

Appendix O

Reasonably Foreseeable Development Scenario for Greater Sage-Grouse Habitat in the Idaho and Southwestern Montana Sub-Region



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O. Reasonably Foreseeable Development Scenario for Greater Sage-Grouse Habitat in Idaho and Southwestern Montana Sub-region

O.1 Introduction

This Reasonably Foreseeable Development Scenario (RFDS) is a required component of the GRSG LUPA/EIS and addresses potential fluid mineral exploration and development over the next 15 years, and its resulting potential impact on leasing and development of federal and nonfederal lands and/or mineral rights within occupied GRSG habitat in the Idaho/southwest Montana sub-region. This RFDS applies primarily to BLM-administered and National Forest System lands and split-estate underlain by federal minerals, although it takes into consideration nonfederal development in the cumulative impact analysis.

This RFDS generally follows the procedures outlined in BLM Instruction Memorandum 2004-089, Policy for Reasonably Foreseeable Development Scenarios for Oil and Gas. It projects a baseline scenario of activity assuming that all potentially productive areas are open under standard lease terms and conditions, except those areas designated as closed to leasing by law, regulation, or executive order. Under these conditions, this RFDS provides a maximum development scenario. The effect of the alternatives on potential development is also included in this scenario.

O.2 Oil and Gas Resources

The reasonably foreseeable disturbance acreage associated with oil and gas development from existing plans is presented in **Table O-1**.

The Four Rivers RFDS concluded it was reasonable to anticipate 6 to 10 exploration wells would be drilled on Federal lands north of the Payette River east of Payette. Due to the recent discovery and development of private lands near New Plymouth, and because several expressions of interest have been received, the nearby Federal lands (some of which are split estate) are considered to have medium potential for the discovery and development of a natural gas resource. Leasing is deferred pending completion of the Four Rivers RMP/EIS. The lands are not located in GRSG habitat. Due to existing road density in the area, it was concluded that approximately one mile of temporary road would be required for each exploratory well.

The Jarbidge RFDS concluded it was reasonable to anticipate up to 2 exploration wells would be drilled, only because lands have been nominated for leasing on lands in the vicinity of Brown's Bench (leasing is deferred pending the completion of the Jarbidge RMP/EIS). The potential for discovery of an oil or gas resource is considered low. Therefore no field development is anticipated. Due to existing road density in the area, it was concluded that approximately two miles of temporary road would be required for each exploratory well. These lands are located in PPH.

Table O-1
Reasonably Foreseeable Development Scenario for the Idaho and Southwest Montana Sub-region

Plan Name/RFDS	# of Exploration Wells Predicted	Acres of Drill Pads¹	Miles of Road²	Acres of Roads³	Acres Disturbed from Exploration	# of Discovery Wells	Exploration Wells Reclaimed (acres)	# Step-out Wells	Acres Disturbed from Step-out	Total Permanent Disturbance (acres)
Four Rivers	6-10	18-30	8	40	48-80	1	35-65	4	32	46
Jarbidge	2	6	4	20	26	0	26	0	0	0
Pocatello	5	15	20	100	115	1	92	4	32	55
Dillon	6	18	10.5	105	123	2	100	4	32	55
Caribou NF	4	12	24	120	132	0	120	0	0	0
TOTALS	23-27	69-81	66.5	332.5 acres	401.5-413.5	4	376-406	12	96	156

¹ Assumes 3 acres each

² Miles of road per exploration well varies by RFDS. Miles of road for step-out wells equals one mile per well (in accordance with Idaho well spacing rule)

³ Assumes 5 acres per mile

The Pocatello RFDS concluded it was reasonable to anticipate that 5 exploratory wells would be drilled, likely in the Bear Lake area. Lands have been nominated, but leasing is deferred pending the outcome of this EIS. The area has moderate potential for the discovery of a limited gas field (see oil and gas potential report for more information). Due to existing road density in the area, it was concluded that approximately four miles of temporary road would be required for each exploratory well. These lands are located in PPH.

The Dillon RFDS concluded it was reasonable to anticipate that 6 exploratory wells would be drilled, and each well would require 3.5 miles of temporary road. Of these wells, two are anticipated to encounter commercial quantities of oil or gas. Dillon predicted that 2 additional step-out wells would be drilled for each discovery well. Given the location of lands with moderate potential in the Dillon RFDS, it is assumed that three of the 6 exploratory wells would be located in PPH, and that one well would encounter commercial quantities of oil or gas, resulting in one three-well field.

The Caribou NF RFDS concluded it was reasonable to anticipate that 4 exploratory wells would be drilled, and that each well would require 6 miles of temporary road. Mineral potential is low to moderate. It is anticipated that the wells would be dry and that no field development would occur. It is assumed the wells would not be located in GRSG habitat.

O.3 Geothermal Resources

BLM currently has 19 existing geothermal leases, 11 of which are located in or near GRSG habitat. While most of the planning area has moderate potential for the discovery of a geothermal resource, it is predicted, for the purposes of this planning document, that the following 8 areas of public lands in Idaho are likely to experience exploration and possible development of the resource for the purposes of energy production:

- Raft River, in southern Cassia County: It is assumed that the operator of the existing 13 MW power plant would increase its output by drilling additional wells on adjacent public lands they now lease. It is also assumed that a different leaseholder would drill the 5 wells it has been approved to drill on public lands, as well as additional unspecified wells, to develop a second power plant at Raft River. It is likely the plant would be located on private land. FEIS update: Two leases have been terminated since publication of the DEIS. They were located in better GRSG habitat (north and west of existing leases) than the leases that remain. The five wells still have not been drilled, but lessee has submitted a new plan to drill a total of 18 wells on federal leases, as well as a utilization plan for a power plant to be located on private land. Assume a 25 mw power plant would be constructed (on private, with wells and pipelines on federal leases).
- Crane Creek, in Washington County: Lessee has drilled temperature gradient holes, but has not proposed development drilling to date. It is assumed, for planning purposes, that a power plant would be developed, possibly on-lease, requiring approximately 12 large bore production wells. FEIS update: no new activity has occurred and no new proposals have been submitted to BLM.

Table O-2
RFDS by Alternative

Alternative	# of Exploration Wells Predicted	Acres of Drill Pads (3 acres ea)	Total Miles of Road	Acres of Roads (5 ac. per mile)	Acres Disturbed from Exploration	Exploration Wells Reclaimed (acres)	# of Discovery Wells	# Step-out Wells	Acres Disturbed from Step-out	Total Permanent Disturbance (acres)	Geophysical Exploration Allowed?
Alternative A	25	75	66.5	332.5	401.5-413.5	376-406	4	12	96	156	Yes
Alternative B	13 ¹	39	34	170	209	209	2	6	48	73.5	No ²
Alternative C	13 ³	39	34	170	209	209	2	6	48	73.5	No
Alternative D	23 ⁴	69	62.5	312.5	375.5-387.5	350-386	4	12	96	156	Yes, with TLs
Alternative E	19 ⁵	57	45	275	332	203	4	10	80	128.5	Not addressed
Alternative F	13 ⁶	39	34	170	209	209	2	6	48	73.5	No ²
Proposed Plan	15 ⁷	45	38	190	235	235	2	6	48	73.5	Yes, with TLs

¹ Alternative B is closed to leasing in PHMA. No leasing on Bear Lake Plateau (Pocatello) or Jarbidge. Assume half the number of wells in Dillon (assume half is in PHMA)

² Only allow geophysical exploration within PHMA to obtain exploratory information for areas outside of and adjacent to PHMA. Only allow geophysical operations by helicopter-portable drilling methods and in accordance with seasonal timing restrictions and/or other restrictions that may apply. Geophysical exploration shall be subject to seasonal restrictions that preclude activities in breeding, nesting, brood rearing and winter habitats during their season of use by GRSG.

³ Alternative C is closed to leasing in PHMA. Since no wells are predicted in GHMA under Alternative B, numbers are the same as Alternative B.

⁴ Alternative D no to low potential areas within PHMA or IHMA are closed to leasing. Therefore no leasing would be allowed in Jarbidge.

⁵ Alternative E is open with NSO in PHMA and GHMA. This is the same as Alternative C in Idaho and same as Alternative A in MT (added 10 wells total for MT- 6 exploratory plus 4 step-outs).

⁶ Alternative F is closed to leasing in PHMA (Same as Alternative B). No leasing on Bear Lake Plateau (Pocatello) or in Jarbidge, and assume half the number of wells in Dillon (assume half is in PHMA)

⁷ Under the Proposed Plan, PHMA and IHMA are open to leasing, subject to NSO w/rare exceptions. Only those wells predicted in non-habitat would be drilled-include those in Four Rivers (8 wildcat + 4 step-out), half the wells in Dillon (3 wildcat + 2 step-out), and 4 wildcat wells in Caribou NF (no production predicted).

- Magic Reservoir, in Camas/Blaine Counties: Lessee has not done any exploration to date, however existing data indicates this has potential for power production. It is assumed that a small field would be discovered and a 10 MW power plant would be constructed. FEIS update: these two leases have been terminated. BLM has no plans to re-lease the area. The RFDS is therefore revised to no discovery or power plant construction.
- West of Weiser, in Washington County: Lessee has not performed any exploration to date. It is assumed that temperature gradient drilling would be conducted on lease. Due to the scattered land ownership pattern in this area, it is not assumed that the geothermal resource would be developed for energy production in the next 10 years. FEIS update: no activity has occurred and no proposals have been submitted to BLM. Castle Creek, in Owyhee County: Numerous water wells in the general area have encountered a higher geothermal gradient than normal, indicating a possible heat source at depth. Normal faulting provides a conduit for fluid flow. Leases offered but no bidders. It is not assumed that the resource would be developed for energy production in the next 10 years.
- Blackfoot/Grays Lake area, in Caribou/Bonneville Counties: higher than normal geothermal gradient indicated in an oil and gas well drilled in 1980's. No other information available. It is not assumed that the resource would be developed for energy production in the next 10 years.

Table O-3
Reasonably Foreseeable Total Disturbance Acreage by Alternative for Geothermal Resources

Alternative	MW Predicted	Acres Disturbed by TG Drilling (1 ac per well)	# of Prod/ Inj. Wells Predicted	Acres of Drill Pads (3 acres ea)	Total Miles of Road	Acres of Roads (5 ac. Per mile)	Powerplant Construction (1/2 ac per MW)	Pipeline Construction	Transmission Line Construction (5 ac. per mile)	Total Permanent Disturbance	Geo-physical Allowed in GRSG Habitat?
Alternative A	40	22	28	85	19	96	20	48	16 miles = 80	380	yes
Alternative B	40	19	28	85	16	80	10	40	80	300	yes
Alternative C	40	19	3,528	85	16	80	10	40	80	300	no
Alternative D	40	19	28	85	16	80	10	40	80	300	yes
Alternative E	40	19	28	85	16	80	10	40	80	300	yes
Alternative F	40	19	28	85	16	80	10	40	80	300	yes