factor of one-half (0.5) to each quarterly arithmetic average price for vanadium. The resulting figure is reported as the adjusted quarterly average price for vanadium.

(3) Paragraphs (h)(1) and (h)(2) can be summarized by the following three equations:

\[ U = \frac{Q_{WA} + TP_{WA}}{2} \]  

where:

- \( U \) = Annualized Quarterly Weighted-Average Price for Uranium
- \( Q_{WA} \) = Quarterly Weighted-Average Price for Uranium
- \( TP_{WA} \) = Total Purchased (Weighted-Average Price) for Uranium

\[ Q_{WA} = Q_{SM} \times P_{SM} + Q_{LTM} \times P_{LTM} \]  

where:

- \( Q_{SM} \) = Quarterly Arithmetic Average Price for the Uranium Spot Market
- \( P_{SM} \) = Purchase Contract Percentage for the Uranium Spot Market
- \( Q_{LTM} \) = Quarterly Arithmetic Average Price for the Uranium Long Term Market
- \( P_{LTM} \) = Purchase Contract Percentage for the Uranium Long Term Market

\[ V = Q_{WA} \times 0.5 \]  

(3)
where:

\[ V = \text{Annualized Quarterly Weighted-Average Price for Vanadium} \]
\[ Q_{WA} = \text{Quarterly Weighted-Average Price for Vanadium} \]

(i) The Lessee shall be notified of these prices (annualized quarterly weighted-average price for uranium and adjusted quarterly average price for vanadium) by formal written correspondence. The Lessee shall use these prices to calculate the fair-market value of the ore in dollars per dry ton (calculated to the nearest cent [$0.01]), for all lots of such ore assayed during any calendar month. This fair-market value shall be determined by:

1. Computing the number of recoverable pounds of contained $U_3O_8$ and $V_2O_5$ per dry ton of ore in the lots so assayed by (i) multiplying the total number of pounds of $U_3O_8$ and $V_2O_5$, respectively, contained in the lots of ore so assayed during such calendar month, by factors of 0.96 and 0.79, respectively (the average milling facility’s recovery rates for $U_3O_8$ and $V_2O_5$, respectively, as acknowledged by DOE) and (ii) dividing each of the resulting numbers by the total number of dry tons of ore contained in the lots so assayed during such calendar month, and carrying the results to three decimal places for $U_3O_8$ and two decimal places for $V_2O_5$; and

2. Adding together the dollar amounts obtained by (i) multiplying the number of recoverable pounds of $U_3O_8$ per dry ton of ore in the lots so assayed by the price per pound of $U_3O_8$ established by DOE and (ii) multiplying the number of recoverable pounds of $V_2O_5$ per dry ton of ore in the lots so assayed by the price per pound of $V_2O_5$ established by DOE.

(j) For ores that have been mined from the Property and delivered to a mill or other receiving station, but not assayed or fed to process, the Lessee shall estimate the value of said ores using standard industry practices, and shall make base royalty and royalty bid payments to DOE equal to or greater than 95 percent (95%) of the estimated value of the base royalty and royalty bid payments due to DOE. Such base royalty and royalty bid payments shall be treated as provisional payments with respect to said ores until such time that said ores are assayed or fed to process and the final base royalty and royalty bid payments due to DOE are calculated and final base royalty and royalty bid payments are made.

(k) If price quotations for vanadium pentoxide become unavailable, the DOE and the Lessee will negotiate to establish a method of determining an appropriate market price per pound of $V_2O_5$ to be used in determining that portion of the value per dry ton of ore attributable to vanadium. Pending agreement on such method, the last prices established by paragraph (h)(2) above shall be used in determining the portion of the value per dry ton of ore attributable to vanadium, for the purpose of computing royalties under this Lease. If the parties fail to reach
agreement on an applicable method, the matter shall constitute a dispute to be decided in accordance with the Article XXVII “DISPUTES” of this Lease.

(l) The parties hereto agree that if the Lessee is paid for any constituent, other than uranium or vanadium, contained in ores mined from the Property, all amounts so paid shall be held in trust by the Lessee for the DOE until the Lessee and the DOE agree upon a base royalty to be paid to the DOE with respect to Lessee’s sale of such constituent.

(m) Consistent with Article XXIII “DELIVERY OF PREMISES”, the Lessee agrees, that within one hundred eighty (180) days following the expiration, relinquishment, or termination of this Lease as herein provided, all royalties associated with this lease (annual royalty, base royalty, and bid royalty) shall become due and payable to the DOE. For ores that have been mined from the Property, but not assayed or fed to process, the Lessee shall estimate the value of said ores using standard industry practices, and shall make base royalty and royalty bid payments to DOE equal to or greater than 95 percent (95%) of the estimated value of the base royalty and royalty bid payments due to DOE. Such base royalty and royalty bid payments shall be treated as provisional payments with respect to said ores until such time that said ores are assayed or fed to process and the final base royalty and royalty bid payments due to DOE are calculated and final base royalty and royalty bid payments are made.
WEIGHING, SAMPLING, AND ASSAYING.

With respect to ores which are mined from the Property and delivered to a mill or other receiving station, the Lessee agrees to the following provisions:

(a) The Lessee shall weigh, or cause to be weighed, each lot of ore delivered from the Property to its mill or other receiving station and shall furnish the DOE a record of the weight of such lot. The scales used in weighing such ore shall be balanced daily and checked once each week or more often, as appears necessary, by either standard weights or by check-weighing against another scale. Scale platforms will be kept clean and free of the sides of the pit, and the scales shall be inspected and certified every six months by the appropriate entity of the state in which the mill or receiving station is located, if such inspection is available; otherwise, a biannual inspection shall be made by a competent organization which is acceptable to both the Lessee and the DOE.

(b) The Lessee shall sample, or cause to be sampled, each lot of ore according to standard and accepted practices in ore sampling, and such sampling shall be final and binding on both parties to this Lease. The DOE or its representative may be present at the sampling of such ore. The Lessee shall ensure that moisture determinations are made according to standard practices in ore sampling. The Lessee shall ensure that each final sample is divided into four (4) pulps, one of which shall be promptly furnished to the DOE, one of which shall be retained by the Lessee for assay purposes, and two of which shall be held in reserve by the Lessee for possible umpire analysis. The Lessee shall promptly assay, or cause to be assayed, its pulp for U₃O₈ and V₂O₅ content and shall transmit the assay results to the DOE, together with weight and moisture certificates for the lot sampled. For the purpose of such reporting, all assays for U₃O₈ shall be adjusted to the nearest 0.001% and all assays for V₂O₅ shall be adjusted to the nearest 0.01%.

(c) The DOE may assay its pulps at its own expense. In case of disagreement with the Lessee’s assay with respect to either U₃O₈ or V₂O₅ content, the DOE may, within 30 calendar days after receiving its pulp, mail to the Lessee a written request for an umpire assay. Upon receipt of such written request, the Lessee shall promptly submit one of the pulps held in reserve to an assayer, whom the parties hereto shall agree upon, for umpire assay. With respect to both U₃O₈ and V₂O₅ content, if the assay of the umpire is within the assays of the two parties, it shall be final. If not, the assay which is nearer to that of the umpire shall prevail. The party whose assay for U₃O₈ is further from that of the umpire shall pay the cost of the umpire’s assay. In the event that the umpire's assay for U₃O₈ is equally distant from the assay of each party, the cost shall be split equally.

(d) The quantity of ore comprising a lot, as used herein, shall be determined by the Lessee, except that no lot shall exceed one thousand (1,000) tons of ore except as otherwise agreed in writing by the Realty Officer.
APPENDIX C

1. SPECIFIC REQUIREMENTS AND STIPULATIONS

The Lessee agrees to comply with all applicable statutes and regulations, including but not limited to the following items:

(a) Prior to resuming operations on the Property that were previously approved by DOE, the Lessee shall notify the Realty Officer in writing of its intentions to resume such operation and shall include any changes, additions, or modifications to the original plan that are now proposed. Upon receipt of such notification, the Realty Officer shall review the approved plan along with any new information provided by the Lessee and determine if additional stipulations are warranted. When all pertinent requirements are satisfied, DOE shall provide the Lessee with a written approval to proceed.

(b) All existing serviceable improvements not associated with the Lessee’s operation, such as fences, gates, cattle guards, roads, trails, culverts, pipelines, bridges, and water development and control structures, authorized for use by the Lessee, shall be maintained in serviceable condition by the Lessee. Such improvements (if not owned by the Lessee) which are damaged or destroyed by the Lessee’s operations shall be replaced, restored, or compensated for by the Lessee.

(c) The Lessee’s operations shall not disturb public land survey corner markers or monuments or Atomic Energy Commission (AEC) survey markers without the prior written approval of the Realty Officer. Additionally, the Lessee shall pay all costs associated with the surveys required to preserve or reestablish the true point of any such marker or monument and the replacement of such marker or monument.

(d) Housing and other buildings and support facilities related to community development shall be constructed or located on the Property only upon the prior written approval of the Realty Officer. In constructing and locating such housing, other buildings, and support facilities, the Lessee shall comply with applicable county planning and zoning regulations, subdivision regulations, and mobile home regulations, and shall furnish evidence of such compliance to the Realty Officer upon request.

(e) Prior to any surface disturbing activity, the Lessee shall file a “Notice of Intent to Conduct Prospecting Operations” (Notice) or “Reclamation Permit Application” (Application), whichever is appropriate, with the Colorado Mined Land Reclamation Board (MLRB) in accordance with “Mineral Rules and Regulations” of the Colorado MLRB, as these rules may be amended. All subsequent modifications to the Notice or Application shall be addressed in accordance with the “Mineral Rules and Regulations” of the Colorado MLRB. The Lessee shall provide the Realty Officer with copies of all pertinent approval documentation including permits issued.
(f) Prior to any surface disturbing activity, the Lessee shall consult with the U.S. Department of Interior—Bureau of Land Management (BLM), the U.S. Department of Interior—Fish and Wildlife Service (USFWS), and/or the Colorado Department of Natural Resources—Division of Wildlife (CDOW), as appropriate, to determine whether threatened or endangered, or sensitive plant or wildlife species occur in the area to be disturbed or whether the agencies have other plant or wildlife concerns in the area to be disturbed. If required, the Lessee shall conduct surveys or provide other documentation to resolve this concern. The Lessee shall provide the Realty Officer with copies of all documents pertaining to this issue.

(g) Prior to any surface disturbing activity, the Lessee shall perform a cultural and historical survey of the area to be disturbed. If cultural or historical resources are found to exist, the Lessee shall consult with the State Historical Preservation Officer for the appropriate measures to be taken. If required, the Lessee shall prepare a mitigation plan to address the protection of the cultural or historical resources. The Lessee shall provide the Realty Officer with copies of all documents pertaining to this issue.

(h) Prior to any surface disturbance activity in a potential floodplain or wetland area, the Lessee shall consult with the U.S. Army Corps of Engineers, the U.S. Environmental Protection Agency, and the appropriate state agency to determine whether a jurisdictional floodplain or wetland exists in the area to be disturbed. If required, the Lessee shall prepare a Floodplain/Wetlands Assessment that proposes mitigation measures to be taken to resolve this concern. The Lessee shall provide the Realty Officer with copies of all documents pertaining to this issue.

(i) The Lessee shall use existing roads where practicable, and shall conduct activities employing wheel or track vehicles in such a manner as to minimize surface damage. The Lessee shall wash all tracked vehicles or equipment prior to their being mobilized to the Property. The Lessee shall promptly repair any road damage resulting from the Lessee's operations, restoring such road to its previous condition or to a condition acceptable to the Realty Officer. Where existing access roads across the Property are used principally by the Lessee, the Lessee shall construct surface-water control and drainage structures (culverts, water bars, or grade dips) on such roads to minimize erosion. Plans for such structures shall be included in all Exploration Plans and Mining Plans submitted to the Realty Officer pursuant to Articles XII “EXPLORATION PLAN” and XIII “MINING PLAN” hereof, respectively. The Lessee shall construct new roads and trails on the Property only at locations and to specifications approved in advance in writing by the Realty Officer or an authorized representative of the Realty Officer, and shall construct and maintain such roads and trails in a manner that will minimize channeling and other erosion. The Realty Officer's approval of plans for new access road construction, culverts, water bars, or grade dips will be guided by standards established by BLM or the U.S. Department of Agriculture—Forest Service (USFS), where appropriate.

(j) The Lessee shall conduct all operations so as to protect all natural resources and the environment including streams, lakes, ponds, waterholes, seeps, and marshes, and protect fish and wildlife resources as required by applicable laws and regulations. The Lessee shall control all mine wastes, contaminants and pollutants, and sediments associated with stormwater runoff in
accordance with existing regulations, and shall comply with all environmental regulations regarding discharge into, or degradation of water resources including streams, springs, stock waters, or groundwater. The Lessee shall not use water from any water source without the written consent of the person having the rights to the use of such water source.

(k) Lessee shall keep the clearing of timber, stumps and snags, and any ground cover to a minimum consistent with the conduct of exploration, development, and mining activities approved hereunder. The Lessee shall abide by any restrictions concerning the bulk removal of vegetation (primarily piñon pine) that are established by the Realty Officer. The Lessee shall use due care to avoid scarring or removal of vegetative ground cover in areas not involved in such operations. Open parks (areas where there is a grass, shrub, and/or sagebrush cover) shall be disturbed as little as possible. If the shrub or brush cover is too high and must be cleared, it shall be cleared at or above ground level. The Lessee shall return all disturbed areas to their original condition or a condition acceptable to the Realty Officer promptly after damage to such areas has occurred and operations under this Lease are no longer being conducted in the disturbed areas.

(l) The Lessee agrees that all underground mine openings shall be supported by pillars, timber, or other ground support devices approved by the Federal or state agencies having jurisdiction over such underground workings. The Lessee further agrees, during the term of this Lease, to substantially fence or permanently close all mine openings/portals, subsidence holes, surface excavations, or other workings resulting from the Lessee’s operation that may be considered hazardous to human health or the environment. Such protective measures shall be maintained in a proper and safe condition during the term of this Lease. Prior to abandoning operations, the Lessee shall submit a mine-site reclamation plan to the Realty Officer for approval. Such plan shall include the proposed method(s) of permanent closure for all mine openings/portals including shafts, adits, inclines/declines, ventilation shafts, and water discharge points. No underground workings or any part thereof shall be permanently abandoned and rendered inaccessible without the prior written approval of the Realty Officer. All mine-site reclamation shall be performed to the satisfaction of the Realty Officer in accordance with the approved reclamation plan.

(m) Surface drill holes and associated disturbances resulting from exploration or development activities shall be abandoned in accordance with existing regulations and in a manner that will protect the surface. All disturbed areas identified by the Lessee as not being needed for future operational activities shall be promptly reclaimed by the Lessee. The Realty Officer, by written notice to the Lessee, shall designate any other areas where reclamation must be undertaken as a result of disturbances caused by the Lessee’s operations.

(n) If antiquities or other objects of historic or scientific interest, including but not limited to historic or prehistoric features or ruins, artifacts, or vertebrate fossils are discovered by the Lessee in the performance of operations under this Lease, the Lessee shall cease operations in the vicinity of such discovery and immediately take appropriate steps to protect and save such objects of historic or scientific interest and shall notify the Realty Officer of such discovery. The Realty Officer shall assess the values involved and prescribe such protective measures as deemed necessary.
(o) The Lessee shall make every effort to prevent, control, or suppress any fire in the operating area and to report any uncontrolled fire to the appropriate BLM or USFS official, as designated by the Realty Officer.

(p) The Lessee shall provide detailed haul route information to the Realty Officer for review prior to commencement of any haul activities. The haul route information shall include, at a minimum, expected routes from the mine site to the proposed mill or other facility accepting material from the mine, expected number of trucks per day, size and approximate weights of the ore being shipped, and expected production rates and mining life timeframes. It is expected that the Lessee will utilize only the specified routing. The lessee shall notify the Realty Officer of any significant changes to the haul route plan.

(q) The Lessee shall comply with Colorado State Access Code Section 43-2-147(4), C.R.S., and Section 24-4-103., C.R.S., effective 8/31/98. Pursuant to said code, the Lessee may be required to participate in a Highway Access Pre-Consultation meeting with DOE and the Colorado Department of Transportation after the completion and submittal to DOE of the approved permit from the Colorado MLRB. The details provided within the Mining Plan and permit, and the information provided under paragraph (p) above shall be used to determine the need for the Pre-Consultation meeting and to determine the potential impacts to county and state roads, highways and intersections from the Lessee’s operations, and any resulting mitigation requirements from these impacts. Any revisions or amendments to the permit, or any conversion from one permit type to another approved by the Colorado MLRB shall also be provided to the Realty Officer. The permit revision, modification or conversion may be used to determine any additional impacts to the county roads or state highways from the Lessee’s operations, and any resulting mitigation requirements from these additional impacts. Access permits required under this requirement shall be provided to the Realty Officer.

(r) The Lessee shall attend and participate in meetings between DOE and other Federal, state, and local agencies, as required.

(s) Prior to entry into any existing lease tract mines or mine workings (or the resumption of mining operations therein), where mitigative measures have been previously undertaken to conserve potentially critical habitat for BLM–listed sensitive bat species, the Lessee shall consult with BLM and CDOW to mitigate the impacts of the Lessee’s activities to the references bat species.
2. EXPLORATION PLAN FORMAT

It is not DOE’s intent to require the Lessee to prepare multiple documents for submittal to the appropriate agencies for review and approval. Consequently, at the Lessee's discretion, a copy of the “Notice of Intent to Conduct Prospecting Operations” filed with the Colorado MLRB may be submitted to DOE for review and approval. That document will meet DOE’s requirement for submittal of an Exploration Plan providing it contains, at a minimum, the following information:

a. Map showing general area to be explored
   1. Tentative location of drill holes or other exploration activity
   2. Location of roads (existing and proposed)

b. Approximate starting date and duration of drilling

c. Drilling information
   1. Type of drilling and/or other exploration equipment
   2. Size of hole and core, if any, to be recovered
   3. Type of logging
   4. Target horizon and depth

d. Road construction necessary for exploration
   1. Location of roads and drill sites
   2. Measures to be taken for erosion control

e. Abandonment
   1. Procedures for plugging drill holes including the disposition of drill hole cuttings
   2. Surface restoration (grading, revegetation, erosion control measures, etc.)

f. Provisions made to conform with existing state and federal regulations regarding control of fire, pollution of water and air, protection of other natural resources, and public health and safety, both during and upon abandonment of exploration activities

g. Specific measures to be taken to assure compliance with environmental and surface use stipulations of this Lease including the preparation of a site-specific environmental document that assures compliance with NEPA and other environmental regulations.
3. MINING PLAN FORMAT

It is not DOE’s intent to require the Lessee to prepare multiple documents for submittal to the appropriate agencies for review and approval. Consequently, at the Lessee’s discretion, a copy of the “Reclamation Permit Application” filed with the Colorado MLRB may be submitted to DOE for review and approval. That document will meet DOE’s requirement for submittal of a Mining Plan providing it contains, at a minimum, the following information:

a. Map showing location of:
   1. Ore body and proposed entry
   2. Any new roads required
   3. Mine plant and associated structures and facilities
   4. Waste dumps and ore storage areas

b. Mining
   1. Initial development plans
      A. Type of entry and haulage method proposed
      B. Stoping method
      C. Estimated rate of daily ore production and mine-life expectations
      D. Provisions to handle mine water
   2. Proposed ventilation and radiation control methods

c. Surface Plant
   1. Buildings, utility lines, and storage/stockpile areas
   2. Sewage and refuse disposal
   3. Compliance with any applicable county planning and zoning regulations
   4. Compliance with EPA stormwater discharge regulations

d. Surface restoration plans
   1. Topsoil removal and storage
   2. Grading and backfilling
3. Control of stormwater runoff

4. Revegetation (if required)

e. Abandonment

1. Permanent closure of all mine openings/portals resulting from, or utilized during, the Lessee’s operations.

2. Removal of structures and associated features

3. Disposition of mine wastes (contouring, leveling, use for backfill, etc.)

f. Provisions made to conform with existing state and federal regulations regarding control of fire, pollution of water and air, protection of other natural resources, and public health and safety, both during and upon abandonment of mining activities.

g. Specific measures to be taken to assure compliance with environmental and surface use stipulations of the Lease including the preparation of a site-specific environmental document that assures compliance with NEPA and other environmental regulations.
URANIUM MINING LEASE
UNITED STATES DEPARTMENT OF ENERGY

THIS LEASE AGREEMENT, effective as of this ___ day of __________, 2008, by and between the UNITED STATES OF AMERICA (hereinafter “Government”), represented by the UNITED STATES DEPARTMENT OF ENERGY (hereinafter “DOE”), whose principal place of business for the purpose of this Lease is 2597 B ¾ Road, Grand Junction, Colorado 81503 and ________________________________ whose principal place of business for the purpose of this Lease is ____________________________ (hereinafter “Lessee”):

WITNESSETH THAT:

DOE represents that it is in possession of certain Government owned uranium mining property in Montrose County, Colorado, more particularly described as Lease Tract C–X–X in Appendix “A” which is attached hereto and hereby made a part this Agreement (the “Property”).

DOE desires that said Property be explored, developed, and operated for the production of uranium-bearing ores.

This Lease is authorized by Section 67 of the Atomic Energy Act of 1954, as amended, and is issued pursuant to the provisions of the DOE’s regulations governing the issuance of leases for mining deposits of uranium in lands held by the DOE (10 CFR Part 760).

NOW, THEREFORE, the parties do hereby agree as follows:

I. GRANT OF LEASE.

For considerations hereinafter stated and performance by the Lessee of the terms and conditions hereinafter provided, the DOE does hereby lease to the Lessee, for the purposes of exploring for, developing, mining, and removing deposits of uranium, vanadium, and associated minerals, the Property described in Appendix “A”, which is attached hereto and hereby made a part hereof, subject to the terms and conditions hereinafter set forth. The rights hereby granted are limited to exploration, development, mining, and removal of ore from within the vertical planes of the boundary lines of the Property, and the Lessee shall have no right hereunder to extend its workings beyond such vertical planes. Access to the Property is not guaranteed by the Government. The Lessee shall be responsible for securing such access.

II. TERM. This Lease shall remain in effect for a period of ten (10) years from the aforementioned effective date, except as it may be sooner relinquished or cancelled pursuant to other provisions of this Lease. Near the end of that 10–year period, DOE will re-evaluate the leasing program to determine if the leases/leasing program should continue.
III. DEFINITIONS. As used herein:

(a) The term “Government” means the Government of the United States of America, including its authorized representatives associated with the Uranium Leasing Program.

(b) The term “DOE” means the United States Department of Energy, or duly authorized representatives thereof, including the Realty Officer except for the purpose of deciding an appeal under Article XXVII “DISPUTES”.

(c) The term “Realty Officer” means a person with the authority to enter into, administer, and/or terminate contracts and make related determinations and findings. The term includes certain authorized representatives of the Realty Officer acting within the limits of their authority as delegated by the Realty Officer.

(d) The term “associated minerals” means any minerals, other than the minerals covered by this Lease, which are (i) so intermingled with the deposits of the mineral or minerals for which this Lease is issued that separate development is, in the opinion of the Realty Officer, not warranted for mining or for economic reasons, or (ii) of such poor quality and in such small quantity that separate development is, in the opinion of the Realty Officer, undesirable for mining or for economic reasons.

(e) The term “applicable statutes and regulations” means all applicable Federal, state, and local statutes, rules, regulations, and standards as they may be amended or replaced from time to time. These statutes include but are not limited to, those relating to mine safety; radiation; air, water, and land pollution; disposal of liquid and solid waste; and workmen's and unemployment compensation.

(f) The term “Exploration Plan” as described in Article XII “EXPLORATION PLAN” and Appendix “C” means a plan of activity proposed by the Lessee for the purpose of conducting approved operations to explore, test, or prospect for minerals covered by this Lease.

(g) The term “Mining Plan” as referenced in Article XIII “MINING PLAN” and Appendix “C” means a plan of activity proposed by the Lessee for the purpose of conducting surface and underground operations to develop or extract the minerals covered by this Lease.

(h) Article “Titles and Headings” as used throughout this Lease are inserted for convenience only, and shall not be deemed to be a part of this Lease or considered in construing this Lease.

IV. GENERAL PERFORMANCE REQUIREMENT. The Lessee shall conduct all activities in accordance with the terms and conditions of this Lease and with those in 10 CFR Part 760. Furthermore, the Lessee shall conduct exploration, development, and mining activities on the Property with all reasonable diligence, skill, and care, as is required to systematically advance lease operations toward, and ultimately achieve and maintain, production of uranium ore consistent with good and safe mining practice, and in accordance with market conditions.
Reasonable diligence shall be assessed by the Realty Officer at his sole discretion on the basis of the Lessee’s ongoing lease activities or the lack thereof. Site permitting activities and the performance of cultural resource surveys and/or threatened and endangered species surveys shall be accepted by the Realty Officer as evidence supporting reasonable diligence.

V. ROYALTIES. The Lessee shall pay or cause to be paid, as directed by the DOE, the royalties specified in Appendix “B”, which is attached hereto and hereby made a part hereof, at the rates and in the manner set forth therein.

VI. INTEREST ON OVERDUE PAYMENTS — FORFEITURE FOR NON-PAYMENT.

(a) All amounts that become payable by the Lessee to the Government under this Lease shall bear simple interest from the date due until paid unless paid within thirty (30) days of becoming due. The interest rate shall be established by DOE (on a quarterly basis as required) as the Federal Short-Term Rate (applied to and applicable to the calendar quarter in which the amount becomes due) plus three (3) percent. The Federal Short-Term Rate is the rate published monthly by the Internal Revenue Service pursuant to Section 1274(d) of the Internal Revenue Code. Additional interest shall be assessed for each subsequent calendar quarter until the amount is paid.

(b) Amounts shall be due at the earlier of the following dates:

(1) The date fixed under this Lease.

(2) The date of the first written demand for payment consistent with this Lease, including any demand resulting from a default cancellation.

(c) Notwithstanding the provisions of paragraphs (a) and (b) of this Article VI, and irrespective of interest payments made by the Lessee to DOE pursuant thereto, the Realty Officer, in his sole discretion, may cancel this Lease for failure by the Lessee to pay the entire principle amount of any annual royalty, base royalty, or bid royalty within sixty (60) calendar days after payment thereof is due from the Lessee to the DOE under the terms of this Lease. Such cancellation shall be effective upon Lessee’s receipt of a written notice thereof from the Realty Officer. Failure of DOE to exercise its right to cancel shall not be deemed to be a waiver thereof.

VII. USE OF SURFACE.

(a) Subject to the other provisions of this Lease, the rights granted to the Lessee herein include the right to use so much of the surface of the Property as is required for the exploration for, and development, mining, and removal of ore, including the right to erect such buildings and other structures and install such machinery and other facilities as may be required for such operations; provided, that the Lessee shall recognize existing uses and commitments in the form of grazing, timbering, Bureau of Land Management special use permits, and public recreation, and improvements such as water developments, ditches, roads, trails, pipelines, telephone,
telegraph, and power lines, fences, and rights-of-way; and Lessee shall conduct its operations so as to interfere as little as possible with such existing uses and improvements.

(b) The Property shall at all times be subject to other lawful uses heretofore or hereafter granted by the Government, through any authorized agency; provided, that such uses shall not prevent, obstruct, or unduly interfere with any right granted under this Lease.

VIII. LEASES FOR OTHER MINERALS. The granting of this Lease shall not preclude the issuance by the Government of other leases of the Property for the purposes of mining and extracting oil, gas, oil shale, coal, phosphate, potassium, sodium, sulphur, or other minerals which are or may in the future be leasable pursuant to Federal mineral leasing laws; provided, that any such leases hereafter issued shall provide that operations under such leases shall not prevent, obstruct, or unduly interfere with any right granted under this Lease.

IX. USE OF SALABLE MINERALS. No salable minerals, such as sand, gravel, or stone, found on the Property shall be used by the Lessee in its operations unless such salable minerals have been purchased from the Government under the provisions of the Materials Act of July 31, 1947, 30 U.S.C. 601, as amended, or from the owner of such salable minerals if other than the Government.

X. SECURITY AND SAFETY. The Lessee shall secure and post all areas that might reasonably be considered hazardous to the general public, including, but not limited to ore stockpile areas, loading areas, mining openings, and mine-rock waste piles, in accordance with all applicable statutes and regulations and specific requirements and stipulations set forth in Appendix “C”. If necessary, the Lessee agrees to construct fences or other barriers around the perimeter of safety-hazard areas to minimize the potential for intrusion by humans, livestock, and wildlife. Radioactive materials exposed by the Lessee’s operation shall be managed to ensure that the exposure of humans and ecosystems is as low as reasonably achievable.

XI. ENVIRONMENTAL REQUIREMENTS. The Lessee, at the Lessee’s expense, shall comply with all applicable statutes and regulations and abide by the specific requirements and stipulations set forth in Appendix “C”, which is attached hereto and hereby made a part hereof.

XII. EXPLORATION PLAN.

(a) Prior to commencing any surface-disturbing operations to explore, test, or prospect for minerals covered by this Lease, the Lessee shall file with the Realty Officer three (3) copies of a plan for the proposed exploration activities and shall obtain the Realty Officer’s approval of such plan. The Exploration Plan shall be consistent with the “Notice of Intent to Conduct Prospecting Operations” (hereinafter “Notice”) to be filed with the Colorado Mined Land Reclamation Board (hereinafter MLRB) in accordance with “Rule 5” of the “Mineral Rules and Regulations” of the Colorado MLRB, as these rules may be amended. The Exploration Plan shall include all information required by the “Notice”, and in addition, must specifically include the following information:
(1) A site-specific environmental analysis;

(2) A description of specific measures to be taken to assure compliance with the requirements of Article XI “ENVIRONMENTAL REQUIREMENTS”, including methods of reclamation contemplated by the Lessee; and

(3) The specific information outlined in Appendix “C” of this Lease.

(b) All Exploration Plans submitted to the Realty Officer pursuant to this Article XII and all proposed activities contained therein shall be reviewed by DOE in accordance with 10 CFR Part 1021 “National Environmental Policy Act Implementing Procedures”.

(c) If preparation and filing of an Exploration Plan for the entire operation is dependent upon factors which cannot or will not be determined except during the progress of exploration activities, partial plans may be submitted and approved from time to time; provided however, that the Lessee shall not perform exploration activities not described in an approved plan.

(d) Changes may be made in the approved Exploration Plan by mutual written agreement of the Lessee and the Realty Officer. Approval is contingent upon the Lessee notifying all other appropriate agencies (as outlined in Appendix “C”) of the proposed changes.

XIII. MINING PLAN.

(a) Prior to constructing any surface installation or commencing mine development on the Property, the Lessee shall file with the Realty Officer three (3) copies of a plan for the proposed mining operations and shall obtain the Realty Officer’s approval of such plan. Such mining plan shall be consistent with the “Reclamation Permit Application” (hereinafter “Application”) to be filed with the Colorado MLRB in accordance with “Rule 1.4” and “Rule 6” of the “Mineral Rules and Regulations” of the Colorado MLRB, as these rules may be amended. The Mining Plan shall include all information required by the “Application”, and in addition, must specifically include the following information:

(1) A site-specific environmental analysis;

(2) A description of specific measures to be taken to assure compliance with the requirements of Article XI “ENVIRONMENTAL REQUIREMENTS”, including methods of reclamation contemplated by the Lessee; and

(3) The specific information outlined in Appendix “C” of this Lease.

(b) All Mining Plans submitted to the Realty Officer pursuant to this Article XIII and all proposed activities contained therein shall be reviewed by DOE in accordance with 10 CFR Part 1021 “National Environmental Policy Act Implementing Procedures”.
(c) If preparation and filing of a Mining Plan for the entire operation is dependent on factors which cannot or will not be determined except during the progress of mining activities, a partial plan may be submitted and approved from time to time; provided however, that the Lessee shall not perform mining activities not described in an approved plan.

(d) Changes may be made in the approved Mining Plan by mutual written agreement of the Lessee and the Realty Officer. Approval is contingent upon the Lessee notifying all other appropriate agencies (as outlined in Appendix “C”) of the proposed changes.

XIV. PERFORMANCE BOND.

(a) Upon approval of an Exploration Plan or Mining Plan, and prior to commencing any surface-disturbing operations, the Lessee shall be required to file a suitable performance bond of not less than $_______ with satisfactory surety, payable to the United States Department of Energy, and the bond shall be conditioned upon the faithful compliance with all applicable statutes and regulations, the terms and conditions of this Lease, and any Exploration Plans and Mining Plans, including amendments and supplements thereto, which have been approved by the Realty Officer.

(b) The Realty Officer shall set the amount of the initial bond and may, from time to time, require an increase or allow a decrease in the amount of the bond, as in his judgment the circumstances may require. In determining the amount of the bond, the Realty Officer shall take into consideration all applicable statutes and regulations and the character and nature of the reclamation requirements of the Lease, including the requirements of any approved Exploration Plans and Mining Plans and partial or supplementary plans, and the estimated costs of such reclamation.

(c) The Lessee and his sureties shall be liable for any damage to the Government resulting from the Lessee’s failure to complete any work required upon the expiration, relinquishment, or cancellation of this Lease.

XV. INSPECTION. The DOE reserves the right, through its officers, employees, agents, and contractors, to enter upon the Property and into all parts of any of Lessee’s mines therein at all reasonable times for inspection and other purposes subject to the Lessee’s standard operating procedures.

XVI. GOOD FAITH NEGOTIATIONS. At the request of the Realty Officer, the Lessee will negotiate in good faith with the DOE to reach an agreement under which the Lessee, for appropriate compensation, would correct undesirable conditions existing on the Property as a result of pre–1974 mining activities and such other conditions that may be identified from time to time by the Realty Officer. If for any reason, the Lessee is unable to perform the work required to correct such conditions in a timely manner, DOE reserves the right to contract with another entity to enter upon the Property and perform said work.
XVII. INDEMNIFICATION OF GOVERNMENT.

(a) The Government, including its employees, all tiers of contractors, agents, and authorized representatives shall not be responsible for any mechanics’ or miners’ liens or other liens, encumbrances, or liabilities incurred by the Lessee in connection with the operation of the Property. The Lessee assumes all responsibility for and will hold the Government harmless from any and all claims and liability of any nature arising from the operation or occupancy of the Property.

(b) The Lessee agrees to protect and indemnify the Government against any payroll taxes or contributions imposed with respect to any employee of the Lessee by any applicable law dealing with old age pensions, unemployment compensation, accident compensation, health insurance and related subjects. The Lessee also agrees, at its own cost and expense, to insure to each person employed in, about, or upon the Property the compensation provided for by law with respect to workmen's compensation and employer’s liability insurance, properly safeguarding the Government, including its employees, all tiers of contractors, agents, and authorized representatives, against liability for injuries to persons, including injuries resulting in death, and loss of and damage to property in policies and amounts acceptable to the DOE and to furnish to the DOE written evidence of such insurance.

XVIII. REPORTING REQUIREMENTS.

(a) The Lessee shall provide the Realty Officer with copies of all permits and correspondence from local, state, or other Federal agencies or entities which pertain to the Lessee’s activities on the Property.

(b) The Lessee shall provide to the Realty Officer, within twenty calendar days after the end of each month, an accurate record of the tonnage and U₃O₈ and V₂O₅ grades of each lot of ore delivered from the Property to a mill, buying station, or other purchaser during the previous month, including copies of all settlement sheets furnished to the Lessee for ores so delivered.

(c) The Lessee shall provide to the Realty Officer as soon as practicable after the end of each calendar quarter, the following documents, records, and/or maps:

(1) A formal (written and signed) summary of all activities conducted on the Property during such calendar quarter that, among other things, documents the Lessee’s reasonable diligence required by Article IV “GENERAL PERFORMANCE REQUIREMENT”.

(2) A map or maps showing the location of all exploration holes drilled on the Property during such calendar quarter, together with copies of any logs and assay records applicable to such drill holes.
(3) A mine map or maps showing the progress of mining on the Property as of the end of such calendar quarter.

(4) Lessee’s estimate of the tonnage and U\textsubscript{3}O\textsubscript{8} and V\textsubscript{2}O\textsubscript{5} grades of all ores stockpiled on the Property as of the end of such calendar quarter.

(5) If no activity occurs on the Property during a calendar quarter, a letter submitted to the Realty Officer stating that no activity has occurred shall satisfy this reporting requirement.

(d) The Lessee further agrees to provide to the Realty Officer the results of any inspections of Lessee’s mines or other facilities located on the Property, conducted by personnel of local, state, or other Federal agencies under applicable statutes and regulations. Furthermore, the Lessee agrees to notify the Realty Officer of any planned or scheduled inspections to be performed by local, state, or other federal agencies as soon as such schedule is known so that the Realty Officer may participate in said inspection if so desired.

(e) The Lessee is hereby notified that information obtained by DOE from the Lessee under this section shall be subject to the provisions of the Freedom of Information Act (5 U.S.C. 552).

XIX. TAXES. The Lessee agrees to pay when due all taxes lawfully assessed and levied pursuant to state or Federal law upon improvements, output of mines, and other interests, property, and assets of the Lessee in or upon the Property.

XX. ASSIGNMENT. The Lessee agrees that no transfer of this lease, or of any interest therein or claim thereunder, by assignment shall occur within the first 30-month period of this lease. Additionally, no transfer of this lease, or of any interest therein or claim thereunder, by assignment, sublease, operating agreement, or otherwise, shall occur unless and until approved in writing by the Realty Officer.

XXI. RELINQUISHMENT OF LEASE. This Lease may be surrendered by the Lessee upon the Lessee’s filing with the DOE, and the Realty Officer’s approval of, a written application for relinquishment. Approval of the application shall be contingent upon the delivery of the Property to the DOE in a condition satisfactory to the Realty Officer, in accordance with the terms of this Lease, and upon the continued liability of the Lessee to make payment of all royalty and other debts theretofore accrued and due the DOE.

XXII. CANCELLATION OF LEASE. DOE may cancel this Lease if the Realty Officer determines that the Lessee has failed to comply with any provision of this Lease including reasonable diligence. Failure of DOE to exercise its rights to cancel shall not be deemed to be a waiver thereof.

XXIII. DELIVERY OF PREMISES. At the expiration of this Lease, or upon its earlier relinquishment or cancellation as herein provided, the Lessee shall, within one hundred eighty
(180) days or other period mutually agreed to by the Lessee and Realty Officer, surrender the Property in a condition satisfactory to the Realty Officer, and shall, unless otherwise directed by the Realty Officer in writing, remove from the Property at Lessee’s expense all structures, machinery, equipment, tools, and improvements placed thereon by the Lessee; provided, that the Lessee shall not remove any timbers or improvements which are determined by the Realty Officer to be required to be left in the mine workings to protect such workings as a mining property. Furthermore, prior to the surrender of the Property, the Lessee shall remove from the Property at Lessee’s expense all stockpiles of ore and/or protore materials placed thereon by the Lessee and remit the required royalties to DOE in accordance with Article V “ROYALTIES” and Appendix “B”. Otherwise, the Lessee shall at the Lessee’s expense return all stockpiles of ore and/or protore materials to a suitable location within the underground mine workings on the Property or other location on the Property as designated by the Realty Officer.

XXIV. EXAMINATION OF RECORDS.

(a) The DOE and the Comptroller General of the United States or duly authorized representatives of either shall, until three (3) years after final payment under this Lease, have access to and the right to examine any of the Lessee’s directly pertinent books, documents, papers, or other records involving transactions related to this Lease. The Lessee shall make these records and documents available to the Government, at the Lessee’s offices, at all reasonable times, without any charge.

(b) The Lessee agrees to include in first-tier subcontracts under this Lease a clause to the effect that the DOE or the Comptroller General or duly authorized representatives of either shall, until three (3) years after final payment under the subcontract, have access to and the right to examine any of the subcontractor’s directly pertinent books, documents, papers, or other records involving transactions related to the subcontract.

(c) The periods of access and examination in paragraphs (a) and (b) above for records relating to (1) appeals under Article XXVII “DISPUTES”, (2) litigation or settlement of claims arising from the performance of this Lease, or (3) costs and expenses of this Lease to which the DOE or the Comptroller General or duly authorized representatives of either has taken exception shall continue until such appeals, litigation, claims, or exceptions are disposed of.

XXV. OFFICIALS NOT TO BENEFIT. No member of or delegate to Congress, or resident commissioner, shall be admitted to any share or part of this Lease, or to any benefit arising from it. However, this clause does not apply to this Lease to the extent that this Lease is made with a corporation for the corporation’s general benefit.

XXVI. COVENANT AGAINST CONTINGENT FEES. The Lessee warrants that no person or selling agency has been employed or retained to solicit or secure this Lease upon an agreement or understanding for a commission, percentage, brokerage, or contingent fee, excepting bona fide employees or bona fide established commercial or selling agencies maintained by the Lessee for the purpose of securing business. For breach or violation of this warranty, the Government shall have the right to cancel this Lease without liability, or in its
discretion to require the Lessee to pay to DOE the full amount of such commission, percentage, brokerage, or contingent fee.

XXVII. **DISPUTES.**

(a) Except as otherwise provided in this Lease, any dispute concerning a question of fact arising under this Lease which is not disposed of by agreement shall be decided by the Realty Officer, who shall reduce his decision to writing and mail or otherwise furnish a copy thereof to the Lessee. The decision of the Realty Officer shall be final and conclusive unless within 30 days from the date of receipt of such copy, the Lessee mails or otherwise furnishes to the Realty Officer a written appeal addressed to the DOE. The decision of the DOE for the determination of such appeals shall be final and conclusive unless determined by a court of competent jurisdiction to have been fraudulent, or capricious, or arbitrary, or so grossly erroneous as necessarily to imply bad faith, or not supported by substantial evidence. In connection with any appeal proceeding under this clause, the Lessee shall be afforded an opportunity to be heard, and to offer evidence in support of its appeal. Pending final decision of a dispute hereunder, the Lessee shall abide by the Realty Officer’s decision.

(b) The provisions of paragraph (a) above does not preclude consideration of questions of law; provided, that nothing in this Lease shall be construed as making final the decision of any administrative official, representative, or board on a question of law.

XXVIII. **HEIRS AND SUCCESSORS-IN-INTEREST.** Each obligation hereunder shall extend to and be binding upon, and every benefit hereof shall inure to, the heirs, executors, administrators, successors, or assigns of the respective parties hereto.

XXIX. **MEMORANDUM FOR RECORDING.** If the Lessee so requests, the parties agree to execute a mutually agreeable written memorandum of even date herewith sufficient to be entitled to be recorded under the laws of the State of Colorado, reciting that all of their right, title, and interest in and to the Property is held subject to this Lease, and that DOE has reserved the royalties described in this Lease, which memorandum Lessee may place of record in the appropriate County. Upon termination of this lease, lessee agrees to execute documentation, which will also be recorded appropriately, showing the lease has terminated.

XXX. **NOTICE.** Any notice, election, report, or other correspondence (“Documents”) required or permitted hereunder shall be in writing and shall be addressed to the party to whom directed as follows:

(a) If to Lessee:

Company Name

Address (for US Mail and parcel delivery)

City, State, Zip Code
Attention:
Telephone:
Facsimile:

(b) If to DOE:

U.S. Department Of Energy
11025 Dover Street, Suite 1000
Westminster, CO 80021-5573
Attention: Steven R. Schiesswohl, Realty Officer
Telephone: (720) 377–9683
Facsimile: (720) 377–3829

Time-sensitive Documents shall be (i) sent by registered or certified United States mail, postage prepaid, return receipt requested; (ii) sent by a reputable overnight courier, or (iii) sent by facsimile transmission with confirmation of receipt. All other Documents can be delivered or sent as indicated above, or may be sent by regular United States mail.

Either party may, from time to time, change its address for the delivery of future documents hereunder by notice in accordance with this Section XXX. Except as provided for royalty payments in Appendix “B” paragraph (g), all documents generated in accordance with this Lease shall be deemed complete and effective on the date that the document was issued.

XXXI. SURVIVAL. The following shall survive termination of this Lease: Articles V, VII (a), X, XI, XIV, XV, XVII, XVIII, XIX, XXII, XXIII, XXIV, and XXX and the Appendices.
IN WITNESS WHEREOF, the parties hereto have executed this Lease, effective as of the date first above written, intending to be legally bound thereby.

UNITED STATES OF AMERICA
UNITED STATES DEPARTMENT OF ENERGY ___________________________ (LESSEE)

By __________________________________ By ________________________________
Title ________________________________ Title ________________________________
Date ________________________________ Date ________________________________
APPENDIX A

DESCRIPTION OF LEASED PROPERTY

The leased Property described herein was referred to as “MINING LEASE NO. AT(05–1)–ML–60.8–C–X–X” during the period from 1974 to the enactment of this Lease.

*Lease-specific legal description will be inserted here.*
ROYALTIES

(a) At the beginning of each lease year during the term of this Lease, there shall become due and payable to the DOE an annual royalty of $_______. Annual royalties paid pursuant to this article shall be credited against royalty bid payments which become payable during the term of this Lease. Annual royalties so paid shall not be refunded upon the expiration, relinquishment, or cancellation of this Lease.

(b) The Lessee agrees to pay to the DOE a royalty bid payment, per dry ton of ore delivered from the Property to a mill or other receiving station, in the amount of ________ percent (____ %) of the value per dry ton, determined as provided in paragraph (g) of this Appendix “B”. This royalty shall apply to all ores produced from the Property during the term of this Lease.

(c) Unless otherwise authorized by DOE in writing, all ores mined from the Property shall be stockpiled on the Property until such time as they are delivered to a mill or other receiving station.

(d) With respect to ores which are mined from the Property and delivered to a mill or other receiving station which is owned or controlled by the Lessee, the Lessee agrees to make royalty bid payments, for all lots of such ore assayed or fed to process during each calendar month, within twenty (20) calendar days after the end of such calendar month. Such royalty bid payments shall be treated as provisional payments with respect to any lot of ore for which the DOE requests an umpire assay, and an appropriate adjustment shall be made in the first royalty bid payment following Lessee’s receipt of the results of such umpire assay for such lot of ore.

(e) With respect to ores which are mined from the Property and delivered to a mill or other receiving station not owned or controlled by the Lessee, the Lessee agrees:

(1) That the DOE may receive royalty bid payments directly from the owner or controller of the mill or other receiving station to which such ores are shipped by the Lessee if the DOE makes arrangements therefore satisfactory to the Lessee.

(2) That, in the absence of such arrangements, the Lessee shall make royalty bid payments for all lots of such ore assayed or fed to process (includes delivery of such ore to an ore-buying station or sample plant) during each calendar month, within twenty (20) calendar days after payment for such lots is mailed to the Lessee; provided, that an appropriate extension of such twenty (20) day period shall be granted by the Realty Officer for any undue delay in the mails which causes a delay in delivery to the Lessee of payment for such lots of ore. Such royalty bid payments shall be treated as provisional payments with respect to any lot of ore for which DOE requests an umpire assay, and an appropriate adjustment shall be made in the first royalty bid payment following finalization of payment to the Lessee for such ore.
(f) Royalty bid payments due the DOE shall be deemed to have been made when received at the DOE Legacy Management Office in Grand Junction, Colorado.

(g) DOE shall establish the prices for uranium and vanadium that shall be used to calculate the fair-market value of lease tract ores. These prices shall be established on a quarterly basis, on or before the twentieth (20th) day after the end of the previous calendar quarter (in January, April, July, and October), and shall remain in effect during the calendar quarter in which they are established. DOE shall establish these prices as follows:

(1) Using an electronic spreadsheet, DOE shall monitor, record, and track the spot-market and long-term-market prices for uranium (quoted as dollars per pound U₃O₈) as reported weekly in *Ux Weekly*. The spreadsheet will then (i) automatically calculate the monthly and quarterly arithmetic average prices for uranium (both spot-market and long-term-market), and (ii) automatically calculate a quarterly weighted-average price for uranium by applying the appropriate purchase contract percentages to the respective quarterly average prices. Using this spreadsheet, DOE shall also monitor, record, and track the Total Purchased (Weighted-Average Price) for uranium as reported annually by the Energy Information Administration in Table S1b. *Weighted-Average Price of Uranium Purchased by Owners and Operators of U.S. Civilian Nuclear Power Reactors (quoted as Dollars per Pound U₃O₈ Equivalent)*. The spreadsheet will then automatically calculate the arithmetic average between the quarterly weighted-average price for uranium and the Total Purchased (Weighted-Average Price) for uranium. The resulting figure is reported as the annualized quarterly weighted-average price for uranium.

(2) Using the same electronic spreadsheet, DOE shall monitor, record, and track the market price of vanadium (quoted as dollars per pound V₂O₅) as reported twice weekly in *Metal Bulletin (Non-Ferrous Primary Metals, Noble Alloys and Ores, Vanadium pentoxide)*. The spreadsheet will then (i) automatically calculate the monthly and quarterly arithmetic average prices for vanadium, and (ii) automatically apply an adjustment factor of one-half (0.5) to each quarterly arithmetic average price for vanadium. The resulting figure is reported as the adjusted quarterly average price for vanadium.

(3) Paragraphs (g)(1) and (g)(2) can be summarized by the following three equations:

\[ U = \frac{(Q_{WA} + TP_{WA})}{2} \]  (1)

where:

\[ U \quad = \quad \text{Annualized Quarterly Weighted-Average Price for Uranium} \]

\[ Q_{WA} \quad = \quad \text{Quarterly Weighted-Average Price for Uranium} \]
TP_{WA} = \text{Total Purchased (Weighted-Average Price) for Uranium}

\[ Q_{WA} = Q_{SM} \times P_{SM} + Q_{LTM} \times P_{LTM} \tag{2} \]

where:

- \( Q_{SM} \) = Quarterly Arithmetic Average Price for the Uranium Spot Market
- \( P_{SM} \) = Purchase Contract Percentage for the Uranium Spot Market
- \( Q_{LTM} \) = Quarterly Arithmetic Average Price for the Uranium Long Term Market
- \( P_{LTM} \) = Purchase Contract Percentage for the Uranium Long Term Market

\[ V = Q_{WA} \times 0.5 \tag{3} \]

where:

- \( V \) = Annualized Quarterly Weighted-Average Price for Vanadium
- \( Q_{WA} \) = Quarterly Weighted-Average Price for Vanadium

(h) The Lessee shall be notified of these prices (annualized quarterly weighted-average price for uranium and adjusted quarterly average price for vanadium) by formal written correspondence. The Lessee shall use these prices to calculate the fair-market value of the ore in dollars per dry ton (calculated to the nearest cent [$0.01]), for all lots of such ore assayed during any calendar month. This fair-market value shall be determined by:

(1) Computing the number of recoverable pounds of contained \( U_3O_8 \) and \( V_2O_5 \) per dry ton of ore in the lots so assayed by (i) multiplying the total number of pounds of \( U_3O_8 \) and \( V_2O_5 \), respectively, contained in the lots of ore so assayed during such calendar month, by factors of 0.96 and 0.79, respectively (the average milling facility’s recovery rates for \( U_3O_8 \) and \( V_2O_5 \), respectively, as acknowledged by DOE) and (ii) dividing each of the resulting numbers by the
total number of dry tons of ore contained in the lots so assayed during such calendar month, and carrying the results to three decimal places for $U_3O_8$ and two decimal places for $V_2O_5$; and

(2) Adding together the dollar amounts obtained by (i) multiplying the number of recoverable pounds of $U_3O_8$ per dry ton of ore in the lots so assayed by the price per pound of $U_3O_8$ established by DOE and (ii) multiplying the number of recoverable pounds of $V_2O_5$ per dry ton of ore in the lots so assayed by the price per pound of $V_2O_5$ established by DOE.

(i) For ores that have been mined from the Property and delivered to a mill or other receiving station, but not assayed or fed to process, the Lessee shall estimate the value of said ores using standard industry practices, and shall make royalty bid payments to DOE equal to or greater than 95 percent (95%) of the estimated value of the royalty bid payments due to DOE. Such royalty bid payments shall be treated as provisional payments with respect to said ores until such time that said ores are assayed or fed to process and the final royalty bid payments due to DOE are calculated and final royalty bid payments are made.

(j) If price quotations for vanadium pentoxide become unavailable, the DOE and the Lessee will negotiate to establish a method of determining an appropriate market price per pound of $V_2O_5$ to be used in determining that portion of the value per dry ton of ore attributable to vanadium. Pending agreement on such method, the last prices established by paragraph (g)(2) above shall be used in determining the portion of the value per dry ton of ore attributable to vanadium, for the purpose of computing royalties under this Lease. If the parties fail to reach agreement on an applicable method, the matter shall constitute a dispute to be decided in accordance with the Article XXVII “DISPUTES” of this Lease.

(k) The parties hereto agree that if the Lessee is paid for any constituent, other than uranium or vanadium, contained in ores mined from the Property, all amounts so paid shall be held in trust by the Lessee for the DOE until the Lessee and the DOE agree upon a base royalty to be paid to the DOE with respect to Lessee’s sale of such constituent.

(l) Consistent with Article XXIII “DELIVERY OF PREMISES”, the Lessee agrees, that within one hundred eighty (180) days following the expiration, relinquishment, or termination of this Lease as herein provided, all royalties associated with this Lease (annual royalty, base royalty, and bid royalty) shall become due and payable to the DOE. For ores that have been mined from the Property, but not assayed or fed to process, the Lessee shall estimate the value of said ores using standard industry practices, and shall make royalty bid payments to DOE equal to or greater than 95 percent (95%) of the estimated value of the royalty bid payments due to DOE. Such royalty bid payments shall be treated as provisional payments with respect to said ores until such time that said ores are assayed or fed to process and the final royalty bid payments due to DOE are calculated and royalty bid payments are made.
WEIGHING, SAMPLING, AND ASSAYING.

With respect to ores which are mined from the Property and delivered to a mill or other receiving station, the Lessee agrees to the following provisions:

(a) The Lessee shall weigh, or cause to be weighed, each lot of ore delivered from the Property to a mill or other receiving station and shall furnish the DOE a record of the weight of such lot. The scales used in weighing such ore shall be balanced daily and checked once each week or more often, as appears necessary, by either standard weights or by check-weighing against another scale. Scale platforms will be kept clean and free of the sides of the pit, and the scales shall be inspected and certified every six months by the appropriate entity of the state in which the mill or receiving station is located, if such inspection is available; otherwise, a biannual inspection shall be made by a competent organization which is acceptable to both the Lessee and the DOE.

(b) The Lessee shall sample, or cause to be sampled, each lot of ore according to standard and accepted practices in ore sampling, and such sampling shall be final and binding on both parties to this Lease. The DOE or its representative may be present at the sampling of such ore. The Lessee shall ensure that moisture determinations are made according to standard practices in ore sampling. The Lessee shall ensure that each final sample is divided into four (4) pulps, one of which shall be promptly furnished to the DOE, one of which shall be retained by the Lessee for assay purposes, and two of which shall be held in reserve by the Lessee for possible umpire analysis. The Lessee shall promptly assay, or cause to be assayed, its pulp for U₃O₈ and V₂O₅ content and shall transmit the assay results to the DOE, together with weight and moisture certificates for the lot sampled. For the purpose of such reporting, all assays for U₃O₈ shall be adjusted to the nearest 0.001% and all assays for V₂O₅ shall be adjusted to the nearest 0.01%.

(c) The DOE may assay its pulps at its own expense. In case of disagreement with the Lessee’s assay with respect to either U₃O₈ or V₂O₅ content, the DOE may, within 30 calendar days after receiving its pulp, mail to the Lessee a written request for an umpire assay. Upon receipt of such written request, the Lessee shall promptly submit one of the pulps held in reserve to an assayer, whom the parties hereto shall agree upon, for umpire assay. With respect to both U₃O₈ and V₂O₅ content, if the assay of the umpire is within the assays of the two parties, it shall be final. If not, the assay which is nearer to that of the umpire shall prevail. The party whose assay for U₃O₈ is further from that of the umpire shall pay the cost of the umpire’s assay. In the event that the umpire's assay for U₃O₈ is equally distant from the assay of each party, the cost shall be split equally.

(d) The quantity of ore comprising a lot, as used herein, shall be determined by the Lessee, except that no lot shall exceed one thousand (1,000) tons of ore except as otherwise agreed in writing by the Realty Officer.
SPECIFIC REQUIREMENTS AND STIPULATIONS

The Lessee agrees to comply with all applicable statutes and regulations, including but not limited to the following items:

(a) Prior to resuming operations on the Property that were previously approved by DOE, the Lessee shall notify the Realty Officer in writing of its intentions to resume such operation and shall include any changes, additions, or modifications to the original plan that are now proposed. Upon receipt of such notification, the Realty Officer shall review the approved plan along with any new information provided by the Lessee and determine if additional stipulations are warranted. When all pertinent requirements are satisfied, DOE shall provide the Lessee with a written approval to proceed.

(b) All existing serviceable improvements such as fences, gates, cattle guards, roads, trails, culverts, pipelines, bridges, and water development and control structures, authorized for use by the Lessee, shall be maintained in serviceable condition by the Lessee. Improvements damaged or destroyed by the Lessee’s operations shall be replaced, restored, or compensated for by the Lessee.

(c) The Lessee’s operations shall not disturb public land survey corner markers or monuments or Atomic Energy Commission (AEC) survey markers without the prior written approval of the Realty Officer. Additionally, the Lessee shall pay all costs associated with the surveys required to preserve or reestablish the true point of any such marker or monument and the replacement of such marker or monument.

(d) Housing and other buildings and support facilities related to community development shall be constructed or located on the Property only upon the prior written approval of the Realty Officer. In constructing and locating such housing, other buildings, and support facilities, the Lessee shall comply with applicable county planning and zoning regulations, subdivision regulations, and mobile home regulations, and shall furnish evidence of such compliance to the Realty Officer upon request.

(e) Prior to any surface disturbing activity, the Lessee shall file a “Notice of Intent to Conduct Prospecting Operations” (Notice) or “Reclamation Permit Application” (Application), whichever is appropriate, with the Colorado Mined Land Reclamation Board (MLRB) in accordance with “Mineral Rules and Regulations” of the Colorado MLRB, as these rules may be amended. All subsequent modifications to the Notice or Application shall be addressed in accordance with the “Mineral Rules and Regulations” of the Colorado MLRB. The Lessee shall provide the Realty Officer with copies of all pertinent approval documentation including permits issued.

(f) Prior to any surface disturbing activity, the Lessee shall consult with the U.S. Department of Interior—Bureau of Land Management (BLM), the U.S. Department of Interior—
Fish and Wildlife Service (USFWS), and/or the Colorado Department of Natural Resources—Division of Wildlife (CDOW), as appropriate, to determine whether threatened or endangered, or sensitive plant or wildlife species occur in the area to be disturbed or whether the agencies have other plant or wildlife concerns in the area to be disturbed. If required, the Lessee shall conduct surveys or provide other documentation to resolve this concern. The Lessee shall provide the Realty Officer with copies of all documents pertaining to this issue.

(g) Prior to any surface disturbing activity, the Lessee shall perform a cultural and historical survey of the area to be disturbed. If cultural or historical resources are found to exist, the Lessee shall consult with the State Historical Preservation Officer for the appropriate measures to be taken. If required, the Lessee shall prepare a mitigation plan to address the protection of the cultural or historical resources. The Lessee shall provide the Realty Officer with copies of all documents pertaining to this issue.

(h) Prior to any surface disturbance activity in a potential floodplain or wetland area, the Lessee shall consult with the U.S. Army Corps of Engineers, the U.S. Environmental Protection Agency, and the appropriate state agency to determine whether a jurisdictional floodplain or wetland exists in the area to be disturbed. If required, the Lessee shall prepare a Floodplain/Wetlands Assessment that proposes mitigation measures to be taken to resolve this concern. The Lessee shall provide the Realty Officer with copies of all documents pertaining to this issue.

(i) The Lessee shall use existing roads where practicable, and shall conduct activities employing wheel or track vehicles in such a manner as to minimize surface damage. The Lessee shall wash all tracked vehicles or equipment prior to their being mobilized to the Property. The Lessee shall promptly repair any road damage resulting from the Lessee's operations, restoring such road to its previous condition or to a condition acceptable to the Realty Officer. Where existing access roads across the Property are used principally by the Lessee, the Lessee shall construct surface-water control and drainage structures (culverts, water bars, or grade dips) on such roads to minimize erosion. Plans for such structures shall be included in all Exploration Plans and Mining Plans submitted to the Realty Officer pursuant to Articles XII “EXPLORATION PLAN” and XIII “MINING PLAN” hereof, respectively. The Lessee shall construct new roads and trails on the Property only at locations and to specifications approved in advance in writing by the Realty Officer or an authorized representative of the Realty Officer, and shall construct and maintain such roads and trails in a manner that will minimize channeling and other erosion. The Realty Officer's approval of plans for new access road construction, culverts, water bars, or grade dips will be guided by standards established by BLM or the U.S. Department of Agriculture—Forest Service (USFS), where appropriate.

(j) The Lessee shall conduct all operations so as to protect all natural resources and the environment including streams, lakes, ponds, waterholes, seeps, and marshes, and protect fish and wildlife resources as required by applicable statutes and regulations. The Lessee shall control all mine wastes, contaminants and pollutants, and sediments associated with stormwater runoff in accordance with existing regulations, and shall comply with all environmental regulations regarding discharge into, or degradation of water resources including streams,
springs, stock waters, or groundwater. The Lessee shall not use water from any water source without the written consent of the person having the rights to the use of such water source.

(k) Lessee shall keep the clearing of timber, stumps and snags, and any ground cover to a minimum consistent with the conduct of exploration, development, and mining activities approved hereunder. The Lessee shall abide by any restrictions concerning the bulk removal of vegetation (primarily piñon pine) that are established by the Realty Officer. The Lessee shall use due care to avoid scarring or removal of vegetative ground cover in areas not involved in such operations. Open parks (areas where there is a grass, shrub, and/or sagebrush cover) shall be disturbed as little as possible. If the shrub or brush cover is too high and must be cleared, it shall be cleared at or above ground level. The Lessee shall return all disturbed areas to their original condition or a condition acceptable to the Realty Officer promptly after damage to such areas has occurred and operations under this Lease are no longer being conducted in the disturbed areas.

(l) The Lessee agrees that all underground mine openings shall be supported by pillars, timber, or other ground support devices approved by the Federal or state agencies having jurisdiction over such underground workings. The Lessee further agrees, during the term of this Lease, to substantially fence or permanently close all mine openings/portals, subsidence holes, surface excavations, or other workings resulting from the Lessee’s operation that may be considered hazardous to human health or the environment. Such protective measures shall be maintained in a proper and safe condition during the term of this Lease. Prior to abandoning operations, the Lessee shall submit a mine-site reclamation plan to the Realty Officer for approval. Such plan shall include the proposed method(s) of permanent closure for all mine openings/portals including shafts, adits, inclines/declines, ventilation shafts, and water discharge points. No underground workings or any part thereof shall be permanently abandoned and rendered inaccessible without the prior written approval of the Realty Officer. All mine-site reclamation shall be performed to the satisfaction of the Realty Officer in accordance with the approved reclamation plan.

(m) Surface drill holes and associated disturbances resulting from exploration or development activities shall be abandoned in accordance with existing regulations and in a manner that will protect the surface. All disturbed areas identified by the Lessee as not being needed for future operational activities shall be promptly reclaimed by the Lessee. The Realty Officer, by written notice to the Lessee, shall designate any other areas where reclamation must be undertaken as a result of disturbances caused by the Lessee’s operations.

(n) If antiquities or other objects of historic or scientific interest, including but not limited to historic or prehistoric features or ruins, artifacts, or vertebrate fossils are discovered by the Lessee in the performance of operations under this Lease, the Lessee shall cease operations in the vicinity of such discovery and immediately take appropriate steps to protect and save such objects of historic or scientific interest and shall notify the Realty Officer of such discovery. The Realty Officer shall assess the values involved and prescribe such protective measures as deemed necessary.
(o) The Lessee shall make every effort to prevent, control, or suppress any fire in the operating area and to report any uncontrolled fire to the appropriate BLM or USFS official, as designated by the Realty Officer.

(p) The Lessee shall provide detailed haul route information to the Realty Officer for review prior to commencement of any haul activities. The haul route information shall include, at a minimum, expected routes from the mine site to the proposed mill or other facility accepting material from the mine, expected number of trucks per day, size and approximate weights of the ore being shipped, and expected production rates and mining life timeframes. It is expected that the Lessee will utilize only the specified routing. The lessee shall notify the Realty Officer of any significant changes to the haul route plan.

(q) The Lessee shall comply with Colorado State Access Code Section 43-2-147(4), C.R.S., and Section 24-4-103., C.R.S., effective 8/31/98. Pursuant to said code, the Lessee may be required to participate in a Highway Access Pre-Consultation meeting with DOE and the Colorado Department of Transportation after the completion and submittal to DOE of the approved permit from the Colorado MLRB. The details provided within the Mining Plan and permit, and the information provided under paragraph (p) above shall be used to determine the need for the Pre-Consultation meeting and to determine the potential impacts to county and state roads, highways and intersections from the Lessee’s operations, and any resulting mitigation requirements from these impacts. Any revisions or amendments to the permit, or any conversion from one permit type to another approved by the Colorado MLRB shall also be provided to the Realty Officer. The permit revision, modification or conversion may be used to determine any additional impacts to the county roads or state highways from the Lessee’s operations, and any resulting mitigation requirements from these additional impacts. Access permits required under this requirement shall be provided to the Realty Officer.

(r) The Lessee shall attend and participate in meetings between DOE and other Federal, state, and local agencies, as required.
EXPLORATION PLAN FORMAT

It is not DOE’s intent to require the Lessee to prepare multiple documents for submittal to the appropriate agencies for review and approval. Consequently, at the Lessee's discretion, a copy of the “Notice of Intent to Conduct Prospecting Operations” filed with the Colorado MLRB may be submitted to DOE for review and approval. That document will meet DOE’s requirement for submittal of an Exploration Plan providing it contains, at a minimum, the following information:

a. Map showing general area to be explored
   1. Tentative location of drill holes or other exploration activity
   2. Location of roads (existing and proposed)

b. Approximate starting date and duration of drilling

c. Drilling information
   1. Type of drilling and/or other exploration equipment
   2. Size of hole and core, if any, to be recovered
   3. Type of logging
   4. Target horizon and depth

d. Road construction necessary for exploration
   1. Location of roads and drill sites
   2. Measures to be taken for erosion control

e. Abandonment
   1. Procedures for plugging drill holes including the disposition of drill hole cuttings
   2. Surface restoration (grading, revegetation, erosion control measures, etc.)

f. Provisions made to conform with existing state and federal regulations regarding control of fire, pollution of water and air, protection of other natural resources, and public health and safety, both during and upon abandonment of exploration activities

g. Specific measures to be taken to assure compliance with environmental and surface use stipulations of this Lease including the preparation of a site-specific environmental document that assures compliance with NEPA and other environmental regulations.
MINING PLAN FORMAT

It is not DOE’s intent to require the Lessee to prepare multiple documents for submittal to the appropriate agencies for review and approval. Consequently, at the Lessee’s discretion, a copy of the “Reclamation Permit Application” filed with the Colorado MLRB may be submitted to DOE for review and approval. That document will meet DOE’s requirement for submittal of a Mining Plan providing it contains, at a minimum, the following information:

a. Map showing location of:
   1. Ore body and proposed entry
   2. Any new roads required
   3. Mine plant and associated structures and facilities
   4. Waste dumps and ore storage areas

b. Mining
   1. Initial development plans
      A. Type of entry and haulage method proposed
      B. Stoping method
      C. Estimated rate of daily ore production and mine-life expectations
      D. Provisions to handle mine water
   2. Proposed ventilation and radiation control methods

c. Surface Plant
   1. Buildings, utility lines, and storage/stockpile areas
   2. Sewage and refuse disposal
   3. Compliance with any applicable county planning and zoning regulations
   4. Compliance with EPA stormwater discharge regulations

d. Surface restoration plans
   1. Topsoil removal and storage
   2. Grading and backfilling
3. Control of stormwater runoff

4. Revegetation (if required)

e. Abandonment

1. Permanent closure of all mine openings/portals resulting from, or utilized during, the Lessee’s operations.

2. Removal of structures and associated features

3. Disposition of mine wastes (contouring, leveling, use for backfill, etc.)

f. Provisions made to conform with existing state and federal regulations regarding control of fire, pollution of water and air, protection of other natural resources, and public health and safety, both during and upon abandonment of mining activities.

g. Specific measures to be taken to assure compliance with environmental and surface use stipulations of the Lease including the preparation of a site-specific environmental document that assures compliance with NEPA and other environmental regulations.
APPENDIX B:

SUMMARY OF THE PUBLIC SCOPING PROCESS FOR THE ULP PEIS
This page intentionally left blank
APPENDIX B:

SUMMARY OF THE PUBLIC SCOPING PROCESS FOR THE ULP PEIS

B.1 INTRODUCTION AND BACKGROUND

The U.S. Department of Energy (DOE) issued the Notice of Intent (NOI) to prepare the Uranium Leasing Program (ULP) Programmatic Environmental Impact Statement (PEIS) on June 21, 2011 (see Volume 76 of the Federal Register: 76 FR 36098). It issued a supplemental notice on July 21, 2011 (76 FR 43678) that announced four public scoping meetings and extended the scoping period through September 9, 2011.

The issuance of the NOI marked the start of the National Environmental Policy Act (NEPA) process for the ULP PEIS that includes opportunities for public participation. This appendix presents a summary of the comments that were received during the scoping period of June 21 through September 9, 2011, for consideration in preparing the Draft PEIS. All comments, regardless of how they were submitted, were given equal consideration in the development of this Draft ULP PEIS.

B.2 SCOPING PROCESS

The NOI and the supplemental notice identified three methods by which the public could provide scoping comments or suggestions for the scope of the ULP PEIS:

• In person at public scoping meetings;
• By electronic mail (e-mail) and regular mail; and
• By electronic comment submittal through the project web site.

DOE conducted scoping meetings for the ULP PEIS at the four locations and on the dates shown in Table B-1. The number of people who attended these meetings is also presented in Table B-1. Meetings were held in Montrose, Naturita, and Telluride, Colorado, and in Monticello, Utah. Each meeting started at 5:30 with registration to provide oral comments, and a brief presentation was given by DOE at 7:00 p.m. In addition to presenting oral comments at the scoping meetings, stakeholders could also e-mail comments, send comments by mail, or could fill out a comment form at the scoping meetings or on the project web site (http://ulpeis.anl.gov/).

During the scoping period, a total of 287 unique comment documents were received from individuals, organizations, and government agencies that addressed the scope of the ULP PEIS. A “comment document” can be a written document (web form or comment form that was distributed at the scoping meetings or by mail), an e-mail submission, or an oral presentation given during a scoping meeting that provides comments on the scope and content of the ULP PEIS. A single comment document may contain multiple comments on one or more issues. There were 61 comment documents provided through the scoping meetings, 164 e-mails and letters, and
62 comment forms submitted through the project website. Among the 287 comment documents received, 8 were from Federal, state, or local government agencies; and the remainder were from individuals or other organizations. Comment documents were received from 13 states; however, approximately 88% of the comments were from Colorado communities or communities near the DOE ULP lease tracts.

B.3 SUMMARY OF SCOPING COMMENTS

All public scoping comments were reviewed and considered in determining the scope for this Draft ULP PEIS. Table B-2 summarizes the public scoping comments that were considered to be within the scope of the Draft ULP PEIS. Those that were considered outside the scope are summarized in Table B-3. The rationales for the determinations are also presented in both tables.

<table>
<thead>
<tr>
<th>Location</th>
<th>Date</th>
<th>No. in Attendance</th>
</tr>
</thead>
<tbody>
<tr>
<td>Montrose, Colorado</td>
<td>August 8, 2011</td>
<td>65</td>
</tr>
<tr>
<td>Telluride, Colorado</td>
<td>August 9, 2011</td>
<td>85</td>
</tr>
<tr>
<td>Naturita, Colorado</td>
<td>August 10, 2011</td>
<td>51</td>
</tr>
<tr>
<td>Monticello, Utah</td>
<td>August 11, 2011</td>
<td>1</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td></td>
<td>202</td>
</tr>
<tr>
<td>Public Scoping Comment</td>
<td>Rationale</td>
<td></td>
</tr>
<tr>
<td>------------------------</td>
<td>-----------</td>
<td></td>
</tr>
<tr>
<td><strong>1. Alternatives</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1A. Support for Alternative 1.</td>
<td>Alternative 1 is included in the range of reasonable alternatives that are evaluated in the Draft PEIS. Under this alternative, all the existing leases (there are 29) would be terminated, and reclamation would be completed on disturbed areas that remained on the lease tracts. DOE would continue to manage the withdrawn land but would not lease the land for uranium mining.</td>
<td></td>
</tr>
<tr>
<td>1B. Support for Alternative 5 because uranium is a clean nuclear energy source that can be mined safely. Some commenters urged DOE to continue the leasing program as it was before the preparation of the PEIS, arguing that companies and individuals should have the right to mine and produce uranium and vanadium just as companies extract coal and other resources such as natural gas.</td>
<td>Alternative 5 is included in the range of reasonable alternatives that are evaluated in the Draft PEIS. Under this alternative, all 31 lease tracts are evaluated for potential exploration, mine development and operations, and reclamation. The 29 leases that were signed in 2008 would have expired in 2018, but these leases have been placed on hold for the duration that it would take to complete this PEIS. The leases would be extended for a duration equivalent to the time taken to complete the PEIS (e.g., if 3 years were added, the end date for the leases would be 2021).</td>
<td></td>
</tr>
<tr>
<td>1C. Alternatives should include these: maintaining current withdrawals without issuing leases; expanding the lease program without issuing leases; issuing leases only on the previously active tracts for the purpose of reclamation; issuing fewer leases requiring interim reclamation; and requiring additional lease stipulations for protection of public lands.</td>
<td>Currently, 29 leases exist (this has been the case since 2008); however, a situation in which current withdrawals would be maintained without issuing leases would occur under Alternative 1. Reclamation that was needed and terminations of the 29 existing leases would also be done as part of Alternative 1. Current leases include adequate stipulations providing appropriate protection of public lands.</td>
<td></td>
</tr>
<tr>
<td>1D. An Alternative that stipulates protection of the Dolores River and San Miguel River watersheds. Lease tracts in the Dolores River Canyon should be withdrawn from the ULP (i.e., Slick Rock Lease Tracts 13, 13A, and 14).</td>
<td>Leases for Lease Tracts 13 and 13A have been in existence since 1974 and still currently exist. Lease Tract 14 (Tracts 14-1, 14-2, and 14-3) is not presently leased. Future uranium mines on all three lease tracts would be expected to be at least 0.25 mi (0.40 km) from the Dolores River. As discussed in the rationale for 1C, Alternative 1 would result in the existing leases being terminated and the currently withdrawn lands being maintained by DOE without leasing for uranium mining.</td>
<td></td>
</tr>
<tr>
<td>1E. An Alternative to keep the lease tracts in place but to prohibit any further mining or exploration until reclamation has been completed on existing or old leases.</td>
<td>DOE believes that the range of reasonable alternatives evaluated in the Draft PEIS addresses this concern. Under Alternatives 1 and 2, the existing leases would be terminated, and reclamation would be conducted. In addition, all legacy mine sites located on the DOE lease tracts have been reclaimed.</td>
<td></td>
</tr>
<tr>
<td>1F. Vacate all leases and re-bid them with both a royalty component and a performance-based component.</td>
<td>DOE’s ULP incorporates a royalty component that is inherently performance-based. The option of terminating all leases is incorporated in Alternatives 1 and 2.</td>
<td></td>
</tr>
</tbody>
</table>
### TABLE B-2 (Cont.)

<table>
<thead>
<tr>
<th>Public Scoping Comment</th>
<th>Rationale</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>2. Impact Analysis</strong></td>
<td><strong>2A.</strong> Cultural resources must be adequately studied, documented, and protected. DOE is encouraged to work closely with local Native Americans familiar with surrounding anthropological resources and cultural artifacts. Archaeological surveys should be conducted where future mining and disturbances might occur, and all recorded sites must be evaluated for significance. An antiquities preservation plan should be prepared for unavoidable impacts.</td>
</tr>
<tr>
<td></td>
<td><strong>2B.</strong> Consider negative impacts on tourism, recreation, and property values, and the overall impact on the local economy and land use in surrounding communities. There is concern that uranium mining could create a boom-and-bust economy.</td>
</tr>
<tr>
<td></td>
<td><strong>2C.</strong> Estimate the number and types of jobs to be created under each alternative, and how each alternative might affect the number of employees needed from outside the region. The concern is that uranium mining would not provide many jobs, and that those jobs would be available only for the short term.</td>
</tr>
<tr>
<td></td>
<td><strong>2D.</strong> Evaluate impacts of uranium mining on water quality. Many commenters were concerned with the impacts on downstream water users. They thought that downstream water quality should be included in the impact analysis, and that water use for uranium mining and milling should be included in the analysis.</td>
</tr>
<tr>
<td></td>
<td><strong>2E.</strong> Include best management practices (BMPs) to minimize stormwater runoff as well as a mitigation measure that would require all vent shafts to be grouted where they intercept aquifers.</td>
</tr>
<tr>
<td>Public Scoping Comment</td>
<td>Rationale</td>
</tr>
<tr>
<td>------------------------</td>
<td>-----------</td>
</tr>
<tr>
<td>2F. Provide description of uranium mining activities and a realistic estimate of activities that will occur on lease tracts until the end of the 10-year time frame.</td>
<td>Since project-specific mine plans were not available prior to the start of the preparation of this Draft ULP PEIS, existing information based on current permits was augmented with reasonable assumptions to simulate realistic but upper-bound mining scenarios (covering, for example, how many mines would operate at the same time, the size of the mines, tonnage produced per mine, amount of water used, number of workers, and types of equipment used). These assumptions provided the basis for the impacts evaluation discussed in Chapter 4 of this Draft PEIS, providing reasonable upper-bound estimates for consideration. These assumptions are discussed in Chapter 2 of this Draft PEIS.</td>
</tr>
<tr>
<td>2G. DOE should undertake its duties under Section 7 of the Endangered Species Act (ESA). The PEIS must fully address impacts on native fish, on aquatic species and riparian habitat, and on the river corridor. The PEIS should exclude development on all designated critical habitat areas. Species downstream from the lease tracts on the Colorado River should be included in the analysis of biological resources. The PEIS should fully survey the area for rare and imperiled species and should include an ecosystems services analysis of the Dolores River watershed.</td>
<td>DOE is engaged in consultation with the USFWS per Section 7 of the ESA. A biological assessment is also being prepared as part of this consultation. This Draft ULP PEIS evaluates potential impacts on ecological resources in the area of the lease tracts, as well as on the threatened and endangered species identified through consultation with the USFWS.</td>
</tr>
<tr>
<td>2H. Include impacts from the release of radioactive and other toxic materials into the atmosphere from mining and milling operations.</td>
<td>The Draft ULP PEIS addresses the potential impacts from the release of material associated with the ore production. The potential impacts of milling operations are outside the scope of the proposed action but are addressed as part of the cumulative impacts analysis in Section 4.7.</td>
</tr>
<tr>
<td>2I. Evaluate the amount of disturbed land that will be a source of increased fugitive dust. There is high potential for air toxicity affecting a widespread area as a result of any weather events that would involve high winds over a dry desert. DOE should identify air emissions, evaluate adverse National Ambient Air Quality Standards (NAAQS) impacts on any Federal Class I or sensitive Class II areas (Colorado National Monument), and include plans to control dust.</td>
<td>The analyses for air quality included in Sections 4.1.1, 4.2.1, 4.3.1, 4.4.1, and 4.5.1 of this Draft ULP PEIS address this concern.</td>
</tr>
<tr>
<td>2J. Evaluate impacts from the release of radon gas and radioactive particulates from mine openings and radon vents; also determine the emissions from mine operations and the impacts on air, climate change, soils, water, and vegetation.</td>
<td>The analysis for potential human health impacts addresses potential impacts from radon gas and uranium on workers and members of the general public within a 50-mi (80-km) radius based on the maximum distance that models allow for deriving dose estimates. Potential impacts on air, climate change, soils, water, and vegetation are addressed in Chapter 4.</td>
</tr>
</tbody>
</table>
### TABLE B-2 (Cont.)

<table>
<thead>
<tr>
<th>Public Scoping Comment</th>
<th>Rationale</th>
</tr>
</thead>
<tbody>
<tr>
<td>2K. Address the long-term impacts on human health, livestock, and wildlife, including food sources, both locally and regionally, due to mining and milling activities. The PEIS must consider health effects of mining and milling, including cancer incidence, on the human population in towns neighboring the mining operation, workers, and local residents.</td>
<td>The analyses of impacts on human health and ecological resources (on livestock and wildlife) address the concern about potential impacts from mining operations. The analysis of human health impacts in Chapter 4 considers the population within a 50-mi (80-km) radius of the lease tract. The analysis for potential impacts on ecological resources addresses resources in the three counties that encompass the 31 lease tracts. The cumulative impacts evaluated in this Draft ULP PEIS (see Section 4.7) address a 50-mi (80-km) radius of the lease tracts and include the White Mesa and Piñon Ridge Mills.</td>
</tr>
<tr>
<td>2L. Describe the impacts from the increased use of area roads, as well as mitigation measures for traffic. The PEIS should evaluate potential adverse impacts on public health and safety, the risk of collisions with wildlife, and the effects on the environment from increased truck traffic that would pass through the Curecanti National Recreation Area. The PEIS should also analyze potential impacts of ore haul routes next to rivers and streams.</td>
<td>The analysis for transportation impacts from hauling ore from the DOE ULP lease tracts (including potential traffic impacts) is discussed in Chapter 4 of this Draft ULP PEIS. Measures to mitigate potential impacts from transportation are also summarized in Section 4.6. The analysis provides an estimate of the potential increase in the number of truck trips on the haul routes to the two mills (proposed Piñon Ridge Mill and the White Mesa Mill). Mitigation measures are discussed in Section 4.6 of this Draft PEIS. Any potential impacts on streams or rivers would result from an ore spill following a transportation accident, as discussed in Section 4.3.10.4 of this Draft ULP PEIS. The Cotter Corporation uranium mill in Cañon City, Colorado, is not discussed in this PEIS because it is currently inoperable, and Cotter Corporation has notified the Colorado Department of Public Health and Environment that the radioactive materials license for the mill will not be renewed. Accordingly, U.S. Highway 50, through the Curecanti National Recreation Area, is no longer an ore haulage route.</td>
</tr>
<tr>
<td>2M. Address the impacts from erosion by wind and rain runoff. The PEIS must identify, review, consider, and reference all state geological studies and U.S. Geological Survey (USGS) studies of the Uravan Mineral Belt and surrounding areas.</td>
<td>Potential erosion impacts are evaluated in this Draft ULP PEIS (see Sections 4.1.3.1, 4.1.3.2, 4.2.3, 4.3.3, and 4.4.3). Relevant USGS studies, reports, and papers were reviewed to support the discussion and analyses presented in this Draft PEIS.</td>
</tr>
<tr>
<td>2N. Consider the environmental sensitivity of Conservation Areas of the Colorado Natural Heritage Program, Areas of Critical Environmental Concern (ACECs), and Special Recreation Management Areas (SRMAs) in the Dolores River Canyon. Development in the three Wilderness Study Areas (WSAs) and 10 Citizen Wilderness Proposals in the affected area should be excluded. The PEIS should consider the views from the Dolores River Canyon at each lease location. There is a concern about the visual impacts that would result from ore trucks travelling along Highway 141, which has been designated the “Unaweep-Tabeguache Scenic and Historic Byway.”</td>
<td>The analysis for visual resources addresses the potential impacts on views from sensitive areas, such as the Dolores River Canyon and the Unaweep-Tabeguache Scenic and Historic Byway.</td>
</tr>
</tbody>
</table>
### TABLE B-2 (Cont.)

<table>
<thead>
<tr>
<th>Public Scoping Comment</th>
<th>Rationale</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>2O.</strong> Any aboveground equipment that makes noise louder than 75 dB that is located within 1 mi (1.6 km) of the Dolores River or any residence should be limited to operating only from 10 a.m. to 6 p.m. on weekdays, and all aboveground blasting anywhere should be limited to between 10 a.m. and 6 p.m. only on weekdays. The PEIS must assess the impacts of noise from intake and exhaust vent fans. The PEIS must include an assessment of the effects from noise on insects, birds, mammals, animal hunting habits, animal mating and reproduction, recreation, grazing, and human habitation.</td>
<td>Any mine plans that would be approved would include measures for mining activities to meet applicable Federal, state, and local requirements, including any requirements regarding noise. It is expected that most mining activities would occur during normal daytime work hours on weekdays. The analysis of potential noise impacts in Chapter 4 of this Draft PEIS addresses potential impacts from the equipment used, including impacts from intake and exhaust vent fans. The analysis for potential impacts on ecological resources also addresses noise. The responses of wildlife to noise would vary by species; the individual’s physiological or reproductive condition; distance; and the type, intensity, and duration of the disturbance. Excessive noise levels can alter wildlife habitat use and activity patterns (e.g., exacerbating fragmentation impacts), increase the animals’ stress levels, decrease their immune response, reduce reproductive success, increase predation risk, degrade communication, and cause hearing damage. Generally, deleterious physiological responses to noise occur at exposure levels of 55 to 60 dBA or more, although other potential impacts on wildlife would occur at lower levels. Noise levels tend to be lower than this exposure level at distances of more than 1,000 ft (300 m) from the noise source. With the exception of blasting, rock drilling, or pile driving, typical noise levels for heavy equipment range from 75 to 90 dBA at a distance of 50 ft (15 m). If only geometrical spreading and ground effects (among noise attenuation mechanisms) are considered, and if an upper range of 90 dBA is assumed, a noise level of 55 dBA would occur at about 1,100 ft (340 m) from the noise source.</td>
</tr>
<tr>
<td><strong>2P.</strong> Assess topsoil required for reclamation, assess gaps in reclamation soil requirements and availability, and determine the impacts if there was an insufficient amount of topsoil.</td>
<td>Mine plans are required to address reclamation procedures, and they address surface soil material needed for covering the waste-rock pile and other disturbed surfaces. The source of this top cover material is typically soil material removed from the lease tracts during the course of mine development and operations and retained on the site for subsequent use during the reclamation phase.</td>
</tr>
<tr>
<td><strong>2Q.</strong> Consider the proximity to the Dolores River and whether a 0.25-mi (0.40-km) buffer from the Dolores River and Calamity Creek should be supported. All water rights associated with the lease tracts should be considered in the PEIS, as well as a requirement for monitoring wells to be established around the perimeter of each lease tract.</td>
<td>Currently, a 0.25-mi (0.40-km) buffer from the Dolores River is being observed as far as the placement of new uranium mining operations on the DOE ULP lease tracts. The analysis for water resources in Chapter 4 focuses on the potential impacts on water quality, since the amount of water needed for the proposed action would be trucked onto the lease tracts and therefore supplied by the vendors used for this service. Requirements for monitoring wells and other requirements will be addressed by DOE and other regulatory agencies as mine plans are submitted for approval.</td>
</tr>
<tr>
<td>Public Scoping Comment</td>
<td>Rationale</td>
</tr>
<tr>
<td>------------------------</td>
<td>-----------</td>
</tr>
<tr>
<td>2R. Assess the practice of ore stockpiling at the lease tracts and its impacts. This should include the amount of stockpiled ore, the radioactive and nonradioactive constituents of the stockpiled ore, the estimated length of time the ore will remain at the sites, and environmental impacts.</td>
<td>The ore that would be generated is not expected to be stockpiled for a length of time that would adversely affect human health and the environment. The Colorado Division of Reclamation, Mining, and Safety (CDRMS) has a requirement that ore cannot be stockpiled for longer than 180 days. However, the continual existence of ore stockpiles during active mining operations is to be expected; it gives the mining companies and their ore transportation contractors flexibility to operate in an efficient manner.</td>
</tr>
</tbody>
</table>

3. Tribal Concerns

3A. Address any associated environmental and spiritual impacts on all downstream Native American Nations. Must engage in Section 106 consultation. | The consultation with the Colorado State Historic Preservation Officer (SHPO) with regard to cultural resources would be conducted when project-specific information was submitted by the lessees to DOE for review and approval. |

4. Policy and Regulatory Issues

4A. Adequate nuclear fuel supplies are available for the U.S. nuclear power industry for the foreseeable future. The development of western Colorado uranium reserves should be given a low priority until there is a clear need for a domestic nuclear fuel supply. | DOE has prepared this Draft ULP PEIS consistent with the purpose and need for agency action discussed in Chapter 1. |

4B. DOE should collaborate with other agencies, including the CDRMS, BLM, and EPA. | DOE is collaborating with various agencies, including the CDRMS, BLM, and EPA, on this PEIS process. Section 1.9 presents a list of the cooperating agencies and the commenting agencies. |

4C. There is a lack of oversight and safeguards, and penalties to companies are not high enough to assure environmental compliance or adherence to current safety laws on reclamation. | DOE’s approval of mine plans would be contingent on the fact that these plans contained appropriate and adequate measures for the protection of human health and the environment. The leases specify conditions that must be met by the lessees. |

4D. The PEIS is redundant and repeats the efforts of numerous other environmental assessments performed by both private mining companies and governmental agencies in or adjacent to the DOE lease tracts. | DOE has prepared this Draft PEIS consistent with the purpose and need for agency action discussed in Chapter 1. This Draft ULP PEIS addresses the range of reasonable alternatives for the management of the DOE ULP consistent with NEPA requirements. |

4E. Local governments requested that affected counties be given an opportunity to meet with DOE separately from the public scoping meetings that were held. | DOE invited the Montrose, Mesa, San Miguel, and San Juan County Commissions to participate as cooperating agencies for the preparation of this PEIS, and they agreed. |
4F. Requests were received to hold meetings in other locations, such as Cañon City, Gateway, and Grand Junction, as well as with the White Mesa Ute Indian Community and in Blanding, Utah.

4G. The review and approval process should include a project-specific NEPA review for each proposed mining operation. The PEIS should include site-specific mitigation measures in addition to general mitigation measures.

4H. Include a history of the compliance of existing lease holders with their lease agreements and applicable statutes and regulations. It should also include DOE or BLM lease and mine inspection reports.

5. Mining Methods

5A. In assessing the environmental impacts, the PEIS should consider what traditional mining methods or other methods should be used (e.g., should both the in-situ leaching and the in-situ recovery methods be allowed, or should the method used be limited to one or the other?).

6. Uranium Resources

6A. Most of the uranium resources in the Colorado Plateau province of western Colorado are located in sedimentary strata, where the distribution of ore is scattered and patchy. This results in large volumes of low-grade radioactive mine waste.

<table>
<thead>
<tr>
<th>Public Scoping Comment</th>
<th>Rationale</th>
</tr>
</thead>
<tbody>
<tr>
<td>4F. Requests were received to hold meetings in other locations, such as Cañon City, Gateway, and Grand Junction, as well as with the White Mesa Ute Indian Community and in Blanding, Utah.</td>
<td>Public comment hearings for the Draft ULP PEIS will be held in Grand Junction in addition to Montrose, Naturita, and Telluride, Colorado. It is felt that public hearings at these four locations would provide the interested members of the public adequate opportunities to participate in a meeting format with regard to accessibility of venues and proximity to where interested members of the public reside.</td>
</tr>
<tr>
<td>4G. The review and approval process should include a project-specific NEPA review for each proposed mining operation. The PEIS should include site-specific mitigation measures in addition to general mitigation measures.</td>
<td>Section 1.6 of this Draft ULP PEIS contains a discussion of the NEPA process that would be conducted once project-specific mine plans were submitted by the lessees to DOE for approval. Measures that could be implemented to minimize potential impacts are summarized in Section 4.6. Site-specific and project-specific mitigative measures would be specified in the approved mine plans and associated documentation.</td>
</tr>
<tr>
<td>4H. Include a history of the compliance of existing lease holders with their lease agreements and applicable statutes and regulations. It should also include DOE or BLM lease and mine inspection reports.</td>
<td>A summary of the mining history that has occurred on the DOE ULP lease tracts is provided in this Draft ULP PEIS in Chapter 1. DOE enforces the requirements stipulated in the leases, and to date, no outstanding issues exist.</td>
</tr>
<tr>
<td>5A. In assessing the environmental impacts, the PEIS should consider what traditional mining methods or other methods should be used (e.g., should both the in-situ leaching and the in-situ recovery methods be allowed, or should the method used be limited to one or the other?).</td>
<td>This Draft PEIS evaluated underground and surface open-pit mining methods. The in-situ leaching method was not evaluated because it is not considered to be a viable option due to the location of the ore in “dry” sedimentary strata (see 6A below).</td>
</tr>
<tr>
<td>6A. Most of the uranium resources in the Colorado Plateau province of western Colorado are located in sedimentary strata, where the distribution of ore is scattered and patchy. This results in large volumes of low-grade radioactive mine waste.</td>
<td>The location of ore described (i.e., in sedimentary strata) is precisely why the underground mining method and, to a lesser extent, the surface open-pit method are more practical methods for extracting the ore. These methods do result in waste rock (material that contains less than 0.05% of uranium) that is partially placed back into the mine workings (if groundwater is demonstrated to be not an issue) or reclaimed as a pile that is contoured to be consistent with its surroundings, covered with available topsoil material, and seeded (or revegetated). This approach has been proven to be an acceptable and protective means of managing the waste rock that is an unavoidable by-product of uranium mining.</td>
</tr>
</tbody>
</table>
TABLE B-3  Public Scoping Issues Considered To Be Outside the Scope of the ULP PEIS

<table>
<thead>
<tr>
<th>Public Scoping Comment</th>
<th>Rationale</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Alternatives</td>
<td></td>
</tr>
<tr>
<td>1A. Because of unstable uranium markets and the uncertainty regarding future commercial development of nuclear power facilities, uranium should be preserved for the future use of the American people until it becomes critical for national strategic energy purposes.</td>
<td>The timing for when uranium mining should be conducted for the purposes described does not meet the purpose and need for DOE’s action.</td>
</tr>
<tr>
<td>1B. Investigate the economic feasibility of renewable and alternative energy development.</td>
<td>The evaluation of renewable and alternative energy development does not meet the purpose and need for DOE’s action described in Chapter 1 of this Draft PEIS.</td>
</tr>
<tr>
<td>1C. Include an alternative that requires old, inactive, and/or abandoned mines to be reclaimed before new leases are granted or any new mines are established.</td>
<td>DOE has reclaimed all abandoned mines within its purview. The 29 leases that currently exist have been in place since 2008, and all mining activities are currently on-hold until the completion of this PEIS process.</td>
</tr>
<tr>
<td>1D. Analyze a no-action alternative that would allow the 1995 leases to lapse with no reclamation conducted.</td>
<td>The option of not performing reclamation when leases lapse or are terminated is not consistent with the requirements of the leases, the ULP, or applicable laws.</td>
</tr>
<tr>
<td>1E. Incorporate into the reclamation goals or standards the option of developing brownfields at some mines, so that the reclaimed land can be used for renewable energy production.</td>
<td>The development of brownfields is outside the scope of this Draft ULP PEIS. It does not respond to the purpose and need for DOE’s action described in Chapter 1.</td>
</tr>
<tr>
<td>2. Impacts Analysis</td>
<td></td>
</tr>
<tr>
<td>2A. Analyze the economic benefits of fully reclaiming and rehabilitating all Federal and state lands in the Uravan Mineral Belt and compare that to the economic benefit of maintaining the existing uranium leases over the next 5 years.</td>
<td>The economic studies suggested are outside the scope of this Draft ULP PEIS. They do not respond to the purpose and need for DOE’s action described in Chapter 1.</td>
</tr>
<tr>
<td>2B. Analyze the costs to local and state governments to develop and maintain roads and develop and operate other infrastructure to support any future increase in uranium mining and milling activities.</td>
<td>An analysis of the costs to local and state governments to maintain roads to support an increase in uranium mining activities has not been included. However, the evaluation in the Draft ULP PEIS for transportation included discussion on potential traffic congestion, radiological impacts, and accident injuries and fatalities. It does not meet the purpose and need for DOE’s action described in Chapter 1.</td>
</tr>
<tr>
<td>2C. A market analysis should be conducted to determine how much uranium should be put on the market now versus in the future, when prices might be higher.</td>
<td>Conducting a market analysis to determine the optimal time for uranium ore to be generated relative to uranium ore prices is outside the scope of this Draft PEIS. It does not respond to the purpose and need for DOE’s action described in Chapter 1.</td>
</tr>
</tbody>
</table>
APPENDIX C:

EMISSION INVENTORIES, COSTS, AND OTHER ESTIMATES
USED AS A BASIS FOR THE ULP PEIS IMPACT ANALYSES
APPENDIX C:

EMISSION INVENTORIES, COSTS, AND OTHER ESTIMATES 
USED AS A BASIS FOR THE ULP PEIS IMPACT ANALYSES

This appendix is a compilation of the emission inventories, cost assumptions and estimates, equipment and materials utilized, and workforce estimates used as the basis for the impact analyses conducted for the ULP PEIS. Estimates of waste volumes (other than those for the waste-rock piles) are also provided. Unless specified elsewhere, the level of effort (number of workers and worker hours), equipment and equipment hours, and cost estimates are based on RS Means construction data (RS Means 2009). Section C.1 presents information to support the analyses for the exploration phase. Sections C.2 and C.3 present similar information for the mine development and operations phase and the reclamation phase, respectively.

C.1 EXPLORATION

Under Alternatives 3 through 5, exploration activities are assumed to occur on the lease tracts being evaluated in the ULP PEIS. Under Alternative 3, Lease Tracts 5, 6, 7, 8, 9, 11, 13, 13A, 15, 18, 21, and 25 are evaluated for potential uranium exploration and mining. Leases for these lease tracts were held in 2007 by Gold Eagle Mining, Inc., and Cotter Corporation. Lease Tract 7 was composed of two tracts (7 and 7A) in 2007, but since then it has been combined into one lease tract. Hence, for the purposes of the ULP PEIS, Alternative 3 evaluates 12 lease tracts. Alternatives 4 and 5 evaluate all 31 lease tracts for potential future exploration and mining activities. Tables C.1-1 through C.1-9 tabulate various information developed for use as the basis for the impact analyses presented in Section 4 of the ULP PEIS.
### TABLE C.1-1 Number of Mines Considered per Mine Size and Alternative\(^a,b\)

<table>
<thead>
<tr>
<th>Mine Size</th>
<th>Alt. 3</th>
<th>Alt. 4</th>
<th>Alt. 5</th>
</tr>
</thead>
<tbody>
<tr>
<td>Small</td>
<td>2</td>
<td>6</td>
<td>0</td>
</tr>
<tr>
<td>Medium</td>
<td>4</td>
<td>10</td>
<td>16</td>
</tr>
<tr>
<td>Large</td>
<td>1</td>
<td>2</td>
<td>2</td>
</tr>
<tr>
<td>Very large</td>
<td>1</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>8</strong></td>
<td><strong>19</strong></td>
<td><strong>19</strong></td>
</tr>
</tbody>
</table>

\(^a\) Alternatives 1 and 2 are not presented in the table because they do not involve potential future mines to be developed.

\(^b\) The range in size and number of mines considered is based on past mining experience in the region (Cotter 2011a).

### TABLE C.1-2 Total Disturbed Acreage per Mine Size and Alternative during Exploration\(^a,b\)

<table>
<thead>
<tr>
<th>Mine Size</th>
<th>Alt. 3</th>
<th>Alt. 4</th>
<th>Alt. 5</th>
</tr>
</thead>
<tbody>
<tr>
<td>Small</td>
<td>0.11</td>
<td>0.33</td>
<td>0</td>
</tr>
<tr>
<td>Medium</td>
<td>0.44</td>
<td>1.10</td>
<td>1.76</td>
</tr>
<tr>
<td>Large</td>
<td>0.17</td>
<td>0.33</td>
<td>0.33</td>
</tr>
</tbody>
</table>

\(^a\) Alternatives 1 and 2 are not presented in the table because they do not involve potential future mines to be developed. The very large mine size is not considered for exploration because it is only used in reference to the existing open-pit mine on Lease Tract JD-7.

\(^b\) Based on a 20 × 60 ft drilling pad per borehole with two, four, and six exploratory boreholes assumed for each small, medium, and large mine, respectively.
### TABLE C.1-3 Assumed Workforce per Labor Category and Alternative during Exploration

<table>
<thead>
<tr>
<th>Labor Category</th>
<th>Alt. 3</th>
<th>Alt. 4</th>
<th>Alt. 5</th>
</tr>
</thead>
<tbody>
<tr>
<td>Foreman</td>
<td>2.4</td>
<td>5.9</td>
<td>7.0</td>
</tr>
<tr>
<td>Laborer</td>
<td>3.4</td>
<td>8.3</td>
<td>9.9</td>
</tr>
<tr>
<td>Equipment operator</td>
<td>2.0</td>
<td>4.8</td>
<td>5.7</td>
</tr>
<tr>
<td>Truck driver</td>
<td>0.1</td>
<td>0.3</td>
<td>0.3</td>
</tr>
<tr>
<td>Cement finisher</td>
<td>0.3</td>
<td>0.8</td>
<td>1.0</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>8.2</strong></td>
<td><strong>20.1</strong></td>
<td><strong>23.9</strong></td>
</tr>
</tbody>
</table>

*a* No exploration activities for Alternatives 1 and 2.

*b* Also assumed to operate equipment.
TABLE C.1-4  Assumed Total Costs per Alternative during Exploration<sup>a</sup>

<table>
<thead>
<tr>
<th>Cost Element</th>
<th>Alt. 3</th>
<th>Alt. 4</th>
<th>Alt. 5</th>
</tr>
</thead>
<tbody>
<tr>
<td>Drawings showing boring details</td>
<td>4,810</td>
<td>11,840</td>
<td>14,060</td>
</tr>
<tr>
<td>Report and recommendations from PE</td>
<td>10,790</td>
<td>26,560</td>
<td>31,540</td>
</tr>
<tr>
<td>Mobilization and demobilization</td>
<td>2,569</td>
<td>6,606</td>
<td>6,606</td>
</tr>
<tr>
<td>Mobilization and demobilization, over 500 mi</td>
<td>13,734</td>
<td>35,316</td>
<td>35,316</td>
</tr>
<tr>
<td>Air rotary drilling, 6-in.-diameter borehole, unconsolidated, depth of &gt;100 ft</td>
<td>397,667</td>
<td>978,873</td>
<td>1,162,411</td>
</tr>
<tr>
<td>Air rotary drilling, 6-in.-diameter borehole, consolidated, depth of &gt;100 ft</td>
<td>132,655</td>
<td>326,536</td>
<td>387,762</td>
</tr>
<tr>
<td>Air rotary drilling, 8-in.-diameter borehole, unconsolidated, depth of ≤100 ft</td>
<td>31,488</td>
<td>77,509</td>
<td>92,042</td>
</tr>
<tr>
<td>Air rotary drilling, 8-in.-diameter borehole, consolidated, depth of ≤100 ft</td>
<td>17,806</td>
<td>43,830</td>
<td>52,048</td>
</tr>
<tr>
<td>Casing for initial borehole</td>
<td>183,082</td>
<td>450,663</td>
<td>535,163</td>
</tr>
<tr>
<td>Sample collection during borehole advancement</td>
<td>522,285</td>
<td>1,285,624</td>
<td>1,526,679</td>
</tr>
<tr>
<td>Move drill rig around site</td>
<td>72,246</td>
<td>191,609</td>
<td>232,444</td>
</tr>
<tr>
<td>Drumming of drill cuttings</td>
<td>202,581</td>
<td>498,474</td>
<td>591,867</td>
</tr>
<tr>
<td>Decontamination of drill rig, etc.</td>
<td>1,809</td>
<td>4,453</td>
<td>5,288</td>
</tr>
<tr>
<td>Surface pads, concrete (3,000 lb/in.² or psi, 6-in.-thick concrete)</td>
<td>187,534</td>
<td>461,623</td>
<td>548,177</td>
</tr>
<tr>
<td><strong>Total direct costs</strong></td>
<td>1,781,057</td>
<td>4,399,517</td>
<td>5,221,404</td>
</tr>
<tr>
<td>Contractor’s overhead and profit (6%)</td>
<td>107,000</td>
<td>264,000</td>
<td>313,000</td>
</tr>
<tr>
<td>Subtotal contractor’s costs</td>
<td>1,888,057</td>
<td>4,663,517</td>
<td>5,534,404</td>
</tr>
<tr>
<td>Contractor’s bond (1%)</td>
<td>19,000</td>
<td>47,000</td>
<td>56,000</td>
</tr>
<tr>
<td><strong>Total contractor’s field costs</strong></td>
<td>1,907,057</td>
<td>4,710,517</td>
<td>5,590,404</td>
</tr>
<tr>
<td>Construction management (10%)</td>
<td>191,000</td>
<td>471,000</td>
<td>559,000</td>
</tr>
<tr>
<td><strong>Total field costs</strong></td>
<td>2,098,057</td>
<td>5,181,517</td>
<td>6,149,404</td>
</tr>
<tr>
<td>Architect/engineer costs (25%)</td>
<td>524,000</td>
<td>1,295,000</td>
<td>1,538,000</td>
</tr>
<tr>
<td>Subtotal</td>
<td>2,622,057</td>
<td>6,476,517</td>
<td>7,687,404</td>
</tr>
<tr>
<td>Program management (6%)</td>
<td>157,000</td>
<td>389,000</td>
<td>462,000</td>
</tr>
<tr>
<td><strong>Total exploration costs</strong></td>
<td>2,779,000</td>
<td>6,866,000</td>
<td>8,149,000</td>
</tr>
</tbody>
</table>

<sup>a</sup> Exploration activities were assumed to be completed within a 1-year time frame.
<table>
<thead>
<tr>
<th>Items Assumed</th>
<th>Small</th>
<th>Medium</th>
<th>Large</th>
<th>Very Large</th>
</tr>
</thead>
<tbody>
<tr>
<td>Alternative 3</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Truck, highway, 24,500 GVW, b 4×2, 2-axle</td>
<td>214</td>
<td>874</td>
<td>324</td>
<td>0</td>
</tr>
<tr>
<td>Flatbed, 8×16 ft</td>
<td>214</td>
<td>862</td>
<td>322</td>
<td>0</td>
</tr>
<tr>
<td>Front-end loader, wheeled, 2.5-yd³ capacity</td>
<td>193</td>
<td>772</td>
<td>290</td>
<td>0</td>
</tr>
<tr>
<td>Gas engine, vibrator</td>
<td>221</td>
<td>882</td>
<td>331</td>
<td>0</td>
</tr>
<tr>
<td>Water truck</td>
<td>104</td>
<td>416</td>
<td>156</td>
<td>0</td>
</tr>
<tr>
<td>Driller/auger</td>
<td>111</td>
<td>452</td>
<td>168</td>
<td>0</td>
</tr>
<tr>
<td>Cement truck</td>
<td>141</td>
<td>561</td>
<td>211</td>
<td>0</td>
</tr>
<tr>
<td>Alternative 4</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Truck, highway, 24,500 GVW, 4×2, 2-axle</td>
<td>654</td>
<td>2,192</td>
<td>654</td>
<td>0</td>
</tr>
<tr>
<td>Flatbed, 8×16 ft</td>
<td>646</td>
<td>2,159</td>
<td>646</td>
<td>0</td>
</tr>
<tr>
<td>Front-end loader, wheeled, 2.5-yd³ capacity</td>
<td>579</td>
<td>1,930</td>
<td>579</td>
<td>0</td>
</tr>
<tr>
<td>Gas engine, vibrator</td>
<td>661</td>
<td>2,203</td>
<td>661</td>
<td>0</td>
</tr>
<tr>
<td>Water truck</td>
<td>312</td>
<td>1,039</td>
<td>312</td>
<td>0</td>
</tr>
<tr>
<td>Driller/auger</td>
<td>339</td>
<td>1,135</td>
<td>339</td>
<td>0</td>
</tr>
<tr>
<td>Cement truck</td>
<td>421</td>
<td>1,401</td>
<td>421</td>
<td>0</td>
</tr>
<tr>
<td>Alternative 5</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Truck, highway, 24,500 GVW, 4×2, 2-axle</td>
<td>0</td>
<td>3,511</td>
<td>654</td>
<td>0</td>
</tr>
<tr>
<td>Flatbed, 8×16 ft</td>
<td>0</td>
<td>3,456</td>
<td>646</td>
<td>0</td>
</tr>
<tr>
<td>Front-end loader, wheeled, 2.5-yd³ capacity</td>
<td>0</td>
<td>3,087</td>
<td>579</td>
<td>0</td>
</tr>
<tr>
<td>Gas engine, vibrator</td>
<td>0</td>
<td>3,525</td>
<td>661</td>
<td>0</td>
</tr>
<tr>
<td>Water truck</td>
<td>0</td>
<td>1,661</td>
<td>312</td>
<td>0</td>
</tr>
<tr>
<td>Driller/auger</td>
<td>0</td>
<td>1,817</td>
<td>339</td>
<td>0</td>
</tr>
<tr>
<td>Cement truck</td>
<td>0</td>
<td>2,241</td>
<td>421</td>
<td>0</td>
</tr>
</tbody>
</table>

Exploration activities were assumed to be completed within a 1-year time frame.

GVW = gross vehicle weight.
<table>
<thead>
<tr>
<th>Items Assumed</th>
<th>Small</th>
<th>Medium</th>
<th>Large</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Alternative 3</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Diesel fuel (gal)</td>
<td>12,000</td>
<td>49,000</td>
<td>18,000</td>
<td>79,000</td>
</tr>
<tr>
<td>Oil and grease (gal)</td>
<td>300</td>
<td>1,100</td>
<td>400</td>
<td>1,800</td>
</tr>
<tr>
<td>Water (gal)</td>
<td>12,000</td>
<td>49,000</td>
<td>18,000</td>
<td>79,000</td>
</tr>
<tr>
<td>55-gal drums (each)</td>
<td>385</td>
<td>1,539</td>
<td>577</td>
<td>2,501</td>
</tr>
<tr>
<td>Concrete (yd³)</td>
<td>90</td>
<td>360</td>
<td>130</td>
<td>580</td>
</tr>
<tr>
<td>Alternative 4</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Diesel fuel (gal)</td>
<td>37,000</td>
<td>124,000</td>
<td>37,000</td>
<td>198,000</td>
</tr>
<tr>
<td>Oil and grease (gal)</td>
<td>800</td>
<td>2,700</td>
<td>800</td>
<td>4,300</td>
</tr>
<tr>
<td>Water (gal)</td>
<td>37,000</td>
<td>121,000</td>
<td>37,000</td>
<td>195,000</td>
</tr>
<tr>
<td>55-gal drums (each)</td>
<td>1,154</td>
<td>3,846</td>
<td>1,154</td>
<td>6,154</td>
</tr>
<tr>
<td>Concrete (yd³)</td>
<td>270</td>
<td>890</td>
<td>270</td>
<td>1,430</td>
</tr>
<tr>
<td>Alternative 5</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Diesel fuel (gal)</td>
<td>0</td>
<td>198,000</td>
<td>37,000</td>
<td>235,000</td>
</tr>
<tr>
<td>Oil and grease (gal)</td>
<td>0</td>
<td>4,400</td>
<td>800</td>
<td>5,200</td>
</tr>
<tr>
<td>Water (gal)</td>
<td>0</td>
<td>194,000</td>
<td>37,000</td>
<td>231,000</td>
</tr>
<tr>
<td>55-gal drums (each)</td>
<td>0</td>
<td>6,153</td>
<td>1,154</td>
<td>7,307</td>
</tr>
<tr>
<td>Concrete (yd³)</td>
<td>0</td>
<td>1,420</td>
<td>270</td>
<td>1,690</td>
</tr>
</tbody>
</table>

a Exploration activities were assumed to be completed within a 1-year time frame.
## TABLE C.1-7  Assumed Annual Air Emissions on an Individual Mine Basis during Exploration\(^a\)

<table>
<thead>
<tr>
<th>Criteria Pollutant</th>
<th>Small</th>
<th>Medium</th>
<th>Large</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total hydrocarbons (THC)</td>
<td>0.1</td>
<td>0.2</td>
<td>0.2</td>
</tr>
<tr>
<td>Reactive organic compounds (ROCs)</td>
<td>0.1</td>
<td>0.1</td>
<td>0.2</td>
</tr>
<tr>
<td>Nitrogen oxides (NO(_x))</td>
<td>0.6</td>
<td>1.2</td>
<td>1.8</td>
</tr>
<tr>
<td>Sulfur dioxide (SO(_2))</td>
<td>0.1</td>
<td>0.1</td>
<td>0.2</td>
</tr>
<tr>
<td>Carbon monoxide (CO)</td>
<td>0.3</td>
<td>0.5</td>
<td>0.8</td>
</tr>
<tr>
<td>Total suspended particulates (TSP)</td>
<td>0.1</td>
<td>0.2</td>
<td>0.3</td>
</tr>
<tr>
<td>Particulate matter ≤10 (\mu)m (PM(_{10}))(^b)</td>
<td>0.1</td>
<td>0.2</td>
<td>0.3</td>
</tr>
<tr>
<td>Particulate matter ≤2.5 (\mu)m (PM(_{2.5}))(^c)</td>
<td>0.1</td>
<td>0.1</td>
<td>0.2</td>
</tr>
<tr>
<td>Carbon dioxide (CO(_2))(^d)</td>
<td>68.6</td>
<td>138</td>
<td>206</td>
</tr>
</tbody>
</table>

\(^a\) The latest emission factors were taken from the U.S. Environmental Protection Agency’s (EPA’s) WebFIRE application located at http://cfpub.epa.gov/webfire/.

\(^b\) Assumes that the construction emission factor for fugitive dust PM\(_{10}\) is 0.22 ton/acre-mo (average conditions) (SCAQMD 2007).

\(^c\) Assumes that 21% of fugitive dust PM\(_{10}\) is PM\(_{2.5}\) and that 89% of combustion PM\(_{10}\) is PM\(_{2.5}\) (SCAQMD undated).

\(^d\) The CO\(_2\) emission factor for diesel fuel was taken from EPA (2008).
### TABLE C.1-8 Assumed Total Air Emissions during Exploration\(^a\)

<table>
<thead>
<tr>
<th>Criteria Pollutant</th>
<th>Alt. 3</th>
<th>Alt. 4</th>
<th>Alt. 5</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total hydrocarbons (THC)</td>
<td>2.2</td>
<td>5.4</td>
<td>6.5</td>
</tr>
<tr>
<td>Reactive organic compounds (ROCs)</td>
<td>2.1</td>
<td>5.2</td>
<td>6.2</td>
</tr>
<tr>
<td>Nitrogen oxides (NO(_x))</td>
<td>17</td>
<td>43</td>
<td>51</td>
</tr>
<tr>
<td>Sulfur dioxide (SO(_2))</td>
<td>2.0</td>
<td>4.8</td>
<td>5.7</td>
</tr>
<tr>
<td>Carbon monoxide (CO)</td>
<td>7.4</td>
<td>18.3</td>
<td>21.7</td>
</tr>
<tr>
<td>Total suspended particulates (TSP)</td>
<td>2</td>
<td>5</td>
<td>5</td>
</tr>
<tr>
<td>Particulate matter ≤10 µm (PM(_{10}))(^b)</td>
<td>2</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>Particulate matter ≤2.5 µm (PM(_{2.5}))(^c)</td>
<td>1</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>Carbon dioxide (CO(_2))(^d)</td>
<td>2,192</td>
<td>5,415</td>
<td>6,432</td>
</tr>
</tbody>
</table>

\(^a\) The latest emission factors were taken from the EPA’s WebFIRE application located at http://cfpub.epa.gov/webfire/.

\(^b\) Assumes that the construction emission factor for fugitive dust PM\(_{10}\) is 0.22 ton/acre-mo (average conditions) (SCAQMD 2007).

\(^c\) Assumes that 21% of fugitive dust PM\(_{10}\) is PM\(_{2.5}\) and that 89% of combustion PM\(_{10}\) is PM\(_{2.5}\) (SCAQMD undated).

\(^d\) The CO\(_2\) emission factor for diesel fuel was taken from EPA (2008).

### TABLE C.1-9 Wastes Generated per Alternative during Exploration

<table>
<thead>
<tr>
<th>Waste Category</th>
<th>Alt. 3</th>
<th>Alt. 4</th>
<th>Alt. 5</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sanitary(^a)</td>
<td>33,000</td>
<td>81,000</td>
<td>97,000</td>
</tr>
<tr>
<td>Other</td>
<td>15,000</td>
<td>36,000</td>
<td>43,000</td>
</tr>
</tbody>
</table>

\(^a\) Amount of sanitary waste was estimated based on the total exploration workforce.
C.2 MINE DEVELOPMENT AND OPERATIONS

Tables C.2-1 through C.2-16 tabulate various information developed for use as the basis for the impact analyses presented in Section 4 of the ULP PEIS.

**TABLE C.2-1  Estimated Material Amounts and Labor Time per Mine Size during Development**

<table>
<thead>
<tr>
<th>Cost Element</th>
<th>Small</th>
<th>Medium</th>
<th>Large</th>
<th>Very Large</th>
</tr>
</thead>
<tbody>
<tr>
<td>Labor (person-hours)</td>
<td>5,015</td>
<td>7,584</td>
<td>11,500</td>
<td>14,671</td>
</tr>
<tr>
<td>Steel (tons)</td>
<td>400</td>
<td>528</td>
<td>695</td>
<td>816</td>
</tr>
<tr>
<td>Lumber (1,000 board feet)</td>
<td>92</td>
<td>120</td>
<td>153</td>
<td>177</td>
</tr>
<tr>
<td>Fuel (gal)</td>
<td>4,981</td>
<td>7,663</td>
<td>11,494</td>
<td>14,559</td>
</tr>
<tr>
<td>Lubricant (gal)</td>
<td>1,250</td>
<td>1,750</td>
<td>2,750</td>
<td>3,500</td>
</tr>
<tr>
<td>Explosives (tons)</td>
<td>186</td>
<td>249</td>
<td>333</td>
<td>395</td>
</tr>
<tr>
<td>Electricity (kWh)</td>
<td>41,000</td>
<td>61,000</td>
<td>102,000</td>
<td>132,000</td>
</tr>
</tbody>
</table>

**TABLE C.2-2  Estimated Materials and Labor Time per Alternative during Development**

<table>
<thead>
<tr>
<th>Cost Element</th>
<th>Alt. 3</th>
<th>Alt. 4</th>
<th>Alt. 5</th>
</tr>
</thead>
<tbody>
<tr>
<td>Labor (person-hours)</td>
<td>67,000</td>
<td>144,000</td>
<td>159,000</td>
</tr>
<tr>
<td>Steel (tons)</td>
<td>4,400</td>
<td>9,900</td>
<td>10,600</td>
</tr>
<tr>
<td>Lumber (1,000 board feet)</td>
<td>1,000</td>
<td>2,200</td>
<td>2,400</td>
</tr>
<tr>
<td>Fuel (gal)</td>
<td>67,000</td>
<td>144,000</td>
<td>159,000</td>
</tr>
<tr>
<td>Lubricant (gal)</td>
<td>16,000</td>
<td>35,000</td>
<td>38,000</td>
</tr>
<tr>
<td>Explosives (tons)</td>
<td>2,100</td>
<td>4,700</td>
<td>5,000</td>
</tr>
<tr>
<td>Electricity (kWh)</td>
<td>580,000</td>
<td>1,232,000</td>
<td>1,375,000</td>
</tr>
</tbody>
</table>
### TABLE C.2-3  Number of Workers per Mine Size and Worker Salary per Labor Category

<table>
<thead>
<tr>
<th>Labor Category</th>
<th>No. of Workers per Mine Size</th>
<th>Individual Annual Salary with Overhead and Profit ($)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mine workers</td>
<td>6 10 16 50</td>
<td>81,250</td>
</tr>
<tr>
<td>Mechanic</td>
<td>0.1 0.1 0.1 0.1</td>
<td>81,250</td>
</tr>
<tr>
<td>Geologist</td>
<td>0.1 0.1 0.1 0.1</td>
<td>137,500</td>
</tr>
<tr>
<td>Surveyor</td>
<td>0.1 0.1 0.1 0.1</td>
<td>81,250</td>
</tr>
<tr>
<td>Engineer</td>
<td>0.1 0.1 0.1 0.1</td>
<td>81,250</td>
</tr>
<tr>
<td>Environmental specialist</td>
<td>0.1 0.1 0.1 0.1</td>
<td>75,000</td>
</tr>
<tr>
<td>Other administrative support (e.g., accountant)</td>
<td>0.1 0.1 0.1 0.1</td>
<td>83,333</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td>6.6 10.6 16.6 50.6</td>
<td></td>
</tr>
</tbody>
</table>

### TABLE C.2-4  Annual Worker Salaries per Labor Category and Mine Size

<table>
<thead>
<tr>
<th>Labor Category</th>
<th>Salary ($) per Mine Size</th>
</tr>
</thead>
<tbody>
<tr>
<td>mine workers</td>
<td>487,500 812,500 1,300,000 4,062,500</td>
</tr>
<tr>
<td>Mechanic</td>
<td>8,125 8,125 8,125 8,125</td>
</tr>
<tr>
<td>Geologist</td>
<td>13,750 13,750 13,750 13,750</td>
</tr>
<tr>
<td>Surveyor</td>
<td>8,125 8,125 8,125 8,125</td>
</tr>
<tr>
<td>Engineer</td>
<td>8,125 8,125 8,125 8,125</td>
</tr>
<tr>
<td>Environmental specialist</td>
<td>7,500 7,500 7,500 7,500</td>
</tr>
<tr>
<td>Other administrative support (e.g., accountant)</td>
<td>8,333 8,333 8,333 8,333</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td>541,458 866,458 1,353,958 4,116,458</td>
</tr>
</tbody>
</table>
### TABLE C.2-5  Number and Cost of Capital Equipment Units per Mine Size

<table>
<thead>
<tr>
<th>Items Assumed</th>
<th>Number of Units per Mine Size&lt;sup&gt;a&lt;/sup&gt;</th>
<th>Unit Cost ($)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Small</td>
<td>Medium</td>
</tr>
<tr>
<td>Underground equipment</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Diesel skid steer loaders, 2-yd³ capacity</td>
<td>1</td>
<td>2</td>
</tr>
<tr>
<td>Diesel trucks (buggies), 5- to 10-ton capacity</td>
<td>2</td>
<td>4</td>
</tr>
<tr>
<td>Development drill, jumbo</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>Production drills, jacklegs</td>
<td>3</td>
<td>6</td>
</tr>
<tr>
<td>Exploration drills, longhole</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>Diesel boss buggies and utility vehicles</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Surface Equipment</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Front-end loader, 2- to 3-yd³ capacity</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>Loaders, 8- to 10-yd³ capacity</td>
<td>–</td>
<td>–</td>
</tr>
<tr>
<td>Backhoe/skid loader or excavator</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>Highway haul trucks, 22- to 24-ton capacity</td>
<td>2</td>
<td>2</td>
</tr>
<tr>
<td>Dump truck, 12 yd³</td>
<td>–</td>
<td>–</td>
</tr>
<tr>
<td>Bulldozer, 200 hp</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>Bulldozer, 400 hp</td>
<td>–</td>
<td>–</td>
</tr>
<tr>
<td>Motor grader, 140 hp</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>Flatbed trailer with tractor or 1-ton vehicle</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>Maintenance truck</td>
<td>–</td>
<td>–</td>
</tr>
<tr>
<td>Pickup truck, ¾ ton, four-wheel drive</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>Snow plow</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>Power generators</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>Scraper</td>
<td>–</td>
<td>–</td>
</tr>
<tr>
<td>Truck, ≥60 tons</td>
<td>–</td>
<td>–</td>
</tr>
</tbody>
</table>

<sup>a</sup> A dash indicates none.
### TABLE C.2-6 Total Capital Equipment Costs per Alternative

<table>
<thead>
<tr>
<th>Items Assumed</th>
<th>Alt. 3</th>
<th>Alt. 4</th>
<th>Alt. 5</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Underground equipment</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Diesel skid steer loaders, 2- yd³ capacity</td>
<td>715,000</td>
<td>1,760,000</td>
<td>2,090,000</td>
</tr>
<tr>
<td>Diesel trucks (buggies), 5- to 10-ton capacity</td>
<td>2,178,400</td>
<td>5,290,400</td>
<td>6,224,000</td>
</tr>
<tr>
<td>Development drill, jumbo</td>
<td>385,000</td>
<td>990,000</td>
<td>990,000</td>
</tr>
<tr>
<td>Production drills, jacklegs</td>
<td>11,700</td>
<td>28,800</td>
<td>34,200</td>
</tr>
<tr>
<td>Exploration drills, longhole</td>
<td>656,000</td>
<td>1,640,000</td>
<td>1,640,000</td>
</tr>
<tr>
<td>Diesel boss buggies and utility vehicles</td>
<td>244,000</td>
<td>610,000</td>
<td>683,200</td>
</tr>
<tr>
<td><strong>Surface equipment</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Front-end loader, 2- to 3- yd³ capacity</td>
<td>2,736,000</td>
<td>6,498,000</td>
<td>6,498,000</td>
</tr>
<tr>
<td>Loaders, 8- to 10- yd³ capacity</td>
<td>369,000</td>
<td>369,000</td>
<td>369,000</td>
</tr>
<tr>
<td>Backhoe/skid loader or excavator</td>
<td>1,256,000</td>
<td>2,983,000</td>
<td>2,983,000</td>
</tr>
<tr>
<td>Highway haul trucks, 22- to 24-ton capacity</td>
<td>8,985,000</td>
<td>22,762,000</td>
<td>22,762,000</td>
</tr>
<tr>
<td>Dump truck, 12 yd³</td>
<td>600,000</td>
<td>600,000</td>
<td>600,000</td>
</tr>
<tr>
<td>Bulldozer, 200 hp</td>
<td>2,205,000</td>
<td>5,670,000</td>
<td>5,670,000</td>
</tr>
<tr>
<td>Bulldozer, 400 hp</td>
<td>1,875,000</td>
<td>1,875,000</td>
<td>1,875,000</td>
</tr>
<tr>
<td>Motor grader, 140 hp</td>
<td>1,280,000</td>
<td>3,040,000</td>
<td>3,040,000</td>
</tr>
<tr>
<td>Flatbed trailer with tractor or 1-ton vehicle</td>
<td>70,000</td>
<td>180,000</td>
<td>180,000</td>
</tr>
<tr>
<td>Maintenance truck</td>
<td>158,000</td>
<td>158,000</td>
<td>158,000</td>
</tr>
<tr>
<td>Pickup truck, ¾ ton, four-wheel drive</td>
<td>360,000</td>
<td>720,000</td>
<td>720,000</td>
</tr>
<tr>
<td>Snow plow</td>
<td>434,000</td>
<td>1,116,000</td>
<td>1,116,000</td>
</tr>
<tr>
<td>Power generators</td>
<td>639,600</td>
<td>1,599,000</td>
<td>1,599,000</td>
</tr>
<tr>
<td>Scraper</td>
<td>308,800</td>
<td>308,800</td>
<td>308,800</td>
</tr>
<tr>
<td>Truck, ≥60 tons</td>
<td>2,396,000</td>
<td>2,396,000</td>
<td>2,396,000</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td>27,862,500</td>
<td>60,594,000</td>
<td>61,936,200</td>
</tr>
</tbody>
</table>
### TABLE C.2-7  Estimated Total Capital Costs per Mine Size

<table>
<thead>
<tr>
<th>Cost Element</th>
<th>Small</th>
<th>Medium</th>
<th>Large</th>
<th>Very Large</th>
</tr>
</thead>
<tbody>
<tr>
<td>Equipment purchase</td>
<td>2,727,000</td>
<td>2,951,000</td>
<td>4,121,000</td>
<td>6,486,000</td>
</tr>
<tr>
<td>Labor</td>
<td>242,000</td>
<td>366,000</td>
<td>555,000</td>
<td>708,000</td>
</tr>
<tr>
<td>Steel</td>
<td>232,000</td>
<td>306,000</td>
<td>403,000</td>
<td>473,000</td>
</tr>
<tr>
<td>Lumber</td>
<td>23,000</td>
<td>30,000</td>
<td>38,000</td>
<td>44,000</td>
</tr>
<tr>
<td>Fuel</td>
<td>13,000</td>
<td>20,000</td>
<td>30,000</td>
<td>38,000</td>
</tr>
<tr>
<td>Lubricant</td>
<td>5,000</td>
<td>7,000</td>
<td>11,000</td>
<td>14,000</td>
</tr>
<tr>
<td>Explosives</td>
<td>124,000</td>
<td>166,000</td>
<td>222,000</td>
<td>263,000</td>
</tr>
<tr>
<td>Tires</td>
<td>9,000</td>
<td>14,000</td>
<td>20,000</td>
<td>26,000</td>
</tr>
<tr>
<td>Construction materials</td>
<td>223,000</td>
<td>317,000</td>
<td>451,000</td>
<td>554,000</td>
</tr>
<tr>
<td>Electricity</td>
<td>4,000</td>
<td>6,000</td>
<td>10,000</td>
<td>13,000</td>
</tr>
<tr>
<td><strong>Total direct costs</strong></td>
<td>3,602,000</td>
<td>4,183,000</td>
<td>5,861,000</td>
<td>8,619,000</td>
</tr>
<tr>
<td>Contractor’s overhead and profit (6%)</td>
<td>216,000</td>
<td>251,000</td>
<td>352,000</td>
<td>517,000</td>
</tr>
<tr>
<td><strong>Subtotal contractor’s costs</strong></td>
<td>3,818,000</td>
<td>4,434,000</td>
<td>6,213,000</td>
<td>9,136,000</td>
</tr>
<tr>
<td>Contractor’s bond (1%)</td>
<td>38,000</td>
<td>44,000</td>
<td>62,000</td>
<td>91,000</td>
</tr>
<tr>
<td><strong>Total contractor’s field costs</strong></td>
<td>3,856,000</td>
<td>4,478,000</td>
<td>6,275,000</td>
<td>9,227,000</td>
</tr>
<tr>
<td>Construction management (10%)</td>
<td>386,000</td>
<td>448,000</td>
<td>628,000</td>
<td>923,000</td>
</tr>
<tr>
<td><strong>Total field costs</strong></td>
<td>4,242,000</td>
<td>4,926,000</td>
<td>6,903,000</td>
<td>10,150,000</td>
</tr>
<tr>
<td>Architecture/engineering costs (25%)</td>
<td>1,061,000</td>
<td>1,232,000</td>
<td>1,726,000</td>
<td>2,538,000</td>
</tr>
<tr>
<td><strong>Subtotal</strong></td>
<td>5,303,000</td>
<td>6,158,000</td>
<td>8,629,000</td>
<td>12,688,000</td>
</tr>
<tr>
<td>Program management (6%)</td>
<td>318,000</td>
<td>369,000</td>
<td>518,000</td>
<td>761,000</td>
</tr>
<tr>
<td><strong>Total capital costs</strong></td>
<td>5,621,000</td>
<td>6,527,000</td>
<td>9,147,000</td>
<td>13,449,000</td>
</tr>
</tbody>
</table>
### TABLE C.2-8 Estimated Total Capital Costs per Alternative

<table>
<thead>
<tr>
<th>Cost Element</th>
<th>Alt. 3</th>
<th>Alt. 4</th>
<th>Alt. 5</th>
</tr>
</thead>
<tbody>
<tr>
<td>Equipment purchase</td>
<td>27,863,000</td>
<td>60,595,000</td>
<td>61,937,000</td>
</tr>
<tr>
<td>Labor</td>
<td>3,213,000</td>
<td>6,934,000</td>
<td>7,681,000</td>
</tr>
<tr>
<td>Steel</td>
<td>2,565,000</td>
<td>5,732,000</td>
<td>6,174,000</td>
</tr>
<tr>
<td>Lumber</td>
<td>246,000</td>
<td>555,000</td>
<td>593,000</td>
</tr>
<tr>
<td>Fuel</td>
<td>174,000</td>
<td>375,000</td>
<td>414,000</td>
</tr>
<tr>
<td>Lubricant</td>
<td>64,000</td>
<td>138,000</td>
<td>152,000</td>
</tr>
<tr>
<td>Explosives</td>
<td>1,396,000</td>
<td>3,108,000</td>
<td>3,359,000</td>
</tr>
<tr>
<td>Tires</td>
<td>118,000</td>
<td>257,000</td>
<td>283,000</td>
</tr>
<tr>
<td>Construction materials</td>
<td>2,717,000</td>
<td>5,958,000</td>
<td>6,524,000</td>
</tr>
<tr>
<td>Electricity</td>
<td>57,000</td>
<td>121,000</td>
<td>135,000</td>
</tr>
<tr>
<td><strong>Total direct costs</strong></td>
<td>38,413,000</td>
<td>83,773,000</td>
<td>87,252,000</td>
</tr>
</tbody>
</table>

**Contractor’s overhead and profit (6%)**

| Subtotal contractor’s costs | 40,718,000 | 88,799,000 | 92,487,000 |

**Contractor’s bond (1%)**

| Contractor’s bond | 407,000 | 888,000 | 925,000 |

**Total contractor’s field costs**

| 41,125,000 | 89,687,000 | 93,412,000 |

**Construction management (10%)**

| 4,113,000 | 8,969,000 | 9,341,000 |

**Total field costs**

| 45,238,000 | 98,656,000 | 102,753,000 |

**Architecture/engineering costs (25%)**

| 11,310,000 | 24,664,000 | 25,688,000 |

**Subtotal**

| 56,548,000 | 123,320,000 | 128,441,000 |

**Program management (6%)**

| 3,393,000 | 7,399,000 | 7,706,000 |

**Total capital costs**

| 59,941,000 | 130,719,000 | 136,147,000 |
## TABLE C.2-9 Assumed Annual Air Emissions on an Individual Mine Basis during Development$^a$

<table>
<thead>
<tr>
<th>Criteria Pollutant</th>
<th>Small</th>
<th>Medium</th>
<th>Large</th>
<th>Very Large</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total hydrocarbons (THC)</td>
<td>0.1</td>
<td>0.1</td>
<td>0.1</td>
<td>0.2</td>
</tr>
<tr>
<td>Reactive organic compounds (ROCs)</td>
<td>0.1</td>
<td>0.1</td>
<td>0.1</td>
<td>0.2</td>
</tr>
<tr>
<td>Nitrogen oxides (NOX)</td>
<td>2.2</td>
<td>3.0</td>
<td>4.2</td>
<td>5.1</td>
</tr>
<tr>
<td>Sulfur dioxide (SO2)</td>
<td>0.3</td>
<td>0.4</td>
<td>0.5</td>
<td>0.6</td>
</tr>
<tr>
<td>Carbon monoxide (CO)</td>
<td>6.5</td>
<td>8.8</td>
<td>11.8</td>
<td>14.0</td>
</tr>
<tr>
<td>Total suspended particulates (TSP)</td>
<td>11.3</td>
<td>15.5</td>
<td>20.6</td>
<td>58.1</td>
</tr>
<tr>
<td>Particulate matter ≤10 μm (PM10)$^b$</td>
<td>9.6</td>
<td>13.1</td>
<td>17.4</td>
<td>37.5</td>
</tr>
<tr>
<td>Particulate matter ≤2.5 μm (PM2.5)$^c$</td>
<td>1.2</td>
<td>1.6</td>
<td>2.1</td>
<td>5.0</td>
</tr>
<tr>
<td>Carbon dioxide (CO2)$^d$</td>
<td>56.8</td>
<td>84.3</td>
<td>126</td>
<td>162</td>
</tr>
</tbody>
</table>

$^a$ The latest emission factors were taken from the EPA’s WebFIRE application located at http://cfpub.epa.gov/webfire/.

$^b$ Assumes that the construction emission factor for fugitive dust PM10 is 0.22 ton/acre-mo (average conditions) (SCAQMD 2007).

$^c$ Assumes that 21% of fugitive dust PM10 is PM2.5 and that 89% of combustion PM10 is PM2.5 (SCAQMD undated).

$^d$ The CO₂ emission factor for diesel fuel was taken from EPA (2008).
### TABLE C.2-10 Estimated Annual Air Emissions per Alternative during Development\(^a\)

<table>
<thead>
<tr>
<th>Criteria Pollutant</th>
<th>Alt. 3</th>
<th>Alt. 4</th>
<th>Alt. 5</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total hydrocarbons (THC)</td>
<td>0.8</td>
<td>1.8</td>
<td>2.0</td>
</tr>
<tr>
<td>Reactive organic compounds (ROCs)</td>
<td>0.8</td>
<td>1.7</td>
<td>1.9</td>
</tr>
<tr>
<td>Nitrogen oxides (NO(_x))</td>
<td>26</td>
<td>57</td>
<td>62</td>
</tr>
<tr>
<td>Sulfur dioxide (SO(_2))</td>
<td>3.1</td>
<td>6.9</td>
<td>7.5</td>
</tr>
<tr>
<td>Carbon monoxide (CO)</td>
<td>74</td>
<td>165</td>
<td>176</td>
</tr>
<tr>
<td>Total suspended particulates (TSP)</td>
<td>262</td>
<td>520</td>
<td>554</td>
</tr>
<tr>
<td>Particulate matter ≤10 (\mu)m (PM(_{10}))(^b)</td>
<td>225</td>
<td>459</td>
<td>489</td>
</tr>
<tr>
<td>Particulate matter ≤2.5 (\mu)m (PM(_{2.5}))(^c)</td>
<td>36</td>
<td>73</td>
<td>78</td>
</tr>
<tr>
<td>Carbon dioxide (CO(_2))(^d)</td>
<td>745</td>
<td>1,601</td>
<td>1,767</td>
</tr>
</tbody>
</table>

\(^a\) The latest emission factors were taken from the EPA’s WebFIRE application located at http://cfpub.epa.gov/webfire/.

\(^b\) Assumes that the construction emission factor for fugitive dust PM\(_{10}\) is 0.22 ton/acre-mo (average conditions) (SCAQMD 2007).

\(^c\) Assumes that 21% of fugitive dust PM\(_{10}\) is PM\(_{2.5}\) and that 89% of combustion PM\(_{10}\) is PM\(_{2.5}\) (SCAQMD undated).

\(^d\) The CO\(_2\) emission factor for diesel fuel was taken from EPA (2008).

### TABLE C.2-11 Wastes Generated per Alternative during Development

<table>
<thead>
<tr>
<th>Waste Category</th>
<th>Alt. 3</th>
<th>Alt. 4</th>
<th>Alt. 5</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sanitary(^a)</td>
<td>136,000</td>
<td>292,000</td>
<td>322,000</td>
</tr>
<tr>
<td>Other</td>
<td>60,000</td>
<td>130,000</td>
<td>143,000</td>
</tr>
</tbody>
</table>

\(^a\) Amount of sanitary waste was estimated based on total construction workforce.
### TABLE C.2-12 Total Worker Peak-Year Annual Wages per Mine Size and Alternative

<table>
<thead>
<tr>
<th>Mine Size</th>
<th>Alt. 3</th>
<th>Alt. 4</th>
<th>Alt. 5</th>
</tr>
</thead>
<tbody>
<tr>
<td>Small</td>
<td>1,083,000</td>
<td>3,249,000</td>
<td>0</td>
</tr>
<tr>
<td>Medium</td>
<td>3,466,000</td>
<td>8,665,000</td>
<td>13,863,000</td>
</tr>
<tr>
<td>Large</td>
<td>1,354,000</td>
<td>2,708,000</td>
<td>2,708,000</td>
</tr>
<tr>
<td>Very large</td>
<td>4,116,000</td>
<td>4,116,000</td>
<td>4,116,000</td>
</tr>
<tr>
<td>Total</td>
<td>10,019,000</td>
<td>18,738,000</td>
<td>20,688,000</td>
</tr>
</tbody>
</table>

### TABLE C.2-13 Peak-Year Annual Water Usage per Mine Size and Alternative during Operations

<table>
<thead>
<tr>
<th>Mine Size</th>
<th>Monthly Volume per Mine Size (gal)</th>
<th>Total Annual Volume per Alternative (gal)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Alt. 3</td>
</tr>
<tr>
<td>Small</td>
<td>7,583</td>
<td>181,992</td>
</tr>
<tr>
<td>Medium</td>
<td>30,666</td>
<td>1,471,968</td>
</tr>
<tr>
<td>Large</td>
<td>45,999</td>
<td>551,988</td>
</tr>
<tr>
<td>Very large</td>
<td>160,000</td>
<td>960,000</td>
</tr>
<tr>
<td>Total</td>
<td>3,165,948</td>
<td>6,289,872</td>
</tr>
</tbody>
</table>

---

* Based on per-mine water use from Cotter (2011b) and Ribeiro (2012).

* Assumes water usage for 6 months only (summer) for dust suppression activities.
### TABLE C.2-14  Total Peak-Year Annual Cost of Operations per Alternative

<table>
<thead>
<tr>
<th>Item</th>
<th>Alt. 3</th>
<th>Alt. 4</th>
<th>Alt. 5</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mining equipment operations</td>
<td>5,553,000</td>
<td>$5,553,000</td>
<td>4,579,000</td>
</tr>
<tr>
<td>Utilities (electricity)</td>
<td>229,000</td>
<td>489,000</td>
<td>546,000</td>
</tr>
<tr>
<td>Diesel fuel</td>
<td>180,000</td>
<td>373,000</td>
<td>425,000</td>
</tr>
<tr>
<td>Other materials (explosives)</td>
<td>41,000</td>
<td>83,000</td>
<td>95,000</td>
</tr>
<tr>
<td>Water</td>
<td>21,000</td>
<td>36,000</td>
<td>45,000</td>
</tr>
<tr>
<td>Worker salaries</td>
<td>10,019,000</td>
<td>18,738,000</td>
<td>20,687,000</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>16,043,000</strong></td>
<td><strong>25,272,000</strong></td>
<td><strong>26,377,000</strong></td>
</tr>
</tbody>
</table>

### TABLE C.2-15  Assumed Annual Air Emissions on an Individual Mine Basis during Operations

<table>
<thead>
<tr>
<th>Criteria Pollutant</th>
<th>Small</th>
<th>Medium</th>
<th>Large</th>
<th>Very Large</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total hydrocarbons (THC)</td>
<td>0.75</td>
<td>0.59</td>
<td>4.48</td>
<td>8.63</td>
</tr>
<tr>
<td>Reactive organic compounds (ROCs)</td>
<td>0.72</td>
<td>0.57</td>
<td>4.30</td>
<td>8.29</td>
</tr>
<tr>
<td>Nitrogen oxides (NOx)</td>
<td>7.36</td>
<td>5.85</td>
<td>44.03</td>
<td>84.71</td>
</tr>
<tr>
<td>Sulfur dioxide (SO2)</td>
<td>0.95</td>
<td>0.75</td>
<td>5.66</td>
<td>10.89</td>
</tr>
<tr>
<td>Carbon monoxide (CO)</td>
<td>3.42</td>
<td>2.84</td>
<td>20.30</td>
<td>38.90</td>
</tr>
<tr>
<td>Total suspended particulates (TSP)</td>
<td>7.11</td>
<td>0.56</td>
<td>4.23</td>
<td>8.15</td>
</tr>
<tr>
<td>Particulate matter ≤10 μm (PM10)b</td>
<td>4.00</td>
<td>0.53</td>
<td>4.02</td>
<td>7.74</td>
</tr>
<tr>
<td>Particulate matter ≤2.5 μm (PM2.5)c</td>
<td>0.79</td>
<td>0.47</td>
<td>3.58</td>
<td>6.89</td>
</tr>
<tr>
<td>Carbon dioxide (CO2)d</td>
<td>672</td>
<td>532</td>
<td>4,025</td>
<td>7,748</td>
</tr>
</tbody>
</table>

---

a The latest emission factors were taken from the EPA’s WebFIRE application located at http://cfpub.epa.gov/webfire/

b Assumes that the construction emission factor for fugitive dust PM10 is 0.22 ton/acre-mo (average conditions) (SCAQMD 2007).

c Assumes that 21% of fugitive dust PM10 is PM2.5 and that 89% of combustion PM10 is PM2.5 (SCAQMD undated).

d The CO2 emission factor for diesel fuel was taken from EPA (2008).
TABLE C.2-16  Estimated Peak-Year Annual Air Emissions per Alternative during Operations

<table>
<thead>
<tr>
<th>Criteria Pollutant</th>
<th>Annual Air Emissions (tons) per Alternative</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Alt. 3</td>
</tr>
<tr>
<td>Total hydrocarbons (THC)</td>
<td>14.0</td>
</tr>
<tr>
<td>Reactive organic compounds (ROCs)</td>
<td>13.4</td>
</tr>
<tr>
<td>Nitrogen oxides (NOx)</td>
<td>137.7</td>
</tr>
<tr>
<td>Sulfur dioxide (SO2)</td>
<td>17.7</td>
</tr>
<tr>
<td>Carbon monoxide (CO)</td>
<td>64.2</td>
</tr>
<tr>
<td>Total suspended particulates (TSP)</td>
<td>32</td>
</tr>
<tr>
<td>Particulate matter ≤10 μm (PM10)</td>
<td>23</td>
</tr>
<tr>
<td>Particulate matter ≤2.5 μm (PM2.5)</td>
<td>11.8</td>
</tr>
<tr>
<td>Carbon dioxide (CO2)</td>
<td>13,000</td>
</tr>
</tbody>
</table>

\[a\] The latest emission factors were taken from the EPA’s WebFIRE application located at http://cfpub.epa.gov/webfire/.

\[b\] Assumes that the construction emission factor for fugitive dust PM10 is 0.22 ton/acre-mo (average conditions) (SCAQMD 2007).

\[c\] Assumes that 21% of fugitive dust PM10 is PM2.5 and that 89% of combustion PM10 is PM2.5 (SCAQMD undated).

\[d\] The CO2 emission factor for diesel fuel was taken from EPA (2008).

C.3 RECLAMATION

The reclamation phase would occur under each of the five alternatives evaluated in the ULP PEIS. Tables C.3-1 through C.3-8 tabulate the information developed as a basis for the impact analyses discussed in Chapter 4. The basis for the estimated values used in Table C.3-1 is that it would take 3 months per mine site for 1 team to complete reclamation. Under Alternatives 1 and 2, 10 mine sites would be reclaimed (9 mines plus JD-7, the open-pit mine).

The assumptions made for Alternative 3 would be the same as those made for Alternatives 1 and 2 because essentially the same number of mines would be reclaimed.

The assumptions made for Alternatives 4 and 5 would be the same since the number of mines would be the same (i.e., 18 mines plus JD-7). Each of the 18 underground mines would require 3 months to reclaim by 1 team. It is assumed that there would be 5 reclamation teams for the 18 underground mines. Three of these teams would be able to work for 12 months rather than only 9 months, because they would be working at the southern lease tracts (i.e., where no snow would inhibit field work). Thus, 3 teams × 12 months = 36 months, plus 2 teams × 9 months = 18 months, for a total of 54 months available for reclamation. The open-pit mine (JD-7) would be reclaimed by a separate team consisting of 14 workers, and it is assumed that reclamation would take 12 months to complete.
### TABLE C.3-1  Assumed Workforce per Labor Category, Team, JD-7 Mine, and Alternative during Reclamation

<table>
<thead>
<tr>
<th>Labor Category</th>
<th>No. of Workers per Team&lt;sup&gt;a&lt;/sup&gt;</th>
<th>No. of Workers for JD-7 Mine</th>
<th>Total No. of Workers per Alternative</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>No. of Workers for Alts. 1 and 2&lt;sup&gt;b&lt;/sup&gt;</td>
<td>Alts. 1</td>
<td>Alts. 3&lt;sup&gt;c&lt;/sup&gt;</td>
</tr>
<tr>
<td>Foreman</td>
<td>1</td>
<td>1</td>
<td>4</td>
</tr>
<tr>
<td>Equipment operator</td>
<td>3</td>
<td>10</td>
<td>19</td>
</tr>
<tr>
<td>Truck driver&lt;sup&gt;f&lt;/sup&gt;</td>
<td>1</td>
<td>2</td>
<td>5</td>
</tr>
<tr>
<td>Electrician/mechanic&lt;sup&gt;g&lt;/sup&gt;</td>
<td>0</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>5</strong></td>
<td><strong>14</strong></td>
<td><strong>29</strong></td>
</tr>
</tbody>
</table>

<sup>a</sup> Other than for work on JD-7 open-pit mine.

<sup>b</sup> Three teams plus the JD-7 team.

<sup>c</sup> Three teams plus the JD-7 team.

<sup>d</sup> Five teams plus the JD-7 team.

<sup>e</sup> Five teams plus the JD-7 team.

<sup>f</sup> Also assumed to operate equipment.

<sup>g</sup> Assumed for very large mine (JD-7) reclamation only.

### TABLE C.3-2  Total Disturbed Acreage per Mine Size and Alternative during Reclamation<sup>a</sup>

<table>
<thead>
<tr>
<th>Disturbed Acreage per Alternative</th>
<th>Mine Size</th>
<th>Alt. 3</th>
<th>Alt. 4</th>
<th>Alt. 5</th>
</tr>
</thead>
<tbody>
<tr>
<td>Small</td>
<td>20</td>
<td>60</td>
<td>0</td>
<td></td>
</tr>
<tr>
<td>Medium</td>
<td>60</td>
<td>150</td>
<td>240</td>
<td></td>
</tr>
<tr>
<td>Large</td>
<td>20</td>
<td>40</td>
<td>40</td>
<td></td>
</tr>
<tr>
<td>Very large</td>
<td>210</td>
<td>210</td>
<td>210</td>
<td></td>
</tr>
</tbody>
</table>

<sup>a</sup> Alternatives 1 and 2 would each involve the reclamation of 257 acres (Cotter 2012) as shown in Table 2.2-1 and involve 10 lease tracts.
### TABLE C.3-3  Assumed Total Costs per Alternative during Reclamation

<table>
<thead>
<tr>
<th>Cost Element</th>
<th>Costs (2009) per Alternative</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Alts. 1 and 2</td>
</tr>
<tr>
<td>Remove aboveground structures</td>
<td>58,436</td>
</tr>
<tr>
<td>Seal portal(s)</td>
<td>23,000</td>
</tr>
<tr>
<td>Establish 3:1 slopes</td>
<td>447,621</td>
</tr>
<tr>
<td>Pock areas of steep slope to reduce future erosion</td>
<td>486,831</td>
</tr>
<tr>
<td>Spread available topsoil over pocking</td>
<td>58,009</td>
</tr>
<tr>
<td>Cut and fill and water bars on access road</td>
<td>153,906</td>
</tr>
<tr>
<td>Revegetate slope and access road</td>
<td>1,297,055</td>
</tr>
<tr>
<td>Place obstruction boulders at access entrance</td>
<td>3,060</td>
</tr>
<tr>
<td>Replace ore in mine</td>
<td>13,472</td>
</tr>
<tr>
<td>Remove 18 in. of subsurface from ore pad area</td>
<td>98,760</td>
</tr>
<tr>
<td>Rip compacted areas</td>
<td>59,427</td>
</tr>
<tr>
<td>Spread topsoil over disturbed areas</td>
<td>40,072</td>
</tr>
<tr>
<td>Backfill sedimentation pond</td>
<td>28,122</td>
</tr>
<tr>
<td>Seal ventilation shafts (72-in. diameter)</td>
<td>85,190</td>
</tr>
<tr>
<td>Seal power drop holes</td>
<td>2,540</td>
</tr>
<tr>
<td>Remove power drops</td>
<td>4,690</td>
</tr>
<tr>
<td>Rip vent and power drop pads</td>
<td>8,327</td>
</tr>
<tr>
<td>Push topsoil over vent and power drop pads</td>
<td>3,955</td>
</tr>
<tr>
<td>Revegetate area around vent and power drop pads</td>
<td>60,917</td>
</tr>
<tr>
<td>Conduct initial site mobilization</td>
<td>49,840</td>
</tr>
<tr>
<td>Conduct secondary seeding mobilization</td>
<td>18,380</td>
</tr>
<tr>
<td><strong>Total direct costs</strong></td>
<td>3,001,610</td>
</tr>
<tr>
<td>Contractor’s overhead and profit (6%)</td>
<td>180,000</td>
</tr>
<tr>
<td><strong>Subtotal contractor’s costs</strong></td>
<td>3,181,610</td>
</tr>
<tr>
<td>Contractor’s bond (1%)</td>
<td>32,000</td>
</tr>
<tr>
<td><strong>Total contractor’s field costs</strong></td>
<td>3,213,610</td>
</tr>
<tr>
<td>Construction management (10%)</td>
<td>321,000</td>
</tr>
<tr>
<td><strong>Total field costs</strong></td>
<td>3,534,610</td>
</tr>
<tr>
<td>Architecture/engineering costs (25%)</td>
<td>883,000</td>
</tr>
<tr>
<td><strong>Subtotal</strong></td>
<td>4,417,610</td>
</tr>
<tr>
<td>Program management (6%)</td>
<td>266,000</td>
</tr>
<tr>
<td><strong>Total reclamation costs (rounded)</strong></td>
<td>4,684,000</td>
</tr>
</tbody>
</table>
# TABLE C.3-4 Assumed Equipment and Total Hours of Operation per Mine Size and Alternative during Reclamation

<table>
<thead>
<tr>
<th>Items Assumed</th>
<th>Small</th>
<th>Medium</th>
<th>Large</th>
<th>Very Large</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Alternatives 1 and 2</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Bulldozer, 310 hp</td>
<td>903</td>
<td>0</td>
<td>0</td>
<td>3,719</td>
</tr>
<tr>
<td>Diesel skid steer loaders, 2- yd³ capacity</td>
<td>725</td>
<td>0</td>
<td>0</td>
<td>2,614</td>
</tr>
<tr>
<td>Motor grader, 140 hp</td>
<td>233</td>
<td>0</td>
<td>0</td>
<td>729</td>
</tr>
<tr>
<td>Excavator, 125 hp</td>
<td>1,179</td>
<td>0</td>
<td>0</td>
<td>4,953</td>
</tr>
<tr>
<td>Front-end loader, 2- to 3- yd³ capacity</td>
<td>1,149</td>
<td>0</td>
<td>0</td>
<td>626</td>
</tr>
<tr>
<td>Grass drill and seeder</td>
<td>725</td>
<td>0</td>
<td>0</td>
<td>2,614</td>
</tr>
<tr>
<td>Dump trucks, 12 yd</td>
<td>1,189</td>
<td>0</td>
<td>0</td>
<td>1,998</td>
</tr>
<tr>
<td>Flatbed trailer with tractor or 1-ton vehicle</td>
<td>144</td>
<td>0</td>
<td>0</td>
<td>16</td>
</tr>
<tr>
<td>Pickup truck, ¾ ton, four-wheel drive</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>4,400</td>
</tr>
<tr>
<td><strong>Alternative 3</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Bulldozer, 310 hp</td>
<td>369</td>
<td>1,092</td>
<td>361</td>
<td>3,719</td>
</tr>
<tr>
<td>Diesel skid steer loaders, 2- yd³ capacity</td>
<td>279</td>
<td>806</td>
<td>263</td>
<td>2,614</td>
</tr>
<tr>
<td>Motor grader, 140 hp</td>
<td>85</td>
<td>238</td>
<td>77</td>
<td>729</td>
</tr>
<tr>
<td>Excavator, 125 hp</td>
<td>487</td>
<td>1,445</td>
<td>479</td>
<td>4,953</td>
</tr>
<tr>
<td>Front-end loader, 2- to 3- yd³ capacity</td>
<td>255</td>
<td>909</td>
<td>427</td>
<td>626</td>
</tr>
<tr>
<td>Grass drill and seeder</td>
<td>279</td>
<td>806</td>
<td>263</td>
<td>2,614</td>
</tr>
<tr>
<td>Dump trucks, 12 yd</td>
<td>331</td>
<td>1,152</td>
<td>498</td>
<td>1,998</td>
</tr>
<tr>
<td>Flatbed trailer with tractor or 1-ton vehicle</td>
<td>32</td>
<td>64</td>
<td>16</td>
<td>16</td>
</tr>
<tr>
<td>Pickup truck, ¾ ton, four-wheel drive</td>
<td>0</td>
<td>2,200</td>
<td>2,200</td>
<td>4,400</td>
</tr>
<tr>
<td><strong>Alternative 4</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Bulldozer, 310 hp</td>
<td>1,108</td>
<td>2,731</td>
<td>723</td>
<td>3,719</td>
</tr>
<tr>
<td>Diesel skid steer loaders, 2- yd³ capacity</td>
<td>838</td>
<td>2,016</td>
<td>527</td>
<td>2,614</td>
</tr>
<tr>
<td>Motor grader, 140 hp</td>
<td>254</td>
<td>595</td>
<td>153</td>
<td>729</td>
</tr>
<tr>
<td>Excavator, 125 hp</td>
<td>1,461</td>
<td>3,612</td>
<td>958</td>
<td>4,953</td>
</tr>
<tr>
<td>Front-end loader, 2- to 3- yd³ capacity</td>
<td>766</td>
<td>2,273</td>
<td>853</td>
<td>626</td>
</tr>
<tr>
<td>Grass drill and seeder</td>
<td>838</td>
<td>2,016</td>
<td>527</td>
<td>2,614</td>
</tr>
<tr>
<td>Dump trucks, 12 yd</td>
<td>992</td>
<td>2,879</td>
<td>996</td>
<td>1,998</td>
</tr>
<tr>
<td>Flatbed trailer with tractor or 1-ton vehicle</td>
<td>96</td>
<td>160</td>
<td>32</td>
<td>16</td>
</tr>
<tr>
<td>Pickup truck, ¾ ton, four-wheel drive</td>
<td>0</td>
<td>4,400</td>
<td>2,200</td>
<td>4,400</td>
</tr>
<tr>
<td><strong>Alternative 5</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Bulldozer, 310 hp</td>
<td>0</td>
<td>4,369</td>
<td>723</td>
<td>3,719</td>
</tr>
<tr>
<td>Diesel skid steer loaders, 2- yd³ capacity</td>
<td>0</td>
<td>3,225</td>
<td>527</td>
<td>2,614</td>
</tr>
<tr>
<td>Motor grader, 140 hp</td>
<td>0</td>
<td>952</td>
<td>153</td>
<td>729</td>
</tr>
<tr>
<td>Excavator, 125 hp</td>
<td>0</td>
<td>5,780</td>
<td>958</td>
<td>4,953</td>
</tr>
<tr>
<td>Front-end loader, 2- to 3- yd³ capacity</td>
<td>0</td>
<td>3,638</td>
<td>853</td>
<td>626</td>
</tr>
<tr>
<td>Grass drill and seeder</td>
<td>0</td>
<td>3,225</td>
<td>527</td>
<td>2,614</td>
</tr>
<tr>
<td>Dump trucks, 12 yd</td>
<td>0</td>
<td>4,607</td>
<td>996</td>
<td>1,998</td>
</tr>
<tr>
<td>Flatbed trailer with tractor or 1-ton vehicle</td>
<td>0</td>
<td>256</td>
<td>32</td>
<td>16</td>
</tr>
<tr>
<td>Pickup truck, ¾ ton, four-wheel drive</td>
<td>0</td>
<td>4,400</td>
<td>2,200</td>
<td>4,400</td>
</tr>
</tbody>
</table>
### TABLE C.3-5 Assumed Amounts of Materials per Mine Size and Alternative during Reclamation

<table>
<thead>
<tr>
<th>Items Assumed</th>
<th>Small</th>
<th>Medium</th>
<th>Large</th>
<th>Very Large</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Alternatives 1 and 2</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Diesel fuel (gal)</td>
<td>25,000</td>
<td>0</td>
<td>0</td>
<td>76,000</td>
<td>101,000</td>
</tr>
<tr>
<td>Oil and grease (gal)</td>
<td>1,300</td>
<td>0</td>
<td>0</td>
<td>3,800</td>
<td>5,100</td>
</tr>
<tr>
<td>Water (gal)</td>
<td>45,350</td>
<td>0</td>
<td>0</td>
<td>114,900</td>
<td>160,000</td>
</tr>
<tr>
<td>Grass seed (40 lb/acre) (tons)</td>
<td>0.9</td>
<td>0</td>
<td>0</td>
<td>4.2</td>
<td>5.14</td>
</tr>
<tr>
<td>Hay, delivered (1 ton/acre) (tons)</td>
<td>47</td>
<td>0</td>
<td>0</td>
<td>210</td>
<td>257</td>
</tr>
<tr>
<td>Alternative 3</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Diesel fuel (gal)</td>
<td>9,000</td>
<td>29,000</td>
<td>12,000</td>
<td>76,000</td>
<td>126,000</td>
</tr>
<tr>
<td>Oil and grease (gal)</td>
<td>400</td>
<td>1,700</td>
<td>900</td>
<td>3,800</td>
<td>6,800</td>
</tr>
<tr>
<td>Water (gal)</td>
<td>29,000</td>
<td>53,400</td>
<td>29,000</td>
<td>114,900</td>
<td>226,000</td>
</tr>
<tr>
<td>Grass seed (40 lb/acre) (tons)</td>
<td>0.4</td>
<td>1.2</td>
<td>0.4</td>
<td>4.2</td>
<td>6.2</td>
</tr>
<tr>
<td>Hay, delivered (1 ton/acre) (tons)</td>
<td>20</td>
<td>60</td>
<td>20</td>
<td>210</td>
<td>310</td>
</tr>
<tr>
<td>Alternative 4</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Diesel fuel (gal)</td>
<td>26,000</td>
<td>71,000</td>
<td>22,000</td>
<td>76,000</td>
<td>195,000</td>
</tr>
<tr>
<td>Oil and grease (gal)</td>
<td>1,200</td>
<td>4,100</td>
<td>1,400</td>
<td>3,800</td>
<td>10,500</td>
</tr>
<tr>
<td>Water (gal)</td>
<td>53,400</td>
<td>99,900</td>
<td>38,800</td>
<td>114,900</td>
<td>307,000</td>
</tr>
<tr>
<td>Grass seed (40 lb/acre) (tons)</td>
<td>1.2</td>
<td>3.0</td>
<td>0.8</td>
<td>4.2</td>
<td>9.2</td>
</tr>
<tr>
<td>Hay, delivered (1 ton/acre) (tons)</td>
<td>60</td>
<td>150</td>
<td>40</td>
<td>210</td>
<td>460</td>
</tr>
<tr>
<td>Alternative 5</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Diesel fuel (gal)</td>
<td>0</td>
<td>111,000</td>
<td>22,000</td>
<td>76,000</td>
<td>209,000</td>
</tr>
<tr>
<td>Oil and grease (gal)</td>
<td>0</td>
<td>6,000</td>
<td>1,400</td>
<td>3,800</td>
<td>11,200</td>
</tr>
<tr>
<td>Water (gal)</td>
<td>0</td>
<td>151,200</td>
<td>38,800</td>
<td>114,900</td>
<td>305,000</td>
</tr>
<tr>
<td>Grass seed (40 lb/acre) (tons)</td>
<td>0.0</td>
<td>4.8</td>
<td>0.8</td>
<td>4.2</td>
<td>9.8</td>
</tr>
<tr>
<td>Hay, delivered (1 ton/acre) (tons)</td>
<td>0</td>
<td>240</td>
<td>40</td>
<td>210</td>
<td>490</td>
</tr>
</tbody>
</table>
### TABLE C.3-6  Assumed Annual Air Emissions on an Individual Mine Basis during Reclamation\(^a\)

<table>
<thead>
<tr>
<th>Criteria Pollutant</th>
<th>Small</th>
<th>Medium</th>
<th>Large</th>
<th>Very Large</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total hydrocarbons (THC)</td>
<td>0.05</td>
<td>0.09</td>
<td>0.14</td>
<td>0.92</td>
</tr>
<tr>
<td>Reactive organic compounds (ROCs)</td>
<td>0.05</td>
<td>0.08</td>
<td>0.13</td>
<td>0.88</td>
</tr>
<tr>
<td>Nitrogen oxides (NO(_x))</td>
<td>0.52</td>
<td>0.84</td>
<td>1.30</td>
<td>9.07</td>
</tr>
<tr>
<td>Sulfur dioxide (SO(_2))</td>
<td>0.07</td>
<td>0.11</td>
<td>0.18</td>
<td>1.18</td>
</tr>
<tr>
<td>Carbon monoxide (CO)</td>
<td>0.24</td>
<td>0.41</td>
<td>0.66</td>
<td>4.33</td>
</tr>
<tr>
<td>Total suspended particulates (TSP)</td>
<td>2.00</td>
<td>2.97</td>
<td>7.88</td>
<td>157</td>
</tr>
<tr>
<td>Particulate matter ≤10 µm (PM(_{10}))(^b)</td>
<td>1.05</td>
<td>1.54</td>
<td>5.98</td>
<td>137</td>
</tr>
<tr>
<td>Particulate matter ≤2.5 µm (PM(_{2.5}))(^c)</td>
<td>0.19</td>
<td>0.29</td>
<td>1.22</td>
<td>28.1</td>
</tr>
<tr>
<td>Carbon dioxide (CO(_2))(^d)</td>
<td>48.6</td>
<td>80.4</td>
<td>128</td>
<td>854</td>
</tr>
</tbody>
</table>

\(^a\) The latest emission factors were taken from the EPA’s WebFIRE application located at http://cfpub.epa.gov/webfire/.

\(^b\) Assumes that the construction emission factor for fugitive dust PM\(_{10}\) is 0.22 ton/acre-mo (average conditions) (SCAQMD 2007).

\(^c\) Assumes that 21% of fugitive dust PM\(_{10}\) is PM\(_{2.5}\) and that 89% of combustion PM\(_{10}\) is PM\(_{2.5}\) (SCAQMD undated).

\(^d\) The CO\(_2\) emission factor for diesel fuel was taken from EPA (2008).
TABLE C.3-7  Assumed Total Air Emissions during Reclamation\textsuperscript{a}

<table>
<thead>
<tr>
<th>Criteria Pollutant</th>
<th>Total Emissions (tons) per Alternative</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Alts. 1 and 2</td>
</tr>
<tr>
<td>Total hydrocarbons (THC)</td>
<td>1.2</td>
</tr>
<tr>
<td>Reactive organic compounds (ROCs)</td>
<td>1.2</td>
</tr>
<tr>
<td>Nitrogen oxides (NO\textsubscript{x})</td>
<td>12</td>
</tr>
<tr>
<td>Sulfur dioxide (SO\textsubscript{2})</td>
<td>1.6</td>
</tr>
<tr>
<td>Carbon monoxide (CO)</td>
<td>5.8</td>
</tr>
<tr>
<td>Total suspended particulates (TSP)</td>
<td>167</td>
</tr>
<tr>
<td>Particulate matter ≤10 μm (PM\textsubscript{10})\textsuperscript{b}</td>
<td>142</td>
</tr>
<tr>
<td>Particulate matter ≤2.5 μm (PM\textsubscript{2.5})\textsuperscript{c}</td>
<td>29</td>
</tr>
<tr>
<td>Carbon dioxide (CO\textsubscript{2})\textsuperscript{d}</td>
<td>1,140</td>
</tr>
</tbody>
</table>

\textsuperscript{a} The latest emission factors were taken from the EPA’s WebFIRE application located at http://cfpub.epa.gov/webfire/.

\textsuperscript{b} Assumes that the construction emission factor for fugitive dust PM\textsubscript{10} is 0.22 ton/acre-mo (average conditions) (SCAQMD 2007).

\textsuperscript{c} Assumes that 21% of fugitive dust PM\textsubscript{10} is PM\textsubscript{2.5} and that 89% of combustion PM\textsubscript{10} is PM\textsubscript{2.5} (SCAQMD undated).

\textsuperscript{d} The CO\textsubscript{2} emission factor for diesel fuel was taken from EPA (2008).

TABLE C.3-8  Wastes Generated per Alternative during Reclamation

<table>
<thead>
<tr>
<th>Waste Category</th>
<th>Waste Generated (gal) per Alternative</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Alts. 1 and 2</td>
</tr>
<tr>
<td>Sanitary\textsuperscript{a}</td>
<td>81,000</td>
</tr>
<tr>
<td>Other</td>
<td>36,000</td>
</tr>
</tbody>
</table>

\textsuperscript{a} Amount of sanitary waste was estimated based on the total reclamation workforce.
C.4 REFERENCES

Cotter, E., 2011a, personal communication from Cotter (S.M. Stoller Corporation, Grand Junction, Colo.) to M. Picel (Argonne National Laboratory, Argonne, Ill.), Nov. 10.

Cotter, E., 2011b, personal communication from Cotter (S.M. Stoller Corporation, Grand Junction, Colo.) to M. Picel (Argonne National Laboratory, Argonne, Ill.), Nov. 17.

Cotter, E., 2012, personal communication from Cotter (S.M. Stoller Corporation, Grand Junction, Colo.) to M. Picel (Argonne National Laboratory, Argonne, Ill.), Feb. 16.


APPENDIX D:

IMPACT ASSESSMENT METHODOLOGIES
This page intentionally left blank
APPENDIX D:

IMPACT ASSESSMENT METHODOLOGIES

This appendix summarizes the methodologies used in evaluating the various environmental resource areas discussed in this draft programmatic environmental impact statement (PEIS). The environmental resource areas evaluated are as follows:

- Air quality;
- Acoustical environment;
- Geology and soils;
- Water resources;
- Human health;
- Ecological resources;
- Socioeconomics;
- Environmental justice;
- Land use;
- Transportation;
- Cultural resources;
- Visual resources; and
- Waste management.

In addition to these resource areas, the U.S. Department of Energy (DOE) has evaluated cumulative impacts that could result from implementation of the Uranium Leasing Program (ULP) proposed action in combination with past, present, and planned activities (including Federal and non-Federal activities) at or in the vicinity of the DOE ULP lease tracts.

D.1 AIR QUALITY

Potential air quality impacts under each alternative were evaluated by estimating air pollutant emissions from two phases: (1) mine development and operations; and (2) reclamation. (Air emissions from the exploration phase were not estimated because of its short duration and the negligible amount of emissions it would generate in comparison with the other phases.) Air emissions were estimated for criteria pollutants, volatile organic compounds (VOCs), and carbon dioxide (CO₂, a primary greenhouse gas [GHG]) that would result from the activities associated with engine exhaust and fugitive dust emissions from heavy equipment and vehicles, wind erosion from the disturbed areas, and explosives use. Air emissions from traffic due to workers commuting were not included because only a small number of workers would be involved (typically 12 to 24 people) and the amount of any associated emissions would thus be small in comparison to the amount of air emissions generated from heavy equipment and other related activities. Detailed emission inventory tables, including data on emission factors, activity levels, fugitive dust control efficiencies, and total emissions, are presented in Appendix C.
To determine the annual emissions, emission factors for each activity were multiplied by activity-level data and the estimated number of items of equipment required for development, operations, and reclamation. Emission factors available in the standard references, which are most commonly used in emission inventories, were employed for these estimates. Except for the following, emission factors were taken from the WebFIRE database (EPA 2012a):

- For operations under average conditions, an emission factor of 0.22 ton/acre-month was used for uncontrolled emissions of particulate matter of less than or equal to 10 µm (PM$_{10}$) (Jones & Stokes Associates 2007). PM$_{2.5}$ emissions were assumed to be 21% of PM$_{10}$ emissions (AQMD 2012).

- For wind erosion, an emission factor of 0.38 ton/acre-yr was used for uncontrolled emissions of total suspended particulates (TSP). PM$_{10}$ and PM$_{2.5}$ emissions were assumed to be 50% and 7.5%, respectively, of TSP emissions (EPA 2012b).

- For blasting, emission factors of 92 and 10 lb/ton for uncontrolled emissions of PM$_{10}$ and PM$_{2.5}$, respectively, were used (QDEH 1999).

- For diesel combustion from heavy equipment, an emission factor of 22.23 lb/gal for CO$_2$ emissions was used (EPA 2008).

For operations and wind erosion, a fugitive dust control efficiency of 50% was assumed by spraying water on the exposed area twice a day. Projected activity-level data were based on assumptions discussed in Appendix C and the alternatives discussed in Chapter 2.

The significance of project-related emissions with regard to overall air quality was determined by comparing estimated annual project-related emissions of criteria pollutants and VOCs with annual emissions in the three counties that encompass the DOE ULP lease tracts (Mesa, Montrose, and San Miguel Counties) in 2008 and by comparing annual project-related emissions of CO$_2$ with annual GHG emissions in Colorado in 2010 and in the United States in 2009 (CDPHE 2011; EPA 2011; Strait et al. 2007).

**D.2 ACOUSTIC ENVIRONMENT**

Potential noise impacts under each alternative were assessed by estimating the combined noise levels from noise-emitting sources associated with ULP activities and then performing noise propagation modeling. These levels were compared with the Colorado noise limit and the U.S. Environmental Protection Agency (EPA) guideline level to estimate the distance from the noise source area or haul routes at which noise would attenuate to these limits or guideline levels.

Primary sources of noise over the life of ULP activities would include operations of aboveground and underground heavy equipment, on-road and off-road vehicle traffic, and, if necessary, blasting. Aboveground equipment includes backhoes, dozers, graders, power
generators, and scrapers, while underground equipment includes rock drills; various types of
loaders and trucks would be used both above and under the ground. The average noise levels
from most of this heavy equipment range from 80 to 90 dBA, with the exception of 98 dBA for a
rock drill at a distance of 50 ft (15 m) (Hanson et al. 2006). In general, the dominant noise source
from most construction equipment is the diesel engine, which is continuously operating around a
fixed location or has limited movement. Except for rock drills, noise levels for the type of
construction equipment that would probably be used at the ULP lease tracts range from about
80 to 90 dBA at a distance of 50 ft (15 m) from the equipment. To estimate noise levels
associated with ULP activities, a composite noise level of 95 dBA at a distance of 50 ft (15 m)
from the mine site was conservatively assumed, if noisy equipment (such as rock drills) was not
being used. Typically, this level could be reached when several pieces of noisy heavy equipment
were operating simultaneously near each other at peak load. For impact analysis along the haul
routes, a peak “pass-by” noise level of 84 dBA at a reference distance of 50 ft (15 m) from a
heavy-duty truck traveling at 55 mph (88 km/h) was estimated (Menge et al. 1998).

Several important factors affect the propagation of sound in the outdoor environment,
such as source characteristics, geometric spreading, ground effects, air absorption,
meteorological effects (due to turbulence and variations in vertical wind speed and temperature),
and screening by topography, structures, dense vegetation, and other natural or human-made
barriers. At this programmatic level, no detailed information (e.g., types and capacities of heavy
equipment, work schedules, specific locations of projects) was available, so screening-level
estimates were made by considering only geometric spreading and ground effects, as shown here
(Barry and Reagan 1978; Hanson et al. 2006):

\[ L_p = L_{p,ref} - (20 + 10G) \log_{10}(D/D_{ref}) \] for point sources

and

\[ L_p = L_{p,ref} + 10 \log_{10}(N\pi D_{ref}/(5280 \times ST)) - (10 + 10G) \log_{10}(D/D_{ref}) \] for line sources,

where

\[ L_p \] = A-weighted sound pressure level at a given distance (dBA),
\[ L_{p,ref} \] = A-weighted sound pressure level at a reference distance (dBA),
\[ G \] = Ground factor that accounts for ground effects (unitless),
\[ D \] = Distance from the noise to the receptor (ft),
\[ D_{ref} \] = Reference distance (ft; assumed to be 50 ft [15 m]),
\[ N \] = Number of vehicles per hour,
\[ 5,280 \] = Conversion factor from miles to feet,
\[ S \] = Average vehicle speed (mph) (assumed to be 55 mph [88 km/h]), and
\[ T \] = Time period over which noise level is computed (assumed to be 1 hour).

For hard ground, \( G = 0 \). For soft ground, \( G \) depends on the effective path height (\( H_{eff} \)), as
follows:
\[
G = 0.66 \text{ if } H_{\text{eff}} \text{ is } < 5 \text{ ft (1.5 m)};\]

\[
G = 0.75 \left( 1 - \frac{H_{\text{eff}}}{42} \right) \text{ if } H_{\text{eff}} \text{ is } \geq 5 \text{ ft [1.5 m]} \text{ and } < 42 \text{ ft [12.8 m]};\]

and

\[
G = 0 \text{ if } H_{\text{eff}} \text{ is } \geq 42 \text{ ft (13 m)}.\]

For this analysis, the ground was assumed to be soft based on the land cover around the ULP lease tracts. The effective path height \((H_{\text{eff}})\) is the average of the source height and the receptor height. The source height for heavy equipment was assumed to be 7.9 ft (2.4 m), which is the average height of drivetrain and exhaust contributions (Wayson 1993). The receptor height was set at 5 ft (1.5 m), which is the approximate height of human ears from the ground.

Noise levels at receptor locations were estimated by using the above formulas. Day-night average noise levels \((L_{\text{dn}})\) or DNL were derived by assuming a work schedule of 10 hours per day. For ULP activities, the distances at which noise levels reach the Colorado daytime maximum permissible limit of 55 dBA\(^1\) and the EPA guideline level of 55 dBA \(L_{\text{dn}}\) for residential areas (EPA 1974) were estimated. In addition, the residences within this distance range were counted, based on the assumption that the ULP activities would occur at the ULP lease tract boundaries. During operations, the distances at which noise levels from heavy-duty trucks along the haul routes would approach the Colorado limit and EPA guideline were estimated.

There are several specially designated areas (e.g., Dolores River Special Recreation Management Area [SRMA], Dolores River Canyon Wilderness Study Area [WSA]) and other nearby wildlife habitats around the DOE ULP lease tracts and haul routes where noise might be a concern. Negative impacts on wildlife begin between 55 and 60 dBA, a range that corresponds to the onset of adverse physiological impacts (Barber et al. 2010). Distances up to the lower threshold level from the mine sites and from the haul routes were estimated to identify the range of noise impacts on wildlife.

D.3 GEOLOGY AND SOILS

The geologic setting established for the ULP lease tracts was based on a review of aerial maps, topographic maps, geologic maps, and the scientific literature. Geologic map data (shapefiles) were obtained from the U.S. Geological Survey (USGS; see Stoeser et al. 2007). References to the geologic time scale were based on the age ranges compiled by Walker and Geissman (2009).

---

\(^1\) Colorado Revised Statutes, Title 25, “Health,” Article 12, “Noise Abatement,” Section 103: “Maximum permissible noise levels are source-oriented regulations (e.g., daytime level shall not exceed 55 dBA at 25 ft or more from the residence’s property boundary).” For this analysis, the Colorado limit for residential areas was applied as a receptor-oriented regulation (e.g., daytime level shall not exceed 55 dBA at a residence) like other noise guidelines or regulations.
The impact assessment for soil resources relied on field observations, consultations with DOE ULP management staff, and reviews of the academic and professional literature to characterize site-specific soil conditions and identify the types of impact-producing activities related to mining within the lease tracts.

Soil conditions within each of the ULP lease tracts were characterized by using customized map data from the U.S. Department of Agriculture (USDA) Natural Resources Conservation Service (NRCS) web soil survey (NRCS 2012) as a starting point and supplementing it with information provided by state and local agencies, as available. Data on various factors, such as soil texture and composition, parent materials, landforms on which the soils developed, drainage class, permeability, surface runoff potential, rutting potential, whole soil erodibility factor (K factor), wind erodibility group/index, and land classification, were gathered to gain a general understanding of the soil’s susceptibility to impacts that could result from ground-disturbing activities. Information on special soil features, such as biological crusts, was also obtained. Chapter 3 (on the affected environment) provides general soil maps and map unit descriptions for each of the four lease tract groupings (Gateway, Uravan, Paradox Valley, and Slick Rock). These maps are based on the soil units delineated on county soil surveys at scales of 1:12,000 to 1:100,000 (USDA 1999). The types of potential soil impacts are described in detail in Section 4.2.3.1, and information on the areas of potential disturbance (subject to these impacts) is provided in the soil resources discussion under each alternative in Chapter 4.

### D.4 WATER METHODOLOGY

The analysis of water resources considered impacts on surface water features and groundwater within the ULP lease tracts, the surrounding valleys, the entire groundwater basins, as well as upstream/upgradient and downstream/downgradient valleys and groundwater basins (if it was determined that there was connectivity and the potential for indirect impacts). The surface water features considered were streams, lakes, wetlands, surface springs and seeps, ephemeral washes/drainages, dry lakes, and floodplains.

Impacts on surface water and groundwater resources were mainly related to the alteration of natural hydrologic conditions (e.g., surface runoff, infiltration, and groundwater recharge/flow), degradation of water quality, and water usage. The ROI for the impacts on surface water is within the Upper Dolores, San Miguel, and Lower Dolores basins (USGS HUC-8 basins) where local surface runoff and groundwater discharge flows from the lease tracts to Dolores River, San Miguel River, and their tributaries. ROI for impacts on groundwater resource would be primarily on the lease tracts and would not exceed 5 mi (8 km) downgradient from mining activities in the lease tracts or any rivers and tributaries that local groundwater discharges to. ROI for impacts on water usage is primarily within Montrose, Mesa, and San Miguel Counties. The assessment of impacts related to hydrologic alterations and water quality was performed by using a variety of data sources (e.g., geologic maps, aerial photographs, professional reports on standard mine practices, and the scientific literature) to characterize water features and by exercising professional judgment to identify potential direct and indirect impacts from mining operations. For impacts related to water usage, water use during mine development and operations of the underground mines and for the JD-7 surface
open-pit mine was mainly for the workers’ potable water supply and for dust control activities. Water volumes assumed are discussed in Section 2.2 and Appendix C.

D.5 HUMAN HEALTH RISK

Potential human health impacts were analyzed for the mine exploration, development and operations, reclamation, and post-reclamation phases. The region of influence (ROI) for human health impacts was a 50-mi (80-km) radius of the lease tracts. Potential impacts to individuals are typically estimated to be at low levels (<2 mrem/yr) at distances greater than about 5 mi (8 km) from the source, a larger radius of 50 mi (80 km) was selected as the ROI to assess the potential impacts to the population as a whole (i.e., for collective dose evaluation). The maximum distance from the source that state-of-the art computer models can evaluate is also 50 mi (80 mi). At this distance, the individual doses would have dropped to negligible levels (<0.1–0.2 mrem/yr), which supports the selection of 50 mi (80 km) as the ROI. With regard to the exploration phase, any impacts that might result during that phase were expected to be minor, because exploratory drillings would disturb only small areas and because most of the mineralized cutting excavated from drilling would be placed back to fill the drill holes. Furthermore, the exploration phase would last for only a short period of time (i.e., a few weeks); therefore, potential impacts would be limited to only a few workers. For these reasons, potential human health impacts associated with the exploration phase were not quantified.

D.5.1 Impact Assessment for the Operational Phase

For this phase, potential impacts on the workers and the general public living near the uranium lease tracts as well as within 50 mi (80 km) of the lease tracts were analyzed. Because the impacts would primarily result from radiation exposures, they (especially radon exposures) were the focus of the analyses conducted for this phase.

Potential impacts assessed for the workers (i.e., uranium miners) included physical hazards and radiation exposures. Physical hazards included nonfatal injuries and illnesses as well as fatal injuries. Statistical data for the mining industry published by the U.S. Department of Labor, Bureau of Labor Statistics (BLS 2011a,b) were used for assessing physical hazards. The potential radiation exposures of the workers, on the other hand, were assessed by using historical data compiled by the United Nations Scientific Committee on the Effects of Atomic Radiation (UNSCEAR 2010).

Radiation exposures of the general public would result primarily from radon emissions from the exhaust vents of the uranium mines. The radon emission rates for three hypothetical underground mines whose sizes ranged from small to medium to large were estimated on the basis of their respective uranium ore production rates, as assumed in the working assumptions. There is a linear correlation between the radon emission rate and the cumulative uranium ore production (EPA 1985). For radon emission rates, an operational period of 10 years was assumed for the uranium mines under consideration when human health impacts under Alternatives 3, 4,
and 5 were assessed. This operational period corresponds roughly to the assumed mining periods of operation for Alternatives 3, 4, and 5 evaluated in Chapter 4. The emission rates from the same mines would be lower if the operational period was shorter. An emission rate of 600 Ci/yr was assumed for a very large open-pit mine, which, according to the working assumptions, would be located on Lease Tract 7. This 600-Ci/yr emission rate was determined on the basis of the emission rates of actual open-pit mines compiled by the EPA in its background report on National Emission Standards for Hazardous Air Pollutants (NESHAP) and is at the upper end of the emission rates for the open-pit mines included in the report (EPA 1989a).

The computer code, CAP88-PC (Trinity Engineering Associates, Inc. 2007), which is supported and maintained by the EPA for demonstrating compliance with regulations, was used to estimate radon concentrations at various downwind locations. Potential maximum radiation doses resulting from radon emissions associated with different sizes of uranium mines were calculated. These calculation results were tabulated as functions of the distance from the emission point and can be used for inferring the potential radiation dose to an individual living close to the ULP lease tracts.

The collective dose to the general public living within 50 mi (80 km) of the lease tracts was also calculated by using CAP88-PC (Trinity Engineering Associates, Inc. 2007). However, rather than the radon emission rate from a single uranium mine, the total radon emission rate from all the uranium mines that would be operated at the same time was used. Because the actual number of mines that would be operated at any time is not known, potential human health impacts were analyzed only for the peak year of operations as defined in the working assumptions (Chapter 2). It is expected that potential collective exposures in any other year would be lower than those estimated for the peak year of operations. Because the exact locations of the active mines during the peak year of operations are not known, the potential range of the collective dose was inferred by placing the radon emission point at four alternative locations. These four alternative locations were selected to be the center points of four lease tract groups, which were formed by aggregating the uranium lease tracts whose geographic locations are close to each other. Figure D.5-1 depicts the four lease tract groups used for analyzing the population exposure. Population distributions within 50 mi (80 km) of the center of each lease tract group were developed by using 2010 Census Bureau data.

D.5.2 Impact Assessment for the Reclamation Phase

For the reclamation phase, potential human health impacts were analyzed for the reclamation workers and the general public living close to the uranium lease tracts. Both chemical and radiological risks were analyzed. The major radiation sources of concern were the uranium isotopes and their decay products contained in the waste-rock piles. In addition to emitting radiation, the uranium compounds could pose chemical hazards to human health. The vanadium content in the uranium ores is about 5 to 10 times higher than the uranium content. As a result of intermixing from mining, the waste-rock piles could also contain vanadium, which, if inhaled or ingested, could have adverse effects on human health. To account for the possible range of radionuclide concentrations in waste rocks, maximum sampling data (reported as
212 mg/kg total uranium which would result in 70 pCi/g uranium and Ra-226 assuming secular equilibrium between uranium isotopes and their decay products) for Lease Tracts JD-6 and JD-8 ((Whetstone Associates 2011, 2012) was considered along with the possibility that the waste rock could contain up to 0.05% uranium (which is calculated to equate to 168 pCi/g uranium).

The reclamation workers were assumed to incur radiation exposures from working on top of the waste-rock pile through three pathways: external radiation; inhalation of radioactive dust particles and radon; and accidental soil ingestion. The exposures were analyzed by using Version 6.7 of the RESRAD computer code (Yu et al. 2001). For chemical exposures, the potential exposure pathways considered were inhalation of dust particles and incidental soil ingestion. The EPA guidance on human health risk assessment (EPA 1989b) was followed to evaluate the potential chemical risks that could result from exposures to uranium and vanadium compounds.
The general public living near the uranium lease tracts would incur radiation and chemical exposures primarily through the airborne release of particulates from the waste-rock piles. In addition, the release of radon could add to the potential radiation exposure. The emission rate of radon was calculated by using Version 6.7 of the RESRAD code (Yu et al. 2001). In the analysis of potential radiation exposures of reclamation workers, RESRAD calculated the radon flux from the surface of a waste-rock pile; this calculated radon flux was multiplied by the surface area of the waste-rock pile to obtain the radon emission rate. The release rate of dust particles was calculated following the guidance from Regulatory Guide 3.59 (NRC 1987) on emissions from exposed uranium mill tailings sands due to wind erosion. The frequencies of different wind speed groups required in the dust particle emission calculation were calculated on the basis of meteorological data from the lease tracts (Rogers 2011).

On the basis of the emission rates of radon and particulates calculated by the methods discussed in the preceding paragraph, concentrations of radon, uranium isotopes and decay products, total uranium, and vanadium at various downwind locations from the emission point were obtained by using CAP88-PC (Trinity Engineering Associates, Inc. 2007). These concentrations at downwind locations were then used to infer potential radiation and chemical exposures for an individual living close to the uranium lease tracts during the reclamation phase.

D.5.3 Impact Assessment for Post-Reclamation Phase

The receptor considered for analysis of the human health impacts in the post-reclamation phase was a nearby resident and recreationist who unknowingly entered the uranium lease tract. It was assumed that the recreationist would camp on top of a waste-rock pile for 2 weeks, collect wild berries, and hunt wildlife animals for consumption. Potential impacts from camping would result from the inhalation of radon diffusing from the waste-rock pile, inhalation of dust particles, accidental soil ingestion, and the direct external radiation emitted by radionuclides contained in the waste-rock pile. The RESRAD code was used for dose calculations. Although it is expected that a layer of soil materials would be spread on top of the waste-rock pile to facilitate the growth of vegetation, the thickness of the soil materials could vary. Therefore, in the analysis, a thickness ranging from 0 to 1 ft (0 to 0.3 m) was assumed, and the range of potential impact was calculated.

The residents living close to the uranium lease tracts could still be exposed to radon and dust particles emitted from the waste-rock piles. However, because of the cover soils spread on top of the waste-rock piles, the emission rates would be reduced. As a result, the potential dose associated with airborne emissions incurred by a resident after the reclamation phase would be less than the dose incurred during the reclamation phase.

A less likely exposure scenario for residents living close to the uranium lease tracts considers that the residents let their livestock graze in the uranium lease tracts and consume the meat and milk produced by the livestock. The RESRAD code was used for this analysis.
D.5.4 Parameter Values for Modeling Potential Radiation and Chemical Exposures

For the impact analyses, a resident living close to or within 50 mi (80 km) of the uranium lease tracts was assumed to be at his residence for 350 days per year and to spend 8 hours outdoors and 16 hours indoors each day. Because the windows and doors of the residence would be closed most of the time, a dust or radon filtration factor of 0.4 was assumed (i.e., the indoor radon or airborne particulate level was assumed to be 40% of the outdoor level). The average inhalation rate was assumed to be 8,000 m$^3$/yr (the default value used in CAP88-PC), while the average soil ingestion rate was assumed to be 100 mg/d.

For reclamation workers, an exposure duration of 20 days was used for impact analyses. The inhalation rate was assumed to be 8,000 m$^3$/yr, and the soil ingestion rate was assumed to be 100 mg/d. An exposure duration of 2 weeks was assumed for the recreationist who camps on a waste-rock pile. This recreationist was assumed to ingest 1 lb (0.45 kg) of wild berries collected from the lease tracts and 100 lb (45.4 kg) of deer meat obtained through hunting activities. This individual was assumed to have the same inhalation and soil ingestion rate as a reclamation worker. For the nearby residents, the inhalation rate and soil ingestion rate were assumed to be the same as those for the recreationist. The ingestion rates of milk (92 L/yr) and meat (63 kg/yr) were set to the RESRAD default values.

For modeling radon emissions from a waste-rock pile, an emanation factor of 0.15 was assumed based on experimental measurement data taken from rock samples (Ferry et al. 2002; Sakoda et al. 2010). The RESRAD default value of $2 \times 10^{-6}$ m$^2$/s was assumed for the radon diffusion coefficient, while the porosity in a waste-rock pile was assumed to be 0.4, the RESRAD default value.

For CAP88-PC analysis, the emission of radon from an underground mine was modeled as a stack source, with a release height of 3 ft (1 m) and a diameter of 6.0 ft (2 m), taken from the diameter of the ventilation shaft in the Final Environmental Assessment for the Whirlwind Mine Uranium Mining Project (BLM 2008). An exit velocity of 16 ft/s (5 m/s) was assumed for the gas escaping from the exhaust vents. This exit velocity was obtained by considering the average ventilation rate in an underground mine, the number of exhaust vents, and the diameter of the exhaust vents. An average annual precipitation of 1 ft/yr (0.32 m/yr), ambient temperature of 50°F (10°C), and absolute humidity of 8 g/m$^3$ were selected to reflect site-specific conditions. An average mixing height of 4,900 ft (1,500 m), considering both morning and afternoon conditions, was also assumed for the analyses. For the analysis involving an open-pit mine, the emission of radon was assumed to come from an area source that occupied 100 acres (40 ha)—or 50% of the disturbed area—based on assumptions presented in Chapter 2 for the alternatives. The release height was 0 ft (0 m), and there was no plume rise for release from the open-pit mine.

D.5.5 Dose Conversion Factors and Toxicity Values

The exposure concentration of radon is usually expressed as a working level (WL), which is a measure of the release of alpha energy by the short-lived progenies of radon. The exposures
are measured in working level months (WLMs). One WLM is equivalent to an exposure of
170 hours to a concentration of 1 WL. UNSCEAR recommends that an exposure of 1 WLM
corresponds to 506 mrem of effective dose for workers (UNSCEAR 2008, 2010). For the general
public, the corresponding effective dose of an exposure of 1 WLM is about 388 mrem
(UNSCEAR 2008). The difference in the conversion from WLM to effective dose used for
workers and the conversion used for the general public lies in the different inhalation rates
considered for the conversion. The International Commission on Radiation Protection
(ICRP 2011) indicates that, based on the pooled results from studies of radon-exposed miners, a
lifetime excess risk of $5 \times 10^{-4}$ per WLM should be used for estimating radon progeny-induced
lung cancer.

Potential radiation doses resulting from exposures to uranium isotopes and their decay
products were calculated by using the ICRP 60-based dose conversion factors for inhalation and
ingestion. The corresponding cancer risks were calculated by using the slope factors obtained

Potential chemical risks that could result from exposures to uranium and vanadium
compounds were assessed by comparing the estimated exposures with threshold values. The
threshold values used are reference concentrations (RfCs) for inhalation exposures and reference
doses (RfDs) for ingestion exposures. The RfD used for assessing risks associated with
vanadium exposure is 0.009 mg/kg-d, obtained from the EPA Integrated Risk Information
System (IRIS) for V$_2$O$_5$ (EPA 2012c). The RfC used is 0.0001 mg/m$^3$ from the Agency for
Toxic Substances and Disease Registry (ATSDR 2012). Because no RfC value is provided in
IRIS or the Health Effect Assessment Summary Tables (HEASTs) for vanadium, the minimum
risk level (MRL) proposed by the ATSDR for chronic exposure was used as a surrogate for RfC.
The RfC used for assessing risks associated with uranium exposure is 0.0008 mg/m$^3$
(ATSDR 2012), which is the MRL proposed by ATSDR for chronic exposure to insoluble
uranium compounds. The RfD used for uranium is 0.003 mg/kg-d, obtained from the IRIS
database (EPA 2012c).

### D.5.6 Comparison of CAP88-PC Results and COMPLY-R Results

According to Title 40 in the Code of Federal Regulations (40 CFR Part 61), emissions of
Rn-222 to the ambient air from an underground uranium mine must not result in any member of
the general public receiving in any year an effective dose of 10 mrem or greater. Owners or
operators of uranium mines must use COMPLY-R (EPA 1989c) or a model equivalent to
COMPLY-R, provided they have received approval from EPA headquarters, to demonstrate
compliance with this requirement. For human health impact analyses, in addition to the use of
COMPLY-R, the CAP88-PC computer code (Trinity Engineering Associates, Inc. 2007) was
also used for conducting analyses in the ULP PEIS because it has been supported and maintained
by the EPA and used extensively in human health risk assessments for evaluating potential
radiation exposures resulting from airborne emissions of radionuclides, including radon.
Furthermore, the emissions considered by CAP88-PC can originate from point sources, such as
the exhaust vents of underground uranium mines, or from area sources, such as the waste-rock
piles accumulated from uranium-mining activities. In addition to being used to obtain air
concentrations for estimating the radiation dose to an individual, CAP88-PC can also be used to
estimate the collective exposures to a population living or working around the emission sources.
Consistency in the methodology was maintained by applying CAP88-PC to evaluate the potential
exposures of the general public, both as individual members and collectively, associated with the
different phases of uranium mine operations considered in the ULP PEIS.

In this section, the calculation results of CAP88-PC and COMPLY-R associated with the
release of radon during the operation of a small underground uranium mine (which was defined
by the working assumptions described in Chapter 2) are compared. This small uranium mine was
assumed to produce 50 tons of uranium ore per day, with an annual production rate of
12,000 tons/yr (10,800 metric tons/yr). The mining activities were assumed to have been
conducted for 10 years. Based on the equation proposed by the EPA (EPA 1985) that correlates
the radon emission rate with the cumulative uranium ore production, a radon emission rate of
528 Ci/yr was calculated. The volumetric flow rate from the exhaust vent was calculated to be
450 ft³/s (13 m³/s), corresponding to an exit speed of 16 ft/s (5 m/s) and a diameter of 6 ft (2 m)
as used in the CAP88-PC analysis. The vent was assumed to be vertical with a height of 3 ft
(1 m) above the ground. Both the ambient temperature and the temperature of the exhaust stream
were 50°F (10°C). By using the joint frequency data (Rogers 2011) collected from a 30-ft (10-m)
high meteorological tower installed by Energy Fuels Resources Corp. in the proposed Piñon
Ridge Mill site in Montrose County, Colorado, the frequency and average wind speed in each of
the 16 directional sectors were calculated (Table D.5-1). These data represent the site-specific
conditions from April 2008 to March 2011.

Table D.5-2 compares the maximum radon doses calculated with CAP88-PC and those
calculated with COMPLY-R at different distances from the radon emission point. The radon
doses calculated with CAP88-PC were much smaller than those calculated with COMPLY-R for
shorter distances, but the difference in calculated doses became smaller as the distance from the
emission point increased. According to the users guide (EPA 1989c), COMPLY-R uses a
conversion factor of 920 mrem/WLM to convert radon exposures to effective doses, and, by
default, a receptor was assumed to spend 75% of the exposure time indoors. For the CAP88-PC
results, an updated conversion factor of 388 mrem/WLM (UNSCEAR 2008) was used, and a
receptor was assumed to spend 16 hours indoors and 8 hours outdoors each day for 350 days per
year at the same location. Furthermore, the indoor radon level was assumed to be 40% of the
outdoor level. If the same exposure-to-dose conversion factor is used in both sets of calculations,
the radon dose calculated with COMPLY-R would be greater than that calculated with
CAP88-PC for an exposure distance of less than 4,900 ft (1,500 m). However, at 4,900 ft
(1,500 m) or more, the radon dose calculated with COMPLY-R would be smaller than that
calculated with CAP88-PC.
### TABLE D.5-1  Meteorological Data Used in the COMPLY-R Calculations

<table>
<thead>
<tr>
<th>Wind from</th>
<th>Frequency</th>
<th>Speed (m/s)</th>
</tr>
</thead>
<tbody>
<tr>
<td>N</td>
<td>0.026</td>
<td>2.63</td>
</tr>
<tr>
<td>NNE</td>
<td>0.015</td>
<td>1.98</td>
</tr>
<tr>
<td>NE</td>
<td>0.015</td>
<td>1.53</td>
</tr>
<tr>
<td>ENE</td>
<td>0.018</td>
<td>1.43</td>
</tr>
<tr>
<td>E</td>
<td>0.04</td>
<td>1.7</td>
</tr>
<tr>
<td>ESE</td>
<td>0.137</td>
<td>2.16</td>
</tr>
<tr>
<td>SE</td>
<td>0.139</td>
<td>2.01</td>
</tr>
<tr>
<td>SSE</td>
<td>0.054</td>
<td>2.01</td>
</tr>
<tr>
<td>S</td>
<td>0.047</td>
<td>3.47</td>
</tr>
<tr>
<td>SSW</td>
<td>0.077</td>
<td>5.02</td>
</tr>
<tr>
<td>SW</td>
<td>0.07</td>
<td>4.54</td>
</tr>
<tr>
<td>WSW</td>
<td>0.061</td>
<td>3.1</td>
</tr>
<tr>
<td>W</td>
<td>0.07</td>
<td>2.58</td>
</tr>
<tr>
<td>WNW</td>
<td>0.094</td>
<td>2.41</td>
</tr>
<tr>
<td>NW</td>
<td>0.09</td>
<td>2.87</td>
</tr>
<tr>
<td>NNW</td>
<td>0.047</td>
<td>2.85</td>
</tr>
</tbody>
</table>

### TABLE D.5-2  Comparison of the Radon Doses Calculated by CAP88-PC and Those Calculated by COMPLY-R

<table>
<thead>
<tr>
<th>Distance (m)</th>
<th>CAP88-PC</th>
<th>COMPLY-R</th>
<th>Ratio a</th>
</tr>
</thead>
<tbody>
<tr>
<td>500</td>
<td>7.8</td>
<td>35.7</td>
<td>4.56</td>
</tr>
<tr>
<td>1,000</td>
<td>5.6</td>
<td>12.0</td>
<td>2.13</td>
</tr>
<tr>
<td>1,500</td>
<td>3.7</td>
<td>6.5</td>
<td>1.75</td>
</tr>
<tr>
<td>2,000</td>
<td>2.7</td>
<td>4.3</td>
<td>1.61</td>
</tr>
<tr>
<td>3,000</td>
<td>1.6</td>
<td>2.5</td>
<td>1.53</td>
</tr>
<tr>
<td>4,000</td>
<td>1.2</td>
<td>1.7</td>
<td>1.39</td>
</tr>
<tr>
<td>5,000</td>
<td>1.0</td>
<td>1.3</td>
<td>1.34</td>
</tr>
</tbody>
</table>

a  The ratio is calculated as COMPLY-R divided by CAP88-PC.
D.6 ECOLOGICAL RESOURCES

D.6.1 Vegetation

This section describes the methodology used to evaluate potential impacts on vegetation within the potentially affected area of the ULP lease tracts.

D.6.1.1 Vegetation Included in the Assessment

Vegetation considered in the assessment included plant communities associated with the ecoregions and land cover types mapped for the potentially affected area (see data sources below). Habitats associated with wetland types, or other water-dependent habitats, known to occur in the potentially affected area were also included.

D.6.1.2 Affected Area

The affected area considered in this assessment included the areas of direct and indirect effects. The area of direct effects was defined as the area that would be physically modified during project development (i.e., where ground-disturbing activities would occur). The area of direct effects encompassed the entire lease tracts, which included all project components and access roads.

The area of indirect effects was defined as the area where ground-disturbing activities would not occur but that could be indirectly affected by activities in the area of direct effects. This indirect effects area was defined as the area outside the lease tracts but within 5 mi (8 km) of the tract boundary. The area of indirect effects could be affected by all phases of project activities, including the construction and use of access roads, in the area of direct effects related to groundwater withdrawals, surface runoff, dust, and accidental spills. The distance from the lease tract boundary used to define this area of indirect effects was based on professional judgment and was considered sufficiently large to bound the area that would potentially be subject to indirect effects. The potential magnitude of indirect effects would decrease with increasing distance from the lease tract.

D.6.1.3 Data Sources

The types of data used to determine the known or potential presence of plant communities in the vicinity of the DOE ULP lease tracts were collected from various sources and at different geographical and organizational levels. Sources of information included, but were not limited to, the following:
• Level III and Level IV ecoregions (Chapman et al. 2006);
• Gap analysis programs—Southwest Regional Gap Analysis Project (SWReGAP) (USGS 2004, 2005);
• State noxious weed lists; and
• National Wetlands Inventory (USFWS 2012).

D.6.1.4 Analysis Approach

Plant communities that were known to occur or could potentially occur within the affected area were included in the impact analysis. A landscape-level analysis was used to determine impacts by quantifying the total number of acres of each land cover type, encompassing a range of similar plant communities, within the area of direct effects.

The magnitudes of impacts on plant communities would depend on the locations of projects, project-specific designs, the mitigation measures applied (including avoidance, minimization, and compensation), and the status of plant communities in project areas.

The analysis of impacts on environmental resources from mining and reclamation activities was based, in part, on a set of assumptions regarding site preparation and reclamation activities. These assumptions were based on management practices at existing mines and current DOE guidance and were used for the evaluation of impacts at the programmatic level.

The actual extent of land disturbance within the footprint of any mine site would be specified in a detailed plan. However, to ensure an upper-bound assumption for the impact analyses, the entire project area was assumed to be cleared of all vegetation during site preparation. Development and operations were assumed to continue for 8 to 15 years. Ground disturbance was assumed to range from 10 acres (4 ha) for small mines to 20 acres (8 ha) for a large mine. In addition, the very large, 210-acre (80-ha) open-pit mine at JD-7 was assumed to resume operations under some of the alternatives.

It was assumed that immediately following the decommissioning of a mine, land surfaces would be recontoured to the greatest extent feasible. The operator would subsequently establish vegetation on the waste-rock area and other disturbed areas. It was assumed that reclamation activities would occur over a 2-year period and would include grading to create landforms conforming to the surrounding area, application of topsoil, and seeding. A seed mix (see Table 4.1-8) has been developed for use on reclamation activities for the ULP. The final determination of successful vegetation establishment would be made by DOE in coordination with the BLM and Colorado Division of Reclamation, Mining, and Safety (CDRMS).
D.6.2 Wildlife and Aquatic Biota

Analysis of potential impacts on terrestrial and aquatic species and their habitats considered mine development, mine operations, and reclamation activities at and in the vicinity of the lease tracts. Direct and indirect impacts on ecological resources were evaluated on the basis of the following:

- The quality and quantity of habitats present;
- The potential magnitude of changes to habitat quality and quantity;
- The season when impacts could occur;
- The expected duration of impacts;
- The sensitivity of biological resources that could be affected by changes in habitat quality or quantity; and
- The rarity and importance of affected resources.

Impacting factors considered in evaluating effects from mining in the lease tracts included the following:

- Habitat loss, modification, and fragmentation;
- Barriers to movement;
- Changes in stream flow and water quality;
- Erosion and sedimentation;
- Air quality and fugitive dust;
- Introduction of invasive species;
- Exposure to contaminants (including radionuclides);
- Mortality and injury; and
- Noise and disturbance.
D.6.2.1 Wildlife

This section describes the methodology used to evaluate impacts on wildlife known to occur, or for which suitable habitat could occur, within the potentially affected area of the ULP lease tracts.

D.6.2.1.1 Wildlife Species Included in the Assessment. Wildlife species considered in the assessment included representative amphibian, reptile, bird, and mammal species. Representative species were selected among those species known to occur, or for which potentially suitable habitat occurs, within the lease tracts. To a large extent, the selection of representative species was based on whether a species (1) has key habitats within or near the lease tracts, (2) is important to humans (e.g., big game, small game, and furbearer species), (3) is representative of other species that share predominant habitats found in the lease tracts, (4) could make use of lease tract mines (e.g., bats), (5) has some type of regulatory protection (e.g., Migratory Bird Treaty Act), and/or (6) is among the species reported in the Environmental Protection Plans (EPPs) provided in Appendix I. To the extent practicable, representative species included wildlife species whose range included the three-county study area or at least extended throughout the region for all or most of the lease tracts.

D.6.2.1.2 Affected Area. For the wildlife impact assessment, the affected area included those portions of Mesa, Montrose, and San Miguel Counties that encompassed the lease tracts. The area of direct effects was defined as the area that would be physically modified during project development (i.e., where ground-disturbing activities would occur). The area of direct effects encompassed the entire lease tracts, which included all project components and access roads. The area of indirect effects was defined as the area where ground-disturbing activities would not occur but that could be indirectly affected by activities in the area of direct effects. This indirect effects area was defined as the area outside the lease tracts but within 5 mi (8 km) of the tract boundary. The distance from the lease tract boundary used to define this area of indirect effects was based on professional judgment and was considered sufficiently large to bound the area that would potentially be subject to indirect effects.

D.6.2.1.3 Data Sources. The types of data used to determine the known or potential presence of wildlife species and life history information on the species were collected from various sources and at different geographical and organizational levels. The most current, location-specific data at the highest resolution were used whenever available. Sources of information included, but were not limited to, the following:

- Colorado National Heritage Program (CNHP 2009) and Colorado Parks and Wildlife (formerly Colorado Division of Wildlife; CPW 2011);
- Gap analysis programs—SWReGAP (USGS 2004, 2005, 2007); and
D.6.2.1.4 Analysis Approach. Because of the uncertainty regarding species distributions and the inherent challenges involved with tracking wildlife species in a lease tract, a conservative approach was used to determine the potential for species to occur on or in the vicinity of the lease tracts. The identification of potential wildlife species in the general area of the lease tracts was based on (1) county-level occurrences, (2) locations of species observations as determined by Colorado’s wildlife and/or natural heritage agencies, and (3) occurrences of identified land cover for the species listed by SWReGAP (USGS 2005).

Spatial data provided by state natural heritage and regional gap analysis programs were used to determine whether potentially suitable habitat occurred in the affected area. Gap analysis program data consisted of vertebrate animal land cover models. When maps of key habitats for a big game or game bird species (e.g., crucial winter range) were available, the acreages of those habitats within each of the lease tracts were determined by using ESRI ArcGIS Version 9 software.

With regard to the assessment of wildlife, relative impact magnitude categories were as follows:

- **None.** No impacts are expected.

- **Small.** Effects would not be detectable or would be so minor that they would neither destabilize nor noticeably alter any important attribute of the resource. (For this analysis, impacts were considered small if $\leq 1\%$ of identified habitat for a representative species would be lost in the ROI.)

- **Moderate.** Effects would be sufficient to alter noticeably but not destabilize important attributes of the resource. (For this analysis, impacts were considered moderate if $\geq 1\%$ but $<10\%$ of identified habitat for a representative species would be lost in the region.)

- **Large.** Effects would be clearly noticeable and sufficient to destabilize important attributes of the resource. (For this analysis, impacts were considered large if $10\%$ or more of identified habitat for a representative species would be lost in the region.)

Actual impact magnitudes on wildlife species would depend on the locations of projects, project-specific designs, mitigation measures applied (including avoidance, minimization, and compensation), and status of the species and their habitats in the project areas.

D.6.2.2 Aquatic Biota

This section describes the methodology used to evaluate direct and indirect impacts on aquatic habitats and biota known to occur on or within the potentially affected area of the ULP lease tracts.
D.6.2.2.1 Affected Area. For the aquatic biota impact assessment, the affected area is similar to that for the wildlife assessment. The area of direct effects was defined as the area that would be physically modified during project development (i.e., where ground-disturbing activities would occur). The area of direct effects encompassed the entire lease tracts, which included all project components and access roads. The area of indirect effects was defined as the area where ground-disturbing activities would not occur but that could be indirectly affected by activities in the area of direct effects. This indirect effects area was defined as the area outside the lease tracts but within 5 mi (8 km) of the tract boundary. The distance from the lease tract boundary used to define this area of indirect effects was based on professional judgment and was considered sufficiently large to bound the area that would potentially be subject to indirect effects.

D.6.2.2.2 Analysis Approach. Aquatic habitat and communities were assessed by first determining the perennial and intermittent/ephemeral surface water features (streams and other water bodies) within or adjacent to the lease tracts. The occurrences of surface water features were based on data from the USGS national atlas (http://nationalatlas.gov/mapmaker) and available reports.

Descriptions of aquatic communities within the aquatic habitats were derived from state records, reports conducted on aquatic systems in the lease tracts, and existing NEPA documents for the lease tracts. For many of the ephemeral/intermittent washes and rivers, no data were available. Many of the surface water features in the lease tracts are ephemeral and are not expected to contain aquatic habitat or biota. However, with sufficient frequency and flow, ephemeral or intermittent surface water may contain a diverse seasonal community of opportunistic species or habitat specialists adapted to living in temporary aquatic environments. Such specialists may be present in a dormant state even in dry periods. Therefore, aquatic biota could be present at least temporarily. Also, mining activities could affect permanent water features located near some of the lease tracts. To better resolve whether aquatic habitat and biota are present within or near a lease tract, site-specific surveys of aquatic communities are presumed to be required prior to mine development.

It was assumed that impacts on aquatic habitat and communities could potentially result from direct disturbance; surface water and groundwater withdrawals; and changes in water, sediment, and contaminant inputs to surface water features. Based on best professional judgment, much greater weight was given to the magnitude of direct effects, because those effects could be difficult to mitigate. The potential for indirect impacts on surface water outside the lease tracts was evaluated on the basis of their proximity and connectivity to surface water inside the lease tracts. In most cases, it was assumed that mitigation would reduce most indirect effects to negligible levels. Actual impacts on aquatic habitat and biota would depend on the locations of mines relative to surface water, mine-specific designs, and mitigation measures applied (including avoidance, minimization, and compensation). Mitigation was considered if there was a potential for impacts on aquatic habitat and biota.
D.6.3 Threatened, Endangered, and Sensitive Species

D.6.3.1 Species Included in the Assessment

Potential impacts on threatened, endangered, and sensitive species were evaluated in a manner similar to that used for plant communities and habitats and wildlife and aquatic resources (Sections D.6.1 and D.6.2), and impacts on these species and their habitats from mine development, mine operations, and reclamation activities at and in the vicinity of the lease tracts were considered. The following types of species were evaluated in the ULP PEIS as threatened, endangered, or sensitive species:

- Species listed as threatened or endangered under the Endangered Species Act (ESA) or that are proposed or candidates for listing under the ESA;
- Species that are listed by the BLM as sensitive;
- Species that are listed by the U.S. Forest Service (USFS) as sensitive; and
- Species that are listed as threatened or endangered by the State of Colorado.

Data used to determine baseline conditions and evaluate impacts of the ULP on threatened, endangered, and sensitive species were obtained from the following sources:

- USFWS Information, Planning, and Conservation (IPaC) System (USFWS 2011a);
- USFWS Critical Habitat Portal (USFWS 2011b);
- NatureServe Explorer (NatureServe 2011);
- CNHP Rare Plant Guide (CNHP 2011a);
- CNHP element occurrence records (CNHP 2011b);
- CPW Natural Diversity Information Source (CPW 2011); and
- SWReGAP (USGS 2007).

D.6.3.2 Affected Area

The affected area includes areas that may be directly or indirectly affected by activities conducted under the ULP. The area of direct effects for threatened, endangered, and sensitive species includes those portions of Mesa, Montrose, and San Miguel Counties that intersect the lease tracts. The area of indirect effects for threatened, endangered, and sensitive species encompasses a larger area of habitats that could be affected by indirect factors including, but not
limited to, groundwater withdrawal; changes in water quality, sedimentation, and erosion;

dispersion of contaminants (including radionuclides); and fugitive dust dispersion. The spatial
extent for the area of indirect effects was conservatively defined based on the species’ biology
and potential mechanisms of impacts. For example, the areas of indirect effects for aquatic
species are generally larger than those for terrestrial species. The indirect effects area for
terrestrial species was defined as the area outside the lease tracts but within 5 mi (8 km) of the
tract boundary. However, the indirect effects area for aquatic species was determined to include
downstream intermittent streams and water bodies to account for potential impacts of altered
water quality and quantity related to ULP activities. For aquatic species, the indirect effects area
included downstream portions of the Dolores and San Miguel Rivers, as well as downstream
portions of the Colorado River. The distance between the confluence of the Dolores and
Colorado Rivers and the Lease Tracts ranges between approximately 35 river miles (56 river km)
from the Gateway Lease Tracts and greater than 70 river miles (112 river km) from the Slick
Rock Lease Tracts. In general, the magnitude of indirect effects decreases with increasing
distance from the lease tracts.

D.6.3.3 Analysis Approach

Because of the uncertainty regarding species distributions and the inherent challenges
involved with tracking species in the lease tracts, a conservative approach was used to determine
the potential for species to occur on or in the vicinity of the lease tracts. The identification of
potential threatened, endangered, and sensitive species in the vicinity of the lease tracts was
based on (1) county-level occurrences, (2) locations of species observations as determined by
Colorado wildlife and/or natural heritage agencies, and (3) occurrences of potentially suitable
habitat for the species listed by SWReGAP (USGS 2007).

Spatial data provided by the CNHP and SWReGAP were used to determine whether
potentially suitable habitat occurred in the affected area. The SWReGAP habitat suitability
models consisted only of vertebrate animal land cover models.

A spatial analysis was performed by using ESRI ArcGIS 10 software to determine the
intersections of the ULP lease tracts with CNHP element occurrences and SWReGAP habitat
suitability models. Based on this analysis, a determination was made regarding the species’
known or potential occurrence on the lease tract. A lack of data did not preclude a species from
potentially occurring in a given area. When there was a lack of CNHP records or SWReGAP
habitat suitability models for a species, modeled land cover types were used to determine the
potential suitability of the affected area with regard to what is known about the species’ biology
and habitat preferences.

Relative impact magnitude categories were as follows:

- **None.** No impacts are expected.
- **Small.** Effects would not be detectable or would be so minor that they would
  neither destabilize nor noticeably alter any important attribute of the resource.
• Moderate. Effects would be sufficient to alter noticeably but not destabilize important attributes of the resource.

• Large. Effects would be clearly noticeable and sufficient to destabilize important attributes of the resource.

Actual impact magnitudes on threatened, endangered, and sensitive species would depend on the locations of projects, project-specific designs, and mitigation measures applied (including avoidance, minimization, and compensation).

D.7 LAND USE

The area of analysis focused on public and private lands within a 25-mi (40-km) radius of the ULP lease tracts. Existing right-of-way (ROW) authorizations and land designations under BLM’s lands and realty program were identified (including specially designated lands with wilderness characteristics). Other information on agriculture, livestock grazing, wild horses and burros, mineral resources (and mining), oil and gas leasing, timber harvest, and recreation were obtained from Federal and state sources. Major sources of information included (1) BLM’s resource management plans, the national landscape conservation system, public land statistics, and the Land and Mineral Legacy Rehost 2000 system (LR2000); (2) USDA’s 2007 census of agriculture and resource bulletins; and (3) various reports and database searches from web sites sponsored by the Colorado Department of Natural Resources (CDNR), CDRMS, Colorado Oil and Gas Conservation Commission (COGCC), Utah Geological Survey, and Utah Division of Oil, Gas, and Mining.

The impacts analysis for land use considered issues such as land use conflicts within the lease tracts (e.g., mining, oil and gas leasing, livestock grazing, and recreation), whether or not lease tracts would be open to mineral entry (under the various alternatives), and visual impacts at specially designated lands. The main factors considered as part of the land use impacts analysis were the (1) proximity of lease tracts to specially designated areas, (2) nature of the resources and resource values present within the proximate specially designated areas, and (3) quality of the view of the lease tracts from these areas.

D.8 SOCIOECONOMICS

The analysis of socioeconomic impacts from the mining activities at the DOE ULP lease tracts assessed impacts in an ROI. The ROI includes Mesa, Montrose, and San Miguel Counties in Colorado, in which the majority (up to 90%) of employees for the DOE ULP proposed mines would reside. The ROI includes county governments, city governments, and school districts. The assessment of the impacts from mining at the DOE ULP lease tracts covered impacts on employment, income, population, housing, community services, and traffic.
D.8.1 Regional Employment and Income

The assessment of impacts from mining activities on regional employment and income was based on the use of regional economic multipliers in association with project expenditure data for the mine development and operations phase and the reclamation phase. Multipliers captured the indirect (off-site) effects of on-site activities associated with mining operational and reclamation activities. Data on expenditures were derived from numerous sources.

Cost data for each cost category were then mapped into the relevant North American Industry Classification System (NAICS) codes for use with multipliers from an IMPLAN model specified for each state (MIG 2011). IMPLAN input-output economic accounts show the flow of commodities to industries from producers and institutional consumers. The accounts also show consumption activities by workers, owners of capital, and imports from outside the region. The IMPLAN model contains 528 sectors representing industries in agriculture, mining, construction, manufacturing, the wholesale and retail trade, utilities, finance, insurance and real estate, and consumer and business services. The model also includes information for each sector on employee compensation; proprietary and property income; personal consumption expenditures; Federal, state, and local expenditures; inventory and capital formation; and imports and exports.

Impacts on employment were described in terms of the total number of jobs created in the ROI in the peak years for mine development, mine operations, and reclamation. The relative impact of the increase in employment in the ROI was calculated by comparing the total mining employment (without considering ULP-related activities), over the same period, with the employment that was assumed in order to estimate the number of jobs created by the ULP exploration, mine development and operations, and reclamation activities. Impacts were expressed in terms of the percentage point difference in the average annual employment growth rate with and without the DOE ULP mining activities. Forecasts were based on data provided by the U.S. Department of Commerce.

D.8.2 Population

An important consideration in the assessment of the impacts from DOE ULP mining and reclamation activities was the number of workers, families, and children who would migrate into the ROI, either temporarily or permanently. The capacity of regional labor markets to supply a sufficient number of workers in the occupations required for mining and reclamation is closely related to the occupational profile of the ROI and occupational unemployment rates. To estimate the in-migration that would occur to satisfy direct labor requirements, the analysis developed estimates of the available labor in each direct labor category based on ROI unemployment rates applied to each occupational category. In-migration associated with indirect labor requirements was derived from estimates of the available labor supply in the ROI economy as a whole that would be able to satisfy the demand for labor by industry sectors in which mining and reclamation spending initially occurred. The national average household size (2.6) was used to calculate the number of additional family members who would accompany direct and indirect
in-migrating workers. Based on other analyses of energy project labor in-migration (Fahys-Smith 1983), it was assumed that 28% of the workers in-migrating into each ROI would bring their family members with them.

Impacts on population were described in terms of the total number of in-migrants arriving in the ROI in the peak year(s) of DOE ULP mining and reclamation. The relative impact of the increase in population in the ROI was calculated by comparing total DOE ULP in-migration over the period in which mining and reclamation was assumed to occur with baseline ROI population forecasts over the same period. Impacts were expressed in terms of the percentage point difference in the average annual population growth rate with and without the DOE ULP mining and reclamation activities. Forecasts were based on data provided by the Colorado State Demography Office.

D.8.3 Housing

The in-migration of workers occurring during mine development and operations has the potential to affect the housing market in the ROI. The analysis considered these impacts by estimating the increase in demand for rental housing units in the peak year(s) of operations and reclamation that would result from the in-migration of both direct and indirect workers into the ROI. The impacts on housing were described in terms of the number of rental units required in the peak year of operations. The relative impact on the existing housing in the ROI was estimated by calculating the impact of mining-related housing demand on the number of vacant rental housing units in the peak year of operations.

D.8.4 Community Services

In-migration associated with mining activities could translate into an increased demand for educational and public services (schools, police, firefighters, health services, and so on) in the ROI. Impacts of mining activities on community service employment were also calculated for the ROI in which the majority of new workers would locate. The analysis used estimates of the number of in-migrating workers and families to calculate the number of newly sworn police officers, firefighters, and general government employees who would be required to maintain the existing levels of service for each community service. Calculations were based on the existing number of employees per 1,000 persons for each community service. The analysis of the impact on educational employment estimated the number of teachers in each school district who would be required to maintain existing teacher-student ratios across all student age groups. Information on existing employment and levels of service was collected from the individual jurisdictions providing each service.

D.8.5 Recreation

Mining activities could have impacts on recreation. Providing quantitative estimates of these potential impacts is difficult as it is unclear how mining operations and reclamation would
affect visits by recreationists. An approach to quantify the magnitude of the potential impacts on
the economy (for tourism and recreation) was developed for the ULP PEIS in order to provide
some perspective. The approach examined the impact of a 1%, 5%, and 10% reduction in ROI
employment and income in the recreation sector. Impacts were estimated by using IMPLAN data
for the ROI (MIG 2011). Impacts on employment were described in terms of the total number of
jobs that would be lost in the ROI from a reduction in the recreation sector. The relative impact
of the decrease in employment in the ROI was calculated by comparing total recreation
employment over the period assumed for the proposed mining activities with recreation
employment forecasts for the ROI (without the proposed action) for the same period.

D.9 ENVIRONMENTAL JUSTICE

Exploration, mine development and operations, and reclamation of uranium mines at the
DOE ULP lease tracts could affect environmental justice if any adverse human health and
environmental impacts resulting from any phase were significantly high and if these impacts
would disproportionately affect minority and low-income populations. If the analysis determined
that human health and environmental impacts were not significant and if the analysis accounted
for any cumulative or multiple adverse exposures from environmental hazards and unique factors
associated with the populations that might result in differential routes of exposure, or other
unique ecological, cultural, human health or socioeconomic impacts, then there could not be any
disproportionately high and adverse impacts on minority and low-income populations. If the
analysis determined a potential for human health or environmental impacts to be significant,
disproportionality would be determined by comparing the proximity of any high and adverse
impacts with the locations of low-income and minority populations. For example, the analysis
would consider whether potentially significant human health risks would appreciably exceed the
risk to the general population.

The analysis of environmental justice issues associated with the development of uranium
mines considered impacts within the ULP lease tracts and an associated 50-mi (80-km) radius
around the boundary of the proposed lease tracts. The geographic distribution of minority and
low-income groups in the 50-mi (80-km) radius was based on demographic data from the
U.S. Bureau of the Census (2011a,b). The following definitions were used to define minority and
low-income population groups:

- Minority. Persons are included in the minority category if they identify
themselves as belonging to any of the following racial groups: (1) Hispanic;
(2) Black (not of Hispanic origin) or African American; (3) American Indian
or Alaska Native; (4) Asian; or (5) Native Hawaiian or Other Pacific Islander.

Beginning with the 2010 Census, where appropriate, the census form allows
individuals to designate multiple population group categories to reflect their
ethnic or racial origin. In addition, persons who classify themselves as being
of multiple racial origins may choose up to six racial groups as the basis of
their racial origins. The term minority includes all persons, including those
classifying themselves in multiple racial categories, except those who classify
themselves as not of Hispanic origin and as White or “Other Race” (U.S. Bureau of the Census 2011a).

The CEQ guidance proposed that minority populations should be identified where either (1) the minority population of the affected area exceeds 50% or (2) the minority population percentage of the affected area is meaningfully greater than the minority population percentage in the general population or other appropriate unit of geographic analysis.

The ULP PEIS applied both criteria in using Census Bureau data for census block groups, wherein consideration was given to minority populations that were both greater than 50% and 20 percentage points higher than they were in the state (the reference geographic unit).

- **Low-income.** These are individuals who fall below the poverty line. The poverty line takes into account family size and the ages of individuals in the family. In 2009, for example, the poverty line for a family of five with three children younger than 18 was $26,023. For any given family below the poverty line, all family members are considered as being below the poverty line for the purposes of analysis (U.S. Bureau of the Census 2011b).

**D.10 TRANSPORTATION**

This section provides the methodology and key input parameters used for the transportation risk analysis performed in support of the ULP PEIS. The methodology followed the common approach identified in the DOE Handbook (DOE 2002). The analysis evaluated the transportation of mined uranium ore from the lease tracts to the uranium mills. Transportation impacts were estimated for shipment by truck because, historically, all such shipments in the area have been by truck. Shipment by rail would not be practical, because there are no rail lines located at or near any of the lease tracts or the uranium mills.

**D.10.1 Overview**

The transportation risk assessment considered human health risks from routine (normal, incident-free) transport of radiological materials and from accidents. The risks associated with the nature of the cargo itself (“cargo-related impacts”) were considered for routine transport. Risks related to the transportation vehicle regardless of type of cargo (“vehicle-related impacts”) were considered for potential accidents. Radiological cargo-related accident risks were not quantified, as discussed in Section D.10.1.2. The transportation of hazardous chemicals was not quantified, because hazardous chemicals utilized are similar in types and volumes typical of general small industrial activity (e.g., use of diesel fuel to operate equipment).
D.10.1.1 Routine Transportation Risk

The radiological risk associated with routine transportation would be cargo-related and result from the potential exposure of people to low levels of external radiation near a loaded shipment. No direct physical exposure to radioactive material would occur during routine transport, because the uranium ore would be covered by a tarp during transport. No significant unintended releases would occur.

D.10.1.2 Accident Transportation Risk

The cargo-related radiological risk from transportation-related accidents would come from the potential release and dispersal of radioactive material into the environment during an accident and the subsequent exposure of people through multiple exposure pathways (e.g., exposure to contaminated soil, inhalation, or the ingestion of contaminated food). However, the bulk of the uranium ore, with an approximate uranium concentration range of about 0.2% U$_3$O$_8$ by weight, would be in cobbles and stones, which would minimize the potential for any significant release of uranium to the surrounding air, soil, or water. Thus, the radiological accident transportation risk from the shipment of uranium ore was not explicitly quantified, because the short-term dose to an individual involved in an accidental spill or the cleanup would be minimal (e.g., a small fraction of that received by a uranium miner, as discussed in Section 4.3.5.1). A miner is estimated to receive an annual dose of 433 mrem, primarily from radon inhalation because of the confined nature of the mine. Such confinement would be absent from an accident spill location, and a worker involved in cleanup might therefore be expected to receive a dose on the order of 1 mrem or less.

“Vehicle-related accident risks” refers to the potential for transportation-related accidents that would result in injuries and fatalities caused by physical trauma unrelated to the cargo.

D.10.2 Routine Risk Assessment Methodology

The RADTRAN 5 computer code (Neuhauser and Kanipe 2003; Weiner et al. 2006) was used in the routine risk assessment to estimate the radiological impacts on collective populations. RADTRAN 5 was developed by Sandia National Laboratories to calculate population risks associated with the transportation of radioactive materials by truck, rail, air, ship, or barge. The code has been used extensively for transportation risk assessments since it was originally issued in the late 1970s as RADTRAN (RADTRAN 1) and has been reviewed and updated periodically. RADTRAN 1 was originally developed to facilitate the calculations presented in NUREG-0170 (NRC 1977).

D.10.2.1 Collective Population Risk

The radiological risk associated with routine transportation would result from the potential exposure of people to low-level external radiation in the vicinity of loaded shipments.
Even under routine transportation, some radiological exposure could occur. Because the radiological consequences (dose) would occur as a direct result of normal operations, the probability of routine consequences is taken to be 1 in the RADTRAN 5 code. Therefore, the dose risk is equivalent to the estimated dose.

For routine transportation, the RADTRAN 5 computer code considers major groups of potentially exposed persons. The RADTRAN 5 calculations of risk for routine highway transportation include exposures of the following population groups:

- **Persons along the route (off-link population).** Collective doses were calculated for all persons living or working within 0.5 mi (0.8 km) of each side of a transportation route. The total number of persons within the 1-mi (1.6-km) corridor was calculated separately for each route considered in the assessment.

- **Persons sharing the route (on-link population).** Collective doses were calculated for persons in all vehicles sharing the transportation route. This group included persons travelling in the same or the opposite direction in which the shipment was going, as well as persons in vehicles passing the shipment.

- **Persons at stops.** Collective doses can be calculated for people who might be exposed while a shipment was stopped en route. For truck transportation, these stops would include those for refueling, food, and rest. Truck stops were not considered in the ULP PEIS because of the relatively short shipment distances being considered.

- **Crew members.** Collective doses were calculated for truck drivers involved in the actual shipment of material. Workers involved in loading or unloading were not considered in the transportation analysis.

The doses calculated for the first three population groups were added together to yield the collective dose to the public. The dose calculated for the fourth group represents the collective dose to workers.

The RADTRAN 5 calculations for routine doses generically compute the dose rate as a function of distance from a point source or line source (Neuhauser and Kanipe 2003). Associated with the calculation of routine doses for each exposed population group are parameters such as the radiation field strength, source-receptor distance, duration of exposure, vehicle speed, stopping time, traffic density, and route characteristics (such as population density). The RADTRAN manual contains derivations of the equations used and descriptions of these parameters (Neuhauser and Kanipe 2003).
D.10.2.2 Highest-Exposed Individual Risk

In addition to the routine collective population risk, the risks to individuals receiving the highest impacts were estimated for a number of hypothetical exposure scenarios by using the RISKIND model (Yuan et al. 1995; Biwer et al. 1997). Receptors included members of the public exposed while standing along the route, during traffic delays, or while living near a facility, as summarized in Table D.10-1.

RISKIND was used to calculate the dose to each individual considered for an exposure scenario defined by an exposure distance, duration, and frequency specific to that receptor. The distances and durations of exposure were similar to those given in previous transportation risk assessments (DOE 1995, 1996, 1997, 1999, 2011). The scenarios were not meant to be exhaustive but were selected to provide a range of potential exposure situations.

The RISKIND external dose model considers direct external exposure and exposure from radiation scattered from the ground and air. RISKIND was used to calculate the dose as a function of distance from a shipment on the basis of the dimensions of the shipment (millirems per hour for stationary exposures and millirem per event for moving shipments). The code approximates the shipment as a cylindrical volume source, and the calculated dose includes contributions from secondary radiation scattering from buildup (scattering by the material contents), cloudshine (scattering by the air), and groundshine (scattering by the ground). As a conservative measure, credit for potential shielding between the shipment and the receptor was not considered.

D.10.3 Accident Assessment Methodology

“Vehicle-related accident risk” refers to the potential for transportation accidents that could directly result in injuries and fatalities not related to the nature of the cargo in the shipment. This risk represents injuries and fatalities from physical trauma. Route-specific rates or county-wide average rates for transportation injuries and fatalities were used in the assessment (see Section D.10.4.1.3). Vehicle-related accident risks were calculated by multiplying the total distance travelled by the rates for transportation injuries and fatalities. In all cases, the vehicle-related accident risks were calculated on the basis of distances for round-trip shipments, because the presence or absence of cargo would not be a factor in accident frequency.

<table>
<thead>
<tr>
<th>TABLE D.10-1  Individual Exposure Scenarios</th>
</tr>
</thead>
<tbody>
<tr>
<td>Receptor</td>
</tr>
<tr>
<td>Person at roadside</td>
</tr>
<tr>
<td>Person in traffic jam</td>
</tr>
<tr>
<td>Resident near route</td>
</tr>
</tbody>
</table>
D.10.4 Input Parameters and Assumptions

The principal input parameters and assumptions used in the transportation risk assessment are discussed in this section. These shipments are subject to regulation by the U.S. Department of Transportation (DOT) and other entities, as appropriate. The Hazardous Materials Transportation Act of 1975, as amended in Volume 49 of the United States Code (49 USC 5105 et seq.), requires DOT to establish regulations for safely transporting hazardous materials (including radioactive materials) in commerce. Title 49 of the CFR contains DOT standards and requirements for packaging, transporting, and handling radioactive materials for all modes of transportation. DOT’s hazardous materials regulations (HMRs) on the transportation of hazardous and radioactive materials can be found in 49 CFR Parts 171–180. Natural uranium ore is classified as a low-specific activity (LSA) material with no activity limit and no specific packaging requirements, as covered under 49 CFR Part 173 (Shippers – General Requirements for Shipments and Packaging). Requirements for motor carrier transportation can also be found in 49 CFR Parts 350–399.

D.10.4.1 External Dose Rate

For input to RADTRAN and RISKIND calculations, the dose rate at a distance of 7 ft (2 m) from the side of a uranium ore haul truck was estimated to be approximately 0.1 mrem/h. An ore content of 0.2% U3O8 by weight was modeled by using the MicroShield code (Grove 2006) with 25 tons of ore.

D.10.4.2 Route Characteristics

Uranium ore shipments would travel from the lease tracts to a uranium mill for processing. These shipments would not necessarily go to the mill that is nearest to a given lease tract. At the time of actual shipment, many factors (e.g., existing road conditions, traffic, weather, road maintenance or repairs, and mill capacities and costs) would be the criteria used to determine which mill should receive a given ore shipment. The transportation route selected for a shipment determines the total population of potentially exposed individuals and the expected frequency of transportation-related accidents.

D.10.4.3 Routine Impacts

For truck transportation, the route characteristics most important for a risk assessment include the total shipping distance between each origin site and destination site and the population density along the route. Shipping distances between the lease tracts and the proposed Piñon Ridge Mill and White Mesa Mill are presented in Section 4.3.10 and Table 4.3-10.

The population density in the uranium lease tracts is very low, less than one person per square kilometer in most locations. Higher population densities are encountered in the small towns of Naturita, Colorado, and Monticello, Utah—the only population centers along any of the
potential uranium shipment routes. For the ULP PEIS analysis, representative unit risk factors were developed on a per-kilometer basis for the collective population and worker (truck driver) doses. These factors were calculated by assuming that the longest potential route would be used.

For the lease tracts and uranium mills under consideration, the longest route is 266 km (165 mi), from New Verde Mine on Lease Tract 26 to White Mesa Mill. The route runs from New Verde Mine on local roads to State Highway (SH) 141, then through Naturita, traveling south to US 491, west into Utah to US 191, through Monticello, and south on US 191 to the White Mesa Mill. This route uses roads typical of most potential routes and runs through both rural and populated areas representative of the region. Population densities at the lease tract level from the 2010 Census were used in RADTRAN 5 to estimate the collective population risks along the route. The average collective dose to the public from uranium ore in the region was estimated to be approximately $1.54 \times 10^{-7}$ person-rem/km. The average dose to a truck driver was estimated to be approximately $8.08 \times 10^{-7}$ rem/km.

D.10.4.4 Injury and Fatality Rates

Injury and fatality rates for use in estimating potential injuries and fatalities from truck accidents during the shipment of uranium ore were developed by using route-specific and county-specific data. The injury and accident fatality rates used in the analysis were $1.85 \times 10^{-7}$/km for injuries and $1.66 \times 10^{-8}$/km for fatalities. These rates were generated based on injuries, fatalities, and vehicle miles travelled as reported by the Colorado Department of Transportation (CDOT) for the years 2002 through 2007 for SH 90, SH 141, and SH 491 (CDOT 2002, 2003, 2004, 2005, 2006a, 2007a) in the vicinity of the lease tracts and along any potential route to either of the two uranium mills considered. These rates are high for heavy truck travel because they include all vehicle types. For comparison, a rate of $1.80 \times 10^{-8}$/km for fatalities was estimated from data on all large-truck vehicle miles (CDOT 2006b, 2007b, 2008, 2009, 2010) and all traffic fatalities (DOT 2010a–d) in Dolores, Mesa, Montrose, and San Miguel Counties for the years 2006 through 2010. This second value is in relatively good agreement with (within <10% of) the value of $1.66 \times 10^{-8}$/km for fatalities for all vehicles on the roads considered in the analysis.

For Utah, injury and fatality rates were derived from the available data for 2005 through 2009 for San Juan County. Data on vehicle miles travelled in the county for all vehicles were used in conjunction with the number of injuries and fatalities recorded (Utah 2005, 2006, 2007, 2008, 2009) to obtain rates of $2.77 \times 10^{-7}$/km for injuries and $2.41 \times 10^{-8}$/km for fatalities. Because these rates included contributions from vehicles other than heavy trucks as well as all roads in the county and not just US 491 and US 191 on the route to the White Mesa Mill (which represent relatively short distances), the Colorado injury and fatality rates were used for the analysis of all shipments to White Mesa Mill.
D.10.4.5 Ore Production Rates and Shipment Capacities

Because of the uncertainties associated with the actual locations and sizes of uranium mines that could operate in the future, the transportation analysis conducted for Alternatives 3 through 5 used an assumed mine size, which determines the number of ore shipments, for each lease tract listed in Table D.10-2. The mine sizes used (small, medium, large, and very large) with assumed uranium ore production rates (50, 100, 200, and 300 tons/d, respectively) are

<table>
<thead>
<tr>
<th>Lease Tract</th>
<th>Assumed Mine Size</th>
<th>Ore Production Rate (tons/d)</th>
<th>Ore Shipments per Daya</th>
</tr>
</thead>
<tbody>
<tr>
<td>C-JD-5</td>
<td>Large</td>
<td>200</td>
<td>8</td>
</tr>
<tr>
<td>C-JD-5A</td>
<td>Small</td>
<td>50</td>
<td>2</td>
</tr>
<tr>
<td>C-JD-6</td>
<td>Large</td>
<td>200</td>
<td>8</td>
</tr>
<tr>
<td>C-JD-7</td>
<td>Very large</td>
<td>300</td>
<td>12</td>
</tr>
<tr>
<td>C-JD-8</td>
<td>Medium</td>
<td>100</td>
<td>4</td>
</tr>
<tr>
<td>C-JD-8A</td>
<td>Small</td>
<td>50</td>
<td>2</td>
</tr>
<tr>
<td>C-JD-9</td>
<td>Medium</td>
<td>100</td>
<td>4</td>
</tr>
<tr>
<td>C-SR-10</td>
<td>Medium</td>
<td>100</td>
<td>4</td>
</tr>
<tr>
<td>C-SR-11</td>
<td>Medium</td>
<td>100</td>
<td>4</td>
</tr>
<tr>
<td>C-SR-11A</td>
<td>Medium</td>
<td>100</td>
<td>4</td>
</tr>
<tr>
<td>C-SR-12</td>
<td>Small</td>
<td>50</td>
<td>2</td>
</tr>
<tr>
<td>C-SR-13</td>
<td>Medium</td>
<td>100</td>
<td>4</td>
</tr>
<tr>
<td>C-SR-13A</td>
<td>Medium</td>
<td>100</td>
<td>4</td>
</tr>
<tr>
<td>C-SR-14</td>
<td>Medium</td>
<td>100</td>
<td>4</td>
</tr>
<tr>
<td>C-SR-15</td>
<td>Small</td>
<td>50</td>
<td>2</td>
</tr>
<tr>
<td>C-SR-15A</td>
<td>Small</td>
<td>50</td>
<td>2</td>
</tr>
<tr>
<td>C-SR-16</td>
<td>Small</td>
<td>50</td>
<td>2</td>
</tr>
<tr>
<td>C-SR-16A</td>
<td>Small</td>
<td>50</td>
<td>2</td>
</tr>
<tr>
<td>C-WM-17</td>
<td>Small</td>
<td>50</td>
<td>2</td>
</tr>
<tr>
<td>C-SM-18</td>
<td>Medium</td>
<td>100</td>
<td>4</td>
</tr>
<tr>
<td>C-AM-19</td>
<td>Large</td>
<td>200</td>
<td>8</td>
</tr>
<tr>
<td>C-AM-19A</td>
<td>Medium</td>
<td>100</td>
<td>4</td>
</tr>
<tr>
<td>C-AM-20</td>
<td>Small</td>
<td>50</td>
<td>2</td>
</tr>
<tr>
<td>C-LP-21</td>
<td>Medium</td>
<td>100</td>
<td>4</td>
</tr>
<tr>
<td>C-LP-22</td>
<td>Small</td>
<td>50</td>
<td>2</td>
</tr>
<tr>
<td>C-LP22A</td>
<td>Medium</td>
<td>100</td>
<td>4</td>
</tr>
<tr>
<td>C-LP-23</td>
<td>Medium</td>
<td>100</td>
<td>4</td>
</tr>
<tr>
<td>C-CM-24</td>
<td>Small</td>
<td>50</td>
<td>2</td>
</tr>
<tr>
<td>C-CM-25</td>
<td>Small</td>
<td>50</td>
<td>2</td>
</tr>
<tr>
<td>C-G-26</td>
<td>Small</td>
<td>50</td>
<td>2</td>
</tr>
<tr>
<td>C-G-27</td>
<td>Small</td>
<td>50</td>
<td>2</td>
</tr>
</tbody>
</table>

a Assumes an ore haul truck capacity of 25 tons.
discussed further in Section 2.2. The size of a mine on a specific lease tract was first selected
roughly on the basis of past uranium ore production. If no previous ore production had occurred,
the assumed mine sizes for those lease tracts were assigned so as to distribute uranium ore
production in a generally even manner across the entire region considered, if all mines were to
operate at the same time. In reality, such an occurrence would generate 2,900 tons of ore per day.
The ore production was averaged over the region to highlight the general level of traffic that
could occur in various areas.

D.11 CULTURAL RESOURCES

The following procedures were employed to estimate the potential impacts of the
alternatives proposed in the ULP PEIS. The process began with a review of available
documentation of known cultural resources, including archaeological sites, historic structures,
and traditional cultural properties. It began with a Class I cultural resource review of the lease
tracts conducted by Alan Reed in 2006, the ethnographic background study and potential for
traditional cultural properties analysis of the lease tracts conducted by J.N. Fritz in 2006, and the
discussion of the historic mines on the lease tracts by E. Twitty in 2008. Information on cultural
resource surveys conducted within the tracts since 2006 was obtained as geographic information
system (GIS) layers from Colorado’s Office of Archaeology and Historic Preservation (OAHP).
For purposes of comparison, GIS data were also obtained for a 15-mi (24-km) buffer
surrounding the lease tracts. Since some lease tracts were closer than 15 mi (24 km) from the
Utah border, buffer information was requested from the Utah State Historic Preservation Office
(SHPO) as well. The data obtained from the Colorado OAHP and the Utah SHPO were used to
update the description of known cultural resources within the lease tracts.

The most recent GIS data from the OAHP were used to compare the number of acres
surveyed within each lease tract with the area of each lease tract, to determine the percentage of
each lease tract that had been surveyed. Then, for purposes of analysis, the lease tracts were
grouped into the four proximity-based clusters used for visual resource analysis: North; North
Central; South Central; and South. The total acreage surveyed and the number of sites recorded
for each cluster were tallied and used to determine site densities for each cluster. On the basis of
the assumption that the site densities in the unsurveyed areas would be similar to those of the
surveyed areas for each cluster, the number of potential sites was projected for each cluster.

Two types of potential impacts were considered. Direct impacts are those in which the
resource is directly destroyed, altered, or damaged by mining operations. Impacts such as
vandalism and unpermitted collecting are considered indirect when they do not result from
mining itself or the construction of access roads to the mines but are instead the result of
increased human presence due to mine operations or increased access due to the construction of
or improved maintenance on roads to the mines. On the basis of the site density within each
cluster and the number of acres that would be disturbed by a mine in each mine category (small,
medium, large, and very large), the number of sites likely to be directly affected by a mine in
each category was projected. Under each alternative, a different number of small, medium, large,
and very large mines would likely be developed. The number of direct impacts for each
alternative was projected, based on the acreage likely to be disturbed. For indirect impacts, it was
assumed that all the sites projected for each cluster would have the potential to be indirectly affected. These were, of course, projections only. Pedestrian surveys would be necessary to determine the actual locations of sites. The number of sites directly affected could be reduced by changing the location of mining activities.

The GIS data from the Colorado OAHP does not identify traditional cultural properties. Unless already documented, the presence of such properties can be determined only by communications with the relevant cultural groups. Federally recognized Native American tribes are being contacted, but to date, none of them have identified any culturally important properties on or near the lease tracts.

D.12 VISUAL RESOURCES

The visual impact analysis for the ULP PEIS utilizes distance zones specified within the Bureau of Land Management’s (BLM’s) visual resource management (VRM) system to identify potentially sensitive visual resource areas (SVRAs) that might be affected by one or more of the five alternatives. In order to assess these impacts, reverse viewshed analyses were conducted to identify which lands surrounding the lease tracts would have views of infrastructure and activities in at least some portion of the lease tracts. Reverse viewshed analyses were conducted for Alternatives 1, 3, and 4. A separate analysis was not conducted for Alternatives 2 and 5 because of the similarities in the visual impacts associated with Alternatives 1 and 4, respectively.

A primary component considered in conducting this analysis was the impact of distance on determining what could be seen from within a lease tract. The distance between the viewer and the mining activities (during exploration, mine development and operations, and reclamation) that are the source of visual contrast is a critical element in determining the level of perceived impact. For this analysis, the BLM distance zones in the VRM system were utilized. These zones are as follows:

- **Foreground–middleground** (0 to 5 mi [0 to 8 km]). This zone includes areas where management activities may be seen in detail. For instance, the outer boundary of this distance zone is defined as the point at which the texture and form of individual plants are no longer apparent in the landscape.

- **Background** (5 to 15 mi [8 to 24 km]). This zone includes the area beyond the foreground–middle ground up to 15 mi (24 km) and the area where some detail beyond the form or outline of the project is visible. For example, vegetation should be visible at least as patterns of light and dark.

- **Seldom seen** (beyond 15 mi [24 km]). This zone includes areas beyond 15 mi (24 km) (BLM 1986).

A GIS-based impact analysis was used to identify locations within the SVRAs from which some portions of the lands containing the lease tracts would be visible. Assuming an
unobstructed view of the ULP lease tract, viewers in these areas would be likely to perceive
some level of visual contrast from the mining activities.

The “spatial analyst extension” of the ESRI ArcGIS 10 software was used to calculate
viewsheds. (A viewshed is an area of landscape visible to the human eye from a fixed vantage
point.) The viewshed analyses determined the potential visibility of the four lease tract groups or
portions of these groups from lands within 25 mi (40 km). The ROI for visual resource analysis
was set at 25 mi (40 km) because it is the approximate limit at which non-negligible visual
contrasts from the structures and landforming activities in the proposed action could reasonably
be expected to be visible in this region, assuming favorable viewing conditions and strong
contrast between an object and its background. Viewshed calculations were performed by using
National Elevation Dataset (NED) 10-meter Digital Elevation Model (DEM) with the earth
curvature set to a refractivity coefficient of 0.13.

Because each of the four groups or a portion of the groups of lease tracts represents a
large geographic area rather than specifically located points, a grid-based sample of points was
used to calculate visibility.

Viewsheds were calculated based on an assumed height of 30 ft (9 m) to represent the
mining sites and 5 ft (1.5 m) to represent the observer height.

The selected SVRAs included in the analysis were as follows:

- National Parks, National Monuments, National Recreation Areas, National
  Preserves, National Wildlife Refuges, National Reserves, National
  Conservation Areas, National Historic Sites;
- Congressionally authorized Wilderness Areas;
- Wilderness Study Areas;
- National Wild and Scenic Rivers;
- Congressionally authorized Wild and Scenic Study Rivers;
- National Scenic Trails and National Historic Trails;
- National Historic Landmarks and National Natural Landmarks;
- All-American Roads, National Scenic Byways, State Scenic Highways, and
  BLM-designated and U.S. Forest Service-designated Scenic Highways and
  Byways;
- BLM-designated Special Recreation Management Areas; and
• Areas of Critical Environmental Concern (ACECs) designated because of outstanding scenic qualities.

Although the viewshed analysis showed areas that may be subject to visual impacts from mining-related activities conducted within the lease tracts, the actual acreage that would be affected would likely be smaller than that indicated by the analysis, because of potential screening of views of the lease tracts by vegetation or structures. The viewshed analyses also did not account for the heights of vegetation or existing structures that might screen views. The analyses conducted for the ULP PEIS were limited to data available in GIS format at the time of analysis. They did not analyze any of the additional scenic resources that exist at the national, state, or local levels. Furthermore, although a GIS-based analysis is capable of having extremely high spatial accuracy, it is limited by the accuracy of the data used in the analysis, which were obtained from many sources and are subject to error.

After the GIS-based analysis was completed, views to the lease tracts from the SVRAs were simulated by using Google Earth software. Keyhole Markup Language (KML) files of the lease tracts and the SVRA boundaries were imported from ArcGIS. Analysts then selected a variety of viewpoints within the SVRAs that were depicted as having potential views of the lease tracts. The intent of this analysis was to evaluate the apparent size and viewing angle of the lease tracts from a potential viewing location and thereby determine the potential level of contrast that could be observed from the various activities associated with each alternative.

D.13 WASTE MANAGEMENT

Wastes (other than waste rock) generated during the three phases of uranium mining (exploration, mine development and operations, and reclamation), such as liquids and solids from the treatment of water, spent oil, grease, and lubricant, and other trash were evaluated in terms of how this additional waste would affect the existing practices or availability of the disposal capacity for similar waste.

D.14 CUMULATIVE IMPACTS

The methodology for cumulative impacts analysis is consistent with guidance provided by the CEQ (CEQ 1997; Connaughton 2005). It includes defining the ROI for cumulative impacts; identifying past, present, and reasonably foreseeable projects and activities (Federal and non-Federal) within the region; summarizing the impacts associated with those projects and activities (if available); and determining the magnitude and significance of the cumulative impacts.

The ROI for cumulative impacts was defined as 50 mi (80 km) for all resource areas, which is considered conservative. Past, present, and reasonably foreseeable projects and activities within the ROI for cumulative impacts were identified from a variety of sources, including NEPA assessments performed by various Federal and state agencies for nearby projects. Projects and activities within the ROI for cumulative impacts were also identified by
using NEPA registers from regional BLM field offices and schedules of proposed actions from nearby National Forests.

D.15 REFERENCES FOR APPENDIX D

ATSDR (Agency for Toxic Substances and Disease Registry), 2012, Minimal Risk Levels (MRLs) Feb.

AQMD (South Coast Air Quality Management District), 2012, Particulate Matter (PM) Significance Thresholds and Calculation Methodology.


NRC (U.S. Nuclear Regulatory Commission), 1977, Final Environmental Statement on the Transportation of Radioactive Material by Air and Other Modes, NUREG-0170, Washington, D.C.


Rogers, Z., 2011, personal communication from Rogers (Energy Fuels Resources Corporation, Lakewood, Colo.) to Y.-S. Chang (Argonne National Laboratory, Argonne, Ill.), Nov. 8.


APPENDIX E:

CORRESPONDENCE ASSOCIATED WITH ENDANGERED SPECIES ACT (ESA) CONSULTATION, BIOLOGICAL OPINION, AND BIOLOGICAL ASSESSMENT
This page intentionally left blank
APPENDIX E:

CORRESPONDENCE ASSOCIATED WITH ENDANGERED SPECIES ACT (ESA)
CONSULTATION, BIOLOGICAL OPINION, AND BIOLOGICAL ASSESSMENT

This appendix presents the biological assessment (BA) prepared for consultation with the U.S. Fish and Wildlife Service (USFWS) and the biological opinion (BO) that was issued by the USFWS. This appendix had previously presented species accounts for species listed under the Endangered Species Act (ESA), and it is now material that is also discussed in the BA or Section 4.3.6.4. This appendix also contains the correspondence between the U.S. Department of Energy (DOE) and the USFWS regarding ESA (Section 7) consultation. The correspondence began on November 7, 2011, and culminated on August 13, 2013, with a letter from the USFWS containing the BO (see page E-13).

Revisions made to the Draft ULP PEIS to prepare the Final ULP PEIS are identified with a line on the right margin of the pages. However, this same approach (i.e., providing lines on the right margin of the pages) to indicate new material was not done for this appendix. Instead, a description of the content of this appendix is provided as described in the paragraph above.

TABLE E-1  Endangered Species Act Consultation Correspondence

<table>
<thead>
<tr>
<th>Date of Letter</th>
<th>Page</th>
<th>Source</th>
<th>Recipient</th>
</tr>
</thead>
</table>
Ms. Patty Gelatt  
Fish and Wildlife Biologist  
U.S. Fish and Wildlife Service  
Western Colorado Field Office  
764 Horizon Drive, Building B  
Grand Junction, CO 81506-3946

Subject: Initiation of Endangered Species Act Informal Consultation for the  
Department of Energy’s Uranium Leasing Program

Dear Ms. Gelatt:

The U.S. Department of Energy Office of Legacy Management (DOE) is preparing a Programmatic Environmental Impact Statement (PEIS) to evaluate potential impacts associated with the management of DOE’s Uranium Leasing Program (ULP), under which DOE administers tracts of land for the exploration, development, and extraction of uranium and vanadium ores. The PEIS is being prepared in accordance with the National Environmental Policy Act of 1969 (NEPA), as amended, following implementing regulations developed by the President’s Council on Environmental Quality in 40 CFR Parts 1500-1508 and DOE’s NEPA implementing procedures provided in 10 CFR Part 1021. The PEIS will analyze potential impacts to environmental resources including those involving threatened or endangered species. The Notice of Intent for the PEIS was published in the Federal Register on June 21, 2011 (76 FR 36097). Public scoping meetings for the PEIS were conducted on August 8-11, 2011 at Montrose, Telluride, and Naturita, in Colorado, and at Monticello, in Utah.

DOE’s ULP includes tracts of land located in Mesa, Montrose, and San Miguel Counties, Colorado, that cover a cumulative acreage of approximately 25,000 acres. The locations of the ULP lease tracts are shown in Figure 1 of the Attachment.

By this letter, DOE is initiating informal consultation with the U.S. Fish and Wildlife Service (USFWS) under the provisions of the Endangered Species Act of 1973, as amended (ESA). DOE has identified a preliminary list of species that may be listed as endangered, threatened, or species that are proposed or candidates for listing under the ESA that may occur in the counties where DOE’s ULP lease tracts are located (see Table 1 of the Attachment). In addition, our preliminary determination indicates that there are no critical habitats on DOE’s ULP lease tracts. The nearest critical habitats are indicated in Figure 2 of the Attachment and are about twenty miles from the nearest DOE ULP lease tract(s). DOE requests a letter from your office concuring with or commenting on this preliminary list and the preliminary determination of critical habitat locations. Finally, please provide any other information you consider appropriate during the consultation process.
Ms. Putty Gelatt

DOE and its PEIS contractor (Argonne National Laboratory) will be contacting you and members of your staff in the near future to coordinate this effort. DOE looks forward to further consultation and coordinating activities with the USPWS on potential impacts, if any, of the ULP to federally-listed species.

Please do not hesitate to contact me if you have any questions on the ULP project at (970) 248-6621, or by e-mail at Tracy.Ribeiro@lm.doe.gov. Please send any correspondence to:

U.S. Department of Energy
Office of Legacy Management
2597 Legacy Way
Grand Junction, CO 81503

Sincerely,

[Signature]

Tracy A. Ribeiro
Environmental Program Manager

Enclosures

cc w/enclosures:
M. Pielc, Argonne National Laboratory (e)
D. Geiser, DOE (e)
L. Kilpatrick, DOE (e)
T. Pauling, DOE (e)
S. Schiesswohl, DOE (e)
E. Cotter, Stoller (e)

ULP webpage
http://ulpeis.anl.gov
ATTACHMENTS

FIGURE 1 – Location of DOE ULP Lease Tracts in Mesa, Montrose, and San Miguel Counties, Colorado
<table>
<thead>
<tr>
<th>Scientific Name</th>
<th>Common Name</th>
<th>Status</th>
<th>Counties in Which Species May Occur</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Plants</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Phacelia subminuta</td>
<td>Debeque phacelia</td>
<td>PT</td>
<td>Mesa</td>
</tr>
<tr>
<td>Eriogonum pelinophyllum</td>
<td>Clay-loving wild buckwheat</td>
<td>E</td>
<td>Montrose</td>
</tr>
<tr>
<td>Sclerochactus glaucesus</td>
<td>Colorado hookless cactus</td>
<td>T</td>
<td>Mesa, Montrose</td>
</tr>
<tr>
<td><strong>Invertebrates</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Boloria acronema</td>
<td>Uncamphryle fritillary</td>
<td>E</td>
<td>San Miguel</td>
</tr>
<tr>
<td>butterfly</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Fish</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Otoila cypha</td>
<td>Humpback chub</td>
<td>B</td>
<td>Mesa, Montrose, San Miguel</td>
</tr>
<tr>
<td>Gila elegans</td>
<td>Bonytail</td>
<td>B</td>
<td>Mesa, Montrose, San Miguel</td>
</tr>
<tr>
<td>Oncohyus chica stenias</td>
<td>Greenback cutthroat trout</td>
<td>T</td>
<td>Mesa</td>
</tr>
<tr>
<td>Pseudaletia lucida</td>
<td>Colorado pikemnow</td>
<td>B</td>
<td>Mesa, Montrose, San Miguel</td>
</tr>
<tr>
<td>Xyrrcauchen texanus</td>
<td>Razorback sucker</td>
<td>E</td>
<td>Mesa, Montrose, San Miguel</td>
</tr>
<tr>
<td><strong>Birds</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Centrocercus minnus</td>
<td>Gunnison sage-grouse</td>
<td>C</td>
<td>Mesa, Montrose, San Miguel</td>
</tr>
<tr>
<td>Centrocercus nephasianus</td>
<td>Greater sage-grouse</td>
<td>C</td>
<td>Mesa, Montrose, San Miguel</td>
</tr>
<tr>
<td>Cucyza americana</td>
<td>Yellow-billed cuckoo</td>
<td>C</td>
<td>Mesa, Montrose, San Miguel</td>
</tr>
<tr>
<td>Empisalas tuatii externus</td>
<td>Southwestern willow thrasher</td>
<td>B</td>
<td>San Miguel</td>
</tr>
<tr>
<td>Strig occidentalis lucida</td>
<td>Mexican spotted owl</td>
<td>T</td>
<td>Montrose, San Miguel</td>
</tr>
<tr>
<td><strong>Mammals</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Cynomys gunnisoni</td>
<td>Gunnison's prairie dog</td>
<td>C</td>
<td>Montrose</td>
</tr>
<tr>
<td>Lynx canadensis</td>
<td>Canada lynx</td>
<td>T</td>
<td>Mesa, Montrose, San Miguel</td>
</tr>
<tr>
<td>Mustela nigricapillus</td>
<td>Black-footed ferret</td>
<td>B</td>
<td>Montrose, San Miguel</td>
</tr>
</tbody>
</table>

* C = candidate; E = endangered; PT = proposed threatened; T = threatened.

b Designated critical habitats for these species are located outside the DOE ULP lease tracts (on the Colora and Gunnison Rivers).
FIGURE 2 – Location of Designated Critical Habitats Relative to the DOE ULP Lease Tracts
United States Department of the Interior
FISH AND WILDLIFE SERVICE
Ecological Services
764 Horizon Drive, Building B
Grand Junction, Colorado 81506-3946

IN REPLY REFER TO:
ES/CO: DOE
TAILS: 06E24100-2012-TA-0033

November 16, 2011

Tracy A. Ribeiro
Environmental Manager
US Department of Energy
Office of Legacy Management
Grand Junction, CO 81503

Dear Ms. Ribeiro:

This responds to your November 7, 2011, correspondence regarding the US Department of Energy, Office of Legacy Management (DOE) Uranium Leasing Program (ULP). We understand that you are preparing a Programmatic Environmental Impact Statement to evaluate the potential impacts of the ULP in Mesa, Montrose, and San Miguel Counties, Colorado.

You submitted a preliminary list of federally endangered, threatened, and candidate species that may occur in the counties where DOE’s ULP lease tracts are located. We discussed your preliminary species list in our meeting on November 9, and concluded that it is an appropriate list with the following exceptions: 1) remove greater sage-grouse (*Centrocercus urophasianus*) because this candidate species does not occur in Mesa, Montrose, or San Miguel Counties, and 2) add North American wolverine (*Gulo gulo luscus*) because this candidate species may occur in Mesa, Montrose, or San Miguel Counties. You should determine what species on the list occur in the ULP areas, or may be affected by the ULP. Your biological assessment should provide an analysis of how the ULP may affect listed species.

One or more candidate species potentially occur within the project area. Federal candidates for official listing as threatened or endangered have no legal protection under the Endangered Species Act of 1973, as amended (16 U.S.C. 1531 et seq.) (Act). However, it is within the spirit of the Act to consider project impacts to these species.
In the future, we recommend that DOE and its contractors use our web-based Information Planning and Conservation system (IPAC) (http://cyos.fws.gov/ipac/) to obtain an official species list. If the Service can be of further assistance, please contact Patty Gelatt at the letterhead address or (970) 243-2778, extension 26.

Sincerely,

Pamela Repp
Acting Western Colorado Field Supervisor
Ms. Patty Gellatt  
Western Colorado Supervisor  
U.S. Fish and Wildlife Service, Ecological Services  
764 Horizon Drive, Building B  
Grand Junction, Colorado 81506  

Subject: FINAL BIOLOGICAL ASSESSMENT FOR THE DEPARTMENT OF ENERGY  
URANIUM LEASING PROGRAM AND A REQUEST FOR FORMAL  
CONSULTATION

Dear Ms. Gellatt:  

The U.S. Department of Energy (DOE) has prepared the enclosed final biological assessment (BA) to evaluate whether the continued management of the DOE Uranium Leasing Program (ULP) (involving exploration, mine development and operations, and reclamation for a period of 10 or more years) would have adverse effects on listed species under the Endangered Species Act (ESA). The BA is part of the ongoing informal consultation started in concert with a programmatic environmental impact statement (PEIS) under the National Environmental Policy Act (NEPA) for the ULP. The proposed action is for an approximate area of 25,000 acres located in the southwest corner of Colorado.

By letter dated November 7, 2011, (Ribeiro 2011), DOE indicated it was beginning a NEPA PEIS. As part of that effort, DOE requested informal consultation with the U.S. Fish and Wildlife Service (USFWS) and concurrence on a list of federally threatened or endangered species that may be in the vicinity of the ULP. DOE met with the USFWS on November 9, 2011, to discuss the list and other details associated with the BA investigation, such as water depletions. In a letter dated November 16, 2011, (Repp 2011) the USFWS provided a few revisions to the list of federally threatened or endangered species. Subsequent to these letters, the USFWS submitted a rule to propose Gunnison Sage Grouse as endangered under the ESA. On March 20, 2013, DOE provided a BA for review. After further review of documents associated with the four endangered fish species within the Upper Colorado River basin, DOE concluded that it was necessary to change the previous determination for these species. DOE is providing this final BA to replace the BA provided in March.

A total of 14 species listed or proposed for listing under the ESA are considered for Section 7 consultation in this BA; an additional three species that are candidates for listing under the ESA are discussed in coordination with USFWS conservation objectives. The species are listed in Table 3-3 of the BA.

With the implementation of various compliance and mitigation measures or best management practices, ULP activities are expected to have no effect on eight species (clay-loving wild buckwheat, Colorado hookless cactus, Debeque phacelia, Uncompahgre frill tail butterfly, greenback cutthroat trout, black-footed ferret, Canada lynx, and North American wolverine) and
Ms. Patty Gellatt

on the designated critical habitat for five species (clay-loving wild buckwheat, Debeque phacelia, Mexican spotted owl, southwestern willow flycatcher, and Canada lynx). DOE has determined that ULP activities may affect, but are not likely to adversely affect, five species (Mexican spotted owl, southwestern willow flycatcher, Gunnison sage-grouse, western yellow-billed cuckoo, and Gunnison’s prairie dog). It has been determined that ULP activities may affect, and are likely to adversely affect the four Colorado River endangered fish species (bonytail, Colorado pikeminnow, humpback chub, and razorback sucker) and their critical habitat.

DOE requests your review of the final BA and your concurrence with these determinations. Since the ULP activities may affect, and are likely to adversely affect the four endangered fish species within the Upper Colorado River basin, DOE is also requesting initiation of formal consultation. Please call me at (303) 410-4817, or the ULP PEIS Document Manager - Mr. Ray Plieness at (303) 410-4806. Please address any correspondence to:

U.S. Department of Energy
Office of Legacy Management
2597 Legacy Way
Grand Junction, CO 81503

Sincerely,

Tracy Ribeiro

Encl.

cc: V. Bowie, GC-54 (e)
    E. Cohen, GC-54 (e)
    S. Dove, GC-31 (e)
    S. Miller, GC-51 (e)
    M. Picel, ANL (e)
    D. Shafer, DOE-LM
    R. Plieness, DOE-LM
    E. Cotter, Stoller (e)

File: ULP 001.01 (A) (rc grand junction)

DOE Support\Managers\Ribeiro\5-13-13 BA Submission Ltr to USFWS
United States Department of the Interior

FISH AND WILDLIFE SERVICE

Ecological Services
764 Horizon Drive, Building B
Grand Junction, Colorado 81506-3946

IN REPLY REFER TO:
ES-6-RO-95-F-001-GJ423
TAILS 06E24100-2013-F-0096

August 13, 2013

Tracy A. Ribeiro
U.S. Department of Energy
Office of Legacy Management
11025 Dover Street, Suite 1000
Westminster, Colorado 80021-5573

Dear Ms. Ribeiro:

In accordance with section 7 of the Endangered Species Act (ESA) of 1973, as amended (16 U.S.C. 1531 et seq.), and the Interagency Cooperation Regulations (50 CFR 402), the Fish and Wildlife Service (Service) reviewed your May 14, 2013 final biological assessment (BA) to evaluate whether continued management of the U.S. Department of Energy’s (DOE) Uranium Leasing Program (ULP) (involving exploration, mine development and operations, and reclamation for a period of 10 or more years) would have adverse effects on listed species under the ESA. The final BA dated May 14, 2013, is part of the ongoing consultation started in concert with a programmatic environmental impact statement (PEIS). The proposed action is for an approximate area of 25,000 acres located in Mesa, Montrose, and San Miguel Counties in southwest Colorado. A total of 14 species either listed or proposed for listing were considered in your BA for section 7 consultation, along with an additional three species that are candidates for listing.

Colorado River Endangered Fishes

DOE has determined that ULP activities may affect, and are likely to adversely affect, the endangered Colorado River fish (bonytail (Gila elegans), Colorado pikeminnow (Ptychocheilus lucius), humpback chub (Gila Cypha), razorback sucker (Xyrauchen texanus)) and their critical habitat. The proposed action will cause an average annual depletion of 19.3 acre-feet per year to the Dolores River in the Upper Colorado River Basin and thus may adversely affect the endangered Colorado River fish and their critical habitat. Water depletions associated with ULP are addressed in a June 4, 2010 intra-Service biological opinion (BO) for water depletions less than 100 acre-feet in the upper Colorado River basin. A Recovery Implementation Program for Endangered Fish Species in the Upper Colorado River Basin was initiated on January 22, 1988. The Recovery Program was intended to be the reasonable and prudent alternative to avoid jeopardy and destruction or adverse modification of critical habitat to the endangered fishes.
caused by depletions from the Upper Colorado River Basin. In order to further define and clarify the process of the Recovery Program, a section 7 agreement was implemented on October 15, 1993, by the Recovery Program participants. Incorporated into this agreement is a Recovery Implementation Program Recovery Action Plan (RIPRAP) which identifies actions currently believed to be required to recover the endangered fishes in the most expeditious manner.

Included in the Recovery Program was the requirement that a depletion fee would be paid by water users to help support the Recovery Program. The ULP fits under the umbrella of the June 4, 2010 re-issued BO that addresses small water depletions and exempts the depletion fee for depletions of 100 acre-feet or less. We have determined that the Recovery Program has made sufficient progress toward recovery to serve as Conservation Measures (formally reasonable and prudent alternatives) for new and historic project depletions of 100 acre-feet or less. Therefore, the depletion fee for the ULP is waived and further consultation is not required.

It is particularly important to avoid contamination of surface and ground water that flows into the Dolores River and in turn into critical habitat in the Colorado River. Uranium mining can contaminate surrounding drainages with uranium, other radioactive contaminants, ammonia, and selenium. The construction of mining facilities may also increase sedimentation in down gradient streams. The implementation of mitigation measures and Best Management Practice’s (BMP’s) described in Table 2-5 of the ULP BA related to aquatic habitats and water quality will reduce water quality impacts to the extent that they are insignificant.

The 2010 BO determined that small water depletions addressed in the BO are not likely to jeopardize the continued existence of the endangered fish and not likely to destroy or adversely modify designated critical habitat.

The determination in this document is based on the information provided by the DOE. If new information becomes available, if a new species becomes listed, if incidental take occurs, if the total average annual amount of water depleted by this project changes, or if any other project element changes which alters the operation of the project from that which is described in your correspondence and which may affect any endangered or threatened species in a manner or to an extent not considered in this BO (see 50 CFR 402.16), formal section 7 consultation must be reinitiated. The DOE should condition its approval documents to retain jurisdiction should section 7 consultation need to be reinitiated.

Mexican Spotted Owl and Southwest Willow Flycatcher

DOE has determined that ULP activities may affect, but are not likely to adversely affect, the Mexican spotted owl (Strix occidentalis lucida), and Southwestern willow flycatchers (Empidonax traillii extimus). Therefore, pursuant to the ESA, DOE has requested the Service’s concurrence with the effects determination. The Service concurs with the DOE’s determination for these species because of the conservation measures described in Table 2-5 (pages 15-20 of the BA) will be implemented during all project phases. DOE assessed that suitable habitat for the southwestern willow flycatcher is unlikely to occur in the vicinity of the lease tracts as the species has not been observed near these areas. Although a Mexican spotted owl occurrence was documented near ULP Lease Tract 12, this bird was most likely migrating as no suitable
breeding habitat such as canyon lands and old growth forests exist on this tract. The Service recommends that surveys be conducted (as described in G17, Table 2-5) prior to any on-the-ground ULP activities, to insure that southwestern willow flycatchers and Mexican spotted owls are not present before irretrievable/irreversible commitment of mining company resources occurs. And as described in Table 2-5 (G12), if any federally listed threatened and endangered species are found during any phase of the project, you must consult with the Service as required by Section 7 of the ESA and determine an appropriate course of action to avoid, minimize, or mitigate impacts.

Candidate and Proposed Species

We would like to call DOE’s attention to the proposed rule to list the Gunnison sage-grouse (Centrocercus minimus) as endangered, plus the proposed designation of critical habitat which were recently published in the Federal Register on January 13, 2013 (USFWS a & b, 2013). Your BA states that the Paradox lease tracts occur as near as 168 ft from the current Gunnison sage-grouse range in the Dry Creek Basin. However, on page 48 (Figure 3-4), the map shows that the western portion of the tract block consisting of the 5a-9 tracts overlaps with the current range of the Gunnison sage-grouse, which in that area, is also proposed critical habitat. Either the map is incorrect or the description in the text is incorrect. Similarly, north of Eggar, proposed critical habitat in the unoccupied range is overlapped by tracts 16 and/or 16A. In your letter of March 20, 2013, you have requested concurrence on your effect determination of not likely to adversely affect for the Gunnison sage-grouse. The Gunnison sage-grouse is currently a proposed species for listing. The DOE is not required to conference with the Service unless you determine that the proposed action is likely to jeopardize the continued existence of the Gunnison sage-grouse section 7(a)(4). All other conferencing regarding a proposed species and proposed critical habitat is voluntary on the DOE’s and the Service’s part. We appreciate your consideration and analysis of effects on the Gunnison sage-grouse. By your determination we assume that you have determined that your project does not jeopardize the continued existence of the Gunnison sage-grouse, but has some lesser effects. Currently, due to limited staff resources, the Service is not able to engage in voluntary conferencing on the Gunnison sage-grouse, but again we appreciate your analysis of the effects to the Gunnison sage-grouse from the proposed ULP. Should the proposal to list the species become final, all aspects of the ESA (including section 7 consultation) will apply.

You have requested concurrence on determination that the proposed project may affect, but is not likely to adversely affect the yellow-billed cuckoo (Coccyzus americanus). The yellow billed cuckoo is a Federal candidate for listing and is not subject to required section 7 consultation or conferencing under the ESA. Currently, the Service is not able to engage in voluntary conferencing on the yellow billed cuckoo, but we appreciate your analysis of the effects to the cuckoo from your proposed action. The Service is preparing a proposed rule for the yellow billed cuckoo that is expected to be available no later than the end of this fiscal year. Consequently, DOE may need to initiate a conference when proposed, or a consultation if listed, with site specific consultations as necessary.
Similarly, you have requested concurrence on your determination that the proposed project may affect, but is not likely to adversely affect the Gunnison’s prairie dog (Cynomys gunnisoni). The Gunnison’s prairie dog is also a Federal candidate for listing and is not subject to required section 7 consultation or conferencing under the ESA. You have determined that the current Gunnison’s prairie dog range intersects or is in the vicinity of Uravan, Paradox, and Slick Rock ULP lease tracts. The Service recommends that surveys be conducted (as described in G17, Table 2-5) prior to any on-the-ground ULP activities to avoid impacts to Gunnison’s prairie dog.

Other Listed Species and designated critical habitat

DOE has determined that ULP activities are expected to have no effect on eight species including: *Eriogonum pelinophilum* (clay-loving wild buckwheat), *Sclerocactus glaucus* (Colorado hookless cactus), *Phacelia submutica* (DeBeque phacelia), Uncompahgre fritillary butterfly (*Boloria acrocema*), greenback cutthroat trout (*Oncorhynchus clarki stomias*), Black-footed ferret (*Mustela nigripes*), Canada lynx (*Lynx canadensis*), and North American wolverine (*Gulo gulo luscus*), and on the designated critical habitat for five species (clay-loving wild buckwheat, Debeque phacelia, Mexican spotted owl, southwestern willow flycatcher, and Canada lynx). The Service does not have any information indicating otherwise. The regulations implementing section 7 of the ESA (Interagency Cooperation) do not authorize or require the Service to review or concur with no effect determinations for listed species or designated critical habitat. However, we appreciated your providing us the no effect determination for our information, even if not required to so under the ESA.

This concludes formal and informal consultation on the DOE ULP. As provided in 50 CFR 402.16, reinitiation of formal consultation is required where discretionary Federal agency involvement or control over the action has been retained (or is authorized by law) and if–1) the amount or extent of incidental take is exceeded; 2) new information reveals effects of the agency action that may affect listed species or critical habitat in a manner or to an extent not considered in this opinion; 3) the action is subsequently modified in a manner that causes an effect to the listed species or critical habitat not considered in this opinion; or 4) a new species is listed or critical habitat designated that may be affected by the action.

Rare Plants

We would like to take this opportunity to call attention to plant species with a ranking from the Colorado Natural Heritage Program of G1 or G2 because these have been identified as the most imperiled and rarest plants in Colorado. These species include: *Astragalus equisilens* (horseshoe milkvetch), *Camissonta eastwoodia* (Eastwood evening-primrose or Grand Junction suncup), *Cryptantha gypsophila* (Gypsum Valley cateye), *Erigeron kachinensis* (Kachina daisy), *Lupinus crassus* (Payson lupine), and *Lygodensmis doloresensis* (Dolores River skeletonplant). In the past, we have been petitioned to list several of these species including the horseshoe milkvetch, Gypsum Valley cateye, and the Dolores River skeletonplant. We did negative 90-day findings for all three species, but all are species of concern. Recent genetic tests suggest that the Gypsum Valley cateye is rarer than previously thought, being confined only to the Gypsum Valley. Actions associated with the leasing should be conducted in a manner to promote conservation of these species.

4
Migratory Birds

DOE has informed the Service that no in situ mining will occur with the ULP. Thus, effects connected with in-situ mining were not included in the ULP BA. The potential for uranium, radionuclides, selenium and other contaminants to impact migratory birds should be assessed for retention ponds that capture surface water, and for sedimentation ponds receiving water pumped from mines. Uranium bearing formations are usually associated with seleniferous strata (Boon 1989). Waterborne selenium concentrations ≥ 2 μg/L are considered hazardous to the health and long-term survival of fish and wildlife (Lemly 1996). Additionally, water with more than 20 μg/L is considered hazardous to aquatic birds (Skoruap and Ohlendorf 1991). Chronic effects of selenium manifest themselves in immune suppression to birds (Fairbrother et al. 1994) which can make affected birds more susceptible to disease and predation. Selenium toxicity will also cause embryonic deformities and mortality (See et al. 1992, Skoruap and Ohlendorf 1991, Ohlendorf 2002).

If submerged aquatic vegetation and/or aquatic invertebrates are present in ponds with high waterborne selenium concentrations, extremely high dietary levels of this contaminant can be available to aquatic migratory birds. Ramirez and Rogers (2000, 2002) documented selenium concentrations ranging from 434 to 508 μg/g in Potamogeton vaginatus (pondweed) collected from a uranium mine wastewater storage reservoir that had waterborne selenium concentrations ranging from 260 to 350 μg/L.

Annual monitoring of retention and sedimentation ponds should be conducted to determine waterborne selenium concentrations and to determine if submerged aquatic vegetation and/or aquatic invertebrates are present and provide a pathway for selenium bioaccumulation by birds using the evaporation ponds. If submerged aquatic vegetation and/or aquatic invertebrates are present in the evaporation pond and waterborne selenium is > 2 μg/L, please contact our office for further guidance.

Along with the previously mentioned contaminants, high salt concentrations may also occur in retention and sedimentation ponds, as well as at ponds at milling facilities. As water evaporates, ponds become increasingly saline; ultimately resulting in accumulation of evaporates/precipitates. On page S-67 of your March 2013 draft PEIS, it is recommended that mine-water treatment ponds should be fenced and netted to prevent use by wildlife including birds and bats. Contrary to what is stated on page 67 of your BA, birds do not avoid acidic and saline conditions in ponded water, and both situations can result in providing attractive nuisance ponds that result in avian mortality. There are numerous publications that address salt toxicity to birds. Wobeser and Howard (1987) discussed mortality of waterfowl on a hypersaline lake with a conductivity of 77,000-90,000 μmhos/cm. Windingstad et al. (1987) reported salt toxicity in waterfowl in a lake with sodium concentrations over 17,000 mg/L. Salt toxicity is associated with high sodium concentrations in bird brains, and they can suffer general dehydration, hemorrhages, salt encrustation of feathers, ocular lens opacities, and eventual mortality (Meteyer et al., 1997). Fencing (Table 2-5, D11), lining (Table 2-5, D4), and netting these ponds that contain high concentrations of salt and contaminants are the best management practices that provide barriers to prevent exposure to birds and other wildlife, and avoid take under the Migratory Bird Treaty Act. Please visit www.fws.gov/mountain-prairie/contaminants/oilpits.htm
for more information on pond netting.

Thank you for your cooperation in this consultation and your interest in conserving endangered species. If we can be of further assistance, please contact Barb Osmundson of the Western Colorado Field Office in Grand Junction at (970) 243-2778, extension 21.

Sincerely,

[Signature]

Patricia S. Gelatt
Western Colorado Supervisor

References Cited:


This page intentionally left blank
Final Biological Assessment for the U.S. Department of Energy Uranium Leasing Program

May 2013
# CONTENTS

<table>
<thead>
<tr>
<th>Section</th>
<th>Title</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>NOTATION</td>
<td>vii</td>
</tr>
<tr>
<td>6</td>
<td>1 INTRODUCTION</td>
<td>1</td>
</tr>
<tr>
<td>6</td>
<td>1.1 Summary</td>
<td>1</td>
</tr>
<tr>
<td>10</td>
<td>2 PROPOSED ACTION</td>
<td>3</td>
</tr>
<tr>
<td>10</td>
<td>2.1 Description of the Action Area</td>
<td>3</td>
</tr>
<tr>
<td>10</td>
<td>2.2 Description of the Proposed Action</td>
<td>10</td>
</tr>
<tr>
<td>10</td>
<td>2.2.1 Production and Surface Disturbance</td>
<td>10</td>
</tr>
<tr>
<td>10</td>
<td>2.2.2 Water</td>
<td>11</td>
</tr>
<tr>
<td>16</td>
<td>2.3 Potentially Applicable Mitigation Measures and Best Management Practices</td>
<td>12</td>
</tr>
<tr>
<td>18</td>
<td>3 EFFECTS OF THE URANIUM LEASING PROGRAM</td>
<td>21</td>
</tr>
<tr>
<td>20</td>
<td>3.1 Common Effects of Uranium Mining on Species and Habitats</td>
<td>21</td>
</tr>
<tr>
<td>20</td>
<td>3.1.1 Exploration</td>
<td>21</td>
</tr>
<tr>
<td>22</td>
<td>3.1.2 Mine Development and Operations</td>
<td>24</td>
</tr>
<tr>
<td>23</td>
<td>3.1.3 Reclamation</td>
<td>29</td>
</tr>
<tr>
<td>24</td>
<td>3.2 Species That May Be Affected under the Proposed Action</td>
<td>30</td>
</tr>
<tr>
<td>25</td>
<td>3.2.1 Endangered, Threatened, and Proposed Species</td>
<td>30</td>
</tr>
<tr>
<td>26</td>
<td>3.2.1.1 Plants</td>
<td>33</td>
</tr>
<tr>
<td>27</td>
<td>3.2.1.2 Invertebrates</td>
<td>38</td>
</tr>
<tr>
<td>28</td>
<td>3.2.1.3 Fish</td>
<td>38</td>
</tr>
<tr>
<td>29</td>
<td>3.2.1.4 Birds</td>
<td>45</td>
</tr>
<tr>
<td>30</td>
<td>3.2.1.5 Mammals</td>
<td>52</td>
</tr>
<tr>
<td>31</td>
<td>3.2.2 Candidate Species</td>
<td>54</td>
</tr>
<tr>
<td>32</td>
<td>3.2.2.1 Birds</td>
<td>56</td>
</tr>
<tr>
<td>33</td>
<td>3.2.2.2 Mammals</td>
<td>57</td>
</tr>
<tr>
<td>35</td>
<td>4 CUMULATIVE EFFECTS</td>
<td>61</td>
</tr>
<tr>
<td>37</td>
<td>4.1 Reasonably Foreseeable Future Actions</td>
<td>61</td>
</tr>
<tr>
<td>38</td>
<td>4.1.1 Piñon Ridge Mill</td>
<td>64</td>
</tr>
<tr>
<td>39</td>
<td>4.1.2 Planned Uranium Exploration</td>
<td>65</td>
</tr>
<tr>
<td>40</td>
<td>4.1.3 Construction of Agricultural Water Facilities</td>
<td>65</td>
</tr>
<tr>
<td>41</td>
<td>4.1.4 Other Future Projects</td>
<td>66</td>
</tr>
<tr>
<td>42</td>
<td>4.2 Past and Present Actions</td>
<td>66</td>
</tr>
<tr>
<td>43</td>
<td>4.2.1 White Mesa Mill</td>
<td>66</td>
</tr>
<tr>
<td>44</td>
<td>4.2.2 Uranium Mining</td>
<td>67</td>
</tr>
<tr>
<td>45</td>
<td>4.2.2.1 Daneros Mine</td>
<td>67</td>
</tr>
<tr>
<td>46</td>
<td>4.2.2.2 La Sal Mines Complex</td>
<td>67</td>
</tr>
</tbody>
</table>
# CONTENTS (Cont.)

4.2.2.3 Whirlwind Mine
4.2.2.4 Other Uranium Mining and Uranium Exploration
4.2.2.5 Coal Mining

4.3 Cumulative Impacts from the Proposed Action

5 REFERENCES

## FIGURES

- **2-1** Locations of the ULP Lease Tracts
- **2-2** Land Cover Types in the Vicinity of the DOE Lease Tracts
- **3-1** Recorded Quad-Level Occurrences of the Clay-Loving Wild Buckwheat and Colorado Hookless Cactus, and Locations of Designated Critical Habitat for the Clay-Loving Wild Buckwheat, in the Vicinity of the ULP Lease Tracts
- **3-2** Recorded Quad-Level Occurrences of the Debeque Phacelia and Uncompahgre Fritillary Butterfly, and Locations of Proposed Critical Habitat for the Debeque Phacelia, in the Vicinity of the ULP Lease Tracts
- **3-3** Locations of Designated Critical Habitat for the Colorado River Endangered Fish Species in the Vicinity of the ULP Lease Tracts
- **3-4** Recorded Quad-Level Occurrences and Distribution of Potentially Suitable Habitat for the Gunnison Sage-Grouse and Western Yellow-Billed Cuckoo in the Vicinity of the ULP Lease Tracts
- **3-5** Recorded Quad-Level Occurrences and Distribution of Potentially Suitable Habitat for the Mexican Spotted Owl and Southwestern Willow Flycatcher, and Locations of Designated Critical Habitat for the Mexican Spotted Owl, in the Vicinity of the ULP Lease Tracts
- **3-6** Recorded Quad-Level Occurrences and Distribution of Potentially Suitable Habitat for the Canada Lynx in the Vicinity of the ULP Lease Tracts
- **3-7** Recorded Quad-Level Occurrences and Distribution of Potentially Suitable Habitat for the Gunnison’s Prairie Dog and North American Wolverine in the Vicinity of the ULP Lease Tracts
FIGURES (Cont.)

4-1 Region of Cumulative Impacts for the Proposed ULP .......................................................... 62
4-2 Uranium Mining and Oil/Gas Wells in the Region of Cumulative Impacts ........................... 63

TABLES

2-1 Status Summary of the 31 DOE ULP Lease Tracts before October 18, 2011.................. 4
2-2 Number of Mines, Ore Production Rates, and Disturbed Surface Areas Assumed for the Peak Year of Operations ............................................................. 11
2-3 Peak Water Requirements Assumed for the ULP Mines .................................................. 13
2-4 Pond Volume, Discharge, and Retention Estimates for the Two Two-Pond Systems Currently at the ULP Mine Sites ................................................................. 13
2-5 Measures to Reduce Impacts of ULP Activities on Ecological Resources .................. 15
3-1 General Ecological Effects on Different Groups of Biota during Various Uranium Mining Phases .............................................................................................. 22
3-2 Seed Mixture Approved for Reseeding on the DOE ULP Lease Tracts ....................... 29
3-3 Summary of Effects Determination for Listed and Candidate Species ......................... 31
NOTATION

ACRONYMS AND ABBREVIATIONS

BA  biological assessment
BLM  Bureau of Land Management
BMP  best management practice
CDOW  Colorado Division of Wildlife
CDPHE  Colorado Department of Public Health and Environment
CERCLA  Comprehensive Environmental Response, Compensation, and Liability Act
CFR  Code of Federal Regulations
CNHP  Colorado Natural Heritage Program
CPW  Colorado Parks and Wildlife (formerly CDOW)
DOE  U.S. Department of Energy
EPA  U.S. Environmental Protection Agency
ESA  Endangered Species Act
NEPA  National Environmental Policy Act
NPDES  National Pollutant Discharge Elimination System
ROW  right-of-way
ULP  Uranium Leasing Program
USC  United States Code
USDA  U.S. Department of Agriculture
USFWS  U.S. Fish and Wildlife Service
WAPA  Western Area Power Administration

UNITS OF MEASURE

acre-ft  acre-foot (feet)
°C  degree(s) Celsius
cm  centimeter(s)
d  day
dBA  a-weighted decibel(s)
°F  degree(s) Fahrenheit
ft  foot (feet)
g  gram(s)
gal  gallon(s)
h  hour(s)
ha  hectare(s)
in.  inch(es)
kg  kilogram(s)
km  kilometer(s)
km²  square kilometer(s)
L  liter(s)
lb  pound(s)
### ULP Final Biological Assessment

<table>
<thead>
<tr>
<th>1</th>
<th>m</th>
<th>meter(s)</th>
</tr>
</thead>
<tbody>
<tr>
<td>2</td>
<td>mGy</td>
<td>milligray</td>
</tr>
<tr>
<td>3</td>
<td>mi</td>
<td>mile(s)</td>
</tr>
<tr>
<td>4</td>
<td>mi²</td>
<td>square mile(s)</td>
</tr>
<tr>
<td>5</td>
<td>oz</td>
<td>ounce(s)</td>
</tr>
<tr>
<td>6</td>
<td>pCi</td>
<td>picocurie(s)</td>
</tr>
<tr>
<td>7</td>
<td>yr</td>
<td>year(s)</td>
</tr>
</tbody>
</table>

**May 2013**
1 INTRODUCTION

This document serves as the biological assessment (BA) for the U.S. Department of Energy’s (DOE’s) proposed action to implement the Uranium Leasing Program (ULP) under which DOE administers tracts of land (lease tracts) in western Colorado for exploration, development, and the extraction of uranium and vanadium ores. This BA was prepared by DOE as part of its compliance with the Endangered Species Act of 1973, as amended (ESA; see 16 USC § 1531 et seq. in United States Code). A BA evaluates the potential effects of an agency’s proposed action on species that are federally listed as threatened or endangered (and species that are proposed for such listing) and on designated and proposed critical habitat and determines whether any such species or habitats are likely to be adversely affected by the proposed action (see 50 CFR 402.12 in the Code of Federal Regulations). This BA is being provided to the U.S. Fish and Wildlife Service (USFWS) to document DOE’s conclusions and the rationale to support those conclusions regarding the effects of the proposed action on protected resources, and it may be used by the USFWS in developing a biological opinion (Opinion) if it is determined that the proposed action is likely to jeopardize the continued existence of a listed species or result in the destruction or adverse modification of critical habitat.

1.1 SUMMARY

A total of 14 species listed or proposed for listing under the ESA are considered for Section 7 consultation in this BA; an additional 3 species that are candidates for listing under the ESA are discussed in coordination with USFWS conservation objectives. Required compliance measures, mitigation measures, and suggested best management practices (BMPs) (listed and defined in Table 2-5) for ULP mining activities would aid in eliminating, reducing, or offsetting impacts to these species. With the implementation of these measures, ULP activities are expected to have no effect on 8 species (clay-loving wild buckwheat, Colorado hookless cactus, Debeque phacelia, Uncompahgre frilltary butterfly, greenback cutthroat trout, black-footed ferret, Canada lynx, and North American wolverine) and on the designated critical habitat for 5 species (clay-loving wild buckwheat, Debeque phacelia, Mexican spotted owl, southwestern willow flycatcher, and Canada lynx). It has been determined that ULP activities may affect, but are not likely to adversely affect, 5 species (Mexican spotted owl, southwestern willow flycatcher, Gunnison sage-grouse, western yellow-billed cuckoo, and Gunnison’s prairie dog). It has been determined that ULP activities may affect, and are likely to adversely affect the 4 Colorado River endangered fish species (bonytail, Colorado pikeminnow, humpback chub, and razorback sucker) and their critical habitat. Additional conservation measures are proposed to reduce or mitigate impacts to the Colorado River endangered fish. The cumulative impact assessment evaluates the incremental impact of other nonfederal activities within a 50-mi (80-km) area surrounding the ULP lease tracts. Cumulative effects of the ULP are not likely to jeopardize federally listed species or interfere with USFWS recovery efforts for these species.
2 PROPOSED ACTION

2.1 DESCRIPTION OF THE ACTION AREA

At present, DOE manages 31 lease tracts under its ULP. These lease tracts are located in Mesa, Montrose, and San Miguel Counties, Colorado, on public lands administered by the Bureau of Land Management (BLM) under the provisions of Public Land Order 459 and others. Of these 31 lease tracts, 29 have active leases, and 2 do not. Lease Tracts 8A and 14 (composed of Tracts 14-1, 14-2, and 14-3) are currently not leased. Lease Tract 8A is a small tract that is isolated and may be located entirely outside the uranium-bearing formation, which could indicate a lack of ore. There was some interest in Lease Tracts 14-1 and 14-2 by potential lessees in the past; however, the third tract (14-3, which lies east of 14-1) is located almost entirely within the Dolores River corridor and was never leased. Table 2-1 lists the 31 lease tracts and the acreage, the current lease holder(s), and the field status of each tract. Figure 2-1 shows the locations of the lease tracts.

The ULP lease tracts are located primarily within the Colorado Plateaus Level III ecoregion (Chapman et al. 2006). An ecoregion is an area in which the ecosystems have a general similarity. The Colorado Plateaus ecoregion is characterized by a rugged tableland of mesas, plateaus, mountains, and canyons, often with abrupt changes in local relief (Chapman et al. 2006). Habitat types within this ecoregion include Douglas-fir forest and woodlands of pinyon-juniper and Gambel oak, as well as sagebrush steppe, desert shrubland, and salt desert scrub. The ULP lease tracts could support a variety of vegetation types; the predominant ones are pinyon-juniper woodlands and sagebrush-dominated shrublands.

Each of the lease tracts is located, at least in part, within the Semiarid Benchlands and Canyonlands Level IV ecoregion. Sandy soils support sagebrush steppe with warm season grasses, such as galleta grass (Pleuraphis jamesii) and blue grama (Bouteloua gracilis), and shrubs, primarily black sagebrush (Artemisia nova), winterfat (Krascheninnikovia lanata), mormon tea (Ephedra viridis), fourwing saltbush (Atriplex canescens), and shadscale (Atriplex confertifolia). Stony soils support pinyon-juniper woodlands of two-needle pinyon pine (Pinus edulis) and Utah juniper (Juniperus osteosperma). Scattered woodlands of Gambel oak (Quercus gambelii) occur at the higher elevations.

Western portions of Lease Tracts 11, 11A, and 12 include the Monticello-Cortez Uplands and Sagebrush Valleys Level IV ecoregion. Sagebrush steppe occurs on broad areas of silty soils and is characterized by Wyoming big sagebrush (Artemisia tridentata wyomingensis), western wheatgrass (Pascopyrum smithii), and Indian ricegrass (Achnatherum hymenoides) (Chapman et al. 2006). Scattered pinyon-juniper woodlands occur on shallow or stony soils along the rims of benches and minor escarpments. Two-needle pinyon pine, antelope bitterbrush (Purshia tridentata), and serviceberry (Amelanchier sp.) also occur in some areas.

A small area in the eastern portion of Lease Tract 13 is located within the Shale Deserts and Sedimentary Basins Level IV ecoregion. This arid ecoregion generally supports sparse mat saltbush shrubland and salt desert scrub (Chapman et al. 2006). Characteristic species include
### TABLE 2-1 Status Summary of the 31 DOE ULP Lease Tracts before October 18, 2011

<table>
<thead>
<tr>
<th>Lease Tract No.</th>
<th>Acreage</th>
<th>Lessee</th>
<th>County</th>
<th>Status&lt;sup&gt;a&lt;/sup&gt;</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>10</td>
<td>638</td>
<td>Golden Eagle Uranium, LLC</td>
<td>San Miguel; No recent (post-1995) activity conducted; no area needs to be reclaimed under current conditions.</td>
</tr>
<tr>
<td>2</td>
<td>11</td>
<td>1,303</td>
<td>Cotter Corporation</td>
<td>San Miguel; New underground mine permitted and being developed; reclamation of previously disturbed areas needed.</td>
</tr>
<tr>
<td>3</td>
<td>11A</td>
<td>1,207</td>
<td>Golden Eagle Uranium, LLC</td>
<td>San Miguel; No recent (post-1995) activity conducted; no area needs to be reclaimed under current conditions.</td>
</tr>
<tr>
<td>4</td>
<td>12</td>
<td>641</td>
<td>Colorado Plateau Partners</td>
<td>San Miguel; No recent (post-1995) activity conducted; no area needs to be reclaimed under current conditions.</td>
</tr>
<tr>
<td>5</td>
<td>13</td>
<td>1,077</td>
<td>Gold Eagle Mining, Inc.</td>
<td>San Miguel; Three existing, permitted underground mines; reclamation of previously disturbed areas is needed.</td>
</tr>
<tr>
<td>6</td>
<td>13A</td>
<td>420</td>
<td>Cotter Corporation</td>
<td>San Miguel; Exploration plan (one hole) approved; drilling and reclamation of the explored area completed.</td>
</tr>
<tr>
<td>7</td>
<td>14</td>
<td>971</td>
<td>Not applicable</td>
<td>San Miguel; Lease tract has not been leased.</td>
</tr>
<tr>
<td>8</td>
<td>15</td>
<td>350</td>
<td>Gold Eagle Mining, Inc.</td>
<td>San Miguel; One existing underground mine; reclamation of previously disturbed areas is needed.</td>
</tr>
<tr>
<td>9</td>
<td>15A</td>
<td>172</td>
<td>Golden Eagle Uranium, LLC</td>
<td>San Miguel; No recent (post-1995) activity conducted; no area needs to be reclaimed under current conditions.</td>
</tr>
<tr>
<td>10</td>
<td>16</td>
<td>1,700</td>
<td>Golden Eagle Uranium, LLC</td>
<td>San Miguel; No recent (post-1995) activity conducted; no area needs to be reclaimed under current conditions.</td>
</tr>
<tr>
<td>11</td>
<td>16A</td>
<td>585</td>
<td>Energy Fuels Resources Corp.</td>
<td>San Miguel; No recent (post-1995) activity conducted; no area needs to be reclaimed under current conditions.</td>
</tr>
<tr>
<td>12</td>
<td>5</td>
<td>151</td>
<td>Gold Eagle Mining, Inc.</td>
<td>Montrose; One existing, permitted underground mine; reclamation of previously disturbed areas is needed.</td>
</tr>
</tbody>
</table>
### TABLE 2-1 (Cont.)

<table>
<thead>
<tr>
<th>Lease Tract No.</th>
<th>Acreage</th>
<th>Lessee</th>
<th>County</th>
<th>Status*</th>
</tr>
</thead>
<tbody>
<tr>
<td>13</td>
<td>SA (1, 2)</td>
<td>25 Golden Eagle Uranium, LLC</td>
<td>Montrose</td>
<td>No recent (post-1995) activity conducted; no area needs to be reclaimed under current conditions.</td>
</tr>
<tr>
<td>14</td>
<td>6</td>
<td>530 Cotter Corporation</td>
<td>Montrose</td>
<td>One existing permitted underground mine; reclamation of previously disturbed areas is needed.</td>
</tr>
<tr>
<td>15</td>
<td>7</td>
<td>403 Cotter Corporation</td>
<td>Montrose</td>
<td>Two existing permitted mines—one underground mine and one large open-pit mine; reclamation of previously disturbed areas is needed.</td>
</tr>
<tr>
<td>16</td>
<td>8</td>
<td>955 Cotter Corporation</td>
<td>Montrose</td>
<td>One existing permitted underground mine; reclamation of previously disturbed areas is needed.</td>
</tr>
<tr>
<td>17</td>
<td>8A</td>
<td>78 Not applicable</td>
<td>Montrose</td>
<td>Lease tract has not been leased.</td>
</tr>
<tr>
<td>18</td>
<td>9</td>
<td>1,037 Cotter Corporation</td>
<td>Montrose</td>
<td>One existing permitted underground mine; reclamation of previously disturbed areas is needed.</td>
</tr>
<tr>
<td>19</td>
<td>17 (1, 2)</td>
<td>475 Golden Eagle Uranium, LLC</td>
<td>Montrose and San Miguel</td>
<td>No recent (post-1995) activity conducted; no area needs to be reclaimed under current conditions.</td>
</tr>
<tr>
<td>20</td>
<td>18</td>
<td>1,181 Cotter Corporation</td>
<td>Montrose</td>
<td>One existing permitted underground mine; reclamation of previously disturbed areas is needed.</td>
</tr>
<tr>
<td>21</td>
<td>19</td>
<td>662 Energy Fuels Resources Corp.</td>
<td>Montrose</td>
<td>No recent (post-1995) activity conducted; no area needs to be reclaimed under current conditions.</td>
</tr>
<tr>
<td>22</td>
<td>19A</td>
<td>1,204 Energy Fuels Resources Corp.</td>
<td>Montrose</td>
<td>No recent (post-1995) activity conducted; no area needs to be reclaimed under current conditions.</td>
</tr>
<tr>
<td>23</td>
<td>20</td>
<td>627 Energy Fuels Resources Corp.</td>
<td>Montrose</td>
<td>No recent (post-1995) activity conducted; no area needs to be reclaimed under current conditions.</td>
</tr>
<tr>
<td>24</td>
<td>21</td>
<td>651 Cotter Corporation</td>
<td>Montrose</td>
<td>Exploration plan (two holes) approved; drilling and reclamation of the explored area are completed; no area needs to be reclaimed under current conditions.</td>
</tr>
</tbody>
</table>
### Table 2-1 (Cont.)

<table>
<thead>
<tr>
<th>Lease Tract No.</th>
<th>Acreage</th>
<th>Lessee</th>
<th>County</th>
<th>Statusa</th>
</tr>
</thead>
<tbody>
<tr>
<td>25</td>
<td>22</td>
<td>224</td>
<td>Golden Eagle Uranium, LLC</td>
<td>Montrose</td>
</tr>
<tr>
<td>26</td>
<td>22A</td>
<td>409</td>
<td>Golden Eagle Uranium, LLC</td>
<td>Montrose</td>
</tr>
<tr>
<td>27</td>
<td>23(1,2,3)</td>
<td>506</td>
<td>Golden Eagle Uranium, LLC</td>
<td>Montrose</td>
</tr>
<tr>
<td>28</td>
<td>24</td>
<td>201</td>
<td>Energy Fuels Resources Corp.</td>
<td>Montrose</td>
</tr>
<tr>
<td>29</td>
<td>25</td>
<td>639</td>
<td>Cotter Corporation</td>
<td>Montrose</td>
</tr>
<tr>
<td>30</td>
<td>26</td>
<td>3,980</td>
<td>Energy Fuels Resources Corp.</td>
<td>Mesa</td>
</tr>
<tr>
<td>31</td>
<td>27</td>
<td>1,766</td>
<td>Energy Fuels Resources Corp.</td>
<td>Mesa</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td></td>
<td>25,137</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

---

*a On October 18, 2011, a federal district court stayed the 31 leases, and enjoined DOE from approving any activities on ULP lands. On February 27, 2012, the court amended its injunction to allow DOE, other federal, state, or local governmental agencies, and the ULP lessees to conduct only those activities on ULP lands that are absolutely necessary, as described in the court's Order. See Colorado Environmental Coalition v. Office of Legacy Management, No. 08-cv-01624, 2012 U.S. DIST. LEXIS 24126 (D. Colo. Feb. 27, 2012).
FIGURE 2-1 Locations of the ULP Lease Tracts
mat saltbush (*Atriplex corrugata*), shadscale, Nuttall's saltbush (*Atriplex nuttallii*), blackbrush
(*Coleogyne ramosissima*), fourwing saltbush, Wyoming big sagebrush, bud sagebrush
(*Purshia tridentata*), galleta grass, and desert trumpet (*Baihaya multiradiata*). The
alkaline soils of floodplains support greasewood (*Sarcobatus vermiculatus*), alkali saltbush
(*Sporobolus airoides*), seepweed (*Suaeda sp.*), and shadscale. Badland areas support little or
no vegetation.

A small portion in the northeast corner of Lease Tract 26 is located within the
Sedimentary Mid-Elevation Forests Level IV ecoregion of the Southern Rockies Level III
ecoregion. This ecoregion supports ponderosa pine (*Pinus ponderosa*) forest, aspen (*Populus
tremuloides*) forest, and Gambel oak woodland (Chapman et al. 2006). Some areas include
mountain mahogany (*Cercocarpus sp.*) and two-needle pinyon pine. Shrubs occurring within
the habitats of this ecoregion include antelope bitterbrush (*Purshia tridentata*), fringed sage
(*Artemisia frigida*), serviceberry, and snowberry (*Symphoricarpos sp.*). Grasses within these
habitats include Arizona fescue (*Festuca arizonica*), bluegrass (*Poa sp.*), junegrass (*Koelkera
macrantha*), needlegrasses (*Stipa spp.*), mountain muhly (*Muhlenbergia montana*), pine
dropseed (*Blepharoneuron trichoolepis*), and mountain brome (*Bromus marginatus*).
Land cover types described and mapped under the Southwest Regional Gap Analysis
Project (USGS 2004) are used to evaluate plant communities in and near the lease tracts
(Figure 2-2). Each cover type encompasses a range of similar plant communities. The
predominant vegetation community in most of the tracts is Colorado Plateau Pinyon-Juniper
Woodland. Large areas of Inter-Mountain Basins Big Sagebrush Shrubland occur in Lease
Tracts 9, 12, 19A, 20, and 21. Colorado Plateau Pinyon-Juniper Shrubland occurs over large
areas of Lease Tracts 13, 13A, 14-1, and 18. Large areas of Rocky Mountain Gambel Oak-Mixed
Montane Shrubland occur in Lease Tracts 10 and 12.
Lease Tracts 19A, 20, and 21 consist primarily of a composite of Colorado Plateau
Pinyon-Juniper Woodland and Inter-Mountain Basins Big Sagebrush Shrubland. Lease
tracts 13A, 14, and 18 are composed primarily of Colorado Plateau Pinyon-Juniper Woodland
and Colorado Plateau Pinyon-Juniper Shrubland. Lease Tract 12 is a mosaic of Inter-Mountain
Basins Montane Sagebrush Steppe, Inter-Mountain Basins Big Sagebrush Shrubland, and Rocky
Mountain Gambel Oak-Mixed Montane Shrubland. Lease Tract 13 is a mosaic of Colorado
Plateau Pinyon-Juniper Woodland, Colorado Plateau Pinyon-Juniper Shrubland, Inter-Mountain
Basins Greasewood Flat, Inter-Mountain Basins Shale Badland, and Inter-Mountain Basins
Mixed Salt Desert Scrub.
Rocky Mountain Lower Montane Riparian Woodland and Shrubland occurs along
segments of Calamity Creek in Lease Tracts 26 and 27, along the Dolores River in Lease
Tract 13, and along the withdrawn area of the northwest section of Lease Tract 13A. A small
area of introduced riparian and wetland vegetation occurs in the northwest corner of Lease
Tract 18 along Atkinson Creek.
Wetland areas are typically inundated or have saturated soils for at least a portion of the
growing season (Cowardin et al. 1979). Wetlands generally support plant communities that are
adapted to saturated soil conditions; however, stream beds, mudflats, gravel beaches, and rocky
FIGURE 2-2  Land Cover Types in the Vicinity of the DOE Lease Tracts (USGS 2004)
shores are wetland areas that may not be vegetated. Although surface flows provide the water
source for some wetlands (such as many riverine marshes), other wetlands (such as springs and
seeps) are supported by groundwater discharge. Wetlands are often associated with perennial
water sources, such as springs, perennial segments of streams, or lakes and ponds. However,
some wetlands, such as vernal pools, have seasonal or intermittent sources of water. Wetlands in
the area of the lease tracts are mapped by the National Wetlands Inventory (USFWS 2009).
Digital data are not available for this area of Colorado; nevertheless, wetlands are mapped and
identified by type. Some wetlands occurring in these areas may not be mapped because of the
inherent limitations of high-altitude image interpretation. Riverine wetlands occur in many
canyon areas within the tracts, including along the Dolores River and named creeks. Small
palustrine wetlands occur in several tracts, typically as a result of a dike or impoundment, and
can represent livestock watering ponds.

2.2 DESCRIPTION OF THE PROPOSED ACTION

DOE is completing a programmatic environmental impact statement (PEIS) under the
National Environmental Policy Act (NEPA) for the ULP. DOE’s proposed action in the PEIS is
to decide whether to continue the ULP for the remainder of the 10-year period covered by a
previous NEPA review in July 2007 and, if it decides to continue the ULP, to determine which
alternative to adopt in order to manage the ULP during that period. The preferred alternative in
the PEIS is to continue the ULP with exploration, mine development and operation, and
reclamation at the 31 lease tracts for the next 10-year period or for another reasonable period.
This BA evaluates the actions associated with the preferred alternative of the PEIS.

2.2.1 Production and Surface Disturbance

Based on analyses of a reasonably foreseeable development scenario (as presented in the
PEIS), it was assumed that there would be a total of 19 mines operating under the ULP at various
production rates at the same time during what would be considered the peak year of operations.
It is further assumed that there would be a smaller number of mines in operation in the years
other than the peak year, and that this peak year could occur more than once (that is, there could
be multiple years with the same number of mines operating at similar ore production rates).
These assumptions are developed based on a review of information on past mining that have
occurred at the ULP lease tracts, and on current expectations of the ULP lessees about the
mining that they would likely conduct in the near future. Table 2-2 presents the assumed number
of mines and associated production rates. The size of the mine (i.e., small, medium, large, or
very large) was assigned on the basis of the assumed ore production rate. The disturbed surface
area, which varies somewhat depending on the size of the mine, is also presented in the table.

The ore generated from the DOE ULP lease tracts could be taken to either of two mills
for processing: White Mesa Mill or the proposed Piñon Ridge Mill. The White Mesa Mill is
currently the only conventional uranium mill operating in the United States. This mill was
originally licensed to operate by the U.S. Nuclear Regulatory Commission on March 31, 1980; it
currently possesses 15 license amendments that allow it to process 18 different alternative ore
TABLE 2-2 Number of Mines, Ore Production Rates, and Disturbed Surface Areas Assumed for the Peak Year of Operations

<table>
<thead>
<tr>
<th>Parameter Assumed</th>
<th>Small (50 per mine)</th>
<th>Medium (100 per mine)</th>
<th>Large (200 per mine)</th>
<th>Very Large</th>
<th>Total for All Sizes</th>
</tr>
</thead>
<tbody>
<tr>
<td>Number of mines</td>
<td>6</td>
<td>10</td>
<td>2</td>
<td>1</td>
<td>19</td>
</tr>
<tr>
<td>Ore production rate (ton/d)</td>
<td>300</td>
<td>1,000</td>
<td>400</td>
<td>300</td>
<td>2,000</td>
</tr>
<tr>
<td>Total disturbed surface area (acres)</td>
<td>60</td>
<td>150</td>
<td>40</td>
<td>210</td>
<td>460</td>
</tr>
</tbody>
</table>

a The one very large mine that is assumed is an open-pit mine (on Lease Tract 7), which has been explored and developed but is currently not in operation. The area developed is about 210 acres.
b Total tonnage per day that is assumed to be produced exceeds the milling capacity of 1,500 tons per day assumed to be available (at White Mesa and Pihen Ridge Mills) for processing uranium ore from the ULP lease tracts, but it is further assumed that the excess tonnage produced could be stockpiled for a few days, since the mills process ore 7 days per week, while production typically occurs on only 5 days per week.
c Total additional area that would be disturbed is 250 acres, since 210 acres from the open-pit mine is already accounted for from previous mining disturbance.

2.2.2 Water

The potential for impacts on surface water and groundwater in the vicinity of the DOE ULP lease tracts during mine development and operations would result from erosion, runoff, dewatering, and groundwater-contamination-related causes. The impacts associated with consumptive water use, chemical spills, and wastewater could be minimized through permitting and BMP implementation. The lease tracts closest to the Dolores River and San Miguel River have the greatest potential for affecting water quality because of their proximity to perennial water bodies. The lease tracts located in the Slick Rock and Uravan lease tracts are the closest to the Dolores River and San Miguel River, respectively. Lease Tract 13 encompasses a 3-mi (5-km) reach of the Dolores River and is where erosion poses the greatest threat to water quality. An increase in erosion and runoff may increase the potential of sediment and pollutant loadings...
to nearby rivers. Possible pollutants may include sediment-associated compounds, chemical dust, control compounds, fuels and other chemicals used in mining, and mineral leachates. As recently evaluated by the CDPHE (2012a,b), the existing impaired surface water that exceeds Colorado standards is mainly located upstream and not associated with the DOE ULP lease tracts. During future mine development and operations, impacts of erosion by runoff are considered to be moderate in some areas near Lease Tracts 13 and 18. However, the potential of sediment and pollutant loadings could be minimized by implementing a stormwater control system, a diversion ditch, a sedimentation pond, and an appropriate monitoring system.

Consumptive water use during mine development and operations is primarily for use by the workers (e.g., showers and drinking water) and for dust suppression. Water consumption estimates for each of the various mine sizes during the peak year are provided in Table 2-3. It is assumed that for the peak year of operations that there would be a total of 19 mines of varying sizes (six small, 10 medium, two large and one very large) operating at the same time. In total, it is assumed that peak year mining activities under the ULP would require approximately 6,300,000 gal (19 acre-ft) of water over the course of the year (Table 2-3). These estimates were conservatively determined based on information and assumptions from previous ULP mining operations. Since local surface water and groundwater sources are scarce and often of poor quality, it is assumed that most of the water supply would be trucked to the site from sources outside the lease tracts. However, it is expected that water would come from the same hydrologic basin as that for the ULP lease tracts (Dolores River Basin) and that the consumed water would also be discharged within the same hydrologic basin. Although local water sources (surface water or groundwater) are not abundantly available in most ULP lease tracts, the source of water used by the lessees to support ULP activities may come from pumping withdrawals on or off the lease tract and would be purchased. The surface water and groundwater sources in the Dolores River Basin where the ULP lease tracts occur are considered over-appropriated by the Colorado Division of Water Resources (CDWR 2007). Therefore, water used to support ULP activities would likely come from purchased sources.

As many as four retention pond systems are assumed to be used for peak ULP mining activities. These pond systems would be primarily intended to capture surface water and prevent sediment from entering nearby streams and drainages. There are currently two pond systems in use at existing ULP mine sites (located at medium-size mines). Therefore, as many as two additional pond systems may be created in lease tracts during the proposed ULP. The volume, discharge, and retention values for the two pond systems that currently exist are provided in Table 2-4. Estimated time to fill these pond systems ranges between 50 and 63 days.

### 2.3 POTENTIALLY APPLICABLE MITIGATION MEASURES AND BEST MANAGEMENT PRACTICES

Under the proposed ULP, various measures would be implemented by developers during each mining phase to reduce the potential for ecological impacts. Measures may include required mitigation measures to reduce or offset impacts, as well as measures that may not be required but are deemed to be BMPs in the industry (e.g., some may be discretionary). Some required measures are...
### TABLE 2-3 Peak Water Requirements Assumed for the ULP Mines\(^a\)

<table>
<thead>
<tr>
<th>Mine Size</th>
<th>No. of Mines</th>
<th>Monthly Water Volume per Mine (gal)(^b)</th>
<th>Total Monthly Water Volume (gal)</th>
<th>Total Monthly Water Volume (acre-ft)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Small(^c)</td>
<td>6</td>
<td>7,600</td>
<td>46,000</td>
<td>0.14</td>
</tr>
<tr>
<td>Medium(^d)</td>
<td>10</td>
<td>31,000</td>
<td>310,000</td>
<td>0.95</td>
</tr>
<tr>
<td>Large(^e)</td>
<td>2</td>
<td>46,000</td>
<td>92,000</td>
<td>0.28</td>
</tr>
<tr>
<td>Very large (pit)(^f)</td>
<td>1</td>
<td>160,000</td>
<td>160,000</td>
<td>0.49</td>
</tr>
</tbody>
</table>

Seasonal Water Use\(^g\)

<table>
<thead>
<tr>
<th></th>
<th>gal</th>
<th>acre-ft</th>
</tr>
</thead>
<tbody>
<tr>
<td>Monthly (summer)</td>
<td>3,600,000</td>
<td>11</td>
</tr>
<tr>
<td>Monthly (winter)</td>
<td>2,700,000</td>
<td>8.3</td>
</tr>
<tr>
<td>Yearly</td>
<td>6,300,000</td>
<td>19</td>
</tr>
</tbody>
</table>

\(^a\) All volume and use values are rounded up to two significant figures.

\(^b\) Assumes all water is drawn from within the Dolores River Basin regardless of whether it is withdrawn from the mine site or trucked into the site.

\(^c\) Water use assumptions for small mines are based on mine SM-18.

\(^d\) Water use assumptions for medium mines are based on mine JD-8.

\(^e\) For large mines, usage is assumed to be 1.5 times that of a medium-size mine.

\(^f\) Water use assumptions for the extra-large pit mine are based on mine JD-7, for 6 months only.

\(^g\) Assumes that the monthly usage is constant year-round, except at the very-large open pit mine. At that mine, water would be used only during the summer months (6 months) for dust suppression activities.

### TABLE 2-4 Pond Volume, Discharge, and Retention Estimates for the Two Two-Pond Systems Currently at the ULP Mine Sites\(^a\)

<table>
<thead>
<tr>
<th>Lease Tract</th>
<th>Pond Volume (gal)</th>
<th>Discharge Rate gal/minute</th>
<th>Discharge Rate gal/month</th>
<th>Retention Time (months)</th>
</tr>
</thead>
<tbody>
<tr>
<td>JD-7</td>
<td>330,000</td>
<td>3.6</td>
<td>160,000</td>
<td>2.1</td>
</tr>
<tr>
<td>JD-9</td>
<td>470,000</td>
<td>6.4</td>
<td>280,000</td>
<td>1.7</td>
</tr>
</tbody>
</table>

\(^a\) All values are rounded up to two significant figures.
listed by project phase in Table 2-5. The table notes whether DOE would consider each measure
a required mitigation measure, a compliance measure, or a BMP. Although some BMPs may be
discretionary, the effect determinations presented in Section 3.2 (summarized in Table 3-3) are
provided based on the assumption that all measures listed in Table 2-5 will be implemented as
part of the ULP.
## TABLE 2.5 Measures to Reduce Impacts of ULP Activities on Ecological Resources

<table>
<thead>
<tr>
<th>Measure</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>G1</td>
<td>Minimize the surface lighting of drilling facilities, storage, and disposal areas and reduce the surface area of the storage areas.</td>
</tr>
<tr>
<td>G2</td>
<td>Construct new roads and maintain them so they minimize the potential for wildlife vehicle collisions and facilitate the movement of wildlife through the project area.</td>
</tr>
<tr>
<td>G3</td>
<td>Construct solid waste management areas in accordance with state and local regulations.</td>
</tr>
<tr>
<td>G4</td>
<td>Avoid areas with unstable slopes in an effort to minimize or reduce the impacts from runoff and sedimentation.</td>
</tr>
<tr>
<td>G5</td>
<td>Establish buffer zones around sensitive habitats, and other outside project facilities and activities from those areas.</td>
</tr>
<tr>
<td>G6</td>
<td>Employ erosion control devices, such as straw bales, to minimize impacts on wildlife and sensitive species.</td>
</tr>
<tr>
<td>G7</td>
<td>Avoid project-related activities on unused surfaces to the extent possible and reduce speeds to lessen fugitive dust emissions.</td>
</tr>
<tr>
<td>G8</td>
<td>Protect plants, wildlife, and their habitats from fugitive dust through measures included in the dust abatement plan.</td>
</tr>
</tbody>
</table>

*May 2013*
## TABLE 2-5 (Cont.)

<table>
<thead>
<tr>
<th>Measure Description</th>
<th>Compliance Measure</th>
<th>Mitigation Measure</th>
<th>BME(^c)</th>
</tr>
</thead>
<tbody>
<tr>
<td>G9 Assign a qualified biologist to be responsible for overseeing compliance with all mitigation measures related to the protection of ecological resources throughout all project phases, particularly in areas requiring avoidance or containing sensitive biological resources, such as sensitive species and important habitats. Additional qualified biological monitors could be assigned during all project phases, as determined through coordination with the BLM, USFWS, and Colorado Parks and Wildlife (CPW, formerly the Colorado Division of Wildlife or CDOW).</td>
<td></td>
<td></td>
<td>X</td>
</tr>
<tr>
<td>G10 Provide all personnel with information necessary to identify and protect ecological resources (especially sensitive species). Provide them with knowledge of relevant mitigation measures before they enter the project work site. This practice would reduce the collection, harassment, or disturbance of plants, wildlife, and their habitats (particularly sensitive species) by educating employees and contractors about applicable state and federal laws, by providing instruction, and by increasing awareness.</td>
<td></td>
<td></td>
<td>X</td>
</tr>
<tr>
<td>G11 Implement measures to mitigate and monitor impacts on sensitive species developed in coordination with the appropriate federal and state agencies (e.g., BLM, USFWS, and CPW).</td>
<td></td>
<td></td>
<td>X</td>
</tr>
<tr>
<td>G12 If any federally listed threatened and endangered species are found during any phase of the project, consult with the USFWS as required by Section 7 of the ESA and determine an appropriate course of action to avoid or mitigate impacts.</td>
<td></td>
<td></td>
<td>X</td>
</tr>
<tr>
<td>G13 To protect bats, implement measures developed in coordination with the appropriate federal and state agencies (e.g., BLM, USFWS, and CPW).</td>
<td></td>
<td></td>
<td>X</td>
</tr>
<tr>
<td>G14 Implement measures to protect birds (including migratory species protected under the Migratory Bird Treaty Act) developed in coordination with the appropriate federal and state agencies (e.g., BLM, USFWS, and CPW).</td>
<td></td>
<td></td>
<td>X</td>
</tr>
<tr>
<td>G15 Implement measures to protect raptors developed in coordination with the appropriate federal and state agencies (e.g., BLM, USFWS, and CPW).</td>
<td></td>
<td></td>
<td>X</td>
</tr>
<tr>
<td>G16 Implement measures to ensure compliance with the regulatory requirements of the Bald and Golden Eagle Protection Act developed in coordination with the USFWS.</td>
<td></td>
<td></td>
<td>X</td>
</tr>
<tr>
<td>Measure Description</td>
<td>Compliance Measure</td>
<td>Mitigation Measure</td>
<td>BME</td>
</tr>
<tr>
<td>---------------------</td>
<td>--------------------</td>
<td>--------------------</td>
<td>-----</td>
</tr>
<tr>
<td>G17 Schedule activities to avoid, minimize, or mitigate impacts on wildlife. For example, avoid crucial winter ranges, especially during the periods when they are used. If there are plans to conduct activities during bird breeding seasons, a nesting bird survey should be conducted first. If active nests are detected, the nest area should be flagged, and no activity should take place near the nest (at a distance determined in coordination with the USFWS) until nesting is completed (i.e., until nestlings have fledged or the nest has failed) or until appropriate agencies agree that construction can proceed with the incorporation of agreed-upon monitoring measures. Coordinate the timing of activities with BLM, USFWS, and CPW. Prior to authorization of ground-disturbing activities, a habitat suitability analysis would be done, and for habitats found suitable, a protocol survey would be done. If nesting birds are found, seasonal and year-round buffers would be established with USFWS coordination.</td>
<td></td>
<td>X</td>
<td></td>
</tr>
<tr>
<td>G18 Minimize increases in the number of nuisance animals (e.g., pets, raccoons, coyotes, and other wildlife) and pests in the project area, particularly any individuals or species that could affect human health and safety or that could adversely affect native plants and animals. A Nuisance Animal and Pest Control Plan could be developed that could identify nuisance and pest species likely to occur in the area, the risks associated with these species, species-specific control measures, and monitoring requirements.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>G19 Minimize the number of areas where wildlife could hide or be trapped (e.g., open sheds, pits, uncovered burrows, and laydown areas). For example, cap uncovered pipes at the end of each workday to prevent animals from entering the pipes. If a sensitive species is discovered inside a component, do not move that component, or, if it must be moved, move it only to remove the animal from the path of activity, until the animal has escaped.</td>
<td></td>
<td>X</td>
<td></td>
</tr>
<tr>
<td>G20 Monitor the potential for an increase in the predators of sensitive species from ravens and other species that are attracted to developed areas and that use tall structures opportunistically to spot vulnerable prey. Also, address the monitoring of ravens and other predators in the nuisance animal and pest control plan.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>G21 Develop a Noxious Weed and Invasive Plant Control Plan to characterize how the establishment of invasive and noxious weeds in project area would be addressed.</td>
<td></td>
<td></td>
<td>X</td>
</tr>
<tr>
<td>G22 Ensure vegetation management is consistent with applicable regulations and agency policies for the control of noxious weeds and invasive plant species.</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
### TABLE 3-5 (Cont.)

<table>
<thead>
<tr>
<th>Measure</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>A.</strong></td>
<td></td>
</tr>
</tbody>
</table>

**E.**

- **D1:** Locate project activities in or near occupied habitats of sensitive animal species. Establish buffer zones around those areas (e.g., identified in the land use plan or determined by local available information or science).
- **D2:** Restrict activities at existing mining sites so that they do not further erode toward perennial streams (e.g., the Dolores River and San Miguel River). Do not allow new mining activities within 0.25 m (0.5 ft) of perennial streams.
- **D3:** Design and measure stream crossings to provide adequate conditions that allow for and maintain the undisturbed movement and safe passage of fish during all project periods. If permanent cross-vectors are required, take care to minimize the removal of any desirable and encroaching vegetation, which provide shelter and shade to aquatic organisms.
- **D4:** Divert water pumped from mine into a lined sedimentation pond (or settling pond) for treatment. Locate settling ponds in topographically low areas but not in any areas that are subject to damaging uncontrolled runoff or washout. Water may be treated at the settling ponds, which provide sedimentation of upstream flow and reduce the potential for degradation downstream.
- **D5:** Locate diversion structures upstream of the mine to intercept surface water flow or shallow groundwater and channel it around the site. Tail the location and length of the ditch to site-specific conditions, taking into account the location of mine waste coke piles, site topography, and surface flow patterns.
- **D6:** Require every dry-pit mining on site that generates, monitors, or has the potential to generate the production of water moving from the mine, tailing, or any groundwater movement from mine operations.
<table>
<thead>
<tr>
<th>Measure Description</th>
<th>Compliance Measurea</th>
<th>Mitigation Measureb</th>
<th>BMPc</th>
</tr>
</thead>
<tbody>
<tr>
<td>D7</td>
<td>Install groundwater monitoring wells downgradient of ore stockpile pads to monitor groundwater presence, abundance, and quality in compliance with EPA and U.S. Geological Survey standards.</td>
<td>X</td>
<td></td>
</tr>
<tr>
<td>D8</td>
<td>Identify storm water control and pollution measures in a Storm Water Pollution Prevention Plan. Develop a wastewater management plan to characterize how wastewater generated from mine operations would be treated and discharged. The plan should include requirements for obtaining necessary discharge permits, such as National Pollution Discharge Elimination System (NPDES) permits. Follow monitoring requirements and NPDES regulations pertaining to the concentrations of potential pollutants released. Implementing the wastewater management plan would minimize the amount of contaminants entering aquatic habitats and reduce the potential for adverse effects on aquatic biota.</td>
<td>X</td>
<td></td>
</tr>
<tr>
<td>D9</td>
<td>Locate the ore storage area on topographically high ground so ore does not come in contact with flowing or ponded water. Grade the ore storage area, and construct an earthen berm around it. Divert any runoff from the ore storage area to a sedimentation pond (or pond system) for testing and treatment.</td>
<td>X</td>
<td></td>
</tr>
<tr>
<td>D10</td>
<td>Design lighting to provide the minimum amount of illumination needed to achieve safety and security objectives. Minimize the amount of off-site lighting. Turn off all unnecessary lighting at night to limit attracting migratory birds or sensitive species.</td>
<td>X</td>
<td></td>
</tr>
<tr>
<td>D11</td>
<td>Build fences (as practicable) to exclude livestock and wildlife from all mine facilities.</td>
<td>X</td>
<td></td>
</tr>
<tr>
<td>D12</td>
<td>Contain any runoff from mine waste-rock piles.</td>
<td>X</td>
<td></td>
</tr>
<tr>
<td>D13</td>
<td>Limit the use of herbicides to nonpersistent, immobile substances. Use only those herbicides that have a low toxicity to wildlife and untargeted native plant species, as determined in consultation with the USFWS. Do not use any herbicides near or in surface water, streams (including ephemeral, intermittent, or perennial streams), riparian areas, or wetlands. Determine setback distances in coordination with federal and state resource management agencies. Before beginning any herbicide treatments, ensure that a qualified biologist has conducted surveys of bird nests and of sensitive species to identify the special measures or BMPs that are necessary to avoid and minimize impacts on migratory birds and sensitive species. The herbicides to be used would be approved by BLM and county weed control staff. The state, county, and BLM listed species scheduled for eradication that are found in the project area would be eradicated and reported to the county weed inspector.</td>
<td>X</td>
<td></td>
</tr>
</tbody>
</table>
TABLE 2-5 (Cont.)

<table>
<thead>
<tr>
<th>Measure Description</th>
<th>Compliance Measure(^a)</th>
<th>Mitigation Measure(^b)</th>
<th>BMP(^c)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Reclamation (R)</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>R1</td>
<td>Before mine entrance are closed after reclamation, conduct a summer and winter bat survey to determine the number and species of bats that could potentially occupy a site. Depending on the results of the surveys, undertake actions that could include the installation of bat gates.</td>
<td>X</td>
<td></td>
</tr>
<tr>
<td>R2</td>
<td>Implement measures for revegetation, soil stabilization, and erosion reduction to ensure that all temporary use areas are restored. Promptly reseed disturbed sites upon project completion to minimize erosion and the establishment of noxious weeds.</td>
<td>X</td>
<td></td>
</tr>
<tr>
<td>R3</td>
<td>If bat surveys under R1 indicate no presence of bats, promptly close off all mine openings when finished with mining activities before bats have an opportunity to establish roosts or hibernacula.</td>
<td>X</td>
<td></td>
</tr>
<tr>
<td>R4</td>
<td>Use native, locally occurring species for reestablishing vegetation. Refer to Table 3-2 for the native seed mixture approved for reseeding on the DOE ULP lease tracts.</td>
<td>X</td>
<td></td>
</tr>
</tbody>
</table>

\(^a\) Compliance measures are those measures needed to fulfill regulatory requirements.

\(^b\) Mitigation measures are those measures required by DOE to reduce or offset impacts and that are not needed to fulfill regulatory requirements.

\(^c\) BMPs are those practices and activities generally implemented within the industry to conserve resources. These BMPs are not required by DOE but may be implemented to further reduce impacts.
3 EFFECTS OF THE URANIUM LEASING PROGRAM

This section summarizes potential impacts associated with site exploration, mine development and operations, and reclamation under the proposed ULP that could occur to species that are endangered, threatened under the ESA, or those species that are proposed or candidates for listing under the ESA. Required compliance measures, mitigation measures, and suggested BMPs for all projects under the ULP are identified in Section 2.3. Mining activities under the ULP can generally be considered under the three project phases just mentioned: (1) exploration, (2) mine development and operations, and (3) reclamation. Possible ecological impacts on different groups of biota that could result from ULP activities are summarized in Table 3-1. These impacts would be lessened to the extent that the listed activities could be avoided, minimized or mitigated.

The types of ecological resources that could be affected by ULP activities would depend on the specific location of the proposed project and its environmental setting. Ecological resources that could be affected include plants, terrestrial and aquatic invertebrates, fish, and terrestrial and avian wildlife, as well as their habitats. These groups of biota include species that are endangered, threatened, proposed, or candidates for listing under the ESA in the region surrounding the ULP lease tracts. General impacts on federally-listed, proposed, and candidate species associated with ULP activities are described in the text that follows, as are specific evaluations of mining impacts on federally listed species.

3.1 COMMON EFFECTS OF URANIUM MINING ON SPECIES AND HABITATS

3.1.1 Exploration

Potential impacts on federally-listed, proposed, and candidate species related to site exploration are listed in Table 3-1. Although some disturbance from mine exploration has occurred in each of these lease tracts, new exploration could occur in either disturbed or undisturbed areas of each lease tract. Exploration activities generally include drilling one or more bore holes for geologic sampling followed by reclamation of the explored area. Impacts from site exploration would result from the disturbance of soils, vegetation, and wildlife as a result of the presence and operation of exploration equipment. Impacts would include the removal of some vegetation, the potential loss of habitat for some wildlife species, and the indirect impacts from fugitive dust generation, noise, and the physical presence of humans and exploration equipment on wildlife species. Impacts on ephemeral drainages crossed by heavy equipment could also result in sediment deposition to downstream wetlands and water bodies. However, impacts would generally be temporary and at a smaller spatial scale than those occurring during other project phases. Some mortality to vegetation and less mobile wildlife could occur at the exploration site, and vehicles could collide with wildlife.
<table>
<thead>
<tr>
<th>Potential Effect</th>
<th>Project Activity</th>
<th>Project Phase</th>
<th>Plants</th>
<th>Arthropods</th>
<th>Mollusks</th>
<th>Fish</th>
<th>Amphibians and Reptiles</th>
<th>Birds</th>
<th>Mammals</th>
</tr>
</thead>
<tbody>
<tr>
<td>Habitat disturbance</td>
<td>Vehicle and foot traffic; geological sampling; access road development; site clearing and grading</td>
<td>Exploration, mine development and operations, reclamation</td>
<td>+</td>
<td>+</td>
<td>+</td>
<td>+</td>
<td>+</td>
<td>+</td>
<td>+</td>
</tr>
<tr>
<td>Injury or mortality of biota</td>
<td>Vehicle and foot traffic; geological sampling; access road development; site clearing and grading</td>
<td>Exploration, mine development and operations, reclamation</td>
<td>+</td>
<td>+</td>
<td>+</td>
<td>+</td>
<td>+</td>
<td>+</td>
<td>+</td>
</tr>
<tr>
<td>Erosion, sedimentation, and runoff to nearby wetland habitats</td>
<td>Site clearing and grading; access road construction and mine development, vehicle and foot traffic</td>
<td>Exploration, Mine development and operations, reclamation</td>
<td>+</td>
<td>+</td>
<td>+</td>
<td>+</td>
<td>+</td>
<td>+</td>
<td>+</td>
</tr>
<tr>
<td>Exposure to contaminants</td>
<td>Accidental uranium ore spills and releases of oil, fuel, and other materials</td>
<td>Exploration, Mine development and operations, reclamation</td>
<td>+</td>
<td>+</td>
<td>+</td>
<td>+</td>
<td>+</td>
<td>+</td>
<td>+</td>
</tr>
<tr>
<td>Fugitive dust damage to plant surfaces and impairment of photosynthesis; respiratory impairment in wildlife</td>
<td>Site clearing and grading; access road construction and mine development, exposure to tailings and other waste piles</td>
<td>Exploration, Mine development and operations, reclamation</td>
<td>+</td>
<td>+</td>
<td>+</td>
<td>+</td>
<td>+</td>
<td>+</td>
<td>+</td>
</tr>
<tr>
<td>Introduction of invasive plant species</td>
<td>Vehicle traffic, access road development, site clearing and grading</td>
<td>Exploration, mine development and operations, reclamation</td>
<td>+</td>
<td>+</td>
<td>+</td>
<td>+</td>
<td>+</td>
<td>+</td>
<td>+</td>
</tr>
<tr>
<td>Potential Effect</td>
<td>Project Activity</td>
<td>Project Phase</td>
<td>Plants</td>
<td>Anthropepds</td>
<td>Mollusks</td>
<td>Fish</td>
<td>Amphibians and Reptiles</td>
<td>Birds</td>
<td>Mammals</td>
</tr>
<tr>
<td>-----------------------</td>
<td>-------------------------------------------</td>
<td>---------------</td>
<td>--------</td>
<td>-------------</td>
<td>----------</td>
<td>------</td>
<td>------------------------</td>
<td>-------</td>
<td>---------</td>
</tr>
<tr>
<td>Behavioral disturbance</td>
<td>Vehicles and foot traffic; geological sampling; access road development; site clearing and grading; human presence</td>
<td>Exploration, noise development and operations, reclamation</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>+</td>
<td>+</td>
<td>+</td>
<td>-</td>
</tr>
</tbody>
</table>

* "-" indicates effects could potentially occur for at least some biota; "-" indicates no biota expected to be affected.
3.1.2 Mine Development and Operations

Potential impacts on ecological resources (including threatened, endangered, and sensitive species) related to mine development and operations are listed in Table 3-1. Mine development and operations are assumed to occur in each of the lease tracts under the proposed ULP. The overall impact of mine development and operations on vegetation and wildlife populations would depend on the locations of the mine site and mining activities, the relative abundance and rarity of the species that are affected, the types of habitat present, and the length of time that the effects or stressors would persist. Generally, the magnitude of an impact on threatened, endangered, and sensitive species is directly related to the amount of surface disturbance. Ground disturbance would range from 10 acres (4 ha) for small mines to 20 acres (8 ha) for large mines, with one 210-acre (81-ha) open-pit mine (Table 2-2).

Direct impacts on vegetation, wildlife, and their habitats associated with the development of mines include direct mortality to vegetation and less mobile wildlife and the destruction of habitat. Vegetation and habitats within the development footprint of the projects, utility rights of way (ROWS), access roads, and other infrastructure would be destroyed. These direct impacts could include destruction and fragmentation of habitats from site clearing and excavation, the storage of waste rock and topsoil materials, and the placement of infrastructure (buildings, ROWs, access roads, etc.).

Direct mortality from vehicle collisions could occur along access and haul roads, especially in wildlife concentration areas or migration corridors. When roads cut across migration corridors, the effects can be dangerous for both animals and humans. No mapped migration corridors for big game species occur on any of the lease tracts. Amphibians, being somewhat small and inconspicuous, are vulnerable to road mortality when they migrate between wetland and upland habitats. Reptiles are vulnerable on roads they use for thermal cooling and heating. Sage grouse are susceptible to road mortality in spring because they often fly to and from leks near ground level. They are also susceptible to vehicular collisions along dirt roads because they sometimes use them to take dust baths (Strittholt et al. 2000). In general, the species most vulnerable to vehicle collisions are day-active, slow-moving species (Hels and Buchwald 2001). However, road kills rarely cause population-level impacts. Avoidance of habitats near roads, especially due to traffic noise, tends to have a greater ecological impact than does mortality from vehicular collisions (Forman and Alexander 1998). Ore haul truck speeds would generally be slow on county or other dirt roads, which would minimize these trucks’ potential to collide with big game.

Indirect impacts on vegetation, wildlife, and their habitats could result from exposure to contaminants, fugitive dust, erosion and sedimentation, the facilitated spread of invasive species, and behavioral effects resulting from the presence of humans and mining equipment (which also involves factors such as lighting and noise). These factors might reduce the function and quality of remaining habitats adjacent to mine sites. Although habitats adjacent to a mine site might remain unaffected, wildlife still might tend to make less use of these areas (primarily because of the disturbance that would occur within the project site). This indirect habitat loss impact could be of greater consequence than direct habitat loss (Sawyer et al. 2006). A utility line might also lead to a loss of usable feeding areas for those species that avoid close proximity to these
facilities due to their use by predators (BirdLife International 2003). For example, common
ravens (Corvus corax) and some birds of prey might become more common along utility lines
because of the presence of perch and nest sites (Knight and Kawashima 1993). Access road
construction could create habitat for species, such as the horned lark (Eremophila alpestris), that
are common along dirt roadways where they can forage on windblown seeds (Ingelfinger and
Anderson 2004).

Based on the industry practice of considering ore with less than 0.05% of uranium as
potential waste rock that could remain on a waste-rock pile on the surface (but graded, covered
with top soil material, and revegetated) after reclamation, the assumed concentration of uranium
that might be present in the waste rock is about 24 pCi/g as an average value; and the potential
radiation exposure to plants to this concentration of uranium would be of low concern. Wetlands
on the lease tracts might be affected by exploration, development, and operations; however, these
impacts would be minimized under the direction of Executive Order 11990, “Protection of
Wetlands,” and under Section 404 of the Clean Water Act, where applicable. Although direct
impacts on wetlands and bodies of water are unlikely, indirect impacts on these wetlands could
occur. The implementation of minimization measures and mitigation measures identified in
Section 2.3 and any additional BMPs would minimize the potential for indirect impacts on
wetlands and bodies of water.

Mining activity might increase the exposure of wildlife to uranium and other radioactive
decay products and to other chemical elements. Negative impacts on animals from uranium
radio nuclides occur from 0.2 to 40 mGy/h for terrestrial invertebrates, 0.14 to 40.0 mGy/h for
birds, and 0.004 to 40.0 mGy/h for mammals (Hinck et al. 2010). The potential magnitude of
impacts would be influenced by the life history strategy, habitat requirements, and mass of the
organism (Hinck et al. 2010). Some birds might be at greater risk to radiation exposure than
other wildlife due to their foraging and ingestion of grit, which would increase their radiation
dose (Driver 1994). Species that spend considerable amounts of time underground in caves,
mines, or burrows could potentially inhale, ingest, or be directly exposed to uranium and other
radio nuclides while digging, eating, preening, and/or hibernating. Herbivores could also be
exposed by ingesting radionuclides that aerially deposited on vegetation or concentrated in
surface waters at or near mine sites (BLM 2011b).

The accidental spill of uranium or vanadium ore into an ephemeral stream or, more
notably, a perennial stream or river, such as the Dolores or San Miguel River, could pose a
localized short-term impact on the aquatic resources. However, the potential for such an event is
extremely low. For example, SENES (2009) determined that the frequency of a rollover and/or
crash of an ore truck at a water crossing en route to the proposed Piñon Ridge Mill would be
8.4 × 10⁻⁵/yr. In addition to uranium and vanadium, the ore contains other potentially toxic
elements, such as aluminum, arsenic, barium, copper, iron, lead, manganese, selenium, and zinc.
Most ore solids would settle in the body of water within a short distance from a spill site
(Edge Environmental, Inc. 2009). It is expected that expedient and comprehensive cleanup
actions would be required under U.S. Department of Transportation regulations and that an
emergency response plan would be in place to respond to accidents and cargo spills
(Edge Environmental, Inc. 2009). Overall, the potential for impacts on aquatic biota from an
accidental spill would be minor to negligible.
Fugitive dust would be generated during site clearing, excavation, processing, and use of access roads. Deposition of fugitive dust could reduce photosynthesis and productivity in plant communities near project areas. Prolonged exposure to fugitive dust could alter a plant community’s composition, reducing the occurrence of species less tolerant of disturbance, resulting in habitat degradation. Open-pit mines would generate greater levels of fugitive dust than would underground mines, since most of the project area would consist of exposed soils, rock materials, and operating mining equipment. Because fugitive dust would be produced throughout the life of the project, the deposition of fugitive dust could constitute a long-term impact on vegetation and wildlife habitat. Little information is available about the effects of fugitive dust on wildlife; however, fugitive dust emissions under the proposed ULP are not expected to result in any long-term individual-level or population-level effects on wildlife.

Disturbed soils could provide an opportunity for the introduction and spread of invasive species or noxious weeds. Seeds of these species could be inadvertently brought to a project site from infested areas by vehicles or equipment used at the site. Invasive species or noxious weeds might also colonize disturbed soils from established populations in nearby areas. Vehicle traffic to and from mine sites might contribute to the spread of seeds and propagules of these species, which could lead to expanding populations along roadways. Invasive species or noxious weeds might alter fire regimes, including increasing the frequency and intensity of wildfires, particularly as a result of the establishment of annual grasses such as cheatgrass (Bromus tectorum). Habitats that are not adapted to frequent or intense fires could experience long-term reductions in function and distribution.

Soils disturbed by land clearing or excavation might be subject to erosion. Soil erosion might also occur in areas where biological soil crusts are disturbed by equipment or foot traffic. The destruction of biological soil crusts could also alter nutrient cycling and availability, reduce water infiltration, reduce germination of native species, and increase the occurrence of non-native species, thereby affecting plant community characteristics (Fleischner 1994; Belnap et al. 2001; Gelbard and Belnap 2003; Rosentreter et al. 2007). Soil compaction from the operation of heavy equipment could reduce the infiltration of precipitation or snowmelt and result in increased runoff and subsequent erosion. Erosion could result in the localized loss of plant communities in areas where topsoil was lost and might include areas outside the mine site. Erosion might result in sedimentation in downgradient upland or wetland habitats and increased sediment deposition in ephemeral drainages or riparian habitats of receiving streams. Effects might include mortality or reduced growth of plants, changes in species composition, or reduced biodiversity. Species more tolerant of disturbance, including invasive species, might become dominant in affected plant communities.

Changes in surface drainage patterns, such as the elimination of ephemeral drainages (not likely to occur) or other changes in runoff patterns, could alter hydrologic characteristics of downstream wetland or riparian habitats and could result in changes in plant community composition or distribution. Increases in the volumes or velocities of flows could result in the erosion of substrates or vegetation in downstream habitats, while decreased flows could result in dessication of habitats. Underground mines would be less likely to result in large changes to surface water flow patterns and associated impacts on plant communities than would open-pit mines, which cause extensive modifications to landscape surfaces. The storage of waste-rock...
material for underground mines, however, could disrupt surface drainage patterns. Leachate from
waste-rock storage areas could affect the quality of surface water or groundwater and affect
downgradient habitats. Groundwater pumped from mines could affect habitats receiving surface
water flows as a result of reduced water quality or increased flow velocities or volumes. As
discussed in Section 2.2.2, although local surface and groundwater availability is expected to be
scarce, it is assumed that purchased water trucked in to the project site would be obtained from
sources within the same hydrologic basin as the lease tracts.

Mining operations could affect groundwater flows if excavations intercepted groundwater
resources. Reductions in groundwater flows could affect downgradient habitats that depend on
groundwater discharges, such as springs, seeps, or streams with flows supplemented or
maintained by groundwater. Plant communities could be degraded as a result of reductions in
water availability.

During mine development and operations, wildlife disturbance might be of greater
concern than habitat loss (Arnett et al. 2007). The response of wildlife to disturbances caused by
noise and human presence would be species-specific. Responses for a given species could be
affected by the physiological or reproductive conditions of individuals; their distance from the
disturbance; and the type, intensity, and duration of the disturbance. Wildlife could respond to
a disturbance in various ways, including attraction, habituation, or avoidance (Knight and
Cole 1991). All three behaviors can be considered adverse impacts. Wildlife might cease
foraging, mating, or nesting near areas where the disturbance occurred. For example, disturbance
near active sage grouse leks could lead to lek abandonment, displacement, and reduced
reproduction. In contrast, wildlife such as bears, foxes, and squirrels can habituate to
disturbances and might be attracted to human activities, primarily when a food source was
accidentally or deliberately made available.

Regular or periodic disturbance could cause adjacent areas to be less attractive to wildlife
and result in long-term reduction of wildlife use in areas exposed to a repeated variety of
disturbances, such as noise. Principal sources of noise would include vehicle traffic, the
operation of machinery, and blasting. The potential effects of noise on wildlife could include
acute or chronic physiological damage to the auditory system, increased energy expenditure,
physical injury incurred during panicked responses, interference with normal activities
(e.g., feeding), and impaired communication (AMEC Americas Limited 2005; Larkin 1996; Salt
and Hullar 2010; USFWS 2011 d). The response of wildlife to noise would vary by species; the
animal’s physiological or reproductive condition; distance; and the type, intensity, and duration
of the disturbance.

Much of the research on wildlife-related noise effects has focused on birds. This research
has shown that noise might affect territory selection, territorial defense, dispersal, foraging
success, fledging success, and song learning (e.g., Reijnen and Poppen 1994; Poppen and
Reijnen 1994; Larkin 1996). Some studies (e.g., Reijnen and Poppen 1994; Poppen and
Reijnen 1994; Reijnen et al. 1995, 1996, 1997) have shown reduced densities of a number of
species in forest habitats (26 of 43 species) and grassland habitats (7 of 12 species) adjacent to
roads, with effects detectable from 66 to 11,581 ft (20 to 3,500 m) from the roads.
Reijnen et al. (1996) identified a threshold effect sound level of 47 dBA for all species combined
and of 42 dBA for the most sensitive species. The observed reductions in population density are attributed to a reduction in habitat quality caused by elevated noise levels. This threshold sound level of 42 to 47 dBA, which is somewhat below the U.S. Environmental Protection Agency (EPA)-recommended limit for residential areas, is at or below the sound levels generated by truck traffic that would likely occur at distances of 250 ft (76 m) or more from the mine site or access roads, or the levels generated by typical construction equipment at distances of 2,500 ft (760 m) or more from the mine site.

Noise can reduce bird nesting success and alter species interactions, resulting in different avian communities (Francis et al. 2009). On the basis of a review of the literature by Hockin et al. (1992), the effects of disturbance on bird breeding and breeding success include reduced nest attendance, nest failures, reduced nest building, increased predation on eggs and nestlings, nest abandonment, inhibition of laying, increased absence from the nest, reduced feeding and brooding, exposure of eggs and nestlings to heat or cold, retarded chick development, and lengthening of the incubation period. The most adverse impacts associated with noise could occur if critical life-cycle activities are disrupted (e.g., mating and nesting). For instance, disturbance of birds during the nesting season can result in nest or brood abandonment. The eggs and young of displaced birds would be more susceptible to cold or predators.

During winter, the average mean flush distance for several raptor species is 387 ft (120 m) from people walking and 246 ft (75 m) from vehicles (Holmes et al. 1993). Disturbance from light traffic (e.g., 1 to 12 vehicles per day) during the breeding season might reduce nest-initiation rates and increase distances moved from sage grouse leks during nest site selection (Lyon and Anderson 2003). The density of sagebrush obligate passerines was reduced by 39% to 60% within a 328-ft (100-m) buffer around dirt roads with traffic volumes ranging from 10 to 700 vehicles per day. However, traffic volumes alone might not explain the observed effect. The birds might also have been responding to edge effects, habitat fragmentation, and increases in other passerine species along the road corridors. Thus, declines might persist even after traffic subsides, lasting until road areas are reclaimed and fully vegetated (Ingelfinger and Anderson 2004).

Various adverse effects of noise on raptors occur, but for some species, the effects are temporary because the raptors habituate to the noise (Brown et al. 1999; Delaney et al. 1999). As reviewed by Hockin et al. (1992), the effects of noise disturbance on bird breeding and breeding success include reduced nest attendance, nest failures, reduced nest building, increased predation on eggs and nestlings, nest abandonment, inhibition of laying, increased absence from the nest, reduced feeding and brooding, exposure of eggs and nestlings to heat or cold, retarded chick development, lengthened incubation period, increased physiological stress, increased energy expenditures, habitat avoidance, decreased population or nesting densities, altered species composition, and disruption and disorientation of movements. The most severe impacts associated with noise could occur if critical life-cycle activities are disrupted (e.g., mating and nesting). For instance, disturbance of birds during the nesting season could result in nest or brood abandonment.

Lighting could also disturb wildlife in the mine area. Lights directly attract migratory birds (particularly in inclement weather and during other low-visibility conditions), and they
could indirectly attract birds and bats by attracting flying insects. Lighting may be needed at
mining facilities to security reasons and to light exploration drilling and mining operations. Any
ULP-related activities that involve lighting have the potential to affect birds and bats, as well as
their invertebrate prey.

3.1.3 Reclamation

General impacts on ecological resources (including threatened, endangered, and sensitive
species) related to reclamation activities are listed in Table 3-1. Reclamation activities would
generally occur on previously disturbed areas and would be associated primarily with covering
the waste-rock pile and re-grading developed areas. Indirect impacts associated with reclamation
activities could include the deposition of fugitive dust, erosion, sedimentation, and the
introduction of non-native species, including noxious weeds.

Reclamation would restore habitat and establish ecological conditions suitable for plant
and wildlife species. The effectiveness of any reclamation activities would depend on the
specific actions taken. The best results would occur where the original site topography,
hydrology, soils, and vegetation patterns are reestablished. During reclamation, topsoil would be
seeded following final surface preparation. The seed mix approved by DOE, in consultation with
BLM, for use in reclamation of all lease tracts is given in Table 3-2. Vegetation reestablishment
might not be possible under all situations. The establishment of native vegetation communities
that existed before development (e.g., pinyon-juniper woodlands and sagebrush shrublands) on
the reclaimed sites could take up to several decades.

<table>
<thead>
<tr>
<th>Species</th>
<th>Scientific Name</th>
<th>Common Name</th>
<th>Broadcast Application Rate (lb/FLS/Acre)*</th>
</tr>
</thead>
<tbody>
<tr>
<td>*Pascopyrum smithii</td>
<td>Arriba western wheatgrass</td>
<td>4.0</td>
<td></td>
</tr>
<tr>
<td>*Elymus trachycaulus ssp. trachycaulus</td>
<td>Slender wheatgrass</td>
<td>2.0</td>
<td></td>
</tr>
<tr>
<td>*Oryzopsis (=Avenatherum) hymenoides</td>
<td>Palouse Indian ricegrass</td>
<td>4.0</td>
<td></td>
</tr>
<tr>
<td>*Bouteloua gracilis</td>
<td>Illiniois blue grama</td>
<td>2.0</td>
<td></td>
</tr>
<tr>
<td>*Hilaria (=Pleuraphis) jamesii (florets)</td>
<td>Galleta grass</td>
<td>2.0</td>
<td></td>
</tr>
<tr>
<td>*Sipha (=Hesperostipa) comata</td>
<td>Needleandthread grass</td>
<td>1.0</td>
<td></td>
</tr>
<tr>
<td>*Sipa (=Nassella) viridula</td>
<td>Lodore green needlegrass</td>
<td>2.0</td>
<td></td>
</tr>
<tr>
<td>*Linnum lewisi</td>
<td>Lewis flux</td>
<td>1.0</td>
<td></td>
</tr>
<tr>
<td>*Pennisetum cyanescens</td>
<td>Bluestem pennsion</td>
<td>0.5</td>
<td></td>
</tr>
<tr>
<td>*Sphaeralcea coccinea or *Sphaeralcea parvifolia</td>
<td>Scarlet or parvifolia globemallow</td>
<td>0.3</td>
<td></td>
</tr>
<tr>
<td>*Antrhopus canescens</td>
<td>Ironwood longleaf saltbush</td>
<td>3.0</td>
<td></td>
</tr>
<tr>
<td>*Cenizo (=Kraschonanitovia) lamata</td>
<td>Winterfat</td>
<td>1.0</td>
<td></td>
</tr>
</tbody>
</table>

* FLS = pure live seed.

b *P. cyanescens (bluestem pennsion) is unavailable, replace with *P. bahamensis (Rocky Mountain
pennsion).
Overall, reclamation impacts on vegetation and wildlife would be minor and of relatively short duration.

3.2 SPECIES THAT MAY BE AFFECTED UNDER THE PROPOSED ACTION

This section discusses the distribution, ecology, and life history of federally listed, proposed, and candidate species and their critical habitat (if applicable) that might occur in the region including and surrounding the ULP lease tracts and the potential for impacts as they relate to the proposed action. The ESA requires the action agencies (i.e., DOE) to consider the direct and indirect impacts of the proposed action on species and critical habitats, together with the effects of other activities that are interrelated to or interdependent with that action, that would be added to the environmental baseline (50 CFR 402.02). Impacts on the species under discussion can be short-term (one or two reproductive seasons) or long-term (affecting several generations). They can be direct (an immediate effect to an individual, population, or its habitat) or indirect (an effect that might occur over time or result from other actions). In addition, cumulative impacts might affect some of the species. For purposes of this BA, cumulative effects are defined as they are in 50 CFR 402.02, as “those effects of future Tribal, State or private activities, not involving Federal activities, that are reasonably certain to occur within the action area of the Federal action subject to consultation.” A summary of potential impacts and avoidance, minimization, and mitigation measures that are used to develop effect determinations for each species is provided in Section 2.3.

For all species evaluated in this BA, natural history information provided by the USFWS (2012a), CPW (2012), and NatureServe (2012), along with recorded observations (quad-level) from the Colorado Natural Heritage Program (CNHP 2011b), are used to determine the potential for species or their habitat to occur in the affected area under the proposed action. For terrestrial vertebrates, the distribution of predicted suitable habitat was evaluated to provide additional information on the potential distribution of species habitat. Predicted suitable habitat for terrestrial vertebrates was determined from animal distribution models from the Southwest Regional Gap Analysis Program (SWReGAP) (USGS 2007). This information was used to determine the potential presence of suitable habitat in the vicinity of the ULP lease tracts. It is important to note that these GAP models (inferred predicted suitable habitat distributions) are available only for the terrestrial vertebrates considered in this BA. Species are discussed below in taxonomic (plants to mammals) and alphabetic order by common name. A summary of the effect determinations for all species evaluated in this BA is provided in Table 3-3.

3.2.1 Endangered, Threatened, and Proposed Species

Fourteen species that are listed as threatened or endangered under the ESA or that are proposed for listing have the potential to occur in the ULP counties evaluated in this BA or within the ULP affected area. These species include the following: three plants (clay-loving wild buckwheat, Colorado hookless cactus, and Debeque phacelia), one invertebrate (Uncompahgre fritillary butterfly), five fish (bonytail, Colorado pikeminnow, greenback cutthroat trout, humpback chub, and razorback sucker), three birds (Gunnison sage-grouse, Mexican spotted owl...
TABLE 3-3 Summary of Effects Determination for Listed and Candidate Species

<table>
<thead>
<tr>
<th>Species that are listed or proposed for listing under the ESA</th>
<th>Status</th>
<th>Critical Habitat</th>
<th>Effect Determination</th>
<th>Rationale</th>
</tr>
</thead>
<tbody>
<tr>
<td>Plants</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Clay-loving wild buckwheat (Eriogonum pelinophytum)</td>
<td>E</td>
<td>N</td>
<td>NE</td>
<td>1</td>
</tr>
<tr>
<td>Colorado hooded cactus (Schlechteria grandis)</td>
<td>T</td>
<td>N</td>
<td>NE</td>
<td>1</td>
</tr>
<tr>
<td>Debequea phaeota (Phacelia submalaica)</td>
<td>T</td>
<td>Y, proposed</td>
<td>NE (critical habitat)</td>
<td>1</td>
</tr>
<tr>
<td>Invertebrates</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Uncompahgre insufficient butterfly (Boloria actinomera)</td>
<td>E</td>
<td>N</td>
<td>NE</td>
<td>1</td>
</tr>
<tr>
<td>Fish</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Colorado River endangered Fish</td>
<td>E</td>
<td>Y</td>
<td>LAA</td>
<td>2</td>
</tr>
<tr>
<td>Bonytail (Gila elegans)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Colorado pikeminnow (Ptychocheilus lucius)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Humpback chub (Gila cypha)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Razorback sucker (Xyrauchen texanus)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Greenback cutthroat trout (Oncorhynchus clarki sp. stonias)</td>
<td>T</td>
<td>N</td>
<td>NE</td>
<td>1</td>
</tr>
<tr>
<td>Birds</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Gunnison sage grouse (Centrocercus minimus)</td>
<td>P</td>
<td>N</td>
<td>NLAA</td>
<td>3</td>
</tr>
<tr>
<td>Mexican spotted owl (Sistrurus maccobius)</td>
<td>T</td>
<td>Y</td>
<td>NLAA</td>
<td>3</td>
</tr>
<tr>
<td>Southwestern willow flycatcher (Empidonax traillii utahus)</td>
<td>E</td>
<td>Y, designated</td>
<td>NLAA</td>
<td>3</td>
</tr>
<tr>
<td>Mammals</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Black-footed ferret (Mustela nigripes)</td>
<td>E</td>
<td>XN</td>
<td>NE (critical habitat)</td>
<td>4</td>
</tr>
<tr>
<td>Canada lynx (Lynx Canadensis)</td>
<td>T</td>
<td>Y</td>
<td>NE</td>
<td>1</td>
</tr>
</tbody>
</table>

E-61 March 2014
### TABLE 3-3 (Cont.)

<table>
<thead>
<tr>
<th>Species</th>
<th>Status</th>
<th>Critical Habitat</th>
<th>Effect Determination</th>
<th>Rationale</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Birds</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Western yellow-billed cuckoo (Cuculus americanus occidentalis)</td>
<td>C</td>
<td>N</td>
<td>NLAA</td>
<td>3</td>
</tr>
<tr>
<td><strong>Mammals</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Gunnison's prairie dog (Cynomys gunnisoni)</td>
<td>C</td>
<td>N</td>
<td>NLAA</td>
<td>3</td>
</tr>
<tr>
<td>North American wolverine (Ondatra zibethica)</td>
<td>C</td>
<td>N</td>
<td>NE</td>
<td>1</td>
</tr>
</tbody>
</table>

---

**Notes:**

- **Status definitions:**
  - **E** = listed as endangered under the ESA, **T** = listed as threatened under the ESA, **P** = proposed for listing under the ESA, **XN** = experimental nonessential population as defined under Section 10(j) of the ESA, **C** = candidate for listing under the ESA.

- **Critical habitat:**
  - **C** = critical habitat, **N** = no critical habitat.

- **Effect determination:**
  - **NE** = no effect, **NLAA** = may affect but not likely to adversely affect, **LAA** = may affect and likely to adversely affect.

- **Rationale:**
  - The rationale for the effect determinations is as follows:

  1. The species is endemic to a particular habitat or region outside the ULP affected area, or the specific habitats required by the species (including designated critical habitat, if applicable) are not present in the ULP affected area. The proposed ULP will have no effect on this species or its designated critical habitat (if applicable).

  2. The species or its habitat (including designated critical habitat, if applicable) may occur in the ULP affected area. Activities associated with the proposed ULP are likely to impact the species or its habitat (including designated critical habitat, if applicable) and the proposed mitigation measures and B&Ms are not likely to completely offset or eliminate some of these impacts. The proposed ULP may affect, and is likely to adversely affect this species and its critical habitat (if applicable).

  3. The species or its habitat (including designated critical habitat, if applicable) may occur in the ULP affected area. However, impacts are considered to be relatively minor and can be minimized or avoided through the implementation of required minimization and mitigation measures and B&Ms. The proposed ULP may affect, but is not likely to adversely affect this species or its habitat (including designated critical habitat, if applicable).

  4. The black-footed ferret is presumed extirpated from southwestern Colorado. Nonessential experimental (XN) populations are unlikely to occur in the ULP affected area. Although the ULP affected area has not been black-cleared for the black-footed ferret, the proposed ULP is likely to have no effect on the black-footed ferret.
3.2.1.1 Plants

3.2.1.1.1 Clay-Loving Wild Buckwheat. The clay-loving wild buckwheat (Eriogonum pelinophilum) is a long-lived, low-growing, rounded subshrub that has dark green inrolled leaves that look needlelike and clusters of white to cream-colored flowers. It is pollinated by more than 50 species, including native bees and ants. Flowering occurs from late May to early September, and individual flowers only last fewer than 3 days (USFWS 2009a).

The clay-loving wild buckwheat is endemic to the rolling clay hills and flats near Delta and Montrose Counties, Colorado. It grows in whitish, alkaline, clay soils of the Marine shale formation that are relatively barren of vegetation at elevations ranging from 5,179 to 6,445 ft (1,579 to 1,965 m). It occurs in the greatest density and frequency away from other shrubs. It is found within swales or drainages that are moister than surrounding areas. Plants sometimes associated with the clay-loving wild buckwheat include mat saltbrush, black sagebrush, shadscale, and Gardner’s saltbrush (USFWS 2009a).

The clay-loving wild buckwheat was listed as endangered on July 13, 1984; approximately 120 acres (49 ha) in Delta County, Colorado, was also designated as critical habitat on that date (USFWS 1984). The current range of the clay-loving wild buckwheat is roughly 576 acres (233 ha) (USFWS 2009a). The current population size of the clay-loving wild buckwheat is roughly 278,000 individuals (USFWS 2009a).

The greatest threat to the clay-loving wild buckwheat is habitat loss and fragmentation from urban development (NatureServe 2012). Potential threats that might be associated with mining activities include surface disturbance from construction of facilities and roads as well as increased vehicle traffic and human presence. Other threats include agricultural development, nonnative invasive plants, livestock use, oil and gas development, and herbicide use (USFWS 2009a).

According to the CNHP, the nearest recorded occurrences of clay-loving wild buckwheat are in eastern Montrose County, approximately 40 mi (64 km) east of the ULP lease tracts. The nearest designated critical habitat in central Delta County is greater than 50 mi (80 km) northeast of the ULP lease tracts (Figure 3-1). Given the endemism of this species in Delta and Montrose Counties, it is unlikely that this species, its habitat, and designated critical habitat could occur in the ULP affected area. For this reason, uranium mining under the ULP will have no effect on the clay-loving wild buckwheat. Similarly, uranium mining under the ULP will have no effect on designated critical habitat for the clay-loving wild buckwheat.
FIGURE 3.1 Recorded Quad Level Occurrences of the Clay-Loving Wild Buckwheat and Colorado Hookless Cactus, and Locations of Designated Critical Habitat for the Clay-Loving Wild Buckwheat, in the Vicinity of the ULP Lease Tracts.
3.2.1.1.2 Colorado Hookless Cactus. The Colorado hookless cactus (*Echinocereus glaucus*) was previously part of a larger complex of *S. glaucus*; however, this complex was split into three distinct species in 2009. All three species are listed as threatened under the ESA (USFWS 2009b). The Colorado hookless cactus is a barrel-shaped cactus that is from 1.2 to 4.8 in. (3.0 to 12.2 cm) tall. The stem is ribbed, with hooked spines radiating out from areoles along the ribs. It produces pink to violet bell or funnel-shaped flowers and short, barrel-shaped fruit from April to May (USFWS 2010a). After blooming, the cactus may shrink below the ground or become a dull grayish-green color, making the plant very hard to identify.

The Colorado hookless cactus is endemic to western Colorado in Delta, Montrose, Mesa, and Garfield Counties. Its range is estimated to be around 1,700–2,100 mi² (4,400–5,440 km²). The total known population is estimated to number more than 19,000 plants (USFWS 2010a). There are currently two population centers of the Colorado hookless cactus that may be morphologically and genetically distinct. The two populations are on alluvial river terraces of the Gunnison and Colorado Rivers, and in the Plateau and Roan Creek drainages. These populations are typically found at elevations ranging from 3,937 to 6,562 ft (1,200 to 2,000 m) (CNHP 2011a; USFWS 2011a). Populations are most abundant on south-facing slopes.

The Colorado hookless cactus was listed as threatened on November 13, 1979 (USFWS 1979). A recovery plan for the Colorado hookless cactus was created on April 14, 2010 (USFWS 2010a) that identified these recovery needs: (1) surveying to accurately document populations and suitable habitat, (2) protecting and restoring habitat and corridors to provide connectivity, and (3) protecting individual plants from direct and indirect threats. Critical habitat for the Colorado hookless cactus has not been designated.

Potential threats to the Colorado hookless cactus that may be associated with mining activities include surface disturbances from construction of facilities and roads as well as increased vehicle traffic and human presence. Construction associated with mining can fragment and destroy Colorado hookless cactus habitat. Roads and associated infrastructure can disturb individuals and habitat. The potential increase in the use of access roads by off-road vehicles could increase erosion, fugitive dust, soil compaction, and sedimentation and could crush cacti. The accumulation of dust on cacti could lead to a decrease in plant growth and water use efficiency. Increased erosion, soil compaction, and sedimentation could kill cacti. An increase in human presence could lead to the illegal collection and loss of individual plants. Other threats to the Colorado hookless cactus include livestock grazing (grazing occurs on 94% of the Colorado hookless cactus’s potential habitat) and competition with invasive weed species (USFWS 2010a).

According to the CNHP, the nearest recorded occurrences of Colorado hookless cactus are in southern Delta County, approximately 23 mi (37 km) east of the nearest ULP lease tract (Lease Tract 27) (Figure 3-1). However, surveys for this species have not documented any individuals near any of the ULP lease tracts (Holsinger 2012). Given the endemism of this species to alluvial terraces of the Gunnison and Colorado Rivers, it is unlikely for this species or its habitat to occur in the ULP affected area. For this reason, uranium mining under the ULP will have no effect on the Colorado hookless cactus.
3.2.1.1.3 Debeque Phacelia. The Debeque phacelia (Phacelia subminuta) is a
low-growing annual herb with small white, tube-shaped flowers hidden within leaves
(U.S.F.W.S. 2011b). Stems are usually 0.8 to 3 in. (2.0 to 7.6 cm) long, deep red, and covered in
stiff hairs. Leaves are also covered with stiff hairs and are reddish when mature and egg shaped.
The plant shows yearly variation in abundance due to environmental factors, with no plants
growing one year and thousands growing the next. Seeds can remain dormant for up to 5 years.
It flowers between late April and late June and sets seed from mid-May through late June
(U.S.F.W.S. 2011b).

Habitat requirements of the Debeque phacelia include clay soils from the Atwell Guleh
and Shire members of the Wasatch Formation that have little other vegetation (generally less
than 10% plant coverage) at elevations ranging from 5,080 to 7,100 ft (1,548 to 2,164 m). The
shrink-swell action of clay soils is essential to the species because seed banks are maintained in
cracks formed in the soil. It has been found associated with other plants, including cheatgrass,
painted gummweed, Gordon’s buckwheat, Nuttall’s povertyweed, and tufted evening primrose. It
is generally found on moderately steep slopes, benches, and ridge tops adjacent to valley floors
(U.S.F.W.S. 2011b).

The Debeque phacelia was listed as threatened on July 27, 2011 (U.S.F.W.S. 2011c). On that
date, the U.S.F.W.S. proposed to designate 24,987 acres (10,112 ha) within nine units in Mesa and
Garfield Counties, Colorado, as critical habitat for this species (U.S.F.W.S. 2011b). On March 27,
2012, the U.S.F.W.S. revised the proposed designation to include a total of 25,484 acres (10,313 ha)
of critical habitat in Mesa and Garfield Counties (U.S.F.W.S. 2012b). There are currently nine
known populations of the Debeque phacelia. It is estimated that the current population size may
be as large as 68,371 if climatic conditions are favorable (U.S.F.W.S. 2011b). The estimated total
number of plants ranges from 7,767 to 68,371 per year (U.S.F.W.S. 2011c). The current range of the
Debeque phacelia is centered on DeBeque, Colorado, in Mesa and Garfield Counties. A polygon
around all nine populations of the Debeque phacelia covers 86,230 acres (34,896 ha), with
626 acres (253 ha) being actually occupied by plants (U.S.F.W.S. 2011b).

Potential threats to the Debeque phacelia that may be associated with mining activities
include surface disturbance from construction of facilities and roads as well as increased vehicle
traffic and human presence. The disturbance of seed banks from within the soil will be
detrimental to the Debeque phacelia (NatureServe 2012). Other threats to this species include
livestock grazing and oil and gas development (U.S.F.W.S. 2011c).

According to the CNHP, the nearest recorded occurrences of Debeque phacelia are in
central Mesa County, Colorado, approximately 45 mi (72 km) northeast of the nearest ULP lease
tract (27). The locations of the proposed critical habitat units are approximately 53 mi (85 km)
 northeast of ULP Lease Tract 27 (Figure 3-2). This species has specific habitat requirements for
clay soils in the Wasatch Formation; these habitats do not occur in the ULP affected area. For
this reason, uranium mining under the ULP will have no effect on the Debeque phacelia or on
proposed critical habitat for the plant.
FIGURE 3-2 Recorded Quad-Level Occurrences of the Debeque Phacelia and Uncompahgre Fritillary Butterfly, and Locations of Proposed Critical Habitat for the Debeque Phacelia, in the Vicinity of the ULP Lease Tracts
3.2.1.2 Invertebrates

3.2.1.2.1 Uncompahgre Fritillary Butterfly. The Uncompahgre fritillary butterfly (Boloria acrocnemis) is a butterfly (family Nymphalidae) that has a wing span of 1 to 1.2 in. (2 to 3 cm). Males have rusty brown wings with criss-crossed black bars. Females have lighter wings. The hind wing has a white jagged bar dividing the brown inner half and the purple-grey outer surface. The body is brownish black. Females lay eggs on the snow willow (Salix rivasii), and the larvae feed on that plant. Adults consume nectar from a range of flowering alpine plants. The butterfly has a biennial life history; eggs are laid in one year, the insects are caterpillars in the following year; and they mature into adults the next year. Adults live only 1 to 2 weeks (USFWS 2011d).

The Uncompahgre fritillary butterfly has the smallest total range of any North American butterfly species. Its habitat is limited in distribution to the San Juan Mountains and southern Sawatch Range in southwestern Colorado. All known colonies occur on public lands. Habitat requirements for this species include the snow willow, which provides food and shelter at elevations above 12,400 ft (3,780 m) (USFWS 1994a, 2011d; NatureServe 2012).

The Uncompahgre fritillary butterfly was listed as an endangered species on June 24, 1991 (USFWS 1991a). A recovery plan was finalized on March 17, 1994 (USFWS 1994a). Critical habitat for this species has not been designated. Currently, 11 known colonies of the butterfly exist (USFWS 2009c). Only 3 of those colonies are monitored, and the current population of those colonies is estimated to number between 3,400 and 23,000 (USFWS 2011d). The overall population size is currently unknown. The current range is estimated to be between 24,710 and 61,776 acres (10,000 and 25,000 ha) in size (NatureServe 2012).

The current threats to the Uncompahgre fritillary butterfly are minor and include collection by people and habitat degradation from widening of hiking trails and sheep grazing (USFWS 2011d). Potential threats to this species that may be associated with mining activities include habitat disturbance from construction of facilities and roads as well as increased vehicle traffic and human presence.

According to the CNHP, the nearest recorded occurrences of the Uncompahgre fritillary butterfly are approximately 60 mi (96 km) east of the ULP lease tracts (Figure 3-2). As discussed, this species has specific habitat requirements for alpine willow communities; these habitats do not occur in the ULP affected area. For this reason, uranium mining under the ULP will have no effect on the Uncompahgre fritillary butterfly.

3.2.1.3 Fish

3.2.1.3.1 Colorado River Endangered Fish. Four listed species of fish that inhabit the Colorado River Basin may occur in the ULP affected area: the bonytail, Colorado...
pikeminnow, humpback chub, and razorback sucker. Each of these fish species historically
inhabited tributaries of the Colorado River system, including portions of the Dolores and
San Miguel Rivers in the ULP project counties. Current populations of these Colorado River
endangered fish species no longer inhabit these tributary rivers in the vicinity of the ULP lease
tracts. However, populations of these species, suitable habitat, and designated critical habitat for
these species occur in the Colorado River, which is downgradient from all ULP lease tracts and
is connected to several lease tracts (primarily Lease Tracts 13, 13A, and 14) by the Dolores River
(Figure 3-3).

Direct impacts on the Colorado River endangered fish or their habitat associated with
ULP activities would not occur. However, potential indirect threats to these species that might be
associated with mining activities under the ULP include impacts on water quality and water
withdrawals. Uranium mining can contaminate surrounding drainages and bodies of water with
uranium, other radioactive contaminants, and other contaminants such as ammonium, which can
negatively affect aquatic biota. Some contaminants can bio-accumulate in fish species (Karp and
Metzler 2006; Freques 2008; Metzler et al. 2008). The toxicity of uranium mill tailings has been
shown to negatively affect aquatic biota in the Colorado River system (USFWS 1990). The
effects of ammonium include reduced growth rate, reduced gamete production, body deformities
and malformations, and degenerative gill and kidney appearance and function. The construction
of mining facilities may also increase the amount of sediment in downgradient streams and rivers
(Leyda 2011), which could also affect habitat quality (including designated critical habitat).

Water depletions associated with uranium mining may contribute to the destruction or
adverse modification of designated critical habitat for the Colorado pikeminnow
(USFWS 2011c) and could also affect all other Colorado River endangered fish. As discussed in
Section 2.2.2 and Table 2-3, as much as 19.3 acre-ft of water may be needed to support ULP
activities during the peak production year. It is assumed that all water would come from sources
within the Dolores River Basin and may be obtained from pumping withdrawals on or off the
lease tract, the purchase of municipal supplies, or the purchase and relinquishment of existing
groundwater rights. Surface water and groundwater sources in the region surrounding the ULP
lease tracts are over-appropriated according to the Colorado Division of Water Resources
(CDWR 2007), and the USFWS considers actions that could result in a net water depletion in
the upper Colorado River Basin to adversely affect the endangered fish and their designated
critical habitat. Although the estimated peak annual water demand from the ULP activities
(19.3 acre-ft) represents a relatively small depletion to the Colorado River, the volume exceeds
the USFWS de minimis threshold of 0.1 acre-ft per year (USFWS 2009) and requires ESA
Section 7 consultation.

Other threats to the Colorado River endangered fish that might be associated with ULP
activities include physical stream alteration, competition with and predation by introduced
species, and pollution. Indirect impacts on the Dolores River and other tributaries to the
Colorado River from ULP-related water withdrawals, run-off, sedimentation, or exposure to
contaminants might be possible, which could affect these species and their habitats (including
designated critical habitat) in the Colorado River (Table 3-1).
FIGURE 3-3 Locations of Designated Critical Habitat for the Colorado River Endangered Fish Species in the Vicinity of the ULP Lease Tracts
The implementation of mitigation measures and BMPs identified in Table 2-5, particularly those related to aquatic habitats and water quality (G4, D2, D3, D4, D5, D6, D7, D8, D9, D12), would reduce impacts of water quality and quantity to the Colorado River endangered fish species. Indirect impacts related to water contamination are expected to be minimized with the measures identified in Table 2-5 to levels that would not adversely affect the species or their habitats. Impacts related to water withdrawal and consumption from the Upper Colorado River Basin are possible (i.e., there are no measures to completely eliminate or offset water withdrawals from the Colorado River Basin). For this reason, it is determined that the proposed ULP may affect, and is likely to adversely affect, both the Colorado River endangered fish and their critical habitat.

Several conservation measures have been identified from previous Biological Assessments and Biological Opinions for related federal activities to offset or reduce negative impacts of project-related water use on Colorado River endangered fish. These conservation measures may be adopted to reduce ULP-related impacts on endangered fish. These conservation measures include the following:

- If water pumping is necessary, pump water from off-channel locations (e.g., ponds and ditches) not directly connected to mainstream rivers such as the Dolores River and
- Require water users to sign Recovery Agreements that state the water users won’t interfere with the implementation of recovery actions and the USFWS will provide ESA compliance. The DOE will ensure Recovery Agreements are initiated by the lessees, or on behalf of the lessees via a representative group, with the USFWS as appropriate.

The USFWS may provide other alternatives to help projects reduce affects from their activities during the consultation process. The natural history, habitat requirements, and listing history for each of these species is provided in the following text.

**Bonytail.** The bonytail (*Gila elegans*) is a species of fish in the family Cyprinidae. It is endemic to the Colorado River Basin. This species has a very slender, round, and long caudal peduncle; a subterminal mouth; and fins that are large and falcate. Adults have a relatively flat, concave head and a smooth dorsal lump and back. Young fish are typically silver-gray with white bellies. Adults have a dark olive back that contains small iridescent highlights (Mueller 2006). Adults grow to be about 21.7 in. (55 cm) in length and weigh 2.4 lb (1.1 kg) (USFWS 2002a). Hatchery-reared bonytail become sexually mature after 2 years (NatureServe 2012). The diet of the bonytail is unknown, but it is hypothesized that they eat insects, fishes, and plants (NatureServe 2012).

The historic range of the bonytail is unknown because it was extirpated from many areas before surveys were conducted, but it was common in warm-water reaches of larger rivers from Mexico to Wyoming (USFWS 2002a). Currently, no self-sustaining populations of bonytail exist in the wild, and only a small number of adults exist in the wild in Lake Mohave, Lake Havasu, and in the Green River and upper Colorado River subbasins (USFWS 2002a). The current
population size is estimated to be between 1 and 1,000 individuals (NatureServe 2012). Hatchery-reared adults have been released into rivers in the upper basin, but results indicate low survival and no reproduction or recruitment (USFWS 2002a).

The habitat requirements of the bonytail are uncertain, but the species has been observed in pools and eddies on mainstem rivers. Habitats necessary for conservation of the bonytail include river channels and flooded, ponded, or inundated riverine habitats (USFWS 2002a; BIO-WEST 2005). Bonytails in rivers probably spawn in spring over rocky substrates, and spawning in reservoirs has been observed over rocky shoals and shorelines (USFWS 2002a). Spawning was observed to occur in June and July at water temperatures of about 64.4°F (18°C) (USFWS 1994b). It is hypothesized that flooded bottomland habitats are important as nursery habitats for young (USFWS 2002a).

The bonytail was listed as an endangered species on April 23, 1980 (USFWS 1980). A recovery plan was approved on August 1, 2002 (USFWS 2002). Approximately 312 mi (502 km) of river in the Colorado River Basin were designated as critical habitat for the bonytail on March 21, 1994. The critical habitat spans five states and includes portions of the Colorado, Green, and Yampa Rivers in the Upper Basin and the Colorado River in the Lower Basin (USFWS 1994b). The nearest location of designated critical habitat is within the Colorado River in Grand County, Utah, approximately 29 mi (46.4 km) northwest of the northern-most ULP lease tracts (Figure 3-3).

**Colorado Pikeminnow.** The Colorado pikeminnow (*Ptychocheilus lucius*) is a species of fish in the family Cyprinidae. It is a long-distance migrant, travelling an average of 411 mi (658 km). It reaches a maximum length of 5.9 ft (1.8 m) and weight of 79 lb (36 kg) and lives over 40 years (USFWS 2002b). It is an elongated fish, with a greenish, slender body with gold flecks on the dorsal surface. The mouth is large and nearly horizontal, with slender teeth (USFWS 2007). Reproduction occurs after 5 to 7 years (NatureServe 2012). Juveniles feed mainly on zooplankton and insect larvae, while larger fish (bigger than 4 in. [10 cm]) feed mainly on other fish (USFWS 2007; NatureServe 2012).

Spawning occurs in river canyons when water flows decline from June to August and when water temperatures are between 64.4 and 73.4°F (18 and 23°C) (USFWS 1994b, 2002b). Optimal temperature for egg hatching is 68°F (20°C) (NatureServe 2012). Adult habitats after spawning include pools, deep runs, and eddies maintained by high spring flows. Larvae drift downstream to nutrient-rich nursery backwaters (USFWS 2002b). Young of the year prefer shallow, alongshore, ephemeral backwaters with little or no current and silt or sand substrates (NatureServe 2012; USFWS 2007). When juveniles reach about 8 in. (20 cm) in length, they prefer deeper water with a faster velocity (USFWS 2007). During the winter, adults are most common in shallow, ice-covered shorelines (USFWS 1994b). Temperature tolerances range from less than 50°F to 95°F (10°C to 35°C) (USFWS 2007).

The Colorado pikeminnow is endemic to the Colorado River Basin. It was extirpated from the Lower Basin in the 1970s, but experimental introductions have been made into the Verde River in the Lower Basin. Currently, three wild reproducing populations occur in the Green River, San Juan River, and upper Colorado River subbasins. Current population estimates

---

**E-72**

*Final ULP PEIS*  
*Appendix E: ESA Consultation Correspondence, BO, and BA*  
*May 2013*
are between 6,600 and 8,900 total for the three populations (6,000 to 8,000 in the Green River; 600 to 900 in the upper Colorado River; 19 to 50 in the San Juan River) (USFWS 2002b).

The Colorado pikeminnow was listed as an endangered species on March 11, 1967. An original recovery plan was approved on August 28, 2002, and the current recovery goals were approved on July 27, 2006 (USFWS 2002b). Approximately 1,148 mi (1,848 km) of river in the Colorado River Basin were designated as critical habitat for the Colorado pikeminnow on March 21, 1994. The critical habitat spans three states and includes portions of the Colorado, Green, Yampa, White, and San Juan Rivers in the Upper Basin (USFWS 1994b). The nearest location of designated critical habitat is within the Colorado River in Grand County, Utah, approximately 29 mi (46 km) northwest of the northern-most ULP lease tracts (Figure 3-3).

**Humpback Chub.** The humpback chub (*Gila cypha*) is a freshwater fish species in the family Cyprinidae. This species is less than 19.7 in. (50 cm) in total length. It has silvery sides and a brown back. Adults have a distinctive dorsal hump, a long snout, and small eyes. Humpback and roundtail chubs can look very similar, and the young in particular do not possess easily identifiable morphological differences (USFWS 1990). The humpback chub reproduces from May to July, depending on the location. Spawning occurs when water temperatures are near 68°F (20°C) and when spring water flows are at their highest (USFWS 1994b). Young and adults are bottom feeders and consume mainly insects and other invertebrates, but algae and fish are occasionally consumed.

The humpback chub is found in river canyons in a variety of habitats, including pools, riffles, and eddies. It has also been found near boulder-strewn canyons, travertine dams, rocky runs, riffles, and rapids (USFWS 1994b). Adult humpback chub inhabit deep (1 to 15 ft [0.3 to 4.6 m]) river regions, but young are generally found in shallower areas (less than 9.8 ft [3.0 m]) (USFWS 2002c).

The humpback chub is endemic to the Colorado River Basin and is presently restricted to remote, whitewater canyons. Human-made alterations to the Colorado River may have caused the humpback chub to disappear from certain areas before its presence was documented (USFWS 1990). Because of this uncertainty, the historical distribution of the humpback chub is not well known, but the earliest known record of the species is from the Grand Canyon from around 4,600 B.C. (USFWS 1990, 1994b).

The humpback chub was listed as an endangered species on March 11, 1967. An original recovery plan was approved on August 22, 1979, and the current second revised recovery plan was approved on September 19, 1990 (USFWS 1990). A revised recovery plan was approved on August 1, 2002 (USFWS 2002c). Approximately 379 mi (610 km) of river in the Colorado River Basin were designated as critical habitat for the humpback chub on March 24, 1994. The critical habitat spans three states and includes portions of the Colorado, Green, and Yampa Rivers in the Upper Basin and the Colorado and Little Colorado Rivers in the Lower Basin (USFWS 1994b). The largest remaining population of humpback chub in the Colorado River Basin occurs in the Little Colorado and Colorado Rivers in the Grand Canyon (USFWS 1994b). The nearest location of designated critical habitat is within the Colorado River in Grand County, Utah, approximately 29 mi (46.4 km) northwest of the northern-most ULP lease tracts (Figure 3-3).
Razorback Sucker. The razorback sucker (Xyrauchen texanus) is a species of fish in the family Catostomidae. This species has a long, high hump behind the head. The head and body are dark, and the sides are brownish, fading to a yellowish white abdomen. It reaches lengths of 36 to 39 in. (91 to 99 cm) and weights up to 12 lb (5.4 kg) (USFWS 2007). The diet of adults includes planktonic crustaceans, diatoms, filamentous algae, midge larvae, and detritus.

Habitat requirements of the razorback sucker in rivers include deep runs, eddies, backwaters, and flooded off-channel environments in spring, runs and pools, often in shallow water associated with submerged sandbars, in summer, and low-velocity runs, pools, and eddies in winter (USFWS 2002d). Adults may travel long distances to spawning sites, and spawning usually occurs in rivers over gravel, cobble, or sand substrates during spring runoff at temperatures higher than 57.2°F (14°C) (USFWS 1991b, 2002d). Spawning can also occur over rocky shoals and shorelines. Young require nursery environments with quiet, warm, shallow water, such as tributary mouths, backwaters, or inundated floodplain habitats in rivers, such as coves or shorelines in reservoirs (USFWS 2002d).

The razorback sucker is endemic to the Colorado River Basin. The historic range of the razorback sucker extended through 3,500 mi (5,600 km) of the Colorado River Basin throughout Arizona, California, Colorado, Nevada, New Mexico, Utah, Wyoming, Baja California Norte, and Sonora of Mexico (USFWS 1991b). Currently, the razorback sucker inhabits only about 25% of its historical range in the upper Colorado River basin (USFWS 1991b, 2002d). Most wild fish are now found in Lake Mohave, which represents the largest population within the lower basin (USFWS 2007). This population dropped from 60,000 individuals in 1991 to 9,000 in 2000 (USFWS 2002d). Razorback suckers are currently found in small numbers in the Green River, upper Colorado River, and San Juan River subbasins; in the lower Colorado River, in reservoirs of Lakes Mead and Mohave; and in small tributaries of the Gila River subbasin (USFWS 2002d).

The razorback sucker was listed as an endangered species on October 23, 1991. A recovery plan was approved on August 28, 2002 (USFWS 2002d). Approximately 1,724 mi (2,758 km) of river in the Colorado River Basin was designated as critical habitat for the razorback sucker on March 21, 1994. The critical habitat spans six states and includes portions of the Green, Yampa, Duchesne, Colorado, White, Gunnison, and San Juan Rivers in the Upper Basin and portions of the Colorado, Gila, Salt, and Verde Rivers in the Lower Basin (USFWS 1994b). The nearest location of designated critical habitat is within the Colorado River in Grand County, Utah, approximately 29 mi (46.4 km) northwest of the northernmost ULP lease tracts (Figure 3-3).

3.2.1.3.2 Greenback Cutthroat Trout. The greenback cutthroat trout (Oncorhynchus clarki ssp. stomias) is a species of fish in the family Salmonidae. It is one of the most colorful subspecies of cutthroat trout (USFWS 1998). This species is characterized by dark, round spots on the sides and tail and two colorful blood-red stripes on each side of the throat under the jaw (USFWS 2011f). Mature males have crimson red along the ventral region during spawning season (USFWS 1998). The diet of the greenback cutthroat trout includes mainly aquatic and terrestrial insects, but those fish are opportunistic feeders (USFWS 2009d; Coleman and CNHP 2007). Males spawn at age two, and females reach sexual maturity when they reach a
length of about 7 in. (18 cm), usually after their third or fourth summer (USFWS 2011f, Coleman and CNHP 2007). They spawn in spring or early summer, depending on the elevation. Females dig redds in the gravel bed of streams, where they deposit eggs. Spawning occurs when water reaches about 41 to 46°F (5 to 8°C) (Coleman and CNHP 2007). Larger females can lay up to 6,000 eggs (USFWS 2009d).

The greenback cutthroat trout is the rarest of the cutthroat trout species. The historic range of the greenback cutthroat trout is not known, but it is hypothesized that all mountain and foothill habitats of the South Platte and Arkansas River drainages in Colorado are included (USFWS 2009d). Only nine naturally occurring populations are known to have persisted, but many additional populations have been established in lakes and streams from being introduced (USFWS 1998). The most stable population occurs in Rocky Mountain National Park (NatureServe 2012). Currently, 145 populations in 142 mi (228 km) of streams and 412 acres (167 ha) of lakes have been documented within greenback historic range (USFWS 2011d).

Habitat requirements of the greenback cutthroat trout differ depending on the life stage. Juveniles need the protective cover and low-velocity flow found in side channels and small tributaries. Spawning occurs in riffles with clean gravel. Overwintering fish prefer deep water, low-velocity flow, and protective cover. Adults prefer slow water areas for resting and fast water areas for feeding, with protective cover from boulders, logs, overhanging vegetation, or undercut banks (USFWS 2009d). Greenbacks also usually require clear, cold, well oxygenated water (USFWS 2009d).

The greenback cutthroat trout was listed as endangered in 1973 and reclassified as threatened on April 18, 1978 (USFWS 1978). A recovery plan was approved on March 1, 1998 (USFWS 1998). Critical habitat for this species has not been designated.

According to the CNHP, the nearest recorded occurrences of the greenback cutthroat trout are more than 100 mi (160 km) east of the ULP lease tracts. As discussed, this species is primarily restricted to headwater streams of the South Platte and Arkansas River drainages; these habitats do not occur in the ULP affected area. For these reasons, uranium mining under the ULP will have no effect on the greenback cutthroat trout. The species is not likely to occur in any aquatic habitats downstream from the ULP lease tracts.

### 3.2.1.4 Birds

#### 3.2.1.4.1 Gunnison Sage-Grouse

The Gunnison sage-grouse (Centrocercus minimus) is one of two sage-grouse species in the family Phasianidae; the other is the greater sage-grouse (C. urophasianus). The Gunnison sage-grouse weighs about a third less than the greater sage-grouse, but the males of both species possess conspicuous filoplumes and yellow-green air sacs on the chest during the breeding season. Sage-grouse gather on leks during the spring, where males establish territories and strut for approximately 6 weeks. Sage-grouse are polygamous, and males do not provide any parental care. The majority of females establish nests within 4 mi (6.5 km) of an active lek. Gunnison sage-grouse lay about six to seven eggs and have one of the
lowest nest success rates of all upland game bird species (ranging from 10% to 63%) (Gunnison Sage-Grouse Rangewide Steering Committee 2005).

Sage-grouse are typically found in large expanses of sagebrush-dominated habitats. Various habitats such as riparian meadows, agricultural lands, and native grasses and forbs are also used if intermixed with sagebrush (USFWS 2010b). The Gunnison sage-grouse relies heavily on sagebrush for nesting, shelter, and food throughout the year. Forbs and insects are eaten during the summer and early fall, but its diet consists entirely of sage brush during the winter (USFWS 2006a).

Gunnison sage-grouse historically occupied 21,370 mi² (55,350 km²) throughout southwestern Colorado, northwestern New Mexico, northeastern Arizona, and southeastern Utah (USFWS 2006a). Currently, only seven widely scattered and isolated populations occur in Colorado and Utah, occupying 1,511 mi² (3,913 km²) in the Gunnison Basin, San Miguel Basin, Monticello-Dove Creek, Pinon Mesa, Crawford, Cerro Summit-Cimarron-Sims Mesa, and Pionea Pass (USFWS 2010b). Gunnison sage-grouse now occupy about 10% of the habitat that existed before the arrival of European settlers (BLM 2010). The breeding population size was estimated to be fewer than 4,000 individuals in 2000, with the largest population (2,000 to 3,000 individuals) occurring primarily in Gunnison and Saguache Counties in Colorado. The remaining six populations have fewer than 300 breeding individuals (NatureServe 2012).

The Gunnison sage-grouse became a candidate for federal listing on September 28, 2010 (USFWS 2010b). The listing of this species was determined to be warranted but was precluded by higher-priority listing actions. The USFWS assigned a listing priority number of 2 to this species because threats have a high magnitude and are imminent. On November 21, 2012, the USFWS submitted a rule to propose this species as endangered under the ESA (USFWS 2012d).

The main threat to the Gunnison sage-grouse is the fragmentation and degradation of sagebrush habitats due to conversion to cropland, energy development, and urban development (NatureServe 2012). Potential threats that may be associated with ULP activities include direct habitat loss, fragmentation, and degradation as well as direct disturbance of nests or leks. Mining may directly alter sagebrush habitat distribution and quality, as a result of the development of mining pits, mining infrastructure, access roads, and overburden placement in sagebrush habitats. Fragmentation of these habitats could force sage-grouse to choose less optimal habitats. The construction of any substantial structure or road, as well as the use of access roads, can cause the increased deposition of dust on plants and the invasion of non-native plants, potentially affecting the abundance and quality of sagebrush. Increased noise and traffic from human presence may also lead to a disruption of normal grouse behavior and productivity (Gunnison Sage-Grouse Rangewide Steering Committee 2005). Other threats include fencing (increases mortality because birds can collide with it and it increases the number of perch sites for nest predators), fires (increases weeds and degrades suitable habitat), and domestic grazing (changes plant communities and soils) (USFWS 2010b).

According to the CNHP, the nearest recorded occurrences of the Gunnison sage-grouse are from San Miguel County, Colorado, approximately 5 mi (8 km) southeast of the Paradox lease tracts (Lease Tract 17). According to the SWReGAP habitat suitability model, potentially
suitable habitat for the Gunnison sage-grouse may occur on or in the vicinity of all ULP lease
tracts; however, none of the ULP lease tracts intersect the current range of this species
(Figure 3-4). According to range data provided by the CPW Natural Diversity Information
Source (CPW 2011), the Paradox lease tracts (5A, 6, 7, 8, 8A, 9, and 17) occur as near as 168 ft
(51 m) from the current Gunnison sage-grouse range in the Dry Creek Basin. Portions of the
species' current range occur adjacent to several Paradox lease tracts (Figure 3-4). Because the
species' current range does not intersect any of the lease tract areas, ULP activities are unlikely
to directly affect this species. Impacts on this species from ULP activities may still occur in the
form of indirect effects or impacts on potentially suitable unoccupied habitat. However, it has
been determined that with the implementation of all mitigation measures and BMPs identified in
Table 2-5, uranium mining under the ULP may affect, but is not likely to adversely affect, the
Gunnison sage-grouse.

3.2.1.4.2 Mexican Spotted Owl. The Mexican spotted owl (Strix occidentalis lucida) is
one of three subspecies of the spotted owl (S. occidentalis) (USFWS 2011g). They are medium-
sized owls without ear tufts (USFWS 2011g). They have dark eyes and a chestnut brown
body with white and brown spots on their abdomen, back, and head (USFWS 2011h). Wing and
tail feathers are dark brown with lighter brown and white bars (USFWS 2011g). Owls younger
than 5 months old have a downy appearance. Subadults (5 to 26 months old) look like adults but
have pointed tail feathers with a white terminal band. Adult tail feathers have rounded tips, and
the terminal band is mottled brown and white (USFWS 2011g). Females are generally larger
than males (USFWS 2011h). Most Mexican spotted owls are nonmigratory, but some individuals
migrate to lower elevations during the winter (USFWS 2011g). The diet of Mexican spotted owls
consists mainly of small and medium-sized rodents, but they also consume bats, birds, reptiles,
and arthropods (USFWS 2011g).

Habitat requirements of the Mexican spotted owl include forested mountains and
canyonlands. Forests used by the Mexican spotted owl are generally uneven-aged, are
multistoried, and have high canopy cover. Larger trees (with an average diameter of 24 in.
[61 cm]) are usually chosen for nesting sites. In canyon lands, important features for the Mexican
spotted owl include steep canyon walls with isolated pinnacles and rims with large vertical cliffs.
The canyon habitats also often include a variety of desert scrub and riparian vegetation
communities. Cliff faces contain numerous caves and ledges that create protected microsites for
nesting and roosting (USFWS 2011g). Foraging occurs in a wide range of habitats, including
managed and unmanaged forests, pinyon-juniper woodlands, mixed-conifer and ponderosa pine
forests, cliff faces and terraces between cliffs, and riparian zones.

Mexican spotted owls rely on existing structures for nesting (e.g., nests built by other
birds on cliffs, debris platforms in trees, and tree cavities). Courtship begins in March; females
lay 1 to 3 eggs in late March or early April; and incubation lasts about 30 days (USFWS 2011g).
The current range of the Mexican spotted owl is nearly the same as the historical range and is
estimated to include 7,720 to 965,250 mi² (20,000 to 2,500,000 km²) across Utah, Colorado,
Arizona, New Mexico, and the western portions of Texas, and several states in Mexico
(NatureServe 2012; USFWS 2011g).
FIGURE 3-4 Recorded Quad-Level Occurrences and Distribution of Potentially Suitable Habitat for the Gunnison Sage-Grouse and Western Yellow-Billed Cuckoo in the Vicinity of the ULP Lease Tracts
The Mexican spotted owl has experienced a long-term population decline of 30–50% (NatureServe 2012). Currently, 1,301 owl sites (used repeatedly by a single or a pair of owls for nesting, roosting, or foraging) are known in the U.S. portion of the owl’s range (USFWS 2011g). The current population size is estimated to be 1,000 to 2,500 individuals. A little more than half of the U.S. population occurs in the Upper Gila Mountains Recovery Unit in Arizona and New Mexico. Many populations occur in isolated mountain ranges separated by large areas of unforested land (NatureServe 2012).

The Mexican spotted owl was listed as threatened on March 16, 1993 (USFWS 1993). A draft recovery plan was made available for comment on June 28, 2011 (USFWS 2011g). Approximately 7,239 mi² (18,749 km²) of critical habitat was designated in Arizona, Colorado, New Mexico, and Utah on June 6, 1995. The designated critical habitat was changed first on February 1, 2001 (USFWS 2001a), and again on August 31, 2004 (USFWS 2004). Currently, critical habitat includes approximately 13,514 mi² (35,000 km²) of habitat in Arizona, Colorado, New Mexico, and Utah (USFWS 2004).

The greatest threat to the Mexican spotted owl has been loss of habitat due to even-aged timber management (NatureServe 2012). Potential threats that may be associated with ULP activities include increased mortality, loss or fragmentation of habitat, and a decreased ability to hunt. Increased vehicle traffic associated with mining operations could increase the number of owls killed as a result of collisions with vehicles. The construction of mining facilities and access roads could remove or fragment Mexican spotted owl habitat. Recent research on acoustic predators (bats and owls) shows that even low levels of traffic noise mask the rustling sounds of rodents and reduce the ability of the predators to hear them. The noise of the mine operations may have a similar effect and prevent the owls from catching prey (Leyda 2011). Other threats include forest fires, predation, starvation, disease, and parasites (USFWS 2011g).

According to the CNHP, the nearest recorded occurrences of the Mexican spotted owl are from southern San Miguel County, Colorado. This quad-level occurrence intersects ULP Lease Tract 12. According to the SWRgap habitat suitability model, potentially suitable habitat for this species may occur on and in the vicinity of all ULP lease tracts. However, this habitat is represented by migratory habitat as no suitable canyons and old growth forests occur on the lease tracts. Designated critical habitat for the Mexican spotted owl does not occur in the vicinity of the ULP lease tracts. However, designated critical habitat does occur in San Juan County, Utah, as close as 28 mi (45 km) west of the ULP lease tracts (Figure 3-5).

Mining activities under the ULP have the potential to affect the Mexican spotted owl and potentially suitable habitat for the Mexican spotted owl (Table 3-1; Figure 3-5). However, it has been determined that with the implementation of all mitigation measures and BMPs identified in Table 2-5, uranium mining under the ULP may affect, but is not likely to adversely affect, populations of the Mexican spotted owl. Uranium mining under the ULP is determined to have no effect on designated critical habitat for the Mexican spotted owl.

3.2.1.4.3 Southwestern Willow Flycatcher. The southwestern willow flycatcher (Empidonax traillii extimus) is one of four willow flycatcher subspecies (E. traillii). This
FIGURE 3.5 Recorded Quat Level Occurrences and Distribution of Potentially Suitable Habitat for the Mexican Spotted Owl and Southwestern Willow Flycatcher, and Locations of Designated Critical Habitat for the Mexican Spotted Owl, in the Vicinity of the ULP Lease Tracts
subspecies is distinguished by subtle differences in color, morphology, and habitat use (USFWS 2002c). The southwestern willow flycatcher is less than 6 in. (15 cm) in length, weighs about 0.4 oz (12 g), and has a brownish-olive body, whitish throat, pale olive breast, pale yellow belly, and two light wing bars (USFWS 2002c, 2011i; NatureServe 2012). The bill is depressed and wide at the base (NatureServe 2012). The flycatchers mainly eat insects, including wasps, bees, moths, caterpillars, and butterflies; sometimes they eat berries as well (NatureServe 2012).

The southwestern willow flycatcher is a neotropical migrant that travels from breeding grounds in the United States to wintering grounds in Central and South America (USFWS 2005a). Essential habitat includes forested wetlands or scrub-shrub wetlands for breeding, foraging, migrating stopovers, dispersing, and shelter (USFWS 2005a). The flycatchers breed in southern California, southern Nevada, southern Utah, southern Colorado, Arizona, and New Mexico from sea level to around 8,000 ft (2,438 m) above sea level. Nesting occurs primarily in dense, swampy thickets of willow, buttonbush, tamarisk, vines, or other plants from 6.5 to 98 ft (2 to 30 m) in height (NatureServe 2012; USFWS 2005a). Nesting has been observed in patches ranging from 0.2 to 173 acres (0.2 to 70 ha) (USFWS 2005a). Nesting occurs from early June through the end of July. The clutch size is usually three or four, and both parents take care of the young (NatureServe 2012).

The current range of the southwestern willow flycatcher is similar to the historical range, but suitable habitat within that range has been greatly reduced (USFWS 2002c). The current range is estimated to be 7,700 to 965,250 mi² (20,000 to 2,500,000 km²), and the population is found in relatively small, isolated, widely dispersed locales (NatureServe 2012). In 2000, 53% of the southwestern willow flycatchers were distributed across only 10 sites (USFWS 2002c). The population has experienced a long-term decline of 30–50%, and it is estimated to consist of between 1,200 and 1,300 pairs (NatureServe 2012).

The southwestern willow flycatcher was listed as an endangered species on March 29, 1995 (USFWS 2002c). A recovery plan was approved on August 30, 2002 (USFWS 2002c). Approximately 603 river mi (964 river km) were designated as critical habitat for the southwestern willow flycatcher on July 22, 1997 (USFWS 1997). On October 19, 2005, the designated critical habitat was amended to include a total of 741 mi (1,186 km) of critical habitat (USFWS 2005a). The currently designated critical habitat includes portions of Arizona, California, Nevada, New Mexico, and Utah. On August 8, 2011, the USFWS proposed to revise critical habitat for the species to include a total of 2,090 mi (3,364 km) of critical habitat in the states of Arizona, California, Colorado, Nevada, New Mexico, and Utah. The currently designated and the proposed critical habitat for the southwestern willow flycatcher does not occur in the vicinity of the ULP lease tracts.

The greatest threat to the southwestern willow flycatcher is loss or degradation of riparian habitat (USFWS 2002c). Potential threats to the southwestern willow flycatcher that may be associated with ULP activities include habitat loss or degradation associated with facility construction and operations, impacts on riparian habitats associated with project-related water withdrawals from the Upper Colorado River Basin, and increased human presence. Direct habitat loss might result from the construction of mining facilities and access roads. Water withdrawals from surface water or groundwater sources to support mining activities might affect riparian...
habitats for the southwestern willow flycatcher. Human disturbances at nesting sites due to
human presence or traffic noise may result in nest abandonment (USFWS 2011i). Additional
threats include fire, livestock grazing, and brood parasitism by the brown-headed cowbird
(USFWS 2002c).

According to the CNHP, the nearest recorded occurrences of the southwestern willow
flycatcher are from southern Dolores County, Colorado, approximately 35 mi (56 km) southeast
of the ULP lease tracts (Figure 3-5). Although the SWReGAP habitat suitability model predicted
potentially suitable habitat for this species in the vicinity of all ULP lease tracts, particularly
along the Dolores and San Miguel Rivers (Figure 3-5), suitable habitat is unlikely to occur in the
vicinity of the lease tracts as the species has not been observed in the vicinity of these areas.
Neither designated nor proposed critical habitat for the southwestern willow flycatcher occurs in
the vicinity of the ULP lease tracts.

Mining activities under the ULP have the potential to affect the southwestern willow
flycatcher and potentially suitable habitat for it (Table 3-1; Figure 3-5). However, it has been
determined that with the implementation of all mitigation measures and BMPs identified in
Table 2-5, uranium mining under the ULP may affect, but is not likely to adversely affect,
populations of the southwestern willow flycatcher. Uranium mining under the ULP is determined
to have no effect on designated or proposed critical habitat for the southwestern willow
flycatcher.

3.2.1.5 Mammals

3.2.1.5.1 Black-Footed Ferret. The black-footed ferret (Mustela nigripes) is the only
ferret species native to North America. It is brownish in color with a slightly paler belly, and its
face mask, legs, and the tip of its tail are black (NatureServe 2012; USFWS 2003). It is about
24 in. (60 cm) in length and weighs up to 2.4 lb (1.1 kg) (USFWS 2003). In captivity, the black-
footed ferret reproduces in March and early April, and the gestation period is around 45 days.
The average litter size is 3.5, and young disperse in the fall. Some females can reproduce as
yearlings. Black-footed ferrets are nocturnal and can remain inactive for up to 6 days during the
winter. Their main food item is prairie dogs, but ground squirrels, rabbits, deer mice, voles,
pocket gophers, birds, and insects are also sometimes consumed (NatureServe 2012;
USFWS 1988).

Historically, the black-footed ferret range extended throughout Arizona, Colorado,
Kansas, Montana, Nebraska, New Mexico, North Dakota, Oklahoma, South Dakota, Texas,
Utah, Wyoming, Alberta, and Saskatchewan. The current range is estimated to be between
39 and 97 mi² (100 and 250 km²) (NatureServe 2012). The black-footed ferret relies on prairie
dog colonies for food, shelter, and denning and has only been found in the vicinity of colonies of
black-tailed prairie dogs, white-tailed prairie dogs, and Gunnison’s prairie dogs (USFWS 2003).
Black-footed ferret habitat is the same habitat as that used by prairie dogs and includes
grasslands, steppe, and shrub steppe. Prairie dog holes serve as resting and birth sites. Between
99 and 148 acres (40 and 60 ha) of prairie dog colony are needed to support one ferret (NatureServe 2012).

By the early 1970s, the black-footed ferret was near extinction due to the intentional poisoning of and introduction of disease to prairie dogs (USFWS 2003). Remaining ferrets are used for captive breeding, and a few reintroductions have successfully established reproducing populations (NatureServe 2012). The population size is now estimated to be between 250 and 1,000 individuals. As of 2005, approximately 400 reintroduced individuals are alive in the wild (NatureServe 2012).

The black-footed ferret was listed as an endangered species on March 11, 1967 (USFWS 1988). A recovery plan was approved on August 8, 1988 (USFWS 1988). The species may be extirpated from the state of Colorado, with the exception of reintroduced populations in the northwestern portion of the state (CPW 2012; USFWS 2012c). Black-footed ferrets were released in the Wolf Creek Management Area in Moffat and Rio Blanco Counties, Colorado, between 2001 and 2006 (BLM 2008a). These populations are considered to be experimental, nonessential populations under Section 10(j) of the ESA. It is unlikely that these experimental nonessential populations will occur in the affected area of the ULP lease tracts. The area of western Colorado containing the ULP lease tracts has not been block-cleared for black-footed ferrets (USFWS 2009h). If populations do occur in the vicinity of the ULP lease tracts, however, they will be considered as an endangered population under the ESA.

Primary threats to the black-footed ferret include prairie dog poisoning and shooting, canine distemper, sylvatic plague, and predation (USFWS 1988). Potential threats to black-footed ferrets or their potential habitat that may be associated with ULP activities include increased mortality due to collisions with vehicles and loss of habitat due to the construction of mining facilities and access roads.

Although the area surrounding the ULP lease tracts has not been cleared for black-footed ferrets, the species is presumably extirpated from the region. It is unlikely for populations (endangered or experimental, nonessential) of black-footed ferrets to occur in the affected area of the ULP lease tracts. For this reason, it has been determined that uranium mining under the ULP will have no effect on the black-footed ferret.

3.2.1.5.2 Canada Lynx. The Canada lynx (Lynx canadensis) is a medium-sized cat reaching 30 to 35 in. (76 to 89 cm) in length and weighing 18 to 23 lb (8.1 to 10.4 kg). It has large feet, long legs, tufts on its ears, and a short, black-tipped tail. During the winter, the lynx’s fur is dense; it is grayish-brown mixed with buff or pale brown on the back and is grayish-white on the belly, legs, and feet. During the summer, its fur is more reddish to gray-brown (USFWS 2011k). Canada lynx prey on snowshoe hares, but if hare densities are low, they prey opportunistically on other small mammals (e.g., red squirrels, flying squirrels, ground squirrels, porcupines, beavers, mice, voles, shrews), birds, and fish (USFWS 2009f, 2011k). Home ranges are generally between 12 and 83 m² (31 and 216 km²) (USFWS 2009f). Breeding occurs in March and April for yearling females; litter sizes average three to four kittens. The male does not help with rearing the young (NatureServe 2012).
Habitat requirements of the Canada lynx include boreal forests, deciduous temperate forests, and subalpine forests that experience cold winters with deep, fluffy snow for extended periods. Hunting occurs in forests with dense understories. Denning occurs in forests where woody debris, such as logs and windfalls, provides protection for kittens (USFWS 2009f). The lynx density is lower in the contiguous United States than in Canada because of a smaller and patchier habitat range and an increased rate of competition for food (USFWS 2009f). Canada lynx in the contiguous United States occur in forested portions of Colorado, Idaho, Maine, Michigan, Minnesota, Montana, New Hampshire, New York, Oregon, Utah, Vermont, Washington, and Wisconsin. A lack of historic or current data on lynx in the contiguous United States makes it difficult to determine population estimates or trends for this region; however, the population is estimated to be fewer than 2,000 individuals (USFWS 2000; NatureServe 2012). The Canada lynx’s current range (including Alaska and Canada) is estimated to be greater than 965,250 mi² (2,500,000 km²) (NatureServe 2012).

The Canada lynx was listed as threatened on March 24, 2000 (USFWS 2000). On December 17, 2009, it became a candidate for federal listing in New Mexico; it was given a listing priority number of 12 because Canada lynxes regularly and frequently cross the state boundary between Colorado and New Mexico, which leaves them without federal protection in New Mexico (USFWS 2009g). A recovery plan for this species was outlined on September 14, 2005 (USFWS 2005b). On November 9, 2006, approximately 1.841 mi² (4,768 km²) of habitat was designated as critical habitat for the Canada lynx (USFWS 2006b). On February 25, 2009, additional critical habitat was designated, bringing the total designated critical habitat to 39,000 mi² (101,010 km²) in Maine, Minnesota, Montana, Wyoming, Idaho, and Washington (USFWS 2009f).

According to the CNHP, the nearest recorded occurrences of the Canada lynx are from Montezuma County, Colorado, approximately 35 mi (56 km) southeast of the ULP lease tracts. According to the SWReGAP habitat suitability model, potentially suitable habitat for the Canada lynx does not occur in the vicinity of the ULP lease tracts (Figure 3-6). Designated critical habitat for the Canada lynx does not occur in the vicinity of the ULP lease tracts. Given the species’ preference for high-elevation coniferous forests, it is unlikely that the Canada lynx will occur in the affected area of the ULP lease tracts. For this reason, uranium mining under the ULP will have no effect on the Canada lynx or its critical habitat.

3.2.2 Candidate Species

Three species that are candidates for listing under the ESA have the potential to occur in the ULP counties evaluated in this BA. These species include one bird species: the western yellow-billed cuckoo, and two mammals, Gunnison’s prairie dog and the North American wolverine. These species are discussed below. A summary of the effect determinations for these species is provided in Table 3-3.
FIGURE 3-6 Recorded Quad-Level Occurrences and Distribution of Potentially Suitable Habitat for the Canada Lynx in the Vicinity of the ULP Lease Tracts
3.2.2.1 Birds

3.2.2.1.1 Western Yellow-Billed Cuckoo. The western yellow-billed cuckoo (* Coccyzus americana occidentalis*) is one of two subspecies of yellow-billed cuckoo (*C. americana*). The western population of this species occurs in Washington, Oregon, California, Idaho, Nevada, Montana, Wyoming, Utah, Arizona, Colorado, New Mexico, Texas, British Columbia, and Mexico. The western yellow-billed cuckoo is around 12 in. (31 cm) in length, with a slender, long-tailed profile (USFWS 2009e). It is brownish above and white below, with rusty colored flight feathers. The upper mandible of the bill is black, and the lower mandible is yellow. The underside of the tail has pairs of large white spots (USFWS 2011j).

Breeding habitat for the western yellow-billed cuckoo consists of large tracts of deciduous riparian woodland, especially dense stands of cottonwood and willow; it can also include mesquite and salt-cedar in some areas. Nests are placed in dense covers of trees, shrubs, or vines; near water; and generally 5 to 42.5 ft (1.5 to 13 m) above the ground. Dense understory foliage appears to be an important factor in nest-site selection, while cottonwood trees are an important foraging habitat (USFWS 2009e). Nonbreeding habitats include various types of forest, woodland, and scrub (NatureServe 2012).

The western yellow-billed cuckoo arrives on breeding grounds in the United States from late May to June and begins fall migration to South America from August to late September (Wiggins 2005). While courting, males will often carry a food item to offer the females during copulation (Wiggins 2005). Clutch size varies from one to five eggs, and both parents build the nest, incubate the eggs, and feed the young. They feed primarily on slow-moving insects, including grasshoppers, caterpillars, and beetles (Wiggins 2005).

The western yellow-billed cuckoo historically bred throughout most of western North America, but it is now extirpated in western Canada, Washington, and Oregon and is rare and patchily distributed throughout most of the United States west of the Rocky Mountains. In western Colorado, the western yellow-billed cuckoo, which was never common in that area, appears to be disappearing (Wiggins 2005). It is estimated that there could be fewer than 2,000 breeding pairs across the entire range of the western yellow-billed cuckoo. It is estimated that this breeding population has declined by at least 90% since the end of the 19th century (NatureServe 2012).

The western yellow-billed cuckoo became a candidate for federal listing on October 30, 2001 (USFWS 2001b). The listing of this species was determined to be warranted but was precluded by higher-priority listing actions. The USFWS assigned a listing priority number of 3.

Primary threats include use of pesticides and loss or degradation of habitat due to agriculture, grazing, encroachment of invasive riparian plant species, and river management (USFWS 2001b). Potential threats to the western yellow-billed cuckoo that may be associated with mining activities include loss or fragmentation of breeding habitat due to construction of facilities or roads, noise disturbances, and impacts on riparian habitat from runoff, sedimentation, or water withdrawals.
According to the CNHP, the nearest recorded occurrences of the western yellow-billed cuckoo are from La Plata County, Colorado, approximately 50 mi (80 km) southeast of the southernmost ULP lease tracts (Figure 3-4). However, according to the CPW (2012), the species is known to occur in Mesa and Montrose Counties, Colorado, as a breeding resident. According to the SWReGAP habitat suitability model, potentially suitable habitat for this species does not occur in the vicinity of any ULP lease tracts. However, it is possible for the species to occur either as a transient or a breeding resident in riparian habitats along the Dolores and San Miguel Rivers in the vicinity of the ULP lease tracts, especially where cottonwood and willow stands are present. Activities associated with the ULP are not likely to directly affect the western yellow-billed cuckoo because direct impacts on this species and its habitat (riparian habitats) will be avoided. It has been determined that with the implementation of all mitigation measures and BMPs identified in Table 2-5, uranium mining under the ULP may affect, but is not likely to adversely affect, the western yellow-billed cuckoo.

3.2.2.2 Mammals

3.2.2.2.1 Gunnison’s Prairie Dog. The Gunnison’s prairie dog (Cynomys gunnisoni) is a large rodent that occurs from central Colorado to central Arizona, including small portions of northwest New Mexico and southeastern Utah. The species is divided into montane and prairie populations, which are separated by mountain ranges that almost completely limit prairie dog movement between populations. Genetic testing is currently being conducted to determine whether montane and prairie Gunnison’s prairie dogs are populations or subspecies (USFWS 2011). The Gunnison’s prairie dog is darker overall and has less striking facial markings than the white-tailed prairie dog. It reaches a length of 11.8 to 15.4 in. (30 to 39 cm) and a weight of 0.6 to 3 lb (0.3 to 1.4 kg) (Seglund and Schnurr 2010). Females reproduce as yearlings, while only a quarter of males reproduce as yearlings (NatureServe 2012). Polygamous mating usually occurs in April and May, and one litter with an average size of six individuals is produced per year (USFWS 2011; Seglund and Schnurr 2010). Colonies consist of 50 to 100 individuals. Only 50% of females survive their first year, and less than 15% survive to their second year. Their diet consists mainly of grasses, forbs, sedges, and shrubs, but insects are also consumed. Prairie dogs can exhibit months of inactivity during winter, and individuals in some parts of the range hibernate (NatureServe 2012).

Habitat requirements for the Gunnison’s prairie dog include level to gently sloping (less than 30%) grasslands and semi-desert or montane shrublands at elevations of 6,000 to 12,000 ft (1,830 to 3,660 m) in high mountain valleys and plateaus. Barrows require well-drained soils and are usually found on slopes or in hummocks (Seglund and Schnurr 2010; USFWS 2011). The montane portion of their habitat accounts for about 40% of the total potential habitat (USFWS 2008a).

The Gunnison’s prairie dog has experienced a long-term population decline of 30% to 70% range-wide. Its current distribution is estimated to be between 100 and 8,000 mi² (260 and 20,700 km²) in Arizona, Colorado, New Mexico, and Utah (USFWS 2011). From 1916 to 2008, the habitat occupied by the Gunnison’s prairie dog declined from 37,450 mi² (97,000 km²) to
525–772 m² (1,360–2,000 km²). Only 3.6% of potential habitat is occupied in the montane portion of the range. The montane population of prairie dogs no longer has the metapopulation structure necessary to recover from catastrophic events because of its small size and its isolation in montane habitats (USFWS 2011b). The current total population size for prairie and montane populations is estimated to be between 100,000 and 1,000,000 (NatureServe 2012).

The Gunnison’s prairie dog became a candidate for federal listing on February 5, 2008 (USFWS 2008a). The listing of this species was determined to be warranted but was precluded by higher-priority listing actions. The USFWS originally assigned a listing priority number of 2 to the species because threats have a high magnitude and are imminent (USFWS 2008a). On December 10, 2008, the listing priority was changed to 3 because listing of the Gunnison’s prairie dog is warranted but precluded only in the montane region of its range within Colorado and New Mexico (USFWS 2008b).

The greatest threats to the Gunnison’s prairie dog are habitat loss and fragmentation, overharvesting (e.g., recreational shooting), and the spread of sylvatic plague (USFWS 2010d). Potential threats to the Gunnison’s prairie dog that may be associated with mining activities include the construction and presence of infrastructure and traffic, which could be direct sources of mortality and habitat fragmentation.

According to the CNHP, the nearest recorded occurrences of the Gunnison’s prairie dog is from western Montrose County, Colorado, approximately 2 mi (3 km) west of the Paradox lease tracts (Figure 3-7). According to the SWReGAP habitat suitability model, potentially suitable habitat for the Gunnison’s prairie dog may occur on or in the vicinity of all ULP lease tracts. According to range data provided by the CPW Natural Diversity Information Source (CPW 2011), the current Gunnison’s prairie dog range intersects or is in the vicinity of the Urvan, Paradox, and Slick Rock ULP lease tracts (Figure 3-7). Activities associated with the ULP could directly and indirectly affect populations of the Gunnison’s prairie dog through direct effects, such as mortality from vehicles and construction equipment or habitat loss and fragmentation, or through indirect effects, such as noise and visual impacts on behavior and the spread of diseases. However, the implementation of mitigation measures and BMPs identified in Table 2-5 will reduce the potential for these impacts. For these reasons, it has been determined that uranium mining under the ULP may affect, but is not likely to adversely affect, the Gunnison’s prairie dog.

3.2.2.2 North American Wolverine. The North American wolverine (Gulo gulo luscus) is a subspecies of the wolverine (G. gulo), which has a holarctic range. It is the largest terrestrial member of the weasel family; adult males weigh 26.5 to 40 lb (12 to 18 kg), and females weigh 17.5 to 26.5 lb (8 to 12 kg). Its appearance is similar to that of a small bear; it has a bushy tail, round head, short, rounded ears, small eyes, and claws used for digging and climbing (USFWS 2010c). Its body is dark brown and its head is paler, and two broad yellowish stripes run from its shoulders and join on the rump (NatureServe 2012).

The North American wolverine breeds at 2 years of age from late spring to early fall and has an average of 3.4 kits per litter. Due to high rates of spontaneous abortion, rates of successful
FIGURE 3-7 Recorded Quad-Level Occurrences and Distribution of Potentially Suitable Habitat for the Gunnison's Prairie Dog and North American Wolverine in the Vicinity of the ULP Lease Tracts
reproduction are among the lowest for mammals. Gestation lasts 30 to 40 days. Wolverines are opportunistic feeders that primarily consume carrion, but they will also eat small animals, birds, fruits, berries, and insects. They naturally occur at low densities, ranging from one wolverine per 25 mi² to one per 130 mi² (one per 65 km² to one per 337 km²) (USFWS 2010c). The home range of a wolverine can range from 40 to 350 mi² (100 to 900 km²) (USFWS 2011m).

Habitat requirements for the North American wolverine include 5 ft (1.5 m) of snow to excavate natal dens. Rocky sites, such as north-facing boulder talus and subalpine cirques in forest openings above 8,200 ft (2,500 m), are selected for dens. Wolverines occur within a wide variety of cold habitats that receive enough winter precipitation. Their range includes alpine, boreal, and arctic habitats, such as boreal forests, tundra, and high-elevation alpine regions (USFWS 2010c).

The North American wolverine occurs throughout Alaska, Canada, and high-elevation habitats of Washington, Idaho, Montana, Wyoming, California, and Colorado. The current population of North American wolverines in the contiguous United States is estimated to be between 250 and 300 individuals, with the largest population occurring in the Northern Rocky Mountains. It is believed that wolverines were entirely or nearly extirpated from the contiguous United States in the first half of the twentieth century, and that now, functioning populations have been reestablished in two regions: the North Cascades in Washington and the northern Rocky Mountains in Idaho, Montana, and Wyoming. Wolverines are also present in the southern Rocky Mountains and the Sierra Nevada Mountains, but reestablishment of populations has not occurred in these areas yet (USFWS 2010c).

The North American wolverine became a candidate for federal listing on December 14, 2010 (USFWS 2010c). The listing of this species was determined to be warranted but was precluded by higher-priority listing actions. The USFWS originally assigned a listing priority number of 6 to the species because threats have a high magnitude but are not imminent (USFWS 2011m).

The main threat to the North American wolverine is habitat loss due to climate change (USFWS 2011m). Other threats include loss of habitat due to human activities, such as winter and summer recreation, housing and industrial development, and extractive industries such as logging (USFWS 2010c). Given the species’ preference for high-elevation, forested areas, it is unlikely that the North American wolverine will occur in areas of direct ULP activity.

According to the CNHP, the nearest recorded occurrences of the North American wolverine are from southern San Miguel County, Colorado, approximately 35 mi (56 km) east of the southernmost ULP lease tracts. According to the SWReGAP habitat suitability model, potentially suitable habitat for the North American wolverine does not occur in the vicinity of the ULP lease tracts (Figure 3-7). Given the species’ preference for high-elevation forests, it is unlikely that it will occur in the affected area of the ULP lease tracts. For this reason, it has been determined that uranium mining under the ULP will have no effect on the North American wolverine.
4 CUMULATIVE EFFECTS

Consistent with 50 CFR 402.02, for purposes of this BA, “cumulative effects” are defined as “those effects of future Tribal, State or private activities, not involving Federal activities, that are reasonably certain to occur within the action area of the Federal action subject to consultation.”

Cumulative impacts result from the incremental impact of the action when added to other past, present, and reasonably foreseeable future actions, regardless of the agency (federal or nonfederal) or person that undertakes such actions. A cumulative impacts assessment accounts for both geographic (spatial) and time (temporal) considerations of past, present, and reasonably foreseeable actions. Geographic boundaries can vary by resource area, depending on the amount of time a potential impact remains in the environment, the extent to which that impact can migrate, and the magnitude of the impact. The region of influence for cumulative impacts for this analysis is defined as 50 mi (80 km) surrounding the ULP lease tracts (Figure 4-1). This area is conservatively defined to account for cumulative impacts on all ecological resources, which may extend beyond the project counties in Colorado (e.g., the Colorado River in Utah). The basis for including an action in the cumulative impacts analysis for this BA was whether the action will have some influence on the ecological resources in the same time and space as those affected by the implementation of the proposed action (i.e., which is to continue the ULP for the remainder of the 10-year lease period or for another reasonable period of time).

The primary uses of land within the immediate vicinity (10 mi [16 km]) of the ULP lease tract area are grazing, recreation, wildlife habitat, and uranium/vanadium exploration and development. Most of this land is managed and owned by the BLM. Most of the land that is within 50 mi (80 km) of the ULP lease tract area is owned by either the federal government or the states of Colorado or Utah. At the time of the preparation of this BA, no known large actions on BLM land are being planned.

In the analysis that follows, impacts of the proposed action are considered in combination with the impacts of past, present, and reasonably foreseeable future actions. This section begins with a description of reasonably foreseeable future actions in the area of cumulative effects (Figures 4-1 and 4-2), including those that are ongoing, under construction, or planned/proposed for future implementation.

4.1 REASONABLY FORESEEABLE FUTURE ACTIONS

Reasonably foreseeable future actions within the region of cumulative effects are discussed in the following sections. These actions are identified primarily from a review of the Schedule of Proposed Action for the San Juan National Forest and other relevant documents and data sources (Edge Environmental, Inc. 2009; USDA 2011b, 2012a). The actions listed are planned, under construction, or ongoing.
FIGURE 4-1 Region of Cumulative Impacts for the Proposed ULP
FIGURE 4.2 Uranium Mining and Oil/Gas Wells in the Region of Cumulative Impacts
4.1.1 Piñon Ridge Mill

Energy Fuels Resources Corporation has planned to construct the Piñon Ridge Mill in Paradox Valley, between Naturita and Bedrock in Montrose County, Colorado. In early 2011, the Colorado Department of Public Health and Environment (CDPHE) issued a final radioactive materials license to Energy Fuels Resources Corporation (which is the main asset of Ontario’s Energy Fuels, Inc., located in Lakewood, Colorado), following CDPHE’s preparation of a decision analysis and environmental impact analysis (CDPHE 2011). A group of plaintiffs then challenged that license by filing a lawsuit against CDPHE in Colorado’s District Court for the City and County of Denver. On June 13, 2012, the court issued a decision in which it held that CDPHE had unlawfully issued the license without conducting the necessary administrative procedures. The court set aside CDPHE’s action in issuing the license, remanded the case for further proceedings, and ordered CDPHE to convene an additional hearing, which was scheduled for April 2013. On April 25, 2013, the CDPHE announced Energy Fuels Resources Corporation has met all the regulatory requirements for a radioactive materials license for the Piñon Ridge Uranium Mill in western Montrose County. Colorado State law requires the CDPHE to approve applications when such requirements are met (CDPHE 2013).

If this recently approved license application results in a license that is similar to the earlier license, Piñon Ridge Mill would process uranium and vanadium into uranium oxide concentrate (yellowcake) and vanadium oxide concentrate, respectively, by using the solvent extraction process (Energy Fuels Resources 2012a; Edge Environmental, Inc. 2009). The mill is expected to process ore from five to nine mines at any one time, and feeder mines are expected to change over the course of the mill’s 40-year lifetime. A surge in uranium exploration, mining, and permitting is anticipated if the mill is constructed, including permitting and development of uranium/vanadium deposits controlled by Energy Fuels Resources (CDNR 2012; Energy Fuels Resources 2009; Edge Environmental, Inc. 2009).

Piñon Ridge Mill would be constructed on approximately 400 acres (162 ha) within an 880-acre (356-ha) property; the licensed (restricted) portion of the site would occupy approximately 300 acres (121 ha). Facilities would consist of a stockpile pad, process buildings, administration and maintenance buildings, waste management facilities (such as tailing cells and evaporation ponds), and ancillary facilities. Construction is expected to last for 21 months and employ 125 to 200 workers (at the peak of construction). During operations, the mill is projected to employ approximately 85 people around the clock. Operations are expected to last for 40 years (Edge Environmental, Inc. 2009; Energy Fuels Resources 2012a).

Host rock would be mined mostly from existing operations (owned and operated by Energy Fuels Resources) throughout Colorado. Ore would be shipped to Piñon Ridge Mill, stored at the ore stockpile pad, crushed and mixed with water to create a fine slurry, and leached with sulfuric acid, resulting in the precipitation of uranium oxide and vanadium oxide concentrates (500 tons per day). Uranium oxide concentrate would be shipped to a conversion plant, while vanadium oxide concentrate would be shipped to a plant that produces ferro-vanadium products (Edge Environmental, Inc. 2009).
In general, the proposed Piñon Ridge Mill would have a negligible to minor impact on federally-listed species. There were no federally listed (threatened, endangered, proposed, or candidate) species observed during wildlife surveys conducted during siting characterization.

Four habitats of importance to area wildlife are identified on the project site, and the developer (Energy Fuels Resources) has proposed offsets to the proposed impacts. Indirect impacts could occur from degradation of habitat by the facility and increased traffic. Contents of evaporation ponds and tailing cells could be toxic to ecological resources, especially wildlife. No jurisdictional wetlands are located at the site, and no aquatic species or habitats occur at the site. Indirect impacts on vegetation could occur if the project displaced native herbivores or if invasive, non-native species became established in disturbed areas. Soil disturbance, vehicle traffic, and other project activities could promote the spread of invasive plants. Increased traffic and erection of fences would increase the potential for collisions with and mortality of terrestrial wildlife and some threatened and endangered species. Radiation dose rates to plants and animals in the vicinity of the facility would be below recommended limits, and exposures from inhalation would be minimal. Nonradiological impacts on biota would be minimized. Impacts on sagebrush-obligate species, such as the Gummison sage-grouse, might occur; however, these impacts would be minimized through the implementation of mitigation measures and BMPs similar to those identified in Table 2-5.

4.1.2 Planned Uranium Exploration

Exploration for uranium typically involves the drilling of exploration holes ranging from 3 to 6 in. (7.6 to 15 cm) in diameter, and it is typically accompanied by the construction of mud pits (to collect drill cuttings and manage drilling fluids). Monitoring wells might also be required to monitor groundwater presence, quality, and depth. Surface disturbance is typically limited. As noted in Sections 2.2 and 3.1.1, uranium exploration activities are generally short-term (BLM 2009b) and are not expected to have significant impacts on listed species.

4.1.3 Construction of Agricultural Water Facilities (Ditch Bill Easements)

The Colorado Ditch Bill Act of 1986 (Public Law 99-545) authorizes the Secretary of Agriculture to issue permanent easements for water conveyance systems used for agricultural irrigation or livestock watering. Granting easements is not a USDA discretionary decision. An applicant meeting the criteria specified in the act is entitled to an easement, and the decision to grant it does not constitute a federal action subject to NEPA review. However, conditions of the easement (including operations and maintenance) might require NEPA review (USDA 2012b). Similarly, the Moab and Monticello Ditch Bills authorize easements in Utah.

A number of Ditch Bill easement applications occurring within the Grand Mesa, Uncompahgre, San Juan, and Manti-La Sal National Forest administrative areas are currently in the scoping process or on hold (USDA 2012a,c,d). While the granting of the easement is nondiscretionary, NEPA analysis is often performed on a group of easement applications to document any environmental concerns; determine whether there is a need to establish discretionary terms and conditions in an operations and maintenance plan; and protect
threatened, endangered, and sensitive species (USDA 2011c). The type and magnitude of
impacts from Ditch Bill easements will depend on the location and nature of the projects. In
cases, a site visit and site-specific impact analysis will be necessary. Impacts
representative of those that could occur as a result of the implementation of terms and conditions
on a Ditch Bill easement include beneficial actions to improve resource conditions and habitat in
easement areas (e.g., the stabilization of ground to prevent erosion and reduce sedimentation in
downstream habitats and the control of noxious weeds) and to protect cultural resources. The
establishment of an operations and maintenance plan will not result in incremental adverse
impacts (USDA 2009).

4.1.4 Other Future Projects

Other proposed or planned nonfederal activities with the potential to contribute to
cumulative impacts relate to utility corridors and ROW maintenance, water use and management,
grazing and grazing management, and wildlife management. Some of these projects may not yet
have a completed environmental assessment, so environmental impacts have not been quantified.

4.2 PAST AND PRESENT ACTIONS

Some of the activities described in this section are past actions with the potential for
future reactivation; they are considered a past action by default.

4.2.1 White Mesa Mill

The White Mesa Mill, located 6 mi (10 km) south of Blanding, Utah, is the only
conventional uranium mill currently operating in the United States. The mill precipitates uranium
oxide concentrate (yellowcake) and vanadium oxide concentrate from host rock. It is licensed to
process 2,000 tons of ore per day and produce 8 million lb (3.6 million kg) of uranium oxide per
year. The mill is also licensed to process and reclaim uranium from alternative feed materials,
including uranium-bearing waste materials derived from uranium conversion, metal processing
facilities, and U.S. government cleanup projects. The mill began processing conventional ore in
2011 after years of processing only alternative feeds (Denison Mines 2012a). In 2011, the mill
produced approximately 1.0 million lb (0.45 million kg) of uranium oxide and 1.3 million lb
(0.6 million kg) of vanadium oxide (Denison Mines 2012b; EIA 2010).

The mill was originally licensed by the Nuclear Regulatory Commission to Energy Fuels
Resources, Inc., on August 7, 1979 (Source Materials License SUA-1358); the license was
oversight in 2004, and the license was reissued in 2005. Denison Mines assumed ownership of
the mill in 2006, and it submitted an application in 2007 for renewal of the state license (UDEQ
2012; Denison Mines 2012a). Denison Mines possesses 15 license amendments allowing the mill
to process 18 different alternative feeds (Denison Mines 2012b). At full capacity, the mill
employs approximately 150 people (Denison Mines 2012a). In April 2012, Energy Fuels
Resources and Denison Mines announced that all of Denison’s mining assets in the United States (including the White Mesa Mill) will be acquired by Energy Fuels Resources (Energy Fuels Resources 2012a–e; Denver Post 2012). This acquisition was completed in June 2012.

Three other uranium mills exist in the United States; all have been on standby since the end of 2010 (EIA 2012).

The continued operation of the White Mesa Mill could affect ecological resources. It is expected that impacts from suspended particulate matter will be negligible. Construction noise and increased human activity might cause wildlife to migrate away from the project vicinity. Fencing around the tailings impoundment will exclude large animals, and the acidity/salinity of the water will make it unattractive for waterfowl. However, no impacts on endangered plant or animal species are expected (Denison Mines 2012a).

4.2.2 Uranium Mining

4.2.2.1 Daneros Mine

The Daneros project, a conventional underground mine initially proposed by Utah Energy Corporation in 2008, is located in Bullseye Canyon, San Juan County, Utah. The BLM issued final approval for the mine permit in May 2009 for 7 years of mine operations. The Daneros Mine, which is expected to produce 500,000 lb (23,000 kg) of uranium oxide per year for processing at the White Mesa Mill, is the state’s first new uranium mine in 30 years. The mine was acquired by Denison Mines through its acquisition of White Canyon Uranium Ltd. in 2011. The Denison’s United States uranium mining and milling assets were acquired by Energy Fuels Resources, Inc. in mid-2012.

Anticipated adverse environmental impacts associated with the mine project include radioactive dust and gas emissions, soil disturbance and vegetation clearing, water use, and the displacement of desert bighorn sheep and degradation of their habitat. None of these impacts are considered significant. Additional traffic from mining operations is not expected to have a noticeable impact on local roads (BLM 2009b).

4.2.2.2 La Sal Mines Complex

Denison’s La Sal Mines complex is a collection of four separate, existing underground uranium mines (Pandora, La Sal, Snowball, and Beaver Shaft) in the vicinity of La Sal, Utah (San Juan County). The complex has been operated since the 1970s and is part of a series of underground mines previously operated by Atlas Minerals and UMETCO Minerals Corporation.

Surface facilities are located on both private and public lands administered or managed by the BLM and State of Utah (CDM 2010). As of 2012, the complex is one of two actively producing mines in the state (Edge Environmental, Inc. 2009; UDNR 2012). Ore produced at the complex is shipped to the White Mesa Mill for processing. Denison submitted a request in 2010 to amend
its plan of operations to include the expansion of Pandora Mine, further exploration activities within the complex, and the drilling of vent holes on private and public land. These activities are expected to take place in three phases between 2011 and 2030.

4.2.2.3 Whirlwind Mine

Energy Fuels Resources’ Whirlwind Mine is located 5 mi (8 km) southwest of Gateway in Mesa County; it is in the Beaver Mining District and spans the Colorado-Utah border. The mine comprises two formerly closed uranium-uranium mines: the Urania Decline Mine and Packer Mine. The mining claim block encompasses 4,890 acres (1,979 ha), but the mine is underground and is permitted for 24 acres (10 ha) of surface disturbance. Surface facilities include two portal areas containing ore stockpiles, waste-rock stockpiles, topsoil stockpiles, a water treatment plant, fuel and oil storage, support buildings, monitoring areas, ventilation shafts, and power drops (BLM 2008b).

The BLM completed an environmental assessment for the proposed Whirlwind Mine project in 2008. Having found no significant impact on the surrounding area, the BLM authorized restoration of the mine and the resumption of ore production. Energy Fuels Resources completed construction of the mine in 2009 but announced late that year that the mine will be put into maintenance status (BLM 2008b; Energy Fuels Resources 2012c; CDNR 2011).

The Whirlwind Mine is one of several mines expected to provide ore to the proposed Piñon Ridge Mill (Edge Environmental, Inc. 2009; CDPHE 2011). Ore could also be transported to the White Mesa Mill for processing. If the mine is reopened and operates at full capacity, it will employ 24 workers covering three 8-hour shifts, 5 days per week. Initial ore production using the room and pillar mining technique is expected to reach 100 tons per day, increasing to 200 tons per day as the market demand increases. The life expectancy of the mine is 10 years (BLM 2008b; Energy Fuels Resources 2012c).

4.2.2.4 Other Uranium Mining and Uranium Exploration

The Uravan Mineral Belt in western Colorado includes an estimated 1,200 historic mines, with production dating back to the 1890s. Total uranium ore production in Colorado was estimated to be over 255,000 lb (116,000 kg) in 2005, all originating from four Cotter Corporation mines in the Uravan Mineral Belt near Nucla and Naturita. The Cotter JD-7 open-pit mine is adjacent to the Piñon Ridge Mine site. All four mines ceased production in November 2005, partly due to high energy costs and the high cost of transporting ore to Cañon City for milling. As of December 2011, Cotter was not seeking to renew its radioactive materials license for the Cañon City Mill and had initiated closure of the facility (CDNR 2012).

Denison’s Sunday Mine Complex began producing uranium in San Miguel County in 2007; ore from these mines was shipped to the White Mesa Mill near Blanding. Production at these mines ceased in 2009 due to declining uranium prices, but the BLM Tres Rios Field Office is currently preparing an environmental assessment for reopening the complex. Limited uranium
production began at Blueroak Energy’s J-Bird Mine in Montrose County in 2008, but production ceased when the mine was transferred to Rimrock Exploration and Development. The mine remains in maintenance status, and no production is anticipated in the immediate future (CDNR 2011). Blueroak sought approval of a plan of operations for Cone Mountain Mine (south of Gateway), but the company ceased development activity later in the same year (Argus 2008a,b). The Prince Albert, Last Chance, and Return Mines may have had limited production for testing within the last four years. Denison’s United States uranium mining and milling assets were acquired by Energy Fuels Resources, Inc. in mid-2012.

There are 33 actively permitted uranium mine projects in Colorado, and one new permit is under review. No uranium production was reported from 2009 to 2011, and none of the actively permitted mine projects is producing at this time. Of the 33, 24 are in maintenance status, 7 are being (or have been) reclaimed, and 2 are conducting development activities. In September 2011, all uranium operators were notified by the Colorado Division of Reclamation, Mining and Safety of the requirement to submit an environmental protection plan, file for an exemption, or commence final site reclamation by October 2012 (CDNR 2012).

There are 12 permitted uranium mines in Utah; only 2 (Dameros and La Sal) are actively producing (UDNR 2012). Several former underground uranium mines are located in the Red Canyon watershed (near the operating Dameros Mine) and other areas of the state that are outside the region of cumulative impacts. Small, remote mining operations that have not been reclaimed are not considered to be a significant human health hazard; the impacts on wildlife will be minor, and low precipitation levels make it unlikely that hazardous concentrations of radioactive minerals and other compounds will significantly affect local watershed characteristics (BLM 2011a).

Although environmental impacts will vary for each uranium mining project, potential environmental impacts from a uranium mine are described in Section 3.1.

Uranium exploration (i.e., drilling) activities are generally short-term and not expected to have direct or significant cumulative environmental or public health effects, provided there are no extraordinary circumstances (e.g., the presence of federally listed threatened or endangered species in the vicinity of the project area; the presence of floodplains or wetlands that will be affected within the project area; the presence of Wilderness Areas, Wilderness Study Areas, or National Recreation Areas near the project area; the presence of Native American religious or cultural sites, archaeological sites, or historic properties within the project area) (USDA 2011a). Uranium exploration activities typically involve few workers, low traffic volumes, and no emissions (Edge Environmental, Inc. 2009).

4.2.2.5 Coal Mining

The 20-acre (8-ha) New Horizon Mine near Nucla is a surface coal mine owned and managed by Western Fuels Association, a not-for-profit, national fuel supply cooperative. The mine is the exclusive coal supplier to the Nucla Station power plant (5 mi [8 km] southeast), producing approximately 350,000 to 400,000 tons of coal per year (Tri-State 2012a). The coal
mined from the Dakota sandstone is higher in ash and sulfur content than are the types of coal mined in other parts of Colorado. The mine employed 23 miners in 2007 (CDNR 2008).

As of 2010, there were no actively producing Utah coal mines within the region of cumulative effects (UDNR 2011).

Other permitted activities in the region of cumulative effects include the mining of sand/gravel, borrow material, sandstone, gold, and quartz/gray granite (over 4,650 acres or 1,880 ha), as well as the mining and exploration of copper and the mining of limestone quarries (BLM 2011a). The Lisbon Valley Copper Mine resumed operations after receiving BLM approval on its revised plan of operations in 2011.

4.3 CUMULATIVE IMPACTS FROM THE PROPOSED ACTION

Potential impacts from the proposed ULP are considered in combination with impacts from past, present, and reasonably foreseeable future nonfederal actions. As mentioned previously, the region of influence for the cumulative impacts analysis is conservatively assumed to be within a 50-mi (80-km) radius.

The impacts on federally listed species discussed in Section 3 indicate the proposed ULP activities are expected to have no effect on 8 species (clay-loving wild buckwheat, Colorado hookless cactus, Debeque phacelia, Uncompahgre fritillary butterfly, greenback cutthroat trout, black-footed ferret, Canada lynx, and North American wolverine) and on the designated critical habitat for 5 species (clay-loving wild buckwheat, Debeque phacelia, Mexican spotted owl, southwestern willow flycatcher, and Canada lynx). In addition, the proposed ULP activities may affect, but are not likely to adversely affect, 5 species (Mexican spotted owl, southwestern willow flycatcher, Gunnison sage-grouse, western yellow-billed cuckoo, and Gunnison’s prairie dog). It has been determined that ULP activities may affect, and are likely to adversely affect the 4 Colorado River endangered fish species (bonytail, Colorado pikeminnow, humpback chub, and razorback sucker) and their critical habitat. For all species, impacts would be reduced by the implementation of BMPs or mitigation measures identified in Table 2-5 and determined in project-specific mine plans.

The available information on the potential impacts from these various projects is summarized in Sections 4.1 and 4.2; however, information for most of the projects was either not available or was qualitative in nature.

The ecological evaluations accounted for measures, including compliance measures and mitigation measures described in Section 2.3, to prevent or minimize any adverse impacts and meet applicable federal, state, and local requirements.

With the implementation of mitigation measures and BMPs identified in Table 2-5, as well as the implementation of any necessary conservation measures determined through consultation with the USFWS, the potential cumulative impacts from uranium-mining-related projects are not likely to jeopardize any federally listed species (including species that are
candidates or proposed for listing) or significantly reduce the viability of these populations in the region of cumulative impacts. Cumulative effects of the ULP would not interfere with ongoing USFWS recovery efforts for listed species.
5 REFERENCES


ULP Final Biological Assessment

May 2013


5. CDWR (Colorado Division of Water Resources), 2007, General Information about Well Permits in Division IV, Jan. 17.


ULP Final Biological Assessment

May 2013


ULP Final Biological Assessment


UPL Final Biological Assessment


Holsinger, K., 2012, UPL PEIS: T&E Question, e-mail from Holsinger (Uncompahgre Field Office, Montrose, Colo.) to G.M. Jones (Bureau of Land Management), Aug. 27.


USFWS, 1988, Black-Footed Ferret Recovery Plan, Denver, Colo.


ULP Final Biological Assessment

May 2015


6. USFWS, 2002a, Bonitail (Gila elegans) Recovery Goals: Amendment and Supplement to the Bonitail Chub Recovery Plan, Mountain-Prairie Region 6, Denver, Colo.


10. USFWS, 2002e, Southwestern Willow Flycatcher Recovery Plan, Region 2, Albuquerque, N.M.


ULP Final Biological Assessment  May 2013

2

4


6


8


10


12


14


16

17 USFWS, 2009c, Uncompahgre Fritillary Butterfly (Boloria acrocema) 3-Year Review: Summary and Evaluation, Grand Junction, Colo.

18

19 USFWS, 2009d, Greenback Cutthroat Trout (Oncorhynchus clarki stomias) 3-Year Review: Summary and Evaluation, Denver, Colo.

20

21 USFWS, 2009e, “Endangered and Threatened Wildlife and Plants; Review of Native Species That Are Candidates for Listing as Endangered or Threatened; Annual Notice of Findings on Resubmitted Petitions; Annual Description of Progress on Listing Actions,” Federal Register 74:57804–57878.

22


24

25

26

27

28

29

30

31

32

33

34

35

36

37

38

39

40

41

42

43

44

45

46

83


USFWS, 2010a, Recovery Outline for the Colorado Hookless Cactus (Sclerocactus glaucus), Region 6, Denver, Colo.


USFWS, 2011b, “Endangered and Threatened Wildlife and Plants; Designation of Critical Habitat for Ipomopsis polyantha (Pagosa Skyrocket), Penstemon debilis (Parachute Beardtongue), and Phacelia submucia (Debeque Phacelia),” Federal Register 76:45078–45128.

USFWS, 2011c, “Endangered and Threatened Wildlife and Plants; Determination of Endangered Status for Ipomopsis polyantha (Pagosa Skyrocket) and Threatened Status for Penstemon debilis (Parachute Beardtongue) and Phacelia submucia (Debeque Phacelia),” Federal Register 76:45054–45075.


USFWS, 2011g, *Draft Recovery Plan for the Mexican Spotted Owl (Strix occidentalis lucida), First Revision, Albuquerque, N.M.*


USFWS, 2011l, "Endangered and Threatened Wildlife and Plants; Review of Native Species That Are Candidates for Listing as Endangered or Threatened; Annual Notice of Findings on Resubmitted Petitions; Annual Description of Progress on Listing Actions," *Federal Register* 76:66370-66439.


USFWS, 2012b, "Endangered and Threatened Wildlife and Plants: Designation of Critical Habitat for Ipomopsis polyantha (Pogoas Skyrocket), Penstemon dubius (Parachute Beardtongue), and Phacelia subnuda (DeBeque Phacelia); Revised Proposed Rule; Reopening of Comment Period," *Federal Register* 77:18157-18172.

USFWS, 2012d, “Review of Native Species That Are Candidates for Listing as Endangered or
Threatened; Annual Notice of Findings on Resubmitted Petitions; Annual Description of

USGS (U.S. Geological Survey), 2004, National Gap Analysis Program, Provisional Digital
Land Cover Map for the Southwestern United States, Version 1.0, RS/GIS Laboratory, College
of Natural Resources, Utah State University.

USGS, 2007, National Gap Analysis Program, Digital Animal-Habitat Models for the
Southwestern United States, Version 1.0, Center for Applied Spatial Ecology, New Mexico
Cooperative Fish and Wildlife Research Unit, New Mexico State University. Available at
and Dec. 16, 2011.

WAPA (Western Area Power Administration), 2012a, Transmission Line Management Issues on
Forest Rights-of-Way: A Brief Overview. Available at http://www2.wapa.gov/sites/western/

WAPA, 2012b, Proposed Project Description Summary. Available at http://www2.wapa.gov/
sites/western/transmission/infrastruct/Documents/Western-FS-EIS/projectdescription.pdf.

Wiggins, D., 2005, Yellow-Billed Cuckoo (Coccyzus americanus): A Technical Conservation
Assessment, U.S. Forest Service, Rocky Mountain Region. Available at http://www.fs.fed.us/
APPENDIX F:

CORRESPONDENCE ASSOCIATED WITH TRIBAL AND NATIONAL HISTORIC PRESERVATION ACT (NHPA) CONSULTATION
This page intentionally left blank
APPENDIX F:

CORRESPONDENCE ASSOCIATED WITH TRIBAL AND NATIONAL HISTORIC PRESERVATION ACT (NHPA) CONSULTATION

Table F-1 lists the consultation correspondence related to the ULP lease tracts discussed in the ULP PEIS. Copies of the correspondence follow this table. The figure that appears on page F-63 was an attachment to all the letters that were sent on September 28, 2012.

**TABLE F-1 Consultation Correspondence**

<table>
<thead>
<tr>
<th>Date of Letter</th>
<th>Page</th>
<th>Source</th>
<th>Recipient</th>
</tr>
</thead>
<tbody>
<tr>
<td>January 9, 2012</td>
<td>F-7</td>
<td>U.S. Department of Energy, Office of Legacy Management (D.W. Geiser, Director)</td>
<td>White Mesa Ute Board Chairperson</td>
</tr>
<tr>
<td>January 9, 2012</td>
<td>F-13</td>
<td>U.S. Department of Energy, Office of Legacy Management (D.W. Geiser, Director)</td>
<td>President of The Navajo Nation</td>
</tr>
<tr>
<td>January 9, 2012</td>
<td>F-17</td>
<td>U.S. Department of Energy, Office of Legacy Management (D.W. Geiser, Director)</td>
<td>Chairman of the Ute Mountain Ute Tribe</td>
</tr>
<tr>
<td>May 2, 2012</td>
<td>F-19</td>
<td>U.S. Department of Energy, Office of Legacy Management (D.W. Geiser, Director)</td>
<td>President of The Navajo Nation</td>
</tr>
<tr>
<td>May 2, 2012</td>
<td>F-20</td>
<td>U.S. Department of Energy, Office of Legacy Management (D.W. Geiser, Director)</td>
<td>Chairman of the Hopi Tribal Council</td>
</tr>
<tr>
<td>May 2, 2012</td>
<td>F-21</td>
<td>U.S. Department of Energy, Office of Legacy Management (D.W. Geiser, Director)</td>
<td>Chairman of the Ute Mountain Ute Tribe</td>
</tr>
<tr>
<td>May 2, 2012</td>
<td>F-22</td>
<td>U.S. Department of Energy, Office of Legacy Management (D.W. Geiser, Director)</td>
<td>White Mesa Ute Board Chairperson</td>
</tr>
<tr>
<td>May 2, 2012</td>
<td>F-23</td>
<td>U.S. Department of Energy, Office of Legacy Management (D.W. Geiser, Director)</td>
<td>Chairman of the Southern Ute Indian Tribe</td>
</tr>
<tr>
<td>May 2, 2012</td>
<td>F-24</td>
<td>U.S. Department of Energy, Office of Legacy Management (D.W. Geiser, Director)</td>
<td>Chairperson of the Ute Business Committee</td>
</tr>
</tbody>
</table>
TABLE F-1 (Cont.)

<table>
<thead>
<tr>
<th>Date of Letter</th>
<th>Page</th>
<th>Source</th>
<th>Recipient</th>
</tr>
</thead>
<tbody>
<tr>
<td>September 28, 2012</td>
<td>F-25</td>
<td>U.S. Department of Energy, Office of Legacy Management (D.W. Geiser, Director)</td>
<td>President of the Jicarilla Apache Tribal Council</td>
</tr>
<tr>
<td>September 28, 2012</td>
<td>F-27</td>
<td>U.S. Department of Energy, Office of Legacy Management (D.W. Geiser, Director)</td>
<td>Governor of the Kewa Pueblo Tribe</td>
</tr>
<tr>
<td>September 28, 2012</td>
<td>F-29</td>
<td>U.S. Department of Energy, Office of Legacy Management (D.W. Geiser, Director)</td>
<td>Governor of the Pueblo of Acoma Tribe</td>
</tr>
<tr>
<td>September 28, 2012</td>
<td>F-31</td>
<td>U.S. Department of Energy, Office of Legacy Management (D.W. Geiser, Director)</td>
<td>Governor of the Pueblo de Cochiti Tribe</td>
</tr>
<tr>
<td>September 28, 2012</td>
<td>F-33</td>
<td>U.S. Department of Energy, Office of Legacy Management (D.W. Geiser, Director)</td>
<td>Governor of the Isleta Tribe</td>
</tr>
<tr>
<td>September 28, 2012</td>
<td>F-35</td>
<td>U.S. Department of Energy, Office of Legacy Management (D.W. Geiser, Director)</td>
<td>Governor of the Pueblo of Jemez Tribe</td>
</tr>
<tr>
<td>September 28, 2012</td>
<td>F-37</td>
<td>U.S. Department of Energy, Office of Legacy Management (D.W. Geiser, Director)</td>
<td>Governor of the Pueblo of Laguna Tribe</td>
</tr>
<tr>
<td>September 28, 2012</td>
<td>F-39</td>
<td>U.S. Department of Energy, Office of Legacy Management (D.W. Geiser, Director)</td>
<td>Governor of the Pueblo of Nambe Tribe</td>
</tr>
<tr>
<td>September 28, 2012</td>
<td>F-41</td>
<td>U.S. Department of Energy, Office of Legacy Management (D.W. Geiser, Director)</td>
<td>Governor of the Pueblo of Picuris Tribe</td>
</tr>
<tr>
<td>September 28, 2012</td>
<td>F-43</td>
<td>U.S. Department of Energy, Office of Legacy Management (D.W. Geiser, Director)</td>
<td>Governor of the Pueblo of Pojoaque Tribe</td>
</tr>
<tr>
<td>September 28, 2012</td>
<td>F-45</td>
<td>U.S. Department of Energy, Office of Legacy Management (D.W. Geiser, Director)</td>
<td>Governor of the Pueblo of San Felipe Tribe</td>
</tr>
<tr>
<td>September 28, 2012</td>
<td>F-47</td>
<td>U.S. Department of Energy, Office of Legacy Management (D.W. Geiser, Director)</td>
<td>Governor of the Pueblo of San Ildefonso Tribe</td>
</tr>
<tr>
<td>September 28, 2012</td>
<td>F-49</td>
<td>U.S. Department of Energy, Office of Legacy Management (D.W. Geiser, Director)</td>
<td>Governor of the Pueblo of Sandia Tribe</td>
</tr>
<tr>
<td>September 28, 2012</td>
<td>F-51</td>
<td>U.S. Department of Energy, Office of Legacy Management (D.W. Geiser, Director)</td>
<td>Governor of the Pueblo of Santa Ana Tribe</td>
</tr>
<tr>
<td>September 28, 2012</td>
<td>F-53</td>
<td>U.S. Department of Energy, Office of Legacy Management (D.W. Geiser, Director)</td>
<td>Governor of the Pueblo of Santa Clara Tribe</td>
</tr>
<tr>
<td>September 28, 2012</td>
<td>F-55</td>
<td>U.S. Department of Energy, Office of Legacy Management (D.W. Geiser, Director)</td>
<td>Governor of the Pueblo of Taos Tribe</td>
</tr>
<tr>
<td>September 28, 2012</td>
<td>F-57</td>
<td>U.S. Department of Energy, Office of Legacy Management (D.W. Geiser, Director)</td>
<td>Governor of the Pueblo of Tesuque Tribe</td>
</tr>
</tbody>
</table>
### TABLE F-1 (Cont.)

<table>
<thead>
<tr>
<th>Date of Letter</th>
<th>Page</th>
<th>Source</th>
<th>Recipient</th>
</tr>
</thead>
<tbody>
<tr>
<td>September 28, 2012</td>
<td>F-59</td>
<td>U.S. Department of Energy, Office of Legacy Management (D.W. Geiser, Director)</td>
<td>Governor of the Pueblo of Zia Tribe</td>
</tr>
<tr>
<td>September 28, 2012</td>
<td>F-61</td>
<td>U.S. Department of Energy, Office of Legacy Management (D.W. Geiser, Director)</td>
<td>Governor of the Zuni Pueblo Tribe</td>
</tr>
<tr>
<td>November 20, 2012</td>
<td>F-64</td>
<td>U.S. Department of Energy, Office of Legacy Management (D.W. Geiser, Director)</td>
<td>President of the Jicarilla Apache Tribal Council</td>
</tr>
<tr>
<td>November 20, 2012</td>
<td>F-66</td>
<td>U.S. Department of Energy, Office of Legacy Management (D.W. Geiser, Director)</td>
<td>Governor of the Kewa Pueblo Tribe</td>
</tr>
<tr>
<td>November 20, 2012</td>
<td>F-68</td>
<td>U.S. Department of Energy, Office of Legacy Management (D.W. Geiser, Director)</td>
<td>Governor of the Pueblo of Jemez Tribe</td>
</tr>
<tr>
<td>November 20, 2012</td>
<td>F-70</td>
<td>U.S. Department of Energy, Office of Legacy Management (D.W. Geiser, Director)</td>
<td>Governor of the Pueblo of Laguna Tribe</td>
</tr>
<tr>
<td>November 20, 2012</td>
<td>F-72</td>
<td>U.S. Department of Energy, Office of Legacy Management (D.W. Geiser, Director)</td>
<td>Governor of the Pueblo of Nambe Tribe</td>
</tr>
<tr>
<td>November 20, 2012</td>
<td>F-74</td>
<td>U.S. Department of Energy, Office of Legacy Management (D.W. Geiser, Director)</td>
<td>Governor of the Pueblo of Picuris Tribe</td>
</tr>
<tr>
<td>November 20, 2012</td>
<td>F-76</td>
<td>U.S. Department of Energy, Office of Legacy Management (D.W. Geiser, Director)</td>
<td>Governor of the Pueblo of Pojoaque Tribe</td>
</tr>
<tr>
<td>November 20, 2012</td>
<td>F-78</td>
<td>U.S. Department of Energy, Office of Legacy Management (D.W. Geiser, Director)</td>
<td>Governor of the Pueblo of San Felipe Tribe</td>
</tr>
<tr>
<td>November 20, 2012</td>
<td>F-80</td>
<td>U.S. Department of Energy, Office of Legacy Management (D.W. Geiser, Director)</td>
<td>Governor of the Pueblo of San Ildefonso Tribe</td>
</tr>
<tr>
<td>November 20, 2012</td>
<td>F-82</td>
<td>U.S. Department of Energy, Office of Legacy Management (D.W. Geiser, Director)</td>
<td>Governor of the Pueblo of Sandia Tribe</td>
</tr>
<tr>
<td>November 20, 2012</td>
<td>F-84</td>
<td>U.S. Department of Energy, Office of Legacy Management (D.W. Geiser, Director)</td>
<td>Governor of the Pueblo of Santa Ana Tribe</td>
</tr>
<tr>
<td>November 20, 2012</td>
<td>F-86</td>
<td>U.S. Department of Energy, Office of Legacy Management (D.W. Geiser, Director)</td>
<td>Governor of the Pueblo of Taos Tribe</td>
</tr>
<tr>
<td>November 20, 2012</td>
<td>F-88</td>
<td>U.S. Department of Energy, Office of Legacy Management (D.W. Geiser, Director)</td>
<td>Governor of the Pueblo of Tesuque Tribe</td>
</tr>
<tr>
<td>November 20, 2012</td>
<td>F-90</td>
<td>U.S. Department of Energy, Office of Legacy Management (D.W. Geiser, Director)</td>
<td>Governor of the Pueblo of Zia Tribe</td>
</tr>
<tr>
<td>Date of Letter</td>
<td>Page</td>
<td>Source</td>
<td>Recipient</td>
</tr>
<tr>
<td>-----------------</td>
<td>-------</td>
<td>------------------------------------------------------------------------</td>
<td>---------------------------------------------------------------------------</td>
</tr>
<tr>
<td>November 20, 2012</td>
<td>F-92</td>
<td>U.S. Department of Energy, Office of Legacy Management (D.W. Geiser, Director)</td>
<td>Governor of the Zuni Pueblo Tribe</td>
</tr>
</tbody>
</table>


The Honorable Elayne Atcitty
White Mesa Ute Board Chairperson
White Mesa Ute Tribe
P.O. Box 7096
White Mesa, UT 84511

Dear Chairperson Atcitty:

The purpose of this letter is to communicate the Department of Energy (DOE) Office of Legacy Management’s (LM) interest in consulting with the White Mesa Ute Tribe on the DOE Uranium Leasing Program (ULP) Programmatic Environmental Impact Statement (PEIS) being conducted following the National Environmental Policy Act (NEPA). DOE-LM currently manages this uranium leasing program and administers thirty-one (31) lease tracts in the Uravan Mineral Belt in southwestern Colorado. Twenty-nine (29) of these lease tracts are actively held under lease. Activities related to these lease sites are being analyzed in the PEIS, as discussed on the dedicated web page <http://ulpeis.anl.gov/>.

DOE-LM has already sent a request to your office and to the Vice Chair of the White Mesa Ute Tribe asking if the agency would like to be a cooperating agency during the drafting and review of the PEIS. DOE-LM is interested in identifying the White Mesa Ute Tribe’s preferences on a consultation approach for the PEIS other than participation as a NEPA cooperating agency. DOE-LM plans to incorporate the consultation activities into its schedule for issuing the PEIS. DOE-LM is in the early stages of developing the PEIS, with plans to issue a Draft PEIS in 2012 and a Final PEIS in 2013.

As summarized below, consultation activities could include staff-to-staff technical briefings, government-to-government consultations between DOE-LM senior officials and elected Tribal leaders, Tribal Government participation during the development of the Draft PEIS, or other activities that the White Mesa Ute Tribe would like to propose consistent with established policies and protocols. These approaches have been successfully used by DOE and Tribal Governments in developing EIS documents that include Tribal Nation concerns and perspectives.

- Staff-to-staff technical briefings between DOE-LM and Tribal Government representatives can be used to share information, obtain Tribal Government input on technical issues, and identify possible topics for discussion during government-to-government consultations. Tribal officials would be welcome to participate in the technical briefings, although the briefings themselves would not be considered formal consultation.

- Formal government-to-government consultations between senior DOE officials and elected Tribal officials can be conducted at agreed upon points in the PEIS
process to further ensure that Tribal rights, values, and interests are identified and considered in pertinent decision-making on the ULP activities.

- Participation in the development of the ULP PEIS can include Tribal Nations providing review and comment on the Draft EIS. As mentioned above, DOE-LM has already initiated this process via requests to a Tribal government agency to become a cooperating agency during the PEIS development. This agency has agreed to be a cooperating agency.

I would like to initiate a teleconference with government representatives of the White Mesa Ute Tribe to discuss consultation options. I would appreciate a response as to White Mesa Ute Tribe’s interest in participating with DOE-LM in government-to-government consultation by January 31, 2012. If you would like to participate, please provide the dates of your availability in February 2012 with your response. I will send out invitations for our kick-off telephone conference call as soon as we receive this information.

If you should have any questions concerning the ULP PEIS, please do not hesitate to contact me at (202) 586-8324 or Tony Carter at (202) 586-3323, who is LM’s Programmatic Headquarters point of contact for Tribal Nations.

Sincerely,

David W. Geiser
Director
Office of Legacy Management

cc: Thomas C. Pauling, LM
    Tony Carter, LM
    Laura Kilpatrick, LM
    Tracy Ribeiro, LM
    April Gil, LM
    Deborah Sullivan, LM
    David Conrad, CI
The Honorable Pearl Casias  
Chairwoman  
Southern Ute Indian Tribe  
P.O. Box 737  
Ignacio, CO 81137  

Dear Chairwoman Casias:

The purpose of this letter is to communicate the Department of Energy (DOE) Office of Legacy Management’s (LM) interest in consulting with the Southern Ute Indian Tribe on the DOE Uranium Leasing Program (ULP) Programmatic Environmental Impact Statement (PEIS) being conducted following the National Environmental Policy Act (NEPA). DOE-LM currently manages this uranium leasing program and administers thirty-one (31) lease tracts in the Uravan Mineral Belt in southwestern Colorado. Twenty-nine (29) of these lease tracts are actively held under lease. Activities related to these lease sites are being analyzed in the PEIS, as discussed on the dedicated web page <<http://ulpeis.anl.gov/>>.

DOE-LM has already sent a request to your office asking if the agency would like to be a cooperating agency during the drafting and review of the PEIS. DOE-LM is interested in identifying the Southern Ute Indian Tribe’s preferences on a consultation approach for the PEIS other than participation as a NEPA cooperating agency. DOE-LM plans to incorporate the consultation activities into its schedule for issuing the PEIS. DOE-LM is in the early stages of developing the PEIS, with plans to issue a Draft PEIS in 2012 and a Final PEIS in 2013.

As summarized below, consultation activities could include staff-to-staff technical briefings, government-to-government consultations between DOE-LM senior officials and elected Tribal leaders, Tribal Government participation during the development of the Draft PEIS, or other activities that the Southern Ute Indian Tribe would like to propose consistent with established policies and protocols. These approaches have been successfully used by DOE and Tribal Governments in developing EIS documents that include Tribal Nation concerns and perspectives.

- Staff-to-staff technical briefings between DOE-LM and Tribal Government representatives can be used to share information, obtain Tribal Government input on technical issues, and identify possible topics for discussion during government-to-government consultations. Tribal officials would be welcome to participate in the technical briefings, although the briefings themselves would not be considered formal consultation.
• Formal government-to-government consultations between senior DOE officials and elected Tribal officials can be conducted at agreed upon points in the PEIS process to further ensure that Tribal rights, values, and interests are identified and considered in pertinent decision-making on the ULP activities.

• Participation in the development of the ULP PEIS can include Tribal Nations providing review and comment on the Draft EIS. As mentioned above, DOE-LM has already initiated this process via requests to a Tribal government agency to become a cooperating agency during the PEIS development. This agency has agreed to be a cooperating agency.

I would like to initiate a teleconference with government representatives of the Southern Ute Indian Tribe to discuss consultation options. I would appreciate a response as to Southern Ute Indian Tribe’s interest in participating with DOE-M in government-to-government consultation by January 31, 2012. If you would like to participate, please provide the dates of your availability in February 2012 with your response. I will send out invitations for our kick-off telephone conference call as soon as we receive this information.

If you should have any questions concerning the ULP PEIS, please do not hesitate to contact me at (202) 586-8324 or Tony Carter at (202) 586-3323, who is LM’s Programmatic Headquarters point of contact for Tribal Nations.

Sincerely,

David W. Geiser
Director
Office of Legacy Management

cc: Thomas C. Pauling, LM
Tony Carter, LM
Laura Kilpatrick, LM
Tracy Ribeiro, LM
April Gil, LM
Deborah Sullivan, LM
David Conrad, CI
Michael Olguin
The Honorable Irene Cuch  
Chairperson, Ute Business Committee  
Ute Indian Tribe  
P.O. Box 190  
Fort Duchesne, UT 84026  

January 9, 2012  

Dear Chairperson Cuch:  

The purpose of this letter is to communicate the Department of Energy (DOE) Office of Legacy Management’s (LM) interest in consulting with the Ute Indian Tribe on the DOE Uranium Leasing Program (ULP) Programmatic Environmental Impact Statement (PEIS) being conducted following the National Environmental Policy Act (NEPA). DOE-LM currently manages this uranium leasing program and administers thirty-one (31) lease tracts in the Uravan Mineral Belt in southwestern Colorado. Twenty-nine (29) of these lease tracts are actively held under lease. Activities related to these lease sites are being analyzed in the PEIS, as discussed on the dedicated web page <http://ulpeis.anl.gov/>.  

DOE-LM has already sent a request to your office and to Mr. Rollie Wilson asking if the agency would like to be a cooperating agency during the drafting and review of the PEIS. DOE-LM is interested in identifying the Ute Indian Tribe’s preferences on a consultation approach for the PEIS other than participation as a NEPA cooperating agency. DOE-LM plans to incorporate the consultation activities into its schedule for issuing the PEIS. DOE-LM is in the early stages of developing the PEIS, with plans to issue a Draft PEIS in 2012 and a Final PEIS in 2013.  

As summarized below, consultation activities could include staff-to-staff technical briefings, government-to-government consultations between DOE-LM senior officials and elected Tribal leaders, Tribal Government participation during the development of the Draft PEIS, or other activities that the Ute Indian Tribe would like to propose consistent with established policies and protocols. These approaches have been successfully used by DOE and Tribal Governments in developing EIS documents that include Tribal Nation concerns and perspectives.  

- Staff-to-staff technical briefings between DOE-LM and Tribal Government representatives can be used to share information, obtain Tribal Government input on technical issues, and identify possible topics for discussion during government-to-government consultations. Tribal officials would be welcome to participate in the technical briefings, although the briefings themselves would not be considered formal consultation.  

- Formal government-to-government consultations between senior DOE officials and elected Tribal officials can be conducted at agreed upon points in the PEIS.
process to further ensure that Tribal rights, values, and interests are identified and considered in pertinent decision-making on the ULP activities.

- Participation in the development of the ULP PEIS can include Tribal Nations providing review and comment on the Draft EIS. As mentioned above, DOE-LM has already initiated this process via requests to a Tribal government agency to become a cooperating agency during the PEIS development. This agency has agreed to be a cooperating agency.

I would like to initiate a teleconference with government representatives of the Ute Indian Tribe to discuss consultation options. I would appreciate a response as to Ute Indian Tribe’s interest in participating with DOE-LM in government-to-government consultation by January 31, 2012. If you would like to participate, please provide the dates of your availability in February 2012 with your response. I will send out invitations for our kick-off telephone conference call as soon as we receive this information.

If you should have any questions concerning the ULP PEIS, please do not hesitate to contact me at (202) 586-8324 or Tony Carter at (202) 586-3323, who is LM’s Programmatic Headquarters point of contact for Tribal Nations.

Sincerely,

[Signature]

David W. Geiser
Director
Office of Legacy Management

cc: Thomas C. Pauling, LM
Tony Carter, LM
Laura Kilpatrick, LM
Tracy Ribeiro, LM
April Gil, LM
Deborah Sullivan, LM
David Conrad, CI
Rollie Wilson
The Honorable Ben Shelley  
President  
The Navajo Nation  
P.O. Box 7440  
2000 Tribal Hill Drive  
Window Rock, AZ 86515

January 9, 2012

Dear President Shelley:

The purpose of this letter is to communicate the Department of Energy (DOE) Office of Legacy Management’s (LM) interest in consulting with The Navajo Nation on the DOE Uranium Leasing Program (ULP) Programmatic Environmental Impact Statement (PEIS) being conducted following the National Environmental Policy Act (NEPA).

DOE-LM currently manages this uranium leasing program and administers thirty-one (31) lease tracts in the Uravan Mineral Belt in southwestern Colorado. Twenty-nine (29) of these lease tracts are actively held under lease. Activities related to these lease sites are being analyzed in the PEIS, as discussed on the dedicated web page <http://ulpeis.anl.gov/>.

DOE-LM has already sent a request to your office, the Supervisory Anthropologist, and the Tribal Historic Preservation Officer asking if the agency would like to be a cooperating agency during the drafting and review of the PEIS. DOE-LM is interested in identifying the Navajo Nation’s preferences on a consultation approach for the PEIS other than participation as a NEPA cooperating agency. DOE-LM plans to incorporate the consultation activities into its schedule for issuing the PEIS. DOE-LM is in the early stages of developing the PEIS, with plans to issue a Draft PEIS in 2012 and a Final PEIS in 2013.

As summarized below, consultation activities could include staff-to-staff technical briefings, government-to-government consultations between DOE-LM senior officials and elected Tribal leaders, Tribal Government participation during the development of the Draft PEIS, or other activities that the Navajo Nation would like to propose consistent with established policies and protocols. These approaches have been successfully used by DOE and Tribal Governments in developing EIS documents that include Tribal Nation concerns and perspectives.

- Staff-to-staff technical briefings between DOE-LM and Tribal Government representatives can be used to share information, obtain Tribal Government input on technical issues, and identify possible topics for discussion during government-to-government consultations. Tribal officials would be welcome to participate in the technical briefings, although the briefings themselves would not be considered formal consultation.
process to further ensure that Tribal rights, values, and interests are identified and considered in pertinent decision-making on the ULP activities.

- Participation in the development of the ULP PEIS can include Tribal Nations providing review and comment on the Draft EIS. As mentioned above, DOE-LM has already initiated this process via requests to a Tribal government agency to become a cooperating agency during the PEIS development. This agency has agreed to be a cooperating agency.

I would like to initiate a teleconference with government representatives of The Navajo Nation to discuss consultation options. I would appreciate a response as to The Navajo Nation’s interest in participating with DOE LM in government-to-government consultation by January 31, 2012. If you would like to participate, please provide the dates of your availability in February 2012 with your response. I will send out invitations for our kick-off telephone conference call as soon as we receive this information.

If you should have any questions concerning the ULP PEIS, please do not hesitate to contact me at (202) 586-8324 or Tony Carter at (202) 586-3323, who is LM’s Programmatic Headquarters point of contact for Tribal Nations.

Sincerely,

David W. Geiser
Director
Office of Legacy Management

cc: Thomas C. Pauling, LM
    Tony Carter, LM
    Laura Kilpatrick, LM
    Tracy Ribeiro, LM
    April Gil, LM
    Deborah Sullivan, LM
    David Conrad, CI
    Tony H. Joe, Jr.
    Dr. Alan Downer
The Honorable Leroy Shingoitewa  
Chairman  
Hopi Tribal Council  
P.O. Box 123  
Kykotsmovi, AZ 86039  

Dear Chairman Shingoitewa:

The purpose of this letter is to communicate the Department of Energy (DOE) Office of Legacy Management’s (LM) interest in consulting with the Hopi Tribal Council on the DOE Uranium Leasing Program (ULP) Programmatic Environmental Impact Statement (PEIS) being conducted following the National Environmental Policy Act (NEPA). DOE-LM currently manages this uranium leasing program and administers thirty-one (31) lease tracts in the Urvan Mineral Belt in southwestern Colorado. Twenty-nine (29) of these lease tracts are actively held under lease. Activities related to these lease sites are being analyzed in the PEIS, as discussed on the dedicated web page <<http://ulpeis.anl.gov>>.

DOE-LM has already sent a request to your office and the Directors office asking if the agency would like to be a cooperating agency during the drafting and review of the PEIS. DOE-LM is interested in identifying the Hopi Tribal Council’s preferences on a consultation approach for the PEIS other than participation as a NEPA cooperating agency. DOE-LM plans to incorporate the consultation activities into its schedule for issuing the PEIS. DOE-LM is in the early stages of developing the PEIS, with plans to issue a Draft PEIS in 2012 and a Final PEIS in 2013.

As summarized below, consultation activities could include staff-to-staff technical briefings, government-to-government consultations between DOE-LM senior officials and elected Tribal leaders, Tribal Government participation during the development of the Draft PEIS, or other activities that the Hopi Tribal Council would like to propose consistent with established policies and protocols. These approaches have been successfully used by DOE and Tribal Governments in developing EIS documents that include Tribal Nation concerns and perspectives.

- Staff-to-staff technical briefings between DOE-LM and Tribal Government representatives can be used to share information, obtain Tribal Government input on technical issues, and identify possible topics for discussion during government-to-government consultations. Tribal officials would be welcome to participate in the technical briefings, although the briefings themselves would not be considered formal consultation.

- Formal government-to-government consultations between senior DOE officials and elected Tribal officials can be conducted at agreed upon points in the PEIS...
process to further ensure that Tribal rights, values, and interests are identified and considered in pertinent decision-making on the ULP activities.

• Participation in the development of the ULP PEIS can include Tribal Nations providing review and comment on the Draft EIS. As mentioned above, DOE-LM has already initiated this process via requests to a Tribal government agency to become a cooperating agency during the PEIS development. This agency has declined to be a cooperating agency.

I would like to initiate a teleconference with government representatives of the Hopi Tribal Council to discuss consultation options. I would appreciate a response as to Hopi Tribal Council’s interest in participating with DOE-LM in government-to-government consultation by January 31, 2012. If you would like to participate, please provide the dates of your availability in February 2012 with your response. I will send out invitations for our kick-off telephone conference call as soon as we receive this information.

If you should have any questions concerning the ULP PEIS, please do not hesitate to contact me at (202) 586-8324 or Tony Carter at (202) 586-3323, who is LM’s Programmatic Headquarters point of contact for Tribal Nations.

Sincerely,

[Signature]

David W. Geiser
Director
Office of Legacy Management

cc: Thomas C. Pauling, LM
Tony Carter, LM
Laura Kilpatrick, LM
Tracy Ribeiro, LM
April Gil, LM
Deborah Sullivan, LM
David Conrad, CI
The Honorable Gary Hayes  
Chairman  
Ute Mountain Ute Tribe  
P.O. Box JJ  
Towaoc, CO 81137  

January 9, 2012

Dear Chairman Hayes:

The purpose of this letter is to communicate the Department of Energy (DOE) Office of Legacy Management’s (LM) interest in consulting with the Ute Mountain Ute Tribe on the DOE Uranium Leasing Program (ULP) Programmatic Environmental Impact Statement (PEIS) being conducted following the National Environmental Policy Act (NEPA). DOE-LM currently manages this uranium leasing program and administers thirty-one (31) lease tracts in the Uravan Mineral Belt in southwestern Colorado. Twenty-nine (29) of these lease tracts are actively held under lease. Activities related to these lease sites are being analyzed in the PEIS, as discussed on the dedicated web page <<http://ulppeis.anl.gov>>.

DOE-LM has already sent a request to your office, the Tribal Historic Preservation Officer, and the Ute Mountain Ute Agency asking if the agency would like to be a cooperating agency during the drafting and review of the PEIS. DOE-LM is interested in identifying the Ute Mountain Ute Tribe’s preferences on a consultation approach for the PEIS other than participation as a NEPA cooperating agency. DOE-LM plans to incorporate the consultation activities into its schedule for issuing the PEIS. DOE-LM is in the early stages of developing the PEIS, with plans to issue a Draft PEIS in 2012 and a Final PEIS in 2013.

As summarized below, consultation activities could include staff-to-staff technical briefings, government-to-government consultations between DOE-LM senior officials and elected Tribal leaders, Tribal Government participation during the development of the Draft PEIS, or other activities that the Ute Mountain Ute Tribe would like to propose consistent with established policies and protocols. These approaches have been successfully used by DOE and Tribal Governments in developing EIS documents that include Tribal Nation concerns and perspectives.

- Staff-to-staff technical briefings between DOE-LM and Tribal Government representatives can be used to share information, obtain Tribal Government input on technical issues, and identify possible topics for discussion during government-to-government consultations. Tribal officials would be welcome to participate in the technical briefings, although the briefings themselves would not be considered formal consultation.
Formal government-to-government consultations between senior DOE officials and elected Tribal officials can be conducted at agreed upon points in the PEIS process to further ensure that Tribal rights, values, and interests are identified and considered in pertinent decision-making on the ULP activities.

Participation in the development of the ULP PEIS can include Tribal Nations providing review and comment on the Draft EIS. As mentioned above, DOE-LM has already initiated this process via requests to a Tribal government agency to become a cooperating agency during the PEIS development. This agency has declined to be a cooperating agency.

I would like to initiate a teleconference with government representatives of the Ute Mountain Ute Tribe to discuss consultation options. I would appreciate a response as to Ute Mountain Ute Tribe’s interest in participating with DOE-LM in government-to-government consultation by January 31, 2012. If you would like to participate, please provide the dates of your availability in February 2012 with your response. I will send out invitations for our kick-off telephone conference call as soon as we receive this information.

If you should have any questions concerning the ULP PEIS, please do not hesitate to contact me at (202) 586-8324 or Tony Carter at (202) 586-3323, who is LM’s Programmatic Headquarters point of contact for Tribal Nations.

Sincerely,

David W. Geiser
Director
Office of Legacy Management

cc: Thomas C. Pauling, LM
Tony Carter, LM
Laura Kilpatrick, LM
Tracy Ribeiro, LM
April Gil, LM
Deborah Sullivan, LM
David Conrad, CI
Department of Energy  
Washington, DC 20585  

MAY 2 2012  

The Honorable Ben Shelley  
President  
The Navajo Nation  
P.O. Box 7440  
2000 Tribal Hill Drive  
Window Rock, AZ 86515  

Dear President Shelley:

This letter is a follow-up to our letter dated January 9, 2012, and phone calls placed to your office on February 22, 2012, and March 7, 2012. The Department of Energy (DOE) remains interested in consultation with the Navajo Nation on the DOE Uranium Leasing Program (ULP), Programmatic Environmental Impact Statement (PEIS). DOE currently administers thirty-one (31) lease tracts in the Uranium Mineral Belt in southwestern Colorado. Twenty-nine (29) of these lease tracts are actively held under lease. Activities related to these lease sites are being analyzed in the PEIS, as discussed on the dedicated web page <http://ulppeis.anl.gov/>.

In addition to the request for consultation, we also sent letters to your office, the Supervisory Anthropologist, and the Tribal Historic Preservation Officer asking if the Tribe would be a cooperating agency during the drafting and review of the PEIS. DOE is now in the middle stages of developing the PEIS, with plans to issue a Draft PEIS in the fall of 2012 and a Final PEIS in 2013. We welcome your input and encourage your participation during the public participation portion of the NEPA process that is scheduled to commence this fall.

DOE continues to look for ways to improve the government-to-government consultation process with the Navajo Nation. We invite any suggestions or advice you might have to improve this process. If you have any questions concerning the ULP PEIS, please do not hesitate to contact me at (202) 586-7550 or Tony Carter at (202) 586-5323, my headquarters representative for activities with Tribal Nations.

Sincerely,

[Signature]

David W. Geiser  
Director  
Office of Legacy Management

cc: Tony H. Joe, Jr., Supervisory Anthropologist  
Dr. Alan Downer, Tribal Historic Preservation Officer and Department Manager  
Historic Preservation
Department of Energy  
Washington, DC 20585  
MAY 02 2012

The Honorable Leroy Shingoitewa  
Chairman  
Hopi Tribal Council  
P.O. Box 123  
Kyokotomovi, AZ 86039

Dear Chairman Shingoitewa:

This letter is a follow-up to our letter dated January 9, 2012, and phone calls placed to your office on February 22, 2012, and March 7, 2012. The Department of Energy (DOE) remains interested in consultation with the Hopi Tribal Council on the DOE Uranium Leasing Program (ULP), Programmatic Environmental Impact Statement (PEIS). DOE currently administers thirty-one (31) lease tracts in the Unavan Mineral Belt in southwestern Colorado. Twenty-nine (29) of these lease tracts are actively held under lease. Activities related to these lease sites are being analyzed in the PEIS, as discussed on the dedicated web page <http://atlas.inl.gov/>.

In addition to the request for consultation, we also sent letters to your office and to the Directors Office asking if the Tribe would be a cooperating agency during the drafting and review of the PEIS. DOE is now in the middle stages of developing the PEIS, with plans to issue a Draft PEIS in the fall of 2012 and a Final PEIS in 2013. We welcome your input and encourage your participation during the public participation portion of the NHPA process that is scheduled to commence this fall.

DOE continues to look for ways to improve the government-to-government consultation process with the Hopi Tribal Council. We invite any suggestions or advice you might have to improve this process. If you have any questions concerning the ULP PEIS, please do not hesitate to contact me at (202) 586-7530 or Tony Carter at (202) 586-3323, my headquarters representative for activities with Tribal Nations.

Sincerely,

David W. Geiser  
Director  
Office of Legacy Management
The Honorable Gary Hayes  
Chairman  
Ute Mountain Ute Tribe  
P.O. Box 11  
Torace, CO 81137

Dear Chairman Hayes:

This letter is a follow-up to our letter dated January 9, 2012, and phone calls placed to your office on February 22, 2012, and March 7, 2012. The Department of Energy (DOE) remains interested in consultation with the Ute Mountain Ute Tribe on the DOE Uranium Leasing Program (ULP), Programmatic Environmental Impact Statement (PEIS). DOE currently administers thirty-one (31) lease tracts in the Uravan Mineral Belt in southwestern Colorado. Twenty-nine (29) of these lease tracts are actively held under lease. Activities related to these lease sites are being analyzed in the PEIS, as discussed on the dedicated web page <http://ulfcis.anl.gov/ >.

In addition to the request for consultation, we also sent letters to your office, to the Tribal Historic Preservation Officer, and to the Ute Mountain Ute Agency asking if the Tribe would be a cooperating agency during the drafting and review of the PEIS. DOE is now in the middle stages of developing the PEIS, with plans to issue a Draft PEIS in the fall of 2012 and a Final PEIS in 2013. We welcome your input and encourage your participation during the public participation portion of the NHPA process that is scheduled to commence this fall.

DOE continues to look for ways to improve the government-to-government consultation process with the Ute Mountain Ute Tribe. We invite any suggestions or advice you might have to improve this process. If you have any questions concerning the ULP PEIS, please do not hesitate to contact me at (202) 586-7550 or Tony Carter at (202) 586-3323, my headquarters representative for activities with Tribal Nations.

Sincerely,

David W. Geiser  
Director  
Office of Legacy Management

cc: Terry Knight, Tribal Historic Preservation Officer  
Francesca Bancroft, Superintendent, Ute Mountain Ute Agency
Department of Energy
Washington, DC 20585

MAY 02 2012

The Honorable Elayne Atcitty
White Mesa Ute Board Chairperson
White Mesa Ute Tribe
P.O. Box 7096
White Mesa, UT 84511

Dear Chairperson Atcitty:

This letter is a follow-up to our letter dated January 9, 2012, and phone calls placed to your office on February 22, 2012, and March 7, 2012. The Department of Energy (DOE) remains interested in consultation with the White Mesa Ute Tribe on the DOE Uranium Leasing Program (ULP), Programmatic Environmental Impact Statement (PEIS). DOE currently administers thirty-one (31) lease tracts in the Uncompahgre Mineral Belt in southwestern Colorado. Twenty-nine (29) of these lease tracts are actively held under lease. Activities related to these lease sites are being analyzed in the PEIS, as discussed on the dedicated web page <http://ulpis.anl.gov>.

In addition to the request for consultation, we also sent letters to your office and to the Vice Chair of the White Mesa Ute Tribe asking if the Tribe would be a cooperating agency during the drafting and review of the PEIS. DOE is now in the middle stages of developing the PEIS, with plans to issue a Draft PEIS in the fall of 2012 and a Final PEIS in 2013. We welcome your input and encourage your participation during the public participation portion of the NEPA process that is scheduled to commence this fall.

DOE continues to look for ways to improve the government-to-government consultation process with the White Mesa Ute Tribe. We invite any suggestions or advice you might have to improve this process. If you have any questions concerning the ULP PEIS, please do not hesitate to contact me at (202) 586-7550 or Tony Carter at (202) 586-3323, my headquarters representative for activities with Tribal Nations.

Sincerely,

David W. Geiser
Director
Office of Legacy Management
Department of Energy
Washington, DC 20585

MAY 2 2012

The Honorable Jimmy R. Newton, Jr.
Chairman
Southern Ute Indian Tribe
P.O. Box 737
Ignacio, CO 81137

Dear Chairman Newton:

This letter is a follow-up to our letter dated January 9, 2012, and phone calls placed to
remains interested in consultation with the Southern Ute Indian Tribe on the DOE
Uranium Leasing Program (ULP), Programmatic Environmental Impact Statement
(PEIS). DOE currently administers thirty-one (31) lease tracts in the Uravan Mineral
Belt in southwestern Colorado. Twenty-nine (29) of these lease tracts are actively held
under lease. Activities related to these lease sites are being analyzed in the PEIS, as

In addition to the request for consultation, we also sent letters to your office asking if the
Tribe would be a cooperating agency during the drafting and review of the PEIS. DOE is
now in the middle stages of developing the PEIS, with plans to issue a Draft PEIS in the
fall of 2012 and a Final PEIS in 2013. We welcome your input and encourage your
participation during the public participation portion of the NEPA process that is
scheduled to commence this fall.

DOE continues to look for ways to improve the government-to-government consultation
process with the Southern Ute Indian Tribe. We invite any suggestions or advice you
might have to improve this process. If you have any questions concerning the ULP PEIS,
please do not hesitate to contact me at (202) 586-7550 or Tony Carter at (202) 586-3323,
my headquarters representative for activities with Tribal Nations.

Sincerely,

David W. Geiser
Director
Office of Legacy Management

cc: Michael Olguin, Vice Chair, Southern Ute Indian Tribe

Printed with soy ink on recycled paper
Department of Energy  
Washington, DC 20585  
MAY 02 2012

The Honorable Irene Thompson  
Chairperson  
Ute Business Committee  
Ute Indian Tribe  
P.O. Box 190  
Fort Duchesne, UT 84026

Dear Chairperson Thompson:

This letter is a follow-up to our letter dated January 9, 2012, and phone calls placed to your office on February 22, 2012, and March 7, 2012. The Department of Energy (DOE) remains interested in consultation with the Ute Indian Tribe on the DOE Uranium Leasing Program (ULP), Programmatic Environmental Impact Statement (PEIS). DOE currently administers thirty-one (31) lease tracts in the Uravan Mineral Belt in southwestern Colorado. Twenty-nine (29) of these lease tracts are actively held under lease. Activities related to these lease sites are being analyzed in the PEIS, as discussed on the dedicated web page <http://ulepis.anl.gov>.

In addition to the request for consultation, we also sent letters to your office and to Mr. Rollie Wilson of the Ute Indian Tribe asking if the Tribe would be a cooperating agency during the drafting and review of the PEIS. DOE is now in the middle stages of developing the PEIS, with plans to issue a Draft PEIS in the fall of 2012 and a Final PEIS in 2013. We welcome your input and encourage your participation during the public participation portion of the NEPA process that is scheduled to commence this fall.

DOE continues to look for ways to improve the government-to-government consultation process with the Ute Indian Tribe. We invite any suggestions or advice you might have to improve this process. If you have any questions concerning the ULP PEIS, please do not hesitate to contact me at (202) 586-7550 or Tony Carter at (202) 586-3323, my headquarters representative for activities with Tribal Nations.

Sincerely,

[Signature]
David W. Geiser  
Director  
Office of Legacy Management

cc: Rollie Wilson, Ute Indian Tribe, Fredericks, Peckles & Morgan, LLP
Department of Energy  
Washington, DC 20585  

September 28, 2012

The Honorable Levi Pestata  
President  
Jicarilla Apache Tribal Council  
P.O. Box 507  
Dulce, NM 87528

Dear President Pestata:

The purpose of this letter is to communicate the Department of Energy (DOE) Office of Legacy Management’s (LM) interest in consulting with the Jicarilla Apache Tribal Council on the DOE Uranium Leasing Program (ULP) Programmatic Environmental Impact Statement (PEIS) being conducted in accordance with the National Environmental Policy Act (NEPA). A PEIS evaluates the environmental impacts of broad agency actions, such as those that may be associated with the ULP. Under the ULP, the DOE administers tracts of land for the exploration, development, and extraction of uranium and vanadium ores. The DOE’s ULP includes tracts of land located in Mesa, Montrose, and San Miguel counties in western Colorado that cover a cumulative area of approximately 25,000 acres. Attached is a map of the lease tracts.

Activities related to these lease sites are being analyzed in the PEIS, as discussed on the ULP PEIS website at http://ulppeis.anl.gov/. DOE LM has already begun the NEPA process for the PEIS by having public scoping meetings and completing the initial, internal draft of the PEIS. Currently, DOE LM is addressing comments by cooperating agencies provided during the internal review of the draft PEIS. The Bureau of Land Management (BLM) is one of the cooperating agencies, specifically the Tres Rios Field Office. Based on the BLM’s previous activities in the areas around the ULP lease tracts and their knowledge of ancestral range of tribes connected with the Mesa Verde region, the BLM identified the Jicarilla Apache Tribal Council Tribe as a group that we should contact for tribal consultation.

DOE LM would like to invite you into the process at this point and is interested in identifying the Jicarilla Apache Tribal Council Tribe’s preferences on a consultation approach for the PEIS. DOE LM plans to incorporate the consultation activities into its schedule for issuing the PEIS. DOE LM is in the early stages of developing the PEIS, with plans to issue a Draft PEIS in early 2013 and a Final PEIS in late 2013.

As detailed below, government-to-government consultations between DOE LM senior officials and elected Tribal leaders could include staff-to-staff technical briefings, Tribal Government participation during the development of the Draft PEIS, or other activities that the Jicarilla Apache Tribal Council Tribe would like to propose consistent with established policies and protocols. These approaches have been successfully used by...
DOE and Tribal Governments in developing EIS documents that include Tribal Nation concerns and perspectives.

- Formal government-to-government consultations between senior DOE officials and elected Tribal officials can be conducted at agreed upon points in the PEIS process to further ensure that Tribal rights, values, and interests are identified and considered in pertinent decision-making on the ULP activities.

- Staff-to-staff technical briefings between DOE LM and Tribal Government representatives can be used to share information, obtain Tribal Government input on technical issues, and identify possible topics for discussion during government-to-government consultations. Tribal officials would be welcome to participate in the technical briefings, although the briefings themselves would not be considered formal consultation.

- Participation in the development of the ULP PEIS can include Tribal Nations providing review and comment on the Draft PEIS.

I would appreciate a response as to Jicarilla Apache Tribal Council Tribe’s interest in participating with DOE LM in government-to-government consultation by October 12, 2012. Based on your response, I will then initiate follow-up actions with the Jicarilla Apache Tribal Council Tribe to address your consultation preferences.

If you should have any questions concerning the ULP PEIS, please do not hesitate to contact me at (202) 586-8324 or Tony Carter at (202) 586-3323, LM’s Programmatic Headquarters point of contact for Tribal Nations.

Sincerely,

[Signature]

David W. Geiser
Director
Office of Legacy Management

cc: Gifford Velarde, Director, Office of Cultural Indian Affairs
Dr. Jeff Blythe, THPO, Office of Cultural Indian Affairs
Thomas C. Pauling, LM
Tony Carter, LM
Ray Plieness, LM
Tracy Ribeiro, LM
David Conrad, CI
Department of Energy
Washington, DC 20585
September 28, 2012

The Honorable Sisto Quintana
Governor
Kewa Pueblo Tribe
P.O. Box 99
Santo Domingo Pueblo, NM 87052

Dear Governor Quintana:

The purpose of this letter is to communicate the Department of Energy (DOE) Office of Legacy Management’s (LM) interest in consulting with the Kewa Pueblo Tribe on the DOE Uranium Leasing Program (ULP) Programmatic Environmental Impact Statement (PEIS) being conducted in accordance with the National Environmental Policy Act (NEPA). A PEIS evaluates the environmental impacts of broad agency actions, such as those that may be associated with the ULP. Under the ULP, the DOE administers tracts of land for the exploration, development, and extraction of uranium and vanadium ores. The DOE’s ULP includes tracts of land located in Mesa, Montrose, and San Miguel counties in western Colorado that cover a cumulative area of approximately 25,000 acres. Attached is a map of the lease tracts.

Activities related to these lease sites are being analyzed in the PEIS, as discussed on the ULP PEIS website at http://ulppeis.anl.gov/. DOE LM has already begun the NEPA process for the PEIS by having public scoping meetings and completing the initial, internal draft of the PEIS. Currently, DOE LM is addressing comments by cooperating agencies provided during the internal review of the draft PEIS. The Bureau of Land Management (BLM) is one of the cooperating agencies, specifically the Tres Rios Field Office. Based on the BLM’s previous activities in the areas around the ULP lease tracts and their knowledge of the ancestral range of tribes connected with the Mesa Verde region, the BLM identified the Kewa Pueblo Tribe as a group that we should contact for tribal consultation.

DOE LM would like to invite you into the process at this point and is interested in identifying the Kewa Pueblo Tribe’s preferences on a consultation approach for the PEIS. DOE LM plans to incorporate the consultation activities into its schedule for issuing the PEIS. DOE LM is in the early stages of developing the PEIS, with plans to issue a Draft PEIS in early 2013 and a Final PEIS in late 2013.

As detailed below, government-to-government consultations between DOE LM senior officials and elected Tribal leaders could include staff-to-staff technical briefings, Tribal Government participation during the development of the Draft PEIS, or other activities that the Kewa Pueblo Tribe would like to propose consistent with established policies and protocols. These approaches have been successfully used by DOE and Tribal
Governments in developing EIS documents that include Tribal Nation concerns and perspectives.

- Formal government-to-government consultations between senior DOE officials and elected Tribal officials can be conducted at agreed upon points in the PEIS process to further ensure that Tribal rights, values, and interests are identified and considered in pertinent decision-making on the ULP activities.

- Staff-to-staff technical briefings between DOE LM and Tribal Government representatives can be used to share information, obtain Tribal Government input on technical issues, and identify possible topics for discussion during government-to-government consultations. Tribal officials would be welcome to participate in the technical briefings, although the briefings themselves would not be considered formal consultation.

- Participation in the development of the ULP PEIS can include Tribal Nations providing review and comment on the Draft PEIS.

I would appreciate a response as to Kewa Pueblo Tribe’s interest in participating with DOE LM in government-to-government consultation by October 12, 2012. Based on your response, I will then initiate follow-up actions with the Kewa Pueblo Tribe to address your consultation preferences.

If you should have any questions concerning the ULP PEIS, please do not hesitate to contact me at (202) 586-8324 or Tony Carter at (202) 586-3323, LM’s Programmatic Headquarters point of contact for Tribal Nations.

Sincerely,

David W. Geiser
Director
Office of Legacy Management

cc: Thomas C. Pauling, LM
Tony Carter, LM
Ray Plienness, LM
Tracy Ribeiro, LM
David Conrad, CI
Department of Energy
Washington, DC 20585
September 28, 2012

The Honorable Randall Vicente
Governor
Pueblo of Acoma Tribe
P.O. Box 309
Acoma, NM 87034

Dear Governor Vicente:

The purpose of this letter is to communicate the Department of Energy (DOE) Office of Legacy Management’s (LM) interest in consulting with the Pueblo of Acoma Tribe on the DOE Uranium Leasing Program (ULP) Programmatic Environmental Impact Statement (PEIS) being conducted in accordance with the National Environmental Policy Act (NEPA). A PEIS evaluates the environmental impacts of broad agency actions, such as those that may be associated with the ULP. Under the ULP, the DOE administers tracts of land for the exploration, development, and extraction of uranium and vanadium ores. The DOE’s ULP includes tracts of land located in Mesa, Montrose, and San Miguel counties in western Colorado that cover a cumulative area of approximately 25,000 acres. Attached is a map of the lease tracts.

Activities related to these lease sites are being analyzed in the PEIS, as discussed on the ULP PEIS website at http://ulppeis.anl.gov/. DOE LM has already begun the NEPA process for the PEIS by having public scoping meetings and completing the initial, internal draft of the PEIS. Currently, DOE LM is addressing comments by cooperating agencies provided during the internal review of the draft PEIS. The Bureau of Land Management (BLM) is one of the cooperating agencies, specifically the Tres Rios Field Office. Based on the BLM’s previous activities in the areas around the ULP lease tracts and their knowledge of ancestral range of tribes connected with the Mesa Verde region, the BLM identified the Pueblo of Acoma Tribe as a group that we should contact for tribal consultation.

DOE LM would like to invite you into the process at this point and is interested in identifying the Pueblo of Acoma Tribe’s preferences on a consultation approach for the PEIS. DOE LM plans to incorporate the consultation activities into its schedule for issuing the PEIS. DOE LM is in the early stages of developing the PEIS, with plans to issue a Draft PEIS in early 2013 and a Final PEIS in late 2013.

As detailed below, government-to-government consultations between DOE LM senior officials and elected Tribal leaders could include staff-to-staff technical briefings, Tribal Government participation during the development of the Draft PEIS, or other activities that the Pueblo of Acoma Tribe would like to propose consistent with established policies and protocols. These approaches have been successfully used by DOE and Tribal
Governments in developing EIS documents that include Tribal Nation concerns and perspectives.

- Formal government-to-government consultations between senior DOE officials and elected Tribal officials can be conducted at agreed upon points in the PEIS process to further ensure that Tribal rights, values, and interests are identified and considered in pertinent decision-making on the ULP activities.

- Staff-to-staff technical briefings between DOE LM and Tribal Government representatives can be used to share information, obtain Tribal Government input on technical issues, and identify possible topics for discussion during government-to-government consultations. Tribal officials would be welcome to participate in the technical briefings, although the briefings themselves would not be considered formal consultation.

- Participation in the development of the ULP PEIS can include Tribal Nations providing review and comment on the Draft PEIS.

I would appreciate a response as to Pueblo of Acoma Tribe’s interest in participating with DOE LM in government-to-government consultation by October 12, 2012. Based on your response, I will then initiate follow-up actions with the Pueblo of Acoma Tribe to address your consultation preferences.

If you should have any questions concerning the ULP PEIS, please do not hesitate to contact me at (202) 586-8324 or Tony Carter at (202) 586-3323, LM’s Programmatic Headquarters point of contact for Tribal Nations.

Sincerely,

David W. Geiser
Director
Office of Legacy Management

cc: Theresa Pasqual, Director, Historic Preservation Office
    Thomas C. Pauling, LM
    Tony Carter, LM
    Ray Plie news, LM
    Tracy Ribeiro, LM
    David Conrad, CI
The Department of Energy
Washington, DC 20585

September 28, 2012

The Honorable Phillip Quintana
Governor
Pueblo de Cochiti Tribe
P.O. Box 70
Cochiti, NM 87072

Dear Governor Quintana:

The purpose of this letter is to communicate the Department of Energy (DOE) Office of Legacy Management’s (LM) interest in consulting with the Pueblo de Cochiti Tribe on the DOE Uranium Leasing Program (ULP) Programmatic Environmental Impact Statement (PEIS) being conducted in accordance with the National Environmental Policy Act (NEPA). A PEIS evaluates the environmental impacts of broad agency actions, such as those that may be associated with the ULP. Under the ULP, the DOE administers tracts of land for the exploration, development, and extraction of uranium and vanadium ores. The DOE’s ULP includes tracts of land located in Mesa, Montrose, and San Miguel counties in western Colorado that cover a cumulative area of approximately 25,000 acres. Attached is a map of the lease tracts.

Activities related to these lease sites are being analyzed in the PEIS, as discussed on the ULP PEIS website at http://ulpeis.anl.gov/. DOE LM has already begun the NEPA process for the PEIS by having public scoping meetings and completing the initial, internal draft of the PEIS. Currently, DOE LM is addressing comments by cooperating agencies provided during the internal review of the draft PEIS. The Bureau of Land Management (BLM) is one of the cooperating agencies, specifically the Tres Rios Field Office. Based on the BLM’s previous activities in the areas around the ULP lease tracts and their knowledge of ancestral range of tribes connected with the Mesa Verde region, the BLM identified the Pueblo de Cochiti Tribe as a group that we should contact for tribal consultation.

DOE LM would like to invite you into the process at this point and is interested in identifying the Pueblo de Cochiti Tribe’s preferences on a consultation approach for the PEIS. DOE LM plans to incorporate the consultation activities into its schedule for issuing the PEIS. DOE LM is in the early stages of developing the PEIS, with plans to issue a Draft PEIS in early 2013 and a Final PEIS in late 2013.

As detailed below, government-to-government consultations between DOE LM senior officials and elected Tribal leaders could include staff-to-staff technical briefings, Tribal Government participation during the development of the Draft PEIS, or other activities that the Pueblo de Cochiti Tribe would like to propose consistent with established policies and protocols. These approaches have been successfully used by DOE and
Tribal Governments in developing EIS documents that include Tribal Nation concerns and perspectives.

- Formal government-to-government consultations between senior DOE officials and elected Tribal officials can be conducted at agreed upon points in the PEIS process to further ensure that Tribal rights, values, and interests are identified and considered in pertinent decision-making on the ULP activities.

- Staff-to-staff technical briefings between DOE LM and Tribal Government representatives can be used to share information, obtain Tribal Government input on technical issues, and identify possible topics for discussion during government-to-government consultations. Tribal officials would be welcome to participate in the technical briefings, although the briefings themselves would not be considered formal consultation.

- Participation in the development of the ULP PEIS can include Tribal Nations providing review and comment on the Draft PEIS.

I would appreciate a response as to Pueblo de Cochiti Tribe’s interest in participating with DOE LM in government-to-government consultation by October 12, 2012. Based on your response, I will then initiate follow-up actions with the Pueblo de Cochiti Tribe to address your consultation preferences.

If you should have any questions concerning the ULP PEIS, please do not hesitate to contact me at (202) 586-8324 or Tony Carter at (202) 586-3323, LM’s Programmatic Headquarters point of contact for Tribal Nations.

Sincerely,

David W. Geiser
Director
Office of Legacy Management

cc: Vernon Garcia, NAGPRA Representative
    Thomas C. Pauling, LM
    Tony Carter, LM
    Ray Plieness, LM
    Tracy Ribeiro, LM
    David Conrad, CI
Department of Energy
Washington, DC 20585

September 28, 2012

The Honorable Frank E. Lujan
Governor
Pueblo of Isleta Tribe
P.O. Box 1270
Isleta, NM  87022

Dear Governor Lujan:

The purpose of this letter is to communicate the Department of Energy (DOE) Office of Legacy Management’s (LM) interest in consulting with the Pueblo of Isleta Tribe on the DOE Uranium Leasing Program (ULP) Programmatic Environmental Impact Statement (PEIS) being conducted in accordance with the National Environmental Policy Act (NEPA). A PEIS evaluates the environmental impacts of broad agency actions, such as those that may be associated with the ULP. Under the ULP, the DOE administers tracts of land for the exploration, development, and extraction of uranium and vanadium ores. The DOE’s ULP includes tracts of land located in Mesa, Montrose, and San Miguel counties in western Colorado that cover a cumulative area of approximately 25,000 acres. Attached is a map of the lease tracts.

Activities related to these lease sites are being analyzed in the PEIS, as discussed on the ULP PEIS website at http://ulppeis.anl.gov/. DOE LM has already begun the NEPA process for the PEIS by having public scoping meetings and completing the initial, internal draft of the PEIS. Currently, DOE LM is addressing comments by cooperating agencies provided during the internal review of the draft PEIS. The Bureau of Land Management (BLM) is one of the cooperating agencies, specifically the Tres Rios Field Office. Based on the BLM’s previous activities in the areas around the ULP lease tracts and their knowledge of ancestral range of tribes connected with the Mesa Verde region, the BLM identified the Pueblo of Isleta Tribe as a group that we should contact for tribal consultation.

DOE LM would like to invite you into the process at this point and is interested in identifying the Pueblo of Isleta Tribe’s preferences on a consultation approach for the PEIS. DOE LM plans to incorporate the consultation activities into its schedule for issuing the PEIS. DOE LM is in the early stages of developing the PEIS, with plans to issue a Draft PEIS in early 2013 and a Final PEIS in late 2013.

As detailed below, government-to-government consultations between DOE LM senior officials and elected Tribal leaders could include staff-to-staff technical briefings, Tribal Government participation during the development of the Draft PEIS, or other activities that the Pueblo of Isleta Tribe would like to propose consistent with established policies and protocols. These approaches have been successfully used by DOE and Tribal...
Governments in developing EIS documents that include Tribal Nation concerns and perspectives.

- Formal government-to-government consultations between senior DOE officials and elected Tribal officials can be conducted at agreed upon points in the PEIS process to further ensure that Tribal rights, values, and interests are identified and considered in pertinent decision-making on the ULP activities.

- Staff-to-staff technical briefings between DOE LM and Tribal Government representatives can be used to share information, obtain Tribal Government input on technical issues, and identify possible topics for discussion during government-to-government consultations. Tribal officials would be welcome to participate in the technical briefings, although the briefings themselves would not be considered formal consultation.

- Participation in the development of the ULP PEIS can include Tribal Nations providing review and comment on the Draft PEIS.

I would appreciate a response as to Pueblo of Isleta Tribe’s interest in participating with DOE LM in government-to-government consultation by **October 12, 2012**. Based on your response, I will then initiate follow-up actions with the Pueblo of Isleta Tribe to address your consultation preferences.

If you should have any questions concerning the ULP PEIS, please do not hesitate to contact me at (202) 586-8324 or Tony Carter at (202) 586-3323, LM’s Programmatic Headquarters point of contact for Tribal Nations.

Sincerely,

David W. Geiser
Director
Office of Legacy Management

cc: Dr. Henry Walt, THPO, Pueblo of Isleta Tribe
Stephanie Zuni, Administrator for Elders, Pueblo of Isleta Tribe
Valentino Jaramillo, NAGPRA Contact, Cultural Affairs Committee, Pueblo of Isleta Tribe
Thomas C. Pauling, LM
Tony Carter, LM
Ray Plieness, LM
Tracy Ribeiro, LM
David Conrad, CI
Department of Energy  
Washington, DC 20585  

September 28, 2012

The Honorable Joshua Madalena  
Governor  
Pueblo of Jemez Tribe  
P.O. Box 100  
Jemez Pueblo, NM 87024

Dear Governor Madalena:

The purpose of this letter is to communicate the Department of Energy (DOE) Office of Legacy Management’s (LM) interest in consulting with the Pueblo of Jemez Tribe on the DOE Uranium Leasing Program (ULP) Programmatic Environmental Impact Statement (PEIS) being conducted in accordance with the National Environmental Policy Act (NEPA). A PEIS evaluates the environmental impacts of broad agency actions, such as those that may be associated with the ULP. Under the ULP, the DOE administers tracts of land for the exploration, development, and extraction of uranium and vanadium ores. The DOE’s ULP includes tracts of land located in Mesa, Montrose, and San Miguel counties in western Colorado that cover a cumulative area of approximately 25,000 acres. Attached is a map of the lease tracts.

Activities related to these lease sites are being analyzed in the PEIS, as discussed on the ULP PEIS website at http://ulpeis.anl.gov/. DOE LM has already begun the NEPA process for the PEIS by having public scoping meetings and completing the initial, internal draft of the PEIS. Currently, DOE LM is addressing comments by cooperating agencies provided during the internal review of the draft PEIS. The Bureau of Land Management (BLM) is one of the cooperating agencies, specifically the Tres Rios Field Office. Based on the BLM’s previous activities in the areas around the ULP lease tracts and their knowledge of ancestral range of tribes connected with the Mesa Verde region, the BLM identified the Pueblo of Jemez Tribe as a group that we should contact for tribal consultation.

DOE LM would like to invite you into the process at this point and is interested in identifying the Pueblo of Jemez Tribe’s preferences on a consultation approach for the PEIS. DOE LM plans to incorporate the consultation activities into its schedule for issuing the PEIS. DOE LM is in the early stages of developing the PEIS, with plans to issue a Draft PEIS in early 2013 and a Final PEIS in late 2013.

As detailed below, government-to-government consultations between DOE LM senior officials and elected Tribal leaders could include staff-to-staff technical briefings, Tribal Government participation during the development of the Draft PEIS, or other activities that the Pueblo of Jemez Tribe would like to propose consistent with established policies and protocols. These approaches have been successfully used by DOE and Tribal
Governments in developing EIS documents that include Tribal Nation concerns and perspectives.

- Formal government-to-government consultations between senior DOE officials and elected Tribal officials can be conducted at agreed upon points in the PEIS process to further ensure that Tribal rights, values, and interests are identified and considered in pertinent decision-making on the ULP activities.

- Staff-to-staff technical briefings between DOE LM and Tribal Government representatives can be used to share information, obtain Tribal Government input on technical issues, and identify possible topics for discussion during government-to-government consultations. Tribal officials would be welcome to participate in the technical briefings, although the briefings themselves would not be considered formal consultation.

- Participation in the development of the ULP PEIS can include Tribal Nations providing review and comment on the Draft PEIS.

I would appreciate a response as to Pueblo of Jemez Tribe’s interest in participating with DOE LM in government-to-government consultation by October 12, 2012. Based on your response, I will then initiate follow-up actions with the Pueblo of Jemez Tribe to address your consultation preferences.

If you should have any questions concerning the ULP PEIS, please do not hesitate to contact me at (202) 586-8324 or Tony Carter at (202) 586-3323, LM’s Programmatic Headquarters point of contact for Tribal Nations.

Sincerely,

David W. Geiser
Director
Office of Legacy Management

cc: Christopher Toya, Traditional Cultural Properties Project Manager
    Thomas C. Pauling, LM
    Tony Carter, LM
    Ray Pliness, LM
    Tracy Ribeiro, LM
    David Conrad, CI
Department of Energy
Washington, DC 20585
September 28, 2012

The Honorable Richard B. Luarkie
Governor
Pueblo of Laguna Tribe
P.O. Box 194
Laguna, NM 87026

Dear Governor Luarkie:

The purpose of this letter is to communicate the Department of Energy (DOE) Office of Legacy Management’s (LM) interest in consulting with the Pueblo of Laguna Tribe on the DOE Uranium Leasing Program (ULP) Programmatic Environmental Impact Statement (PEIS) being conducted in accordance with the National Environmental Policy Act (NEPA). A PEIS evaluates the environmental impacts of broad agency actions, such as those that may be associated with the ULP. Under the ULP, the DOE administers tracts of land for the exploration, development, and extraction of uranium and vanadium ores. The DOE’s ULP includes tracts of land located in Mesa, Montrose, and San Miguel counties in western Colorado that cover a cumulative area of approximately 25,000 acres. Attached is a map of the lease tracts.

Activities related to these lease sites are being analyzed in the PEIS, as discussed on the ULP PEIS website at http://ulppeis.anl.gov/. DOE LM has already begun the NEPA process for the PEIS by having public scoping meetings and completing the initial, internal draft of the PEIS. Currently, DOE LM is addressing comments by cooperating agencies provided during the internal review of the draft PEIS. The Bureau of Land Management (BLM) is one of the cooperating agencies, specifically the Tres Rios Field Office. Based on the BLM’s previous activities in the areas around the ULP lease tracts and their knowledge of ancestral range of tribes connected with the Mesa Verde region, the BLM identified the Pueblo of Laguna Tribe as a group that we should contact for tribal consultation.

DOE LM would like to invite you into the process at this point and is interested in identifying the Pueblo of Laguna Tribe’s preferences on a consultation approach for the PEIS. DOE LM plans to incorporate the consultation activities into its schedule for issuing the PEIS. DOE LM is in the early stages of developing the PEIS, with plans to issue a Draft PEIS in early 2013 and a Final PEIS in late 2013.

As detailed below, government-to-government consultations between DOE LM senior officials and elected Tribal leaders could include staff-to-staff technical briefings, Tribal Government participation during the development of the Draft PEIS, or other activities that the Pueblo of Laguna Tribe would like to propose consistent with established policies and protocols. These approaches have been successfully used by DOE and
Tribal Governments in developing EIS documents that include Tribal Nation concerns and perspectives.

- Formal government-to-government consultations between senior DOE officials and elected Tribal officials can be conducted at agreed upon points in the PEIS process to further ensure that Tribal rights, values, and interests are identified and considered in pertinent decision-making on the ULP activities.

- Staff-to-staff technical briefings between DOE LM and Tribal Government representatives can be used to share information, obtain Tribal Government input on technical issues, and identify possible topics for discussion during government-to-government consultations. Tribal officials would be welcome to participate in the technical briefings, although the briefings themselves would not be considered formal consultation.

- Participation in the development of the ULP PEIS can include Tribal Nations providing review and comment on the Draft PEIS.

I would appreciate a response as to Pueblo of Laguna Tribe’s interest in participating with DOE LM in government-to-government consultation by October 12, 2012. Based on your response, I will then initiate follow-up actions with the Pueblo of Laguna Tribe to address your consultation preferences.

If you should have any questions concerning the ULP PEIS, please do not hesitate to contact me at (202) 586-8324 or Tony Carter at (202) 586-3323, LM’s Programmatic Headquarters point of contact for Tribal Nations.

Sincerely,

David W. Geiser
Director
Office of Legacy Management

cc: Robert Mooney, Sr., Records, Pueblo of Laguna Tribe
    Thomas C. Pauling, LM
    Tony Carter, LM
    Ray Plieness, LM
    Tracy Ribeiro, LM
    David Conrad, CI
The Honorable Phillip A. Perez  
Governor  
Pueblo of Nambe Tribe  
Route 1, Box 117-BB  
Santa Fe, NM 87506  

Dear Governor Perez:  

The purpose of this letter is to communicate the Department of Energy (DOE) Office of Legacy Management’s (LM) interest in consulting with the Pueblo of Nambe Tribe on the DOE Uranium Leasing Program (ULP) Programmatic Environmental Impact Statement (PEIS) being conducted in accordance with the National Environmental Policy Act (NEPA). A PEIS evaluates the environmental impacts of broad agency actions, such as those that may be associated with the ULP. Under the ULP, the DOE administers tracts of land for the exploration, development, and extraction of uranium and vanadium ores. The DOE’s ULP includes tracts of land located in Mesa, Montrose, and San Miguel counties in western Colorado that cover a cumulative area of approximately 25,000 acres. Attached is a map of the lease tracts.  

Activities related to these lease sites are being analyzed in the PEIS, as discussed on the ULP PEIS website at http://ulppeis.anl.gov/. DOE LM has already begun the NEPA process for the PEIS by having public scoping meetings and completing the initial, internal review of the draft PEIS. Currently, DOE LM is addressing comments by cooperating agencies provided during the internal review of the draft PEIS. The Bureau of Land Management (BLM) is one of the cooperating agencies, specifically the Tres Rios Field Office. Based on the BLM’s previous activities in the areas around the ULP lease tracts and their knowledge of ancestral range of tribes connected with the Mesa Verde region, the BLM identified the Pueblo of Nambe Tribe as a group that we should contact for tribal consultation.  

DOE LM would like to invite you into the process at this point and is interested in identifying the Pueblo of Nambe Tribe’s preferences on a consultation approach for the PEIS. DOE LM plans to incorporate the consultation activities into its schedule for issuing the PEIS. DOE LM is in the early stages of developing the PEIS, with plans to issue a Draft PEIS in early 2013 and a Final PEIS in late 2013.  

As detailed below, government-to-government consultations between DOE LM senior officials and elected Tribal leaders could include staff-to-staff technical briefings, Tribal Government participation during the development of the Draft PEIS, or other activities that the Pueblo of Nambe Tribe would like to propose consistent with established policies and protocols. These approaches have been successfully used by DOE and Tribal
Governments in developing EIS documents that include Tribal Nation concerns and perspectives.

- Formal government-to-government consultations between senior DOE officials and elected Tribal officials can be conducted at agreed upon points in the PEIS process to further ensure that Tribal rights, values, and interests are identified and considered in pertinent decision-making on the ULP activities.

- Staff-to-staff technical briefings between DOE LM and Tribal Government representatives can be used to share information, obtain Tribal Government input on technical issues, and identify possible topics for discussion during government-to-government consultations. Tribal officials would be welcome to participate in the technical briefings, although the briefings themselves would not be considered formal consultation.

- Participation in the development of the ULP PEIS can include Tribal Nations providing review and comment on the Draft PEIS.

I would appreciate a response as to Pueblo of Nambe Tribe’s interest in participating with DOE LM in government-to-government consultation by October 12, 2012. Based on your response, I will then initiate follow-up actions with the Pueblo of Nambe Tribe to address your consultation preferences.

If you should have any questions concerning the ULP PEIS, please do not hesitate to contact me at (202) 586-8324 or Tony Carter at (202) 586-3323, LM’s Programmatic Headquarters point of contact for Tribal Nations.

Sincerely,

David W. Geiser  
Director  
Office of Legacy Management  

cc: Ernest Mirabal, NAGPRA Representative  
Thomas C. Pauling, LM  
Tony Carter, LM  
Ray Plienes, LM  
Tracy Ribeiro, LM  
David Conrad, CI
Department of Energy
Washington, DC 20585

September 28, 2012

The Honorable Gerald Nailor
Governor
Pueblo of Picuris Tribe
P.O. Box 127
Penasco, NM 87553

Dear Governor Nailor:

The purpose of this letter is to communicate the Department of Energy (DOE) Office of Legacy Management’s (LM) interest in consulting with the Pueblo of Picuris Tribe on the DOE Uranium Leasing Program (ULP) Programmatic Environmental Impact Statement (PEIS) being conducted in accordance with the National Environmental Policy Act (NEPA). A PEIS evaluates the environmental impacts of broad agency actions, such as those that may be associated with the ULP. Under the ULP, the DOE administers tracts of land for the exploration, development, and extraction of uranium and vanadium ores. The DOE’s ULP includes tracts of land located in Mesa, Montrose, and San Miguel counties in western Colorado that cover a cumulative area of approximately 25,000 acres. Attached is a map of the lease tracts.

Activities related to these lease sites are being analyzed in the PEIS, as discussed on the ULP PEIS website at http://ulpeis.anl.gov/. DOE LM has already begun the NEPA process for the PEIS by having public scoping meetings and completing the initial, internal draft of the PEIS. Currently, DOE LM is addressing comments by cooperating agencies provided during the internal review of the draft PEIS. The Bureau of Land Management (BLM) is one of the cooperating agencies, specifically the Tres Rios Field Office. Based on the BLM’s previous activities in the areas around the ULP lease tracts and their knowledge of ancestral range of tribes connected with the Mesa Verde region, the BLM identified the Pueblo of Picuris Tribe as a group that we should contact for tribal consultation.

DOE LM would like to invite you into the process at this point and is interested in identifying the Pueblo of Picuris Tribe’s preferences on a consultation approach for the PEIS. DOE LM plans to incorporate the consultation activities into its schedule for issuing the PEIS. DOE LM is in the early stages of developing the PEIS, with plans to issue a Draft PEIS in early 2013 and a Final PEIS in late 2013.

As detailed below, government-to-government consultations between DOE LM senior officials and elected Tribal leaders could include staff-to-staff technical briefings, Tribal Government participation during the development of the Draft PEIS, or other activities that the Pueblo of Picuris Tribe would like to propose consistent with established policies and protocols. These approaches have been successfully used by DOE and Tribal
Governments in developing EIS documents that include Tribal Nation concerns and perspectives.

- Formal government-to-government consultations between senior DOE officials and elected Tribal officials can be conducted at agreed upon points in the PEIS process to further ensure that Tribal rights, values, and interests are identified and considered in pertinent decision-making on the ULP activities.

- Staff-to-staff technical briefings between DOE LM and Tribal Government representatives can be used to share information, obtain Tribal Government input on technical issues, and identify possible topics for discussion during government-to-government consultations. Tribal officials would be welcome to participate in the technical briefings, although the briefings themselves would not be considered formal consultation.

- Participation in the development of the ULP PEIS can include Tribal Nations providing review and comment on the Draft PEIS.

I would appreciate a response as to Pueblo of Picuris Tribe’s interest in participating with DOE LM in government-to-government consultation by October 12, 2012. Based on your response, I will then initiate follow-up actions with the Pueblo of Picuris Tribe to address your consultation preferences.

If you should have any questions concerning the ULP PEIS, please do not hesitate to contact me at (202) 586-8324 or Tony Carter at (202) 586-3323, LM’s Programmatic Headquarters point of contact for Tribal Nations.

Sincerely,

David W. Geiser
Director
Office of Legacy Management

cc: Christy Van Buren, NAGPRA Representative
    Thomas C. Pauling, LM
    Tony Carter, LM
    Ray Plieness, LM
    Tracy Ribeiro, LM
    David Conrad, CL
Department of Energy  
Washington, DC 20585  
September 28, 2012

The Honorable George Rivera  
Governor  
Pueblo of Pojoaque Tribe  
78 Cities of Gold Road  
Santa Fe, NM 87506

Dear Governor Rivera:

The purpose of this letter is to communicate the Department of Energy (DOE) Office of Legacy Management’s (LM) interest in consulting with the Pueblo of Pojoaque Tribe on the DOE Uranium Leasing Program (ULP) Programmatic Environmental Impact Statement (PEIS) being conducted in accordance with the National Environmental Policy Act (NEPA). A PEIS evaluates the environmental impacts of broad agency actions, such as those that may be associated with the ULP. Under the ULP, the DOE administers tracts of land for the exploration, development, and extraction of uranium and vanadium ores. The DOE’s ULP includes tracts of land located in Mesa, Montrose, and San Miguel counties in western Colorado that cover a cumulative area of approximately 25,000 acres. Attached is a map of the lease tracts.

Activities related to these lease sites are being analyzed in the PEIS, as discussed on the ULP PEIS website at http://ulpeis.aml.gov/. DOE LM has already begun the NEPA process for the PEIS by having public scoping meetings and completing the initial, internal draft of the PEIS. Currently, DOE LM is addressing comments by cooperating agencies provided during the internal review of the draft PEIS. The Bureau of Land Management (BLM) is one of the cooperating agencies, specifically the Tres Rios Field Office. Based on the BLM’s previous activities in the areas around the ULP lease tracts and their knowledge of ancestral range of tribes connected with the Mesa Verde region, the BLM identified the Pueblo of Pojoaque Tribe as a group that we should contact for tribal consultation.

DOE LM would like to invite you into the process at this point and is interested in identifying the Pueblo of Pojoaque Tribe’s preferences on a consultation approach for the PEIS. DOE LM plans to incorporate the consultation activities into its schedule for issuing the PEIS. DOE LM is in the early stages of developing the PEIS, with plans to issue a Draft PEIS in early 2013 and a Final PEIS in late 2013.

As detailed below, government-to-government consultations between DOE LM senior officials and elected Tribal leaders could include staff-to-staff technical briefings, Tribal Government participation during the development of the Draft PEIS, or other activities that the Pueblo of Pojoaque Tribe would like to propose consistent with established policies and protocols. These approaches have been successfully used by DOE and
Tribal Governments in developing EIS documents that include Tribal Nation concerns and perspectives.

- Formal government-to-government consultations between senior DOE officials and elected Tribal officials can be conducted at agreed upon points in the PEIS process to further ensure that Tribal rights, values, and interests are identified and considered in pertinent decision-making on the ULP activities.

- Staff-to-staff technical briefings between DOE LM and Tribal Government representatives can be used to share information, obtain Tribal Government input on technical issues, and identify possible topics for discussion during government-to-government consultations. Tribal officials would be welcome to participate in the technical briefings, although the briefings themselves would not be considered formal consultation.

- Participation in the development of the ULP PEIS can include Tribal Nations providing review and comment on the Draft PEIS.

I would appreciate a response as to Pueblo of Pojoaque Tribe’s interest in participating with DOE LM in government-to-government consultation by October 12, 2012. Based on your response, I will then initiate follow-up actions with the Pueblo of Pojoaque Tribe to address your consultation preferences.

If you should have any questions concerning the ULP PEIS, please do not hesitate to contact me at (202) 586-8324 or Tony Carter at (202) 586-3323, LM’s Programmatic Headquarters point of contact for Tribal Nations.

Sincerely,

David W. Geiser
Director
Office of Legacy Management

cc: Vernon Lujan, NAGPRA Representative
    Thomas C. Pauling, LM
    Tony Carter, LM
    Ray Plienness, LM
    Tracy Ribeiro, LM
    David Conrad, CI
Department of Energy
Washington, DC 20585

September 28, 2012

The Honorable Anthony Ortiz
Governor
Pueblo of San Felipe Tribe
P.O. Box 4339
San Felipe Pueblo, NM 87001

Dear Governor Ortiz:

The purpose of this letter is to communicate the Department of Energy (DOE) Office of Legacy Management’s (LM) interest in consulting with the Pueblo of San Felipe Tribe on the DOE Uranium Leasing Program (ULP) Programmatic Environmental Impact Statement (PEIS) being conducted in accordance with the National Environmental Policy Act (NEPA). A PEIS evaluates the environmental impacts of broad agency actions, such as those that may be associated with the ULP. Under the ULP, the DOE administers tracts of land for the exploration, development, and extraction of uranium and vanadium ores. The DOE’s ULP includes tracts of land located in Mesa, Montrose, and San Miguel counties in western Colorado that cover a cumulative area of approximately 25,000 acres. Attached is a map of the lease tracts.

Activities related to these lease sites are being analyzed in the PEIS, as discussed on the ULP PEIS website at http://ulpeis.anl.gov/. DOE LM has already begun the NEPA process for the PEIS by having public scoping meetings and completing the initial, internal draft of the PEIS. Currently, DOE LM is addressing comments by cooperating agencies provided during the internal review of the draft PEIS. The Bureau of Land Management (BLM) is one of the cooperating agencies, specifically the Tres Rios Field Office. Based on the BLM’s previous activities in the areas around the ULP lease tracts and their knowledge of ancestral range of tribes connected with the Mesa Verde region, the BLM identified the Pueblo of San Felipe Tribe as a group that we should contact for tribal consultation.

DOE LM would like to invite you into the process at this point and is interested in identifying the Pueblo of San Felipe Tribe’s preferences on a consultation approach for the PEIS. DOE LM plans to incorporate the consultation activities into its schedule for issuing the PEIS. DOE LM is in the early stages of developing the PEIS, with plans to issue a Draft PEIS in early 2013 and a Final PEIS in late 2013.

As detailed below, government-to-government consultations between DOE LM senior officials and elected Tribal leaders could include staff-to-staff technical briefings, Tribal Government participation during the development of the Draft PEIS, or other activities that the Pueblo of San Felipe Tribe would like to propose consistent with established policies and protocols. These approaches have been successfully used by DOE and
Tribal Governments in developing EIS documents that include Tribal Nation concerns and perspectives.

- Formal government-to-government consultations between senior DOE officials and elected Tribal officials can be conducted at agreed upon points in the PEIS process to further ensure that Tribal rights, values, and interests are identified and considered in pertinent decision-making on the ULP activities.

- Staff-to-staff technical briefings between DOE LM and Tribal Government representatives can be used to share information, obtain Tribal Government input on technical issues, and identify possible topics for discussion during government-to-government consultations. Tribal officials would be welcome to participate in the technical briefings, although the briefings themselves would not be considered formal consultation.

- Participation in the development of the ULP PEIS can include Tribal Nations providing review and comment on the Draft PEIS.

I would appreciate a response as to Pueblo of San Felipe Tribe’s interest in participating with DOE LM in government-to-government consultation by October 12, 2012. Based on your response, I will then initiate follow-up actions with the Pueblo of San Felipe Tribe to address your consultation preferences.

If you should have any questions concerning the ULP PEIS, please do not hesitate to contact me at (202) 586-8324 or Tony Carter at (202) 586-3323, LM’s Programmatic Headquarters point of contact for Tribal Nations.

Sincerely,

David W. Geiser
Director
Office of Legacy Management

cc: Sarah Candelaria, NAGPRA Contact, Tribal Administrator
    Thomas C. Pauling, LM
    Tony Carter, LM
    Ray Plines, LM
    Tracy Ribeiro, LM
    David Conrad, CI
Department of Energy  
Washington, DC 20585  

September 28, 2012  

The Honorable Terry Aguilar  
Governor  
Pueblo of San Ildefonso Tribe  
Route 5, P.O. Box 315-A  
Santa Fe, NM 87506  

Dear Governor Aguilar:  

The purpose of this letter is to communicate the Department of Energy (DOE) Office of Legacy Management’s (LM) interest in consulting with the Pueblo of San Ildefonso Tribe on the DOE Uranium Leasing Program (ULP) Programmatic Environmental Impact Statement (PEIS) being conducted in accordance with the National Environmental Policy Act (NEPA). A PEIS evaluates the environmental impacts of broad agency actions, such as those that may be associated with the ULP. Under the ULP, the DOE administers tracts of land for the exploration, development, and extraction of uranium and vanadium ores. The DOE’s ULP includes tracts of land located in Mesa, Montrose, and San Miguel counties in western Colorado that cover a cumulative area of approximately 25,000 acres. Attached is a map of the lease tracts.  

Activities related to these lease sites are being analyzed in the PEIS, as discussed on the ULP PEIS website at http://ulppeis.aml.gov/. DOE LM has already begun the NEPA process for the PEIS by having public scoping meetings and completing the initial, internal draft of the PEIS. Currently, DOE LM is addressing comments by cooperating agencies provided during the internal review of the draft PEIS. The Bureau of Land Management (BLM) is one of the cooperating agencies, specifically the Tres Rios Field Office. Based on the BLM’s previous activities in the areas around the ULP lease tracts and their knowledge of ancestral range of tribes connected with the Mesa Verde region, the BLM identified the Pueblo of San Ildefonso Tribe as a group that we should contact for tribal consultation.  

DOE LM would like to invite you into the process at this point and is interested in identifying the Pueblo of San Ildefonso Tribe’s preferences on a consultation approach for the PEIS. DOE LM plans to incorporate the consultation activities into its schedule for issuing the PEIS. DOE LM is in the early stages of developing the PEIS, with plans to issue a Draft PEIS in early 2013 and a Final PEIS in late 2013.  

As detailed below, government-to-government consultations between DOE LM senior officials and elected Tribal leaders could include staff-to-staff technical briefings, Tribal Government participation during the development of the Draft PEIS, or other activities that the Pueblo of San Ildefonso Tribe would like to propose consistent with established policies and protocols. These approaches have been successfully used by DOE and...
Tribal Governments in developing EIS documents that include Tribal Nation concerns and perspectives.

- Formal government-to-government consultations between senior DOE officials and elected Tribal officials can be conducted at agreed upon points in the PEIS process to further ensure that Tribal rights, values, and interests are identified and considered in pertinent decision-making on the ULP activities.

- Staff-to-staff technical briefings between DOE LM and Tribal Government representatives can be used to share information, obtain Tribal Government input on technical issues, and identify possible topics for discussion during government-to-government consultations. Tribal officials would be welcome to participate in the technical briefings, although the briefings themselves would not be considered formal consultation.

- Participation in the development of the ULP PEIS can include Tribal Nations providing review and comment on the Draft PEIS.

I would appreciate a response as to Pueblo of San Ildefonso Tribe’s interest in participating with DOE LM in government-to-government consultation by October 12, 2012. Based on your response, I will then initiate follow-up actions with the Pueblo of San Ildefonso Tribe to address your consultation preferences.

If you should have any questions concerning the ULP PEIS, please do not hesitate to contact me at (202) 586-8324 or Tony Carter at (202) 586-3323, LM’s Programmatic Headquarters point of contact for Tribal Nations.

Sincerely,

David W. Geiser
Director
Office of Legacy Management

cc: Brain Montoya, NAGPRA Contact, Pueblo of San Ildefonso Tribe
    Thomas C. Pauling, LM
    Tony Carter, LM
    Ray Plieness, LM
    Tracy Ribeiro, LM
    David Conrad, CI
Department of Energy
Washington, DC 20585
September 28, 2012

The Honorable Malcolm Montoya
Governor
Pueblo of Sandia Tribe
481 Sandia Loop
Bernalillo, NM 87004

Dear Governor Montoya:

The purpose of this letter is to communicate the Department of Energy (DOE) Office of Legacy Management’s (LM) interest in consulting with the Pueblo of Sandia Tribe on the DOE Uranium Leasing Program (ULP) Programmatic Environmental Impact Statement (PEIS) being conducted in accordance with the National Environmental Policy Act (NEPA). A PEIS evaluates the environmental impacts of broad agency actions, such as those that may be associated with the ULP. Under the ULP, the DOE administers tracts of land for the exploration, development, and extraction of uranium and vanadium ores. The DOE’s ULP includes tracts of land located in Mesa, Montrose, and San Miguel counties in western Colorado that cover a cumulative area of approximately 25,000 acres. Attached is a map of the lease tracts.

Activities related to these lease sites are being analyzed in the PEIS, as discussed on the ULP PEIS website at http://ulpéis.anl.gov/. DOE LM has already begun the NEPA process for the PEIS by having public scoping meetings and completing the initial, internal draft of the PEIS. Currently, DOE LM is addressing comments by cooperating agencies provided during the internal review of the draft PEIS. The Bureau of Land Management (BLM) is one of the cooperating agencies, specifically the Tres Ríos Field Office. Based on the BLM’s previous activities in the areas around the ULP lease tracts and their knowledge of ancestral range of tribes connected with the Mesa Verde region, the BLM identified the Pueblo of Sandia Tribe as a group that we should contact for tribal consultation.

DOE LM would like to invite you into the process at this point and is interested in identifying the Pueblo of Sandia Tribe’s preferences on a consultation approach for the PEIS. DOE LM plans to incorporate the consultation activities into its schedule for issuing the PEIS. DOE LM is in the early stages of developing the PEIS, with plans to issue a Draft PEIS in early 2013 and a Final PEIS in late 2013.

As detailed below, government-to-government consultations between DOE LM senior officials and elected Tribal leaders could include staff-to-staff technical briefings, Tribal Government participation during the development of the Draft PEIS, or other activities that the Pueblo of Sandia Tribe would like to propose consistent with established policies and protocols. These approaches have been successfully used by DOE and Tribal...
Governments in developing EIS documents that include Tribal Nation concerns and perspectives.

- Formal government-to-government consultations between senior DOE officials and elected Tribal officials can be conducted at agreed upon points in the PEIS process to further ensure that Tribal rights, values, and interests are identified and considered in pertinent decision-making on the ULP activities.

- Staff-to-staff technical briefings between DOE LM and Tribal Government representatives can be used to share information, obtain Tribal Government input on technical issues, and identify possible topics for discussion during government-to-government consultations. Tribal officials would be welcome to participate in the technical briefings, although the briefings themselves would not be considered formal consultation.

- Participation in the development of the ULP PEIS can include Tribal Nations providing review and comment on the Draft PEIS.

I would appreciate a response as to Pueblo of Sandia Tribe’s interest in participating with DOE LM in government-to-government consultation by October 12, 2012. Based on your response, I will then initiate follow-up actions with the Pueblo of Sandia Tribe to address your consultation preferences.

If you should have any questions concerning the ULP PEIS, please do not hesitate to contact me at (202) 586-8324 or Tony Carter at (202) 586-3323, LM’s Programmatic Headquarters point of contact for Tribal Nations.

Sincerely,

David W. Geiser  
Director  
Office of Legacy Management

cc: Frank Chaves, Environmental Department Director  
   Thomas C. Pauling, LM  
   Tony Carter, LM  
   Ray Pletness, LM  
   Tracy Ribeiro, LM  
   David Conrad, CI
Department of Energy
Washington, DC 20585

September 28, 2012

The Honorable Ernest J. Lujan
Governor
Pueblo of Santa Ana Tribe
Two Dove Road
Santa Ana Pueblo, NM 87004

Dear Governor Lujan:

The purpose of this letter is to communicate the Department of Energy (DOE) Office of Legacy Management's (LM) interest in consulting with the Pueblo of Santa Ana Tribe on the DOE Uranium Leasing Program (ULP) Programmatic Environmental Impact Statement (PEIS) being conducted in accordance with the National Environmental Policy Act (NEPA). A PEIS evaluates the environmental impacts of broad agency actions, such as those that may be associated with the ULP. Under the ULP, the DOE administers tracts of land for the exploration, development, and extraction of uranium and vanadium ores. The DOE's ULP includes tracts of land located in Mesa, Montrose, and San Miguel counties in western Colorado that cover a cumulative area of approximately 25,000 acres. Attached is a map of the lease tracts.

Activities related to these lease sites are being analyzed in the PEIS, as discussed on the ULP PEIS website at http://ulpesis.anl.gov/. DOE LM has already begun the NEPA process for the PEIS by having public scoping meetings and completing the initial, internal draft of the PEIS. Currently, DOE LM is addressing comments by cooperating agencies provided during the internal review of the draft PEIS. The Bureau of Land Management (BLM) is one of the cooperating agencies, specifically the Tres Rios Field Office. Based on the BLM's previous activities in the areas around the ULP lease tracts and their knowledge of ancestral range of tribes connected with the Mesa Verde region, the BLM identified the Pueblo of Santa Ana Tribe as a group that we should contact for tribal consultation.

DOE LM would like to invite you into the process at this point and is interested in identifying the Pueblo of Santa Ana Tribe's preferences on a consultation approach for the PEIS. DOE LM plans to incorporate the consultation activities into its schedule for issuing the PEIS. DOE LM is in the early stages of developing the PEIS, with plans to issue a Draft PEIS in early 2013 and a Final PEIS in late 2013.

As detailed below, government-to-government consultations between DOE LM senior officials and elected Tribal leaders could include staff-to-staff technical briefings, Tribal Government participation during the development of the Draft PEIS, or other activities that the Pueblo of Santa Ana Tribe would like to propose consistent with established policies and protocols. These approaches have been successfully used by DOE and
Tribal Governments in developing EIS documents that include Tribal Nation concerns and perspectives.

- Formal government-to-government consultations between senior DOE officials and elected Tribal officials can be conducted at agreed upon points in the PEIS process to further ensure that Tribal rights, values, and interests are identified and considered in pertinent decision-making on the ULP activities.

- Staff-to-staff technical briefings between DOE LM and Tribal Government representatives can be used to share information, obtain Tribal Government input on technical issues, and identify possible topics for discussion during government-to-government consultations. Tribal officials would be welcome to participate in the technical briefings, although the briefings themselves would not be considered formal consultation.

- Participation in the development of the ULP PEIS can include Tribal Nations providing review and comment on the Draft PEIS.

I would appreciate a response as to Pueblo of Santa Ana Tribe’s interest in participating with DOE LM in government-to-government consultation by October 12, 2012. Based on your response, I will then initiate follow-up actions with the Pueblo of Santa Ana Tribe to address your consultation preferences.

If you should have any questions concerning the ULP PEIS, please do not hesitate to contact me at (202) 586-8324 or Tony Carter at (202) 586-3323, LM’s Programmatic Headquarters point of contact for Tribal Nations.

Sincerely,

David W. Geiser
Director
Office of Legacy Management

cc: Ben Robbins, Tribal Resource Administrator
Thomas C. Pauling, LM
Tony Carter, LM
Ray Plieness, LM
Tracy Ribeiro, LM
David Conrad, Cl
The Honorable Walter Dasheno  
Governor  
Pueblo of Santa Clara Tribe  
P.O. Box 580  
Espanola, NM 87532

Dear Governor Dasheno:

The purpose of this letter is to communicate the Department of Energy (DOE) Office of Legacy Management’s (LM) interest in consulting with the Pueblo of Santa Clara Tribe on the DOE Uranium Leasing Program (ULP) Programmatic Environmental Impact Statement (PEIS) being conducted in accordance with the National Environmental Policy Act (NEPA). A PEIS evaluates the environmental impacts of broad agency actions, such as those that may be associated with the ULP. Under the ULP, the DOE administers tracts of land for the exploration, development, and extraction of uranium and vanadium ores. The DOE’s ULP includes tracts of land located in Mesa, Montrose, and San Miguel counties in western Colorado that cover a cumulative area of approximately 25,000 acres. Attached is a map of the lease tracts.

Activities related to these lease sites are being analyzed in the PEIS, as discussed on the ULP PEIS website at http://ulpeis.ornl.gov/. DOE LM has already begun the NEPA process for the PEIS by having public scoping meetings and completing the initial, internal draft of the PEIS. Currently, DOE LM is addressing comments by cooperating agencies provided during the internal review of the draft PEIS. The Bureau of Land Management (BLM) is one of the cooperating agencies, specifically the Tres Rios Field Office. Based on the BLM’s previous activities in the areas around the ULP lease tracts and their knowledge of ancestral range of tribes connected with the Mesa Verde region, the BLM identified the Pueblo of Santa Clara Tribe as a group that we should contact for tribal consultation.

DOE LM would like to invite you into the process at this point and is interested in identifying the Pueblo of Santa Clara Tribe’s preferences on a consultation approach for the PEIS. DOE LM plans to incorporate the consultation activities into its schedule for issuing the PEIS. DOE LM is in the early stages of developing the PEIS, with plans to issue a Draft PEIS in early 2013 and a Final PEIS in late 2013.

As detailed below, government-to-government consultations between DOE LM senior officials and elected Tribal leaders could include staff-to-staff technical briefings, Tribal Government participation during the development of the Draft PEIS, or other activities that the Pueblo of Santa Clara Tribe would like to propose consistent with established policies and protocols. These approaches have been successfully used by DOE and
Tribal Governments in developing EIS documents that include Tribal Nation concerns and perspectives.

- Formal government-to-government consultations between senior DOE officials and elected Tribal officials can be conducted at agreed upon points in the PEIS process to further ensure that Tribal rights, values, and interests are identified and considered in pertinent decision-making on the ULP activities.

- Staff-to-staff technical briefings between DOE LM and Tribal Government representatives can be used to share information, obtain Tribal Government input on technical issues, and identify possible topics for discussion during government-to-government consultations. Tribal officials would be welcome to participate in the technical briefings, although the briefings themselves would not be considered formal consultation.

- Participation in the development of the ULP PEIS can include Tribal Nations providing review and comment on the Draft PEIS.

I would appreciate a response as to Pueblo of Santa Clara Tribe’s interest in participating with DOE LM in government-to-government consultation by October 12, 2012. Based on your response, I will then initiate follow-up actions with the Pueblo of Santa Clara Tribe to address your consultation preferences.

If you should have any questions concerning the ULP PEIS, please do not hesitate to contact me at (202) 586-8324 or Tony Carter at (202) 586-3323, LM’s Programmatic Headquarters point of contact for Tribal Nations.

Sincerely,

David W. Geiser
Director
Office of Legacy Management

cc: Ben Chavarria, NAGPRA Contact, Land Claims Office
    Thomas C. Pauling, LM
    Tony Carter, LM
    Ray Plienness, LM
    Tracy Ribeiro, LM
    David Conrad, CI
The Honorable Loriano B. Romero  
Governor  
Pueblo of Taos Tribe  
P.O. Box 1846  
Taos, NM 87571  

Dear Governor Romero:

The purpose of this letter is to communicate the Department of Energy (DOE) Office of Legacy Management’s (LM) interest in consulting with the Pueblo of Taos Tribe on the DOE Uranium Leasing Program (ULP) Programmatic Environmental Impact Statement (PEIS) being conducted in accordance with the National Environmental Policy Act (NEPA). A PEIS evaluates the environmental impacts of broad agency actions, such as those that may be associated with the ULP. Under the ULP, the DOE administers tracts of land for the exploration, development, and extraction of uranium and vanadium ores. The DOE’s ULP includes tracts of land located in Mesa, Montrose, and San Miguel counties in western Colorado that cover a cumulative area of approximately 25,000 acres. Attached is a map of the lease tracts.

Activities related to these lease sites are being analyzed in the PEIS, as discussed on the ULP PEIS website at http://ulppeis.anl.gov/. DOE LM has already begun the NEPA process for the PEIS by having public scoping meetings and completing the initial, internal draft of the PEIS. Currently, DOE LM is addressing comments by cooperating agencies provided during the internal review of the draft PEIS. The Bureau of Land Management (BLM) is one of the cooperating agencies, specifically the Tres Rios Field Office. Based on the BLM’s previous activities in the areas around the ULP lease tracts and their knowledge of ancestral range of tribes connected with the Mesa Verde region, the BLM identified the Pueblo of Taos Tribe as a group that we should contact for tribal consultation.

DOE LM would like to invite you into the process at this point and is interested in identifying the Pueblo of Taos Tribe’s preferences on a consultation approach for the PEIS. DOE LM plans to incorporate the consultation activities into its schedule for issuing the PEIS. DOE LM is in the early stages of developing the PEIS, with plans to issue a Draft PEIS in early 2013 and a Final PEIS in late 2013.

As detailed below, government-to-government consultations between DOE LM senior officials and elected Tribal Nation leaders could include staff-to-staff technical briefings, Tribal Government participation during the development of the Draft PEIS, or other activities that the Pueblo of Taos Tribe would like to propose consistent with established policies and protocols. These approaches have been successfully used by DOE and Tribal
Governments in developing EIS documents that include Tribal Nation concerns and perspectives.

- Formal government-to-government consultations between senior DOE officials and elected Tribal officials can be conducted at agreed upon points in the PEIS process to further ensure that Tribal rights, values, and interests are identified and considered in pertinent decision-making on the ULP activities.

- Staff-to-staff technical briefings between DOE LM and Tribal Government representatives can be used to share information, obtain Tribal Government input on technical issues, and identify possible topics for discussion during government-to-government consultations. Tribal officials would be welcome to participate in the technical briefings, although the briefings themselves would not be considered formal consultation.

- Participation in the development of the ULP PEIS can include Tribal Nations providing review and comment on the Draft PEIS.

I would appreciate a response as to Pueblo of Taos Tribe’s interest in participating with DOE LM in government-to-government consultation by October 12, 2012. Based on your response, I will then initiate follow-up actions with the Pueblo of Taos Tribe to address your consultation preferences.

If you should have any questions concerning the ULP PEIS, please do not hesitate to contact me at (202) 586-8324 or Tony Carter at (202) 586-3323, LM’s Programmatic Headquarters point of contact for Tribal Nations.

Sincerely,

David W. Geiser
Director
Office of Legacy Management

cc: Gilbert Suazo Sr., Lt. Governor, Pueblo of Taos tribe
Tina Romero, Executive Assistant
Thomas C. Pauling, LM
Tony Carter, LM
Ray Phlencs, LM
Tracey Ribeiro, LM
David Conrad, CI
Department of Energy
Washington, DC 20585

September 28, 2012

The Honorable Ramos Romero
Governor
Pueblo of Tesuque Tribe
Route 42, P.O. Box 360-T
Santa Fe, NM 87506

Dear Governor Romero:

The purpose of this letter is to communicate the Department of Energy (DOE) Office of Legacy Management’s (LM) interest in consulting with the Pueblo of Tesuque Tribe on the DOE Uranium Leasing Program (ULP) Programmatic Environmental Impact Statement (PEIS) being conducted in accordance with the National Environmental Policy Act (NEPA). A PEIS evaluates the environmental impacts of broad agency actions, such as those that may be associated with the ULP. Under the ULP, the DOE administers tracts of land for the exploration, development, and extraction of uranium and vanadium ores. The DOE's ULP includes tracts of land located in Mesa, Montrose, and San Miguel counties in western Colorado that cover a cumulative area of approximately 25,000 acres. Attached is a map of the lease tracts.

Activities related to these lease sites are being analyzed in the PEIS, as discussed on the ULP PEIS website at http://ulppeis.anl.gov/. DOE LM has already begun the NEPA process for the PEIS by having public scoping meetings and completing the initial, internal draft of the PEIS. Currently, DOE LM is addressing comments by cooperating agencies provided during the internal review of the draft PEIS. The Bureau of Land Management (BLM) is one of the cooperating agencies, specifically the Tres Rios Field Office. Based on the BLM’s previous activities in the areas around the ULP lease tracts and their knowledge of ancestral range of tribes connected with the Mesa Verde region, the BLM identified the Pueblo of Tesuque Tribe as a group that we should contact for tribal consultation.

DOE LM would like to invite you into the process at this point and is interested in identifying the Pueblo of Tesuque Tribe’s preferences on a consultation approach for the PEIS. DOE LM plans to incorporate the consultation activities into its schedule for issuing the PEIS. DOE LM is in the early stages of developing the PEIS, with plans to issue a Draft PEIS in early 2013 and a Final PEIS in late 2013.

As detailed below, government-to-government consultations between DOE LM senior officials and elected Tribal leaders could include staff-to-staff technical briefings, Tribal Government participation during the development of the Draft PEIS, or other activities that the Pueblo of Tesuque Tribe would like to propose consistent with established policies and protocols. These approaches have been successfully used by DOE and
Tribal Governments in developing EIS documents that include Tribal Nation concerns and perspectives.

- Formal government-to-government consultations between senior DOE officials and elected Tribal officials can be conducted at agreed upon points in the PEIS process to further ensure that Tribal rights, values, and interests are identified and considered in pertinent decision-making on the ULP activities.

- Staff-to-staff technical briefings between DOE LM and Tribal Government representatives can be used to share information, obtain Tribal Government input on technical issues, and identify possible topics for discussion during government-to-government consultations. Tribal officials would be welcome to participate in the technical briefings, although the briefings themselves would not be considered formal consultation.

- Participation in the development of the ULP PEIS can include Tribal Nations providing review and comment on the Draft PEIS.

I would appreciate a response as to Pueblo of Tesuque Tribe’s interest in participating with DOE LM in government-to-government consultation by October 12, 2012. Based on your response, I will then initiate follow-up actions with the Pueblo of Tesuque Tribe to address your consultation preferences.

If you should have any questions concerning the ULP PEIS, please do not hesitate to contact me at (202) 586-8324 or Tony Carter at (202) 586-3323, LM’s Programmatic Headquarters point of contact for Tribal Nations.

Sincerely,

[Signature]

David W. Geiser
Director
Office of Legacy Management

cc: Charles Dorame, Pueblo of Tesuque Tribe
    Thomas C. Pauling, LM
    Tony Carter, LM
    Ray Pieness, LM
    Tracy Ribeiro, LM
    David Conrad, CI
The Honorable Wilfred Shije
Governor
Pueblo of Zia Tribe
135 Capitol Square Drive
Zia Pueblo, NM 87053-6013

Dear Governor Shije:

The purpose of this letter is to communicate the Department of Energy (DOE) Office of Legacy Management’s (LM) interest in consulting with the Pueblo of Zia Tribe on the DOE Uranium Leasing Program (ULP) Programmatic Environmental Impact Statement (PEIS) being conducted in accordance with the National Environmental Policy Act (NEPA). A PEIS evaluates the environmental impacts of broad agency actions, such as those that may be associated with the ULP. Under the ULP, the DOE administers tracts of land for the exploration, development, and extraction of uranium and vanadium ores. The DOE’s ULP includes tracts of land located in Mesa, Montrose, and San Miguel counties in western Colorado that cover a cumulative area of approximately 25,000 acres. Attached is a map of the lease tracts.

Activities related to these lease sites are being analyzed in the PEIS, as discussed on the ULP PEIS website at http://ulppeis.anl.gov/. DOE LM has already begun the NEPA process for the PEIS by having public scoping meetings and completing the initial, internal draft of the PEIS. Currently, DOE LM is addressing comments by cooperating agencies provided during the internal review of the draft PEIS. The Bureau of Land Management (BLM) is one of the cooperating agencies, specifically the Tres Rios Field Office. Based on the BLM’s previous activities in the areas around the ULP lease tracts and their knowledge of ancestral range of tribes connected with the Mesa Verde region, the BLM identified the Pueblo of Zia Tribe as a group that we should contact for tribal consultation.

DOE LM would like to invite you into the process at this point and is interested in identifying the Pueblo of Zia Tribe’s preferences on a consultation approach for the PEIS. DOE LM plans to incorporate the consultation activities into its schedule for issuing the PEIS. DOE LM is in the early stages of developing the PEIS, with plans to issue a Draft PEIS in early 2013 and a Final PEIS in late 2013.

As detailed below, government-to-government consultations between DOE LM senior officials and elected Tribal leaders could include staff-to-staff technical briefings, Tribal Government participation during the development of the Draft PEIS, or other activities that the Pueblo of Zia Tribe would like to propose consistent with established policies and protocols. These approaches have been successfully used by DOE and Tribal
Governments in developing EIS documents that include Tribal Nation concerns and perspectives.

- Formal government-to-government consultations between senior DOE officials and elected Tribal officials can be conducted at agreed upon points in the PEIS process to further ensure that Tribal rights, values, and interests are identified and considered in pertinent decision-making on the ULP activities.

- Staff-to-staff technical briefings between DOE LM and Tribal Government representatives can be used to share information, obtain Tribal Government input on technical issues, and identify possible topics for discussion during government-to-government consultations. Tribal officials would be welcome to participate in the technical briefings, although the briefings themselves would not be considered formal consultation.

- Participation in the development of the ULP PEIS can include Tribal Nations providing review and comment on the Draft PEIS.

I would appreciate a response as to Pueblo of Zia Tribe’s interest in participating with DOE LM in government-to-government consultation by October 12, 2012. Based on your response, I will then initiate follow-up actions with the Pueblo of Zia Tribe to address your consultation preferences.

If you should have any questions concerning the ULP PEIS, please do not hesitate to contact me at (202) 586-8324 or Tony Carter at (202) 586-3323, LM’s Programmatic Headquarters point of contact for Tribal Nations.

Sincerely,

David W. Geiser
Director
Office of Legacy Management

cc: Peter Pino, NAGPRA Contact for CO/UT
Thomas C. Pauling, LM
Tony Carter, LM
Ray Pliness, LM
Tracy Ribeiro, LM
David Conrad, CI
Department of Energy
Washington, DC 20585

September 28, 2012

The Honorable Arlen P. Quetawki, Sr.
Governor
Zuni Pueblo Tribe
P.O. Box 339
Zuni, NM 87327

Dear Governor Quetawki:

The purpose of this letter is to communicate the Department of Energy (DOE) Office of Legacy Management's (LM) interest in consulting with the Zuni Pueblo Tribe on the DOE Uranium Leasing Program (ULP) Programmatic Environmental Impact Statement (PEIS) being conducted in accordance with the National Environmental Policy Act (NEPA). A PEIS evaluates the environmental impacts of broad agency actions, such as those that may be associated with the ULP. Under the ULP, the DOE administers tracts of land for the exploration, development, and extraction of uranium and vanadium ores. The DOE's ULP includes tracts of land located in Mesa, Montrose, and San Miguel counties in western Colorado that cover a cumulative area of approximately 25,000 acres. Attached is a map of the lease tracts.

Activities related to these lease sites are being analyzed in the PEIS, as discussed on the ULP PEIS website at http://ulpeis.anl.gov/. DOE LM has already begun the NEPA process for the PEIS by having public scoping meetings and completing the initial, internal draft of the PEIS. Currently, DOE LM is addressing comments by cooperating agencies provided during the internal review of the draft PEIS. The Bureau of Land Management (BLM) is one of the cooperating agencies, specifically the Tres Rios Field Office. Based on the BLM's previous activities in the areas around the ULP lease tracts and their knowledge of ancestral range of tribes connected with the Mesa Verde region, the BLM identified the Zuni Pueblo Tribe as a group that we should contact for tribal consultation.

DOE LM would like to invite you into the process at this point and is interested in identifying the Zuni Pueblo Tribe's preferences on a consultation approach for the PEIS. DOE LM plans to incorporate the consultation activities into its schedule for issuing the PEIS. DOE LM is in the early stages of developing the PEIS, with plans to issue a Draft PEIS in early 2013 and a Final PEIS in late 2013.

As detailed below, government-to-government consultations between DOE LM senior officials and elected Tribal leaders could include staff-to-staff technical briefings, Tribal Government participation during the development of the Draft PEIS, or other activities that the Zuni Pueblo Tribe would like to propose consistent with established policies and protocols. These approaches have been successfully used by DOE and Tribal...
Governments in developing EIS documents that include Tribal Nation concerns and perspectives.

- Formal government-to-government consultations between senior DOE officials and elected Tribal officials can be conducted at agreed upon points in the PEIS process to further ensure that Tribal rights, values, and interests are identified and considered in pertinent decision-making on the ULP activities.

- Staff-to-staff technical briefings between DOE LM and Tribal Government representatives can be used to share information, obtain Tribal Government input on technical issues, and identify possible topics for discussion during government-to-government consultations. Tribal officials would be welcome to participate in the technical briefings, although the briefings themselves would not be considered formal consultation.

- Participation in the development of the ULP PEIS can include Tribal Nations providing review and comment on the Draft PEIS.

I would appreciate a response as to Zuni Pueblo Tribe’s interest in participating with DOE LM in government-to-government consultation by **October 12, 2012**. Based on your response, I will then initiate follow-up actions with the Zuni Pueblo Tribe to address your consultation preferences.

If you should have any questions concerning the ULP PEIS, please do not hesitate to contact me at (202) 586-8324 or Tony Carter at (202) 586-3323, LM’s Programmatic Headquarters point of contact for Tribal Nations.

*Sincerely,*

David W. Geiser  
Director  
Office of Legacy Management

*cc:*  
Arden Kucate, Head Councilman, Zuni Pueblo Tribe  
Kurt Dongoske, Acting Director, Historic Preservation  
Thomas C. Pauling, LM  
Tony Carter, LM  
Ray Plieness, LM  
Tracy Ribeiro, LM  
David Conrad, CI
Figure 1. Locations of lease tracts to be potentially administered by the Department of Energy under the Uranium Leasing Program.
The Honorable Levi Pesata  
President  
Jicarilla Apache Tribal Council  
P.O. Box 507  
Dulce, NM 87528

Dear President Pesata:

This letter is a follow-up to the letter dated September 28, 2012 and phone call placed to your office on October 24, 2012, communicating the Department of Energy (DOE) interest in consulting with the Jicarilla Apache Tribe on the DOE Uranium Leasing Program (ULP), specifically on the Programmatic Environmental Impact Statement (PEIS) being conducted following the National Environmental Policy Act (NEPA). DOE currently administers thirty-one (31) lease tracts in the Uranium Mineral Belt in southwestern Colorado. Twenty-nine (29) of these lease tracts are actively held under lease. Activities related to these lease sites are being analyzed in the PEIS, as discussed on the dedicated web page <http://ulppeis.anl.gov/>.

In the inquiry letter on consultation, DOE identified three approaches to government-to-government consultations for your consideration in the event you deemed it appropriate to participate in the PEIS process. DOE is currently reviewing the Draft PEIS with the cooperating agencies; comments are due by November 30, 2012. DOE plans to issue a Draft PEIS for public review in February 2013 and a Final PEIS in late 2013. We welcome your input and encourage your participation in the NEPA process.

DOE continues to look for ways to improve the government-to-government consultation process with the Jicarilla Apache Tribe. We invite any suggestions or advice you might have to improve this process. If you have any questions concerning the ULP PEIS, please do not hesitate to contact me at (202) 586-7550 or Tony Carter at (202) 586-3323, my headquarters representative for activities with Tribal Nations.

Sincerely,

David W. Geiser  
Director  
Office of Legacy Management
cc:  Gifford Velarde, Director, Office of Cultural Indian Affairs
    Dr. Jeff Blythe, THPO, Office of Cultural Indian Affairs
    Thomas C. Pauling, LM
    Tony Carter, LM
    Ray Pliness, LM
    Tracy Ribeiro, LM
    David Conrad, CI
The Honorable Sisto Quintana  
Governor  
Kewa Pueblo Tribe  
P.O. Box 99  
Santo Domingo Pueblo, NM 87052

Dear Governor Quintana:

This letter is a follow-up to the letter dated September 28, 2012 and phone call placed to your office on October 24, 2012, communicating the Department of Energy (DOE) interest in consulting with the Kewa Pueblo Tribe on the DOE Uranium Leasing Program (ULP), specifically on the Programmatic Environmental Impact Statement (PEIS) being conducted following the National Environmental Policy Act (NEPA). DOE currently administers thirty-one (31) lease tracts in the Urravan Mineral Belt in southwestern Colorado. Twenty-nine (29) of these lease tracts are actively held under lease. Activities related to these lease sites are being analyzed in the PEIS, as discussed on the dedicated web page [http://ulppeis.anl.gov/].

In the inquiry letter on consultation, DOE identified three approaches to government-to-government consultations for your consideration in the event you deemed it appropriate to participate in the PEIS process. DOE is currently reviewing the Draft PEIS with the cooperating agencies; comments are due by November 30, 2012. DOE plans to issue a Draft PEIS for public review in February 2013 and a Final PEIS in late 2013. We welcome your input and encourage your participation in the NEPA process.

DOE continues to look for ways to improve the government-to-government consultation process with the Kewa Pueblo Tribe. We invite any suggestions or advice you might have to improve this process. If you have any questions concerning the ULP PEIS, please do not hesitate to contact me at (202) 586-7550 or Tony Carter at (202) 586-3323, my headquarters representative for activities with Tribal Nations.

Sincerely,

David W. Geiser  
Director  
Office of Legacy Management
The Honorable Joshua Madalena
Governor
Pueblo of Jemez Tribe
P.O. Box 100
Jemez Pueblo, NM 87024
Dear Governor Madalena:

This letter is a follow-up to the letter dated September 28, 2012 and phone call placed to your office on October 24, 2012, communicating the Department of Energy (DOE) interest in consulting with the Pueblo of Jemez Tribe on the DOE Uranium Leasing Program (ULP), specifically on the Programmatic Environmental Impact Statement (PEIS) being conducted following the National Environmental Policy Act (NEPA). DOE currently administers thirty-one (31) lease tracts in the Uravan Mineral Belt in southwestern Colorado. Twenty-nine (29) of these lease tracts are actively held under lease. Activities related to these lease sites are being analyzed in the PEIS, as discussed on the dedicated web page <http://ulpeis.anl.gov/>.

In the inquiry letter on consultation, DOE identified three approaches to government-to-government consultations for your consideration in the event you deemed it appropriate to participate in the PEIS process. DOE is currently reviewing the Draft PEIS with the cooperating agencies; comments are due by November 30, 2012. DOE plans to issue a Draft PEIS for public review in February 2013 and a Final PEIS in late 2013. We welcome your input and encourage your participation in the NEPA process.

DOE continues to look for ways to improve the government-to-government consultation process with the Pueblo of Jemez Tribe. We invite any suggestions or advice you might have to improve this process. If you have any questions concerning the ULP PEIS, please do not hesitate to contact me at (202) 586-7550 or Tony Carter at (202) 586-3323, my headquarters representative for activities with Tribal Nations.

Sincerely,

David W. Geiser
Director
Office of Legacy Management
cc: Christopher Toya, Traditional Cultural Properties Project Manager
    Thomas C. Pauling, LM
    Tony Carter, LM
    Ray Pliness, LM
    Tracy Ribeiro, LM
    David Conrad, CI
The Honorable Richard B. Luarkie  
Governor  
Pueblo of Laguna Tribe  
P.O. Box 194  
Laguna, NM 87026  

Dear Governor Luarkie:

This letter is a follow-up to the letter dated September 28, 2012 and phone call placed to your office on October 24, 2012, communicating the Department of Energy (DOE) interest in consulting with the Pueblo of Laguna Tribe on the DOE Uranium Leasing Program (ULP), specifically on the Programmatic Environmental Impact Statement (PEIS) being conducted following the National Environmental Policy Act (NEPA). DOE currently administers thirty-one (31) lease tracts in the Uravan Mineral Belt in southwestern Colorado. Twenty-nine (29) of these lease tracts are actively held under lease. Activities related to these lease sites are being analyzed in the PEIS, as discussed on the dedicated web page <http://ulpeis.aml.gov/>.

In the inquiry letter on consultation, DOE identified three approaches to government-to-government consultations for your consideration in the event you deemed it appropriate to participate in the PEIS process. DOE is currently reviewing the Draft PEIS with the cooperating agencies; comments are due by November 30, 2012. DOE plans to issue a Draft PEIS for public review in February 2013 and a Final PEIS in late 2013. We welcome your input and encourage your participation in the NEPA process.

DOE continues to look for ways to improve the government-to-government consultation process with the Pueblo of Laguna Tribe. We invite any suggestions or advice you might have to improve this process. If you have any questions concerning the ULP PEIS, please do not hesitate to contact me at (202) 586-7550 or Tony Carter at (202) 586-3323, my headquarters representative for activities with Tribal Nations.

Sincerely,

David W. Geiser  
Director  
Office of Legacy Management
cc: Robert Mooney, Sr., Records, Pueblo of Laguna Tribe
Thomas C. Pauling, LM
Tony Carter, LM
Ray Plieness, LM
Tracy Ribeiro, LM
David Conrad, CI
Department of Energy
Washington, DC 20585

November 20, 2012

The Honorable Phillip A. Perez
Governor
Pueblo of Nambe Tribe
Route 1, Box 117-BB
Santa Fe, NM 87506

Dear Governor Perez:

This letter is a follow-up to the letter dated September 28, 2012 and phone call placed to your office on October 24, 2012, communicating the Department of Energy (DOE) interest in consulting with the Pueblo of Nambe Tribe on the DOE Uranium Leasing Program (ULP), specifically on the Programmatic Environmental Impact Statement (PEIS) being conducted following the National Environmental Policy Act (NEPA). DOE currently administers thirty-one (31) lease tracts in the Urravan Mineral Belt in southwestern Colorado. Twenty-nine (29) of these lease tracts are actively held under lease. Activities related to these lease sites are being analyzed in the PEIS, as discussed on the dedicated web page <http://ulperis.anl.gov/>.

In the inquiry letter on consultation, DOE identified three approaches to government-to-government consultations for your consideration in the event you deemed it appropriate to participate in the PEIS process. DOE is currently reviewing the Draft PEIS with the cooperating agencies; comments are due by November 30, 2012. DOE plans to issue a Draft PEIS for public review in February 2013 and a Final PEIS in late 2013. We welcome your input and encourage your participation in the NEPA process.

DOE continues to look for ways to improve the government-to-government consultation process with the Pueblo of Nambe Tribe. We invite any suggestions or advice you might have to improve this process. If you have any questions concerning the ULP PEIS, please do not hesitate to contact me at (202) 586-7550 or Tony Carter at (202) 586-3323, my headquarters representative for activities with Tribal Nations.

Sincerely,

David W. Geiser
Director
Office of Legacy Management
cc: Ernest Mirabal, NAGPRA Representative
    Thomas C. Pauling, LM
    Tony Carter, LM
    Ray Plieness, LM
    Tracy Ribeiro, LM
    David Conrad, CI
The Honorable Gerald Nailor  
Governor  
Pueblo of Picuris Tribe  
P.O. Box 127  
Penasco, NM 87553  

Dear Governor Nailor:

This letter is a follow-up to the letter dated September 28, 2012 and phone call placed to your office on October 24, 2012 communicating the Department of Energy (DOE) interest in consulting with the Pueblo of Picuris Tribe on the DOE Uranium Leasing Program (ULP), specifically on the Programmatic Environmental Impact Statement (PEIS) being conducted following the National Environmental Policy Act (NEPA). DOE currently administers thirty-one (31) lease tracts in the Uravan Mineral Belt in southwestern Colorado. Twenty-nine (29) of these lease tracts are actively held under lease. Activities related to these lease sites are being analyzed in the PEIS, as discussed on the dedicated web page <http://ulpeis.anl.gov/>.

In the inquiry letter on consultation, DOE identified three approaches to government-to-government consultations for your consideration in the event you deemed it appropriate to participate in the PEIS process. DOE is currently reviewing the Draft PEIS with the cooperating agencies; comments are due by November 30, 2012. DOE plans to issue a Draft PEIS for public review in February 2013 and a Final PEIS in late 2013. We welcome your input and encourage your participation in the NEPA process.

DOE continues to look for ways to improve the government-to-government consultation process with the Pueblo of Picuris Tribe. We invite any suggestions or advice you might have to improve this process. If you have any questions concerning the ULP PEIS, please do not hesitate to contact me at (202) 586-7550 or Tony Carter at (202) 586-3323, my headquarters representative for activities with Tribal Nations.

Sincerely,

David W. Geiser  
Director  
Office of Legacy Management
cc: Christy Van Buren, NAGPRA Representative
    Thomas C. Pauling, LM
    Tony Carter, LM
    Ray Plieness, LM
    Tracy Ribeiro, LM
    David Conrad, CI
The Honorable George Rivera  
Governor  
Pueblo of Pojoaque Tribe  
78 Cities of Gold Road  
Santa Fe, NM 87506

Dear Governor Rivera:

This letter is a follow-up to the letter dated September 28, 2012 and phone call placed to your office on October 24, 2012, communicating the Department of Energy (DOE) interest in consulting with the Pueblo of Pojoaque Tribe on the DOE Uranium Leasing Program (ULP), specifically on the Programmatic Environmental Impact Statement (PEIS) being conducted following the National Environmental Policy Act (NEPA). DOE currently administers thirty-one (31) lease tracts in the Uravan Mineral Belt in southwestern Colorado. Twenty-nine (29) of these lease tracts are actively held under lease. Activities related to these lease sites are being analyzed in the PEIS, as discussed on the dedicated web page <http://ulpeis.anl.gov/>.

In the inquiry letter on consultation, DOE identified three approaches to government-to-government consultations for your consideration in the event you deemed it appropriate to participate in the PEIS process. DOE is currently reviewing the Draft PEIS with the cooperating agencies; comments are due by November 30, 2012. DOE plans to issue a Draft PEIS for public review in February 2013 and a Final PEIS in late 2013. We welcome your input and encourage your participation in the NEPA process.

DOE continues to look for ways to improve the government-to-government consultation process with the Pueblo of Pojoaque Tribe. We invite any suggestions or advice you might have to improve this process. If you have any questions concerning the ULP PEIS, please do not hesitate to contact me at (202) 586-7550 or Tony Carter at (202) 586-3323, my headquarters representative for activities with Tribal Nations.

Sincerely,

David W. Geiser  
Director  
Office of Legacy Management
cc: Vernon Lujan, NAGPRA Representative
    Thomas C. Pauling, LM
    Tony Carter, LM
    Ray Plieness, LM
    Tracy Ribeiro, LM
    David Conrad, CI
November 20, 2012

The Honorable Anthony Ortiz  
Governor  
Pueblo of San Felipe Tribe  
P.O. Box 4339  
San Felipe Pueblo, NM  87001  

Dear Governor Ortiz:  

This letter is a follow-up to the letter dated September 28, 2012 and phone call placed to your office on October 24, 2012, communicating the Department of Energy (DOE) interest in consulting with the Pueblo of San Felipe Tribe on the DOE Uranium Leasing Program (ULP), specifically on the Programmatic Environmental Impact Statement (PEIS) being conducted following the National Environmental Policy Act (NEPA). DOE currently administers thirty-one (31) lease tracts in the Uravan Mineral Belt in southwestern Colorado. Twenty-nine (29) of these lease tracts are actively held under lease. Activities related to these lease sites are being analyzed in the PEIS, as discussed on the dedicated web page <http://ulpeis.anl.gov/>.

In the inquiry letter on consultation, DOE identified three approaches to government-to-government consultations for your consideration in the event you deemed it appropriate to participate in the PEIS process. DOE is currently reviewing the Draft PEIS with the cooperating agencies; comments are due by November 30, 2012. DOE plans to issue a Draft PEIS for public review in February 2013 and a Final PEIS in late 2013. We welcome your input and encourage your participation in the NEPA process.

DOE continues to look for ways to improve the government-to-government consultation process with the Pueblo of San Felipe Tribe. We invite any suggestions or advice you might have to improve this process. If you have any questions concerning the ULP PEIS, please do not hesitate to contact me at (202) 586-7550 or Tony Carter at (202) 586-3323, my headquarters representative for activities with Tribal Nations.

Sincerely,

David W. Geiser  
Director  
Office of Legacy Management

Printed with soy ink on recycled paper
cc: Sarah Candelaria, NAGPRA Contact, Tribal Administrator
    Thomas C. Pauling, LM
    Tony Carter, LM
    Ray Plieness, LM
    Tracy Ribeiro, LM
    David Conrad, CI
Department of Energy
Washington, DC 20585

November 20, 2012

The Honorable Terry Aguilar
Governor
Pueblo of San Ildefonso Tribe
Route 5, P.O. Box 315-A
Santa Fe, NM 87506

Dear Governor Aguilar:

This letter is a follow-up to the letter dated September 28, 2012 and phone call placed to your office on October 24, 2012, communicating the Department of Energy (DOE) interest in consulting with the Pueblo of San Ildefonso Tribe on the DOE Uranium Leasing Program (ULP), specifically on the Programmatic Environmental Impact Statement (PEIS) being conducted following the National Environmental Policy Act (NEPA). DOE currently administers thirty-one (31) lease tracts in the Uravan Mineral Belt in southwestern Colorado. Twenty-nine (29) of these lease tracts are actively held under lease. Activities related to these lease sites are being analyzed in the PEIS, as discussed on the dedicated web page <http://ulpeis.anl.gov>.

In the inquiry letter on consultation, DOE identified three approaches to government-to-government consultations for your consideration in the event you deemed it appropriate to participate in the PEIS process. DOE is currently reviewing the Draft PEIS with the cooperating agencies; comments are due by November 30, 2012. DOE plans to issue a Draft PEIS for public review in February 2013 and a Final PEIS in late 2013. We welcome your input and encourage your participation in the NEPA process.

DOE continues to look for ways to improve the government-to-government consultation process with the Pueblo of San Ildefonso Tribe. We invite any suggestions or advice you might have to improve this process. If you have any questions concerning the ULP PEIS, please do not hesitate to contact me at (202) 586-7550 or Tony Carter at (202) 586-3323, my headquarters representative for activities with Tribal Nations.

Sincerely,

David W. Geiser
Director
Office of Legacy Management

Printed with soy ink on recycled paper
cc: Brain Montoya, NAGPRA Contact, Pueblo of San Ildefonso Tribe
    Thomas C. Pauling, LM
    Tony Carter, LM
    Ray Plieness, LM
    Tracy Ribeiro, LM
    David Conrad, CI

November 20, 2012
Department of Energy
Washington, DC 20585
November 20, 2012

The Honorable Malcolm Montoya
Governor
Pueblo of Sandia Tribe
481 Sandia Loop
Bernalillo, NM 87004

Dear Governor Montoya:

This letter is a follow-up to the letter dated September 28, 2012 and phone call placed to your office on October 24, 2012, communicating the Department of Energy (DOE) interest in consulting with the Pueblo of Sandia Tribe on the DOE Uranium Leasing Program (ULP), specifically on the Programmatic Environmental Impact Statement (PEIS) being conducted following the National Environmental Policy Act (NEPA). DOE currently administers thirty-one (31) lease tracts in the Uravan Mineral Belt in southwestern Colorado. Twenty-nine (29) of these lease tracts are actively held under lease. Activities related to these lease sites are being analyzed in the PEIS, as discussed on the dedicated web page <http://ulpeis.anl.gov/>.

In the inquiry letter on consultation, DOE identified three approaches to government-to-government consultations for your consideration in the event you deemed it appropriate to participate in the PEIS process. DOE is currently reviewing the Draft PEIS with the cooperating agencies; comments are due by November 30, 2012. DOE plans to issue a Draft PEIS for public review in February 2013 and a Final PEIS in late 2013. We welcome your input and encourage your participation in the NEPA process.

DOE continues to look for ways to improve the government-to-government consultation process with the Pueblo of Sandia Tribe. We invite any suggestions or advice you might have to improve this process. If you have any questions concerning the ULP PEIS, please do not hesitate to contact me at (202) 586-7550 or Tony Carter at (202) 586-3323, my headquarters representative for activities with Tribal Nations.

Sincerely,

David W. Geiser
Director
Office of Legacy Management
cc: Frank Chaves, Environmental Department Director
    Thomas C. Pauling, LM
    Tony Carter, LM
    Ray Plieness, LM
    Tracy Ribeiro, LM
    David Conrad, CI
Department of Energy
Washington, DC 20585

November 20, 2012

The Honorable Ernest J. Lujan
Governor
Pueblo of Santa Ana Tribe
Two Dove Road
Santa Ana Pueblo, NM 87004

Dear Governor Lujan:

This letter is a follow-up to the letter dated September 28, 2012 and phone call placed to your office October 24, 2012, communicating the Department of Energy (DOE) interest in consulting with the Pueblo of Santa Ana Tribe on the DOE Uranium Leasing Program (ULP), specifically on the Programmatic Environmental Impact Statement (PEIS) being conducted following the National Environmental Policy Act (NEPA). DOE currently administers thirty-one (31) lease tracts in the Uravan Mineral Belt in southwestern Colorado. Twenty-nine (29) of these lease tracts are actively held under lease. Activities related to these lease sites are being analyzed in the PEIS, as discussed on the dedicated web page <http://ulpeis.anl.gov/>.

In the inquiry letter on consultation, DOE identified three approaches to government-to-government consultations for your consideration in the event you deemed it appropriate to participate in the PEIS process. DOE is currently reviewing the Draft PEIS with the cooperating agencies; comments are due by November 30, 2012. DOE plans to issue a Draft PEIS for public review in February 2013 and a Final PEIS in late 2013. We welcome your input and encourage your participation in the NEPA process.

DOE continues to look for ways to improve the government-to-government consultation process with the Pueblo of Santa Ana Tribe. We invite any suggestions or advice you might have to improve this process. If you have any questions concerning the ULP PEIS, please do not hesitate to contact me at (202) 586-7550 or Tony Carter at (202) 586-3323, my headquarters representative for activities with Tribal Nations.

Sincerely,

David W. Geiser
Director
Office of Legacy Management

Printed with soy ink on recycled paper

F-84 March 2014
cc: Ben Robbins, Tribal Resource Administrator
    Thomas C. Pauling, LM
    Tony Carter, LM
    Ray Plieness, LM
    Tracy Ribeiro, LM
    David Conrad, CI
The Honorable Loriano B. Romero  
Governor  
Pueblo of Taos Tribe  
P.O. Box 1846  
Taos, NM 87571  

Dear Governor Romero:

This letter is a follow-up to the letter dated September 28, 2012 and phone call placed to your office on October 24, 2012, communicating the Department of Energy (DOE) interest in consulting with the Pueblo of Taos Tribe on the DOE Uranium Leasing Program (ULP), specifically on the Programmatic Environmental Impact Statement (PEIS) being conducted following the National Environmental Policy Act (NEPA). DOE currently administers thirty-one (31) lease tracts in the Uravan Mineral Belt in southwestern Colorado. Twenty-nine (29) of these lease tracts are actively held under lease. Activities related to these lease sites are being analyzed in the PEIS, as discussed on the dedicated web page <http://ulpeis.anl.gov/>.

In the inquiry letter on consultation, DOE identified three approaches to government-to-government consultations for your consideration in the event you deemed it appropriate to participate in the PEIS process. DOE is currently reviewing the Draft PEIS with the cooperating agencies; comments are due by November 30, 2012. DOE plans to issue a Draft PEIS for public review in February 2013 and a Final PEIS in late 2013. We welcome your input and encourage your participation in the NEPA process.

DOE continues to look for ways to improve the government-to-government consultation process with the Pueblo of Taos Tribe. We invite any suggestions or advice you might have to improve this process. If you have any questions concerning the ULP PEIS, please do not hesitate to contact me at (202) 586-7550 or Tony Carter at (202) 586-3323, my headquarters representative for activities with Tribal Nations.

Sincerely,

David W. Geiser  
Director  
Office of Legacy Management
cc: Gilbert Suazo Sr., Lt. Governor, Pueblo of Taos tribe
Tina Romero, Executive Assistant
Thomas C. Pauling, LM
Tony Carter, LM
Ray Plieam, LM
Tracy Ribeiro, LM
David Conrad, CI
The Honorable Ramos Romero  
Governor  
Pueblo of Tesuque Tribe  
Route 42, P.O. Box 360-T  
Santa Fe, NM 87506  

Dear Governor Romero:

This letter is a follow-up to the letter dated September 28, 2012 and phone call placed to your office on October 24, 2012, communicating the Department of Energy (DOE) interest in consulting with the Pueblo of Tesuque Tribe on the DOE Uranium Leasing Program (ULP), specifically on the Programmatic Environmental Impact Statement (PEIS) being conducted following the National Environmental Policy Act (NEPA). DOE currently administers thirty-one (31) lease tracts in the Uravan Mineral Belt in southwestern Colorado. Twenty-nine (29) of these lease tracts are actively held under lease. Activities related to these lease sites are being analyzed in the PEIS, as discussed on the dedicated web page <http://ulpeis.anl.gov/>.

In the inquiry letter on consultation, DOE identified three approaches to government-to-government consultations for your consideration in the event you deemed it appropriate to participate in the PEIS process. DOE is currently reviewing the Draft PEIS with the cooperating agencies; comments are due by November 30, 2012. DOE plans to issue a Draft PEIS for public review in February 2013 and a Final PEIS in late 2013. We welcome your input and encourage your participation in the NEPA process.

DOE continues to look for ways to improve the government-to-government consultation process with the Pueblo of Tesuque Tribe. We invite any suggestions or advice you might have to improve this process. If you have any questions concerning the ULP PEIS, please do not hesitate to contact me at (202) 586-7550 or Tony Carter at (202) 586-3323, my headquarters representative for activities with Tribal Nations.

Sincerely,

David W. Geiser  
Director  
Office of Legacy Management
cc: Charles Dorame, Pueblo of Tesuque Tribe
    Thomas C. Pauling, LM
    Tony Carter, LM
    Ray Pfieness, LM
    Tracy Ribeiro, LM
    David Conrad, CI
Department of Energy
Washington, DC 20585

November 20, 2012

The Honorable Wilfred Shije
Governor
Pueblo of Zia Tribe
135 Capitol Square Drive
Zia Pueblo, NM 87053-6013

Dear Governor Shije:

This letter is a follow-up to the letter dated September 28, 2012 and phone call placed to your office on October 24, 2012, communicating the Department of Energy (DOE) interest in consulting with the Pueblo of Zia Tribe on the DOE Uranium Leasing Program (ULP), specifically on the Programmatic Environmental Impact Statement (PEIS) being conducted following the National Environmental Policy Act (NEPA). DOE currently administers thirty-one (31) lease tracts in the Uravan Mineral Belt in southwestern Colorado. Twenty-nine (29) of these lease tracts are actively held under lease. Activities related to these lease sites are being analyzed in the PEIS, as discussed on the dedicated web page <http://ulpeis.anl.gov/>.

In the inquiry letter on consultation, DOE identified three approaches to government-to-government consultations for your consideration in the event you deemed it appropriate to participate in the PEIS process. DOE is currently reviewing the Draft PEIS with the cooperating agencies; comments are due by November 30, 2012. DOE plans to issue a Draft PEIS for public review in February 2013 and a Final PEIS in late 2013. We welcome your input and encourage your participation in the NEPA process.

DOE continues to look for ways to improve the government-to-government consultation process with the Pueblo of Zia Tribe. We invite any suggestions or advice you might have to improve this process. If you have any questions concerning the ULP PEIS, please do not hesitate to contact me at (202) 586-7550 or Tony Carter at (202) 586-3323, my headquarters representative for activities with Tribal Nations.

Sincerely,

David W. Geiser
Director
Office of Legacy Management
cc: Peter Pino, NAGPRA Contact for CO/UT
    Thomas C. Pauling, LM
    Tony Carter, LM
    Ray Plieness, LM
    Tracy Ribeiro, LM
    David Conrad, CI
Department of Energy
Washington, DC 20585

November 20, 2012

The Honorable Arlen P. Quetawki, Sr.
Governor
Zuni Pueblo Tribe
P.O. Box 339
Zuni, NM 87327

Dear Governor Quetawki:

This letter is a follow-up to the letter dated September 28, 2012 and phone call placed to your office on October 24, 2012, communicating the Department of Energy (DOE) interest in consulting with the Zuni Pueblo Tribe on the DOE Uranium Leasing Program (ULP), specifically on the Programmatic Environmental Impact Statement (PEIS) being conducted following the National Environmental Policy Act (NEPA). DOE currently administers thirty-one (31) lease tracts in the Uravan Mineral Belt in southwestern Colorado. Twenty-nine (29) of these lease tracts are actively held under lease. Activities related to these lease sites are being analyzed in the PEIS, as discussed on the dedicated web page <http://ulpeis.anl.gov/>.

In the inquiry letter on consultation, DOE identified three approaches to government-to-government consultations for your consideration in the event you deemed it appropriate to participate in the PEIS process. DOE is currently reviewing the Draft PEIS with the cooperating agencies; comments are due by November 30, 2012. DOE plans to issue a Draft PEIS for public review in February 2013 and a Final PEIS in late 2013. We welcome your input and encourage your participation in the NEPA process.

DOE continues to look for ways to improve the government-to-government consultation process with the Zuni Pueblo Tribe. We invite any suggestions or advice you might have to improve this process. If you have any questions concerning the ULP PEIS, please do not hesitate to contact me at (202) 586-7550 or Tony Carter at (202) 586-3323, my headquarters representative for activities with Tribal Nations.

Sincerely,

David W. Geiser
Director
Office of Legacy Management
cc: Arden Kucate, Head Councilman, Zuni Pueblo Tribe
    Kurt Dongoske, Acting Director, Historic Preservation
    Thomas C. Pauling, LM
    Tony Carter, LM
    Ray Plieness, LM
    Tracy Ribeiro, LM
    David Conrad, CI
Table F-2 lists correspondence related to the establishment of a programmatic agreement between DOE, the Colorado SHPO, and the BLM. Copies of the correspondence follow this table. Letters of invitation sent to the Mesa and San Miguel County historical commissions and Native American tribes are also included here. All the letters of invitation were sent on August 9, 2013, and contain an enclosure that could be filled in and returned to DOE-LM.

<table>
<thead>
<tr>
<th>Date of Letter</th>
<th>Page</th>
<th>Source</th>
<th>Recipient</th>
</tr>
</thead>
<tbody>
<tr>
<td>July 22, 2013</td>
<td>F-97</td>
<td>U.S. Department of Energy, Office of Legacy Management (D.S. Shafer, Acting Director, Office of Site Operations)</td>
<td>Bureau of Land Management (L. Anderson, Southwest District Manager)</td>
</tr>
<tr>
<td>August 9, 2013</td>
<td>F-106</td>
<td>U.S. Department of Energy, Office of Legacy Management (T.A. Ribeiro, Environmental Program Manager)</td>
<td>Coordinator of San Miguel Historical Society</td>
</tr>
<tr>
<td>August 9, 2013</td>
<td>F-109</td>
<td>U.S. Department of Energy, Office of Legacy Management (T.A. Ribeiro, Environmental Program Manager)</td>
<td>President of Mesa County Historical Society</td>
</tr>
<tr>
<td>August 9, 2013</td>
<td>F-112</td>
<td>U.S. Department of Energy, Office of Legacy Management (D.S. Shafer, Acting Director, Office of Site Operations)</td>
<td>Chairwoman of Ute Indian Tribe</td>
</tr>
<tr>
<td>August 9, 2013</td>
<td>F-115</td>
<td>U.S. Department of Energy, Office of Legacy Management (D.S. Shafer, Acting Director, Office of Site Operations)</td>
<td>Chairwoman of Southern Ute Indian Tribe</td>
</tr>
<tr>
<td>August 9, 2013</td>
<td>F-118</td>
<td>U.S. Department of Energy, Office of Legacy Management (D.S. Shafer, Acting Director, Office of Site Operations)</td>
<td>Chairman of Hopi Tribe</td>
</tr>
<tr>
<td>August 9, 2013</td>
<td>F-121</td>
<td>U.S. Department of Energy, Office of Legacy Management (D.S. Shafer, Acting Director, Office of Site Operations)</td>
<td>President of Navajo Nation</td>
</tr>
<tr>
<td>August 9, 2013</td>
<td>F-124</td>
<td>U.S. Department of Energy, Office of Legacy Management (D.S. Shafer, Acting Director, Office of Site Operations)</td>
<td>Chairwoman of White Mesa Ute Tribe</td>
</tr>
</tbody>
</table>
### TABLE F-2 (Cont.)

<table>
<thead>
<tr>
<th>Date of Letter</th>
<th>Page</th>
<th>Source</th>
<th>Recipient</th>
</tr>
</thead>
<tbody>
<tr>
<td>August 9, 2013</td>
<td>F-127</td>
<td>U.S. Department of Energy, Office of Legacy Management (D.S. Shafer, Acting Director, Office of Site Operations)</td>
<td>Governor of Pueblo of Acoma Tribe</td>
</tr>
<tr>
<td>August 9, 2013</td>
<td>F-130</td>
<td>U.S. Department of Energy, Office of Legacy Management (D.S. Shafer, Acting Director, Office of Site Operations)</td>
<td>Chairman of Ute Mountain Ute Tribe</td>
</tr>
<tr>
<td>August 9, 2013</td>
<td>F-133</td>
<td>U.S. Department of Energy, Office of Legacy Management (D.S. Shafer, Acting Director, Office of Site Operations)</td>
<td>Governor of Pueblo of Isleta Tribe</td>
</tr>
<tr>
<td>August 9, 2013</td>
<td>F-136</td>
<td>U.S. Department of Energy, Office of Legacy Management (D.S. Shafer, Acting Director, Office of Site Operations)</td>
<td>Governor of Pueblo de Cochiti Tribe</td>
</tr>
<tr>
<td>August 9, 2013</td>
<td>F-139</td>
<td>U.S. Department of Energy, Office of Legacy Management (D.S. Shafer, Acting Director, Office of Site Operations)</td>
<td>Governor of Pueblo of Picuris Tribe</td>
</tr>
<tr>
<td>August 9, 2013</td>
<td>F-142</td>
<td>U.S. Department of Energy, Office of Legacy Management (D.S. Shafer, Acting Director, Office of Site Operations)</td>
<td>Governor of Pueblo of Taos Tribe</td>
</tr>
<tr>
<td>August 9, 2013</td>
<td>F-145</td>
<td>U.S. Department of Energy, Office of Legacy Management (D.S. Shafer, Acting Director, Office of Site Operations)</td>
<td>Chairman of Assiniboine and Sioux Tribes of the Fort Peck Reservation</td>
</tr>
<tr>
<td>August 9, 2013</td>
<td>F-148</td>
<td>U.S. Department of Energy, Office of Legacy Management (D.S. Shafer, Acting Director, Office of Site Operations)</td>
<td>President of Jicarilla Apache Tribal Council</td>
</tr>
<tr>
<td>August 9, 2013</td>
<td>F-151</td>
<td>U.S. Department of Energy, Office of Legacy Management (D.S. Shafer, Acting Director, Office of Site Operations)</td>
<td>Governor of Kewa Pueblo Tribe</td>
</tr>
<tr>
<td>August 9, 2013</td>
<td>F-154</td>
<td>U.S. Department of Energy, Office of Legacy Management (D.S. Shafer, Acting Director, Office of Site Operations)</td>
<td>Governor of Pueblo of Jemez Tribe</td>
</tr>
<tr>
<td>August 9, 2013</td>
<td>F-157</td>
<td>U.S. Department of Energy, Office of Legacy Management (D.S. Shafer, Acting Director, Office of Site Operations)</td>
<td>Governor of Pueblo of Laguna Tribe</td>
</tr>
<tr>
<td>August 9, 2013</td>
<td>F-160</td>
<td>U.S. Department of Energy, Office of Legacy Management (D.S. Shafer, Acting Director, Office of Site Operations)</td>
<td>Governor of Pueblo of Nambe Tribe</td>
</tr>
<tr>
<td>Date of Letter</td>
<td>Page</td>
<td>Source</td>
<td>Recipient</td>
</tr>
<tr>
<td>---------------</td>
<td>------</td>
<td>--------</td>
<td>-----------</td>
</tr>
<tr>
<td>August 9, 2013</td>
<td>F-163</td>
<td>U.S. Department of Energy, Office of Legacy Management (D.S. Shafer, Acting Director, Office of Site Operations)</td>
<td>Governor of Pueblo of Pojoaque Tribe</td>
</tr>
<tr>
<td>August 9, 2013</td>
<td>F-166</td>
<td>U.S. Department of Energy, Office of Legacy Management (D.S. Shafer, Acting Director, Office of Site Operations)</td>
<td>Governor of Pueblo of San Felipe Tribe</td>
</tr>
<tr>
<td>August 9, 2013</td>
<td>F-169</td>
<td>U.S. Department of Energy, Office of Legacy Management (D.S. Shafer, Acting Director, Office of Site Operations)</td>
<td>Governor of Pueblo of Ildefonso Tribe</td>
</tr>
<tr>
<td>August 9, 2013</td>
<td>F-172</td>
<td>U.S. Department of Energy, Office of Legacy Management (D.S. Shafer, Acting Director, Office of Site Operations)</td>
<td>Governor of Pueblo of Sandia Tribe</td>
</tr>
<tr>
<td>August 9, 2013</td>
<td>F-175</td>
<td>U.S. Department of Energy, Office of Legacy Management (D.S. Shafer, Acting Director, Office of Site Operations)</td>
<td>Governor of Pueblo of Santa Ana Tribe</td>
</tr>
<tr>
<td>August 9, 2013</td>
<td>F-178</td>
<td>U.S. Department of Energy, Office of Legacy Management (D.S. Shafer, Acting Director, Office of Site Operations)</td>
<td>Governor of Pueblo of Santa Clara Tribe</td>
</tr>
<tr>
<td>August 9, 2013</td>
<td>F-181</td>
<td>U.S. Department of Energy, Office of Legacy Management (D.S. Shafer, Acting Director, Office of Site Operations)</td>
<td>Governor of Pueblo of Tesuque Tribe</td>
</tr>
<tr>
<td>August 9, 2013</td>
<td>F-184</td>
<td>U.S. Department of Energy, Office of Legacy Management (D.S. Shafer, Acting Director, Office of Site Operations)</td>
<td>Governor of Pueblo of Zia Tribe</td>
</tr>
<tr>
<td>August 9, 2013</td>
<td>F-187</td>
<td>U.S. Department of Energy, Office of Legacy Management (D.S. Shafer, Acting Director, Office of Site Operations)</td>
<td>Governor of Zuni Tribe of the Zuni Reservation</td>
</tr>
</tbody>
</table>
Department of Energy
Washington, DC 20585

July 22, 2013

Ms. Lori Armstrong
Bureau of Land Management
Southwest District Manager
2465 S. Townsend Ave.
Montrose, CO 81401

Subject: Invitation to be a Consulting Party for a Programmatic Agreement for the Department of Energy’s Uranium Leasing Program

Dear Ms. Armstrong:

The Department of Energy Office, Office of Legacy Management (DOE-LM) would like to invite the Bureau of Land Management (BLM) to be a consulting party for the proposed programmatic agreement as described in the enclosed letter to the Colorado State Historic Preservation Officer (CO SHPO). The discussion on the programmatic agreement was initiated with the CO SHPO, and Gina Jones of your office, on May 30, 2013.

Because of the historical collaborative effort between BLM and DOE-LM on management of the lease tracts associated with the DOE-LM’s Uranium Leasing Program and based on the conversations DOE-LM has had with your organization and the CO SHPO, DOE-LM is of the understanding that BLM is agreeable to participate in the programmatic agreement as a consulting party. Please confirm that the BLM will participate as a consulting party.

DOE-LM would like to proceed with discussion of the next steps for this programmatic agreement within the next few weeks. Please call me at (720) 880-4347 or Tracy Ribeiro, the DOE-LM primary contact for this action, at (303) 410-4817 if you have any questions. Please address any correspondence to:

U.S. Department of Energy
Office of Legacy Management
2597 Legacy Way
Grand Junction, CO 81503

Sincerely,

[Signature]

David S. Shafer, Ph.D.
Acting Director – Office of Site Operations
Office of Legacy Management

Enclosure
July 22, 2013

Edward C. Nichols
State Historic Preservation Officer
History Colorado
1200 Broadway
Denver, CO 80203

Subject: Request for Uranium Leasing Program Section 106 Programmatic Agreement

Dear Mr. Nichols:

Consistent with a discussion initiated with Dan Corson of your office on May 30, 2013, the Department of Energy, Office of Legacy Management (DOE-LM) would like to pursue a programmatic agreement (PA) under the National Historic Preservation Act (NHPA) for the DOE-LM Uranium Leasing Program.

DOE-LM is the Federal agency involved, and the Federal program is the DOE-LM Uranium Leasing Program (ULP). The ULP involves the leasing of Federal lands for exploration, development, and mining for uranium (and vanadium) followed by reclamation. DOE-LM administers the program aspects of the ULP and the subsurface activities while the Bureau of Land Management (BLM) remains responsible for multiple use management of the surface (where not needed for uranium mining facilities). When lessees are active on the lease tracts, both DOE-LM and BLM review exploration and mining plans in accordance with a Memorandum of Understanding (2010). The DOE-LM staff to contact for information is:

Tracy Ribeiro, LM Environmental Program Manager, (303) 410-4817.

The current ULP was initiated in 1974. It currently includes multiple lease tracts that encompass approximately 25,000 acres in southwest Colorado within Mesa, Montrose, and San Miguel Counties. Historical uses of the lands contained within the ULP have included ranching (since the mid to late 1800s); radium, vanadium, and uranium mining (since the late 1890s); hunting (since the late 1800s); and other recreational activities (predominantly since the 1980s). A map identifying the location of the lease tracts is enclosed.

Currently, there are no lease activities occurring on the lease tracts, other than safety-related actions, due to a litigation hold to address Endangered Species Act and National Environmental Policy Act concerns in DOE-LM’s programmatic environmental assessment and FONSI issued in 2007. DOE-LM is currently preparing a Programmatic Environmental Impact Statement (PEIS) for determination whether to continue the ULP and if so, how to manage the program.
Mr. Edward C. Nichols

July 22, 2013

Ground disturbance associated with ULP exploration, development, mining, and reclamation activities could affect historic properties. Historically, approximately 300 acres were disturbed as a result of ULP activities; known cultural resources and historic properties were routinely avoided. In one instance, during reclamation of a small mine portal, heavy equipment inadvertently disturbed a remnant (railroad tie) of the historic track-and-rail system used at the mine entrance. DOE-LM self-reported this incident to the BLM and subsequently was required to conduct mitigation at a second, non-related site. The results of the mitigation were approved by the applicable BLM office. DOE-LM has estimated that up to 490 acres (area of potential effect) could be disturbed should the ULP continue. The actual locations of potential future disturbance will not be known until lessees submit required exploration or mining plans, which must identify the areas that would be affected by the proposed activities.

A Class I cultural resources inventory was conducted for all of the ULP lease tracts in 2006 (provided in the accompanying CD). The Class I inventory identified 126 previous, mostly small-scale, surveys. In addition, in 2006, existing ethnographic literature was reviewed for the presence of potential traditional cultural properties. The study estimates the potential (on a low, medium, high scale) for traditional cultural properties to be found on lease tracts within the study area. Eleven additional Class III inventories have been conducted relative to the ULP lease tracts since the 2006 inventory. Several of these inventories were conducted in support of multiple lessee-proposed exploration plans; the remaining inventories were conducted in support of DOE-LM’s proposed reclamation activities at legacy abandoned uranium mine sites. Formal documentation for these surveys were transmitted to the Colorado State Historic Preservation Officer (CO SHPO) through the BLM. A Class III cultural resources inventory of the approximate 25,000 acres has not been completed because it is unknown where future ground disturbance related to the ULP activities would occur.

Based on information obtained from the Office of Archaeology and Historic Preservation (ACHP) in the state of Colorado in December 2011, 42 cultural sites have been identified within the tracts; 24 are prehistoric, 14 are historic, and four have both historic and prehistoric components. Most of the prehistoric sites are classified as either lithic scatters or as camp sites. In addition, one site is a rock art panel, and two are classified as rock shelters. Historic sites are predominantly mines but also include mining camps, a cabin, and a highway.

Historically, because the BLM administers the surface rights, the BLM has assisted DOE-LM by taking lead federal agency responsibility for NHPA consultations and determinations. As lessees identified potential areas of disturbance, the lessees would coordinate with the BLM and DOE to have surveys conducted to determine if cultural resources or historic properties were present. Since the BLM has a programmatic agreement with ACHP and the CO SHPO, BLM has been using the State Protocol to consult with the CO SHPO on determinations of effect.

DOE-LM would like to pursue a programmatic agreement for the ULP with the ACHP, the CO SHPO, and the BLM, as well as Tribes, local governments, and interested public. A preliminary list of Tribes and others that may be contacted to determine if they have interest in becoming a consulting party to the PA is enclosed. Twenty five tribes were previously contacted for nation
Mr. Edward C. Nichols  

July 22, 2013

to nation consultation and to determine interest in participating as a cooperating agency for the ULP PEIS; five tribes chose to participate as cooperating agencies for the PEIS while responses from the remaining 20 tribes varied. The BLM is a cooperating agency on the ULP PEIS and has tentatively agreed to be a consulting party on the PA. The BLM will be actively involved with consultation activities under the PA; the division of labor for activities for consultation is still being discussed between LM and the BLM.

The proposed programmatic agreement would formalize the programmatic implementation of a phased approach for leasing, exploration, development, and reclamation. The PA will outline alternative procedures to implement NHPA Section 106 consultation for each phase. Each potential area of disturbance identified by the lessees during their planning process will typically follow the consultation process outlined in 36 CFR sections 800.3 through 800.6; historic properties would be identified and evaluated, effects assessed, and consultation will occur if an adverse effect is identified. This consultation would be completed prior to each exploration plan, mining plan, or reclamation plan being approved.

DOE-LM will contact you within the next few weeks to discuss the next steps for this programmatic agreement. Please call me at (720) 880-4347 or Tracy Ribeiro at (303) 410-4817, if you have any questions concerning this request. Please address any correspondence to:

U.S. Department of Energy  
Office of Legacy Management  
11025 Dover Street, Suite 1000  
Westminster, CO 80021-5573

Sincerely,

David S. Shafer, Ph.D.  
Acting Director – Office of Site Operations  
Office of Legacy Management

Enclosures

cc we/enclosure:  
L. Armstrong, BLM  
D. Corson, CO SHPO  
T. McCulloch, ACHP  
T. Carter, DOE-LM

File: ULP 001.01 (A) (re grand junction)
List of Potential Consulting Parties for NHPA Sect. 106 Consultation for ULP

Federal Groups
CO SHPO
BLM
ACHP

Tribal Groups
White Mesa Ute Tribe
Southern Ute Indian Tribe
Ute Indian Tribe
The Navajo Nation
The Hopi Tribe
Ute Mountain Ute Tribe
Jicarilla Apache Tribal Council
Kewa Pueblo Tribe
Pueblo of Acoma
Pueblo de Cochiti
Pueblo of Isleta
Pueblo of Jemez Pueblo of Laguna
Pueblo of Nambe
Pueblo of Picuris
Pueblo of Pojoaque
Pueblo of San Felipe
Pueblo of San Ildefonso
Pueblo of Sandia
Pueblo of Santa Ana
Pueblo of Santa Clara
Pueblo of Taos
Pueblo of Tesuque
Pueblo of Zia
Zuni Pueblo

Local Government and Interested Parties
San Miguel Historical Commission
Mesa County Historical Commission
Mesa County
Class I Cultural Resource Inventory of
38 Department of Energy Uranium Lease Withdrawal Areas
Mesa, Montrose, and San Miguel Counties, Colorado

by
Alan D. Reed
Principal Investigator

Alpine Archaeological Consultants, Inc.
PO Box 2075
Montrose, CO 81402
(970) 249-8781

Prepared for S.M. Stoller Corporation
2897 B ½ Road
Grand Junction, CO 81503

Prepared under the provisions of
Bureau of Land Management Permit No. C-46920

July 6, 2006
Potential Traditional Cultural Properties Within 38 Uranium Lease Tracts in Southwestern Colorado: A Background Ethnographic Analysis

John N. Fritz, Ph.D.
Principal Investigator
2227 Lincoln Court
Salt Lake City, Utah 84124

Prepared for S.M. Stoller Corporation
2597 B ½ Road
Grand Junction, CO 81503

November 1, 2006
July 22, 2013

Tom McCulloch, Ph.D., R.P.A.
Senior Archeologist
Office of Federal Agency Programs
Advisory Council on Historic Preservation
Washington, DC 20004

Subject: Invitation to be a Consulting Party for a Programmatic Agreement for the
Department of Energy’s Uranium Leasing Program

Dear Mr. McCulloch:

The Department of Energy Office, Office of Legacy Management (DOE-LM) would like to
invite the Advisory Council on Historic Preservation (ACHP) to be a consulting party for the
proposed programmatic agreement as described in the attached letter to the Colorado State
Historic Preservation Officer (CO SHPO). The discussion on the programmatic agreement was
initiated with the CO SHPO and the Bureau of Land Management (BLM) on May 30, 2013.
DOE-LM started discussions with ACHP the following week. Please let DOE-LM know if the
ACHP would like to participate as a consulting party.

DOE-LM would like to proceed with discussion of the next steps for this programmatic
agreement within the next few weeks. Please call me at (720) 880-4347 or Tracy Ribeiro, the
DOE-LM primary contact for this action, at (303) 410-4817 if you have any questions. Please
address any correspondence to:

U.S. Department of Energy
Office of Legacy Management
2597 Legacy Way
Grand Junction, CO 81503

Sincerely,

[Signature]

David S. Shafer, Ph.D.
Acting Director – Office of Site Operations
Office of Legacy Management

cc w/o enclosure:
E. Nicholas, CO SHPO
File: ULP 001.01 (A) (rc grand junction)

Asset Mnt: Trans(Ribeiro/7-22-13 ULP Sect 106 PA Request lr/ACHP (McCulloch)
Dear Ms. Luther-Broderick:

The purpose of this letter is to invite the San Miguel Historical Society to be a consulting party for a programmatic agreement (PA) under the National Historic Preservation Act (NHPA) to address Section 106 consultation activities for historic properties that have been or may be identified on 25,000 acres of land in southwest Colorado. The acreage is managed by the Department of Energy, Office of Legacy Management (DOE-LM) under the DOE Uranium Leasing Program (ULP). The enclosed map displays the lease tract areas that will be addressed in the PA. For all the lease tracts, DOE-LM has land withdrawals from the U.S. Bureau of Land Management (BLM).

In 2011, DOE-LM initiated a Programmatic Environmental Impact Statement (PEIS) for the ULP. DOE-LM is currently preparing responses to comments from the public and initiating the final PEIS; information on the PEIS can be reviewed on the dedicated web page http://ulppeis.anl.gov/. The San Miguel County Board of Commissioners opted to participate in the PEIS endeavor as a cooperating agency.

DOE-LM has estimated that up to 490 acres of the 25,000 acres could be disturbed should the ULP mining continue; however, it is unknown where future ground disturbance related to ULP activities would occur. As a continuing effort to programmatically address potential impacts of the ULP on the environment, DOE-LM is pursuing a PA with the Colorado State Historic Preservation Office (CO SHPO), the Advisory Council on Historic Preservation, the BLM, and other interested historical/heritage groups.

The proposed PA would formalize the programmatic implementation of a phased approach for leasing, exploration, development, and reclamation. The PA will outline alternative procedures to implement NHPA Section 106 consultation for each phase. Each potential area of disturbance identified during the planning process will typically be evaluated following the consultation process outlined in 36 CFR sections 800.3 through 800.6; historic properties would be identified and evaluated, effects assessed, and
consultation will occur if an adverse effect is identified. This consultation would be completed prior to each exploration plan, mining plan, or reclamation plan being approved. DOB-LM plans to pursue this PA with an ambitious completion date in the next several months.

If the Mesa County Historical Society chooses to participate as a consulting party for the proposed PA, they could discuss concerns and provide input on the consultation activities within the proposed phased PA. Is the Mesa County Historical Society interested in serving as a consulting party on the proposed PA? Please let us know of your group’s interest in participating. You may fill out the information on the enclosed letter and return it to DOE-LM in the self-addressed, stamped envelope. Alternatively, you may contact me at (303) 410.4817 or tracey.ribeiro@ln.doe.gov.

Sincerely,

Tracey A. Ribeiro
Environmental Program Manager

Enclosures

cc w/enclosure
Tracy A. Ribeiro  
Environmental Program Manager  
Department of Energy – Office of Legacy Management  
11025 Dover St., Ste. 1000  
Westminster, CO 80021

Subject: Consultation Under Section 106 of the National Historic Preservation Act for Activities Related to the Department Energy’s Uranium Leasing Program

With regards to a proposed Programmatic Agreement to address consultation under Section 106 of the National Historic Preservation Act for the Department of Energy’s Uranium Leasing Program, the San Miguel Historical Society is (please check the appropriate line below)

_____ Interested in participating as a consulting party.*

_____ Not interested in participating as a consulting party.

(*Your group will be contacted in the future to continue participation.)

Signature: _________________________________

Print Name: _______________________________

Date: ______________________________
Priscilla B. Mangnall
President
Mesa County Historical Society
P.O. Box 841
Grand Junction, CO 81502

Subject: Consultation Under Section 106 of the National Historic Preservation Act for Activities Related to the Department Energy’s Uranium Leasing Program

Dear Ms. Mangnall:

The purpose of this letter is to invite the Mesa County Historical Society to be a consulting party for a programmatic agreement (PA) under the National Historic Preservation Act (NHPA) to address Section 106 consultation activities for historic properties that have been or may be identified on 25,000 acres of land in southwest Colorado. The acreage is managed by the Department of Energy, Office of Legacy Management (DOE-LM) under the DOE Uranium Leasing Program (ULP). The enclosed map displays the lease tract areas that will be addressed in the PA. For all the lease tracts, DOE-LM has land withdrawals from the U.S. Bureau of Land Management (BLM).

In 2011, DOE-LM initiated a Programmatic Environmental Impact Statement (PEIS) for the ULP. DOE-LM is currently preparing responses to comments from the public and initiating the final PEIS; information on the PEIS can be reviewed on the dedicated web page http://ulppeis.anl.gov/. The Mesa County Commission opted to participate in the PEIS endeavor as a cooperating agency.

DOE-LM has estimated that up to 490 acres of the 25,000 acres could be disturbed should the ULP mining continue; however, it is unknown where future ground disturbance related to ULP activities would occur. As a continuing effort to programmatically address potential impacts of the ULP on the environment, DOE-LM is pursuing a PA with the Colorado State Historic Preservation Office (CO SHPO), the Advisory Council on Historic Preservation, the BLM, and other interested historical/heritage groups.

The proposed PA would formalize the programmatic implementation of a phased approach for leasing, exploration, development, and reclamation. The PA will outline alternative procedures to implement NHPA Section 106 consultation for each phase. Each potential area of disturbance identified during the planning process will typically be evaluated following the consultation process outlined in 36 CFR sections 800.3 through 800.6; historic properties would be identified and evaluated, effects assessed, and
consultation will occur if an adverse effect is identified. This consultation would be completed prior to each exploration plan, mining plan, or reclamation plan being approved. DOE-LM plans to pursue this PA with an ambitious completion date in the next several months.

If the Mesa County Historical Society chooses to participate as a consulting party for the proposed PA, they could discuss concerns and provide input on the consultation activities within the proposed phased PA. Is the Mesa County Historical Society interested in serving as a consulting party on the proposed PA? Please let us know of your group’s interest in participating. You may fill out the information on the enclosed letter and return it to DOE-LM in the self-addressed, stamped envelope. Alternatively, you may contact me at (903) 410.4817 or tracy.ribeiro@lm.doe.gov.

Sincerely,

[Signature]

Tracy A. Ribeiro
Environmental Program Manager

Enclosures

cc w/enclosure
Tracy A. Ribeiro  
Environmental Program Manager  
Department of Energy – Office of Legacy Management  
11025 Dover St., Ste. 1000  
Westminster, CO 80021

Subject: Consultation Under Section 106 of the National Historic Preservation Act for Activities Related to the Department Energy’s Uranium Leasing Program

With regards to a proposed Programmatic Agreement to address consultation under Section 106 of the National Historic Preservation Act for the Department of Energy’s Uranium Leasing Program, the Mesa County Historical Society is (please check the appropriate line below)

_____ Interested in participating as a consulting party.  

_____ Not interested in participating as a consulting party.

(*Your group will be contacted in the future to continue participation.)

Signature: ________________________________

Print Name: ________________________________

Date: ________________________________
The Honorable Irene Cuch
Chairwoman
Ute Indian Tribe
P.O. Box 190
Ft. Duchesne, UT 84026

Subject: Consultation Under Section 106 of the National Historic Preservation Act for Activities Related to the Department Energy’s Uranium Leasing Program

Dear Chairwoman Cuch:

The purpose of this letter is to invite the Ute Indian Tribe to be a consulting party for a programmatic agreement (PA) under the National Historic Preservation Act (NHPA) to address Section 106 consultation activities for historic properties that have been or may be identified on 25,000 acres of land in southwest Colorado. The acreage is managed by the Department of Energy, Office of Legacy Management (DOE-LM) under the DOE Uranium Leasing Program (ULP). The enclosed map displays the lease tract areas that will be addressed in the PA. For all the lease tracts, DOE-LM has land withdrawals from the U.S. Bureau of Land Management (BLM).

In 2011, DOE-LM initiated a Programmatic Environmental Impact Statement (PEIS) for the (ULP). DOE-LM is currently preparing responses to comments from the public and initiating the final PEIS; information on the PEIS can be reviewed on the dedicated web page http://ulpiax.org/. The Ute Indian Tribe was identified as having ancestral movement throughout the Mesa Verde region and possibly into the ULP lease tract areas. Because of this historical connection to the area, DOE-LM has contacted the Ute Indian Tribe on several occasions since initiation of the PEIS to inquire about their interest in government to government consultation and/or serving as a cooperating agency in the National Environmental Policy Act process. The Ute Indian Tribe opted to participate in the PEIS endeavor as a consulting agency.

DOE-LM has estimated that up to 490 acres of the 25,000 acres could be disturbed should ULP mining continue; however, it is unknown where future ground disturbance related to ULP activities would occur. As a continuing effort to programmatcally address potential impacts of the ULP on the environment, DOE-LM is pursuing a PA with the Colorado State Historic Preservation Office (CO SHPO), the Advisory Council on Historic Preservation, the BLM, and other interested historical/heritage groups.

The proposed PA would formalize the programmatic implementation of a phased approach for leasing, exploration, development, and reclamation. The PA will outline alternative procedures to implement NHPA Section 106 consultation for each phase.
Each potential area of disturbance identified during the planning process will typically be evaluated following the consultation process outlined in 36 CFR sections 800.3 through 800.6; historic properties would be identified and evaluated, effects assessed, and consultation will occur if an adverse effect is identified. This consultation would be completed prior to each exploration plan, mining plan, or reclamation plan being approved.

If the Ute Indian Tribe chooses to participate as a consulting party for the proposed PA, they could discuss concerns and provide input on the consultation activities within the proposed phased PA. Is the Ute Indian Tribe interested in participating as a consulting party on the proposed PA, in addition to their activities on the ULP PEIS? Please let us know of your tribe’s interest in participating. You may fill out the information on the enclosed letter and return it to DOE-LM in the self-addressed, stamped envelope. Alternatively, you may contact Tracy Ribeiro, DOE-LM’s Environmental Program Manager, at (720) 880-4347 or tracy.ribeiro@in.doe.gov.

Please call me at (720) 880-4347 if you have any questions.

Sincerely,

[Signature]

David S. Shafer, Ph.D.
Acting Director - Office of Site Operations
Office of Legacy Management

Enclosure

cc w/envelope
Betsy Chapoose, Ute Indian Tribe
Dr. David S. Shafer
Acting Director - Office of Site Operations
Department of Energy – Office of Legacy Management
11025 Dover St., Ste. 1000
Westminster, CO 80021

Subject: Consultation Under Section 106 of the National Historic Preservation Act for Activities Related to the Department Energy’s Uranium Leasing Program

With regards to a proposed Programmatic Agreement to address consultation under Section 106 of the National Historic Preservation Act for the Department of Energy’s Uranium Leasing Program, the Ute Indian Tribe is (please check the appropriate line below)

____ Interested in participating as a consulting party. *

____ Not interested in participating as a consulting party.

(*Your group will be contacted in the future to continue participation.)

Signature: ________________________________

Print Name: ________________________________

Date: ________________________________
Department of Energy
Washington, DC 20585

AUG 09 2013

The Honorable Pearl Casias
Chairwoman
Southern Ute Indian Tribe
P.O. Box 737
Ignacio, CO 81137

Subject: Consultation Under Section 106 of the National Historic Preservation Act for Activities Related to the Department Energy’s Uranium Leasing Program

Dear Chairwoman Pearl Casias:

The purpose of this letter is to invite the Southern Ute Indian Tribe to be a consulting party for a programmatic agreement (PA) under the National Historic Preservation Act (NHPA) to address Section 106 consultation activities for historic properties that have been or may be identified on 25,000 acres of land in southwest Colorado. The acreage is managed by the Department of Energy, Office of Legacy Management (DOE-LM) under the DOE Uranium Leasing Program (ULP). The enclosed map displays the lease tract areas that will be addressed in the PA. For all the lease tracts, DOE-LM has land withdrawals from the U.S. Bureau of Land Management (BLM).

In 2011, DOE-LM initiated a Programmatic Environmental Impact Statement (PEIS) for the (ULP). DOE-LM is currently preparing responses to comments from the public and initiating the final PEIS; information on the PEIS can be reviewed on the dedicated web page http://ulppeis.anl.gov/. The Southern Ute Indian Tribe was identified as having ancestral movement throughout the Mesa Verde region and possibly into the ULP lease tract areas. Because of this historical connection to the area, DOE-LM has contacted the Southern Ute Indian Tribe on several occasions since initiation of the PEIS to inquire about their interest in government to government consultation and/or serving as a cooperating agent in the National Environmental Policy Act process. The Southern Ute Indian Tribe opted to participate in the PEIS endeavor as a cooperating agency.

DOE-LM has estimated that up to 490 acres of the 25,000 acres could be disturbed should ULP mining continue; however, it is unknown where future ground disturbance related to ULP activities would occur. As a continuing effort to programmatically address potential impacts of the ULP on the environment, DOE-LM is pursuing a PA with the Colorado State Historic Preservation Office (CO SHPO), the Advisory Council on Historic Preservation, the BLM, and other interested historical/heritage groups.

The proposed PA would formalize the programmatic implementation of a phased approach for leasing, exploration, development, and reclamation. The PA will outline alternative procedures to implement NHPA Section 106 consultation for each phase.
Each potential area of disturbance identified during the planning process will typically be evaluated following the consultation process outlined in 36 CFR sections 800.3 through 800.6; historic properties would be identified and evaluated, effects assessed, and consultation will occur if an adverse effect is identified. This consultation would be completed prior to each exploration plan, mining plan, or reclamation plan being approved.

If the Southern Ute Indian Tribe chooses to participate as a consulting party for the proposed PA, they could discuss concerns and provide input on the consultation activities within the proposed phased PA. Is the Southern Ute Indian Tribe interested in participating as a consulting party on the proposed PA, in addition to their activities on the ULP PEIS? Please let us know of your tribe’s interest in participating. You may fill out the information on the enclosed letter and return it to DOE-LM in the self-addressed, stamped envelope. Alternatively, you may contact Tracy Ribeiro, DOE-LM’s Environmental Program Manager, at (720) 880-4347 or tracy.ribeiro@lm.doe.gov.

Please call me at (720) 880-4347 if you have any questions.

Sincerely,

David S. Shafer, Ph.D.
Acting Director - Office of Site Operations
Office of Legacy Management

Enclosure

cc w/enclosure
Mr. Neil Cloud, Southern Ute Indian Tribe
Dr. David S. Shafer  
Acting Director - Office of Site Operations  
Department of Energy – Office of Legacy Management  
11025 Dover St., Ste. 1000  
Westminster, CO 80021  

Subject: Consultation Under Section 106 of the National Historic Preservation Act for Activities Related to the Department Energy's Uranium Leasing Program  

With regards to a proposed Programmatic Agreement to address consultation under Section 106 of the National Historic Preservation Act for the Department of Energy's Uranium Leasing Program, the Southern Ute Indian Tribe is (please check the appropriate line below)  

_____ Interested in participating as a consulting party.*  
_____ Not interested in participating as a consulting party.  

(*Your group will be contacted in the future to continue participation.)  

Signature: ____________________________  

Print Name: ____________________________  

Date: ____________________________
Dear Chairman Shingoitowa:

The purpose of this letter is to invite the Hopi Tribe to be a consulting party for a programmatic agreement (PA) under the National Historic Preservation Act (NHPA) to address Section 106 consultation activities for historic properties that have been or may be identified on 25,000 acres of land in southwest Colorado. The acreage is managed by the Department of Energy, Office of Legacy Management (DOE-LM) under the DOE Uranium Leasing Program (ULP). The enclosed map displays the lease tract areas that will be addressed in the PA. For all the lease tracts, DOE-LM has land withdrawals from the U.S. Bureau of Land Management (BLM).

In 2011, DOE-LM initiated a Programmatic Environmental Impact Statement (PEIS) for the (ULP). DOE-LM is currently preparing responses to comments from the public and initiating the final PEIS; information on the PEIS can be reviewed on the dedicated web page http://ulppeis.anl.gov/. The Hopi Tribe was identified as having ancestral movement throughout the Mesa Verde region and possibly into the ULP lease tract areas. Because of this historical connection to the area, DOE-LM has contacted the Hopi Tribe on several occasions since initiation of the PEIS to inquire about their interest in government to government consultation and/or serving as a cooperating agent in in the National Environmental Policy Act process. The Hopi Tribe opted to participate in the PEIS endeavor as a commenting agency.

DOE-LM has estimated that up to 490 acres of the 25,000 acres could be disturbed should ULP mining continue; however, it is unknown where future ground disturbance related to ULP activities would occur. As a continuing effort to programmatically address potential impacts of the ULP on the environment, DOE-LM is pursuing a PA with the Colorado State Historic Preservation Office (CO SHPO), the Advisory Council on Historic Preservation, the BLM, and other interested historical/heritage groups.

The proposed PA would formalize the programmatic implementation of a phased approach for leasing, exploration, development, and reclamation. The PA will outline alternative procedures to implement NHPA Section 106 consultation for each phase.
Each potential area of disturbance identified during the planning process will typically be evaluated following the consultation process outlined in 36 CFR sections 800.3 through 800.6; historic properties would be identified and evaluated, effects assessed, and consultation will occur if an adverse effect is identified. This consultation would be completed prior to each exploration plan, mining plan, or reclamation plan being approved.

If the Hopi Tribe chooses to participate as a consulting party for the proposed PA, they could discuss concerns and provide input on the consultation activities within the proposed phased PA. Is the Hopi Tribe interested in participating as a consulting party on the proposed PA, in addition to their activities on the ULP PEIS? Please let us know of your tribe’s interest in participating. You may fill out the information on the enclosed letter and return it to DOE-LM in the self-addressed, stamped envelope. Alternatively, you may contact Tracey Ribeiro, DOE-LM’s Environmental Program Manager, at (720) 880-4347 or tracey.ribeiro@lm.doe.gov.

Please call me at (720) 880-4347 if you have any questions.

Sincerely,

[Signature]

David S. Shafer, Ph.D.
Acting Director of Office of Site Operations
Office of Legacy Management

Enclosure

cc w/enclosure
Dr. David S. Shafer  
Acting Director - Office of Site Operations  
Department of Energy – Office of Legacy Management  
11025 Dover St., Ste. 1000  
Westminster, CO 80021  

Subject: Consultation Under Section 106 of the National Historic Preservation Act for Activities Related to the Department Energy's Uranium Leasing Program  

With regards to a proposed Programmatic Agreement to address consultation under Section 106 of the National Historic Preservation Act for the Department of Energy's Uranium Leasing Program, the Hopi Tribe is (please check the appropriate line below)  

____ Interested in participating as a consulting party.*  
____ Not interested in participating as a consulting party.  

(*Your group will be contacted in the future to continue participation.)  

Signature: ____________________________  
Print Name: ____________________________  
Date: ____________________________
Department of Energy  
Washington, DC 20585  
AUG 09 2013

The Honorable Ben Shelby  
President  
Navajo Nation  
P.O. Box 7440  
Window Rock, AZ 86515

Subject: Consultation Under Section 106 of the National Historic Preservation Act for  
Activities Related to the Department Energy’s Uranium Leasing Program

Dear President Shelby:

The purpose of this letter is to invite the Navajo Nation to be a consulting party for a  
programmatic agreement (PA) under the National Historic Preservation Act (NHPA) to  
address Section 106 consultation activities for historic properties that have been or may  
be identified on 25,000 acres of land in southwest Colorado. The acreage is managed by  
the Department of Energy, Office of Legacy Management (DOE-LM) under the DOE  
Uranium Leasing Program (ULP). The enclosed map displays the lease tract areas that  
will be addressed in the PA. For all the lease tracts, DOE-LM has land withdrawals from  
The U.S. Bureau of Land Management (BLM).

In 2011, DOE-LM initiated a Programmatic Environmental Impact Statement (PEIS) for  
the ULP. DOE-LM is currently preparing responses to comments from the public and  
initiating the final PEIS; information on the PEIS can be reviewed on the dedicated web  
page http://ulppeis.aml.gov/. The Navajo Nation was identified as having ancestral  
movement throughout the Mesa Verde region and possibly into the ULP lease tract areas.  
Because of this historical connection to the area, DOE-LM has contacted the Navajo  
Nation on several occasions since initiation of the PEIS to inquire about their interest in  
government to government consultation and/or serving as a cooperating agent in the  
National Environmental Policy Act process. Navajo Nation opted to participate in the  
PEIS endeavor as a cooperating agency.

DOE-LM has estimated that up to 490 acres of the 25,000 acres could be disturbed  
should ULP mining continue; however, it is unknown where future ground disturbance  
related to ULP activities would occur. As a continuing effort to programmatically  
address potential impacts of the ULP on the environment, DOE-LM is pursuing a PA  
with the Colorado State Historic Preservation Office (CO SHPO), the Advisory Council  
on Historic Preservation, the BLM, and other interested historical/heritage groups.

The proposed PA would formalize the programmatic implementation of a phased  
approach for leasing, exploration, development, and reclamation. The PA will outline  
alternative procedures to implement NHPA Section 106 consultation for each phase.
Each potential area of disturbance identified during the planning process will typically be evaluated following the consultation process outlined in 36 CFR sections 800.3 through 800.6; historic properties would be identified and evaluated, effects assessed, and consultation will occur if an adverse effect is identified. This consultation would be completed prior to each exploration plan, mining plan, or reclamation plan being approved.

If the Navajo Nation chooses to participate as a consulting party for the proposed PA, they could discuss concerns and provide input on the consultation activities within the proposed phased PA. Is the Navajo Nation interested in participating as a consulting party on the proposed PA, in addition to their activities on the ULP PEIS? Please let us know of your tribe’s interest in participating. You may fill out the information on the enclosed letter and return it to DOE-LM in the self-addressed, stamped envelope. Alternatively, you may contact Tracy Ribeiro, DOE-LM’s Environmental Program Manager, at (720) 880-4347 or tracy.ribeiro@lm doe.gov.

Please call me at (720) 880-4347 if you have any questions.

Sincerely,

David S. Shafer, Ph.D.
Acting Director - Office of Site Operations
Office of Legacy Management

Enclosure

cc: [enclosure]
Mr. Tony Joe, Navajo Nation
Mr. Tim Begay, Navajo Nation
Dr. David S. Shafer  
Acting Director - Office of Site Operations  
Department of Energy - Office of Legacy Management  
11025 Dover St., Ste. 1000  
Westminster, CO 80021  

Subject: Consultation Under Section 106 of the National Historic Preservation Act for Activities Related to the Department Energy’s Uranium Leasing Program  

With regards to a proposed Programmatic Agreement to address consultation under Section 106 of the National Historic Preservation Act for the Department of Energy’s Uranium Leasing Program, the Navajo Nation is (please check the appropriate line below)  

_____ Interested in participating as a consulting party.*  

_____ Not interested in participating as a consulting party.  

(*Your group will be contacted in the future to continue participation.)  

Signature: ________________________________  

Print Name: ________________________________  

Date: ________________________________
The Honorable Elayne Atcitty  
Chairwoman  
White Mesa Ute Tribe  
P.O. Box 7096  
White Mesa, UT 84511

Subject: Consultation Under Section 106 of the National Historic Preservation Act for Activities Related to the Department Energy's Uranium Leasing Program

Dear Chairwoman Atcitty:

The purpose of this letter is to invite the White Mesa Ute Tribe to be a consulting party for a programmatic agreement (PA) under the National Historic Preservation Act (NHPA) to address Section 106 consultation activities for historic properties that have been or may be identified on 25,000 acres of land in southwest Colorado. The acreage is managed by the Department of Energy, Office of Legacy Management (DOE-LM) under the DOE Uranium Leasing Program (ULP). The enclosed map displays the lease tract areas that will be addressed in the PA. For all the lease tracts, DOE-LM has land withdrawals from the U.S. Bureau of Land Management (BLM).

In 2011, DOE-LM initiated a Programmatic Environmental Impact Statement (PEIS) for the (ULP). DOE-LM is currently preparing responses to comments from the public and initiating the final PEIS; information on the PEIS can be reviewed on the dedicated web page http://ulppeis.anl.gov/. The White Mesa Ute Tribe was identified as having ancestral movement throughout the Mesa Verde region and possibly into the ULP lease tract areas. Because of this historical connection to the area, DOE-LM has contacted the White Mesa Ute Tribe on several occasions since initiation of the PEIS to inquire about their interest in government to government consultation and/or serving as a cooperating agent in the National Environmental Policy Act process. The White Mesa Ute Tribe opted to participate in the PEIS endeavor as a consulting agency.

DOE-LM has estimated that up to 490 acres of the 25,000 acres could be disturbed should ULP mining continue; however, it is unknown where future ground disturbance related to ULP activities would occur. As a continuing effort to programmatic address potential impacts of the ULP on the environment, DOE-LM is pursuing a PA with the Colorado State Historic Preservation Office (CO SHPO), the Advisory Council on Historic Preservation, the BLM, and other interested historical/heritage groups.

The proposed PA would formalize the programmatic implementation of a phased approach for leasing, exploration, development, and reclamation. The PA will outline alternative procedures to implement NHPA Section 106 consultation for each phase.
Each potential area of disturbance identified during the planning process will typically be evaluated following the consultation process outlined in 36 CFR sections 800.3 through 800.6; historic properties would be identified and evaluated, effects assessed, and consultation will occur if an adverse effect is identified. This consultation would be completed prior to each exploration plan, mining plan, or reclamation plan being approved.

If the White Mesa Ute Tribe chooses to participate as a consulting party for the proposed PA, they could discuss concerns and provide input on the consultation activities within the proposed phased PA. Is the White Mesa Ute Tribe interested in participating as a consulting party on the proposed PA, in addition to their activities on the ULP PEIS? Please let us know of your tribe’s interest in participating. You may fill out the information on the enclosed letter and return it to DOE-LM in the self-addressed, stamped envelope. Alternatively, you may contact Tracy Ribeiro, DOE-LM’s Environmental Program Manager, at (720) 880-4347 or tracy.ribeiro@lm.doe.gov. Please call me at (720) 880-4347 if you have any questions.

Sincerely,

[Signature]

David S. Shafer, Ph.D.
Acting Director, Office of Site Operations
Office of Legacy Management

Enclosure

cc w/enclosure
Dr. David S. Shafer  
Acting Director - Office of Site Operations  
Department of Energy – Office of Legacy Management  
11025 Dover St., Ste. 1000  
Westminster, CO  80021

Subject: Consultation Under Section 106 of the National Historic Preservation Act for Activities Related to the Department Energy’s Uranium Leasing Program

With regards to a proposed Programmatic Agreement to address consultation under Section 106 of the National Historic Preservation Act for the Department of Energy’s Uranium Leasing Program, the White Mesa Ute Tribe is (please check the appropriate line below)

____ Interest in participating as a consulting party.*

____ Not interested in participating as a consulting party.

(*Your group will be contacted in the future to continue participation.)

Signature: ____________________________

Print Name: ____________________________

Date: ____________________________


The Honorable Randall Vicente  
Governor  
Pueblo of Acoma Tribe  
P.O. Box 309  
Acoma, NM 87034

Subject: Consultation Under Section 106 of the National Historic Preservation Act for Activities Related to the Department Energy’s Uranium Leasing Program

Dear Governor Vicente:

The purpose of this letter is to invite the Pueblo of Acoma Tribe to be a consulting party for a programmatic agreement (PA) under the National Historic Preservation Act (NHPA) to address Section 106 consultation activities for historic properties that have been or may be identified on 25,000 acres of land in southwest Colorado. The acreage is managed by the Department of Energy, Office of Legacy Management (DOE-LM) under the DOE Uranium Leasing Program (ULP). The enclosed map displays the lease tract areas that will be addressed in the PA. For all the lease tracts, DOE-LM has land withdrawals from the U.S. Bureau of Land Management (BLM).

In 2011, DOE-LM initiated a Programmatic Environmental Impact Statement (PEIS) for the (ULP). DOE-LM is currently preparing responses to comments from the public and initiating the final PEIS; information on the PEIS can be reviewed on the dedicated web page http://ulpeis.anl.gov/. The Pueblo of Acoma Tribe was identified as having ancestral movement throughout the Miss Verde region and possibly into the ULP lease tract areas. Because of this historical connection to the area, DOE-LM has contacted the Pueblo of Acoma Tribe on several occasions since initiation of the PEIS to inquire about their interest in government to government consultation and/or serving as a cooperating agent in the National Environmental Policy Act process. The Pueblo of Acoma Tribe opted to participate in the PEIS endeavor as a cooperating agency.

DOE-LM has estimated that up to 490 acres of the 25,000 acres could be disturbed should ULP mining continue; however, it is unknown where future ground disturbance related to ULP activities would occur. As a continuing effort to programmatistically address potential impacts of the ULP on the environment, DOE-LM is pursuing a PA with the Colorado State Historic Preservation Office (CO SHPO), the Advisory Council on Historic Preservation, the BLM, and other interested historical/heritage groups.

The proposed PA would formalize the programmatic implementation of a phased approach for leasing, exploration, development, and reclamation. The PA will outline alternative procedures to implement NHPA Section 106 consultation for each phase.
Each potential area of disturbance identified during the planning process will typically be evaluated following the consultation process outlined in 36 CFR sections 800.3 through 800.6; historic properties would be identified and evaluated, effects assessed, and consultation will occur if an adverse effect is identified. This consultation would be completed prior to each exploration plan, mining plan, or reclamation plan being approved.

If the Pueblo of Acoma Tribe chooses to participate as a consulting party for the proposed PA, they could discuss concerns and provide input on the consultation activities within the proposed phased PA. Is the Pueblo of Acoma Tribe interested in participating as a consulting party on the proposed PA, in addition to their activities on the ULP PEIS? Please let us know of your tribe’s interest in participating. You may fill out the information on the enclosed letter and return it to DOE-LM in the self-addressed, stamped envelope. Alternatively, you may contact Tracy Ribeiro, DOE-LM’s Environmental Program Manager, at (720) 880-4347 or tracy.ribeiro@lm.doe.gov.

Please call me at (720) 880-4347 if you have any questions.

Sincerely,

David S. Shafer, Ph.D.
Acting Director - Office of Site Operations
Office of Legacy Management

Enclosure

cc w/envelope
Ms. Theresa Pasqual, Pueblo of Acoma Tribe
Mr. Ernie Vallo, Pueblo of Acoma Tribe
Dr. David S. Shafer  
Acting Director- Office of Site Operations  
Department of Energy – Office of Legacy Management  
11025 Dover St., Ste. 1000  
Westminster, CO 80021  

Subject: Consultation Under Section 106 of the National Historic Preservation Act for Activities Related to the Department Energy’s Uranium Leasing Program  

With regards to a proposed Programmatic Agreement to address consultation under Section 106 of the National Historic Preservation Act for the Department of Energy’s Uranium Leasing Program, the Pueblo of Acoma is (please check the appropriate line below):  

______ Interested in participating as a consulting party.*  

______ Not interested in participating as a consulting party.  

(*Your group will be contacted in the future to continue participation.)  

Signature: ____________________________  

Print Name: __________________________  

Date: ________________________________
The Honorable Gary Hayes
Chairman
Ute Mountain Ute Tribe
P.O. Box 248
Towaoc, CO 81334

Subject: Consultation Under Section 106 of the National Historic Preservation Act for Activities Related to the Department Energy's Uranium Leasing Program

Dear Chairman Hayes:

The purpose of this letter is to invite the Ute Mountain Ute Tribe to be a consulting party for a programmatic agreement (PA) under the National Historic Preservation Act (NHPA) to address Section 106 consultation activities for historic properties that have been or may be identified on 25,000 acres of land in southwest Colorado. The acreage is managed by the Department of Energy, Office of Legacy Management (DOE-LM) under the DOE Uranium Leasing Program (ULP). The enclosed map displays the lease tract areas that will be addressed in the PA. For all the lease tracts, DOE-LM has land withdrawals from the U.S. Bureau of Land Management (BLM).

In 2011, DOE-LM initiated a Programmatic Environmental Impact Statement (PEIS) for the ULP. DOE-LM is currently preparing responses to comments from the public and initiating the final PEIS; information on the PEIS can be reviewed on the dedicated web page http://ulppeis.anl.gov/. The Ute Mountain Ute Tribe was identified as having ancestral movement throughout the Mesa Verde region and possibly into the ULP lease tract areas. Because of this historical connection to the area, DOE-LM has contacted the Ute Mountain Ute Tribe on several occasions since initiation of the PEIS to inquire about their interest in government to government consultation and/or serving as a cooperating agent in the National Environmental Policy Act process. The Ute Mountain Ute Tribe opted to participate in the PEIS endeavor as a commenting agency.

DOE-LM has estimated that up to 490 acres of the 25,000 acres could be disturbed should ULP mining continue; however, it is unknown where future ground disturbance related to ULP activities would occur. As a continuing effort to programmatically address potential impacts of the ULP on the environment, DOE-LM is pursuing a PA with the Colorado State Historic Preservation Office (CO SHPO), the Advisory Council on Historic Preservation, the BLM, and other interested historical/heritage groups.

The proposed PA would formalize the programmatic implementation of a phased approach for leasing, exploration, development, and reclamation. The PA will outline alternative procedures to implement NHPA Section 106 consultation for each phase.
Each potential area of disturbance identified during the planning process will typically be evaluated following the consultation process outlined in 36 CFR sections 800.3 through 800.6; historic properties would be identified and evaluated, effects assessed, and consultation will occur if an adverse effect is identified. This consultation would be completed prior to each exploration plan, mining plan, or reclamation plan being approved.

If the Ute Mountain Ute Tribe chooses to participate as a consulting party for the proposed PA, they could discuss concerns and provide input on the consultation activities within the proposed phased PA. Is the Ute Mountain Ute Tribe interested in participating as a consulting party on the proposed PA, in addition to their activities on the ULP PEIS? Please let us know of your tribe's interest in participating. You may fill out the information on the enclosed letter and return it to DOE-LM in the self-addressed, stamped envelope. Alternatively, you may contact Tracey Ribeiro, DOE-LM's Environmental Program Manager, at (720) 880-4347 or tracey.ribeiro@lm.doe.gov.

Please call me at (720) 880-4347 if you have any questions.

Sincerely,

David S. Shafer, Ph.D.
Acting Director - Office of Site Operations
Office of Legacy Management

Enclosure

cc w/encl
Lynn Hartmann, Ute Mountain Ute Tribe
Terry Night, Ute Mountain Ute Tribe
Dr. David S. Shafer  
Acting Director - Office of Site Operations  
Department of Energy – Office of Legacy Management  
11025 Dover St., Ste. 1000  
Westminster, CO 80021

Subject: Consultation Under Section 106 of the National Historic Preservation Act for Activities Related to the Department Energy’s Uranium Leasing Program

With regards to a proposed Programmatic Agreement to address consultation under Section 106 of the National Historic Preservation Act for the Department of Energy’s Uranium Leasing Program, the Ute Mountain Ute Tribe is (please check the appropriate line below)

   ___ Interested in participating as a consulting party.*

   ___ Not interested in participating as a consulting party.

(Your group will be contacted in the future to continue participation.)

Signature: ________________________________

Print Name: ________________________________

Date: ________________________________
The Honorable Frank E. Lujan  
Governor  
Pueblo of Isleta Tribe  
P.O. Box 1270  
Isleta, NM 87022

Subject: Consultation Under Section 106 of the National Historic Preservation Act for Activities Related to the Department Energy’s Uranium Leasing Program

Dear Governor Lujan:

The purpose of this letter is to invite the Pueblo of Isleta Tribe to be a consulting party for a programmatic agreement (PA) under the National Historic Preservation Act (NHPA) to address Section 106 consultation activities for historic properties that have been or may be identified on 25,000 acres of land in southwest Colorado. The acreage is managed by the Department of Energy, Office of Legacy Management (DOE-LM) under the DOE Uranium Leasing Program (ULP). The enclosed map displays the lease tract areas that will be addressed in the PA. For all the lease tracts, DOE-LM has land withdrawals from the U.S. Bureau of Land Management (BLM).

In 2011, DOE-LM initiated a Programmatic Environmental Impact Statement (PEIS) for the (ULP). DOE-LM is currently preparing responses to comments from the public and initiating the final PEIS; information on the PEIS can be reviewed on the dedicated web page http://ulpis.nlm.gov. The Pueblo of Isleta Tribe was identified as having ancestral movement throughout the Mesa Verde region and possibly into the ULP lease tract areas. Because of this historical connection to the area, DOE-LM has contacted the Pueblo of Isleta Tribe on several occasions since initiation of the PEIS to inquire about their interest in government to government consultation and/or serving as a cooperating agent in the National Environmental Policy Act process. The Pueblo of Isleta Tribe opted to participate in the PEIS endeavor as a cooperating agency.

DOE-LM has estimated that up to 490 acres of the 25,000 acres could be disturbed should ULP mining continue; however, it is unknown where future ground disturbance related to ULP activities would occur. As a continuing effort to programmatically address potential impacts of the ULP on the environment, DOE-LM is pursuing a PA with the Colorado State Historic Preservation Office (CO SHPO), the Advisory Council on Historic Preservation, the BLM, and other interested historical/heritage groups.

The proposed PA would formalize the programmatic implementation of a phased approach for leasing, exploration, development, and reclamation. The PA will outline alternative procedures to implement NHPA Section 106 consultation for each phase.
Each potential area of disturbance identified during the planning process will typically be evaluated following the consultation process outlined in 36 CFR sections 800.3 through 800.6; historic properties would be identified and evaluated, effects assessed, and consultation will occur if an adverse effect is identified. This consultation would be completed prior to each exploration plan, mining plan, or reclamation plan being approved.

If the Pueblo of Isleta Tribe chooses to participate as a consulting party for the proposed PA, they could discuss concerns and provide input on the consultation activities within the proposed phased PA. Is the Pueblo of Isleta Tribe interested in participating as a consulting party on the proposed PA, in addition to their activities on the ULP PEIS? Please let us know of your tribe’s interest in participating. You may fill out the information on the enclosed letter and return it to DOE-LM in the self-addressed, stamped envelope. Alternatively, you may contact Tracy Ribeiro, DOE-LM’s Environmental Program Manager, at (720) 880-4347 or tracy.ribeiro@lm.doe.gov.

Please call me at (720) 880-4347 if you have any questions.

Sincerely,

David S. Shafer, Ph.D.
Acting Director, Office of Site Operations
Office of Legacy Management

Enclosure

cc w/enclosure
Stephanie Zuni, Pueblo of Isleta Tribe
Valentino Jaramillo, Pueblo of Isleta Tribe

F-134 March 2014
Dr. David S. Shafer
Acting Director - Office of Site Operations
Department of Energy – Office of Legacy Management
11025 Dover St., Ste. 1000
Westminster, CO  80021

Subject: Consultation Under Section 106 of the National Historic Preservation Act for Activities Related to the Department Energy’s Uranium Leasing Program

With regards to a proposed Programmatic Agreement to address consultation under Section 106 of the National Historic Preservation Act for the Department of Energy’s Uranium Leasing Program, the Pueblo of Isleta is (please check the appropriate line below)

   [ ] Interested in participating as a consulting party.*
   [ ] Not interested in participating as a consulting party.

(*Your group will be contacted in the future to continue participation.)

Signature: ______________________________

Print Name: ______________________________

Date: ________________________________
The Honorable Robert B. Pecos  
Governor  
Pueblo de Cochiti Tribe  
P.O. Box 70  
Cochiti Pueblo, NM 87072  

Subject: Consultation Under Section 106 of the National Historic Preservation Act for Activities Related to the Department Energy’s Uranium Leasing Program  

Dear Governor Pecos:  

The purpose of this letter is to invite the Pueblo de Cochiti Tribe to be a consulting party for a programmatic agreement (PA) under the National Historic Preservation Act (NHPA) to address Section 106 consultation activities for historic properties that have been or may be identified on 25,000 acres of land in southwest Colorado. The acreage is managed by the Department of Energy, Office of Legacy Management (DOE-LM) under the DOE Uranium Leasing Program (ULP). The enclosed map displays the lease tract areas that will be addressed in the PA. For all the lease tracts, DOE-LM has land withdrawals from the U.S. Bureau of Land Management (BLM).  

In 2011, DOE-LM initiated a Programmatic Environmental Impact Statement (PEIS) for the (ULP). DOE-LM is currently preparing responses to comments from the public and initiating the final PEIS; information on the PEIS can be reviewed on the dedicated web page http://nipeis.anl.gov/. The Pueblo de Cochiti Tribe was identified as having ancestral movement throughout the Mesa Verde region and possibly into the ULP lease tract areas. Because of this historical connection to the area, DOE-LM has contacted the Pueblo de Cochiti Tribe on several occasions since initiation of the PEIS to inquire about their interest in government to government consultation and/or serving as a cooperating agency in the National Environmental Policy Act process. The Pueblo de Cochiti Tribe opted to participate in the PEIS endeavor as a cooperating agency.  

DOE-LM has estimated that up to 490 acres of the 25,000 acres could be disturbed should ULP mining continue; however, it is unknown where future ground disturbance related to ULP activities would occur. As a continuing effort to programmaticallly address potential impacts of the ULP on the environment, DOE-LM is pursuing a PA with the Colorado State Historic Preservation Office (CSHPO), the Advisory Council on Historic Preservation, the BLM, and other interested historical/heritage groups.  

The proposed PA would formalize the programmatic implementation of a phased approach for leasing, exploration, development, and reclamation. The PA will outline alternative procedures to implement NHPA Section 106 consultation for each phase.
Each potential area of disturbance identified during the planning process will typically be evaluated following the consultation process outlined in 36 CFR sections 800.3 through 800.6; historic properties would be identified and evaluated; effects assessed, and consultation will occur if an adverse effect is identified. This consultation would be completed prior to each exploration plan, mining plan, or reclamation plan being approved.

If the Pueblo de Cochiti Tribe chooses to participate as a consulting party for the proposed PA, they could discuss concerns and provide input on the consultation activities within the proposed phased PA. Is the Pueblo de Cochiti Tribe interested in participating as a consulting party on the proposed PA, in addition to their activities on the ULP PEIS? Please let us know of your tribe’s interest in participating. You may fill out the information on the enclosed letter and return it to DOE-LM in the self-addressed, stamped envelope. Alternatively, you may contact Tracy Ribeiro, DOE-LM’s Environmental Program Manager, at (720) 880-4347 or tracy.ribeiro@lm.doe.gov.

Please call me at (720) 880-4347 if you have any questions.

Sincerely,

[Signature]

David S. Shafer, Ph.D.
Acting Director Office of Site Operations
Office of Legacy Management

Enclosure:

cc w/enclosure
Jacob Pecos, Pueblo de Cochiti Tribe
Gilbert Herrera, Pueblo de Cochiti Tribe
Dr. David S. Shafer  
Acting Director- Office of Site Operations  
Department of Energy – Office of Legacy Management  
11025 Dover St., Ste. 1000  
Westminster, CO  80021

Subject: Consultation Under Section 106 of the National Historic Preservation Act for Activities Related to the Department Energy’s Uranium Leasing Program

With regards to a proposed Programmatic Agreement to address consultation under Section 106 of the National Historic Preservation Act for the Department of Energy’s Uranium Leasing Program, the Pueblo de Cochiti Tribe is [please check the appropriate line below]

[ ] Interested in participating as a consulting party.*

[ ] Not interested in participating as a consulting party.

(*Your group will be contacted in the future to continue participation.)

Signature: __________________________________________

Print Name: _________________________________________

Date: _______________________________________________
Department of Energy  
Washington, DC 20585  
August 9, 2013

The Honorable Gerald Nailor
Governor
Pueblo of Picuris Tribe
P.O. Box 127
Penasco, NM 87553

Subject: Consultation under Section 106 of the National Historic Preservation Act for Activities Related to the Department Energy’s Uranium Leasing Program

Dear Governor Nailor:

The purpose of this letter is to invite the Pueblo of Picuris Tribe to be a consulting party for a programmatic agreement (PA) under the National Historic Preservation Act (NHPA) to address Section 106 consultation activities for historic properties that have been or may be identified on 25,000 acres of land in southwest Colorado. The acreage is managed by the Department of Energy, Office of Legacy Management (DOE-LM) under the DOE Uranium Leasing Program (ULP). The enclosed map displays the lease tract areas that will be addressed in the PA. For all the lease tracts, DOE-LM has land withdrawals from the U.S. Bureau of Land Management (BLM).

In 2011, DOE-LM initiated a Programmatic Environmental Impact Statement (PEIS) for the (ULP). DOE-LM is currently preparing responses to comments from the public and initiating the final PEIS; information on the PEIS can be reviewed on the dedicated web page http://ulppeis.anl.gov/. The Pueblo of Picuris Tribe was identified as having ancestral movement throughout the Mesa Verde region and possibly into the ULP lease tract areas. Because of this historical connection to the area, LM has contacted the Pueblo of Picuris Tribe on several occasions since initiation of the PEIS to inquire about their interest in government to government consultation and/or serving as a cooperating agent in in the National Environmental Policy Act process. The Pueblo of Picuris Tribe did not express an interest to participate in this endeavor during these earlier communications.

DOE-LM has estimated that up to 490 acres of the 25,000 acres could be disturbed should the ULP mining continue; however, it is unknown where future ground disturbance related to ULP activities would occur. As a continuing effort to programatically address potential impacts of the ULP on the environment, DOE-LM is pursuing a PA with the Colorado State Historic Preservation Office (CO SHPO), the Advisory Council on Historic Preservation, the BLM, and other interested historical/heritage groups.
The proposed PA would formalize the programmatic implementation of a phased approach for leasing, exploration, development, and reclamation. The PA will outline alternative procedures to implement NEPA Section 106 consultation for each phase. Each potential area of disturbance identified during the planning process will typically be evaluated following the consultation process outlined in 36 CFR sections 800.3 through 800.6; historic properties would be identified and evaluated, effects assessed, and consultation will occur if an adverse effect is identified. This consultation would be completed prior to each exploration plan, mining plan, or reclamation plan being approved.

If the Pueblo of Picuris Tribe chooses to participate as a consulting party for the proposed PA, they could discuss concerns and provide input on the consultation activities within the proposed phased PA. Is the Pueblo of Picuris Tribe interested in serving as a consulting party on the proposed PA? Please call to identify your tribe’s interest in participating or fill out the information on the enclosed letter and return it to DOE-LM in the self-addressed, stamped envelope. Alternately, you may contact Tracy Ribeiro, LM’s Environmental Program Manager, at (303) 410-4817 or at tracy.ribeiro@lm.doe.gov. Please call me at (720) 880-4347 if you have any questions.

Sincerely,

David S. Shafer, Ph.D.
Acting Director of Site Operations
Office of Legacy Management

Enclosure

cc w/enclosure
Richard Mermejo, Pueblo of Picuris Tribe
Dr. David S. Shafer
Acting Director- Office of Site Operations
Department of Energy – Office of Legacy Management
11025 Dover St., Ste. 1000
Westminster, CO 80021

Subject: Consultation under Section 106 of the National Historic Preservation Act for Activities Related to the Department Energy’s Uranium Leasing Program

With regards to a proposed Programmatic Agreement to address consultation under Section 106 of the National Historic Preservation Act for the Department of Energy’s Uranium Leasing Program, the Pueblo of Picuris Tribe is (please check the appropriate line below)

____ Interested in participating as a consulting party.*

____ Not interested in participating as a consulting party.

(*Your group will be contacted in the future to continue participation.)

Signature: ____________________________

Print Name: __________________________

Date: ________________________________
Department of Energy  
Washington, DC 20585  
August 9, 2013

The Honorable Nelson J. Cordova  
Governor  
Pueblo of Taos Tribe  
P.O. Box 1846  
Taos, NM 87571

Subject: Consultation under Section 106 of the National Historic Preservation Act for Activities Related to the Department Energy’s Uranium Leasing Program

Dear Governor Cordova:

The purpose of this letter is to invite the Pueblo of Taos Tribe to be a consulting party for a programmatic agreement (PA) under the National Historic Preservation Act (NHPA) to address Section 106 consultation activities for historic properties that have been or may be identified on 25,000 acres of land in southwest Colorado. The acreage is managed by the Department of Energy, Office of Legacy Management (DOE-LM) under the DOE Uranium Leasing Program (ULP). The enclosed map displays the lease tract areas that will be addressed in the PA. For all the lease tracts, DOE-LM has land withdrawals from the U.S. Bureau of Land Management (BLM).

In 2011, DOE-LM initiated a Programmatic Environmental Impact Statement (PEIS) for the (ULP). DOE-LM is currently preparing responses to comments from the public and initiating the final PEIS; information on the PEIS can be reviewed on the dedicated web page http://ulpeis.anl.gov/. The Pueblo of Taos Tribe was identified as having ancestral movement throughout the Mesa Verde region and possibly into the ULP lease tract areas. Because of this historical connection to the area, LM has contacted the Pueblo of Taos Tribe on several occasions since initiation of the PEIS to inquire about their interest in government to government consultation and/or serving as a cooperating agent in the National Environmental Policy Act process. The Pueblo of Taos Tribe did not express an interest to participate in this endeavor during these earlier communications.

DOE-LM has estimated that up to 490 acres of the 25,000 acres could be disturbed should the ULP mining continue; however, it is unknown where future ground disturbance related to ULP activities would occur. As a continuing effort to programmaticallly address potential impacts of the ULP on the environment, DOE-LM is pursuing a PA with the Colorado State Historic Preservation Office (CO SHPO), the Advisory Council on Historic Preservation, the BLM, and other interested historical/heritage groups.
The proposed PA would formalize the programmatic implementation of a phased approach for leasing, exploration, development, and reclamation. The PA will outline alternative procedures to implement NHPA Section 106 consultation for each phase. Each potential area of disturbance identified during the planning process will typically be evaluated following the consultation process outlined in 36 CFR sections 800.3 through 800.6; historic properties would be identified and evaluated, effects assessed, and consultation will occur if an adverse effect is identified. This consultation would be completed prior to each exploration plan, mining plan, or reclamation plan being approved.

If the Pueblo of Taos Tribe chooses to participate as a consulting party for the proposed PA, they could discuss concerns and provide input on the consultation activities within the proposed phased PA. Is the Pueblo of Taos Tribe interested in serving as a consulting party on the proposed PA? Please call to identify your tribe’s interest in participating or fill out the information on the enclosed letter and return it to DOE-LM in the self-addressed, stamped envelope. Alternatively, you may contact Tracy Ribeiro, LM’s Environmental Program Manager, at (303) 410-4817 or at tracy.ribeiro@lm.doe.gov. Please call me at (720) 880-4347 if you have any questions.

Sincerely,

David S. Shafer, Ph.D.
Acting Director of Site Operations
Office of Legacy Management

Enclosure

cc w/envelope:
Donovan Gomez, Pueblo of Taos Tribe
Dr. David S. Shafer  
Acting Director - Office of Site Operations  
Department of Energy – Office of Legacy Management  
11025 Dover St., Ste. 1000  
Westminster, CO 80021

Subject: Consultation under Section 106 of the National Historic Preservation Act for Activities Related to the Department Energy’s Uranium Leasing Program

With regards to a proposed Programmatic Agreement to address consultation under Section 106 of the National Historic Preservation Act for the Department of Energy’s Uranium Leasing Program, the Pueblo of Taos Tribe is (please check the appropriate line below)

___ Interested in participating as a consulting party.*

___ Not interested in participating as a consulting party.

(*Your group will be contacted in the future to continue participation.)

Signature: ________________________________

Print Name: ________________________________

Date: ________________________________
Department of Energy
Washington, DC 20585

August 9, 2013

The Honorable Floyd Azure
Chairman
Assiniboine and Sioux Tribes of the Fort Peck Reservation
P.O. Box 1027
Poplar, MT 59255

Subject: Consultation under Section 106 of the National Historic Preservation Act for Activities Related to the Department Energy's Uranium Leasing Program

Dear Chairman Azure:

The purpose of this letter is to invite the Assiniboine and Sioux Tribes of the Fort Peck Reservation to be a consulting party for a programmatic agreement (PA) under the National Historic Preservation Act (NHPA) to address Section 106 consultation activities for historic properties that have been or may be identified on 25,000 acres of land in southwest Colorado. The acreage is managed by the Department of Energy, Office of Legacy Management (DOE-LM) under the DOE Uranium Leasing Program (ULP). The enclosed map displays the lease tract areas that will be addressed in the PA. For all the lease tracts, DOE-LM has land withdrawals from the U.S. Bureau of Land Management (BLM).

In 2011, DOE-LM initiated a Programmatic Environmental Impact Statement (PEIS) for the (ULP). DOE-LM is currently preparing responses to comments from the public and initiating the final PEIS; information on the PEIS can be reviewed on the dedicated web page http://ulppeis.anl.gov. The Assiniboine and Sioux Tribes of the Fort Peck Reservation were identified as having ancestral movement throughout the Mesa Verde region and possibly into the ULP lease tract areas. Because of this historical connection to the area, LM has contacted the Assiniboine and Sioux Tribes of the Fort Peck Reservation on several occasions since initiation of the PEIS to inquire about their interest in government to government consultation and/or serving as a cooperating agent in the National Environmental Policy Act process. The Assiniboine and Sioux Tribes of the Fort Peck Reservation did not express an interest to participate in this endeavor during these earlier communications.

DOE-LM has estimated that up to 490 acres of the 25,000 acres could be disturbed should the ULP mining continue; however, it is unknown where future ground disturbance related to ULP activities would occur. As a continuing effort to programmatically address potential impacts of the ULP on the environment, DOE-LM is pursuing a PA with the Colorado State Historic Preservation Office (CO SHPO), the ACHP, the BLM, and other interested historical/heritage groups.
The proposed PA would formalize the programmatic implementation of a phased approach for leasing, exploration, development, and reclamation. The PA will outline alternative procedures to implement NHPA Section 106 consultation for each phase. Each potential area of disturbance identified during the planning process will typically be evaluated following the consultation process outlined in 36 CFR sections 800.3 through 800.6; historic properties would be identified and evaluated, effects assessed, and consultation will occur if an adverse effect is identified. This consultation would be completed prior to each exploration plan, mining plan, or reclamation plan being approved.

If the Assiniboine and Sioux Tribes of the Fort Peck Reservation chooses to participate as a consulting party for the proposed PA, they could discuss concerns and provide input on the consultation activities within the proposed phased PA. Is the Assiniboine and Sioux Tribes of the Fort Peck Reservation interested in serving as a consulting party on the proposed PA? Please call to identify your tribe’s interest in participating or fill out the information on the enclosed letter and return it to DOE-LM in the self-addressed, stamped envelope. Alternatively, you may contact Tracy Ribeiro, LM’s Environmental Program Manager, at (303) 410-4817 or at tracy.ribeiro@lm.doe.gov. Please call me at (720) 880-4347 if you have any questions.

Sincerely,

[Signature]
David S. Shafer, Ph.D.
Acting Director, Site Operations
Office of Legacy Management

Enclosure

cc w/enclosure
Dr. David S. Sheafer  
Acting Director- Office of Site Operations  
Department of Energy – Office of Legacy Management  
11025 Dover St., Ste. 1000  
Westminster, CO  80021

Subject: Consultation under Section 106 of the National Historic Preservation Act for Activities Related to the Department Energy’s Uranium Leasing Program

With regards to a proposed Programmatic Agreement to address consultation under Section 106 of the National Historic Preservation Act for the Department of Energy’s Uranium Leasing Program, the Assiniboine and Sioux Tribes of the Fort Peck Reservation is (please check the appropriate line below)

[ ] Interested in participating as a consulting party,*  
[ ] Not interested in participating as a consulting party.

(*Your group will be contacted in the future to continue participation.)

Signature: ________________________________

Print Name: ________________________________

Date: ________________________________
Department of Energy
Washington, DC 20585
August 9, 2013

The Honorable Kovi Pestata
President
Jicarilla Apache Tribal Council
P.O. Box 307
Dulce, NM 87528

Subject: Consultation under Section 106 of the National Historic Preservation Act for Activities Related to the Department Energy's Uranium Leasing Program

Dear President Pestata:

The purpose of this letter is to invite the Jicarilla Apache Tribal Council to be a consulting party for a programmatic agreement (PA) under the National Historic Preservation Act (NHPA) to address Section 106 consultation activities for historic properties that have been or may be identified on 25,000 acres of land in southwest Colorado. The acreage is managed by the Department of Energy, Office of Legacy Management (DOE-LM) under the DOE Uranium Leasing Program (ULP). The enclosed map displays the lease tract areas that will be addressed in the PA. For all the lease tracts, DOE-LM has land withdrawals from the U.S. Bureau of Land Management (BLM).

In 2011, DOE-LM initiated a Programmatic Environmental Impact Statement (PEIS) for the (ULP). DOE-LM is currently preparing responses to comments from the public and initiating the final PEIS; information on the PEIS can be reviewed on the dedicated web page http://ulppeis.anl.gov/. The Jicarilla Apache Tribe was identified as having ancestral movement throughout the Mesa Verde region and possibly into the ULP lease tract areas. Because of this historical connection to the area, LM has contacted the Jicarilla Apache Tribe on several occasions since initiation of the PEIS to inquire about their interest in government to government consultation and/or serving as a cooperating agent in in the National Environmental Policy Act process. The Jicarilla Apache Tribe did not express an interest to participate in this endeavor during these earlier communications.

DOE-LM has estimated that up to 490 acres of the 25,000 acres could be disturbed should the ULP mining continue; however, it is unknown where future ground disturbance related to ULP activities would occur. As a continuing effort to programmatically address potential impacts of the ULP on the environment, DOE-LM is pursuing a PA with the Colorado State Historic Preservation Office (CO SHPO), the Advisory Council on Historic Preservation, the BLM, and other interested historical/heritage groups.
The proposed PA would formalize the programmatic implementation of a phased approach for leasing, exploration, development, and reclamation. The PA will outline alternative procedures to implement NHPA Section 106 consultation for each phase. Each potential area of disturbance identified during the planning process will typically be evaluated following the consultation process outlined in 36 CFR sections 800.3 through 800.6; historic properties would be identified and evaluated, effects assessed, and consultation will occur if an adverse effect is identified. This consultation would be completed prior to each exploration plan, mining plan, or reclamation plan being approved.

If the Jicarilla Apache Tribe chooses to participate as a consulting party for the proposed PA, they could discuss concerns and provide input on the consultation activities within the proposed phased PA. Is the Jicarilla Apache Tribe interested in serving as a consulting party on the proposed PA? Please call to identify your tribe’s interest in participating or fill out the information on the enclosed letter and return it to DOE-LM in the self-addressed, stamped envelope. Alternately, you may contact Tracy Ribeiro, DOE’s Environmental Program Manager, at (303) 410-4817 or at tracy.ribeiro@lm.doe.gov. Please call me at (720) 880-4347 if you have any questions.

Sincerely,

[Signature]

David S. Shafer, Ph.D.
Acting Director of Site Operations
Office of Legacy Management

Enclosure

cc w/enclousure
Gifford Velarde, Jicarilla Apache Tribe
Dr. Jeff Blythe, Jicarilla Apache Tribe
Dr. David S. Shafer  
Acting Director - Office of Site Operations  
Department of Energy – Office of Legacy Management  
11025 Dover St., Ste. 1000  
Westminster, CO 80021

Subject: Consultation under Section 106 of the National Historic Preservation Act for Activities Related to the Department Energy’s Uranium Leasing Program

With regards to a proposed Programmatic Agreement to address consultation under Section 106 of the National Historic Preservation Act for the Department of Energy’s Uranium Leasing Program, the Jicarilla Apache Tribe is (please check the appropriate line below)

____ Interested in participating as a consulting party.*
____ Not interested in participating as a consulting party.

(*Your group will be contacted in the future to continue participation.)

Signature: ________________________________
Print Name: ________________________________
Date: ________________________________
The Honorable David P. Garcia
Governor
Kewa Pueblo Tribe
P.O. Box 99
Santa Domingo, NM 87052

Subject: Consultation under Section 106 of the National Historic Preservation Act for Activities Related to the Department Energy’s Uranium Leasing Program

Dear Governor Garcia:

The purpose of this letter is to invite the Kewa Pueblo Tribe to be a consulting party for a programmatic agreement (PA) under the National Historic Preservation Act (NHPA) to address Section 106 consultation activities for historic properties that have been or may be identified on 25,000 acres of land in southwest Colorado. The acreage is managed by the Department of Energy, Office of Legacy Management (DOE-LM) under the DOE Uranium Leasing Program (ULP). The enclosed map displays the lease tract areas that will be addressed in the PA. For all the lease tracts, DOE-LM has land withdrawals from the U.S. Bureau of Land Management (BLM).

In 2011, DOE-LM initiated a Programmatic Environmental Impact Statement (PEIS) for the ULP. DOE-LM is currently preparing responses to comments from the public and initiating the final PEIS; information on the PEIS can be reviewed on the dedicated web page http://ulpes doe.gov/. The Kewa Pueblo Tribe was identified as having ancestral movement throughout the Mesa Verde region and possibly into the ULP lease tract areas. Because of this historical connection to the area, DOE-LM has contacted the Kewa Pueblo Tribe on several occasions since initiation of the PEIS to inquire about their interest in government to government consultation and/or serving as a cooperating agent in the National Environmental Policy Act process. The Kewa Pueblo Tribe did not express an interest to participate in this endeavor during these earlier communications.

DOE-LM has estimated that up to 490 acres of the 25,000 acres could be disturbed should the ULP mining continue; however, it is unknown where future ground disturbance related to ULP activities would occur. As a continuing effort to programmatically address potential impacts of the ULP on the environment, DOE-LM is pursuing a PA with the Colorado State Historic Preservation Office (CO SHPO), the Advisory Council on Historic Preservation, the BLM, and other interested historical/heritage groups.
The proposed PA would formalize the programmatic implementation of a phased approach for leasing, exploration, development, and reclamation. The PA will outline alternative procedures to implement NHPA Section 106 consultation for each phase. Each potential area of disturbance identified during the planning process will typically be evaluated following the consultation process outlined in 36 CFR sections 800.3 through 800.6; historic properties would be identified and evaluated, effects assessed, and consultation will occur if an adverse effect is identified. This consultation would be completed prior to each exploration plan, mining plan, or reclamation plan being approved.

If the Kews Pueblo Tribe chooses to participate as a consulting party for the proposed PA, they could discuss concerns and provide input on the consultation activities within the proposed phased PA. Is the Kews Pueblo Tribe interested in serving as a consulting party on the proposed PA? Please call to identify your tribe’s interest in participating or fill out the information on the enclosed letter and return it to DOE-LM in the self-addressed, stamped envelope. Alternately, you may contact Tracy Ribeiro, LM’s Environmental Program Manager, at (303) 410-4817 or at tracy.ribeiro@lm.doc.gov. Please call me at (720) 880-4347 if you have any questions.

Sincerely,

David S. Shaffer, Ph.D.
Acting Director of Site Operations
Office of Legacy Management

Enclosure

cc w/enclosure
Dr. David S. Shafer  
Acting Director - Office of Site Operations  
Department of Energy - Office of Legacy Management  
17025 Dover St., Ste. 1000  
Westminster, CO 80021

Subject: Consultation under Section 106 of the National Historic Preservation Act for Activities Related to the Department Energy's Uranium Leasing Program

With regards to a proposed Programmatic Agreement to address consultation under Section 106 of the National Historic Preservation Act for the Department of Energy's Uranium Leasing Program, the Kewa Pueblo Tribe is (please check the appropriate line below)

_____ Interested in participating as a consulting party.*

_____ Not interested in participating as a consulting party.

(*Your group will be contacted in the future to continue participation.)

Signature: ________________________________________

Print Name: ________________________________________

Date: ____________________________
Department of Energy
Washington, DC 20585
August 9, 2013

The Honorable Michael J. Toledo, Jr.
Governor
Pueblo of Jemez Tribe
P.O. Box 100
Jemez Pueblo, NM 87024

Subject: Consultation under Section 106 of the National Historic Preservation Act for Activities Related to the Department Energy’s Uranium Leasing Program

Dear Governor Toledo:

The purpose of this letter is to invite the Pueblo of Jemez Tribe to be a consulting party for a programmatic agreement (PA) under the National Historic Preservation Act (NHPA) to address Section 106 consultation activities for historic properties that have been or may be identified on 25,000 acres of land in southwest Colorado. The acreage is managed by the Department of Energy, Office of Legacy Management (DOE-LM) under the DOE Uranium Leasing Program (ULP). The enclosed map displays the lease tract areas that will be addressed in the PA. For all the lease tracts, DOE-LM has land withdrawals from the U.S. Bureau of Land Management (BLM).

In 2011, DOE-LM initiated a Programmatic Environmental Impact Statement (PEIS) for the (ULP). DOE-LM is currently preparing responses to comments from the public and initiating the final PEIS; information on the PEIS can be reviewed on the dedicated web page http://ulppeis.anl.gov/. The Pueblo of Jemez Tribe was identified as having ancestral movement throughout the Mesa Verde region and possibly into the ULP lease tract areas. Because of this historical connection to the area, LM has contacted the Pueblo of Jemez Tribe on several occasions since initiation of the PEIS to inquire about their interest in government to government consultation and/or serving as a cooperating agent in the National Environmental Policy Act process. Pueblo of Jemez Tribe did not express an interest to participate in this endeavor during these earlier communications.

DOE-LM has estimated that up to 490 acres of the 25,000 acres could be disturbed should the ULP mining continue; however, it is unknown where future ground disturbance related to ULP activities would occur. As a continuing effort to programmatically address potential impacts of the ULP on the environment, DOE-LM is pursuing a PA with the Colorado State Historic Preservation Office (CO SHPO), the Advisory Council on Historic Preservation, the BLM, and other interested historical/heritage groups.
The proposed PA would formalize the programmatic implementation of a phased approach for leasing, exploration, development, and reclamation. The PA will outline alternative procedures to implement NHPA Section 106 consultation for each phase. Each potential area of disturbance identified during the planning process will typically be evaluated following the consultation process outlined in 36 CFR sections 800.3 through 800.6; historic properties would be identified and evaluated, effects assessed, and consultation will occur if an adverse effect is identified. This consultation would be completed prior to each exploration plan, mining plan, or reclamation plan being approved.

If the Pueblo of Jemez Tribe chooses to participate as a consulting party for the proposed PA, they could discuss concerns and provide input on the consultation activities within the proposed phased PA. Is the Pueblo of Jemez Tribe interested in serving as a consulting party on the proposed PA? Please call to identify your tribe’s interest in participating or fill out the information on the enclosed letter and return it to DOE-LM in the self-addressed, stamped envelope. Alternately, you may contact Tracy Ribeiro, LM’s Environmental Program Manager, at (303) 410-4817 or at tracy.ribeiro@lm.doe.gov. Please call me at (720) 880-4347 if you have any questions.

Sincerely,

David S. Shafer, Ph.D.
Acting Director of Site Operations
Office of Legacy Management

Enclosure

cc w/envelope
Christopher Toya, Pueblo of Jemez Tribe
Dr. David S. Shafer  
Acting Director - Office of Site Operations  
Department of Energy – Office of Legacy Management  
11025 Dover St., Ste. 1000  
Westminster, CO  80021

Subject: Consultation under Section 106 of the National Historic Preservation Act for Activities Related to the Department of Energy’s Uranium Leasing Program

With regards to a proposed Programmatic Agreement to address consultation under Section 106 of the National Historic Preservation Act for the Department of Energy’s Uranium Leasing Program, the Pueblo of Jemez Tribe is (please check the appropriate line below)

_____ Interested in participating as a consulting party.*
_____ Not interested in participating as a consulting party.

(*Your group will be contacted in the future to continue participation.)

Signature: ____________________________

Print Name: __________________________

Date: ________________________________
Department of Energy
Washington, DC 20585
August 9, 2013

The Honorable Richard B. Luarkie
Governor
Pueblo of Laguna Tribe
P.O. Box 194
Laguna Pueblo, NM 87026

Subject: Consultation under Section 106 of the National Historic Preservation Act for Activities Related to the Department Energy’s Uranium Leasing Program

Dear Governor Luarkie:

The purpose of this letter is to invite the Pueblo of Laguna Tribe to be a consulting party for a programmatic agreement (PA) under the National Historic Preservation Act (NHPA) to address Section 106 consultation activities for historic properties that have been or may be identified on 25,000 acres of land in southwest Colorado. The acreage is managed by the Department of Energy, Office of Legacy Management (DOE-LM) under the DOE Uranium Leasing Program (ULP). The enclosed map displays the lease tract areas that will be addressed in the PA. For all the lease tracts, DOE-LM has land withdrawals from the U.S. Bureau of Land Management (BLM).

In 2011, DOE-LM initiated a Programmatic Environmental Impact Statement (PEIS) for the (ULP). DOE-LM is currently preparing responses to comments from the public and initiating the final PEIS; information on the PEIS can be reviewed on the dedicated web page http://ulpeis.anl.gov/. The Pueblo of Laguna Tribe was identified as having ancestral movement throughout the Mesa Verde region and possibly into the ULP lease tract areas. Because of this historical connection to the area, LM has contacted the Pueblo of Laguna Tribe on several occasions since initiation of the PEIS to inquire about their interest in government to government consultation and/or serving as a cooperating agent in the National Environmental Policy Act process. The Pueblo of Laguna Tribe did not express an interest to participate in this endeavor during those earlier communications.

DOE-LM has estimated that up to 490 acres of the 25,000 acres could be disturbed should the ULP mining continue; however, it is unknown where future ground disturbance related to ULP activities would occur. As a continuing effort to programatically address potential impacts of the ULP on the environment, DOE-LM is pursuing a PA with the Colorado State Historic Preservation Office (CO SHPO), the Advisory Council on Historic Preservation, the BLM, and other interested historical/heritage groups.
The proposed PA would formalize the programmatic implementation of a phased approach for leasing, exploration, development, and reclamation. The PA will outline alternative procedures to implement NHPA Section 106 consultation for each phase. Each potential area of disturbance identified during the planning process will typically be evaluated following the consultation process outlined in 36 CFR sections 800.3 through 800.6; historic properties would be identified and evaluated, effects assessed, and consultation will occur if an adverse effect is identified. This consultation would be completed prior to each exploration plan, mining plan, or reclamation plan being approved.

If the Pueblo of Laguna Tribe chooses to participate as a consulting party for the proposed PA, they could discuss concerns and provide input on the consultation activities within the proposed phased PA. Is the Pueblo of Laguna Tribe interested in serving as a consulting party on the proposed PA? Please call to identify your tribe's interest in participating or fill out the information on the enclosed letter and return it to DOE-LM in the self-addressed, stamped envelope. Alternatively, you may contact Tracy Ribeiro, LM’s Environmental Program Manager, at (303) 410-4817 or at tracy.ribeiro@lm.doe.gov. Please call me at (720) 880-4347 if you have any questions.

Sincerely,

David S. Shafer, Ph.D.
Acting Director of Site Operations
Office of Legacy Management

Enclosure

cc w/enclosure
Robert Mooney, Pueblo of Laguna Tribe
Larry Lentie, Pueblo of Laguna Tribe
Dr. David S. Shafer  
Acting Director- Office of Site Operations  
Department of Energy – Office of Legacy Management  
11025 Dover St., Ste. 1000  
Westminster, CO  80021

Subject: Consultation under Section 106 of the National Historic Preservation Act for  
Activities Related to the Department Energy’s Uranium Leasing Program

With regards to a proposed Programmatic Agreement to address consultation under  
Section 106 of the National Historic Preservation Act for the Department of Energy’s  
Uranium Leasing Program, the Pueblo of Laguna Tribe is (please check the appropriate  
line below)

_____ Interested in participating as a consulting party.*

_____ Not interested in participating as a consulting party.

(*Your group will be contacted in the future to continue participation.)

Signature: ____________________________

Print Name: __________________________

Date: ________________________________
Department of Energy
Washington, DC 20585

August 9, 2013

The Honorable Ernest Miranda
Governor
Pueblo of Nambe Tribe
Route 1, Box 117-BB
Santa Fe, NM 87506

Subject: Consultation under Section 106 of the National Historic Preservation Act for Activities Related to the Department Energy’s Uranium Leasing Program

Dear Governor Miranda:

The purpose of this letter is to invite the Pueblo of Nambe Tribe to be a consulting party for a programmatic agreement (PA) under the National Historic Preservation Act (NHPA) to address Section 106 consultation activities for historic properties that have been or may be identified on 25,000 acres of land in southwest Colorado. The acreage is managed by the Department of Energy, Office of Legacy Management (DOE-LM) under the DOE Uranium Leasing Program (ULP). The enclosed map displays the lease tract areas that will be addressed in the PA. For all the lease tracts, DOE-LM has land withdrawals from the U.S. Bureau of Land Management (BLM).

In 2011, DOE-LM initiated a Programmatic Environmental Impact Statement (PEIS) for the (ULP). DOE-LM is currently preparing responses to comments from the public and initiating the final PEIS; information on the PEIS can be reviewed on the dedicated web page http://ulppeis.anl.gov/. The Pueblo of Nambe Tribe was identified as having ancestral movement throughout the Mesa Verde region and possibly into the ULP lease tract areas. Because of this historical connection to the area, LM has contacted the Pueblo of Nambe Tribe on several occasions since initiation of the PEIS to inquire about their interest in government to government consultation and/or serving as a cooperating agent in the National Environmental Policy Act process. The Pueblo of Nambe Tribe did not express an interest to participate in this endeavor during these earlier communications.

DOE-LM has estimated that up to 490 acres of the 25,000 acres could be disturbed should the ULP mining continue; however, it is unknown where future ground disturbance related to ULP activities would occur. As a continuing effort to programmatically address potential impacts of the ULP on the environment, DOE-LM is pursuing a PA with the Colorado State Historic Preservation Office (CO SHPO), the Advisory Council on Historic Preservation, the BLM, and other interested historical/heritage groups.
The proposed PA would formalize the programmatic implementation of a phased approach for leasing, exploration, development, and reclamation. The PA will outline alternative procedures to implement NHPA Section 106 consultation for each phase. Each potential area of disturbance identified during the planning process will typically be evaluated following the consultation process outlined in 36 CFR sections 800.3 through 800.6; historic properties would be identified and evaluated, effects assessed, and consultation will occur if an adverse effect is identified. This consultation would be completed prior to each exploration plan, mining plan, or reclamation plan being approved.

If the Pueblo of Nambe Tribe chooses to participate as a consulting party for the proposed PA, they could discuss concerns and provide input on the consultation activities within the proposed phased PA. Is the Pueblo of Nambe Tribe interested in serving as a consulting party on the proposed PA? Please call to identify your tribe’s interest in participating or fill out the information on the enclosed letter and return it to DOE-LM in the self-addressed, stamped envelope. Alternately, you may contact Tracy Ribeiro, LM’s Environmental Program Manager, at (303) 410-4817 or at tracy.ribeiro@lm.doe.gov. Please call me at (720) 880-4347 if you have any questions.

Sincerely,

[Signature]

David S. Shafer, Ph.D.
Acting Director of Site Operations
Office of Legacy Management

Enclosure

cc w/enclosure
Dr. David S. Shafer  
Acting Director- Office of Site Operations  
Department of Energy – Office of Legacy Management  
11025 Dover St., Ste. 1000  
Westminster, CO 80021

Subject: Consultation under Section 106 of the National Historic Preservation Act for Activities Related to the Department Energy’s Uranium Leasing Program

With regards to a proposed Programmatic Agreement to address consultation under Section 106 of the National Historic Preservation Act for the Department of Energy’s Uranium Leasing Program, the Pueblo of Nambe tribe is (please check the appropriate line below)

[ ] Interested in participating as a consulting party.*
[ ] Not interested in participating as a consulting party.

(*Your group will be contacted in the future to continue participation.)

Signature: ____________________________
Print Name: __________________________
Date: ________________________________
Department of Energy
Washington, DC 20585

August 9, 2013

The Honorable George Rivera
Governor
Pueblo of Pojoaque Tribe
78 Cities of Gold Road
Santa Fe, NM 87506

Subject: Consultation under Section 106 of the National Historic Preservation Act for Activities Related to the Department Energy’s Uranium Leasing Program

Dear Governor Rivera:

The purpose of this letter is to invite the Pueblo of Pojoaque Tribe to be a consulting party for a programmatic agreement (PA) under the National Historic Preservation Act (NHPA) to address Section 106 consultation activities for historic properties that have been or may be identified on 25,000 acres of land in southwest Colorado. The acreage is managed by the Department of Energy, Office of Legacy Management (DOE-LM) under the DOE Uranium Leasing Program (ULP). The enclosed map displays the lease tract areas that will be addressed in the PA. For all the lease tracts, DOE-LM has land withdrawals from the U.S. Bureau of Land Management (BLM).

In 2011, DOE-LM initiated a Programmatic Environmental Impact Statement (PEIS) for the (ULP). DOE-LM is currently preparing responses to comments from the public and initiating the final PEIS; information on the PEIS can be reviewed on the dedicated web page http://ulppeis.anl.gov/. The Pueblo of Pojoaque Tribe was identified as having ancestral movement throughout the Mesa Verde region and possibly into the ULP lease tract areas. Because of this historical connection to the area, LM has contacted the Pueblo of Pojoaque Tribe on several occasions since initiation of the PEIS to inquire about their interest in government to government consultation and/or serving as a cooperating agent in in the National Environmental Policy Act process. Pueblo of Pojoaque Tribe did not express an interest to participate in this endeavor during these earlier communications.

DOE-LM has estimated that up to 490 acres of the 25,000 acres could be disturbed should the ULP mining continue; however, it is unknown where future ground disturbance related to ULP activities would occur. As a continuing effort to programmaticallly address potential impacts of the ULP on the environment, DOE-LM is pursuing a PA with the Colorado State Historic Preservation Office (CO SHPO), the Advisory Council on Historic Preservation, the BLM, and other interested historical/heritage groups.
The proposed PA would formalize the programmatic implementation of a phased approach for leasing, exploration, development, and reclamation. The PA will outline alternative procedures to implement NHPA Section 106 consultation for each phase. Each potential area of disturbance identified during the planning process will typically be evaluated following the consultation process outlined in 36 CFR sections 800.3 through 800.6; historic properties would be identified and evaluated, effects assessed, and consultation will occur if an adverse effect is identified. This consultation would be completed prior to each exploration plan, mining plan, or reclamation plan being approved.

If the Pueblo of Pojoaque Tribe chooses to participate as a consulting party for the proposed PA, they could discuss concerns and provide input on the consultation activities within the proposed phased PA. Is the Pueblo of Pojoaque Tribe interested in serving as a consulting party on the proposed PA? Please call to identify your tribe’s interest in participating or fill out the information on the enclosed letter and return it to DOE-LM in the self-addressed, stamped envelope. Alternatively, you may contact Tracy Ribeiro, LM’s Environmental Program Manager, at (303) 410-4817 or at tracy.ribeiro@lm.doe.gov. Please call me at (720) 880-4347 if you have any questions.

Sincerely,

David S. Shafer, Ph.D.
Acting Director of Site Operations
Office of Legacy Management

Enclosure

cc w/enclosure
Vernan Lujan, Pueblo of Pojoaque Tribe
Dr. David S. Shafer  
Acting Director- Office of Site Operations  
Department of Energy—Office of Legacy Management  
11025 Dover St., Ste. 1000  
Westminster, CO 80021

Subject: Consultation under Section 106 of the National Historic Preservation Act for Activities Related to the Department Energy’s Uranium Leasing Program

With regards to a proposed Programmatic Agreement to address consultation under Section 106 of the National Historic Preservation Act for the Department of Energy’s Uranium Leasing Program, the Pueblo of Pojoaque Tribe is (please check the appropriate line below)

- Interested in participating as a consulting party.*
- Not interested in participating as a consulting party.

(*Your group will be contacted in the future to continue participation.)

Signature: ____________________________

Print Name: ___________________________

Date: ________________________________
Department of Energy
Washington, DC 20588

August 9, 2013

The Honorable Raymond Sandoval, Sr.
Governor
Pueblo of San Felipe Tribe
P.O. Box 4339
San Felipe, NM 87001

Subject: Consultation under Section 106 of the National Historic Preservation Act for Activities Related to the Department Energy’s Uranium Leasing Program

Dear Governor Sandoval:

The purpose of this letter is to invite the Pueblo of San Felipe Tribe to be a consulting party for a programmatic agreement (PA) under the National Historic Preservation Act (NHPA) to address Section 106 consultation activities for historic properties that have been or may be identified on 25,000 acres of land in southwest Colorado. The acreage is managed by the Department of Energy, Office of Legacy Management (DOE-LM) under the DOE Uranium Leasing Program (ULP). The enclosed map displays the lease tract areas that will be addressed in the PA. For all the lease tracts, DOE-LM has land withdrawals from the U.S. Bureau of Land Management (BLM).

In 2011, DOE-LM initiated a Programmatic Environmental Impact Statement (PEIS) for the (ULP). DOE-LM is currently preparing responses to comments from the public and initiating the final PEIS; information on the PEIS can be reviewed on the dedicated web page http://ulpes.anl.gov/. The Pueblo of San Felipe Tribe was identified as having ancestral movement throughout the Mesa Verde region and possibly into the ULP lease tract areas. Because of this historical connection to the area, LM has contacted the Pueblo of San Felipe Tribe on several occasions since initiation of the PEIS to inquire about their interest in government to government consultation and/or serving as a cooperating agent in the National Environmental Policy Act process. The Pueblo of San Felipe Tribe did not express an interest to participate in this endeavor during these earlier communications.

DOE-LM has estimated that up to 490 acres of the 25,000 acres could be disturbed should the ULP mining continue; however, it is unknown where future ground disturbance related to ULP activities would occur. As a continuing effort to programmatically address potential impacts of the ULP on the environment, DOE-LM is pursuing a PA with the Colorado State Historic Preservation Office (CO SHPO), the Advisory Council on Historic Preservation, the BLM, and other interested historical/heritage groups.

Printed with soy ink on recycled paper

F-166
March 2014
The proposed PA would formalize the programmatic implementation of a phased approach for leasing, exploration, development, and reclamation. The PA will outline alternative procedures to implement NEPA Section 106 consultation for each phase. Each potential area of disturbance identified during the planning process will typically be evaluated following the consultation process outlined in 36 CFR sections 800.3 through 800.6; historic properties would be identified and evaluated, effects assessed, and consultation will occur if an adverse effect is identified. This consultation would be completed prior to each exploration plan, mining plan, or reclamation plan being approved.

If the Pueblo of San Felipe Tribe chooses to participate as a consulting party for the proposed PA, they could discuss concerns and provide input on the consultation activities within the proposed phased PA. Is the Pueblo of San Felipe Tribe interested in serving as a consulting party on the proposed PA? Please call to identify your tribe’s interest in participating or fill out the information on the enclosed letter and return it to DOE-LM in the self-addressed, stamped envelope. Alternately, you may contact Tracy Ribeiro, LM’s Environmental Program Manager, at (303) 410-4817 or at tracy.ribeiro@lm.doe.gov. Please call me at (720) 880-4347 if you have any questions.

Sincerely,

David S. Shafer, Ph.D.
Acting Director of Site Operations
Office of Legacy Management

Enclosure

cc w/envelope
Dr. David S. Shuford  
Acting Director - Office of Site Operations  
Department of Energy – Office of Legacy Management  
11025 Dover St., Ste. 1000  
Westminster, CO 80021

Subject: Consultation under Section 106 of the National Historic Preservation Act for Activities Related to the Department Energy’s Uranium Leasing Program

With regards to a proposed Programmatic Agreement to address consultation under Section 106 of the National Historic Preservation Act for the Department of Energy’s Uranium Leasing Program, the Pueblo of San Felipe Tribe is (please check the appropriate line below)

[ ] Interested in participating as a consulting party.*
[ ] Not interested in participating as a consulting party.

(*Your group will be contacted in the future to continue participation.)

Signature: ________________________________

Print Name: ________________________________

Date: ________________________________
Department of Energy
Washington, DC 20585

August 9, 2013

The Honorable Perry Martinez
Governor
Pueblo of Ildefonso Tribe
Route 5, Box 315A
Santa Fe, NM 87506

Subject: Consultation under Section 106 of the National Historic Preservation Act for Activities Related to the Department of Energy’s Uranium Leasing Program

Dear Governor Martinez:

The purpose of this letter is to invite the Pueblo of Ildefonso Tribe to be a consulting party for a programmatic agreement (PA) under the National Historic Preservation Act (NHPA) to address Section 106 consultation activities for historic properties that have been or may be identified on 25,000 acres of land in southwest Colorado. The acreage is managed by the Department of Energy, Office of Legacy Management (DOE-LM) under the DOE Uranium Leasing Program (ULP). The enclosed map displays the lease tract areas that will be addressed in the PA. For all the lease tracts, DOE-LM has land withdrawals from the U.S. Bureau of Land Management (BLM).

In 2011, DOE-LM initiated a Programmatic Environmental Impact Statement (PEIS) for the (ULP). DOE-LM is currently preparing responses to comments from the public and initiating the final PEIS; information on the PEIS can be reviewed on the dedicated web page http://ulpolis.anl.gov. The Pueblo of Ildefonso Tribe was identified as having ancestral movement throughout the Mesa Verde region and possibly into the ULP lease tract areas. Because of this historical connection to the area, LM has contacted the Pueblo of Ildefonso Tribe on several occasions since initiation of the PEIS to inquire about their interest in government to government consultation and/or serving as a cooperating agent in the National Environmental Policy Act process. The Pueblo of Ildefonso Tribe did not express an interest to participate in this endeavor during these earlier communications.

DOE-LM has estimated that up to 490 acres of the 25,000 acres could be disturbed should the ULP mining continue; however, it is unknown where future ground disturbance related to ULP activities would occur. As a continuing effort to programmatically address potential impacts of the ULP on the environment, DOE-LM is pursuing a PA with the Colorado State Historic Preservation Office (CHP), the Advisory Council on Historic Preservation, the BLM, and other interested historical/heritage groups.
The proposed PA would formalize the programmatic implementation of a phased approach for leasing, exploration, development, and reclamation. The PA will outline alternative procedures to implement NHPA Section 106 consultation for each phase. Each potential area of disturbance identified during the planning process will typically be evaluated following the consultation process outlined in 36 CFR sections 800.3 through 800.6; historic properties would be identified and evaluated, effects assessed, and consultation will occur if an adverse effect is identified. This consultation would be completed prior to each exploration plan, mining plan, or reclamation plan being approved.

If the Pueblo of Ildefonso Tribe chooses to participate as a consulting party for the proposed PA, they could discuss concerns and provide input on the consultation activities within the proposed phased PA. Is the Pueblo of Ildefonso Tribe interested in serving as a consulting party on the proposed PA? Please call to identify your tribe’s interest in participating or fill out the information on the enclosed letter and return it to DOI-LM in the self-addressed, stamped envelope. Alternately, you may contact Tracy Ribeiro, LMP’s Environmental Program Manager, at (303) 410-4817 or at tracy.ribeiro@lm.dot.gov. Please call me at (720) 880-4347 if you have any questions.

Sincerely,

David S. Shafer, Ph.D.
Acting Director of Site Operations
Office of Legacy Management

Enclosure

cc: w/enclosure
Brian Montoya, Pueblo of Ildefonso Tribe
Dr. David S. Shafer
Acting Director- Office of Site Operations
Department of Energy – Office of Legacy Management
11025 Dover St., Ste. 1000
Westminster, CO 80021

Subject: Consultation under Section 106 of the National Historic Preservation Act for Activities Related to the Department Energy’s Urmium Leasing Program

With regards to a proposed Programmatic Agreement to address consultation under Section 106 of the National Historic Preservation Act for the Department of Energy’s Uranium Leasing Program, the Pueblo of Illdefonso Tribe is (please check the appropriate line below)

[ ] Interested in participating as a consulting party.

[ ] Not interested in participating as a consulting party.

(*Your group will be contacted in the future to continue participation.)

Signature: ________________________________

Print Name: ________________________________

Date: ________________________________
The Honorable Malcolm Montoya  
Governor  
Pueblo of Sandia Tribe  
481 Sandia Loop  
Bernalillo, NM 87004

Subject: Consultation under Section 106 of the National Historic Preservation Act for Activities Related to the Department Energy's Uranium Leasing Program

Dear Governor Montoya:

The purpose of this letter is to invite the Pueblo of Sandia Tribe to be a consulting party for a programmatic agreement (PA) under the National Historic Preservation Act (NHPA) to address Section 106 consultation activities for historic properties that have been or may be identified on 25,000 acres of land in southwest Colorado. The acreage is managed by the Department of Energy, Office of Legacy Management (DOE-LM) under the DOE Uranium Leasing Program (ULP). The enclosed map displays the lease tract areas that will be addressed in the PA. For all the lease tracts, DOE-LM has land withdrawals from the U.S. Bureau of Land Management (BLM).

In 2011, DOE-LM initiated a Programmatic Environmental Impact Statement (PEIS) for the (ULP). DOE-LM is currently preparing responses to comments from the public and initiating the final PEIS; information on the PEIS can be reviewed on the dedicated web page http://ulppeis.anl.gov/. The Pueblo of Sandia Tribe was identified as having ancestral movement throughout the Mesa Verde region and possibly into the ULP lease tract areas. Because of this historical connection to the area, LM has contacted the Pueblo of Sandia Tribe on several occasions since initiation of the PEIS to inquire about their interest in government to government consultation and/or serving as a cooperating agent in the National Environmental Policy Act process. Pueblo of Sandia Tribe did not express an interest to participate in this endeavor during those earlier communications.

DOE-LM has estimated that up to 490 acres of the 25,000 acres could be disturbed should the ULP mining continue; however, it is unknown where future ground disturbance related to ULP activities would occur. As a continuing effort to programmatically address potential impacts of the ULP on the environment, DOE-LM is pursuing a PA with the Colorado State Historic Preservation Office (CO SHPO), the Advisory Council on Historic Preservation, the BLM, and other interested historical/heritage groups.
The proposed PA would formalize the programmatic implementation of a phased approach for leasing, exploration, development, and reclamation. The PA will outline alternative procedures to implement NEPA Section 106 consultation for each phase. Each potential area of disturbance identified during the planning process will typically be evaluated following the consultation process outlined in 36 CFR sections 800.3 through 800.6; historic properties would be identified and evaluated, effects assessed, and consultation will occur if an adverse effect is identified. This consultation would be completed prior to each exploration plan, mining plan, or reclamation plan being approved.

If the Pueblo of Sandia Tribe chooses to participate as a consulting party for the proposed PA, they could discuss concerns and provide input on the consultation activities within the proposed phased PA. Is the Pueblo of Sandia Tribe interested in serving as a consulting party on the proposed PA? Please call to identify your tribe's interest in participating or fill out the information on the enclosed letter and return it to DOE-LM in the self-addressed, stamped envelope. Alternatively, you may contact Tracy Ribeiro, LM's Environmental Program Manager, at (703) 410-4817 or at tracy.ribeiro@lm.doe.gov. Please call me at (720) 880-4347 if you have any questions.

Sincerely,

[Signature]

David S. Shafer, Ph.D.
Acting Director of Site Operations
Office of Legacy Management

Enclosure

cc w/envelope
Frank Chavez, Pueblo of Sandia Tribe
Dr. David S. Shafer  
Acting Director - Office of Site Operations  
Department of Energy - Office of Legacy Management  
11025 Dover St., Ste. 1000  
Westminster, CO 80021

Subject: Consultation under Section 106 of the National Historic Preservation Act for Activities Related to the Department Energy's Uranium Leasing Program

With regards to a proposed Programmatic Agreement to address consultation under Section 106 of the National Historic Preservation Act for the Department of Energy’s Uranium Leasing Program, the Pueblo of Sandia Tribe is (please check the appropriate line below)

_____ Interested in participating as a consulting party.*  
_____ Not interested in participating as a consulting party.

(*Your group will be contacted in the future to continue participation.)

Signature: ____________________________

Print Name: ____________________________

Date: ____________________________
Department of Energy
Washington, DC 20585
August 9, 2013

The Honorable Lawrence Montoya
Governor
Pueblo of Santa Ana Tribe
2 Dove Road
Santa Ana Pueblo, NM 87004

Subject: Consultation under Section 106 of the National Historic Preservation Act for Activities Related to the Department Energy's Uranium Leasing Program

Dear Governor Montoya:

The purpose of this letter is to invite the Pueblo of Santa Ana Tribe to be a consulting party for a programmatic agreement (PA) under the National Historic Preservation Act (NHPA) to address Section 106 consultation activities for historic properties that have been or may be identified on 25,000 acres of land in southwest Colorado. The acreage is managed by the Department of Energy, Office of Legacy Management (DOE-LM) under the DOE Uranium Leasing Program (ULP). The enclosed map displays the lease tract areas that will be addressed in the PA. For all the lease tracts, DOE-LM has land withdrawals from the U.S. Bureau of Land Management (BLM).

In 2011, DOE-LM initiated a Programmatic Environmental Impact Statement (PEIS) for the (ULP). DOE-LM is currently preparing responses to comments from the public and initiating the final PEIS; information on the PEIS can be reviewed on the dedicated web page http://ulpes.anl.gov/. The Pueblo of Santa Ana Tribe was identified as having ancestral movement throughout the Mesa Verde region and possibly into the ULP lease tract areas. Because of this historical connection to the area, LM has contacted the Pueblo of Santa Ana Tribe on several occasions since initiation of the PEIS to inquire about their interest in government to government consultation and/or serving as a cooperating agent in the National Environmental Policy Act process. The Pueblo of Santa Ana Tribe did not express an interest to participate in this endeavor during these earlier communications.

DOE-LM has estimated that up to 490 acres of the 25,000 acres could be disturbed should the ULP mining continue; however, it is unknown where future ground disturbance related to ULP activities would occur. As a continuing effort to programmatically address potential impacts of the ULP on the environment, DOE-LM is pursuing a PA with the Colorado State Historic Preservation Office (CO SHPO), the Advisory Council on Historic Preservation, the BLM, and other interested historical/heritage groups.
The proposed PA would formalize the programmatic implementation of a phased approach for leasing, exploration, development, and reclamation. The PA will outline alternative procedures to implement NHPA Section 106 consultation for each phase. Each potential area of disturbance identified during the planning process will typically be evaluated following the consultation process outlined in 36 CFR sections 800.3 through 800.6; historic properties would be identified and evaluated, effects assessed, and consultation will occur if an adverse effect is identified. This consultation would be completed prior to each exploration plan, mining plan, or reclamation plan being approved.

If the Pueblo of Santa Ana Tribe chooses to participate as a consulting party for the proposed PA, they could discuss concerns and provide input on the consultation activities within the proposed phased PA. Is the Pueblo of Santa Ana Tribe interested in serving as a consulting party on the proposed PA? Please call to identify your tribe’s interest in participating or fill out the information on the enclosed letter and return it to DOE-LM in the self-addressed, stamped envelope. Alternatively, you may contact Tracy Ribeiro, LM’s Environmental Program Manager, at (303) 410-4817 or at tracy.ribeiro@lm.doe.gov. Please call me at (720) 880-4347 if you have any questions.

Sincerely,

David S. Shafer, Ph.D.
Acting Director of Site Operations
Office of Legacy Management

Enclosure

cc w/enclosure:
Ben Robbins, Pueblo of Santa Ana Tribe
Dr. David S. Shafer  
Acting Director - Office of Site Operations  
Department of Energy – Office of Legacy Management  
11025 Dover St., Ste. 1000  
Westminster, CO 80021

Subject: Consultation under Section 106 of the National Historic Preservation Act for Activities Related to the Department Energy’s Uranium Leasing Program

With regards to a proposed Programmatic Agreement to address consultation under Section 106 of the National Historic Preservation Act for the Department of Energy’s Uranium Leasing Program, the Pueblo of Santa Ana Tribe is (please check the appropriate line below)

  ___ Interested in participating as a consulting party. *  
  ___ Not interested in participating as a consulting party.

(*Your group will be contacted in the future to continue participation.)

Signature: ____________________________

Print Name: ___________________________

Date: ________________________________
The Honorable Walter Dasheno  
Governor  
Pueblo of Santa Clara Tribe  
P.O. Box 580  
Espanola, NM 87532  

Subject: Consultation under Section 106 of the National Historic Preservation Act for Activities Related to the Department Energy’s Uranium Leasing Program  

Dear Governor Dasheno:  

The purpose of this letter is to invite the Pueblo of Santa Clara Tribe to be a consulting party for a programmatic agreement (PA) under the National Historic Preservation Act (NHPA) to address Section 106 consultation activities for historic properties that have been or may be identified on 23,000 acres of land in southwest Colorado. The acreage is managed by the Department of Energy, Office of Legacy Management (DOE-LM) under the DOE Uranium Leasing Program (ULP). The enclosed map displays the lease tract areas that will be addressed in the PA. For all the lease tracts, DOE-LM has land withdrawals from the U.S. Bureau of Land Management (BLM).  

In 2011, DOE-LM initiated a Programmatic Environmental Impact Statement (PEIS) for the (ULP). DOE-LM is currently preparing responses to comments from the public and initiating the final PEIS; information on the PEIS can be reviewed on the dedicated web page http://ulppeis.anl.gov. The Pueblo of Santa Clara Tribe was identified as having ancestral movement throughout the Mesa Verde region and possibly into the ULP lease tract areas. Because of this historical connection to the area, LM has contacted the Pueblo of Santa Clara Tribe on several occasions since initiation of the PEIS to inquire about their interest in government to government consultation and/or serving as a cooperating agent in the National Environmental Policy Act process. The Pueblo of Santa Clara Tribe did not express an interest to participate in this endeavor during these earlier communications.  

DOE-LM has estimated that up to 490 acres of the 23,000 acres could be disturbed should the ULP mining continue; however, it is unknown where future ground disturbances related to ULP activities would occur. As a continuing effort to programmatically address potential impacts of the ULP on the environment, DOE-LM is pursuing a PA with the Colorado State Historic Preservation Office (CO SHPO), the Advisory Council on Historic Preservation, the BLM, and other interested historical/heritage groups.
The proposed PA would formalize the programmatic implementation of a phased approach for leasing, exploration, development, and reclamation. The PA will outline alternative procedures to implement NHPA Section 106 consultation for each phase. Each potential area of disturbance identified during the planning process will typically be evaluated following the consultation process outlined in 36 CFR sections 800.3 through 800.6; historic properties would be identified and evaluated, effects assessed, and consultation will occur if an adverse effect is identified. This consultation would be completed prior to each exploration plan, mining plan, or reclamation plan being approved.

If the Pueblo of Santa Clara Tribe chooses to participate as a consulting party for the proposed PA, they could discuss concerns and provide input on the consultation activities within the proposed phased PA. Is the Pueblo of Santa Clara Tribe interested in serving as a consulting party on the proposed PA? Please call to identify your tribe’s interest in participating or fill out the information on the enclosed letter and return it to DOE-LM in the self-addressed, stamped envelope. Alternately, you may contact Tracy Ribeiro, LM’s Environmental Program Manager, at (303) 410-4817 or at tracy.ribeiro@lm.doe.gov. Please call me at (720) 880-4347 if you have any questions.

Sincerely,

David S. Shafer, Ph.D.
 Acting Director of Site Operations
 Office of Legacy Management

Enclosure

cc w/encl
Ben Chavarría, Pueblo of Santa Clara Tribe
Dr. David S. Shafer
Acting Director - Office of Site Operations
Department of Energy - Office of Legacy Management
11025 Dover St., Ste. 1000
Westminster, CO 80021

Subject: Consultation under Section 106 of the National Historic Preservation Act for Activities Related to the Department Energy’s Uranium Leasing Program

With regards to a proposed Programmatic Agreement to address consultation under Section 106 of the National Historic Preservation Act for the Department of Energy’s Uranium Leasing Program, the Pueblo of Santa Clara Tribe is (please check the appropriate line below)

___ Interested in participating as a consulting party.*

___ Not interested in participating as a consulting party.

(*Your group will be contacted in the future to continue participation.)

Signature: ____________________________

Print Name: __________________________

Date: _____________________________
August 9, 2013

The Honorable Mark Mitchell
Governor
Pueblo of Tesuque Tribe
Route 42, Box 360-T
Santa Fe, NM 87506

Subject: Consultation under Section 106 of the National Historic Preservation Act for Activities Related to the Department Energy’s Uranium Leasing Program

Dear Governor Mitchell:

The purpose of this letter is to invite the Pueblo of Tesuque Tribe to be a consulting party for a Programmatic Agreement (PA) under the National Historic Preservation Act (NHPA) to address Section 106 consultation activities for historic properties that have been or may be identified on 25,000 acres of land in southwest Colorado. The acreage is managed by the Department of Energy, Office of Legacy Management (DOE-LM) under the DOE Uranium Leasing Program (ULP). The enclosed map displays the lease tract areas that will be addressed in the PA. For all the lease tracts, DOE-LM has land withdrawals from the U.S. Bureau of Land Management (BLM).

In 2011, DOE-LM initiated a Programmatic Environmental Impact Statement (PEIS) for the (ULP). DOE-LM is currently preparing responses to comments from the public and initiating the final PEIS; information on the PEIS can be reviewed on the dedicated web page http://ulpeis.snl.gov/. The Pueblo of Tesuque Tribe was identified as having ancestral movement throughout the Mesa Verde region and possibly into the ULP lease tract areas. Because of this historical connection to the area, LM has contacted the Pueblo of Tesuque Tribe on several occasions since initiation of the PEIS to inquire about their interest in government to government consultation and or serving as a cooperating agent in the National Environmental Policy Act process. The Pueblo of Tesuque Tribe did not express an interest to participate in this endeavor during these earlier communications.

DOE-LM has estimated that up to 490 acres of the 25,000 acres could be disturbed should the ULP mining continue; however, it is unknown where future ground disturbance related to ULP activities would occur. As a continuing effort to programmatically address potential impacts of the ULP on the environment, DOE-LM is pursuing a PA with the Colorado State Historic Preservation Office (CO SHPO), the Advisory Council on Historic Preservation, the BLM, and other interested historical/heritage groups.
The proposed PA would formalize the programmatic implementation of a phased approach for leasing, exploration, development, and reclamation. The PA will outline alternative procedures to implement NEPA Section 106 consultation for each phase. Each potential area of disturbance identified during the planning process will typically be evaluated following the consultation process outlined in 36 CFR sections 800.3 through 800.6; historic properties would be identified and evaluated, effects assessed, and consultation will occur if an adverse effect is identified. This consultation would be completed prior to each exploration plan, mining plan, or reclamation plan being approved.

If the Pueblo of Tesuque Tribe chooses to participate as a consulting party for the proposed PA, they could discuss concerns and provide input on the consultation activities within the proposed phased PA. Is the Pueblo of Tesuque Tribe interested in serving as a consulting party on the proposed PA? Please call to identify your tribe’s interest in participating or fill out the information on the enclosed letter and return it to DOE-LM in the self-addressed, stamped envelope. Alternately, you may contact Tracey Ribeiro, LM’s Environmental Program Manager, at (303) 410-4817 or at tracey.ribeiro@lm.doe.gov. Please call me at (720) 880-4347 if you have any questions.

Sincerely,

[Signature]

David S. Shafer, Ph.D.
Acting Director of Site Operations
Office of Legacy Management

Enclosure

cc w/enclosure
Dr. David S. Shafer  
Acting Director - Office of Site Operations  
Department of Energy – Office of Legacy Management  
11025 Dover St., Ste. 1000  
Westminster, CO 80021  

Subject: Consultation under Section 106 of the National Historic Preservation Act for Activities Related to the Department Energy’s Uranium Leasing Program  

With regards to a proposed Programmatic Agreement to address consultation under Section 106 of the National Historic Preservation Act for the Department of Energy’s Uranium Leasing Program, the Pueblo of Tesuque Tribe is (please check the appropriate line below)  

_____ Interested in participating as a consulting party.  

_____ Not interested in participating as a consulting party.  

(*Your group will be contacted in the future to continue participation.)  

Signature: ____________________________  

Print Name: ____________________________  

Date: ____________________________
The Honorable Marcellus Medina
Governor
Pueblo of Zia Tribe
135 Capitol Square Drive
Zia Pueblo, NM 87053

Subject: Consultation under Section 106 of the National Historic Preservation Act for Activities Related to the Department of Energy’s Uranium Leasing Program

Dear Governor Medina:

The purpose of this letter is to invite the Pueblo of Zia Tribe to be a consulting party for a programmatic agreement (PA) under the National Historic Preservation Act (NHPA) to address Section 106 consultation activities for historic properties that have been or may be identified on 25,000 acres of land in southwest Colorado. The acreage is managed by the Department of Energy, Office of Legacy Management (DOE-LM) under the DOE Uranium Leasing Program (ULP). The enclosed map displays the lease tract areas that will be addressed in the PA. For all the lease tracts, DOE-LM has land withdrawals from the U.S. Bureau of Land Management (BLM).

In 2011, DOE-LM initiated a Programmatic Environmental Impact Statement (PEIS) for the (ULP). DOE-LM is currently preparing responses to comments from the public and initiating the final PEIS; information on the PEIS can be reviewed on the dedicated web page http://ulpela.mln.gov. The Pueblo of Zia Tribe was identified as having ancestral movement throughout the Mesa Verde region and possibly into the ULP lease tract areas. Because of this historical connection to the area, DOE-LM has contacted the Pueblo of Zia Tribe on several occasions since initiation of the PEIS to inquire about their interest in government to government consultation and/or serving as a cooperating agent in the National Environmental Policy Act process. The Pueblo of Zia Tribe did not express an interest to participate in this endeavor during these earlier communications.

DOE-LM has estimated that up to 490 acres of the 25,000 acres could be disturbed should the ULP mining continue; however, it is unknown where future ground disturbance related to ULP activities would occur. As a continuing effort to programmatically address potential impacts of the ULP on the environment, DOE-LM is pursuing a PA with the Colorado State Historic Preservation Office (CO SHPO), the Advisory Council on Historic Preservation, the BLM, and other interested historical/heritage groups.
The proposed PA would formalize the programmatic implementation of a phased approach for leasing, exploration, development, and reclamation. The PA will outline alternative procedures to implement NHPA Section 106 consultation for each phase. Each potential area of disturbance identified during the planning process will typically be evaluated following the consultation process outlined in 36 CFR sections 800.3 through 800.6; historic properties would be identified and evaluated, effects assessed, and consultation will occur if an adverse effect is identified. This consultation would be completed prior to each exploration plan, mining plan, or reclamation plan being approved.

If the Pueblo of Zia Tribe chooses to participate as a consulting party for the proposed PA, they could discuss concerns and provide input on the consultation activities within the proposed phased PA. Is the Pueblo of Zia Tribe interested in serving as a consulting party on the proposed PA? Please call to identify your tribe’s interest in participating or fill out the information on the enclosed letter and return it to DOB-LM in the self-addressed, stamped envelope. Alternately, you may contact Tracy Ribeiro, LM’s Environmental Program Manager, at (303) 410-4817 or at tracy.ribeiro@lm.doc.gov. Please call me at (720) 880-4347 if you have any questions.

Sincerely,

[Signature]

David S. Shafer, Ph.D.
Acting Director of Site Operations
Office of Legacy Management

Enclosure

cc:w/enclosure:

Peter Pino, Pueblo of Zia Tribe
Dr. David S. Shafer
Acting Director - Office of Site Operations
Department of Energy - Office of Legacy Management
11025 Dover St., Ste. 1000
Westminster, CO 80021

Subject: Consultation under Section 106 of the National Historic Preservation Act for Activities Related to the Department Energy’s Uranium Leasing Program

With regards to a proposed Programmatic Agreement to address consultation under Section 106 of the National Historic Preservation Act for the Department of Energy’s Uranium Leasing Program, the Pueblo of Zia Tribe is (please check the appropriate line below)

____ Interested in participating as a consulting party.*

____ Not interested in participating as a consulting party.

(*Your group will be contacted in the future to continue participation.)

Signature: ______________________________

Print Name: ______________________________

Date: ______________________________
August 9, 2013

The Honorable Arlen P. Quachawi
Governor
Zuni Tribe of the Zuni Reservation
P.O. Box 339
Zuni, NM 87327

Subject: Consultation under Section 106 of the National Historic Preservation Act for Activities Related to the Department Energy’s Uranium Leasing Program

Dear Governor Quachawi:

The purpose of this letter is to invite the Zuni Tribe of the Zuni Reservation to be a consulting party for a programmatic agreement (PA) under the National Historic Preservation Act (NHPA) to address Section 106 consultation activities for historic properties that have been or may be identified on 25,000 acres of land in southwest Colorado. The acreage is managed by the Department of Energy, Office of Legacy Management (DOE-LM) under the DOE Uranium Leasing Program (ULP). The enclosed map displays the lease tract areas that will be addressed in the PA. For all the lease tracts, DOE-LM has land withdrawals from the U.S. Bureau of Land Management (BLM).

In 2011, DOE-LM initiated a Programmatic Environmental Impact Statement (PEIS) for the (ULP). DOE-LM is currently preparing responses to comments from the public and initiating the final PEIS; information on the PEIS can be reviewed on the dedicated web page http://ulppeis.anl.gov/. The Zuni Tribe of the Zuni Reservation was identified as having ancestral movement throughout the Mesa Verde region and possibly into the ULP lease tract areas. Because of this historical connection to the area, LM has contacted the Zuni Tribe of the Zuni Reservation on several occasions since initiation of the PEIS to inquire about their interest in government to government consultation and/or serving as a cooperating agent in in the National Environmental Policy Act process. The Zuni Tribe of the Zuni Reservation did not express an interest to participate in this endeavor during those earlier communications.

DOE-LM has estimated that up to 490 acres of the 25,000 acres could be disturbed should the ULP mining continue; however, it is unknown where future ground disturbance related to ULP activities would occur. As a continuing effort to programatically address potential impacts of the ULP on the environment, DOE-LM is pursuing a PA with the Colorado State Historic Preservation Office (CO SHPO), the Advisory Council on Historic Preservation, the BLM, and other interested historical/heritage groups.
The proposed PA would formalize the programmatic implementation of a phased approach for leasing, exploration, development, and reclamation. The PA will outline alternative procedures to implement NHPA Section 106 consultation for each phase. Each potential area of disturbance identified during the planning process will typically be evaluated following the consultation process outlined in 36 CFR sections 800.3 through 800.6; historic properties would be identified and evaluated, effects assessed, and consultation will occur if an adverse effect is identified. This consultation would be completed prior to each exploration plan, mining plan, or reclamation plan being approved.

If the Zuni Tribe of the Zuni Reservation chooses to participate as a consulting party for the proposed PA, they could discuss concerns and provide input on the consultation activities within the proposed phased PA. Is the Zuni Tribe of the Zuni Reservation interested in serving as a consulting party on the proposed PA? Please call to identify your tribe’s interest in participating or fill out the information on the enclosed letter and return it to DOB-LM in the self-addressed, stamped envelope. Alternatively, you may contact Tracy Ribeiro, LM’s Environmental Program Manager, at (303) 410-4817 or at tracy.ribeiro@lm.doe.gov. Please call me at (720) 880-4347 if you have any questions.

Sincerely,

[Signature]

David S. Shafer, Ph.D.
Acting Director of Site Operations
Office of Legacy Management

Enclosure

cc w/enclosure:
Kurt Dongoske, Zuni Tribe of the Zuni Reservation
Dr. David S. Shafer  
Acting Director, Office of Site Operations  
Department of Energy – Office of Legacy Management  
11025 Dover St., Ste. 1000  
Westminster, CO 80021

Subject: Consultation under Section 106 of the National Historic Preservation Act for Activities Related to the Department Energy’s Uranium Leasing Program

With regards to a proposed Programmatic Agreement to address consultation under Section 106 of the National Historic Preservation Act for the Department of Energy’s Uranium Leasing Program, the Zuni Tribe of the Zuni Reservation is (please check the appropriate line below)

- Interested in participating as a consulting party.*
- Not interested in participating as a consulting party.

(*Your group will be contacted in the future to continue participation.)

Signature: ________________________________

Print Name: ________________________________

Date: ________________________________
This page intentionally left blank
APPENDIX G:

LIST OF PREPARERS
This page intentionally left blank
APPENDIX G:

LIST OF PREPARERS

Table G-1 lists the U.S. Department of Energy (DOE) management team members for the Uranium Leasing Program (ULP) Programmatic Environmental Impact Statement (PEIS). Table G-2 lists the names, education, and expertise of the ULP PEIS preparers (all are at Argonne National Laboratory). In addition, Ed Cotter of Stoller Corporation provided valuable project insight and information on the ULP for the preparation of the ULP PEIS.

TABLE G-1  DOE Management Team

<table>
<thead>
<tr>
<th>Name</th>
<th>Office</th>
<th>Title</th>
</tr>
</thead>
<tbody>
<tr>
<td>David S. Shafer</td>
<td>DOE Office of Legacy Management</td>
<td>Acting Director, Office of Site Operations</td>
</tr>
<tr>
<td>Raymond M. Plieness</td>
<td>DOE Office of Legacy Management</td>
<td>ULP PEIS Document Manager and Acting Team Leader, Asset Management Team</td>
</tr>
<tr>
<td>Tracy A. Ribeiro</td>
<td>DOE Office of Legacy Management</td>
<td>NEPA Compliance Manager</td>
</tr>
<tr>
<td>Laura E. Kilpatrick</td>
<td>DOE Office of Legacy Management</td>
<td>ULP Program Manager</td>
</tr>
</tbody>
</table>

G-3  March 2014
### TABLE G-2 ULP PEIS Preparers

<table>
<thead>
<tr>
<th>Name</th>
<th>Education/Expertise</th>
<th>Contribution</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Argonne National Laboratory</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Timothy Allison</td>
<td>M.S., Mineral and Energy Resource Economics; M.A., Geography; 26 years of experience in regional analysis and economic impact analysis</td>
<td>Socioeconomics, environmental justice</td>
</tr>
<tr>
<td>Kevin J. Beckman</td>
<td>B.S., Mathematics and Computer Science; 1 year of experience in Web programming and visual impact analysis</td>
<td>Public web site development and technical support for visual impact analysis</td>
</tr>
<tr>
<td>Bruce Biwer</td>
<td>Ph.D., Chemistry; 20 years of experience in environmental assessment and transportation risk analysis</td>
<td>Transportation</td>
</tr>
<tr>
<td>Brian Cantwell</td>
<td>B.S., Forestry, 26 years of experience in cartography and GIS</td>
<td>GIS</td>
</tr>
<tr>
<td>Young-Soo Chang</td>
<td>Ph.D., Chemical Engineering; 21 years of experience in air quality and noise impact analysis</td>
<td>Climate, air quality, noise</td>
</tr>
<tr>
<td>Jing-Jy Cheng</td>
<td>Ph.D., Polymer Science and Engineering; 19 years of experience in computer model development and applications for human health and ecological risk assessments</td>
<td>Human health impacts</td>
</tr>
<tr>
<td>Karl Fischer</td>
<td>B.S.E., Nuclear Engineering; M.Eng., Radiological Health Engineering; 13 years of relevant experience for assessing cumulative impacts</td>
<td>Cumulative impacts</td>
</tr>
<tr>
<td>Linda Graf</td>
<td>Desktop publishing specialist; 39 years of experience in creating, revising, formatting, and printing documents</td>
<td>Document assembly and production</td>
</tr>
<tr>
<td>Elizabeth Hocking</td>
<td>J.D.; 18 years of experience in environmental and energy policy analysis</td>
<td>Applicable laws, regulations, and other requirements</td>
</tr>
</tbody>
</table>
TABLE G-2 (Cont.)

<table>
<thead>
<tr>
<th>Name</th>
<th>Education/Expertise</th>
<th>Contribution</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mary Moniger</td>
<td>B.A., English; 30 years of experience in technical editing and writing</td>
<td>Technical editor</td>
</tr>
<tr>
<td>Ellen Moret</td>
<td>M.P.P., Public Policy; B.A., Environmental Studies; 6 years of experience in environmental assessment</td>
<td>Socioeconomic</td>
</tr>
<tr>
<td>Michele Nelson</td>
<td>Certificate of Design; 32 years of experience in graphic design and technical illustration</td>
<td>Graphic designer</td>
</tr>
<tr>
<td>Terri Patton</td>
<td>M.S., Geology; 22 years of experience in environmental research and assessment</td>
<td>Geology, land use; cumulative impacts</td>
</tr>
<tr>
<td>Mary Picel</td>
<td>M.S., Environmental Health Sciences; 23 years of experience in environmental assessment, risk assessment, and waste management</td>
<td>Project manager, document manager, development of alternatives and programmatic topics, human health impacts, waste management, cumulative impacts</td>
</tr>
<tr>
<td>Robert Sullivan</td>
<td>M.L.A., Landscape Architecture; 21 years of experience in visual impact analysis and simulation; 13 years in web site development</td>
<td>Visual impact analysis</td>
</tr>
<tr>
<td>Robert A. Van Lonkhuyzen</td>
<td>B.A., Biology; 20 years of experience in ecological research and environmental assessment</td>
<td>Ecological resources analysis (plant communities/habitats)</td>
</tr>
<tr>
<td>Bruce Verhaaren</td>
<td>Ph.D., Archaeology; 20 years of experience in archaeological analysis; 16 years in environmental assessment and records management</td>
<td>Native American concerns analysis</td>
</tr>
<tr>
<td>William S. Vinikour</td>
<td>M.S. and B.S., Biology with environmental emphasis; 34 years of experience in ecological research and environmental assessment</td>
<td>Ecological resources analysis (wildlife and aquatic biota)</td>
</tr>
<tr>
<td>Leroy J. Walston, Jr.</td>
<td>M.S., Biology; 5 years of experience in ecological research and environmental assessment</td>
<td>Ecological resources analysis (special status species)</td>
</tr>
<tr>
<td>Name</td>
<td>Education/Expertise</td>
<td>Contribution</td>
</tr>
<tr>
<td>-----------------------</td>
<td>-----------------------------------------------------------------------------------</td>
<td>-----------------</td>
</tr>
<tr>
<td>Eugene Yan</td>
<td>Ph.D., Hydrogeology; 15 years of experience in hydrological studies, environmental remediation, and water resources assessment.</td>
<td>Water resources</td>
</tr>
<tr>
<td>Emily A. Zvolanek</td>
<td>B.A., Environmental Science; 2 years of experience in GIS mapping</td>
<td>GIS mapping</td>
</tr>
</tbody>
</table>
APPENDIX H:

CONTRACTOR DISCLOSURE STATEMENT
This page intentionally left blank
APPENDIX H:

CONTRACTOR DISCLOSURE STATEMENT

Argonne National Laboratory is the contractor assisting the U.S. Department of Energy (DOE) in preparing the Uranium Leasing Program (ULP) programmatic environmental impact statement (PEIS). DOE is responsible for reviewing and evaluating the information and determining the appropriateness and adequacy of incorporating any data, analyses, or results in the PEIS. DOE determines the scope and content of the PEIS and supporting documents and will furnish direction to Argonne, as appropriate, in preparing these documents.

The Council on Environmental Quality’s regulations (40 CFR 1506.5(c)), which have been adopted by DOE (10 CFR Part 1021), require contractors who will prepare an EIS to execute a disclosure specifying that they have no financial or other interest in the outcome of the project. The term “financial interest or other interest in the outcome of the project” for the purposes of this disclosure is defined on pages 18026–18038 in Volume 46 of the Federal Register of March 23, 1981, under “Forty Most Asked Questions Concerning CEQ’s National Environmental Policy Act Regulations” at Questions 17a and 17b. It states that financial or other interest in the outcome of the project includes “any financial benefit such as promise of future construction or design work on the project, as well as indirect benefits the consultant is aware of (e.g., if the project would aid proposals sponsored by the firm’s other clients)” (46 FR 18026–18038).

In accordance with these regulations, Argonne National Laboratory hereby certifies that it has no financial or other interest in the outcome of the project.

Certified by:

[Signature]

John R. Krummel
Director, Environmental Science Division
May 1, 2012