

## 2.0 Alternatives Including the Proposed Action

### 2.1 Introduction

This chapter describes the alternatives considered in this Environmental Impact Statement (EIS). According to the Regulations for Implementing the Procedural Provisions of National Environmental Policy Act (NEPA) by the Council on Environmental Quality, the alternatives section is the heart of the EIS (40 Code of Federal Regulations [CFR] § 1502.14). Reasonable alternatives to be analyzed in detail must be developed based on the purpose and need for the action, be consistent with federal laws, and not be speculative. Per BLM regulations at 43 CFR § 46.420(b), reasonable alternatives are those “that are technically and economically practical or feasible and meet the purpose and need of the proposed action.” All alternatives analyzed in detail in an EIS must be rigorously explored, objectively evaluated, and considered by the decision-maker. The alternatives should be developed to analyze a reasonable range of possibilities that cover the full spectrum of the issues to be evaluated and compared, without requiring every possible combination of options to be considered.

These alternatives were developed by the Bureau of Land Management (BLM) in response to issues and concerns from public comments submitted during the public scoping period, coordination with Cooperating Agencies, and interaction with the BLM management and resource specialists. The BLM also considered alternatives raised during the scoping and alternatives development processes that are not carried forward for detailed analysis. These alternatives, with the rationale for not including each for detailed analysis, are described in Section 2.4.

In addition to the No Action Alternative, there are four action alternatives analyzed in detail. This chapter concludes with a summary of the environmental effects of the alternatives that are analyzed in the EIS.

The Council on Environmental Quality regulations at 40 CFR § 1502.14(e) direct that an EIS “...identify the agency's preferred alternative or alternatives, if one or more exists, in the draft statement and identify such alternative in the final statement unless another law prohibits the expression of such a preference.” The BLM has not yet selected a preferred alternative for inclusion in this Draft EIS, but, per BLM regulations at 43 CFR § 46.425, the BLM will identify a preferred alternative in the Final EIS based on the range of alternatives and input from the public during the Draft EIS public comment period. The identification of a preferred alternative does not constitute a commitment or decision in principle, and there is no requirement to select the preferred alternative in the Record of Decision (ROD). Selection in the ROD of an alternative other than the preferred alternative does not require preparation of a supplemental EIS if the selected alternative was analyzed in the EIS.

### 2.2 Summary of Alternatives Analyzed in Detail

Following is a brief summary of the alternatives analyzed in detail in this EIS.

- **Alternative 1 (No Action Alternative)**—Reaffirms the lease stipulations on the 65 leases as they were issued.
- **Alternative 2**—Modifies leases to address inconsistencies with the 1993 EIS and ROD (U.S. Forest Service [Forest Service or USFS] 1993a). Adds stipulations identified in the 1993 EIS and ROD but not attached to leases as issued.
- **Alternative 3**—Modifies the 65 leases to match the stipulations for future leasing identified in the Proposed Action from the 2014 White River National Forest (WRNF) Final EIS (USFS 2014a).

- **Alternative 4 (Proposed Action)**—Modifies or cancels the 65 leases to match the stipulations and availability decisions identified for future leasing in the 2014 WRNF Draft ROD (USFS 2014b).
- **Alternative 5**—Cancels all 65 existing leases; plug and abandon producing wells; remove roads, well pads, and ancillary facilities; and reclaim all disturbed areas.

## 2.3 Alternatives Analyzed in Detail

### 2.3.1 Alternative 1 (No Action Alternative): Reaffirm Leases with Current Stipulations

Under Alternative 1, the BLM would continue to administer the leases with their current stipulations. Those leases that are currently under suspension would be reaffirmed and allowed to be developed at the discretion of the lessee, subject to applicable legal requirements. Should a lease be reinstated, the process for management of exploration, development, and reclamation would continue to follow the process described in Section 1.1.3. Throughout this document, the term “development” is used to describe the construction, drilling, and completion processes necessary to produce fluid minerals. Once development is completed, mineral extraction to produce the well is described as “operations.”

As shown in **Table 2-1**, most of the leases not under suspension are within a designated unit or held by production. **Table 2-1** summarizes the stipulations by lease under Alternative 1. The stipulations are displayed in **Figures 2-1** through **2-4**.

**Table 2-1 Lease Stipulations Under Alternative 1**

Zone	Lease No.	Lease Acres	Type of Stipulation <sup>1</sup>	Type of Restriction	Acres of Stipulation/SLT
1	058677	543	NSO	Roadless Areas	543
1	059630	587	NSO	Bighorn Sheep	309
				Roadless Areas	587
				Slopes Greater than 60%	587
1	066727	640	NSO	Bighorn Sheep	640
1	066728	1,276	NSO	Bighorn Sheep	1,276
			TL	Big Game Winter Range	93
1	066729	654	NSO	Bighorn Sheep	653
				Slopes Greater than 60%	1
1	066730	1,279	NSO	Bighorn Sheep	1,278
			SLT ONLY	Standard Lease Terms	1
1	066731	651	NSO	Slopes Greater than 60%	651
1	066732	1,437	NSO	Slopes Greater than 60%	1435
1	066733	1,416	NSO	Slopes Greater than 60%	1,418
1	066926	1,629	NSO	Slopes Greater than 60%	1,629
2	061121	964	NSO	Slopes Greater than 60%	351
			TL	Big Game Winter Range	208
			SLT ONLY	Standard Lease Terms	405
2	066723	1,280	NSO	Slopes Greater than 60%	68
			TL	Big Game Winter Range	1,198
			SLT ONLY	Standard Lease Terms	82

**Table 2-1 Lease Stipulations Under Alternative 1**

<b>Zone</b>	<b>Lease No.</b>	<b>Lease Acres</b>	<b>Type of Stipulation <sup>1</sup></b>	<b>Type of Restriction</b>	<b>Acres of Stipulation/SLT</b>
2	066724	1,973	TL	Big Game Winter Range	1,973
2	066915	2,537	NSO	USFS Administrative Sites	108
			TL	Big Game Winter Range	2,348
				Elk Production Area	80
SLT ONLY	Standard Lease Terms	1			
2	066916	2,562	TL	Elk Production Area	1,901
			SLT ONLY	Standard Lease Terms	660
2	066917	1,920	NSO	High Geologic Hazard—GMUGNF	20
			CSU	Elk Production Area—GMUGNF	439
			TL	Elk Production Area	443
			SLT ONLY	Standard Lease Terms	1,018
2	066918	2,557	NSO	Slopes Greater than 60%	216
			CSU	Level 1 Travel Route	98
			TL	Big Game Winter Range	2,531
2	066920	418	NSO	Slopes Greater than 60%	32
			SLT ONLY	Standard Lease Terms	386
2	067147	783	NSO	Slopes Greater than 60%	771
			TL	Big Game Winter Range	11
			SLT ONLY	Standard Lease Terms	1
2	067150	662	NSO	Slopes Greater than 60%	207
			TL	Big Game Winter Range	385
			SLT ONLY	Standard Lease Terms	70
2	067542	480	NSO	Slopes Greater than 60%	435
			SLT ONLY	Standard Lease Terms	46
2	067543	1,167	NSO	Slopes Greater than 60%	800
			SLT ONLY	Standard Lease Terms	367
2	067544	730	NSO	Slopes Greater than 60%	730
2	070013	1,262	NSO	>60% Slope—GMUGNF	1
				High Geologic Hazard—GMUGNF	52
				Riparian/ Wetland—GMUGNF	3
				Roadless Area—GMUGNF	186
				Slopes Greater than 60%	1,037
			CSU	40-60% Slope—GMUGNF	33
Moderate Geologic Hazard—GMUGNF	173				
2	070014	1,486	NSO	Roadless Areas	1,486
				Slopes Greater than 60%	1,486

**Table 2-1 Lease Stipulations Under Alternative 1**

Zone	Lease No.	Lease Acres	Type of Stipulation <sup>1</sup>	Type of Restriction	Acres of Stipulation/SLT
2	070015	1,598	NSO	Roadless Areas	1,522
				Slopes Greater than 60%	1,522
			SLT ONLY	Standard Lease Terms	76
2	070016	51	NSO	Slopes Greater than 60%	50
2	070361	638	NSO	Slopes Greater than 60%	556
				CSU	Moderate Geologic Hazard—GMUGNF
			TL		Powerline Corridor
				Big Game Winter Range	35
2	072157	638	NSO	Big Game Winter Range—GMUGNF	47
				Slopes Greater than 60%	15
			CSU	Moderate Geologic Hazard—GMUGNF	341
				Powerline Corridor	185
			TL	Big Game Winter Range	201
Big Game Winter Range—GMUGNF	341				
SLT ONLY	Standard Lease Terms	82			
2	075070	1,152	NSO	Roadless Areas	1,147
				Slopes Greater than 60%	248
			TL	Big Game Winter Range	950
				Elk Production Area	249
			SLT ONLY	Standard Lease Terms	5
2	076123	80	NSO	Roadless Areas	80
3	058835	1,475	SLT ONLY	Standard Lease Terms	1,475
3	058836	1,279	SLT ONLY	Standard Lease Terms	1,279
3	058837	1,669	TL	Elk Production Area	1,669
3	058838	1,277	CSU	Areas of Moderate Geologic Hazard—GMUGNF	26
			SLT ONLY	Standard Lease Terms	1,251
3	058839	1,127	TL	Elk Production Area	1,086
			SLT ONLY	Standard Lease Terms	41
3	058840	639	TL	Snowmobile	8
			SLT ONLY	Standard Lease Terms	631
3	058841	638	TL	Snowmobile	58
			SLT ONLY	Standard Lease Terms	580
3	066687	1,053	NSO	Slopes Greater than 60%	46
			SLT ONLY	Standard Lease Terms	1,007
3	066688	774	NSO	Slopes Greater than 60%	65
			TL	Elk Production Area	174
			SLT ONLY	Standard Lease Terms	535

**Table 2-1 Lease Stipulations Under Alternative 1**

<b>Zone</b>	<b>Lease No.</b>	<b>Lease Acres</b>	<b>Type of Stipulation <sup>1</sup></b>	<b>Type of Restriction</b>	<b>Acres of Stipulation/SLT</b>
3	066689	40	NSO	Ski Area	40
3	066690	274	NSO	Ski Area	36
			CSU	Level 1 Travel Route	49
			TL	Elk Production Area	142
				Snowmobile	49
SLT ONLY	Standard Lease Terms	47			
3	066691	198	NSO	Cutthroat Trout	39
				Slopes Greater than 60%	98
			SLT ONLY	Standard Lease Terms	61
3	066692	1,417	NSO	Slopes Greater than 60%	91
			SLT ONLY	Standard Lease Terms	1,327
3	066693	2,167	NSO	Slopes Greater than 60%	365
			TL	Big Game Winter Range	80
				Elk Production Area	1,169
			SLT ONLY	Standard Lease Terms	552
3	066694	119	NSO	Cutthroat Trout	2
				Slopes Greater than 60%	92
			SLT ONLY	Standard Lease Terms	25
3	066695	1,061	NSO	Big Game Winter Range	277
				Slopes Greater than 60%	97
			SLT ONLY	Standard Lease Terms	688
3	066696	1,027	NSO	Cutthroat Trout	206
			SLT ONLY	Standard Lease Terms	821
3	066697	1,872	NSO	Cutthroat Trout	217
			SLT ONLY	Standard Lease Terms	1,655
3	066698	2,460	SLT ONLY	Standard Lease Terms	2,460
3	066699	114	SLT ONLY	Standard Lease Terms	114
3	066700	841	NSO	Slopes Greater than 60%	370
			SLT ONLY	Standard Lease Terms	471
3	066701	1,885	NSO	Cutthroat Trout	62
				Slopes Greater than 60%	34
			SLT ONLY	Standard Lease Terms	1,789
3	066702	1,254	NSO	Slopes Greater than 60%	822
			SLT ONLY	Standard Lease Terms	432
3	066706	2,548	SLT ONLY	Standard Lease Terms	2,547
3	066707	1,276	NSO	Slopes Greater than 60%	109
			SLT ONLY	Standard Lease Terms	1,167

**Table 2-1 Lease Stipulations Under Alternative 1**

<b>Zone</b>	<b>Lease No.</b>	<b>Lease Acres</b>	<b>Type of Stipulation <sup>1</sup></b>	<b>Type of Restriction</b>	<b>Acres of Stipulation/SLT</b>
3	066708	2,554	CSU	Level 1 Travel Route	984
			TL	Elk Production Area	1,239
			SLT ONLY	Standard Lease Terms	1,315
3	066709	638	SLT ONLY	Standard Lease Terms	638
3	066710	2,329	CSU	Level 1 Travel Route	538
			TL	Snowmobile	1,241
			SLT ONLY	Standard Lease Terms	1,088
3	066711	1,751	CSU	Level 1 Travel Route	1,286
			TL	Elk Production Area	1,727
			SLT ONLY	Standard Lease Terms	24
3	066712	875	NSO	Cutthroat Trout	70
			CSU	Level 1 Travel Route	100
			TL	Elk Production Area	617
			SLT ONLY	Standard Lease Terms	188
3	066908	2,400	TL	Elk Production Area	1,929
			SLT ONLY	Standard Lease Terms	472
3	066909	2,077	NSO	Cutthroat Trout	3
				Slopes Greater than 60%	255
			TL	Big Game Winter Range	206
				Elk Production Area	190
			SLT ONLY	Standard Lease Terms	1,424
3	066913	1,660	NSO	Slopes Greater than 60%	53
			CSU	Level 1 Travel Route	402
			TL	Snowmobile	301
			SLT ONLY	Standard Lease Terms	1,134
4	066948	2,562	NSO	Slopes Greater than 60%	65
			TL	Big Game Winter Range	405
				Snowmobile	1,569
			SLT ONLY	Standard Lease Terms	524

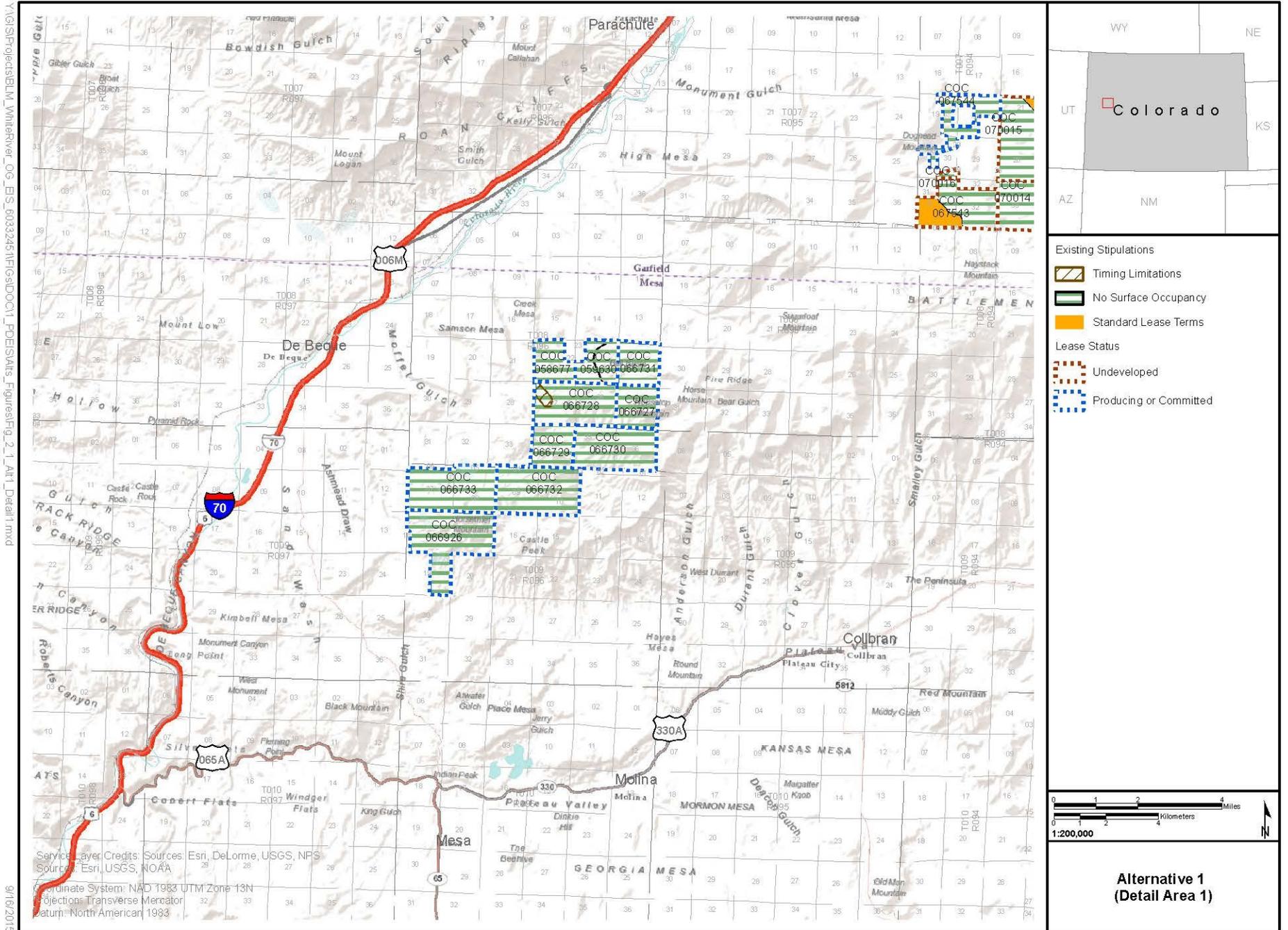
<sup>1</sup> GMUGNF= Grand Mesa, Uncompahgre, and Gunnison National Forest.

NSO = No Surface Occupancy.

CSU = Controlled Surface Use.

TL = Timing Limitation.

SLT = Standard Lease Terms.



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Figure 2-1 Existing Lease Stipulations under Alternative 1, West Side



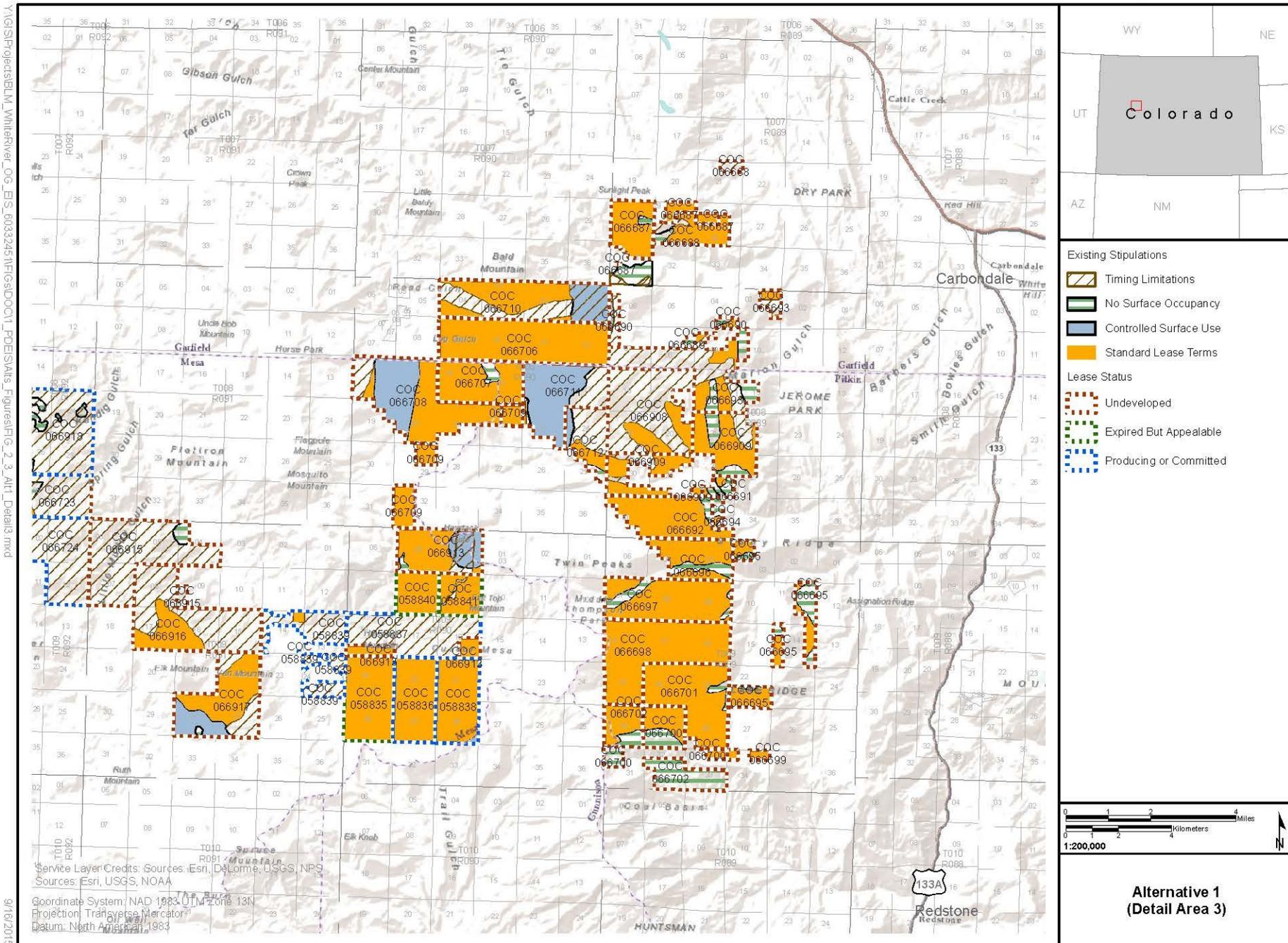


Figure 2-3 Existing Lease Stipulations under Alternative 1, East Side

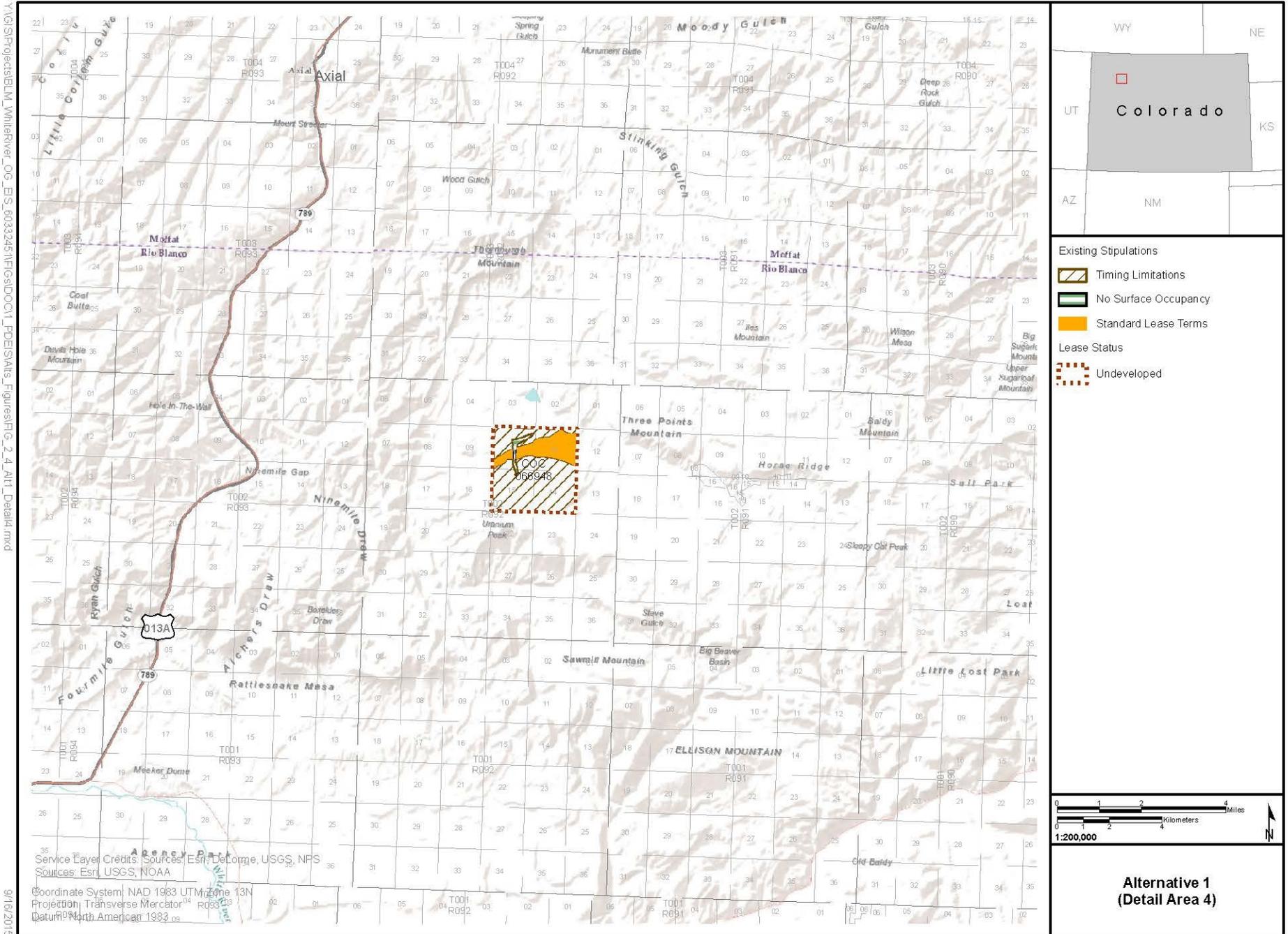


Figure 2-4 Existing Lease Stipulations under Alternative 1, North Lease

**2.3.2 Alternative 2: Update to Include All 1993 Leasing Decisions**

Alternative 2 addresses inconsistencies between the 1993 WRNF ROD and the lease stipulations as they were subsequently issued. In some cases, the leases did not include the stipulations as stated in the Forest Service decision document; these leases would be modified to include those stipulations under this alternative. Under this alternative, the BLM would offer the lessee the option of either accepting the new lease terms or having the lease cancelled. Cancellation would be done through a BLM administrative process and would require that the BLM refund any bonus bids and lease payments.

This alternative applies only to eight leases and is intended to reconcile differences in the stipulations by adding the stipulations listed in **Table 2-2**. All other lease stipulations are the same as those shown in **Table 2-1**. Only the additional lease stipulations are shown on **Figures 2-5** through **2-8**.

**Table 2-2 Leases with Additional Stipulations to Correct Known Discrepancies**

Zone	Lease No.	Lease Acres	Type of Stipulation	Type of Restriction	Acres of Stipulation
3	058840	639	TL	Snowmobile Corridor	80
3	058841	638	TL	Snowmobile Corridor	269
3	066687	1,053	NSO	Slopes Greater than 60%	399
			TL	Elk Production Area	382
3	066688	774	NSO	Slopes Greater than 60%	17
3	066693	2,167	NSO	Ski Area	27
3	066706	2,548	CSU	Level 1 Travel Route	793
			NSO	Slopes Greater than 60%	74
			TL	Unspecified	336
				Level 1 Travel Route	793
3	066707	1,276	TL	Unspecified	133



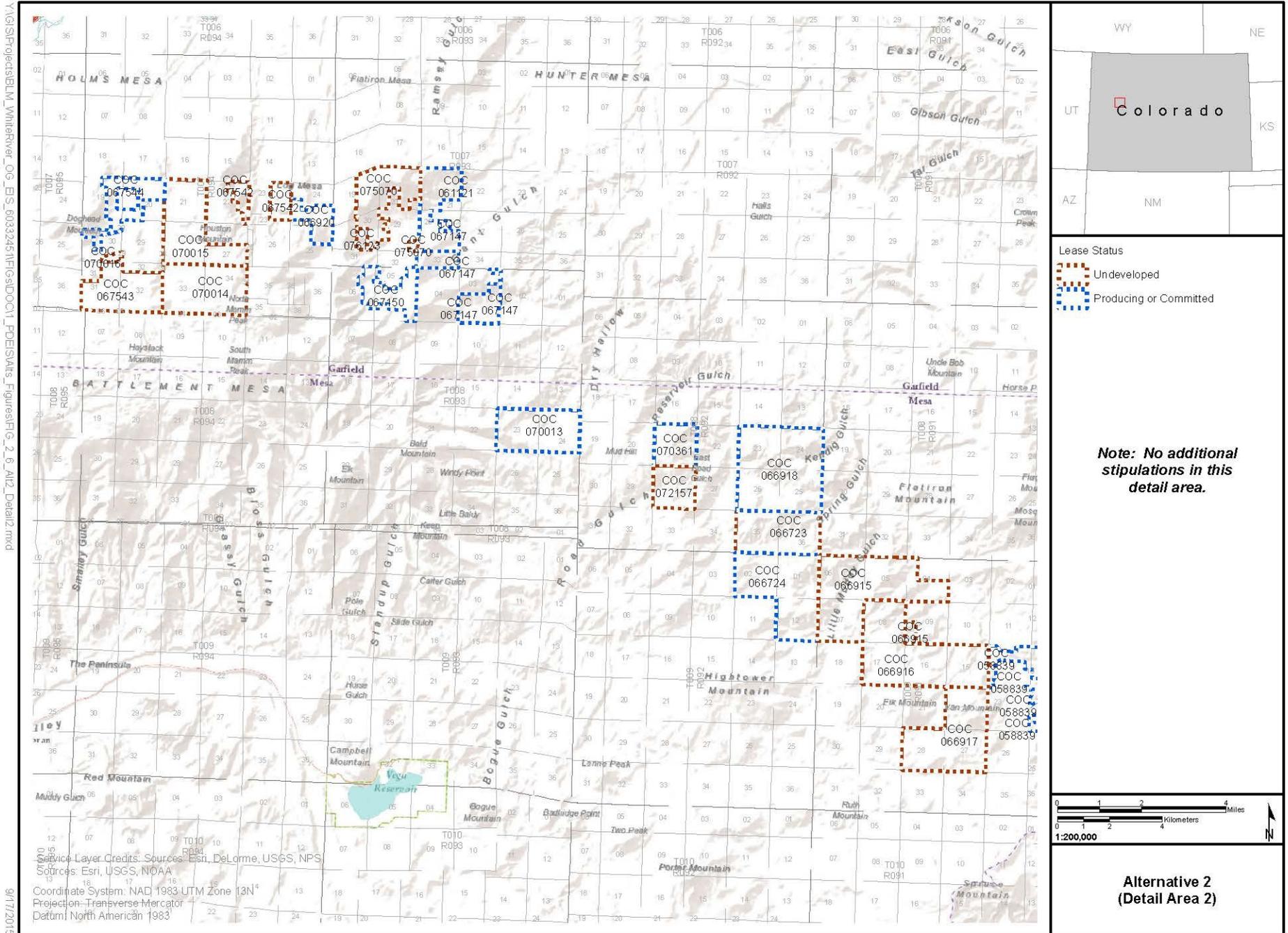


Figure 2-6 Additional Lease Stipulations under Alternative 2, Middle Section



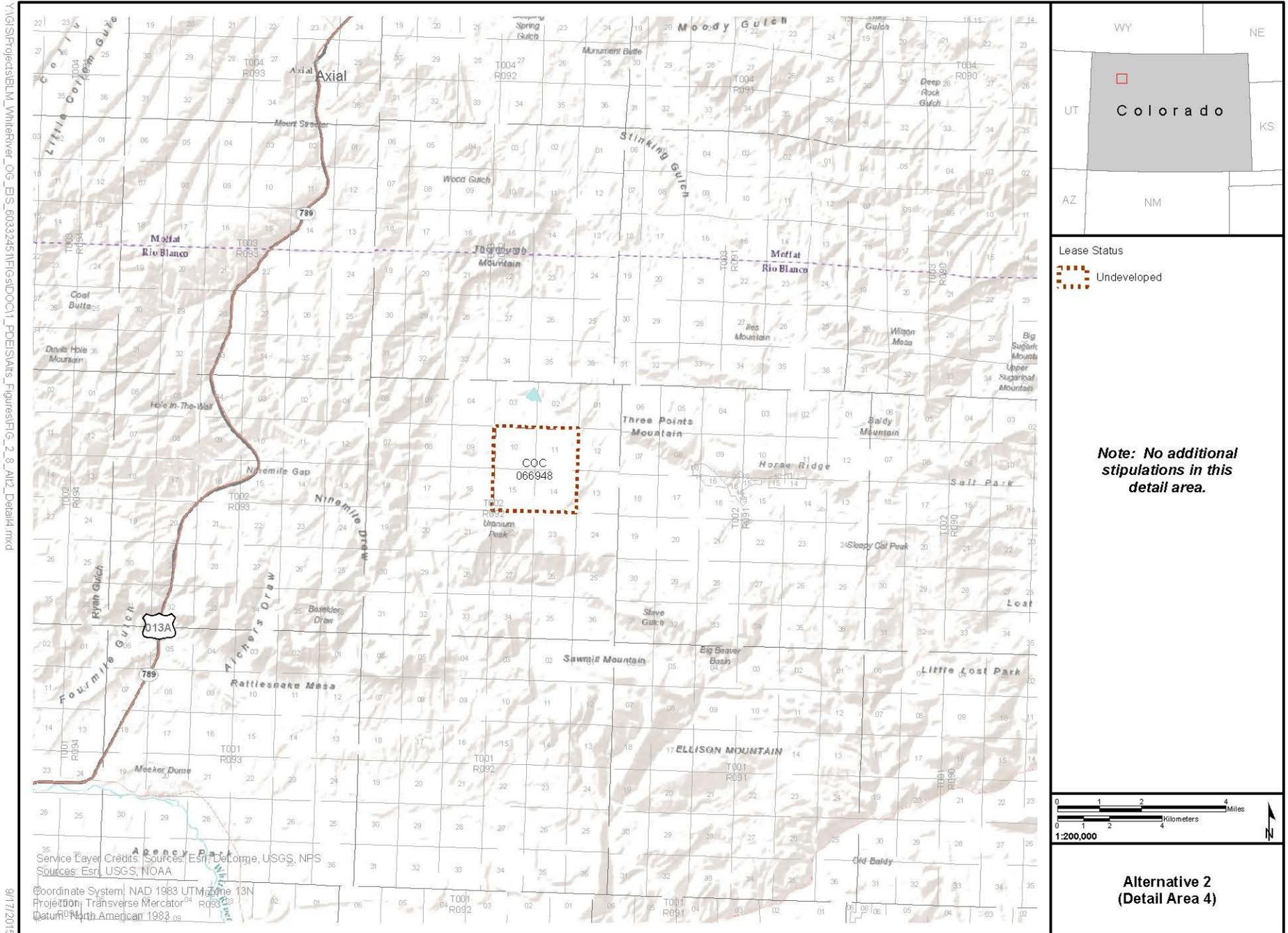


Figure 2-8 Additional Lease Stipulations under Alternative 2, North Side

**2.3.3 Alternative 3: Modify Stipulations to Match the 2014 WRNF Final EIS Proposed Action**

Although the Forest Service’s 2014 Proposed Action and draft decision do not apply to these 65 leases, Alternative 3 is designed to consider the modification of the 65 leases to match the stipulations for future leasing in the Forest Service’s Proposed Action from the WRNF Final EIS (USFS 2014a). Under Alternative 3, the BLM would modify the existing leases to apply stipulations that match those identified by the Forest Service for future leasing in its Proposed Action. Under this alternative, the BLM would offer the lessee the option of either accepting the new lease terms or having the lease cancelled. For undeveloped leases, cancellation (if elected by the lessee) would be done through a BLM administrative process and would require that the BLM refund any bonus bids and lease payments. Should the lessee not accept the new lease stipulations on a producing lease, it may be necessary for the BLM to request judicial action to cancel the lease.

Changes in lease stipulations would not apply to locations with producing wells because the constraints applied through lease stipulations apply to exploration and development, not operations after the well is producing. However, any new wells to be developed on a lease with modified stipulations would be required to comply with the modified stipulations. Lease Notice CO-56 would apply to new development under Alternative 3. This lease notice states that air quality analysis may be required, including preparation of a comprehensive emissions inventory, air quality modeling, and interagency consultation with affected land managers and air quality regulators to determine potential mitigation options for any predicted significant impacts from proposed development. Compliance with the National Ambient Air Quality Standards and protection of nearby Class I or Sensitive Class II areas would be required.

In the WRNF Final EIS, Alternative C (Scenario 1) presented many new stipulations to protect surface resources that were not considered in the 1993 EIS. For example, there are stipulations to protect such resources as sensitive plant and animal species, migration corridors, scenic integrity, and paleontological resources, none of which are protections provided by the current stipulations. There are many more acres of lease stipulations and very little area with standard lease terms. The stipulations would be applied to the 65 previously issued leases under this alternative. For leases with producing wells, the new stipulations would only apply to new development. Existing wells would remain in production.

**Table 2-3** lists the proposed stipulations for each lease. Note that the total acreage of stipulations on each lease may be greater than the total lease acreage because many stipulations overlap. **Figures 2-9** through **2-12** display the types of stipulations proposed for each lease.

**Table 2-3 Lease Stipulations Under Alternative 3**

Zone	Lease No.	Lease Acres	Type of Stipulation	Type of Restriction <sup>1</sup>	Acres of Stipulation
1	058677	543	NSO	Bighorn Sheep Migration Corridors and Water Sources	362
				High Scenic Integrity Objective	541
				Research Natural Areas	540
				Roadless Areas	22
				Severe or High Landscape Stability Hazards	9
				Slope Greater than 50%	11
				Threatened, Endangered, Proposed, and Candidate (TEPC) Aquatic Species	6
				TEPC Plant Species	543
				Water Influence Zones	79

**Table 2-3 Lease Stipulations Under Alternative 3**

Zone	Lease No.	Lease Acres	Type of Stipulation	Type of Restriction <sup>1</sup>	Acres of Stipulation
			CSU	Big Game Winter Ranges	543
				Highly Erodible Soils	123
				Paleontological Resources	543
				Plant Species of Local Concern	543
				Sensitive Aquatic Species	16
				Sensitive Plant Species	538
				Sensitive Terrestrial Avian Invertebrate Species	543
				Slopes 30 to 50%	97
			TL	Big Game Winter Range	534
			1	059630	587
High Scenic Integrity Objective	574				
Research Natural Areas	572				
Roadless Areas	290				
Severe or High Landscape Stability Hazards	116				
Slope Greater than 50%	109				
TEPC Plant Species	585				
TEPC Wildlife Species	44				
Water Influence Zones	97				
CSU	Authorized Sites and Facilities	45			
	Big Game Summer Concentration	126			
	Big Game Winter Ranges	587			
	Highly Erodible Soils	126			
	Paleontological Resources	577			
	Plant Species of Local Concern	581			
	Sensitive Aquatic Species	1			
	Sensitive Plant Species	574			
	Sensitive Terrestrial Avian Invertebrate Species	578			
	Slopes 30 to 50%	200			
TL	Big Game Summer Concentration	126			
	Big Game Winter Range	587			
1	066727	640	NSO	Bighorn Sheep Migration Corridors and Water Sources	518
				Bighorn Sheep Winter Habitats	413
				High Scenic Integrity Objective	640
				Research Natural Areas	640
				Roadless Areas	640
				Severe or High Landscape Stability Hazards	343

**Table 2-3 Lease Stipulations Under Alternative 3**

Zone	Lease No.	Lease Acres	Type of Stipulation	Type of Restriction <sup>1</sup>	Acres of Stipulation
				Slope Greater than 50%	313
				TEPC Plant Species	158
				TEPC Wildlife Species	194
				Water Influence Zones	57
			CSU	Big Game Summer Concentration	218
				Big Game Winter Ranges	39
				Highly Erodible Soils	41
				Paleontological Resources	640
				Plant Species of Local Concern	102
				Sensitive Aquatic Species	21
				Sensitive Plant Species	640
				Sensitive Terrestrial Avian Invertebrate Species	640
				Slopes 30 to 50%	201
				Spruce Fir Old Growth and Old Growth Recruitment Stands	26
			TL	Big Game Summer Concentration	218
Big Game Winter Range	39				
1	066728	1,276	NSO	Bighorn Sheep Migration Corridors and Water Sources	1,275
				Bighorn Sheep Winter Habitats	25
				High Scenic Integrity Objective	1,275
				Research Natural Areas	1,275
				Roadless Areas	835
				Severe or High Landscape Stability Hazards	333
				Slope Greater than 50%	318
				TEPC Plant Species	1,252
				TEPC Wildlife Species	110
				Water Influence Zones	237
			CSU	Big Game Winter Ranges	1,132
				Highly Erodible Soils	167
				Paleontological Resources	1,275
				Plant Species of Local Concern	1,144
				Sensitive Aquatic Species	205
				Sensitive Plant Species	1,275
				Sensitive Terrestrial Avian Invertebrate Species	1,275
			Slopes 30 to 50%	396	
			TL	Big Game Winter Range	728

**Table 2-3 Lease Stipulations Under Alternative 3**

<b>Zone</b>	<b>Lease No.</b>	<b>Lease Acres</b>	<b>Type of Stipulation</b>	<b>Type of Restriction<sup>1</sup></b>	<b>Acres of Stipulation</b>
1	066729	654	NSO	Bighorn Sheep Migration Corridors and Water Sources	270
				Bighorn Sheep Winter Habitats	488
				High Scenic Integrity Objective	655
				Research Natural Areas	654
				Roadless Areas	492
				Severe or High Landscape Stability Hazards	272
				Slope Greater than 50%	245
				TEPC Plant Species	579
				TEPC Wildlife Species	65
				Water Influence Zones	91
			CSU	Big Game Winter Ranges	655
				Highly Erodible Soils	13
				Paleontological Resources	655
				Plant Species of Local Concern	416
				Sensitive Aquatic Species	99
				Sensitive Plant Species	654
				Sensitive Terrestrial Avian Invertebrate Species	655
			TL	Slopes 30 to 50%	209
				Big Game Winter Range	110
1	066730	1,279	NSO	Bighorn Sheep Migration Corridors and Water Sources	722
				Bighorn Sheep Winter Habitats	341
				High Scenic Integrity Objective	1,279
				Research Natural Areas	1,279
				Roadless Areas	1,228
				Severe or High Landscape Stability Hazards	395
				Slope Greater than 50%	383
				TEPC Plant Species	706
				TEPC Wildlife Species	442
				Water Influence Zones	207
			CSU	Big Game Winter Ranges	287
				Paleontological Resources	1,279
				Plant Species of Local Concern	609
				Sensitive Aquatic Species	308
				Sensitive Plant Species	1,279
				Sensitive Terrestrial Avian Invertebrate Species	1,279
				Slopes 30 to 50%	482

**Table 2-3 Lease Stipulations Under Alternative 3**

<b>Zone</b>	<b>Lease No.</b>	<b>Lease Acres</b>	<b>Type of Stipulation</b>	<b>Type of Restriction<sup>1</sup></b>	<b>Acres of Stipulation</b>
				Spruce Fir Old Growth and Old Growth Recruitment Stands	20
1	066731	651	NSO	Authorized Sites and Facilities	126
				Bighorn Sheep Migration Corridors and Water Sources	120
				Bighorn Sheep Winter Habitats	21
				High Scenic Integrity Objective	645
				Research Natural Areas	644
				Roadless Areas	646
				Severe or High Landscape Stability Hazards	75
				Slope Greater than 50%	79
				TEPC Plant Species	339
				TEPC Wildlife Species	139
				Water Influence Zones	108
			CSU	Authorized Sites and Facilities	361
				Big Game Summer Concentration	649
				Big Game Winter Ranges	514
				Highly Erodible Soils	180
				Moderately High Landscape Stability Hazards	13
				Paleontological Resources	646
				Plant Species of Local Concern	325
				Sensitive Aquatic Species	63
				Sensitive Plant Species	651
				Sensitive Terrestrial Avian Invertebrate Species	651
Slopes 30 to 50%	266				
Spruce Fir Old Growth and Old Growth Recruitment Stands	3				
TL	Big Game Summer Concentration	649			
	Big Game Winter Range	506			
1	066732	1,437	NSO	Bighorn Sheep Migration Corridors and Water Sources	768
				Bighorn Sheep Winter Habitats	663
				High Scenic Integrity Objective	1,435
				Research Natural Areas	1,433
				Roadless Areas	1,267
				Severe or High Landscape Stability Hazards	335
				Slope Greater than 50%	325
				TEPC Plant Species	1,016
				TEPC Wildlife Species	248

**Table 2-3 Lease Stipulations Under Alternative 3**

Zone	Lease No.	Lease Acres	Type of Stipulation	Type of Restriction <sup>1</sup>	Acres of Stipulation
				Water Influence Zones	274
			CSU	Big Game Migration Corridors	80
				Big Game Winter Ranges	1,025
				Highly Erodible Soils	154
				Moderately High Landscape Stability Hazards	22
				Paleontological Resources	1,435
				Plant Species of Local Concern	1,375
				Sensitive Aquatic Species	71
				Sensitive Plant Species	1,435
				Sensitive Terrestrial Avian Invertebrate Species	1,435
				Slopes 30 to 50%	457
				Spruce Fir Old Growth and Old Growth Recruitment Stands	23
			TL	Big Game Winter Range	594
1	066733	1,416	NSO	Bighorn Sheep Migration Corridors and Water Sources	688
				Bighorn Sheep Winter Habitats	309
				High Scenic Integrity Objective	1,415
				Raptor Species Breeding Territories	703
				Research Natural Areas	1,377
				Roadless Areas	783
				Severe or High Landscape Stability Hazards	120
				Slope Greater than 50%	120
				TEPC Aquatic Species	713
				TEPC Plant Species	1,200
				TEPC Wildlife Species	106
				Water Influence Zones	285
				Public Water Supply Source Area Protection	790
			CSU	Big Game Winter Ranges	1,254
				Highly Erodible Soils	666
				Moderately High Landscape Stability Hazards	13
				Paleontological Resources	1,415
				Plant Species of Local Concern	1,418
			Sensitive Plant Species	1,418	
			Sensitive Terrestrial Avian Invertebrate Species	1,400	
Slopes 30 to 50%	281				
TL	Big Game Winter Range	1,166			

**Table 2-3 Lease Stipulations Under Alternative 3**

Zone	Lease No.	Lease Acres	Type of Stipulation	Type of Restriction <sup>1</sup>	Acres of Stipulation
1	066926	1,629	NSO	Bighorn Sheep Migration Corridors and Water Sources	332
				Bighorn Sheep Production	935
				Bighorn Sheep Summer Concentration	404
				Bighorn Sheep Winter Habitats	1,381
				High Scenic Integrity Objective	1,159
				Raptor Species Breeding Territories	1,399
				Research Natural Areas	1,156
				Roadless Areas	1,082
				Severe or High Landscape Stability Hazards	377
				Slope Greater than 50%	313
				TEPC Aquatic Species	1,399
				TEPC Plant Species	1,044
				TEPC Wildlife Species	159
				Water Influence Zones	161
				NSO-Public Water Supply Source Area Protection	10
			CSU	Big Game Migration Corridors	36
				Big Game Winter Ranges	793
				Highly Erodible Soils	342
				Moderately High Landscape Stability Hazards	11
				Paleontological Resources	1,161
Plant Species of Local Concern	1,629				
Sensitive Plant Species	1,629				
Sensitive Terrestrial Avian Invertebrate Species	1,629				
TL	Slopes 30 to 50%	351			
	Big Game Winter Range	773			
2	061121	964	NSO	Public Water Supply Source Area Protection	416
				Roadless Areas	667
				Severe or High Landscape Stability Hazards	19
				Slope Greater than 50%	20
				TEPC Plant Species	48
				TEPC Wildlife Species	57
				Water Influence Zones	112
				CSU	Big Game Migration Corridors
			Big Game Production Areas		184
			Big Game Summer Concentration		441
			Big Game Winter Ranges		964
			Ground Water Resources		8

**Table 2-3 Lease Stipulations Under Alternative 3**

Zone	Lease No.	Lease Acres	Type of Stipulation	Type of Restriction <sup>1</sup>	Acres of Stipulation
				Highly Erodible Soils	805
				Moderately High Landscape Stability Hazards	11
				Paleontological Resources	963
				Plant Species of Local Concern	189
				Sensitive Aquatic Species	77
				Sensitive Plant Species	961
				Sensitive Terrestrial Avian Invertebrate Species	769
				Slopes 30 to 50%	302
			TL	Big Game Summer Concentration	441
			Big Game Winter Range	695	
2	066723	1,280	NSO	Authorized Sites and Facilities	829
				Raptor Species Breeding Territories	120
				Roadless Areas	71
				Severe or High Landscape Stability Hazards	36
				Slope Greater than 50%	40
				TEPC Aquatic Species	1,077
				Water Influence Zones	174
				CSU	Authorized Sites and Facilities
			Big Game Migration Corridors		92
			Big Game Summer Concentration		1,280
			Big Game Winter Ranges		1,280
			Highly Erodible Soils		1,045
			Moderately High Landscape Stability Hazards		2
			Paleontological Resources		1,280
			Sensitive Aquatic Species		122
			Sensitive Plant Species		1,280
			Sensitive Terrestrial Avian Invertebrate Species		1,031
			Slopes 30 to 50%	422	
			TL	Big Game Summer Concentration	1,280
				Big Game Winter Range	1,280
Raptor Species Breeding Territories	120				
2	066724	1,973	NSO	Authorized Sites and Facilities	866
				Raptor Species Breeding Territories	601
				Roadless Areas	1,221
				Severe or High Landscape Stability Hazards	7
				Slope Greater than 50%	29
				TEPC Aquatic Species	724
				Water Influence Zones	240

**Table 2-3 Lease Stipulations Under Alternative 3**

Zone	Lease No.	Lease Acres	Type of Stipulation	Type of Restriction <sup>1</sup>	Acres of Stipulation
			CSU	Authorized Sites and Facilities	1,215
				Big Game Migration Corridors	164
				Big Game Production Areas	768
				Big Game Summer Concentration	1,973
				Big Game Winter Ranges	1,900
				Highly Erodible Soils	1,446
				Paleontological Resources	1,973
				Sensitive Aquatic Species	258
				Sensitive Plant Species	1,973
				Sensitive Terrestrial Avian Invertebrate Species	1,143
			Slopes 30 to 50%	524	
			TL	Big Game Summer Concentration	1,973
				Big Game Winter Range	1,871
Raptor Species Breeding Territories	274				
2	066915	2,537	NSO	Authorized Sites and Facilities	336
				Native Cutthroat Trout Habitat	41
				Raptor Species Breeding Territories	1,529
				Roadless Areas	1,916
				Severe or High Landscape Stability Hazards	86
				Slope Greater than 50%	176
				TEPC Raptor Species	503
				TEPC Wildlife Species	334
				Water Influence Zones	279
			CSU	Authorized Sites and Facilities	998
				Big Game Migration Corridors	165
				Big Game Production Areas	1,845
				Big Game Summer Concentration	2,537
				Big Game Winter Ranges	2,456
				High Concern Travel Ways or Use Areas	662
				Highly Erodible Soils	2,082
				Moderately High Landscape Stability Hazards	8
				Paleontological Resources	2,537
				Sensitive Aquatic Species	465
				Sensitive Plant Species	2,537
Sensitive Terrestrial Avian Invertebrate Species	2,169				
Slopes 30 to 50%	1,349				

**Table 2-3 Lease Stipulations Under Alternative 3**

Zone	Lease No.	Lease Acres	Type of Stipulation	Type of Restriction <sup>1</sup>	Acres of Stipulation
			TL	Big Game Summer Concentration	2,537
				Big Game Winter Range	2,325
				Raptor Species Breeding Territories	554
2	066916	2,562	NSO	Native Cutthroat Trout Habitat	10
				Raptor Species Breeding Territories	292
				Roadless Areas	2,562
				Severe or High Landscape Stability Hazards	115
				Slope Greater than 50%	135
				TEPC Wildlife Species	549
				Water Influence Zones	189
			CSU	Authorized Sites and Facilities	49
				Big Game Migration Corridors	175
				Big Game Production Areas	1,839
				Big Game Summer Concentration	2,376
				Big Game Winter Ranges	244
				High Concern Travel Ways or Use Areas	421
				Highly Erodible Soils	2,193
				Moderately High Landscape Stability Hazards	24
				Paleontological Resources	2,562
				Sensitive Aquatic Species	276
				Sensitive Plant Species	2,486
			Sensitive Terrestrial Avian Invertebrate Species	2,048	
			Slopes 30 to 50%	943	
TL	Big Game Summer Concentration	2,376			
	Big Game Winter Range	136			
	Raptor Species Breeding Territories	135			
2	066917	1,920	NSO	Authorized Sites and Facilities	68
				Fen Wetlands	0
				High Geologic Hazard—GMUGNF	20
				Native Cutthroat Trout Habitat	8
				Roadless Areas	1,324
				Severe or High Landscape Stability Hazards	4
				Slope Greater than 50%	13
				TEPC Aquatic Species	563
				TEPC Plant Species	349
				TEPC Wildlife Species	139
				Water Influence Zones	109

**Table 2-3 Lease Stipulations Under Alternative 3**

Zone	Lease No.	Lease Acres	Type of Stipulation	Type of Restriction <sup>1</sup>	Acres of Stipulation
			CSU	Authorized Sites and Facilities	270
				Big Game Production Areas	70
				Big Game Summer Concentration	924
				Big Game Winter Ranges	99
				Elk Production Area—GMUGNF	439
				High Concern Travel Ways or Use Areas	1,201
				Highly Erodible Soils	1,337
				Paleontological Resources	1,452
				Plant Species of Local Concern	915
				Sensitive Aquatic Species	534
				Sensitive Plant Species	1,708
				Sensitive Terrestrial Avian Invertebrate Species	920
				Slopes 30 to 50%	277
				Watersheds with CRCT and GBCT Conservation Populations	206
			TL	Big Game Summer Concentration	924
2	066918	2,557	NSO	Severe or High Landscape Stability Hazards	472
				Slope Greater than 50%	367
				TEPC Aquatic Species	236
				TEPC Plant Species	44
				TEPC Wildlife Species	14
				Water Influence Zones	233
			CSU	Authorized Sites and Facilities	120
				Big Game Migration Corridors	11
				Big Game Summer Concentration	2,123
				Big Game Winter Ranges	2,557
				High Concern Travel Ways or Use Areas	476
				Highly Erodible Soils	2,286
				Moderately High Landscape Stability Hazards	27
				Paleontological Resources	2,553
				Sensitive Aquatic Species	0
				Sensitive Plant Species	2,557
				Sensitive Terrestrial Avian Invertebrate Species	2,493
			Slopes 30 to 50%	1,242	
TL	Big Game Summer Concentration	2,123			
	Big Game Winter Range	2,557			

**Table 2-3 Lease Stipulations Under Alternative 3**

<b>Zone</b>	<b>Lease No.</b>	<b>Lease Acres</b>	<b>Type of Stipulation</b>	<b>Type of Restriction<sup>1</sup></b>	<b>Acres of Stipulation</b>
2	066920	418	NSO	Authorized Sites and Facilities	165
				Native Cutthroat Trout Habitat	51
				Severe or High Landscape Stability Hazards	35
				Slope Greater than 50%	50
				TEPC Aquatic Species	7
				TEPC Wildlife Species	29
				Water Influence Zones	44
				NSO-Public Water Supply Source Area Protection	275
			CSU	Authorized Sites and Facilities	304
				Big Game Summer Concentration	51
				Big Game Winter Ranges	406
				High Concern Travel Ways or Use Areas	418
				Highly Erodible Soils	206
				Moderate Scenic Integrity Objective	185
				Moderately High Landscape Stability Hazards	68
				Paleontological Resources	418
				Sensitive Aquatic Species	63
				Sensitive Plant Species	301
				Sensitive Terrestrial Avian Invertebrate Species	123
				Slopes 30 to 50%	233
Spruce Fir Old Growth and Old Growth Recruitment Stands	11				
Watersheds with CRCT and GBCT Conservation Populations	418				
TL	Big Game Summer Concentration	51			
2	067147	783	NSO	Authorized Sites and Facilities	26
				Raptor Species Breeding Territories	11
				Roadless Areas	779
				Severe or High Landscape Stability Hazards	39
				Slope Greater than 50%	36
				TEPC Wildlife Species	72
				Water Influence Zones	107
			CSU	Authorized Sites and Facilities	119
				Big Game Production Areas	628
				Big Game Summer Concentration	662
				Big Game Winter Ranges	780
				High Concern Travel Ways or Use Areas	497
				Highly Erodible Soils	573

**Table 2-3 Lease Stipulations Under Alternative 3**

Zone	Lease No.	Lease Acres	Type of Stipulation	Type of Restriction <sup>1</sup>	Acres of Stipulation
				Moderate Scenic Integrity Objective	372
				Moderately High Landscape Stability Hazards	25
				Paleontological Resources	779
				Sensitive Aquatic Species	210
				Sensitive Plant Species	779
				Sensitive Terrestrial Avian Invertebrate Species	614
				Slopes 30 to 50%	211
			TL	Big Game Summer Concentration	662
			Big Game Winter Range	462	
2	067150	662	NSO	Raptor Species Breeding Territories	63
				Roadless Areas	634
				Severe or High Landscape Stability Hazards	86
				Slope Greater than 50%	83
				TEPC Wildlife Species	278
				Water Influence Zones	63
			CSU	Big Game Production Areas	625
				Big Game Summer Concentration	307
				Big Game Winter Ranges	647
				High Concern Travel Ways or Use Areas	2
				Highly Erodible Soils	546
				Moderate Scenic Integrity Objective	52
				Moderately High Landscape Stability Hazards	19
				Paleontological Resources	662
				Sensitive Plant Species	613
				Sensitive Terrestrial Avian Invertebrate Species	310
				Slopes 30 to 50%	248
				Spruce Fir Old Growth and Old Growth Recruitment Stands	27
			TL	Big Game Summer Concentration	307
				Raptor Species Breeding Territories	63
2	067542	480	NSO	Severe or High Landscape Stability Hazards	375
				Slope Greater than 50%	330
				TEPC Wildlife Species	297
				Water Influence Zones	44
			CSU	Big Game Migration Corridors	67
				Big Game Production Areas	145
				Big Game Summer Concentration	343
				Big Game Winter Ranges	467

**Table 2-3 Lease Stipulations Under Alternative 3**

Zone	Lease No.	Lease Acres	Type of Stipulation	Type of Restriction <sup>1</sup>	Acres of Stipulation
				High Concern Travel Ways or Use Areas	53
				Highly Erodible Soils	45
				Moderately High Landscape Stability Hazards	0
				Paleontological Resources	480
				Sensitive Plant Species	479
				Sensitive Terrestrial Avian Invertebrate Species	306
				Slopes 30 to 50%	101
				Spruce Fir Old Growth and Old Growth Recruitment Stands	57
				Watersheds with CRCT and GBCT Conservation Populations	480
			TL	Big Game Summer Concentration	343
			Big Game Winter Range	14	
			Raptor Species Breeding Territories	43	
			2	067543	1,167
Raptor Species Breeding Territories	57				
Roadless Areas	994				
Severe or High Landscape Stability Hazards	13				
Slope Greater than 50%	11				
Summer Non-Motorized Recreation	60				
TEPC Aquatic Species	128				
TEPC Wildlife Species	1,024				
Water Influence Zones	112				
CSU	Authorized Sites and Facilities	560			
	Big Game Production Areas	268			
	Big Game Summer Concentration	1,167			
	Big Game Winter Ranges	579			
	Ground Water Resources	479			
	High Concern Travel Ways or Use Areas	995			
	Highly Erodible Soils	834			
	Moderate Scenic Integrity Objective	778			
	Moderately High Landscape Stability Hazards	37			
	Paleontological Resources	1,166			
	Sensitive Aquatic Species	199			
	Sensitive Plant Species	1,088			
Sensitive Terrestrial Avian Invertebrate Species	1,143				
Slopes 30 to 50%	202				
Spruce Fir Old Growth and Old Growth Recruitment Stands	405				

**Table 2-3 Lease Stipulations Under Alternative 3**

Zone	Lease No.	Lease Acres	Type of Stipulation	Type of Restriction <sup>1</sup>	Acres of Stipulation
				Watersheds with CRCT and GBCT Conservation Populations	451
			TL	Big Game Summer Concentration	1,167
2	067544	730	NSO	Native Cutthroat Trout Habitat	46
				Roadless Areas	241
				Severe or High Landscape Stability Hazards	15
				Slope Greater than 50%	20
				TEPC Wildlife Species	35
				Water Influence Zones	108
			CSU	Big Game Migration Corridors	92
				Big Game Production Areas	586
				Big Game Summer Concentration	730
				Big Game Winter Ranges	710
				Ground Water Resources	2
				High Concern Travel Ways or Use Areas	15
				Highly Erodible Soils	580
				Moderate Scenic Integrity Objective	59
				Moderately High Landscape Stability Hazards	80
				Paleontological Resources	729
				Sensitive Aquatic Species	93
				Sensitive Plant Species	667
				Sensitive Terrestrial Avian Invertebrate Species	395
				Slopes 30 to 50%	229
Watersheds with CRCT and GBCT Conservation Populations	170				
TL	Big Game Summer Concentration	730			
	Big Game Winter Range	19			
2	070013	1,262	NSO	>60% Slope—GMUGNF	1
				Fen Wetlands	22
				High Geologic Hazard—GMUGNF	52
				Riparian/ Wetland—GMUGNF	3
				Roadless Area—GMUGNF	186
				Roadless Areas	1,200
				Severe or High Landscape Stability Hazards	41
				Slope Greater than 50%	46
				TEPC Aquatic Species	212
				TEPC Wildlife Species	9
				Water Influence Zones	88

**Table 2-3 Lease Stipulations Under Alternative 3**

Zone	Lease No.	Lease Acres	Type of Stipulation	Type of Restriction <sup>1</sup>	Acres of Stipulation
			CSU	40-60% Slope—GMUGNF	33
				Big Game Summer Concentration	942
				Big Game Winter Ranges	1,199
				Ground Water Resources	65
				Highly Erodible Soils	1,034
				Moderate Geologic Hazard—GMUGNF	173
				Moderate Scenic Integrity Objective	0
				Paleontological Resources	1,036
				Sensitive Aquatic Species	212
				Sensitive Plant Species	1,255
				Sensitive Terrestrial Avian Invertebrate Species	478
			Slopes 30 to 50%	291	
			TL	Big Game Summer Concentration	942
Big Game Winter Range	796				
2	070014	1,486	NSO	Authorized Sites and Facilities	251
				Fen Wetlands	38
				Native Cutthroat Trout Habitat	107
				Roadless Areas	1,485
				Severe or High Landscape Stability Hazards	24
				Slope Greater than 50%	49
				Summer Non-Motorized Recreation	781
				TEPC Aquatic Species	114
				TEPC Wildlife Species	1,163
				Water Influence Zones	168
			CSU	Authorized Sites and Facilities	722
				Big Game Production Areas	389
				Big Game Summer Concentration	1,486
				Big Game Winter Ranges	704
				Ground Water Resources	346
				Highly Erodible Soils	458
				Moderate Scenic Integrity Objective	1,187
				Moderately High Landscape Stability Hazards	155
				Paleontological Resources	1,486
				Sensitive Aquatic Species	219
				Sensitive Plant Species	1,394
Sensitive Terrestrial Avian Invertebrate Species	1,277				
Slopes 30 to 50%	450				

**Table 2-3 Lease Stipulations Under Alternative 3**

Zone	Lease No.	Lease Acres	Type of Stipulation	Type of Restriction <sup>1</sup>	Acres of Stipulation
				Spruce Fir Old Growth and Old Growth Recruitment Stands	933
				Watersheds with CRCT and GBCT Conservation Populations	228
			TL	Big Game Summer Concentration	1,486
2	070015	1,598	NSO	Authorized Sites and Facilities	118
				Native Cutthroat Trout Habitat	39
				Roadless Areas	1,595
				Severe or High Landscape Stability Hazards	317
				Slope Greater than 50%	324
				Summer Non-Motorized Recreation	31
				TEPC Aquatic Species	45
				TEPC Wildlife Species	824
				Water Influence Zones	136
			CSU	Authorized Sites and Facilities	445
				Big Game Production Areas	683
				Big Game Summer Concentration	1,598
				Big Game Winter Ranges	1,564
				Ground Water Resources	298
				Highly Erodible Soils	700
				Moderate Scenic Integrity Objective	1,004
				Moderately High Landscape Stability Hazards	115
				Paleontological Resources	1,598
				Sensitive Aquatic Species	81
				Sensitive Plant Species	1,231
Sensitive Terrestrial Avian Invertebrate Species	1,124				
TL	Slopes 30 to 50%	671			
	Spruce Fir Old Growth and Old Growth Recruitment Stands	420			
				Watersheds with CRCT and GBCT Conservation Populations	693
2	070016	51	NSO	Roadless Areas	51
				TEPC Wildlife Species	40
				Water Influence Zones	6
			CSU	Big Game Production Areas	46
				Big Game Summer Concentration	51
				Big Game Winter Ranges	50
				Ground Water Resources	21

**Table 2-3 Lease Stipulations Under Alternative 3**

Zone	Lease No.	Lease Acres	Type of Stipulation	Type of Restriction <sup>1</sup>	Acres of Stipulation
				High Concern Travel Ways or Use Areas	40
				Highly Erodible Soils	28
				Moderate Scenic Integrity Objective	50
				Moderately High Landscape Stability Hazards	0
				Paleontological Resources	51
				Sensitive Plant Species	1
				Sensitive Terrestrial Avian Invertebrate Species	44
				Slopes 30 to 50%	6
			TL	Big Game Summer Concentration	51
2	070361	638	NSO	Severe or High Landscape Stability Hazards	23
				Slope Greater than 50%	28
				TEPC Aquatic Species	288
				Water Influence Zones	27
			CSU	Big Game Summer Concentration	33
				Big Game Winter Ranges	638
				High Concern Travel Ways or Use Areas	517
				Highly Erodible Soils	590
				Moderate Geologic Hazard—GMUGNF	47
				Paleontological Resources	591
				Sensitive Aquatic Species	33
				Sensitive Plant Species	638
			Sensitive Terrestrial Avian Invertebrate Species	483	
Slopes 30 to 50%	231				
TL	Big Game Summer Concentration	33			
	Big Game Winter Range	638			
	Big Game Winter Range—GMUGNF	47			
2	072157	638	NSO	Slope Greater than 50%	0
				TEPC Aquatic Species	419
				TEPC Wildlife Species	2
				Water Influence Zones	23
			CSU	Big Game Summer Concentration	4
				Big Game Winter Ranges	638
				High Concern Travel Ways or Use Areas	627
				Highly Erodible Soils	295
				Moderate Geologic Hazard—GMUGNF	341
				Paleontological Resources	298
Sensitive Aquatic Species	4				
Sensitive Plant Species	498				

**Table 2-3 Lease Stipulations Under Alternative 3**

Zone	Lease No.	Lease Acres	Type of Stipulation	Type of Restriction <sup>1</sup>	Acres of Stipulation
2	075070	1,152	TL	Sensitive Terrestrial Avian Invertebrate Species	249
				Slopes 30 to 50%	75
				Big Game Summer Concentration	4
				Big Game Winter Range	638
				Big Game Winter Range—GMUGNF	341
			NSO	Authorized Sites and Facilities	40
				Raptor Species Breeding Territories	15
				Roadless Areas	1,113
				Severe or High Landscape Stability Hazards	92
				Slope Greater than 50%	95
				TEPC Wildlife Species	1
				Water Influence Zones	49
				Public Water Supply Source Area Protection	30
CSU	Authorized Sites and Facilities	163			
	Big Game Migration Corridors	116			
	Big Game Production Areas	425			
	Big Game Summer Concentration	31			
	Big Game Winter Ranges	1,150			
	High Concern Travel Ways or Use Areas	114			
	Highly Erodible Soils	766			
	Moderate Scenic Integrity Objective	3			
	Moderately High Landscape Stability Hazards	59			
	Paleontological Resources	1,151			
	Plant Species of Local Concern	24			
	Sensitive Aquatic Species	3			
	Sensitive Plant Species	1,094			
Sensitive Terrestrial Avian Invertebrate Species	314				
Slopes 30 to 50%	452				
Watersheds with CRCT and GBCT Conservation Populations	267				
TL	Big Game Summer Concentration	31			
	Big Game Winter Range	194			
	Raptor Species Breeding Territories	15			
2	076123	80	NSO	Raptor Species Breeding Territories	1
				Roadless Areas	80
				Severe or High Landscape Stability Hazards	2
				Slope Greater than 50%	2
				Water Influence Zones	13

**Table 2-3 Lease Stipulations Under Alternative 3**

Zone	Lease No.	Lease Acres	Type of Stipulation	Type of Restriction <sup>1</sup>	Acres of Stipulation
			CSU	Authorized Sites and Facilities	28
				Big Game Production Areas	80
				Big Game Winter Ranges	80
				High Concern Travel Ways or Use Areas	79
				Highly Erodible Soils	31
				Moderate Scenic Integrity Objective	15
				Paleontological Resources	80
				Sensitive Plant Species	80
				Sensitive Terrestrial Avian Invertebrate Species	31
				Slopes 30 to 50%	29
			TL	Raptor Species Breeding Territories	1
3	058835	1,475	NSO	Roadless Areas	1,434
				Slope Greater than 50%	4
				TEPC Aquatic Species	6
				TEPC Wildlife Species	65
				Water Influence Zones	203
			CSU	Authorized Sites and Facilities	5
				Big Game Production Areas	1,239
				Big Game Summer Concentration	1,383
				Big Game Winter Ranges	1,471
				High Concern Travel Ways or Use Areas	549
				Highly Erodible Soils	1,179
				Paleontological Resources	1,474
				Sensitive Aquatic Species	189
				Sensitive Plant Species	1,432
Sensitive Terrestrial Avian Invertebrate Species	829				
Slopes 30 to 50%	186				
Watersheds with CRCT and GBCT Conservation Populations	1,474				
TL	Big Game Summer Concentration	1,383			
3	058836	1,279	NSO	Roadless Areas	1,222
				Slope Greater than 50%	1
				TEPC Aquatic Species	329
				TEPC Wildlife Species	12
				Water Influence Zones	201
			CSU	Big Game Production Areas	1,026
				Big Game Summer Concentration	1,181
				Big Game Winter Ranges	1,279

**Table 2-3 Lease Stipulations Under Alternative 3**

Zone	Lease No.	Lease Acres	Type of Stipulation	Type of Restriction <sup>1</sup>	Acres of Stipulation			
				High Concern Travel Ways or Use Areas	412			
				Highly Erodible Soils	977			
				Paleontological Resources	1,279			
				Sensitive Aquatic Species	513			
				Sensitive Plant Species	1,239			
				Sensitive Terrestrial Avian Invertebrate Species	1,135			
				Slopes 30 to 50%	39			
				Watersheds with CRCT and GBCT Conservation Populations	1,279			
			TL	Big Game Summer Concentration	1,181			
			3	058837	1,669	NSO	Authorized Sites and Facilities	126
							Fen Wetlands	12
Native Cutthroat Trout Habitat	229							
Raptor Species Breeding Territories	476							
Roadless Areas	216							
Severe or High Landscape Stability Hazards	14							
Slope Greater than 50%	16							
TEPC Aquatic Species	221							
TEPC Wildlife Species	411							
Water Influence Zones	438							
CSU	Authorized Sites and Facilities	537						
	Big Game Production Areas	232						
	Big Game Summer Concentration	1,319						
	Big Game Winter Ranges	1,402						
	High Concern Travel Ways or Use Areas	1,583						
	Highly Erodible Soils	713						
	Paleontological Resources	1,669						
	Sensitive Aquatic Species	812						
	Sensitive Plant Species	1,646						
	Sensitive Terrestrial Avian Invertebrate Species	1,501						
TL	Slopes 30 to 50%	77						
	Watersheds with CRCT and GBCT Conservation Populations	1,669						
	Big Game Summer Concentration	1,319						
				Big Game Winter Range	10			
				Raptor Species Breeding Territories	476			

**Table 2-3 Lease Stipulations Under Alternative 3**

<b>Zone</b>	<b>Lease No.</b>	<b>Lease Acres</b>	<b>Type of Stipulation</b>	<b>Type of Restriction<sup>1</sup></b>	<b>Acres of Stipulation</b>
3	058838	1,277	NSO	Authorized Sites and Facilities	110
				Roadless Areas	693
				Slope Greater than 50%	12
				TEPC Aquatic Species	226
				TEPC Wildlife Species	105
				Water Influence Zones	196
			CSU	Areas of Moderate Geologic Hazard—GMUGNF	26
				Authorized Sites and Facilities	352
				Big Game Production Areas	304
				Big Game Summer Concentration	1,221
				Big Game Winter Ranges	1,252
				High Concern Travel Ways or Use Areas	28
				Highly Erodible Soils	962
				Moderately High Landscape Stability Hazards	5
				Paleontological Resources	1,252
				Sensitive Aquatic Species	328
				Sensitive Plant Species	649
				Sensitive Terrestrial Avian Invertebrate Species	1,043
				Slopes 30 to 50%	199
			Watersheds with CRCT and GBCT Conservation Populations	1,253	
TL	Big Game Summer Concentration	1,221			
3	058839	1,127	NSO	Authorized Sites and Facilities	420
				Fen Wetlands	2
				Native Cutthroat Trout Habitat	183
				Roadless Areas	650
				Slope Greater than 50%	7
				TEPC Wildlife Species	268
				Water Influence Zones	222
			CSU	Authorized Sites and Facilities	908
				Big Game Production Areas	528
				Big Game Summer Concentration	1,127
				Big Game Winter Ranges	1,017
				High Concern Travel Ways or Use Areas	1,035
				Highly Erodible Soils	870
				Paleontological Resources	1,127
				Sensitive Aquatic Species	490
Sensitive Plant Species	1,115				

**Table 2-3 Lease Stipulations Under Alternative 3**

Zone	Lease No.	Lease Acres	Type of Stipulation	Type of Restriction <sup>1</sup>	Acres of Stipulation
				Sensitive Terrestrial Avian Invertebrate Species	897
				Slopes 30 to 50%	125
				Spruce Fir Old Growth and Old Growth Recruitment Stands	35
				Watersheds with CRCT and GBCT Conservation Populations	893
			TL	Big Game Summer Concentration	1,127
				Big Game Winter Range	184
3	058840	639	NSO	Native Cutthroat Trout Habitat	7
				Raptor Species Breeding Territories	27
				Roadless Areas	630
				TEPC Aquatic Species	75
				TEPC Wildlife Species	186
				Water Influence Zones	83
			CSU	Authorized Sites and Facilities	58
				Big Game Summer Concentration	213
				Big Game Winter Ranges	2
				High Concern Travel Ways or Use Areas	503
				Highly Erodible Soils	208
				Paleontological Resources	639
				Sensitive Aquatic Species	139
				Sensitive Plant Species	638
				Sensitive Terrestrial Avian Invertebrate Species	596
				Slopes 30 to 50%	15
				Watersheds with CRCT and GBCT Conservation Populations	639
			TL	Big Game Summer Concentration	213
				Raptor Species Breeding Territories	27
3	058841	638	NSO	Native Cutthroat Trout Habitat	110
				Raptor Species Breeding Territories	88
				Roadless Areas	134
				TEPC Aquatic Species	95
				TEPC Wildlife Species	125
				Water Influence Zones	124
			CSU	Big Game Summer Concentration	578
				Big Game Winter Ranges	454
				High Concern Travel Ways or Use Areas	638
				Highly Erodible Soils	340
			Paleontological Resources	638	

**Table 2-3 Lease Stipulations Under Alternative 3**

Zone	Lease No.	Lease Acres	Type of Stipulation	Type of Restriction <sup>1</sup>	Acres of Stipulation	
				Sensitive Aquatic Species	156	
				Sensitive Plant Species	252	
				Sensitive Terrestrial Avian Invertebrate Species	608	
				Slopes 30 to 50%	10	
				Watersheds with CRCT and GBCT Conservation Populations	638	
			TL	Big Game Summer Concentration	578	
3	066687	1,053	NSO	Authorized Sites and Facilities	3	
				Public Water Supply Source Area Protection	279	
				Severe or High Landscape Stability Hazards	44	
				Slope Greater than 50%	70	
				TEPC Aquatic Species	55	
				TEPC Wildlife Species	466	
				Water Influence Zones	65	
			CSU	Authorized Sites and Facilities	64	
				Big Game Production Areas	733	
				Big Game Winter Ranges	1,041	
				Communication Sites	332	
				High Concern Travel Ways or Use Areas	782	
				Highly Erodible Soils	59	
				Moderate Scenic Integrity Objective	128	
				Moderately High Landscape Stability Hazards	7	
				Paleontological Resources	1,050	
				Sensitive Aquatic Species	89	
				Sensitive Plant Species	676	
				Sensitive Terrestrial Avian Invertebrate Species	257	
				Slopes 30 to 50%	524	
				Spruce Fir Old Growth and Old Growth Recruitment Stands	105	
				TL	Big Game Winter Range	8
3	066688	774	NSO	Public Water Supply Source Area Protection	770	
				Severe or High Landscape Stability Hazards	94	
				Slope Greater than 50%	98	
				TEPC Aquatic Species	90	
				TEPC Wildlife Species	222	
				Water Influence Zones	26	
				CSU	Authorized Sites and Facilities	38
			Big Game Production Areas		160	

**Table 2-3 Lease Stipulations Under Alternative 3**

Zone	Lease No.	Lease Acres	Type of Stipulation	Type of Restriction <sup>1</sup>	Acres of Stipulation
				Big Game Winter Ranges	770
				High Concern Travel Ways or Use Areas	573
				Highly Erodible Soils	162
				Moderate Scenic Integrity Objective	44
				Moderately High Landscape Stability Hazards	19
				Paleontological Resources	774
				Sensitive Plant Species	493
				Sensitive Terrestrial Avian Invertebrate Species	172
				Slopes 30 to 50%	371
			TL	Bald Eagle Winter Roost and Perch Sites	3
	Big Game Summer Concentration	1			
	Big Game Winter Range	174			
3	066689	40	NSO	Public Water Supply Source Area Protection	40
				TEPC Wildlife Species	11
				Water Influence Zones	1
			CSU	Big Game Production Areas	40
				Big Game Winter Ranges	40
				High Concern Travel Ways or Use Areas	40
				Highly Erodible Soils	40
				Moderate Scenic Integrity Objective	9
	Paleontological Resources	40			
	Slopes 30 to 50%	3			
3	066690	274	NSO	Authorized Sites and Facilities	0
				Public Water Supply Source Area Protection	80
				Severe or High Landscape Stability Hazards	4
				Slope Greater than 50%	6
				TEPC Aquatic Species	7
				TEPC Wildlife Species	113
				Water Influence Zones	38
				CSU	Authorized Sites and Facilities
			Big Game Production Areas		203
			Big Game Winter Ranges		78
			High Concern Travel Ways or Use Areas		274
			Highly Erodible Soils		174
			Moderate Scenic Integrity Objective		172
			Paleontological Resources		274
				Sensitive Aquatic Species	40
	Sensitive Plant Species	20			

**Table 2-3 Lease Stipulations Under Alternative 3**

Zone	Lease No.	Lease Acres	Type of Stipulation	Type of Restriction <sup>1</sup>	Acres of Stipulation	
3	066691	198	TL	Sensitive Terrestrial Avian Invertebrate Species	116	
				Slopes 30 to 50%	97	
				Big Game Winter Range	45	
			NSO	Native Cutthroat Trout Habitat	41	
				Roadless Areas	50	
				Severe or High Landscape Stability Hazards	36	
				Slope Greater than 50%	36	
				TEPC Aquatic Species	3	
				TEPC Wildlife Species	76	
				Water Influence Zones	25	
				CSU	Highly Erodible Soils	131
					Moderately High Landscape Stability Hazards	3
					Paleontological Resources	198
					Sensitive Aquatic Species	58
					Sensitive Plant Species	198
Sensitive Terrestrial Avian Invertebrate Species	87					
Slopes 30 to 50%	95					
Watersheds with CRCT and GBCT Conservation Populations	198					
3	066692	1,417	NSO	Fen Wetlands	31	
				Raptor Species Breeding Territories	691	
				Roadless Areas	1,331	
				Severe or High Landscape Stability Hazards	7	
				Slope Greater than 50%	19	
				TEPC Aquatic Species	35	
				TEPC Wildlife Species	737	
				Water Influence Zones	187	
				CSU	Big Game Summer Concentration	623
			Big Game Winter Ranges		3	
			Ground Water Resources		110	
			Highly Erodible Soils		1,193	
			Moderately High Landscape Stability Hazards		14	
			Paleontological Resources		1,417	
			Sensitive Aquatic Species		64	
			Sensitive Plant Species		534	
			Sensitive Terrestrial Avian Invertebrate Species		596	
			Slopes 30 to 50%		224	

**Table 2-3 Lease Stipulations Under Alternative 3**

Zone	Lease No.	Lease Acres	Type of Stipulation	Type of Restriction <sup>1</sup>	Acres of Stipulation
			TL	Spruce Fir Old Growth and Old Growth Recruitment Stands	209
				Watersheds with CRCT and GBCT Conservation Populations	1,417
				Big Game Summer Concentration	623
				Big Game Winter Range	3
				Raptor Species Breeding Territories	15
3	066693	2,167	NSO	Fen Wetlands	51
				Public Water Supply Source Area Protection	1,023
				Severe or High Landscape Stability Hazards	81
				Slope Greater than 50%	98
				TEPC Aquatic Species	128
				TEPC Wildlife Species	1,028
				Water Influence Zones	267
			CSU	Big Game Production Areas	1,070
				Big Game Winter Ranges	2,003
				Ground Water Resources	0
				High Concern Travel Ways or Use Areas	1,973
				Highly Erodible Soils	1,199
				Moderate Scenic Integrity Objective	43
				Paleontological Resources	2,163
				Sensitive Aquatic Species	321
				Sensitive Plant Species	854
				Sensitive Terrestrial Avian Invertebrate Species	503
				Slopes 30 to 50%	688
				Spruce Fir Old Growth and Old Growth Recruitment Stands	30
			Watersheds with CRCT and GBCT Conservation Populations	735	
TL	Bald Eagle Winter Roost and Perch Sites	0			
	Big Game Winter Range	901			
3	066694	119	NSO	Native Cutthroat Trout Habitat	5
				Roadless Areas	116
				Severe or High Landscape Stability Hazards	20
				Slope Greater than 50%	26
				TEPC Aquatic Species	0
				TEPC Wildlife Species	33
				Water Influence Zones	3

**Table 2-3 Lease Stipulations Under Alternative 3**

Zone	Lease No.	Lease Acres	Type of Stipulation	Type of Restriction <sup>1</sup>	Acres of Stipulation
			CSU	Highly Erodible Soils	86
				Paleontological Resources	119
				Sensitive Aquatic Species	10
				Sensitive Plant Species	100
				Sensitive Terrestrial Avian Invertebrate Species	11
				Slopes 30 to 50%	81
				Watersheds with CRCT and GBCT Conservation Populations	119
3	066695	1,061	NSO	Fen Wetlands	21
				Roadless Areas	618
				Severe or High Landscape Stability Hazards	78
				Slope Greater than 50%	74
				TEPC Aquatic Species	5
				TEPC Wildlife Species	449
				Water Influence Zones	106
			CSU	Big Game Production Areas	175
				Big Game Summer Concentration	681
				Big Game Winter Ranges	913
				Highly Erodible Soils	486
				Moderate Scenic Integrity Objective	57
				Moderately High Landscape Stability Hazards	22
				Paleontological Resources	1,061
				Sensitive Aquatic Species	10
				Sensitive Plant Species	718
				Sensitive Terrestrial Avian Invertebrate Species	190
				Slopes 30 to 50%	414
				Spruce Fir Old Growth and Old Growth Recruitment Stands	271
Watersheds with CRCT and GBCT Conservation Populations	1,061				
TL	Big Game Summer Concentration	681			
	Big Game Winter Range	442			
3	066696	1,027	NSO	Fen Wetlands	36
				Native Cutthroat Trout Habitat	139
				Raptor Species Breeding Territories	49
				Roadless Areas	910
				Severe or High Landscape Stability Hazards	33
				Slope Greater than 50%	47
				TEPC Aquatic Species	129

**Table 2-3 Lease Stipulations Under Alternative 3**

Zone	Lease No.	Lease Acres	Type of Stipulation	Type of Restriction <sup>1</sup>	Acres of Stipulation
				TEPC Wildlife Species	446
				Water Influence Zones	131
			CSU	Big Game Production Areas	289
				Big Game Summer Concentration	893
				Big Game Winter Ranges	384
				Ground Water Resources	13
				Highly Erodible Soils	717
				Moderately High Landscape Stability Hazards	2
				Paleontological Resources	1,027
				Sensitive Aquatic Species	214
				Sensitive Plant Species	481
				Sensitive Terrestrial Avian Invertebrate Species	351
				Slopes 30 to 50%	522
				Spruce Fir Old Growth and Old Growth Recruitment Stands	248
			Watersheds with CRCT and GBCT Conservation Populations	1,027	
TL	Big Game Summer Concentration	893			
	Big Game Winter Range	81			
3	066697	1,872	NSO	Fen Wetlands	32
				Native Cutthroat Trout Habitat	105
				Roadless Areas	1,120
				Severe or High Landscape Stability Hazards	42
				Slope Greater than 50%	43
				TEPC Aquatic Species	116
				TEPC Wildlife Species	1,636
				Water Influence Zones	172
			CSU	Big Game Production Areas	1,028
				Big Game Summer Concentration	1,863
				Big Game Winter Ranges	1,512
				Ground Water Resources	442
				High Concern Travel Ways or Use Areas	965
				Highly Erodible Soils	742
				Paleontological Resources	1,872
				Sensitive Aquatic Species	181
				Sensitive Plant Species	1,619
				Sensitive Terrestrial Avian Invertebrate Species	1,442
Slopes 30 to 50%	525				

**Table 2-3 Lease Stipulations Under Alternative 3**

Zone	Lease No.	Lease Acres	Type of Stipulation	Type of Restriction <sup>1</sup>	Acres of Stipulation
				Spruce Fir Old Growth and Old Growth Recruitment Stands	1,081
				Watersheds with CRCT and GBCT Conservation Populations	1,872
			TL	Big Game Summer Concentration	1,863
3	066698	2,460	NSO	Fen Wetlands	69
				Roadless Areas	1,893
				Slope Greater than 50%	4
				TEPC Aquatic Species	114
				TEPC Wildlife Species	2,247
				Water Influence Zones	212
			CSU	Big Game Production Areas	913
				Big Game Summer Concentration	2,460
				Big Game Winter Ranges	2,460
				Ground Water Resources	723
				High Concern Travel Ways or Use Areas	448
				Highly Erodible Soils	734
				Paleontological Resources	2,460
				Sensitive Aquatic Species	218
				Sensitive Plant Species	2,456
				Sensitive Terrestrial Avian Invertebrate Species	1,669
				Slopes 30 to 50%	282
TL	Spruce Fir Old Growth and Old Growth Recruitment Stands	1,312			
	Watersheds with CRCT and GBCT Conservation Populations	2,460			
3	066699	114	NSO	Roadless Areas	80
				TEPC Wildlife Species	111
				Water Influence Zones	13
			CSU	Big Game Summer Concentration	78
				Big Game Winter Ranges	111
				Highly Erodible Soils	42
				Paleontological Resources	114
				Sensitive Plant Species	114
				Slopes 30 to 50%	48
				Spruce Fir Old Growth and Old Growth Recruitment Stands	114
TL	Watersheds with CRCT and GBCT Conservation Populations	114			

**Table 2-3 Lease Stipulations Under Alternative 3**

Zone	Lease No.	Lease Acres	Type of Stipulation	Type of Restriction <sup>1</sup>	Acres of Stipulation			
			TL	Big Game Summer Concentration	78			
3	066700	841	NSO	Alpine	53			
				Fen Wetlands	38			
				Roadless Areas	833			
				Severe or High Landscape Stability Hazards	73			
				Slope Greater than 50%	78			
				TEPC Wildlife Species	806			
				Water Influence Zones	111			
			CSU	Big Game Summer Concentration	682			
				Big Game Winter Ranges	539			
				Highly Erodible Soils	77			
				Moderate Scenic Integrity Objective	615			
				Moderately High Landscape Stability Hazards	21			
							Paleontological Resources	827
							Sensitive Aquatic Species	0
							Sensitive Plant Species	841
Sensitive Terrestrial Avian Invertebrate Species	133							
Slopes 30 to 50%	359							
Spruce Fir Old Growth and Old Growth Recruitment Stands	585							
Watersheds with CRCT and GBCT Conservation Populations	542							
TL	Big Game Summer Concentration	682						
3	066701	1,885	NSO	Fen Wetlands	153			
				Roadless Areas	1,815			
				Severe or High Landscape Stability Hazards	43			
				Slope Greater than 50%	48			
				TEPC Aquatic Species	327			
				TEPC Wildlife Species	1,309			
				Water Influence Zones	372			
			CSU	Big Game Production Areas	395			
				Big Game Summer Concentration	1,885			
				Big Game Winter Ranges	1,885			
				Highly Erodible Soils	621			
				Moderate Scenic Integrity Objective	181			
				Paleontological Resources	1,885			
				Sensitive Aquatic Species	481			
				Sensitive Plant Species	1,709			

**Table 2-3 Lease Stipulations Under Alternative 3**

Zone	Lease No.	Lease Acres	Type of Stipulation	Type of Restriction <sup>1</sup>	Acres of Stipulation
				Sensitive Terrestrial Avian Invertebrate Species	488
				Slopes 30 to 50%	608
				Spruce Fir Old Growth and Old Growth Recruitment Stands	963
				Watersheds with CRCT and GBCT Conservation Populations	1,884
			TL	Big Game Summer Concentration	1,885
3	066702	1,254	NSO	Alpine	0
				Fen Wetlands	25
				Roadless Areas	570
				Severe or High Landscape Stability Hazards	131
				Slope Greater than 50%	129
				TEPC Aquatic Species	117
				TEPC Wildlife Species	738
				Water Influence Zones	198
			CSU	Big Game Summer Concentration	557
				Big Game Winter Ranges	415
				Highly Erodible Soils	490
				Moderate Scenic Integrity Objective	331
				Moderately High Landscape Stability Hazards	16
				Paleontological Resources	1,164
				Sensitive Aquatic Species	182
				Sensitive Plant Species	887
				Sensitive Terrestrial Avian Invertebrate Species	508
				Slopes 30 to 50%	381
				Spruce Fir Old Growth and Old Growth Recruitment Stands	282
Watersheds with CRCT and GBCT Conservation Populations	421				
TL	Big Game Summer Concentration	557			
3	066706	2,548	NSO	Fen Wetlands	3
				Raptor Species Breeding Territories	1,172
				Roadless Areas	1,932
				Severe or High Landscape Stability Hazards	27
				Slope Greater than 50%	27
				TEPC Aquatic Species	43
				TEPC Raptor Species	406
				TEPC Wildlife Species	1,514
				Water Influence Zones	246

**Table 2-3 Lease Stipulations Under Alternative 3**

Zone	Lease No.	Lease Acres	Type of Stipulation	Type of Restriction <sup>1</sup>	Acres of Stipulation
			CSU	Authorized Sites and Facilities	81
				Big Game Production Areas	693
				Big Game Summer Concentration	273
				High Concern Travel Ways or Use Areas	1,226
				Highly Erodible Soils	1,633
				Moderate Scenic Integrity Objective	342
				Paleontological Resources	2,548
				Sensitive Aquatic Species	77
				Sensitive Plant Species	693
				Sensitive Terrestrial Avian Invertebrate Species	2,054
				Slopes 30 to 50%	172
				Spruce Fir Old Growth and Old Growth Recruitment Stands	6
				Watersheds with CRCT and GBCT Conservation Populations	994
			TL	Big Game Summer Concentration	273
Raptor Species Breeding Territories	496				
3	066707	1,276	NSO	Fen Wetlands	27
				Native Cutthroat Trout Habitat	4
				Raptor Species Breeding Territories	164
				Roadless Areas	1,168
				Severe or High Landscape Stability Hazards	31
				Slope Greater than 50%	31
				TEPC Aquatic Species	2
				TEPC Wildlife Species	1,030
				Water Influence Zones	94
			CSU	Big Game Summer Concentration	331
				High Concern Travel Ways or Use Areas	172
				Highly Erodible Soils	1,003
				Moderately High Landscape Stability Hazards	5
				Paleontological Resources	1,276
				Sensitive Aquatic Species	8
				Sensitive Plant Species	750
				Sensitive Terrestrial Avian Invertebrate Species	1,105
				Slopes 30 to 50%	199
				Spruce Fir Old Growth and Old Growth Recruitment Stands	87
Watersheds with CRCT and GBCT Conservation Populations	1,231				

**Table 2-3 Lease Stipulations Under Alternative 3**

Zone	Lease No.	Lease Acres	Type of Stipulation	Type of Restriction <sup>1</sup>	Acres of Stipulation
			TL	Big Game Summer Concentration	331
				Raptor Species Breeding Territories	0
3	066708	2,554	NSO	Fen Wetlands	76
				Native Cutthroat Trout Habitat	184
				Raptor Species Breeding Territories	1,518
				Roadless Areas	1,339
				TEPC Aquatic Species	77
				TEPC Wildlife Species	1,693
				Water Influence Zones	277
			CSU	Big Game Production Areas	297
				Big Game Summer Concentration	898
				Big Game Winter Ranges	8
				High Concern Travel Ways or Use Areas	1,847
				Highly Erodible Soils	2,106
				Paleontological Resources	2,554
				Sensitive Aquatic Species	247
				Sensitive Plant Species	1,669
				Sensitive Terrestrial Avian Invertebrate Species	2,522
				Slopes 30 to 50%	291
				Spruce Fir Old Growth and Old Growth Recruitment Stands	29
				Watersheds with CRCT and GBCT Conservation Populations	2,554
			TL	Big Game Summer Concentration	898
				Raptor Species Breeding Territories	632
				Western Boreal Toad Breeding Sites	6
3	066709	638	NSO	Fen Wetlands	25
				Native Cutthroat Trout Habitat	0
				Raptor Species Breeding Territories	364
				Roadless Areas	170
				TEPC Wildlife Species	556
				Water Influence Zones	50
			CSU	Big Game Summer Concentration	467
				High Concern Travel Ways or Use Areas	508
				Highly Erodible Soils	440
				Paleontological Resources	638
				Sensitive Aquatic Species	1
Sensitive Plant Species	199				

**Table 2-3 Lease Stipulations Under Alternative 3**

Zone	Lease No.	Lease Acres	Type of Stipulation	Type of Restriction <sup>1</sup>	Acres of Stipulation
				Sensitive Terrestrial Avian Invertebrate Species	558
				Slopes 30 to 50%	75
				Spruce Fir Old Growth and Old Growth Recruitment Stands	213
				Watersheds with CRCT and GBCT Conservation Populations	638
			TL	Big Game Summer Concentration	467
				Raptor Species Breeding Territories	137
				Western Boreal Toad Breeding Sites	94
3	066710	2,329	NSO	Authorized Sites and Facilities	303
				Raptor Species Breeding Territories	153
				Roadless Areas	1,896
				Slope Greater than 50%	2
				TEPC Aquatic Species	132
				TEPC Wildlife Species	529
				Water Influence Zones	351
			CSU	Authorized Sites and Facilities	572
				Big Game Production Areas	422
				Big Game Summer Concentration	722
				High Concern Travel Ways or Use Areas	826
				Highly Erodible Soils	1,546
				Moderate Scenic Integrity Objective	460
				Moderately High Landscape Stability Hazards	7
				Paleontological Resources	2,328
				Sensitive Aquatic Species	204
				Sensitive Plant Species	1,205
				Sensitive Terrestrial Avian Invertebrate Species	1,160
				Slopes 30 to 50%	392
				Watersheds with CRCT and GBCT Conservation Populations	895
TL	Big Game Summer Concentration	722			
3	066711	1,751	NSO	Fen Wetlands	48
				Native Cutthroat Trout Habitat	73
				Raptor Species Breeding Territories	560
				Roadless Areas	181
				TEPC Aquatic Species	80
				TEPC Raptor Species	97
				TEPC Wildlife Species	1,275
				Water Influence Zones	163

**Table 2-3 Lease Stipulations Under Alternative 3**

Zone	Lease No.	Lease Acres	Type of Stipulation	Type of Restriction <sup>1</sup>	Acres of Stipulation
			CSU	Big Game Production Areas	632
				Big Game Winter Ranges	133
				High Concern Travel Ways or Use Areas	1,701
				Highly Erodible Soils	491
				Moderate Scenic Integrity Objective	55
				Paleontological Resources	1,751
				Sensitive Aquatic Species	198
				Sensitive Plant Species	1,323
				Sensitive Terrestrial Avian Invertebrate Species	815
				Slopes 30 to 50%	100
				Spruce Fir Old Growth and Old Growth Recruitment Stands	7
			Watersheds with CRCT and GBCT Conservation Populations	1,219	
			TL	Raptor Species Breeding Territories	318
Western Boreal Toad Breeding Sites	461				
3	066712	875	NSO	Fen Wetlands	90
				Native Cutthroat Trout Habitat	36
				Roadless Areas	481
				Severe or High Landscape Stability Hazards	2
				Slope Greater than 50%	2
				TEPC Aquatic Species	37
				TEPC Wildlife Species	539
				Water Influence Zones	154
			CSU	Big Game Migration Corridors	79
				Big Game Production Areas	488
				Big Game Winter Ranges	343
				High Concern Travel Ways or Use Areas	345
				Highly Erodible Soils	617
				Paleontological Resources	875
				Sensitive Aquatic Species	80
				Sensitive Plant Species	211
				Sensitive Terrestrial Avian Invertebrate Species	465
				Slopes 30 to 50%	109
				Spruce Fir Old Growth and Old Growth Recruitment Stands	11
Watersheds with CRCT and GBCT Conservation Populations	875				
TL	Western Boreal Toad Breeding Sites	550			

**Table 2-3 Lease Stipulations Under Alternative 3**

Zone	Lease No.	Lease Acres	Type of Stipulation	Type of Restriction <sup>1</sup>	Acres of Stipulation
3	066908	2,400	NSO	Authorized Sites and Facilities	98
				Fen Wetlands	55
				Public Water Supply Source Area Protection	73
				Roadless Areas	1,217
				Slope Greater than 50%	4
				TEPC Aquatic Species	411
				TEPC Wildlife Species	1,101
				Water Influence Zones	382
			CSU	Authorized Sites and Facilities	286
				Big Game Migration Corridors	270
				Big Game Production Areas	1,945
				Big Game Winter Ranges	2,333
				High Concern Travel Ways or Use Areas	975
				Highly Erodible Soils	2,010
				Paleontological Resources	2,400
				Sensitive Aquatic Species	671
				Sensitive Plant Species	1,343
				Sensitive Terrestrial Avian Invertebrate Species	731
				Slopes 30 to 50%	353
Watersheds with CRCT and GBCT Conservation Populations	2,335				
3	066909	2,077	NSO	Authorized Sites and Facilities	27
				Fen Wetlands	44
				Native Cutthroat Trout Habitat	64
				Raptor Species Breeding Territories	240
				Roadless Areas	826
				Severe or High Landscape Stability Hazards	113
				Slope Greater than 50%	127
				TEPC Aquatic Species	54
				TEPC Wildlife Species	864
				Water Influence Zones	203
			CSU	Authorized Sites and Facilities	181
				Big Game Migration Corridors	178
				Big Game Production Areas	543
				Big Game Winter Ranges	1,104
				Ground Water Resources	40
				High Concern Travel Ways or Use Areas	37
				Highly Erodible Soils	1,360

**Table 2-3 Lease Stipulations Under Alternative 3**

Zone	Lease No.	Lease Acres	Type of Stipulation	Type of Restriction <sup>1</sup>	Acres of Stipulation			
				Paleontological Resources	2,077			
				Sensitive Aquatic Species	183			
				Sensitive Plant Species	1,303			
				Sensitive Terrestrial Avian Invertebrate Species	897			
				Slopes 30 to 50%	837			
				Spruce Fir Old Growth and Old Growth Recruitment Stands	45			
				Watersheds with CRCT and GBCT Conservation Populations	2,067			
			TL	Big Game Winter Range	263			
			3	066913	1,660	NSO	Raptor Species Breeding Territories	726
							Roadless Areas	507
							Severe or High Landscape Stability Hazards	1
							Slope Greater than 50%	0
							TEPC Aquatic Species	97
TEPC Raptor Species	292							
TEPC Wildlife Species	688							
Water Influence Zones	177							
CSU	Authorized Sites and Facilities	6						
	Big Game Production Areas	168						
	Big Game Summer Concentration	1,427						
	Big Game Winter Ranges	414						
	High Concern Travel Ways or Use Areas	1,501						
	Highly Erodible Soils	1,065						
	Moderately High Landscape Stability Hazards	5						
	Paleontological Resources	1,660						
	Sensitive Aquatic Species	176						
	Sensitive Plant Species	903						
	Sensitive Terrestrial Avian Invertebrate Species	1,218						
	Slopes 30 to 50%	212						
Spruce Fir Old Growth and Old Growth Recruitment Stands	54							
Watersheds with CRCT and GBCT Conservation Populations	1,660							
TL	Big Game Summer Concentration	1,427						
	Raptor Species Breeding Territories	351						
4	066948	2,562	NSO	Fen Wetlands	98			
				Raptor Species Breeding Territories	2,085			
				Severe or High Landscape Stability Hazards	18			

**Table 2-3 Lease Stipulations Under Alternative 3**

Zone	Lease No.	Lease Acres	Type of Stipulation	Type of Restriction <sup>1</sup>	Acres of Stipulation
				Slope Greater than 50%	39
				TEPC Aquatic Species	48
				TEPC Raptor Species	503
				TEPC Wildlife Species	1,239
				Water Influence Zones	302
			CSU	Big Game Production Areas	1,709
				Big Game Summer Concentration	2
				Big Game Winter Ranges	469
				Ground Water Resources	89
				High Concern Travel Ways or Use Areas	1,421
				Highly Erodible Soils	1,176
				Moderate Scenic Integrity Objective	789
				Moderately High Landscape Stability Hazards	7
				Paleontological Resources	2,561
				Sensitive Aquatic Species	91
				Sensitive Plant Species	2,282
				Sensitive Terrestrial Avian Invertebrate Species	1,284
				Slopes 30 to 50%	156
				Spruce Fir Old Growth and Old Growth Recruitment Stands	132
				Watersheds with CRCT and GBCT Conservation Populations	2,562
			TL	Bald Eagle Winter Roost and Perch Sites	2,562
				Big Game Summer Concentration	2
				Big Game Winter Range	317
				Raptor Species Breeding Territories	587

<sup>1</sup> TEPC = Threatened, Endangered, Proposed, or Candidate.  
 CRCT = Colorado River cutthroat trout.  
 GBCT = greenback lineage cutthroat trout.  
 GMUGNF = Grand Mesa, Uncompahgre and Gunnison National Forests.



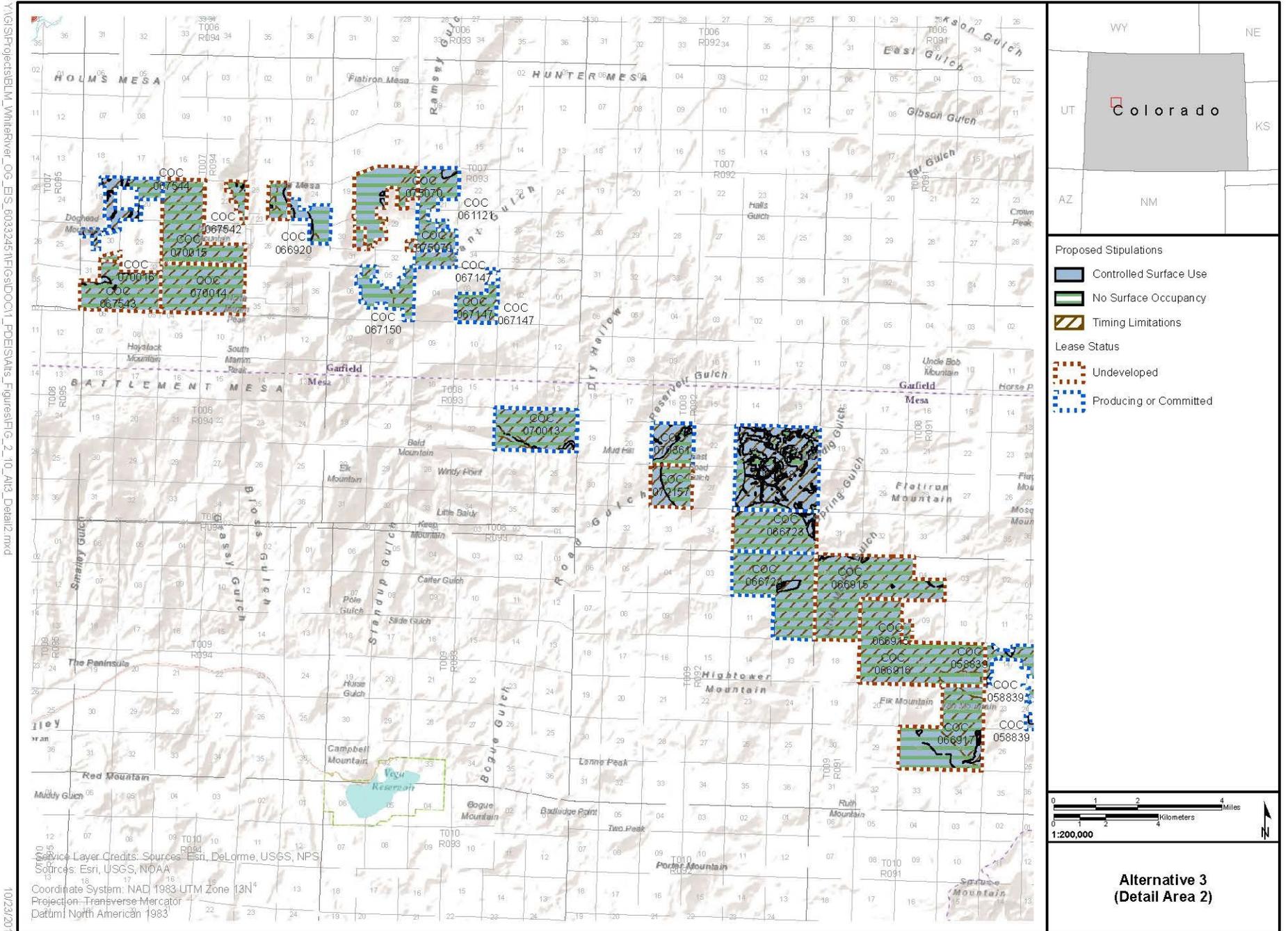
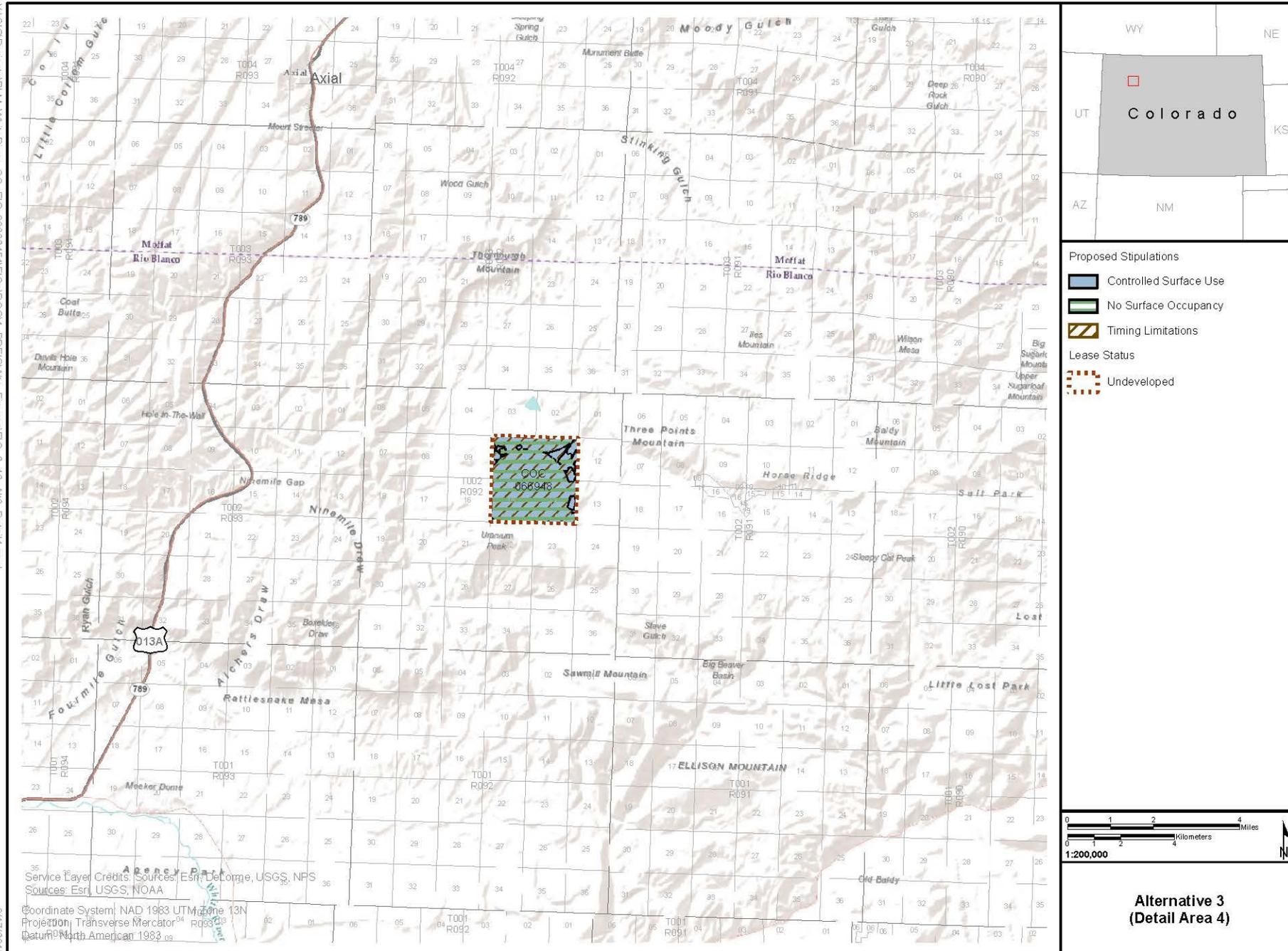


Figure 2-10 Proposed Lease Stipulations under Alternative 3, Middle Section



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Figure 2-12 Proposed Lease Stipulations under Alternative 3, North Side

### **2.3.4 Alternative 4 (Proposed Action): Modify Stipulations and Cancel Leases to Match the WRNF 2014 ROD**

Under Alternative 4, the BLM would modify existing lease stipulations in areas identified as open to future leasing by the Forest Service and cancel existing leases in areas identified as closed to future leasing in the WRNF Draft ROD (USFS 2014b). Although the Forest Service's decision on future leasing in the 2014 ROD does not apply to the 65 previously issued leases, this alternative is designed to reflect the Forest Service's future management objectives for these lease areas. The primary difference between Alternatives 3 and 4 is that under Alternative 4, some leases or parts of leases would be cancelled to match the Forest Service draft decision for future leasing availability in the WRNF Draft ROD (USFS 2014b). In the existing leases identified as open to future leasing in the WRNF Draft ROD, the stipulations would be modified to be the same as those listed for Alternative 3 in **Table 2-3**. Lease Notice CO-56 would apply to new development under Alternative 4.

In the areas identified as closed to future leasing in the WRNF Draft ROD (USFS 2014b), one of two things would happen—the leases that sit entirely within areas designated as closed to future leasing would be cancelled, or leases that sit partially within and partially outside of areas closed to future leasing would be contracted (reduced in size) to the area of the lease that overlaps the part of the WRNF open to future leasing. With respect to the leases eligible to be contracted, the BLM would offer the lessee the option of either accepting the new lease terms or having the lease cancelled. For undeveloped leases within areas closed to leasing, cancellation would be done through a BLM administrative process and would require that the BLM refund any bonus bids and lease payments. For developed leases within areas closed to leasing, the BLM would pursue the plugging and abandonment of all wells and the removal of all associated ancillary facilities located in areas identified as NSO. As with the other alternatives, a decision to implement this alternative would not authorize any on-the-ground activities, including specific reclamation actions. If this alternative is selected, additional site-specific analysis would be required where surface-disturbing activities would be required.

Changes in lease stipulations under this Alternative would not apply to locations with producing wells because lease stipulations apply to exploration and development, not operations; however, any new wells to be developed on a lease with modified stipulations would be required to comply with those changes. The 25 leases that would be cancelled (all or part) are listed in **Table 2-4** and displayed on **Figure 2-13**.



**Table 2-4 Lease Acreage to be Cancelled Under Alternative 4 (all in Zone 3)**

Lease No.	Lease Acres	Acres to be Cancelled	% of Lease to be Cancelled	Acres Retained (for Contracted Leases)
066687	1,053	1,049	All	0
066688	774	771	All	0
066689	40	40	All	0
066690	274	274	All	0
066691	198	197	All	0
066692	1,417	1,417	All	0
066693	2,167	2,153	All	0
066694	119	119	All	0
066695	1,061	1,052	All	0
066696	1,027	1,027	All	0
066697	1,872	1,872	All	0
066698	2,460	2,460	All	0
066699	114	111	All	0
066700	841	826	98.2%	15
066701	1,885	1,845	All	0
066702	1,254	1,160	92.5%	94
066706	2,548	2,093	82.1%	455
066707	1,276	380	29.8%	896
066708	2,554	79	3.1%	2,475
066709	638	160	25.1%	478
066710	2,329	2,293	98.5%	36
066711	1,751	1,751	All	0
066712	875	875	All	0
066908	2,400	2,397	All	0
066909	2,077	2,061	All	0

**2.3.5 Alternative 5: Cancel All Leases**

Under Alternative 5, all of the previously issued 65 leases would be cancelled. For producing leases, this action is not within the BLM’s sole authority to implement so it would be necessary to pursue judicial action. For the purposes of analysis, it is assumed that this judicial action would result in the cancellation of all leases. This alternative is included mainly to facilitate a full range of analysis from continuing the existing leases with their current stipulations to considering a scenario as close to not having issued leases (following the WRNF 1993 ROD) as is feasible today. Under this alternative, all producing wells would have to be plugged and abandoned, infrastructure would be removed, roads, well pads, and other ancillary facilities would be reclaimed, and all disturbed areas would be revegetated. As with the other alternatives, a decision to implement this alternative would not authorize any on-the-ground activities, including specific reclamation actions. If this alternative is selected, additional site-specific analysis would be required. **Figures 2-14** and **2-15** display the locations of the producing wells and well pads to be removed.

Under this alternative, the following actions would be required:

- Plugging and abandonment of 75 wells; removal of all ancillary equipment (tanks, burners, etc.);
- Reclamation and revegetation of 16 well pads totaling approximately 38 acres; and
- Reclamation and revegetation of approximately 48 acres of access roads.

#### **2.4 Alternatives Considered but Eliminated from Detailed Study**

During alternatives development, the BLM reviewed all alternatives or alternative elements suggested by the public during the scoping period. The range of alternatives to be analyzed in detail described in Section 2.2 addresses most of the scoping comments. Some suggested alternatives or alternative elements were considered during the alternatives development process but were eliminated from detailed analysis.

In general, the following reasons may be considered grounds for eliminating an alternative (BLM Handbook H-1790-1, 6.6.3):

- It is ineffective because it would not respond to the agency's purpose and need.
- It is technically or economically infeasible.
- It is inconsistent with the basic policy objectives for the management of the area.
- Its implementation is remote or speculative.
- It is substantially similar in design to an alternative that is analyzed in detail.
- It would have substantially similar effects to an alternative that is analyzed in detail.

Additionally, there were some suggestions, such as best management practices (BMPs), well design specifications, or other design features that were not incorporated into an action alternative because the BLM has determined they are either regulated by other agencies or are more appropriately considered during the Application for Permit to Drill (APD) process, after operators submit a site-specific plan of operations for evaluation.

Mitigation may be subsequently attached to all leases as Conditions of Approval (COAs). During the APD process, potential resource issues would be identified at the onsite review (see Section 1.2, Federal Leasing Process). The site-specific environmental analysis at the APD stage may identify mitigation measures to be attached to the approved permit as COAs.

The specific alternatives that were eliminated from detailed analysis are discussed below, along with the rationale for their elimination.

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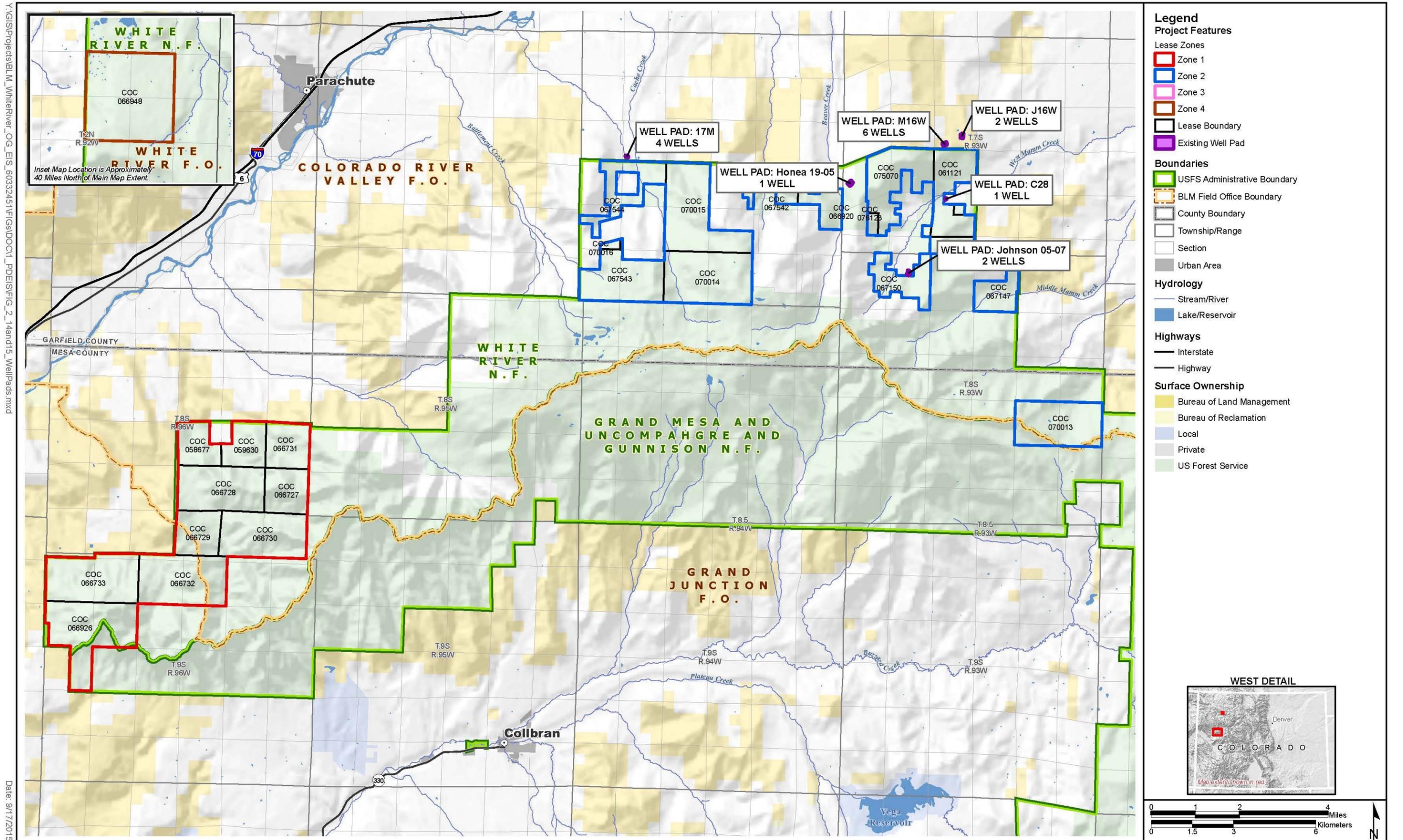


Figure 2-14 Location of Existing Wells and Well Pads to be Removed Under Alternative 5, West side of Analysis Area



### **2.4.1 Designate Access Routes**

Public scoping and some cooperating agency comments stated concerns related to the potential effects of traffic by vehicles and heavy equipment used by the oil and gas industry on community, residential, and relatively narrow forest roads. The comments pointed out that the roads and bridges, especially those that would be needed to access the eastern-most leases, are not adequate to handle heavy and frequent industry traffic without major improvements. Also of concern was that the heavy vehicle traffic would be incompatible with the other activities in Carbondale and Glenwood Springs, due to existing congestion during ski season and the residential nature of some of the feeder roads that would most likely be used to access the leases. Some commenters specifically expressed concern over the use of Four-Mile Road, which is the primary road that would be used to access the leases south of Carbondale and requested that use of this road by oil and gas vehicles and heavy equipment not be allowed.

Specifically, it was suggested that the BLM consider designating specific routes to access certain leases under one or more alternatives. This alternative was not carried forward because BLM guidelines and policy specify that lease stipulations are used to control on-lease activities, not otherwise lawful off-lease activities over which BLM has no authority. This alternative would not be consistent with the agency's purpose and need to comply with the BLM's and Forest Service's mineral policy and collaborative responsibility for oil and gas development. The construction, use, or improvement of roads on public lands must be addressed through analysis during a separate NEPA process for right-of-way (ROW) or special use permits. In addition, analysis of not using Four-Mile Road to access oil and gas leases would be covered under Alternatives 4 and 5, in which those leases would be cancelled.

### **2.4.2 Limit Hydraulic Fracturing**

There were public concerns related to the effects of hydraulic fracturing expressed during scoping and recommendations that the BLM should consider limiting or excluding hydraulic fracturing through lease stipulations. The BLM determined that limiting or disallowing hydraulic fracturing is not feasible for three primary reasons:

1. There are appropriate mitigation measures required during well development operations to minimize potential adverse impacts;
2. Operators cannot feasibly develop many of the target formations in the 65 leases without hydraulic fracturing, which would result in denying access to the leased minerals; and
3. Hydraulic fracturing is speculative until the site-specific stage of permitting and therefore is not able to be analyzed in detail at the leasing stage.

### **2.4.3 Cancel All Leases in the Thompson Divide Area**

There were many requests made during public scoping for the BLM to cancel all leases in the area known locally as the Thompson Divide. The reason stated for an alternative that cancels these leases is to preserve the current nature of the area, protect natural resources for recreational uses, protect surface water and groundwater, and preserve land values and residential communities.

The BLM considered creating an alternative in response to this public request. This was determined not to be necessary as a separate alternative to be analyzed in detail because it is substantively similar to Alternative 4, which reflects the decision made in the WRNF Draft ROD (USFS 2014b). The approach to analyzing Alternative 5 in which all leases would be cancelled would consider this option without creating and analyzing a separate alternative.

#### **2.4.4 Reducing the Size of the Leases**

Scoping comments suggested that the BLM consider reducing the size of the leases as a way to minimize resource impacts. This suggested alternative was eliminated from detailed analysis because it would have substantially similar effects to Alternatives 3 and 5. Alternative 3 adds large areas of new lease stipulations to minimize adverse effects to important resources. Where there are additional acres of NSO stipulations, the size of the lease is effectively reduced for surface disturbance, only allowing fluid mineral extraction from formations accessed from surface locations that are offset from the target location. Alternative 5 considers cancelling all leases, which would eliminate future development and resource impacts.

#### **2.4.5 Cancelling Suspensions/Allowing Leases to Expire**

Scoping comments suggested that the BLM should cancel all lease suspensions and allow leases to expire. This alternative element was dismissed from detailed analysis because it does not meet the agency's purpose and need to regulate the develop of oil and gas in the public domain as defined by the Mineral Leasing Act as amended and would be inconsistent with the requirement to address the NEPA deficiency identified by the Interior Board of Land Appeals (IBLA).

#### **2.4.6 Requirements for Existing Pollution to be Cleaned Up before Leases are Developed**

Scoping comments suggested that the BLM consider a requirement that existing pollution must be cleaned up before operators can develop their leases. This alternative was dismissed from detailed analysis because it does not meet the BLM's or the Forest Service's purpose and need. Specifically, it does not meet BLM's purpose and need to revisit or reaffirm previous leasing decisions, address the NEPA deficiency identified by the IBLA, or meet the BLM's collaborative responsibility under the Federal Onshore Oil and Gas Leasing Reform Act of 1987 to issue and manage oil and gas leases where the Forest Service has issued a land availability decision. Compliance with applicable laws, regulations, and standards for pollutants or hazardous materials and spills is required as part of the BLM and Forest Service regulations, policies, and guidelines for monitoring and enforcement of federal oil and gas leases (e.g., 43 CFR § 3162).

#### **2.4.7 Requirements for Monitoring of Existing Sites**

Scoping comments suggested that the BLM consider a requirement that existing development be randomly monitored to determine their performance with regard to atmospheric, water, and ground contamination. This alternative was dismissed from detailed analysis because it does not meet the agency's purpose and need to address the NEPA deficiency identified by the IBLA associated with the decision to lease. Monitoring of existing oil and gas leasing is addressed under the site-specific Environmental Assessments and permits that authorize development, and as part of the BLM and Forest Service policies and guidelines for monitoring and enforcement of federal leases. It is not within the scope of a leasing-level EIS.

#### **2.4.8 Considering Drilling of Leases with NSO Stipulations from Adjacent Locations without NSO Stipulations**

Scoping comments requested that the BLM and the Forest Service jointly consider and support the application of directional or horizontal drilling of federal leases designated with NSO stipulations from adjacent new or existing locations on federal leases without NSO stipulations or adjacent locations on private leases. This alternative element was dismissed from detailed analysis because BLM regulations and policy do not require specific drilling techniques such as horizontal drilling, which is a technical and economic decision to be made by the operator before submitting an APD. However, it should be noted that this scenario is assumed in some cases in the analysis of the alternatives carried forward.

#### **2.4.9 Additional NSO Stipulations**

Respondents requested the following NSO stipulations to protect resources that are not currently specified in the range of alternatives:

- NSO for cultural resources
- NSO for sensitive soils
- NSO stipulations to maintain road density guidelines
- NSO buffers around dams and water control structures
- NSO buffers around injection wells
- NSO within Inventoried Roadless Areas

It is important to note that the range of alternatives does offer the option of cancelling all leases. This alternative may be selected for any or all leases, particularly in which unacceptable adverse resource impacts are disclosed through analysis, including impacts to any resources that are not protected by the NSO stipulations outlined in the alternatives.

Additional reasons for the elimination of these alternatives are included below.

- **Cultural Resources:** The existing regulatory framework, including the National Historic Preservation Act, provides the authority to protect cultural resources. Protection of cultural resources is usually addressed at the site-specific APD stage, after cultural surveys have been done. The BLM and the Forest Service are required to consider avoidance or mitigation of sites eligible for the National Register of Historic Places and there is no need to incorporate a stipulation to protect a resource that is already protected by law.
- **Sensitive Soils:** Surface disturbance on erodible soils and landscape stability will be considered in the EIS impact analysis. The range of alternatives includes NSO and CSU stipulations to address conditions that can lead to loss or degradation of soil resources by disallowing surface disturbance (NSO) or moving surface disturbance away from erodible soils (CSU). These stipulations to protect soil resources would be applied under Alternative 3, following site-specific soil surveys once an APD is filed.
- **Road Density:** Because the locations of future oil and gas development (including new access roads) are not known at this level of the leasing availability analysis, it is not practicable to apply NSO stipulations to areas that may potentially have conflicts with Forest Plan road density guidelines. During the site-specific NEPA process, which is done when an APD is submitted, Forest Plan road density guidelines will be a part of the analysis and design of the proposal.
- **Inventoried Roadless Areas:** These areas were designated by the Forest Service in 2001. It was suggested in public scoping and informal discussions that these areas should be limited with a NSO stipulation. This was eliminated from detailed analysis because these designations have been superseded by the 2012 Colorado Roadless Rule. Alternatives 3 and 4 incorporate current Forest Service leasing requirements for compliance with the 2012 Roadless Rule.

#### **2.4.10 NSO Stipulation Buffers**

Respondents suggested specific buffers to protect various resources with NSO stipulations. These suggestions were dismissed from detailed analysis because they fall within the range of alternatives to be analyzed, which includes a full range of resource protections including the buffers contained in the 1993 analysis (Alternatives 1 and 2), the buffers contained in the 2014 WRNF Final EIS (Alternatives 3 and 4). Additionally, the possibility of no leasing is presented and analyzed under Alternative 5 and is available to the BLM as a decision.

#### **2.4.11 Additional Timing Limitations**

Respondents requested a timing limitation that would prohibit in-channel stream disturbance during fish spawning, egg incubation, and fry emerging seasons. This was not incorporated because the current range of alternatives includes NSO stipulations for both native cutthroat trout habitat and water influence zones, which includes perennial streams.

#### **2.4.12 Additional Resource Protections**

Scoping commenters suggested numerous design features and BMPs for various resources including the following. These design features, mitigation measures, and BMPs are more appropriately considered during the APD process, after operators submit a site-specific plan of operations for evaluation. For this reason, they were not added as part of an alternative to be analyzed in detail.

- Well Design: design specifications related to well drilling, stimulation, production, and closure phases.
- Air Quality: air quality mitigation measures such as methane capture, or other control measures; requirements for air quality monitoring.
- Human Health and Safety: use of bear-proof trash containers to reduce wildlife-human conflicts; BMPs to reduce the threat of industry-caused fire, and requirements for emergency response plans.
- Visual Resources: BMPs to protect recreation uses in the area, such as locating disturbance and equipment to minimize visual detection, and painting equipment in neutral tones that match surrounding landscape.
- Transportation: BMPs outlining collaboration needs for transportation routes.
- Water Resources: requirements to minimize the number of road-stream crossings; BMPs to manage road drainage and erosion to avoid routing sediment to streams; requirements for water resources management plans; and requirements for use of recycling produced water in well drilling and stimulation.

#### **2.4.13 More Expansive Definition of Alternative 2**

BLM considered a preliminary version of Alternative 2 that would have included modifying the geographic application of stipulations currently attached to the 65 leases, or be attached based on the WRNF 1993 ROD, to match more current mapping of those resources. This alternative element was eliminated as redundant with Alternatives 3 and 4, which rely on contemporary mapping of various resources to establish stipulations that are protective of those resources.

The BLM also considered a preliminary version of Alternative 2 that would have included modifying the leases to add stipulations needed to ensure compliance with applicable laws and regulation. This alternative element was eliminated from detailed analysis because: 1) it was somewhat redundant with standard lease terms and conditions and supplemental authorities, which require compliance with applicable laws and regulations, and 2) it was not clear whether any stipulations would be needed to ensure compliance. Therefore, Alternative 2 was defined with a more limited scope to allow analysis of a broad range of alternatives to inform the BLM's eventual decision.

### **2.5 Land Use Plan Conformance and Consistency**

The Forest Service is responsible for determining what National Forest System (NFS) lands are available for leasing and under what stipulations. It also regulates all surface-disturbing activities conducted during exploration and development of oil and gas leases. The BLM is responsible for issuing oil and gas leases and permits for subsurface development of all federal fluid minerals including those

underlying NFS lands. Conformance and consistency with Forest Service and BLM land use plans is discussed below

### **2.5.1 Forest Plan Consistency**

The first leasing decision on the WRNF was made with the 1993 Leasing Final EIS, ROD and Amendment to the Forest Plan. The 1993 Oil and Gas Leasing ROD analyzed lands for leasing and made approximately 950,000 acres available for oil and gas leasing with approximately 417,000 acres of the total available actually readily leasable without any additional environmental analysis. The 65 leases under analysis in this EIS were authorized by the WRNF 1993 Oil and Gas Leasing ROD.

In 2002, the WRNF published its Land Resource Management Plan (LRMP) Revision (USFS 2002a) and accompanying Final EIS analysis. The 2002 LRMP adopted the 1993 White River National Forest Oil and Gas Leasing ROD without changes, except that certain areas were made unavailable for leasing due to wild and scenic river designations or were recommended for wilderness.

This EIS evaluates a range of stipulations for oil and gas leasing, all of which are consistent with the WRNF 1993 Oil and Gas Leasing ROD, the 2002 LRMP, or the 2014 WRNF Oil and Gas Leasing Draft ROD that updates the 2002 LRMP. Forest Plan consistency is compared to the alternatives analyzed in detail in this EIS in the summary below.

- Alternative 1: This alternative would continue managing the existing leases according to the decisions made in the 1993 WRNF Oil and Gas Leasing ROD. This alternative would not apply new lease stipulations, and would therefore be inconsistent with the 2002 LRMP.
- Alternative 2: This alternative would address inconsistencies in leasing stipulations or apply new lease stipulations not contained in the 2002 LRMP. Therefore, this alternative would be consistent with the 2002 LRMP. The BLM has the authority to add additional lease stipulations beyond those identified and confirmed by the Forest Service.
- Alternative 3: Under this alternative, new proposed lease stipulations considered under the Proposed Action in the 2014 WRNF Oil and Gas Leasing Final EIS would be applied to the existing leases for the purpose of protecting resources. This alternative would be consistent with the 2002 LRMP and the proposed changes to the Forest Plan per the 2014 WRNF Oil and Gas Leasing Draft ROD because it adds stipulations contained in the LRMP and the 2014 Final EIS did not address decisions on existing leasing.
- Alternative 4: Under this alternative, new proposed lease stipulations identified in the 2014 WRNF Oil and Gas Leasing Draft ROD would be applied to the existing leases for the purpose of protecting resources. Some of the 65 existing federal oil and gas leases on the WRNF would be cancelled within those areas identified as not available for future leasing. This alternative would not be in conformance with the availability decisions in the 2002 LRMP but would be consistent with BLM's authority not to offer the lease. The alternative would be consistent with the decisions in the 2014 WRNF Oil and Gas Leasing Draft ROD for future leasing although not required to have plan conformity.
- Alternative 5: This alternative would cancel all 65 existing federal oil and gas leases on the WRNF. This alternative would not be in conformance with the availability decisions in the 2002 LRMP but would allow for future consistency with the changes identified in the 2014 WRNF Oil and Gas Leasing Draft ROD because it would enable the 65 leases to be reissued according to the Forest Service decision in the future.

### **2.5.2 BLM Resource Management Plan Conformance**

While responsibility for issuing and managing the 65 leases analyzed in this EIS resides primarily with the BLM Colorado River Valley (CRVFO) (with one lease to the north managed by the BLM White River

[WRFO]), the CRVFO and WRFO do not determine what NFS lands are available for leasing nor do they identify the stipulations under which lands will be leased. Therefore, any changes in lease stipulations or availability of lands for leasing on NFS lands would not require changes to the CRVFO or WRFO Resource Management Plans (RMPs).

An evaluation of BLM RMP conformance would be necessary if BLM lands were to be used to provide offsite access to leases. Offsite access, to be determined at the development stage for each lease during processing of APDs, could involve lands managed by the CRVFO, WRFO, as well as the Grand Junction and Uncompahgre FOs. Conformance with the RMPs for these FOs would be evaluated as needed when a site-specific plan of development is submitted to the BLM with details regarding lease access.

## **2.6 Management Requirements, Monitoring, and Environmental Protection Measures Common to all Alternatives**

**Table 1-1** includes a list of major laws and regulations that apply to the leasing and development of federal fluid minerals on the WRNF. There are additional federal laws, regulations, and policies that may apply depending on site-specific resources and conditions. To assist the reader in understanding the oil and gas development phases, regulations, onshore orders, and BMPs, additional information is available on the Forest Service website at <http://www.fs.fed.us/geology/energyOil&Gas.html> and on the BLM Colorado website at [http://www.blm.gov/co/st/en/BLM\\_Programs/oilandgas.html](http://www.blm.gov/co/st/en/BLM_Programs/oilandgas.html). The application of these laws to future development under the Proposed Action and alternatives is assumed in the analysis contained in Chapter 4.0. Because this NEPA process will not result in the approval or authorization of any aspects of development or surface-disturbing activities, identifying design features, BMPs, and COAs to be selected for yet-to-be-identified future development and production projects is best suited for future site-specific environmental analysis when locations are known. See Section 1.4 for a complete description of the decisions to be informed by this EIS.

Future site-specific analysis would occur when there is a review of onsite resources and conditions after the operator submits a Surface Use Plan of Operation (SUPO) and APD for oil and gas exploration or development. The onsite review helps to determine the level of NEPA analysis required, such as a categorical exclusion, environmental assessment, or EIS, before a SUPO can be approved and a permit to drill is issued. The site-specific analysis would evaluate requests by operators to approve waivers, exceptions, or modifications of lease stipulations. Regardless of the level of NEPA analysis, the onsite review is used to determine what site and project specific design features, BMPs, mitigation measures, or COAs would be attached to the SUPO and permit to drill to minimize impacts and protect resources.

## **2.7 Development Assumptions for Use in Impact Analysis**

The 2014 WRNF Oil and Gas Leasing EIS is a programmatic environmental analysis that considers conceptual or planning-level alternatives. For this EIS analyzing potential changes to the 65 previously issued leases, the Reasonably Foreseeable Development Scenario (RFDS) (USFS 2010a), described briefly in Chapter 1.0, Section 1.1.4 and included as Appendix F of the WRNF Oil and Gas Leasing Draft EIS (USFS 2012) was used to determine the amount of conceptual future development in order to compare potential impacts of the proposed leasing stipulations under each alternative.

The following sections provide a simplified description of the typical process by which a federal fluid mineral well on NFS land would be developed in this region following issuance of a lease. This information forms the basis for the development assumptions that are used in the Chapter 4.0 analysis and is followed by summary tables of projected well numbers, associated ancillary facilities, surface disturbance, and water demands by well type and alternative.

## **2.7.1 Typical Well Development Process**

### **2.7.1.1 Application for Permit to Drill**

Prior to the start of construction activities, the operator submits site-specific applications to the BLM such as Notice of Staking, APD accompanied by a SUPO, and ROW application, as necessary. The operator submits project survey information, including detailed construction plans, and stakes the location on the ground. Although the BLM or Forest Service is responsible for resource surveys, the operator typically engages an independent third-party contractor to complete the cultural resource, biological, and other surveys, and provides written reports to the BLM or Forest Service as required.

The BLM forwards the SUPO to the Forest Service for review and approval. The BLM completes a geologic and petroleum engineering review of the proposal. The Forest Service and the BLM perform onsite evaluations of surface resources and complete a NEPA analysis as part of the review process. During the APD process, the BLM and Forest Service will determine whether any ROW grants or special use permits are required. The agencies also will identify any BMPs, design features, and mitigation measures that are required to be constructed to protect surface resources and comply with laws and regulations.

Operations by a lessee or operator do not require a special use permit for activities overlying the federal lease being developed, or when the lease is part of a federal unit or communitization agreement. A ROW grant from the BLM or a special use permit from the Forest Service (depending on the surface land manager) is required for well pads, tank batteries, pipelines, powerlines, and access roads that occupy federally owned land outside the lease or unit boundary associated with the proposed oil and gas well.

Once the SUPO is approved and the permit to drill is issued, the operator begins construction of access roads, well pads, pipelines, powerlines, and other ancillary facilities prior to drilling the well. Before surface-disturbing activities start, the operator must obtain a bond to ensure compliance with all lease terms, COAs, and reclamation requirements.

### **2.7.1.2 Access Road and Well Pad Construction**

Most new access roads would be constructed as laterals from existing roads. Should a new access road be needed, the operator would move construction equipment over existing roads to the point where the access road would begin. Moving equipment to the construction site, such as bulldozers, scrapers, graders, backhoes, and trenchers using trucks) would require transporting several truckloads over public and private roads.

Generally the shortest feasible route would be selected to minimize the distance and construction costs, but environmental factors or the landowner's preference may dictate a longer haul route. The amount of surface area needed for roads depends upon topography and the types of loads they would carry. New roads to be developed for well pads are assumed to require up to a 75-foot disturbance corridor to allow room for construction of both the road and pipeline. Following construction, the disturbed area is stabilized and reclaimed, leaving a 25-foot-wide roadway including side ditches. Roads must comply with the guidance in the Surface Operating Standards for Oil and Gas Exploration and Development (U.S. Department of Interior and U.S. Department of Agriculture 2007), commonly called the "Gold Book."

Well pads are usually constructed from the native sand/soil/rock materials present. Locations are leveled by balancing cut and fill areas. Heavy equipment is used to clear, level, and prepare the site of the well pad. In general, vertical and directional wells require smaller well pads than horizontal wells. The average disturbance footprint for well pads outlined in the RFDS would be 6 acres, assuming that more than one well is drilled from a single pad. The EIS analysis assumes an average of 7 wells would be drilled from each well pad for vertical and directional wells and 2 wells per pad for horizontal wells.

Following well drilling and completion activities (see below), operators would reduce the size of the average 6-acre well pads to the minimum working surface area needed for production facilities and future workovers while allowing for reshaping and stabilization of cut-and-fill slopes. Interim reclamation would be accomplished by grading, leveling, and seeding, as required in the permit to drill. Interim reclamation would reduce the disturbed area at each pad to approximately 3.5 acres.

### **2.7.1.3 Drilling**

Once roads are constructed, the drilling rig and associated equipment would be moved to the location and erected. Moving a drilling rig may require 10 to 25 truckloads of equipment over public highways and private roads. Special transportation permits for oversize loads would need to be obtained from the Colorado Department of Transportation. Derrick heights vary depending on the depth or weight capacity of the rig, but when erected, these heights could range from 160 feet for rigs drilling directional wells to 195 feet for rigs drilling horizontal wells.

Water for drilling would be hauled to storage tanks onsite. Water sources are typically from wells or commercial water sources permitted by the Colorado State Engineer for the use of surface or subsurface water for drilling. When drilling commences, and as long as it progresses, water would be continually transported to the rig location. Roughly 6,000 barrels or 252,000 gallons of fresh water (0.77 acre-foot) would be required to drill a vertical or directional well to the depth of between 3,500 and 7,500 feet. Horizontal wells would require approximately 25,000 barrels or 1,050,000 gallons of fresh water (3.22 acre-feet). More water would be required if circulation is lost.

Once the rig is ready, the hole is drilled to the appropriate depth, at which point surface casing would be set and cemented. Surface casing is set to a depth greater than the deepest fresh water aquifer that could be reasonably developed. After the surface casing is set, a blowout preventer is attached to the top of the surface casing to control the release of subsurface fluids (oil, gas, and water) to the surface. Minimum standards and enforcement provisions for drilling operations are addressed in Onshore Order No. 2.

Drilling is usually accomplished with water or drilling fluids (“mud”) that aid the drilling of the wellbore to depths within about 1,000 feet of the prospective formation. Drilling is usually conducted using a closed-loop drilling system, in which freshwater-based mud is circulated by means of pump pressure from tanks down the drill pipe, through jets in the bit, and up the space between the wellbore and the drill pipe. As mud and cuttings come to the surface, the mud is augmented with fresh mud in the rig’s mud tanks and recirculated and reused continually in the drilling process while drill cuttings are removed from the mud system typically with centrifuges and shaker systems. Drill cuttings are typically stored in a bermed or trenched area on the pad sometimes augmented with drying agents to prevent runoff. Drilling mud may be oil-based (diesel or mineral oil) or synthetic (olefins or paraffins). Synthetic drilling mud is more biodegradable and less toxic than standard oil-based muds.

The duration of drilling operations on a given well can vary greatly depending on depth and conditions encountered while drilling. Drilling operations are continuous, 24 hours a day, 7 days a week, and are estimated to take approximately 10 days for vertical or directionally drilled wells and 60 days for horizontally drilled wells. Pickup trucks or cars are used for workers’ transportation to and from the drilling site.

### **2.7.1.4 Well Testing and Completion**

Upon reaching target depth, a series of geophysical logging tools are run in the well to evaluate the potential resource and make a determination regarding the productive potential of the well. If oil or gas is not discovered in commercial quantities, the well is considered dry. The operator would then be required to follow BLM procedures to properly plug the dry hole and the drill site and access road would be rehabilitated in accordance with the stipulations attached to the APD and the plugging approval.

If the well will be completed as a producer, the drilling rig is moved off the site after the production casing is cemented. A smaller rig, called a completion rig, then is moved in and utilized for running casing identification logs, perforating, running down hole pumps, running production tubing in the wellbore, and setting the wellhead valves and controls. The rest of the fluid treatment and handling system is installed at this time, such as production and storage tanks, dehydrators, separators, measuring systems, sales meters, and flow lines. A typical cased wellbore consists of conductor pipe, surface casing, and production casing. The surface, intermediate, and production casing/cementing programs are designed to isolate and protect shallower formations and aquifers from the production stream and to minimize the potential for migration of fluids and pressure communication between formations.

After drilling and casing of the well, a completion program is typically initiated to improve resource recovery by increasing the rate and volume of hydrocarbons moving into the wellbore. These processes are known as well-stimulation treatments and include hydraulic fracturing (or “fracking”), acidizing, and other mechanical and chemical treatments, often used in combination. Hydraulic fracturing is a process used to maximize the extraction of underground resources by allowing the fluid minerals to move more freely from the rock pores to the production well. Fluids, commonly made up of water and chemical additives (e.g., recycled or fresh water, liquid carbon dioxide, sand, and chemical additives), are pumped into a geologic formation at high pressure during hydraulic fracturing. When the pressure exceeds the rock strength, the fluids open or enlarge fractures. After the fractures are created, a propping agent is pumped into the fractures to keep them from closing when the pumping pressure is released. After fracturing is completed, up to 80 percent of the injected fracturing fluid returns to the wellbore. The specific type and components of the hydraulic fracturing fluid vary based on geologic formation and company. In Colorado, operators are required by the Colorado Oil and Gas Conservation Commission (COGCC) to maintain a list of the chemicals used in hydraulic fracture of each well and to submit that information to an online data repository ([www.fracfocus.org](http://www.fracfocus.org)).

Groundwater is protected during the hydraulic fracturing process by a combination of the casing and cement that is installed when the well is drilled and by the depth of the rock between the fracture zone and any fresh-water bearing zones or aquifers. Generally, for a typical Mesa Verde well (common to this analysis area), approximately eight hydraulic fracturing stages are performed for each well to free up gas in tight sand lenses.

After completion operations are finished, wellhead equipment, consisting of various valves and pressure regulators, is installed to control the oil or gas flow to the production facilities and to safely shut in the well under any conditions.

Completion activities are continuous, 24 hours a day, 7 days a week, and are estimated to take approximately 20 days for vertical or directionally drilled wells and 30 days for horizontally drilled wells.

#### **2.7.1.5 Well Production**

During production, employees of the operator visit the wells on an as-needed basis, estimated to be about twice per week per pad, to inspect well site facilities and perform other routine maintenance activities on a year-round basis. Field operations also are inspected by the BLM and Forest Service to ensure accountability for royalties, compliance with the lease, and compliance with permits, safety, and environmental requirements.

Produced water and liquid condensate is disposed of by trucking or piping the water to an authorized disposal area and treated. Produced water may be utilized in hydraulic fracturing operations after undergoing a treatment or disposed in an authorized disposal well. The COGCC controls all aspects of disposal wells. The BLM authorizes produced water from federal wells to be disposed of in an approved disposal facility.

It is estimated that when the field is mature each vertical or directionally drilled well would produce approximately 38,000 barrels of fluids (water and condensate) over the life of the well and that each horizontally drilled well would produce approximately 75,000 barrels of fluids (water and condensate) over the life of the well.

#### **2.7.1.6 Well Abandonment and Reclamation**

It is expected that the typical well would remain economically productive for approximately 20 to 30 years. When the well is depleted and can no longer produce in paying quantities, the operator would submit a plug and abandonment plan. Abandonment of the well pads and facilities would be performed in accordance with all applicable COGCC, Forest Service, and BLM regulations. Subsurface pipelines would be decommissioned from service, plugged at specific intervals, and abandoned in place. The well pad and access road would be closed, graded to natural contours, and reclaimed according to Forest Service specifications from the SUPO and applicable COAs.

The Forest Service would be responsible for establishing and approving the methods for surface rehabilitation, and determining when this rehabilitation has been satisfactorily accomplished. When surface reclamation is completed and desirable vegetation successfully established, the operator would submit a Final Abandonment Notice. When all wells on a lease are satisfactorily reclaimed, the bond would be released.

#### **2.7.2 Differences between Vertical or Directionally Drilled and Horizontally Drilled Wells**

The RFDS for the analysis area assumes development of the Mesa Verde Formation primarily by the use of conventional vertical or directionally drilled wells. Directionally drilled wells usually begin as vertical wellbores. At a designated depth (the “kickoff point,”) the wellbore trajectory bears off on an angle that is offset from the surface location to intersect the reservoir. They are often called “s-curve” wellbores to characterize a common configuration. Directional drilling may be used to minimize the wells' environmental impact because multiple wells may be drilled from one well pad, reducing the number of well pads and ancillary facilities and associated surface disturbance.

The objective of a directional well is to expose more reservoir rock to the wellbore surface than would be the case with a vertical well penetrating the reservoir perpendicular to the well casing. The initial portion of a directionally drilled well is typically drilled using the same rotary drilling technique that is used to drill most vertical wells.

Horizontal drilling typically starts out with a vertical wellbore until it reaches the target formation, then is turned horizontally at depth. Horizontal drilling offers the following differences from a vertical or directional well.

- A horizontal well may produce at rates several times greater than a vertical well, due to the increased wellbore surface area within the producing formation.
- Operators are able to develop a reservoir with a sufficiently smaller number of horizontal wells because each well can drain a larger rock volume about its bore than a vertical well.
- Horizontal wells take longer to drill and complete, use larger well pads for different drilling rigs, require more water for drilling and completion, and often generate more produced water.

#### **2.7.3 Development Assumptions**

**Table 2-5** displays the assumptions for surface disturbance, water use, and production forecasts by type for a typical well in the analysis area, depending on the drilling technology. The table and the projections for development of the 65 existing leases assume all wells would produce gas with small amounts of oil. For this reason, no production of oil is listed. **Table 2-5** also shows the projected surface disturbance,

water usage, and mineral production based on the RFDS, assuming that the leases would be unconstrained by more than standard lease terms.

Initial surface disturbance refers to bare soils resulting from earthmoving activities until interim reclamation is achieved. Long-term surface disturbance refers to unvegetated surface that remains in that condition until final reclamation is completed. For example, during well pad construction, up to 6 acres would be disturbed (short-term) and it is assumed that 2.5 acres would be graded and revegetated, leaving 3.5 acres of long-term surface disturbance.

**Table 2-6** lists other assumptions for typical wells. The assumptions shown in **Tables 2-5** and **2-6** are used in the impact analysis contained in Chapter 4.0.

**Table 2-5 Surface Disturbance, Water Use, Production by Typical Well Type**

Facility/Resource	Vertical/Directional				Horizontal			
			RFDS (Unconstrained)				RFDS (Unconstrained)	
Number of wells			427				17	
Number of pads			61				2.4	
	Per Well Rate		Total Amount <sup>1</sup>		Per Well Rate		Total Amount <sup>1</sup>	
Surface Disturbance (acres)	Initial	Long-term	Initial	Long-term	Initial	Long-term	Initial	Long-term
Pad size per well	0.9	0.5	366	214	0.9	0.5	14.6	8.5
Roads/Pipeline per pad	9.0	3.0	549	183	9.0	3.0	21.9	7.3
Water Use (acre-feet)								
Drilling (fresh)	0.77		330		3.22		55	
Completion (Recycled)	6.44		2,752		77.3		1,314	
Fluid Production (Life of Well)								
Gas (Bcf)	1.2		512		6.4		109	
Produced Water (acre-feet)	4.9		2,1		9.7		164	

<sup>1</sup> Due to rounding of decimal places, the total amounts shown may vary from a calculation using the numbers displayed for the per well rates.

Bcf = Billion Cubic Feet

**Table 2-6 Other Development Assumptions for Typical Wells**

Category	Activity	Vertical or Directional Well	Horizontal Well
Surface disturbance	Road and pipeline disturbance (initial)	1 mile @ 75 ft. wide (initial); 1 mile @ 25 ft. wide (long-term)	
Drilling practice	Wells per pad	7 per pad	2 per pad
	Drilling Duration	10 days	60 days
	Completion Duration	20 days	30 days
	Specific practices	Closed loop, green completions	Closed loop, green completions, synthetic mud
	Directional Reach (depends on total vertical depth)	1,000 to 5,000 ft.	10,560 ft.
Transportation (trips per well pad)	<b>Total for Drilling<sup>1</sup></b>	<b>266</b>	<b>916</b>
	Over-Legal Trucks	7	14
	Heavy Trucks	86	281
	Light Trucks	172	621
	<b>Total for Completion<sup>2</sup></b>	<b>376</b>	<b>497</b>
	Over-Legal Trucks	1	1
	Heavy Trucks	241	294
	Light Trucks	134	202
	<b>Daily for Operations/Maintenance<sup>3</sup></b>	10 trips per day	10 trips per day
	Over-Legal Trucks	0 (workover only) <sup>4</sup>	0 (workover only) <sup>4</sup>
	Heavy Trucks	4	4
	Light Trucks	6	6
	<b>Total for Reclamation<sup>5</sup></b>	<b>54</b>	<b>53</b>
	Over-Legal Trucks	2	2
	Heavy Trucks	10	10
	Light Trucks	41	41
Staffing	Employees Per Day	55	55

<sup>1</sup> Drilling estimates include road, pad and pipeline construction, drilling rig up/rig down, and drilling phases.

<sup>2</sup> Completion estimates include mobilization and completion phases.

<sup>3</sup> Operations include ongoing production and workovers.

<sup>4</sup> Over-legal trucks are estimated to be used during workovers only (which would occur every 4 years, and up to 10 days per well).

<sup>5</sup> Reclamation estimates include plugging and abandoning the well and reclaiming roads and pads.

Source: Mobley 2014.

### 2.7.4 Well Numbers Under Each Alternative

The numbers of wells predicted to be developed under each alternative was determined by starting with the unconstrained development from the RFDS, shown in **Table 2-5**; prorating the well numbers projected for each zone based on past development numbers, production potential, and anticipated drilling technology; and considering the constraints on development, such as NSO stipulations and the maximum distance from the surface location to the target formation. **Table 2-7** displays the estimated number of new wells and pads that are used as the basis for the analysis of effects in Chapter 4.0. Because the number of wells and pads are prorated based on scaling the RFDS projections but the actual numbers and locations of wells and pads is unknown for this leasing analysis, there are fractional numbers for wells and pads only to be used for the analysis of impacts. **Appendix D** describes the process for scaling the RFDS projections for each alternative in more detail.

**Table 2-7 Number of Projected Wells by Alternative**

Zone/Well Type	Alternative 1	Alternative 2	Alternative 3	Alternative 4	Alternative 5 <sup>1</sup>
<b>Zone 1</b>					
Vertical/Directional Wells	19.7	19.7	19.7	19.7	0
Horizontal wells	16	16	16	16	
Pads	5.1	5.1	5.1	5.1	0
<b>Zone 2</b>					
Vertical/Directional Wells	318.1	318.1	318.1	318.1	-73
Horizontal wells	1	1	1	1	
Pads	45.6	45.6	45.6	45.6	-13
<b>Zone 3</b>					
Vertical/Directional Wells	50.7	50.7	47.6	17.9	-2
Horizontal wells	1	1	1	0.4	
Pads	7.4	7.4	6.9	2.6	-3
<b>Zone 4</b>					
Vertical/Directional Wells	10	10	10	10	0
Horizontal wells	0	0	0	0	
Pads	1.4	1.4	1.4	1.4	0
<b>Totals</b>					
Vertical/Directional Wells	398.4	398.4	395.4	365.7	-75
Horizontal wells	18	18	18	17.4	
Pads	59.5	59.5	59.1	54.7	-16

<sup>1</sup> Under Alternative 5 all leases would be cancelled; therefore, the number of new wells in all zones would be zero. This column displays the numbers of wells and pads to be reclaimed under Alternative 5.

### 2.7.5 Comparison of Alternatives

**Table 2-8** displays, by alternative, projected surface disturbance (for well pads, roads, and pipelines), as well as projected water use, transportation needs, staffing requirements, and production forecasts for reasonably foreseeable development. The totals shown in the table account for the combination of vertical/directional wells and the number of horizontal wells projected under each alternative. These results are used in the analysis contained in Chapter 4.0.

**Table 2-8 Development Assumptions by Alternatives**

	Alternative 1	Alternative 2	Alternative 3	Alternative 4	Alternative 5 <sup>1</sup>
<b>Zone 1 (10,114 acres)</b>					
Initial Surface Disturbance (acres)	77	77	77	77	0
Long-term Surface Disturbance (acres)	33	33	33	33	0
Fresh Water Use <sup>2</sup> (acre-feet)	339	339	339	339	0
Recycled Water Use (acre-feet)	1,091	1,091	1,091	1,091	0
Gas Production (Bcf)	126	126	126	126	0
Produced Water (gallons)	81,761,565	81,761,565	81,761,565	81,761,565	0
<b>Zone 2 (24,938 acres)</b>					
Initial Surface Disturbance (acres)	684	684	684	684	76
Long-term Surface Disturbance (acres)	296	296	296	296	0
Fresh Water Use <sup>2</sup> (acre-feet)	675	675	675	675	0
Recycled Water Use (acre-feet)	1,702	1,702	1,702	1,702	0
Gas Production (Bcf)	388	388	388	388	0
Produced Water (gallons)	510,837,600	510,837,600	510,837,600	510,837,600	0
<b>Zone 3 (42,767 acres)</b>					
Initial Surface Disturbance (acres)	111	111	104	39	10
Long-term Surface Disturbance (acres)	48	48	45	17	0
Fresh Water Use <sup>2</sup> (acre-feet)	123	123	117	44	0
Recycled Water Use (acre-feet)	323	323	307	115	0
Gas Production (Bcf)	67	67	64	24	0
Produced Water (gallons)	84,067,200	84,067,200	79,119,600	29,713,855	0
<b>Zone 4 (2,562 acres)</b>					
Initial Surface Disturbance (acres)	21	21	21	21	0

**Table 2-8 Development Assumptions by Alternatives**

	Alternative 1	Alternative 2	Alternative 3	Alternative 4	Alternative 5 <sup>1</sup>
Long-term Surface Disturbance (acres)	9	9	9	9	0
Fresh Water Use <sup>2</sup> (acre-feet)	21	21	21	21	0
Recycled Water Use (acre-feet)	52	52	52	52	0
Gas Production (Bcf)	12	12	12	12	0
Produced Water (gallons)	15,960,000	15,960,000	15,960,000	15,960,000	0
<b>Totals (80,361 acres)</b>					
Initial Surface Disturbance (acres)	893	893	886	821	86
Long-term Surface Disturbance (acres)	386	386	383	355	0
Fresh Water Use <sup>2</sup> (acre-feet)	1,158	1,158	1,152	1,079	0
Recycled Water Use (acre-feet)	3,168	3,168	3,152	2,960	0
Gas Production (Bcf)	593	593	590	550	0
Produced Water (gallons)	692,626,365	692,626,365	687,678,765	638,273,020	0

<sup>1</sup> Under Alternative 5, all leases would be cancelled; therefore the number of new well in all zones would be zero. The Alternative 5 column displays the surface disturbance due to reclamation of existing wells, pads, and roads.

<sup>2</sup> Includes 20% of completion water (for hydraulic fracturing) that is not recycled.

Note: Assumptions used to calculate this information are derived from **Tables 2-5, 2-6, and 2-7.**

## 2.8 Summary of Impacts by Alternative

**Table 2-9** provides a summary of the key direct and indirect environmental impacts for each resource analyzed under each alternative. Detailed descriptions of impacts are presented in each resource section in Chapter 4.0. The summarized impacts assume the implementation of laws, regulations, and environmental protection measures required by permits and policy.

**Table 2-9 Summary of Environmental Impacts and Resource Protections**

Resource Affected	Alternative 1	Alternative 2	Alternative 3	Alternative 4	Alternative 5
<b>Air Quality</b>	Based on the Comprehensive Air Resources Protection Protocol implemented by the BLM, the air quality modeling has been completed for this region through the Colorado Air Resources Management Modeling Study (CARMMS). Emissions from projected future development in the 65 leases were previously analyzed in a regional NEPA analysis (CARMMS) and determined not to contribute significantly to adverse effects on air quality. Disclosure of emissions inventories at the project level and monitoring would be required during development and production.				No further analysis or monitoring of air quality would be required under this alternative.
<b>Geologic Hazards</b>	CSU and NSO stipulations for steep slopes and geological hazards would provide limited coverage to unstable areas.	Coverage of unstable sites from stipulations would be similar to Alternative 1, with slightly more acreage of NSO in Zone 3.	The only stipulations that would minimize impacts to lands with geologic hazards are those designed to protect steep slopes. While this includes slightly more acreage of stipulations intended to cover these unstable areas, the greater limitations on development of lands with geologic hazards would result from NSO stipulations designed to protect other resources, should they be implemented.	Coverage of areas prone to geologic hazards would be similar to that described for Alternative 3. The exception is that those leases that would be cancelled in Zone 3 would not be developed so geologic hazards in the area that would be closed to leasing would not be disturbed by mineral development.	Reclamation of existing wells and other infrastructure would not increase geologic hazards or disturb unstable slopes.
<b>Minerals</b>	Estimated total production of 593 Bcf, approximately 28 Bcf less than projected for by the unconstrained RFDS.	Same projected gas production as Alternative 1.	Estimated total production of 590 Bcf, slightly less than Alternative 1.	Estimated total production of 550 Bcf, less than Alternative 1.	There would be an estimated loss of 45 Bcf gas production from the 75 producing wells.
<b>Paleontological Resources</b>	There are no stipulations designed to minimize impacts to important paleontological deposits. Protection of Potential Fossil Yield Classification Class 3 and 5 formations would result from implementation of NSO stipulations for other resources, if implemented, and the required management of those classes.	Similar to Alternative 1.	CSU stipulations designed to minimize impacts to paleontological resources would effectively cover almost all of the lease area so important fossil-bearing formations potentially would be protected.	Coverage by stipulations would be similar to that described for Alternative 3, with either NSO stipulations or areas closed to leasing limiting or eliminating surface disturbance in most areas.	Decommissioning and reclamation would take place on previously disturbed ground, so adverse impacts to fossil-bearing formations is unlikely.
<b>Soils</b>	An NSO stipulation for Slopes >60% would preclude surface disturbance in water erodible soils in almost all of Zone 1, in	Same level of coverage by stipulations as described for Alternative 1.	Resource-specific NSO protection would preclude surface disturbance in fewer acres of water erodible soils as	The coverage by stipulations for water erodible soils would be similar to that described for Alternative 3, except in	Surface disturbance would be limited primarily to previously disturbed areas that would be reclaimed. Following

**Table 2-9 Summary of Environmental Impacts and Resource Protections**

Resource Affected	Alternative 1	Alternative 2	Alternative 3	Alternative 4	Alternative 5
	<p>about one-third in Zone 2 and minimally in Zones 2 and 4 (less than 2%). Other NSO stipulations would increase this coverage slightly (mostly in Zone 2).</p>		<p>compared to Alternative 1 (between 1% and 6% of water erodible soils by zone); however, CSU stipulations designed specifically to minimize adverse impacts to erodible soils on between 78% and 100% of water erodible soils, by zone with consideration of all NSOs, there would be additional coverage of erodible soils compared to Alternative 1, as surface disturbance would be precluded in between 86% and 100% of all water erodible soils, by zone.</p>	<p>Zone 3, where a large area would be closed to leasing. Lease cancellation would result in the elimination of some mineral development within Zone 3 and additional protection for erodible soils.</p>	<p>reclamation, the potential for surface disturbance would decrease greatly and soil productivity would improve.</p>
<p><b>Surface Water</b></p>	<p>There are no stipulations specifically designed to minimize adverse impacts to surface water resources under this alternative. General NSO stipulations for coverage of other resources would, if implemented, limit development of 23% of Colorado Source Water Assessment and Protection (CSWAP) areas, 9% of Local Source Water Protection Plans (SWPP); 11% of Outstanding Waters, 52% of impaired and monitored waters, and 23% of perennial streams. No stipulation coverage would be provided for COGCC Rule 317B areas.</p>	<p>Same as Alternative 1, except that 11% of the SWPP areas would be covered by general NSO stipulations.</p>	<p>There are two NSO stipulations specifically designed to minimize adverse impacts to surface water resources. Resource-specific stipulations that limit surface disturbance would cover 7% of CSWAP areas, 89% of COGCC Rule 317B areas, 9% of SWPP areas, 99% of Outstanding Waters, and 100% of Impaired Waters and perennial streams. General NSO stipulations including those for other resources would cover up to 88% of the CSWAP areas, 92% of COGCC Rule 317B areas, 88% of the SWPP areas; 99% of the Outstanding Waters, , and 100% of perennial streams and impaired and monitored waters.</p>	<p>There are two NSO stipulations specifically designed to minimize adverse impacts to surface water resources. The combination of the resource-specific NSO lease stipulations and areas closed to leasing would cover 45% of CSWAP areas, 89% of COGCC Rule 317B areas, 98% of SWPP areas, 99% of Impaired Waters, and 100% of Outstanding Waters and perennial streams. General NSO stipulations including those for other resources and the areas closed to leasing would cover up to 93% of CSWAP areas, 92% of COGCC Rule 317B areas. 99% of the SWPP areas. and 100% of, Outstanding Waters, impaired and monitored waters, and</p>	<p>There would be no stipulations needed for protection of surface water resources. Surface disturbance from decommissioning and reclaiming existing wells and infrastructure would be temporary and surface water would be protected by implementation of mitigation measures until reclamation success occurs.</p>

**Table 2-9 Summary of Environmental Impacts and Resource Protections**

Resource Affected	Alternative 1	Alternative 2	Alternative 3	Alternative 4	Alternative 5
				perennial streams would be precluded from surface disturbance.	
<b>Groundwater</b>	There are no stipulations designed specifically to minimize impacts to groundwater resources under this alternative. Areas of high aquifer sensitivity in Zone 1 would have the most protection from NSO lease stipulations designed to cover other resources, should they be implemented.	Similar to Alternative 1, with slightly more coverage in Zone 3 due to increased acreage of NSO stipulations.	There are CSU stipulations designed to minimize adverse impacts to groundwater under Alternative 3. These stipulations, combined with the NSO stipulations intended to cover other resources, would provide more coverage of groundwater resources and aquifers compared to Alternative 1.	Similar to Alternative 3, with additional coverage of groundwater resources in the areas that would be closed to leasing.	Once reclamation is completed, this alternative would have the lowest potential to adversely affect groundwater resources because there would be no mineral development.
<b>General Vegetation</b>	NSO stipulation would be applied to riparian/wetland areas (on the GMUGNF), and TEPC Plant Species Populations and Habitats. There would be no resource-specific CSU stipulations. Resource-specific NSOs would cover less than 1% of general vegetation and riparian/wetland habitats (within Zone 3 only). With consideration of all NSO stipulations, stipulation coverage of vegetation by zone would be as follows: Zone 1, 100%; Zone 2,-30%; Zone 3, 8%; Zone 4, 3%.	Same as Alternative 1 except that in Zone 3, lease stipulations would cover an additional 1% of vegetation from surface disturbance.	Resource-specific NSOs (4) would preclude surface disturbance on between 12% (Zone 4) and 73% (Zone 1) of vegetation. Resource-specific CSU stipulations (3) would be applied to between 66% (Zone 3) and 100% (Zone 1) of vegetation. With consideration of all NSO stipulations, stipulation coverage of vegetation by zone would be as follows: Zone 1, 100%; Zone 2, 87%; Zone 3, 86%; Zone 4, 92%.	Similar to Alternative 3 except that 95% of Zone 3 would be precluded from development by a combination of NSO stipulation and lease cancellations.	Minimizes impact to vegetation cover because all surface disturbance would be associated with reclamation of vegetation cover.

**Table 2-9 Summary of Environmental Impacts and Resource Protections**

<b>Resource Affected</b>	<b>Alternative 1</b>	<b>Alternative 2</b>	<b>Alternative 3</b>	<b>Alternative 4</b>	<b>Alternative 5</b>
<b>Riparian/Wetland Vegetation</b>	The same percentages of protection applies to riparian/wetland areas as described for General Vegetation, except that within Zone 4, NSO protections would extend to only 1% of the riparian/wetland habitat.	Same as Alternative 1 except that in Zone 3, lease stipulations would cover an additional 1% of riparian/wetland habitat from surface disturbance.	NSO would be applied to Riparian/Wetland (GMUGNF), Fen Wetlands, and federally listed Plant Species Populations and Habitats. Riparian/wetland areas would have between 7% (Zone 2) and 83% (Zone 1) and 95% NSO stipulations coverage by zones; however, the resource-related WIZ NSO stipulation would offer between 63% (Zone 3) and 93% coverage.	Similar to Alternative 3 except that surface disturbance in over half of all riparian habitat in Zone 3 would be precluded through lease cancellation.	Minimal adverse impact to riparian/wetland areas because no new development would occur in these areas.
<b>Special Status Plants</b>	Federally listed species would be covered by an NSO stipulation, but this stipulation does not extend to suitable habitat.  There is no DeBeque phacelia and Colorado Hookless Cactus suitable habit outside of Zone 1 so all suitable habitat for these species would be covered. Ute ladies'-tresses suitable habitat would not be covered by stipulations outside of Zone 1.  The degree of coverage by stipulations for other special status species in Zones 2, 3, and 4 would vary by suitable habit type (0% to 100% for fen habitat, 3% to 47% for forested habitat and <1% to 34% for non-forested habitat).  Significant plant communities would have very little coverage by stipulations in Zones 2, 3, and 4.	Same as Alternative 1.	CSU stipulations would be applied to Spruce-Fir Old Growth and Old Growth Recruitment Stands, and Plant Species of Local Concern, and Sensitive Plant Species.  All federally listed suitable habitats would be fully covered. The degree of stipulation coverage for other special status species in Zones 2, 3, and 4 would vary would be between 60% and 100% depending on habitat type and zone. Significant plant communities would have between 68% and 100% coverage.	Similar to Alternative 3 except that surface disturbance in over half of all special status species habits habitat in Zone 3 would be precluded through lease cancellation.	Alternative 5 would minimize the potential for adverse impacts to special status species habitat to the greatest extent because all surface disturbance would be associated with reclamation.

**Table 2-9 Summary of Environmental Impacts and Resource Protections**

Resource Affected	Alternative 1	Alternative 2	Alternative 3	Alternative 4	Alternative 5
<p><b>Terrestrial Wildlife</b></p>	<p>NSO stipulations would be applied to bighorn sheep and big game (elk and mule deer) winter ranges. TLs would be applied to big game winter range and elk production areas. A CSU would be applied elk production areas within the GMUGNF.</p> <p>The bighorn sheep NSO would cover most bighorn sheep habitat as currently mapped. The big game winter range NSO would cover mule deer winter range as currently mapped and would cover 8% of elk winter range in Zone 2. The TL stipulation for big game winter range would not always protect deer and elk winter range as it is currently mapped and would not be applied to moose.</p> <p>With regard to all NSO stipulations, the combined coverage of terrestrial wildlife habitat by zone would be as follows: Zone 1—100%, Zone 2—30%, Zone 3—8%, Zone 4—3%</p> <p>Outside of Zone 1, coverage of sensitive wildlife habitat from surface disturbance would be as follows: Mule deer would have no NSO stipulations. Elk production areas would have between 5% and 41% NSO stipulation coverage.</p>	<p>Similar to Alternative 1 with slightly more combined NSO protections for elk production areas, elk winter range.</p>	<p>The NSO stipulation for bighorn sheep would be expanded to include additional habitat types, resulting in 100% coverage of currently mapped habitat. The NSO stipulation for winter range would be eliminated.</p> <p>The big game winter range TL stipulation would be expanded to include moose and would cover most of deer, elk, and moose winter range as currently mapped.</p> <p>The TL stipulation for elk production areas would be eliminated. Although this stipulation would not be included on any of the leases under Alternatives 3 and 4, there is still an opportunity to apply a 60-day TL as a COA under the BLM Standard Lease Terms during site-specific NEPA analyses at the implementation level. However, implementing the TL stipulation for big game summer concentration areas (June 16-October 14) and not including the elk production TL under Alternatives 3 and 4, would result in a 45-day window (May 1 to June 15) that would leave approximately 23,813 acres (10% of the total range within the analysis area) of elk production areas on 39 leases in Zones 2, 3, and 4 (see <b>Table 3.7-4</b>) without stipulation</p>	<p>Coverage by stipulations would be similar to that described for Alternative 3. With regard to all NSO stipulations and areas closed to leasing, the combined coverage to minimize adverse effects on terrestrial wildlife habitat by zone would be the same as Alternative 3 with the exception of in Zone 3 where additional coverage of terrestrial wildlife habitat would be provided by the areas that would be closed to leasing. The leases that would be canceled due to the closed to leasing requirement would preclude surface in the following wildlife habitat in Zone 3:</p> <ul style="list-style-type: none"> <li>• 3 acres of mule deer habitat</li> <li>• 9,724 acres (72%) of elk production areas</li> <li>• 97 acres (17%) of all elk severe winter range</li> <li>• 1,902 acres (90%) of all elk winter range</li> <li>• 10,296 acres (57%) of all elk summer concentration areas</li> <li>• 241 acres (85%) of black bear fall concentration areas and 1 acre (1%) of all summer concentration areas</li> </ul>	<p>Alternative 5 would provide the maximum amount of reduction in adverse impacts due to oil and gas development for terrestrial wildlife resources.</p>

**Table 2-9 Summary of Environmental Impacts and Resource Protections**

Resource Affected	Alternative 1	Alternative 2	Alternative 3	Alternative 4	Alternative 5
	<p>Elk winter range would have between 1% and 25% NSO coverage and elk severe winter range and elk winter concentration areas would have 0% to 6% NSO coverage. Elk summer concentration areas would have 50% NSO coverage within in Zone 2 but less than 5% in Zone 3. Moose habitats would have 2% to 12% NSO coverage. Black bear fall concentration areas would have 12% to 40% NSO coverage.</p>		<p>protection.</p> <p>CSUs would be applied to Big Game Migration Corridors, Big Game Production Areas, Big Game Summer Concentration, Big Game Winter Ranges, Elk Production Area (GMUGNF) and Sensitive Terrestrial/Avian/ Invertebrate Species.</p> <p>With regard to all NSO stipulations, the combined coverage of terrestrial wildlife habitat by zone would be as follows: Zone 1—100%, Zone 2—87%, Zone 3—86%, Zone 4—92%.</p> <p>Mule deer would have 70% to 100% NSO coverage by zone. Elk habitat would have between 63% and 100% NSO coverage, except for severe winter range in Zone 3, which would have no NSO coverage.</p> <p>Moose habitat would have between 80% and 99% NSO coverage in all zones. Black bear habitat concentration areas would have 57% to 100% NSO coverage by zone.</p>		
<p><b>Special Status Wildlife Species</b></p>	<p>All special status species would be covered by an NSO stipulation but this does not necessarily include occupied habitat.</p> <p>Lynx denning habitat would have 89% and 5% NSO coverage in Zones 2 and 3, respectively. The wetland/riparian stipulation for</p>	<p>Similar to Alternative 1 with slightly more combined NSO coverage for Canada lynx denning habitat.</p>	<p>Federally listed/candidate species and associated habitat would be fully covered.</p>	<p>Federally listed/candidate species and associated habitat would be fully covered.</p> <p>The leases that would be canceled due to the closed to leasing requirement would preclude surface in 105 acres of lynx denning habitat in</p>	<p>Federally listed/candidate species and associated habitat would not be affected by oil and gas development.</p>

**Table 2-9 Summary of Environmental Impacts and Resource Protections**

Resource Affected	Alternative 1	Alternative 2	Alternative 3	Alternative 4	Alternative 5
	GMUGNF would cover about 1% of associated western yellow-billed cuckoo riparian/wetland habitats in Zone 2.  Sage grouse habitat (in Zone 1 only) would be fully covered by NSO stipulations.			Zone 3.	
<b>Aquatic Resources</b>	There are NSO and TL stipulations designed to minimize adverse impacts to cutthroat trout habitat that would cover up to 7 miles of perennial streams, mostly within Zone 3, with no coverage from resource-specific stipulations in Zones 1 and 4. Other NSO stipulations would cover some streams and habitat for aquatic species if implemented. This alternative would not fully cover special status aquatic species habitat (cutthroat trout, boreal toad, leopard frog) through stipulations.  No new water depletions that have not been analyzed in the previous Biological Assessment and Biological Option are projected.	Same as Alternative 1.	Additional NSO, CSU, and TL stipulations designed for aquatic resources would cover approximately 44% of named perennial streams in Zone 2, 78% in Zone 3, and 100% in Zone 4. There are no perennial streams with game or special status aquatic species in Zone 1. There would be increased coverage for special status aquatic species habitat through resource-specific stipulations and other stipulations.  No new water depletions that have not been analyzed in the previous BA and BO are projected.	Similar to Alternative 3, except that more perennial stream miles in Zone 3 outside the leases would be covered by being closed to leasing, eliminating future mineral development in those areas.	Following the short-term disturbance required to remove existing wells and other infrastructure and implement reclamation, there would be no potential impacts to aquatic resources from mineral development or water depletions.
<b>Cultural Resources</b>	There are no stipulations specifically developed to minimize adverse impacts to cultural resources, although federal law would provide coverage of eligible sites. It is estimated that approximately 276 archaeological sites would	There are no stipulations specifically developed to minimize adverse impacts to cultural resources, although federal law would provide coverage of eligible sites. It is estimated that approximately 281 archaeological sites would	There are no stipulations specifically developed to minimize adverse impacts to cultural resources, although federal law would provide coverage of eligible sites. It is estimated that approximately 670 archaeological sites would	There are no stipulations specifically developed to minimize adverse impacts to cultural resources, although federal law would provide coverage of eligible sites. It is estimated that approximately 707 archaeological sites	Surface disturbance to remove infrastructure and reclaim areas would occur primarily in previously disturbed areas. It is unlikely that any sites would be affected.

**Table 2-9 Summary of Environmental Impacts and Resource Protections**

Resource Affected	Alternative 1	Alternative 2	Alternative 3	Alternative 4	Alternative 5
	be protected from surface disturbance, when considering all NSO stipulations, should they be implemented.	be protected from surface disturbance, when considering all NSO stipulations, should they be implemented.	be protected from surface disturbance, when considering all NSO stipulations, should they be implemented.	would be protected from surface disturbance, when considering all NSO stipulations, should they be implemented.	
<b>Transportation</b>	<p>Future mineral development would result in new road construction and increased traffic levels proportionate to the amount of development projected in each zone (Zone 2 projected for the most development). Increased traffic levels to service gas wells would be most noticeable along roads in areas without high levels of existing development. An estimated 60 miles of new roads would be constructed, with the heaviest increase in traffic during drilling and completion of wells.</p> <p>An average of 8,449 daily vehicle round-trips, with potential for vehicle collisions and/or an increased risk of collision with wildlife.</p>	Same as Alternative 1.	Slightly fewer wells to be developed but the projected level of traffic and new road construction would be similar to Alternative 1.	With fewer wells projected to be developed in Zone 3, this alternative would result in the fewest miles of new roads and the lowest increase in development-related traffic.	There would be vehicle traffic in Zones 2 and 3 to decommission wells, pads, and roads, and to reclaim the disturbed areas. Once the reclamation is complete, no development-related traffic or construction would occur.

**Table 2-9 Summary of Environmental Impacts and Resource Protections**

<b>Resource Affected</b>	<b>Alternative 1</b>	<b>Alternative 2</b>	<b>Alternative 3</b>	<b>Alternative 4</b>	<b>Alternative 5</b>
<b>Land Use</b>	Existing land uses would be affected where NSO stipulations do not restrict mineral development. In these areas, it is likely that new ROW authorizations would be necessary. NSO stipulations would be the least under Alternative 1, so changes in land use may be most affected. Communication sites would be covered by stipulations for other resources.	Same as Alternative 1.	Similar to Alternative 1, with more NSO stipulations that would minimize land use changes within the leases, possibly pushing mineral development off-lease to other landowners. The communication sites would be covered by a CSU stipulation.	Similar to Alternative 3, except there would be no land use changes in Zone 3 within the area identified as closed to leasing.	Land uses within the leases would not be modified by mineral development. The 75 wells and associated roads and pipelines would revert to previous land uses after reclamation is completed.
<b>Special Designations</b>	The special designations potentially affected include the Lower Battlement Resource Natural Areas (RNA) (Zone 1) and the roadless areas designated under the Colorado Roadless Area (CRA). The majority of the RNA would be covered by NSO stipulations designed to protect steep slopes and bighorn sheep habitat, should they be implemented. There would be limited coverage of CRAs through NSO stipulations intended to minimize impacts to other resources. There are no CRAs in Zone 4.	Same as Alternative 1.	There would be slightly more acreage of NSO stipulations to minimize adverse impacts to the RNA under Alternative 3 and more protection of CRAs through NSO stipulations, primarily in Zones 2 and 3. There are no CRAs in Zone 4.	Same as Alternative 3 when considering coverage from both NSO stipulations and designation of Zone 3 areas closed to leasing.	Alternative 5 would result in the fewest development-related impacts to the RNA and CRAs because all leases would be canceled.
<b>Recreation</b>	Should they be implemented, NSO stipulations created to minimize adverse impacts to other resources would limit development-related impacts by covering portions of backcountry motorized and non-motorized management	Similar to Alternative 1 with slightly more coverage of ROS classifications due to slightly increased NSO stipulation acreage.	More coverage of summer and winter ROS classifications would be provided by the greatly increased amount of lease stipulations, especially through NSO constraints. This would provide greater coverage for backcountry motorized	Protections of ROS classifications would be similar to Alternative 3.	Protection of recreation resources would be the greatest under Alternative 5 because all leases would be canceled so there would be no impacts to recreation once existing well pads and roads are reclaimed.

**Table 2-9 Summary of Environmental Impacts and Resource Protections**

<b>Resource Affected</b>	<b>Alternative 1</b>	<b>Alternative 2</b>	<b>Alternative 3</b>	<b>Alternative 4</b>	<b>Alternative 5</b>
	areas in Zone 2. There would be limited acreage of summer and winter recreation opportunity spectrum (ROS) classifications coverage by lease stipulations compared to the acreage available for development.		recreation in the designated Management Area and the same amount of coverage to non-motorized areas in Zone 2. The dispersed recreation management area in Zone 3 would have some coverage under this alternative.		
<b>Livestock Grazing</b>	Should they be implemented, NSO and CSU stipulations designed to minimize adverse impacts to other resources would provide some coverage to forage within established grazing allotments that overlap leases. Approximately 25% of all allotments within the leases would be covered. Surface disturbance or the occurrence of structures related to mineral development would only affect an estimated 3 animal unit months on the leases over the long term. Off-lease surface disturbance also could occur.	Similar to Alternative 1, with slightly increased acreage of NSO stipulations that could provide additional coverage to forage.	Because all allotments that overlap the leases would be protected by NSO or CSU stipulations, it is estimated that this alternative would result in the least adverse effects to on-lease forage.	Similar to Alternative 3 with possibly greater off-lease coverage of forage within allotments due to the areas in Zone 3 that would be closed to leasing.	Under Alternative 5, areas within allotments would be reclaimed and no new development-related disturbance would occur. This would result in an increase in forage within allotments.
<b>Scenic Resources</b>	There are no specific stipulations to minimize adverse impacts to scenic resources under Alternative 1. Implementation of NSO stipulations designed to cover other resources would provide minor coverage to changes in scenic attractiveness, with the highest percentage of coverage of high and very high Scenic Integrity Objectives by other NSO stipulations in Zone 1.	Similar to Alternative 1.	Alternative 3 includes 3 stipulations designed to minimize adverse impacts to areas with high Scenic Integrity Objectives and travel routes that have high user concern. This coverage, combined with the large area of NSO stipulations designed to minimize adverse impacts to other resources, would result in fewer alterations of scenic resources within the lease boundaries.	Similar to Alternative 3, with additional coverage of scenic resources within the area that would be closed to leasing.	Alternative 5 would have the least adverse impact to scenic resources because, following decommissioning and reclamation of existing wells and other infrastructure, the area would be allowed to return to its natural condition.

**Table 2-9 Summary of Environmental Impacts and Resource Protections**

Resource Affected	Alternative 1	Alternative 2	Alternative 3	Alternative 4	Alternative 5
<b>Hazardous Materials</b>	Activities conducted under these alternatives carry risks of spills and releases of hazardous materials and solid waste. In the absence of stipulations, activities would be carried out in accordance with applicable regulatory programs.				The risks would be less under Alternative 5 because the hazardous materials and other chemicals used in gas production would not be present.
<b>Human Health and Safety</b>	<p>No water resources-specific stipulations exist but the combined NSO stipulations could protect up to 12% of CSWAP areas, 10% of SWPPs. Impacts from air emissions are expected to be minimal.</p> <p>Risk of fire from construction activities or operation of gas wells would be addressed at the site-specific level through best management practices and well design.</p> <p>Limited employment increases are not expected to affect the level of emergency service.</p> <p>Development of 416 wells would result in county revenues that could benefit Public Safety.</p>	<p>General NSO stipulations related to other resources could minimize adverse impacts to portions of the CSWAP areas; all other impacts and risks would be the same as Alternative 1.</p>	<p>Public Water Supply Source Areas NSO stipulation would minimize adverse impacts to up to 69% of the CSWAP areas and 89% of the SWPP areas.</p> <p>Other potential impacts would be similar to Alternative 1 in type but the level of risk would be slightly less. County revenues that could benefit Public Safety also may be slightly reduced.</p>	<p>With the combination of NSO lease stipulations and areas closed to leasing, all designated CSWAP areas, and 99% of the SWPP areas would be precluded from surface disturbance.</p> <p>Potential impacts would be similar to Alternative 1 in type but the level of risk would be slightly less. County revenues that could benefit Public Safety also may be slightly reduced.</p>	<p>Long-term risks or potential impacts would be eliminated; some short-term risks would occur when the existing wells are plugged and abandoned and existing facilities reclaimed. County revenues that could benefit Public Safety would be eliminated.</p>

**Table 2-9 Summary of Environmental Impacts and Resource Protections**

<b>Resource Affected</b>	<b>Alternative 1</b>	<b>Alternative 2</b>	<b>Alternative 3</b>	<b>Alternative 4</b>	<b>Alternative 5</b>
<b>Socioeconomics</b>	<p>Most new wells are projected to be developed in Mesa County, which is projected to have the greatest increase in employment and revenue from gas development. In the Four-county Region, the following increases are projected due to future gas development:</p> <ul style="list-style-type: none"> <li>• 273 average annual total jobs</li> <li>• \$17.3 million in average annual labor income</li> <li>• \$79.0 million in average annual gas revenues</li> <li>• \$5.7 million in average annual revenues to local government</li> </ul>	<p>Same as Alternative 1:</p> <ul style="list-style-type: none"> <li>• 273 average annual total jobs</li> <li>• \$17.3 million in average annual labor income</li> <li>• \$79.0 million in average annual gas revenues</li> <li>• \$5.7 million in average annual revenues to local government</li> </ul>	<p>Slightly less increase in jobs and revenue compared to Alternative 1:</p> <ul style="list-style-type: none"> <li>• 271 average annual total jobs</li> <li>• \$17.2 million in average annual labor income</li> <li>• \$78.4 million in average annual gas revenues</li> <li>• \$5.6 million in average annual revenues to local government</li> </ul>	<p>The average annual employment, labor income, and revenues to the Four-County Region would be less than Alternative 1 due to the decrease in wells projected to be developed and associated gas production.</p> <ul style="list-style-type: none"> <li>• 253 average annual total jobs</li> <li>• \$16.0 million in average annual labor income</li> <li>• \$72.7 million in average annual gas revenues</li> <li>• \$5.4 million in average annual revenues to local government</li> </ul>	<p>Jobs, labor income, and revenue to counties would be the least under Alternative 5 because reasonably foreseeable future production would not be developed and producing wells would be eliminated.</p> <ul style="list-style-type: none"> <li>• 26 average annual total jobs lost</li> <li>• \$1.3 million in average annual labor income loss</li> <li>• \$18.8 million in average annual gas revenues lost</li> <li>• \$1.4 million in average annual revenues to local government lost</li> </ul>
<b>Environmental Justice</b>	There would be no adverse impacts to environmental justice populations under any alternative because they do not exist within the analysis area.				

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