



Final Uranium Leasing Program Programmatic Environmental Impact Statement

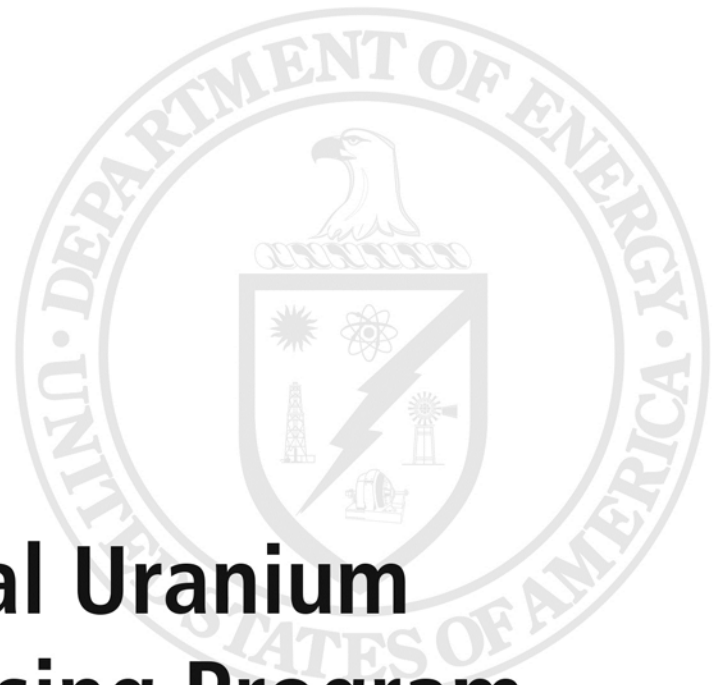
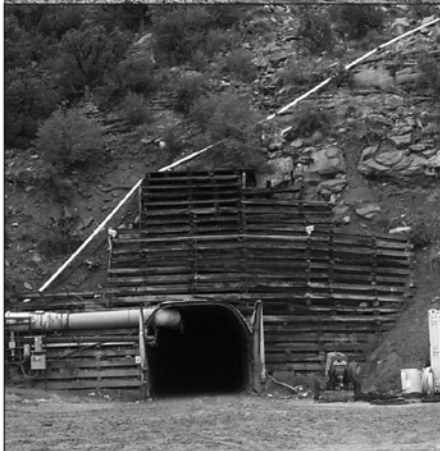
Volume 2: Chapter 5 through Appendix H

DOE/EIS-0472
March 2014



U.S. DEPARTMENT OF
ENERGY

Legacy
Management



Final Uranium Leasing Program Programmatic Environmental Impact Statement

Volume 2: Chapter 5 through Appendix H

DOE/EIS-0472
March 2014



U.S. DEPARTMENT OF
ENERGY

Legacy
Management

CONTENTS

1
2
3
4 NOTATION xxxiii
5
6 CONVERSION TABLE xli
7
8 **VOLUME 1: CHAPTERS 1 THROUGH 4**
9
10 1 INTRODUCTION 1-1
11
12 1.1 Background 1-1
13 1.2 Current Status of the ULP 1-6
14 1.2.1 DOE ULP Administrative Process 1-7
15 1.2.2 Lease Requirements 1-13
16 1.3 Site-Specific Information for the ULP Lease Tracts 1-14
17 1.3.1 ULP Lease Tract 5 1-14
18 1.3.2 ULP Lease Tract 5A 1-17
19 1.3.3 ULP Lease Tract 6 1-17
20 1.3.4 ULP Lease Tract 7 1-19
21 1.3.5 ULP Lease Tract 8 1-21
22 1.3.6 ULP Lease Tract 8A 1-21
23 1.3.7 ULP Lease Tract 9 1-23
24 1.3.8 ULP Lease Tract 10 1-25
25 1.3.9 ULP Lease Tract 11 1-25
26 1.3.10 ULP Lease Tract 11A 1-27
27 1.3.11 ULP Lease Tract 12 1-27
28 1.3.12 ULP Lease Tract 13 1-28
29 1.3.13 ULP Lease Tract 13A 1-30
30 1.3.14 ULP Lease Tract 14 1-30
31 1.3.15 ULP Lease Tract 15 1-31
32 1.3.16 ULP Lease Tract 15A 1-31
33 1.3.17 ULP Lease Tract 16 1-32
34 1.3.18 ULP Lease Tract 16A 1-33
35 1.3.19 ULP Lease Tract 17 1-33
36 1.3.20 ULP Lease Tract 18 1-34
37 1.3.21 ULP Lease Tract 19 1-36
38 1.3.22 ULP Lease Tract 19A 1-36
39 1.3.23 ULP Lease Tract 20 1-37
40 1.3.24 ULP Lease Tract 21 1-37
41 1.3.25 ULP Lease Tract 22 1-38
42 1.3.26 ULP Lease Tract 22A 1-39
43 1.3.27 ULP Lease Tract 23 1-39
44 1.3.28 ULP Lease Tract 24 1-40
45 1.3.29 ULP Lease Tract 25 1-40
46

CONTENTS (Cont.)

1		
2		
3		
4	1.3.30 ULP Lease Tract 26	1-41
5	1.3.31 ULP Lease Tract 27	1-42
6	1.4 Purpose and Need for Agency Action	1-43
7	1.5 Proposed Action.....	1-44
8	1.6 Scope of the ULP PEIS.....	1-44
9	1.7 NEPA Process for the ULP PEIS.....	1-45
10	1.7.1 Public Scoping Process	1-45
11	1.7.1.1 Comments Considered Within the ULP PEIS Scope	1-46
12	1.7.1.2 Comments Considered Outside the ULP PEIS Scope	1-49
13	1.7.2 Public Comment Process	1-49
14	1.7.3 Nine Topics of Interest Based on Public Comments	
15	Received.....	1-51
16	1.8 Other Related, Similar, Connected, or Cumulative Actions.....	1-61
17	1.9 Consultation	1-62
18	1.10 Cooperating and Commenting Agencies	1-63
19	1.11 Organization of the ULP PEIS.....	1-65
20		
21	2 PROPOSED ACTION AND ALTERNATIVES	2-1
22		
23	2.1 Uranium Mining Methods and Phases.....	2-3
24	2.1.1 Exploration.....	2-3
25	2.1.2 Mine Development and Operations	2-4
26	2.1.2.1 Surface-Plant Area Construction and Operations.....	2-5
27	2.1.2.2 Mining Method – Underground Mining	2-12
28	2.1.2.3 Mining Method – Surface Open-Pit Mining.....	2-13
29	2.1.3 Reclamation	2-13
30	2.1.4 Ore Processing	2-14
31	2.1.4.1 Piñon Ridge Mill.....	2-14
32	2.1.4.2 White Mesa Mill	2-16
33	2.2 Five Alternatives Evaluated.....	2-17
34	2.2.1 Alternative 1.....	2-17
35	2.2.1.1 Basis for Impacts Analyses for Alternative 1	2-19
36	2.2.2 Alternative 2.....	2-20
37	2.2.2.1 Basis for Impacts Analyses for Alternative 2	2-21
38	2.2.3 Alternative 3.....	2-21
39	2.2.3.1 Basis for Impacts Analyses for Alternative 3	2-24
40	2.2.4 Alternative 4.....	2-26
41	2.2.4.1 Basis for Impacts Analyses for Alternative 4	2-27
42	2.2.5 Alternative 5.....	2-30
43	2.2.5.1 Basis for Impacts Analyses for Alternative 5	2-30
44	2.3 Alternatives Considered but Not Evaluated in Detail.....	2-32
45	2.4 Summary and Comparison of the Potential Impacts from the Five	
46	Alternatives	2-33

CONTENTS (Cont.)

1		
2		
3		
4	2.4.1	Air Quality 2-33
5	2.4.2	Acoustic Environment 2-38
6	2.4.3	Soil Resources..... 2-38
7	2.4.4	Water Resources 2-39
8	2.4.5	Human Health 2-40
9	2.4.6	Ecological Resources 2-42
10	2.4.6.1	Vegetation..... 2-43
11	2.4.6.2	Wildlife 2-44
12	2.4.6.3	Aquatic Biota 2-46
13	2.4.6.4	Threatened, Endangered, and Sensitive Species..... 2-47
14	2.4.7	Land Use 2-48
15	2.4.8	Socioeconomics 2-49
16	2.4.9	Environmental Justice..... 2-49
17	2.4.10	Transportation 2-50
18	2.4.11	Cultural Resources 2-51
19	2.4.12	Visual Resources..... 2-53
20	2.4.13	Waste Management..... 2-54
21	2.4.14	Cumulative Impacts 2-54
22	2.5	Irreversible and Irrecoverable Commitment of Resources..... 2-72
23	2.6	Preferred Alternative Identified 2-72
24		
25	3	AFFECTED ENVIRONMENT 3-1
26		
27	3.1	Air Quality 3-1
28	3.1.1	Climate..... 3-1
29	3.1.1.1	General Climate 3-1
30	3.1.1.2	Wind..... 3-2
31	3.1.1.3	Temperature 3-5
32	3.1.1.4	Precipitation 3-5
33	3.1.1.5	Severe Weather 3-5
34	3.1.2	Existing Air Emissions 3-8
35	3.1.3	Existing Air Quality..... 3-11
36	3.1.4	Regulatory Environment..... 3-14
37	3.1.4.1	Prevention of Significant Deterioration 3-14
38	3.1.4.2	Visibility Protection..... 3-18
39	3.1.4.3	General Conformity 3-18
40	3.1.4.4	Air Quality-Related Values 3-18
41	3.2	Acoustic Environment 3-20
42	3.2.1	Sound Fundamentals..... 3-20
43	3.2.2	Background Noise Levels..... 3-21
44	3.2.3	Noise Regulations 3-22
45	3.3	Geological Setting and Soil Resources 3-23
46	3.3.1	Geological Setting..... 3-23

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

1	CONTENTS (Cont.)		
2			
3			
4	3.7.4.1	Uranium	3-191
5	3.7.4.2	Coal.....	3-195
6	3.7.4.3	Oil and Gas	3-195
7	3.7.4.4	Other Minerals and Mineral Materials.....	3-196
8	3.7.5	Timber Harvest	3-196
9	3.7.6	Recreation	3-197
10	3.8	Socioeconomics	3-198
11	3.8.1	Economic Environment	3-200
12	3.8.1.1	ROI Employment and Unemployment	3-200
13	3.8.1.2	Employment by Sector.....	3-201
14	3.8.1.3	Personal Income.....	3-202
15	3.8.2	Social Environment.....	3-205
16	3.8.2.1	Population	3-205
17	3.8.2.2	ROI Housing.....	3-205
18	3.8.2.3	ROI Community and Social Services	3-206
19	3.8.3	Recreation and Tourism Economy.....	3-211
20	3.9	Environmental Justice.....	3-213
21	3.10	Transportation.....	3-218
22	3.11	Cultural Resources	3-224
23	3.11.1	Cultural History of Southwestern Colorado	3-224
24	3.11.2	Cultural Resource Inventories.....	3-228
25	3.11.3	Traditional Cultural Properties	3-236
26	3.12	Visual Resources.....	3-238
27	3.12.1	Regional Setting.....	3-239
28	3.12.2	Lease Tracts	3-241
29	3.12.2.1	North Group.....	3-250
30	3.12.2.2	North Central Group and South Central Group.....	3-252
31	3.12.2.3	South Group.....	3-254
32	3.12.3	Visual Resource Management	3-255
33	3.13	Waste Management.....	3-257
34			
35	4	ENVIRONMENTAL IMPACTS	4-1
36			
37	4.1	Alternative 1.....	4-1
38	4.1.1	Air Quality	4-1
39	4.1.2	Acoustic Environment	4-2
40	4.1.3	Geology and Soil Resources	4-4
41	4.1.3.1	Potential Soil Impacts Common to All Alternatives	4-4
42	4.1.3.2	Soil Impacts under Alternative 1	4-8
43	4.1.3.3	Impacts on Paleontological Resources under Alternative 1	4-8
44	4.1.4	Water Resources	4-9
45	4.1.5	Human Health.....	4-10
46	4.1.5.1	Conceptual Site Exposure Model	4-10

1	CONTENTS (Cont.)		
2			
3			
4	4.1.5.2	Potential Human Health Impacts from Alternative 1	4-14
5	4.1.5.3	Worker Exposure – Reclamation Workers	4-15
6	4.1.5.4	General Public Exposure – Residential Scenario	4-17
7	4.1.5.5	General Public Exposure – Recreationist Scenario	4-24
8	4.1.5.6	General Public Exposure – Individual Receptor Entering	
9		an Inactive Underground Mine Portal	4-26
10	4.1.6	Ecological Resources	4-26
11	4.1.6.1	Vegetation	4-26
12	4.1.6.2	Wildlife	4-30
13	4.1.6.3	Aquatic Biota	4-32
14	4.1.6.4	Threatened, Endangered, and Sensitive Species	4-32
15	4.1.7	Land Use	4-50
16	4.1.8	Socioeconomics	4-50
17	4.1.8.1	Recreation and Tourism	4-51
18	4.1.9	Environmental Justice	4-52
19	4.1.10	Transportation	4-53
20	4.1.11	Cultural Resources	4-53
21	4.1.12	Visual Resources	4-54
22	4.1.12.1	Vegetation and Landform Alterations	4-55
23	4.1.12.2	Removal of Structures and On-Site Materials	4-56
24	4.1.12.3	Roads	4-56
25	4.1.12.4	Workers, Vehicles, and Equipment	4-57
26	4.1.12.5	Lighting	4-57
27	4.1.12.6	Impacts on Lands Surrounding the Lease Tracts	4-57
28	4.1.13	Waste Management	4-67
29	4.2	Alternative 2	4-67
30	4.2.1	Air Quality	4-68
31	4.2.2	Acoustic Environment	4-68
32	4.2.3	Geology and Soil Resources	4-68
33	4.2.3.1	Paleontological Resources	4-68
34	4.2.4	Water Resources	4-68
35	4.2.5	Human Health	4-69
36	4.2.6	Ecological Resources	4-69
37	4.2.6.1	Vegetation	4-69
38	4.2.6.2	Wildlife	4-69
39	4.2.6.3	Aquatic Biota	4-69
40	4.2.6.4	Threatened, Endangered, and Sensitive Species	4-70
41	4.2.7	Land Use	4-70
42	4.2.8	Socioeconomics	4-70
43	4.2.9	Environmental Justice	4-70
44	4.2.10	Transportation	4-70
45	4.2.11	Cultural Resources	4-71
46	4.2.12	Visual Resources	4-71

CONTENTS (Cont.)

1		
2		
3		
4	4.2.13	Waste Management..... 4-71
5	4.3	Alternative 3..... 4-71
6	4.3.1	Air Quality 4-72
7	4.3.1.1	Exploration..... 4-72
8	4.3.1.2	Mine Development and Operations 4-72
9	4.3.1.3	Reclamation 4-75
10	4.3.2	Acoustic Environment 4-76
11	4.3.2.1	Exploration..... 4-76
12	4.3.2.2	Mine Development and Operations 4-76
13	4.3.2.3	Reclamation 4-79
14	4.3.3	Geology and Soil Resources 4-80
15	4.3.3.1	Exploration..... 4-80
16	4.3.3.2	Mine Development and Operations 4-80
17	4.3.3.3	Reclamation 4-81
18	4.3.3.4	Paleontological Resources 4-81
19	4.3.4	Water Resources 4-82
20	4.3.4.1	Exploration..... 4-82
21	4.3.4.2	Mine Development and Operations 4-83
22	4.3.4.3	Reclamation 4-88
23	4.3.5	Human Health 4-89
24	4.3.5.1	Worker Exposures – Uranium Miners 4-89
25	4.3.5.2	Worker Exposure – Reclamation Workers 4-91
26	4.3.5.3	General Public Exposure – Residential Scenario 4-92
27	4.3.5.4	General Public Exposures – Recreationist Scenario..... 4-101
28	4.3.5.5	Intentional Destructive Acts 4-103
29	4.3.6	Ecological Resources 4-104
30	4.3.6.1	Vegetation..... 4-104
31	4.3.6.2	Wildlife 4-108
32	4.3.6.3	Aquatic Biota 4-125
33	4.3.6.4	Threatened, Endangered, and Sensitive Species..... 4-131
34	4.3.7	Land Use 4-154
35	4.3.8	Socioeconomics 4-154
36	4.3.8.1	Recreation and Tourism..... 4-156
37	4.3.9	Environmental Justice 4-159
38	4.3.9.1	Exploration..... 4-159
39	4.3.9.2	Mine Development and Operations 4-160
40	4.3.9.3	Reclamation 4-161
41	4.3.10	Transportation 4-161
42	4.3.10.1	General Approach and Assumptions 4-161
43	4.3.10.2	Routine Transportation Risks 4-163
44	4.3.10.3	Transportation Accident Risks..... 4-172
45	4.3.10.4	Accidental Release of Uranium during Transportation 4-175
46	4.3.11	Cultural Resources 4-176

1	CONTENTS (Cont.)		
2			
3			
4		4.3.11.1 Exploration.....	4-177
5		4.3.11.2 Mine Development and Operations	4-177
6		4.3.11.3 Reclamation	4-179
7	4.3.12	Visual Resources.....	4-179
8		4.3.12.1 Exploration.....	4-180
9		4.3.12.2 Mine Development and Operations	4-180
10		4.3.12.3 Reclamation	4-184
11		4.3.12.4 Impacts on Surrounding Lands	4-184
12	4.3.13	Waste Management.....	4-192
13	4.4	Alternative 4.....	4-193
14	4.4.1	Air Quality	4-193
15		4.4.1.1 Exploration.....	4-193
16		4.4.1.2 Mine Development and Operations	4-193
17		4.4.1.3 Reclamation	4-196
18	4.4.2	Acoustic Environment	4-196
19		4.4.2.1 Exploration.....	4-196
20		4.4.2.2 Mine Development and Operations	4-197
21		4.4.2.3 Reclamation	4-199
22	4.4.3	Geology and Soil Resources	4-200
23		4.4.3.1 Exploration.....	4-200
24		4.4.3.2 Mine Development and Operations	4-200
25		4.4.3.3 Reclamation	4-200
26		4.4.3.4 Paleontological Resources	4-200
27	4.4.4	Water Resources	4-201
28		4.4.4.1 Exploration.....	4-201
29		4.4.4.2 Mine Development and Operations	4-201
30		4.4.4.3 Reclamation	4-202
31	4.4.5	Human Health	4-203
32		4.4.5.1 Worker Exposure – Uranium Miners.....	4-203
33		4.4.5.2 Worker Exposure – Reclamation Workers	4-204
34		4.4.5.3 General Public Exposure – Residential Scenario	4-205
35		4.4.5.4 General Public Exposure – Recreationist Scenario	4-210
36	4.4.6	Ecological Resources	4-211
37		4.4.6.1 Vegetation.....	4-211
38		4.4.6.2 Wildlife	4-212
39		4.4.6.3 Aquatic Biota	4-213
40		4.4.6.4 Threatened, Endangered, and Sensitive Species.....	4-213
41	4.4.7	Land Use	4-213
42	4.4.8	Socioeconomics	4-215
43		4.4.8.1 Recreation and Tourism.....	4-217
44	4.4.9	Environmental Justice	4-217
45		4.4.9.1 Exploration.....	4-217
46		4.4.9.2 Mine Development and Operations	4-217

CONTENTS (Cont.)

1			
2			
3			
4		4.4.9.3 Reclamation	4-217
5	4.4.10	Transportation	4-217
6		4.4.10.1 Routine Transportation Risks	4-218
7		4.4.10.2 Transportation Accident Risks.....	4-220
8	4.4.11	Cultural Resources	4-221
9	4.4.12	Visual Resources.....	4-222
10		4.4.12.1 Exploration, Mine Development and Operations, and Reclamation	4-222
11		4.4.12.2 Impacts on Surrounding Lands	4-222
12		4.4.13 Waste Management.....	4-234
13	4.5	Alternative 5.....	4-235
14	4.5.1	Air Quality	4-235
15		4.5.1.1 Exploration.....	4-235
16		4.5.1.2 Mine Development and Operations	4-235
17		4.5.1.3 Reclamation	4-237
18	4.5.2	Acoustic Environment	4-238
19		4.5.2.1 Exploration.....	4-238
20		4.5.2.2 Mine Development and Operations	4-238
21		4.5.2.3 Reclamation	4-240
22	4.5.3	Geology and Soil Resources	4-241
23		4.5.3.1 Paleontological Resources	4-241
24	4.5.4	Water Resources	4-241
25		4.5.4.1 Exploration.....	4-241
26		4.5.4.2 Mine Development and Operations	4-242
27		4.5.4.3 Reclamation	4-242
28	4.5.5	Human Health	4-242
29		4.5.5.1 Worker Exposure – Uranium Miners.....	4-243
30		4.5.5.2 Worker Exposure – Reclamation Workers	4-244
31		4.5.5.3 General Public Exposure – Residential Scenario	4-245
32		4.5.5.4 General Public Exposure – Recreationist Scenario	4-250
33	4.5.6	Ecological Resources	4-251
34		4.5.6.1 Vegetation.....	4-251
35		4.5.6.2 Wildlife	4-252
36		4.5.6.3 Aquatic Biota	4-252
37		4.5.6.4 Threatened, Endangered, and Sensitive Species.....	4-253
38	4.5.7	Land Use	4-253
39	4.5.8	Socioeconomics	4-253
40		4.5.8.1 Recreation and Tourism.....	4-255
41	4.5.9	Environmental Justice.....	4-255
42		4.5.9.1 Exploration.....	4-255
43		4.5.9.2 Mine Development and Operations	4-255
44		4.5.9.3 Reclamation	4-255
45	4.5.10	Transportation	4-256
46			

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

CONTENTS (Cont.)

1
2
3
4 **VOLUME 2: CHAPTER 5 THROUGH APPENDIX H**
5
6 5 APPLICABLE LAWS AND REQUIREMENTS 5-1
7
8 5.1 Applicable Federal Laws and Regulations 5-1
9 5.2 State of Colorado Environmental Laws 5-7
10 5.3 County Environmental Ordinances and Plans 5-7
11 5.4 Memoranda of Understanding 5-7
12
13 6 CONSULTATION PROCESS FOR THE DOE ULP PEIS 6-1
14
15 6.1 Tribal Government-to-Government Consultation 6-1
16 6.2 Consultation for the ESA 6-3
17 6.3 Consultation for the NHPA 6-4
18
19 7 INDEX 7-1
20
21 8 REFERENCES 8-1
22
23 APPENDIX A: Examples of Existing Leases for the Uranium Leasing Program A-1
24
25 APPENDIX B: Summary of the Public Scoping Process for the ULP PEIS B-1
26
27 APPENDIX C: Emission Inventories, Costs, and Other Estimates Used as a Basis
28 for the ULP PEIS Impact Analyses C-1
29
30 APPENDIX D: Impact Assessment Methodologies D-1
31
32 APPENDIX E: Correspondence Associated with Endangered Species Act (ESA)
33 Consultation, Biological Opinion, and Biological Assessment E-1
34
35 APPENDIX F: Correspondence Associated with Tribal and National Historic
36 Preservation Act (NHPA) Consultation F-1
37
38 APPENDIX G: List of Preparers G-1
39
40 APPENDIX H: Contractor Disclosure Statement H-1
41
42

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

 Organizations I-23

 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.)

1			
2			
3			
4	2.1-2	Photograph of Mine Plant Surface Configuration at Lease Tract 7.....	2-7
5			
6	2.1-3	Photograph of Mine Plant Surface Configuration at Lease Tract 8.....	2-8
7			
8	2.1-4	Photograph of Former Mine Plant Surface Configuration at Lease Tract 13A	2-9
9			
10	2.1-5	Schematic of a Generic Mine Plant Surface Configuration.....	2-10
11			
12	2.1-6	Locations of White Mesa Mill and Proposed Piñon Ridge Mill.....	2-15
13			
14	2.2-1	Locations of Lease Tracts Evaluated under Alternatives 1 and 2.....	2-18
15			
16	2.2-2	Locations of Lease Tracts Evaluated under Alternative 3	2-22
17			
18	3.1-1	Wind Roses at the Proposed Piñon Ridge Mill, Montrose County, Colorado, April 2008–March 2011: (a) Site 1, 33-ft Level; and (b) Site 2, 98-ft Level	3-3
19			
20			
21	3.1-2	Wind Rose at 20-ft Level at Nucla, Montrose County, Colorado, 2006–2010	3-4
22			
23	3.1-3	Monitored PM ₁₀ Concentrations at Sites 1 and 2 of the Proposed Piñon Ridge Mill, April 2008–March 2010	3-15
24			
25			
26	3.1-4	PSD Class I Areas and Colorado Sensitive Class II Areas around the ULP Lease Tracts.....	3-17
27			
28			
29	3.3-1	Physiographic Map of the Colorado Plateau	3-23
30			
31	3.3-2	Extent of the Paradox Basin and the Paradox Fold and Fault Belt in Southwestern Colorado and Southeastern Utah.....	3-25
32			
33			
34	3.3-3	Shaded Relief Map Showing Location of ULP Lease Tracts	3-26
35			
36	3.3-4	Extent of the Uravan Mineral Belt in Relation to Known Uranium-Vanadium Deposits	3-28
37			
38			
39	3.3-5	Geologic Map Covering the ULP Lease Tracts.....	3-29
40			
41	3.3-6	Generalized Stratigraphy of the Paradox Basin	3-31
42			
43	3.3-7	Topography of the Gateway Lease Tracts	3-36
44			
45	3.3-8	Topography of the Uravan Lease Tracts.....	3-37
46			
47			

FIGURES (Cont.)

1			
2			
3			
4	3.3-9	Topography of the Paradox Lease Tracts	3-39
5			
6	3.3-10	Topography of the Slick Rock Lease Tracts.....	3-41
7			
8	3.3-11	Soils within and around the Gateway Lease Tracts	3-44
9			
10	3.3-12	Soils within and around the Uravan Lease Tracts	3-46
11			
12	3.3-13	Soils within and around the Paradox Lease Tracts	3-48
13			
14	3.3-14	Soils within and around the Slick Rock Lease Tracts.....	3-52
15			
16	3.4-1	Average Annual Precipitation in Colorado, 1961–1990.....	3-54
17			
18	3.4-2	Map of Surface Water Features in the Region of the DOE ULP Lease Tracts	3-55
19			
20	3.4-3	Seasonal Hydrograph and Monthly Discharge Values in the Dolores River near Bedrock, Colorado, 1990–2010	3-57
21			
22			
23	3.4-4	Seasonal Hydrograph and Monthly Discharge Values in the San Miguel River near Uravan, Colorado, 1990–2010	3-58
24			
25			
26	3.4-5	Location of Impaired Water Bodies.....	3-66
27			
28	3.4-6	Conceptual Diagram of the Hydrogeologic Stratigraphy of the Paradox Basin.....	3-70
29			
30	3.4-7	Locations of 88 Domestic Wells and One Municipal Well in and near the Lease Tracts	3-74
31			
32			
33	3.5-1	Location of the Proposed Piñon Ridge Mill	3-87
34			
35	3.6-1	Level IV Ecoregions in the Vicinity of DOE ULP Lease Tracts.....	3-94
36			
37	3.6-2	Land Cover Types in the Vicinity of DOE ULP Lease Tracts 26 and 27	3-96
38			
39	3.6-3	Land Cover Types in the Vicinity of DOE ULP Lease Tracts 18–20, 24, and 25.....	3-97
40			
41			
42	3.6-4	Land Cover Types in the Vicinity of DOE ULP Lease Tracts 5–8, 17, and 21–23.....	3-98
43			
44			
45	3.6-5	Land Cover Types in the Vicinity of DOE ULP Lease Tracts 10–16	3-99
46			
47			

FIGURES (Cont.)

1			
2			
3			
4	3.6-6	NWI Wetlands Mapped in the Vicinity of Lease Tracts 13 and 14.....	3-108
5			
6	3.6-7	Wild Turkey Activity Areas within the Three-County Study Area	
7		That Encompasses the Lease Tract Boundaries.....	3-128
8			
9	3.6-8	Desert Bighorn Sheep Activity Areas within the Three-County Study Area	
10		That Encompasses the Lease Tract Boundaries.....	3-135
11			
12	3.6-9	Elk Activity Areas within the Three-County Study Area That Encompasses	
13		the Lease Tract Boundaries.....	3-138
14			
15	3.6-10	Elk Winter Activity Areas within the Lease Tracts	3-139
16			
17	3.6-11	Mule Deer Activity Areas within the Three-County Study Area That	
18		Encompasses the Lease Tract Boundaries	3-141
19			
20	3.6-12	Mule Deer Winter Activity Areas within the Lease Tracts	3-142
21			
22	3.6-13	Pronghorn Activity Areas within the Three-County Study Area That	
23		Encompasses the Lease Tract Boundaries	3-144
24			
25	3.6-14	Locations of Designated Critical Habitat for the Colorado River Endangered	
26		Fishes in the Vicinity of the ULP Lease Tracts	3-167
27			
28	3.6-15	Distribution of Proposed Critical Habitat for the Gunnison Sage-Grouse	
29		in the Vicinity of the ULP Lease Tracts	3-169
30			
31	3.6-16	Recorded Occurrences and Distribution of Potentially Suitable Habitat	
32		for the Mexican Spotted Owl in the Vicinity of the ULP Lease Tracts.....	3-170
33			
34	3.6-17	Distribution of Potentially Suitable Habitat for the Southwestern Willow	
35		Flycatcher in the Vicinity of the ULP Lease Tracts	3-172
36			
37	3.6-18	Distribution of Potentially Suitable Habitat for the Western Yellow-Billed	
38		Cuckoo and Canada Lynx in the Vicinity of the ULP Lease Tracts.....	3-173
39			
40	3.6-19	Distribution of Potentially Suitable Habitat for the Gunnison’s Prairie Dog	
41		in the Vicinity of the ULP Lease Tracts	3-174
42			
43	3.7-1	Specially Designated Areas on Public Lands near the ULP Lease Tracts.....	3-180
44			
45	3.7-2	Land with Wilderness Characteristics near the ULP Lease Tracts.....	3-184
46			
47			

FIGURES (Cont.)

1			
2			
3			
4	3.7-3	Wild and Scenic River Segments near the ULP Lease Tracts	3-185
5			
6	3.7-4	Permitted Oil and Gas Wells and Mines within 25 mi of the ULP Lease Tracts ...	3-192
7			
8	3.8-1	ROI Population from 1960–2010.....	3-200
9			
10	3.9-1	Minority Populations within the 50-mi Radius surrounding the Proposed Lease Tracts	3-216
11			
12			
13	3.9-2	Low-Income Populations within the 50-mi Radius surrounding the Proposed Lease Tracts	3-217
14			
15			
16	3.10-1	Road Network by the Lease Tract and Uranium Mills	3-219
17			
18	3.10-2	Local Road Network around the Slick Rock Lease Tracts	3-220
19			
20	3.10-3	Local Road Network around the Paradox and UraVan Lease Tracts	3-221
21			
22	3.10-4	Local Road Network around the Gateway Lease Tracts	3-222
23			
24	3.12-1	Locations of the Four Lease Tract Groups: North; North Central; South Central; and South	3-240
25			
26			
27	3.12-2	View from the Western Edge of Lease Tract 26 Facing Southwest.....	3-242
28			
29	3.12-3	View from Mesa Top near Lease Tract 19 Facing West	3-243
30			
31	3.12-4	View of Lease Tract 16A.....	3-244
32			
33	3.12-5	View of the Cotter Mine on Lease Tract 11	3-245
34			
35	3.12-6	View of the New Verde Mine Reclamation Site on Lease Tract 26.....	3-246
36			
37	3.12-7	View of Lease Tract 19 Facing West.....	3-247
38			
39	3.12-8	View of Entrance to Underground Mine at Lease Tract 18.....	3-248
40			
41	3.12-9	Composite Viewshed of Four Lease Tract Groups.....	3-249
42			
43	3.12-10	Composite Viewshed with Overlay of Sensitive Visual Resource Areas.....	3-251
44			
45	4.1-1	Conceptual Exposure Model for the Exploration, Mining Development and Operations, and Reclamation Phases at the ULP Lease Tracts	4-11
46			
47			

FIGURES (Cont.)

1			
2			
3			
4	4.1-2	Existing Structures in the ULP Lease Tract Surrounding Area.....	4-18
5			
6	4.1-3	Viewshed Analysis for Portions of the North Lease Group under Alternative 1 ...	4-60
7			
8	4.1-4	Viewshed Analysis for the North Central Lease Group under Alternative 1	4-61
9			
10	4.1-5	Viewshed Analysis for the South Central Lease Group under Alternative 1	4-63
11			
12	4.1-6	Viewshed Analysis for the South Lease Group under Alternative 1	4-66
13			
14	4.3-1	Viewshed Analysis for the North Central Lease Group under Alternative 3	4-186
15			
16	4.3-2	Viewshed Analysis for the South Central Lease Group under Alternative 3	4-188
17			
18	4.3-3	Viewshed Analysis for the South Lease Group under Alternative 3	4-191
19			
20	4.4-1	Viewshed Analysis for the North Lease Group under Alternative 4	4-224
21			
22	4.4-2	Viewshed Analysis for the North Central Lease Group under Alternative 4	4-226
23			
24	4.4-3	Viewshed Analysis for the South Central Lease Group under Alternative 4	4-229
25			
26	4.4-4	Viewshed Analysis for the South Lease Group under Alternative 4	4-233
27			
28	4.7-1	Region of Influence for Cumulative Effects	4-275
29			
30	4.7-2	Uranium Mining and Oil and Gas Wells within the Region of Influence	
31		for Cumulative Effects	4-277
32			
33	D.5-1	Designated Grouping of the ULP Lease Tracts Used as a Basis for	
34		Human Health Impacts Evaluation	D-10
35			
36			

TABLES

37			
38			
39			
40	1.1-1	Summary of Three Leasing Programs Administered between 1949 and 2008	1-2
41			
42	1.1-2	Summary of Uranium Ore Production from 1974 to 2008	1-3
43			
44	1.2-1	Summary of the 31 DOE ULP Lease Tracts in 2011.....	1-8
45			
46	1.3-1	Estimated Remaining Ore Reserve at the ULP Lease Tracts	1-15
47			

TABLES (Cont.)

1			
2			
3			
4	1.7-1	Draft ULP PEIS Public Hearing Locations in Colorado, Dates, and	
5		Attendance	1-50
6			
7	2.2-1	Lease Tracts Evaluated under Alternatives 1 and 2.....	2-19
8			
9	2.2-2	Lease Tracts Evaluated under Alternative 3	2-23
10			
11	2.2-3	Number of Mines, Ore Production Rate, Disturbed Surface Area, Number of	
12		Workers, and Water Usage Assumed for the Peak Year of Operations under	
13		Alternative 3.....	2-26
14			
15	2.2-4	Number of Mines, Ore Production Rate, and Disturbed Surface Area	
16		Assumed for the Peak Year of Operations under Alternative 4.....	2-28
17			
18	2.2-5	Amount of Water To Be Utilized per Mine under Alternative 4.....	2-30
19			
20	2.2-6	Number of Mines, Ore Production Rate, and Disturbed Surface Area	
21		Assumed for the Peak Year of Operations under Alternative 5.....	2-31
22			
23	2.2-7	Assumed Amount of Water To Be Utilized per Mine under Alternative 5	2-32
24			
25	2.4-1	Meaning of Qualitative Terms Used To Describe Potential Impact Levels	2-34
26			
27	2.4-2	Summary of Known Cultural Resource Sites by Lease Tract Cluster.....	2-52
28			
29	2.4-3	Summary of Potential Impacts on Known Cultural Resource Sites	2-52
30			
31	2.4-4	Comparison of the Potential Impacts on Air Quality, the Acoustic	
32		Environment, and Soil Resources from Alternatives 1 through 5	2-57
33			
34	2.4-5	Comparison of the Potential Impacts on Water Resources, Land Use, and	
35		Waste Management from Alternatives 1 through 5.....	2-60
36			
37	2.4-6	Comparison of the Potential Impacts on Human Health from	
38		Alternatives 1 through 5.....	2-62
39			
40	2.4-7	Comparison of the Potential Impacts on Ecological Resources from	
41		Alternatives 1 through 5.....	2-65
42			
43	2.4-8	Comparison of the Potential Impacts on Socioeconomics, Environmental	
44		Justice, and Transportation from Alternatives 1 through 5.....	2-68
45			
46			

TABLES (Cont.)

1

2

3

4 2.4-9 Comparison of the Potential Impacts on Cultural Resources and Visual
5 Resources from Alternatives 1 through 5 2-70

6

7 2.5-1 Estimated Amount of Resources Assumed To Be Irreversible and
8 Irretrievable as a Result of the Implementation of the ULP Alternatives..... 2-72

9

10 3.1-1 Temperature and Precipitation Data Summaries at Selected Meteorological
11 Stations around the ULP Lease Tracts, in Order of Meteorological Station
12 Starting from North to South 3-6

13

14 3.1-2 Annual Emissions of Criteria Pollutants and Volatile Organic Compounds in
15 Mesa, Montrose, and San Miguel Counties, Colorado, Encompassing the ULP
16 Lease Tracts, 2008 3-9

17

18 3.1-3 National Ambient Air Quality Standards, Colorado State Ambient Air
19 Quality Standards, and Background Concentration Levels Representative
20 of the ULP Lease Tracts in Mesa, Montrose, and San Miguel Counties,
21 Colorado..... 3-12

22

23 3.1-4 Maximum Allowable PSD Increments for PSD Class I and Class II Areas..... 3-16

24

25 3.2-1 Colorado Limits on Maximum Permissible Noise Levels 3-22

26

27 3.3-1 Geologic Units in the Lease Tracts and Their PFYC Ranking..... 3-42

28

29 3.4-1 Range in Reported Peak Discharge Values for Intermittent and Ephemeral
30 Streams in the Region of the DOE ULP Lease Tracts..... 3-59

31

32 3.4-2 Impaired Water Bodies on the Colorado 2012 303(d) and M&E Lists or in the
33 Process of Implementing TMDL within the Upper Dolores, San Miguel, and
34 Lower Dolores Watersheds..... 3-61

35

36 3.4.3 COC Concentrations in the Dolores River at SRE and SRW Sites near
37 Slick Rock Lease Tract 13 3-69

38

39 3.4-4 Depths to Groundwater Observed in USGS Monitoring Wells Located within
40 the Upper Dolores, San Miguel, and Lower Dolores Basins 3-72

41

42 3.4-5 Monitoring Data Collected at Springs Located within the Vicinity of the
43 DOE ULP Tracts..... 3-73

44

45 3.4-6 Domestic and Municipal Wells in the Area 5 mi from the DOE ULP
46 Lease Tracts 3-75

47

TABLES (Cont.)

1			
2			
3			
4	3.4-7	COC Concentrations in Groundwater at SRE and SRW Sites near	
5		Slick Rock Lease Tract 13	3-77
6			
7	3.4-8	Water Use by Category for Mesa, Montrose, and San Miguel Counties	
8		in 2005	3-78
9			
10	3.5-1	Uranium-Mining-Related Regulations and Guidelines for Workers	
11		and Members of the Public	3-84
12			
13	3.5-2	Comparison of Radiation Exposures from Natural Background Sources near	
14		ULP Lease Tracts Versus the U.S. National Average	3-86
15			
16	3.5-3	Estimated Radiation and Chemical Exposures for Receptors in the DOE	
17		Lease Tracts Based on Environmental Monitoring Data from Energy Fuels	
18		Resources Corp.	3-90
19			
20	3.6-1	Land Cover Types within DOE ULP Lease Tracts	3-100
21			
22	3.6-2	Descriptions of Land Cover Types	3-104
23			
24	3.6-3	Noxious Weeds Occurring on or in the Vicinity of ULP Lease Tracts	3-106
25			
26	3.6-4	Wetlands Mapped by the National Wetlands Inventory within ULP Lease	
27		Tracts.....	3-109
28			
29	3.6-5	Descriptions of Wetland Types.....	3-113
30			
31	3.6-6	Number of Wildlife Species in the Three-County Study Area	3-115
32			
33	3.6-7	Amphibian and Reptile Species Expected To Occur within the Lease Tract	
34		Boundaries	3-116
35			
36	3.6-8	Songbird Species Expected To Occur within the Lease Tract Boundaries	3-119
37			
38	3.6-9	Raptor Species Expected To Occur within the Lease Tract Boundaries	3-126
39			
40	3.6-10	Upland Game Bird Species Expected To Occur within the Lease Tract	
41		Boundaries	3-127
42			
43	3.6-11	Acreages of Wild Turkey Activity Areas within the Three-County Study	
44		Area and the Combined Boundary for the Lease Tracts.....	3-129
45			
46			

TABLES (Cont.)

1			
2			
3			
4	3.6-12	Descriptions of Big Game Activity Areas in Colorado	3-131
5			
6	3.6-13	Habitat Information for Big Game Species Expected To Occur within the	
7		Lease Tract Boundaries.....	3-132
8			
9	3.6-14	Acreages of American Black Bear Activity Areas within the	
10		Three-County Study Area and the Combined Boundary for the	
11		Lease Tracts	3-133
12			
13	3.6-15	Acreages of Desert Bighorn Sheep Activity Areas within the	
14		Three-County Study Area and the Combined Boundary for the	
15		Lease Tracts	3-136
16			
17	3.6-16	Acreages of Elk Activity Areas within the Three-County Study Area and	
18		the Combined Boundary for the Lease Tracts	3-140
19			
20	3.6-17	Acreages of Mule Deer Activity Areas within the Three-County Study Area	
21		and the Combined Boundary for the Lease Tracts.....	3-143
22			
23	3.6-18	Acreages of Pronghorn Activity Areas within the Three-County Study Area	
24		and the Combined Boundary for the Lease Tracts.....	3-145
25			
26	3.6-19	Bat Species Reported from Abandoned Mines within the ULP Lease Tracts	3-146
27			
28	3.6-20	Small Game, Furbearer, and Nongame Mammal Species Expected To Occur	
29		within the Lease Tract Boundaries	3-147
30			
31	3.6-21	Threatened, Endangered, and Sensitive Species That May Occur in the	
32		Vicinity of the ULP Lease Tracts	3-154
33			
34	3.6-22	Species Listed, Proposed for Listing, or Candidates for Listing under the	
35		ESA That May Occur in the Vicinity of the ULP Lease Tracts	3-165
36			
37	3.6-23	Number of Sensitive Species That May Occur on or near ULP Lease	
38		Tracts.....	3-176
39			
40	3.7-1	Specially Designated Areas on Public Lands within 25 mi of the ULP Lease	
41		Tracts.....	3-181
42			
43	3.7-2	Lands with Wilderness Characteristics within 25 mi of the ULP Lease Tracts	3-182
44			
45	3.7-3	Eligible Wild and Scenic River Segments within 25 mi of the ULP Lease	
46		Tracts.....	3-186

TABLES (Cont.)

1			
2			
3			
4	3.7-4	Number of Farms and Acreage of Agricultural Lands by County.....	3-189
5			
6	3.7-5	Active Uranium Mining Permits in Southwestern Colorado.....	3-193
7			
8	3.7-6	Uranium Projects in Southwestern Utah, 2010.....	3-194
9			
10	3.8-1	ROI Employment, 2001–2010.....	3-201
11			
12	3.8-2	ROI and State Unemployment Data, 2001–2011	3-201
13			
14	3.8-3	ROI Employment by Sector, 2009.....	3-203
15			
16	3.8-4	ROI Personal Income, 2000–2009.....	3-204
17			
18	3.8-5	ROI Population, 2000–2023	3-204
19			
20	3.8-6	ROI Urban Population and Income, 1999–2010.....	3-206
21			
22	3.8-7	ROI Housing Characteristics, 2000 and 2009.....	3-207
23			
24	3.8-8	ROI Jurisdictions	3-208
25			
26	3.8-9	ROI School District Data, 2010.....	3-208
27			
28	3.8-10	ROI Physicians, 2010.....	3-209
29			
30	3.8-11	ROI Public Safety Employment, 2009.....	3-210
31			
32	3.8-12	ROI and County Crime Rates, 2009	3-210
33			
34	3.9-1	Minority and Low-Income Populations within the 50-mi Radius Surrounding the Proposed Lease Tracts	3-215
35			
36			
37	3.10-1	Annual Average Daily Traffic Volumes for Major Roads near the Lease Tracts, 2010.....	3-223
38			
39			
40	3.11-1	Cultural Resource Survey Coverage of the Lease Tracts	3-230
41			
42	3.11-2	Correlation of Lease Tract Cluster Designations.....	3-231
43			
44	3.11-3	Cultural Resource Survey Coverage, Site Tallies, and Site Density within 15 mi of Lease Tract Clusters	3-231
45			
46			

TABLES (Cont.)

1			
2			
3			
4	3.11-4	Cultural Resource Survey Coverage, Site Tallies, and Site Density within	
5		Each Lease Tract Cluster	3-231
6			
7	3.11-5	Eligible and Potentially Eligible Sites in the Lease Tracts	3-233
8			
9	3.12-1	Sensitive Visual Resource Areas with Potential Views of the North Group	3-252
10			
11	3.12-2	Sensitive Visual Resource Areas with Potential Views of the North Central	
12		Group	3-253
13			
14	3.12-3	Sensitive Visual Resource Areas with Potential Visibility of the	
15		South Central Group	3-254
16			
17	3.12-4	Sensitive Visual Resource Areas with Potential Views of the South Group	3-256
18			
19	4.1-1	Peak-Year Air Emissions from Reclamation under Alternative 1	4-3
20			
21	4.1-2	Potential Impacts from Mining Activities on Soil Resources	4-5
22			
23	4.1-3	Potential Human Receptors, Uranium Sources, and Exposure Pathways	
24		to Exploration, Mining Development and Operations, and Reclamation	
25		Phases at the ULP Lease Tracts	4-12
26			
27	4.1-4	Dimensions of the Waste-Rock Piles per Mine Size Assumed for Human	
28		Health Impact Analysis	4-16
29			
30	4.1-5	Estimated Upper-Bound Emission Rates of Particulates, Radon, and	
31		Radionuclides for the Four Assumed Waste-Rock Pile Sizes	4-20
32			
33	4.1-6	Potential Maximum Radiation Doses and LCF Risks to a Resident as a Result	
34		of the Emission of Radon from the Four Assumed Waste-Rock Pile Sizes	4-20
35			
36	4.1-7	Potential Maximum Radiation Doses and LCF Risks to a Resident as a	
37		Result of the Emission of Particulates from the Four Assumed Waste-Rock	
38		Pile Sizes	4-21
39			
40	4.1-8	Potential Maximum Total Doses and LCF Risks to a Resident as a Result	
41		of the Emission of Radon and Particulates from the Four Assumed Waste-	
42		Rock Pile Sizes	4-21
43			
44	4.1-9	Seed Mixture Developed for Reseeding on the DOE ULP Lease Tracts	4-28
45			
46			

TABLES (Cont.)

1		
2		
3		
4	4.1-10	Potential Effects of the Uranium Leasing Program under Alternative 1 on
5		Threatened, Endangered, and Sensitive Species..... 4-33
6		
7	4.1-11	Socioeconomic Impacts of Uranium Mining Reclamation in the Region of
8		Influence under Alternative 1 4-51
9		
10	4.3-1	Peak-Year Air Emissions from Mine Development, Operations, and
11		Reclamation under Alternative 3 4-73
12		
13	4.3-2	Radiation Doses and LCF Risks Received by Underground Uranium Miners
14		under Alternative 3 4-91
15		
16	4.3-3	Radon Emission Rates per Type of Mine during Mine Operations Assumed
17		for Alternative 3 4-94
18		
19	4.3-4	Potential Maximum Radon Levels, Radiation Doses, Radon Concentrations,
20		and LCF Risks to a Resident Associated with the Emission of Radon from
21		Four Uranium Mine Sizes under Alternative 3..... 4-96
22		
23	4.3-5	Collective Doses and LCF Risks to the General Public from Radon Emissions
24		from Uranium Mines during the Peak Year of Operations under Alternative 3..... 4-99
25		
26	4.3-6	Summary of Potential Impacts on Wildlife Associated with Alternative 34-118
27		
28	4.3-7	Potential Impacts on Aquatic Biota Associated with Alternative 3.....4-127
29		
30	4.3-8	Potential Effects of the Uranium Leasing Program under Alternative 3
31		on Threatened, Endangered, and Sensitive Species.....4-132
32		
33	4.3-9	Socioeconomic Impacts of Uranium Mine Development, Operations, and
34		Reclamation in the Region of Influence under Alternative 34-155
35		
36	4.3-10	Recreation Sector Activity in the Region of Influence in 2012.....4-158
37		
38	4.3-11	Impacts from Reductions in Recreation Sector Employment Resulting
39		from Uranium Mining Development in the Region of Influence, 20124-159
40		
41	4.3-12	Distances from Lease Tracts to Ore Processing Mills4-164
42		
43	4.3-13	Peak-Year Collective Population Transportation Impacts under Alternative 3.....4-165
44		
45		

TABLES (Cont.)

1			
2			
3			
4	4.3-14	Potential Haul Truck Traffic on Local Roads.....	4-166
5			
6	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
7			
8			
9	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
10			
11			
12	4.3-17	Single-Shipment Collective Population Impacts from Transporting Ore from Lease Tracts to Piñon Ridge Mill	4-173
13			
14			
15	4.3-18	Single-Shipment Collective Population Impacts from Transporting Ore from Lease Tracts to White Mesa Mill.....	4-174
16			
17			
18	4.3-19	Hypothetical Single-Shipment Radiological Impacts on Individual Receptors	4-175
19			
20	4.3-20	Cultural Resource Sites That Could Be Directly Affected under Alternative 3	4-178
21			
22	4.4-1	Peak-Year Air Emissions from Mine Development, Operations, and Reclamation under Alternative 4	4-194
23			
24			
25	4.4-2	Radon Emission Rates per Type of Mine during Mine Operations Assumed for Alternative 4	4-208
26			
27			
28	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
29			
30			
31	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
32			
33			
34			
35	4.4-5	Socioeconomic Impacts from Uranium Mine Development, Operations, and Reclamation in the Region of Influence under Alternative 4	4-215
36			
37			
38	4.4-6	Peak-Year Collective Population Transportation Impacts under Alternative 4.....	4-219
39			
40	4.4-7	Cultural Resource Sites That Could Be Directly Affected under Alternative 4	4-222
41			
42	4.5-1	Peak-Year Air Emissions from Mine Development, Operations, and Reclamation under Alternative 5	4-236
43			
44			
45	4.5-2	Radon Emission Rates per Type of Mine during Mine Operations Assumed for Alternative 5	4-246
46			
47			

TABLES (Cont.)

1			
2			
3			
4	4.5-3	Potential Maximum Radiation Doses, Radon Concentrations, and LCF Risks	
5		to a Resident Associated with the Emission of Radon from Three Sizes of	
6		Uranium Mines	4-247
7			
8	4.5-4	Collective Doses and LCF Risks to the General Public from Radon Emissions	
9		from Uranium Mines during the Peak Year of Operations under Alternative 5	4-248
10			
11	4.5-5	Socioeconomic Impacts of Uranium Mine Development, Operations, and	
12		Reclamation in the Region of Influence under Alternative 5	4-254
13			
14	4.5-6	Peak-Year Collective Population Transportation Impacts under Alternative 5	4-257
15			
16	4.5-7	Cultural Resource Sites Expected To Be Directly Affected under	
17		Alternative 5	4-260
18			
19	4.6-1	Measures Identified to Minimize Potential Impacts from Uranium Mining	
20		at the ULP Lease Tracts	4-262
21			
22	4.7-1	Potential Environmental Impacts of the Proposed Piñon Ridge Mill	4-279
23			
24	4.7-2	Potential Environmental Impacts of the Proposed Book Cliff Mine	4-282
25			
26	4.7-3	Potential Environmental Impacts from Operation of the White Mesa Mill	4-288
27			
28	4.7-4	Potential Environmental Impacts of the Daneros Mine	4-291
29			
30	4.7-5	Potential Environmental Impacts of the Whirlwind Mine	4-293
31			
32	4.7-6	Summary of Exploration Plans for the ULP Lease Tracts	4-297
33			
34	4.7-7	Summary of Reclamation Plans Implemented in 2009 to 2011 for the	
35		ULP Lease Tracts	4-299
36			
37	4.7-8	Potential Environmental Impacts of Oil and Gas Exploration	
38		and Development	4-305
39			
40	4.7-9	Potential Environmental Impacts of Livestock Grazing	4-307
41			
42	4.7-10	General Trends in the Region of Influence for Cumulative Effects	4-310
43			
44	4.7-11	Summary of Major Projects and Activities in the Region of Influence	
45		for Cumulative Effects	4-314
46			

TABLES (Cont.)

1
2
3
4 4.7-12 Potential Impacts of Select Projects Considered with the
5 DOE ULP Alternatives 4-322
6
7 5.2-1 Potentially Applicable State Requirements 5-9
8
9 5.3-1 Potentially Applicable County Requirements..... 5-11
10
11 6.1-1 Indian Tribal Governments Contacted by DOE with Regard
12 to Their Interest in Being Consulted on the ULP PEIS 6-2
13
14 6.3-1 NHPA Consultation Efforts 6-6 |
15
16 B-1 Public Scoping Meeting Locations, Dates, and Attendance B-4
17
18 B-2 Public Scoping Comments Considered To Be Within the Scope of the
19 ULP PEIS..... B-5 |
20
21 B-3 Public Scoping Issues Considered To Be Outside the Scope of the ULP PEIS B-12 |
22
23 C.1-1 Number of Mines Considered per Mine Size and Alternative..... C-4
24
25 C.1-2 Total Disturbed Acreage per Mine Size and Alternative during Exploration C-4
26
27 C.1-3 Assumed Workforce per Labor Category and Alternative during Exploration..... C-5
28
29 C.1-4 Assumed Total Costs per Alternative during Exploration..... C-6
30
31 C.1-5 Assumed Equipment and Total Hours Operated per Mine Size and
32 Alternative during Exploration C-7
33
34 C.1-6 Assumed Total Material Amounts per Alternative during Exploration..... C-8
35
36 C.1-7 Assumed Annual Air Emissions on an Individual Mine Basis during
37 Exploration..... C-9
38
39 C.1-8 Assumed Total Air Emissions during Exploration C-10
40
41 C.1-9 Wastes Generated per Alternative during Exploration C-10
42
43 C.2-1 Estimated Material Amounts and Labor Time per Mine Size during
44 Development C-11
45
46 C.2-2 Estimated Materials and Labor Time per Alternative during Development..... C-11
47

TABLES (Cont.)

1			
2			
3			
4	C.2-3	Number of Workers per Mine Size and Worker Salary per Labor Category	C-12
5			
6	C.2-4	Annual Worker Salaries per Labor Category and Mine Size	C-12
7			
8	C.2-5	Number and Cost of Capital Equipment Units per Mine Size.....	C-13
9			
10	C.2-6	Total Capital Equipment Costs per Alternative	C-14
11			
12	C.2-7	Estimated Total Capital Costs per Mine Size	C-15
13			
14	C.2-8	Estimated Total Capital Costs per Alternative.....	C-16
15			
16	C.2-9	Assumed Annual Air Emissions on an Individual Mine Basis during	
17		Development	C-17
18			
19	C.2-10	Estimated Annual Air Emissions per Alternative during Development.....	C-18
20			
21	C.2-11	Wastes Generated per Alternative during Development	C-18
22			
23	C.2-12	Total Worker Peak-Year Annual Wages per Mine Size and Alternative	C-19
24			
25	C.2-13	Peak-Year Annual Water Usage per Mine Size and Alternative	
26		during Operations.....	C-19
27			
28	C.2-14	Total Peak-Year Annual Cost of Operations per Alternative	C-20
29			
30	C.2-15	Assumed Annual Air Emissions on an Individual Mine Basis during	
31		Operations	C-20
32			
33	C.2-16	Estimated Peak-Year Annual Air Emissions per Alternative during Operations...	C-21
34			
35	C.3-1	Assumed Workforce per Labor Category, Team, JD-7 Mine, and	
36		Alternative during Reclamation.....	C-22
37			
38	C.3-2	Total Disturbed Acreage per Mine Size and Alternative during Reclamation	C-22
39			
40	C.3-3	Assumed Total Costs per Alternative during Reclamation.....	C-23
41			
42	C.3-4	Assumed Equipment and Total Hours of Operation per Mine Size and	
43		Alternative during Reclamation.....	C-24
44			
45	C.3-5	Assumed Amounts of Materials per Mine Size and Alternative during	
46		Reclamation	C-25
47			

TABLES (Cont.)

1
2
3
4 C.3-6 Assumed Annual Air Emissions on an Individual Mine Basis during
5 Reclamation C-26
6
7 C.3-7 Assumed Total Air Emissions during Reclamation..... C-27
8
9 C.3-8 Wastes Generated per Alternative during Reclamation..... C-27
10
11 D.5-1 Meteorological Data Used in the COMPLY-R Calculations..... D-15
12
13 D.5-2 Comparison of the Radon Doses Calculated by CAP88-PC and Those
14 Calculated by COMPLY-R..... D-15
15
16 D.10-1 Individual Exposure Scenarios..... D-31
17
18 D.10-2 Mine Size for Each Lease Tract as Assumed for the Transportation
19 Analysis for Alternatives 3, 4, and 5..... D-34
20
21 E-1 Endangered Species Act Consultation Correspondence E-3
22
23 F-1 Consultation Correspondence F-3
24
25 F-2 Correspondence Regarding the Establishment of a Programmatic
26 Agreement for Section 106 Consultation..... F-94
27
28 G-1 DOE Management Team G-3
29
30 G-2 ULP PEIS Preparers..... G-4
31
32 I.1-1 Draft ULP PEIS Public Hearing Locations in Colorado, Dates, and
33 Estimated Attendance I-2
34
35 I.4-1 Organizations That Submitted Comments in Writing via Letter, E-mail,
36 or Web Portal or Orally at One of the Public Hearings for ULP I-17
37
38 I.4-2 Individuals Who Submitted Comments in Writing via Letter, E-mail,
39 or Web Portal or Orally at One of the Public Hearings for ULP I-17
40

1
2
3
4
5
6
7
8
9
10
11
12
13
14
15

This page intentionally left blank

1 **NOTATION**

2

3

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

7

8

9 **ACRONYMS AND ABBREVIATIONS**

10

11	AADT	annual average daily traffic
12	ACEC	Area of Critical Environmental Concern
13	ACHP	American Council on Historic Preservation
14	AEA	Atomic Energy Act
15	AEC	Atomic Energy Commission
16	APE	area of potential effects
17	AQCR	Air Quality Control Region
18	AQRV	air-quality-related value
19	ATSDR	Agency for Toxic Substances and Disease Registry
20	AUM	animal unit month
21		
22	BA	biological assessment
23	BLM	Bureau of Land Management
24	BLS	Bureau of Labor Statistics
25	BMP	best management practice
26	BO	biological opinion
27	BOR	Bureau of Reclamation
28		
29	CAA	Clean Air Act
30	CAAQS	Colorado Ambient Air Quality Standards
31	CASTNET	Clean Air Status and Trends Network
32	CCCD	Colorado Center for Community Development
33	CDA	Colorado Department of Agriculture
34	CDNR	Colorado Department of Natural Resources
35	CDOT	Colorado Department of Transportation
36	CDOW	Colorado Division of Wildlife
37	CDPHE	Colorado Department of Public Health and Environment
38	CDRMS	Colorado Division of Reclamation, Mining, and Safety
39	CDWR	Colorado Division of Water Resources
40	CEDE	committed effective dose equivalent
41	CERCLA	Comprehensive Environmental Response, Compensation, and Liability Act
42	CEQ	Council on Environmental Quality
43	CFR	<i>Code of Federal Regulations</i>
44	CNHP	Colorado Natural Heritage Program
45	COGCC	Colorado Oil and Gas Conservation Commission
46	CPW	Colorado Parks and Wildlife (formerly CDOW)

1	CRD	Comment Response Document
2	CRS	<i>Colorado Revised Statutes</i>
3	CWA	Clean Water Act
4	CWCB	Colorado Water Conservation Board
5		
6	DCF	dose conversion factor
7	DEM	Digital Elevation Model
8	DNL	day-night average sound level
9	DOE	U.S. Department of Energy
10	DOE-LM	DOE Office of Legacy Management
11	DOI	U.S. Department of the Interior
12	DOT	U.S. Department of Transportation
13	DPS	distinct population segment (USFWS)
14	DRI	Desert Research Institute
15		
16	EA	environmental assessment
17	EDE	effective dose equivalent
18	EF	enhanced Fujita (scale)
19	EFR	Energy Fuels Resources
20	EIA	Energy Information Administration
21	EIS	environmental impact statement
22	EMF	electromagnetic field
23	E.O.	Executive Order
24	EPA	U.S. Environmental Protection Agency
25	EPP	environmental protection plan
26	EPS	Economic and Planning Systems
27	ERNA	Ecological Research Natural Area
28	ESA	Endangered Species Act
29		
30	FGR	Federal Guidance Report
31	FLM	Federal Land Manager
32	FONSI	Finding of No Significant Impact
33	FR	<i>Federal Register</i>
34	FTW	full-time worker
35		
36	GAO	Government Accountability Office
37	GHG	greenhouse gas
38	GIS	geographic information system
39		
40	HA	herd area
41	HAP	hazardous air pollutant
42	HEAST	Health Effect Assessment Summary Tables
43	HFC	hydrofluorocarbon
44	HI	hazard index
45	HMA	herd management area
46	HMR	hazardous materials regulation (DOT)

1	HQ	hazard quotient
2		
3	I-	Interstate (Highway)
4	ICRP	International Commission on Radiological Protection
5	IDA	intentional destructive act
6	IPaC	Information, Planning, and Conservation System (USFWS)
7	IRIS	Integrated Risk Information System
8	ISM	Integrated Safety Management
9		
10	KOP	key observation point
11	KREX	KREX News Channel
12		
13	L ₉₀	sound level exceeded 90% of the time
14	LCF	latent cancer fatality
15	L _{dn}	day-night average sound level
16	L _{eq}	equivalent continuous sound level
17	L _g	surface wave
18	LHA	landscape health assessment
19	LR2000	Land and Mineral Rehost 2000 System (BLM)
20	LSA	low specific activity
21		
22	M&E	Monitoring & Evaluation (List)
23	ML _g	surface wave magnitude
24	MOU	Memorandum of Understanding
25	MSHA	Mine Safety and Health Administration
26		
27	NAAQS	National Ambient Air Quality Standard(s)
28	NAICS	North American Industry Classification System
29	NCA	National Conservation Area
30	NCDC	National Climatic Data Center
31	NCRP	National Council on Radiation Protection
32	NED	National Elevation Data
33	NEPA	National Environmental Policy Act
34	NESHAP	National Emission Standards for Hazardous Air Pollutants
35	NHPA	National Historic Preservation Act
36	NLCS	National Landscape Conservation System (BLM)
37	NMFS	National Marine Fisheries Service
38	NOI	Notice of Intent
39	NP	National Park
40	NPDES	National Pollutant Discharge Elimination System
41	NPS	National Park Service
42	NRC	U.S. Nuclear Regulatory Commission
43	NRCS	Natural Resources Conservation Service
44	NRHP	<i>National Register of Historic Places</i>
45	NWCC	National Wind Coordinating Committee
46	NWI	National Wetlands Inventory

1		
2	OAHP	Office of Archaeology and Historic Preservation (Colorado)
3	OHV	off-highway vehicle
4	OMP	operations and maintenance plan
5	ONA	Outstanding Natural Area
6	ORV	Outstanding Remarkable Value
7		
8	PA	programmatic agreement
9	PEA	programmatic environmental assessment
10	PEIS	programmatic environmental impact statement
11	PFC	perfluorocarbon
12	PFYC	Potential Fossil Yield Classification
13	P.L.	Public Law
14	PLS	pure live seed
15	PM	particulate matter
16	PM _{2.5}	particulate matter with a mean aerodynamic diameter of 2.5 µm or less
17	PM ₁₀	particulate matter with a mean aerodynamic diameter of 10 µm or less
18	PSD	Prevention of Significant Deterioration
19		
20	QDEH	Queensland Department of Environment and Heritage
21		
22	RCRA	Resource Conservation and Recovery Act
23	RfC	reference dose concentration
24	RfD	reference dose
25	RILOR	reclamation in lieu of royalties
26	RMP	resource management plan
27	RNA	Research Natural Area
28	ROD	Record of Decision
29	ROI	region of influence
30	ROW	right-of-way
31		
32	SAAQS	State Ambient Air Quality Standard(s)
33	SDWA	Safe Drinking Water Act
34	SH	State Highway
35	SHPO	State Historic Preservation Office
36	SIP	State Implementation Plan
37	SJPLC	San Juan Public Lands Center
38	SRE	Slick Rock East
39	SRMA	Special Recreation Management Area
40	SRW	Slick Rock West
41	SVRA	sensitive visual resource area
42	SWCTR	Southwest Colorado Travel Region
43	SWMP	stormwater management plan
44	SWReGAP	Southwest Regional Gap Analysis Project
45		

1	TDS	total dissolved solids
2	TEDE	total effective dose equivalent
3	THC	total hydrocarbons
4	TIS	traffic impact study
5	TMDL	total maximum daily load
6	TSCA	Toxic Substances Control Act
7	TSP	total suspended particulates
8		
9	UCC	Union Carbide Corporation
10	UDEQ	Utah Department of Environmental Quality
11	UDNR	Utah Department of Natural Resources
12	UDOGM	Utah Division of Oil, Gas, and Mining
13	UDOT	Utah Department of Transportation
14	UDWR	Utah Division of Wildlife Resources
15	UGS	Utah Geological Survey
16	ULP	Uranium Leasing Program
17	UMTRCA	Uranium Milling Tailings Radiation Control Act
18	UNSCEAR	United Nations Scientific Committee on the Effects of Radiation
19	US	U.S. Highway
20	USACE	U.S. Army Corps of Engineers
21	USC	<i>United States Code</i>
22	USDA	U.S. Department of Agriculture
23	USFS	U.S. Forest Service
24	USFWS	U.S. Fish and Wildlife Service
25	USGRCRP	U.S. Global Research Change Research Program
26	USGS	U.S. Geological Survey
27		
28	VOC	volatile organic compound
29	VRI	visual resource inventory
30	VRM	visual resource management
31		
32	WA	Wilderness Area
33	WAPA	Western Area Power Administration
34	WHO	World Health Organization
35	WL	working level
36	WLM	working level month
37	WRCC	Western Regional Climate Center
38	WSA	Wilderness Study Area
39	WSR	National Wild and Scenic Rivers
40		
41		
42		

1 **CHEMICALS**

2

3 CH₄ methane
 4 CO carbon monoxide
 5 CO₂ carbon dioxide
 6 CO_{2e} carbon dioxide equivalent

7

8 K-40 potassium-40

9

10 NO₂ nitrogen dioxide11 N₂O nitrous oxide12 NO_x nitrogen oxides

13

14 O₃ ozone

15

16 Pb lead

17

18 SF₆ sulfur hexafluoride19 SO₂ sulfur dioxide

20

21 U₃O₈ uranium oxide (triuranium octoxide)

22

23 V₂O₅ vanadium oxide (divanadium pentoxide)

24

25

26 **UNITS OF MEASURE**

27

28 ac-ft acre-foot (feet)

29

30 bbl barrel(s)

31

32 °C degree(s) Celsius

33 Ci curie(s)

34 cm centimeter(s)

35 cm³ cubic centimeter(s)

36

37 d day(s)

38 dB decibel(s)

39 dBA a-weighted decibel(s)

40

41 °F degree(s) Fahrenheit

42 ft foot (feet)

43 ft³ cubic foot (feet)

44

45 g gram(s)

46 gal gallon(s)

47

1	h	hour(s)
2	ha	hectare(s)
3	hp	horsepower
4	Hz	hertz
5		
6	in.	inch(es)
7	in. ³	cubic inch(es)
8		
9	kg	kilogram(s)
10	km	kilometer(s)
11	km ²	square kilometer(s)
12		
13	L	liter(s)
14	lb	pound(s)
15		
16	m	meter(s)
17	m ²	square meter(s)
18	m ³	cubic meter(s)
19	mg	milligram(s)
20	mGy	milligray
21	mi	mile(s)
22	mi ²	square mile(s)
23	min	minute(s)
24	mm	millimeter(s)
25	mo	month(s)
26	mph	mile(s) per hour
27	mrem	millirem
28	MW	megawatt(s)
29		
30	pCi	picocurie(s)
31	ppb	part(s) per billion
32	ppm	part(s) per million
33		
34	rem	roentgen equivalent man
35		
36	s	second(s)
37		
38	yd	yard(s)
39	yd ³	cubic yard(s)
40	yr	year(s)
41		
42	μg	microgram(s)
43	μm	micrometer(s)
44	μmho(s)	micromho(s)
45	μS	microsievert(s)

1
2
3
4
5
6
7
8
9
10
11
12
13
14

This page intentionally left blank

CONVERSION TABLE
ENGLISH/METRIC AND METRIC/ENGLISH EQUIVALENTS

Multiply	By	To Obtain
<i>English/Metric Equivalents</i>		
acres	0.004047	square kilometers (km ²)
acre-feet (ac-ft)	1,234	cubic meters (m ³)
cubic feet (ft ³)	0.02832	cubic meters (m ³)
cubic yards (yd ³)	0.7646	cubic meters (m ³)
degrees Fahrenheit (°F) -32	0.5555	degrees Celsius (°C)
feet (ft)	0.3048	meters (m)
gallons (gal)	3.785	liters (L)
gallons (gal)	0.003785	cubic meters (m ³)
inches (in.)	2.540	centimeters (cm)
miles (mi)	1.609	kilometers (km)
miles per hour (mph)	1.609	kilometers per hour (kph)
pounds (lb)	0.4536	kilograms (kg)
short tons (tons)	907.2	kilograms (kg)
short tons (tons)	0.9072	metric tons (t)
square feet (ft ²)	0.09290	square meters (m ²)
square yards (yd ²)	0.8361	square meters (m ²)
square miles (mi ²)	2.590	square kilometers (km ²)
yards (yd)	0.9144	meters (m)
<i>Metric/English Equivalents</i>		
centimeters (cm)	0.3937	inches (in.)
cubic meters (m ³)	0.00081	acre-feet (ac-ft)
cubic meters (m ³)	35.31	cubic feet (ft ³)
cubic meters (m ³)	1.308	cubic yards (yd ³)
cubic meters (m ³)	264.2	gallons (gal)
degrees Celsius (°C) +17.78	1.8	degrees Fahrenheit (°F)
hectares (ha)	2.471	acres
kilograms (kg)	2.205	pounds (lb)
kilograms (kg)	0.001102	short tons (tons)
kilometers (km)	0.6214	miles (mi)
kilometers per hour (kph)	0.6214	miles per hour (mph)
liters (L)	0.2642	gallons (gal)
meters (m)	3.281	feet (ft)
meters (m)	1.094	yards (yd)
metric tons (t)	1.102	short tons (tons)
square kilometers (km ²)	247.1	acres
square kilometers (km ²)	0.3861	square miles (mi ²)
square meters (m ²)	10.76	square feet (ft ²)
square meters (m ²)	1.196	square yards (yd ²)

1
2
3
4

5
6

1
2
3
4
5
6
7
8
9
10
11
12
13
14

This page intentionally left blank

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

1 they find that a Federal project may cause loss or destruction of significant scientific, prehistoric,
2 or archeological data.

3
4
5 **Archaeological Resources Protection Act of 1979, as amended (16 USC 470 *et seq.*).**

6 This act requires a permit for any excavation or removal of archaeological resources from
7 Federal or American Indian lands. Excavations must be undertaken for the purpose of furthering
8 archaeological knowledge in the public interest, and resources removed remain the property of
9 the United States.

10
11
12 **Atomic Energy Act of 1954 (42 USC 2011 *et seq.*).** The AEA provides the statutory
13 framework for DOE, as the successor agency to the AEC, to ensure a supply of domestic
14 uranium adequate to meet the defense needs of the United States. The AEA also authorizes DOE
15 to exercise regulatory authority over activities it conducts or those conducted on its behalf. An
16 extensive system of standards and requirements has been established through DOE directives to
17 protect health and minimize danger to life and property from activities under DOE's jurisdiction.

18
19
20 **Bald and Golden Eagle Protection Act of 1973, as amended (16 USC 668 through**
21 **668d).** The Bald and Golden Eagle Protection Act, as amended, makes it unlawful to take,
22 pursue, molest, or disturb bald (American) and golden eagles, their nests, or their eggs anywhere
23 in the United States. The DOI regulates activities that might adversely affect bald and golden
24 eagles.

25
26
27 **Clean Air Act of 1970, as amended (42 USC 7401 *et seq.*).** The CAA is intended to
28 "protect and enhance the quality of the nation's air resources so as to promote the public health
29 and welfare and the productive capacity of its population." Section 118 of the CAA requires that
30 each Federal agency with jurisdiction over any property or facility engaged in any activity that
31 might result in the discharge of air pollutants comply with "all Federal, state, interstate, and local
32 requirements" with regard to the control and abatement of air pollution.

33
34 Section 109 of CAA directs the EPA to set NAAQS for criteria pollutants. These
35 standards were established for PM, SO₂, CO, ozone, NO₂, and lead. Section 111 of the CAA
36 requires the establishment of national standards of performance for new or modified stationary
37 sources of atmospheric pollutants, and Section 160 requires that specific emission increases be
38 evaluated prior to permit approval to prevent significant deterioration of air quality. Specific
39 standards for releases of hazardous air pollutants (including radionuclides) are required per
40 Section 112. Radionuclide emissions are regulated under the NESHAP Program under
41 40 CFR Part 61.

42
43
44 **Clean Water Act of 1972, as amended (33 USC 1251 *et seq.*).** The CWA provides
45 water quality standards for the nation's waterways, guidelines and limitations for effluent
46 discharges from point-source discharges, and the NPDES permit program that is administered by

1 the EPA or by states under their own laws. Sections 401 through 405 of the Water Quality Act of
2 1987 added Section 402(p) to the CWA, which requires the EPA to establish regulations for
3 permits for stormwater discharges associated with industrial activities. Section 404 of the CWA
4 requires permits for the discharge of dredge or fill materials into navigable waters.
5 Sections 303(d) and 305(b) update water quality conditions for all water bodies every 2 years.
6 The water body that is identified as impaired will be required to be investigated for development
7 of TMDL, which will be implemented to correct the impairment.
8
9

10 **Comprehensive Environmental Response, Compensation, and Liability Act of 1980**
11 **(42 USC 9604; also known as Superfund).** CERCLA provides, among other things, authority
12 for Federal and state governments to respond directly to hazardous substance incidents. The act
13 requires reporting of spills, including radioactive spills, to the National Response Center.
14
15

16 **Endangered Species Act of 1973, as amended (16 USC 1531 *et seq.*).** The ESA
17 provides a program for the conservation of threatened and endangered species and the
18 ecosystems on which those species rely. The act is intended to prevent the further decline of
19 endangered and threatened species and to restore those species and their critical habitats.
20 Section 7 requires Federal agencies to assure that any action authorized, funded, or carried out by
21 them is not likely to jeopardize the continued existence of listed species or result in the
22 destruction or adverse modification of their critical habitat.
23
24

25 **Emergency Planning and Community Right-to-Know Act of 1986**
26 **(USC 11001 *et seq.*; also known as Superfund Amendments and Reauthorization Act**
27 **[SARA] Title III).** This act requires emergency planning and notice to communities and
28 Government agencies concerning the presence and release of specific chemicals. Its provisions
29 help increase the public's knowledge of and access to information on chemicals at individual
30 facilities, their uses, and releases into the environment. States and communities can use the
31 information to improve chemical safety and protect public health and the environment.
32
33

34 **Federal Cave Resources Protection Act of 1988 (16 USC 4301 *et seq.*).** This act
35 established requirements for the management and protection of caves and their resources on
36 Federal lands, including allowing the land managing agencies to withhold the location of caves
37 from the public and requiring permits for any removal or collection activities in caves on Federal
38 lands.
39
40

41 **Federal Insecticide, Fungicide, and Rodenticide Act (7 USC 136 *et seq.*).** This act
42 regulates the use, registration, and disposal of several classes of pesticides to ensure that they are
43 applied in a manner that protects the public, workers, and the environment. Implementing
44 regulations include recommended procedures for the disposal and storage of pesticides and
45 worker protection standards.
46

1 **Federal Land Policy and Management Act, as amended (43 USC 1701 *et seq.*)**. This
2 act is the principal law governing how the BLM manages public lands. It guides the BLM in
3 managing, protecting, developing, and enhancing public land and specifically requires the
4 agency to manage public land resources for multiple uses and sustained yield for both present
5 and future generations. The act governs the issuance of ROWs on public land and reclamation of
6 public land.
7
8

9 **Federal Mine Safety and Health Act of 1977, as amended (30 USC 801 *et seq.*)**. The
10 Federal Mine Safety and Health Act authorizes the Secretary of Labor to establish mandatory
11 health and safety standards for mines, including related surface operations. The act defines a
12 mine as “(a) an area of land from which minerals are extracted in nonliquid form or, if in liquid
13 form, are extracted with workers underground, (b) private ways and roads appurtenant to such
14 [an] area, and (c) lands, excavations, underground passageways, shafts, slopes, tunnels and
15 workings, structures, facilities, equipment, machines, tools, or other property including
16 impoundments, retention dams, and tailings ponds, on the surface or underground, used in, or to
17 be used in, or resulting from, the work of extracting such minerals from their natural deposits in
18 nonliquid form, or if in liquid form, with workers underground, or used in, or to be used in, the
19 milling of such minerals, or the work of preparing coal or other minerals, and includes custom
20 coal preparation facilities.”
21
22

23 **Fish and Wildlife Coordination Act (16 USC 661 *et seq.*)**. The Fish and Wildlife
24 Coordination Act promotes effective planning and cooperation among Federal, state, public, and
25 private agencies for the conservation and rehabilitation of the nation’s fish and wildlife. The act
26 requires consultation with the USFWS and state authorities whenever a Federal action involves
27 impounding, diverting, channel deepening, or otherwise controlling or modifying the waters of
28 any stream or other body of water.
29
30

31 **Noxious Weed Act of 1974, as amended (7 USC 2801 *et seq.*)**. The act authorizes the
32 Secretary of Agriculture to designate plants as noxious weeds by regulation. The movement of
33 all such designated weeds in interstate or foreign commerce is prohibited except under permit.
34 The 1990 amendment requires Federal agencies to develop and adequately fund a program for
35 managing undesirable plants in order to control these plants on Federal lands under their
36 jurisdiction.
37
38

39 **Migratory Bird Treaty Act of 1918, as amended (16 USC 703 *et seq.*)**. This act, as
40 amended, is intended to protect birds that have common migration patterns between the
41 United States and Canada, Mexico, Japan, and Russia. The act stipulates that it is unlawful at any
42 time, by any means, or in any manner to “kill any migratory bird unless and except as permitted
43 by regulation.”
44
45

1 **National Environmental Policy Act of 1969, as amended (42 USC 4321 *et seq.*).**

2 NEPA establishes a national policy that promotes the awareness of the consequences of human
3 activity on the environment and the consideration of environmental impacts during the planning
4 and decision-making stages of a project. It requires Federal agencies to prepare an EIS for
5 “major Federal actions significantly affecting the quality of the human environment.”
6
7

8 **National Historic Preservation Act of 1966, as amended (16 USC 470 *et seq.*).** NHPA

9 provides that sites with significant national historic value be placed on the NRHP maintained by
10 the Secretary of the Interior. Section 106 of the act requires a Federal agency to determine
11 whether its proposed undertaking is the type of activity that could affect historic properties. If so,
12 the agency must consult with the appropriate SHPO or Tribal Historic Preservation Officer. If an
13 adverse effect is found, the consultation often ends with the execution of a Memorandum of
14 Agreement that indicates how the adverse effect will be resolved.
15
16

17 **Native American Graves Protection and Repatriation Act of 1990 (25 USC 3001).**

18 This act establishes a means for American Indians to request the return or repatriation of human
19 remains and other cultural items presently held by Federal agencies or Federally assisted
20 museums or institutions. The act also contains provisions regarding the intentional excavation
21 and removal of, inadvertent discovery of, and illegal trafficking in American Indian human
22 remains and cultural items. The law requires the establishment of a review committee with
23 monitoring and policy-making responsibilities, the development of regulations for repatriation,
24 and the development of procedures to handle unexpected discoveries of graves or grave items
25 during activities on Federal or tribal lands. All Federal agencies that manage land and/or are
26 responsible for archaeological collections obtained from their lands or generated by their
27 activities must comply with this act.
28
29

30 **Noise Control Act of 1972, as amended (42 USC 4901 *et seq.*).** Section 4 of the Noise

31 Control Act of 1972, as amended, directs all Federal agencies to carry out “to the fullest extent
32 within their authority” programs within their jurisdictions in a manner that furthers a national
33 policy that promotes an environment free from noise that would jeopardize health and welfare.
34
35

36 **Occupational Safety and Health Act of 1970 (29 USC 651 *et seq.*).** This act establishes

37 standards for safe and healthful working conditions in places of employment throughout the
38 United States. The act is administered and enforced by the Occupational Safety and Health
39 Administration in the U.S. Department of Labor.
40
41

42 **Paleontological Resources Preservation Act (16 USC 470aaa *et seq.*).** This act

43 promotes the preservation and use of paleontological resources on Federal lands by prohibiting
44 the following: (1) taking or damaging paleontological resources located on Federal lands without
45 a permit or permission; (2) selling or purchasing such resources received from Federal lands; and
46 (3) submitting false records or identification for such resources removed from Federal lands.

1 **Pollution Prevention Act of 1990 (42 USC 13101 *et seq.*)**. This act establishes a
2 national policy for waste management and pollution control. Source reduction is given first
3 preference, followed by environmentally safe recycling, then by treatment, and finally by
4 disposal.

5
6
7 **Resource Conservation and Recovery Act of 1976, as amended**
8 **(42 USC 6901 *et seq.*)**. Under this act (abbreviated RCRA), which amended the Solid Waste
9 Disposal Act of 1965, the EPA defines and identifies hazardous waste; establishes standards for
10 its transportation, treatment, storage, and disposal; and requires permits for persons engaged in
11 hazardous waste activities. Section 3006 of RCRA allows states to establish and administer these
12 permit programs with EPA approval. The Federal Facility Compliance Act of 1992
13 (42 USC 6961 *et seq.*) amended RCRA to require that all Federal agencies having jurisdiction
14 over a solid waste facility or disposal site, or engaged in the management of solid or hazardous
15 waste, are subject to all applicable Federal, state, and local laws, regulations, and ordinances
16 addressing solid and hazardous waste.

17
18
19 **Safe Drinking Water Act of 1974, as amended (42 USC 300(f) *et seq.*)**. The primary
20 objective of the Safe Drinking Water Act (SDWA) is to protect the quality of public drinking
21 water supplies and sources of drinking water. The implementing regulations, administered by the
22 EPA unless delegated to states, establish standards applicable to public water systems. These
23 regulations include maximum contaminant levels (including those for radioactivity) in public
24 water systems that have at least 15 service connections used by year-round residents or that
25 regularly serve at least 25 year-round residents.

26
27
28 **Theft and Destruction of Government Property (18 USC 641 and 1361)**. This
29 legislation makes it illegal to steal or damage any property of the Federal Government and
30 establishes provisions for fines and imprisonment.

31
32
33 **Toxic Substances Control Act of 1976 (15 USC 2601 *et seq.*)**. This act (abbreviated
34 TSCA) provides the EPA with the authority to require testing of chemical substances entering
35 the environment and to regulate them as necessary. The law complements and expands existing
36 toxic substance laws such as Section 112 of the CAA and Section 307 of the CWA. TSCA
37 requires compliance with inventory reporting and chemical control provisions of the legislation
38 to protect the public from the risks of exposure to chemicals.

39
40
41 **Wild and Scenic Rivers Act (16 USC 1271 *et seq.*)**. The act establishes a National Wild
42 and Scenic Rivers System and prescribes the methods and standards through which additional
43 rivers may be added to the system. Rivers may be designated by Congress or, under certain
44 conditions, the Secretary of the Interior; designated segments need not include the entire river.
45 Each river is administered by either a Federal or state agency; for Federally administered rivers

1 in the lower 48 states, the designated boundaries generally average one quarter mile on either
2 bank in order to protect river-related values.

3 4 5 **5.2 STATE OF COLORADO ENVIRONMENTAL LAWS**

6
7 Certain environmental requirements are implemented by states under their own state
8 laws, as authorized by the EPA to state authorities for implementation and enforcement. It is
9 DOE policy to conduct its operations in an environmentally safe manner that complies with all
10 applicable requirements, including applicable state requirements. A list of state environmental
11 laws potentially applicable to the alternatives for the management of the ULP, described in the
12 ULP PEIS, is provided in Table 5.2-1.

13 14 15 **5.3 COUNTY ENVIRONMENTAL ORDINANCES AND PLANS**

16
17 Under Colorado state law, county planning commissions are authorized to make and
18 adopt a master plan for the physical development of the unincorporated territory of the county.
19 The lease tracts that are the subject of the ULP PEIS are located in Mesa, Montrose, and
20 San Miguel Counties. County ordinances, plans, and permit requirements that could apply to the
21 ULP management alternatives described in the ULP PEIS are listed in Table 5.3-1.

22 23 24 **5.4 MEMORANDA OF UNDERSTANDING**

25
26 In recognition of their shared roles and responsibilities and under their respective
27 authorities, the DOE-LM Office of Site Operations and the CDRMS entered into an MOU in
28 September 2012. The purpose of the MOU is to identify those roles and responsibilities, promote
29 agency coordination in matters affecting the ULP, eliminate duplication, simplify administrative
30 processes, and minimize or eliminate the adverse environmental effects of ULP mining
31 operations.

32
33 The MOU between DOE and CDRMS states that DOE has sole authority over the
34 selection of lessees as well as the negotiation, issuance, management, and termination of leases;
35 DOE is also the lead bonding authority. To allow for its independent review, each agency is to
36 receive copies of lessee documents pertaining to “site-specific Exploration Plans/Notices of
37 Intent and Reclamation Permits/Plans of Operation.” DOE has the authority and responsibility to
38 assure that lessees conduct all operations in compliance with the lease and with all applicable
39 laws and regulations, while the CDRMS has the authority and responsibility to assure that
40 operators conduct uranium and vanadium mining operations in compliance with applicable State
41 of Colorado laws and regulations. Each agency is to conduct its inspections of operations in
42 order to fulfill its regulatory oversight responsibilities, to notify the other agency of
43 noncompliance issues, and to retain its enforcement authorities.

1 In 2010, the DOE-LM Office of Site Operations entered into a MOU with the BLM
2 concerning the management of withdrawn lands. The MOU identifies the individual and shared
3 roles and responsibilities of each agency with respect to the ULP.
4

5 Pursuant to this 2010 MOU, DOE has sole authority over the selection of lessees as well
6 as lease negotiation, issuance, management, and termination. DOE is responsible for assuring
7 that all lease-wide stipulations it has agreed to with the BLM are incorporated into leases or, as
8 appropriate, are included as stipulations in Exploration and Mining Plan approvals. DOE also has
9 sole authority to assure that lessees conduct operations in compliance with lease language and all
10 applicable laws and regulations; DOE must notify the BLM of any noncompliance and
11 subsequent response actions. The BLM is to notify DOE of noncompliance, safety, and other
12 issues noted by its staff members while they are performing their duties on the leased premises.
13

14 The MOU provides that DOE is to reclaim all leased tracts when they are no longer
15 required to support the DOE mission and that DOE shall consult with the BLM prior to
16 reclamation in order to ensure that all involved lands are reclaimed to BLM standards and needs.
17
18
19

1 **TABLE 5.2-1 Potentially Applicable State Requirements**

Law	Citation	Requirement
Agreements for Transfer of Functions from Federal Government to State Government	<i>Colorado Revised Statutes (CRS)</i> , Title 25, "Health," Article 11, "Radiation Control," Section 102, Agreements for transfer of functions from Federal Government to State Government	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.
Colorado Air Pollution Prevention and Control Act	CRS, Title 25, "Health," Article 7, "Air Quality Control," Section 101 <i>et seq.</i>	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.
Colorado Mined Land Reclamation Act	CRS, Title 34, "Mineral Resources," Article 32, "Colorado Mined Land Reclamation Act," Section 101 <i>et seq.</i>	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.
Colorado Natural Areas Act	CRS, Title 33, "Parks and Wildlife," Article 33, "Colorado Natural Areas," Section 101 <i>et seq.</i>	Establishes a statewide natural areas program to identify and protect certain natural areas.
Colorado Noxious Weed Act	CRS, Title 35, "Agriculture," Article 5.5, "Colorado Noxious Weed Act," Section 111, Cooperation with Federal and state agencies	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.
Colorado Water Quality Control Act	CRS Title 25, "Health," Article 8, "Water Quality Control," Sections 501–503	Requires a permit for the discharge of pollutants into any state waters.
Colorado Water Quality Control Act	CRS, Title 25, "Health," Article 8, "Water Quality Control," Section 506, Nuclear and radioactive wastes	Requires a permit to discharge, deposit, or dispose of any radioactive waste underground in liquid, solid, or explosive form.

TABLE 5.2-1 (Cont.)

Law	Citation	Requirement
Hazardous Waste	CRS Title 25, "Health," Article 15, "Hazardous Waste," Part 3, "State Hazardous Waste Management Plan," Section 308, Prohibited acts, enforcement	Prohibits disposal of hazardous waste at unpermitted facilities.
Groundwater Use	CRS, Title 37, "Water and Irrigation," Article 90, "Underground Water," Section 107, Application for use of groundwater	Requires anyone desiring to appropriate groundwater in designated groundwater basins to file an application prior to doing so.
Historical, Prehistorical, and Archaeological Resources	CRS, Title 24, "Government, State," Article 80, "State History, Archives, and Emblems," Part 4, "Historical, Prehistorical, and Archaeological Resources," Section 406, Permits	Requires permits for the investigation, excavation, gathering, or removal from the natural state of any historical, prehistorical, and archaeological resources within the state.
Maximum Permissible Noise Levels	CRS, Title 25, "Health," Article 12, "Noise Abatement," Section 103, Maximum permissible noise levels	Establishes the dB(A) and time periods that constitute permissible noise levels.
Nongame, Endangered, or Threatened Species Conservation Act	CRS, Title 33, "Parks and Wildlife," Article 2, "Nongame and Endangered Species Conservation," Section 101 <i>et seq.</i>	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.
Pesticide Act	CRS, Title 35, "Agriculture," Article 9, "Pesticide Act," Section 101 <i>et seq.</i>	Controls the use of pesticides in the state.
Pollution Prevention Act of 1992	CRS 25, "Health," Article 16.5, "Pollution Prevention," Section 101 <i>et seq.</i>	Establishes that the prevention of pollution is preferable to treatment and disposal of toxic substances and is the cornerstone of the future of environmental management.
Unmarked Human Graves	CRS, Title 24, "Government, State," Article 80, "State History, Archives, and Emblems," Part 13, "Unmarked Human Graves," Section 1301 <i>et seq.</i>	Establishes the notification requirements upon the discovery of suspected human skeletal remains.

1 **TABLE 5.3-1 Potentially Applicable County Requirements**

Ordinance/Plan/Permit	Citation	Requirements
Mesa County		
Land Development Code	2000 Mesa County Land Development Code/Road and Bridge Standards and Specifications	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.
Update Building, Plumbing, Mechanical, Fuel Gas, Property Maintenance, Residential, Electrical, Energy Conservation Codes	Ordinance 008A	Adopts and slightly modifies the International Building Code and International Residential Code.
Noxious Weed Management Plan	Mesa County 2009-204	Lists the noxious weeds covered by the plan and promotes noxious weed management.
Montrose County		
Montrose County Zoning Resolution	Montrose County Zoning Resolution	<p>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.</p> <p>Applications, a complete site plan, and an impact mitigation plan are required for special uses.</p> <p>Permits are required for any work performed within the public ROWs of Montrose County and within county road access.</p>

TABLE 5.3-1 (Cont.)

Ordinance/Plan/Permit	Citation	Requirements
San Miguel County		
San Miguel County Land Use Code	Section 3-1, General	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.
	Section 5-11, Conditional Uses on Federal Lands	Establishes the standards for reviewing mineral exploration and mining on Federal land that is subject to Federal and state laws and regulations.
	Section 5-16, Mining	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.
	Section 5-321N, Development or Improvement of Roads, Driveways, and Recreational Trails	Requires that any proposed access to a county road must be issued a Driveway Access Permit.
	Section 5-607, Sewage Disposal	Requires a permit for new or replaced septic systems.

1
2
3

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 the each tribe.

1
2**TABLE 6.1-1 Indian Tribal Governments Contacted by DOE with
Regard to Their Interest in Being Consulted on the ULP PEIS**

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

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

1 determinations; that is, any amounts of water depleted from the Colorado River Basin as a result
2 of ULP activities must be addressed, regardless of water rights or ownership.

3
4 Water quality as it relates to the listed fish species is evaluated in the BA. With regard to
5 water that would be brought onto the ULP lease tracts to support mining operations, some public
6 water entities had previously consulted with the USFWS about water depletions. If the ULP
7 lessees obtain water from these public water entities, these volumes will not need to be entered
8 into the total volume counted as water depleted. However, since it will not be possible to
9 determine the exact source of the water to be utilized for future ULP mining activities, the
10 evaluation in the BA assumes that all consumptive water utilized is water depleted from the
11 Colorado River basin. For water that would be removed during mining operations and then
12 ponded, treated, and released, the water depletions and water quality related to the temporarily
13 ponded water are also evaluated in the BA. Cumulative depletions for mining actions on the ULP
14 lease tracts are also evaluated.

15
16 DOE has kept the USFWS informed about the ULP PEIS schedule, provided the USFWS
17 with up-to-date information on the ESA consultation and the BA preparation relative to the
18 overall ULP PEIS project schedule, and provided the USFWS with status updates on June 19,
19 July 10, October 17, and November 19, 2012. DOE submitted the Final BA on May 14, 2013.
20 DOE received the biological opinion (BO) from the USFWS on August 13, 2013. The USFWS
21 indicated that with the findings as stated in the BO, the formal and informal consultation on the
22 DOE ULP is concluded. The USFWS concurred with DOE's determination that was presented in
23 the Final BA (dated May 14, 2013; see Appendix E for the full version).

24
25 The USFWS, through the BO, indicated the following recommendations be considered
26 by DOE for inclusion in the Final ULP PEIS: (1) reinstate consultation if conditions changed
27 from those described in the discussion on the Gunnison sage-grouse and the yellow-billed
28 cuckoo; (2) conduct surveys prior to on-the-ground ULP activities that could have impacts on the
29 Gunnison's prairie dog; (3) promote conservation of sensitive plant species; (4) conduct annual
30 monitoring of retention and sedimentation ponds; and (5) make corrections to errors found
31 (e.g., map or text). These recommendations have been incorporated into this PEIS.

32 33 34 **6.3 CONSULTATION FOR THE NHPA**

35
36 DOE has initiated programmatic consultation, in compliance with Section 106 of the
37 NHPA, concerning DOE's management of the ULP. Section 106 of the NHPA requires Federal
38 agencies to consider the effect of their undertakings on historic properties and to consult with the
39 appropriate SHPO, American Council on Historic Preservation (ACHP), and other parties that
40 have an interest in the effects of the undertaking on historic properties. For the ULP, per the
41 procedure that has historically been and is currently still being carried out, DOE has addressed
42 consultation through the BLM and the lessees on specific undertakings when ULP
43 activities/plans have been proposed. However, since the NHPA allows for the utilization of a
44 programmatic agreement (PA) to govern large or complex projects, and since PAs can be used
45 when effects on historic properties are expected to be similar and repetitive or regional in scope

1 or when these effects cannot be fully determined prior to approval of an undertaking, DOE has
2 initiated the development of a PA for the ULP.
3

4 DOE initiated discussion regarding a PA with the BLM and the Colorado SHPO on
5 May 30, 2013, in a teleconference. During the call, the ULP activities were summarized, and the
6 related cultural resource activities were discussed. The SHPO suggested that a PA using a phased
7 approach could be utilized, and the initial list of consulting parties was discussed. Following the
8 teleconference, the BLM and DOE entered into discussions on how best to address coordination
9 of efforts between the three BLM Field Offices and DOE. On July 22, 2013, Mr. David Shafer of
10 DOE sent letters to the ACHP, the Colorado SHPO, and the BLM that formally requested the
11 initiation of consultation with these entities, invited them to be a consulting party, and proposed
12 pursuing a PA. On August 9, 2013, similar letters were sent to the 25 tribal groups originally
13 contacted for government-to-government consultation and the local historical commissions for
14 Mesa and San Miguel Counties. The letters to the tribes were addressed to the tribal leader, and
15 copies were sent to the cultural resources contact, if known. Facsimiles of all the letters sent are
16 presented in Appendix F (see Table F-2). During the weeks of August 19–23 and August 26–30,
17 2013, DOE-LM made calls to the ACHP, the tribes, and the historical commissions from which
18 responses had not yet been received. On September 16 and 17, 2013, an e-mail or second letter
19 was sent to the tribes and historical commissions from which responses had not yet been
20 received. On October 8, 2013, DOE provided the initial version of the PA to the groups that had
21 agreed to be consulting parties and hosted a conference call to discuss any questions or concerns.
22 All communications after this first conference call were distributed to all of the initially
23 identified parties, regardless of their response status, to ensure that the PA effort was made
24 known and to encourage full participation. DOE issued two iterative versions of the PA on
25 October 27, 2013, and November 29, 2013 requesting input and review. DOE hosted a second
26 conference call on November 4, 2013 to again address any questions or concerns. DOE requested
27 responses to the latest revision of the PA by December 12, 2013. The PA will be revised to
28 address input and review from the consulting parties, and then routed to the responsive parties
29 for concurrence. DOE-LM plans to have the PA in place before issuance of the ULP PEIS ROD.
30 The DOE-LM contact efforts and responses from the groups invited to be consulting parties are
31 summarized in Table 6.3-1.
32
33
37

1 **TABLE 6.3-1 NHPA Consultation Efforts**

Group	Contact Attempts (if no response yet received)	Response to Invitation To Be a Consulting Party
CO SHPO		Yes
BLM		Yes
ACHP		No
White Mesa Ute Tribe	<p>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</p>	
Southern Ute Indian Tribe		Yes
Ute Indian Tribe (Uintah & Ouray Reservation)	<p>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</p>	

2

TABLE 6.3-1 (Cont.)

Group	Contact Attempts (if no response yet received)	Response to Invitation To Be a Consulting Party
The Navajo Nation		Yes
Hopi Tribe		No
Ute Mountain Ute Tribe		Yes
Jicarilla Apache Tribal Council		No
Kewa Pueblo	<p>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</p>	
Pueblo of Acoma	<p>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</p>	

TABLE 6.3-1 (Cont.)

Group	Contact Attempts (if no response yet received)	Response to Invitation To Be a Consulting Party
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	
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	

TABLE 6.3-1 (Cont.)

Group	Contact Attempts (if no response yet received)	Response to Invitation To Be a Consulting Party
Pueblo of Picuris	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	
Pueblo of Pojoaque		Yes
Pueblo of San Felipe		Yes
Pueblo of San Ildefonso	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	
Pueblo of Sandia		No
Pueblo of Santa Ana		No
Pueblo of Santa Clara		Yes
Pueblo of Taos		Yes

TABLE 6.3-1 (Cont.)

Group	Contact Attempts (if no response yet received)	Response to Invitation To Be a Consulting Party
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	
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	
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.)

Group	Contact Attempts (if no response yet received)	Response to Invitation To Be a Consulting Party
Rimrocker Historical Society of Western Montrose County		Yes
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	

1
2

1
2
3
4
5
6
7
8
9
10
11
12
13
14

This page intentionally left blank

7 INDEX

1	
2	
3	
4	A
5	
6	acoustic environment
7	affected environment (Section 3.2)
8	best management practices (Section 4.6.3)
9	comparison across alternatives (Table 2.4-4, Section 2.4.2)
10	impacts under Alternatives 1, 2, 3, 4, 5 (Sections 4.1.2, 4.2.2, 4.3.2, 4.4.2, 4.5.2)
11	methodology (Appendix D.2)
12	affected environment (Chapter 3)
13	agricultural land
14	affected environment (Section 3.7.2)
15	air quality
16	affected environment (Section 3.1)
17	best management practices (Section 4.6, Table 4.6-1)
18	comparison across alternatives (Table 2.4-4, Section 2.4.1)
19	impacts under Alternatives 1, 2, 3, 4, 5 (Sections 4.1.1, 4.2.1, 4.3.1, 4.4.1, 4.5.1)
20	methodology (Appendix D.1)
21	regulatory environment (Section 3.1.4)
22	Alternative 1
23	description (Section 2.2.1)
24	impacts (Section 4.1)
25	Alternative 2
26	description (Section 2.2.2)
27	impacts (Section 4.2)
28	Alternative 3
29	description (Section 2.2.3)
30	impacts (Section 4.3)
31	Alternative 4 (preferred alternative)
32	description (Sections 1.4, 2.2.4)
33	identification as preferred (Section 2.6)
34	impacts (Section 4.4)
35	Alternative 5 (No Action Alternative)
36	description (Section 2.2.5)
37	impacts (Section 4.5)
38	alternatives considered but not evaluated (Section 2.3)
39	American Indian tribes, <i>see</i> Native Americans
40	amphibians, <i>see</i> reptiles and amphibians
41	aquatic biota or species (Section 2.4.6.3)
42	affected environment (Section 3.6.3)
43	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)
44	methodology (Appendix D.6.2)
45	

- 1 **B**
2
3 basis for impact analyses (Appendix C)
4 exploration (Section C.1)
5 mine development and operations phase (Section C.2)
6 reclamation phase (Section C.3)
7 best management practices (Section 4.6, Table 4.6-1)
8 biological assessment (Appendix E)
9 biological opinion (Appendix E)
10 birds
11 affected environment (Section 3.6.2.2)
12 protective regulations (Section 3.6.2.2.5)
13 Book Cliff (coal) Mine
14 cumulative impacts (Section 4.7.1.3, Table 4.7-6)
15
16 **C**
17
18 Cameo Station Power Plant
19 cumulative impacts (Section 4.7.2.10)
20 climate
21 affected environment (Section 3.1.1)
22 coal mining, *see* Book Cliff Mine and *see* mineral and coal resources and mining
23 Colorado state and county laws (Sections 5.5, 5.6)
24 comments and responses (Appendix I)
25 community services
26 methodology (Appendix D.8.4)
27 contractor disclosure statement (Appendix H)
28 consultation process (Sections 1.9, 6)
29 correspondence (Appendix E, Table E-1, Appendix F)
30 NHPA (National Historic Preservation Act) related (Section 6.3)
31 with Native American tribes (Sections 1.9, 1.10, 6.1; Appendix F)
32 with U.S. Fish and Wildlife Service (Sections 1.9, 1.10, 6.2; Appendix E, Table E-1)
33 cooperating agencies (Section 1.10)
34 criteria pollutant emissions, *see* air quality
35 Clean Air Act (Chapter 5)
36 existing air quality and emissions (Sections 3.1.2., 3.1.3)
37 impacts under Alternatives 1, 2, 3, 4, 5 (Sections 4.1.1, 4.2.1, 4.3.1, 4.4.1, 4.5.1)
38 methodology (Appendix D.1)
39 regulations (Section 3.1.4)
40 cultural resources
41 affected environment (Section 3.11)
42 best management practices (Section 4.6, Table 4.6-1)
43 comparison across alternatives (Table 2.4-9, Section 2.4.11)
44 history (Section 3.11.1)
45 impacts under Alternatives 1, 2, 3, 4, 5 (Sections 4.1.11, 4.2.11, 4.3.11, 4.4.11, 4.5.11)
46 inventories at lease tracts (Section 3.11.2)

- 1 methodology (Appendix D.11)
 2 traditional cultural properties (Section 3.11.3)
 3 cumulative impacts (Sections 2.4.14, 4.7)
 4 impacts from projects in region of influence for cumulative impacts (Table 4.7-12) |
 5 impacts from proposed action (Section 4.7.3)
 6 list of projects in region of influence for cumulative impacts (Table 4.7-11) |
 7 methodology (Appendix D.14)
 8 reasonably foreseeable future actions (Section 4.7.1)
 9
 10 **D**
 11
 12 Daneros Mine
 13 cumulative impacts (Section 4.7.2.2.1, Table 4.7-4)
 14 Ditch Bill easements |
 15 cumulative impacts (Section 4.7.1.8)
 16 DOE ULP administrative process (Section 1.2.1) |
 17 doses, exposure, and risk
 18 human-health-related
 19 comparison across alternatives (Section 2.4.5)
 20 methodology (Appendix D.5)
 21 under Alternatives 1, 2, 3, 4, 5 (Sections 4.1.5, 4.2.5, 4.3.5, 4.4.5, 4.5.5)
 22 transportation-related
 23 comparison across alternatives (Section 2.4.10)
 24 methodology (Appendix D.10)
 25 under Alternatives 1, 2, 3, 4, 5 (Sections 4.1.10, 4.2.10, 4.3.10, 4.4.10, 4.5.10)
 26
 27 **E**
 28
 29 ecological resources
 30 affected environment (Section 3.6)
 31 best management practices (Section 4.6, Table 4.6-1)
 32 comparison across alternatives (Table 2.4-7, Section 2.4.6)
 33 impacts under Alternatives 1, 2, 3, 4, 5 (Sections 4.1.6, 4.2.6, 4.3.6, 4.4.6, 4.5.6)
 34 methodology (Appendix D.6)
 35 ecoregions (Figure 3.6-1)
 36 education
 37 affected environment (Section 3.8.2.3.1)
 38 emissions, *see* criteria pollutant emissions
 39 employment, unemployment, and income
 40 affected environment (Section 3.8.1)
 41 methodology (Appendix D.8.1)
 42 endangered species, *see* threatened, endangered, and sensitive species
 43 Energy Queen Mine
 44 cumulative impacts (Section 4.7.2.2.4)
 45 environmental justice
 46 affected environment (Section 3.9)

- 1 comparison across alternatives (Table 2.4-8, Section 2.4.9)
 2 impacts under Alternatives 1, 2, 3, 4, 5 (Sections 4.1.9, 4.2.9, 4.3.9, 4.4.9, 4.5.9)
 3 methodology (Appendix D.9)
 4 ESA (Endangered Species Act) (Sections 1.9, 1.10, 6.2; Appendix E, Table E-1)
 5 Executive Order 13175
 6 consultation (Sections 1.8 and 6)
 7 exploration phase, *see* uranium mining phases
 8
 9 **F**
 10
 11 Federal laws (Section 5.1)
 12 firefighters, *see* public safety
 13 fish, *see* aquatic biota or species
 14 floodplains (Section 3.6.1.1)
 15 geological setting (Section 3.3.1)
 16 lease requirements (Section 1.2.2)
 17 Fry Canyon Mill CERCLA remediation
 18 cumulative impacts (Section 4.7.1.4)
 19 future actions, *see* uranium mining phases—reclamation
 20 future projects
 21 list (Section 4.7.1.9)
 22 cumulative impacts (Section 4.7.1.9)
 23
 24 **G**
 25
 26 Gateway lease tracts
 27 soil (Section 3.3.2.1)
 28 geologic and soil resources
 29 affected environment (Section 3.3)
 30 best management practices (Section 4.6, Table 4.6-1)
 31 comparison across alternatives (Table 2.4-4, Section 2.4.3)
 32 geology (Section 3.3.1.5)
 33 impacts under all alternatives (Section 4.1.3.1)
 34 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)
 35 methodology (Appendix D.3)
 36 physiography (Section 3.3.1.1)
 37 soil (Section 3.3.2)
 38 grazing permits
 39 cumulative impacts (Section 4.7.2.5, Table 4.7-9)
 40 groundwater
 41 affected environment (Section 3.4.2)
 42
 43 **H**
 44
 45 Hanging Flume replica reconstruction
 46 cumulative impacts (Section 4.7.1.7)

- 1 health care
2 affected environment (Section 3.8.2.3.2)
3 housing
4 affected environment (Section 3.8.2.2)
5 methodology (Appendix D.8.3)
6 human health
7 affected environment (Section 3.5)
8 best management practices (Section 4.6, Table 4.6-1)
9 comparison across alternatives (Table 2.4-6, Section 2.4.5)
10 conceptual model (Section 4.1.5.1)
11 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)
12
13 **I**
14
15 income, *see* employment, unemployment, and income
16 intentional destructive acts (Section 4.3.5.5)
17 irreversible and irretrievable commitment of resources (Section 2.5)
18
19 **J**
20
21 JD-7 Mine, *see* open-pit mine
22
23 **K**
24
25 No entries
26
27 **L**
28
29 land cover (Figure 3.6-2, Tables 3.6-1 and 3.6-2)
30 affected environment, *see* vegetation (Section 3.6.1)
31 land use
32 affected environment (Section 3.7, Figure 3.7-1)
33 comparison across alternatives (Table 2.4-5, Section 2.4.7)
34 impacts under Alternatives 1, 2, 3, 4, 5 (Sections 4.1.7, 4.2.7, 4.3.7, 4.4.7, 4.5.7)
35 methodology (Appendix D.7)
36 La Sal Mines Complex
37 cumulative impacts (Section 4.7.2.2.2)
38 latent cancer fatality (LCF), *see* doses, exposure, and risks
39 laws and regulations (Chapter 5)
40 leases, *see* ULP sample leases
41 lease tracts, *see* ULP lease tracts
42 Lisbon Natural Gas Processing Plant
43 cumulative impacts (Section 4.7.2.8)
44 low-income populations, *see* environmental justice
45

- 1 **M**
- 2
- 3 mammals
- 4 affected environment (Section 3.6.2.3)
- 5 map of lease tract site locations (Figure 1.4-1)
- 6 methodology for impact assessments (Appendix D)
- 7 mine development and operations, *see* uranium mining phases
- 8 mineral and coal resources and mining
- 9 affected environment (Section 3.7.4)
- 10 coal (Section 3.7.4.2)
- 11 oil and gas (Section 3.7.4.3)
- 12 other minerals and mineral materials (Section 3.7.4.4)
- 13 uranium (Section 3.7.4.1)
- 14 future cumulative impacts
- 15 coal (Section 4.7.2.3)
- 16 oil and gas (Section 4.7.2.4, Table 4.7-8)
- 17 minority populations, *see* environmental justice
- 18
- 19 **N**
- 20
- 21 Native American tribes
- 22 consultations (Sections 1.9, 1.10, 6.1; Appendix F)
- 23 traditional cultural properties (Section 3.11.3)
- 24 NEPA process, *see* scoping process
- 25 NHPA (National Historic Preservation Act) consultation (Section 6.3)
- 26 No Action Alternative, *see* Alternative 5
- 27 noise, *see* acoustic environment
- 28 NRHP (*National Register of Historic Places*) significance criteria (Section 3.11)
- 29
- 30 **O**
- 31
- 32 oil and gas exploration, *see* mineral and coal resources and mining
- 33 open-pit mine (Figure 2.1-2; Section 2.1.2.3)
- 34 organization of PEIS (Section 1.11)
- 35
- 36 **P**
- 37
- 38 Paradox lease tracts
- 39 soil (Section 3.3.2.3)
- 40 Paradox Valley Desalinization Plant
- 41 cumulative impacts (Section 4.7.2.9)
- 42 PEIS scope (Section 1.6)
- 43 PEIS organization (Section 1.11)
- 44 Piñon Ridge Mill (Section 2.1.4.1)
- 45 cumulative impacts (Section 4.7.1.1, Table 4.7-1)
- 46 police, *see* public safety

- 1 pollutant emissions, *see* criteria pollutant emissions
- 2 population
- 3 affected environment (Section 3.8.2.1)
- 4 methodology (Appendix D.8.2)
- 5 potash exploration
- 6 cumulative impacts (Section 4.7.2.7)
- 7 power generation and transmission
- 8 cumulative impacts (Section 4.7.2.6)
- 9 preferred alternative, *see* Alternative 4 (Section 2.2.4)
- 10 preparers (Appendix G)
- 11 proposed action, *see* Alternative 4 (Sections 1.5, 2.2.4)
- 12 public participation in scoping process, *see* scoping process
- 13 public safety
- 14 affected environment (Section 3.8.2.3.3)
- 15 purpose and need for agency action (Section 1.4)
- 16
- 17 **Q**
- 18
- 19 No entries
- 20
- 21 **R**
- 22
- 23 radiation or radiological doses or impacts, *see* doses, exposure, and risks
- 24 rangeland resources
- 25 affected environment (Section 3.7.3)
- 26 reclamation in lieu of royalties, *see* RILOR plans
- 27 recreation and tourism
- 28 affected environment (Sections 3.7.6, 3.8.3)
- 29 impacts under Alternatives 1, 3, 4, 5 (Section 4.1.8.1, 4.3.8.1, 4.4.8.1, 4.5.8.1)
- 30 methodology (Appendix D.8.5)
- 31 references for main text (Chapter 8)
- 32 reforestation projects
- 33 cumulative impacts (Section 4.7.1.5)
- 34 regulations and laws (Chapter 5)
- 35 reptiles and amphibians
- 36 affected environment (Section 3.6.2.1)
- 37 resource areas being evaluated (Figure 2-1)
- 38 responses to comments (Appendix I)
- 39
- 40 **S**
- 41
- 42 scope of ULP PEIS (Section 1.6)
- 43 scoping process (Section 1.7.1)
- 44 comments within PEIS scope (Section 1.7.1.1)
- 45 comments outside PEIS scope (Section 1.7.1.2)
- 46 public comment process (Section 1.7.2, Appendix I)

- 1 public scoping process (Section 1.7.1, Appendix B)
- 2 seismicity (Section 3.3.1.4)
- 3 sensitive species, *see* threatened, endangered, and sensitive species
- 4 sensitive visual resource areas (SVRAs), *see* visual resources
- 5 site-specific information on lease tracts (Section 1.3)
- 6 Slick Rock lease tracts
- 7 soil (Section 3.3.2.4)
- 8 socioeconomics or socioeconomic resources
- 9 affected environment (Section 3.8)
- 10 comparison across alternatives (Table 2.4-8, Section 2.4.8)
- 11 impacts under Alternatives 1, 2, 3, 4, 5 (Sections 4.1.8, 4.2.8, 4.3.8, 4.4.8, 4.5.8)
- 12 methodology (Appendix D.8)
- 13 soil resources, *see* geologic and soil resources
- 14 surface water
- 15 affected environment (Section 3.4.1)
- 16
- 17 **T**
- 18
- 19 terrestrial ecology, *see* wildlife or vegetation
- 20 threatened, endangered, and sensitive species (Section 2.4.6.4); also *see* ecological resources
- 21 affected environment (Section 3.6.4, Table 3.6-21)
- 22 impacts under Alternatives 1, 2 (Section 4.1.6.4, Table 4.1-10, Section 4.2.6.4)
- 23 impacts under Alternative 3 (Section 4.3.6.4, Table 4.3-6)
- 24 impacts under Alternative 4 (Section 4.4.6.4, Table 4.4-4)
- 25 impacts under Alternative 5 (Section 4.5.6.4)
- 26 methodology (Appendix D.6.3)
- 27 non-ESA sensitive species (Section 3.6.4.2)
- 28 timber
- 29 affected environment (Section 3.7.5)
- 30 tourism, *see* recreation and tourism
- 31 traffic, *see* transportation
- 32 transportation
- 33 affected environment (Section 3.10)
- 34 best management practices (Section 4.6, Table 4.6-1)
- 35 comparison across alternatives (Table 2.4-8, Section 2.4.10)
- 36 impacts under Alternatives 1, 2, 3, 4, 5 (Sections 4.1.10, 4.2.10, 4.3.10, 4.4.10, 4.5.10)
- 37 methodology (Appendix D.10)
- 38 tribal consultations, *see* Native American tribes
- 39
- 40 **U**
- 41
- 42 ULP background (Section 1.1)
- 43 ULP current status (Section 1.2)
- 44 ULP lease tracts
- 45 summary (Table 1.2-1)
- 46 locations (Figure 1.2-1, Section 1.3)

- 1 site-specific information (Section 1.3)
- 2 ULP sample leases (Appendix A)
- 3 underground mining, *see* uranium mining methods
- 4 uranium exploration and mining in the future
- 5 cumulative impacts (Sections 4.7.1.2, 4.7.2.2.6)
- 6 uranium mining methods (Section 2.1)
- 7 surface plant (Section 2.1.2.1)
- 8 underground (Section 2.1.2.2)
- 9 open pit (Section 2.1.2.3, also *see* open-pit mine)
- 10 uranium mining phases
- 11 exploration (Section 2.1.1)
- 12 mine development and operations (Section 2.1.2)
- 13 reclamation (Section 2.1.3)
- 14 ore processing (Section 2.1.4)
- 15 uranium ore production summary (Table 1.1-2)
- 16 Uravan Mineral Belt (Section 3.3.2.2)
- 17
- 18 **V**
- 19
- 20 vegetation, *see* ecological resources (Section 2.4.6.1)
- 21 affected environment (Section 3.6.1)
- 22 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)
- 23 very large mine, *see* open-pit mine
- 24 visual resources
- 25 affected environment (Section 3.12)
- 26 best management practices (Section 4.6, Table 4.6-1)
- 27 comparison across alternatives (Table 2.4-9, Section 2.4.12)
- 28 four lease tract groups/areas (Section 3.12.2)
- 29 composite viewshed (Figure 3.12-9)
- 30 locations on map (Figure 3.12-1)
- 31 photographs of views (Figures 3.12-2 through 8)
- 32 impacts under Alternatives 1, 2 (Sections 4.1.12, 4.2.12)
- 33 impacts under Alternative 3 (Section 4.3.12)
- 34 on three lease tract groups (Sections 4.3.12.4.1, 4.3.12.4.2, 4.3.12.4.3)
- 35 impacts under Alternative 4
- 36 on four lease tract groups (Sections 4.4.12.2.1, 4.4.12.2.2, 4.4.12.2.3,
- 37 4.4.12.2.4)
- 38 impacts under Alternative 5 (Section 4.5.12)
- 39 management (Section 3.12.3)
- 40 methodology (Appendix D.12)
- 41 regional setting (Section 3.12.1)
- 42 sensitive visual resource areas or SVRAs (Figure 3.12-10)
- 43
- 44 **W**
- 45
- 46 waste management

- 1 affected environment (Section 3.13)
- 2 comparison across alternatives (Table 2.4-5, Section 2.4.13)
- 3 impacts under Alternatives 1, 2, 3, 4, 5 (Sections 4.1.13, 4.2.13, 4.3.13, 4.4.13, 4.5.13)
- 4 methodology (Appendix D.13)
- 5 water resources
- 6 affected environment (Section 3.4)
- 7 best management practices (Section 4.6, Table 4.6-1)
- 8 comparison across alternatives (Table 2.4-5, Section 2.4.4)
- 9 impacts under Alternatives 1, 2, 3, 4, 5 (Sections 4.1.4, 4.2.4, 4.3.4, 4.4.4, 4.5.4)
- 10 management (Section 3.4.3)
- 11 methodology (Appendix D.4)
- 12 Western Area Power Administration (WAPA)
- 13 ROW maintenance cumulative impacts (Section 4.7.1.6)
- 14 wetlands (Section 3.6.1.1)
- 15 Executive Order 11990 (Chapter 5)
- 16 geological setting (Section 3.3.1)
- 17 lease requirements (Section 1.2.2)
- 18 NWI mapping (Figure 3.6-6, Table 3.6-3)
- 19 Whirlwind Mine
- 20 cumulative impacts (Section 4.7.2.2.3, Table 4.7-5)
- 21 White Mesa Mill (Section 2.1.4.2)
- 22 cumulative impacts (Section 4.7.2.1, Table 4.7-3)
- 23 wilderness lands
- 24 affected environment (Section 3.7.1, Figure 3.7-1, Table 3.7-1)
- 25 wildlife, *see* ecological resources (Section 2.4.6.2)
- 26 affected environment (Section 3.6.2)
- 27 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)
- 28 methodology (Appendix D.6.2)
- 29 wild horses and burros
- 30 affected environment (Section 3.7.3.2)
- 31 WIPP Vicinity (Section 1.4.3.7, Chapter 11)
- 32
- 33 **X, Y, Z**
- 34
- 35 No entries

8 REFERENCES

- 1
2
3
4 Ackerman, D.J., and F.E. Rush, 1984, *Hydrogeologic Reconnaissance of the San Miguel River*
5 *Basin, Southwestern Colorado*, Open File Report 84-4133, U.S. Geological Survey.
6
7 Acoustical Society of America, 1983, *American National Standard Specification for Sound Level*
8 *Meters, ANSI S1.4-1983*, New York, N.Y.
9
10 Acoustical Society of America, 1985, *American National Standard Specification for Sound Level*
11 *Meters, ANSI S1.4A-1985 Amendment to ANSI S1.4-1983*, New York, N.Y., June 26.
12
13 ACS (American Cancer Society), 2011, *Cancer Facts & Figures*. Available at <http://www.cancer.org/acs/groups/content/@epidemiologysurveillance/documents/document/acspc-029771.pdf>. Accessed Oct. 2012.
14
15
16
17 AEC (U.S. Atomic Energy Commission), 1972, *Leasing of AEC Controlled Uranium Bearing*
18 *Land, Colorado, Utah, New Mexico*, WASH-1523, Sept.
19
20 Ake, J., et al., 2005, "Deep-Injection and Closely Monitored Induced Seismicity at Paradox
21 Valley, Colorado," *Bulletin of the Seismological Society of America*, 95(2):664–683.
22
23 Allred, T.M., and E.D. Andrews, 2000, *Hydrology, Geomorphology, and Sediment Transport of*
24 *the San Miguel River, Southwest Colorado*, Water Resources Investigation Report 00-4075,
25 U.S. Geological Survey.
26
27 AMA (American Medical Association), 2010, *Physician-Related Data Resources*, Chicago, Ill.
28 Available at <http://www.ama-assn.org/cgi-bin/sserver/datalist.cgi> (data current as of May 2010).
29
30 AMEC Americas Limited, 2005, *Mackenzie Gas Project Effects of Noise on Wildlife*, prepared
31 for Imperial Oil Resources Ventures Limited, July.
32
33 Anderson, R., and G. Stewart, 2003, *Riverine Fish Flow Investigations*, Federal Aid Project
34 F-289-R6, Colorado Division of Wildlife, Fish Research Section, Fort Collins, Colo., June.
35
36 APLIC (Avian Power Line Interaction Committee), 2006, *Suggested Practices for Avian*
37 *Protection on Power Lines: The State of the Art in 2006*, Edison Electric Institute, APLIC, and
38 the California Energy Commission, Washington, D.C., and Sacramento, Calif. Available at
39 [http://www.aplic.org/SuggestedPractices2006\(LR\).pdf](http://www.aplic.org/SuggestedPractices2006(LR).pdf). Accessed March 25, 2008.
40
41 APLIC and USFWS (U.S. Fish and Wildlife Service), 2005, *Avian Protection Plan (APP)*
42 *Guidelines*, April. Available at http://www.eei.org/industry_issues/environmental/land/wildlife_and_endangered_species/AvianProtectionPlanGuidelines.pdf. Accessed March 7, 2007.
43
44

- 1 ARB (California Air Resources Board), 2011, *2004 Inventory: Main Speciation Profiles*.
2 Available at http://www.arb.ca.gov/ei/speciate/profphp04/pmprof_list.php. Accessed
3 Dec. 15, 2011.
4
- 5 Argonne National Laboratory, 2012, *Input Data and Output Results of the Computer Models*
6 *Employed for Human Health Impact Analyses in the Uranium Leasing Program PEIS*, prepared
7 by Environmental Science Division, Argonne National Laboratory, for U.S. Department of
8 Energy, Dec.
9
- 10 Argus (Argus Metals Corp.), 2008a, *Bluerock Updates Mining and Development Project Status*
11 *of US Uranium Mining Operations*, Sept. 22. Available at [http://www.bluerockresources.com/s/](http://www.bluerockresources.com/s/NewsReleases.asp?ReportID=320172&_Title=Bluerock-Updates-Mining-And-Development-Project-Status-Of-US-Uranium-Mining)
12 [NewsReleases.asp?ReportID=320172&_Title=Bluerock-Updates-Mining-And-Development-](http://www.bluerockresources.com/s/NewsReleases.asp?ReportID=320172&_Title=Bluerock-Updates-Mining-And-Development-Project-Status-Of-US-Uranium-Mining)
13 [Project-Status-Of-US-Uranium-Mining](http://www.bluerockresources.com/s/NewsReleases.asp?ReportID=320172&_Title=Bluerock-Updates-Mining-And-Development-Project-Status-Of-US-Uranium-Mining). Accessed Feb. 28, 2012.
14
- 15 Argus, 2008b, *Bluerock Receives First Ore Purchase Payment and Continues with Care and*
16 *Maintenance of US Uranium Mining Operations*, Oct. 31. Available at [http://www.bluerock](http://www.bluerockresources.com/s/NewsReleases.asp?ReportID=326342&_Type=News-Releases&_Title=Bluerock-Receives-First-Ore-Purchase-Payment-And-Continues-With-Care-And-Ma)
17 [resources.com/s/NewsReleases.asp?ReportID=326342&_Type=News-Releases&_Title=](http://www.bluerockresources.com/s/NewsReleases.asp?ReportID=326342&_Type=News-Releases&_Title=Bluerock-Receives-First-Ore-Purchase-Payment-And-Continues-With-Care-And-Ma)
18 [Bluerock-Receives-First-Ore-Purchase-Payment-And-Continues-With-Care-And-Ma](http://www.bluerockresources.com/s/NewsReleases.asp?ReportID=326342&_Type=News-Releases&_Title=Bluerock-Receives-First-Ore-Purchase-Payment-And-Continues-With-Care-And-Ma). Accessed
19 Feb. 28, 2012.
20
- 21 Armstrong, H., 1982, *Fossil Vertebrates, Invertebrates, and Plants of the Uravan Area*, Grand
22 River Institute Project No. 8250 for the Bureau of Land Management, Montrose District Office,
23 Colo.
24
- 25 Arnett, E.B., et al., 2007, *Impacts of Wind Energy Facilities on Wildlife and Wildlife Habitat*,
26 Wildlife Society Technical Review 07-2, The Wildlife Society, Bethesda, Md., Sept.
27
- 28 ATSDR (Agency for Toxic Substances and Disease Registry), 2012, *Minimal Risk Levels*
29 *(MRLs)*, Feb. Available at http://www.atsdr.cdc.gov/mrls/pdfs/atsdr_mrls_february_2012.pdf.
30 Accessed March 19, 2012.
31
- 32 Backlund, P., et al., 2008, *The Effects of Climate Change on Agriculture, Land Resources, Water*
33 *Resources, and Biodiversity in the United States*, U.S. Climate Change Science Program,
34 Synthesis and Assessment Product 4.3, May.
35
- 36 Barber, J.R., et al., 2010, “The Costs of Chronic Noise Exposure for Terrestrial Organisms,”
37 *Trends in Ecology and Evolution* 25(3):180–189.
38
- 39 Barber, J.R., et al., 2011, “Anthropogenic Noise Exposure in Protected Natural Areas:
40 Estimating the Scale of Ecological Consequences,” *Landscape Ecol.* 26:1281–1295.
41
- 42 Belnap, J., and J. Herrick, 2006, *Recovery Time of Soil and Vegetation from Historical*
43 *Geophysical Exploration in Southeastern Utah*, prepared for the U.S. Department of Energy and
44 Bureau of Land Management.
45

- 1 Belnap, J., et al., 2001, *Biological Soil Crusts: Ecology and Management*, U.S. Department of
2 the Interior, Bureau of Land Management, Technical Reference 1730-2.
3
- 4 Belnap, J., et al., 2009, “Sediment Losses and Gains across a Gradient of Livestock Grazing and
5 Plant Invasion in a Cool, Semi-arid Grassland, Colorado Plateau, USA,” *Aeolian Research* 1:27–
6 43.
7
- 8 Beranek, L.L., 1988, *Noise and Vibration Control*, Revised Edition, Institute of Noise Control
9 Engineering, Washington, D.C.
10
- 11 Bestgen, K.R., et al., 2011, *Status and Trends of Flannelmouth Sucker* *Catostomus latipinnis*,
12 *Bluehead Sucker* *Catostomus discolorus*, and *Roundtail Chub* *Gila robusta*, in the *Dolores River*,
13 *Colorado*, and *Opportunities for Population Improvement: Phase II Report*, prepared for Lower
14 Dolores Plan, Working Group – Legislative Committee, Aug.
15
- 16 Bevanger, K., 1995, “Tetraonid Mortality Caused by Collisions with Power Lines in Boreal
17 Forest Habitats in Central Norway,” *Fauna Norvegica, Series C, Cinclus* 18:41–51.
18
- 19 BirdLife International, 2003, *Protecting Birds from Powerlines: A Practical Guide on the Risks*
20 *to Birds from Electricity Transmission Facilities and How to Minimize Any Such Adverse Effects*,
21 T-PVS/Inf (2003) 15, Convention on the Conservation of European Wildlife and Natural
22 Habitats, Standing Committee, 23rd Meeting, Strasbourg, Dec. 1–4. Available at [http://www.coe.int/T/E/Cultural_Co-operation/Environment/Nature_and_biological_diversity/Nature_](http://www.coe.int/T/E/Cultural_Co-operation/Environment/Nature_and_biological_diversity/Nature_protection)
23 [protection](http://www.coe.int/T/E/Cultural_Co-operation/Environment/Nature_and_biological_diversity/Nature_protection). Accessed Oct. 23, 2006.
24
25
- 26 BLM (Bureau of Land Management), 1984, *Manual 8400—Visual Resource Management*.
27 Available at <http://www.blm.gov/nstc/VRM/8400.html>. Accessed Dec. 2, 2011.
28
- 29 BLM, 1985, *San Juan/San Miguel Planning Area, Resource Management Plan*, Montrose
30 District, Sept. Available at [http://www.blm.gov/pgdata/etc/medialib/blm/co/field_offices/](http://www.blm.gov/pgdata/etc/medialib/blm/co/field_offices/uncompahgre_field/documents.Par.92100.File.dat/SJSMROD.pdf)
31 [uncompahgre_field/documents.Par.92100.File.dat/SJSMROD.pdf](http://www.blm.gov/pgdata/etc/medialib/blm/co/field_offices/uncompahgre_field/documents.Par.92100.File.dat/SJSMROD.pdf). Accessed Dec. 12, 2011.
32
- 33 BLM, 1986a, *Manual H-8410-1—Visual Resource Inventory*. Available at <http://www.blm.gov/nstc/VRM/8410.html>. Accessed Dec. 1, 2011.
34
35
- 36 BLM, 1986b, *Manual 8431, Visual Resource Contrast Rating*. Available at <http://www.blm.gov/nstc/VRM/8431.html>. Accessed Jan. 30, 2012.
37
38
- 39 BLM, 1988, *Uncompahgre Basin Resource Management Plan and Environmental Impact*
40 *Statement*, Montrose District, Colo., Uncompahgre Basin Resource Area, Sept. Available at
41 [http://www.blm.gov/pgdata/etc/medialib/blm/co/programs/land_use_planning/rmp/archives/](http://www.blm.gov/pgdata/etc/medialib/blm/co/programs/land_use_planning/rmp/archives/Uncompahgre/final_rmp_eis.Par.41451.File.dat/Ubfrmp.pdf)
42 [Uncompahgre/final_rmp_eis.Par.41451.File.dat/Ubfrmp.pdf](http://www.blm.gov/pgdata/etc/medialib/blm/co/programs/land_use_planning/rmp/archives/Uncompahgre/final_rmp_eis.Par.41451.File.dat/Ubfrmp.pdf). Accessed Dec. 12, 2011.
43
- 44 BLM, 1995, *Uranium Closure/Reclamation Guidelines*, supplement to the BLM Solid Minerals
45 Reclamation Handbook, BLM Handbook H-3042-1.
46

- 1 BLM, 1998, *BLM Manual Section 8270: Paleontological Resource Management*, July 13.
2
- 3 BLM, 2001, *Colorado Water Rights Fact Sheet*.
4
- 5 BLM, 2002, *Final Environmental Impact Statement Renewal of the Federal Grant for the Trans-
6 Alaska Pipeline System Right-of-Way*, BLM/AK/PT-03/005+2880+990, U.S. Department of the
7 Interior, Bureau of Land Management, Anchorage, Alaska, Nov.
8
- 9 BLM, 2007a, “Scenery, Visual Resources, and the Built Environment,” Chapter 3.22 in
10 Volume 1 of *San Juan Public Lands Draft Land Management Plan and Draft
11 Environmental Impact Statement*. Available at [http://ocs.fortlewis.edu/forestPlan/DEIS/
12 pdf/Vol1%20Ch3.22%20Scenery,%20Visual%20Resources,%20Built%20Environment.pdf](http://ocs.fortlewis.edu/forestPlan/DEIS/pdf/Vol1%20Ch3.22%20Scenery,%20Visual%20Resources,%20Built%20Environment.pdf).
13 Accessed Dec. 6, 2011.
14
- 15 BLM, 2007b, “Executive Summary,” in *San Juan Public Lands Draft Land Management Plan
16 and Draft Environmental Impact Statement*. Available at [http://ocs.fortlewis.edu/forestPlan/
17 DEIS/pdf/DLMP-DEIS%20Executive%20Summary.pdf](http://ocs.fortlewis.edu/forestPlan/DEIS/pdf/DLMP-DEIS%20Executive%20Summary.pdf). Accessed Dec. 12, 2011.
18
- 19 BLM, 2007c, *Potential Fossil Yield Classification (PFYC) System for Paleontological Resources
20 on Public Lands*, Instruction Memorandum No. 2008-009, Oct. 15.
21
- 22 BLM, 2008a, *Special Status Species Management*, BLM Manual 6840, Release 6-125,
23 U.S. Department of the Interior, Dec. 12.
24
- 25 BLM, 2008b, *Decision Record, Finding of No Significant Impact, and Final Environmental
26 Assessment for the Whirlwind Mine Uranium Mining Project*, Grand Junction Field Office,
27 Grand Junction, Colo., and Moab Field Office, Moab, Utah, Sept. Available at
28 [http://www.blm.gov/pgdata/etc/medialib/blm/co/field_offices/grand_junction_field/
29 PDF.Par.16552.File.dat/WhirlwinMineEAFinal.pdf](http://www.blm.gov/pgdata/etc/medialib/blm/co/field_offices/grand_junction_field/PDF.Par.16552.File.dat/WhirlwinMineEAFinal.pdf). Accessed Feb. 22, 2012.
30
- 31 BLM, 2008c, *Denison Mines (USA) Corp. Sunday Mines Environmental Assessment*,
32 CO-800-2007-104EA, prepared by Denison Mines, Denver, Colo., for U.S. Department of the
33 Interior, BLM Dolores Public Lands Office, Dolores, Colo., Nov.
34
- 35 BLM, 2008d, *Integrated Vegetation Management*, BLM Handbook H1740-2, Release 1-1714,
36 U.S. Department of the Interior, Washington, D.C., March 25.
37
- 38 BLM 2008f, *Assessment and Mitigation of Potential Impacts to Paleontological Resources*,
39 Instruction Memorandum No. 2009-011, Oct. 10.
40
- 41 BLM, 2009a, *Draft Environmental Impact Statement—Proposed Red Cliff Mine Project
42 and Federal Coal Lease by Application*, Jan. 6. Available at [http://www.blm.gov/co/st/en/
43 BLM_Programs/land_use_planning/rmp/red_cliff_mine/documents.html](http://www.blm.gov/co/st/en/BLM_Programs/land_use_planning/rmp/red_cliff_mine/documents.html). Accessed
44 Feb. 24, 2012.
45

- 1 BLM, 2009b, *Decision Record, Finding of No Significant Impact, and Environmental*
2 *Assessment for the Daneros Mine Project*, Monticello Field Office, May. Available at
3 https://www.blm.gov/ut/enbb/files/Daneros__EA_FONSI_DR_revised.pdf. Accessed
4 Feb. 28, 2012.
- 5
- 6 BLM, 2009c, *A New Paleontology Law—Paleontological Resources: Preservation under the*
7 *Omnibus Public Lands Act of 2009*.
- 8
- 9 BLM, 2009d, *Wild and Scenic River Eligibility Report for the Grand Junction Field Office*.
- 10
- 11 BLM, 2009e, *Uncompahgre Basin & San Juan/San Miguel Resource Management Plan*
12 *Amendments, Environmental Assessment*, Nov.
- 13
- 14 BLM, 2010a, *Uncompahgre RMP Planning*, RMP Planning Fact Sheet 2.1, Uncompahgre
15 Field Office.
- 16
- 17 BLM, 2010b, *Visual Resource Management*, RMP Planning Fact Sheet 3.3, Uncompahgre
18 Field Office.
- 19
- 20 BLM, 2010c, *Fact Sheet: Gas Development in the North Fork*, Uncompahgre Field Office.
21 Available at [http://www.blm.gov/pgdata/etc/medialib/blm/co/field_offices/uncompahgre_field/](http://www.blm.gov/pgdata/etc/medialib/blm/co/field_offices/uncompahgre_field/documents.Par.8035.File.dat/North%20Fork%20O&G%20fact%20sheet_final.pdf)
22 [documents.Par.8035.File.dat/North%20Fork%20O&G%20fact%20sheet_final.pdf](http://www.blm.gov/pgdata/etc/medialib/blm/co/field_offices/uncompahgre_field/documents.Par.8035.File.dat/North%20Fork%20O&G%20fact%20sheet_final.pdf). Accessed
23 Feb. 28, 2012.
- 24
- 25 BLM, 2010d, *Dolores River Information—Dolores Public Lands Office*, March 25. Available at
26 <http://www.blm.gov/co/st/en/fo/sjplc/recreation/sjdolores.html>. Accessed Feb. 22, 2012.
- 27
- 28 BLM, 2010e, *Final Wild and Scenic River Eligibility Report for the Uncompahgre Planning*
29 *Area*, Uncompahgre Field Office, Colorado, June.
- 30
- 31 BLM, 2011a, *Notice of Public Scoping for Potassium Prospecting and Exploration*, Dolores
32 Field Office, June 27. Available at [http://www.blm.gov/pgdata/etc/medialib/blm/co/](http://www.blm.gov/pgdata/etc/medialib/blm/co/field_offices/san_juan_public_lands/pdf.Par.22579.File.dat/20110624_SIGNED_SCOPING_LETTER_Potash.pdf)
33 [field_offices/san_juan_public_lands/pdf.Par.22579.File.dat/20110624_SIGNED_](http://www.blm.gov/pgdata/etc/medialib/blm/co/field_offices/san_juan_public_lands/pdf.Par.22579.File.dat/20110624_SIGNED_SCOPING_LETTER_Potash.pdf)
34 [SCOPING_LETTER_Potash.pdf](http://www.blm.gov/pgdata/etc/medialib/blm/co/field_offices/san_juan_public_lands/pdf.Par.22579.File.dat/20110624_SIGNED_SCOPING_LETTER_Potash.pdf). Accessed Feb. 22, 2012.
- 35
- 36 BLM, 2011b, *Environmental Assessment: La Sal No. 2 Uranium Sampling Project*, Moab Field
37 Office, DOI-BLM-UT-Y010-2011-0162-EA. Sept. Available at [http://www.blm.gov/pgdata/](http://www.blm.gov/pgdata/etc/medialib/blm/ut/moab_fo/ea_postings.Par.74657.File.dat/LaSalNo2EA.pdf)
38 [etc/medialib/blm/ut/moab_fo/ea_postings.Par.74657.File.dat/LaSalNo2EA.pdf](http://www.blm.gov/pgdata/etc/medialib/blm/ut/moab_fo/ea_postings.Par.74657.File.dat/LaSalNo2EA.pdf). Accessed
39 Feb. 28, 2012.
- 40
- 41 BLM, 2011c, *Determination of NEPA Adequacy: Hanging Flume Replica Construction*,
42 Uncompahgre Field Office, DOI-BLM-CO-S050-2011-0028DNA, Aug. Available at
43 [http://www.blm.gov/pgdata/etc/medialib/blm/co/information/nepa/uncompahgre_field/](http://www.blm.gov/pgdata/etc/medialib/blm/co/information/nepa/uncompahgre_field/ufo_nepa_documents0.Par.80861.File.dat/11-28%20DNA%20Hanging%20Flume%20Replica%20Construction.pdf)
44 [ufo_nepa_documents0.Par.80861.File.dat/11-28%20DNA%20Hanging%20Flume%](http://www.blm.gov/pgdata/etc/medialib/blm/co/information/nepa/uncompahgre_field/ufo_nepa_documents0.Par.80861.File.dat/11-28%20DNA%20Hanging%20Flume%20Replica%20Construction.pdf)
45 [20Replica%20Construction.pdf](http://www.blm.gov/pgdata/etc/medialib/blm/co/information/nepa/uncompahgre_field/ufo_nepa_documents0.Par.80861.File.dat/11-28%20DNA%20Hanging%20Flume%20Replica%20Construction.pdf). Accessed Feb. 28, 2012.
- 46

- 1 BLM, 2011d, *RMP Planning Calendar*, Resource Management Planning, Resource Management
2 Plan, Grand Junction, Colo., Field Office, U.S. Department of the Interior. Available at
3 <http://www.blm.gov/co/st/en/fo/gjfo/rmp.html>. Accessed Dec. 6, 2011.
4
- 5 BLM, 2011e, *Greater Sage-Grouse Interim Management Policies and Procedures*,
6 BLM IM 2012-043. Available at [http://www.blm.gov/wo/st/en/info/regulations/Instruction_](http://www.blm.gov/wo/st/en/info/regulations/Instruction_Memos_and_Bulletins/national_instruction/2012/IM_2012-043.html)
7 [Memos_and_Bulletins/national_instruction/2012/IM_2012-043.html](http://www.blm.gov/wo/st/en/info/regulations/Instruction_Memos_and_Bulletins/national_instruction/2012/IM_2012-043.html). Accessed Feb. 7, 2012.
8
- 9 BLM, 2011f, *BLM National Greater Sage-Grouse Land Use Planning Strategy*,
10 BLM IM 2012-044. Available at [http://www.blm.gov/wo/st/en/info/regulations/Instruction_](http://www.blm.gov/wo/st/en/info/regulations/Instruction_Memos_and_Bulletins/national_instruction/2012/IM_2012-044.html)
11 [Memos_and_Bulletins/national_instruction/2012/IM_2012-044.html](http://www.blm.gov/wo/st/en/info/regulations/Instruction_Memos_and_Bulletins/national_instruction/2012/IM_2012-044.html). Accessed Feb. 7, 2012.
12
- 13 BLM, 2011g, *The National Landscape Conservation System: 15-Year Strategy, 2010–2025*,
14 Report BLM/WO/GI-11/013+6100.
15
- 16 BLM, 2011h, *Land and Mineral Legacy Rehost 2000 System—LR2000*, last updated Sept. 23,
17 2011. Available at <http://blm.gov/lr2000>. Accessed Dec. 14, 2011.
18
- 19 BLM, 2011i, *Herd Management Areas and Herd Area Maps by State*, updated Nov. 1. Available
20 at [http://www.blm.gov/wo/st/en/prog/whbprogram/herd_management/HMA_and_HA_Maps.](http://www.blm.gov/wo/st/en/prog/whbprogram/herd_management/HMA_and_HA_Maps.html)
21 [html](http://www.blm.gov/wo/st/en/prog/whbprogram/herd_management/HMA_and_HA_Maps.html). Accessed Feb. 22, 2012.
22
- 23 BLM, 2011j, *Environmental Assessment: East Paradox LHA Grazing Permit Renewals*,
24 Uncompahgre Field Office, DOI-BLM-CO-S050-2011-0023 EA. Available at
25 [http://www.blm.gov/pgdata/etc/medialib/blm/co/information/nepa/uncompahgre_field/](http://www.blm.gov/pgdata/etc/medialib/blm/co/information/nepa/uncompahgre_field_ufo_nepa_documents0.Par.26626.File.dat/11-23%20EA%20E_Paradox%20LHA%20Grazing%20Permit%20Renewal.pdf)
26 [ufo_nepa_documents0.Par.26626.File.dat/11-23%20EA%20E_Paradox%20LHA%20](http://www.blm.gov/pgdata/etc/medialib/blm/co/information/nepa/uncompahgre_field_ufo_nepa_documents0.Par.26626.File.dat/11-23%20EA%20E_Paradox%20LHA%20Grazing%20Permit%20Renewal.pdf)
27 [Grazing%20Permit%20Renewal.pdf](http://www.blm.gov/pgdata/etc/medialib/blm/co/information/nepa/uncompahgre_field_ufo_nepa_documents0.Par.26626.File.dat/11-23%20EA%20E_Paradox%20LHA%20Grazing%20Permit%20Renewal.pdf). Accessed Feb. 22, 2012.
28
- 29 BLM, 2011k, *Uncompahgre Field Office Recreation: Visitation and Land Use*.
30
- 31 BLM, 2011l, *Environmental Assessment for the November 2011 Oil and Gas Lease Sale*,
32 DOI-BLM-CO-130-2011-0043-EA, Grand Junction Field Office, July. Available at
33 [http://www.blm.gov/pgdata/etc/medialib/blm/co/programs/oil_and_gas/Lease_Sale/2011/](http://www.blm.gov/pgdata/etc/medialib/blm/co/programs/oil_and_gas/Lease_Sale/2011/november_2011.Par.35745.File.dat/GJ_Final%20Sale%20EA.pdf)
34 [november_2011.Par.35745.File.dat/GJ_Final%20Sale%20EA.pdf](http://www.blm.gov/pgdata/etc/medialib/blm/co/programs/oil_and_gas/Lease_Sale/2011/november_2011.Par.35745.File.dat/GJ_Final%20Sale%20EA.pdf). Accessed Feb. 22, 2012.
35
- 36 BLM, 2011m, *Environmental Assessment: November 2011 Competitive Oil and Gas Lease Sale*,
37 DOI-BLM-CO-S050-2011-0003 EA, Uncompahgre Field Office. Available at
38 [http://www.blm.gov/pgdata/etc/medialib/blm/co/programs/oil_and_gas/Lease_Sale/2011/](http://www.blm.gov/pgdata/etc/medialib/blm/co/programs/oil_and_gas/Lease_Sale/2011/november_2011.Par.75091.File.dat/UFO_Sale%20NoticeFinal%20EA.pdf)
39 [november_2011.Par.75091.File.dat/UFO_Sale%20NoticeFinal%20EA.pdf](http://www.blm.gov/pgdata/etc/medialib/blm/co/programs/oil_and_gas/Lease_Sale/2011/november_2011.Par.75091.File.dat/UFO_Sale%20NoticeFinal%20EA.pdf). Accessed
40 Feb. 24, 2012.
41
- 42 BLM, 2011n, *Northern Arizona Proposed Withdrawal Final Environmental Impact Statement*,
43 BLM/AZ/PL-11/002, U.S. Department of the Interior, Bureau of Land Management, Oct.
44

- 1 BLM, 2011o, *Uncompahgre Planning Area Wilderness Characteristic Inventory: 2011 Update*,
2 BLM Uncompahgre Field Office, Colorado. Available at: [http://www.blm.gov/co/st/en/fo/ufo/
3 uncompahgre_rmp.html](http://www.blm.gov/co/st/en/fo/ufo/uncompahgre_rmp.html). Accessed Dec.11, 2012.
4
- 5 BLM, 2012a, *Environmental Assessment: Dolores River Restoration Treatments*, DOI-BLM-
6 CO-S050-2012-0011 EA, Uncompahgre Field Office, March. Available at [http://www.blm.gov/
7 pgdata/etc/medialib/blm/co/information/nepa/uncompahgre_field/ufo_nepa_documents0.
8 Par.39048.File.dat/12-11%20EA%20Dolores%20RiverRestoration.pdf](http://www.blm.gov/pgdata/etc/medialib/blm/co/information/nepa/uncompahgre_field/ufo_nepa_documents0.Par.39048.File.dat/12-11%20EA%20Dolores%20RiverRestoration.pdf). Accessed May 8, 2012.
9
- 10 BLM, 2012b, *Land and Mineral Legacy Rehost 2000 System–LR 2000*, last updated July 10,
11 2012. Available at <http://www.blm.gov/lr2000/index.htm>. Accessed Sept. 10 and 11, 2012.
12
- 13 BLM, 2012c, *Environmental Assessment: Devil Canyon Fuels Reduction and Vegetation
14 Restoration*, Monticello Field Office, DOI-BLM-UT-Y020-2012-0010-EA, Aug. Available at
15 https://www.blm.gov/ut/enbb/files/Signed_EA,_Fonsi_and_Decision_Record.pdf. Accessed
16 Oct. 12, 2012.
17
- 18 BLM, 2012d, *BLM Manual Section 6310: Conducting Wilderness Characteristics Inventory on
19 BLM Lands (Public)*, March 15.
20
- 21 BLM, 2012e, *BLM Manual Section 6320: Considering Lands with Wilderness Characteristics in
22 the BLM Land Use Planning Process (Public)*, March 15.
23
- 24 BLM, 2012f, *Wilderness Characteristics Assessment for the BLM Portions of the San Juan
25 Public Lands*, BLM Tres Rios Field Office, Nov. 28.
26
- 27 BLM, 2012g, *Grand Junction Field Office Wilderness Characteristics Inventory Update:
28 Documentation of Current Wilderness Inventory Conditions*, BLM Grand Junction Field Office,
29 Colorado, July.
30
- 31 BLM, 2012h, *Environmental Assessment: Potash Exploration Project*, Tres Rios Field Office,
32 DOI-BLM-CO-S010-2009-0076-EA, Oct. Available at [http://www.blm.gov/pgdata/etc/medialib/
33 blm/co/information/nepa/san_juan_public_lands/trfo_nepa_docs.Par.1940.File.dat/09-
34 76%20RM_Potash_Final_EA_2012-1018.pdf](http://www.blm.gov/pgdata/etc/medialib/blm/co/information/nepa/san_juan_public_lands/trfo_nepa_docs.Par.1940.File.dat/09-76%20RM_Potash_Final_EA_2012-1018.pdf). Accessed Dec. 19, 2012.
35
- 36 BLM, 2012i, *Grand Junction Field Office Draft Resource Management Plan and Environmental
37 Impact Statement*, Dec. Available at [http://www.blm.gov/pgdata/etc/medialib/blm/co/
38 field_offices/grand_junction_field/Draft_RMP/Draft_rmp_eis_v1.Par.57126.File.dat/
39 GJFO_Draft_RMP_EIS_Vol-I.pdf](http://www.blm.gov/pgdata/etc/medialib/blm/co/field_offices/grand_junction_field/Draft_RMP/Draft_rmp_eis_v1.Par.57126.File.dat/GJFO_Draft_RMP_EIS_Vol-I.pdf). Accessed Sept. 2013.
40
- 41 BLM and CPW (Colorado Parks and Wildlife), 1989, *Colorado Desert Bighorn Sheep
42 Management Plan*.
43
- 44 BLM and DOE (U.S. Department of Energy), 2010a, *Memorandum of Understanding between
45 the U.S. Bureau of Land Management and the U.S. Department of Energy*, April.
46

- 1 BLM and DOE, 2010b, *Draft Programmatic Environmental Impact Statement for Solar Energy*
2 *Development in Six Southwestern States*, DES 10-59, DOE/EIS-0403, Dec.
3
- 4 BLM, undated, *A Recreation and Visitors Strategy, Colorado Recreation Program*.
5
- 6 BLS (Bureau of Labor Statistics), 2011a, *Number of Fatal Work Injuries, 1992–2010*,
7 U.S. Department of Labor. Available at <http://www.bls.gov/iif/oshwc/cfoi/cfch0009.pdf>.
8 Accessed March 13, 2012.
9
- 10 BLS, 2011b, *2010 Survey of Occupational Injuries & Illnesses, Summary Estimates Charts*
11 *Package*, Oct. 20. Available at <http://www.bls.gov/iif/oshwc/osh/os/osch0044.pdf>. Accessed
12 March 13, 2012.
13
- 14 Boardman, R.L., et al., 1957, *Results of U.S. Geological Survey Exploration for Uranium-*
15 *Vanadium Deposits in the Club Mesa Area, Uravan District, Montrose County, Colorado*, Trace
16 Elements Memorandum Report 979, U.S. Geological Survey, May.
17
- 18 BOR (Bureau of Reclamation), 2009, *McPhee Dam*. Available at [http://www.usbr.gov/projects/](http://www.usbr.gov/projects/PrintFacilityAttributes.jsp?fac_Name=McPhee%20Dam)
19 [PrintFacilityAttributes.jsp?fac_Name=McPhee%20Dam](http://www.usbr.gov/projects/PrintFacilityAttributes.jsp?fac_Name=McPhee%20Dam).
20
- 21 BOR, 2011, *Dolores Project*. Available at [http://www.usbr.gov/projects/Project.jsp?proj_Name=](http://www.usbr.gov/projects/Project.jsp?proj_Name=Dolores%20Project)
22 [Dolores%20Project](http://www.usbr.gov/projects/Project.jsp?proj_Name=Dolores%20Project). Accessed Feb. 17, 2012.
23
- 24 BOR, 2012, *CRBSCP—Paradox Valley Unit—Title II*. Available at [http://www.usbr.gov/](http://www.usbr.gov/projects/Project.jsp?proj_Name=CRBSCP%20-%20Paradox%20Valley%20Unit%20-%20Title%20II&pageType=ProjectPage)
25 [projects/Project.jsp?proj_Name=CRBSCP%20-%20Paradox%20Valley%20Unit%20-%20](http://www.usbr.gov/projects/Project.jsp?proj_Name=CRBSCP%20-%20Paradox%20Valley%20Unit%20-%20Title%20II&pageType=ProjectPage)
26 [Title%20II&pageType=ProjectPage](http://www.usbr.gov/projects/Project.jsp?proj_Name=CRBSCP%20-%20Paradox%20Valley%20Unit%20-%20Title%20II&pageType=ProjectPage). Accessed Feb. 17, 2012.
27
- 28 BOR, 2013a, *Paradox Valley Unit*. Available at <http://www.usbr.gov/uc/wcao/progact/paradox/>.
29 Accessed July 26, 2013.
30
- 31 BOR, 2013b, *Scoping Report—Paradox Valley Unit EIS*, BOR Western Colorado Area Office,
32 Colo., Jan.
33
- 34 Breit, G.N., and J.L. Fisher, 1988, *Variations in the Abundance of Occluded Light Hydrocarbons*
35 *(C1–C5) and Their Relation to Diagenetic Changes, in the Salt Wash Member, Late Jurassic*
36 *Morrison Formation, Slick Rock District, San Miguel County, Colorado*, Open File
37 Report 88-586, U.S. Geological Survey.
38
- 39 Brown, B.T., et al., 1999, “The Influence of Weapons-Testing Noise on Bald Eagle Behavior,”
40 *Journal of Raptor Research* 33:227–232.
41
- 42 Brown, P.E., et al., 2000, “Evicting Bats When Gates Won’t Work: Unstable Mines and
43 Renewed Mining,” in K.C. Vories and D. Throgmorton (editors), *Bat Conservation and Mining:*
44 *A Technical Interactive Forum*, U.S. Department of the Interior, Office of Surface Mining; Bat
45 Conservation International; Coal Research Center, Southern Illinois University at Carbondale.
46

- 1 CCCD (Colorado Center for Community Development), 1995, *UnawEEP/Tabeguache Scenic and*
2 *Historic Byway Management Plan*. Aug.
- 3
- 4 CDA (Colorado Department of Agriculture), 2010, *Noxious Weed Management Program,*
5 *Colorado Weed Mapping*. Available at [http://www.colorado.gov/cs/Satellite/Agriculture-Main/](http://www.colorado.gov/cs/Satellite/Agriculture-Main/CDAG/1167928184069)
6 [CDAG/1167928184069](http://www.colorado.gov/cs/Satellite/Agriculture-Main/CDAG/1167928184069). Accessed Dec. 21, 2011.
- 7
- 8 CDA, 2011, *Noxious Weed Management Program, Noxious Weed List*. Available at
9 [http://www.colorado.gov/cs/Satellite?c=Page&cid=1174084048733&pagename=Agriculture-](http://www.colorado.gov/cs/Satellite?c=Page&cid=1174084048733&pagename=Agriculture-Main%2FCDAGLayout)
10 [Main%2FCDAGLayout](http://www.colorado.gov/cs/Satellite?c=Page&cid=1174084048733&pagename=Agriculture-Main%2FCDAGLayout). Accessed Dec. 21, 2011.
- 11
- 12 CDM (CDM, Inc.), 2010, *Plan of Operations Amendment, Denison Mines (USA) Corp., La Sal*
13 *Mines Complex, San Juan County, Utah*, prepared for Denison Mines (USA) Corp., Nov.
14 Available at [http://www.blm.gov/pgdata/etc/medialib/blm/ut/moab_fo/La_Sal_Mines_](http://www.blm.gov/pgdata/etc/medialib/blm/ut/moab_fo/La_Sal_Mines_Complex_Documents.Par.78220.File.dat/La%20Sal%20Mines%20Complex%20Plan%20of%20Operations.pdf)
15 [Complex_Documents.Par.78220.File.dat/La%20Sal%20Mines%20Complex%20Plan%20of](http://www.blm.gov/pgdata/etc/medialib/blm/ut/moab_fo/La_Sal_Mines_Complex_Documents.Par.78220.File.dat/La%20Sal%20Mines%20Complex%20Plan%20of%20Operations.pdf)
16 [%20Operations.pdf](http://www.blm.gov/pgdata/etc/medialib/blm/ut/moab_fo/La_Sal_Mines_Complex_Documents.Par.78220.File.dat/La%20Sal%20Mines%20Complex%20Plan%20of%20Operations.pdf). Accessed Feb. 28, 2012.
- 17
- 18 CDMG (Colorado Division of Minerals and Geology), 2002, *Best Practices in Abandoned Mine*
19 *Land Reclamation*, State of Colorado, Denver, Colo.
- 20
- 21 CDNR (Colorado Department of Natural Resources), 2008, *Colorado Mineral and Energy*
22 *Industry Activities, 2007*, Colorado Geological Survey. Available at [http://geosurvey.state.co.us/](http://geosurvey.state.co.us/SiteCollectionDocuments/EnergyResources/MER_07_FINAL.pdf)
23 [SiteCollectionDocuments/EnergyResources/MER_07_FINAL.pdf](http://geosurvey.state.co.us/SiteCollectionDocuments/EnergyResources/MER_07_FINAL.pdf). Accessed Feb. 22, 2012.
- 24
- 25 CDNR, 2011, *Uranium Mining in Colorado 2011*, Division of Reclamation Mining and Safety,
26 June 13.
- 27
- 28 CDNR, 2012, *Uranium Mining in Colorado 2012*, Division of Reclamation Mining and Safety,
29 Jan. 13.
- 30
- 31 CDOT (Colorado Department of Transportation), 2011, *DTD Data Access—Statistics, Maps, and*
32 *Data—Traffic Data*. Available at [http://apps.coloradodot.info/dataaccess/Traffic/index.cfm?](http://apps.coloradodot.info/dataaccess/Traffic/index.cfm?fuseaction=TrafficMain&Menu)
33 [fuseaction=TrafficMain&Menu](http://apps.coloradodot.info/dataaccess/Traffic/index.cfm?fuseaction=TrafficMain&Menu). Accessed Nov. 4, 2011.
- 34
- 35 CDOT, 2012, *UnawEEP Tabeguache*.
- 36
- 37 CDPHE (Colorado Department of Public Health and Environment), 2003, *Total Maximum Daily*
38 *Load for Mercury in McPhee and NarraguinneP Reservoirs, Colorado, Phase I*, Technical
39 Report.
- 40
- 41 CDPHE, 2008a, *Total Maximum Daily Load Assessment, Silver Creek, Dolores County,*
42 *Colorado*, Technical Report, Water Quality Control Division. Available at [http://www.](http://www.colorado.gov/cs/Satellite/CDPHE-WQ/CBON/1251596042774)
43 [colorado.gov/cs/Satellite/CDPHE-WQ/CBON/1251596042774](http://www.colorado.gov/cs/Satellite/CDPHE-WQ/CBON/1251596042774). Accessed Oct. 22, 2012.
- 44

- 1 CDPHE, 2008b, *Total Maximum Daily Load Assessment San Miguel River Segments*
2 *(cogusm03a, cogusm03b, cogusm06a, cogusm06b) Zinc and Cadmium, San Miguel County,*
3 *Colorado*, Technical Report, Water Quality Control Division.
4
- 5 CDPHE, 2010, *Addenda/Errata to Total Maximum Daily Load Assessment, San Miguel River*
6 *(Segments cogusm03a, cogusm06a, cogusm06b) Cadmium, San Miguel County, Colorado,*
7 *Technical Report*, Water Quality Control Division.
8
- 9 CDPHE, 2011a, *2008 Air Pollutant Emissions Inventory*, on-line database, Denver, Colo.
10 Available at http://www.colorado.gov/airquality/inv_maps_2008.aspx. Accessed Nov. 23, 2011.
11
- 12 CDPHE, 2011b, *Air Quality Standards, Designations and Emission Budgets*, 5 CCR 1001-14,
13 Colorado Air Quality Control Commission, Denver, Colo. Available at <http://www.cdphe.state.co.us/regulations/airregs/5CCR1001-14.pdf>. Accessed Nov. 5, 2011.
14
- 15 CDPHE, 2011c, *Colorado 2010 Air Quality Data Report*, Denver, Colo. Available at
16 <http://www.colorado.gov/airquality/tech.aspx>. Accessed Nov. 5, 2011.
17
- 18 CDPHE, 2011d, *Energy Fuels Piñon Ridge Uranium Mill License Decision*, Radiation Program,
19 March 7.
20
- 21 CDPHE, 2012a, *Integrated Water Quality Monitoring and Assessment Report, State of*
22 *Colorado*, 2012 Update to the 2010 305(b) Report, prepared pursuant to Section 303(d) and
23 Section 305(b) of the Clean Water Act, Water Quality Control Division. Available at
24 <http://www.colorado.gov/cs/Satellite/CDPHE-WQCC/CBON/1251590894055>. Accessed
25 Oct. 22, 2012.
26
- 27 CDPHE, 2012b, *Colorado's Section 303(d) List of Impaired Waters and Monitoring and*
28 *Evaluation List, Water Quality*, 2012 Update to the 2010 303(d) List, prepared pursuant to
29 Section 303(d) and Section 305(b) of the Clean Water Act, Water Quality Control Division.
30 Available at <http://www.colorado.gov/cs/Satellite/CDPHE-WQCC/CBON/1251590894055>.
31 Accessed Oct. 22, 2012.
32
- 33 CDPHE, 2012c, Search results of public water supply systems within 5 miles from the ULP lease
34 tracts, by the Source Water Assessment and Protection Program, CDPHE, Dec.
35
- 36 CDPHE, 2013, *Energy Fuels Piñon Ridge Uranium Mill License Decision*, Radiation Program,
37 April 25.
38
- 39 CDRMS (Colorado Division of Reclamation, Mining, and Safety), 2011, *Monthly Coal Detail*
40 *Report, January through December 2010*, Feb. 15. Available at [http://mining.state.co.us/Reports/](http://mining.state.co.us/Reports/Detail2010.pdf)
41 [Detail2010.pdf](http://mining.state.co.us/Reports/Detail2010.pdf). Accessed Feb. 17, 2012.
42
- 43 CDRMS, 2012a, *Mining and Safety Minerals Program Inspection Report for Burros Mine (in*
44 *Lease Tract 13) (Permit # M-1977-297)*, Inspection Date: Oct. 16, 2012.
45
46

- 1 CDRMS, 2012b, *Minerals Program Inspection Report for Ellison Mine (in Lease Tract 13)*
2 (*Permit #M-1978-342*), Inspection Date: Oct. 16, 2012.
3
- 4 CDRMS, 2012c, *Minerals Program Inspection Report for Hawkeye Mine (in Lease Tract 13)*
5 (*Permit # M-1978-311*), Inspection Date: Oct. 16, 2012.
6
- 7 CDRMS, 2012d, *Monthly Coal Summary Report, January through December 2011*, Feb. 7.
8 Available at <http://mining.state.co.us/Reports/CoalSummary2011.pdf>. Accessed Feb. 17, 2012.
9
- 10 CDRMS, 2012e, *County Operator Mining Data (Delta, Dolores, Mesa, Montezuma, Montrose,*
11 *and San Miguel Counties)*. Available at [http://mining.state.co.us/County%20Operator%](http://mining.state.co.us/County%20Operator%20Mining%20Data.htm)
12 [20Mining%20Data.htm](http://mining.state.co.us/County%20Operator%20Mining%20Data.htm). Accessed Feb. 17, 2012.
13
- 14 CDRMS 2012f, *Uranium Mining in Colorado 2012 (Updated July 18, 2012)*, Denver, Colo.
15
- 16 CDWR (Colorado Division of Water Resources), 2005, *Rules and Regulations for Water Well*
17 *Construction, Pump Installation, Cistern Installation, and Monitoring and Observation*
18 *Hole/Well Construction, 2-CCR-402-2*, Denver, Colo.
19
- 20 CDWR, 2007, *General Information about Well Permits in Division IV*, Jan. 17.
21
- 22 CDWR, 2011, *Colorado's Decision Support Systems (CDSS)*. Available at [http://cdss.state.co.us/](http://cdss.state.co.us/Pages/CDSSHome.aspx)
23 [Pages/CDSSHome.aspx](http://cdss.state.co.us/Pages/CDSSHome.aspx). Accessed Dec. 23, 2011.
24
- 25 Cember, H., 1983, *Introduction to Health Physics*, Pergamon Press, Elmsford, N.Y.
26
- 27 CensusViewer, 2013a, *Population of Montrose County, Colorado: Census 2010 and 2000*
28 *Interactive Map, Demographics, Statistics, Graphs, Quick Facts*. Available at
29 <http://censusviewer.com/county/CO/Montrose>. Accessed Sept. 2013.
30
- 31 CensusViewer, 2013b, *Population of San Miguel County, Colorado: Census 2010 and 2000*
32 *Interactive Map, Demographics, Statistics, Graphs, Quick Facts*. Available at
33 <http://censusviewer.com/county/CO/San%20Miguel>. Accessed Sept. 2013.
34
- 35 CensusViewer, 2013c, *Population of Mesa County, Colorado: Census 2010 and 2000 Interactive*
36 *Map, Demographics, Statistics, Graphs, Quick Facts*. Available at [http://censusviewer.com/](http://censusviewer.com/county/CO/Mesa)
37 [county/CO/Mesa](http://censusviewer.com/county/CO/Mesa). Accessed Sept. 2013.
38
- 39 CEQ (Council on Environmental Quality), 1997, *Environmental Justice Guidance under the*
40 *National Environmental Policy Act*, Executive Office of the President, Washington, D.C.
41
- 42 CGS (Colorado Geological Survey), 2003, *Ground Water Atlas of Colorado*, Special
43 *Publication 53*, Division of Minerals and Geology, Department of Natural Resources, Denver,
44 Colo.
45

- 1 Chafin, D.T., 2003, *Effect of the Paradox Valley Unit on the Dissolved-Solids Load of the*
2 *Dolores River near Bedrock, Colorado, 1988–2001*, Water Resources Investigation
3 Report 02-4275, U.S. Geological Survey.
4
- 5 Chapman, P.M., et al. (editors), 2009, *Ecological Assessment of Selenium in the Aquatic*
6 *Environment: Summary of a SETAC Pellston Workshop*, Society of Environmental Toxicology
7 and Chemistry (SETAC), Pensacola, Fla.
8
- 9 Chapman, S.S., et al., 2006, *Ecoregions of Colorado* (color poster with map, descriptive text,
10 summary tables, and photographs; map scale 1:1,200,000), U.S. Geological Survey, Reston, Va.
11
- 12 Chenoweth, W.L., 1981, “The Uranium-Vanadium Deposits of the Uravan Mineral Belt and
13 Adjacent Areas, Colorado and Utah,” pp. 165–170 in *New Mexico Geological Society*
14 *Guidebook*, R.C. Epis and J.F. Callender (editors), 32nd Field Conference, Oct. 8–10.
15
- 16 Chenoweth, W.L., 1987, “Paradox Valley, Colorado: A Collapsed Salt Anticline,” pp. 339–342
17 in *Geological Society of America Centennial Field Guide—Rocky Mountain Section*, Vol. 2,
18 S.S. Beus (editor).
19
- 20 Chronic, H., and F. Williams, 2002, *Roadside Geology of Colorado*, Second Edition, Mountain
21 Press Publishing Co., Missoula, Mont.
22
- 23 CNHP (Colorado Natural Heritage Program), 2011a, *Rare Plant Guide List*. Available at
24 <http://www.cnhp.colostate.edu/download/projects/rareplants/list.asp?list=master>. Accessed
25 Dec. 16, 2011.
26
- 27 CNHP, 2011b, *Element Occurrences by Quadrangle*. Available at <http://www.cnhp.colostate.edu/download/gis.asp#maps>. Accessed Dec. 16, 2011.
28
29
- 30 COGCC (Colorado Oil and Gas Conservation Commission), 2012a, *COGCC Reports Portal—*
31 *Production Data Inquiry for Delta, Dolores, Mesa, Montezuma, Montrose, and San Miguel*
32 *Counties*, State of Colorado Department of Natural Resources. Available at <http://cogcc.state.co.us/cogis>. Accessed Feb. 17, 2012.
33
34
- 35 COGCC, 2012b, *Colorado Oil and Gas Information System—Production Data Inquiries for*
36 *T43N, R18W, R19W, and R20W; T44N, R18W, and R19W; T45N, R18W; T46N, R17W; T47N,*
37 *R17W; and T48N, R17W, and R18W*, State of Colorado Department of Natural Resources,
38 Jan. 20.
39
- 40 Colorado Bat Working Group, 2005, *Colorado Working Bat Group Minutes 22 April 2005*,
41 Available at [http://www.cnhp.colostate.edu/teams/zoology/cbwg/pdfs/](http://www.cnhp.colostate.edu/teams/zoology/cbwg/pdfs/CDWG%20Minutes%202005.pdf)
42 [CDWG%20Minutes%202005.pdf](http://www.cnhp.colostate.edu/teams/zoology/cbwg/pdfs/CDWG%20Minutes%202005.pdf). Accessed Sept. 19, 2012.
43
- 44 Colorado Bat Working Group, 2010a, *Bats of Colorado*. Available at <http://www.cnhp.colostate.edu/teams/zoology/cbwg/batList.asp>. Accessed Sept. 14, 2012.
45
46

- 1 Colorado Bat Working Group, 2010b, *The Colorado Bat Matrix*, Available at
2 <http://www.cnhp.colostate.edu/teams/zoology/cbwg/splash.asp>. Accessed Sept. 27, 2012.
3
- 4 Colorado Department of Local Affairs, 2011, *Economic Base Analysis—Result*.
5
- 6 Colorado Field Ornithologists, 2010a, *Checklist of the Birds of Colorado—Mesa County*,
7 Available at [http://www.coloradocountybirding.com/checklists/checklist.php?id=](http://www.coloradocountybirding.com/checklists/checklist.php?id=40&flag=pdf&name=Mesa)
8 [40&flag=pdf&name=Mesa](http://www.coloradocountybirding.com/checklists/checklist.php?id=40&flag=pdf&name=Mesa). Accessed Nov. 4, 2011.
9
- 10 Colorado Field Ornithologists, 2010b, *Checklist of the Birds of Colorado—Montrose County*,
11 Available at [http://www.coloradocountybirding.com/checklists/checklist.](http://www.coloradocountybirding.com/checklists/checklist.php?id=44&flag=pdf&name=Montrose)
12 [php?id=44&flag=pdf&name=Montrose](http://www.coloradocountybirding.com/checklists/checklist.php?id=44&flag=pdf&name=Montrose). Accessed Nov. 4, 2011.
13
- 14 Colorado Field Ornithologists, 2010c, *Checklist of the Birds of Colorado—San Miguel County*,
15 Available at [http://www.coloradocountybirding.com/checklists/checklist.](http://www.coloradocountybirding.com/checklists/checklist.php?id=58&flag=pdf&name=SanMiguel)
16 [php?id=58&flag=pdf&name=SanMiguel](http://www.coloradocountybirding.com/checklists/checklist.php?id=58&flag=pdf&name=SanMiguel). Accessed Nov. 4, 2011.
17
- 18 Condon, S.M., 1997, *Geology of the Pennsylvanian and Permian Cutler Group and Permian*
19 *Kaibab Limestone in the Paradox Basin, Southeastern Utah and Southwestern Colorado*,
20 Bulletin 2000-P, U.S. Geological Survey.
21
- 22 Colorado State Demography Office, 2011, *Population Forecasts—Years (2000 to 2040)*.
23
- 24 Corona Research, Inc., 2009, *Colorado State Parks Marketing Assessment: Visitor Spending*
25 *Analysis, 2008–2009*.
26
- 27 Cotter Corp. (Cotter Corporation N.S.L.), 2011, *JD-8 Mine Permit Amendment Application*
28 *M-1984-014*, prepared by Cotter Corp., Nucla, Colo., and submitted to State of Colorado,
29 Division of Reclamation, Mining and Safety, Denver, Colo., June 2.
30
- 31 Cotter Corp., 2012a, *SR-13A Mine Permit Amendment Application M-1977-311*, prepared by
32 Cotter Corp., Nucla, Colo. and O’Connor Design Group, Inc., Grand Junction, Colo., and
33 submitted to State of Colorado, Division of Reclamation, Mining and Safety, Denver, Colo.,
34 Sept. 19.
35
- 36 Cotter Corp., 2012b, *LP-21 Mine Permit Amendment Application M-1977-305*, prepared by
37 Cotter Corp., Nucla, Colo., and O’Connor Design Group, Inc., Grand Junction, Colo., and
38 submitted to State of Colorado, Division of Reclamation, Mining and Safety, Denver, Colo.,
39 Sept. 19.
40
- 41 Cotter Corp., 2012c, *CM-25 Mine Permit Amendment Application M-1977-307*, prepared by
42 Cotter Corp., Grand Junction, Colo., and O’Connor Design Group, Inc., Grand Junction, Colo.,
43 and submitted to State of Colorado, Division of Reclamation, Mining and Safety, Denver, Colo.,
44 Sept. 19.
45

- 1 Cotter Corp., 2012d, *JD-6 Mine Permit Amendment Application M-1977-310*, prepared by Cotter
2 Corp., Nucla, Colo., and submitted to State of Colorado, Division of Reclamation, Mining and
3 Safety, Denver, Colo., Sept. 24.
4
- 5 Cotter Corp., 2012e, *SR-11 Mine Permit Amendment Application M-1977-451*, prepared by
6 Cotter Corp., Nucla, Colo., and O'Connor Design Group, Inc., Grand Junction, Colo., and
7 submitted to State of Colorado, Division of Reclamation, Mining and Safety, Denver, Colo.,
8 Sept. 24.
9
- 10 Cotter Corp., 2012f, *JD-9 Mine Permit Amendment Application M-1977-306*, prepared by Cotter
11 Corp., Nucla, Colo., and O'Connor Design Group, Inc., Grand Junction, Colo., and submitted to
12 State of Colorado, Division of Reclamation, Mining and Safety, Denver, Colo., Sept. 25.
13
- 14 Cotter Corp., 2012g, *SM-18 Mine Permit Amendment Application M-1978-116*, prepared by
15 Cotter Corp., Nucla, Colo., and O'Connor Design Group, Inc., Grand Junction, Colo., and
16 submitted to State of Colorado, Division of Reclamation, Mining and Safety, Denver, Colo.,
17 Sept. 26.
18
- 19 Countess Environmental, 2006, *WRAP Fugitive Dust Handbook*, prepared for Western
20 Governors' Association, Denver, Colo., Sept. 7. Available at [http://www.wrapair.org/forums/
21 dejfdh/content/FDHandbook_Rev_06.pdf](http://www.wrapair.org/forums/dejfdh/content/FDHandbook_Rev_06.pdf). Accessed Dec. 15, 2011.
22
- 23 Cowardin, L.M., et al., 1979, *Classification of Wetlands and Deepwater Habitats of the
24 United States*, FWS/OBS-79/31, U.S. Fish and Wildlife Service, Dec.
25
- 26 CPW (Colorado Parks and Wildlife), 2008, *Recommended Buffer Zones and Seasonal
27 Restrictions for Colorado Raptors*. Available at [http://wildlife.state.co.us/
28 SiteCollectionDocuments/DOW/WildlifeSpecies/LivingWithWildlife/RaptorBufferGuidelines
29 2008.pdf](http://wildlife.state.co.us/SiteCollectionDocuments/DOW/WildlifeSpecies/LivingWithWildlife/RaptorBufferGuidelines2008.pdf). Accessed Sept. 14, 2012.
30
- 31 CPW, 2011a, *Natural Diversity Information Source Data*, Colorado Department of Natural
32 Resources, Denver, Colo. Available at <http://ndis.nrel.colostate.edu/wildlife.html>. Accessed
33 Dec. 15, 2011.
34
- 35 CPW, 2011b, *Sandhill Crane*, Colorado Department of Natural Resources, Denver, Colo.
36 Available at <http://wildlife.state.co.us/WildlifeSpecies/Profiles/Birds/Pages/SandhillCrane.aspx>.
37 Accessed May 1, 2012.
38
- 39 CPW, 2012a, *CPW Bat Sites, Uranium Lease Tracts*. Report transmitted from CPW to Argonne
40 National Laboratory, Argonne, Ill., June 15.
41
- 42 Craig, L.C., 1982, *Uranium Potential of the Burro Canyon Formation in Western Colorado*,
43 Open File Report 82-222, U.S. Geological Survey.
44
- 45 CSFS (Colorado State Forest Service), 2009, *Durango District 2009 Annual Report*. Available at
46 http://csfs.colostate.edu/pdfs/FINAL_Durango_AR09.pdf. Accessed Feb. 21, 2012.

- 1 Cunningham, G.M., and L. Fahrig, 2010, "Plasticity in the Vocalizations of Anurans in Response
2 to Traffic Noise," *Acta Oecologica* 36:463–470.
3
- 4 Curtis, G.P., et al., 2006, "Simulation of Reactive Transport of Uranium (VI) in Groundwater
5 with Variable Chemical Conditions," *Water Resources Research* 42, W04404, doi:10.1029/
6 2005WR003979.
7
- 8 CWCB (Colorado Water Conservation Board), 2012, *Instream Flow Program*. Available at
9 <http://cwcb.state.co.us/environment/instream-flow-program/Pages/main.aspx>. Accessed
10 Feb. 17, 2012.
11
- 12 Delaney, D.K., et al., 1999, "Effects of Helicopter Noise on Mexican Spotted Owls," *Journal of*
13 *Wildlife Management* 63(1):60–76. Available at [http://www.rmrs.nau.edu/publications/](http://www.rmrs.nau.edu/publications/Delaney_1999b/Delaney_1999b.pdf)
14 [Delaney_1999b/Delaney_1999b.pdf](http://www.rmrs.nau.edu/publications/Delaney_1999b/Delaney_1999b.pdf). Accessed Aug. 13, 2009.
15
- 16 Denison (Denison Mines), 2008, *Sunday Mines Environmental Assessment*, CO-800-2007-
17 104EA, prepared for the U.S. Bureau of Land Management, Nov.
18
- 19 Denison, 2012a, *White Mesa*, Toronto, Ontario. Available at [http://www.denisonmines.com/](http://www.denisonmines.com/Document/Details/96)
20 [Document/Details/96](http://www.denisonmines.com/Document/Details/96). Accessed Feb. 21 and May 2, 2012.
21
- 22 Denison, 2012b, *Denison Outlines 2012 Operating Plans and Releases 2011 Production and*
23 *Sales Volume*, press release, Denison Mines, Toronto, Ontario, Jan. 16. Available at
24 <http://www.infomine.com/index/pr/PB148470.PDF>. Accessed Feb. 21 and May 2, 2012.
25
- 26 Denman, A.R., et al., 2003, "Assessment of Health Risks to Skin and Lung of Elevated Radon
27 Levels in Abandoned Mines," *Health Physics* 85(6), Dec.
28
- 29 Denver District Court, 2012, Judicial Review Order, Sheep Mountain Alliance and Towns of
30 Telluride, and Ophir, Colorado v. Colorado Department of Public Health and Environment and
31 Energy Fuels Resources, Case Number 2011CV861, June 13, 2012.
32
- 33 DOE (U.S. Department of Energy), 1995, *Final Environmental Assessment for the Uranium*
34 *Lease Management Program*, DOE/EA-1037, Grand Junction Projects Office; also *Finding of*
35 *No Significant Impact, Uranium Lease Management Program*, Aug. 22
36
- 37 DOE, 2003, *Estimating Radiation Risk from Total Effective Dose Equivalent (TEDE)*, ISCORS,
38 Technical Report No. 1, DOE/EH-412/0015/0802 Rev. 1, Air, Water and Radiation Information
39 Brief, Office of Environmental Policy and Guidance, Washington, D.C., Jan.
40
- 41 DOE, 2004, *Recommendations for the Preparation of Environmental Assessments and*
42 *Environmental Impact Statements*, Second Edition, Environmental, Safety, and Health, Office of
43 NEPA Policy and Compliance, Washington, D.C., Dec.
44

- 1 DOE, 2005, *Remediation of the Moab Uranium Mill Tailings, Grand and San Juan Counties,*
2 *Utah, Final Environmental Impact Statement*, DOE/EIS-0355, July. Available at
3 <http://www.gjem.energy.gov/moab/eis/feis.htm>. Accessed May 8, 2012.
4
- 5 DOE, 2007, *Uranium Leasing Program Final Programmatic Environmental Assessment,*
6 DOE/EA-1535, also *Finding of No Significant Impact for the Uranium Leasing Program*, Office
7 of Legacy Management, July.
8
- 9 DOE, 2009a, *Approval of Exploration Plan Submitted for DOE Lease Tract C-G-26,*
10 OLM-SRS-2009-150, Office of Legacy Management, Oct. 19.
11
- 12 DOE, 2009b, *Approval of Exploration Plan Submitted for DOE Lease Tract C-LP-21,*
13 OLM-SRS-2009-148, Office of Legacy Management, Oct. 26.
14
- 15 DOE, 2009c, *Approval of Exploration Plan Submitted for DOE Lease Tract C-SR-13A,*
16 OLM-SRS-2009-167, Office of Legacy Management, Nov. 23.
17
- 18 DOE, 2009d, *DOE Uranium Leasing Program, U.S. Uranium Corporation—Work Scope for*
19 *Reclamation in-Lieu-of Royalty*, OLM-SRS-2009-171, Nov. 30.
20
- 21 DOE, 2009e, *DOE Uranium Leasing Program, Golden Eagle Mining, Inc.—Work Scope for*
22 *Reclamation in-Lieu-of Royalty*, OLM-SRS-2009-173, Nov. 30.
23
- 24 DOE, 2009f, *DOE Uranium Leasing Program, Energy Fuels Resources—Work Scope for*
25 *Reclamation in-Lieu-of Royalty*, OLM-SRS-2009-174, Nov. 30.
26
- 27 DOE, 2009g, *DOE Uranium Leasing Program, Golden Eagle Uranium—Work Scope for*
28 *Reclamation in-Lieu-of Royalty*, OLM-SRS-2009-172, Nov. 30.
29
- 30 DOE, 2009h, *Approval of Exploration Plan Submitted for DOE Lease Tract C-CM-24,*
31 OLM-SRS-2009-106, Office of Legacy Management, Aug. 17.
32
- 33 DOE, 2009i, *Approval of Exploration Plan Submitted for DOE Lease Tract C-CM-25,*
34 OLM-SRS-2009-149, Office of Legacy Management, Oct. 27.
35
- 36 DOE, 2010a, *Approval of Exploration Plan Submitted for DOE Lease Tract C-SR-15A,*
37 OLM-LEK-2010-099, Office of Legacy Management, July 20.
38
- 39 DOE, 2010b, *Approval of Exploration Plan Submitted for DOE Lease Tract C-WM-17,*
40 OLM-LEK-2010-099, Office of Legacy Management, July 20.
41
- 42 DOE, 2010c, *Approval of Phase II Plan Submitted for DOE Lease Tract C-G-26 Mine*
43 *Development and Operation*, OLM-LEK-2010-105, Office of Legacy Management, Aug. 11.
44
- 45 DOE, 2010d, *DOE Uranium Leasing Program, Cotter Corporation—Work Scope for*
46 *Reclamation in-Lieu-of Royalty*, OLM-SRS-2010-150, Nov. 22.

- 1 DOE, 2010e, *DOE Uranium Leasing Program, Golden Eagle Uranium—Work Scope for*
2 *Reclamation in-Lieu-of Royalty*, OLM-SRS-2010-154, Nov. 22.
3
- 4 DOE, 2010f, *DOE Uranium Leasing Program, Energy Fuels Resources—Work Scope for*
5 *Reclamation in-Lieu-of Royalty*, OLM-SRS-2010-152, Nov. 22.
6
- 7 DOE, 2011a, *Uranium Leasing Program Mineral Leasing Procedures Manual,*
8 *LMS/PRO/S04344-0.0*, prepared by S.M. Stoller Corporation for Office of Legacy Management,
9 April 26.
10
- 11 DOE, 2011b, *Radiation Protection of the Public and the Environment*, Order DOE O 458.1,
12 Office of Health, Safety and Security, Feb.
13
- 14 DOE, 2011c, *DOE Uranium Leasing Program, Energy Fuels Resources—Work Scope for*
15 *Reclamation in-Lieu-of Royalty*, OLM-SRS-2011-161, Oct. 6, 2011.
16
- 17 DOE, 2011d, *DOE Uranium Leasing Program, Energy Fuels Resources—Work Scope for*
18 *Reclamation in-Lieu-of Royalty*, OLM-SRS-2011-094, June 22, 2011.
19
- 20 DOE, 2011e, *DOE Order 458.1 Radiation Protection of the Public and the Environment*, Office
21 of Health, Safety, and Security, Washington, D.C., Feb.
22
- 23 DOE, 2013, *Verification Monitoring Report for the Slick Rock, Colorado, Processing Sites,*
24 *MS/SRE-SRW/S09923*, Office of Legacy Management, April.
25
- 26 DOE and CDRMS (Colorado Division of Reclamation, Mining, and Safety), 2012,
27 *Memorandum of Understanding between the U.S. Department of Energy and the Colorado*
28 *Division of Reclamation, Mining, and Safety*, Sept.
29
- 30 DOI (U.S. Department of the Interior), 2011, *Native American Consultation Database*, National
31 NAGPRA Online Databases, National Park Service.
32
- 33 DOI, 2012, *Final Environmental Impact Statement, Aspinall Unit Operations*, Bureau of
34 Reclamation, Jan. Available at [http://www.usbr.gov/uc/envdocs/eis/AspinallEIS/](http://www.usbr.gov/uc/envdocs/eis/AspinallEIS/Final%20Volume%20I.pdf)
35 *Final%20Volume%20I.pdf*. Accessed Feb. 27, 2012.
36
- 37 DOJ (U.S. Department of Justice), 2009a, “Table 10: Offenses Known to Law Enforcement, by
38 State by Metropolitan and Nonmetropolitan Counties, 2009,” *Crime in the United States*, Federal
39 Bureau of Investigation, Criminal Justice Information Services Division.
40
- 41 DOJ, 2009b, “Table 80: Full-Time Law Enforcement Employees, by State by Metropolitan and
42 Nonmetropolitan Counties, 2009,” *Crime in the United States*, Federal Bureau of Investigation,
43 Criminal Justice Information Services Division, Sept.
44

- 1 DOT (U.S. Department of Transportation), 2010a, *Traffic Safety Facts, Dolores County,*
2 *Colorado, 2006–2010*, National Highway Transportation Safety Administration, Washington,
3 D.C. Available at [http://www-nrd.nhtsa.dot.gov/departments/nrd-30/ncsa/STSI/8_CO/2010/](http://www-nrd.nhtsa.dot.gov/departments/nrd-30/ncsa/STSI/8_CO/2010/Counties/Colorado_Dolores%20County_2010.HTM)
4 [Counties/Colorado_Dolores%20County_2010.HTM](http://www-nrd.nhtsa.dot.gov/departments/nrd-30/ncsa/STSI/8_CO/2010/Counties/Colorado_Dolores%20County_2010.HTM). Accessed Jan. 25, 2012.
5
- 6 DOT, 2010b, *Traffic Safety Facts, Mesa County, Colorado, 2006–2010*, National Highway
7 Transportation Safety Administration, Washington, D.C. Available at [http://www-nrd.nhtsa.dot.](http://www-nrd.nhtsa.dot.gov/departments/nrd-30/ncsa/STSI/8_CO/2010/Counties/Colorado_Mesa%20County_2010.HTM)
8 [gov/departments/nrd-30/ncsa/STSI/8_CO/2010/Counties/Colorado_Mesa%20County_](http://www-nrd.nhtsa.dot.gov/departments/nrd-30/ncsa/STSI/8_CO/2010/Counties/Colorado_Mesa%20County_2010.HTM)
9 [2010.HTM](http://www-nrd.nhtsa.dot.gov/departments/nrd-30/ncsa/STSI/8_CO/2010/Counties/Colorado_Mesa%20County_2010.HTM). Accessed Jan. 25, 2012.
10
- 11 DOT, 2010c, *Traffic Safety Facts, Montrose County, Colorado, 2006–2010*, National Highway
12 Transportation Safety Administration, Washington, D.C. Available at [http://www-nrd.nhtsa.dot.](http://www-nrd.nhtsa.dot.gov/departments/nrd-30/ncsa/STSI/8_CO/2010/Counties/Colorado_Montrose%20County_2010.HTM)
13 [gov/departments/nrd-30/ncsa/STSI/8_CO/2010/Counties/Colorado_Montrose%20County_](http://www-nrd.nhtsa.dot.gov/departments/nrd-30/ncsa/STSI/8_CO/2010/Counties/Colorado_Montrose%20County_2010.HTM)
14 [2010.HTM](http://www-nrd.nhtsa.dot.gov/departments/nrd-30/ncsa/STSI/8_CO/2010/Counties/Colorado_Montrose%20County_2010.HTM). Accessed Jan. 25, 2012.
15
- 16 DOT, 2010d, *Traffic Safety Facts, San Miguel County, Colorado, 2006–2010*, National Highway
17 Transportation Safety Administration, Washington, D.C. Available at [http://www-nrd.nhtsa.dot.](http://www-nrd.nhtsa.dot.gov/departments/nrd-30/ncsa/STSI/8_CO/2010/Counties/Colorado_San%20Miguel%20County_2010.HTM)
18 [gov/departments/nrd-30/ncsa/STSI/8_CO/2010/Counties/Colorado_San%20Miguel%20County_](http://www-nrd.nhtsa.dot.gov/departments/nrd-30/ncsa/STSI/8_CO/2010/Counties/Colorado_San%20Miguel%20County_2010.HTM)
19 [2010.HTM](http://www-nrd.nhtsa.dot.gov/departments/nrd-30/ncsa/STSI/8_CO/2010/Counties/Colorado_San%20Miguel%20County_2010.HTM). Accessed Jan. 25, 2012.
20
- 21 DOT, 2010e, *Traffic Safety Facts, San Juan County, Utah, 2006–2010*, National Highway
22 Transportation Safety Administration, Washington, D.C. Available at [http://www-nrd.nhtsa.dot.](http://www-nrd.nhtsa.dot.gov/departments/nrd-30/ncsa/STSI/49_UT/2010/Counties/Utah_San%20Juan%20County_2010.HTM)
23 [gov/departments/nrd-30/ncsa/STSI/49_UT/2010/Counties/Utah_San%20Juan%20County_](http://www-nrd.nhtsa.dot.gov/departments/nrd-30/ncsa/STSI/49_UT/2010/Counties/Utah_San%20Juan%20County_2010.HTM)
24 [2010.HTM](http://www-nrd.nhtsa.dot.gov/departments/nrd-30/ncsa/STSI/49_UT/2010/Counties/Utah_San%20Juan%20County_2010.HTM). Accessed Jan. 25, 2012.
25
- 26 DRI (Desert Research Institute), 2011, *RAWS USA Climate Archive*. Available at
27 <http://www.raws.dri.edu/>. Accessed Dec. 21, 2011.
28
- 29 Driver, C.J., 1994, *Ecotoxicity Literature Review of Selected Hanford Site Contaminants,*
30 PNL-9394, U.S. Department of Energy, Pacific Northwest Laboratory, March.
31
- 32 Eckerman, K., et al., 1999, *Cancer Risk Coefficients for Environmental Exposure to*
33 *Radionuclides*, EPA 402-R-99-001, Federal Guidance Report No. 12, prepared by Oak Ridge
34 National Laboratory for U.S. Environmental Protection Agency, Office of Radiation and Indoor
35 Air.
36
- 37 Edge Environmental, Inc., 2009, *Piñon Ridge Project Environmental Report, Montrose County,*
38 *Colorado*, prepared for Energy Fuels Resources Corporation, Lakewood, Colo., Nov. Available
39 at <http://www.co.montrose.co.us/DocumentView.aspx?DID=857>. Accessed Dec. 23, 2011.
40
- 41 EIA (Energy Information Administration), 2010, *2010 Domestic Uranium Production Report,*
42 June. Available at <http://www.eia.gov/uranium/production/annual/pdf/dupr.pdf>. Accessed
43 Feb. 23, 2012.
44
- 45 EIA, 2012, *Annual Energy Outlook 2012 with Projections to 2035*, DOE/EIA-0383(2012), June.
46

- 1 Eldred, K.M., 1982, "Standards and Criteria for Noise Control—An Overview," *Noise Control*
2 *Engineering* 18(1):16–23.
3
- 4 Ellison, L.E., et al., 2003, *Colorado Bat Conservation Plan*, Colorado Committee of the Western
5 Bat Working Group. Available at [http://www.cnhp.colostate.edu/teams/zoology/cbwg/pdfs/](http://www.cnhp.colostate.edu/teams/zoology/cbwg/pdfs/ColoradoBatConservationPlanFebruary2004.pdf)
6 [ColoradoBatConservationPlanFebruary2004.pdf](http://www.cnhp.colostate.edu/teams/zoology/cbwg/pdfs/ColoradoBatConservationPlanFebruary2004.pdf). Accessed Sept. 19, 2012.
7
- 8 Energy Fuels (Energy Fuels, Inc.), 2009, *Mine Operations Plan: Piñon Ridge Mill Facility*
9 *Montrose County, Colorado*, Aug.
10
- 11 Energy Fuels, 2012a, *Piñon Ridge Mill*. Available at [http://www.pinonridgemill.com/](http://www.pinonridgemill.com/index.html)
12 [index.html](http://www.pinonridgemill.com/index.html). Accessed Feb. 21, 2012.
13
- 14 Energy Fuels, 2012b, *Energy Queen Mine*. Available at [http://www.energyfuels.com/](http://www.energyfuels.com/projects/energy-queen/index.html)
15 [projects/energy-queen/index.html](http://www.energyfuels.com/projects/energy-queen/index.html). Accessed Feb. 24, 2012.
16
- 17 Energy Fuels., 2012c, *Whirlwind Mine*. Available at [http://www.energyfuels.com/projects/](http://www.energyfuels.com/projects/whirlwind/index.html)
18 [whirlwind/index.html](http://www.energyfuels.com/projects/whirlwind/index.html). Accessed Feb. 28, 2012.
19
- 20 Energy Fuels, 2012d, *Piñon Ridge Mill: Schedule*. Available at [http://www.pinonridgemill.](http://www.pinonridgemill.com/schedule.html)
21 [com/schedule.html](http://www.pinonridgemill.com/schedule.html). Accessed May 7, 2012.
22
- 23 Energy Fuels, 2013a, *Daneros*, Toronto, Ontario, Canada. Available at
24 <http://www.energyfuels.com/projects/daneros>. Accessed Oct. 18, 2013.
25
- 26 Energy Fuels, 2013b, *La Sal Complex*, Toronto, Ontario, Canada. Available at
27 http://www.energyfuels.com/projects/la_sal_complex. Accessed Oct. 18, 2013.
28
- 29 Energy Fuels Resources Corp. and Greg Lewicki and Associates, 2008, *Whirlwind Mine Plan of*
30 *Operations*, Vol. 1, prepared for Bureau of Land Management–Colorado, Grand Junction Field
31 Office, and Bureau of Land Management–Utah, Moab Field Office, March. Available at
32 http://www.uraniumwatch.org/whirlwindmine/ww_planofoperation.80331.pdf. Accessed
33 Feb. 1, 2012.
34
- 35 EPA (U.S. Environmental Protection Agency), 1974, *Information on Levels of Environmental*
36 *Noise Requisite to Protect Public Health and Welfare with an Adequate Margin of Safety*,
37 550/9-74-004, Office of Noise Abatement and Control, March. Available at [http://www.nonoise.](http://www.nonoise.org/library/levels74/levels74.htm)
38 [org/library/levels74/levels74.htm](http://www.nonoise.org/library/levels74/levels74.htm). Accessed Sept. 26, 2011.
39
- 40 EPA, 1985, *Draft Background Information Document, Proposed Standard for Radon-222*
41 *Emissions to Air from Underground Uranium Mines*, EPA 520/1-85-010, Office of Radiation
42 Program, Washington, D.C., Feb. 14.
43
- 44 EPA, 1988, *Limiting Values of Radionuclide Intake and Air Concentration and Dose Conversion*
45 *Factors for Inhalation, Submersion, and Ingestion*, Federal Guidance Report No. 11, EPA-520/1-
46 88-020, Office of Radiation Programs, Washington, D.C.

- 1 EPA 1989a, *Risk Assessments, Environmental Impact Statement, NESHAPS for Radionuclides,*
2 *Background Information Document-Volume 2*, EPA/520/1-89-006-1, Office of Radiation
3 Programs, Washington, D.C., Sept.
4
- 5 EPA 1989b, *User's Guide for the COMPLY-R Code (Revision 1)*, EPA 520/1-89-029, Office of
6 Radiation Programs, Washington, D.C., Oct.
7
- 8 EPA, 1993, *External Exposure to Radionuclides in Air, Water, and Soil*, Federal Guidance
9 Report No. 12, EPA 402-R-93-081, Office of Radiation and Indoor Air, Washington, D.C.
10
- 11 EPA, 1994, *Estimating Radiogenic Cancer Risks*, EPA 402-R-93-076, Office of Radiation and
12 Indoor Air, Washington, D.C., June.
13
- 14 EPA, 2006, *How Air Pollution Affects the View*, EPA-456/F-06-001, April.
15
- 16 EPA, 2008, *Technical Report on Technologically Enhanced Naturally Occurring Radioactive*
17 *Materials from Uranium Mining, Volume 1: Mining and Reclamation Background*,
18 EPA 402-R-08-005, Office of Radiation and Indoor Air, Washington, D.C., April.
19
- 20 EPA, 2011a, *Inventory of U.S. Greenhouse Gas Emissions and Sinks: 1990–2009*,
21 EPA 430-R-11-005, April 15. Available at [http://www.epa.gov/climatechange/emissions/](http://www.epa.gov/climatechange/emissions/downloads11/US-GHG-Inventory-2011-Complete_Report.pdf)
22 [downloads11/US-GHG-Inventory-2011-Complete_Report.pdf](http://www.epa.gov/climatechange/emissions/downloads11/US-GHG-Inventory-2011-Complete_Report.pdf). Accessed Nov. 5, 2011.
23
- 24 EPA, 2011b, *National Ambient Air Quality Standards (NAAQS)*. Available at <http://www.epa.gov/air/criteria.html>, last updated Nov. 8, 2011. Accessed Dec. 15, 2011.
25
26
- 27 EPA, 2011c, *The Green Book Nonattainment Areas for Criteria Pollutants*. Available at
28 <http://www.epa.gov/oaqps001/greenbk/>, last updated Aug. 30, 2011. Accessed Nov. 5, 2011.
29
- 30 EPA, 2011d, *AirData: Access to Monitored Air Quality Data from EPA's Air Quality System*
31 *(AQS) Data Mart*. Available at <http://www.epa.gov/airdata/>, last updated Dec. 14, 2011.
32 Accessed Dec. 15, 2011.
33
- 34 EPA, 2012a, *Integrated Risk Information System (IRIS)*. Available at <http://www.epa.gov/IRIS>.
35 Accessed March 17, 2012.
36
- 37 EPA, 2012b, *CASTNET Home*. Available at <http://epa.gov/castnet/javaweb/index.html>. Accessed
38 Sept. 25, 2012.
39
- 40 EPA, 2013, *National Primary Drinking Water Regulations*. Available at
41 <http://water.epa.gov/drink/contaminants/index.cfm#List>. Accessed Sept. 5, 2013.
42
- 43 EPS (Economic and Planning Systems), 2010, *Montrose County Socioeconomic Impact Study*,
44 prepared by EPS, Mike Retzlaff, and Lloyd Levy Consulting (EPS #19841), for Montrose
45 County, Colo., March.
46

- 1 Erwin, W.J., and R.H. Stasiak, 1979, "Vertebrate Mortality during Burning of a Reestablished
2 Prairie in Nebraska," *American Midland Naturalist* 101:247–249.
3
- 4 Fairbrother, A., et al., 1994, "Impairment of Growth and Immune Function of Avocet Chicks
5 from Sites with Elevated Selenium, Arsenic, and Boron," *Journal of Wildlife Diseases*
6 30(2):222–233.
7
- 8 Faanes, C.A., 1987, *Bird Behavior and Mortality in Relation to Power Lines in Prairie Habitats*,
9 Fish and Wildlife Technical Report 7, U.S. Department of the Interior, Fish and Wildlife Service,
10 Washington, D.C.
11
- 12 Feeney, D., et al., 2004, *Big Game Migration Corridors in Wyoming*, Wyoming Open Spaces,
13 University of Wyoming, Laramie, Wyo., April. Available at [http://www.uwyo.edu/openspaces/
14 docs/MigrationCorridors.pdf](http://www.uwyo.edu/openspaces/docs/MigrationCorridors.pdf). Accessed Sept. 26, 2006.
15
- 16 Ferry C., et al. 2002, "An Experimental Method for Measuring the Radon-222 Emanation Factor
17 in Rocks," *Radiation Measurements* 35:570.
18
- 19 Filas, F., 2013, *Daneros Mine Large Mine Notice of Intent to Revise Mine Operations San Juan*
20 *County, Utah*, Transmittal from Filas (Energy Fuels Resources (USA) Inc., Lakewood, Colo.), to
21 W. Western (State of Utah Department of Natural Resources, Division of Oil, Gas and Mining,
22 Salt Lake City, Utah), March 4. Available at [https://fs.ogm.utah.gov/FILES/MINERALS/
23 PERMITS/037/M0370126/2013/Incoming/03072013.pdf](https://fs.ogm.utah.gov/FILES/MINERALS/PERMITS/037/M0370126/2013/Incoming/03072013.pdf). Accessed Oct. 18, 2013.
24
- 25 Finch, W.I., and J.F. Davis, 1985, "Sandstone-Type Uranium Deposits—An Introduction," in
26 *Geological Environments of Sandstone-Type Uranium Deposits*, Report IAEA-TECDOC-328,
27 International Atomic Energy Agency, March.
28
- 29 Fire Departments Network, 2011, *Colorado Fire Departments*. Available at [http://co.fire
30 departments.net/fire/county/Colorado.html](http://co.firedepartments.net/fire/county/Colorado.html).
31
- 32 Fischer, R.P., and L.S. Hilpert, 1952, *Geology of the Uravan Mineral Belt*, Bulletin 988-A,
33 U.S. Geological Survey.
34
- 35 Fleischner, T.L., 1994, "Ecological Costs of Livestock Grazing in Western North America,"
36 *Conservation Biology* 8(3):629–644.
37
- 38 Foos, A., 1999, *Geology of the Colorado Plateau*, Geology Department, University of Akron,
39 Ohio. Available at <http://www.nature.nps.gov/geology/education/foos/plateau.pdf>.
40
- 41 Foppen, R., and R. Reijnen, 1994, "The Effects of Car Traffic on Breeding Bird Populations in
42 Woodland. II. Breeding Dispersal of Male Willow Warblers (*Phylloscopus trochilus*) in Relation
43 to the Proximity of a Highway," *Journal of Applied Ecology* 32:95–101.
44
- 45 Ford, W.M., et al., 1999, "Effects of a Community Restoration Fire on Small Mammals and
46 Herpetofauna in the Southern Appalachians," *Forest Ecology and Management* 114:233–243.

- 1 Forman, R.T.T., and L.E. Alexander, 1998, "Roads and Their Major Ecological Effects," *Annual*
2 *Review of Ecology and Systematics* 29:207–231.
3
- 4 Francis, C.D., and J.R. Barber, 2013, "A Framework for Understanding Noise Impacts on
5 Wildlife: An Urgent Conservation Priority," *Frontiers in Ecology and the Environment*
6 11(6):305–313.
7
- 8 Francis, C.D., et al., 2009, "Noise Pollution Changes Avian Communities and Species
9 Interactions," *Current Biology* 19:1415–1419.
10
- 11 Fritz, J.N., 2006, *Potential Traditional Cultural Properties within 38 Uranium Leasing Tracts in*
12 *Southwestern Colorado: A Background Ethnographic Analysis*, prepared for S.M. Stoller
13 Corporation, Grand Junction, Colo., Nov. 1.
14
- 15 Gaines, W.L., et al., 2003, *Assessing the Cumulative Effects of Linear Recreation Routes on*
16 *Wildlife Habitats on the Okanogan and Wenatchee National Forests*, General Technical
17 Report PNW-GTR-586, U.S. Department of Agriculture, Forest Service, Pacific Northwest
18 Research Station, Portland, Ore.
19
- 20 GAO (Government Accounting Office), 2007, *Climate Change: Agencies Should Develop*
21 *Guidance for Addressing the Effects on Federal Land and Water Resources*, GAO-07-863, report
22 to Congressional requesters, Aug.
23
- 24 Gelbard, J.L., and J. Belnap, 2003, "Roads as Conduits for Exotic Plant Invasions in a Semiarid
25 Landscape," *Conservation Biology* 17(2):420–432.
26
- 27 George, J.L., et al. (editors), 2009, *Colorado Bighorn Sheep Management Plan 2009–2019*,
28 Special Report Number 81, Colorado Department of Natural Resources, Division of Wildlife,
29 Denver, Colo., Feb.
30
- 31 GJSentinel (*Grand Junction Daily Sentinel*), 2011, "Knockdown Phase at Cameo Power Plant,"
32 Aug. 15. Available at [http://www.gjsentinel.com/news/articles/knockdown_phase_at_](http://www.gjsentinel.com/news/articles/knockdown_phase_at_cameo_power)
33 [cameo_power](http://www.gjsentinel.com/news/articles/knockdown_phase_at_cameo_power). Accessed Feb. 23, 2012.
34
- 35 Golder Associates (Golder Associates, Inc.), 2009, *Hydrogeologic Report, Piñon Ridge Project,*
36 *Montrose County, Colorado*, technical report, Exhibit F1 of the Mill License Application.
37
- 38 Gordus, A.G., et al., 2002, "Salt Toxicosis in Ruddy Ducks that Winter on an Agricultural
39 Evaporation Basin in California," *Journal of Wildlife Diseases* 38(1):124–131.
40
- 41 Groves, C.R., and K. Steenhof, 1988, "Responses of Small Mammals and Vegetation to
42 Wildfires in Shadscale Communities of Southwestern Idaho," *Northwest Science* 62:205–210.
43

- 1 Grout, M.A., and E.R. Verbeek, 1997, "Tectonic and Paleostress Significance of the Regional
2 Joint Network of the Central Paradox Basin, Utah and Colorado," in *Laccolith Complexes of*
3 *Southeastern Utah: Time of Emplacement and Tectonic Setting—Workshop Proceedings*,
4 Friedman and Huffman (editors), Bulletin 2158, U.S. Geological Survey.
5
- 6 Habib, L, et al., 2007, "Chronic Industrial Noise Affects Pairing Success and Age Structure of
7 Ovenbirds *Seiurus aurocapilla*," *Journal of Applied Ecology* 44:176–184.
8
- 9 Hand, J.L., et al., 2011, *Spatial and Seasonal Patterns and Temporal Variability of Haze and Its*
10 *Constituents in the United States*, Interagency Monitoring of Protected Visual Environments
11 (IMPROVE) Report V, June. Available at [http://vista.cira.colostate.edu/improve/publications/](http://vista.cira.colostate.edu/improve/publications/Reports/2011/PDF/Cover_TOC.pdf)
12 [Reports/2011/PDF/Cover_TOC.pdf](http://vista.cira.colostate.edu/improve/publications/Reports/2011/PDF/Cover_TOC.pdf). Accessed May 4, 2012.
13
- 14 Hanson, C.E., et al., 2006, *Transit Noise and Vibration Impact Assessment*, FTA-VA-90-1003-
15 06, prepared by Harris Miller Miller & Hanson Inc., Burlington, Mass., for U.S. Department of
16 Transportation, Federal Transit Administration, Washington, D.C., May. Available at
17 http://www.hmmh.com/rail_manuals01fta.html. Accessed Feb. 29, 2012.
18
- 19 Harris, C.M. (editor), 1991, *Handbook of Acoustical Measurements and Noise Control*, Third
20 Edition, McGraw-Hill Book Company, New York, N.Y.
21
- 22 Hawn, W.S., 2003, *Soil Survey of San Miguel Area, Colorado—Parts of Dolores, Montrose, and*
23 *San Miguel Counties*, U.S. Department of Agriculture, Natural Resources Conservation Service
24 in cooperation with the Colorado Agricultural Experiment Station, U.S. Department of the
25 Interior, Bureau of Land Management.
26
- 27 Hazel, J.E., 2000, *Sedimentary Response to Intrabasinal Salt Tectonism in the Upper Triassic*
28 *Chinle Formation, Paradox Basin, Utah*, Bulletin 2000-F, U.S. Geological Survey.
29
- 30 Hels, T., and E. Buchwald, 2001, "The Effect of Road Kills on Amphibian Populations,"
31 *Biological Conservation* 99:331–340.
32
- 33 Hinck, J.E., et al., 2010, "Biological Pathways of Exposure and Ecotoxicity Values for Uranium
34 and Associated Radionuclides," Chapter D of *Hydrological, Geological, and Biological Site*
35 *Characterization of Breccia Pipe Uranium Deposits in Northern Arizona*, A.E. Alpine (editor),
36 Scientific Investigations Report 2010-5025, U.S. Geological Survey.
37
- 38 Hirsch, C.L., et al., 2006, *Range-wide Status of Colorado River Cutthroat Trout (Oncorhynchus*
39 *clarkia pleuriticus): 2005*, Colorado River Cutthroat Trout Conservation Team Report, Colorado
40 Division of Wildlife, Fort Collins, Colo.
41
- 42 Hite, R.J., and S.W. Lohman, 1973, *Geologic Appraisal of Paradox Basin Salt Deposits for*
43 *Waste Emplacement*, Open File Report 73-114, U.S. Geological Survey.
44
- 45 Hobbs, N.T., 1989, "Linking Energy Balance to Survival in Mule Deer: Development and Test
46 of a Simulation Model," *Wildlife Monographs* 101:1–39.

- 1 Hockin, D., et al., 1992, "Examination of the Effects of Disturbance on Birds with Reference to
2 Its Importance in Ecological Assessments," *Journal of Environmental Management* 36:253–286.
3
- 4 Hoerling, M., et al., 2008, *Climate Change in Colorado: A Synthesis to Support Water Resources
5 Management and Adaptation*, report prepared by the Western Water Assessment for the
6 Colorado Water Conservation Board.
7
- 8 Holmes, T.L., et al., 1993, "Responses of Wintering Grassland Raptors to Human Disturbance,"
9 *Wildlife Society Bulletin* 21:461–468.
10
- 11 Holsinger, K., 2012, *ULP PEIS: T&E Question*, e-mail from Holsinger (Uncompahgre Field
12 Office, Montrose, Colo.) to G.M. Jones (Bureau of Land Management), Aug. 27.
13
- 14 Horn, J., and S. Moore-McMillian, 2009, *Documentation of Historic Mine Features on
15 U.S. Department of Energy Uranium Lease Tracts in Western Colorado: Phase 3, Gateway
16 Area, Mesa County, Colorado*, prepared for S.M. Stoller Corporation, Grand Junction, Colo.,
17 Sept.
18
- 19 Hunt, C.B., 1974, *Natural Regions of the United States and Canada*, W.H. Freeman and
20 Company.
21
- 22 Hurshman, T., 1994, personal communication between Hurshman (Bureau of Land Management,
23 Montrose District Office) and R. Bleil (Rust Geotech), Oct. 17.
24
- 25 Hutson, S.S., et al., 2004, *Estimated Use of Water in the United States in 2000*, Circular 1268
26 (county-level data download), U.S. Geological Survey. Available at [http://water.usgs.gov/
27 watuse/data/2000/index.html](http://water.usgs.gov/watuse/data/2000/index.html). Accessed Oct. 23, 2012.
28
- 29 IAEA (International Atomic Energy Agency), 2000, *Methods of Exploitation of Different
30 Types of Uranium Deposits*, IAEA-TecDoc-1174, Sept. Available at [http://www-
31 pub.iaea.org/MTCD/publications/PDF/te_1174_prn.pdf](http://www-pub.iaea.org/MTCD/publications/PDF/te_1174_prn.pdf). Accessed Feb. 1, 2012.
32
- 33 ICRP (International Commission on Radiological Protection), 1977, *Recommendations of the
34 International Commission on Radiological Protection*, ICRP Publication 26, Pergamon Press,
35 Oxford, U.K.
36
- 37 ICRP, 1979, *Limits for Intakes of Radionuclides by Workers*, ICRP Publication 30, Part 1,
38 Pergamon Press, Oxford, U.K.
39
- 40 ICRP, 1980, *Limits for Intakes of Radionuclides by Workers*, ICRP Publication 30, Part 2,
41 Pergamon Press, Oxford, U.K.
42
- 43 ICRP, 1981, *Limits for Intakes of Radionuclides by Workers*, ICRP Publication 30, Part 3,
44 Pergamon Press, Oxford, U.K.
45

- 1 ICRP, 1991, *Recommendations of the International Commission on Radiological Protection*,
2 ICRP Publication 60–1990, Pergamon Press.
3
- 4 ICRP, 1996, *Age-Dependent Doses to the Members of the Public from Intake of Radionuclides*,
5 *Part 5, Compilation of Ingestion and Inhalation Coefficients*, ICRP Publication 72, Pergamon
6 Press, Oxford, U.K.
7
- 8 ICRP, 2011, “ICRP Publication 115: Lung Cancer Risk from Radon and Progeny,” *Annals of the*
9 *ICRP* 40(1).
10
- 11 Information Services, 2001, *Gaining Ground or Shaky Ground? A Detailed Look at Tourism*
12 *Employment in the Southwest Colorado Travel Region*, Final Report, Dec. Available at
13 http://www.scan.org/tourism_report.pdf.
14
- 15 Ingelfinger, F., and S. Anderson, 2004, “Passerine Response to Roads Associated with Natural
16 Gas Extraction in a Sagebrush Steppe Habitat,” *Western North American Naturalist*
17 64(3):385–395.
18
- 19 IUC (International Uranium Corporation), 2003, *Description of the Affected Environment, White*
20 *Mesa Mill, Blanding, Utah, for Transport by Slurry Pipeline and Disposal of the Moab Tailings*,
21 Denver, Colo., May.
22
- 23 Ivahnenko, T., and J.L. Flynn, 2010, *Estimated Withdrawals and Use of Water in Colorado,*
24 *2005*, Scientific Investigations Report 2010-5002, U.S. Geological Survey.
25
- 26 Jackson, P.O., et al., 1980, *An Investigation of Radon-222 Emissions from Underground*
27 *Uranium Mines*, Pacific Northwest Laboratory, Richland, Wash., Feb.
28
- 29 Joesting, H.R., and P.E. Byerly, 1958, *Regional Geophysical Investigations of the Uravan Area,*
30 *Colorado*, Professional Paper 316-A, U.S. Geological Survey.
31
- 32 Jones, G., 2008, “Sensory Ecology: Noise Annoys Foraging Bats,” *Current Biology* 18:1098–
33 1100.
34
- 35 Karp, K.E., and D.R. Metzler, 2006, “Moab, Utah, UMTRA Site: The Last Large Uranium Mill
36 Tailings Pile To Be Cleaned Up in the United States,” pp. 671–682 in B.J. Merkel and
37 A. Hasche-Berger (editors), *Uranium in the Environment: Mining Impact and Consequences*.
38
- 39 Kelly, J.M., and D.M. Janz, 2009, “Assessment of Oxidative Stress and Histopathology in
40 Juvenile Northern Pike (*Esox lucius*) Inhabiting Lakes Downstream of a Uranium Mill, *Aquatic*
41 *Toxicology* 92:240–249.
42
- 43 Kenny, J.F., et al., 2009, *Estimated Use of Water in the United States in 2005*, Circular 1344
44 (county-level data download), U.S. Geological Survey. Available at <http://water.usgs.gov/watuse/data/2005/>. Accessed Oct. 23, 2012.
45
46

- 1 Kirkham, R.M., and W.P. Rogers, 1981, *Earthquake Potential in Colorado: A Preliminary*
2 *Evaluation*, Colorado Department of Natural Resources, Open File Report 78-3, Colorado
3 Geological Survey.
4
- 5 Kirschbaum, M.A., and L.R.H. Biewick, 2012, “A Summary of the Coal Deposits in the
6 Colorado Plateau: Arizona, Colorado, New Mexico, and Utah,” in *Geological Assessment of*
7 *Coal in the Colorado Plateau: Arizona, Colorado, New Mexico, and Utah*, M.A. Kirschbaum
8 (editor), Professional Paper 1625-B, U.S. Geological Survey. Available at [http://pubs.usgs.gov/](http://pubs.usgs.gov/pp/p1625b/)
9 [pp/p1625b/](http://pubs.usgs.gov/pp/p1625b/). Accessed Sept. 12, 2012.
10
- 11 KKCO (KKCO NBC 11 News), 2007, “Xcel Officials Want to Shut Down Cameo Power Plant,”
12 Nov. 16. Available at <http://www.nbc11news.com/home/headlines/11498461.html>. Accessed
13 Feb. 24, 2012.
14
- 15 Knick, S.T., and D.L. Dyer, 1997, “Distribution of Black-Tailed Jackrabbit Habitat Determined
16 by GIS in Southwestern Idaho,” *Journal of Wildlife Management* 61(1):75–85.
17
- 18 Knight, R.L., and D.N. Cole, 1991, “Effects of Recreational Activity on Wildlife in Wildlands,”
19 pp. 238–247 in *Transactions of the Fifty-Sixth North American Wildlife and Natural Resources*
20 *Conference*, March 17–22, R.E. McCabe (editor), Wildlife Management Institute, Washington,
21 D.C.
22
- 23 Knight, R.L., and J.Y. Kawashima, 1993, “Responses of Raven and Red-Tailed Hawk
24 Populations to Linear Right-of-Ways,” *Journal of Wildlife Management* 57(2):266–271.
25
- 26 Kotamarthi, V.R., and D.J. Holdridge, 2007, *Process-Scale Modeling of Elevated Wintertime*
27 *Ozone in Wyoming*, ANL/EVS/R-07/7, prepared by Environmental Science Division, Argonne
28 National Laboratory, for BP America, Dec. Available at [http://www.ipd.anl.gov/anlpubs/](http://www.ipd.anl.gov/anlpubs/2008/01/60757.pdf)
29 [2008/01/60757.pdf](http://www.ipd.anl.gov/anlpubs/2008/01/60757.pdf). Accessed Sept. 23, 2011.
30
- 31 Krausman, P.R., et al., 2004, “Effects of Military Operations on Behavior and Hearing of
32 Endangered Sonoran Pronghorn,” *Wildlife Monographs* 157:1-41.
33
- 34 KREX (KREX NewsChannel), 2011, “Plans Set for Teardown of Cameo Power Plant,” Aug. 1.
35 Available at [http://www.krextv.com/news/around-the-region/Plans-Set-For-Teardown-of-](http://www.krextv.com/news/around-the-region/Plans-Set-For-Teardown-of-Cameo-Power-Plant-126550668.html)
36 [Cameo-Power-Plant-126550668.html](http://www.krextv.com/news/around-the-region/Plans-Set-For-Teardown-of-Cameo-Power-Plant-126550668.html). Accessed Feb. 23, 2011.
37
- 38 Larkin, R.P., 1996, *Effects of Military Noise on Wildlife: A Literature Review*, Technical
39 Report 96/21, U.S. Army Construction Engineering Research Laboratory, Champaign, Ill.
40
- 41 Lehman, R.N., and J.W. Allendorf, 1989, “The Effects of Fire, Fire Exclusion, and Fire
42 Management on Raptor Habitats in the Western United States,” in *Proceedings of the Western*
43 *Raptor Management Symposium and Workshop, 1987, October 26–28, Boise, Idaho*, Scientific
44 and Technical Series No. 12, National Wildlife Federation, Washington, D.C.
45

- 1 Lemly, A.D., 1997, "Environmental Implications of Excessive Selenium: A Review,"
2 *Biomedical and Environmental Sciences* 10:415–435.
3
- 4 Leyda, J.D., 2011, *Ecological Effects of Uranium Mining—Colorado, USA*, Leyda Consulting,
5 Inc. Available at [http://uraniumwatch.org/doe_uraniumleasingprogram/exhibitA_LCI_](http://uraniumwatch.org/doe_uraniumleasingprogram/exhibitA_LCI_UranMine-Ecol-Effcts.110908.pdf)
6 [UranMine-Ecol-Effcts.110908.pdf](http://uraniumwatch.org/doe_uraniumleasingprogram/exhibitA_LCI_UranMine-Ecol-Effcts.110908.pdf). Accessed Nov. 28, 2011.
7
- 8 Lincoln, F.C., et al., 1998, *Migration of Birds*, U.S. Fish and Wildlife Service Circular 16,
9 U.S. Department of the Interior, Washington, D.C. Available at [http://www.npwrc.usgs.gov/](http://www.npwrc.usgs.gov/resource/birds/migratio/index.htm)
10 [resource/birds/migratio/index.htm](http://www.npwrc.usgs.gov/resource/birds/migratio/index.htm). Accessed Oct. 20, 2006.
11
- 12 Lyon, A.G., and S.H. Anderson, 2003, "Potential Gas Development Impacts on Sage Grouse
13 Nest Initiation and Movement," *Wildlife Society Bulletin* 31(2):486–491.
14
- 15 Lyon, L.J., et al., 2000a, "Direct Effects of Fire and Animal Responses," in *Wildland Fire in*
16 *Ecosystems: Effects of Fire on Fauna*, General Technical Report RMRS-GTR-42-Vol. 1,
17 J.K. Smith (editor), U.S. Department of Agriculture, Forest Service, Rocky Mountain Research
18 Station, Ogden, Utah. Available at http://www.fs.fed.us/rm/pubs/rmrs_gtr042_1.pdf. Accessed
19 Aug. 14, 2009.
20
- 21 Lyon, L.J., et al., 2000b, "Fire Effects on Animal Populations," in *Wildland Fire in Ecosystems:*
22 *Effects of Fire on Fauna*, General Technical Report RMRS-GTR-42-Vol. 1, J.K. Smith (editor),
23 U.S. Department of Agriculture, Forest Service, Rocky Mountain Research Station, Ogden,
24 Utah. Available at http://www.fs.fed.us/rm/pubs/rmrs_gtr042_1.pdf. Accessed Aug. 14, 2009.
25
- 26 Mackun, P., and S. Wilson, 2011, *Population Distribution and Change: 2000 to 2010*,
27 U.S. Census Bureau, C2010BR-01, March.
28
- 29 Mancini, K.M., et al., 1988, *Effects of Aircraft Noise and Sonic Booms on Domestic Animals and*
30 *Wildlife: A Literature Synthesis*, NERC-88/29, U.S. Fish and Wildlife Service National Ecology
31 Research Center, Ft. Collins, Colo.
32
- 33 Maxell, B.A., 2000, *Management of Montana's Amphibians: A Review of Factors That May*
34 *Present a Risk to Population Viability and Accounts on the Identification, Distribution,*
35 *Taxonomy, Habitat Use, Natural History, and the Status and Conservation of Individual Species*,
36 a report (Order Number 43-0343-0-0224) to Northern Regional Office (Region 1), USDA Forest
37 Service, Missoula, Mont., Sept. 20. Available at [http://www.isu.edu/~petechar/iparc/](http://www.isu.edu/~petechar/iparc/Maxell_Mgmnt.pdf)
38 [Maxell_Mgmnt.pdf](http://www.isu.edu/~petechar/iparc/Maxell_Mgmnt.pdf). Accessed Aug. 10, 2009.
39
- 40 McAda, C.W., 2003, *Flow Recommendations to Benefit Endangered Fishes in the Colorado and*
41 *Gunnison Rivers*, final report, Upper Colorado River Endangered Fish Recovery Program, July.
42
- 43 McLellan, B.N., and D.M. Shackleton, 1988, "Grizzly Bears and Resource-Extraction Industries:
44 Effects of Roads on Behaviour, Habitat Use and Demography," *Journal of Applied Ecology*
45 25:451–460.
46

- 1 Meehan K.A., 2001, *Effects of Exposure to Continuous Low Doses of Ionizing Radiation*, Cape
2 Technikon Theses & Dissertations, Paper 156.
3
- 4 Menge, C.W., et al., 1998, *FHWA Traffic Noise Model[®] Technical Manual*, FHWA-PD-96-010
5 and DOT-VNTSC-FHWA-98-2, prepared by U.S. Department of Transportation, John A. Volpe
6 National Transportation Systems Center, Cambridge, Mass., for U.S. Department of
7 Transportation, Federal Highway Administration, Washington, D.C., Feb.
8
- 9 Meteyer, C.U., et al., 1997, "Sodium Toxicity and Pathology Associated with Exposure of
10 Waterfowl to Hypersaline Playa Lakes of Southeast New Mexico," *Journal of Veterinary*
11 *Diagnostic Investigation* 9:269–280.
12
- 13 Miller, D., 2012, *Data Request*, e-mail from Miller (Antiquities Section of Utah State History,
14 Salt Lake City, Utah) to D. O'Rourke (Argonne National Laboratory, Argonne, Ill.), March 22.
15
- 16 Miller, N.P., 2002, "Transportation Noise and Recreational Lands," *Internoise 2002*, Dearborn,
17 Mich., Aug. 19–21, 2002. Available at <http://www.hmmh.com/cmsdocuments/N011.pdf>.
18 Accessed Dec. 22, 2011.
19
- 20 Mkandawire, M., and E.G. Dudel, 2005, "Accumulation of Arsenic in *Lemna gibba* L.
21 (Duckweed) in Tailing Waters of Two Abandoned Uranium Mining Sites in Saxony, Germany,"
22 *Science of the Total Environment* 336:81–89.
23
- 24 Molenaar, C.M., 1987, "Correlation Chart — Paradox Basin and Vicinity," in *Geology of*
25 *Cataract Canyon and Vicinity*, J.A. Campbell (editor), Four Corners Geological Society,
26 10th Field Conference.
27
- 28 Montrose County, 2010, *Montrose County Socioeconomic Impact Study*, Department of
29 Community Development and Board of County Commissioners, March 31.
30
- 31 Mormon, S.A., 2010, "Arsenic: A Detective Story in Dusts," *Earth* 55(6):40–47, June.
32
- 33 Moore, S., and J. Horn, 2010, *Documentation of Five Historic Mine Features on*
34 *U.S. Department of Energy Uranium Lease Tracts in Western Colorado: Phase 2, Uravan/Long*
35 *Park Area, Montrose County, Colorado*, prepared for S.M. Stoller Corporation, Grand Junction
36 Colo., Jan.
37
- 38 Moore-McMillian, S., and J. Omvig, 2009, *Documentation of Historic Mine Features on*
39 *U.S. Department of Energy Uranium Lease Tracts in Western Colorado: Phase 1, Slick Rock*
40 *Area, San Miguel County, Colorado*, prepared for S.M. Stoller Corporation, Grand Junction,
41 Colo., July.
42
- 43 Morgan, T.A., et al., 2006, *The Four Corners Timber Harvest and Forest Products Industry,*
44 *2002*, Resource Bulletin RMRS-RB-7, U.S. Department of Agriculture, Forest Service, Rocky
45 Mountain Research Station, May.
46

- 1 Morris, R.E., et al., 2009, "Simulation of Wintertime High Ozone Concentrations in
2 Southwestern Wyoming," presented at the 8th Annual CMAS Conference, Chapel Hills, N.C.,
3 Oct. 19–21. Available at [http://www.cmascenter.org/conference/2009/abstracts/morris_](http://www.cmascenter.org/conference/2009/abstracts/morris_simulation_wintertime_2009.pdf)
4 [simulation_wintertime_2009.pdf](http://www.cmascenter.org/conference/2009/abstracts/morris_simulation_wintertime_2009.pdf). Accessed Sept. 23, 2011.
5
- 6 Mullins, T.E., and V.L. Freeman, 1954, *Lithofacies of the Salt Wash Member of the Morrison*
7 *Formation*, Trace Elements Investigations Report 341, U.S. Geological Survey.
8
- 9 Muscatello, J.R., and D.M. Janz, 2009, "Selenium Accumulation in Aquatic Biota Downstream
10 of a Uranium Mining and Milling Operation," *Science of the Total Environment* 407:1318–1325.
11
- 12 Muscatello, J.R., et al., 2008, "Accumulation of Selenium in Aquatic Systems Downstream of a
13 Uranium Mining Operation in Northern Saskatchewan, Canada," *Environmental Pollution*
14 156:387–393.
15
- 16 Muth, R.T., et al., 2000, *Flow and Temperature Recommendations for Endangered Fishes in the*
17 *Green River Downstream of Flaming Gorge Dam*, final report, Upper Colorado River
18 Endangered Fish Recovery Program, Denver, Colo., Sept.
19
- 20 Nash, T., 2002, *Hydrogeochemical Investigations of Historic Mining Districts, Central Western*
21 *Slope of Colorado, Including Influence on Surface-Water Quality*, Digital Data Series DDS-73,
22 U.S. Geological Survey, Denver, Colo.
23
- 24 National Research Council, 2011, *Uranium Mining in Virginia: Scientific, Technical,*
25 *Environmental, Human Health and Safety, and Regulatory Aspects of Uranium Mining and*
26 *Processing in Virginia*, prepublication copy, Washington, D.C., Dec. 19.
27
- 28 National Research Council, 2012, *Uranium Mining in Virginia: Scientific, Technical,*
29 *Environmental, Human Health and Safety, and Regulatory Aspects of Uranium Mining and*
30 *Processing in Virginia*, prepublication version, Washington, D.C.
31
- 32 NatureServe, 2011, *NatureServe Explorer: An Online Encyclopedia of Life, Version 7.1,*
33 Arlington, Va. Available at <http://www.natureserve.org/explorer>. Accessed Dec. 16 and 19,
34 2011.
35
- 36 Naugle, D.E., et al., 2004, "West Nile Virus: Pending Crisis for Greater Sage-Grouse," *Ecology*
37 *Letters* 7:704–713.
38
- 39 NCDC (National Climatic Data Center), 2011a, *Climates of the States (CLIM60): Climate of*
40 *Colorado*, National Oceanic and Atmospheric Administration, Satellite and Information Service.
41 Available at <http://cdo.ncdc.noaa.gov/cgi-bin/climatenormals/climatenormals.pl>. Accessed
42 Nov. 5, 2011.
43
- 44 NCDC, 2011b, *Storm Events*, National Oceanic and Atmospheric Administration, Satellite and
45 Information Service. Available at <http://www4.ncdc.noaa.gov/cgi-win/wwcgi.dll?wwEvent~>
46 Storms. Accessed Dec. 22, 2011.

- 1 NCDC, 2011c, *National Climatic Data Center*. Available at <http://www.ncdc.noaa.gov/oa/ncdc.html>. Accessed Dec. 21, 2011.
- 2
3
- 4 NCDC, 2012, *National Climatic Data Center*. Available at <http://www.ncdc.noaa.gov/oa/ncdc.html>. Accessed Dec. 12, 2012.
- 5
6
- 7 NCES (National Center for Education Statistics), 2011, *Search for Public School Districts*.
- 8
- 9 NCRP (National Council on Radiation Protection and Measurement), 2009, *Ionizing Radiation Exposure of the Population of the United States*, Report No. 160, Bethesda, Md.
- 10
11
- 12 Neff, J.C., et al., 2008, "Increasing Eolian Dust Deposition in the Western United States Linked to Human Activity," *Nat. Geosci.* 1:189–195.
- 13
14
- 15 Newman, G.J., and E.F. Redente, 2001, "Long-Term Plant Community Development as Influenced by Revegetation Techniques," *Journal of Range Management* 54(6):717–724.
- 16
17
- 18 NRC (U.S. Nuclear Regulatory Commission), 1979, *Final Environmental Statement Related to Operation of White Mesa Uranium Project Energy Fuels Nuclear, Inc.*, May.
- 19
20
- 21 NRC 1987, *Regulatory Guide 3.59 (Task WM 407-4) Methods for Estimating Radioactive and Toxic Airborne Source Terms for Uranium Milling Operations*, U.S. Nuclear Regulatory Commission, Office of Nuclear Regulatory Research, Washington, D.C., March.
- 22
23
24
- 25 NRCS (Natural Resources Conservation Service), 2009, *Soil Survey Geographic (SSURGO) Database for Mesa, Montrose, and San Miguel Counties, Colorado*.
- 26
27
- 28 NRCS, 2010, *The Twelve Orders of Soil Taxonomy*. Available at http://soils.usda.gov/technical/soil_orders. Accessed Feb. 11, 2010.
- 29
30
- 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.
- 32
33
34
35
- 36 NRCS, 2012b, *Custom Soil Resource Report for San Miguel Area, Colorado, Parts of Dolores, Montrose, and San Miguel Counties: Cross Section through Uravan Lease Tracts (Parts 1 and 2)*, U.S. Department of Agriculture, Jan. 9.
- 37
38
39
- 40 NRCS, 2012c, *Custom Soil Resource Report for San Miguel Area, Colorado, Parts of Dolores, Montrose, and San Miguel Counties: Cross Section through Paradox (North) Lease Tracts (Parts 1 and 2)*, U.S. Department of Agriculture, Jan. 9.
- 41
42
43
- 44 NRCS, 2012d, *Custom Soil Resource Report for San Miguel Area, Colorado, Parts of Dolores, Montrose, and San Miguel Counties: Cross Section through Paradox (South) Lease Tracts (Parts 1 and 2)*, U.S. Department of Agriculture, Jan. 9.
- 45
46

- 1 NRCS, 2012e, *Custom Soil Resource Report for San Miguel Area, Colorado, Parts of Dolores,*
2 *Montrose, and San Miguel Counties: Cross Section through Slick Rock (North) Lease Tracts*
3 *(Parts 1 and 2)*, U.S. Department of Agriculture, Jan. 10.
4
- 5 NRCS, 2012f, *Custom Soil Resource Report for San Miguel Area, Colorado, Parts of Dolores,*
6 *Montrose, and San Miguel Counties: Cross Section through Slick Rock (South) Lease Tracts*
7 *(Parts 1 and 2)*, U.S. Department of Agriculture, Jan. 10.
8
- 9 NRCS, 2012g, *Custom Soil Resource Report for San Miguel Area, Colorado, Parts of Dolores,*
10 *Montrose, and San Miguel Counties: Slick Rock Lease Tract 12 (Parts 1 and 2)*,
11 U.S. Department of Agriculture, Jan. 10 and 11.
12
- 13 NRCS, 2012h, *Soil Quality/Soil Health Publications—Available Water Capacity*.
14
- 15 NSTC (National Science and Technology Council), 2008, *Scientific Assessment of the Effects of*
16 *Global Climate Change on the United States*, report of the Committee on Environment and
17 Natural Resources, May.
18
- 19 NWCC (National Wind Coordinating Committee), 2002, *Permitting of Wind Energy*
20 *Facilities: A Handbook*, prepared by the NWCC Siting Subcommittee, Aug. Available at
21 <http://www.nationalwind.org/assets/publications/permitting2002.pdf>. Accessed Sept. 26, 2011.
22
- 23 Olendorff, R.R., and R.N. Lehman, 1986, *Raptor Collisions with Utility Lines: An Analysis*
24 *Using Subjective Field Observations*, prepared by U.S. Department of the Interior, Bureau of
25 Land Management, Sacramento, Calif., for Pacific Gas and Electric Company, San Ramon,
26 Calif., Feb.
27
- 28 Otak, Inc., 2009, *Visual Resource Inventory*, prepared for U.S. Department of the Interior,
29 Bureau of Land Management, Uncompahgre Field Office, Montrose, Colo., Sept.
30
- 31 Ott, R., et al., 2010, *Perspectives on Ute Ethnohistory in West Central Colorado*, prepared by the
32 Dominguez Archaeological Research Group, Inc., for the Ute Indian Tribe of the Uintah and
33 Ouray Reservation; Ute Mountain Ute Tribe; Southern Ute Indian Tribe; and for the Bureau of
34 Land Management's Colorado State Office and its Glenwood Springs, Grand Junction, and
35 Uncompahgre Field Offices, Dec. 6.
36
- 37 Painter, T.H., et al., 2007, "Impact of Disturbed Desert Soils on Duration of Mountain Snow
38 Cover," *Geophys. Res. Lett.* 34, L12502, doi:10.1029/2007GL030284.
39
- 40 Painter, T.H., et al., 2010, "Response of Colorado River Runoff to Dust Radiative Forcing in
41 Snow," *Proceedings of the National Academy of Sciences* 107(40):17,125–17,130. Available at
42 www.pnas.org/cgi/doi/10.1073/pnas.0913139107. Accessed Sept. 2013.
43
- 44 Paschke, M.W., et al., 2005, "Long-Term Effects of Biosolids on Revegetation of Disturbed
45 Sagebrush Steppe in Northwestern Colorado," *Restoration Ecology* 13(3):545–551.
46

- 1 Pater, L.L., et al., 2009, "Recommendations for Improved Assessment of Noise Impacts on
2 Wildlife," *Journal of Wildlife Management* 73(5):788–795.
3
- 4 Peters (Peters Geosciences), 2011, *Updated Technical Report on Energy Fuels Resources
5 Corporation's Energy Queen Project, San Juan County, Utah*, prepared for Energy Fuels, Inc.,
6 March 15.
7
- 8 Piñon Ridge Mill, 2012, *The Piñon Ridge Mill*. Available at [http://www.Piñonridgemill.com/
9 index.html](http://www.Piñonridgemill.com/index.html). Accessed Feb. 21, 2012.
10
- 11 Pollmann, K., et al., 2006, "Metal Binding by Bacteria from Uranium Mining Waste Piles and Its
12 Technological Applications," *Biotechnology Advances* 24:58–68.
13
- 14 Power Consulting, 2010, *A Socioeconomic Analysis of the Impact of the Proposed Piñon Ridge
15 Uranium Project on Western Mesa, Montrose, and San Miguel Counties, Colorado*, prepared for
16 Sheep Mountain Alliance, Dec.
17
- 18 Real, A., et al., 2004, "Effects of Ionising Radiation Exposure on Plants, Fish, and Mammals:
19 Relevant Data for Environmental Radiation Protection," *Journal of Radiological Protection*
20 24:A123–A137.
21
- 22 Red Cliff Mine, 2012, *Red Cliff Mine: EIS Schedule*. Available at [http://www.redcliffmine.com/
23 schedule.htm](http://www.redcliffmine.com/schedule.htm). Accessed Feb. 22, 2012.
24
- 25 Reed, A.D., 2006, *Class I Cultural Resource Inventory of 38 Department of Energy Uranium
26 Lease Withdrawal Areas, Mesa, Montrose, and San Miguel Counties, Colorado*, prepared by
27 Alpine Archaeological Consultants, Inc., Montrose, Colo., for S.M. Stoller Corporation, Grand
28 Junction, Colo., July 6.
29
- 30 Reed, A.D., and M.D. Metcalf, 1999, *Colorado Prehistory: A Context for the Northern Colorado
31 River Basin*, Colorado Council of Professional Archaeologists, Denver, Colo.
32
- 33 Reijnen, R., and R. Foppen, 1994, "The Effects of Car Traffic on Breeding Bird Populations in
34 Woodland. I. Evidence of Reduced Habitat Quality for Willow Warblers (*Phylloscopus
35 trochilus*) Breeding Close to a Highway," *Journal of Applied Ecology* 32:85–94.
36
- 37 Ritter, B., 2007, *Colorado Climate Action Plan: A Strategy to Address Global Warming*, Nov.
38
- 39 Rogers, Z., 2011, personal communication from Rogers (Energy Fuels Resources Corporation,
40 Lakewood, Colo.) to Y.-S. Chang (Argonne National Laboratory, Argonne, Ill.), Nov. 8.
41
- 42 Rosentreter, R., et al., 2007, *A Field Guide to Biological Soil Crusts of Western U.S. Drylands—
43 Common Lichens and Bryophytes*, U.S. Government Printing Office, Denver, Colo.
44
- 45 RRC Associates and Rees Consulting, Inc., 2011, *Regional Housing Needs Assessment Ouray
46 and San Miguel Counties*, Sept. Available at <http://www.smrha.org/NeedsAssessment2011.pdf>.

- 1 Sakoda, A., et al., 2010, "Difference of Natural Radioactivity and Radon Emanation Fraction
2 among Constituent Minerals of Rock or Soil," *Applied Radiation and Isotopes* 68(12):24–52.
3
- 4 Salek, M.E., 2011, *Colorado Highway Quickfacts*. Available at [http://www.mesalek.com/](http://www.mesalek.com/colo/facts.html)
5 [colo/facts.html](http://www.mesalek.com/colo/facts.html). Accessed Sept. 24, 2012.
6
- 7 Salt, A.N., and T.E. Hullar, 2010, "Responses of the Ear to Low Frequency Sounds, Infrasound
8 and Wind Turbines," *Hearing Research* 268:12–21.
9
- 10 San Miguel County, 2008, *San Miguel Comprehensive Development Plan, Adopted August 3,*
11 *1978; Amended through February 13, 2008*. Available at [http://www.sanmiguelcounty.org/](http://www.sanmiguelcounty.org/departments/planning/documents/SMCMP.COUNTY.PART1.2008.pdf)
12 [departments/planning/documents/SMCMP.COUNTY.PART1.2008.pdf](http://www.sanmiguelcounty.org/departments/planning/documents/SMCMP.COUNTY.PART1.2008.pdf). Accessed Dec. 2, 2011.
13
- 14 Sargent, M.S., and K.S. Carter (editors), 1999, *Managing Michigan Wildlife: A Landowners*
15 *Guide*, Michigan United Conservation Clubs, East Lansing, Michigan. Available at
16 [http://www.michigandnr.com/publications/pdfs/huntingwildlifehabitat/landowners_guide/](http://www.michigandnr.com/publications/pdfs/huntingwildlifehabitat/landowners_guide/Introduction/index.htm)
17 [Introduction/index.htm](http://www.michigandnr.com/publications/pdfs/huntingwildlifehabitat/landowners_guide/Introduction/index.htm). Accessed Sept. 13, 2012.
18
- 19 Saunders, S., et al., 2008, *Hotter and Drier: The West's Changed Climate*, The Rocky Mountain
20 Climate Organization and Natural Resources Defense Council, March. Available at
21 <http://www.nrdc.org/globalwarming/west/west.pdf>. Accessed Sept. 2013.
22
- 23 Sawyer, H., et al., 2005, "Mule Deer and Pronghorn Migration in Western Wyoming," *Wildlife*
24 *Society Bulletin* 33(4):1266–1273.
25
- 26 Sawyer, H., et al., 2006, "Winter Habitat Selection of Mule Deer before and during Development
27 of a Natural Gas Field," *The Journal of Wildlife Management* 70(2):396–403.
28
- 29 Schooley, R.L., et al., 1996, "Can Shrub Cover Increase Predation Risk for a Desert Rodent?,"
30 *Canadian Journal of Zoology* 74:157–163.
31
- 32 Schwinning, S., et al., 2008, "Sensitivity of the Colorado Plateau to Change: Climate,
33 Ecosystems, and Society," *Ecology and Society* 13(2):28 (online journal). Available at
34 <http://www.ecologyandsociety.org/vol13/iss2/art28/>. Accessed Oct. 23, 2012.
35
- 36 See, R.B., et al., 1992, *Detailed Study of Selenium in Soil, Representative Plants, Water, Bottom*
37 *Sediment, and Biota in the Kendrick Reclamation Project Area, Wyoming, 1988–90*, Water
38 Resources Investigations Report 91-4131, U.S. Geological Survey, Cheyenne, Wyo.
39
- 40 SENES (SENES Consultants Limited), 2009, *Risk Assessment for Proposed Uranium and*
41 *Vanadium Mill at the Piñon Ridge Property*, prepared by SENES Consultants Limited,
42 Englewood, Colo., for Energy Fuels Resources Corporation, Lakewood, Colo., Nov.
43
- 44 Sharmasarkar, S., and G.F. Vance, 2002, "Soil and Plant Selenium at a Reclaimed Uranium
45 Mine," *Journal of Environmental Quality* 31:1516–1521.
46

- 1 Sharpe, P.B., and B. Van Horne, 1998, "Influence of Habitat on Behavior of Townsend's Ground
2 Squirrel (*Spermophilus townsendii*)," *Journal of Mammalogy* 79:906–918.
3
- 4 Shawe, D.R., 1970, *Structure of the Slick Rock District and Vicinity, San Miguel and Dolores*
5 *Counties, Colorado*, Professional Paper 576-C, U.S. Geological Survey.
6
- 7 Shawe, D.R., 2011, *Uranium-Vanadium Deposits of the Slick Rock District, Colorado*,
8 Professional Paper 576-F, U.S. Geological Survey.
9
- 10 Shawe, D.R., et al., 1968, *Stratigraphy of Slick Rock District and Vicinity, San Miguel and*
11 *Dolores Counties, Colorado*, Professional Paper 576-A, U.S. Geological Survey.
12
- 13 Simmons, G.C., 1957, *Contact of the Burro Canyon Formation with the Dakota Sandstone, Slick*
14 *Rock District, Colorado, and Correlation of the Burro Canyon Formation*, Trace Elements
15 Investigations Report 552, U.S. Geological Survey.
16
- 17 Simmons, J.A., et al., 2008, "Forest to Reclaimed Mine Land Use Change Leads to Altered
18 Ecosystem Structure and Function," *Ecological Applications* 18:104–118.
19
- 20 Skorupa, J.P., and H.M. Ohlendorf, 1991, "Contaminants in Drainage Water and Avian Risk
21 Thresholds," pp. 345–368 in A. Dinar and D. Zilberman (editors), *The Economics and*
22 *Management of Water and Drainage in Agriculture*, Kluwer Academic Publishers.
23
- 24 SJPLC (San Juan Public Lands Center), 2011, *San Juan Public Lands Draft Land Management*
25 *Plan + Draft Environmental Impact Statement: Supplement to the Draft Environmental Impact*
26 *Statement*, Aug. Available at <http://ocs.fortlewis.edu/forestplan/supplement/cover.htm>. Accessed
27 May 8, 2012.
28
- 29 S.M. Stoller Corporation, 2012, *Compiled Field Surveys of U.S. Department of Energy Uranium*
30 *Leasing Program Mine Reclamation Sites, 2000–2012*, prepared by S.M. Stoller Corporation,
31 Contractor to U.S. Department of Energy Office of Legacy Management.
32
- 33 Sonoran Institute, 2009, *Uranium Mining, Tourism, and Outdoor Recreation in Gateway,*
34 *Colorado*, July.
35
- 36 Spears, C.F., and E.V. Kleven, 1978, *Soil Survey of Mesa County Area, Colorado*,
37 U.S. Department of Agriculture, Soil Conservation Service in Cooperation with the Colorado
38 Agricultural Experiment Station, Feb.
39
- 40 Spendrup, J., 2013, personal communication from Spendrup (Spendrup Fan Co., Grand Junction,
41 Colo.) to Y.-S. Chang (Argonne National Laboratory, Argonne, Ill.), Aug. 27.
42
- 43 Steele, B.A., 1985, *Preliminary Report on and Measured Sections of the Middle Jurassic*
44 *Entrada Sandstone and Wanakah Formation near Placerville, Southwestern Colorado*, Open
45 File Report 85-446, U.S. Geological Survey.
46

- 1 Steenhof, K., et al., 1993, “Nesting by Raptors and Common Ravens on Electrical Transmission
2 Line Towers,” *Journal of Wildlife Management* 57(2):271–281.
3
- 4 Stoesser, D.B., et al., 2007, *Preliminary Integrated Geologic Map Databases for the*
5 *United States: Central States—Montana, Wyoming, Colorado, New Mexico, North Dakota,*
6 *South Dakota, Nebraska, Kansas, Oklahoma, Texas, Iowa, Missouri, Arkansas, and Louisiana,*
7 *Open File Report 2005-1351, Version 1.2, U.S. Geological Survey, Dec.*
8
- 9 Strait, R., et al., 2007, *Final Colorado Greenhouse Gas Inventory and Reference Case*
10 *Projections 1990–2020*, Center for Climate Strategies, Oct. Available at
11 <http://www.coloradoclimate.org/ewebeditpro/items/O14F13894.pdf>. Accessed Nov. 5, 2011.
12
- 13 Streubel, D., 2000, *Ovis canadensis (Bighorn Sheep)*. Available at [http://imnh.isu.edu/](http://imnh.isu.edu/digitalatlas/bio/mammal/Hoofed/bish/sheep.htm)
14 [digitalatlas/bio/mammal/Hoofed/bish/sheep.htm](http://imnh.isu.edu/digitalatlas/bio/mammal/Hoofed/bish/sheep.htm). Accessed Sept. 12, 2012.
15
- 16 Sullivan, M., 2011, *Cultural Data for Uranium Leasing Program*, e-mail from Sullivan (Office
17 of Archaeology and Historic Preservation, Denver, Colo.) to B. Verhaaren (Argonne National
18 Laboratory, Argonne, Ill.), Dec. 2.
19
- 20 Sydnor, R.S., and E.F. Redente, 2000, “Long-Term Plant Community Development on Topsoil
21 Treatments Overlying a Phytotoxic Growth Medium,” *Journal of Environmental Quality*
22 29:1778–1786.
23
- 24 Thompson, D.J., and J.A. Jenks, 2007, “Cougar Mortality Attributed to Electrocutation from
25 Power Lines in South Dakota,” *The Prairie Naturalist* 39(314):191–193.
26
- 27 Thornbury, W.D., 1965, *Regional Geomorphology of the United States*, John Wiley & Sons, Inc.,
28 New York, N.Y.
29
- 30 Topper, R., et al., 2003, *Groundwater Atlas of Colorado*, Special Publication 53, Colorado
31 Geological Survey.
32
- 33 Tri-State (Tri-State Generation and Transmission Association, Inc.), 2011, *Baseload Resources:*
34 *Nucla Station*. Available at <http://www.tristategt.org/AboutUs/baseload-resources.cfm>. Accessed
35 Dec. 23, 2011.
36
- 37 Tri-State, 2012a, *Baseload Resources*. Available at [http://www.tristategt.org/AboutUs/baseload-](http://www.tristategt.org/AboutUs/baseload-resources.cfm)
38 [resources.cfm](http://www.tristategt.org/AboutUs/baseload-resources.cfm). Accessed Feb. 21, 2012.
39
- 40 Tri-State, 2012b, *Nucla-Sunshine Project*. Available at [http://www.tristategt.org/Transmission/](http://www.tristategt.org/Transmission/Nucla/Nucla-Sunshine-project.cfm)
41 [Nucla/Nucla-Sunshine-project.cfm](http://www.tristategt.org/Transmission/Nucla/Nucla-Sunshine-project.cfm). Accessed Feb. 21, 2012.
42
- 43 Tri-State, 2012c, *Phase 2 of Nucla-Sunshine Project On Schedule*. Available at
44 <http://www.poweringthewest.org/2011/09/16/phase-2-of-nucla-sunshine-project-on-schedule/>.
45 Accessed Feb. 22, 2012.
46

- 1 Trinity Engineering Associates, Inc., 2007, *CAP88-PC Version 3.0 User Guide*, Cincinnati,
2 Ohio, Dec. 9.
- 3
- 4 Trombulak, S.C., and C.A. Frissell, 2000, "Review of Ecological Effects of Roads on Terrestrial
5 and Aquatic Communities," *Conservation Biology* 14(1):18–30.
- 6
- 7 Tweto, O., 1979, *Geologic Map of Colorado (Scale 1:500,000)*, U.S. Geological Survey,
8 prepared in cooperation with the Colorado Geological Survey.
- 9
- 10 Two Bears, D., 2012, "Navajo Traditional History," *Native Voices on the Colorado River Tribal*
11 *Series*, Native Voices Grand Canyon. Available at [http://www.nativevoicesgrandcanyon.org/
12 pdf%20files/Navajo%20newsletter1.pdf](http://www.nativevoicesgrandcanyon.org/pdf%20files/Navajo%20newsletter1.pdf). Accessed March 9, 2012.
- 13
- 14 Twitty, E., 2008, *Guide to Assessing Historic Radium, Uranium, and Vanadium Mining*
15 *Resources in Montrose and San Miguel Counties*, prepared by Mountain States Historical,
16 Boulder, Colo., for Western Colorado Interpretive Association, Delta, Colo., July.
- 17
- 18 UCDC (Utah Conservation Data Center), 2012, *Common Name Wild Turkey—Rio Grande;*
19 *Scientific Name—Meleagris gallopavo intermedia*, State of Utah Natural Resources, Division of
20 Wildlife Resources, Salt Lake City, Utah. Available at [http://dwrcdc.nr.utah.gov/rsgis2/
21 Search/Display.asp?F1Nm=melegain](http://dwrcdc.nr.utah.gov/rsgis2/Search/Display.asp?F1Nm=melegain). Accessed Nov. 13, 2012.
- 22
- 23 UDEQ (Utah Department of Environmental Quality), 2011, *Title V Operating Permit: Lisbon*
24 *Natural Gas Processing Plant*, Division of Air Quality, Aug. 4. Available at
25 http://168.178.6.8/daq_public_pdfs/120397-10034pmt.20110804.pdf. Accessed Feb. 28, 2012.
- 26
- 27 UDEQ, 2012a, *Denison/White Mesa Uranium Mill*. Available at [http://www.deq.utah.gov/
28 businesses/denison/index.htm](http://www.deq.utah.gov/businesses/denison/index.htm). Accessed Feb. 21, 2012.
- 29
- 30 UDEQ, 2012b, *Denison/White Mesa Uranium Mill*. Available at [http://www.radiationcontrol.
31 utah.gov/Uranium_Mills/denison/index.htm](http://www.radiationcontrol.utah.gov/Uranium_Mills/denison/index.htm). Accessed Oct. 24, 2012.
- 32
- 33 UDNR (Utah Department of Natural Resources), 2011, *Utah Mining 2010*, Circular 114,
34 Utah Geological Survey. Available at <http://geology.utah.gov/online/c/c-114.pdf>. Accessed
35 May 7, 2012.
- 36
- 37 UDNR, 2012, *Utah Minerals Program*, Division of Oil, Gas, and Mining. Available at
38 <http://linux1.ogm.utah.gov/WebStuff/wwwroot/minerals/mineralsoperatorsbypermit.php>.
39 Accessed Feb. 28, 2012.
- 40
- 41 UDOGM (Utah Division of Oil, Gas, and Mining), 2012, *Utah Oil and Gas: Annual Production*
42 *Summary—Grand and San Juan Counties, Utah*, Department of Natural Resources. Available at
43 http://oilgas.ogm.utah.gov/Data_Center/DataCenter.cfm#production. Accessed Feb. 17, 2012.
- 44

- 1 UDOT (Utah Department of Transportation), 2011, *Traffic on Utah Highways, 2010*,
2 Systems Planning and Programming Division, Traffic Analysis Section. Available at
3 <http://www.udot.utah.gov/main/f?p=100:pg:0:::V,T:,529>. Accessed Nov. 7, 2011.
4
- 5 UDWR (Utah Division of Wildlife Resources), 2003, *Utah Division of Wildlife Resources*
6 *Statewide Management Plan for Mule Deer*, State of Utah Natural Resources, Division of
7 Wildlife Resources, Salt Lake City, Utah. Available at [http://www.wildlife.utah.gov/hunting/](http://www.wildlife.utah.gov/hunting/biggame/pdf/mule_deer_plan.pdf)
8 [biggame/pdf/mule_deer_plan.pdf](http://www.wildlife.utah.gov/hunting/biggame/pdf/mule_deer_plan.pdf). Accessed June 12, 2006.
9
- 10 UDWR, 2005, *Statewide Management Plan for Elk*, Salt Lake City, Utah. Available at
11 <http://utah.ptfs.com/awweb/awarchive?type=file&item=10836>. Accessed Oct. 23, 2012.
12
- 13 UDWR, 2008, *Utah Conservation Data Center*, State of Utah Natural Resources, Division
14 of Wildlife Resources, Salt Lake City, Utah. Available at [http://dwrcdc.nr.utah.gov/ucdc/](http://dwrcdc.nr.utah.gov/ucdc/default.asp)
15 [default.asp](http://dwrcdc.nr.utah.gov/ucdc/default.asp). Accessed Oct. 3, 2008.
16
- 17 UGS (Utah Geological Survey), 2011, *Utah Mining 2010*, Circular 114, Utah Department of
18 Natural Resources.
19
- 20 UGS, 2012, *Table 2.8—Coal Production and Recoverable Reserves in Utah by Coal Mine,*
21 *2011–2011*. Available at <http://geology.utah.gov/emp/energydata/statistics/coal2.0/pdf/T2.8.pdf>.
22 Accessed Feb. 17, 2012.
23
- 24 UNSCEAR (United Nations Scientific Committee on the Effects of Atomic Radiation), 1993,
25 *Sources and Effects of Ionizing Radiation, UNSCEAR 1993 Report to the General Assembly,*
26 *with Scientific Annexes*, United Nations, New York, N.Y.
27
- 28 UNSCEAR, 2008, *Effects of Ionizing Radiation, UNSCEAR 2006 Report to the General*
29 *Assembly with Scientific Annexes, Annex E Sources-to-Effects Assessment for Radon in Homes*
30 *and Workplaces*, United Nations, New York, N.Y.
31
- 32 UNSCEAR, 2010, *Sources and Effects of Ionizing Radiation, UNSCEAR 2008 Report to the*
33 *General Assembly with Scientific Annexes*, Vol. 1, United Nations, New York, N.Y.
34
- 35 U.S. Bureau of the Census, 1995, *Population of Counties by Decennial Census: 1900 to 1990*.
36 Available at <http://www.census.gov/population/cencounts/co190090.txt>. Accessed Sept. 2013.
37
- 38 U.S. Bureau of the Census, 2011a, *County Business Patterns, 2009*.
39
- 40 U.S. Bureau of the Census, 2011b, *State and County Quickfacts*.
41
- 42 U.S. Bureau of the Census, 2011c, *USA Counties*.
43
- 44 U.S. Bureau of the Census, 2011d, *Population Estimates, All Incorporated Places 2000–2009*.
45
- 46 U.S. Bureau of the Census, 2011e, *American Factfinder*.

- 1 U.S. Bureau of the Census, 2011f, *American Factfinder, 2005–2009 American Community*
2 *Survey 5-Year Estimates*.
3
- 4 U.S. Bureau of the Census, 2011g, *2010 Census Summary File 1: Table P5*.
5
- 6 U.S. Bureau of the Census, 2011h, *2009 American Community Survey 5-Year Estimates*
7 *(2005–2009): Table B17017*.
8
- 9 U.S. Bureau of the Census, 2011i, *The Most Populous Counties and Incorporated Places in 2010*
10 *Colorado: 2000 and 2010*, CB11-CN.39, Feb. 23.
11
- 12 U.S. Bureau of the Census, 2011j, *The Most Populous Counties and Incorporated Places in 2010*
13 *Utah: 2000 and 2010*, CB11-CN.53, Feb. 24.
14
- 15 USDA (U.S. Department of Agriculture), 2004, *Understanding Soil Risks and Hazards: Using*
16 *Soil Survey to Identify Areas with Risks and Hazards to Human Life and Property*, G.B. Muckel
17 (editor).
18
- 19 USDA, 2007a, *Census of Agriculture: Colorado State and County Data, Volume 1, Geographic*
20 *Area Series*, National Agricultural Statistics Service, Washington, D.C.
21
- 22 USDA, 2007b, *Census of Agriculture: Colorado State and County Data, Volume 1, Chapter 2,*
23 *County Level Data, County Summary Highlights: 2007*, National Agricultural Statistics Service,
24 Washington, D.C.
25
- 26 USDA, 2008, *Gypsy Moth Management in the United States: A Cooperative Approach*,
27 U.S. Forest Service, June. Available at <http://na.fs.fed.us/pubs/detail.cfm?id=8523>. Accessed
28 Feb. 27, 2012.
29
- 30 USDA, 2009a, *2007 Census of Agriculture—United States, Summary and State Data, Vol. 1*
31 *Geographic Area Series, Part 51*, Report AC-07-A-51, National Agricultural Statistics Service,
32 Dec.
33
- 34 USDA, 2009b, *Environmental Assessment: Operation and Maintenance Plan for Manti–La Sal*
35 *National Forest Ditch Bill Easements*, U.S. Forest Service, Dec. Available at
36 http://www.fs.fed.us/r4/mantilasal/projects/ditch_bill/final_ea_122109.pdf. Accessed
37 Feb. 28, 2012.
38
- 39 USDA, 2011a, *Decision Memo: Kimmerle Uranium Exploration Drilling, Manti-La Sal National*
40 *Forest*, U.S. Forest Service, Sept. Available at http://a123.g.akamai.net/7/123/11558/abc123/forestservic.download.akamai.com/11558/www/nepa/78849_FSPLT2_056443.pdf. Accessed
41 Feb. 28, 2012.
42
- 43
- 44 USDA, 2011b, *Schedule of Proposed Actions (SOPA) 10/01/2011 to 12/31/2011, San Juan*
45 *National Forest*, U.S. Forest Service, Oct. Available at [http://www.fs.fed.us/sopa/](http://www.fs.fed.us/sopa/components/reports/sopa-110213-2011-10.html)
46 [components/reports/sopa-110213-2011-10.html](http://www.fs.fed.us/sopa/components/reports/sopa-110213-2011-10.html). Accessed Feb. 21, 2012.

- 1 USDA, 2011c, *Decision Memo: Agricultural Irrigation and Livestock Watering System*,
2 U.S. Forest Service, Oct. Available at [http://www.fs.usda.gov/Internet/FSE_DOCUMENTS/
3 stelprdb5343833.pdf](http://www.fs.usda.gov/Internet/FSE_DOCUMENTS/stelprdb5343833.pdf). Accessed Feb. 28, 2012.
4
- 5 USDA, 2011d, *Nationwide Aerial Application of Fire Retardant on National Forest System
6 Land: Record of Decision*, U.S. Forest Service, Dec. Available at [http://a123.g.akamai.net/7/
7 123/11558/abc123/forestservic.download.akamai.com/11558/www/nepa/71615_FSPLT2_
8 066634.pdf](http://a123.g.akamai.net/7/123/11558/abc123/forestservic.download.akamai.com/11558/www/nepa/71615_FSPLT2_066634.pdf). Accessed Feb. 27, 2012.
9
- 10 USDA, 2012a, *Schedule of Proposed Actions (SOPA) 01/01/2012 to 03/31/2012, San Juan
11 National Forest*, U.S. Forest Service. Available at [http://www.fs.fed.us/sopa/components/
12 reports/sopa-110213-2012-01.pdf](http://www.fs.fed.us/sopa/components/reports/sopa-110213-2012-01.pdf). Accessed Feb. 27, 2012.
13
- 14 USDA, 2012b, *Colorado Ditch Bill Act*, U.S. Forest Service. Available at [http://www.fs.usda.
15 gov/detail/r2/landmanagement/?cid=STELPRDB5177473](http://www.fs.usda.gov/detail/r2/landmanagement/?cid=STELPRDB5177473). Accessed Feb. 28, 2012.
16
- 17 USDA, 2012c, *Schedule of Proposed Actions (SOPA) 01/01/2012 to 03/31/2012, Grand Mesa,
18 Uncompahgre and Gunnison National Forests*, U.S. Forest Service. Available at
19 <http://www.fs.fed.us/sopa/components/reports/sopa-110204-2012-01.pdf>. Accessed
20 Feb. 27, 2012.
21
- 22 USDA, 2012d, *Schedule of Proposed Actions (SOPA) 01/01/2012 to 03/31/2012, Manti-La Sal
23 National Forest*, U.S. Forest Service. Available at [http://www.fs.fed.us/sopa/components/
24 reports/sopa-110410-2012-01.pdf](http://www.fs.fed.us/sopa/components/reports/sopa-110410-2012-01.pdf). Accessed Feb. 28, 2012.
25
- 26 USDA and DOI (U.S. Department of the Interior), 2007, *Surface Operating Standards and
27 Guidelines for Oil and Gas Exploration and Development*, BLM/WO/ST-06/021+3071/REV 07,
28 Denver, Colo. Available at [http://www.blm.gov/wo/st/en/prog/energy/oil_and_gas/best_
29 management_practices/gold_book.html](http://www.blm.gov/wo/st/en/prog/energy/oil_and_gas/best_management_practices/gold_book.html). Accessed Nov. 2, 2012.
30
- 31 U.S. Department of Commerce, 2011, *Local Area Personal Income*, Bureau of Economic
32 Analysis.
33
- 34 U.S. Department of Labor, 2010a, *Local Area Unemployment Statistics: County Data*, Bureau of
35 Labor Statistics.
36
- 37 U.S. Department of Labor, 2010b, *Local Area Unemployment Statistics: State Data*, Bureau of
38 Labor Statistics.
39
- 40 U.S. Department of Labor, 2011, *Local Area Unemployment Statistics: Monthly County Data*,
41 Bureau of Labor Statistics.
42
- 43 USFS (U.S. Forest Service), 2005, *Threatened, Endangered, and Sensitive Plants and Animals*,
44 Forest Service Manual (FMS) 2670, U.S. Department of Agriculture, Aug. 29.
45

- 1 USFS and BLM, 2013, *Volume II: San Juan National Forest and Proposed Tres Rios Field*
2 *Office Land and Resource Management Plan*, U.S. Department of Agriculture, USFS Region 2,
3 San Juan National Forest, and U.S. Department of Interior, BLM Tres Rios Field Office, Sept.
4 Available at www.blm.gov/co/st/en/fo/sjplc/land_use_planning.html or
5 www.fs.usda.gov/main/sanjuan/landmanagement/planning. Accessed Oct. 9, 2013.
6
- 7 USFS et al., 2010, *Federal Land Managers' Air Quality Related Values Work Group (FLAG):*
8 *Phase I Report—Revised (2010)*, Natural Resource Report NPS/NRPC/NRR–2010/232, Oct.
9 Available at http://www.nature.nps.gov/air/pubs/pdf/flag/FLAG_2010.pdf. Accessed Sept. 19,
10 2012.
11
- 12 USFWS (U.S. Fish and Wildlife Service), 1990, *Humpback Chub Recovery Plan*, Denver, Colo.
13 Available at http://ecos.fws.gov/docs/recovery_plan/900919c.pdf. Accessed Nov. 25, 2011.
14
- 15 USFWS, 2002a, *Bonytail (Gila elegans) Recovery Goals: Amendment and Supplement to the*
16 *Bonytail Chub Recovery Plan*, USFWS Mountain-Prairie Region 6, Denver, Colo.
17
- 18 USFWS, 2002b, *Colorado Pikeminnow (Ptychocheilus lucius) Recovery Goals: Amendment and*
19 *Supplement to the Colorado Squawfish Recovery Plan*, USFWS Mountain-Prairie Region 6,
20 Denver, Colo.
21
- 22 USFWS, 2002c, *Razorback Sucker (Xyrauchen texanus) Recovery Goals: Amendment and*
23 *Supplement to the Razorback Sucker Recovery Plan*, USFWS Mountain-Prairie Region 6,
24 Denver, Colo.
25
- 26 USFWS, 2003, *Preliminary Estimates of Waterfowl Hunter Activity and Harvest during the 2001*
27 *and 2002 Hunting Seasons, Administrative Report—July 2003*, Division of Migratory Bird
28 Management, Harvest Surveys Section, Laurel, Md.
29
- 30 USFWS, 2009a, *USFWS Block-Cleared Areas for Black-Footed Ferret Surveys in Colorado*,
31 Sept. Available at [http://www.fws.gov/mountain-prairie/species/mammals/blackfootedferret/
32 statewide_block_clearance_map_090809_final.pdf](http://www.fws.gov/mountain-prairie/species/mammals/blackfootedferret/statewide_block_clearance_map_090809_final.pdf). Accessed Feb. 7, 2012.
33
- 34 USFWS, 2009b, *Consultation Guidance for de Minimis Water Depletions in the Upper Colorado*
35 *River Basin*, U.S. Fish and Wildlife Service, Mountain-Prairie Region, Lakewood, Colo.
36
- 37 USFWS, 2011a, *IPaC—Information, Planning, and Conservation System*. Available at
38 <http://ecos.fws.gov/ipac/>. Accessed Dec. 16, 2011.
39
- 40 USFWS, 2011b, *Critical Habitat Portal, FWS Critical Habitat for Threatened and Endangered*
41 *Species*. Available at <http://criticalhabitat.fws.gov/crithab/>. Accessed Dec. 16, 2011.
42
- 43 USFWS, 2011c, *The Effects of Noise on Wildlife*, Available at [http://www.fws.gov/
44 windenergy/docs/Noise.pdf](http://www.fws.gov/windenergy/docs/Noise.pdf). Accessed Nov. 14, 2011.
45

- 1 USFWS, 2012, *National Wetlands Inventory*, Interactive Mapping Program. Available at
2 <http://www.fws.gov/wetlands>. Accessed Sept. 17, 2012.
3
- 4 USFWS, 2013a, “Endangered and Threatened Wildlife and Plants; Endangered Status for
5 Gunnison Sage-Grouse; Proposed Rule,” *Federal Register* 78:2485-2538.
6
- 7 USFWS 2013b, “Endangered and Threatened Wildlife and Plants; Designation of Critical
8 Habitat for Gunnison Sage-Grouse,” *Federal Register* 78:2539-2570.
9
- 10 USGCRP (U.S. Global Change Research Program), 2009, *Global Climate Change Impacts in the*
11 *United States: A State of Knowledge Report from the U.S. Global Change Research Program*,
12 Cambridge University Press, New York, N.Y.
13
- 14 USGS (U.S. Geological Survey), 2001, *Federally Owned Coal, Federal Lands, and Coal Quality*
15 *in the Colorado Plateau Region*, FS-001-01, Feb.
16
- 17 USGS, 2003, *Physiographic Regions*. Available at <http://tapestry.usgs.gov/physiogr/physio.html>.
18 Accessed Dec. 21, 2011.
19
- 20 USGS, 2004, *National Gap Analysis Program, Provisional Digital Land Cover Map for the*
21 *Southwestern United States*, Version 1.0, RS/GIS Laboratory, College of Natural Resources,
22 Utah State University, Logan, Utah.
23
- 24 USGS, 2005, *Southwest Regional GAP Analysis Project—Land Cover Descriptions*, RS/GIS
25 Laboratory, College of Natural Resources, Utah State University, Logan, Utah.
26
- 27 USGS, 2007, *National Gap Analysis Program, Digital Animal-Habitat Models for the*
28 *Southwestern United States*, Version 1.0, Center for Applied Spatial Ecology, New Mexico
29 Cooperative Fish and Wildlife Research Unit, New Mexico State University. Available at
30 <http://fws-nmcfwru.nmsu.edu/swregap/HabitatModels/default.htm>. Accessed March 15, 2010,
31 and Dec. 16, 2011.
32
- 33 USGS, 2011a, *Hydrologic Unit Maps*. Available at <http://water.usgs.gov/GIS/huc.html>.
34 Accessed Dec. 21, 2011.
35
- 36 USGS, 2011b, *National Water Information System (NWIS)*.
37
- 38 USGS, 2012a, *Earthquake Data Base Search Results: 100 km Radius from Circle Center Point*
39 *Latitude 38.336N, Longitude 108.859W*, National Earthquake Information Center, Sept. 10.
40
- 41 USGS, 2012b, *Glossary of Terms on EQ Maps*, Earthquake Hazards Program.
42
- 43 USGS Canyonlands Research Station, 2006, *An Introduction to Biological Soil Crusts*. Available
44 at <http://www.soilcrust.org/crust101.htm>. Accessed Jan. 11, 2012.
45

- 1 Valdez, R.A., et al., 1992, *Dolores River Native Fish Suitability Study*, BIO/WEST Report
2 No. TR-272-02, final report prepared for Utah Division of Wildlife Resources, Salt Lake City,
3 Utah.
4
- 5 Walker, J.D., and J.W. Geissman, 2009, *Geologic Time Scale*, Geological Society of America.
6
- 7 WAPA (Western Area Power Administration), 2012a, *Transmission Line Management Issues on*
8 *Forested Rights-of-Way: A Brief Overview*. Available at [http://ww2.wapa.gov/sites/western/](http://ww2.wapa.gov/sites/western/transmission/infrastruct/Documents/Western-FS-EIS/Projectoverview.pdf)
9 [transmission/infrastruct/Documents/Western-FS-EIS/Projectoverview.pdf](http://ww2.wapa.gov/sites/western/transmission/infrastruct/Documents/Western-FS-EIS/Projectoverview.pdf). Accessed
10 Feb. 22, 2012.
11
- 12 WAPA, 2012b, *Proposed Project Description Summary*. Available at [http://ww2.wapa.gov/](http://ww2.wapa.gov/sites/western/transmission/infrastruct/Documents/Western-FS-EIS/projectdescription.pdf)
13 [sites/western/transmission/infrastruct/Documents/Western-FS-EIS/projectdescription.pdf](http://ww2.wapa.gov/sites/western/transmission/infrastruct/Documents/Western-FS-EIS/projectdescription.pdf).
14 Accessed Feb. 22, 2012.
15
- 16 Watts, K.R., 2000, *Effects of the Paradox Valley Unit on Dissolved Solids, Sodium, and Chloride*
17 *in the Dolores River near Bedrock, Colorado, Water Years 1988–98*, Water-Resources
18 Investigations Report 00-4011, U.S. Geological Survey.
19
- 20 Watts, S.T., and S.T. Knick, 1996, “The Influence of Vegetation, Soils, and Disturbance on
21 Townsend’s Ground Squirrel Abundance,” in *BLM/IDARNG Research Project Final Report*,
22 Vol. 2, U.S. Geological Survey, Forest and Rangeland Ecosystem Science Center, Snake River
23 Field Station, Boise, Idaho.
24
- 25 Weir, Jr., et al., 1983, *Regional Hydrology of the Dolores River Basin, Eastern Paradox Basin,*
26 *Colorado, and Utah*, Water-Resources Investigations Report 83-4217, U.S. Geological Survey.
27
- 28 WEST, Inc., 2007, *Wildlife and Habitat Baseline Study for the Whiskey Ridge Wind Power*
29 *Project, Kittitas County, Washington*, prepared for Whiskey Ridge Power Partners LLC, May.
30 Available at [http://www.efsec.wa.gov/wildhorse/Supplemental%20EIS/DSEIS/](http://www.efsec.wa.gov/wildhorse/Supplemental%20EIS/DSEIS/WHISKEYRIDGE_BASELINE%20REPORT_FINAL%20Revision%2008-05-08.pdf)
31 [WHISKEYRIDGE_BASELINE%20REPORT_FINAL%20Revision%2008-05-08.pdf](http://www.efsec.wa.gov/wildhorse/Supplemental%20EIS/DSEIS/WHISKEYRIDGE_BASELINE%20REPORT_FINAL%20Revision%2008-05-08.pdf). Accessed
32 Aug. 6, 2009.
33
- 34 Westerling, A.L., et al., 2006, “Warming and Earlier Spring Increase Western U.S. Forest
35 Wildfire Activity,” *Science* 313:940–943.
36
- 37 Whetstone Associates, 2011, *JD-8 Mine Environmental Protection Plan*, work performed under
38 contract to Cotter Corp., Gunnison, Colo., June.
39
- 40 Whetstone Associates, 2012, *JD-6 Mine Environmental Protection Plan*, work performed under
41 contract to Cotter Corp., Gunnison, Colo., Sept.
42
- 43 White, D., 2014, personal communication from White (Energy Fuels Resources (USA) Inc.,
44 Lakewood, Colo.) to M. Picel (Argonne National Laboratory, Argonne, Ill.), Jan. 8.
45

- 1 Whitfield, M.S., et al., 1983, *Regional Hydrology of the Blanding-Durango Area, Southern*
2 *Paradox Basin, Utah, and Colorado*, Water Resources Investigations Report 83-4218,
3 U.S. Geological Survey.
4
- 5 WHO (World Health Organization), 2007, *Extremely Low Frequency Fields*, Environmental
6 Health Criteria 238, WHO Press, Geneva, Switzerland.
7
- 8 Widmann, B.L., 1997, "Fault Number 2286—Paradox Valley Graben," in *Quaternary Fault and*
9 *Fold Database of the United States*, U.S. Geological Survey. Available at <http://earthquakes.usgs.gov/regional/qfaults>. Accessed Dec. 19, 2011.
10
- 11
- 12 Williams, G., 2012, *Subject: Notification of Ore Shipments from Cotter Corporation Canon City*
13 *Mill*, letter from Williams to L. Kilpatrick.
14
- 15 Williams, G., 2013, personal communication from Williams (Cotter Corporation, Nucla, Colo.)
16 to Y.-S. Chang (Argonne National Laboratory, Argonne, Ill.), Aug. 13.
17
- 18 Windingstad, R.M., et al., 1987, "Salt Toxicosis in Waterfowl in North Dakota," *Journal of*
19 *Wildlife Diseases* 23(3):443–446.
- 20
- 21 Wobeser, G., and J. Howard, 1987, "Mortality of Waterfowl on a Hypersaline Wetland as a
22 Result of Salt Encrustation," *Journal of Wildlife Diseases* 23(1):127–134.
- 23
- 24 Wong, I.G., and J.R. Humphrey, 1989, "Contemporary Seismicity, Faulting, and the State of
25 Stress in the Colorado Plateau," *Geological Society of America* 101(9):1127–1146.
- 26
- 27 Woodward, C., 2012a, *CPW Bat Sites Uranium Lease (sic) Tracts Analysis by Species*. Subject:
28 CPW Internal Review Comments on DOE Uranium Leasing Program PDEIS. Attachment to
29 e-mail from J. Holst (Energy Liaison, Colorado Parks and Wildlife, Southwest Region, Durango,
30 Colo.) to L. Kilpatrick (Realty Officer, Office of Legacy Management, U.S. Department of
31 Energy, Westminster, Colo.), June 15, 2012.
- 32
- 33 Woodward, C., 2012b, *CPW Bat Sites Uranium Lease Tracts Analysis, v2*, Subject: CPW
34 Internal Review Comments on DOE Uranium Leasing Program PDEIS. Attachment to e-mail
35 from J. Holst (Energy Liaison, Colorado Parks and Wildlife, Southwest Region, Durango, Colo.)
36 to L. Kilpatrick (Realty Officer, Office of Legacy Management, U.S. Department of Energy,
37 Westminster, Colo.), June 15, 2012.
- 38
- 39 WRCC (Western Regional Climate Center), 1997, *Average Annual Precipitation in Colorado*.
40 Available at <http://www.wrcc.dri.edu/pcpn/co.gif>. Accessed Dec. 21, 2011.
- 41
- 42 WRCC, 2011a, *Western U.S. Climate Historical Summaries*. Available at <http://www.wrcc.dri.edu/Climsum.html>. Accessed Nov. 5, 2011.
43
- 44
- 45 WRCC, 2011b, *Climate of Colorado*. Available at <http://www.wrcc.dri.edu/narratives/COLORADO.htm>. Accessed Dec. 21, 2011.
46

-
- 1 www.nationalparked.com, 2011, *Black Canyon of the Gunnison, Visitation Statistics by Year*.
2 Available at http://www.nationalparked.com/US/Black_Canyon_of_the_Gunnison/Visitation_
3 [History.php](http://www.nationalparked.com/US/Black_Canyon_of_the_Gunnison/Visitation_).
4
- 5 Xcel (Xcel Energy), 2010, *First-ever Solar-Coal Project Is Running*, June 29. Available at
6 http://www.xcelenergy.com/About_Us/Energy_News/News_Archive/First-ever_solar-
7 [coal_project_is_running](http://www.xcelenergy.com/About_Us/Energy_News/News_Archive/First-ever_solar-). Accessed Feb. 24, 2012.
8
- 9 Yarmoloy, C., et al., 1988, “Behavior Responses and Reproduction of Mule Deer, *Odocoileus*
10 *hemionus*, Does Following Experimental Harassment with an All-Terrain Vehicle,” *Canadian*
11 *Field-Naturalist* 102:425–429.
12
- 13 Yu, C., et al., 2001, *User’s Manual for RESRAD Version 6*, ANL/EAD-4, Argonne National
14 Laboratory, Argonne, Ill., July.
15

1
2
3
4
5
6
7
8
9
10
11
12
13
14
15
16
17
18

APPENDIX A:
EXAMPLES OF EXISTING LEASES FOR THE
URANIUM LEASING PROGRAM

1
2
3
4
5
6
7
8
9
10
11
12
13
14

This page intentionally left blank

APPENDIX A:

**EXAMPLES OF EXISTING LEASES FOR THE
URANIUM LEASING PROGRAM**

1
2
3
4
5
6
7 Facsimiles of two generic leases are shown in this appendix. The leases could be
8 modified in the future as a result of the ULP PEIS process. The first lease agreement was used
9 for leases prior to May 2008 (i.e., the original leases issued in 1974, and the continuation of
10 those leases up to and including the issuance of new leases for the 13 “active” lease tracts on
11 April 30, 2008). The second lease agreement was used for the competitive bid solicitation
12 process that DOE completed in June 2008 for the remaining lease tracts that were “inactive” at
13 that time. As discussed in Section 1.2.1, the one primary difference between these two lease
14 agreements is the manner in which the production royalty for each lease is calculated. Please
15 note that for both leases, each lessee is required to pay an annual royalty fee, which is basically
16 an annual rent payment, for which the amount is established by DOE and which is paid at the
17 beginning of each lease year just to hold the lease for that year.
18

19 For the “active” leases (see the first lease shown in this appendix [page A-5]), the lessee
20 must pay a production royalty, paid on a monthly basis during periods of active ore production,
21 for ore produced from the lease tract and shipped to a uranium mill or other processing facility.
22 This production royalty is a combination of a “base” royalty, calculated as a three percentage
23 (2%, 10%, and 14%) step-function applied to the value of the ore produced, plus a bid royalty,
24 calculated by applying the lessee’s royalty bid percentage to the value of the ore produced. The
25 base royalty is applied to the lease tract’s total ore production, and the bid royalty is applied to
26 the lease tract’s ore production up to the “bid quantity,” which is an amount specified for each
27 lease tract in pounds of uranium produced.
28

29 For the newer leases (see the second lease shown in this appendix [page A-29]), the
30 lessee must pay just the bid royalty, as calculated above; however, the bid royalty is applied to
31 the lease tract’s total ore production.
32
33

1
2
3
4
5
6
7
8
9
10
11
12
13
14
15
16

This page intentionally left blank

April 2008

DE-RO01-08LM70XXX

URANIUM MINING LEASE

UNITED STATES DEPARTMENT OF ENERGY

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

April 2008

DE-RO01-08LM70XXX

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

April 2008

DE-RO01-08LM70XXX

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.

April 2008

DE-RO01-08LM70XXX

(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;

April 2008

DE-RO01-08LM70XXX

- (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

April 2008

DE-RO01-08LM70XXX

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.

April 2008

DE-RO01-08LM70XXX

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.

April 2008

DE-RO01-08LM70XXX

- (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

April 2008

DE-RO01-08LM70XXX

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.

April 2008

DE-RO01-08LM70XXX

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 Realty Officer Title _____
Date _____ Date _____

April 2008

DE-RO01-08LM70XXX

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”.

April 2008

DE-RO01-08LM70XXX

APPENDIX B

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 U₃O₈ 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.

April 2008

DE-RO01-08LM70XXX

(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 U_3O_8) as reported weekly in *U_x 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 U_3O_8 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 V_2O_5) as reported twice weekly in *Metal Bulletin (Non-Ferrous Primary Metals, Noble Alloys and Ores, Vanadium pentoxide)*. The

April 2008

DE-RO01-08LM70XXX

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:

$$U = (Q_{WA} + TP_{WA}) / 2 \quad (1)$$

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

$$Q_{WA} = Q_{SM} * P_{SM} + Q_{LTM} * P_{LTM} \quad (2)$$

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

$$V = Q_{WA} * 0.5 \quad (3)$$

April 2008

DE-RO01-08LM70XXX

where:

V = Annualized Quarterly Weighted-Average Price for Vanadium

Q_{WA} = 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 U₃O₈ and V₂O₅ per dry ton of ore in the lots so assayed by (i) multiplying the total number of pounds of U₃O₈ and V₂O₅, 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 U₃O₈ and V₂O₅, 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 U₃O₈ and two decimal places for V₂O₅; and

(2) Adding together the dollar amounts obtained by (i) multiplying the number of recoverable pounds of U₃O₈ per dry ton of ore in the lots so assayed by the price per pound of U₃O₈ established by DOE and (ii) multiplying the number of recoverable pounds of V₂O₅ per dry ton of ore in the lots so assayed by the price per pound of V₂O₅ 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 V₂O₅ 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

April 2008

DE-RO01-08LM70XXX

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.

April 2008

DE-RO01-08LM70XXX

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 U_3O_8 and V_2O_5 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 U_3O_8 shall be adjusted to the nearest 0.001% and all assays for V_2O_5 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 U_3O_8 or V_2O_5 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 U_3O_8 and V_2O_5 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 U_3O_8 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 U_3O_8 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.

April 2008

DE-RO01-08LM70XXX

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.

April 2008

DE-RO01-08LM70XXX

(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

April 2008

DE-RO01-08LM70XXX

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.

April 2008

DE-RO01-08LM70XXX

(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.

April 2008

DE-RO01-08LM70XXX

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.

April 2008

DE-RO01-08LM70XXX

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

April 2008

DE-RO01-08LM70XXX

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.

June 2008

DE-RO01-08LM70XXX

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.

June 2008

DE-RO01-08LM70XXX

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.

June 2008

DE-RO01-08LM70XXX

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,

June 2008

DE-RO01-08LM70XXX

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:

June 2008

DE-RO01-08LM70XXX

- (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”.

June 2008

DE-RO01-08LM70XXX

(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.

June 2008

DE-RO01-08LM70XXX

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.

June 2008

DE-RO01-08LM70XXX

- (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 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

June 2008

DE-RO01-08LM70XXX

(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

June 2008

DE-RO01-08LM70XXX

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

June 2008

DE-RO01-08LM70XXX

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.

June 2008

DE-RO01-08LM70XXX

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 <u>Realty Officer</u>	Title _____
Date _____	Date _____

June 2008

DE-RO01-08LM70XXX

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.

June 2008

DE-RO01-08LM70XXX

APPENDIX B

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.

June 2008

DE-RO01-08LM70XXX

(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 U_3O_8) as reported weekly in *U_x 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 U_3O_8 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 V_2O_5) 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:

$$U = (Q_{WA} + TP_{WA}) / 2 \quad (1)$$

where:

U = Annualized Quarterly Weighted-Average Price for Uranium

Q_{WA} = Quarterly Weighted-Average Price for Uranium

June 2008

DE-RO01-08LM70XXX

TP_{WA} = Total Purchased (Weighted-Average Price) for Uranium

$$Q_{WA} = Q_{SM} * P_{SM} + Q_{LTM} * P_{LTM} \quad (2)$$

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

$$V = Q_{WA} * 0.5 \quad (3)$$

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

June 2008

DE-RO01-08LM70XXX

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.

June 2008

DE-RO01-08LM70XXX

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 U_3O_8 and V_2O_5 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 U_3O_8 shall be adjusted to the nearest 0.001% and all assays for V_2O_5 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 U_3O_8 or V_2O_5 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 U_3O_8 and V_2O_5 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 U_3O_8 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 U_3O_8 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.

June 2008

DE-RO01-08LM70XXX

APPENDIX C

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—

June 2008

DE-RO01-08LM70XXX

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,

June 2008

DE-RO01-08LM70XXX

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.

June 2008

DE-RO01-08LM70XXX

(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.

June 2008

DE-RO01-08LM70XXX

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.

June 2008

DE-RO01-08LM70XXX

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

June 2008

DE-RO01-08LM70XXX

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.

June 2008

DE-RO01-08LM70XXX

This page intentionally left blank

1
2
3
4
5
6
7
8
9
10
11
12
13
14
15
16
17
18

APPENDIX B:
SUMMARY OF THE PUBLIC SCOPING PROCESS FOR THE ULP PEIS

1
2
3
4
5
6
7
8
9
10
11
12
13
14

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

1 62 comment forms submitted through the project web site. Among the 287 comment documents
 2 received, 8 were from Federal, state, or local government agencies; and the remainder were from
 3 individuals or other organizations. Comment documents were received from 13 states; however,
 4 approximately 88% of the comments were from Colorado communities or communities near the
 5 DOE ULP lease tracts.

8 **B.3 SUMMARY OF SCOPING COMMENTS**

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

15 **TABLE B-1 Public Scoping Meeting Locations,**
 16 **Dates, and Attendance**

Location	Date	No. in Attendance
Montrose, Colorado	August 8, 2011	65
Telluride, Colorado	August 9, 2011	85
Naturita, Colorado	August 10, 2011	51
Monticello, Utah	August 11, 2011	1
Total		202

18
 19
 20

1 **TABLE B-2 Public Scoping Comments Considered To Be Within the Scope of the ULP PEIS**

Public Scoping Comment	Rationale
1. Alternatives	
1A. Support for Alternative 1.	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.
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.	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).
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.	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.
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).	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.
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.	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.
1F. Vacate all leases and re-bid them with both a royalty component and a performance-based component.	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.

TABLE B-2 (Cont.)

Public Scoping Comment	Rationale
2. Impact Analysis	
<p>2A. 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.</p>	<p>The analysis of cultural resources discussed in the Draft PEIS for the five alternatives evaluated addresses this concern. DOE initiated government-to-government consultation with six tribes. The status of these consultations to date is summarized in Chapter 6 of the Draft PEIS. The Draft PEIS does identify archaeological surveys to be conducted on a project-specific basis as exploration and mine development plans are submitted to DOE for approval. The preparation of an antiquities preservation plan and other plans would be done consistent with appropriate requirements.</p>
<p>2B. 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.</p>	<p>The impacts analysis in Chapter 4 for socioeconomics addresses this concern.</p>
<p>2C. 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.</p>	<p>Same as 2B.</p>
<p>2D. 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.</p>	<p>The impacts analysis for water resources addresses potential impacts on water quality from the ULP proposed action (i.e., from exploration, mine development and operations, and reclamation). Uranium ore milling or processing (e.g., at the proposed Piñon Ridge Mill or at White Mesa Mill) is outside the scope of the ULP proposed action. However, the cumulative impacts analyses conducted for the Draft ULP PEIS considered potential impacts from the proposed Piñon Ridge Mill and the White Mesa Mill.</p>
<p>2E. 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.</p>	<p>BMPs, mitigation measures, and compliance measures are discussed in the Draft ULP PEIS (see Section 4.6 for a summary list) and were considered in the impact analyses for specific resource areas discussed in Chapter 4. These measures include ones that address stormwater runoff. Final measures for mitigating potential impacts would be determined in the record of decision (ROD) for the ULP PEIS and incorporated into approved mine plans, as appropriate.</p>

TABLE B-2 (Cont.)

Public Scoping Comment	Rationale
<p>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.</p>	<p>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.</p>
<p>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.</p>	<p>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.</p>
<p>2H. Include impacts from the release of radioactive and other toxic materials into the atmosphere from mining and milling operations.</p>	<p>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.</p>
<p>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.</p>	<p>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.</p>
<p>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.</p>	<p>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.</p>

TABLE B-2 (Cont.)

Public Scoping Comment	Rationale
<p>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.</p>	<p>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.</p>
<p>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.</p>	<p>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.</p>
<p>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.</p>	<p>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.</p>
<p>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.”</p>	<p>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.</p>

TABLE B-2 (Cont.)

Public Scoping Comment	Rationale
<p>2O. 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.</p>	<p>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.</p>
<p>2P. 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.</p>	<p>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.</p>
<p>2Q. 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.</p>	<p>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.</p>

TABLE B-2 (Cont.)

Public Scoping Comment	Rationale
<p>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.</p>	<p>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.</p>
<p>3. Tribal Concerns</p>	
<p>3A. Address any associated environmental and spiritual impacts on all downstream Native American Nations. Must engage in Section 106 consultation.</p>	<p>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.</p>
<p>4. Policy and Regulatory Issues</p>	
<p>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.</p>	<p>DOE has prepared this Draft ULP PEIS consistent with the purpose and need for agency action discussed in Chapter 1.</p>
<p>4B. DOE should collaborate with other agencies, including the CDRMS, BLM, and EPA.</p>	<p>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.</p>
<p>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.</p>	<p>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.</p>
<p>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.</p>	<p>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.</p>
<p>4E. Local governments requested that affected counties be given an opportunity to meet with DOE separately from the public scoping meetings that were held.</p>	<p>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.</p>

TABLE B-2 (Cont.)

Public Scoping Comment	Rationale
<p>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.</p>	<p>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.</p>
<p>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.</p>	<p>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.</p>
<p>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.</p>	<p>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.</p>
<p>5. Mining Methods</p>	
<p>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?).</p>	<p>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).</p>
<p>6. Uranium Resources</p>	
<p>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.</p>	<p>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.</p>

1
2
3

1 TABLE B-3 Public Scoping Issues Considered To Be Outside the Scope of the ULP PEIS

Public Scoping Comment	Rationale
1. Alternatives	
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.	The timing for when uranium mining should be conducted for the purposes described does not meet the purpose and need for DOE's action.
1B. Investigate the economic feasibility of renewable and alternative energy development.	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.
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.	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.
1D. Analyze a no-action alternative that would allow the 1995 leases to lapse with no reclamation conducted.	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.
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.	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.
2. Impacts Analysis	
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.	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.
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.	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.
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.	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.

2

1
2
3
4
5
6
7
8
9
10
11
12
13
14
15
16
17
18

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

1
2
3
4
5
6
7
8
9
10
11
12
13
14
15

This page intentionally left blank

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 least 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.

1
2
3**TABLE C.1-1 Number of Mines
Considered per Mine Size and
Alternative^{a,b}**

Mine Size	No. of Mines per Alternative		
	Alt. 3	Alt. 4	Alt. 5
Small	2	6	0
Medium	4	10	16
Large	1	2	2
Very large	1	1	1
Total	8	19	19

^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).

4
5
6
7
8**TABLE C.1-2 Total Disturbed Acreage
per Mine Size and Alternative during
Exploration^{a,b}**

Mine Size	Disturbed Acreage per Alternative ^a		
	Alt. 3	Alt. 4	Alt. 5
Small	0.11	0.33	0
Medium	0.44	1.10	1.76
Large	0.17	0.33	0.33

^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.

9

1
2
3**TABLE C.1-3 Assumed Workforce per Labor Category and Alternative during Exploration**

Labor Category	No. of Workers per Alternative ^a		
	Alt. 3	Alt. 4	Alt. 5
Foreman	2.4	5.9	7.0
Laborer	3.4	8.3	9.9
Equipment operator	2.0	4.8	5.7
Truck driver ^b	0.1	0.3	0.3
Cement finisher	0.3	0.8	1.0
Total	8.2	20.1	23.9

^a No exploration activities for Alternatives 1 and 2.

^b Also assumed to operate equipment.

4
5
6

1

TABLE C.1-4 Assumed Total Costs per Alternative during Exploration^a

Cost Element	Cost (\$ 2009) per Alternative		
	Alt. 3	Alt. 4	Alt. 5
Drawings showing boring details	4,810	11,840	14,060
Report and recommendations from PE	10,790	26,560	31,540
Mobilization and demobilization	2,569	6,606	6,606
Mobilization and demobilization, over 500 mi	13,734	35,316	35,316
Air rotary drilling, 6-in.-diameter borehole, unconsolidated, depth of >100 ft	397,667	978,873	1,162,411
Air rotary drilling, 6-in.-diameter borehole, consolidated, depth of >100 ft	132,655	326,536	387,762
Air rotary drilling, 8-in.-diameter borehole, unconsolidated, depth of ≤100 ft	31,488	77,509	92,042
Air rotary drilling, 8-in.-diameter borehole, consolidated, depth of ≤100 ft	17,806	43,830	52,048
Casing for initial borehole	183,082	450,663	535,163
Sample collection during borehole advancement	522,285	1,285,624	1,526,679
Move drill rig around site	72,246	191,609	232,444
Drumming of drill cuttings	202,581	498,474	591,867
Decontamination of drill rig, etc.	1,809	4,453	5,288
Surface pads, concrete (3,000 lb/in. ² or psi, 6-in.-thick concrete)	187,534	461,623	548,177
Total direct costs	1,781,057	4,399,517	5,221,404
Contractor's overhead and profit (6%)	107,000	264,000	313,000
<i>Subtotal contractor's costs</i>	1,888,057	4,663,517	5,534,404
Contractor's bond (1%)	19,000	47,000	56,000
<i>Total contractor's field costs</i>	1,907,057	4,710,517	5,590,404
Construction management (10%)	191,000	471,000	559,000
<i>Total field costs</i>	2,098,057	5,181,517	6,149,404
Architect/engineer costs (25%)	524,000	1,295,000	1,538,000
<i>Subtotal</i>	2,622,057	6,476,517	7,687,404
Program management (6%)	157,000	389,000	462,000
Total exploration costs	2,779,000	6,866,000	8,149,000

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

2

3

1
2**TABLE C.1-5 Assumed Equipment and Total Hours Operated per Mine Size and Alternative during Exploration^a**

Items Assumed	Hours Operated per Mine Size			
	Small	Medium	Large	Very Large
Alternative 3				
Truck, highway, 24,500 GVW, ^b 4×2, 2-axle	214	874	324	0
Flatbed, 8×16 ft	214	862	322	0
Front-end loader, wheeled, 2.5-yd ³ capacity	193	772	290	0
Gas engine, vibrator	221	882	331	0
Water truck	104	416	156	0
Driller/auger	111	452	168	0
Cement truck	141	561	211	0
Alternative 4				
Truck, highway, 24,500 GVW, 4×2, 2-axle	654	2,192	654	0
Flatbed, 8×16 ft	646	2,159	646	0
Front-end loader, wheeled, 2.5-yd ³ capacity	579	1,930	579	0
Gas engine, vibrator	661	2,203	661	0
Water truck	312	1,039	312	0
Driller/auger	339	1,135	339	0
Cement truck	421	1,401	421	0
Alternative 5				
Truck, highway, 24,500 GVW, 4×2, 2-axle	0	3,511	654	0
Flatbed, 8×16 ft	0	3,456	646	0
Front-end loader, wheeled, 2.5-yd ³ capacity	0	3,087	579	0
Gas engine, vibrator	0	3,525	661	0
Water truck	0	1,661	312	0
Driller/auger	0	1,817	339	0
Cement truck	0	2,241	421	0

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

^b GVW = gross vehicle weight.

3
4

1
2**TABLE C.1-6 Assumed Total Material Amounts per Alternative during Exploration^a**

Items Assumed	Amount of Materials per Mine Size			
	Small	Medium	Large	Total
Alternative 3				
Diesel fuel (gal)	12,000	49,000	18,000	79,000
Oil and grease (gal)	300	1,100	400	1,800
Water (gal)	12,000	49,000	18,000	79,000
55-gal drums (each)	385	1,539	577	2,501
Concrete (yd ³)	90	360	130	580
Alternative 4				
Diesel fuel (gal)	37,000	124,000	37,000	198,000
Oil and grease (gal)	800	2,700	800	4,300
Water (gal)	37,000	121,000	37,000	195,000
55-gal drums (each)	1,154	3,846	1,154	6,154
Concrete (yd ³)	270	890	270	1,430
Alternative 5				
Diesel fuel (gal)	0	198,000	37,000	235,000
Oil and grease (gal)	0	4,400	800	5,200
Water (gal)	0	194,000	37,000	231,000
55-gal drums (each)	0	6,153	1,154	7,307
Concrete (yd ³)	0	1,420	270	1,690

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

3
4

1
2**TABLE C.1-7 Assumed Annual Air Emissions on an Individual Mine Basis during Exploration^a**

Criteria Pollutant	Annual Air Emissions (tons) per Mine Size		
	Small	Medium	Large
Total hydrocarbons (THC)	0.1	0.2	0.2
Reactive organic compounds (ROCs)	0.1	0.1	0.2
Nitrogen oxides (NO _x)	0.6	1.2	1.8
Sulfur dioxide (SO ₂)	0.1	0.1	0.2
Carbon monoxide (CO)	0.3	0.5	0.8
Total suspended particulates (TSP)	0.1	0.2	0.3
Particulate matter ≤10 μm (PM ₁₀) ^b	0.1	0.2	0.3
Particulate matter ≤2.5 μm (PM _{2.5}) ^c	0.1	0.1	0.2
Carbon dioxide (CO ₂) ^d	68.6	138	206

- ^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 PM₁₀ is 0.22 ton/acre-mo (average conditions) (SCAQMD 2007).
- ^c Assumes that 21% of fugitive dust PM₁₀ is PM_{2.5} and that 89% of combustion PM₁₀ is PM_{2.5} (SCAQMD undated).
- ^d The CO₂ emission factor for diesel fuel was taken from EPA (2008).

3

4

1
2**TABLE C.1-8 Assumed Total Air Emissions during Exploration^a**

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

- ^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 PM_{2.5} and that 89% of combustion PM₁₀ is PM_{2.5} (SCAQMD undated).
- ^d The CO₂ emission factor for diesel fuel was taken from EPA (2008).

3
4
5
6**TABLE C.1-9 Wastes Generated per Alternative during Exploration**

Waste Category	Waste Generated (gal) per Alternative		
	Alt. 3	Alt. 4	Alt. 5
Sanitary ^a	33,000	81,000	97,000
Other	15,000	36,000	43,000

- ^a Amount of sanitary waste was estimated based on the total exploration workforce.

7
8
9

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

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

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

Cost Element	Amount per Alternative		
	Alt. 3	Alt. 4	Alt. 5
Labor (person-hours)	67,000	144,000	159,000
Steel (tons)	4,400	9,900	10,600
Lumber (1,000 board feet)	1,000	2,200	2,400
Fuel (gal)	67,000	144,000	159,000
Lubricant (gal)	16,000	35,000	38,000
Explosives (tons)	2,100	4,700	5,000
Electricity (kWh)	580,000	1,232,000	1,375,000

1
2**TABLE C.2-3 Number of Workers per Mine Size and Worker Salary per Labor Category**

Labor Category	No. of Workers per Mine Size				Individual Annual Salary with Overhead and Profit (\$)
	Small	Medium	Large	Very Large	
Mine workers	6	10	16	50	81,250
Mechanic	0.1	0.1	0.1	0.1	81,250
Geologist	0.1	0.1	0.1	0.1	137,500
Surveyor	0.1	0.1	0.1	0.1	81,250
Engineer	0.1	0.1	0.1	0.1	81,250
Environmental specialist	0.1	0.1	0.1	0.1	75,000
Other administrative support (e.g., accountant)	0.1	0.1	0.1	0.1	83,333
Total	6.6	10.6	16.6	50.6	

3
4
5
6**TABLE C.2-4 Annual Worker Salaries per Labor Category and Mine Size**

Labor Category	Salary (\$) per Mine Size			
	Small	Medium	Large	Very Large
Mine workers	487,500	812,500	1,300,000	4,062,500
Mechanic	8,125	8,125	8,125	8,125
Geologist	13,750	13,750	13,750	13,750
Surveyor	8,125	8,125	8,125	8,125
Engineer	8,125	8,125	8,125	8,125
Environmental specialist	7,500	7,500	7,500	7,500
Other administrative support (e.g., accountant)	8,333	8,333	8,333	8,333
Total	541,458	866,458	1,353,958	4,116,458

7
8

1 **TABLE C.2-5 Number and Cost of Capital Equipment Units per Mine Size**

Items Assumed	Number of Units per Mine Size ^a				Unit Cost (\$)
	Small	Medium	Large	Very Large	
Underground equipment					
Diesel skid steer loaders, 2-yd ³ capacity	1	2	3	– ^a	55,000
Diesel trucks (buggies), 5- to 10-ton capacity	2	4	8	–	77,800
Development drill, jumbo	1	1	1	–	55,000
Production drills, jacklegs	3	6	9	–	300
Exploration drills, longhole	1	1	2	–	82,000
Diesel boss buggies and utility vehicles	2	3	4	–	12,200
Surface Equipment					
Front-end loader, 2- to 3-yd ³ capacity	1	1	1	1	342,000
Loaders, 8- to 10-yd ³ capacity	–	–	–	3	123,000
Backhoe/skid loader or excavator	1	1	1	1	157,000
Highway haul trucks, 22- to 24-ton capacity	2	2	3	–	599,000
Dump truck, 12 yd ³	–	–	–	3	200,000
Bulldozer, 200 hp	1	1	1	–	315,000
Bulldozer, 400 hp	–	–	–	3	625,000
Motor grader, 140 hp	1	1	1	1	160,000
Flatbed trailer with tractor or 1-ton vehicle	1	1	1	–	10,000
Maintenance truck	–	–	–	1	158,000
Pickup truck, ¾ ton, four-wheel drive	1	1	2	4	30,000
Snow plow	1	1	1	–	62,000
Power generators	1	1	2	–	79,950
Scraper	–	–	–	4	77,200
Truck, ≥60 tons	–	–	–	4	599,000

^a A dash indicates none.

2

3

1

TABLE C.2-6 Total Capital Equipment Costs per Alternative

Items Assumed	Total Capital Equipment Cost (\$ 2009) per Alternative		
	Alt. 3	Alt. 4	Alt. 5
Underground equipment			
Diesel skid steer loaders, 2-yd ³ capacity	715,000	1,760,000	2,090,000
Diesel trucks (buggies), 5- to 10-ton capacity	2,178,400	5,290,400	6,224,000
Development drill, jumbo	385,000	990,000	990,000
Production drills, jacklegs	11,700	28,800	34,200
Exploration drills, longhole	656,000	1,640,000	1,640,000
Diesel boss buggies and utility vehicles	244,000	610,000	683,200
Surface equipment			
Front-end loader, 2- to 3-yd ³ capacity	2,736,000	6,498,000	6,498,000
Loaders, 8- to 10-yd ³ capacity	369,000	369,000	369,000
Backhoe/skid loader or excavator	1,256,000	2,983,000	2,983,000
Highway haul trucks, 22- to 24-ton capacity	8,985,000	22,762,000	22,762,000
Dump truck, 12 yd ³	600,000	600,000	600,000
Bulldozer, 200 hp	2,205,000	5,670,000	5,670,000
Bulldozer, 400 hp	1,875,000	1,875,000	1,875,000
Motor grader, 140 hp	1,280,000	3,040,000	3,040,000
Flatbed trailer with tractor or 1-ton vehicle	70,000	180,000	180,000
Maintenance truck	158,000	158,000	158,000
Pickup truck, ¾ ton, four-wheel drive	360,000	720,000	720,000
Snow plow	434,000	1,116,000	1,116,000
Power generators	639,600	1,599,000	1,599,000
Scraper	308,800	308,800	308,800
Truck, ≥60 tons	2,396,000	2,396,000	2,396,000
Total	27,862,500	60,594,000	61,936,200

2

3

1 **TABLE C.2-7 Estimated Total Capital Costs per Mine Size**

Cost Element	Total Capital Cost (\$ 2009) per Mine Size			
	Small	Medium	Large	Very Large
Equipment purchase	2,727,000	2,951,000	4,121,000	6,486,000
Labor	242,000	366,000	555,000	708,000
Steel	232,000	306,000	403,000	473,000
Lumber	23,000	30,000	38,000	44,000
Fuel	13,000	20,000	30,000	38,000
Lubricant	5,000	7,000	11,000	14,000
Explosives	124,000	166,000	222,000	263,000
Tires	9,000	14,000	20,000	26,000
Construction materials	223,000	317,000	451,000	554,000
Electricity	4,000	6,000	10,000	13,000
Total direct costs	3,602,000	4,183,000	5,861,000	8,619,000
Contractor's overhead and profit (6%)	216,000	251,000	352,000	517,000
<i>Subtotal contractor's costs</i>	<i>3,818,000</i>	<i>4,434,000</i>	<i>6,213,000</i>	<i>9,136,000</i>
Contractor's bond (1%)	38,000	44,000	62,000	91,000
<i>Total contractor's field costs</i>	<i>3,856,000</i>	<i>4,478,000</i>	<i>6,275,000</i>	<i>9,227,000</i>
Construction management (10%)	386,000	448,000	628,000	923,000
<i>Total field costs</i>	<i>4,242,000</i>	<i>4,926,000</i>	<i>6,903,000</i>	<i>10,150,000</i>
Architecture/engineering costs (25%)	1,061,000	1,232,000	1,726,000	2,538,000
<i>Subtotal</i>	<i>5,303,000</i>	<i>6,158,000</i>	<i>8,629,000</i>	<i>12,688,000</i>
Program management (6%)	318,000	369,000	518,000	761,000
Total capital costs	5,621,000	6,527,000	9,147,000	13,449,000

2

3

1

TABLE C.2-8 Estimated Total Capital Costs per Alternative

Cost Element	Total Capital Cost (\$ 2009) per Alternative		
	Alt. 3	Alt. 4	Alt. 5
Equipment purchase	27,863,000	60,595,000	61,937,000
Labor	3,213,000	6,934,000	7,681,000
Steel	2,565,000	5,732,000	6,174,000
Lumber	246,000	555,000	593,000
Fuel	174,000	375,000	414,000
Lubricant	64,000	138,000	152,000
Explosives	1,396,000	3,108,000	3,359,000
Tires	118,000	257,000	283,000
Construction materials	2,717,000	5,958,000	6,524,000
Electricity	57,000	121,000	135,000
Total direct costs	38,413,000	83,773,000	87,252,000
Contractor's overhead and profit (6%)	2,305,000	5,026,000	5,235,000
<i>Subtotal contractor's costs</i>	40,718,000	88,799,000	92,487,000
Contractor's bond (1%)	407,000	888,000	925,000
<i>Total contractor's field costs</i>	41,125,000	89,687,000	93,412,000
Construction management (10%)	4,113,000	8,969,000	9,341,000
<i>Total field costs</i>	45,238,000	98,656,000	102,753,000
Architecture/engineering costs (25%)	11,310,000	24,664,000	25,688,000
<i>Subtotal</i>	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

2

3

1
2**TABLE C.2-9 Assumed Annual Air Emissions on an Individual Mine Basis during Development^a**

Criteria Pollutant	Annual Air Emissions (tons) per Mine Size			
	Small	Medium	Large	Very Large
Total hydrocarbons (THC)	0.1	0.1	0.1	0.2
Reactive organic compounds (ROCs)	0.1	0.1	0.1	0.2
Nitrogen oxides (NO _x)	2.2	3.0	4.2	5.1
Sulfur dioxide (SO ₂)	0.3	0.4	0.5	0.6
Carbon monoxide (CO)	6.5	8.8	11.8	14.0
Total suspended particulates (TSP)	11.3	15.5	20.6	58.1
Particulate matter ≤10 μm (PM ₁₀) ^b	9.6	13.1	17.4	37.5
Particulate matter ≤2.5 μm (PM _{2.5}) ^c	1.2	1.6	2.1	5.0
Carbon dioxide (CO ₂) ^d	56.8	84.3	126	162

^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 PM_{2.5} and that 89% of combustion PM₁₀ is PM_{2.5} (SCAQMD undated).

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

3
4

1
2**TABLE C.2-10 Estimated Annual Air Emissions per Alternative during Development^a**

Criteria Pollutant	Annual Air Emissions (tons) per Alternative		
	Alt. 3	Alt. 4	Alt. 5
Total hydrocarbons (THC)	0.8	1.8	2.0
Reactive organic compounds (ROCs)	0.8	1.7	1.9
Nitrogen oxides (NO _x)	26	57	62
Sulfur dioxide (SO ₂)	3.1	6.9	7.5
Carbon monoxide (CO)	74	165	176
Total suspended particulates (TSP)	262	520	554
Particulate matter ≤10 μm (PM ₁₀) ^b	225	459	489
Particulate matter ≤2.5 μm (PM _{2.5}) ^c	36	73	78
Carbon dioxide (CO ₂) ^d	745	1,601	1,767

^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 PM_{2.5} and that 89% of combustion PM₁₀ is PM_{2.5} (SCAQMD undated).

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

3
4
5
6**TABLE C.2-11 Wastes Generated per Alternative during Development**

Waste Category	Waste Generated (gal) per Alternative		
	Alt. 3	Alt. 4	Alt. 5
Sanitary ^a	136,000	292,000	322,000
Other	60,000	130,000	143,000

^a Amount of sanitary waste was estimated based on total construction workforce.

7
8

1
2**TABLE C.2-12 Total Worker Peak-Year Annual Wages per Mine Size and Alternative**

Mine Size	Annual Wages (\$) per Alternative		
	Alt. 3	Alt. 4	Alt. 5
Small	1,083,000	3,249,000	0
Medium	3,466,000	8,665,000	13,863,000
Large	1,354,000	2,708,000	2,708,000
Very large	4,116,000	4,116,000	4,116,000
Total	10,019,000	18,738,000	20,688,000

3
4
5
6**TABLE C.2-13 Peak-Year Annual Water Usage per Mine Size and Alternative during Operations^a**

Mine Size	Monthly Volume per Mine Size (gal)	Total Annual Volume per Alternative (gal)		
		Alt. 3	Alt. 4	Alt. 5
Small	7,583	181,992	545,976	0
Medium	30,666	1,471,968	3,679,920	5,887,872
Large	45,999	551,988	1,103,976	1,103,976
Very large ^b	160,000	960,000	960,000	960,000
Total		3,165,948	6,289,872	7,951,848

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

^b Assumes water usage for 6 months only (summer) for dust suppression activities.

7
8
9

1
2**TABLE C.2-14 Total Peak-Year Annual Cost of Operations per Alternative**

Item	Annual Cost of Operations (\$) per Alternative		
	Alt. 3	Alt. 4	Alt. 5
Mining equipment operations	5,553,000	\$5,553,000	4,579,000
Utilities (electricity)	229,000	489,000	546,000
Diesel fuel	180,000	373,000	425,000
Other materials (explosives)	41,000	83,000	95,000
Water	21,000	36,000	45,000
Worker salaries	10,019,000	18,738,000	20,687,000
Total	16,043,000	25,272,000	26,377,000

3
4
5
6**TABLE C.2-15 Assumed Annual Air Emissions on an Individual Mine Basis during Operations^a**

Criteria Pollutant	Annual Air Emissions (tons) per Mine Size			
	Small	Medium	Large	Very Large
Total hydrocarbons (THC)	0.75	0.59	4.48	8.63
Reactive organic compounds (ROCs)	0.72	0.57	4.30	8.29
Nitrogen oxides (NO _x)	7.36	5.85	44.03	84.71
Sulfur dioxide (SO ₂)	0.95	0.75	5.66	10.89
Carbon monoxide (CO)	3.42	2.84	20.30	38.90
Total suspended particulates (TSP)	7.11	0.56	4.23	8.15
Particulate matter ≤10 μm (PM ₁₀) ^b	4.00	0.53	4.02	7.74
Particulate matter ≤2.5 μm (PM _{2.5}) ^c	0.79	0.47	3.58	6.89
Carbon dioxide (CO ₂) ^d	672	532	4,025	7,748

^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 PM_{2.5} and that 89% of combustion PM₁₀ is PM_{2.5} (SCAQMD undated).

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

7

1
2**TABLE C.2-16 Estimated Peak-Year Annual Air Emissions per Alternative during Operations^a**

Criteria Pollutant	Annual Air Emissions (tons) per Alternative		
	Alt. 3	Alt. 4	Alt. 5
Total hydrocarbons (THC)	14.0	28.0	31.6
Reactive organic compounds (ROCs)	13.4	26.9	30.4
Nitrogen oxides (NO _x)	137.7	275.5	313.1
Sulfur dioxide (SO ₂)	17.7	35.4	40.1
Carbon monoxide (CO)	64.2	128.4	145.1
Total suspended particulates (TSP)	32	65	74
Particulate matter ≤10 μm (PM ₁₀) ^b	23	45	51
Particulate matter ≤2.5 μm (PM _{2.5}) ^c	11.8	23.5	26.7
Carbon dioxide (CO ₂) ^d	13,000	25,000	29,000

^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 PM_{2.5} and that 89% of combustion PM₁₀ is PM_{2.5} (SCAQMD undated).

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

3
4
5
6

C.3 RECLAMATION

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

12
13
14
15

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

16
17
18
19
20
21
22
23
24

16 The assumptions made for Alternatives 4 and 5 would be the same since the number of
17 mines would be the same (i.e., 18 mines plus JD-7). Each of the 18 underground mines would
18 require 3 months to reclaim by 1 team. It is assumed that there would be 5 reclamation teams for
19 the 18 underground mines. Three of these teams would be able to work for 12 months rather than
20 only 9 months, because they would be working at the southern lease tracts (i.e., where no snow
21 would inhibit field work). Thus, 3 teams × 12 months = 36 months, plus 2 teams × 9 months =
22 18 months, for a total of 54 months available for reclamation. The open-pit mine (JD-7) would
23 be reclaimed by a separate team consisting of 14 workers, and it is assumed that reclamation
24 would take 12 months to complete.

1
2**TABLE C.3-1 Assumed Workforce per Labor Category, Team, JD-7 Mine, and Alternative during Reclamation**

Labor Category	No. of Workers per Team ^a	No. of Workers for JD-7 Mine	Total No. of Workers per Alternative			
			Alts. 1 and 2 ^b	Alt. 3 ^c	Alt. 4 ^d	Alt. 5 ^e
Foreman	1	1	4	4	6	6
Equipment operator	3	10	19	19	25	25
Truck driver ^f	1	2	5	5	7	7
Electrician/mechanic ^g	0	1	1	1	1	1
Total	5	14	29	29	39	39

^a Other than for work on JD-7 open-pit mine.

^b Three teams plus the JD-7 team.

^c Three teams plus the JD-7 team.

^d Five teams plus the JD-7 team.

^e Five teams plus the JD-7 team.

^f Also assumed to operate equipment.

^g Assumed for very large mine (JD-7) reclamation only.

3
4
5
6
7**TABLE C.3-2 Total Disturbed Acreage per Mine Size and Alternative during Reclamation^a**

Mine Size	Disturbed Acreage per Alternative		
	Alt. 3	Alt. 4	Alt. 5
Small	20	60	0
Medium	60	150	240
Large	20	40	40
Very large	210	210	210

^a 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.

8

1 **TABLE C.3-3 Assumed Total Costs per Alternative during Reclamation**

Cost Element	Costs (\$ 2009) per Alternative			
	Alts. 1 and 2	Alt. 3	Alt. 4	Alt. 5
Remove aboveground structures	58,436	62,085	136,157	149,067
Seal portal(s)	23,000	18,400	43,700	43,700
Establish 3:1 slopes	447,621	539,931	801,189	853,440
Pock areas of steep slope to reduce future erosion	486,831	587,229	871,371	928,200
Spread available topsoil over pocking	58,009	69,971	103,829	110,600
Cut and fill and water bars on access road	153,906	185,646	275,474	293,440
Revegetate slope and access road	1,297,055	1,564,541	2,321,577	2,472,985
Place obstruction boulders at access entrance	3,060	2,448	5,814	5,814
Replace ore in mine	13,472	17,963	35,925	41,314
Remove 18 in. of subsurface from ore pad area	98,760	131,680	263,360	302,864
Rip compacted areas	59,427	71,683	106,368	113,305
Spread topsoil over disturbed areas	40,072	48,335	71,723	76,401
Backfill sedimentation pond	28,122	33,922	50,335	53,618
Seal ventilation shafts (72-in. diameter)	85,190	68,152	161,861	161,861
Seal power drop holes	2,540	2,032	4,826	4,826
Remove power drops	4,690	3,752	8,911	8,911
Rip vent and power drop pads	8,327	10,045	14,905	15,877
Push topsoil over vent and power drop pads	3,955	4,770	7,078	7,540
Revegetate area around vent and power drop pads	60,917	73,480	109,034	116,145
Conduct initial site mobilization	49,840	39,872	94,696	94,696
Conduct secondary seeding mobilization	18,380	14,704	34,922	34,922
Total direct costs	3,001,610	3,550,640	5,523,056	5,889,526
Contractor's overhead and profit (6%)	180,000	213,000	331,000	353,000
<i>Subtotal contractor's costs</i>	3,181,610	3,763,640	5,854,056	6,242,526
Contractor's bond (1%)	32,000	38,000	60,000	63,000
<i>Total contractor's field costs</i>	3,213,610	3,801,640	5,914,056	6,305,526
Construction management (10%)	321,000	380,000	591,000	630,000
<i>Total field costs</i>	3,534,610	4,181,640	6,505,056	6,935,526
Architecture/engineering costs (25%)	883,000	1,045,000	1,626,000	1,733,000
<i>Subtotal</i>	4,417,610	5,226,640	8,131,056	8,668,526
Program management (6%)	266,000	314,000	488,000	521,000
Total reclamation costs (rounded)	4,684,000	5,541,000	8,619,000	9,189,000

2

3

1
2**TABLE C.3-4 Assumed Equipment and Total Hours of Operation per Mine Size and Alternative during Reclamation**

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

3

1
2**TABLE C.3-5 Assumed Amounts of Materials per Mine Size and Alternative during Reclamation**

Items Assumed	Amount of Materials per Mine Size				
	Small	Medium	Large	Very Large	Total
Alternatives 1 and 2					
Diesel fuel (gal)	25,000	0	0	76,000	101,000
Oil and grease (gal)	1,300	0	0	3,800	5,100
Water (gal)	45,350	0	0	114,900	160,000
Grass seed (40 lb/acre) (tons)	0.9	0	0	4.2	5.14
Hay, delivered (1 ton/acre) (tons)	47	0	0	210	257
Alternative 3					
Diesel fuel (gal)	9,000	29,000	12,000	76,000	126,000
Oil and grease (gal)	400	1,700	900	3,800	6,800
Water (gal)	29,000	53,400	29,000	114,900	226,000
Grass seed (40 lb/acre) (tons)	0.4	1.2	0.4	4.2	6.2
Hay, delivered (1 ton/acre) (tons)	20	60	20	210	310
Alternative 4					
Diesel fuel (gal)	26,000	71,000	22,000	76,000	195,000
Oil and grease (gal)	1,200	4,100	1,400	3,800	10,500
Water (gal)	53,400	99,900	38,800	114,900	307,000
Grass seed (40 lb/acre) (tons)	1.2	3.0	0.8	4.2	9.2
Hay, delivered (1 ton/acre) (tons)	60	150	40	210	460
Alternative 5					
Diesel fuel (gal)	0	111,000	22,000	76,000	209,000
Oil and grease (gal)	0	6,000	1,400	3,800	11,200
Water (gal)	0	151,200	38,800	114,900	305,000
Grass seed (40 lb/acre) (tons)	0.0	4.8	0.8	4.2	9.8
Hay, delivered (1 ton/acre) (tons)	0	240	40	210	490

3
4
5

1
2**TABLE C.3-6 Assumed Annual Air Emissions on an Individual Mine Basis during Reclamation^a**

Criteria Pollutant	Annual Air Emissions (tons) per Mine Size			
	Small	Medium	Large	Very Large
Total hydrocarbons (THC)	0.05	0.09	0.14	0.92
Reactive organic compounds (ROCs)	0.05	0.08	0.13	0.88
Nitrogen oxides (NO _x)	0.52	0.84	1.30	9.07
Sulfur dioxide (SO ₂)	0.07	0.11	0.18	1.18
Carbon monoxide (CO)	0.24	0.41	0.66	4.33
Total suspended particulates (TSP)	2.00	2.97	7.88	157
Particulate matter ≤10 μm (PM ₁₀) ^b	1.05	1.54	5.98	137
Particulate matter ≤2.5 μm (PM _{2.5}) ^c	0.19	0.29	1.22	28.1
Carbon dioxide (CO ₂) ^d	48.6	80.4	128	854

^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 PM_{2.5} and that 89% of combustion PM₁₀ is PM_{2.5} (SCAQMD undated).

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

3

1

TABLE C.3-7 Assumed Total Air Emissions during Reclamation^a

Criteria Pollutant	Total Air Emissions (tons) per Alternative			
	Alts. 1 and 2	Alt. 3	Alt. 4	Alt. 5
Total hydrocarbons (THC)	1.2	1.5	2.4	2.6
Reactive organic compounds (ROCs)	1.2	1.5	2.3	2.5
Nitrogen oxides (NO _x)	12	15	23	25
Sulfur dioxide (SO ₂)	1.6	2.0	3.0	3.3
Carbon monoxide (CO)	5.8	7.2	11.1	12.0
Total suspended particulates (TSP)	167	180	216	221
Particulate matter ≤10 μm (PM ₁₀) ^b	142	150	172	175
Particulate matter ≤2.5 μm (PM _{2.5}) ^c	29	31	35	35
Carbon dioxide (CO ₂) ^d	1,140	1,420	2,200	2,360

^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 PM_{2.5} and that 89% of combustion PM₁₀ is PM_{2.5} (SCAQMD undated).

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

2
3
4
5**TABLE C.3-8 Wastes Generated per Alternative during Reclamation**

Waste Category	Waste Generated (gal) per Alternative			
	Alts. 1 and 2	Alt. 3	Alt. 4	Alt. 5
Sanitary ^a	81,000	126,000	162,000	154,000
Other	36,000	56,000	72,000	68,000

^a Amount of sanitary waste was estimated based on the total reclamation workforce.

6
7

C.4 REFERENCES

- 1
2
3 Cotter, E., 2011a, personal communication from Cotter (S.M. Stoller Corporation, Grand
4 Junction, Colo.) to M. Picel (Argonne National Laboratory, Argonne, Ill.), Nov. 10.
5
6 Cotter, E., 2011b, personal communication from Cotter (S.M. Stoller Corporation, Grand
7 Junction, Colo.) to M. Picel (Argonne National Laboratory, Argonne, Ill.), Nov. 17.
8
9 Cotter, E., 2012, personal communication from Cotter (S.M. Stoller Corporation, Grand
10 Junction, Colo.) to M. Picel (Argonne National Laboratory, Argonne, Ill.), Feb. 16.
11
12 EPA (U.S. Environmental Protection Agency), 2008, *Climate Leaders Greenhouse Gas*
13 *Inventory Protocol Core Module Guidance: Direct Emissions from Mobile Combustion Sources*,
14 EPA430-K-08-004, May. Available at [http://www.epa.gov/climateleadership/documents/
15 resources/mobilesource_guidance.pdf](http://www.epa.gov/climateleadership/documents/resources/mobilesource_guidance.pdf).EPA430-K-08-004.
16
17 Ribeiro, T., 2012, personal communication from Ribeiro (U.S. Department of Energy, Office of
18 Legacy Management) to M. Picel (Argonne National Laboratory, Argonne, Ill.), Aug. 21.
19
20 RS Means (R.S. Means Company, Inc.), 2009, *Building Construction Cost Data 2009, 67th*
21 *Annual Edition*, Kingston, Mass.
22
23 SCAQMD (South Coast Air Quality Management District), 2007, “Software User’s Guide:
24 URBEMIS2007 for Windows, Version 9.2, Emissions Estimation for Land Use Development
25 Projects,” Diamond Bar, Calif., Nov. Available at [http://www.urbemis.com/software/
26 URBEMIS9%20Users%20Manual%20Appendices.pdf](http://www.urbemis.com/software/URBEMIS9%20Users%20Manual%20Appendices.pdf). Accessed Oct. 24, 2012.
27
28 SCAQMD, undated, “Handout #1.” Available at [www.aqmd.gov/CEQA/handbook/PM2_5/
29 handout1.doc](http://www.aqmd.gov/CEQA/handbook/PM2_5/handout1.doc). Accessed Oct. 24, 2012.
30
31

1
2
3
4
5
6
7
8
9
10
11
12
13
14
15
16

**APPENDIX D:
IMPACT ASSESSMENT METHODOLOGIES**

1
2
3
4
5
6
7
8
9
10
11
12
13

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.

1 To determine the annual emissions, emission factors for each activity were multiplied by
2 activity-level data and the estimated number of items of equipment required for development,
3 operations, and reclamation. Emission factors available in the standard references, which are
4 most commonly used in emission inventories, were employed for these estimates. Except for the
5 following, emission factors were taken from the WebFIRE database (EPA 2012a):
6

- 7 • For operations under average conditions, an emission factor of
8 0.22 ton/acre-month was used for uncontrolled emissions of particulate matter
9 of less than or equal to 10 μm (PM_{10}) (Jones & Stokes Associates 2007).
10 $\text{PM}_{2.5}$ emissions were assumed to be 21% of PM_{10} emissions (AQMD 2012).
11
- 12 • For wind erosion, an emission factor of 0.38 ton/acre-yr was used for
13 uncontrolled emissions of total suspended particulates (TSP). PM_{10} and $\text{PM}_{2.5}$
14 emissions were assumed to be 50% and 7.5%, respectively, of TSP emissions
15 (EPA 2012b).
16
- 17 • For blasting, emission factors of 92 and 10 lb/ton for uncontrolled emissions
18 of PM_{10} and $\text{PM}_{2.5}$, respectively, were used (QDEH 1999).
19
- 20 • For diesel combustion from heavy equipment, an emission factor of
21 22.23 lb/gal for CO_2 emissions was used (EPA 2008).
22

23 For operations and wind erosion, a fugitive dust control efficiency of 50% was assumed
24 by spraying water on the exposed area twice a day. Projected activity-level data were based on
25 assumptions discussed in Appendix C and the alternatives discussed in Chapter 2.
26

27 The significance of project-related emissions with regard to overall air quality was
28 determined by comparing estimated annual project-related emissions of criteria pollutants and
29 VOCs with annual emissions in the three counties that encompass the DOE ULP lease tracts
30 (Mesa, Montrose, and San Miguel Counties) in 2008 and by comparing annual project-related
31 emissions of CO_2 with annual GHG emissions in Colorado in 2010 and in the United States in
32 2009 (CDPHE 2011; EPA 2011; Strait et al. 2007).
33
34

35 **D.2 ACOUSTIC ENVIRONMENT**

36

37 Potential noise impacts under each alternative were assessed by estimating the combined
38 noise levels from noise-emitting sources associated with ULP activities and then performing
39 noise propagation modeling. These levels were compared with the Colorado noise limit and the
40 U.S. Environmental Protection Agency (EPA) guideline level to estimate the distance from the
41 noise source area or haul routes at which noise would attenuate to these limits or guideline
42 levels.
43

44 Primary sources of noise over the life of ULP activities would include operations of
45 aboveground and underground heavy equipment, on-road and off-road vehicle traffic, and, if
46 necessary, blasting. Aboveground equipment includes backhoes, dozers, graders, power

1 generators, and scrapers, while underground equipment includes rock drills; various types of
 2 loaders and trucks would be used both above and under the ground. The average noise levels
 3 from most of this heavy equipment range from 80 to 90 dBA, with the exception of 98 dBA for a
 4 rock drill at a distance of 50 ft (15 m) (Hanson et al. 2006). In general, the dominant noise source
 5 from most construction equipment is the diesel engine, which is continuously operating around a
 6 fixed location or has limited movement. Except for rock drills, noise levels for the type of
 7 construction equipment that would probably be used at the ULP lease tracts range from about
 8 80 to 90 dBA at a distance of 50 ft (15 m) from the equipment. To estimate noise levels
 9 associated with ULP activities, a composite noise level of 95 dBA at a distance of 50 ft (15 m)
 10 from the mine site was conservatively assumed, if noisy equipment (such as rock drills) was not
 11 being used. Typically, this level could be reached when several pieces of noisy heavy equipment
 12 were operating simultaneously near each other at peak load. For impact analysis along the haul
 13 routes, a peak “pass-by” noise level of 84 dBA at a reference distance of 50 ft (15 m) from a
 14 heavy-duty truck traveling at 55 mph (88 km/h) was estimated (Menge et al. 1998).

15
 16 Several important factors affect the propagation of sound in the outdoor environment,
 17 such as source characteristics, geometric spreading, ground effects, air absorption,
 18 meteorological effects (due to turbulence and variations in vertical wind speed and temperature),
 19 and screening by topography, structures, dense vegetation, and other natural or human-made
 20 barriers. At this programmatic level, no detailed information (e.g., types and capacities of heavy
 21 equipment, work schedules, specific locations of projects) was available, so screening-level
 22 estimates were made by considering only geometric spreading and ground effects, as shown here
 23 (Barry and Reagan 1978; Hanson et al. 2006):

24
 25
$$L_p = L_{p,ref} - (20 + 10 G) \log_{10} (D/D_{ref})$$
 for point sources

26
 27 and

28
 29
$$L_p = L_{p,ref} + 10 \log_{10} (N\pi D_{ref}^2 / (5280 \times ST)) - (10 + 10 G) \log_{10} (D/D_{ref})$$
 for line sources,

30
 31 where

- 32
 33 L_p = A-weighted sound pressure level at a given distance (dBA),
 34 $L_{p,ref}$ = A-weighted sound pressure level at a reference distance (dBA),
 35 G = Ground factor that accounts for ground effects (unitless),
 36 D = Distance from the noise to the receptor (ft),
 37 D_{ref} = Reference distance (ft; assumed to be 50 ft [15 m]),
 38 N = Number of vehicles per hour,
 39 5,280 = Conversion factor from miles to feet,
 40 S = Average vehicle speed (mph) (assumed to be 55 mph [88 km/h]), and
 41 T = Time period over which noise level is computed (assumed to be 1 hour).

42
 43 For hard ground, $G = 0$. For soft ground, G depends on the effective path height (H_{eff}), as
 44 follows:

1 $G = 0.66$ if H_{eff} is <5 ft (1.5 m);

2
3 $G = 0.75 (1 - H_{eff}/42)$ if H_{eff} is ≥ 5 ft [1.5 m] and <42 ft [12.8 m];

4
5 and

6
7 $G = 0$ if H_{eff} is ≥ 42 ft (13 m).

8
9 For this analysis, the ground was assumed to be soft based on the land cover around the ULP
10 lease tracts. The effective path height (H_{eff}) is the average of the source height and the receptor
11 height. The source height for heavy equipment was assumed to be 7.9 ft (2.4 m), which is the
12 average height of drivetrain and exhaust contributions (Wayson 1993). The receptor height was
13 set at 5 ft (1.5 m), which is the approximate height of human ears from the ground.

14
15 Noise levels at receptor locations were estimated by using the above formulas. Day-night
16 average noise levels (L_{dn} , or DNL) were derived by assuming a work schedule of 10 hours per
17 day. For ULP activities, the distances at which noise levels reach the Colorado daytime
18 maximum permissible limit of 55 dBA¹ and the EPA guideline level of 55 dBA L_{dn} for
19 residential areas (EPA 1974) were estimated. In addition, the residences within this distance
20 range were counted, based on the assumption that the ULP activities would occur at the ULP
21 lease tract boundaries. During operations, the distances at which noise levels from heavy-duty
22 trucks along the haul routes would approach the Colorado limit and EPA guideline were
23 estimated.

24
25 There are several specially designated areas (e.g., Dolores River Special Recreation
26 Management Area [SRMA], Dolores River Canyon Wilderness Study Area [WSA]) and other
27 nearby wildlife habitats around the DOE ULP lease tracts and haul routes where noise might be a
28 concern. Negative impacts on wildlife begin between 55 and 60 dBA, a range that corresponds to
29 the onset of adverse physiological impacts (Barber et al. 2010). Distances up to the lower
30 threshold level from the mine sites and from the haul routes were estimated to identify the range
31 of noise impacts on wildlife.

32 33 34 **D.3 GEOLOGY AND SOILS**

35
36 The geologic setting established for the ULP lease tracts was based on a review of aerial
37 maps, topographic maps, geologic maps, and the scientific literature. Geologic map data
38 (shapefiles) were obtained from the U.S. Geological Survey (USGS; see Stoesser et al. 2007).
39 References to the geologic time scale were based on the age ranges compiled by Walker and
40 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.

1 The impact assessment for soil resources relied on field observations, consultations with
2 DOE ULP management staff, and reviews of the academic and professional literature to
3 characterize site-specific soil conditions and identify the types of impact-producing activities
4 related to mining within the lease tracts.
5

6 Soil conditions within each of the ULP lease tracts were characterized by using
7 customized map data from the U.S. Department of Agriculture (USDA) Natural Resources
8 Conservation Service (NRCS) web soil survey (NRCS 2012) as a starting point and
9 supplementing it with information provided by state and local agencies, as available. Data on
10 various factors, such as soil texture and composition, parent materials, landforms on which the
11 soils developed, drainage class, permeability, surface runoff potential, rutting potential, whole
12 soil erodibility factor (K factor), wind erodibility group/index, and land classification, were
13 gathered to gain a general understanding of the soil's susceptibility to impacts that could result
14 from ground-disturbing activities. Information on special soil features, such as biological crusts,
15 was also obtained. Chapter 3 (on the affected environment) provides general soil maps and map
16 unit descriptions for each of the four lease tract groupings (Gateway, Uravan, Paradox Valley,
17 and Slick Rock). These maps are based on the soil units delineated on county soil surveys at
18 scales of 1:12,000 to 1:100,000 (USDA 1999). The types of potential soil impacts are described
19 in detail in Section 4.2.3.1, and information on the areas of potential disturbance (subject to these
20 impacts) is provided in the soil resources discussion under each alternative in Chapter 4.
21
22

23 **D.4 WATER METHODOLOGY**

24

25 The analysis of water resources considered impacts on surface water features and
26 groundwater within the ULP lease tracts, the surrounding valleys, the entire groundwater basins,
27 as well as upstream/upgradient and downstream/downgradient valleys and groundwater basins
28 (if it was determined that there was connectivity and the potential for indirect impacts). The
29 surface water features considered were streams, lakes, wetlands, surface springs and seeps,
30 ephemeral washes/drainages, dry lakes, and floodplains.
31

32 Impacts on surface water and groundwater resources were mainly related to the alteration
33 of natural hydrologic conditions (e.g., surface runoff, infiltration, and groundwater
34 recharge/flow), degradation of water quality, and water usage. The ROI for the impacts on
35 surface water is within the Upper Dolores, San Miguel, and Lower Dolores basins (USGS
36 HUC-8 basins) where local surface runoff and groundwater discharge flows from the lease tracts
37 to Dolores River, San Miguel River, and their tributaries. ROI for impacts on groundwater
38 resource would be primarily on the lease tracts and would not exceed 5 mi (8 km) downgradient
39 from mining activities in the lease tracts or any rivers and tributaries that local groundwater
40 discharges to. ROI for impacts on water usage is primarily within Montrose, Mesa, and
41 San Miguel Counties. The assessment of impacts related to hydrologic alterations and water
42 quality was performed by using a variety of data sources (e.g., geologic maps, aerial
43 photographs, professional reports on standard mine practices, and the scientific literature) to
44 characterize water features and by exercising professional judgment to identify potential direct
45 and indirect impacts from mining operations. For impacts related to water usage, water use
46 during mine development and operations of the underground mines and for the JD-7 surface

1 open-pit mine was mainly for the workers' potable water supply and for dust control activities.
2 Water volumes assumed are discussed in Section 2.2 and Appendix C.

5 **D.5 HUMAN HEALTH RISK**

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

24 **D.5.1 Impact Assessment for the Operational Phase**

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

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

39 Radiation exposures of the general public would result primarily from radon emissions
40 from the exhaust vents of the uranium mines. The radon emission rates for three hypothetical
41 underground mines whose sizes ranged from small to medium to large were estimated on the
42 basis of their respective uranium ore production rates, as assumed in the working assumptions.
43 There is a linear correlation between the radon emission rate and the cumulative uranium ore
44 production (EPA 1985). For radon emission rates, an operational period of 10 years was assumed
45 for the uranium mines under consideration when human health impacts under Alternatives 3, 4,

1 and 5 were assessed. This operational period corresponds roughly to the assumed mining periods
2 of operation for Alternatives 3, 4, and 5 evaluated in Chapter 4. The emission rates from the
3 same mines would be lower if the operational period was shorter. An emission rate of 600 Ci/yr
4 was assumed for a very large open-pit mine, which, according to the working assumptions,
5 would be located on Lease Tract 7. This 600-Ci/yr emission rate was determined on the basis of
6 the emission rates of actual open-pit mines compiled by the EPA in its background report on
7 National Emission Standards for Hazardous Air Pollutants (NESHAP) and is at the upper end of
8 the emission rates for the open-pit mines included in the report (EPA 1989a).

9
10 The computer code, CAP88-PC (Trinity Engineering Associates, Inc. 2007), which is
11 supported and maintained by the EPA for demonstrating compliance with regulations, was used
12 to estimate radon concentrations at various downwind locations. Potential maximum radiation
13 doses resulting from radon emissions associated with different sizes of uranium mines were
14 calculated. These calculation results were tabulated as functions of the distance from the
15 emission point and can be used for inferring the potential radiation dose to an individual living
16 close to the ULP lease tracts.

17
18 The collective dose to the general public living within 50 mi (80 km) of the lease tracts
19 was also calculated by using CAP88-PC (Trinity Engineering Associates, Inc. 2007). However,
20 rather than the radon emission rate from a single uranium mine, the total radon emission rate
21 from all the uranium mines that would be operated at the same time was used. Because the actual
22 number of mines that would be operated at any time is not known, potential human health
23 impacts were analyzed only for the peak year of operations as defined in the working
24 assumptions (Chapter 2). It is expected that potential collective exposures in any other year
25 would be lower than those estimated for the peak year of operations. Because the exact locations
26 of the active mines during the peak year of operations are not known, the potential range of the
27 collective dose was inferred by placing the radon emission point at four alternative locations.
28 These four alternative locations were selected to be the center points of four lease tract groups,
29 which were formed by aggregating the uranium lease tracts whose geographic locations are close
30 to each other. Figure D.5-1 depicts the four lease tract groups used for analyzing the population
31 exposure. Population distributions within 50 mi (80 km) of the center of each lease tract group
32 were developed by using 2010 Census Bureau data.

33 34 35 **D.5.2 Impact Assessment for the Reclamation Phase**

36
37 For the reclamation phase, potential human health impacts were analyzed for the
38 reclamation workers and the general public living close to the uranium lease tracts. Both
39 chemical and radiological risks were analyzed. The major radiation sources of concern were the
40 uranium isotopes and their decay products contained in the waste-rock piles. In addition to
41 emitting radiation, the uranium compounds could pose chemical hazards to human health. The
42 vanadium content in the uranium ores is about 5 to 10 times higher than the uranium content. As
43 a result of intermixing from mining, the waste-rock piles could also contain vanadium, which, if
44 inhaled or ingested, could have adverse effects on human health. To account for the possible
45 range of radionuclide concentrations in waste rocks, maximum sampling data (reported as

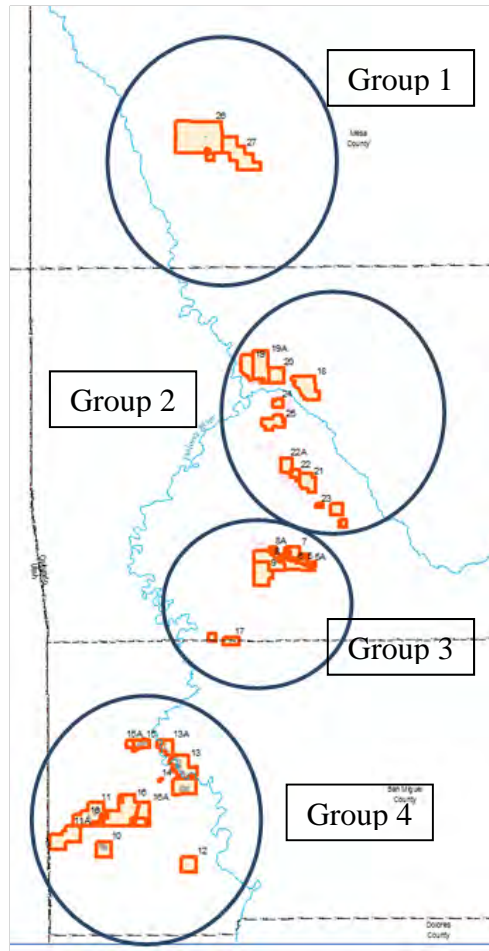


FIGURE D.5-1 Designated Grouping of the ULP Lease Tracts Used as a Basis for Human Health Impacts Evaluation

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.

1 The general public living near the uranium lease tracts would incur radiation and
2 chemical exposures primarily through the airborne release of particulates from the waste-rock
3 piles. In addition, the release of radon could add to the potential radiation exposure. The
4 emission rate of radon was calculated by using Version 6.7 of the RESRAD code
5 (Yu et al. 2001). In the analysis of potential radiation exposures of reclamation workers,
6 RESRAD calculated the radon flux from the surface of a waste-rock pile; this calculated radon
7 flux was multiplied by the surface area of the waste-rock pile to obtain the radon emission rate.
8 The release rate of dust particles was calculated following the guidance from *Regulatory*
9 *Guide 3.59* (NRC 1987) on emissions from exposed uranium mill tailings sands due to wind
10 erosion. The frequencies of different wind speed groups required in the dust particle emission
11 calculation were calculated on the basis of meteorological data from the lease tracts
12 (Rogers 2011).

13
14 On the basis of the emission rates of radon and particulates calculated by the methods
15 discussed in the preceding paragraph, concentrations of radon, uranium isotopes and decay
16 products, total uranium, and vanadium at various downwind locations from the emission point
17 were obtained by using CAP88-PC (Trinity Engineering Associates, Inc. 2007). These
18 concentrations at downwind locations were then used to infer potential radiation and chemical
19 exposures for an individual living close to the uranium lease tracts during the reclamation phase.
20
21

22 **D.5.3 Impact Assessment for Post-Reclamation Phase**

23
24 The receptor considered for analysis of the human health impacts in the post-reclamation
25 phase was a nearby resident and recreationist who unknowingly entered the uranium lease tract.
26 It was assumed that the recreationist would camp on top of a waste-rock pile for 2 weeks, collect
27 wild berries, and hunt wildlife animals for consumption. Potential impacts from camping would
28 result from the inhalation of radon diffusing from the waste-rock pile, inhalation of dust
29 particles, accidental soil ingestion, and the direct external radiation emitted by radionuclides
30 contained in the waste-rock pile. The RESRAD code was used for dose calculations. Although it
31 is expected that a layer of soil materials would be spread on top of the waste-rock pile to
32 facilitate the growth of vegetation, the thickness of the soil materials could vary. Therefore, in
33 the analysis, a thickness ranging from 0 to 1 ft (0 to 0.3 m) was assumed, and the range of
34 potential impact was calculated.

35
36 The residents living close to the uranium lease tracts could still be exposed to radon and
37 dust particles emitted from the waste-rock piles. However, because of the cover soils spread on
38 top of the waste-rock piles, the emission rates would be reduced. As a result, the potential dose
39 associated with airborne emissions incurred by a resident after the reclamation phase would be
40 less than the dose incurred during the reclamation phase.

41
42 A less likely exposure scenario for residents living close to the uranium lease tracts
43 considers that the residents let their livestock graze in the uranium lease tracts and consume the
44 meat and milk produced by the livestock. The RESRAD code was used for this analysis.
45
46

1 **D.5.4 Parameter Values for Modeling Potential Radiation and Chemical Exposures**

2
3 For the impact analyses, a resident living close to or within 50 mi (80 km) of the uranium
4 lease tracts was assumed to be at his residence for 350 days per year and to spend 8 hours
5 outdoors and 16 hours indoors each day. Because the windows and doors of the residence would
6 be closed most of the time, a dust or radon filtration factor of 0.4 was assumed (i.e., the indoor
7 radon or airborne particulate level was assumed to be 40% of the outdoor level). The average
8 inhalation rate was assumed to be 8,000 m³/yr (the default value used in CAP88-PC), while the
9 average soil ingestion rate was assumed to be 100 mg/d.

10
11 For reclamation workers, an exposure duration of 20 days was used for impact analyses.
12 The inhalation rate was assumed to be 8,000 m³/yr, and the soil ingestion rate was assumed to be
13 100 mg/d. An exposure duration of 2 weeks was assumed for the recreationist who camps on a
14 waste-rock pile. This recreationist was assumed to ingest 1 lb (0.45 kg) of wild berries collected
15 from the lease tracts and 100 lb (45.4 kg) of deer meat obtained through hunting activities. This
16 individual was assumed to have the same inhalation and soil ingestion rate as a reclamation
17 worker. For the nearby residents, the inhalation rate and soil ingestion rate were assumed to be
18 the same as those for the recreationist. The ingestion rates of milk (92 L/yr) and meat (63 kg/yr)
19 were set to the RESRAD default values.

20
21 For modeling radon emissions from a waste-rock pile, an emanation factor of 0.15 was
22 assumed based on experimental measurement data taken from rock samples (Ferry et al. 2002;
23 Sakoda et al. 2010). The RESRAD default value of 2×10^{-6} m²/s was assumed for the radon
24 diffusion coefficient, while the porosity in a waste-rock pile was assumed to be 0.4, the
25 RESRAD default value.

26
27 For CAP88-PC analysis, the emission of radon from an underground mine was modeled
28 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
29 diameter of the ventilation shaft in the *Final Environmental Assessment for the Whirlwind Mine*
30 *Uranium Mining Project* (BLM 2008). An exit velocity of 16 ft/s (5 m/s) was assumed for the
31 gas escaping from the exhaust vents. This exit velocity was obtained by considering the average
32 ventilation rate in an underground mine, the number of exhaust vents, and the diameter of the
33 exhaust vents. An average annual precipitation of 1 ft/yr (0.32 m/yr), ambient temperature of
34 50°F (10°C), and absolute humidity of 8 g/m³ were selected to reflect site-specific conditions.
35 An average mixing height of 4,900 ft (1,500 m), considering both morning and afternoon
36 conditions, was also assumed for the analyses. For the analysis involving an open-pit mine, the
37 emission of radon was assumed to come from an area source that occupied 100 acres (40 ha)—or
38 50% of the disturbed area—based on assumptions presented in Chapter 2 for the alternatives.
39 The release height was 0 ft (0 m), and there was no plume rise for release from the open-pit
40 mine.

41 42 43 **D.5.5 Dose Conversion Factors and Toxicity Values**

44
45 The exposure concentration of radon is usually expressed as a working level (WL), which
46 is a measure of the release of alpha energy by the short-lived progenies of radon. The exposures

1 are measured in working level months (WLMs). One WLM is equivalent to an exposure of
2 170 hours to a concentration of 1 WL. UNSCEAR recommends that an exposure of 1 WLM
3 corresponds to 506 mrem of effective dose for workers (UNSCEAR 2008, 2010). For the general
4 public, the corresponding effective dose of an exposure of 1 WLM is about 388 mrem
5 (UNSCEAR 2008). The difference in the conversion from WLM to effective dose used for
6 workers and the conversion used for the general public lies in the different inhalation rates
7 considered for the conversion. The International Commission on Radiation Protection
8 (ICRP 2011) indicates that, based on the pooled results from studies of radon-exposed miners, a
9 lifetime excess risk of 5×10^{-4} per WLM should be used for estimating radon progeny-induced
10 lung cancer.

11
12 Potential radiation doses resulting from exposures to uranium isotopes and their decay
13 products were calculated by using the ICRP 60-based dose conversion factors for inhalation and
14 ingestion. The corresponding cancer risks were calculated by using the slope factors obtained
15 from Federal Guidance Report No. 13 (Eckerman et al. 1999).

16
17 Potential chemical risks that could result from exposures to uranium and vanadium
18 compounds were assessed by comparing the estimated exposures with threshold values. The
19 threshold values used are reference concentrations (RfCs) for inhalation exposures and reference
20 doses (RfDs) for ingestion exposures. The RfD used for assessing risks associated with
21 vanadium exposure is 0.009 mg/kg-d, obtained from the EPA Integrated Risk Information
22 System (IRIS) for V₂O₅ (EPA 2012c). The RfC used is 0.0001 mg/m³ from the Agency for
23 Toxic Substances and Disease Registry (ATSDR 2012). Because no RfC value is provided in
24 IRIS or the Health Effect Assessment Summary Tables (HEASTs) for vanadium, the minimum
25 risk level (MRL) proposed by the ATSDR for chronic exposure was used as a surrogate for RfC.
26 The RfC used for assessing risks associated with uranium exposure is 0.0008 mg/m³
27 (ATSDR 2012), which is the MRL proposed by ATSDR for chronic exposure to insoluble
28 uranium compounds. The RfD used for uranium is 0.003 mg/kg-d, obtained from the IRIS
29 database (EPA 2012c).

30 31 32 **D.5.6 Comparison of CAP88-PC Results and COMPLY-R Results**

33
34 According to Title 40 in the *Code of Federal Regulations* (40 CFR Part 61), emissions of
35 Rn-222 to the ambient air from an underground uranium mine must not result in any member of
36 the general public receiving in any year an effective dose of 10 mrem or greater. Owners or
37 operators of uranium mines must use COMPLY-R (EPA 1989c) or a model equivalent to
38 COMPLY-R, provided they have received approval from EPA headquarters, to demonstrate
39 compliance with this requirement. For human health impact analyses, in addition to the use of
40 COMPLY-R, the CAP88-PC computer code (Trinity Engineering Associates, Inc. 2007) was
41 also used for conducting analyses in the ULP PEIS because it has been supported and maintained
42 by the EPA and used extensively in human health risk assessments for evaluating potential
43 radiation exposures resulting from airborne emissions of radionuclides, including radon.
44 Furthermore, the emissions considered by CAP88-PC can originate from point sources, such as
45 the exhaust vents of underground uranium mines, or from area sources, such as the waste-rock
46 piles accumulated from uranium-mining activities. In addition to being used to obtain air

1 concentrations for estimating the radiation dose to an individual, CAP88-PC can also be used to
2 estimate the collective exposures to a population living or working around the emission sources.
3 Consistency in the methodology was maintained by applying CAP88-PC to evaluate the potential
4 exposures of the general public, both as individual members and collectively, associated with the
5 different phases of uranium mine operations considered in the ULP PEIS.
6

7 In this section, the calculation results of CAP88-PC and COMPLY-R associated with the
8 release of radon during the operation of a small underground uranium mine (which was defined
9 by the working assumptions described in Chapter 2) are compared. This small uranium mine was
10 assumed to produce 50 tons of uranium ore per day, with an annual production rate of
11 12,000 tons/yr (10,800 metric tons/yr). The mining activities were assumed to have been
12 conducted for 10 years. Based on the equation proposed by the EPA (EPA 1985) that correlates
13 the radon emission rate with the cumulative uranium ore production, a radon emission rate of
14 528 Ci/yr was calculated. The volumetric flow rate from the exhaust vent was calculated to be
15 450 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)
16 as used in the CAP88-PC analysis. The vent was assumed to be vertical with a height of 3 ft
17 (1 m) above the ground. Both the ambient temperature and the temperature of the exhaust stream
18 were 50°F (10°C). By using the joint frequency data (Rogers 2011) collected from a 30-ft (10-m)
19 high meteorological tower installed by Energy Fuels Resources Corp. in the proposed Piñon
20 Ridge Mill site in Montrose County, Colorado, the frequency and average wind speed in each of
21 the 16 directional sectors were calculated (Table D.5-1). These data represent the site-specific
22 conditions from April 2008 to March 2011.
23

24 Table D.5-2 compares the maximum radon doses calculated with CAP88-PC and those
25 calculated with COMPLY-R at different distances from the radon emission point. The radon
26 doses calculated with CAP88-PC were much smaller than those calculated with COMPLY-R for
27 shorter distances, but the difference in calculated doses became smaller as the distance from the
28 emission point increased. According to the users guide (EPA 1989c), COMPLY-R uses a
29 conversion factor of 920 mrem/WLM to convert radon exposures to effective doses, and, by
30 default, a receptor was assumed to spend 75% of the exposure time indoors. For the CAP88-PC
31 results, an updated conversion factor of 388 mrem/WLM (UNSCEAR 2008) was used, and a
32 receptor was assumed to spend 16 hours indoors and 8 hours outdoors each day for 350 days per
33 year at the same location. Furthermore, the indoor radon level was assumed to be 40% of the
34 outdoor level. If the same exposure-to-dose conversion factor is used in both sets of calculations,
35 the radon dose calculated with COMPLY-R would be greater than that calculated with
36 CAP88-PC for an exposure distance of less than 4,900 ft (1,500 m). However, at 4,900 ft
37 (1,500 m) or more, the radon dose calculated with COMPLY-R would be smaller than that
38 calculated with CAP88-PC.
39
40
41

1
2
3**TABLE D.5-1 Meteorological Data Used in the COMPLY-R Calculations**

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

4
5
6
7
8**TABLE D.5-2 Comparison of the Radon Doses Calculated by CAP88-PC and Those Calculated by COMPLY-R**

Distance (m)	Radon Dose (mrem/yr)		Ratio ^a
	CAP88-PC	COMPLY-R	
500	7.8	35.7	4.56
1,000	5.6	12.0	2.13
1,500	3.7	6.5	1.75
2,000	2.7	4.3	1.61
3,000	1.6	2.5	1.53
4,000	1.2	1.7	1.39
5,000	1.0	1.3	1.34

^a The ratio is calculated as COMPLY-R divided by CAP88-PC.

9
10
11
12

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:

- 1 • Level III and Level IV ecoregions (Chapman et al. 2006);
- 2
- 3 • Gap analysis programs—Southwest Regional Gap Analysis Project
- 4 (SWReGAP) (USGS 2004, 2005);
- 5
- 6 • State noxious weed lists; and
- 7
- 8 • National Wetlands Inventory (USFWS 2012).
- 9

10 **D.6.1.4 Analysis Approach**

11
12
13 Plant communities that were known to occur or could potentially occur within the
14 affected area were included in the impact analysis. A landscape-level analysis was used to
15 determine impacts by quantifying the total number of acres of each land cover type,
16 encompassing a range of similar plant communities, within the area of direct effects.

17
18 The magnitudes of impacts on plant communities would depend on the locations of
19 projects, project-specific designs, the mitigation measures applied (including avoidance,
20 minimization, and compensation), and the status of plant communities in project areas.

21
22 The analysis of impacts on environmental resources from mining and reclamation
23 activities was based, in part, on a set of assumptions regarding site preparation and reclamation
24 activities. These assumptions were based on management practices at existing mines and current
25 DOE guidance and were used for the evaluation of impacts at the programmatic level.

26
27 The actual extent of land disturbance within the footprint of any mine site would be
28 specified in a detailed plan. However, to ensure an upper-bound assumption for the impact
29 analyses, the entire project area was assumed to be cleared of all vegetation during site
30 preparation. Development and operations were assumed to continue for 8 to 15 years. Ground
31 disturbance was assumed to range from 10 acres (4 ha) for small mines to 20 acres (8 ha) for a
32 large mine. In addition, the very large, 210-acre (80-ha) open-pit mine at JD-7 was assumed to
33 resume operations under some of the alternatives.

34
35 It was assumed that immediately following the decommissioning of a mine, land surfaces
36 would be recontoured to the greatest extent feasible. The operator would subsequently establish
37 vegetation on the waste-rock area and other disturbed areas. It was assumed that reclamation
38 activities would occur over a 2-year period and would include grading to create landforms
39 conforming to the surrounding area, application of topsoil, and seeding. A seed mix (see
40 Table 4.1-8) has been developed for use on reclamation activities for the ULP. The final
41 determination of successful vegetation establishment would be made by DOE in coordination
42 with the BLM and Colorado Division of Reclamation, Mining, and Safety (CDRMS).

43
44

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.

1 **D.6.2.1 Wildlife**

2
3 This section describes the methodology used to evaluate impacts on wildlife known to
4 occur, or for which suitable habitat could occur, within the potentially affected area of the ULP
5 lease tracts.

6
7
8 **D.6.2.1.1 Wildlife Species Included in the Assessment.** Wildlife species considered in
9 the assessment included representative amphibian, reptile, bird, and mammal species.
10 Representative species were selected among those species known to occur, or for which
11 potentially suitable habitat occurs, within the lease tracts. To a large extent, the selection of
12 representative species was based on whether a species (1) has key habitats within or near the
13 lease tracts, (2) is important to humans (e.g., big game, small game, and furbearer species), (3) is
14 representative of other species that share predominant habitats found in the lease tracts, (4) could
15 make use of lease tract mines (e.g., bats), (5) has some type of regulatory protection
16 (e.g., Migratory Bird Treaty Act), and/or (6) is among the species reported in the Environmental
17 Protection Plans (EPPs) provided in Appendix I. To the extent practicable, representative species
18 included wildlife species whose range included the three-county study area or at least extended
19 throughout the region for all or most of the lease tracts.

20
21
22 **D.6.2.1.2 Affected Area.** For the wildlife impact assessment, the affected area included
23 those portions of Mesa, Montrose, and San Miguel Counties that encompassed the lease tracts.
24 The area of direct effects was defined as the area that would be physically modified during
25 project development (i.e., where ground-disturbing activities would occur). The area of direct
26 effects encompassed the entire lease tracts, which included all project components and access
27 roads. The area of indirect effects was defined as the area where ground-disturbing activities
28 would not occur but that could be indirectly affected by activities in the area of direct effects.
29 This indirect effects area was defined as the area outside the lease tracts but within 5 mi (8 km)
30 of the tract boundary. The distance from the lease tract boundary used to define this area of
31 indirect effects was based on professional judgment and was considered sufficiently large to
32 bound the area that would potentially be subject to indirect effects.

33
34
35 **D.6.2.1.3 Data Sources.** The types of data used to determine the known or potential
36 presence of wildlife species and life history information on the species were collected from
37 various sources and at different geographical and organizational levels. The most current,
38 location-specific data at the highest resolution were used whenever available. Sources of
39 information included, but were not limited to, the following:

- 40 • Colorado National Heritage Program (CNHP 2009) and Colorado Parks and
41 Wildlife (formerly Colorado Division of Wildlife; CPW 2011);
- 42 • Gap analysis programs—SWReGAP (USGS 2004, 2005, 2007); and
- 43 • NatureServe (2011).
- 44
- 45
- 46

1 **D.6.2.1.4 Analysis Approach.** Because of the uncertainty regarding species distributions
2 and the inherent challenges involved with tracking wildlife species in a lease tract, a conservative
3 approach was used to determine the potential for species to occur on or in the vicinity of the
4 lease tracts. The identification of potential wildlife species in the general area of the lease tracts
5 was based on (1) county-level occurrences, (2) locations of species observations as determined
6 by Colorado's wildlife and/or natural heritage agencies, and (3) occurrences of identified land
7 cover for the species listed by SWReGAP (USGS 2005).
8

9 Spatial data provided by state natural heritage and regional gap analysis programs were
10 used to determine whether potentially suitable habitat occurred in the affected area. Gap analysis
11 program data consisted of vertebrate animal land cover models. When maps of key habitats for a
12 big game or game bird species (e.g., crucial winter range) were available, the acreages of those
13 habitats within each of the lease tracts were determined by using ESRI ArcGIS Version 9
14 software.
15

16 With regard to the assessment of wildlife, relative impact magnitude categories were as
17 follows:
18

- 19 • *None.* No impacts are expected.
- 20
- 21 • *Small.* Effects would not be detectable or would be so minor that they would
22 neither destabilize nor noticeably alter any important attribute of the resource.
23 (For this analysis, impacts were considered small if $\leq 1\%$ of identified habitat
24 for a representative species would be lost in the ROI.)
- 25
- 26 • *Moderate.* Effects would be sufficient to alter noticeably but not destabilize
27 important attributes of the resource. (For this analysis, impacts were
28 considered moderate if $\geq 1\%$ but $< 10\%$ of identified habitat for a
29 representative species would be lost in the region.)
30
- 31 • *Large.* Effects would be clearly noticeable and sufficient to destabilize
32 important attributes of the resource. (For this analysis, impacts were
33 considered large if 10% or more of identified habitat for a representative
34 species would be lost in the region.)
35

36 Actual impact magnitudes on wildlife species would depend on the locations of projects,
37 project-specific designs, mitigation measures applied (including avoidance, minimization, and
38 compensation), and status of the species and their habitats in the project areas.
39

40 **D.6.2.2 Aquatic Biota**

41

42 This section describes the methodology used to evaluate direct and indirect impacts on
43 aquatic habitats and biota known to occur on or within the potentially affected area of the ULP
44 lease tracts.
45

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

12
13
14 **D.6.2.2.2 Analysis Approach.** Aquatic habitat and communities were assessed by first
15 determining the perennial and intermittent/ephemeral surface water features (streams and other
16 water bodies) within or adjacent to the lease tracts. The occurrences of surface water features
17 were based on data from the USGS national atlas (<http://nationalatlas.gov/mapmaker>) and
18 available reports.

19
20 Descriptions of aquatic communities within the aquatic habitats were derived from state
21 records, reports conducted on aquatic systems in the lease tracts, and existing NEPA documents
22 for the lease tracts. For many of the ephemeral/intermittent washes and rivers, no data were
23 available. Many of the surface water features in the lease tracts are ephemeral and are not
24 expected to contain aquatic habitat or biota. However, with sufficient frequency and flow,
25 ephemeral or intermittent surface water may contain a diverse seasonal community of
26 opportunistic species or habitat specialists adapted to living in temporary aquatic environments.
27 Such specialists may be present in a dormant state even in dry periods. Therefore, aquatic biota
28 could be present at least temporarily. Also, mining activities could affect permanent water
29 features located near some of the lease tracts. To better resolve whether aquatic habitat and biota
30 are present within or near a lease tract, site-specific surveys of aquatic communities are
31 presumed to be required prior to mine development.

32
33 It was assumed that impacts on aquatic habitat and communities could potentially result
34 from direct disturbance; surface water and groundwater withdrawals; and changes in water,
35 sediment, and contaminant inputs to surface water features. Based on best professional judgment,
36 much greater weight was given to the magnitude of direct effects, because those effects could be
37 difficult to mitigate. The potential for indirect impacts on surface water outside the lease tracts
38 was evaluated on the basis of their proximity and connectivity to surface water inside the lease
39 tracts. In most cases, it was assumed that mitigation would reduce most indirect effects to
40 negligible levels. Actual impacts on aquatic habitat and biota would depend on the locations of
41 mines relative to surface water, mine-specific designs, and mitigation measures applied
42 (including avoidance, minimization, and compensation). Mitigation was considered if there was
43 a potential for impacts on aquatic habitat and biota.

44
45

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

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

16 17 18 **D.6.3.3 Analysis Approach** 19

20 Because of the uncertainty regarding species distributions and the inherent challenges
21 involved with tracking species in the lease tracts, a conservative approach was used to determine
22 the potential for species to occur on or in the vicinity of the lease tracts. The identification of
23 potential threatened, endangered, and sensitive species in the vicinity of the lease tracts was
24 based on (1) county-level occurrences, (2) locations of species observations as determined by
25 Colorado wildlife and/or natural heritage agencies, and (3) occurrences of potentially suitable
26 habitat for the species listed by SWReGAP (USGS 2007).
27

28 Spatial data provided by the CNHP and SWReGAP were used to determine whether
29 potentially suitable habitat occurred in the affected area. The SWReGAP habitat suitability
30 models consisted only of vertebrate animal land cover models.
31

32 A spatial analysis was performed by using ESRI ArcGIS 10 software to determine the
33 intersections of the ULP lease tracts with CNHP element occurrences and SWReGAP habitat
34 suitability models. Based on this analysis, a determination was made regarding the species'
35 known or potential occurrence on the lease tract. A lack of data did not preclude a species from
36 potentially occurring in a given area. When there was a lack of CNHP records or SWReGAP
37 habitat suitability models for a species, modeled land cover types were used to determine the
38 potential suitability of the affected area with regard to what is known about the species' biology
39 and habitat preferences.
40

41 Relative impact magnitude categories were as follows:

- 42
- 43 • *None*. No impacts are expected.
- 44
- 45 • *Small*. Effects would not be detectable or would be so minor that they would
46 neither destabilize nor noticeably alter any important attribute of the resource.
47

- 1 • *Moderate*. Effects would be sufficient to alter noticeably but not destabilize
- 2 important attributes of the resource.
- 3
- 4 • *Large*. Effects would be clearly noticeable and sufficient to destabilize
- 5 important attributes of the resource.
- 6

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

10 11 12 **D.7 LAND USE**

13
14 The area of analysis focused on public and private lands within a 25-mi (40-km) radius of
15 the ULP lease tracts. Existing right-of-way (ROW) authorizations and land designations under
16 BLM's lands and realty program were identified (including specially designated lands with
17 wilderness characteristics). Other information on agriculture, livestock grazing, wild horses and
18 burros, mineral resources (and mining), oil and gas leasing, timber harvest, and recreation were
19 obtained from Federal and state sources. Major sources of information included (1) BLM's
20 resource management plans, the national landscape conservation system, public land statistics,
21 and the Land and Mineral Legacy Rehost 2000 system (LR2000); (2) USDA's 2007 census of
22 agriculture and resource bulletins; and (3) various reports and database searches from web sites
23 sponsored by the Colorado Department of Natural Resources (CDNR), CDRMS, Colorado Oil
24 and Gas Conservation Commission (COGCC), Utah Geological Survey, and Utah Division of
25 Oil, Gas, and Mining.

26
27 The impacts analysis for land use considered issues such as land use conflicts within the
28 lease tracts (e.g., mining, oil and gas leasing, livestock grazing, and recreation), whether or not
29 lease tracts would be open to mineral entry (under the various alternatives), and visual impacts at
30 specially designated lands. The main factors considered as part of the land use impacts analysis
31 were the (1) proximity of lease tracts to specially designated areas, (2) nature of the resources
32 and resource values present within the proximate specially designated areas, and (3) quality of
33 the view of the lease tracts from these areas.

34 35 36 **D.8 SOCIOECONOMICS**

37
38 The analysis of socioeconomic impacts from the mining activities at the DOE ULP lease
39 tracts assessed impacts in an ROI. The ROI includes Mesa, Montrose, and San Miguel Counties
40 in Colorado, in which the majority (up to 90%) of employees for the DOE ULP proposed mines
41 would reside. The ROI includes county governments, city governments, and school districts. The
42 assessment of the impacts from mining at the DOE ULP lease tracts covered impacts on
43 employment, income, population, housing, community services, and traffic.

1 **D.8.1 Regional Employment and Income**

2
3 The assessment of impacts from mining activities on regional employment and income
4 was based on the use of regional economic multipliers in association with project expenditure
5 data for the mine development and operations phase and the reclamation phase. Multipliers
6 captured the indirect (off-site) effects of on-site activities associated with mining operational and
7 reclamation activities. Data on expenditures were derived from numerous sources.
8

9 Cost data for each cost category were then mapped into the relevant North American
10 Industry Classification System (NAICS) codes for use with multipliers from an IMPLAN model
11 specified for each state (MIG 2011). IMPLAN input-output economic accounts show the flow of
12 commodities to industries from producers and institutional consumers. The accounts also show
13 consumption activities by workers, owners of capital, and imports from outside the region. The
14 IMPLAN model contains 528 sectors representing industries in agriculture, mining, construction,
15 manufacturing, the wholesale and retail trade, utilities, finance, insurance and real estate, and
16 consumer and business services. The model also includes information for each sector on
17 employee compensation; proprietary and property income; personal consumption expenditures;
18 Federal, state, and local expenditures; inventory and capital formation; and imports and exports.
19

20 Impacts on employment were described in terms of the total number of jobs created in the
21 ROI in the peak years for mine development, mine operations, and reclamation. The relative
22 impact of the increase in employment in the ROI was calculated by comparing the total mining
23 employment (without considering ULP-related activities), over the same period, with the
24 employment that was assumed in order to estimate the number of jobs created by the ULP
25 exploration, mine development and operations, and reclamation activities. Impacts were
26 expressed in terms of the percentage point difference in the average annual employment growth
27 rate with and without the DOE ULP mining activities. Forecasts were based on data provided by
28 the U.S. Department of Commerce.
29
30

31 **D.8.2 Population**

32
33 An important consideration in the assessment of the impacts from DOE ULP mining and
34 reclamation activities was the number of workers, families, and children who would migrate into
35 the ROI, either temporarily or permanently. The capacity of regional labor markets to supply a
36 sufficient number of workers in the occupations required for mining and reclamation is closely
37 related to the occupational profile of the ROI and occupational unemployment rates. To estimate
38 the in-migration that would occur to satisfy direct labor requirements, the analysis developed
39 estimates of the available labor in each direct labor category based on ROI unemployment rates
40 applied to each occupational category. In-migration associated with indirect labor requirements
41 was derived from estimates of the available labor supply in the ROI economy as a whole that
42 would be able to satisfy the demand for labor by industry sectors in which mining and
43 reclamation spending initially occurred. The national average household size (2.6) was used to
44 calculate the number of additional family members who would accompany direct and indirect

1 in-migrating workers. Based on other analyses of energy project labor in-migration (Fahys-
2 Smith 1983), it was assumed that 28% of the workers in-migrating into each ROI would bring
3 their family members with them.
4

5 Impacts on population were described in terms of the total number of in-migrants arriving
6 in the ROI in the peak year(s) of DOE ULP mining and reclamation. The relative impact of the
7 increase in population in the ROI was calculated by comparing total DOE ULP in-migration over
8 the period in which mining and reclamation was assumed to occur with baseline ROI population
9 forecasts over the same period. Impacts were expressed in terms of the percentage point
10 difference in the average annual population growth rate with and without the DOE ULP mining
11 and reclamation activities. Forecasts were based on data provided by the Colorado State
12 Demography Office.
13
14

15 **D.8.3 Housing**

16
17 The in-migration of workers occurring during mine development and operations has the
18 potential to affect the housing market in the ROI. The analysis considered these impacts by
19 estimating the increase in demand for rental housing units in the peak year(s) of operations and
20 reclamation that would result from the in-migration of both direct and indirect workers into the
21 ROI. The impacts on housing were described in terms of the number of rental units required in
22 the peak year of operations. The relative impact on the existing housing in the ROI was
23 estimated by calculating the impact of mining-related housing demand on the number of vacant
24 rental housing units in the peak year of operations.
25
26

27 **D.8.4 Community Services**

28
29 In-migration associated with mining activities could translate into an increased demand
30 for educational and public services (schools, police, firefighters, health services, and so on) in the
31 ROI. Impacts of mining activities on community service employment were also calculated for
32 the ROI in which the majority of new workers would locate. The analysis used estimates of the
33 number of in-migrating workers and families to calculate the number of newly sworn police
34 officers, firefighters, and general government employees who would be required to maintain the
35 existing levels of service for each community service. Calculations were based on the existing
36 number of employees per 1,000 persons for each community service. The analysis of the impact
37 on educational employment estimated the number of teachers in each school district who would
38 be required to maintain existing teacher-student ratios across all student age groups. Information
39 on existing employment and levels of service was collected from the individual jurisdictions
40 providing each service.
41
42

43 **D.8.5 Recreation**

44
45 Mining activities could have impacts on recreation. Providing quantitative estimates of
46 these potential impacts is difficult as it is unclear how mining operations and reclamation would

1 affect visits by recreationists. An approach to quantify the magnitude of the potential impacts on
2 the economy (for tourism and recreation) was developed for the ULP PEIS in order to provide
3 some perspective. The approach examined the impact of a 1%, 5%, and 10% reduction in ROI
4 employment and income in the recreation sector. Impacts were estimated by using IMPLAN data
5 for the ROI (MIG 2011). Impacts on employment were described in terms of the total number of
6 jobs that would be lost in the ROI from a reduction in the recreation sector. The relative impact
7 of the decrease in employment in the ROI was calculated by comparing total recreation
8 employment over the period assumed for the proposed mining activities with recreation
9 employment forecasts for the ROI (without the proposed action) for the same period.

12 **D.9 ENVIRONMENTAL JUSTICE**

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

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

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

41 Beginning with the 2010 Census, where appropriate, the census form allows
42 individuals to designate multiple population group categories to reflect their
43 ethnic or racial origin. In addition, persons who classify themselves as being
44 of multiple racial origins may choose up to six racial groups as the basis of
45 their racial origins. The term minority includes all persons, including those
46 classifying themselves in multiple racial categories, except those who classify

1 themselves as not of Hispanic origin and as White or “Other Race”
2 (U.S. Bureau of the Census 2011a).

3
4 The CEQ guidance proposed that minority populations should be identified
5 where either (1) the minority population of the affected area exceeds 50% or
6 (2) the minority population percentage of the affected area is meaningfully
7 greater than the minority population percentage in the general population or
8 other appropriate unit of geographic analysis.

9
10 The ULP PEIS applied both criteria in using Census Bureau data for census
11 block groups, wherein consideration was given to minority populations that
12 were both greater than 50% and 20 percentage points higher than they were in
13 the state (the reference geographic unit).

- 14
15 • *Low-income.* These are individuals who fall below the poverty line. The
16 poverty line takes into account family size and the ages of individuals in the
17 family. In 2009, for example, the poverty line for a family of five with three
18 children younger than 18 was \$26,023. For any given family below the
19 poverty line, all family members are considered as being below the poverty
20 line for the purposes of analysis (U.S. Bureau of the Census 2011b).

21 22 23 **D.10 TRANSPORTATION**

24
25 This section provides the methodology and key input parameters used for the
26 transportation risk analysis performed in support of the ULP PEIS. The methodology followed
27 the common approach identified in the DOE Handbook (DOE 2002). The analysis evaluated the
28 transportation of mined uranium ore from the lease tracts to the uranium mills. Transportation
29 impacts were estimated for shipment by truck because, historically, all such shipments in the area
30 have been by truck. Shipment by rail would not be practical, because there are no rail lines
31 located at or near any of the lease tracts or the uranium mills.

32 33 34 **D.10.1 Overview**

35
36 The transportation risk assessment considered human health risks from routine (normal,
37 incident-free) transport of radiological materials and from accidents. The risks associated with
38 the nature of the cargo itself (“cargo-related impacts”) were considered for routine transport.
39 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
40 quantified, as discussed in Section D.10.1.2. The transportation of hazardous chemicals was not
41 quantified, because hazardous chemicals utilized are similar in types and volumes typical of
42 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_3O_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.

1 Even under routine transportation, some radiological exposure could occur. Because the
2 radiological consequences (dose) would occur as a direct result of normal operations, the
3 probability of routine consequences is taken to be 1 in the RADTRAN 5 code. Therefore, the
4 dose risk is equivalent to the estimated dose.

5
6 For routine transportation, the RADTRAN 5 computer code considers major groups of
7 potentially exposed persons. The RADTRAN 5 calculations of risk for routine highway
8 transportation include exposures of the following population groups:

- 9
- 10 • *Persons along the route (off-link population)*. Collective doses were
11 calculated for all persons living or working within 0.5 mi (0.8 km) of each
12 side of a transportation route. The total number of persons within the 1-mi
13 (1.6-km) corridor was calculated separately for each route considered in the
14 assessment.
 - 15
16 • *Persons sharing the route (on-link population)*. Collective doses were
17 calculated for persons in all vehicles sharing the transportation route. This
18 group included persons travelling in the same or the opposite direction in
19 which the shipment was going, as well as persons in vehicles passing the
20 shipment.
 - 21
22 • *Persons at stops*. Collective doses can be calculated for people who might be
23 exposed while a shipment was stopped en route. For truck transportation,
24 these stops would include those for refueling, food, and rest. Truck stops were
25 not considered in the ULP PEIS because of the relatively short shipment
26 distances being considered.
 - 27
28 • *Crew members*. Collective doses were calculated for truck drivers involved in
29 the actual shipment of material. Workers involved in loading or unloading
30 were not considered in the transportation analysis.
- 31

32 The doses calculated for the first three population groups were added together to yield the
33 collective dose to the public. The dose calculated for the fourth group represents the collective
34 dose to workers.

35
36 The RADTRAN 5 calculations for routine doses generically compute the dose rate as a
37 function of distance from a point source or line source (Neuhauser and Kanipe 2003). Associated
38 with the calculation of routine doses for each exposed population group are parameters such as
39 the radiation field strength, source-receptor distance, duration of exposure, vehicle speed,
40 stopping time, traffic density, and route characteristics (such as population density). The
41 RADTRAN manual contains derivations of the equations used and descriptions of these
42 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 D.10-1 Individual Exposure Scenarios

Receptor	Exposure Event
Person at roadside	2 m
Person in traffic jam	1.2 m for 30 minutes
Resident near route	30 m

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

1 potential uranium shipment routes. For the ULP PEIS analysis, representative unit risk factors
2 were developed on a per-kilometer basis for the collective population and worker (truck driver)
3 doses. These factors were calculated by assuming that the longest potential route would be used.
4

5 For the lease tracts and uranium mills under consideration, the longest route is 266 km
6 (165 mi), from New Verde Mine on Lease Tract 26 to White Mesa Mill. The route runs from
7 New Verde Mine on local roads to State Highway (SH) 141, then through Naturita, traveling
8 south to US 491, west into Utah to US 191, through Monticello, and south on US 191 to the
9 White Mesa Mill. This route uses roads typical of most potential routes and runs through both
10 rural and populated areas representative of the region. Population densities at the lease tract level
11 from the 2010 Census were used in RADTRAN 5 to estimate the collective population risks
12 along the route. The average collective dose to the public from uranium ore in the region was
13 estimated to be approximately 1.54×10^{-7} person-rem/km. The average dose to a truck driver
14 was estimated to be approximately 8.08×10^{-7} rem/km.
15
16

17 **D.10.4.4 Injury and Fatality Rates**

18
19 Injury and fatality rates for use in estimating potential injuries and fatalities from truck
20 accidents during the shipment of uranium ore were developed by using route-specific and
21 county-specific data. The injury and accident fatality rates used in the analysis were
22 1.85×10^{-7} /km for injuries and 1.66×10^{-8} /km for fatalities. These rates were generated based
23 on injuries, fatalities, and vehicle miles travelled as reported by the Colorado Department of
24 Transportation (CDOT) for the years 2002 through 2007 for SH 90, SH 141, and SH 491
25 (CDOT 2002, 2003, 2004, 2005, 2006a, 2007a) in the vicinity of the lease tracts and along any
26 potential route to either of the two uranium mills considered. These rates are high for heavy truck
27 travel because they include all vehicle types. For comparison, a rate of 1.80×10^{-8} /km for
28 fatalities was estimated from data on all large-truck vehicle miles (CDOT 2006b, 2007b, 2008,
29 2009, 2010) and all traffic fatalities (DOT 2010a–d) in Dolores, Mesa, Montrose, and
30 San Miguel Counties for the years 2006 through 2010. This second value is in relatively good
31 agreement with (within <10% of) the value of 1.66×10^{-8} /km for fatalities for all vehicles on the
32 roads considered in the analysis.
33

34 For Utah, injury and fatality rates were derived from the available data for 2005 through
35 2009 for San Juan County. Data on vehicle miles travelled in the county for all vehicles were
36 used in conjunction with the number of injuries and fatalities recorded (Utah 2005, 2006, 2007,
37 2008, 2009) to obtain rates of 2.77×10^{-7} /km for injuries and 2.41×10^{-8} /km for fatalities.
38 Because these rates included contributions from vehicles other than heavy trucks as well as all
39 roads in the county and not just US 491 and US 191 on the route to the White Mesa Mill (which
40 represent relatively short distances), the Colorado injury and fatality rates were used for the
41 analysis of all shipments to White Mesa Mill.
42
43

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 D.10-2 Mine Size for Each Lease Tract as Assumed for the Transportation Analysis for Alternatives 3, 4, and 5

Lease Tract	Assumed Mine Size	Ore Production Rate (tons/d)	Ore Shipments per Day ^a
C-JD-5	Large	200	8
C-JD-5A	Small	50	2
C-JD-6	Large	200	8
C-JD-7	Very large	300	12
C-JD-8	Medium	100	4
C-JD-8A	Small	50	2
C-JD-9	Medium	100	4
C-SR-10	Medium	100	4
C-SR-11	Medium	100	4
C-SR-11A	Medium	100	4
C-SR-12	Small	50	2
C-SR-13	Medium	100	4
C-SR-13A	Medium	100	4
C-SR-14	Medium	100	4
C-SR-15	Small	50	2
C-SR-15A	Small	50	2
C-SR-16	Small	50	2
C-SR-16A	Small	50	2
C-WM-17	Small	50	2
C-SM-18	Medium	100	4
C-AM-19	Large	200	8
C-AM-19A	Medium	100	4
C-AM-20	Small	50	2
C-LP-21	Medium	100	4
C-LP-22	Small	50	2
C-LP22A	Medium	100	4
C-LP-23	Medium	100	4
C-CM-24	Small	50	2
C-CM-25	Small	50	2
C-G-26	Small	50	2
C-G-27	Small	50	2

^a Assumes an ore haul truck capacity of 25 tons.

1 discussed further in Section 2.2. The size of a mine on a specific lease tract was first selected
2 roughly on the basis of past uranium ore production. If no previous ore production had occurred,
3 the assumed mine sizes for those lease tracts were assigned so as to distribute uranium ore
4 production in a generally even manner across the entire region considered, if all mines were to
5 operate at the same time. In reality, such an occurrence would generate 2,900 tons of ore per day.
6 The ore production was averaged over the region to highlight the general level of traffic that
7 could occur in various areas.
8
9

10 **D.11 CULTURAL RESOURCES**

11
12 The following procedures were employed to estimate the potential impacts of the
13 alternatives proposed in the ULP PEIS. The process began with a review of available
14 documentation of known cultural resources, including archaeological sites, historic structures,
15 and traditional cultural properties. It began with a Class I cultural resource review of the lease
16 tracts conducted by Alan Reed in 2006, the ethnographic background study and potential for
17 traditional cultural properties analysis of the lease tracts conducted by J.N. Fritz in 2006, and the
18 discussion of the historic mines on the lease tracts by E. Twitty in 2008. Information on cultural
19 resource surveys conducted within the tracts since 2006 was obtained as geographic information
20 system (GIS) layers from Colorado's Office of Archaeology and Historic Preservation (OAHP).
21 For purposes of comparison, GIS data were also obtained for a 15-mi (24-km) buffer
22 surrounding the lease tracts. Since some lease tracts were closer than 15 mi (24 km) from the
23 Utah border, buffer information was requested from the Utah State Historic Preservation Office
24 (SHPO) as well. The data obtained from the Colorado OAHP and the Utah SHPO were used to
25 update the description of known cultural resources within the lease tracts.
26

27 The most recent GIS data from the OAHP were used to compare the number of acres
28 surveyed within each lease tract with the area of each lease tract, to determine the percentage of
29 each lease tract that had been surveyed. Then, for purposes of analysis, the lease tracts were
30 grouped into the four proximity-based clusters used for visual resource analysis: North; North
31 Central; South Central; and South. The total acreage surveyed and the number of sites recorded
32 for each cluster were tallied and used to determine site densities for each cluster. On the basis of
33 the assumption that the site densities in the unsurveyed areas would be similar to those of the
34 surveyed areas for each cluster, the number of potential sites was projected for each cluster.
35

36 Two types of potential impacts were considered. Direct impacts are those in which the
37 resource is directly destroyed, altered, or damaged by mining operations. Impacts such as
38 vandalism and unpermitted collecting are considered indirect when they do not result from
39 mining itself or the construction of access roads to the mines but are instead the result of
40 increased human presence due to mine operations or increased access due to the construction of
41 or improved maintenance on roads to the mines. On the basis of the site density within each
42 cluster and the number of acres that would be disturbed by a mine in each mine category (small,
43 medium, large, and very large), the number of sites likely to be directly affected by a mine in
44 each category was projected. Under each alternative, a different number of small, medium, large,
45 and very large mines would likely be developed. The number of direct impacts for each
46 alternative was projected, based on the acreage likely to be disturbed. For indirect impacts, it was

1 assumed that all the sites projected for each cluster would have the potential to be indirectly
2 affected. These were, of course, projections only. Pedestrian surveys would be necessary to
3 determine the actual locations of sites. The number of sites directly affected could be reduced by
4 changing the location of mining activities.

5
6 The GIS data from the Colorado OAHF does not identify traditional cultural properties.
7 Unless already documented, the presence of such properties can be determined only by
8 communications with the relevant cultural groups. Federally recognized Native American tribes
9 are being contacted, but to date, none of them have identified any culturally important properties
10 on or near the lease tracts.

11 12 13 **D.12 VISUAL RESOURCES**

14
15 The visual impact analysis for the ULP PEIS utilizes distance zones specified within the
16 Bureau of Land Management's (BLM's) visual resource management (VRM) system to identify
17 potentially sensitive visual resource areas (SVRAs) that might be affected by one or more of the
18 five alternatives. In order to assess these impacts, reverse viewshed analyses were conducted to
19 identify which lands surrounding the lease tracts would have views of infrastructure and
20 activities in at least some portion of the lease tracts. Reverse viewshed analyses were conducted
21 for Alternatives 1, 3, and 4. A separate analysis was not conducted for Alternatives 2 and 5
22 because of the similarities in the visual impacts associated with Alternatives 1 and 4,
23 respectively.

24
25 A primary component considered in conducting this analysis was the impact of distance
26 on determining what could be seen from within a lease tract. The distance between the viewer
27 and the mining activities (during exploration, mine development and operations, and
28 reclamation) that are the source of visual contrast is a critical element in determining the level of
29 perceived impact. For this analysis, the BLM distance zones in the VRM system were utilized.
30 These zones are as follows:

- 31
32
- 33 • *Foreground–middleground* (0 to 5 mi [0 to 8 km]). This zone includes areas
34 where management activities may be seen in detail. For instance, the outer
35 boundary of this distance zone is defined as the point at which the texture and
36 form of individual plants are no longer apparent in the landscape.
 - 37 • *Background* (5 to 15 mi [8 to 24 km]). This zone includes the area beyond the
38 foreground–middle ground up to 15 mi (24 km) and the area where some
39 detail beyond the form or outline of the project is visible. For example,
40 vegetation should be visible at least as patterns of light and dark.
 - 41 • *Seldom seen* (beyond 15 mi [24 km]). This zone includes areas beyond 15 mi
42 (24 km) (BLM 1986).
- 43
44

45 A GIS-based impact analysis was used to identify locations within the SVRAs from
46 which some portions of the lands containing the lease tracts would be visible. Assuming an

1 unobstructed view of the ULP lease tract, viewers in these areas would be likely to perceive
2 some level of visual contrast from the mining activities.

3
4 The “spatial analyst extension” of the ESRI ArcGIS 10 software was used to calculate
5 viewsheds. (A viewshed is an area of landscape visible to the human eye from a fixed vantage
6 point.) The viewshed analyses determined the potential visibility of the four lease tract groups or
7 portions of these groups from lands within 25 mi (40 km). The ROI for visual resource analysis
8 was set at 25 mi (40 km) because it is the approximate limit at which non-negligible visual
9 contrasts from the structures and landforming activities in the proposed action could reasonably
10 be expected to be visible in this region, assuming favorable viewing conditions and strong
11 contrast between an object and its background. Viewshed calculations were performed by using
12 National Elevation Dataset (NED) 10-meter Digital Elevation Model (DEM) with the earth
13 curvature set to a refractivity coefficient of 0.13.

14
15 Because each of the four groups or a portion of the groups of lease tracts represents a
16 large geographic area rather than specifically located points, a grid-based sample of points was
17 used to calculate visibility.

18
19 Viewsheds were calculated based on an assumed height of 30 ft (9 m) to represent the
20 mining sites and 5 ft (1.5 m) to represent the observer height.

21
22 The selected SVRAs included in the analysis were as follows:

- 23
24 • National Parks, National Monuments, National Recreation Areas, National
25 Preserves, National Wildlife Refuges, National Reserves, National
26 Conservation Areas, National Historic Sites;
27
28 • Congressionally authorized Wilderness Areas;
29
30 • Wilderness Study Areas;
31
32 • National Wild and Scenic Rivers;
33
34 • Congressionally authorized Wild and Scenic Study Rivers;
35
36 • National Scenic Trails and National Historic Trails;
37
38 • National Historic Landmarks and National Natural Landmarks;
39
40 • All-American Roads, National Scenic Byways, State Scenic Highways, and
41 BLM-designated and U.S. Forest Service-designated Scenic Highways and
42 Byways;
43
44 • BLM-designated Special Recreation Management Areas; and
45

- 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

1 using NEPA registers from regional BLM field offices and schedules of proposed actions from
2 nearby National Forests.

5 **D.15 REFERENCES FOR APPENDIX D**

6
7 ATSDR (Agency for Toxic Substances and Disease Registry), 2012, *Minimal Risk Levels*
8 (*MRLs*) Feb.

9
10 AQMD (South Coast Air Quality Management District), 2012, *Particulate Matter (PM) 2.5*
11 *Significance Thresholds and Calculation Methodology*.

12
13 Barber, J.R., et al., 2010, “The Costs of Chronic Noise Exposure for Terrestrial Organisms,”
14 *Trends in Ecology and Evolution* 25(3):180–189.

15
16 Barry, T.M., and J.A. Reagan, 1978, *FHWA Highway Traffic Noise Prediction Model*, FHWA-
17 RD-77-108, prepared for the Federal Highway Administration, Washington, D.C., Dec.

18
19 Biwer, B.M., et al., 1997, *RISKIND Verification and Benchmark Comparisons*,
20 ANL/EAD/TM-74, Argonne National Laboratory, Argonne, Ill., Aug.

21
22 BLM (Bureau of Land Management), 1986, *Visual Resource Inventory*, BLM Manual Handbook
23 8410-1, Release 8-28, U.S. Department of the Interior, Washington, D.C., Jan.

24
25 BLM, 2008, *Final Environmental Assessment for the Whirlwind Mine Uranium Mining Project*,
26 Grand Junction Field Office, Grand Junction, Colo., and Moab Field Office, Moab, Utah, Sept.

27
28 BLS (Bureau of Labor Statistics), 2011a, *Number and Rate of Fatal Occupational Injuries, by*
29 *Industry Sector, 2010*.

30
31 BLS, 2011b, *2010 Survey of Occupational Injuries & Illnesses, Summary Estimates Charts*
32 *Package*, Oct. 20.

33
34 CDOT (Colorado Department of Transportation), 2002, *Crashes and Rates on State Highways,*
35 *2002*, Traffic Safety and Traffic Engineering Branch, Accident Management Unit.

36
37 CDOT, 2003, *Crashes and Rates on State Highways, 2003*, Traffic Safety and Traffic
38 Engineering Branch, Accident Management Unit.

39
40 CDOT, 2004, *Crashes and Rates on State Highways, 2004*, Traffic Safety and Traffic
41 Engineering Branch, Accident Management Unit.

42
43 CDOT, 2005, *Crashes and Rates on State Highways, 2005*, Traffic Safety and Traffic
44 Engineering Branch, Accident Management Unit.

- 1 CDOT, 2006a, *Crashes and Rates on State Highways, 2006*, Safety and Traffic Engineering
2 Branch, Accident Management Unit.
3
- 4 CDOT, 2006b, *Roadway Statistics, 2006 State Highway Statistics—Daily Vehicle Miles of Travel*
5 *(DVMT) for All Trucks by County*. Available at [http://apps.coloradodot.info/dataaccess/](http://apps.coloradodot.info/dataaccess/Statistics/dsp_folder/Roadway/2006/2006TruckDVMTbyCounty.htm)
6 [Statistics/dsp_folder/Roadway/2006/2006TruckDVMTbyCounty.htm](http://apps.coloradodot.info/dataaccess/Statistics/dsp_folder/Roadway/2006/2006TruckDVMTbyCounty.htm). Accessed Jan. 25, 2012.
7
- 8 CDOT, 2007a, *Crashes and Rates on State Highways, 2007*, Safety and Traffic Engineering
9 Branch, Accident Management Unit.
10
- 11 CDOT, 2007b, *Roadway Statistics, 2007 State Highway Statistics—Daily Vehicle Miles of Travel*
12 *(DVMT) for All Trucks by County*. Available at [http://apps.coloradodot.info/dataaccess/Statistics/](http://apps.coloradodot.info/dataaccess/Statistics/dsp_folder/Roadway/2007/2007TruckDVMTbyCounty.htm)
13 [dsp_folder/Roadway/2007/2007TruckDVMTbyCounty.htm](http://apps.coloradodot.info/dataaccess/Statistics/dsp_folder/Roadway/2007/2007TruckDVMTbyCounty.htm). Accessed Jan. 25, 2012.
14
- 15 CDOT, 2008, *Roadway Statistics, 2008 State Highway Statistics—Daily Vehicle Miles of Travel*
16 *(DVMT) for All Trucks by County*. Available at [http://apps.coloradodot.info/dataaccess/Statistics/](http://apps.coloradodot.info/dataaccess/Statistics/dsp_folder/Roadway/2008/2008TruckDVMTbyCounty.htm)
17 [dsp_folder/Roadway/2008/2008TruckDVMTbyCounty.htm](http://apps.coloradodot.info/dataaccess/Statistics/dsp_folder/Roadway/2008/2008TruckDVMTbyCounty.htm). Accessed Jan. 25, 2012.
18
- 19 CDOT, 2009, *Roadway Statistics, 2009 State Highway Statistics—Daily Vehicle Miles of Travel*
20 *(DVMT) for All Trucks by County*. Available at [http://apps.coloradodot.info/dataaccess/Statistics/](http://apps.coloradodot.info/dataaccess/Statistics/dsp_folder/Roadway/2009/2009TruckDVMTbyCounty.htm)
21 [dsp_folder/Roadway/2009/2009TruckDVMTbyCounty.htm](http://apps.coloradodot.info/dataaccess/Statistics/dsp_folder/Roadway/2009/2009TruckDVMTbyCounty.htm). Accessed Jan. 25, 2012.
22
- 23 CDOT, 2010, *Roadway Statistics, 2010 State Highway Statistics—Daily Vehicle Miles of Travel*
24 *(DVMT) for All Trucks by County*. Available at [http://apps.coloradodot.info/dataaccess/Statistics/](http://apps.coloradodot.info/dataaccess/Statistics/dsp_folder/Roadway/2010/2010TruckDVMTbyCounty.pdf)
25 [dsp_folder/Roadway/2010/2010TruckDVMTbyCounty.pdf](http://apps.coloradodot.info/dataaccess/Statistics/dsp_folder/Roadway/2010/2010TruckDVMTbyCounty.pdf). Accessed Jan. 25, 2012.
26
- 27 CDPHE (Colorado Department of Public Health and Environment), 2011, *2008 Air Pollutant*
28 *Emissions Inventory*, online database, Denver, Colo. Available at [http://www.colorado.gov/](http://www.colorado.gov/airquality/inv_maps_2008.aspx)
29 [airquality/inv_maps_2008.aspx](http://www.colorado.gov/airquality/inv_maps_2008.aspx). Accessed Nov. 23, 2011.
30
- 31 CEQ (Council on Environmental Quality), 1997, *Environmental Justice Guidance under the*
32 *National Environmental Policy Act*, Executive Office of the President, Washington, D.C.
33
- 34 Chapman, S.S., et al., 2006, *Ecoregions of Colorado* (color poster with map, descriptive text,
35 summary tables, and photographs; map scale 1:1,200,000), U.S. Geological Survey, Reston, Va.
36
- 37 CNHP (Colorado Natural Heritage Program), 2009, *Summary of Services*. Available at
38 <http://www.cnhp.colostate.edu/>. Accessed Sept. 9, 2009.
39
- 40 CNHP, 2011a, *Colorado Natural Heritage Program—Rare Plant Guide List*. Available at
41 <http://www.cnhp.colostate.edu/download/projects/rareplants/list.asp?list=master>. Accessed
42 Dec. 16, 2011.
43
- 44 CNHP, 2011b, *Colorado Natural Heritage Program—Element Occurrences by Quad*. Available
45 at <http://www.cnhp.colostate.edu/download/gis.asp#maps>. Accessed Dec. 16, 2011.
46

- 1 Connaughton, J.L., 2005, "Guidance on the Consideration of Past Actions in Cumulative Effects
2 Analysis," letter from Connaughton (Chairman, Council on Environmental Quality) to Heads of
3 Federal Agencies, June 24.
4
- 5 CPW (Colorado Parks and Wildlife), 2011, *Natural Diversity Information Source*, Colorado
6 Department of Natural Resources, Division of Wildlife, Denver, Colo. Available at <http://ndis.nrel.colostate.edu/index.html>. Accessed Dec. 15, 2011.
7
8
- 9 DOE (U.S. Department of Energy), 1995, *Department of Energy Programmatic Spent Nuclear
10 Fuel Management and Idaho National Engineering Laboratory Environmental Restoration and
11 Waste Management Programs Final Environmental Impact Statement*, DOE/EIS-0203-F, Office
12 of Environmental Management, Idaho Operations Office, Idaho Falls, Id., Apr.
13
- 14 DOE, 1996, *Final Environmental Impact Statement on a Proposed Nuclear Weapons
15 Nonproliferation Policy Concerning Foreign Research Reactor Spent Nuclear Fuel, Appendix E:
16 Evaluation of Human Health Effects of Overland Transportation*, DOE/EIS-0218F, Vol. 2,
17 Assistant Secretary for Environmental Management, Washington, D.C., Feb.
18
- 19 DOE, 1997, *Final Waste Management Programmatic Environmental Impact Statement for
20 Managing Treatment, Storage, and Disposal of Radioactive and Hazardous Waste*,
21 DOE/EIS0200-F, Office of Environmental Management, Washington, D.C.
22
- 23 DOE, 1999, *Final Programmatic Environmental Impact Statement for Alternative Strategies for
24 the Long-Term Management and Use of Depleted Uranium Hexafluoride*, DOE/EIS-0269, Office
25 of Nuclear Energy, Science and Technology, Germantown, Md., April.
26
- 27 DOE, 2002, *A Resource Handbook on DOE Transportation Risk Assessment*,
28 DOE/EM/NTP/HB-01, prepared by Transportation Risk Assessment Working Group Technical
29 Subcommittee for DOE, Office of Environmental Management, National Transportation
30 Program, Albuquerque, N.M., July.
31
- 32 DOE, 2011, *Draft Environmental Impact Statement for the Disposal of Greater-Than-Class-C
33 (GTCC) Low-Level Radioactive Waste and GTCC-Like Waste*, DOE/EIS-0375-D, Office of
34 Environmental Management, Washington, D.C., Feb.
35
- 36 DOT (U.S. Department of Transportation), 2010a, *Traffic Safety Facts, Dolores County,
37 Colorado, 2006–2010*, National Highway Transportation Safety Administration,
38 Washington, D.C. Available at [http://www-nrd.nhtsa.dot.gov/departments/nrd-30/ncsa/STSI/
39 8_CO/2010/Counties/Colorado_Dolores%20County_2010.HTM](http://www-nrd.nhtsa.dot.gov/departments/nrd-30/ncsa/STSI/8_CO/2010/Counties/Colorado_Dolores%20County_2010.HTM). Accessed Jan. 25, 2012.
40
- 41 DOT, 2010b, *Traffic Safety Facts, Mesa County, Colorado, 2006–2010*, National Highway
42 Transportation Safety Administration, Washington, D.C. Available at [http://www-nrd.nhtsa.dot.
43 gov/departments/nrd-30/ncsa/STSI/8_CO/2010/Counties/Colorado_Mesa%20County_2010.
44 HTM](http://www-nrd.nhtsa.dot.gov/departments/nrd-30/ncsa/STSI/8_CO/2010/Counties/Colorado_Mesa%20County_2010.HTM). Accessed Jan. 25, 2012.
45

- 1 DOT, 2010c, *Traffic Safety Facts, Montrose County, Colorado, 2006–2010*, National Highway
2 Transportation Safety Administration, Washington, D.C. Available at [http://www-nrd.nhtsa.dot.
3 gov/departments/nrd-30/ncsa/STSI/8_CO/2010/Counties/Colorado_Montrose%20County_2010.
4 HTM](http://www-nrd.nhtsa.dot.gov/departments/nrd-30/ncsa/STSI/8_CO/2010/Counties/Colorado_Montrose%20County_2010.HTM). Accessed Jan. 25, 2012.
5
- 6 DOT, 2010d, *Traffic Safety Facts, San Miguel County, Colorado, 2006–2010*, National Highway
7 Transportation Safety Administration, Washington, D.C.
8
- 9 Eckerman, K., et al., 1999, *Cancer Risk Coefficients for Environmental Exposures to
10 Radionuclides*, EPA 402-R-99-001, Federal Guidance Report No. 13, prepared by Oak Ridge
11 National Laboratory for U.S. Environmental Protection Agency, Office of Radiation and Indoor
12 Air.
13
- 14 EPA (U.S. Environmental Protection Agency), 1974, *Information on Levels of Environmental
15 Noise Requisite to Protect Public Health and Welfare with an Adequate Margin of Safety*,
16 550/9-74-004, Office of Noise Abatement and Control, March.
17
- 18 EPA, 1985, *Draft Background Information Document, Proposed Standard for Radon-222
19 Emissions to Air from Underground Uranium Mines*, EPA/520/1-85-010, Office of Radiation
20 Programs, Washington, D.C., Feb. 14.
21
- 22 EPA, 1989a, *Risk Assessments, Environmental Impact Statement, NESHAPS for Radionuclides,
23 Background Information Document—Volume 2*, EPA/520/1-89-006-1, Office of Radiation
24 Programs, Washington, D.C. Sept.
25
- 26 EPA, 1989b, *Risk Assessment Guidance for Superfund, Vol. I: Human Health Evaluation
27 Manual (Part A), Interim Guidance*, EPA/540/1-89/002, Office of Emergency and Remedial
28 Response, Washington, D.C.
29
- 30 EPA, 1989c, *Users Guide for the COMPLY-R Code (Revision 1)*, EPA 520/1-89-029, Office of
31 Radiation Programs, Washington, D.C., Oct.
32
- 33 EPA, 1993, *Diffuse NORM: Waste Characterization and Preliminary Risk Assessment*, Office of
34 Radiation Programs, Washington, D.C.
35
- 36 EPA, 2004, *Unit Conversions, Emissions Factors, and Other Reference Data*, Nov. Available at
37 <http://www.epa.gov/cpd/pdf/brochure.pdf>. Accessed Feb. 24, 2012.
38
- 39 EPA, 2008, *Climate Leaders Greenhouse Gas Inventory Protocol Coe Mobile Guidance: Direct
40 Emissions from Mobile Combustion Sources*, EPA/430-K-08-004, May.
41
- 42 EPA, 2011, *Inventory of U.S. Greenhouse Gas Emissions and Sinks: 1990–2009*,
43 EPA 430-R-11-005, April 15.
44
- 45 EPA, 2012a, *Search WebFIRE*. Available at <http://cfpub.epa.gov/webfire/>. Accessed Jan. 27,
46 2012.

- 1 EPA, 2012b, Section 11.9, “Western Surface Coal Mining (10/98),” and Section 13.2.4,
2 “Aggregate Handling and Storage Piles (11/06),” in Volume 1, “Stationary Point and Area
3 Sources,” of *Compilation of Air Pollutant Emission Factors*, AP 42, Fifth Edition.
4
- 5 EPA, 2012c, *Integrated Risk Information System (IRIS)*. Available at <http://www.epa.gov/IRIS>.
6 Accessed March 17, 2012.
7
- 8 Fahys-Smith, V., 1983, “Migration of Boom-town Construction Workers: The Development of
9 an Analytic Framework,” *Environmental Geochemistry and Health* 5:104–112.
10
- 11 Ferry, C., et al., 2002, “An Experimental Method for Measuring the Radon-222 Emanation
12 Factor in Rocks,” *Radiation Measurements* 35:570.
13
- 14 Grove, 2006, *MicroShield User’s Manual Version 7*, Grove Software Inc., Lynchburg, Va.
15
- 16 Hanson, C.E., et al., 2006, *Transit Noise and Vibration Impact Assessment*,
17 FTA-VA-90-1003-06, prepared by Harris Miller Miller & Hanson Inc., Burlington, Mass., for
18 U.S. Department of Transportation, Federal Transit Administration, Washington, D.C., May.
19
- 20 ICRP (International Commission on Radiological Protection), 2011, “ICRP Publication 115:
21 Lung Cancer Risk from Radon and Progeny,” *Annals of the ICRP* 40(1).
22
- 23 Jones & Stokes Associates, 2007, *Software User’s Guide: URBEMIS2007 for Windows*,
24 *Version 9.2, Emissions Estimation for Land Use Development Projects*, prepared for South Coast
25 Air Quality Management District, Diamond Bar, Calif., Nov. Available at <http://www.urbemis.com/software/download.html>. Accessed Feb. 24, 2012.
26
27
- 28 Menge, C.W., et al., 1998, *FHWA Traffic Noise Model® Technical Manual*, FHWA-PD-96-010
29 and DOT-VNTSC-FHWA-98-2, prepared by U.S. Department of Transportation, John A. Volpe
30 National Transportation Systems Center, Cambridge, Mass., for U.S. Department of
31 Transportation, Federal Highway Administration, Washington, D.C., Feb.
32
- 33 MIG (Minnesota IMPLAN Group, Inc.), 2011, *IMPLAN Version 3 Software System*, Hudson,
34 Wisc.
35
- 36 NatureServe, 2011, *NatureServe Explorer—An Online Encyclopedia of Life*. Available at
37 <http://www.natureserve.org/explorer/>. Accessed Dec. 16, 2011.
38
- 39 Neuhauser, K.S., and F.L. Kanipe, 2003, *RADTRAN 5 User Guide*, SAND2003-2354, Sandia
40 National Laboratories, Albuquerque, N.M., July.
41
- 42 NRC (U.S. Nuclear Regulatory Commission), 1977, *Final Environmental Statement on the*
43 *Transportation of Radioactive Material by Air and Other Modes*, NUREG-0170, Washington,
44 D.C.
45

- 1 NRC, 1987, *Regulatory Guide 3.59 (Task WM 407-4) Methods for Estimating Radioactive and*
2 *Toxic Airborne Source Terms for Uranium Milling Operations*, Office of Nuclear Regulatory
3 Research, Washington, D.C., March.
4
- 5 NRCS (National Resources Conservation Service), 2012, *Soil Taxonomy, A Basic System of Soil*
6 *Classification for Making and Interpreting Soil Surveys*, USDA Handbook 436, 2nd Edition,
7 U.S. Department of Agriculture.
8
- 9 Rogers, Z., 2011, personal communication from Rogers (Energy Fuels Resources Corporation,
10 Lakewood, Colo.) to Y.-S. Chang (Argonne National Laboratory, Argonne, Ill.), Nov. 8.
11
- 12 QDEH (Queensland Department of Environment and Heritage), 1999, *Emission Estimation*
13 *Technique Manual for Explosives Detonation and Firing Ranges*, March.
14
- 15 Sakoda, A., et al., 2010, “Difference of Natural Radioactivity and Radon Emanation Fraction
16 Among Constituent Minerals of Rock or Soil,” *Applied Radiation and Isotopes* 68(12):2452.
17
- 18 Stoeser, D.B., et al., 2007, *Preliminary Integrated Geologic Map Databases for the*
19 *United States—Central States: Montana, Wyoming, Colorado, New Mexico, North Dakota,*
20 *South Dakota, Nebraska, Kansas, Oklahoma, Texas, Iowa, Missouri, Arkansas, and Louisiana,*
21 *Open File Report 2005-1351, Version 1.2, original file updated in Dec. 2007, U.S. Geological*
22 *Survey.*
23
- 24 Strait, R., et al., 2007, *Final Colorado Greenhouse Gas Inventory and Reference Case*
25 *Projections 1990—2020*, Center for Climate Strategies, Oct. Available at
26 <http://www.coloradoclimate.org/ewebeditpro/items/O14F13894.pdf>. Accessed Nov. 5, 2011.
27
- 28 Trinity Engineering Associates, Inc., 2007, *CAP88-PC Version 3.0 User Guide*, Cincinnati,
29 Ohio, Dec. 9.
30
- 31 UNSCEAR (United Nations Scientific Committee on the Effects of Atomic Radiation), 2008,
32 Annex E, “Sources-to-Effects Assessment for Radon in Homes and Workplaces,” in *Effects of*
33 *Ionizing Radiation*, UNSCEAR 2006 Report to the General Assembly, with Scientific Annexes,
34 United Nations, New York, N.Y.
35
- 36 UNSCEAR, 2010, *Sources and Effects of Ionizing Radiation*, UNSCEAR 2008 Report to the
37 General Assembly, with Scientific Annexes, Vol. 1, United Nations, New York, N.Y.
38
- 39 U.S. Bureau of the Census, 2011a, *2010 Census Summary File 1: Table P5*.
40
- 41 U.S. Bureau of the Census, 2011b, *2009 American Community Survey 5-Year Estimates*
42 *(2005–2009): Table B17017*.
43
- 44 USDA (U.S. Department of Agriculture), 1999, *Soil Taxonomy—A Basic System of Soil*.
45

- 1 USFWS (U.S. Fish and Wildlife Service), 2011a, *IPaC—Information, Planning, and*
2 *Conservation System*. Available at <http://ecos.fws.gov/ipac/>. Accessed Dec. 16, 2011.
3
- 4 USFWS, 2011b, *Critical Habitat Portal*, FWS Critical Habitat for Threatened and Endangered
5 Species. Available at <http://criticalhabitat.fws.gov/crithab/>. Accessed Dec. 16, 2011.
6
- 7 USFWS, 2012, *National Wetlands Inventory*, Interactive Mapping Program, U.S. Department of
8 the Interior, Washington, D.C. Available at <http://fws.gov/wetlands>. Accessed Sept. 17, 2012.
9
- 10 USGS (U.S. Geological Survey), 2004, *National Gap Analysis Program, Provisional Digital*
11 *Land Cover Map for the Southwestern United States*, Version 1.0, RS/GIS Laboratory, College
12 of Natural Resources, Utah State University. Available at [http://earth.gis.usu.edu/swgap/](http://earth.gis.usu.edu/swgap/landcover.html)
13 [landcover.html](http://earth.gis.usu.edu/swgap/landcover.html). Accessed March 15, 2010.
14
- 15 USGS, 2005, *National Gap Analysis Program, Southwest Regional GAP Analysis Project—Land*
16 *Cover Descriptions*, RS/GIS Laboratory, College of Natural Resources, Utah State University.
17 Available at http://earth.gis.usu.edu/swgap/legend_desc.html. Accessed March 15, 2010.
18
- 19 USGS, 2007, *National Gap Analysis Program, Digital Animal-Habitat Models for the*
20 *Southwestern United States. Version 1.0*. Center for Applied Spatial Ecology, New Mexico
21 Cooperative Fish and Wildlife Research Unit, New Mexico State University. Available at
22 <http://fws-nmcfwru.nmsu.edu/swregap/default.htm>. Accessed Dec. 16, 2011.
23
- 24 Utah (State of Utah), 2005, *Utah Crash Summary, 2005*, Department of Public Safety.
25
- 26 Utah, 2006, *Utah Crash Summary, 2006*, Department of Public Safety.
27
- 28 Utah, 2007, *Utah Crash Summary, 2007*, Department of Public Safety. Available at
29 <http://publicsafety.utah.gov/highwaysafety/1997-2005.html>. Accessed Feb. 10, 2012.
30
- 31 Utah, 2008, *Utah Crash Summary, 2008*, Department of Public Safety.
32
- 33 Utah, 2009, *Utah Crash Summary, 2009*, Department of Public Safety.
34
- 35 Walker, J.D., and J.W. Geissman (compilers), 2009, *Geologic Time Scale*, Geological Society of
36 America, Cambridge University Press.
37
- 38 Wayson, R.L., 1993, “Sound Fundamentals, Part 2,” *The Wall Journal*, Sept./Oct.
39
- 40 Weiner, R.F., et al., 2006, *RadCat 2.3 User Guide*, SAND2006-6315, Sandia National
41 Laboratories, Albuquerque, N.M, Oct.
42
- 43 Whetstone Associates, 2011, *JD-8 Mine Environmental Protection Plan*, work performed under
44 contract to Cotter Corp., Gunnison, Colo., June.
45

- 1 Whetstone Associates, 2012, *JD-6 Mine Environmental Protection Plan*, work performed under
- 2 contract to Cotter Corp., Gunnison, Colo., Sept.
- 3
- 4 Yu, C., et al., 2001, *User's Manual for RESRAD Version 6*, ANL/EAD-4, Argonne National
- 5 Laboratory, Argonne, Ill., July.
- 6
- 7 Yuan, Y.C., et al., 1995, *RISKIND —A Computer Program for Calculating Radiological*
- 8 *Consequences and Health Risks from Transportation of Spent Nuclear Fuel*, ANL/EAD-1,
- 9 Argonne National Laboratory, Argonne, Ill., Nov.

1
2
3
4
5
6
7
8
9
10
11
12
13
14
15
16

APPENDIX E:
CORRESPONDENCE ASSOCIATED WITH ENDANGERED SPECIES ACT (ESA)
CONSULTATION, BIOLOGICAL OPINION, AND BIOLOGICAL ASSESSMENT

1
2
3
4
5
6
7
8
9
10
11
12
13
14
15

This page intentionally left blank

1 **APPENDIX E:**

2

3 **CORRESPONDENCE ASSOCIATED WITH ENDANGERED SPECIES ACT (ESA)**

4 **CONSULTATION, BIOLOGICAL OPINION, AND BIOLOGICAL ASSESSMENT**

5

6

7 This appendix presents the biological assessment (BA) prepared for consultation with the

8 U.S. Fish and Wildlife Service (USFWS) and the biological opinion (BO) that was issued by the

9 USFWS. This appendix had previously presented species accounts for species listed under the

10 Endangered Species Act (ESA), and it is now material that is also discussed in the BA or

11 Section 4.3.6.4. This appendix also contains the correspondence between the U.S. Department of

12 Energy (DOE) and the USFWS regarding ESA (Section 7) consultation. The correspondence

13 began on November 7, 2011, and culminated on August 13, 2013, with a letter from the USFWS

14 containing the BO (see page E-13).

15

16 Revisions made to the Draft ULP PEIS to prepare the Final ULP PEIS are identified with

17 a line on the right margin of the pages. However, this same approach (i.e., providing lines on the

18 right margin of the pages) to indicate new material was not done for this appendix. Instead, a

19 description of the content of this appendix is provided as described in the paragraph above.

20

21

22 **TABLE E-1 Endangered Species Act Consultation Correspondence**

Date of Letter	Page	Source	Recipient
November 7, 2011	E-4	U.S. Department of Energy, Office of Legacy Management (T.A. Ribeiro, Environmental Program Manager)	U.S. Fish and Wildlife Service, Western Colorado Field Office (P. Gelatt, Fish and Wildlife Biologist)
November 16, 2011	E-9	U.S. Fish and Wildlife Service, Western Colorado Field Office (P. Repp, Acting Western Colorado Field Supervisor)	U.S. Department of Energy, Office of Legacy Management (T.A. Ribeiro, Environmental Manager)
May 13, 2013	E-11	U.S. Department of Energy, Office of Legacy Management (T.A. Ribeiro, Environmental Program Manager) (biological assessment attached)	U.S. Fish and Wildlife Service, Ecological Services (P. Gelatt, Western Colorado Supervisor)
August 13, 2013	E-13	U.S. Fish and Wildlife Service, Ecological Services (P. Gelatt, Western Colorado Supervisor)	U.S. Department of Energy, Office of Legacy Management (T.A. Ribeiro) (contains biological opinion)

23

24

25



Department of Energy
Washington, DC 20585

November 7, 2011

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 concurring 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.



Printed with soy ink on recycled paper

1
2
3

Ms. Patty Gelatt

-2-

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 USFWS 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,



Tracy A. Ribeiro
Environmental Program Manager

Enclosures

cc w/enclosures:

M. Picel, 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>

1
2
3

ATTACHMENTS

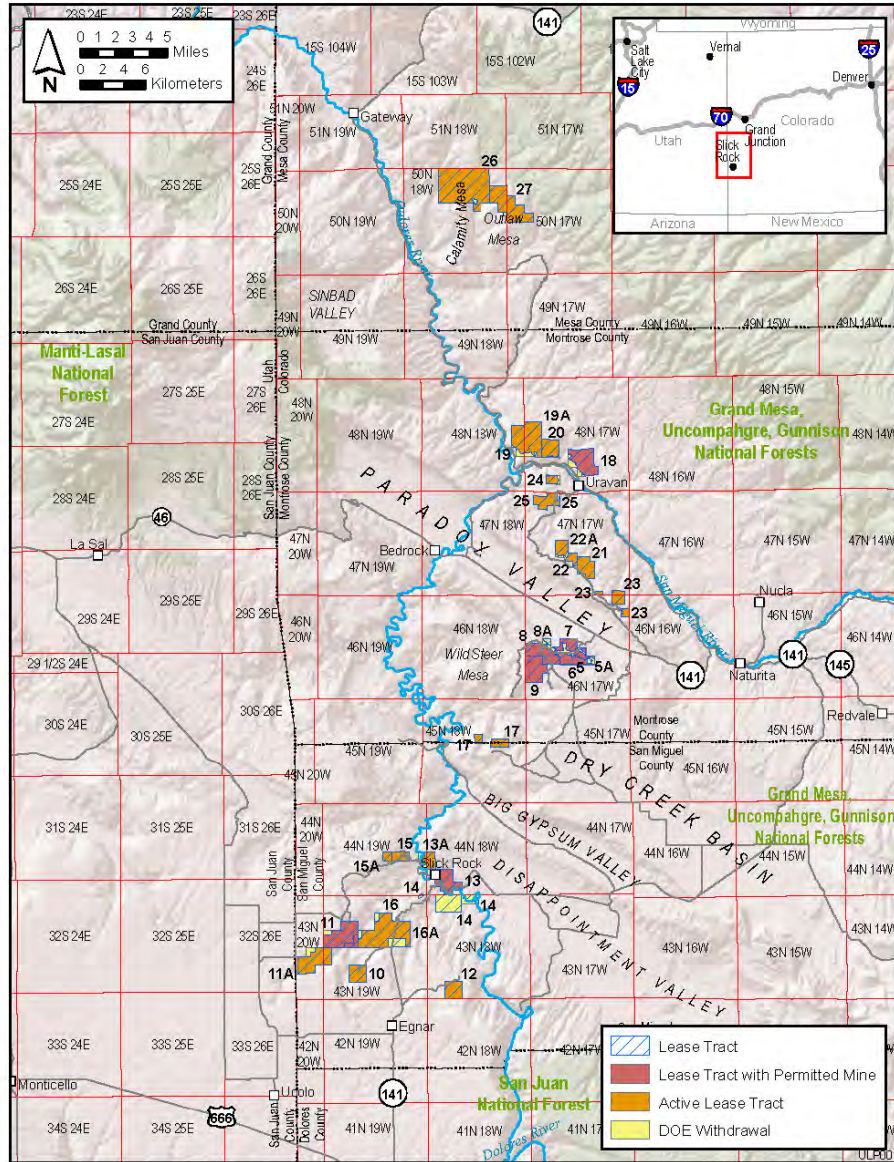


FIGURE 1 – Location of DOE ULP Lease Tracts in Mesa, Montrose, and San Miguel Counties, Colorado

1
2
3

TABLE 1 – Species Listed as Endangered or Threatened Under the Endangered Species Act, or Species That are Proposed or Candidates for Listing Under the Endangered Species Act That May Occur in the Counties Where DOE ULP Lease Tracts are Located

Scientific Name	Common Name	Status ^a	Counties in Which Species May Occur	Counties in Which Critical Habitat May Occur
Plants				
<i>Phacelia submutica</i>	Debeque phacelia	PT	Mesa	
<i>Eriogonum pelinophilum</i>	Clay-loving wild buckwheat	E	Montrose	
<i>Sclerocactus glaucus</i>	Colorado hookless cactus	T	Mesa, Montrose	
Invertebrates				
<i>Boloria acrocnemata</i>	Uncompahgre fritillary butterfly	E	San Miguel	
Fish				
<i>Gila cypha</i>	Humpback chub	E	Mesa, Montrose, San Miguel	Mesa ^b
<i>Gila elegans</i>	Bonytail	E	Mesa, Montrose, San Miguel	Mesa ^b
<i>Oncorhynchus clarki stomias</i>	Greenback cutthroat trout	T	Mesa	
<i>Ptychocheilus lucius</i>	Colorado pikeminnow	E	Mesa, Montrose, San Miguel	Mesa ^b
<i>Xyrauchen texanus</i>	Razorback sucker	E	Mesa, Montrose, San Miguel	Mesa ^b
Birds				
<i>Centrocercus minimus</i>	Gunnison sage-grouse	C	Mesa, Montrose, San Miguel	
<i>Centrocercus urophasianus</i>	Greater sage-grouse	C	Mesa, Montrose, San Miguel	
<i>Coccyzus americanus</i>	Yellow-billed cuckoo	C	Mesa, Montrose, San Miguel	
<i>Empidonax traillii eximius</i>	Southwestern willow flycatcher	E	San Miguel	
<i>Strix occidentalis lucida</i>	Mexican spotted owl	T	Montrose, San Miguel	
Mammals				
<i>Cynomys gunnisoni</i>	Gunnison's prairie dog	C	Montrose	
<i>Lynx canadensis</i>	Canada lynx	T	Mesa, Montrose, San Miguel	
<i>Mustela nigripes</i>	Black-footed ferret	E	Montrose, San Miguel	

^a 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 Colorado and Gunnison Rivers).

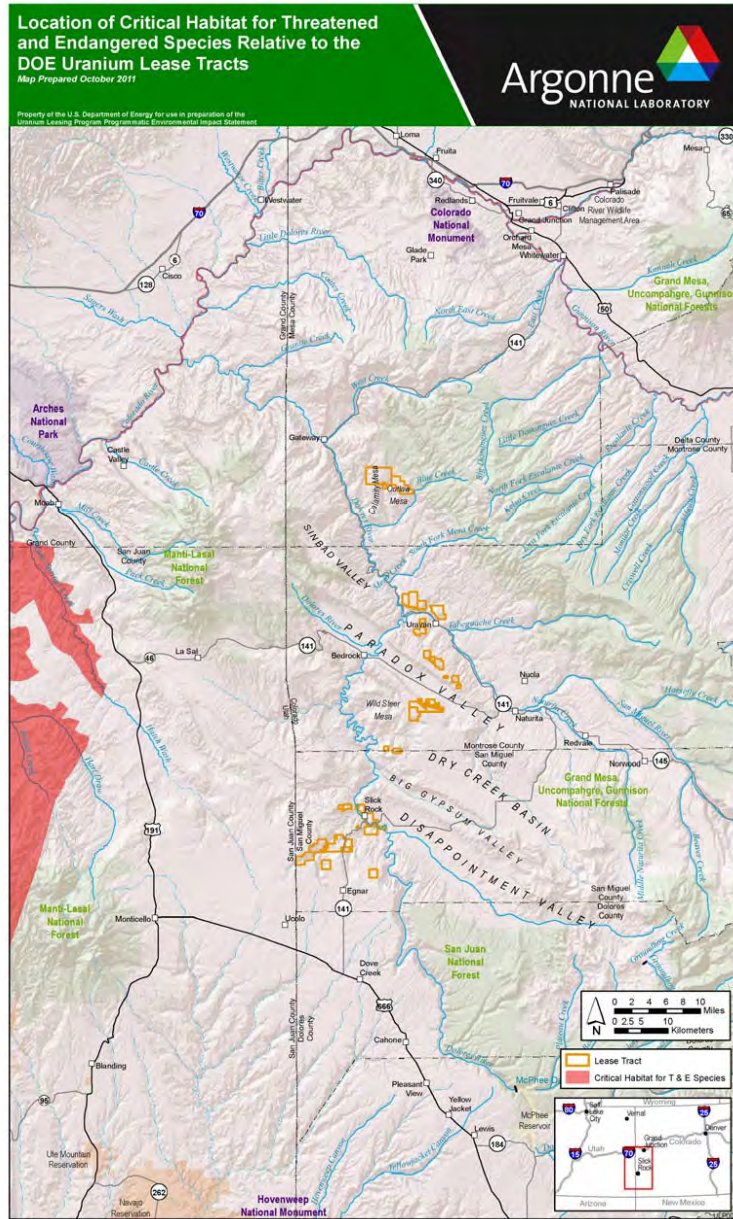


FIGURE 2 – Location of Designated Critical Habitats Relative to the DOE ULP Lease Tracts

1
2
3



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.

1
2
3

In the future, we recommend that DOE and its contractors use our web-based Information Planning and Conservation system (IPAC) (<http://ecos.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



Department of Energy
Washington, DC 20585

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 fritillary butterfly, greenback cutthroat trout, black-footed ferret, Canada lynx, and North American wolverine) and



Ms. Patty Gellatt

-2-

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 Plienness 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
2013.05.14 16:57:24
-06'00'

Tracy A. Ribeiro
Environmental Program Manager

Enclosure

cc w/enclosure:

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. Plienness, 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 Egnar, 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 acrocneuma*), 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 do 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 equisolensis* (horseshoe milkvetch), *Camissonia eastwoodia* (Eastwood evening-primrose or Grand Junction suncup), *Cryptantha gypsophila* (Gypsum Valley cateye), *Erigeron kachinensis* (Kachina daisy), *Lupinus crassus* (Payson lupine), and *Lygodesmis 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.

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 $\geq 2 \mu\text{g/L}$ are considered hazardous to the health and long-term survival of fish and wildlife (Lemly 1996). Additionally, water with more than $20 \mu\text{g/L}$ is considered hazardous to aquatic birds (Skorupa 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, Skorupa 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 $\mu\text{g/g}$ in *Potamogeton vaginatus* (pondweed) collected from a uranium mine wastewater storage reservoir that had waterborne selenium concentrations ranging from 260 to 350 $\mu\text{g/L}$.

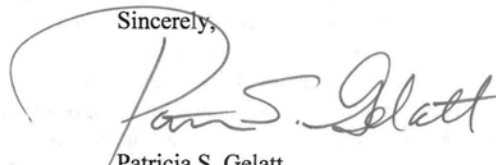
Annual monitoring of retention and sedimentation ponds should be conducted to determine waterborne selenium concentrations and to determine if submerged aquatic vegetation and/or aquatic invertebrates are present and provide a pathway for selenium bioaccumulation by birds using the evaporation ponds. If submerged aquatic vegetation and/or aquatic invertebrates are present in the evaporation pond and waterborne selenium is $> 2 \mu\text{g/L}$, 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 $\mu\text{mhos/cm}$. Windingstad et al. (1987) reported salt toxicosis in waterfowl in a lake with sodium concentrations over 17,000 mg/L. Salt toxicosis 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,



Patricia S. Gelatt
Western Colorado Supervisor

References Cited:

- Boon, D.Y. 1989. Potential selenium problems in Great Plains soils. In L.W. Jacobs, ed. Selenium in agriculture and the environment. American Society of Agronomy, Inc, and Soil Science Society of America. SSSA Special Pub. No. 23. Madison, WI. pp: 107-121.
- Fairbrother, A.F., M. Fix, T. O'Hara, and C.A. Ribic. 1994. Impairment of growth and immune function of avocet chicks from sites with elevated selenium, arsenic, and boron. *Journal of Wildlife Diseases*. 30(2):222-233.
- Lemly, A.D. 1996. Selenium in aquatic organisms. Pages 427-445 in W.N. Beyer, G.H. Heinz, and A.W. Redmon-Norwood (eds.). *Environmental contaminants in wildlife: Interpreting tissue concentrations*. Lewis Publishers, Boca Raton, Florida.
- Meteyer, C.U., R.R. Dubielzig, F. Joshua Dein, L.A. Baeten, M. IS. Moore, J.R. Jehl Jr., and K. Wesenberg. 1997. Sodium toxicity and pathology associated with exposure of waterfowl to hypersaline playa lakes of southeast New Mexico. *J. Vet. Diagn. Invest.* 9:269-280.
- Ohlendorf, H.M. 2002. Ecotoxicology of selenium. In *Handbook of Ecotoxicology*, 2nd ed.; Hoffman, D.J., Rattner, B.A., Burton Jr., G.A., Cairns, Jr., J., Eds.; Lewis Publishers, Boca Raton, FL, 2003; pp 465-500.
- Ramirez, P. and B. Rogers. 2000. Selenium in a Wyoming grassland community receiving wastewater from an in situ uranium mine. U.S. Fish and Wildlife Service Contaminant Report # R6/715C/00. Cheyenne, WY. Sept. 31.
- Ramirez, P. Jr. and B.P. Rogers. 2002. Selenium in a Wyoming grassland community receiving wastewater from an *in situ* uranium mine. *Arch. Environ. Contam. Toxicol.* 42:431-436.
- See, R.B., D.L. Naftz, D.A. Peterson, J.G. Crock, J.A. Erdman, R.C. Severson, P. Ramirez, Jr., and J.A. Armstrong. 1992. Detailed study of selenium in soil, representative plants,

water, bottom sediment, and biota in the Kendrick Reclamation Project Area, Wyoming, 1988-90. U.S. Geological Survey Water Resources Investigations Report 91-4131. 142 pp.

Skorupa, J.P., and H.M. Ohlendorf. 1991. Contaminants in drainage water and avian risk thresholds. Pages 345-368 *in* A. Dinar and D. Zilberman (eds.). *The economics and management of water and drainage in agriculture*. Kluwer Academic Publishers, Boston, MA.

USFWS. 2013a. Endangered and threatened wildlife and plants; endangered status for Gunnison sage-grouse; Proposed Rule. Fed. Regist. 78(8): 2485-2538.

USFWS. 2013b. Endangered and threatened wildlife and plants; designation of critical habitat for Gunnison sage-grouse; Proposed Rule. Fed. Regist. 78(8): 2539-2570.

Windingstad, R.M., F.X. Kartch, R.K.Strand, and M.R. Smith. 1987. Salt toxicosis in waterfowl in North Dakota. *Journal of Wildlife Diseases* 23(3): 443-446.

BOsmundson:DOEULPBOGJ423.docx:081313:KM

1
2
3
4
5
6
7
8
9
10
11
12
13
14
15

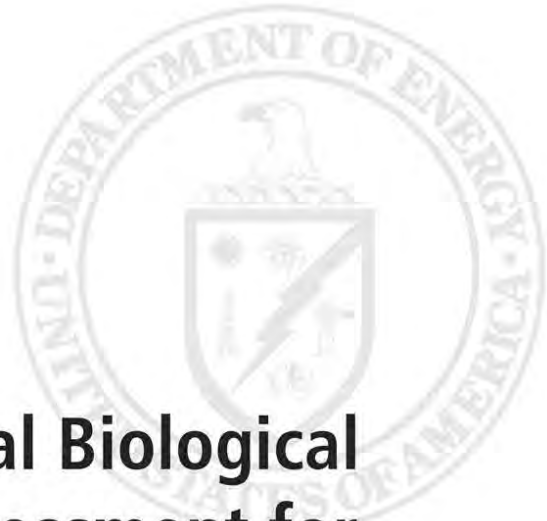
This page intentionally left blank



Final Biological Assessment for the U.S. Department of Energy Uranium Leasing Program

May 2013





Final Biological Assessment for the U.S. Department of Energy Uranium Leasing Program

May 2013



This page intentionally left blank.

CONTENTS

1		
2		
3		
4	NOTATION.....	vii
5		
6	1 INTRODUCTION.....	1
7		
8	1.1 Summary.....	1
9		
10	2 PROPOSED ACTION.....	3
11		
12	2.1 Description of the Action Area.....	3
13	2.2 Description of the Proposed Action.....	10
14	2.2.1 Production and Surface Disturbance.....	10
15	2.2.2 Water.....	11
16	2.3 Potentially Applicable Mitigation Measures and Best Management Practices.....	12
17		
18	3 EFFECTS OF THE URANIUM LEASING PROGRAM.....	21
19		
20	3.1 Common Effects of Uranium Mining on Species and Habitats.....	21
21	3.1.1 Exploration.....	21
22	3.1.2 Mine Development and Operations.....	24
23	3.1.3 Reclamation.....	29
24	3.2 Species That May Be Affected under the Proposed Action.....	30
25	3.2.1 Endangered, Threatened, and Proposed Species.....	30
26	3.2.1.1 Plants.....	33
27	3.2.1.2 Invertebrates.....	38
28	3.2.1.3 Fish.....	38
29	3.2.1.4 Birds.....	45
30	3.2.1.5 Mammals.....	52
31	3.2.2 Candidate Species.....	54
32	3.2.2.1 Birds.....	56
33	3.2.2.2 Mammals.....	57
34		
35	4 CUMULATIVE EFFECTS.....	61
36		
37	4.1 Reasonably Foreseeable Future Actions.....	61
38	4.1.1 Piñon Ridge Mill.....	64
39	4.1.2 Planned Uranium Exploration.....	65
40	4.1.3 Construction of Agricultural Water Facilities.....	65
41	4.1.4 Other Future Projects.....	66
42	4.2 Past and Present Actions.....	66
43	4.2.1 White Mesa Mill.....	66
44	4.2.2 Uranium Mining.....	67
45	4.2.2.1 Daneros Mine.....	67
46	4.2.2.2 La Sal Mines Complex.....	67

1
2
3
4
5
6
7
8
9
10
11
12
13
14
15
16
17
18
19
20
21
22
23
24
25
26
27
28
29
30
31
32
33
34
35
36
37
38
39
40
41
42
43
44
45
46

CONTENTS (Cont.)

4.2.2.3 Whirlwind Mine..... 68

4.2.2.4 Other Uranium Mining and Uranium Exploration 68

4.2.2.5 Coal Mining..... 69

4.3 Cumulative Impacts from the Proposed Action..... 70

5 REFERENCES 71

FIGURES

2-1 Locations of the ULP Lease Tracts..... 7

2-2 Land Cover Types in the Vicinity of the DOE Lease Tracts 9

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..... 34

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..... 37

3-3 Locations of Designated Critical Habitat for the Colorado River Endangered Fish Species in the Vicinity of the ULP Lease Tracts..... 40

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..... 48

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..... 50

3-6 Recorded Quad-Level Occurrences and Distribution of Potentially Suitable Habitat for the Canada Lynx in the Vicinity of the ULP Lease Tracts..... 55

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 59

1
2
3
4
5
6
7
8
9
10
11
12
13
14
15
16
17
18
19
20
21
22
23
24
25
26
27
28
29
30
31

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

ULP Final Biological Assessment

May 2013

- 1
- 2
- 3
- 4
- 5
- 6
- 7
- 8
- 9
- 10
- 11
- 12
- 13
- 14

This page intentionally left blank.

ULP Final Biological Assessment

May 2013

NOTATION

1		
2		
3		
4	ACRONYMS AND ABBREVIATIONS	
5		
6	BA	biological assessment
7	BLM	Bureau of Land Management
8	BMP	best management practice
9	CDOW	Colorado Division of Wildlife
10	CDPHE	Colorado Department of Public Health and Environment
11	CERCLA	Comprehensive Environmental Response, Compensation, and Liability Act
12	CFR	<i>Code of Federal Regulations</i>
13	CNHP	Colorado Natural Heritage Program
14	CPW	Colorado Parks and Wildlife (formerly CDOW)
15	DOE	U.S. Department of Energy
16	EPA	U.S. Environmental Protection Agency
17	ESA	Endangered Species Act
18	NEPA	National Environmental Policy Act
19	NPDES	National Pollutant Discharge Elimination System
20	ROW	right-of-way
21	ULP	Uranium Leasing Program
22	USC	<i>United States Code</i>
23	USDA	U.S. Department of Agriculture
24	USFWS	U.S. Fish and Wildlife Service
25	WAPA	Western Area Power Administration
26		
27		
28	UNITS OF MEASURE	
29		
30	acre-ft	acre-foot (feet)
31	°C	degree(s) Celsius
32	cm	centimeter(s)
33	d	day
34	dBa	a-weighted decibel(s)
35	°F	degree(s) Fahrenheit
36	ft	foot (feet)
37	g	gram(s)
38	gal	gallon(s)
39	h	hour(s)
40	ha	hectare(s)
41	in.	inch(es)
42	kg	kilogram(s)
43	km	kilometer(s)
44	km ²	square kilometer(s)
45	L	liter(s)
46	lb	pound(s)

vii

ULP Final Biological Assessment

May 2013

1	m	meter(s)
2	mGy	milligray
3	mi	mile(s)
4	mi ²	square mile(s)
5	oz	ounce(s)
6	pCi	picocurie(s)
7	yr	year(s)
8		
9		

ULP Final Biological Assessment

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 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). 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.

ULP Final Biological Assessment

May 2013

- 1
- 2
- 3
- 4
- 5
- 6
- 7
- 8
- 9
- 10
- 11
- 12
- 13
- 14

This page intentionally left blank.

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

ULP Final Biological Assessment

May 2013

1 TABLE 2-1 Status Summary of the 31 DOE ULP Lease Tracts before October 18, 2011

	Lease Tract No.	Acreage	Lessee	County	Status ^a
1	10	638	Golden Eagle Uranium, LLC	San Miguel	No recent (post-1995) activity conducted; no area needs to be reclaimed under current conditions.
2	11	1,303	Cotter Corporation	San Miguel	One new underground mine permitted and being developed; reclamation of previously disturbed areas needed.
3	11A	1,297	Golden Eagle Uranium, LLC	San Miguel	No recent (post-1995) activity conducted; no area needs to be reclaimed under current conditions.
4	12	641	Colorado Plateau Partners	San Miguel	No recent (post-1995) activity conducted; no area needs to be reclaimed under current conditions.
5	13	1,077	Gold Eagle Mining Inc.	San Miguel	Three existing, permitted underground mines; reclamation of previously disturbed areas is needed.
6	13A	420	Cotter Corporation	San Miguel	Exploration plan (one hole) approved; drilling and reclamation of the explored area are completed.
7	14 (1, 2, 3)	971	Not applicable	San Miguel	Lease tract has not been leased.
8	15	350	Gold Eagle Mining Inc.	San Miguel	One existing underground mine; reclamation of previously disturbed areas is needed.
9	15A	172	Golden Eagle Uranium, LLC	San Miguel	No recent (post-1995) activity conducted; no area needs to be reclaimed under current conditions.
10	16	1,790	Golden Eagle Uranium, LLC	San Miguel	No recent (post-1995) activity conducted; no area needs to be reclaimed under current conditions.
11	16A	585	Energy Fuels Resources Corp.	San Miguel	No recent (post-1995) activity conducted; no area needs to be reclaimed under current conditions.
12	5	151	Gold Eagle Mining Inc.	Montrose	One existing, permitted underground mine; reclamation of previously disturbed areas is needed.

2

4

1
2

ULP Final Biological Assessment

May 2013

TABLE 2-1 (Cont.)

	Lease Tract No.	Acreage	Lessee	County	Status ^a
13	5A (1, 2)	25	Golden Eagle Uranium, LLC	Montrose	No recent (post-1995) activity conducted; no area needs to be reclaimed under current conditions.
14	6	530	Cotter Corporation	Montrose	One existing permitted underground mine; reclamation of previously disturbed areas is needed.
15	7	493	Cotter Corporation	Montrose	Two existing permitted mines—one underground mine and one large open-pit mine; reclamation of previously disturbed areas is needed.
16	8	955	Cotter Corporation	Montrose	One existing permitted underground mine; reclamation of previously disturbed areas is needed.
17	8A	78	Not applicable	Montrose	Lease tract has not been leased.
18	9	1,037	Cotter Corporation	Montrose	One existing permitted underground mine; reclamation of previously disturbed areas is needed.
19	17 (1, 2)	475	Golden Eagle Uranium, LLC	Montrose and San Miguel	No recent (post-1995) activity conducted; no area needs to be reclaimed under current conditions.
20	18	1,181	Cotter Corporation	Montrose	One existing permitted underground mine; reclamation of previously disturbed areas is needed.
21	19	662	Energy Fuels Resources Corp.	Montrose	No recent (post-1995) activity conducted; no area needs to be reclaimed under current conditions.
22	19A	1,204	Energy Fuels Resources Corp.	Montrose	No recent (post-1995) activity conducted; no area needs to be reclaimed under current conditions.
23	20	627	Energy Fuels Resources Corp.	Montrose	No recent (post-1995) activity conducted; no area needs to be reclaimed under current conditions.
24	21	651	Cotter Corporation	Montrose	Exploration plan (two holes) approved; drilling and reclamation of the explored area are completed; no area needs to be reclaimed under current conditions.

ULP Final Biological Assessment

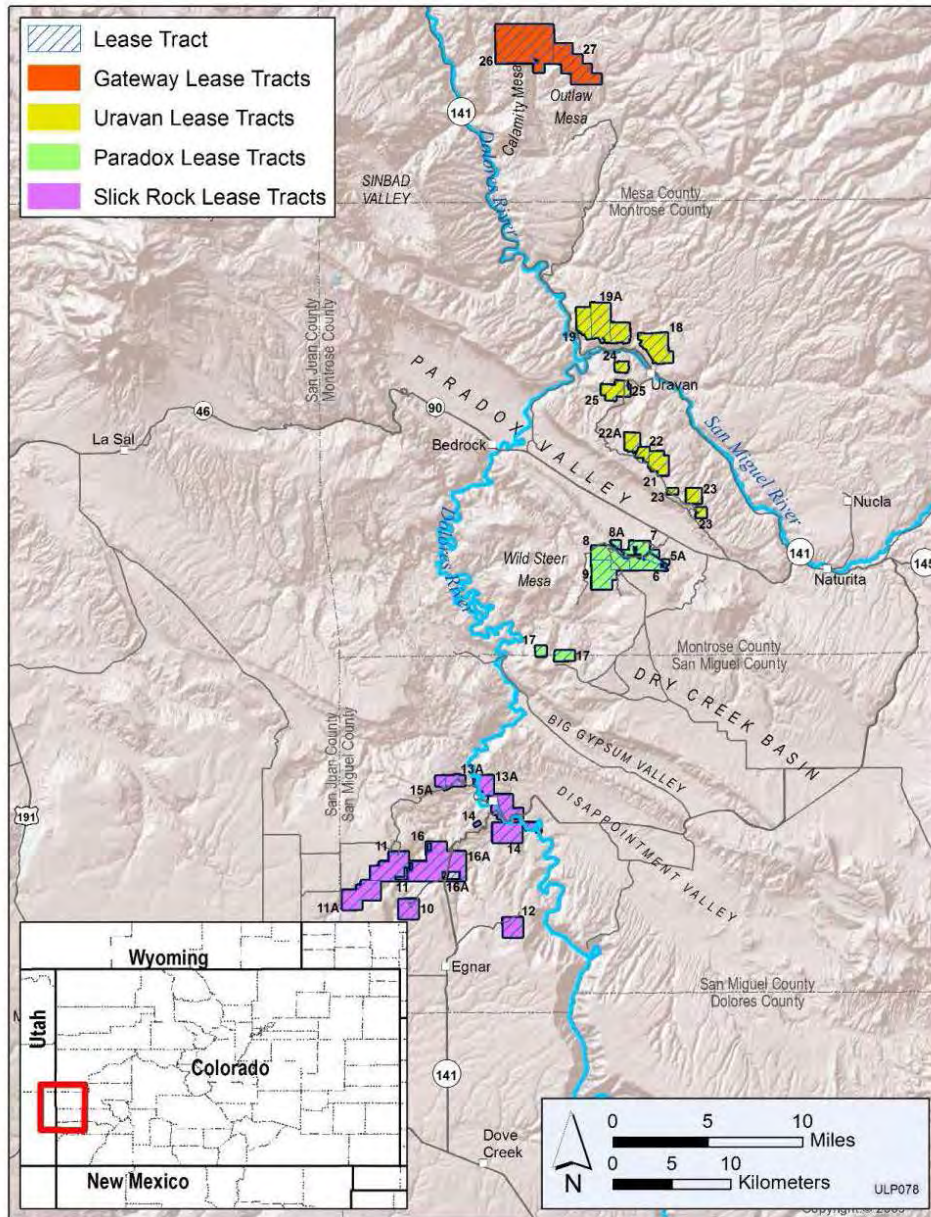
May 2013

TABLE 2-1 (Cont.)

	Lease Tract No.	Acreage	Lessee	County	Status ^a
25	22	224	Golden Eagle Uranium, LLC	Montrose	No recent (post-1995) activity conducted; no area needs to be reclaimed under current conditions.
26	22A	409	Golden Eagle Uranium, LLC	Montrose	No recent (post-1995) activity conducted; no area needs to be reclaimed under current conditions.
27	23 (1, 2, 3)	596	Golden Eagle Uranium, LLC	Montrose	No recent (post-1995) activity conducted; no area needs to be reclaimed under current conditions.
28	24	201	Energy Fuels Resources Corp.	Montrose	Exploration plan (eight holes) approved; drilling and reclamation of explored area are completed; no area needs to be reclaimed under current conditions.
29	25	639	Cotter Corporation	Montrose	Exploration plan (one hole) approved; drilling and reclamation of explored area are completed; no area needs to be reclaimed under current conditions.
30	26	3,989	Energy Fuels Resources Corp.	Mesa	Exploration plan (six holes) approved; drilling and reclamation of the explored area are completed; mine re-entry plan is approved, bulkhead partially removed, and assessment completed; portal is resecured; reclamation of previously disturbed areas is needed.
31	27	1,766	Energy Fuels Resources Corp.	Mesa	No recent (post-1995) activity conducted; no area needs to be reclaimed under current conditions.
Total		25,137			

^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).

1
2



1
2
3
FIGURE 2-1 Locations of the ULP Lease Tracts

7

1
2

ULP Final Biological Assessment

May 2013

1 mat saltbush (*Atriplex corrugata*), shadscale, Nuttall's saltbush (*Atriplex nuttallii*), blackbrush
 2 (*Coleogyne ramosissima*), fourwing saltbush, Wyoming big sagebrush, bud sagebrush
 3 (*Picrothammus desertorum*), galleta grass, and desert trumpet (*Baileya multiradiata*). The
 4 alkaline soils of floodplains support greasewood (*Sarcobatus vermiculatus*), alkali sacaton
 5 (*Sporobolus airoides*), seepweed (*Suaeda* sp.), and shadscale. Badland areas support little or
 6 no vegetation.

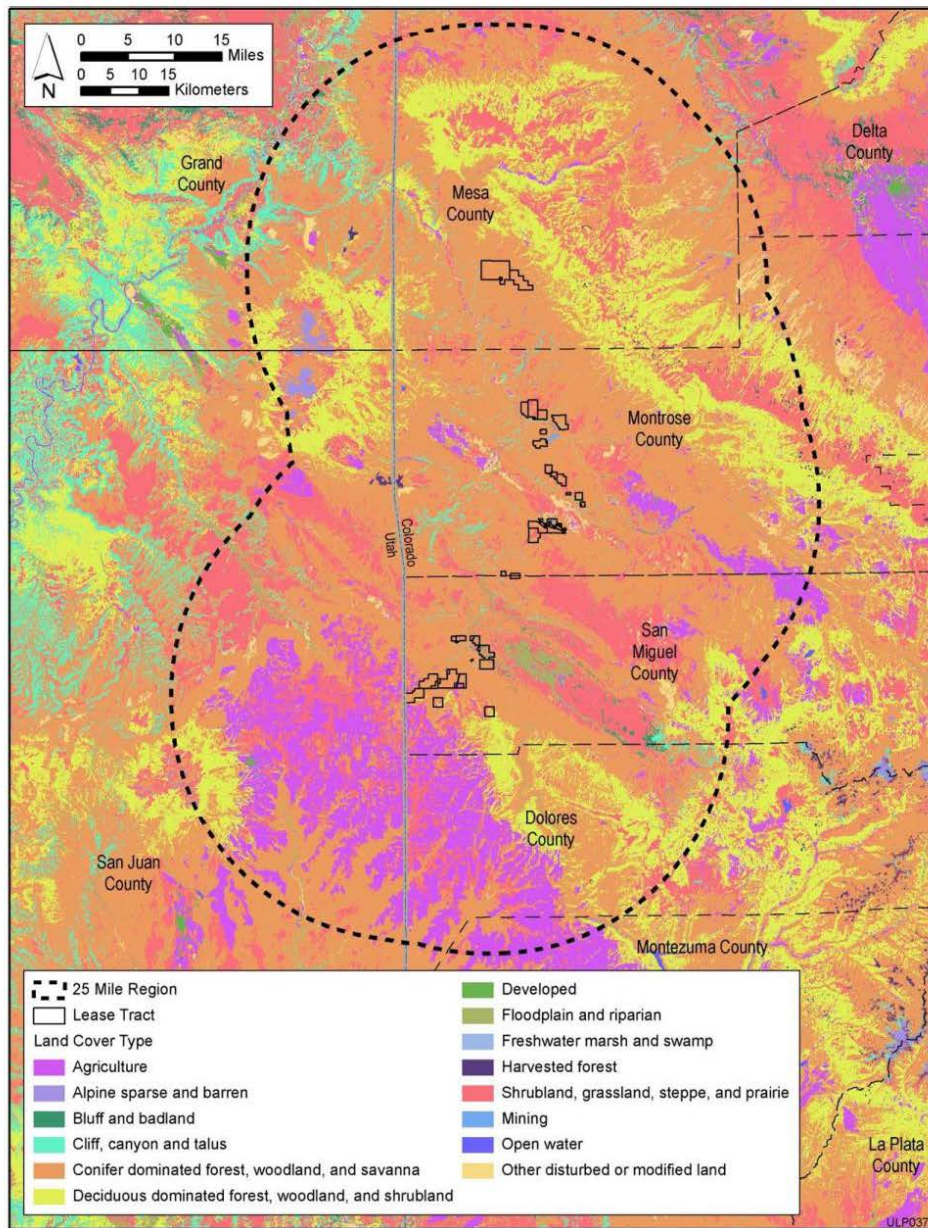
7
 8 A small portion in the northeast corner of Lease Tract 26 is located within the
 9 Sedimentary Mid-Elevation Forests Level IV ecoregion of the Southern Rockies Level III
 10 ecoregion. This ecoregion supports ponderosa pine (*Pinus ponderosa*) forest, aspen (*Populus*
 11 *tremuloides*) forest, and Gambel oak woodland (Chapman et al. 2006). Some areas include
 12 mountain mahogany (*Cercocarpus* sp.) and two-needle pinyon pine. Shrubs occurring within
 13 the habitats of this ecoregion include antelope bitterbrush (*Purshia tridentata*), fringed sage
 14 (*Artemisia frigida*), serviceberry, and snowberry (*Symphoricarpos* sp.). Grasses within these
 15 habitats include Arizona fescue (*Festuca arizonica*), bluegrass (*Poa* sp.), junegrass (*Koeleria*
 16 *macrantha*), needlegrasses (*Stipa* spp.), mountain muhly (*Muhlenbergia montana*), pine
 17 dropseed (*Blepharoneuron tricholepis*), and mountain brome (*Bromus marginatus*).

18
 19 Land cover types described and mapped under the Southwest Regional Gap Analysis
 20 Project (USGS 2004) are used to evaluate plant communities in and near the lease tracts
 21 (Figure 2-2). Each cover type encompasses a range of similar plant communities. The
 22 predominant vegetation community in most of the tracts is Colorado Plateau Pinyon-Juniper
 23 Woodland. Large areas of Inter-Mountain Basins Big Sagebrush Shrubland occur in Lease
 24 Tracts 9, 12, 19A, 20, and 21. Colorado Plateau Pinyon-Juniper Shrubland occurs over large
 25 areas of Lease Tracts 13, 13A, 14-1, and 18. Large areas of Rocky Mountain Gambel Oak-Mixed
 26 Montane Shrubland occur in Lease Tracts 10 and 12.

27
 28 Lease Tracts 19A, 20, and 21 consist primarily of a composite of Colorado Plateau
 29 Pinyon-Juniper Woodland and Inter-Mountain Basins Big Sagebrush Shrubland. Lease
 30 tracts 13A, 14, and 18 are composed primarily of Colorado Plateau Pinyon-Juniper Woodland
 31 and Colorado Plateau Pinyon-Juniper Shrubland. Lease Tract 12 is a mosaic of Inter-Mountain
 32 Basins Montane Sagebrush Steppe, Inter-Mountain Basins Big Sagebrush Shrubland, and Rocky
 33 Mountain Gambel Oak-Mixed Montane Shrubland. Lease Tract 13 is a mosaic of Colorado
 34 Plateau Pinyon-Juniper Woodland, Colorado Plateau Pinyon-Juniper Shrubland, Inter-Mountain
 35 Basins Greasewood Flat, Inter-Mountain Basins Shale Badland, and Inter-Mountain Basins
 36 Mixed Salt Desert Scrub.

37
 38 Rocky Mountain Lower Montane Riparian Woodland and Shrubland occurs along
 39 segments of Calamity Creek in Lease Tracts 26 and 27, along the Dolores River in Lease
 40 Tract 13, and along the withdrawn area of the northwest section of Lease Tract 13A. A small
 41 area of introduced riparian and wetland vegetation occurs in the northwest corner of Lease
 42 Tract 18 along Atkinson Creek.

43
 44 Wetland areas are typically inundated or have saturated soils for at least a portion of the
 45 growing season (Cowardin et al. 1979). Wetlands generally support plant communities that are
 46 adapted to saturated soil conditions; however, stream beds, mudflats, gravel beaches, and rocky



1

2 **FIGURE 2-2 Land Cover Types in the Vicinity of the DOE Lease Tracts (USGS 2004)**

3

ULP Final Biological Assessment

May 2013

1 shores are wetland areas that may not be vegetated. Although surface flows provide the water
2 source for some wetlands (such as many riverine marshes), other wetlands (such as springs and
3 seeps) are supported by groundwater discharge. Wetlands are often associated with perennial
4 water sources, such as springs, perennial segments of streams, or lakes and ponds. However,
5 some wetlands, such as vernal pools, have seasonal or intermittent sources of water. Wetlands in
6 the area of the lease tracts are mapped by the National Wetlands Inventory (USFWS 2009i).
7 Digital data are not available for this area of Colorado; nevertheless, wetlands are mapped and
8 identified by type. Some wetlands occurring in these areas may not be mapped because of the
9 inherent limitations of high-altitude image interpretation. Riverine wetlands occur in many
10 canyon areas within the tracts, including along the Dolores River and named creeks. Small
11 palustrine wetlands occur in several tracts, typically as a result of a dike or impoundment, and
12 may represent livestock watering ponds.

13

14

15 2.2 DESCRIPTION OF THE PROPOSED ACTION

16

17 DOE is completing a programmatic environmental impact statement (PEIS) under the
18 National Environmental Policy Act (NEPA) for the ULP. DOE's proposed action in the PEIS is
19 to decide whether to continue the ULP for the remainder of the 10-year period covered by a
20 previous NEPA review in July 2007 and, if it decides to continue the ULP, to determine which
21 alternative to adopt in order to manage the ULP during that period. The preferred alternative in
22 the PEIS is to continue the ULP with exploration, mine development and operation, and
23 reclamation at the 31 lease tracts for the next 10-year period or for another reasonable period.
24 This BA evaluates the actions associated with the preferred alternative of the PEIS.

25

26

27 2.2.1 Production and Surface Disturbance

28

29 Based on analyses of a reasonably foreseeable development scenario (as presented in the
30 PEIS), it was assumed that there would be a total of 19 mines operating under the ULP at various
31 production rates at the same time during what would be considered the peak year of operations.
32 It is further assumed that there would be a smaller number of mines in operation in the years
33 other than the peak year, and that this peak year could occur more than once (that is, there could
34 be multiple years with the same number of mines operating at similar ore production rates).
35 These assumptions are developed based on a review of information on past mining that have
36 occurred at the ULP lease tracts, and on current expectations of the ULP lessees about the
37 mining that they would likely conduct in the near future. Table 2-2 presents the assumed number
38 of mines and associated production rates. The size of the mine (i.e., small, medium, large, or
39 very large) was assigned on the basis of the assumed ore production rate. The disturbed surface
40 area, which varies somewhat depending on the size of the mine, is also presented in the table.

41

42

43 The ore generated from the DOE ULP lease tracts could be taken to either of two mills
44 for processing: White Mesa Mill or the proposed Piñon Ridge Mill. The White Mesa Mill is
45 currently the only conventional uranium mill operating in the United States. This mill was
46 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

1 **TABLE 2-2 Number of Mines, Ore Production Rates, and Disturbed Surface Areas Assumed for**
 2 **the Peak Year of Operations**

Parameter Assumed	Parameter Value per Size of Mine				Total for All Sizes
	Small	Medium	Large	Very Large ^a	
Number of mines	6	10	2	1	19
Ore production rate (tons/d)	300 (50 per mine)	1,000 (100 per mine)	400 (200 per mine)	300	2,000 ^b
Total disturbed surface area (acres)	60 (10 per mine)	150 (15 per mine)	40 (20 per mine)	210 ^a	460 ^c

^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 Piñon 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.

3
 4
 5 feeds. The White Mesa Mill also operates under a groundwater discharge permit and an air
 6 quality approval order. The mill is located off U.S. Highway 191, approximately 6 mi (10 km)
 7 south of Blanding, Utah.

8
 9 The nearest ULP lease tract is Lease Tract 11A, which is approximately 33 mi (53 km)
 10 northeast of the mill. The White Mesa Mill also processes ore from the Colorado Plateau and
 11 Arizona Strip. The White Mesa Mill is licensed to process an average of 2,000 tons of ore per
 12 day and produce 8 million lb (3.6 million kg) of uranium oxide per year (Denison Mines 2012a).

13
 14
 15 **2.2.2 Water**

16
 17 The potential for impacts on surface water and groundwater in the vicinity of the DOE
 18 ULP lease tracts during mine development and operations would result from erosion, runoff,
 19 dewatering, and groundwater-contamination-related causes. The impacts associated with
 20 consumptive water use, chemical spills, and wastewater could be minimized through permitting
 21 and BMP implementation. The lease tracts closest to the Dolores River and San Miguel River
 22 have the greatest potential for affecting water quality because of their proximity to perennial
 23 water bodies. The lease tracts located in the Slick Rock and Uravan lease tracts are the closest to
 24 the Dolores River and San Miguel River, respectively. Lease Tract 13 encompasses a 3-mi
 25 (5-km) reach of the Dolores River and is where erosion poses the greatest threat to water quality.
 26 An increase in erosion and runoff may increase the potential of sediment and pollutant loadings

ULP Final Biological Assessment

May 2013

1 to nearby rivers. Possible pollutants may include sediment-associated compounds, chemical dust
2 control compounds, fuels and other chemicals used in mining, and mineral leachates. As recently
3 evaluated by the CDPHE (2012a,b), the existing impaired surface water that exceeds Colorado
4 standards is mainly located upstream and not associated with the DOE ULP lease tracts. During
5 future mine development and operations, impacts of erosion by runoff are considered to be
6 moderate in some areas near Lease Tracts 13 and 18. However, the potential of sediment and
7 pollutant loadings could be minimized by implementing a stormwater control system, a diversion
8 ditch, a sedimentation pond, and an appropriate monitoring system.
9

10 Consumptive water use during mine development and operations is primarily for use by
11 the workers (e.g., showers and drinking water) and for dust suppression. Water consumption
12 estimates for each of the various mine sizes during the peak year are provided in Table 2-3. It is
13 assumed that for the peak year of operations that there would be a total of 19 mines of varying
14 sizes (six small, 10 medium, two large and one very large) operating at the same time. In total, it
15 is assumed that peak year mining activities under the ULP would require approximately
16 6,300,000 gal (19 acre-ft) of water over the course of the year (Table 2-3). These estimates were
17 conservatively determined based on information and assumptions from previous ULP mining
18 operations. Since local surface water and groundwater sources are scarce and often of poor
19 quality, it is assumed that most of the water supply would be trucked to the site from sources
20 outside the lease tracts. However, it is expected that water would come from the same hydrologic
21 basin as that for the ULP lease tracts (Dolores River Basin) and that the consumed water would
22 also be discharged within the same hydrologic basin. Although local water sources (surface
23 water or groundwater) are not abundantly available in most ULP lease tracts, the source of water
24 used by the lessees to support ULP activities may come from pumping withdrawals on or off the
25 lease tract and would be purchased. The surface water and groundwater sources in the Dolores
26 River Basin where the ULP lease tracts occur are considered over-appropriated by the Colorado
27 Division of Water Resources (CDWR 2007). Therefore, water used to support ULP activities
28 would likely come from purchased sources.
29

30 As many as four retention pond systems are assumed to be used for peak ULP mining
31 activities. These pond systems would be primarily intended to capture surface water and prevent
32 sediment from entering nearby streams and drainages. There are currently two pond systems in
33 use at existing ULP mine sites (located at medium-size mines). Therefore, as many as two
34 additional pond systems may be created in lease tracts during the proposed ULP. The volume,
35 discharge, and retention values for the two pond systems that currently exist are provided in
36 Table 2-4. Estimated time to fill these pond systems ranges between 50 and 63 days.
37
38

39 **2.3 POTENTIALLY APPLICABLE MITIGATION MEASURES AND** 40 **BEST MANAGEMENT PRACTICES**

41
42 Under the proposed ULP, various measures would be implemented by developers during
43 each mining phase to reduce the potential for ecological impacts. Measures may include required
44 mitigation measures to reduce or offset impacts, as well as measures that may not be required but
45 are deemed to be BMPs in the industry (e.g., some may be discretionary). Some required
46 measures are established to comply with existing policy and regulations. These measures are

1

TABLE 2-3 Peak Water Requirements Assumed for the ULP Mines^a

Mine Size	No. of Mines	Monthly Water Volume per Mine (gal) ^b	Total Monthly Water Volume (gal)	Total Monthly Water Volume (acre-ft)
Small ^c	6	7,600	46,000	0.14
Medium ^d	10	31,000	310,000	0.95
Large ^e	2	46,000	92,000	0.28
Very large (pit) ^f	1	160,000	160,000	0.49
Seasonal Water Use ^g			gal	acre-ft
Monthly (summer)			3,600,000	11
Monthly (winter)			2,700,000	8.3
Yearly			6,300,000	19

^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 consistent 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.

2

3

4

5

TABLE 2-4 Pond Volume, Discharge, and Retention Estimates for the Two Two-Pond Systems Currently at the ULP Mine Sites^a

Lease Tract	Pond Volume (gal)	Discharge Rate		Retention Time (months)
		gal/minute	gal/month	
JD-7	330,000	3.6	160,000	2.1
JD-9	470,000	6.4	280,000	1.7

^a All values are rounded up to two significant figures.

ULP Final Biological Assessment

May 2013

- 1 listed by project phase in Table 2-5. The table notes whether DOE would consider each measure
- 2 a required mitigation measure, a compliance measure, or a BMP. Although some BMPs may be
- 3 discretionary, the effect determinations presented in Section 3.2 (summarized in Table 3-3) are
- 4 provided based on the assumption that all measures listed in Table 2-5 will be implemented as
- 5 part of the ULP.
- 6

TABLE 2-5 Measures to Reduce Impacts of ULP Activities on Ecological Resources

Measure Description	Compliance Measure ^a	Mitigation Measure ^b	EMPs ^c
General Multiphase Measures (G) – Measures that apply to all project phases			
G1 Minimize the surface footprint of disturbed areas (buildings, roads, storage areas, stockpile areas, and loading areas) within the lease tracts to the extent possible. Use existing roads and disturbed areas to the extent possible (before constructing new roads or disturbing new areas). If access roads need to be constructed, improve and maintain them so they minimize the potential for wildlife-vehicle collisions and facilitate the movement of wildlife through the project area.		X	
G2 Observe practices used to handle and manage hazardous materials and other waste (such as during refueling and equipment maintenance) to minimize or prevent spills in order to reduce the potential for impacts on ecological resources.			X
G3 Containerize solid waste and manage it in accordance with state and local regulations.	X		
G4 Avoid areas with unstable slopes in an effort to minimize or reduce the impacts from runoff and sedimentation on aquatic biota.		X	
G5 Establish buffer zones around sensitive habitats, and either exclude project facilities and activities from those areas or modify them within those areas, to the extent practicable.		X	
G6 Employ noise reduction devices (e.g., mufflers) to minimize impacts on wildlife and sensitive species populations. Use explosives only at specified times and specified distances from sensitive wildlife or surface waters, as established by DOE or other federal and state agencies. Operators should ensure that all equipment is adequately muffled and maintained in order to minimize disturbance to wildlife. As practicable, do not leave vehicles and equipment idling, since this not only contributes to air pollution but also produces noise that can have impacts on wildlife.			X
G7 Avoid project-related traffic on unpaved surfaces to the extent possible and reduce speeds to lessen fugitive dust emissions.			X
G8 Protect plants, wildlife, and their habitats from fugitive dust through measures included in a dust abatement plan.			X

15

2

TABLE 2-5 (Cont.)

	Measure Description	Compliance Measure ^a	Mitigation Measure ^b	EMPC ^c
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)			X
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.			X
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).		X	
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.	X		
G13	To protect bats, implement measures developed in coordination with the appropriate federal and state agencies (e.g., BLM, USFWS, and CPW).		X	
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).	X		
G15	Implement measures to protect raptors developed in coordination with the appropriate federal and state agencies (e.g., BLM, USFWS, and CPW).		X	
G16	Implement measures to ensure compliance with the regulatory requirements of the Bald and Golden Eagle Protection Act developed in coordination with the USFWS.	X		

TABLE 2-5 (Cont.)

	Measure Description	Compliance Measure ^a	Mitigation Measure ^b	EMPC
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.		X	
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.			X
G19	Minimize the number of areas where wildlife could hide or be trapped (e.g., open sheds, pits, uncovered basins 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.			X
G20	Monitor the potential for an increase in the predation 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.			X
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 managed.		X	
G22	Ensure vegetation management is consistent with applicable regulations and agency policies for the control of noxious weeds and invasive plant species.	X		

TABLE 2-5 (Cont.)

	Measure Description	Compliance Measure ^a	Mitigation Measure ^b	EMPC ^c
Exploration (E) – Measures that apply to exploration activities				
Other than the general multiphase measures, there are no exploration-specific mitigation measures.				
Mine Development and Operations (D) – In addition to general multiphase measures, measures that apply to mine development and operational activities				
D1	Do not locate project activities in or near occupied habitats of sensitive animal species. Establish buffer zones around these areas (e.g., identified in the land use plan or substantiated by best available information or science) to prevent any destructive impacts associated with project activities.			X
D2	Restrict activities at existing mine sites so that they do not further encroach toward perennial streams (e.g., the Dolores River and San Miguel River). Do not allow new mining activities within 0.25 mi (0.4 km) of perennial streams.		X	
D3	Design any necessary stream crossings to provide in-stream conditions that allow for and maintain the uninterrupted movement and safe passage of fish during all project periods. If stream crossings are required, take care to minimize the removal of any deadfall and overhanging vegetation, which provide shelter and shade to aquatic organisms.		X	
D4	Divert water pumped from mines to a lined sedimentation pond (or pond system) for treatment. Locate settling ponds in topographically low areas but not in any areas that are along drainages or near naturally flowing water.		X	
D5	Locate diversion structures upstream of the mine site to intercept surface water flow or shallow groundwater and channel it around the site. Tailor the location and length of the ditch to site-specific conditions, taking into account the location of mine waste-rock piles, site topography, and surface flow patterns.		X	
D6	Require any developers using on-site groundwater supplies to conduct a hydrologic study to further characterize the upgradient and downgradient aquifers, the groundwater flowing into the mine, the groundwater connections between the mine and areas outside the mine, the eventual fate of the water flowing from the mine, and any groundwater impacts from mining operations.			X

TABLE 2-5 (Cont.)

	Measure Description	Compliance Measure ^a	Mitigation Measure ^b	BMP ^c
D7	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.			X
D8	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.		X	
D9	Locate the ore storage area on topographically high ground so ore does not come into 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.		X	
D10	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.			X
D11	Build fences (as practicable) to exclude livestock and wildlife from all mine facilities.			X
D12	Contain any runoff from mine waste-rock piles.			X
D13	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.			X

TABLE 2-5 (Cont.)

	Measure Description	Compliance Measure ^a	Mitigation Measure ^b	BMP ^c
	Reclamation (R) – In addition to general multiphase measures, measures that would also apply to reclamation activities. Measures D10 through D13 above also apply to reclamation activities.			
R1	Before mine entrances 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.		X	
R2	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.		X	
R3	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.		X	
R4	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.			X

^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.

1 **3 EFFECTS OF THE URANIUM LEASING PROGRAM**

2
3
4 This section summarizes potential impacts associated with site exploration, mine
5 development and operations, and reclamation under the proposed ULP that could occur to
6 species that are endangered, threatened under the ESA, or those species that are proposed or
7 candidates for listing under the ESA. Required compliance measures, mitigation measures, and
8 suggested BMPs for all projects under the ULP are identified in Section 2.3. Mining activities
9 under the ULP can generally be considered under the three project phases just mentioned:
10 (1) exploration, (2) mine development and operations, and (3) reclamation. Possible ecological
11 impacts on different groups of biota that could result from ULP activities are summarized in
12 Table 3-1. These impacts would be lessened to the extent that the listed activities could be
13 avoided, minimized or mitigated.

14
15 The types of ecological resources that could be affected by ULP activities would depend
16 on the specific location of the proposed project and its environmental setting. Ecological
17 resources that could be affected include plants, terrestrial and aquatic invertebrates, fish, and
18 terrestrial and avian wildlife, as well as their habitats. These groups of biota include species that
19 are endangered, threatened, proposed, or candidates for listing under the ESA in the region
20 surrounding the ULP lease tracts. General impacts on federally-listed, proposed, and candidate
21 species associated with ULP activities are described in the text that follows, as are specific
22 evaluations of mining impacts on federally listed species.

23
24
25 **3.1 COMMON EFFECTS OF URANIUM MINING ON SPECIES AND HABITATS**

26
27
28 **3.1.1 Exploration**

29
30 Potential impacts on federally-listed, proposed, and candidate species related to site
31 exploration are listed in Table 3-1. Although some disturbance from mine exploration has
32 occurred in each of these lease tracts, new exploration could occur in either disturbed or
33 undisturbed areas of each lease tract. Exploration activities generally include drilling one or more
34 bore holes for geologic sampling followed by reclamation of the explored area. Impacts from site
35 exploration would result from the disturbance of soils, vegetation, and wildlife as a result of the
36 presence and operation of exploration equipment. Impacts would include the removal of some
37 vegetation, the potential loss of habitat for some wildlife species, and the indirect impacts from
38 fugitive dust generation, noise, and the physical presence of humans and exploration equipment
39 on wildlife species. Impacts on ephemeral drainages crossed by heavy equipment could also
40 result in sediment deposition to downstream wetlands and water bodies. However, impacts
41 would generally be temporary and at a smaller spatial scale than those occurring during other
42 project phases. Some mortality to vegetation and less mobile wildlife could occur at the
43 exploration site, and vehicles could collide with wildlife.

44
45

TABLE 3-1 General Ecological Effects on Different Groups of Biota during Various Uranium Mining Phases

Potential Effect	Project Activity	Project Phase	Biota Potentially Affected ^a									
			Plants	Arthropods	Mollusks	Fish	Amphibians and Reptiles	Birds	Mammals			
Habitat disturbance	Vehicle and foot traffic; geological sampling; access road development; site clearing and grading	Exploration, mine development and operations, reclamation	+	+	+	-	+	+	+	+	+	
Injury or mortality of biota	Vehicle and foot traffic; geological sampling; access road development; site clearing and grading	Exploration, mine development and operations, reclamation	+	+	+	-	+	+	+	+	+	
Erosion, sedimentation, and runoff to nearby wetland habitats	Site clearing and grading; access road construction and mine development; vehicle and foot traffic	Exploration, Mine development and operations, reclamation	+	+	+	-	+	+	+	-	-	
Exposure to contaminants	Accidental uranium ore spills and releases of oil, fuel, and other materials	Exploration, Mine development and operations, reclamation	+	+	+	-	+	+	+	+	+	
Fugitive dust damage to plant surfaces and impairment of photosynthesis; respiratory impairment in wildlife	Site clearing and grading; access road construction and mine development; exposure to tailings and other waste piles	Exploration, Mine development and operations, reclamation	+	+	+	-	+	+	+	+	+	
Introduction of invasive plant species	Vehicle traffic, access road development, site clearing and grading	Exploration, mine development and operations, reclamation	+	+	+	-	+	+	+	+	+	

TABLE 3-1 (Cont.)

Potential Effect	Project Activity	Project Phase	Biota Potentially Affected ^a						
			Plants	Arthropods	Mollusks	Fish	Amphibians and Reptiles	Birds	Mammals
Behavioral disturbance	Vehicle and foot traffic; geological sampling; access road development; site clearing and grading; human presence	Exploration, mine development and operations, reclamation	-	-	-	-	+	+	+

^a "+" 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

ULP Final Biological Assessment

May 2013

1 facilities due to their use by predators (BirdLife International 2003). For example, common
2 ravens (*Corvus corax*) and some birds of prey might become more common along utility lines
3 because of the presence of perch and nest sites (Knight and Kawashima 1993). Access road
4 construction could create habitat for species, such as the horned lark (*Eremophila alpestris*), that
5 are common along dirt roadways where they can forage on windblown seeds (Ingelfinger and
6 Anderson 2004).

7
8 Based on the industry practice of considering ore with less than 0.05% of uranium as
9 potential waste rock that could remain on a waste-rock pile on the surface (but graded, covered
10 with top soil material, and revegetated) after reclamation, the assumed concentration of uranium
11 that might be present in the waste rock is about 24 pCi/g as an average value; and the potential
12 radiation exposure to plants to this concentration of uranium would be of low concern. Wetlands
13 on the lease tracts might be affected by exploration, development, and operations; however, these
14 impacts would be minimized under the direction of Executive Order 11990, "Protection of
15 Wetlands," and under Section 404 of the Clean Water Act, where applicable. Although direct
16 impacts on wetlands and bodies of water are unlikely, indirect impacts on these wetlands could
17 occur. The implementation of minimization measures and mitigation measures identified in
18 Section 2.3 and any additional BMPs would minimize the potential for indirect impacts on
19 wetlands and bodies of water.

20
21 Mining activity might increase the exposure of wildlife to uranium and other radioactive
22 decay products and to other chemical elements. Negative impacts on animals from uranium
23 radionuclides occur from 0.2 to 40 mGy/h for terrestrial invertebrates, 0.14 to 40.0 mGy/h for
24 birds, and 0.004 to 40.0 mGy/h for mammals (Hinck et al. 2010). The potential magnitude of
25 impacts would be influenced by the life history strategy, habitat requirements, and mass of the
26 organism (Hinck et al. 2010). Some birds might be at greater risk to radiation exposure than
27 other wildlife due to their foraging and ingestion of grit, which would increase their radiation
28 dose (Driver 1994). Species that spend considerable amounts of time underground in caves,
29 mines, or burrows could potentially inhale, ingest, or be directly exposed to uranium and other
30 radionuclides while digging, eating, preening, and/or hibernating. Herbivores could also be
31 exposed by ingesting radionuclides that aerially deposited on vegetation or concentrated in
32 surface waters at or near mine sites (BLM 2011b).

33
34 The accidental spill of uranium or vanadium ore into an ephemeral stream or, more
35 notably, a perennial stream or river, such as the Dolores or San Miguel River, could pose a
36 localized short-term impact on the aquatic resources. However, the potential for such an event is
37 extremely low. For example, SENES (2009) determined that the frequency of a rollover and/or
38 crash of an ore truck at a water crossing en route to the proposed Piñon Ridge Mill would be
39 8.4×10^{-5} /yr. In addition to uranium and vanadium, the ore contains other potentially toxic
40 elements, such as aluminum, arsenic, barium, copper, iron, lead, manganese, selenium, and zinc.
41 Most ore solids would settle in the body of water within a short distance from a spill site
42 (Edge Environmental, Inc. 2009). It is expected that expedient and comprehensive cleanup
43 actions would be required under U.S. Department of Transportation regulations and that an
44 emergency response plan would be in place to respond to accidents and cargo spills
45 (Edge Environmental, Inc. 2009). Overall, the potential for impacts on aquatic biota from an
46 accidental spill would be minor to negligible.

ULP Final Biological Assessment

May 2013

1 Fugitive dust would be generated during site clearing, excavation, processing, and use
2 of access roads. Deposition of fugitive dust could reduce photosynthesis and productivity in
3 plant communities near project areas. Prolonged exposure to fugitive dust could alter a plant
4 community's composition, reducing the occurrence of species less tolerant of disturbance,
5 resulting in habitat degradation. Open-pit mines would generate greater levels of fugitive dust
6 than would underground mines, since most of the project area would consist of exposed soils,
7 rock materials, and operating mining equipment. Because fugitive dust would be produced
8 throughout the life of the project, the deposition of fugitive dust could constitute a long-term
9 impact on vegetation and wildlife habitat. Little information is available about the effects of
10 fugitive dust on wildlife; however, fugitive dust emissions under the proposed ULP are not
11 expected to result in any long-term individual-level or population-level effects on wildlife.

12
13 Disturbed soils could provide an opportunity for the introduction and spread of invasive
14 species or noxious weeds. Seeds of these species could be inadvertently brought to a project
15 site from infested areas by vehicles or equipment used at the site. Invasive species or noxious
16 weeds might also colonize disturbed soils from established populations in nearby areas. Vehicle
17 traffic to and from mine sites might contribute to the spread of seeds and propagules of these
18 species, which could lead to expanding populations along roadways. Invasive species or noxious
19 weeds might alter fire regimes, including increasing the frequency and intensity of wildfires,
20 particularly as a result of the establishment of annual grasses such as cheatgrass (*Bromus*
21 *tectorum*). Habitats that are not adapted to frequent or intense fires could experience long-term
22 reductions in function and distribution.

23
24 Soils disturbed by land clearing or excavation might be subject to erosion. Soil erosion
25 might also occur in areas where biological soil crusts are disturbed by equipment or foot traffic.
26 The destruction of biological soil crusts could also alter nutrient cycling and availability, reduce
27 water infiltration, reduce germination of native species, and increase the occurrence of
28 non-native species, thereby affecting plant community characteristics (Fleischner 1994;
29 Belnap et al. 2001; Gelbard and Belnap 2003; Rosentreter et al. 2007). Soil compaction from the
30 operation of heavy equipment could reduce the infiltration of precipitation or snowmelt and
31 result in increased runoff and subsequent erosion. Erosion could result in the localized loss of
32 plant communities in areas where topsoil was lost and might include areas outside the mine site.
33 Erosion might result in sedimentation in downgradient upland or wetland habitats and increased
34 sediment deposition in ephemeral drainages or riparian habitats of receiving streams. Effects
35 might include mortality or reduced growth of plants, changes in species composition, or reduced
36 biodiversity. Species more tolerant of disturbance, including invasive species, might become
37 dominant in affected plant communities.

38
39 Changes in surface drainage patterns, such as the elimination of ephemeral drainages (not
40 likely to occur) or other changes in runoff patterns, could alter hydrologic characteristics of
41 downstream wetland or riparian habitats and could result in changes in plant community
42 composition or distribution. Increases in the volumes or velocities of flows could result in the
43 erosion of substrates or vegetation in downstream habitats, while decreased flows could result in
44 dessication of habitats. Underground mines would be less likely to result in large changes to
45 surface water flow patterns and associated impacts on plant communities than would open-pit
46 mines, which cause extensive modifications to landscape surfaces. The storage of waste-rock

ULP Final Biological Assessment

May 2013

1 material for underground mines, however, could disrupt surface drainage patterns. Leachate from
2 waste-rock storage areas could affect the quality of surface water or groundwater and affect
3 downgradient habitats. Groundwater pumped from mines could affect habitats receiving surface
4 water flows as a result of reduced water quality or increased flow velocities or volumes. As
5 discussed in Section 2.2.2, although local surface and groundwater availability is expected to be
6 scarce, it is assumed that purchased water trucked in to the project site would be obtained from
7 sources within the same hydrologic basin as the lease tracts.

8
9 Mining operations could affect groundwater flows if excavations intercepted groundwater
10 resources. Reductions in groundwater flows could affect downgradient habitats that depend on
11 groundwater discharges, such as springs, seeps, or streams with flows supplemented or
12 maintained by groundwater. Plant communities could be degraded as a result of reductions in
13 water availability.

14
15 During mine development and operations, wildlife disturbance might be of greater
16 concern than habitat loss (Arnett et al. 2007). The response of wildlife to disturbances caused by
17 noise and human presence would be species-specific. Responses for a given species could be
18 affected by the physiological or reproductive conditions of individuals; their distance from the
19 disturbance; and the type, intensity, and duration of the disturbance. Wildlife could respond to
20 a disturbance in various ways, including attraction, habituation, or avoidance (Knight and
21 Cole 1991). All three behaviors can be considered adverse impacts. Wildlife might cease
22 foraging, mating, or nesting near areas where the disturbance occurred. For example, disturbance
23 near active sage grouse leks could lead to lek abandonment, displacement, and reduced
24 reproduction. In contrast, wildlife such as bears, foxes, and squirrels can habituate to
25 disturbances and might be attracted to human activities, primarily when a food source was
26 accidentally or deliberately made available.

27
28 Regular or periodic disturbance could cause adjacent areas to be less attractive to wildlife
29 and result in long-term reduction of wildlife use in areas exposed to a repeated variety of
30 disturbances, such as noise. Principal sources of noise would include vehicle traffic, the
31 operation of machinery, and blasting. The potential effects of noise on wildlife could include
32 acute or chronic physiological damage to the auditory system, increased energy expenditure,
33 physical injury incurred during panicked responses, interference with normal activities
34 (e.g., feeding), and impaired communication (AMEC Americas Limited 2005; Larkin 1996; Salt
35 and Hullar 2010; USFWS 2011d). The response of wildlife to noise would vary by species; the
36 animal's physiological or reproductive condition; distance; and the type, intensity, and duration
37 of the disturbance.

38
39 Much of the research on wildlife-related noise effects has focused on birds. This research
40 has shown that noise might affect territory selection, territorial defense, dispersal, foraging
41 success, fledging success, and song learning (e.g., Reijnen and Foppen 1994; Foppen and
42 Reijnen 1994; Larkin 1996). Some studies (e.g., Reijnen and Foppen 1994; Foppen and
43 Reijnen 1994; Reijnen et al. 1995, 1996, 1997) have shown reduced densities of a number of
44 species in forest habitats (26 of 43 species) and grassland habitats (7 of 12 species) adjacent to
45 roads, with effects detectable from 66 to 11,581 ft (20 to 3,500 m) from the roads.
46 Reijnen et al. (1996) identified a threshold effect sound level of 47 dBA for all species combined

ULP Final Biological Assessment

May 2013

1 and of 42 dBA for the most sensitive species. The observed reductions in population density are
2 attributed to a reduction in habitat quality caused by elevated noise levels. This threshold sound
3 level of 42 to 47 dBA, which is somewhat below the U.S. Environmental Protection Agency
4 (EPA)-recommended limit for residential areas, is at or below the sound levels generated by
5 truck traffic that would likely occur at distances of 250 ft (76 m) or more from the mine area or
6 access roads, or the levels generated by typical construction equipment at distances of 2,500 ft
7 (760 m) or more from the mine site.

8
9 Noise can reduce bird nesting success and alter species interactions, resulting in
10 different avian communities (Francis et al. 2009). On the basis of a review of the literature by
11 Hockin et al. (1992), the effects of disturbance on bird breeding and breeding success include
12 reduced nest attendance, nest failures, reduced nest building, increased predation on eggs and
13 nestlings, nest abandonment, inhibition of laying, increased absence from the nest, reduced
14 feeding and brooding, exposure of eggs and nestlings to heat or cold, retarded chick
15 development, and lengthening of the incubation period. The most adverse impacts associated
16 with noise could occur if critical life-cycle activities are disrupted (e.g., mating and nesting). For
17 instance, disturbance of birds during the nesting season can result in nest or brood abandonment.
18 The eggs and young of displaced birds would be more susceptible to cold or predators.

19
20 During winter, the average mean flush distance for several raptor species is 387 ft
21 (120 m) from people walking and 246 ft (75 m) from vehicles (Holmes et al. 1993). Disturbance
22 from light traffic (e.g., 1 to 12 vehicles per day) during the breeding season might reduce nest-
23 initiation rates and increase distances moved from sage grouse leks during nest site selection
24 (Lyon and Anderson 2003). The density of sagebrush obligate passerines was reduced by 39% to
25 60% within a 328-ft (100-m) buffer around dirt roads with traffic volumes ranging from 10 to
26 700 vehicles per day. However, traffic volumes alone might not explain the observed effect. The
27 birds might also have been responding to edge effects, habitat fragmentation, and increases in
28 other passerine species along the road corridors. Thus, declines might persist even after traffic
29 subsides, lasting until road areas are reclaimed and fully vegetated (Ingelfinger and
30 Anderson 2004).

31
32 Various adverse effects of noise on raptors occur, but for some species, the effects are
33 temporary because the raptors habituate to the noise (Brown et al. 1999; Delaney et al. 1999). As
34 reviewed by Hockin et al. (1992), the effects of noise disturbance on bird breeding and breeding
35 success include reduced nest attendance, nest failures, reduced nest building, increased predation
36 on eggs and nestlings, nest abandonment, inhibition of laying, increased absence from the nest,
37 reduced feeding and brooding, exposure of eggs and nestlings to heat or cold, retarded chick
38 development, lengthened incubation period, increased physiological stress, increased energy
39 expenditures, habitat avoidance, decreased population or nesting densities, altered species
40 composition, and disruption and disorientation of movements. The most severe impacts
41 associated with noise could occur if critical life-cycle activities are disrupted (e.g., mating
42 and nesting). For instance, disturbance of birds during the nesting season could result in nest or
43 brood abandonment.

44
45 Lighting could also disturb wildlife in the mine area. Lights directly attract migratory
46 birds (particularly in inclement weather and during other low-visibility conditions), and they

1 could indirectly attract birds and bats by attracting flying insects. Lighting may be needed at
 2 mining facilities to security reasons and to light exploration drilling and mining operations. Any
 3 ULP-related activities that involve lighting have the potential to affect birds and bats, as well as
 4 their invertebrate prey.
 5
 6

7 3.1.3 Reclamation

8
 9 General impacts on ecological resources (including threatened, endangered, and sensitive
 10 species) related to reclamation activities are listed in Table 3-1. Reclamation activities would
 11 generally occur on previously disturbed areas and would be associated primarily with covering
 12 the waste-rock pile and re-grading developed areas. Indirect impacts associated with reclamation
 13 activities could include the deposition of fugitive dust, erosion, sedimentation, and the
 14 introduction of non-native species, including noxious weeds.
 15

16 Reclamation would restore habitat and establish ecological conditions suitable for plant
 17 and wildlife species. The effectiveness of any reclamation activities would depend on the
 18 specific actions taken. The best results would occur where the original site topography,
 19 hydrology, soils, and vegetation patterns are reestablished. During reclamation, topsoil would be
 20 seeded following final surface preparation. The seed mix approved by DOE, in consultation with
 21 BLM, for use in reclamation of all lease tracts is given in Table 3-2. Vegetation reestablishment
 22 might not be possible under all situations. The establishment of native vegetation communities
 23 that existed before development (e.g., pinyon-juniper woodlands and sagebrush shrublands) on
 24 the reclaimed sites could take up to several decades.
 25
 26
 27

TABLE 3-2 Seed Mixture Approved for Reseeding on the DOE ULP Lease Tracts

Species		Broadcast
Scientific Name	Common Name	Application Rate (lb PLS/acre) ^a
<i>Pascopyrum smithii</i>	Arriba western wheatgrass	4.0
<i>Elymus trachycaulus</i> ssp. <i>trachycaulus</i>	Slender wheatgrass	2.0
<i>Oryzopsis</i> (= <i>Achnatherum</i>) <i>hymenoides</i>	Paloma Indian ricegrass	4.0
<i>Bouteloua gracilis</i>	Hachita blue grama	2.0
<i>Hilaria</i> (= <i>Pleuraphis</i>) <i>jamesii</i> (florets)	Galleta grass	2.0
<i>Stipa</i> (= <i>Hesperostipa</i>) <i>comata</i>	Needleandthread grass	1.0
<i>Stipa</i> (= <i>Nassella</i>) <i>viridula</i>	Lodorm green needlegrass	2.0
<i>Linum lewisii</i>	Lewis flax	1.0
<i>Penstemon cyanocaulis</i> ^b	Bluestem penstemon	0.5
<i>Sphaeralcea coccinea</i> or <i>Sphaeralcea parvifolia</i>	Scarlet or parvifolia globemallow	0.3
<i>Atriplex canescens</i>	Rincon fourwing saltbush	3.0
<i>Ceratoides</i> (= <i>Krascheninnikovia</i>) <i>lanata</i>	Winterfat	1.0

^a PLS = pure live seed.

^b If *P. cyanocaulis* (bluestem penstemon) is unavailable, replace with *P. bandera* (Rocky Mountain penstemon).

ULP Final Biological Assessment

May 2013

1 Overall, reclamation impacts on vegetation and wildlife would be minor and of relatively
2 short duration.

3 3.2 SPECIES THAT MAY BE AFFECTED UNDER THE PROPOSED ACTION

4
5
6
7 This section discusses the distribution, ecology, and life history of federally listed,
8 proposed, and candidate species and their critical habitat (if applicable) that might occur in the
9 region including and surrounding the ULP lease tracts and the potential for impacts as they relate
10 to the proposed action. The ESA requires the action agencies (i.e., DOE) to consider the direct
11 and indirect impacts of the proposed action on species and critical habitats, together with the
12 effects of other activities that are interrelated to or interdependent with that action, that would be
13 added to the environmental baseline (50 CFR 402.02). Impacts on the species under discussion
14 can be short-term (one or two reproductive seasons) or long-term (affecting several generations).
15 They can be direct (an immediate effect to an individual, population, or its habitat) or indirect
16 (an effect that might occur over time or result from other actions). In addition, cumulative
17 impacts might affect some of the species. For purposes of this BA, cumulative effects are defined
18 as they are in 50 CFR 402.02, as "those effects of future Tribal, State or private activities, not
19 involving Federal activities, that are reasonably certain to occur within the action area of the
20 Federal action subject to consultation." A summary of potential impacts and avoidance,
21 minimization, and mitigation measures that are used to develop effect determinations for each
22 species is provided in Section 2.3.

23
24 For all species evaluated in this BA, natural history information provided by the USFWS
25 (2012a), CPW (2012), and NatureServe (2012), along with recorded observations (quad-level)
26 from the Colorado Natural Heritage Program (CNHP 2011b), are used to determine the potential
27 for species or their habitat to occur in the affected area under the proposed action. For terrestrial
28 vertebrates, the distribution of predicted suitable habitat was evaluated to provide additional
29 information on the potential distribution of species habitat. Predicted suitable habitat for
30 terrestrial vertebrates was determined from animal distribution models from the Southwest
31 Regional Gap Analysis Program (SWReGAP) (USGS 2007). This information was used to
32 determine the potential presence of suitable habitat in the vicinity of the ULP lease tracts. It is
33 important to note that these GAP models (inferred predicted suitable habitat distributions) are
34 available only for the terrestrial vertebrates considered in this BA. Species are discussed below
35 in taxonomic (plants to mammals) and alphabetic order by common name. A summary of the
36 effect determinations for all species evaluated in this BA is provided in Table 3-3.

37 38 39 3.2.1 Endangered, Threatened, and Proposed Species

40
41 Fourteen species that are listed as threatened or endangered under the ESA or that are
42 proposed for listing have the potential to occur in the ULP counties evaluated in this BA or
43 within the ULP affected area. These species include the following: three plants (clay-loving wild
44 buckwheat, Colorado hookless cactus, and Debeque phacelia), one invertebrate (Uncompahgre
45 fritillary butterfly), five fish (bonytail, Colorado pikeminnow, greenback cutthroat trout,
46 humpback chub, and razorback sucker), three birds (Gunnison sage-grouse, Mexican spotted owl

1 TABLE 3-3 Summary of Effects Determination for Listed and Candidate Species

Species	Status ^a	Critical Habitat ^b	Effect Determination ^c	Rationale ^d
Species that are listed or proposed for listing under the ESA				
Plants				
Clay-loving wild buckwheat (<i>Eriogonum pelinophilum</i>)	E	N	NE NE (critical habitat)	1 1
Colorado hookless cactus (<i>Sclerocactus glaucus</i>)	T	N	NE	1
Debeque phacelia (<i>Phacelia submutica</i>)	T	Y, proposed	NE NE (critical habitat)	1 1
Invertebrates				
Uncompahgre fritillary butterfly (<i>Boloria acrocneuma</i>)	E	N	NE	1
Fish				
Colorado River Endangered Fish Bonytail (<i>Gila elegans</i>)	E	Y	LAA LAA (critical habitat)	2 2
Colorado pikeminnow (<i>Ptychocheilus lucius</i>)				
Humpback chub (<i>Gila cypha</i>)				
Razorback sucker (<i>Xyrauchen texanus</i>)				
Greenback cutthroat trout (<i>Oncorhynchus clarki ssp. stomias</i>)	T	N	NE	1
Birds				
Gunnison sage-grouse (<i>Centrocercus minimus</i>)	P	N	NLAA	3
Mexican spotted owl (<i>Strix occidentalis lucida</i>)	T	Y	NLAA NE (critical habitat)	3 1
Southwestern willow flycatcher (<i>Empidonax traillii extimus</i>)	E	Y, designated and proposed	NLAA NE (critical habitat)	3 1
Mammals				
Black-footed ferret (<i>Mustela nigripes</i>)	E, XN	N	NE	4
Canada lynx (<i>Lynx Canadensis</i>)	T	Y	NE NE (critical habitat)	1 1

2

TABLE 3-3 (Cont.)

Species	Status ^a	Critical Habitat ^b	Effect Determination ^c	Rationale ^d
Species that are candidates for listing under the ESA				
Birds				
Western yellow-billed cuckoo (<i>Coccyzus americanus occidentalis</i>)	C	N	NLAA	3
Mammals				
Gunnison's prairie dog (<i>Cynomys gunnisoni</i>)	C	N	NLAA	3
North American wolverine (<i>Gulo gulo luscus</i>)	C	N	NE	1

^a Status definitions are as follows: 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.

^b If designated critical habitat for a species is known to occur, that is indicated with a "Y" for yes; if it is not known to occur, that is indicated with an "N" for no. Some species have proposed critical habitat that has not been finalized.

^c The effect determinations are defined as follows: NE = no effect, NLAA = may affect but not likely to adversely affect, LAA = may affect and likely to adversely affect.

^d 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 BMPs 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 BMPs. 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 block-cleared for the black-footed ferret, the proposed ULP is likely to have no effect on the black-footed ferret.

1
2

ULP Final Biological Assessment

May 2013

1 and southwestern willow flycatcher), and two mammals (black-footed ferret and Canada lynx).
2 The habitat requirements, distribution relative to the ULP affected area, and effects
3 determination for each of these species are described below. A summary of the effects
4 determinations for these species is provided in Table 3-3.
5
6

7 3.2.1.1 Plants

8
9

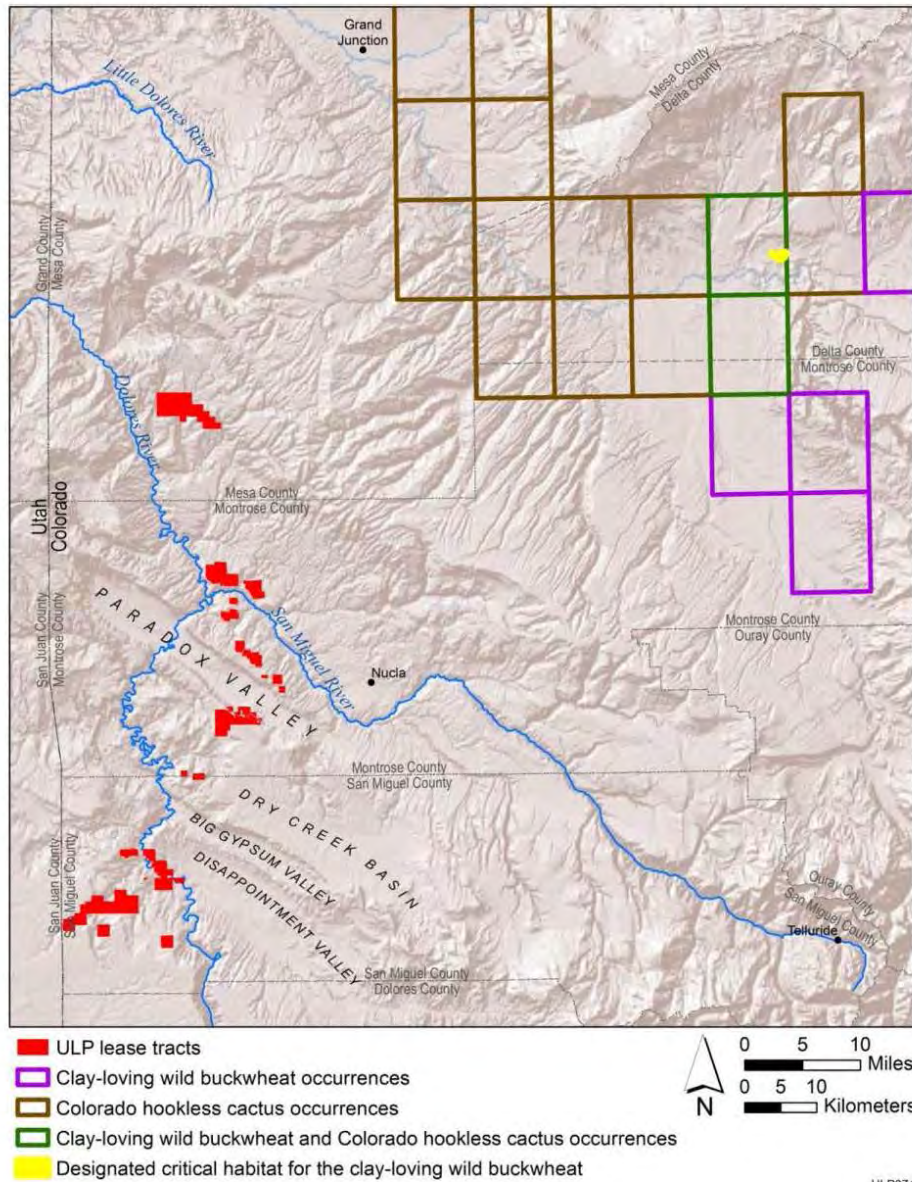
10 3.2.1.1.1 Clay-Loving Wild Buckwheat. The clay-loving wild buckwheat (*Eriogonum*
11 *pelinophilum*) is a long-lived, low-growing, rounded subshrub that has dark green inrolled leaves
12 that look needlelike and clusters of white to cream-colored flowers. It is pollinated by more than
13 50 species, including native bees and ants. Flowering occurs from late May to early September,
14 and individual flowers only last fewer than 3 days (USFWS 2009a).
15

16 The clay-loving wild buckwheat is endemic to the rolling clay hills and flats near Delta
17 and Montrose Counties, Colorado. It grows in whitish, alkaline, clay soils of the Mancos shale
18 formation that are relatively barren of vegetation at elevations ranging from 5,179 to 6,445 ft
19 (1,579 to 1,965 m). It occurs in the greatest density and frequency away from other shrubs. It is
20 found within swales or drainages that are moister than surrounding areas. Plants sometimes
21 associated with the clay-loving wild buckwheat include mat saltbrush, black sagebrush,
22 shadscale, and Gardner's saltbrush (USFWS 2009a).
23

24 The clay-loving wild buckwheat was listed as endangered on July 13, 1984;
25 approximately 120 acres (49 ha) in Delta County, Colorado, was also designated as critical
26 habitat on that date (USFWS 1984). The current range of the clay-loving wild buckwheat is
27 roughly 576 acres (233 ha) (USFWS 2009a). The current population size of the clay-loving wild
28 buckwheat is roughly 278,000 individuals (USFWS 2009a).
29

30 The greatest threat to the clay-loving wild buckwheat is habitat loss and fragmentation
31 from urban development (NatureServe 2012). Potential threats that might be associated with
32 mining activities include surface disturbance from construction of facilities and roads as well as
33 increased vehicle traffic and human presence. Other threats include agricultural development,
34 nonnative invasive plants, livestock use, oil and gas development, and herbicide use
35 (USFWS 2009a).
36

37 According to the CNHP, the nearest recorded occurrences of clay-loving wild buckwheat
38 are in eastern Montrose County, approximately 40 mi (64 km) east of the ULP lease tracts. The
39 nearest designated critical habitat in central Delta County is greater than 50 mi (80 km) northeast
40 of the ULP lease tracts (Figure 3-1). Given the endemism of this species in Delta and Montrose
41 Counties, it is unlikely that this species, its habitat, and designated critical habitat could occur in
42 the ULP affected area. For this reason, uranium mining under the ULP will have **no effect** on the
43 clay-loving wild buckwheat. Similarly, uranium mining under the ULP will have **no effect** on
44 designated critical habitat for the clay-loving wild buckwheat.
45



1

ULP074

2 **FIGURE 3-1 Recorded Quad-Level Occurrences of the Clay-Loving Wild Buckwheat and**
 3 **Colorado Hookless Cactus, and Locations of Designated Critical Habitat for the Clay-Loving**
 4 **Wild Buckwheat, in the Vicinity of the ULP Lease Tracts**

ULP Final Biological Assessment

May 2013

1 **3.2.1.1.2 Colorado Hookless Cactus.** The Colorado hookless cactus (*Scleroactus*
2 *glaucus*) was previously part of a larger complex of *S. glaucus*; however, this complex was split
3 into three distinct species in 2009. All three species are listed as threatened under the ESA
4 (USFWS 2009b). The Colorado hookless cactus is a barrel-shaped cactus that is from 1.2 to
5 4.8 in. (3.0 to 12.2 cm) tall. The stem is ribbed, with hooked spines radiating out from areoles
6 along the ribs. It produces pink to violet bell or funnel-shaped flowers and short, barrel-shaped
7 fruit from April to May (USFWS 2010a). After blooming, the cactus may shrink below the
8 ground or become a dull grayish-green color, making the plant very hard to identify.
9

10 The Colorado hookless cactus is endemic to western Colorado in Delta, Montrose, Mesa,
11 and Garfield Counties. Its range is estimated to be around 1,700–2,100 mi² (4,400–5,440 km²)
12 (USFWS 2010a; NatureServe 2012). The total known population is estimated to number more
13 than 19,000 plants (USFWS 2010a). There are currently two population centers of the Colorado
14 hookless cactus that may be morphologically and genetically distinct. The two populations are on
15 alluvial river terraces of the Gunnison and Colorado Rivers, and in the Plateau and Roan Creek
16 drainages. These populations are typically found at elevations ranging from 3,937 to 6,562 ft
17 (1,200 to 2,000 m) (CNHP 2011a; USFWS 2011a). Populations are most abundant on south-
18 facing slopes.
19

20 The Colorado hookless cactus was listed as threatened on November 13, 1979
21 (USFWS 1979). A recovery plan for the Colorado hookless cactus was created on April 14, 2010
22 (USFWS 2010a) that identified these recovery needs: (1) surveying to accurately document
23 populations and suitable habitat, (2) protecting and restoring habitat and corridors to provide
24 connectivity, and (3) protecting individual plants from direct and indirect threats. Critical habitat
25 for the Colorado hookless cactus has not been designated.
26

27 Potential threats to the Colorado hookless cactus that may be associated with mining
28 activities include surface disturbances from construction of facilities and roads as well as
29 increased vehicle traffic and human presence. Construction associated with mining can fragment
30 and destroy Colorado hookless cactus habitat. Roads and associated infrastructure can disturb
31 individuals and habitat. The potential increase in the use of access roads by off-road vehicles
32 could increase erosion, fugitive dust, soil compaction, and sedimentation and could crush cacti.
33 The accumulation of dust on cacti could lead to a decrease in plant growth and water use
34 efficiency. Increased erosion, soil compaction, and sedimentation could kill cacti. An increase in
35 human presence could lead to the illegal collection and loss of individual plants. Other threats to
36 the Colorado hookless cactus include livestock grazing (grazing occurs on 94% of the Colorado
37 hookless cactus's potential habitat) and competition with invasive weed species
38 (USFWS 2010a).
39

40 According to the CNHP, the nearest recorded occurrences of Colorado hookless cactus
41 are in southern Delta County, approximately 23 mi (37 km) east of the nearest ULP lease tract
42 (Lease Tract 27) (Figure 3-1). However, surveys for this species have not documented any
43 individuals near any of the ULP lease tracts (Holsinger 2012). Given the endemism of this
44 species to alluvial terraces of the Gunnison and Colorado Rivers, it is unlikely for this species or
45 its habitat to occur in the ULP affected area. For this reason, uranium mining under the ULP will
46 have **no effect** on the Colorado hookless cactus.

ULP Final Biological Assessment

May 2013

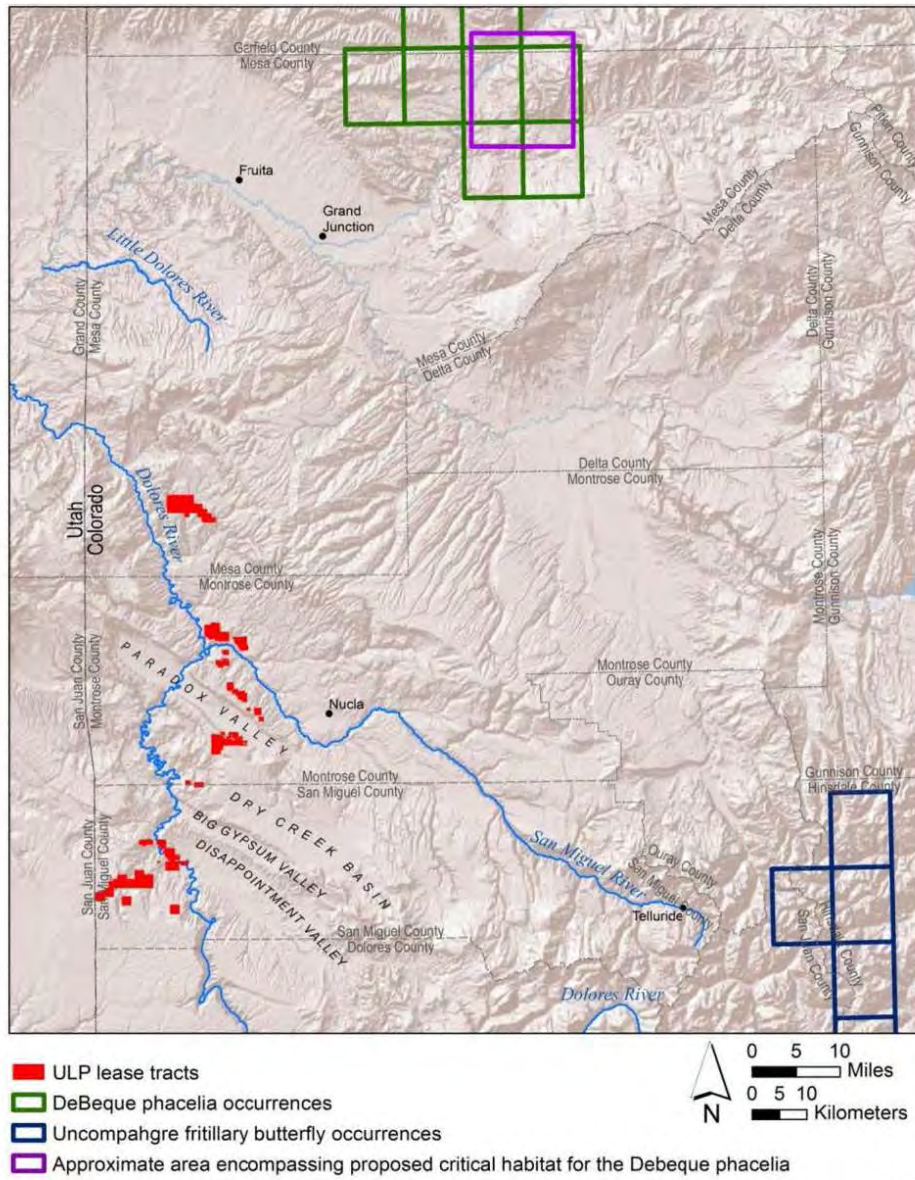
1 **3.2.1.1.3 Debeque Phacelia.** The Debeque phacelia (*Phacelia submutica*) is a
2 low-growing annual herb with small white, tube-shaped flowers hidden within leaves
3 (USFWS 2011b). Stems are usually 0.8 to 3 in. (2.0 to 7.6 cm) long, deep red, and covered in
4 stiff hairs. Leaves are also covered with stiff hairs and are reddish when mature and egg shaped.
5 The plant shows yearly variation in abundance due to environmental factors, with no plants
6 growing one year and thousands growing the next. Seeds can remain dormant for up to 5 years.
7 It flowers between late April and late June and sets seed from mid-May through late June
8 (USFWS 2011b).
9

10 Habitat requirements of the Debeque phacelia include clay soils from the Atwell Gulch
11 and Shire members of the Wasatch Formation that have little other vegetation (generally less
12 than 10% plant coverage) at elevations ranging from 5,080 to 7,100 ft (1,548 to 2,164 m). The
13 shrink-swell action of clay soils is essential to the species because seed banks are maintained in
14 cracks formed in the soil. It has been found associated with other plants, including cheatgrass,
15 pointed gumweed, Gordon's buckwheat, Nuttall's povertyweed, and tufted evening primrose. It
16 is generally found on moderately steep slopes, benches, and ridge tops adjacent to valley floors
17 (USFWS 2011b).
18

19 The Debeque phacelia was listed as threatened on July 27, 2011 (USFWS 2011c). On that
20 date, the USFWS proposed to designate 24,987 acres (10,112 ha) within nine units in Mesa and
21 Garfield Counties, Colorado, as critical habitat for this species (USFWS 2011b). On March 27,
22 2012, the USFWS revised the proposed designation to include a total of 25,484 acres (10,313 ha)
23 of critical habitat in Mesa and Garfield Counties (USFWS 2012b). There are currently nine
24 known populations of the Debeque phacelia. It is estimated that the current population size may
25 be as large as 68,371 if climatic conditions are favorable (USFWS2011b). The estimated total
26 number of plants ranges from 7,767 to 68,371 per year (USFWS 2011c). The current range of the
27 Debeque phacelia is centered on DeBeque, Colorado, in Mesa and Garfield Counties. A polygon
28 around all nine populations of the Debeque phacelia covers 86,230 acres (34,896 ha), with
29 626 acres (253 ha) being actually occupied by plants (USFWS 2011b).
30

31 Potential threats to the Debeque phacelia that may be associated with mining activities
32 include surface disturbance from construction of facilities and roads as well as increased vehicle
33 traffic and human presence. The disturbance of seed banks from within the soil will be
34 detrimental to the Debeque phacelia (NatureServe 2012). Other threats to this species include
35 livestock grazing and oil and gas development (USFWS 2011c).
36

37 According to the CNHP, the nearest recorded occurrences of Debeque phacelia are in
38 central Mesa County, Colorado, approximately 45 mi (72 km) northeast of the nearest ULP lease
39 tract (27). The locations of the proposed critical habitat units are approximately 53 mi (85 km)
40 northeast of ULP Lease Tract 27 (Figure 3-2). This species has specific habitat requirements for
41 clay soils in the Wasatch Formation; these habitats do not occur in the ULP affected area. For
42 this reason, uranium mining under the ULP will have **no effect** on the Debeque phacelia or on
43 proposed critical habitat for the plant.
44
45



1

ULP075

2 **FIGURE 3-2** Recorded Quad-Level Occurrences of the Debeque Phacelia and Uncompahgre
 3 Fritillary Butterfly, and Locations of Proposed Critical Habitat for the Debeque Phacelia, in
 4 the Vicinity of the ULP Lease Tracts

1 **3.2.1.2 Invertebrates**

2
3
4 **3.2.1.2.1 Uncompahgre Fritillary Butterfly.** The Uncompahgre fritillary butterfly
5 (*Boloria acrocneuma*) is a butterfly (family Nymphalidae) that has a wing span of 1 to 1.2 in.
6 (2 to 3 cm). Males have rusty brown wings with criss-crossed black bars. Females have lighter
7 wings. The hind wing has a white jagged bar dividing the brown inner half and the purple-grey
8 outer surface. The body is brownish black. Females lay eggs on the snow willow (*Salix nivalis*),
9 and the larvae feed on that plant. Adults consume nectar from a range of flowering alpine plants.
10 The butterfly has a biennial life history; eggs are laid in one year; the insects are caterpillars in
11 the following year; and they mature into adults the next year. Adults live only 1 to 2 weeks
12 (USFWS 2011d).

13
14 The Uncompahgre fritillary butterfly has the smallest total range of any North American
15 butterfly species. Its habitat is limited in distribution to the San Juan Mountains and southern
16 Sawatch Range in southwestern Colorado. All known colonies occur on public lands. Habitat
17 requirements for this species include the snow willow, which provides food and shelter at
18 elevations above 12,400 ft (3,780 m) (USFWS 1994a, 2011d; NatureServe 2012).

19
20 The Uncompahgre fritillary butterfly was listed as an endangered species on
21 June 24, 1991 (USFWS 1991a). A recovery plan was finalized on March 17, 1994
22 (USFWS 1994a). Critical habitat for this species has not been designated. Currently, 11 known
23 colonies of the butterfly exist (USFWS 2009c). Only 3 of those colonies are monitored, and the
24 current population of those colonies is estimated to number between 3,400 and 23,000
25 (USFWS 2011d). The overall population size is currently unknown. The current range is
26 estimated to be between 24,710 and 61,776 acres (10,000 and 25,000 ha) in size
27 (NatureServe 2012).

28
29 The current threats to the Uncompahgre fritillary butterfly are minor and include
30 collection by people and habitat degradation from widening of hiking trails and sheep grazing
31 (USFWS 2011d). Potential threats to this species that may be associated with mining activities
32 include habitat disturbance from construction of facilities and roads as well as increased vehicle
33 traffic and human presence.

34
35 According to the CNHP, the nearest recorded occurrences of the Uncompahgre fritillary
36 butterfly are approximately 60 mi (96 km) east of the ULP lease tracts (Figure 3-2). As
37 discussed, this species has specific habitat requirements for alpine willow communities; these
38 habitats do not occur in the ULP affected area. For this reason, uranium mining under the ULP
39 will have **no effect** on the Uncompahgre fritillary butterfly.

40
41
42 **3.2.1.3 Fish**

43
44
45 **3.2.1.3.1 Colorado River Endangered Fish.** Four listed species of fish that inhabit
46 the Colorado River Basin may occur in the ULP affected area: the bonytail, Colorado

ULP Final Biological Assessment

May 2013

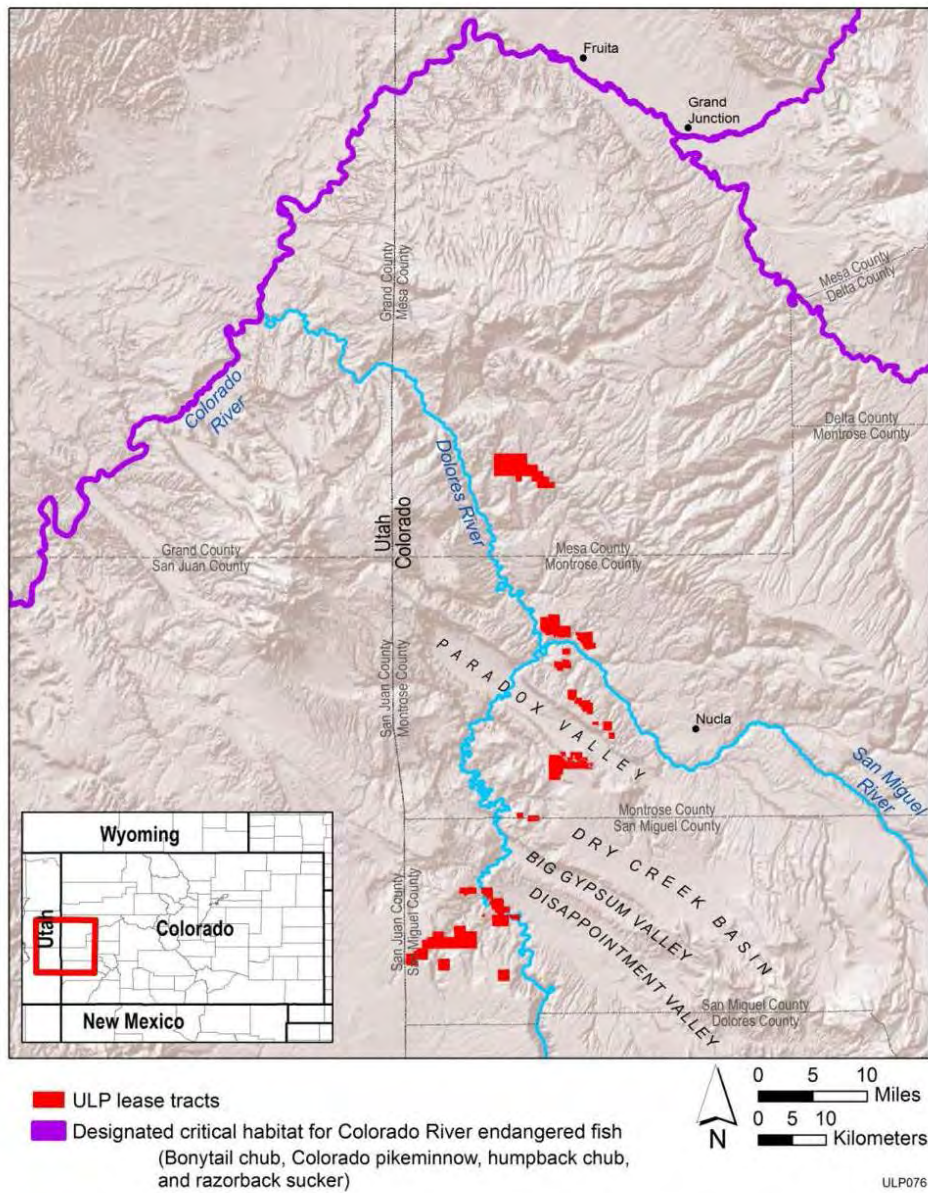
1 pikeminnow, humpback chub, and razorback sucker. Each of these fish species historically
2 inhabited tributaries of the Colorado River system, including portions of the Dolores and
3 San Miguel Rivers in the ULP project counties. Current populations of these Colorado River
4 endangered fish species no longer inhabit these tributary rivers in the vicinity of the ULP lease
5 tracts. However, populations of these species, suitable habitat, and designated critical habitat for
6 these species occur in the Colorado River, which is downgradient from all ULP lease tracts and
7 is connected to several lease tracts (primarily Lease Tracts 13, 13A, and 14) by the Dolores River
8 (Figure 3-3).

9
10 Direct impacts on the Colorado River endangered fish or their habitat associated with
11 ULP activities would not occur. However, potential indirect threats to these species that might be
12 associated with mining activities under the ULP include impacts on water quality and water
13 withdrawals. Uranium mining can contaminate surrounding drainages and bodies of water with
14 uranium, other radioactive contaminants, and other contaminants such as ammonium, which can
15 negatively affect aquatic biota. Some contaminants can bio-accumulate in fish species (Karp and
16 Metzler 2006; Fresques 2008; Metzler et al. 2008). The toxicity of uranium mill tailings has been
17 shown to negatively affect aquatic biota in the Colorado River system (USFWS 1990). The
18 effects of ammonium include reduced growth rate, reduced gamete production, body deformities
19 and malformations, and degenerative gill and kidney appearance and function. The construction
20 of mining facilities may also increase the amount of sediment in downgradient streams and rivers
21 (Leyda 2011), which could also affect habitat quality (including designated critical habitat).

22
23 Water depletions associated with uranium mining may contribute to the destruction or
24 adverse modification of designated critical habitat for the Colorado pikeminnow
25 (USFWS 2011e) and could also affect all other Colorado River endangered fish. As discussed in
26 Section 2.2.2 and Table 2-3, as much as 19.3 acre-ft of water may be needed to support ULP
27 activities during the peak production year. It is assumed that all water would come from sources
28 within the Dolores River Basin and may be obtained from pumping withdrawals on or off the
29 lease tract, the purchase of municipal supplies, or the purchase and relinquishment of existing
30 groundwater rights. Surface water and groundwater sources in the region surrounding the ULP
31 lease tracts are over-appropriated according to the Colorado Division of Water Resources
32 (CDWR 2007), and the USFWS considers actions that could result in a net water depletion in
33 the upper Colorado River Basin to adversely affect the endangered fish and their designated
34 critical habitat. Although the estimated peak annual water demand from the ULP activities
35 (19.3 acre-ft) represents a relatively small depletion to the Colorado River, the volume exceeds
36 the USFWS *de minimis* threshold of 0.1 acre-ft per year (USFWS 2009j) and requires ESA
37 Section 7 consultation.

38
39 Other threats to the Colorado River endangered fish that might be associated with ULP
40 activities include physical stream alteration, competition with and predation by introduced
41 species, and pollution. Indirect impacts on the Dolores River and other tributaries to the
42 Colorado River from ULP-related water withdrawals, runoff, sedimentation, or exposure to
43 contaminants might be possible, which could affect these species and their habitats (including
44 designated critical habitat) in the Colorado River (Table 3-1).

45



1
2
3
4

FIGURE 3-3 Locations of Designated Critical Habitat for the Colorado River Endangered Fish Species in the Vicinity of the ULP Lease Tracts

ULP Final Biological Assessment

May 2013

1 The implementation of mitigation measures and BMPs identified in Table 2-5,
2 particularly those related to aquatic habitats and water quality (G4, D2, D3, D4, D5, D6, D7,
3 D8, D9, D12), would reduce impacts of water quality and quantity to the Colorado River
4 endangered fish species. Indirect impacts related to water contamination are expected to be
5 minimized with the measures identified in Table 2-5 to levels that would not adversely affect the
6 species or their habitats. Impacts related to water withdrawal and consumption from the Upper
7 Colorado River Basin are possible (i.e., there are no measures to completely eliminate or offset
8 water withdrawals from the Colorado River Basin). For this reason, it is determined that the
9 proposed ULP **may affect, and is likely to adversely affect, both the Colorado River**
10 **endangered fish and their critical habitat.**

11
12 Several conservation measures have been identified from previous Biological
13 Assessments and Biological Opinions for related federal activities to offset or reduce negative
14 impacts of project-related water use on Colorado River endangered fish. These conservation
15 measures may be adopted to reduce ULP-related impacts on endangered fish. These conservation
16 measures include the following:

- 17
- 18 • If water pumping is necessary, pump water from off-channel locations
19 (e.g., ponds and ditches) not directly connected to mainstem rivers such as the
20 Dolores River and
- 21
- 22 • Require water users to sign Recovery Agreements that state the water users
23 won't interfere with the implementation of recovery actions and the USFWS
24 will provide ESA compliance. The DOE will ensure Recovery Agreements
25 are initiated by the lessees, or on the behalf of the lessees via a representative
26 group, with the USFWS as appropriate.
- 27

28 The USFWS may provide other alternatives to help projects reduce affects from their
29 activities during the consultation process. The natural history, habitat requirements, and listing
30 history for each of these species is provided in the following text.

31
32 **Bonytail.** The bonytail (*Gila elegans*) is a species of fish in the family Cyprinidae. It is
33 endemic to the Colorado River Basin. This species has a very slender, round, and long caudal
34 peduncle; a subterminal mouth; and fins that are large and falcate. Adults have a relatively flat,
35 concave head and a smooth dorsal hump and back. Young fish are typically silver-gray with
36 white bellies. Adults have a dark olive back that contains small iridescent highlights
37 (Mueller 2006). Adults grow to be about 21.7 in. (55 cm) in length and weigh 2.4 lb (1.1 kg)
38 (USFWS 2002a). Hatchery-reared bonytail become sexually mature after 2 years
39 (NatureServe 2012). The diet of the bonytail is unknown, but it is hypothesized that they eat
40 insects, fishes, and plants (NatureServe 2012).

41
42 The historic range of the bonytail is unknown because it was extirpated from many areas
43 before surveys were conducted, but it was common in warm-water reaches of larger rivers from
44 Mexico to Wyoming (USFWS 2002a). Currently, no self-sustaining populations of bonytail exist
45 in the wild, and only a small number of adults exist in the wild in Lake Mohave, Lake Havasu,
46 and in the Green River and upper Colorado River subbasins (USFWS 2002a). The current

ULP Final Biological Assessment

May 2013

1 population size is estimated to be between 1 and 1,000 individuals (NatureServe 2012).
2 Hatchery-reared adults have been released into rivers in the upper basin, but results indicate low
3 survival and no reproduction or recruitment (USFWS 2002a).

4
5 The habitat requirements of the bonytail are uncertain, but the species has been observed
6 in pools and eddies on mainstem rivers. Habitats necessary for conservation of the bonytail
7 include river channels and flooded, ponded, or inundated riverine habitats (USFWS 2002a;
8 BIO-WEST 2005). Bonytails in rivers probably spawn in spring over rocky substrates, and
9 spawning in reservoirs has been observed over rocky shoals and shorelines (USFWS 2002a).
10 Spawning was observed to occur in June and July at water temperatures of about 64.4°F (18°C)
11 (USFWS 1994b). It is hypothesized that flooded bottomland habitats are important as nursery
12 habitats for young (USFWS 2002a).

13
14 The bonytail was listed as an endangered species on April 23, 1980 (USFWS 1980). A
15 recovery plan was approved on August 1, 2002 (USFWS 2002a). Approximately 312 mi
16 (502 km) of river in the Colorado River Basin were designated as critical habitat for the bonytail
17 on March 21, 1994. The critical habitat spans five states and includes portions of the Colorado,
18 Green, and Yampa Rivers in the Upper Basin and the Colorado River in the Lower Basin
19 (USFWS 1994b). The nearest location of designated critical habitat is within the Colorado River
20 in Grand County, Utah, approximately 29 mi (46.4 km) northwest of the northern-most ULP
21 lease tracts (Figure 3-3).

22
23 **Colorado Pikeminnow.** The Colorado pikeminnow (*Ptychocheilus lucius*) is a species
24 of fish in the family Cyprinidae. It is a long-distance migrator, travelling an average of 411 mi
25 (658 km). It reaches a maximum length of 5.9 ft (1.8 m) and weight of 79 lb (36 kg) and lives
26 over 40 years (USFWS 2002b). It is an elongated fish, with a greenish, slender body with gold
27 flecks on the dorsal surface. The mouth is large and nearly horizontal, with slender teeth
28 (USFWS 2007). Reproduction occurs after 5 to 7 years (NatureServe 2012). Juveniles feed
29 mainly on zooplankton and insect larvae, while larger fish (bigger than 4 in. [10 cm]) feed
30 mainly on other fish (USFWS 2007; NatureServe 2012).

31
32 Spawning occurs in river canyons when water flows decline from June to August and
33 when water temperatures are between 64.4 and 73.4°F (18 and 23°C) (USFWS 1994b, 2002b).
34 Optimal temperature for egg hatching is 68°F (20°C) (NatureServe 2012). Adult habitats after
35 spawning include pools, deep runs, and eddies maintained by high spring flows. Larvae drift
36 downstream to nutrient-rich nursery backwaters (USFWS 2002b). Young of the year prefer
37 shallow, alongshore, ephemeral backwaters with little or no current and silt or sand substrates
38 (NatureServe 2012; USFWS 2007). When juveniles reach about 8 in. (20 cm) in length, they
39 prefer deeper water with a faster velocity (USFWS 2007). During the winter, adults are most
40 common in shallow, ice-covered shorelines (USFWS 1994b). Temperature tolerances range
41 from less than 50°F to 95°F (10°C to 35°C) (USFWS 2007).

42
43 The Colorado pikeminnow is endemic to the Colorado River Basin. It was extirpated
44 from the Lower Basin in the 1970s, but experimental introductions have been made into the
45 Verde River in the Lower Basin. Currently, three wild reproducing populations occur in the
46 Green River, San Juan River, and upper Colorado River subbasins. Current population estimates

ULP Final Biological Assessment

May 2013

1 are between 6,600 and 8,900 total for the three populations (6,000 to 8,000 in the Green River;
2 600 to 900 in the upper Colorado River; 19 to 50 in the San Juan River) (USFWS 2002b).

3
4 The Colorado pikeminnow was listed as an endangered species on March 11, 1967. An
5 original recovery plan was approved on August 28, 2002, and the current recovery goals were
6 approved on July 27, 2006 (USFWS 2002b). Approximately 1,148 mi (1,848 km) of river in the
7 Colorado River Basin were designated as critical habitat for the Colorado pikeminnow on
8 March 21, 1994. The critical habitat spans three states and includes portions of the Colorado,
9 Green, Yampa, White, and San Juan Rivers in the Upper Basin (USFWS 1994b). The nearest
10 location of designated critical habitat is within the Colorado River in Grand County, Utah,
11 approximately 29 mi (46 km) northwest of the northern-most ULP lease tracts (Figure 3-3).

12
13 **Humpback Chub.** The humpback chub (*Gila cypha*) is a freshwater fish species in the
14 family Cyprinidae. This species is less than 19.7 in. (50 cm) in total length. It has silvery sides
15 and a brown back. Adults have a distinctive dorsal hump, a long snout, and small eyes.
16 Humpback and roundtail chubs can look very similar, and the young in particular do not possess
17 easily identifiable morphological differences (USFWS 1990). The humpback chub reproduces
18 from May to July, depending on the location. Spawning occurs when water temperatures are near
19 68°F (20°C) and when spring water flows are at their highest (USFWS 1994b). Young and adults
20 are bottom feeders and consume mainly insects and other invertebrates, but algae and fish are
21 occasionally consumed.

22
23 The humpback chub is found in river canyons in a variety of habitats, including pools,
24 riffles, and eddies. It has also been found near boulder-strewn canyons, travertine dams, rocky
25 runs, riffles, and rapids (USFWS 1994b). Adult humpback chub inhabit deep (1 to 15 ft [0.3 to
26 4.6 m]) river regions, but young are generally found in shallower areas (less than 9.8 ft [3.0 m])
27 (USFWS 2002c).

28
29 The humpback chub is endemic to the Colorado River Basin and is presently restricted to
30 remote, whitewater canyons. Human-made alterations to the Colorado River may have caused
31 the humpback chub to disappear from certain areas before its presence was documented
32 (USFWS 1990). Because of this uncertainty, the historical distribution of the humpback chub is
33 not well known, but the earliest known record of the species is from the Grand Canyon from
34 around 4,000 B.C. (USFWS 1990, 1994b).

35
36 The humpback chub was listed as an endangered species on March 11, 1967. An original
37 recovery plan was approved on August 22, 1979, and the current second revised recovery plan
38 was approved on September 19, 1990 (USFWS 1990). A revised recovery plan was approved on
39 August 1, 2002 (USFWS 2002c). Approximately 379 mi (610 km) of river in the Colorado River
40 Basin were designated as critical habitat for the humpback chub on March 24, 1994. The critical
41 habitat spans three states and includes portions of the Colorado, Green, and Yampa Rivers in the
42 Upper Basin and the Colorado and Little Colorado Rivers in the Lower Basin (USFWS 1994b).
43 The largest remaining population of humpback chub in the Colorado River Basin occurs in the
44 Little Colorado and Colorado Rivers in the Grand Canyon (USFWS 1994b). The nearest location
45 of designated critical habitat is within the Colorado River in Grand County, Utah, approximately
46 29 mi (46.4 km) northwest of the northern-most ULP lease tracts (Figure 3-3).

ULP Final Biological Assessment

May 2013

1 **Razorback Sucker.** The razorback sucker (*Xyrauchen texanus*) is a species of fish in the
2 family Catostomidae. This species has a long, high hump behind the head. The head and body
3 are dark, and the sides are brownish, fading to a yellowish white abdomen. It reaches lengths of
4 36 to 39 in. (91 to 99 cm) and weighs up to 12 lb (5.4 kg) (USFWS 2007). The diet of adults
5 includes planktonic crustaceans, diatoms, filamentous algae, midge larvae, and detritus.
6

7 Habitat requirements of the razorback sucker in rivers include deep runs, eddies,
8 backwaters, and flooded off-channel environments in spring; runs and pools, often in shallow
9 water associated with submerged sandbars, in summer; and low-velocity runs, pools, and eddies
10 in winter (USFWS 2002d). Adults may travel long distances to spawning sites, and spawning
11 usually occurs in rivers over gravel, cobble, or sand substrates during spring runoff at
12 temperatures higher than 57.2°F (14°C) (USFWS 1991b, 2002d). Spawning can also occur over
13 rocky shoals and shorelines. Young require nursery environments with quiet, warm, shallow
14 water, such as tributary mouths, backwaters, or inundated floodplain habitats in rivers, such as
15 coves or shorelines in reservoirs (USFWS 2002d).
16

17 The razorback sucker is endemic to the Colorado River Basin. The historic range of
18 the razorback sucker extended through 3,500 mi (5,600 km) of the Colorado River Basin
19 throughout Arizona, California, Colorado, Nevada, New Mexico, Utah, Wyoming, Baja
20 California Norte, and Sonora of Mexico (USFWS 1991b). Currently, the razorback sucker
21 inhabits only about 25% of its historical range in the upper Colorado River basin
22 (USFWS 1991b, 2002d). Most wild fish are now found in Lake Mohave, which represents the
23 largest population within the lower basin (USFWS 2007). This population dropped from
24 60,000 individuals in 1991 to 9,000 in 2000 (USFWS 2002d). Razorback suckers are currently
25 found in small numbers in the Green River, upper Colorado River, and San Juan River
26 subbasins; in the lower Colorado River; in reservoirs of Lakes Mead and Mohave; and in small
27 tributaries of the Gila River subbasin (USFWS 2002d).
28

29 The razorback sucker was listed as an endangered species on October 23, 1991. A
30 recovery plan was approved on August 28, 2002 (USFWS 2002d). Approximately 1,724 mi
31 (2,758 km) of river in the Colorado River Basin was designated as critical habitat for the
32 razorback sucker on March 21, 1994. The critical habitat spans six states and includes portions
33 of the Green, Yampa, Duchesne, Colorado, White, Gunnison, and San Juan Rivers in the
34 Upper Basin and portions of the Colorado, Gila, Salt, and Verde Rivers in the Lower Basin
35 (USFWS 1994b). The nearest location of designated critical habitat is within the Colorado River
36 in Grand County, Utah, approximately 29 mi (46.4 km) northwest of the northernmost ULP lease
37 tracts (Figure 3-3).
38

39 **3.2.1.3.2 Greenback Cutthroat Trout.** The greenback cutthroat trout (*Oncorhynchus*
40 *clarki* ssp. *stomias*) is a species of fish in the family Salmonidae. It is one of the most colorful
41 subspecies of cutthroat trout (USFWS 1998). This species is characterized by dark, round spots
42 on the sides and tail and two colorful blood-red stripes on each side of the throat under the jaw
43 (USFWS 2011f). Mature males have crimson red along the ventral region during spawning
44 season (USFWS 1998). The diet of the greenback cutthroat trout includes mainly aquatic and
45 terrestrial insects, but these fish are opportunistic feeders (USFWS 2009d; Coleman and
46 CNHP 2007). Males spawn at age two, and females reach sexual maturity when they reach a

ULP Final Biological Assessment

May 2013

1 length of about 7 in. (18 cm), usually after their third or fourth summer (USFWS 2011f;
2 Coleman and CNHP 2007). They spawn in spring or early summer, depending on the elevation.
3 Females dig redds in the gravel bed of streams, where they deposit eggs. Spawning occurs when
4 water reaches about 41 to 46°F (5 to 8°C) (Coleman and CNHP 2007). Larger females can lay up
5 to 6,000 eggs (USFWS 2009d).
6

7 The greenback cutthroat trout is the rarest of the cutthroat trout species. The historic
8 range of the greenback cutthroat trout is not known, but it is hypothesized that all mountain and
9 foothill habitats of the South Platte and Arkansas River drainages in Colorado are included
10 (USFWS 2009d). Only nine naturally occurring populations are known to have persisted, but
11 many additional populations have been established in lakes and streams from being introduced
12 (USFWS 1998). The most stable population occurs in Rocky Mountain National Park
13 (NatureServe 2012). Currently, 145 populations in 142 mi (228 km) of streams and 412 acres
14 (167 ha) of lakes have been documented within greenback historic range (USFWS 2011f).
15

16 Habitat requirements of the greenback cutthroat trout differ depending on the life stage.
17 Juveniles need the protective cover and low-velocity flow found in side channels and small
18 tributaries. Spawning occurs in riffles with clean gravel. Overwintering fish prefer deep water,
19 low-velocity flow, and protective cover. Adults prefer slow water areas for resting and fast water
20 areas for feeding, with protective cover from boulders, logs, overhanging vegetation, or undercut
21 banks (USFWS 2009d). Greenbacks also usually require clear, cold, well oxygenated water
22 (USFWS 2009d).
23

24 The greenback cutthroat trout was listed as endangered in 1973 and reclassified as
25 threatened on April 18, 1978 (USFWS 1978). A recovery plan was approved on March 1, 1998
26 (USFWS 1998). Critical habitat for this species has not been designated.
27

28 According to the CNHP, the nearest recorded occurrences of the greenback cutthroat
29 trout are more than 100 mi (160 km) east of the ULP lease tracts. As discussed, this species is
30 primarily restricted to headwater streams of the South Platte and Arkansas River drainages; these
31 habitats do not occur in the ULP affected area. For these reasons, uranium mining under the ULP
32 will have **no effect** on the greenback cutthroat trout. The species is not likely to occur in any
33 aquatic habitats downstream from the ULP lease tracts.
34

35 36 **3.2.1.4 Birds**

37
38
39 **3.2.1.4.1 Gunnison Sage-Grouse.** The Gunnison sage-grouse (*Centrocercus minimus*) is
40 one of two sage-grouse species in the family Phasianidae; the other is the greater sage-grouse
41 (*C. urophasianus*). The Gunnison sage-grouse weighs about a third less than the greater sage-
42 grouse, but the males of both species possess conspicuous filoplumes and yellow-green air sacs
43 on the chest during the breeding season. Sage-grouse gather on leks during the spring, where
44 males establish territories and strut for approximately 6 weeks. Sage-grouse are polygamous, and
45 males do not provide any parental care. The majority of females establish nests within 4 mi
46 (6.5 km) of an active lek. Gunnison sage-grouse lay about six to seven eggs and have one of the

ULP Final Biological Assessment

May 2013

1 lowest nest success rates of all upland game bird species (ranging from 10% to 63%)
2 (Gunnison Sage-Grouse Rangewide Steering Committee 2005).

3
4 Sage-grouse are typically found in large expanses of sagebrush-dominated habitats.
5 Various habitats such as riparian meadows, agricultural lands, and native grasses and forbs are
6 also used if intermixed with sagebrush (USFWS 2010b). The Gunnison sage-grouse relies
7 heavily on sagebrush for nesting, shelter, and food throughout the year. Forbs and insects are
8 eaten during the summer and early fall, but its diet consists entirely of sage brush during the
9 winter (USFWS 2006a).

10
11 Gunnison sage-grouse historically occupied 21,370 mi² (55,350 km²) throughout
12 southwestern Colorado, northwestern New Mexico, northeastern Arizona, and southeastern Utah
13 (USFWS 2006a). Currently, only seven widely scattered and isolated populations occur in
14 Colorado and Utah, occupying 1,511 mi² (3,913 km²) in the Gunnison Basin, San Miguel Basin,
15 Monticello-Dove Creek, Pinon Mesa, Crawford, Cerro Summit-Cimarron-Sims Mesa, and
16 Poncha Pass (USFWS 2010b). Gunnison sage-grouse now occupy about 10% of the habitat that
17 existed before the arrival of European settlers (BLM 2010). The breeding population size was
18 estimated to be fewer than 4,000 individuals in 2000, with the largest population (2,000 to
19 3,000 individuals) occurring primarily in Gunnison and Saguache Counties in Colorado. The
20 remaining six populations have fewer than 300 breeding individuals (NatureServe 2012).

21
22 The Gunnison sage-grouse became a candidate for federal listing on September 28, 2010
23 (USFWS 2010b). The listing of this species was determined to be warranted but was precluded
24 by higher-priority listing actions. The USFWS assigned a listing priority number of 2 to this
25 species because threats have a high magnitude and are imminent. On November 21, 2012, the
26 USFWS submitted a rule to propose this species as endangered under the ESA (USFWS 2012d).

27
28 The main threat to the Gunnison sage-grouse is the fragmentation and degradation of
29 sagebrush habitats due to conversion to cropland, energy development, and urban development
30 (NatureServe 2012). Potential threats that may be associated with ULP activities include direct
31 habitat loss, fragmentation, and degradation as well as direct disturbance of nests or leks. Mining
32 may directly alter sagebrush habitat distribution and quality, as a result of the development of
33 mining pits, mining infrastructure, access roads, and overburden placement in sagebrush habitats.
34 Fragmentation of these habitats could force sage-grouse to choose less optimal habitats. The
35 construction of any substantial structure or road, as well as the use of access roads, can cause the
36 increased deposition of dust on plants and the invasion of non-native plants, potentially affecting
37 the abundance and quality of sagebrush. Increased noise and traffic from human presence may
38 also lead to a disruption of normal grouse behavior and productivity (Gunnison Sage-Grouse
39 Rangewide Steering Committee 2005). Other threats include fencing (increases mortality
40 because birds can collide with it and it increases the number of perch sites for nest predators),
41 fires (increases weeds and degrades suitable habitat), and domestic grazing (changes plant
42 communities and soils) (USFWS 2010b).

43
44 According to the CNHP, the nearest recorded occurrences of the Gunnison sage-grouse
45 are from San Miguel County, Colorado, approximately 5 mi (8 km) southeast of the Paradox
46 lease tracts (Lease Tract 17). According to the SWReGAP habitat suitability model, potentially

ULP Final Biological Assessment

May 2013

1 suitable habitat for the Gunnison sage-grouse may occur on or in the vicinity of all ULP lease
2 tracts; however, none of the ULP lease tracts intersect the current range of this species
3 (Figure 3-4). According to range data provided by the CPW Natural Diversity Information
4 Source (CPW 2011), the Paradox lease tracts (5A, 6, 7, 8, 8A, 9, and 17) occur as near as 168 ft
5 (51 m) from the current Gunnison sage-grouse range in the Dry Creek Basin. Portions of the
6 species' current range occur adjacent to several Paradox lease tracts (Figure 3-4). Because the
7 species' current range does not intersect any of the lease tract areas, ULP activities are unlikely
8 to directly affect this species. Impacts on this species from ULP activities may still occur in the
9 form of indirect effects or impacts on potentially suitable unoccupied habitat. However, it has
10 been determined that with the implementation of all mitigation measures and BMPs identified in
11 Table 2-5, uranium mining under the ULP **may affect, but is not likely to adversely affect**, the
12 Gunnison sage-grouse.

13

14

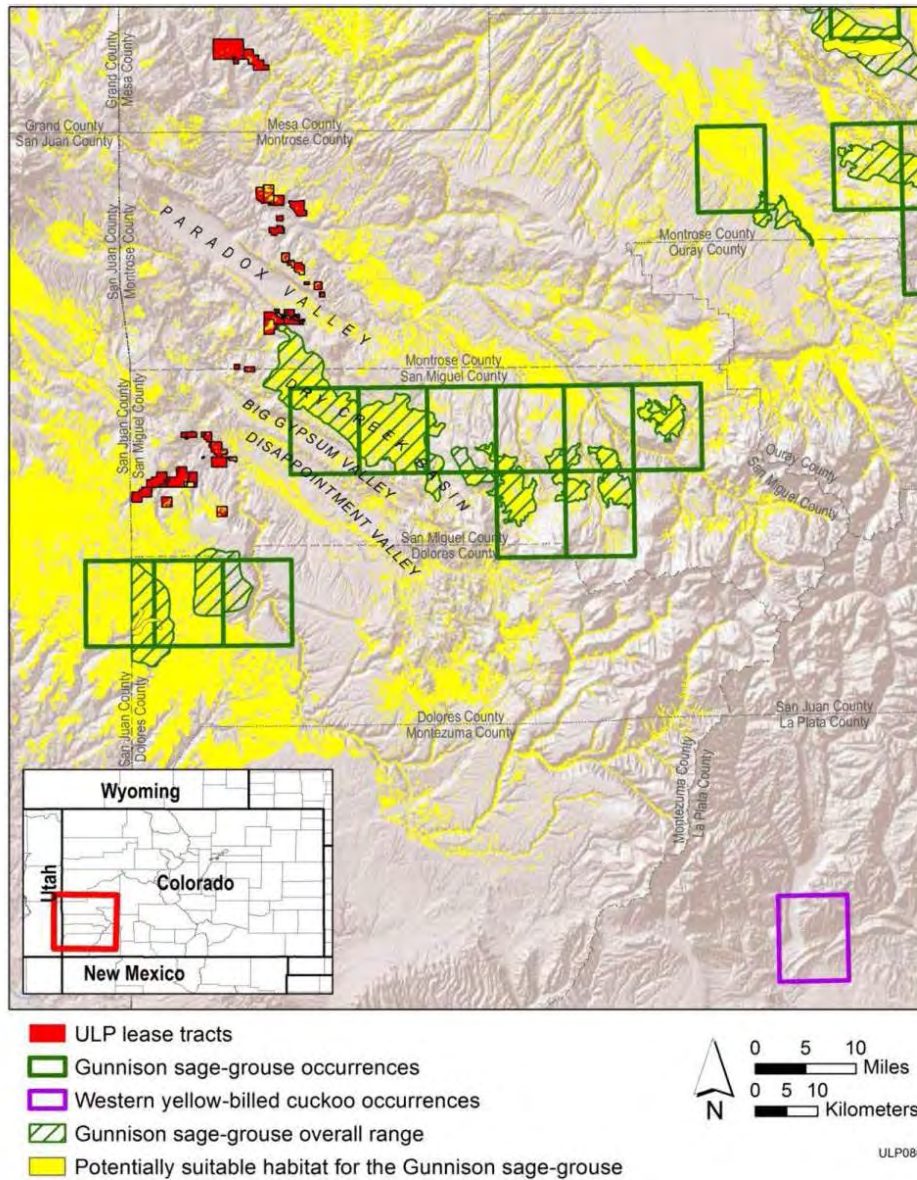
15 **3.2.1.4.2 Mexican Spotted Owl.** The Mexican spotted owl (*Strix occidentalis lucida*) is
16 one of three subspecies of the spotted owl (*S. occidentalis*) (USFWS 2011g). They are medium-
17 sized owls without ear tufts (USFWS 2011g). They have dark eyes and an ashy-chestnut brown
18 body with white and brown spots on their abdomen, back, and head (USFWS 2011h). Wing and
19 tail feathers are dark brown with lighter brown and white bars (USFWS 2011g). Owls younger
20 than 5 months old have a downy appearance. Subadults (5 to 26 months old) look like adults but
21 have pointed tail feathers with a white terminal band. Adult tail feathers have rounded tips, and
22 the terminal band is mottled brown and white (USFWS 2011g). Females are generally larger
23 than males (USFWS 2011h). Most Mexican spotted owls are nonmigratory, but some individuals
24 migrate to lower elevations during the winter (USFWS 2011g). The diet of Mexican spotted owls
25 consists mainly of small and medium-sized rodents, but they also consume bats, birds, reptiles,
26 and arthropods (USFWS 2011g).

27

28 Habitat requirements of the Mexican spotted owl include forested mountains and
29 canyonlands. Forests used by the Mexican spotted owl are generally uneven-aged, are
30 multistoried, and have high canopy cover. Larger trees (with an average diameter of 24 in.
31 [61 cm]) are usually chosen for nesting sites. In canyon lands, important features for the Mexican
32 spotted owl include steep canyon walls with isolated pinnacles and rims with large vertical cliffs.
33 The canyon habitats also often include a variety of desert scrub and riparian vegetation
34 communities. Cliff faces contain numerous caves and ledges that create protected microsites for
35 nesting and roosting (USFWS 2011g). Foraging occurs in a wide range of habitats, including
36 managed and unmanaged forests, pinyon-juniper woodlands, mixed-conifer and ponderosa pine
37 forests, cliff faces and terraces between cliffs, and riparian zones.

38

39 Mexican spotted owls rely on existing structures for nesting (e.g., nests built by other
40 birds on cliffs, debris platforms in trees, and tree cavities). Courtship begins in March; females
41 lay 1 to 3 eggs in late March or early April; and incubation lasts about 30 days (USFWS 2011g).
42 The current range of the Mexican spotted owl is nearly the same as the historical range and is
43 estimated to include 7,720 to 965,250 mi² (20,000 to 2,500,000 km²) across Utah, Colorado,
44 Arizona, New Mexico, and the western portions of Texas, and several states in Mexico
45 (NatureServe 2012; USFWS 2011g).



1

2 **FIGURE 3-4 Recorded Quad-Level Occurrences and Distribution of Potentially Suitable**
 3 **Habitat for the Gunnison Sage-Grouse and Western Yellow-Billed Cuckoo in the Vicinity of the**
 4 **ULP Lease Tracts**

5

1 The Mexican spotted owl has experienced a long-term population decline of 30–50%
2 (NatureServe 2012). Currently, 1,301 owl sites (used repeatedly by a single or a pair of owls for
3 nesting, roosting, or foraging) are known in the U.S. portion of the owl's range (USFWS 2011g).
4 The current population size is estimated to be 1,000 to 2,500 individuals. A little more than half
5 of the U.S. population occurs in the Upper Gila Mountains Recovery Unit in Arizona and New
6 Mexico. Many populations occur in isolated mountain ranges separated by large areas of
7 unforested land (NatureServe 2012).

8
9 The Mexican spotted owl was listed as threatened on March 16, 1993 (USFWS 1993).
10 A draft recovery plan was made available for comment on June 28, 2011 (USFWS 2011g).
11 Approximately 7,239 mi² (18,749 km²) of critical habitat was designated in Arizona, Colorado,
12 New Mexico, and Utah on June 6, 1995. The designated critical habitat was changed first on
13 February 1, 2001 (USFWS 2001a), and again on August 31, 2004 (USFWS 2004). Currently,
14 critical habitat includes approximately 13,514 mi² (35,000 km²) of habitat in Arizona, Colorado,
15 New Mexico, and Utah (USFWS 2004).

16
17 The greatest threat to the Mexican spotted owl has been loss of habitat due to even-aged
18 timber management (NatureServe 2012). Potential threats that may be associated with ULP
19 activities include increased mortality, loss or fragmentation of habitat, and a decreased ability to
20 hunt. Increased vehicle traffic associated with mining operations could increase the number of
21 owls killed as a result of collisions with vehicles. The construction of mining facilities and access
22 roads could remove or fragment Mexican spotted owl habitat. Recent research on acoustic
23 predators (bats and owls) shows that even low levels of traffic noise mask the rustling sounds of
24 rodents and reduce the ability of the predators to hear them. The noise of the mine operations
25 may have a similar effect and prevent the owls from catching prey (Leyda 2011). Other threats
26 include forest fires, predation, starvation, disease, and parasites (USFWS 2011g).

27
28 According to the CNHP, the nearest recorded occurrences of the Mexican spotted owl are
29 from southern San Miguel County, Colorado. This quad-level occurrence intersects ULP Lease
30 Tract 12. According to the SWReGAP habitat suitability model, potentially suitable habitat for
31 this species may occur on and in the vicinity of all ULP lease tracts. However, this habitat is
32 represented by migratory habitat as no suitable canyonlands and old growth forests occur on the
33 lease tracts. Designated critical habitat for the Mexican spotted owl does not occur in the vicinity
34 of the ULP lease tracts. However, designated critical habitat does occur in San Juan County,
35 Utah, as close as 28 mi (45 km) west of the ULP lease tracts (Figure 3-5).

36
37 Mining activities under the ULP have the potential to affect the Mexican spotted owl and
38 potentially suitable habitat for the Mexican spotted owl (Table 3-1; Figure 3-5). However, it has
39 been determined that with the implementation of all mitigation measures and BMPs identified in
40 Table 2-5, uranium mining under the ULP **may affect, but is not likely to adversely affect,**
41 populations of the Mexican spotted owl. Uranium mining under the ULP is determined to have
42 **no effect** on designated critical habitat for the Mexican spotted owl.

43
44
45 **3.2.1.4.3 Southwestern Willow Flycatcher.** The southwestern willow flycatcher
46 (*Empidonax traillii extimus*) is one of four willow flycatcher subspecies (*E. traillii*). This

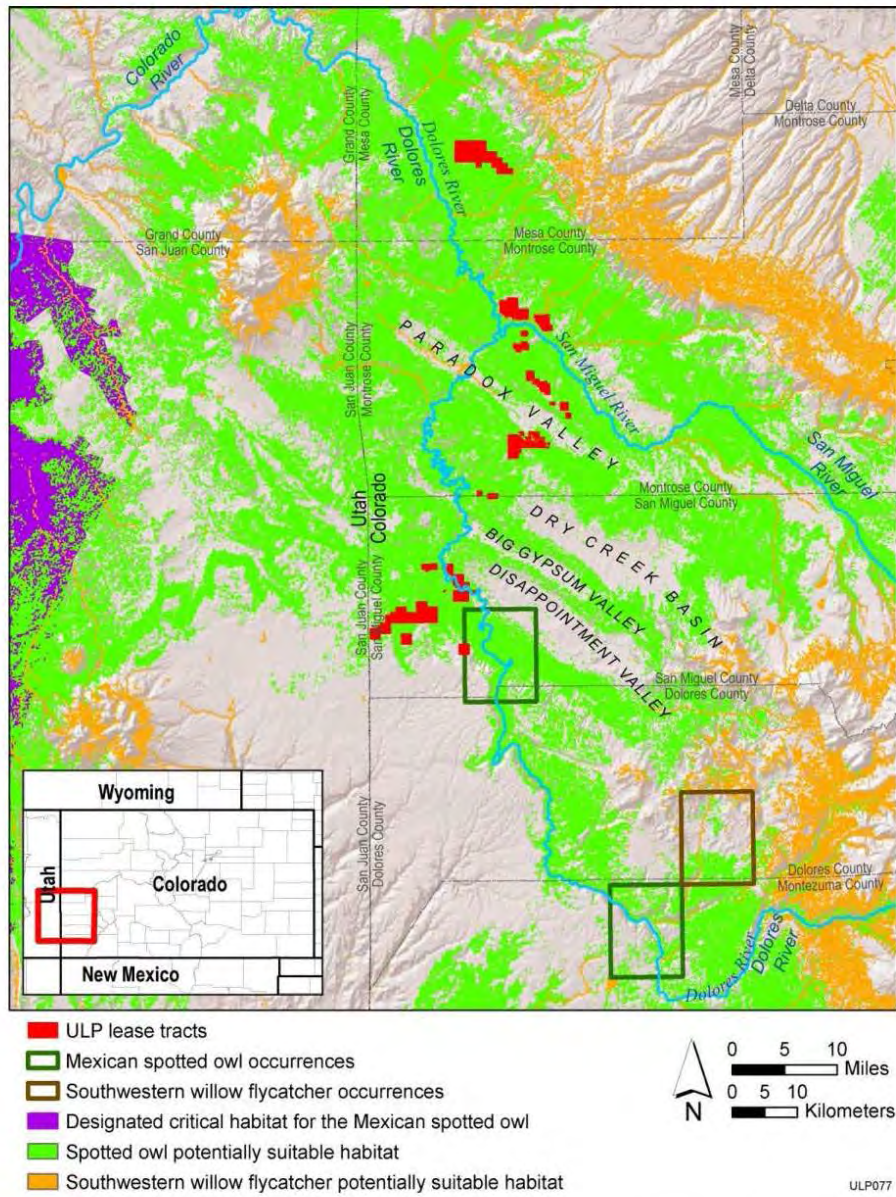


FIGURE 3-5 Recorded Quad-Level Occurrences and Distribution of Potentially Suitable Habitat for the Mexican Spotted Owl and Southwestern Willow Flycatcher, and Locations of Designated Critical Habitat for the Mexican Spotted Owl, in the Vicinity of the ULP Lease Tracts

ULP Final Biological Assessment

May 2013

1 subspecies is distinguished by subtle differences in color, morphology, and habitat use
2 (USFWS 2002e). The southwestern willow flycatcher is less than 6 in. (15 cm) in length, weighs
3 about 0.4 oz (12 g), and has a brownish-olive body, whitish throat, pale olive breast, pale yellow
4 belly, and two light wing bars (USFWS 2002e, 2011i; NatureServe 2012). The bill is depressed
5 and wide at the base (NatureServe 2012). The flycatchers mainly eat insects, including wasps,
6 bees, moths, caterpillars, and butterflies; sometimes they eat berries as well (NatureServe 2012).

7
8 The southwestern willow flycatcher is a neotropical migrant that travels from
9 breeding grounds in the United States to wintering grounds in Central and South America
10 (USFWS 2005a). Essential habitat includes forested wetlands or scrub-shrub wetlands for
11 breeding, foraging, migrating stopovers, dispersing, and shelter (USFWS 2005a). The flycatchers
12 breed in southern California, southern Nevada, southern Utah, southern Colorado, Arizona, and
13 New Mexico from sea level to around 8,000 ft (2,438 m) above sea level. Nesting occurs
14 primarily in dense, swampy thickets of willow, buttonbush, tamarisk, vines, or other plants from
15 6.5 to 98 ft (2 to 30 m) in height (NatureServe 2012; USFWS 2005a). Nesting has been observed
16 in patches ranging from 0.2 to 173 acres (0.2 to 70 ha) (USFWS 2005a). Nesting occurs from
17 early June through the end of July. The clutch size is usually three or four, and both parents take
18 care of the young (NatureServe 2012).

19
20 The current range of the southwestern willow flycatcher is similar to the historical range,
21 but suitable habitat within that range has been greatly reduced (USFWS 2002e). The current
22 range is estimated to be 7,700 to 965,250 mi² (20,000 to 2,500,000 km²), and the population is
23 found in relatively small, isolated, widely dispersed locales (NatureServe 2012). In 2000, 53% of
24 the southwestern willow flycatchers were distributed across only 10 sites (USFWS 2002e). The
25 population has experienced a long-term decline of 30–50%, and it is estimated to consist of
26 between 1,200 and 1,300 pairs (NatureServe 2012).

27
28 The southwestern willow flycatcher was listed as an endangered species on March 29,
29 1995 (USFWS 2002e). A recovery plan was approved on August 30, 2002 (USFWS 2002e).
30 Approximately 603 river mi (964 river km) were designated as critical habitat for the
31 southwestern willow flycatcher on July 22, 1997 (USFWS 1997). On October 19, 2005, the
32 designated critical habitat was amended to include a total of 741 mi (1,186 km) of critical habitat
33 (USFWS 2005a). The currently designated critical habitat includes portions of Arizona,
34 California, Nevada, New Mexico, and Utah. On August 8, 2011, the USFWS proposed to revise
35 critical habitat for the species to include a total of 2,090 mi (3,364 km) of critical habitat in the
36 states of Arizona, California, Colorado, Nevada, New Mexico, and Utah. The currently
37 designated and the proposed critical habitat for the southwestern willow flycatcher does not
38 occur in the vicinity of the ULP lease tracts.

39
40 The greatest threat to the southwestern willow flycatcher is loss or degradation of riparian
41 habitat (USFWS 2002e). Potential threats to the southwestern willow flycatcher that may be
42 associated with ULP activities include habitat loss or degradation associated with facility
43 construction and operations, impacts on riparian habitats associated with project-related water
44 withdrawals from the Upper Colorado River Basin, and increased human presence. Direct habitat
45 loss might result from the construction of mining facilities and access roads. Water withdrawals
46 from surface water or groundwater sources to support mining activities might affect riparian

ULP Final Biological Assessment

May 2013

1 habitats for the southwestern willow flycatcher. Human disturbances at nesting sites due to
2 human presence or traffic noise may result in nest abandonment (USFWS 2011i). Additional
3 threats include fire, livestock grazing, and brood parasitism by the brown-headed cowbird
4 (USFWS 2002e).

5
6 According to the CNHP, the nearest recorded occurrences of the southwestern willow
7 flycatcher are from southern Dolores County, Colorado, approximately 35 mi (56 km) southeast
8 of the ULP lease tracts (Figure 3-5). Although the SWReGAP habitat suitability model predicted
9 potentially suitable habitat for this species in the vicinity of all ULP lease tracts, particularly
10 along the Dolores and San Miguel Rivers (Figure 3-5), suitable habitat is unlikely to occur in the
11 vicinity of the lease tracts as the species has not been observed in the vicinity of these areas.
12 Neither designated nor proposed critical habitat for the southwestern willow flycatcher occurs in
13 the vicinity of the ULP lease tracts.

14
15 Mining activities under the ULP have the potential to affect the southwestern willow
16 flycatcher and potentially suitable habitat for it (Table 3-1; Figure 3-5). However, it has been
17 determined that with the implementation of all mitigation measures and BMPs identified in
18 Table 2-5, uranium mining under the ULP **may affect, but is not likely to adversely affect,**
19 populations of the southwestern willow flycatcher. Uranium mining under the ULP is determined
20 to have **no effect** on designated or proposed critical habitat for the southwestern willow
21 flycatcher.

22 23 24 **3.2.1.5 Mammals**

25
26
27 **3.2.1.5.1 Black-Footed Ferret.** The black-footed ferret (*Mustela nigripes*) is the only
28 ferret species native to North America. It is brownish in color with a slightly paler belly, and its
29 face mask, legs, and the tip of its tail are black (NatureServe 2012; USFWS 2003). It is about
30 24 in. (60 cm) in length and weighs up to 2.4 lb (1.1 kg) (USFWS 2003). In captivity, the black-
31 footed ferret reproduces in March and early April, and the gestation period is around 45 days.
32 The average litter size is 3.5, and young disperse in the fall. Some females can reproduce as
33 yearlings. Black-footed ferrets are nocturnal and can remain inactive for up to 6 days during the
34 winter. Their main food item is prairie dogs, but ground squirrels, rabbits, deer mice, voles,
35 pocket gophers, birds, and insects are also sometimes consumed (NatureServe 2012;
36 USFWS 1988).

37
38 Historically, the black-footed ferret range extended throughout Arizona, Colorado,
39 Kansas, Montana, Nebraska, New Mexico, North Dakota, Oklahoma, South Dakota, Texas,
40 Utah, Wyoming, Alberta, and Saskatchewan. The current range is estimated to be between
41 39 and 97 mi² (100 and 250 km²) (NatureServe 2012). The black-footed ferret relies on prairie
42 dog colonies for food, shelter, and denning and has only been found in the vicinity of colonies of
43 black-tailed prairie dogs, white-tailed prairie dogs, and Gunnison's prairie dogs (USFWS 2003).
44 Black-footed ferret habitat is the same habitat as that used by prairie dogs and includes
45 grasslands, steppe, and shrub steppe. Prairie dog holes serve as resting and birth sites. Between

ULP Final Biological Assessment

May 2013

1 99 and 148 acres (40 and 60 ha) of prairie dog colony are needed to support one ferret
2 (NatureServe 2012).

3
4 By the early 1970s, the black-footed ferret was near extinction due to the intentional
5 poisoning of and introduction of disease to prairie dogs (USFWS 2003). Remaining ferrets are
6 used for captive breeding, and a few reintroductions have successfully established reproducing
7 populations (NatureServe 2012). The population size is now estimated to be between 250 and
8 1,000 individuals. As of 2005, approximately 400 reintroduced individuals are alive in the wild
9 (NatureServe 2012).

10
11 The black-footed ferret was listed as an endangered species on March 11, 1967
12 (USFWS 1988). A recovery plan was approved on August 8, 1988 (USFWS 1988). The species
13 may be extirpated from the state of Colorado, with the exception of reintroduced populations in
14 the northwestern portion of the state (CPW 2012; USFWS 2012c). Black-footed ferrets were
15 released in the Wolf Creek Management Area in Moffat and Rio Blanco Counties, Colorado,
16 between 2001 and 2006 (BLM 2008a). These populations are considered to be experimental,
17 nonessential populations under Section 10(j) of the ESA. It is unlikely that these experimental
18 nonessential populations will occur in the affected area of the ULP lease tracts. The area of
19 western Colorado containing the ULP lease tracts has not been block-cleared for black-footed
20 ferrets (USFWS 2009h). If populations do occur in the vicinity of the ULP lease tracts, however,
21 they will be considered as an endangered population under the ESA.

22
23 Primary threats to the black-footed ferret include prairie dog poisoning and shooting,
24 canine distemper, sylvatic plague, and predation (USFWS 1988). Potential threats to black-
25 footed ferrets or their potential habitat that may be associated with ULP activities include
26 increased mortality due to collisions with vehicles and loss of habitat due to the construction
27 of mining facilities and access roads.

28
29 Although the area surrounding the ULP lease tracts has not been cleared for black-footed
30 ferrets, the species is presumably extirpated from the region. It is unlikely for populations
31 (endangered or experimental, nonessential) of black-footed ferrets to occur in the affected area of
32 the ULP lease tracts. For this reason, it has been determined that uranium mining under the ULP
33 will have **no effect** on the black-footed ferret.

34
35
36 **3.2.1.5.2 Canada Lynx.** The Canada lynx (*Lynx canadensis*) is a medium-sized cat
37 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
38 large feet, long legs, tufts on its ears, and a short, black-tipped tail. During the winter, the lynx's
39 fur is dense; it is grayish-brown mixed with buff or pale brown on the back and is grayish-white
40 on the belly, legs, and feet. During the summer, its fur is more reddish to gray-brown
41 (USFWS 2011k). Canada lynx prey on snowshoe hares, but if hare densities are low, they prey
42 opportunistically on other small mammals (e.g., red squirrels, flying squirrels, ground squirrels,
43 porcupines, beavers, mice, voles, shrews), birds, and fish (USFWS 2009f, 2011k). Home ranges
44 are generally between 12 and 83 mi² (31 and 216 km²) (USFWS 2009f). Breeding occurs in
45 March and April for yearling females; litter sizes average three to four kittens. The male does not
46 help with rearing the young (NatureServe 2012).

ULP Final Biological Assessment

May 2013

1 Habitat requirements of the Canada lynx include boreal forests, deciduous temperate
2 forests, and subalpine forests that experience cold winters with deep, fluffy snow for extended
3 periods. Hunting occurs in forests with dense understories. Denning occurs in forests where
4 woody debris, such as logs and windfalls, provides protection for kittens (USFWS 2009f). The
5 lynx density is lower in the contiguous United States than in Canada because of a smaller and
6 patchier habitat range and an increased rate of competition for food (USFWS 2009f). Canada
7 lynx in the contiguous United States occur in forested portions of Colorado, Idaho, Maine,
8 Michigan, Minnesota, Montana, New Hampshire, New York, Oregon, Utah, Vermont,
9 Washington, and Wisconsin. A lack of historic or current data on lynx in the contiguous United
10 States makes it difficult to determine population estimates or trends for this region; however, the
11 population is estimated to be fewer than 2,000 individuals (USFWS 2000; NatureServe 2012).
12 The Canada lynx's current range (including Alaska and Canada) is estimated to be greater than
13 965,250 mi² (2,500,000 km²) (NatureServe 2012).

14
15 The Canada lynx was listed as threatened on March 24, 2000 (USFWS 2000). On
16 December 17, 2009, it became a candidate for federal listing in New Mexico; it was given a
17 listing priority number of 12 because Canada lynxes regularly and frequently cross the state
18 boundary between Colorado and New Mexico, which leaves them without federal protection in
19 New Mexico (USFWS 2009g). A recovery plan for this species was outlined on September 14,
20 2005 (USFWS 2005b). On November 9, 2006, approximately 1,841 mi² (4,768 km²) of habitat
21 was designated as critical habitat for the Canada lynx (USFWS 2006b). On February 25, 2009,
22 additional critical habitat was designated, bringing the total designated critical habitat to
23 39,000 mi² (101,010 km²) in Maine, Minnesota, Montana, Wyoming, Idaho, and Washington
24 (USFWS 2009f).

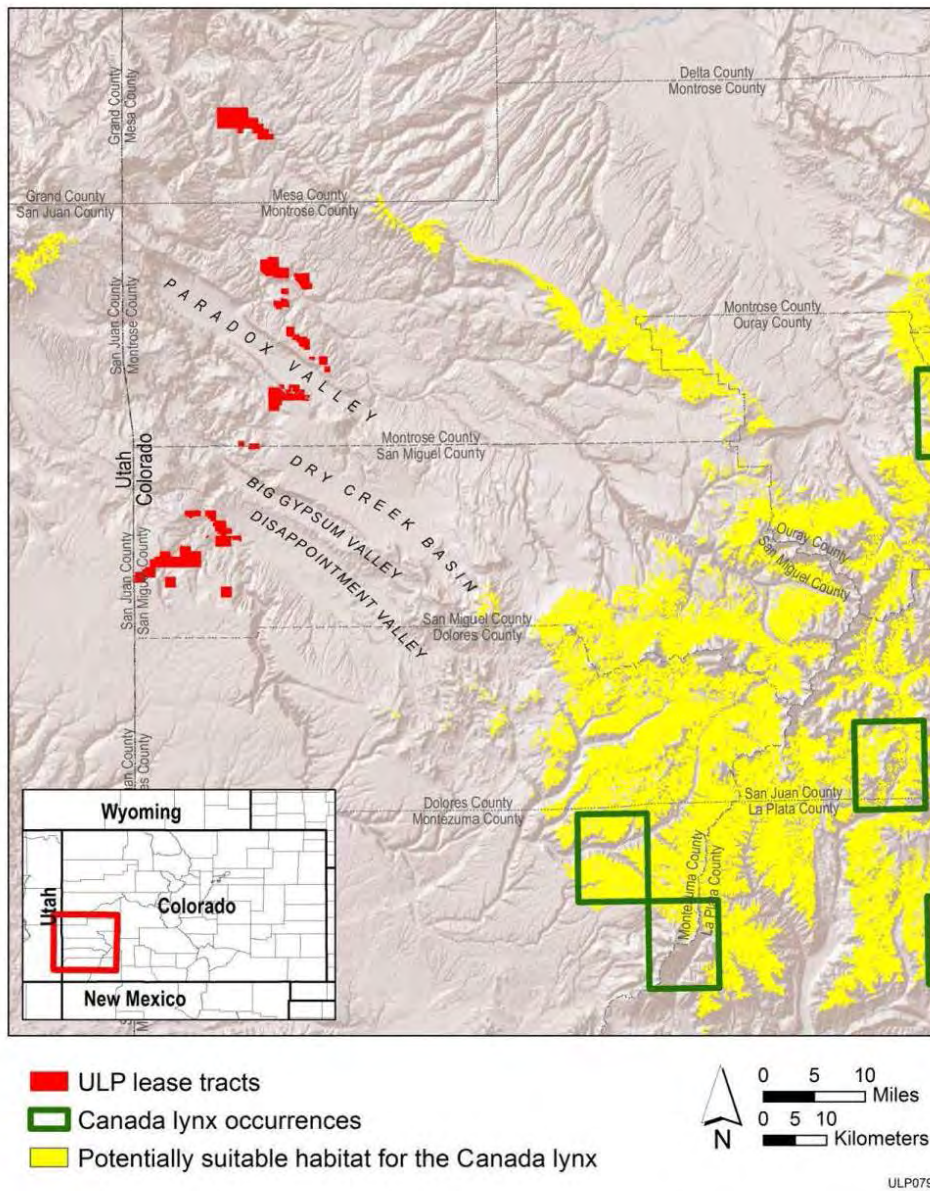
25
26 According to the CNHP, the nearest recorded occurrences of the Canada lynx are from
27 Montezuma County, Colorado, approximately 35 mi (56 km) southeast of the ULP lease tracts.
28 According to the SWReGAP habitat suitability model, potentially suitable habitat for the Canada
29 lynx does not occur in the vicinity of the ULP lease tracts (Figure 3-6). Designated critical
30 habitat for the Canada lynx does not occur in the vicinity of the ULP lease tracts. Given the
31 species' preference for high-elevation coniferous forests, it is unlikely that the Canada lynx will
32 occur in the affected area of the ULP lease tracts. For this reason, uranium mining under the ULP
33 will have **no effect** on the Canada lynx or its critical habitat.

34
35

36 3.2.2 Candidate Species

37
38 Three species that are candidates for listing under the ESA have the potential to occur in
39 the ULP counties evaluated in this BA. These species include one bird species, the western
40 yellow-billed cuckoo, and two mammals, Gunnison's prairie dog and the North American
41 wolverine. These species are discussed below. A summary of the effect determinations for these
42 species is provided in Table 3-3.

43
44



1
2
3
4

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

1 **3.2.2.1 Birds**

2

3

4

5 **3.2.2.1.1 Western Yellow-Billed Cuckoo.** The western yellow-billed cuckoo (*Coccyzus*
6 *americanus occidentalis*) is one of two subspecies of yellow-billed cuckoo (*C. americanus*). The
7 western population of this species occurs in Washington, Oregon, California, Idaho, Nevada,
8 Montana, Wyoming, Utah, Arizona, Colorado, New Mexico, Texas, British Columbia, and
9 Mexico. The western yellow-billed cuckoo is around 12 in. (31 cm) in length, with a slender,
10 long-tailed profile (USFWS 2009e). It is brownish above and white below, with rusty colored
11 flight feathers. The upper mandible of the bill is black, and the lower mandible is yellow. The
12 underside of the tail has pairs of large white spots (USFWS 2011j).

13

14 Breeding habitat for the western yellow-billed cuckoo consists of large tracts of
15 deciduous riparian woodland, especially dense stands of cottonwood and willow; it can also
16 include mesquite and salt-cedar in some areas. Nests are placed in dense covers of trees, shrubs,
17 or vines; near water; and generally 5 to 42.5 ft (1.5 to 13 m) above the ground. Dense understory
18 foliage appears to be an important factor in nest-site selection, while cottonwood trees are an
19 important foraging habitat (USFWS 2009e). Nonbreeding habitats include various types of
20 forest, woodland, and scrub (NatureServe 2012).

21

22 The western yellow-billed cuckoo arrives on breeding grounds in the United States from
23 late May to June and begins fall migration to South America from August to late September
24 (Wiggins 2005). While courting, males will often carry a food item to offer the females during
25 copulation (Wiggins 2005). Clutch size varies from one to five eggs, and both parents build the
26 nest, incubate the eggs, and feed the young. They feed primarily on slow-moving insects,
27 including grasshoppers, caterpillars, and beetles (Wiggins 2005).

28

29 The western yellow-billed cuckoo historically bred throughout most of western North
30 America, but it is now extirpated in western Canada, Washington, and Oregon and is rare and
31 patchily distributed throughout most of the United States west of the Rocky Mountains. In
32 western Colorado, the western yellow-billed cuckoo, which was never common in that area,
33 appears to be disappearing (Wiggins 2005). It is estimated that there could be fewer than
34 2,000 breeding pairs across the entire range of the western yellow-billed cuckoo. It is estimated
35 that this breeding population has declined by at least 90% since the end of the 19th century
36 (NatureServe 2012).

37

38 The western yellow-billed cuckoo became a candidate for federal listing on October 30,
39 2001 (USFWS 2001b). The listing of this species was determined to be warranted but was
40 precluded by higher-priority listing actions. The USFWS assigned a listing priority number of 3.

41

42 Primary threats include use of pesticides and loss or degradation of habitat due to
43 agriculture, grazing, encroachment of invasive riparian plant species, and river management
44 (USFWS 2001b). Potential threats to the western yellow-billed cuckoo that may be associated
45 with mining activities include loss or fragmentation of breeding habitat due to construction of
46 facilities or roads, noise disturbances, and impacts on riparian habitat from runoff, sedimentation,
or water withdrawals.

1 According to the CNHP, the nearest recorded occurrences of the western yellow-billed
2 cuckoo are from La Plata County, Colorado, approximately 50 mi (80 km) southeast of the
3 southernmost ULP lease tracts (Figure 3-4). However, according to the CPW (2012), the species
4 is known to occur in Mesa and Montrose Counties, Colorado, as a breeding resident. According
5 to the SWReGAP habitat suitability model, potentially suitable habitat for this species does not
6 occur in the vicinity of any ULP lease tracts. However, it is possible for the species to occur
7 either as a transient or a breeding resident in riparian habitats along the Dolores and San Miguel
8 Rivers in the vicinity of the ULP lease tracts, especially where cottonwood and willow stands are
9 present. Activities associated with the ULP are not likely to directly affect the western yellow-
10 billed cuckoo because direct impacts on this species and its habitat (riparian habitats) will be
11 avoided. It has been determined that with the implementation of all mitigation measures and
12 BMPs identified in Table 2-5, uranium mining under the ULP **may affect, but is not likely to**
13 **adversely affect**, the western yellow-billed cuckoo.

14
15

16 3.2.2.2 Mammals

17
18

19 **3.2.2.2.1 Gunnison's Prairie Dog.** The Gunnison's prairie dog (*Cynomys gunnisoni*) is
20 a large rodent that occurs from central Colorado to central Arizona, including small portions of
21 northwest New Mexico and southeastern Utah. The species is divided into montane and prairie
22 populations, which are separated by mountain ranges that almost completely limit prairie dog
23 movement between populations. Genetic testing is currently being conducted to determine
24 whether montane and prairie Gunnison's prairie dogs are populations or subspecies
25 (USFWS 2011). The Gunnison's prairie dog is darker overall and has less striking facial
26 markings than the white-tailed prairie dog. It reaches a length of 11.8 to 15.4 in. (30 to 39 cm)
27 and a weight of 0.6 to 3 lb (0.3 to 1.4 kg) (Seglund and Schnurr 2010). Females reproduce as
28 yearlings, while only a quarter of males reproduce as yearlings (NatureServe 2012). Polygamous
29 mating usually occurs in April and May, and one litter with an average size of six individuals
30 is produced per year (USFWS 2011; Seglund and Schnurr 2010). Colonies consist of 50 to
31 100 individuals. Only 50% of females survive their first year, and less than 15% survive to their
32 second year. Their diet consists mainly of grasses, forbs, sedges, and shrubs, but insects are also
33 consumed. Prairie dogs can exhibit months of inactivity during winter, and individuals in some
34 parts of the range hibernate (NatureServe 2012).

35

36 Habitat requirements for the Gunnison's prairie dog include level to gently sloping (less
37 than 30%) grasslands and semi-desert or montane shrublands at elevations of 6,000 to 12,000 ft
38 (1,830 to 3,660 m) in high mountain valleys and plateaus. Burrows require well-drained soils and
39 are usually found on slopes or in hummocks (Seglund and Schnurr 2010; USFWS 2011). The
40 montane portion of their habitat accounts for about 40% of the total potential habitat
41 (USFWS 2008a).

42

43 The Gunnison's prairie dog has experienced a long-term population decline of 30% to
44 70% rangewide. Its current distribution is estimated to be between 100 and 8,000 mi² (260 and
45 20,700 km²) in Arizona, Colorado, New Mexico, and Utah (USFWS 2011). From 1916 to 2008,
46 the habitat occupied by the Gunnison's prairie dog declined from 37,450 mi² (97,000 km²) to

ULP Final Biological Assessment

May 2013

1 525–772 mi² (1,360–2,000 km²). Only 3.6% of potential habitat is occupied in the montane
2 portion of the range. The montane population of prairie dogs no longer has the metapopulation
3 structure necessary to recover from catastrophic events because of its small size and its isolation
4 in montane habitats (USFWS 2011). The current total population size for prairie and montane
5 populations is estimated to be between 100,000 and 1,000,000 (NatureServe 2012).
6

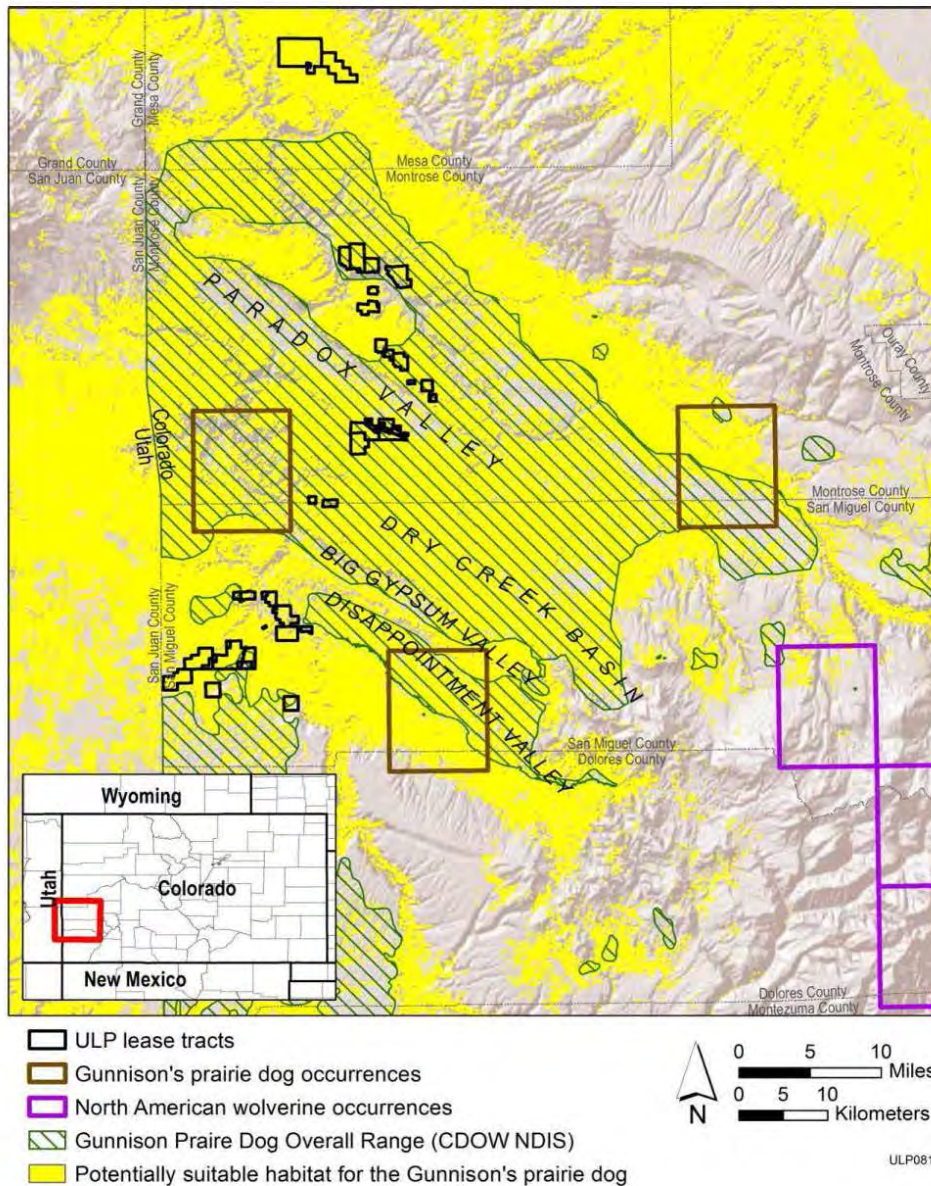
7 The Gunnison's prairie dog became a candidate for federal listing on February 5, 2008
8 (USFWS 2008a). The listing of this species was determined to be warranted but was precluded
9 by higher-priority listing actions. The USFWS originally assigned a listing priority number of
10 2 to the species because threats have a high magnitude and are imminent (USFWS 2008a). On
11 December 10, 2008, the listing priority was changed to 3 because listing of the Gunnison's
12 prairie dog is warranted but precluded only in the montane region of its range within Colorado
13 and New Mexico (USFWS 2008b).
14

15 The greatest threats to the Gunnison's prairie dog are habitat loss and fragmentation,
16 overharvesting (e.g., recreational shooting), and the spread of sylvatic plague (USFWS 2010d).
17 Potential threats to the Gunnison's prairie dog that may be associated with mining activities
18 include the construction and presence of infrastructure and traffic, which could be direct sources
19 of mortality and habitat fragmentation.
20

21 According to the CNHP, the nearest recorded occurrences of the Gunnison's prairie dog
22 is from western Montrose County, Colorado, approximately 2 mi (3 km) west of the Paradox
23 lease tracts (Figure 3-7). According to the SWReGAP habitat suitability model, potentially
24 suitable habitat for the Gunnison's prairie dog may occur on or in the vicinity of all ULP lease
25 tracts. According to range data provided by the CPW Natural Diversity Information Source
26 (CPW 2011), the current Gunnison's prairie dog range intersects or is in the vicinity of the
27 Uravan, Paradox, and Slick Rock ULP lease tracts (Figure 3-7). Activities associated with the
28 ULP could directly and indirectly affect populations of the Gunnison's prairie dog through direct
29 effects, such as mortality from vehicles and construction equipment or habitat loss and
30 fragmentation, or through indirect effects, such as noise and visual impacts on behavior and the
31 spread of diseases. However, the implementation of mitigation measures and BMPs identified in
32 Table 2-5 will reduce the potential for these impacts. For these reasons, it has been determined
33 that uranium mining under the ULP **may affect, but is not likely to adversely affect, the**
34 Gunnison's prairie dog.
35
36

37 **3.2.2.2.2 North American Wolverine.** The North American wolverine (*Gulo gulo*
38 *luscus*) is a subspecies of the wolverine (*G. gulo*), which has a holarctic range. It is the largest
39 terrestrial member of the weasel family; adult males weigh 26.5 to 40 lb (12 to 18 kg), and
40 females weigh 17.5 to 26.5 lb (8 to 12 kg). Its appearance is similar to that of a small bear; it
41 has a bushy tail; round head; short, rounded ears; small eyes; and claws used for digging and
42 climbing (USFWS 2010c). Its body is dark brown and its head is paler, and two broad yellowish
43 stripes run from its shoulders and join on the rump (NatureServe 2012).
44

45 The North American wolverine breeds at 2 years of age from late spring to early fall and
46 has an average of 3.4 kits per litter. Due to high rates of spontaneous abortion, rates of successful



1

2 **FIGURE 3-7 Recorded Quad-Level Occurrences and Distribution of Potentially Suitable Habitat**
 3 **for the Gunnison's Prairie Dog and North American Wolverine in the Vicinity of the ULP Lease**
 4 **Tracts**

5

ULP Final Biological Assessment

May 2013

1 reproduction are among the lowest for mammals. Gestation lasts 30 to 40 days. Wolverines are
2 opportunistic feeders that primarily consume carrion, but they will also eat small animals, birds,
3 fruits, berries, and insects. They naturally occur at low densities, ranging from one wolverine per
4 25 mi² to one per 130 mi² (one per 65 km² to one per 337 km²) (USFWS 2010c). The home
5 range of a wolverine can range from 40 to 350 mi² (100 to 900 km²) (USFWS 2011m).
6

7 Habitat requirements for the North American wolverine include 5 ft (1.5 m) of snow to
8 excavate natal dens. Rocky sites, such as north-facing boulder talus and subalpine cirques in
9 forest openings above 8,200 ft (2,500 m), are selected for dens. Wolverines occur within a wide
10 variety of cold habitats that receive enough winter precipitation. Their range includes alpine,
11 boreal, and arctic habitats, such as boreal forests, tundra, and high-elevation alpine regions
12 (USFWS 2010c).
13

14 The North American wolverine occurs throughout Alaska, Canada, and high-elevation
15 habitats of Washington, Idaho, Montana, Wyoming, California, and Colorado. The current
16 population of North American wolverines in the contiguous United States is estimated to be
17 between 250 and 300 individuals, with the largest population occurring in the Northern Rocky
18 Mountains. It is believed that wolverines were entirely or nearly extirpated from the contiguous
19 United States in the first half of the twentieth century, and that now, functioning populations
20 have been reestablished in two regions: the North Cascades in Washington and the northern
21 Rocky Mountains in Idaho, Montana, and Wyoming. Wolverines are also present in the southern
22 Rocky Mountains and the Sierra Nevada Mountains, but reestablishment of populations has not
23 occurred in these areas yet (USFWS 2010c).
24

25 The North American wolverine became a candidate for federal listing on December 14,
26 2010 (USFWS 2010c). The listing of this species was determined to be warranted but was
27 precluded by higher-priority listing actions. The USFWS originally assigned a listing priority
28 number of 6 to the species because threats have a high magnitude but are not imminent
29 (USFWS 2011m).
30

31 The main threat to the North American wolverine is habitat loss due to climate change
32 (USFWS 2011m). Other threats include loss of habitat due to human activities, such as winter
33 and summer recreation, housing and industrial development, and extractive industries such as
34 logging (USFWS 2010c). Given the species' preference for high-elevation, forested areas, it is
35 unlikely that the North American wolverine will occur in areas of direct ULP activity.
36

37 According to the CNHP, the nearest recorded occurrences of the North American
38 wolverine are from southern San Miguel County, Colorado, approximately 35 mi (56 km) east of
39 the southernmost ULP lease tracts. According to the SWReGAP habitat suitability model,
40 potentially suitable habitat for the North American wolverine does not occur in the vicinity of the
41 ULP lease tracts (Figure 3-7). Given the species' preference for high-elevation forests, it is
42 unlikely that it will occur in the affected area of the ULP lease tracts. For this reason, it has been
43 determined that uranium mining under the ULP will have **no effect** on the North American
44 wolverine.
45

1
2
3
4
5
6
7
8
9
10
11
12
13
14
15
16
17
18
19
20
21
22
23
24
25
26
27
28
29
30
31
32
33
34
35
36
37
38
39
40
41
42
43
44
45
46

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.”

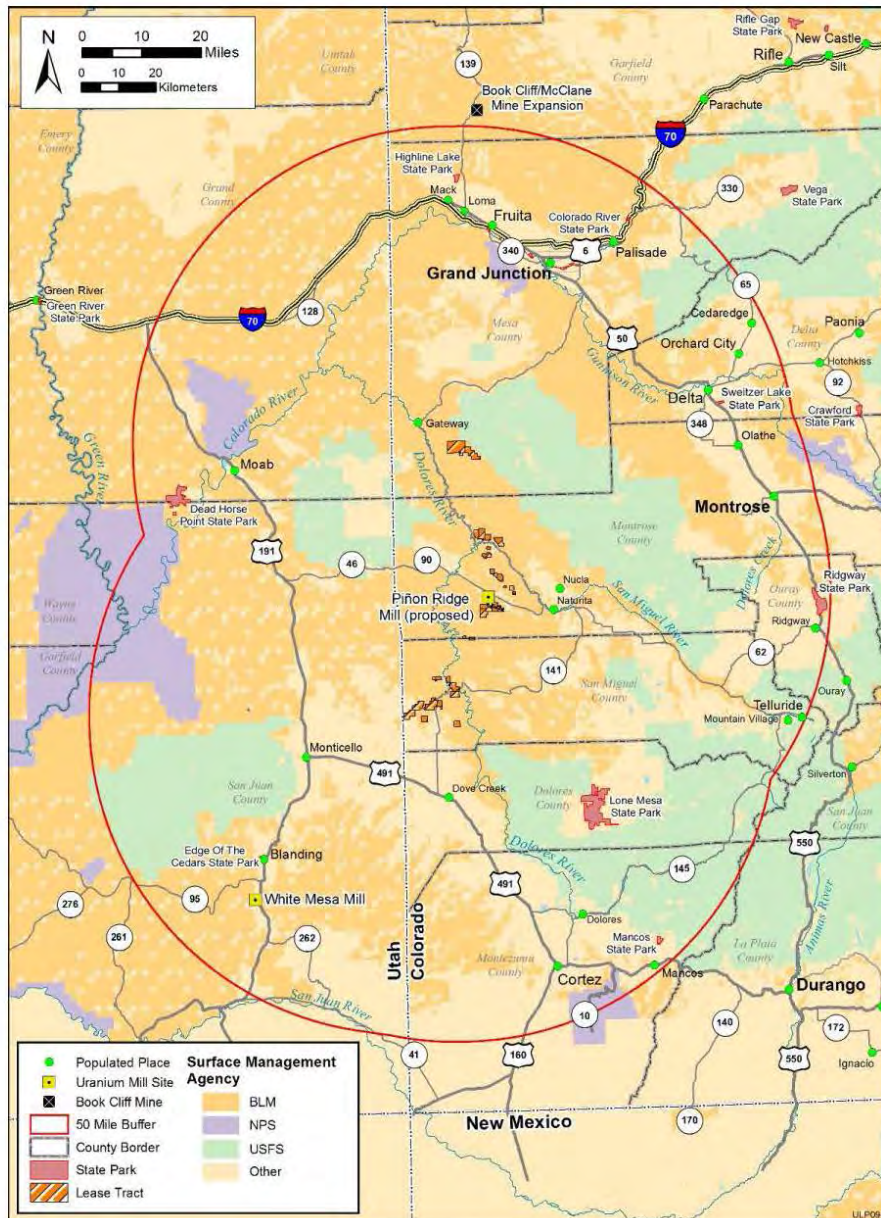
Cumulative impacts result from the incremental impact of the action when added to other past, present, and reasonably foreseeable future actions, regardless of the agency (federal or nonfederal) or person that undertakes such actions. A cumulative impacts assessment accounts for both geographic (spatial) 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 primary 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

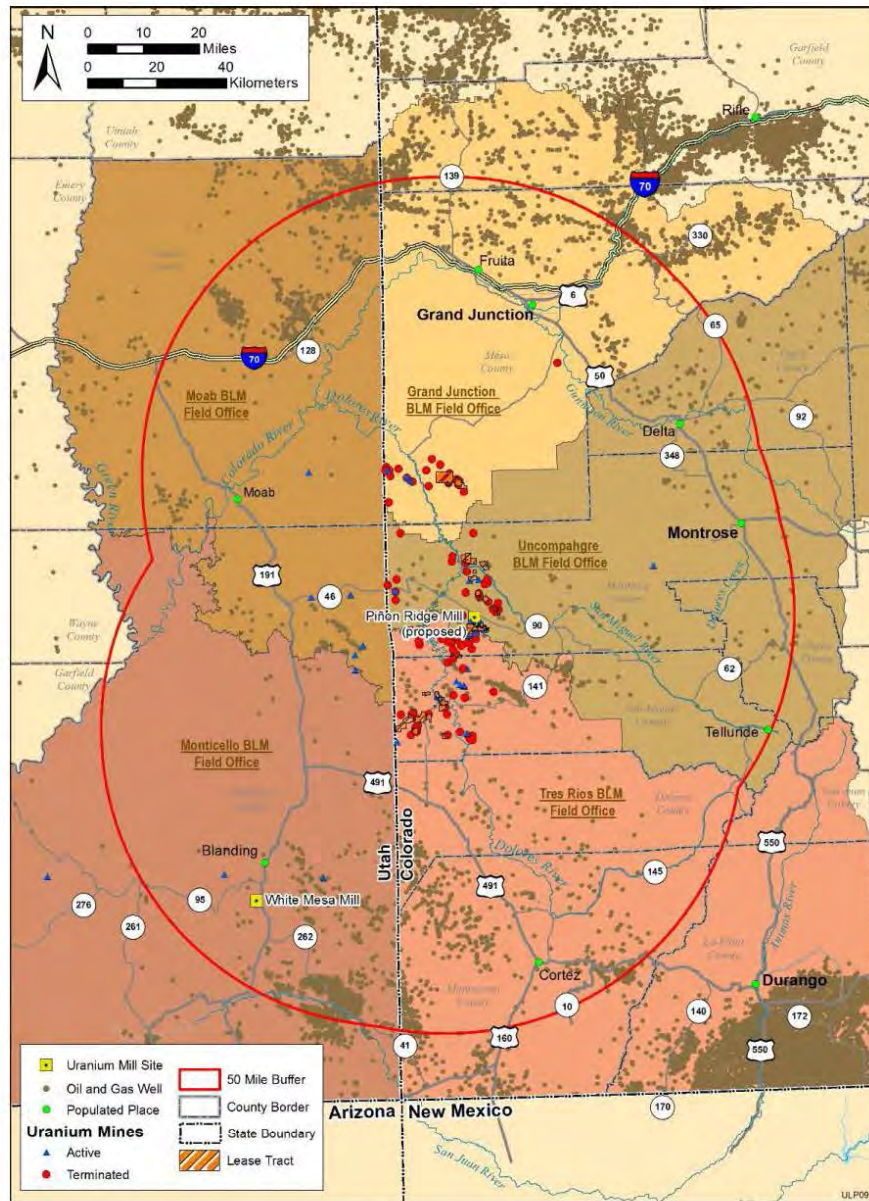
Reasonably foreseeable future actions within the region of cumulative effects are discussed in the following sections. These actions are identified primarily from a review of the Schedule of Proposed Action for the San Juan National Forest and other relevant documents and data sources (Edge Environmental, Inc. 2009; USDA 2011b, 2012a). The actions listed are planned, under construction, or ongoing.



1

2

FIGURE 4-1 Region of Cumulative Impacts for the Proposed ULP



1
2
3

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).

ULP Final Biological Assessment

May 2013

1 In general, the proposed Piñon Ridge Mill would have a negligible to minor impact on
2 federally-listed species. There were no federally listed (threatened, endangered, proposed, or
3 candidate) species observed during wildlife surveys conducted during siting characterization.
4 Four habitats of importance to area wildlife are identified on the project site, and the developer
5 (Energy Fuels Resources) has proposed offsets to the proposed impacts. Indirect impacts could
6 occur from degradation of habitat by the facility and increased traffic. Contents of evaporation
7 ponds and tailing cells could be toxic to ecological resources, especially wildlife. No
8 jurisdictional wetlands are located at the site, and no aquatic species or habitats occur at the site.
9 Indirect impacts on vegetation could occur if the project displaced native herbivores or if
10 invasive, non-native species became established in disturbed areas. Soil disturbance, vehicle
11 traffic, and other project activities could promote the spread of invasive plants. Increased traffic
12 and erection of fences would increase the potential for collisions with and mortality of terrestrial
13 wildlife and some threatened and endangered species. Radiation dose rates to plants and animals
14 in the vicinity of the facility would be below recommended limits, and exposures from inhalation
15 would be minimal. Nonradiological impacts on biota would be minimized. Impacts on
16 sagebrush-obligate species, such as the Gunnison sage-grouse, might occur; however, these
17 impacts would be minimized through the implementation of mitigation measures and BMPs
18 similar to those identified in Table 2-5.

19

20

21 **4.1.2 Planned Uranium Exploration**

22

23 Exploration for uranium typically involves the drilling of exploration holes ranging from
24 3 to 6 in. (7.6 to 15 cm) in diameter, and it is typically accompanied by the construction of mud
25 pits (to collect drill cuttings and manage drilling fluids). Monitoring wells might also be required
26 to monitor groundwater presence, quality, and depth. Surface disturbance is typically limited. As
27 noted in Sections 2.2 and 3.1.1, uranium exploration activities are generally short-term
28 (BLM 2009b) and are not expected to have significant impacts on listed species.

29

30

31 **4.1.3 Construction of Agricultural Water Facilities (Ditch Bill Easements)**

32

33 The Colorado Ditch Bill Act of 1986 (Public Law 99-545) authorizes the Secretary of
34 Agriculture to issue permanent easements for water conveyance systems used for agricultural
35 irrigation or livestock watering. Granting easements is not a USDA discretionary decision. An
36 applicant meeting the criteria specified in the act is entitled to an easement, and the decision to
37 grant it does not constitute a federal action subject to NEPA review. However, conditions of the
38 easement (including operations and maintenance) might require NEPA review (USDA 2012b).
39 Similarly, the Moab and Monticello Ditch Bills authorize easements in Utah.

40

41 A number of Ditch Bill easement applications occurring within the Grand Mesa,
42 Uncompahgre, San Juan, and Manti-La Sal National Forest administrative areas are currently in
43 the scoping process or on hold (USDA 2012a,c,d). While the granting of the easement is
44 nondiscretionary, NEPA analysis is often performed on a group of easement applications to
45 document any environmental concerns; determine whether there is a need to establish
46 discretionary terms and conditions in an operations and maintenance plan; and protect

1 threatened, endangered, and sensitive species (USDA 2011c). The type and magnitude of
2 impacts from Ditch Bill easements will depend on the location and nature of the projects. In
3 many cases, a site visit and site-specific impact analysis will be necessary. Impacts
4 representative of those that could occur as a result of the implementation of terms and conditions
5 on a Ditch Bill easement include beneficial actions to improve resource conditions and habitat in
6 easement areas (e.g., the stabilization of ground to prevent erosion and reduce sedimentation in
7 downstream habitats and the control of noxious weeds) and to protect cultural resources. The
8 establishment of an operations and maintenance plan will not result in incremental adverse
9 impacts (USDA 2009).

12 **4.1.4 Other Future Projects**

14 Other proposed or planned nonfederal activities with the potential to contribute to
15 cumulative impacts relate to utility corridors and ROW maintenance, water use and management,
16 grazing and grazing management, and wildlife management. Some of these projects may not yet
17 have a completed environmental assessment, so environmental impacts have not been quantified.

20 **4.2 PAST AND PRESENT ACTIONS**

22 Some of the activities described in this section are past actions with the potential for
23 future reactivation; they are considered a past action by default.

26 **4.2.1 White Mesa Mill**

28 The White Mesa Mill, located 6 mi (10 km) south of Blanding, Utah, is the only
29 conventional uranium mill currently operating in the United States. The mill precipitates uranium
30 oxide concentrate (yellowcake) and vanadium oxide concentrate from host rock. It is licensed to
31 process 2,000 tons of ore per day and produce 8 million lb (3.6 million kg) of uranium oxide per
32 year. The mill is also licensed to process and reclaim uranium from alternative feed materials,
33 including uranium-bearing waste materials derived from uranium conversion, metal processing
34 facilities, and U.S. government cleanup projects. The mill began processing conventional ore in
35 2011 after years of processing only alternative feeds (Denison Mines 2012a). In 2011, the mill
36 produced approximately 1.0 million lb (0.45 million kg) of uranium oxide and 1.3 million lb
37 (0.6 million kg) of vanadium oxide (Denison Mines 2012b; EIA 2010).

39 The mill was originally licensed by the Nuclear Regulatory Commission to Energy Fuels
40 Resources, Inc., on August 7, 1979 (Source Materials License SUA-1358); the license was
41 renewed in 10-year increments in 1987 and 1997. The State of Utah assumed regulatory
42 oversight in 2004, and the license was reissued in 2005. Denison Mines assumed ownership of
43 the mill in 2006, and it submitted an application in 2007 for renewal of the state license (UDEQ
44 2012; Denison Mines 2012a). Denison Mines possesses 15 license amendments allowing the mill
45 to process 18 different alternative feeds (Denison Mines 2012b). At full capacity, the mill
46 employs approximately 150 people (Denison Mines 2012a). In April 2012, Energy Fuels

ULP Final Biological Assessment

May 2013

1 Resources and Denison Mines announced that all of Denison's mining assets in the United States
2 (including the White Mesa Mill) will be acquired by Energy Fuels Resources (Energy Fuels
3 Resources 2012a-c; *Denver Post* 2012). This acquisition was completed in June 2012.

4
5 Three other uranium mills exist in the United States; all have been on standby since the
6 end of 2010 (EIA 2012).

7
8 The continued operation of the White Mesa Mill could affect ecological resources. It
9 is expected that impacts from suspended particulate matter will be negligible. Construction noise
10 and increased human activity might cause wildlife to migrate away from the project vicinity.
11 Fencing around the tailings impoundment will exclude large animals, and the acidity/salinity of
12 the water will make it unattractive for waterfowl. However, no impacts on endangered plant or
13 animal species are expected (Denison Mines 2012a).

16 4.2.2 Uranium Mining

19 4.2.2.1 Daneros Mine

20
21 The Daneros project, a conventional underground mine initially proposed by Utah Energy
22 Corporation in 2008, is located in Bullseye Canyon, San Juan County, Utah. The BLM issued
23 final approval for the mine permit in May 2009 for 7 years of mine operations. The Daneros
24 Mine, which is expected to produce 500,000 lb (23,000 kg) of uranium oxide per year for
25 processing at the White Mesa Mill, is the state's first new uranium mine in 30 years. The mine
26 was acquired by Denison Mines through its acquisition of White Canyon Uranium Ltd. in 2011.
27 The Denison's United States uranium mining and milling assets were acquired by Energy Fuels
28 Resources, Inc. in mid-2012.

29
30 Anticipated adverse environmental impacts associated with the mine project include
31 radioactive dust and gas emissions, soil disturbance and vegetation clearing, water use, and the
32 displacement of desert bighorn sheep and degradation of their habitat. None of these impacts are
33 considered significant. Additional traffic from mining operations is not expected to have a
34 noticeable impact on local roads (BLM 2009b).

37 4.2.2.2 La Sal Mines Complex

38
39 Denison's La Sal Mines complex is a collection of four separate, existing underground
40 uranium mines (Pandora, La Sal, Snowball, and Beaver Shaft) in the vicinity of La Sal, Utah
41 (San Juan County). The complex has been operated since the 1970s and is part of a series of
42 underground mines previously operated by Atlas Minerals and UMETCO Minerals Corporation.
43 Surface facilities are located on both private and public lands administered or managed by the
44 BLM and State of Utah (CDM 2010). As of 2012, the complex is one of two actively producing
45 mines in the state (Edge Environmental, Inc. 2009; UDNR 2012). Ore produced at the complex
46 is shipped to the White Mesa Mill for processing. Denison submitted a request in 2010 to amend

1 its plan of operations to include the expansion of Pandora Mine, further exploration activities
2 within the complex, and the drilling of vent holes on private and public land. These activities are
3 expected to take place in three phases between 2011 and 2030.

4 5 6 **4.2.2.3 Whirlwind Mine**

7
8 Energy Fuels Resources' Whirlwind Mine is located 5 mi (8 km) southwest of Gateway
9 in Mesa County; it is in the Beaver Mining District and spans the Colorado/Utah border. The
10 mine comprises two formerly closed uranium-vanadium mines: the Urantah Decline Mine and
11 Packrat Mine. The mining claim block encompasses 4,890 acres (1,979 ha), but the mine is
12 underground and is permitted for 24 acres (10 ha) of surface disturbance. Surface facilities
13 include two portal areas containing ore stockpiles, waste-rock stockpiles, topsoil stockpiles, a
14 water treatment plant, fuel and oil storage, support buildings, monitoring areas, ventilation
15 shafts, and power drops (BLM 2008b).

16
17 The BLM completed an environmental assessment for the proposed Whirlwind Mine
18 project in 2008. Having found no significant impact on the surrounding area, the BLM
19 authorized restoration of the mine and the resumption of ore production. Energy Fuels Resources
20 completed construction of the mine in 2009 but announced late that year that the mine will be put
21 into maintenance status (BLM 2008b; Energy Fuels Resources 2012c; CDNR 2011).

22
23 The Whirlwind Mine is one of several mines expected to provide ore to the proposed
24 Piñon Ridge Mill (Edge Environmental, Inc. 2009; CDPHE 2011). Ore could also be transported
25 to the White Mesa Mill for processing. If the mine is reopened and operates at full capacity, it
26 will employ 24 workers covering three 8-hour shifts, 5 days per week. Initial ore production
27 using the room and pillar mining technique is expected to reach 100 tons per day, increasing to
28 200 tons per day as the market demand increases. The life expectancy of the mine is 10 years
29 (BLM 2008b; Energy Fuels Resources 2012c).

30 31 32 **4.2.2.4 Other Uranium Mining and Uranium Exploration**

33
34 The Uravan Mineral Belt in western Colorado includes an estimated 1,200 historic mines,
35 with production dating back to the 1890s. Total uranium ore production in Colorado was
36 estimated to be over 255,000 lb (116,000 kg) in 2005, all originating from four Cotter
37 Corporation mines in the Uravan Mineral Belt near Nucla and Naturita. The Cotter JD-7 open-pit
38 mine is adjacent to the Piñon Ridge Mill site. All four mines ceased production in
39 November 2005, partly due to high energy costs and the high cost of transporting ore to Cañon
40 City for milling. As of December 2011, Cotter was not seeking to renew its radioactive materials
41 license for the Cañon City Mill and had initiated closure of the facility (CDNR 2012).

42
43 Denison's Sunday Mine Complex began producing uranium in San Miguel County in
44 2007; ore from these mines was shipped to the White Mesa Mill near Blanding. Production at
45 these mines ceased in 2009 due to declining uranium prices, but the BLM Tres Ríos Field Office
46 is currently preparing an environmental assessment for reopening the complex. Limited uranium

ULP Final Biological Assessment

May 2013

1 production began at Bluerock Energy's J-Bird Mine in Montrose County in 2008, but production
2 ceased when the mine was transferred to Rimrock Exploration and Development. The mine
3 remains in maintenance status, and no production is anticipated in the immediate future
4 (CDNR 2011). Bluerock sought approval of a plan of operations for Cone Mountain Mine (south
5 of Gateway), but the company ceased development activity later in the same year
6 (Argus 2008a,b). The Prince Albert, Last Chance, and Return Mines may have had limited
7 production for testing within the last four years. Denison's United States uranium mining and
8 milling assets were acquired by Energy Fuels Resources, Inc. in mid-2012.

9
10 There are 33 actively permitted uranium mine projects in Colorado, and one new permit
11 is under review. No uranium production was reported from 2009 to 2011, and none of the
12 actively permitted mine projects is producing at this time. Of the 33, 24 are in maintenance
13 status, 7 are being (or have been) reclaimed, and 2 are conducting development activities. In
14 September 2011, all uranium operators were notified by the Colorado Division of Reclamation,
15 Mining and Safety of the requirement to submit an environmental protection plan, file for an
16 exemption, or commence final site reclamation by October 2012 (CDNR 2012).

17
18 There are 12 permitted uranium mines in Utah; only 2 (Daneros and La Sal) are actively
19 producing (UDNR 2012). Several former underground uranium mines are located in the Red
20 Canyon watershed (near the operating Daneros Mine) and other areas of the state that are outside
21 the region of cumulative impacts. Small, remote mining operations that have not been reclaimed
22 are not considered to be a significant human health hazard; the impacts on wildlife will be minor,
23 and low precipitation levels make it unlikely that hazardous concentrations of radioactive
24 minerals and other compounds will significantly affect local watershed characteristics
25 (BLM 2011a).

26
27 Although environmental impacts will vary for each uranium mining project, potential
28 environmental impacts from a uranium mine are described in Section 3.1.

29
30 Uranium exploration (i.e., drilling) activities are generally short-term and not expected to
31 have direct or significant cumulative environmental or public health effects, provided there are
32 no extraordinary circumstances (e.g., the presence of federally listed threatened or endangered
33 species in the vicinity of the project area; the presence of floodplains or wetlands that will be
34 affected within the project area; the presence of Wilderness Areas, Wilderness Study Areas, or
35 National Recreation Areas near the project area; the presence of Native American religious or
36 cultural sites, archaeological sites, or historic properties within the project area) (USDA 2011a).
37 Uranium exploration activities typically involve few workers, low traffic volumes, and no
38 emissions (Edge Environmental, Inc. 2009).

41 4.2.2.5 Coal Mining

42
43 The 20-acre (8-ha) New Horizon Mine near Nucla is a surface coal mine owned and
44 managed by Western Fuels Association, a not-for-profit, national fuel supply cooperative. The
45 mine is the exclusive coal supplier to the Nucla Station power plant (5 mi [8 km] southeast),
46 producing approximately 350,000 to 400,000 tons of coal per year (Tri-State 2012a). The coal

ULP Final Biological Assessment

May 2013

1 mined from the Dakota sandstone is higher in ash and sulfur content than are the types of coal
2 mined in other parts of Colorado. The mine employed 23 miners in 2007 (CDNR 2008).

3
4 As of 2010, there were no actively producing Utah coal mines within the region of
5 cumulative effects (UDNR 2011).

6
7 Other permitted activities in the region of cumulative effects include the mining of
8 sand/gravel, borrow material, sandstone, gold, and quartz/granite (over 4,650 acres or 1,880 ha),
9 as well as the mining and exploration of copper and the mining of limestone quarries
10 (BLM 2011a). The Lisbon Valley Copper Mine resumed operations after receiving BLM
11 approval on its revised plan of operations in 2011.

14 4.3 CUMULATIVE IMPACTS FROM THE PROPOSED ACTION

15
16 Potential impacts from the proposed ULP are considered in combination with impacts
17 from past, present, and reasonably foreseeable future nonfederal actions. As mentioned
18 previously, the region of influence for the cumulative impacts analysis is conservatively assumed
19 to be within a 50-mi (80-km) radius.

20
21 The impacts on federally listed species discussed in Section 3 indicate the proposed ULP
22 activities are expected to have **no effect** on 8 species (clay-loving wild buckwheat, Colorado
23 hookless cactus, Debeque phacelia, Uncompahgre fritillary butterfly, greenback cutthroat trout,
24 black-footed ferret, Canada lynx, and North American wolverine) and on the designated critical
25 habitat for 5 species (clay-loving wild buckwheat, Debeque phacelia, Mexican spotted owl,
26 southwestern willow flycatcher, and Canada lynx). In addition, the proposed ULP activities **may**
27 **affect, but are not likely to adversely affect**, 5 species (Mexican spotted owl, southwestern
28 willow flycatcher, Gunnison sage-grouse, western yellow-billed cuckoo, and Gunnison's prairie
29 dog). It has been determined that ULP activities **may affect, and are likely to adversely affect**
30 the 4 Colorado River endangered fish species (bonytail, Colorado pikeminnow, humpback chub,
31 and razorback sucker) and their critical habitat. For all species, impacts would be reduced by the
32 implementation of BMPs or mitigation measures identified in Table 2-5 and determined in
33 project-specific mine plans.

34
35 The available information on the potential impacts from these various projects is
36 summarized in Sections 4.1 and 4.2; however, information for most of the projects was either not
37 available or was qualitative in nature.

38
39 The ecological evaluations accounted for measures, including compliance measures and
40 mitigation measures described in Section 2.3, to prevent or minimize any adverse impacts and
41 meet applicable federal, state, and local requirements.

42
43 With the implementation of mitigation measures and BMPs identified in Table 2-5, as
44 well as the implementation of any necessary conservation measures determined through
45 consultation with the USFWS, the potential cumulative impacts from uranium-mining-related
46 projects are not likely to jeopardize any federally listed species (including species that are

ULP Final Biological Assessment

May 2013

- 1 candidates or proposed for listing) or significantly reduce the viability of these populations in the
- 2 region of cumulative impacts. Cumulative effects of the ULP would not interfere with ongoing
- 3 USFWS recovery efforts for listed species.
- 4

ULP Final Biological Assessment

May 2013

- 1
- 2
- 3
- 4
- 5
- 6
- 7
- 8
- 9
- 10
- 11
- 12
- 13
- 14

This page intentionally left blank.

ULP Final Biological Assessment

May 2013

5 REFERENCES

- 1
2
3
4 AMEC Americas Limited, 2005, *Mackenzie Gas Project Effects of Noise on Wildlife*, prepared
5 for Imperial Oil Resources Ventures Limited, July. Available at [http://www.ngps.nt.ca/Upload/
6 Proponent/Imperial%20Oil%20Resources%20Ventures%20Limited/birdfield_wildlife/
7 Documents/Noise_Wildlife_Report_Filed.pdf](http://www.ngps.nt.ca/Upload/Proponent/Imperial%20Oil%20Resources%20Ventures%20Limited/birdfield_wildlife/Documents/Noise_Wildlife_Report_Filed.pdf). Accessed Feb. 19, 2010.
8
9 Argus (Argus Metals Corp.), 2008a, *Bluerock Updates Mining and Development Project Status
10 of US Uranium Mining Operations*, Sept. 22. Available at [http://www.bluerockresources.com/s/
11 NewsReleases.asp?ReportID=320172&_Title=Bluerock-Updates-Mining-And-Development-
12 Project-Status-Of-US-Uranium-Mining](http://www.bluerockresources.com/s/NewsReleases.asp?ReportID=320172&_Title=Bluerock-Updates-Mining-And-Development-Project-Status-Of-US-Uranium-Mining). Accessed Feb. 28, 2012.
13
14 Argus, 2008b, *Bluerock Receives First Ore Purchase Payment and Continues with Care and
15 Maintenance of US Uranium Mining Operations*, Oct. 31. Available at [http://www.bluerock
16 resources.com/s/NewsReleases.asp?ReportID=326342&_Type=News-Releases&_Title=
17 Bluerock-Receives-First-Ore-Purchase-Payment-And-Continues-With-Care-And-Ma](http://www.bluerockresources.com/s/NewsReleases.asp?ReportID=326342&_Type=News-Releases&_Title=Bluerock-Receives-First-Ore-Purchase-Payment-And-Continues-With-Care-And-Ma). Accessed
18 Feb. 28, 2012.
19
20 Arnett, E.B., et al., 2007, *Impacts of Wind Energy Facilities on Wildlife and Wildlife Habitat*,
21 Wildlife Society Technical Review 07-2, The Wildlife Society, Bethesda, Md., Sept.
22
23 Belnap, J., et al., 2001, *Biological Soil Crusts: Ecology and Management*, Technical
24 Reference 1730-2. U.S. Department of the Interior, Bureau of Land Management.
25
26 BIO-WEST, 2005, Colorado River Backwaters Enhancement, Species Profile Report. Submitted
27 to the U.S. Bureau of Reclamation, Lower Colorado Region, Boulder City, Nevada. October.
28
29 BirdLife International, 2003, *Protecting Birds from Powerlines: A Practical Guide on the Risks
30 to Birds from Electricity Transmission Facilities and How to Minimize Any Such Adverse Effects*,
31 T-PVS/Inf (2003) 15, Convention on the Conservation of European Wildlife and Natural
32 Habitats, Standing Committee, 23rd Meeting, Strasbourg, France Dec. 1–4. Available at
33 [http://www.coe.int/T/E/Cultural_Co-operation/Environment/Nature_and_biological_diversity/
34 Nature_protection](http://www.coe.int/T/E/Cultural_Co-operation/Environment/Nature_and_biological_diversity/Nature_protection). Accessed Oct. 23, 2006.
35
36 BLM, 2008a, *A Review of Black-Footed Ferret Reintroduction in Northwest Colorado, 2001–
37 2006*, Technical Note 426, Aug.
38
39 BLM, 2008b, *Decision Record, Finding of No Significant Impact, and Final Environmental
40 Assessment for the Whirlwind Mine Uranium Mining Project*, Grand Junction Field
41 Office, Grand Junction, Colo., and Moab Field Office, Moab, Utah, Sept. Available at
42 [http://www.blm.gov/pgdata/etc/medialib/blm/co/field_offices/grand_junction_field/
43 PDF.Par.16552.File.dat/WhirlwinMineEAFinal.pdf](http://www.blm.gov/pgdata/etc/medialib/blm/co/field_offices/grand_junction_field/PDF.Par.16552.File.dat/WhirlwinMineEAFinal.pdf). Accessed Feb. 22, 2012.
44
45

ULP Final Biological Assessment

May 2013

- 1 BLM, 2009a, *Draft Environmental Impact Statement—Proposed Red Cliff Mine Project*
2 *and Federal Coal Lease by Application*, Jan. 6. Available at <http://www.blm.gov/co/st/en/>
3 BLM Programs/land_use_planning/rmp/red_cliff_mine/documents.html. Accessed
4 Feb. 24, 2012.
5
- 6 BLM, 2009b, *Decision Record, Finding of No Significant Impact, and Environmental*
7 *Assessment for the Daneros Mine Project*, Monticello Field Office, May. Available at
8 https://www.blm.gov/ut/enbb/files/Daneros_EA_FONSI_DR_revised.pdf. Accessed
9 Feb. 28, 2012.
10
- 11 BLM, 2010, *Sage-Grouse and Sagebrush Conservation*. Available at <http://www.blm.gov/wo/>
12 [st/en/prog/more/sage_grouse_home2.html](http://www.blm.gov/wo/st/en/prog/more/sage_grouse_home2.html). Accessed Nov. 28, 2011.
13
- 14 BLM, 2011a, *Environmental Assessment: East Paradox LHA Grazing Permit Renewals*,
15 Uncompahgre Field Office, DOI-BLM-CO-S050-2011-0023 EA. Available at
16 http://www.blm.gov/pgdata/etc/medialib/blm/co/information/nepa/uncompahgre_field/
17 [ufo_nepa_documents0.Par.26626.File.dat/11-23%20EA%20E_Paradox%20LHA%20](http://www.blm.gov/pgdata/etc/medialib/blm/co/information/nepa/uncompahgre_field/ufo_nepa_documents0.Par.26626.File.dat/11-23%20EA%20E_Paradox%20LHA%20)
18 [Grazing%20Permit%20Renewal.pdf](http://www.blm.gov/pgdata/etc/medialib/blm/co/information/nepa/uncompahgre_field/ufo_nepa_documents0.Par.26626.File.dat/11-23%20EA%20E_Paradox%20LHA%20). Accessed Feb. 22, 2012.
19
- 20 BLM, 2011b, *Northern Arizona Proposed Withdrawal Final Environmental Impact Statement*,
21 BLM/AZ/PL-11/002. U.S. Department of the Interior, Oct.
22
- 23 BLM, 2012, *Environmental Assessment: Dolores River Restoration Treatments*, DOI-BLM-CO-
24 S050-2012-0011 EA. Uncompahgre Field Office, March. Available at <http://www.blm.gov/>
25 [pgdata/etc/medialib/blm/co/information/nepa/uncompahgre_field/ufo_nepa_documents0.](http://www.blm.gov/pgdata/etc/medialib/blm/co/information/nepa/uncompahgre_field/ufo_nepa_documents0.Par.39048.File.dat/12-11%20EA%20Dolores%20RiverRestoration.pdf)
26 [Par.39048.File.dat/12-11%20EA%20Dolores%20RiverRestoration.pdf](http://www.blm.gov/pgdata/etc/medialib/blm/co/information/nepa/uncompahgre_field/ufo_nepa_documents0.Par.39048.File.dat/12-11%20EA%20Dolores%20RiverRestoration.pdf). Accessed May 8, 2012.
27
- 28 Brown, B.T., et al., 1999, "The Influence of Weapons-Testing Noise on Bald Eagle Behavior,"
29 *Journal of Raptor Research* 33:227–232.
30
- 31 CDM (CDM, Inc.), 2010, *Plan of Operations Amendment, Denison Mines (USA) Corp., La Sal*
32 *Mines Complex, San Juan County, Utah*, prepared for Denison Mines (USA) Corp., Nov.
33 Available at http://www.blm.gov/pgdata/etc/medialib/blm/ut/moab_fo/La_Sal_Mines
34 [Complex_Documents.Par.78220.File.dat/La%20Sal%20Mines%20Complex%20Plan%20of](http://www.blm.gov/pgdata/etc/medialib/blm/ut/moab_fo/La_Sal_Mines)
35 [%20Operations.pdf](http://www.blm.gov/pgdata/etc/medialib/blm/ut/moab_fo/La_Sal_Mines). Accessed Feb. 28, 2012.
36
- 37 CDNR (Colorado Department of Natural Resources), 2008, *Colorado Mineral and Energy*
38 *Industry Activities, 2007*, Colorado Geological Survey. Available at <http://geosurvey.state.co.us/>
39 [SiteCollectionDocuments/EnergyResources/MER_07_FINAL.pdf](http://geosurvey.state.co.us/SiteCollectionDocuments/EnergyResources/MER_07_FINAL.pdf). Accessed Feb. 22, 2012.
40
- 41 CDNR (Colorado Department of Natural Resources), 2011, *Uranium Mining in Colorado 2011*.
42 Division of Reclamation Mining and Safety. June 13.
43
- 44 CDNR, 2012, *Uranium Mining in Colorado 2012*, Division of Reclamation Mining and Safety,
45 Jan. 13.
46

ULP Final Biological Assessment

May 2013

- 1 CDPHE (Colorado Department of Public Health and Environment), 2011, *Energy Fuels*
2 *Resources Piñon Ridge Uranium Mill License Decision*, Radiation Program, March 7.
3
- 4 CDPHE, 2012a, *Integrated Water Quality Monitoring and Assessment Report, State of*
5 *Colorado*, 2012 Update to the 2010 305(b) Report, prepared pursuant to Section 303(d) and
6 Section 305(b) of the Clean Water Act, Water Quality Control Division. Available at
7 <http://www.colorado.gov/cs/Satellite/CDPHE-WQCC/CBON/1251590894055>. Accessed
8 Oct. 22, 2012.
9
- 10 CDPHE, 2012b, *Colorado's Section 303(d) List of Impaired Waters and Monitoring and*
11 *Evaluation List, Water Quality*, 2012 Update to the 2010 303(d) List, prepared pursuant to
12 Section 303(d) and Section 305(b) of the Clean Water Act, Water Quality Control Division.
13 Available at <http://www.colorado.gov/cs/Satellite/CDPHE-WQCC/CBON/1251590894055>.
14 Accessed Oct. 22, 2012.
15
- 16 CDPHE, 2013, April 25: *Piñon Ridge Uranium Mill License Application Meets State Regulatory*
17 *Requirements*, April 25. Available at [http://www.colorado.gov/cs/Satellite?c=](http://www.colorado.gov/cs/Satellite?c=Page&childpagename=CDPHE-Main%2FCBONLayout&cid=1251641879219&pagename=CBONWrapper)
18 [Page&childpagename=CDPHE-Main%2FCBONLayout&cid=1251641879219&pagename=](http://www.colorado.gov/cs/Satellite?c=Page&childpagename=CDPHE-Main%2FCBONLayout&cid=1251641879219&pagename=CBONWrapper)
19 [CBONWrapper](http://www.colorado.gov/cs/Satellite?c=Page&childpagename=CDPHE-Main%2FCBONLayout&cid=1251641879219&pagename=CBONWrapper). Accessed May 6, 2013
20
- 21 CDWR (Colorado Division of Water Resources), 2007, *General Information about Well Permits*
22 *in Division IV*, Jan. 17.
23
- 24 Chapman, S.S., et al., 2006, *Ecoregions of Colorado* (color poster with map, descriptive text,
25 summary tables, and photographs; map scale 1:1,200,000), U.S. Geological Survey, Reston, Va.
26
- 27 CNHP (Colorado Natural Heritage Program), 2011a, *Endangered Species Act Listed Plants,*
28 *Colorado Hookless Cactus*. Available at [http://www.cnhp.colostate.edu/download/](http://www.cnhp.colostate.edu/download/projects/rareplants/list.asp?list=esa)
29 [projects/rareplants/list.asp?list=esa](http://www.cnhp.colostate.edu/download/projects/rareplants/list.asp?list=esa). Accessed Nov. 25, 2011.
30
- 31 CNHP, 2011b, *Statewide Elements by Quad (July 2011)*. Available at [http://www.cnhp.](http://www.cnhp.colostate.edu/download/gis.asp#maps)
32 [colostate.edu/download/gis.asp#maps](http://www.cnhp.colostate.edu/download/gis.asp#maps). Accessed April 30, 2012.
33
- 34 Coleman, M.A., and CNHP (Colorado Natural Heritage Program), 2007, *Life-History and*
35 *Ecology of the Greenback Cutthroat Trout*, prepared for the Greenback Cutthroat Trout
36 Recovery Program, April 26. Available at [http://www.cnhp.colostate.edu/download/documents/](http://www.cnhp.colostate.edu/download/documents/2007/GBN_Life_History-Coleman-4-26-07.pdf)
37 [2007/GBN_Life_History-Coleman-4-26-07.pdf](http://www.cnhp.colostate.edu/download/documents/2007/GBN_Life_History-Coleman-4-26-07.pdf). Accessed Nov. 29, 2011.
38
- 39 Cowardin, L.M., et al., 1979, *Classification of Wetlands and Deepwater Habitats of the*
40 *United States*, FWS/OBS-79/31, U.S. Fish and Wildlife Service, Dec.
41
- 42 CPW (Colorado Parks and Wildlife), 2011, *Natural Diversity Information Source FTP Server,*
43 *NDIS Data*. Available at <http://ndis.nrel.colostate.edu/ftp/index.html>. Accessed May 4, 2012.
44
- 45 CPW, 2012, *Natural Diversity Information Source*. Available at [http://ndis.nrel.colostate.edu/](http://ndis.nrel.colostate.edu/wildlife.asp)
46 [wildlife.asp](http://ndis.nrel.colostate.edu/wildlife.asp). Accessed April 17 and 30, 2012.

ULP Final Biological Assessment

May 2013

- 1 CSFS (Colorado State Forest Service), 2009, *Durango District 2009 Annual Report*. Available at
2 http://csfs.colostate.edu/pdfs/FINAL_Durango_AR09.pdf. Accessed Feb. 21, 2012.
- 3
- 4 Delaney, D.K., et al., 1999, "Effects of Helicopter Noise on Mexican Spotted Owls," *Journal of*
5 *Wildlife Management* 63(1):60–76. Available at [http://www.rmrs.nau.edu/publications/](http://www.rmrs.nau.edu/publications/Delaney_1999b/Delaney_1999b.pdf)
6 [Delaney_1999b/Delaney_1999b.pdf](http://www.rmrs.nau.edu/publications/Delaney_1999b/Delaney_1999b.pdf). Accessed Aug. 13, 2009.
- 7
- 8 Denison Mines, 2012a, *White Mesa*, Toronto, Ontario. Available at [http://www.denisonmines.](http://www.denisonmines.com/Document/Details/96)
9 [com/Document/Details/96](http://www.denisonmines.com/Document/Details/96). Accessed Feb. 21 and May 2, 2012.
- 10
- 11 Denison Mines, 2012b, *Denison Outlines 2012 Operating Plans and Releases 2011 Production*
12 *and Sales Volume*, press release, Denison Mines, Toronto, Ontario, Jan. 16. Available at
13 <http://www.infomine.com/index/pr/PB148470.PDF>. Accessed Feb. 21 and May 2, 2012.
- 14
- 15 Denver District Court, 2012, *Judicial Review Order, Sheep Mountain Alliance and Towns of*
16 *Telluride, and Ophir, Colorado v. Colorado Department of Public Health and Environment and*
17 *Energy Fuels Resources*, Case Number 2011CV861. June 13, 2012.
- 18
- 19 *Denver Post*, 2012, "Energy Fuels Resources to Buy Utah's White Mesa Uranium Mill,"
20 April 18. Available at [http://www.denverpost.com/business/ci_20419970/energy-fuels-buy-](http://www.denverpost.com/business/ci_20419970/energy-fuels-buy-utahs-white-mesa-uranium-mill/ixzzIuB8OOibc)
21 [utahs-white-mesa-uranium-mill/ixzzIuB8OOibc](http://www.denverpost.com/business/ci_20419970/energy-fuels-buy-utahs-white-mesa-uranium-mill/ixzzIuB8OOibc). Accessed May 7, 2012.
- 22
- 23 DOE (U.S. Department of Energy), 2005, *Remediation of the Moab Uranium Mill Tailings,*
24 *Grand and San Juan Counties, Utah, Final Environmental Impact Statement, DOE/EIS-0355,*
25 July. Available at <http://www.gjem.energy.gov/moab/eis/feis.htm>. Accessed May 8, 2012.
- 26
- 27 DOI (U.S. Department of the Interior), 2012, *Final Environmental Impact Statement, Aspinall*
28 *Unit Operations*, Bureau of Reclamation, Jan. Available at [http://www.usbr.gov/uc/envdocs/](http://www.usbr.gov/uc/envdocs/eis/AspinallEIS/Final%20Volume%20I.pdf)
29 [eis/AspinallEIS/Final%20Volume%20I.pdf](http://www.usbr.gov/uc/envdocs/eis/AspinallEIS/Final%20Volume%20I.pdf). Accessed Feb. 27, 2012.
- 30
- 31 Driver, C.J., 1994, *Ecotoxicity Literature Review of Selected Hanford Site Contaminants,*
32 PNL-9394, U.S. Department of Energy, Pacific Northwest Laboratory, March.
- 33
- 34 Edge Environmental, Inc., 2009, *Piñon Ridge Project Environmental Report, Montrose County,*
35 *Colorado*, prepared for Energy Fuels Resources Corporation, Lakewood, Colo., Nov. Available
36 at <http://www.co.montrose.co.us/DocumentView.aspx?DID=857>. Accessed Dec. 23, 2011.
- 37
- 38 EIA (Energy Information Administration), 2010, *2010 Domestic Uranium Production Report,*
39 June. Available at <http://www.eia.gov/uranium/production/annual/pdf/dupr.pdf>. Accessed
40 Feb. 23, 2012.
- 41
- 42 EIA, 2012, *Annual Energy Outlook 2012 with Projections to 2035*. DOE/EIA-0383(2012), June.
- 43
- 44 Energy Fuels Resources (Energy Fuels Resources Corporation), 2009, *Mine Operations Plan:*
45 *Piñon Ridge Mill Facility, Montrose County, Colorado*, Aug.
- 46

ULP Final Biological Assessment

May 2013

- 1 Energy Fuels Resources, 2012a, *Piñon Ridge Mill*. Available at <http://www.pinonridgemill.com/index.html>. Accessed Feb. 21, 2012.
- 3
- 4 Energy Fuels Resources, 2012b, *Energy Queen Mine*. Available at <http://www.energyfuels.com/projects/energy-queen/index.html>. Accessed Feb. 24, 2012.
- 6
- 7 Energy Fuels Resources, 2012c, *Whirlwind Mine*. Available at <http://www.energyfuels.com/projects/whirlwind/index.html>. Accessed Feb. 28, 2012.
- 9
- 10 Energy Fuels Resources, 2012d, *Piñon Ridge Mill: Schedule*. Available at <http://www.pinonridgemill.com/schedule.html>. Accessed May 7, 2012.
- 12
- 13 Energy Fuels Resources, 2012e, *Energy Fuels Inc. and Denison Mines Corp. Announce Transaction to Create Leading U.S. Uranium Company*, April 16. Available at <http://www.energyfuels.com/news/2012/april16-12.html>. Accessed May 7, 2012.
- 16
- 17 Fleischner, T.L., 1994, "Ecological Costs of Livestock Grazing in Western North America," *Conservation Biology* 8:629-644.
- 19
- 20 Foppen, R., and R. Reijnen, 1994, "The Effects of Car Traffic on Breeding Bird Populations in Woodland. II. Breeding Dispersal of Male Willow Warblers (*Phylloscopus trochilus*) in Relation to the Proximity of a Highway," *Journal of Applied Ecology* 32:95-101.
- 23
- 24 Forman, R.T.T., and L.E. Alexander, 1998, "Roads and Their Major Ecological Effects," *Annual Review of Ecology and Systematics* 29:207-231.
- 26
- 27 Francis, C.D., et al., 2009, "Noise Pollution Changes Avian Communities and Species Interactions," *Current Biology* 19:1415-1419.
- 29
- 30 Fresques, T., 2008, *Programmatic Biological Assessment for BLM's Fluid Minerals Program in Western Colorado Re: Water Depletions and Effects on the Four Endangered Big River Fishes: Colorado Pikeminnow (Ptychocheilus lucius), Humpback Chub (Gila cypha), Bonytail Chub (Gila elegans), and Razorback Sucker (Xyrauchen texanus)*. Available at http://westernenergyalliance.org/wp-content/uploads/uploads/Draft_OG_WD_PBA_5-5-08%20%282%29.pdf. Accessed Nov. 28, 2011.
- 36
- 37 Gelbard, J.L., and J. Belnap, 2003, "Roads as Conduits for Exotic Plant Invasions in a Semiarid Landscape," *Conservation Biology* 17:420-432.
- 39
- 40 Gunnison Sage-Grouse Rangewide Steering Committee, 2005, *Gunnison Sage-Grouse Rangewide Conservation Plan*, Colorado Division of Wildlife, Denver, Colo.
- 42
- 43 Hels, T., and E. Buchwald, 2001, "The Effect of Road Kills on Amphibian Populations," pp. 25-42 in *Proceedings of the 2001 International Conference on Ecology and Transportation*, C.L. Irwin et al. (editors), Center for Transportation and the Environment, North Carolina State University, Raleigh, N.C.
- 46

ULP Final Biological Assessment

May 2013

- 1 Hinck, J.E., et al., 2010, "Biological Pathways of Exposure and Ecotoxicity Values for Uranium
2 and Associated Radionuclides," Chapter D of *Hydrological, Geological, and Biological Site*
3 *Characterization of Breccia Pipe Uranium Deposits in Northern Arizona*, A.E. Alpine (editor),
4 Scientific Investigations Report 2010-5025, U.S. Department of the Interior, U.S. Geological
5 Survey.
6
- 7 Hockin, D., et al., 1992, "Examination of the Effects of Disturbance on Birds with Reference to
8 Its Importance in Ecological Assessments," *Journal of Environmental Management* 36:253–286.
9
- 10 Holmes, T.L., et al., 1993, "Responses of Wintering Grassland Raptors to Human Disturbance,"
11 *Wildlife Society Bulletin* 21:461–468.
12
- 13 Holsinger, K., 2012, *ULP PEIS: T&E Question*, e-mail from Holsinger (Uncompahgre Field
14 Office, Montrose, Colo.) to G.M. Jones (Bureau of Land Management), Aug. 27.
15
- 16 Ingelfinger, F., and S. Anderson, 2004, "Passerine Response to Roads Associated with Natural
17 Gas Extraction in a Sagebrush Steppe Habitat," *Western North American Naturalist*
18 64(3):385–395.
19
- 20 Karp, K.E., and D.R. Metzler, 2006, "Moab, Utah, UMTRA Site: The Last Large Uranium Mill
21 Tailings Pile To Be Cleaned Up in the United States," pp. 671–682 in *Uranium in the*
22 *Environment: Mining Impact and Consequences*, B.J. Merkel and A. Hasche-Berger (editors).
23
- 24 Knight, R.L., and D.N. Cole, 1991, "Effects of Recreational Activity on Wildlife in Wildlands,"
25 pp. 238–247 in *Transactions of the Fifty-Sixth North American Wildlife and Natural Resources*
26 *Conference*, R.E. McCabe (editor), Wildlife Management Institute, Washington, D.C.,
27 March 17–22.
28
- 29 Knight, R.L., and J.Y. Kawashima, 1993, "Responses of Raven and Red-Tailed Hawk
30 Populations to Linear Right-of-Ways," *Journal of Wildlife Management* 57(2):266–271.
31
- 32 Larkin, R.P., 1996, *Effects of Military Noise on Wildlife: A Literature Review*, Technical
33 Report 96/21, U.S. Army Construction Engineering Research Laboratory, Champaign, Ill.
34
- 35 Leyda, J.D., 2011, *Ecological Effects of Uranium Mining—Colorado, USA*, Leyda Consulting,
36 Inc. Available at [http://uraniumwatch.org/doe_uraniumleasingprogram/exhibitA_LCI_](http://uraniumwatch.org/doe_uraniumleasingprogram/exhibitA_LCI_UranMine-Ecol-Effects.110908.pdf)
37 [UranMine-Ecol-Effects.110908.pdf](http://uraniumwatch.org/doe_uraniumleasingprogram/exhibitA_LCI_UranMine-Ecol-Effects.110908.pdf). Accessed Nov. 28, 2011.
38
- 39 Lyon, A.G., and S.H. Anderson, 2003, "Potential Gas Development Impacts on Sage Grouse
40 Nest Initiation and Movement," *Wildlife Society Bulletin* 31(2):486–491.
41
- 42 Metzler, D.R., et al., 2008, "Ground Water Remediation at the Moab, Utah, USA, Former
43 Uranium-Ore Processing Site," pp. 37–44 in *Uranium Mining and Hydrogeology*, B.J. Merkel
44 and A. Hasche-Berger (editors).
45

ULP Final Biological Assessment

May 2013

- 1 Mueller, G.A., 2006, *Ecology of Bonytail and Razorback Sucker and the Role of Off-Channel*
2 *Habitats in Their Recovery*, Scientific Investigations Report 2006-5065, U.S. Department of the
3 Interior, U.S. Geological Survey.
4
- 5 NatureServe, 2012, *NatureServe Explorer: An Online Encyclopedia of Life*, Arlington, Va.
6 Available at <http://www.natureserve.org/explorer>. Accessed April 17 and 30, 2012.
7
- 8 Piñon Ridge Mill, 2012, *The Piñon Ridge Mill*. Available at [http://www.Piñonridgemill.com/](http://www.Piñonridgemill.com/index.html)
9 [index.html](http://www.Piñonridgemill.com/index.html). Accessed Feb. 21, 2012.
10
- 11 Red Cliff Mine, 2012, *Red Cliff Mine: EIS Schedule*. Available at [http://www.redcliffmine.com/](http://www.redcliffmine.com/schedule.htm)
12 [schedule.htm](http://www.redcliffmine.com/schedule.htm). Accessed Feb. 22, 2012.
13
- 14 Reijnen, R., and R. Foppen, 1994, "The Effects of Car Traffic on Breeding Bird Populations in
15 Woodland. I. Evidence of Reduced Habitat Quality for Willow Warblers (*Phylloscopus*
16 *trochilus*) Breeding Close to a Highway," *Journal of Applied Ecology* 32:85–94.
17
- 18 Reijnen, R., et al., 1995, "The Effects of Car Traffic on Breeding Bird Populations in Woodland.
19 III. Reduction of Density in Relation to the Proximity of Main Roads," *Journal of Applied*
20 *Ecology* 32:187–202.
21
- 22 Reijnen, R., et al., 1996, "The Effects of Traffic on the Density of Breeding Birds in Dutch
23 Agricultural Grasslands," *Biological Conservation* 75:255–260.
24
- 25 Reijnen, R., et al., 1997, "Disturbance by Traffic of Breeding Birds: Evaluation of the Effects
26 and Considerations in Planning and Managing Road Corridors," *Biodiversity and*
27 *Conservation* 6:567–581.
28
- 29 Rosentreter, R., et al., 2007, *A Field Guide to Biological Soil Crusts of Western U.S. Drylands—*
30 *Common Lichens and Bryophytes*, U.S. Government Printing Office, Denver, Colo.
31
- 32 Salt, A.N., and T.E. Hullar, 2010, "Responses of the Ear to Low Frequency Sounds, Infrasound
33 and Wind Turbines," *Hearing Research* 268:12–21.
34
- 35 Sawyer, H., et al., 2006, "Winter Habitat Selection of Mule Deer before and during Development
36 of a Natural Gas Field," *Journal of Wildlife Management* 70:396–403.
37
- 38 Seglund, A.E., and P.M. Schnurr, 2010, *Colorado Gunnison's and White-Tailed Prairie Dog*
39 *Conservation Strategy*, Colorado Division of Wildlife, Denver, Colo.
40
- 41 SENES (SENES Consultants Limited), 2009, *Risk Assessment for Proposed Uranium and*
42 *Vanadium Mill at the Piñon Ridge Property*, prepared by SENES, Englewood, Colo., for Energy
43 Fuels Resources Corporation, Lakewood, Colo., Nov.
44

ULP Final Biological Assessment

May 2013

- 1 Strittholt, J.R., et al., 2000, *Importance of Bureau of Land Management Roadless Areas in the*
2 *Western U.S.A.*, prepared by the Conservation Biology Institute, Corvallis, Ore., for the National
3 BLM Wilderness Campaign. Available at <http://www.consbio.org/cbi/projects/blm/blm.htm>.
4 Accessed Jan. 28, 2005.
5
- 6 UDEQ (Utah Department of Environmental Quality), 2012, *Denison/White Mesa Uranium Mill*.
7 Available at <http://www.deq.utah.gov/businesses/denison/index.htm>. Accessed Feb. 21, 2012.
8
- 9 UDNR (Utah Department of Natural Resources), 2012, *Utah Minerals Program*, Division of Oil,
10 Gas, and Mining. Available at [http://linux1.ogm.utah.gov/WebStuff/wwwroot/minerals/
11 mineralsoperatorsbypermit.php](http://linux1.ogm.utah.gov/WebStuff/wwwroot/minerals/mineralsoperatorsbypermit.php). Accessed Feb. 28, 2012.
12
- 13 USDA (U.S. Department of Agriculture), 2008, *Gypsy Moth Management in the United States;*
14 *A Cooperative Approach*, U.S. Forest Service, June. Available at [http://na.fs.fed.us/pubs/
15 detail.cfm?id=8523](http://na.fs.fed.us/pubs/detail.cfm?id=8523). Accessed Feb. 27, 2012.
16
- 17 USDA, 2009, *Environmental Assessment: Operation and Maintenance Plan for Manti-La Sal*
18 *National Forest Ditch Bill Easements*, U.S. Forest Service, Dec. Available at
19 http://www.fs.fed.us/r4/mantilasal/projects/ditch_bill/final_ea_122109.pdf. Accessed
20 Feb. 28, 2012.
21
- 22 USDA, 2011a, *Decision Memo: Kimmerle Uranium Exploration Drilling, Manti-La Sal*
23 *National Forest*, U.S. Forest Service, Sept. Available at [http://a123.g.akamai.net/7/123/11558/
24 abc123/forestservic.download.akamai.com/11558/www/nepa/78849_FSPLT2_056443.pdf](http://a123.g.akamai.net/7/123/11558/abc123/forestservic.download.akamai.com/11558/www/nepa/78849_FSPLT2_056443.pdf).
25 Accessed Feb. 28, 2012.
26
- 27 USDA, 2011b, *Schedule of Proposed Actions (SOPA) 10/01/2011 to 12/31/2011, San Juan*
28 *National Forest*, U.S. Forest Service, Oct. Available at [http://www.fs.fed.us/sopa/components/
29 reports/sopa-110213-2011-10.html](http://www.fs.fed.us/sopa/components/reports/sopa-110213-2011-10.html). Accessed Feb. 21, 2012.
30
- 31 USDA, 2011c, *Decision Memo: Agricultural Irrigation and Livestock Watering System*,
32 U.S. Forest Service, Oct. Available at [http://www.fs.usda.gov/Internet/FSE_DOCUMENTS/
33 stelprdb5343833.pdf](http://www.fs.usda.gov/Internet/FSE_DOCUMENTS/stelprdb5343833.pdf). Accessed Feb. 28, 2012.
34
- 35 USDA, 2011d, *Nationwide Aerial Application of Fire Retardant on National Forest System*
36 *Land: Record of Decision*, U.S. Forest Service, Dec. Available at [http://a123.g.akamai.net/7/
37 123/11558/abc123/forestservic.download.akamai.com/11558/www/nepa/71615_FSPLT2_
38 066634.pdf](http://a123.g.akamai.net/7/123/11558/abc123/forestservic.download.akamai.com/11558/www/nepa/71615_FSPLT2_066634.pdf). Accessed Feb. 27, 2012.
39
- 40 USDA, 2012a, *Schedule of Proposed Actions (SOPA) 01/01/2012 to 03/31/2012, San Juan*
41 *National Forest*, U.S. Forest Service. Available at [http://www.fs.fed.us/sopa/components/
42 reports/sopa-110213-2012-01.pdf](http://www.fs.fed.us/sopa/components/reports/sopa-110213-2012-01.pdf). Accessed Feb. 27, 2012.
43
- 44 USDA, 2012b, *Colorado Ditch Bill Act*, U.S. Forest Service. Available at [http://www.fs.usda.
45 gov/detail/r2/landmanagement/?cid=STELPRDB5177473](http://www.fs.usda.gov/detail/r2/landmanagement/?cid=STELPRDB5177473). Accessed Feb. 28, 2012.
46

ULP Final Biological Assessment

May 2013

- 1 USDA, 2012c, *Schedule of Proposed Actions (SOPA) 01/01/2012 to 03/31/2012, Grand Mesa,*
- 2 *Uncompahgre and Gunnison National Forests*, U.S. Forest Service. Available at
- 3 <http://www.fs.fed.us/sopa/components/reports/sopa-110204-2012-01.pdf>. Accessed
- 4 Feb. 27, 2012.
- 5
- 6 USDA, 2012d, *Schedule of Proposed Actions (SOPA) 01/01/2012 to 03/31/2012, Manti-La Sal*
- 7 *National Forest*, U.S. Forest Service. Available at [http://www.fs.fed.us/sopa/components/](http://www.fs.fed.us/sopa/components/reports/sopa-110410-2012-01.pdf)
- 8 [reports/sopa-110410-2012-01.pdf](http://www.fs.fed.us/sopa/components/reports/sopa-110410-2012-01.pdf). Accessed Feb. 28, 2012.
- 9
- 10 USFWS (U.S. Fish and Wildlife Service), 1978, "Endangered and Threatened Wildlife and
- 11 Plants; Listing of the Greenback Cutthroat Trout as a Threatened Species," *Federal*
- 12 *Register* 43:16343–16345.
- 13
- 14 USFWS, 1979, "Endangered and Threatened Wildlife and Plants; Determination That
- 15 *Sclerocactus glaucus* is a Threatened Species," *Federal Register* 44:58868–58870.
- 16
- 17 USFWS, 1980, "Determination That the Bonytail Chub (*Gila elegans*) is an Endangered
- 18 Species," *Federal Register* 45:27710–27713.
- 19
- 20 USFWS, 1984, "Endangered and Threatened Wildlife and Plants; Final Rule To Determine
- 21 *Eriogonum Pelinophilum* To Be an Endangered Species and To Designate Its Critical Habitat,"
- 22 *Federal Register* 49:28562–28565.
- 23
- 24 USFWS, 1988, *Black-Footed Ferret Recovery Plan*, Denver, Colo.
- 25
- 26 USFWS, 1990, *Humpback Chub Recovery Plan*, Denver, Colo. Available at [http://ecos.fws.gov/](http://ecos.fws.gov/docs/recovery_plan/900919c.pdf)
- 27 [docs/recovery_plan/900919c.pdf](http://ecos.fws.gov/docs/recovery_plan/900919c.pdf). Accessed Nov. 25, 2011.
- 28
- 29 USFWS, 1991a, "Endangered and Threatened Wildlife and Plants; Uncompahgre Fritillary
- 30 Butterfly Determined To Be Endangered," *Federal Register* 56:28712–28717.
- 31
- 32 USFWS, 1991b, "Endangered and Threatened Wildlife and Plants; the Razorback Sucker
- 33 (*Xyrauchen texanus*) Determined To Be an Endangered Species," *Federal*
- 34 *Register* 56:54957–54967.
- 35
- 36 USFWS, 1993, "Endangered and Threatened Wildlife and Plants; Final Rule To List the
- 37 Mexican Spotted Owl as a Threatened Species," *Federal Register* 58:14248–14271.
- 38
- 39 USFWS, 1994a, *Uncompahgre Fritillary Butterfly Recovery Plan*, Denver, Colo. Available at
- 40 http://ecos.fws.gov/docs/recovery_plan/940317.pdf. Accessed Nov. 30, 2011.
- 41
- 42 USFWS, 1994b, "Endangered and Threatened Wildlife and Plants; Determination of Critical
- 43 Habitat for the Colorado River Endangered Fishes: Razorback Sucker, Colorado Squawfish,
- 44 Humpback Chub, and Bonytail Chub," *Federal Register* 59:13374–13400.
- 45

ULP Final Biological Assessment

May 2013

- 1 USFWS, 1997, "Endangered and Threatened Wildlife and Plants; Final Determination of Critical
2 Habitat for the Southwestern Willow Flycatcher," *Federal Register* 62:39129–39147.
3
- 4 USFWS, 1998, *Greenback Cutthroat Trout Recovery Plan*, Denver, Colo.
5
- 6 USFWS, 2000, "Endangered and Threatened Wildlife and Plants; Determination of Threatened
7 Status for the Contiguous U.S. Distinct Population Segment of the Canada Lynx and Related
8 Rule," *Federal Register* 65:16053–16086.
9
- 10 USFWS, 2001a, "Endangered and Threatened Wildlife and Plants; Final Designation of Critical
11 Habitat for the Mexican Spotted Owl," *Federal Register* 66:8530–8553.
12
- 13 USFWS, 2001b, "Endangered and Threatened Wildlife and Plants; Review of Plant and Animal
14 Species That Are Candidates or Proposed for Listing as Endangered or Threatened, Annual
15 Notice of Findings on Recycled Petitions, and Annual Description of Progress on Listing
16 Actions," *Federal Register* 66:54808–54832.
17
- 18 USFWS, 2002a, *Bonytail (Gila elegans) Recovery Goals: Amendment and Supplement to the
19 Bonytail Chub Recovery Plan*, Mountain-Prairie Region 6, Denver, Colo.
20
- 21 USFWS, 2002b, *Colorado Pikeminnow (Ptychocheilus lucius) Recovery Goals: Amendment and
22 Supplement to the Colorado Squawfish Recovery Plan*, Mountain-Prairie Region 6, Denver,
23 Colo.
24
- 25 USFWS, 2002c, *Humpback chub (Gila cypha) Recovery Goals: amendment and supplement to
26 the Humpback Chub Recovery Plan*. U.S. Fish and Wildlife Service, Mountain-Prairie
27 Region (6), Denver, Colo..
28
- 29 USFWS, 2002d, *Razorback Sucker (Xyrauchen texanus) Recovery Goals: Amendment and
30 Supplement to the Razorback Sucker Recovery Plan*, Prairie Region 6, Denver, Colo.
31
- 32 USFWS, 2002e, *Southwestern Willow Flycatcher Recovery Plan*, Region 2, Albuquerque, N.M.
33
- 34 USFWS, 2003, "Endangered and Threatened Wildlife and Plants; Establishment of Nonessential
35 Experimental Population Status and Reintroduction of Black-Footed Ferrets in South-Central
36 South Dakota," *Federal Register* 68:26498–26510.
37
- 38 USFWS, 2004, "Endangered and Threatened Wildlife and Plants; Final Designation of Critical
39 Habitat for the Mexican Spotted Owl," *Federal Register* 69:53182–53298.
40
- 41 USFWS, 2005a, "Endangered and Threatened Wildlife and Plants; Designation of Critical
42 Habitat for the Southwestern Willow Flycatcher (*Empidonax traillii extimus*)," *Federal
43 Register* 70:60886–61009.
44

ULP Final Biological Assessment

May 2013

- 1 USFWS, 2005b, *Recovery Outline: Contiguous United States Distinct Population Segment of the*
2 *Canada Lynx*, Helena, Mont. Available at [http://ecos.fws.gov/docs/recovery_plan/final%](http://ecos.fws.gov/docs/recovery_plan/final%20draft%20lynx%20Recovery%20Outline%2009-05.pdf)
3 [20draft%20lynx%20Recovery%20Outline%2009-05.pdf](http://ecos.fws.gov/docs/recovery_plan/final%20draft%20lynx%20Recovery%20Outline%2009-05.pdf). Accessed Dec. 2, 2011.
4
- 5 USFWS, 2006a, "Endangered and Threatened Wildlife and Plants; Final Listing
6 Determination for the Gunnison Sage-Grouse as Threatened or Endangered," *Federal*
7 *Register* 71:19954–19982.
8
- 9 USFWS, 2006b, "Endangered and Threatened Wildlife and Plants; Designation of Critical
10 Habitat for the Contiguous United States Distinct Population Segment of the Canada Lynx,"
11 *Federal Register* 71:66008–66061.
12
- 13 USFWS, 2007, *The Colorado Pikeminnow and the Razorback Sucker*, San Juan River Basin
14 Recovery Implementation Program. Available at <http://www.fws.gov/southwest/sjrip/>
15 [GB_FS.cfm](http://www.fws.gov/southwest/sjrip/). Accessed Nov. 28, 2011.
16
- 17 USFWS, 2008a, "Endangered and Threatened Wildlife and Plants; 12-Month Finding on a
18 Petition To List the Gunnison's Prairie Dog as Threatened or Endangered," *Federal*
19 *Register* 73:6660–6684.
20
- 21 USFWS, 2008b, "Endangered and Threatened Wildlife and Plants; Review of Native Species
22 That Are Candidates for Listing as Endangered or Threatened; Annual Notice of Findings on
23 Resubmitted Petitions; Annual Description of Progress on Listing Actions," *Federal*
24 *Register* 73:75176–75244.
25
- 26 USFWS, 2009a, *Eriogonum pelinophilum (Clay-Loving Wild Buckwheat) 5-Year Review:*
27 *Summary and Evaluation*, Grand Junction, Colo.
28
- 29 USFWS, 2009b, "Endangered and Threatened Wildlife and Plants; Taxonomic Change of
30 *Sclerocactus Glaucus* to Three Separate Species," *Federal Register* 74:47112–47117.
31
- 32 USFWS, 2009c, *Uncompahgre Fritillary Butterfly (Boloria acrocnema) 5-Year Review:*
33 *Summary and Evaluation*, Grand Junction, Colo.
34
- 35 USFWS, 2009d, *Greenback Cutthroat Trout (Oncorhynchus clarki stomias) 5-Year Review:*
36 *Summary and Evaluation*, Denver, Colo.
37
- 38 USFWS, 2009e, "Endangered and Threatened Wildlife and Plants; Review of Native Species
39 That Are Candidates for Listing as Endangered or Threatened; Annual Notice of Findings on
40 Resubmitted Petitions; Annual Description of Progress on Listing Actions," *Federal*
41 *Register* 74:57804–57878.
42
- 43 USFWS, 2009f, "Endangered and Threatened Wildlife and Plants; Revised Designation of
44 Critical Habitat for the Contiguous United States Distinct Population Segment of the Canada
45 Lynx," *Federal Register* 74:8616–8702.
46

ULP Final Biological Assessment

May 2013

- 1 USFWS, 2009g, "Endangered and Threatened Wildlife and Plants; 12-Month Finding on a
2 Petition To Change the Final Listing of the Distinct Population Segment of the Canada Lynx To
3 Include New Mexico," *Federal Register* 74:66937–66950.
4
- 5 USFWS, 2009h, *USFWS Block-Cleared Areas for Black-Footed Ferret Surveys in Colorado*,
6 *September 2009*, map. Available at [http://www.fws.gov/mountain-prairie/species/mammals/
7 blackfootedferret/statewide_block_clearance_map_090809_final.pdf](http://www.fws.gov/mountain-prairie/species/mammals/blackfootedferret/statewide_block_clearance_map_090809_final.pdf). Accessed May 2, 2012.
8
- 9 USFWS, 2009i, *National Wetlands Inventory*. Available at <http://www.fws.gov/wetlands>.
10
- 11 USFWS, 2009j, *Consultation Guidance for De Minimis Water Depletions in the Upper Colorado*
12 *River Basin*, U.S. Fish and Wildlife Service, Mountain-Prairie Region, Denver, Colorado.
13
- 14 USFWS, 2010a, *Recovery Outline for the Colorado Hookless Cactus (Sclerocactus glaucus)*,
15 *Region 6*, Denver, Colo.
16
- 17 USFWS, 2010b, "Endangered and Threatened Wildlife and Plants; Determination
18 for the Gunnison Sage-Grouse as a Threatened or Endangered Species," *Federal*
19 *Register* 75:59804–59863.
20
- 21 USFWS, 2010c, "Endangered and Threatened Wildlife and Plants; 12-Month Finding on a
22 Petition To List the North American Wolverine as Endangered or Threatened," *Federal*
23 *Register* 75:78030–78061.
24
- 25 USFWS, 2010d, *U.S. Fish and Wildlife Service Species Assessment and Listing Priority*
26 *Assignment Form, Gunnison's Prairie Dog (Cynomys gunnisoni)*. Available at [http://ecos.fws.
27 gov/docs/candidate/assessments/2010/r6/A0IB_V01.pdf](http://ecos.fws.gov/docs/candidate/assessments/2010/r6/A0IB_V01.pdf). Accessed May 4, 2012.
28
- 29 USFWS, 2011a, *U.S. Fish and Wildlife Service Environmental Conservation Online System*,
30 *Colorado Hookless Cactus*. Available at [http://ecos.fws.gov/speciesProfile/profile/
31 speciesProfile.action?spcode=Q3KI](http://ecos.fws.gov/speciesProfile/profile/speciesProfile.action?spcode=Q3KI). Accessed Nov. 25, 2011.
32
- 33 USFWS, 2011b, "Endangered and Threatened Wildlife and Plants; Designation of Critical
34 Habitat for *Ipomopsis polyantha* (Pagosa Skyrocket), *Penstemon debilis* (Parachute
35 Beardtongue), and *Phacelia submutica* (Debeque Phacelia)," *Federal Register* 76:45078–45128.
36
- 37 USFWS, 2011c, "Endangered and Threatened Wildlife and Plants; Determination of Endangered
38 Status for *Ipomopsis polyantha* (Pagosa Skyrocket) and Threatened Status for *Penstemon debilis*
39 (Parachute Beardtongue) and *Phacelia submutica* (Debeque Phacelia)," *Federal*
40 *Register* 76:45054–45075.
41
- 42 USFWS, 2011d, *Species Profile: Uncompahgre Fritillary Butterfly (Boloria acrocnema)*.
43 Available at <http://ecos.fws.gov/speciesProfile/profile/speciesProfile.action?spcode=I01Q>.
44 Accessed Nov. 30, 2011.
45

ULP Final Biological Assessment

May 2013

- 1 USFWS, 2011e, *Federally Listed, Proposed and Candidate Species: Colorado River Fish*,
2 Wyoming Ecological Services. Available at [http://www.fws.gov/wyominges/Pages/Species/
3 Species_Listed/CORivFish.html](http://www.fws.gov/wyominges/Pages/Species/Species_Listed/CORivFish.html). Accessed Nov. 28, 2011.
4
- 5 USFWS, 2011f, *Species Profile: Greenback Cutthroat Trout (Oncorhynchus clarki ssp. Stomias)*,
6 Available at <http://ecos.fws.gov/speciesProfile/profile/speciesProfile.action?scode=E00F>.
7 Accessed Nov. 29, 2011.
8
- 9 USFWS, 2011g, *Draft Recovery Plan for the Mexican Spotted Owl (Strix occidentalis lucida)*,
10 *First Revision*, Albuquerque, N.M.
11
- 12 USFWS, 2011h, *Species Profile: Mexican Spotted Owl (Strix occidentalis lucida)*. Available at
13 <http://ecos.fws.gov/speciesProfile/profile/speciesProfile.action?scode=B074>. Accessed
14 Nov. 30, 2011.
15
- 16 USFWS, 2011i, *Species Profile: Southwestern Willow Flycatcher (Empidonax traillii extimus)*.
17 Available at <http://ecos.fws.gov/speciesProfile/profile/speciesProfile.action?scode=B094>.
18 Accessed Nov. 28, 2011.
19
- 20 USFWS, 2011j, *Species Profile: Yellow-Billed Cuckoo (Coccyzus americanus)*. Available at
21 <http://ecos.fws.gov/speciesProfile/profile/speciesProfile.action?scode=B06R>. Accessed
22 Nov. 25, 2011.
23
- 24 USFWS, 2011k, *Species Profile: Canada Lynx (Lynx canadensis)*. Available at
25 <http://ecos.fws.gov/speciesProfile/profile/speciesProfile.action?scode=A073>. Accessed
26 Dec. 2, 2011.
27
- 28 USFWS, 2011l, "Endangered and Threatened Wildlife and Plants; Review of Native Species
29 That Are Candidates for Listing as Endangered or Threatened; Annual Notice of Findings on
30 Resubmitted Petitions; Annual Description of Progress on Listing Actions," *Federal
31 Register* 76:66370–66439.
32
- 33 USFWS, 2011m, *Species Profile: North American Wolverine (Gulo gulo luscus)*. Available at
34 <http://ecos.fws.gov/speciesProfile/profile/speciesProfile.action?scode=A0FA>. Accessed
35 Dec. 1, 2011.
36
- 37 USFWS, 2012a, *Environmental Conservation Online System*. Available at [http://ecos.fws.gov/
38 ecos/indexPublic.do](http://ecos.fws.gov/ecos/indexPublic.do). Accessed April 30, 2012.
39
- 40 USFWS, 2012b, "Endangered and Threatened Wildlife and Plants; Designation of Critical
41 Habitat for *Ipomopsis polyantha* (Pagosa Skyrocket), *Penstemon debilis* (Parachute Beardtongue),
42 and *Phacelia submutica* (DeBeque Phacelia). Revised Proposed Rule; Reopening of Comment
43 Period," *Federal Register* 77:18157–18172.
44
- 45 USFWS, 2012c, *Endangered Species: Black-Footed Ferret*. Available at [http://www.fws.gov/
46 mountain-prairie/species/mammals/blackfootedferret/](http://www.fws.gov/mountain-prairie/species/mammals/blackfootedferret/). Accessed April 18, 2012.

ULP Final Biological Assessment

May 2013

- 1 USFWS, 2012d, "Review of Native Species That Are Candidates for Listing as Endangered or
2 Threatened; Annual Notice of Findings on Resubmitted Petitions; Annual Description of
3 Progress on Listing Actions," *Federal Register* 77:69993–70060.
4
5 USGS (U.S. Geological Survey), 2004, *National Gap Analysis Program, Provisional Digital
6 Land Cover Map for the Southwestern United States*, Version 1.0, RS/GIS Laboratory, College
7 of Natural Resources, Utah State University.
8
9 USGS, 2007, *National Gap Analysis Program, Digital Animal-Habitat Models for the
10 Southwestern United States*, Version 1.0, Center for Applied Spatial Ecology, New Mexico
11 Cooperative Fish and Wildlife Research Unit, New Mexico State University. Available at
12 <http://fws-nmcfwru.nmsu.edu/swregap/HabitatModels/default.htm>. Accessed March 15, 2010,
13 and Dec. 16, 2011.
14
15 WAPA (Western Area Power Administration), 2012a, *Transmission Line Management Issues on
16 Forested Rights-of-Way: A Brief Overview*. Available at [http://ww2.wapa.gov/sites/western/
17 transmission/infrastructure/Documents/Western-FS-EIS/Projectoverview.pdf](http://ww2.wapa.gov/sites/western/transmission/infrastructure/Documents/Western-FS-EIS/Projectoverview.pdf). Accessed
18 Feb. 22, 2012.
19
20 WAPA, 2012b, *Proposed Project Description Summary*. Available at [http://ww2.wapa.gov/
21 sites/western/transmission/infrastructure/Documents/Western-FS-EIS/projectdescription.pdf](http://ww2.wapa.gov/sites/western/transmission/infrastructure/Documents/Western-FS-EIS/projectdescription.pdf).
22 Accessed Feb. 22, 2012.
23
24 Wiggins, D., 2005, *Yellow-Billed Cuckoo (Coccyzus americanus): A Technical Conservation
25 Assessment*, U.S. Forest Service, Rocky Mountain Region. Available at [http://www.fs.fed.us/
26 r2/projects/scp/assessments/yellowbilledcuckoo.pdf](http://www.fs.fed.us/r2/projects/scp/assessments/yellowbilledcuckoo.pdf). Accessed Nov. 25, 2011.
27

1
2
3
4
5
6
7
8
9
10
11
12
13
14
15
16
17
18

APPENDIX F:
CORRESPONDENCE ASSOCIATED WITH TRIBAL AND NATIONAL
HISTORIC PRESERVATION ACT (NHPA) CONSULTATION

1
2
3
4
5
6
7
8
9
10
11
12
13
14

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

Date of Letter	Page	Source	Recipient
January 9, 2012	F-7	U.S. Department of Energy, Office of Legacy Management (D.W. Geiser, Director)	White Mesa Ute Board Chairperson
January 9, 2012	F-9	U.S. Department of Energy, Office of Legacy Management (D.W. Geiser, Director)	Chairwoman, Southern Ute Indian Tribe
January 9, 2012	F-11	U.S. Department of Energy, Office of Legacy Management (D.W. Geiser, Director)	Chairperson, Ute Business Committee, Ute Indian Tribe
January 9, 2012	F-13	U.S. Department of Energy, Office of Legacy Management (D.W. Geiser, Director)	President of The Navajo Nation
January 9, 2012	F-15	U.S. Department of Energy, Office of Legacy Management (D.W. Geiser, Director)	Chairman of the Hopi Tribal Council
January 9, 2012	F-17	U.S. Department of Energy, Office of Legacy Management (D.W. Geiser, Director)	Chairman of the Ute Mountain Ute Tribe
May 2, 2012	F-19	U.S. Department of Energy, Office of Legacy Management (D.W. Geiser, Director)	President of The Navajo Nation
May 2, 2012	F-20	U.S. Department of Energy, Office of Legacy Management (D.W. Geiser, Director)	Chairman of the Hopi Tribal Council
May 2, 2012	F-21	U.S. Department of Energy, Office of Legacy Management (D.W. Geiser, Director)	Chairman of the Ute Mountain Ute Tribe
May 2, 2012	F-22	U.S. Department of Energy, Office of Legacy Management (D.W. Geiser, Director)	White Mesa Ute Board Chairperson
May 2, 2012	F-23	U.S. Department of Energy, Office of Legacy Management (D.W. Geiser, Director)	Chairman of the Southern Ute Indian Tribe
May 2, 2012	F-24	U.S. Department of Energy, Office of Legacy Management (D.W. Geiser, Director)	Chairperson of the Ute Business Committee, Ute Indian Tribe

TABLE F-1 (Cont.)

Date of Letter	Page	Source	Recipient
September 28, 2012	F-25	U.S. Department of Energy, Office of Legacy Management (D.W. Geiser, Director)	President of the Jicarilla Apache Tribal Council
September 28, 2012	F-27	U.S. Department of Energy, Office of Legacy Management (D.W. Geiser, Director)	Governor of the Kewa Pueblo Tribe
September 28, 2012	F-29	U.S. Department of Energy, Office of Legacy Management (D.W. Geiser, Director)	Governor of the Pueblo of Acoma Tribe
September 28, 2012	F-31	U.S. Department of Energy, Office of Legacy Management (D.W. Geiser, Director)	Governor of the Pueblo de Cochiti Tribe
September 28, 2012	F-33	U.S. Department of Energy, Office of Legacy Management (D.W. Geiser, Director)	Governor of the Isleta Tribe
September 28, 2012	F-35	U.S. Department of Energy, Office of Legacy Management (D.W. Geiser, Director)	Governor of the Pueblo of Jemez Tribe
September 28, 2012	F-37	U.S. Department of Energy, Office of Legacy Management (D.W. Geiser, Director)	Governor of the Pueblo of Laguna Tribe
September 28, 2012	F-39	U.S. Department of Energy, Office of Legacy Management (D.W. Geiser, Director)	Governor of the Pueblo of Nambe Tribe
September 28, 2012	F-41	U.S. Department of Energy, Office of Legacy Management (D.W. Geiser, Director)	Governor of the Pueblo of Picuris Tribe
September 28, 2012	F-43	U.S. Department of Energy, Office of Legacy Management (D.W. Geiser, Director)	Governor of the Pueblo of Pojoaque Tribe
September 28, 2012	F-45	U.S. Department of Energy, Office of Legacy Management (D.W. Geiser, Director)	Governor of the Pueblo of San Felipe Tribe
September 28, 2012	F-47	U.S. Department of Energy, Office of Legacy Management (D.W. Geiser, Director)	Governor of the Pueblo of San Ildefonso Tribe
September 28, 2012	F-49	U.S. Department of Energy, Office of Legacy Management (D.W. Geiser, Director)	Governor of the Pueblo of Sandia Tribe
September 28, 2012	F-51	U.S. Department of Energy, Office of Legacy Management (D.W. Geiser, Director)	Governor of the Pueblo of Santa Ana Tribe
September 28, 2012	F-53	U.S. Department of Energy, Office of Legacy Management (D.W. Geiser, Director)	Governor of the Pueblo of Santa Clara Tribe
September 28, 2012	F-55	U.S. Department of Energy, Office of Legacy Management (D.W. Geiser, Director)	Governor of the Pueblo of Taos Tribe
September 28, 2012	F-57	U.S. Department of Energy, Office of Legacy Management (D.W. Geiser, Director)	Governor of the Pueblo of Tesuque Tribe

TABLE F-1 (Cont.)

Date of Letter	Page	Source	Recipient
September 28, 2012	F-59	U.S. Department of Energy, Office of Legacy Management (D.W. Geiser, Director)	Governor of the Pueblo of Zia Tribe
September 28, 2012	F-61	U.S. Department of Energy, Office of Legacy Management (D.W. Geiser, Director)	Governor of the Zuni Pueblo Tribe
November 20, 2012	F-64	U.S. Department of Energy, Office of Legacy Management (D.W. Geiser, Director)	President of the Jicarilla Apache Tribal Council
November 20, 2012	F-66	U.S. Department of Energy, Office of Legacy Management (D.W. Geiser, Director)	Governor of the Kewa Pueblo Tribe
November 20, 2012	F-68	U.S. Department of Energy, Office of Legacy Management (D.W. Geiser, Director)	Governor of the Pueblo of Jemez Tribe
November 20, 2012	F-70	U.S. Department of Energy, Office of Legacy Management (D.W. Geiser, Director)	Governor of the Pueblo of Laguna Tribe
November 20, 2012	F-72	U.S. Department of Energy, Office of Legacy Management (D.W. Geiser, Director)	Governor of the Pueblo of Nambe Tribe
November 20, 2012	F-74	U.S. Department of Energy, Office of Legacy Management (D.W. Geiser, Director)	Governor of the Pueblo of Picuris Tribe
November 20, 2012	F-76	U.S. Department of Energy, Office of Legacy Management (D.W. Geiser, Director)	Governor of the Pueblo of Pojoaque Tribe
November 20, 2012	F-78	U.S. Department of Energy, Office of Legacy Management (D.W. Geiser, Director)	Governor of the Pueblo of San Felipe Tribe
November 20, 2012	F-80	U.S. Department of Energy, Office of Legacy Management (D.W. Geiser, Director)	Governor of the Pueblo of San Ildefonso Tribe
November 20, 2012	F-82	U.S. Department of Energy, Office of Legacy Management (D.W. Geiser, Director)	Governor of the Pueblo of Sandia Tribe
November 20, 2012	F-84	U.S. Department of Energy, Office of Legacy Management (D.W. Geiser, Director)	Governor of the Pueblo of Santa Ana Tribe
November 20, 2012	F-86	U.S. Department of Energy, Office of Legacy Management (D.W. Geiser, Director)	Governor of the Pueblo of Taos Tribe
November 20, 2012	F-88	U.S. Department of Energy, Office of Legacy Management (D.W. Geiser, Director)	Governor of the Pueblo of Tesuque Tribe
November 20, 2012	F-90	U.S. Department of Energy, Office of Legacy Management (D.W. Geiser, Director)	Governor of the Pueblo of Zia Tribe

TABLE F-1 (Cont.)

Date of Letter	Page	Source	Recipient
November 20, 2012	F-92	U.S. Department of Energy, Office of Legacy Management (D.W. Geiser, Director)	Governor of the Zuni Pueblo Tribe

1
2



Department of Energy

Washington, DC 20585

January 9, 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:

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



Printed with soy ink on recycled paper

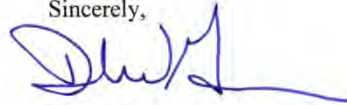
process to further ensure that Tribal rights, values, and interests are identified and considered in pertinent decision-making on the ULP activities.

- 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



Department of Energy

Washington, DC 20585

January 9, 2012

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.



Printed with soy ink on recycled paper

- 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



Department of Energy

Washington, DC 20585

January 9, 2012

The Honorable Irene Cuch
 Chairperson, Ute Business Committee
 Ute Indian Tribe
 P.O. Box 190
 Fort Duchesne, UT 84026

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



Printed with soy ink on recycled paper

1
2
3

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,



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



Department of Energy

Washington, DC 20585

January 9, 2012

The Honorable Ben Shelley
 President
 The Navajo Nation
 P.O. Box 7440
 2000 Tribal Hill Drive
 Window Rock, AZ 86515

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.



Printed with soy ink on recycled paper

1
2
3

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



Department of Energy

Washington, DC 20585

January 9, 2012

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 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 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



Printed with soy ink on recycled paper

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,



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

1
2
3



Department of Energy

Washington, DC 20585

January 9, 2012

The Honorable Gary Hayes
 Chairman
 Ute Mountain Ute Tribe
 P.O. Box JJ
 Towaoc, CO 81137

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://ulpeis.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.



Printed with soy ink on recycled paper

- 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 02 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 Uruvan 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 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) 586-3323, my headquarters representative for activities with Tribal Nations.

Sincerely,

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



Printed with soy ink on recycled paper

1

2



Department of Energy

Washington, DC 20585

MAY 02 2012

The Honorable Leroy Shingoitewa
 Chairman
 Hopi Tribal Council
 P.O. Box 123
 Kykotsmovi, 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 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 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 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 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) 586-7550 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

1

2


Department of Energy

Washington, DC 20585

MAY 02 2012

The Honorable Gary Hayes
 Chairman
 Ute Mountain Ute Tribe
 P.O. Box JJ
 Towaoc, 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://ulpcis.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 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 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
 Priscilla Bancroft, Superintendent, Ute Mountain Ute Agency



Printed with soy ink on recycled paper



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 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 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



Printed with soy ink on recycled paper.

1

2


Department of Energy

Washington, DC 20585

MAY 02 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 your office on February 22, 2012, and March 7, 2012. The Department of Energy (DOE) 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 Ute 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 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 Ute Indian 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 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,

David W. Geiser
 Director
 Office of Legacy Management

cc: Rollic Wilson, Ute Indian Tribe, Fredericks, Peebles & Morgan, LLP



Printed with soy ink on recycled paper

**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://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 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



Printed with soy ink on recycled paper

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,



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://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 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



Printed with soy ink on recycled paper

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://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 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



Printed with soy ink on recycled paper

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 Plienness, LM
Tracy Ribeiro, LM
David Conrad, CI



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



Printed with soy ink on recycled paper

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 Plienness, 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://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 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



Printed with soy ink on recycled paper

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 Plienness, 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



Printed with soy ink on recycled paper

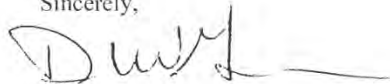
Governments in developing EIS documents that include Tribal Nation concerns and perspectives.

- 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 Plienness, 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://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 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



Printed with soy ink on recycled paper

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



Department of Energy

Washington, DC 20585

September 28, 2012

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://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 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



Printed with soy ink on recycled paper

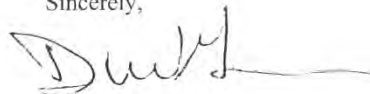
Governments in developing EIS documents that include Tribal Nation concerns and perspectives.

- 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 Plienness, 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



Printed with soy ink on recycled paper

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 Plienness, LM
Tracy Ribeiro, LM
David Conrad, CI



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.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 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



Printed with soy ink on recycled paper.

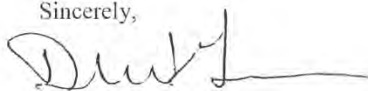
Tribal Governments in developing EIS documents that include Tribal Nation concerns and perspectives.

- 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



Printed with soy ink on recycled paper.

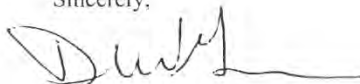
Tribal Governments in developing EIS documents that include Tribal Nation concerns and perspectives.

- 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 Plieness, 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://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 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 Plienness, 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://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 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



Printed with soy inks on recycled paper

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 Plienness, 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://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 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



Printed on 100% recycled paper.

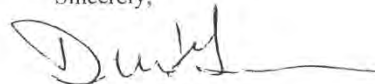
Tribal Governments in developing EIS documents that include Tribal Nation concerns and perspectives.

- 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 Plienness, LM
Tracy Ribeiro, LM
David Conrad, CI

**Department of Energy**

Washington, DC 20585

September 28, 2012

The Honorable Walter Dasheno
Governor
Pueblo of Santa Clara Tribe
P.O. Box 580
Española, 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.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 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



Printed with 100% recycled paper.

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 Plieness, LM
Tracy Ribeiro, LM
David Conrad, CI



Department of Energy

Washington, DC 20585

September 28, 2012

The Honorable Lorian 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://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 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 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



Printed with 100% recycled paper.

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 Plienness, LM
Tracy 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://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 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



Printed with soy ink on recycled paper

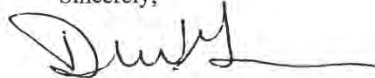
Tribal Governments in developing EIS documents that include Tribal Nation concerns and perspectives.

- 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,



David W. Geiser
Director
Office of Legacy Management

cc: Charles Dorame, Pueblo of Tesuque 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 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://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 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



Printed with soy ink on recycled paper

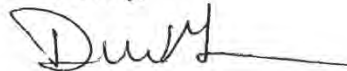
Governments in developing EIS documents that include Tribal Nation concerns and perspectives.

- 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 Plieness, 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



Printed with soy ink on recycled paper

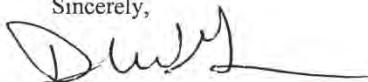
Governments in developing EIS documents that include Tribal Nation concerns and perspectives.

- 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 Plienness, LM
Tracy Ribeiro, LM
David Conrad, CI

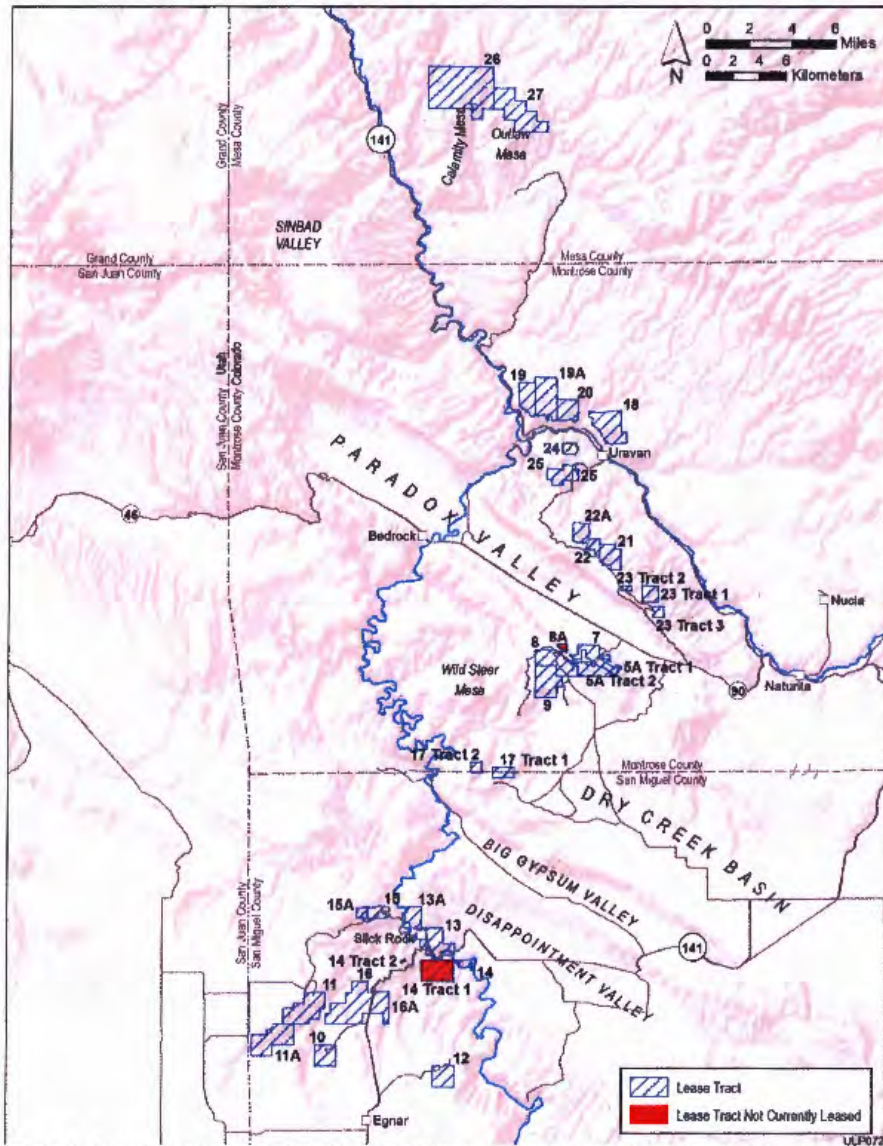


Figure 1. Locations of lease tracts to be potentially administered by the Department of Energy under the Uranium Leasing Program.

1
2



Department of Energy

Washington, DC 20585

November 20, 2012

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 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 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



Printed with soy ink on recycled paper

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 Plienness, LM
Tracy Ribeiro, LM
David Conrad, CI

**Department of Energy**

Washington, DC 20585

November 20, 2012

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 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 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,

A handwritten signature in black ink, appearing to read "D. Geiser", with a long horizontal line extending to the right.

David W. Geiser
Director
Office of Legacy Management



Printed with soy ink on recycled paper

cc: 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 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,

A handwritten signature in black ink, appearing to read "D. Geiser", with a long horizontal flourish extending to the right.

David W. Geiser
Director
Office of Legacy Management



Printed with soy ink on recycled paper

cc: Christopher Toya, Traditional Cultural Properties Project Manager
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 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.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 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,

A handwritten signature in black ink, appearing to read "David W. Geiser".

David W. Geiser
Director
Office of Legacy Management



Printed with soy ink on recycled paper

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 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 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,

A handwritten signature in black ink, appearing to read "D. Geiser", written over a horizontal line.

David W. Geiser
Director
Office of Legacy Management



Printed with soy ink on recycled paper

cc: Ernest Mirabal, NAGPRA Representative
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 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,

A handwritten signature in black ink, appearing to read "D. Geiser".

David W. Geiser
Director
Office of Legacy Management



Printed with soy ink on recycled paper

cc: Christy Van Buren, NAGPRA Representative
Thomas C. Pauling, LM
Tony Carter, LM
Ray Plienness, LM
Tracy Ribeiro, LM
David Conrad, CI

**Department of Energy**

Washington, DC 20585

November 20, 2012

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,

A handwritten signature in black ink, appearing to read "David W. Geiser".

David W. Geiser
Director
Office of Legacy Management



Printed with soy ink on recycled paper

cc: Vernon Lujan, NAGPRA Representative
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 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,

A handwritten signature in black ink, appearing to read "David W. Geiser".

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 Plienness, 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,

A handwritten signature in black ink, appearing to read "D. Geiser", written over a horizontal line.

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

1
2

**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,

A handwritten signature in black ink, appearing to read "David W. Geiser".

David W. Geiser
Director
Office of Legacy Management



Printed with soy ink on recycled paper

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,

A handwritten signature in black ink, appearing to read "David W. Geiser", with a long horizontal flourish extending to the right.

David W. Geiser
Director
Office of Legacy Management



Printed with soy ink on recycled paper

cc: Ben Robbins, Tribal Resource 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 Lorian 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,

A handwritten signature in black ink, appearing to read "David W. Geiser", with a long horizontal flourish extending to the right.

David W. Geiser
Director
Office of Legacy Management



Printed with soy ink on recycled paper

cc: Gilbert Suazo Sr., Lt. Governor, Pueblo of Taos tribe
Tina Romero, Executive Assistant
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 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,

A handwritten signature in black ink, appearing to read "David W. Geiser", written over a horizontal line.

David W. Geiser
Director
Office of Legacy Management



Printed with soy ink on recycled paper

cc: Charles Dorame, Pueblo of Tesuque 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 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,

A handwritten signature in black ink, appearing to read "D. Geiser".

David W. Geiser
Director
Office of Legacy Management



Printed with soy ink on recycled paper

cc: Peter Pino, NAGPRA Contact for CO/UT
Thomas C. Pauling, LM
Tony Carter, LM
Ray Plienness, 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,

A handwritten signature in black ink, appearing to read "David W. Geiser".

David W. Geiser
Director
Office of Legacy Management



Printed with soy ink on recycled paper

cc: Arden Kucate, Head Councilman, Zuni Pueblo Tribe
Kurt Dongoske, Acting Director, Historic Preservation
Thomas C. Pauling, LM
Tony Carter, LM
Ray Plienness, LM
Tracy Ribeiro, LM
David Conrad, CI

1 Table F-2 lists correspondence related to the establishment of a programmatic agreement
 2 between DOE, the Colorado SHPO, and the BLM. Copies of the correspondence follow this
 3 table. Letters of invitation sent to the Mesa and San Miguel County historical commissions and
 4 Native American tribes are also included here. All the letters of invitation were sent on August 9,
 5 2013, and contain an enclosure that could be filled in and returned to DOE-LM.
 6
 7

8 **TABLE F-2 Correspondence Regarding the Establishment of a Programmatic Agreement for**
 9 **Section 106 Consultation**

Date of Letter	Page	Source	Recipient
July 22, 2013	F-97	U.S. Department of Energy, Office of Legacy Management (D.S. Shafer, Acting Director, Office of Site Operations)	Bureau of Land Management (L. Anderson, Southwest District Manager)
July 22, 2013	F-98	U.S. Department of Energy, Office of Legacy Management (D.S. Shafer, Acting Director, Office of Site Operations)	History Colorado (E.C. Nichols, State Historic Preservation Officer)
July 22, 2013	F-105	U.S. Department of Energy, Office of Legacy Management (D.S. Shafer, Acting Director, Office of Site Operations)	Advisory Council on Historic Preservation, Office of Federal Agency Programs (T. McCulloch, Senior Archeologist)
August 9, 2013	F-106	U.S. Department of Energy, Office of Legacy Management (T.A. Ribeiro, Environmental Program Manager)	Coordinator of San Miguel Historical Society
August 9, 2013	F-109	U.S. Department of Energy, Office of Legacy Management (T.A. Ribeiro, Environmental Program Manager)	President of Mesa County Historical Society
August 9, 2013	F-112	U.S. Department of Energy, Office of Legacy Management (D.S. Shafer, Acting Director, Office of Site Operations)	Chairwoman of Ute Indian Tribe
August 9, 2013	F-115	U.S. Department of Energy, Office of Legacy Management (D.S. Shafer, Acting Director, Office of Site Operations)	Chairwoman of Southern Ute Indian Tribe
August 9, 2013	F-118	U.S. Department of Energy, Office of Legacy Management (D.S. Shafer, Acting Director, Office of Site Operations)	Chairman of Hopi Tribe
August 9, 2013	F-121	U.S. Department of Energy, Office of Legacy Management (D.S. Shafer, Acting Director, Office of Site Operations)	President of Navajo Nation
August 9, 2013	F-124	U.S. Department of Energy, Office of Legacy Management (D.S. Shafer, Acting Director, Office of Site Operations)	Chairwoman of White Mesa Ute Tribe

10

TABLE F-2 (Cont.)

Date of Letter	Page	Source	Recipient
August 9, 2013	F-127	U.S. Department of Energy, Office of Legacy Management (D.S. Shafer, Acting Director, Office of Site Operations)	Governor of Pueblo of Acoma Tribe
August 9, 2013	F-130	U.S. Department of Energy, Office of Legacy Management (D.S. Shafer, Acting Director, Office of Site Operations)	Chairman of Ute Mountain Ute Tribe
August 9, 2013	F-133	U.S. Department of Energy, Office of Legacy Management (D.S. Shafer, Acting Director, Office of Site Operations)	Governor of Pueblo of Isleta Tribe
August 9, 2013	F-136	U.S. Department of Energy, Office of Legacy Management (D.S. Shafer, Acting Director, Office of Site Operations)	Governor of Pueblo de Cochiti Tribe
August 9, 2013	F-139	U.S. Department of Energy, Office of Legacy Management (D.S. Shafer, Acting Director, Office of Site Operations)	Governor of Pueblo of Picuris Tribe
August 9, 2013	F-142	U.S. Department of Energy, Office of Legacy Management (D.S. Shafer, Acting Director, Office of Site Operations)	Governor of Pueblo of Taos Tribe
August 9, 2013	F-145	U.S. Department of Energy, Office of Legacy Management (D.S. Shafer, Acting Director, Office of Site Operations)	Chairman of Assiniboine and Sioux Tribes of the Fort Peck Reservation
August 9, 2013	F-148	U.S. Department of Energy, Office of Legacy Management (D.S. Shafer, Acting Director, Office of Site Operations)	President of Jicarilla Apache Tribal Council
August 9, 2013	F-151	U.S. Department of Energy, Office of Legacy Management (D.S. Shafer, Acting Director, Office of Site Operations)	Governor of Kewa Pueblo Tribe
August 9, 2013	F-154	U.S. Department of Energy, Office of Legacy Management (D.S. Shafer, Acting Director, Office of Site Operations)	Governor of Pueblo of Jemez Tribe
August 9, 2013	F-157	U.S. Department of Energy, Office of Legacy Management (D.S. Shafer, Acting Director, Office of Site Operations)	Governor of Pueblo of Laguna Tribe
August 9, 2013	F-160	U.S. Department of Energy, Office of Legacy Management (D.S. Shafer, Acting Director, Office of Site Operations)	Governor of Pueblo of Nambe Tribe

TABLE F-2 (Cont.)

Date of Letter	Page	Source	Recipient
August 9, 2013	F-163	U.S. Department of Energy, Office of Legacy Management (D.S. Shafer, Acting Director, Office of Site Operations)	Governor of Pueblo of Pojoaque Tribe
August 9, 2013	F-166	U.S. Department of Energy, Office of Legacy Management (D.S. Shafer, Acting Director, Office of Site Operations)	Governor of Pueblo of San Felipe Tribe
August 9, 2013	F-169	U.S. Department of Energy, Office of Legacy Management (D.S. Shafer, Acting Director, Office of Site Operations)	Governor of Pueblo of Ildefonso Tribe
August 9, 2013	F-172	U.S. Department of Energy, Office of Legacy Management (D.S. Shafer, Acting Director, Office of Site Operations)	Governor of Pueblo of Sandia Tribe
August 9, 2013	F-175	U.S. Department of Energy, Office of Legacy Management (D.S. Shafer, Acting Director, Office of Site Operations)	Governor of Pueblo of Santa Ana Tribe
August 9, 2013	F-178	U.S. Department of Energy, Office of Legacy Management (D.S. Shafer, Acting Director, Office of Site Operations)	Governor of Pueblo of Santa Clara Tribe
August 9, 2013	F-181	U.S. Department of Energy, Office of Legacy Management (D.S. Shafer, Acting Director, Office of Site Operations)	Governor of Pueblo of Tesuque Tribe
August 9, 2013	F-184	U.S. Department of Energy, Office of Legacy Management (D.S. Shafer, Acting Director, Office of Site Operations)	Governor of Pueblo of Zia Tribe
August 9, 2013	F-187	U.S. Department of Energy, Office of Legacy Management (D.S. Shafer, Acting Director, Office of Site Operations)	Governor of Zuni Tribe of the Zuni Reservation

1
2



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,

David S. Shafer, Ph.D.
Acting Director – Office of Site Operations
Office of Legacy Management

Enclosure





Department of Energy
Washington, DC 20585

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

-2-

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

-3-

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 w/enclosure:

L. Armstrong, BLM
D. Corson, CO SHPO
T. McCulloch, ACHP
T. Carter, DOE-LM
File: ULP 001.01 (A) (rc grand junction)

Asset Mgt Team\Ribeiro\7-22-13 ULP Sect 106 PA Request SHPO ltr (Nichols).docx

List of Potential Consulting Parties for NHPA Sect. 106 Consultation for ULP

Federal Groups

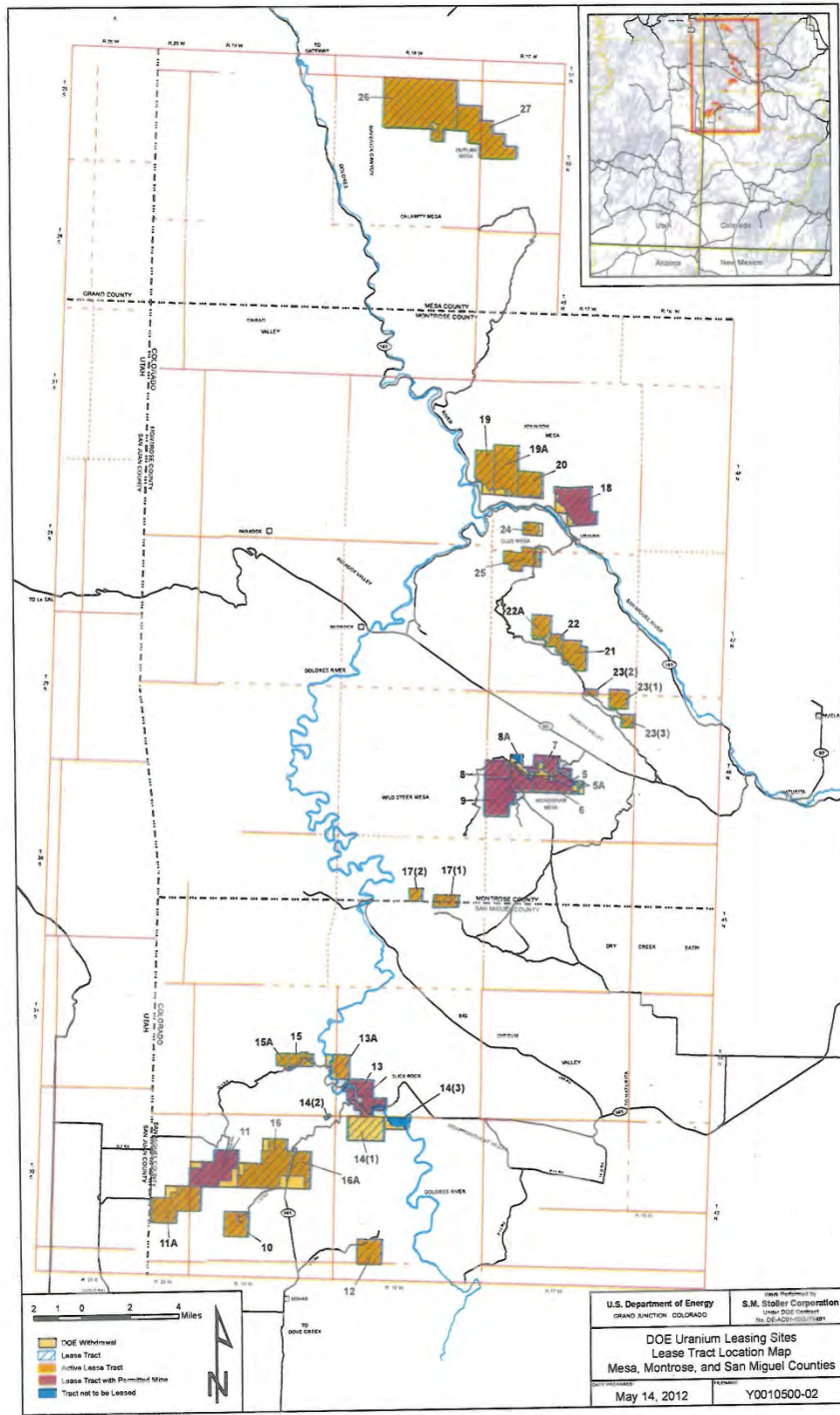
CO SHPO
BLM
ACHP

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) 249-6761

Prepared for S.M. Stoller Corporation
2597 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 ¼ Road
Grand Junction, CO 81503

November 1, 2006



Department of Energy
Washington, DC 20585

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,

David S. Shafer, Ph.D.
Acting Director – Office of Site Operations
Office of Legacy Management

Enclosure

cc w/o enclosure:
E. Nichols, CO SHPO
File: ULP 001.01 (A) (rc grand junction)

Asset Mgr Team\Ribeiro\7-22-13 ULP Sect 106 PA Request ltr ACHP (McCulloch)





Department of Energy

Washington, DC 20585

AUG 09 2013

Linda Luther-Broderick
 Coordinator
 San Miguel Historical Society
 Open Space and Recreation
 P.O. Box 1170
 Telluride, CO 81435

Subject: Consultation Under Section 106 of the National Historic Preservation Act for
 Activities Related to the Department Energy's Uranium Leasing Program

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://ulpeis.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 SHIPO), 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



Printed with soy ink on recycled paper

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~~^{San Miguel} 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 tracy.ribeiro@lm.doe.gov.

Sincerely,



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 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: _____



Department of Energy
Washington, DC 20585

AUG 09 2013

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

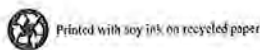
Dear Ms. Mangnall:

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://ulpeis.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 (303) 410.4817 or tracy.ribeiro@lm.doe.gov.

Sincerely,



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: _____

**Department of Energy**

Washington, DC 20585

AUG 09 2013

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://ulpeis.anl.gov/>. 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 agent in the National Environmental Policy Act process. The Ute Indian 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.



Printed with soy ink on recycled paper

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@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
Betsy Chappoose, 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://ulpeis.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.



Printed with soy ink on recycled paper

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: _____



Department of Energy
Washington, DC 20585

AUG 09 2013

The Honorable Leroy Shingoitewa
Chairman
Hopi Tribe
P.O. Box 123
Kykotsmovi, AZ 86039

Subject: Consultation Under Section 106 of the National Historic Preservation Act for
Activities Related to the Department Energy's Uranium Leasing Program

Dear Chairman Shingoitewa:

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 (NHIPA) 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 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.



Printed with soy ink on recycled paper

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 DOB-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 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 Shelley
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 Shelley:

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://ulpeis.anl.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.



Printed with soy ink on recycled paper

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 w/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: _____



Department of Energy
Washington, DC 20585

AUG 09 2013

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://ulpeis.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 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.

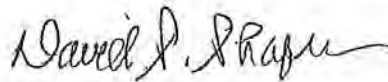


Printed with soy ink on recycled paper

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,



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)

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 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 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 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 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.



Printed with soy ink on recycled paper

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/enclosure

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: _____



Department of Energy
Washington, DC 20585

AUG 09 2013

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://ulpeis.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.



Printed with soy ink on recycled paper

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 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

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: _____



Department of Energy
Washington, DC 20585

AUG 09 2013

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://ulpeis.anl.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.



Printed with soy ink on recycled paper

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

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: _____



Department of Energy
Washington, DC 20585

AUG 09 2013

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://ulpeis.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 agent 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 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.



Printed with soy ink on recycled paper

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,



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://ulpeis.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 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 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

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 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 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

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. 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:
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://ulpeis.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.

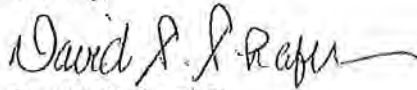


Printed with soy ink on recycled paper

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. 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, 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 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 Kevi Pestata
President
Jicarilla Apache Tribal Council
P.O. Box 507
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://ulpeis.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 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.



Printed with soy ink on recycled paper

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, 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
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: _____

**Department of Energy**

Washington, DC 20585

August 9, 2013

The Honorable David F. Garcia
Governor
Kewa Pueblo Tribe
P.O. Box 99
Santo 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://ulpeis.anl.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, 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 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.



Printed with soy ink on recycled paper

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 Kewa 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 Kewa 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. 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 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://ulpeis.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.



Printed with soy ink on recycled paper

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/enclosure
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 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 in the National Environmental Policy Act process. The Pueblo of Laguna 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

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. 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
Robert Mooney, Pueblo of Laguna Tribe
Larry Lente, 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 Mirabal
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 Mirabal:

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://ulpeis.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 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.



Printed with soy ink on recycled paper

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,



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://ulpeis.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 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

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. 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
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 20585

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://ulpeis.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 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

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 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.doc.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

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 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 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://ulpeis.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 (CO SHPO), the Advisory Council on Historic Preservation, the BLM, and other interested historical/heritage groups.



Printed with soy ink on recycled paper

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 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
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 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 Ildefonso 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 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://ulpeis.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 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

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 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. 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
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://ulpeis.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 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.



Printed with soy ink on recycled paper

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. 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:
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: _____

**Department of Energy**

Washington, DC 20585

August 9, 2013

The Honorable Walter Dasheno
Governor
Pueblo of Santa Clara Tribe
P.O. Box 580
Española, 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 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 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 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

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/enclosure
Ben Chavarria, 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: _____

**Department of Energy**

Washington, DC 20585

August 9, 2013

The Honorable Mark Mitchell
Governor
Pueblo of Tesuque Tribe
Route 42, Box 360-T
Sante 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.anl.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 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.



Printed with soy ink on recycled paper

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 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 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

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: _____



Department of Energy
Washington, DC 20585

August 9, 2013

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 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://ulpeis.anl.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, 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 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 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.



Printed with soy ink on recycled paper

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 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:
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: _____

**Department of Energy**

Washington, DC 20585

August 9, 2013

The Honorable Arlen P. Quetawki
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 Quetawki:

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://ulpeis.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 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.

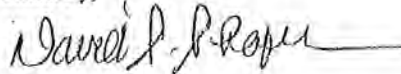


Printed with soy ink on recycled paper.

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 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:
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: _____

1
2
3
4
5
6
7
8
9
10
11
12
13
14

This page intentionally left blank

1
2
3
4
5
6
7
8
9
10
11
12
13
14
15
16
17

**APPENDIX G:
LIST OF PREPARERS**

1
2
3
4
5
6
7
8
9
10
11
12
13
14

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

Name	Office	Title
<i>U.S. Department of Energy</i>		
David S. Shafer	DOE Office of Legacy Management	Acting Director, Office of Site Operations
Raymond M. Plienness	DOE Office of Legacy Management	ULP PEIS Document Manager and Acting Team Leader, Asset Management Team
Tracy A. Ribeiro	DOE Office of Legacy Management	NEPA Compliance Manager
Laura E. Kilpatrick	DOE Office of Legacy Management	ULP Program Manager

1 **TABLE G-2 ULP PEIS Preparers**

Name	Education/Expertise	Contribution
<i>Argonne National Laboratory</i>		
Timothy Allison	M.S., Mineral and Energy Resource Economics; M.A., Geography; 26 years of experience in regional analysis and economic impact analysis	Socioeconomics, environmental justice
Kevin J. Beckman	B.S., Mathematics and Computer Science; 1 year of experience in Web programming and visual impact analysis	Public web site development and technical support for visual impact analysis
Bruce Biwer	Ph.D., Chemistry; 20 years of experience in environmental assessment and transportation risk analysis	Transportation
Brian Cantwell	B.S., Forestry, 26 years of experience in cartography and GIS	GIS
Young-Soo Chang	Ph.D., Chemical Engineering; 21 years of experience in air quality and noise impact analysis	Climate, air quality, noise
Jing-Jy Cheng	Ph.D., Polymer Science and Engineering; 19 years of experience in computer model development and applications for human health and ecological risk assessments	Human health impacts
Karl Fischer	B.S.E., Nuclear Engineering; M.Eng., Radiological Health Engineering; 13 years of relevant experience for assessing cumulative impacts	Cumulative impacts
Linda Graf	Desktop publishing specialist; 39 years of experience in creating, revising, formatting, and printing documents	Document assembly and production
Elizabeth Hocking	J.D.; 18 years of experience in environmental and energy policy analysis	Applicable laws, regulations, and other requirements

2

TABLE G-2 (Cont.)

Name	Education/Expertise	Contribution
Mary Moniger	B.A., English; 30 years of experience in technical editing and writing	Technical editor
Ellen Moret	M.P.P., Public Policy; B.A., Environmental Studies; 6 years of experience in environmental assessment	Socioeconomic
Michele Nelson	Certificate of Design; 32 years of experience in graphic design and technical illustration	Graphic designer
Terri Patton	M.S., Geology; 22 years of experience in environmental research and assessment	Geology, land use; cumulative impacts
Mary Picel	M.S., Environmental Health Sciences; 23 years of experience in environmental assessment, risk assessment, and waste management	Project manager, document manager, development of alternatives and programmatic topics, human health impacts, waste management, cumulative impacts
Robert Sullivan	M.L.A., Landscape Architecture; 21 years of experience in visual impact analysis and simulation; 13 years in web site development	Visual impact analysis
Robert A. Van Lonkhuyzen	B.A., Biology; 20 years of experience in ecological research and environmental assessment	Ecological resources analysis (plant communities/habitats)
Bruce Verhaaren	Ph.D., Archaeology; 20 years of experience in archaeological analysis; 16 years in environmental assessment and records management	Native American concerns analysis
William S. Vinikour	M.S. and B.S., Biology with environmental emphasis; 34 years of experience in ecological research and environmental assessment	Ecological resources analysis (wildlife and aquatic biota)
Leroy J. Walston, Jr.	M.S., Biology; 5 years of experience in ecological research and environmental assessment	Ecological resources analysis (special status species)

TABLE G-2 (Cont.)

Name	Education/Expertise	Contribution
Eugene Yan	Ph.D., Hydrogeology; 15 years of experience in hydrological studies, environmental remediation, and water resources assessment.	Water resources
Emily A. Zvolanek	B.A., Environmental Science; 2 years of experience in GIS mapping	GIS mapping

1

1
2
3
4
5
6
7
8
9
10
11
12
13
14
15
16
17

**APPENDIX H:
CONTRACTOR DISCLOSURE STATEMENT**

1
2
3
4
5
6
7
8
9
10
11
12
13
14

This page intentionally left blank

APPENDIX H:

CONTRACTOR DISCLOSURE STATEMENT

1
2
3
4
5
6
7
8
9
10
11
12
13
14
15
16
17
18
19
20
21
22
23
24
25
26
27
28
29
30
31
32
33
34
35
36
37
38
39
40
41
42
43

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

Name

Director, Environmental Science Division

Title

May 1, 2012

Date

1
2
3
4
5
6
7
8
9
10
11
12
13

This page intentionally left blank