
4.0 ENVIRONMENTAL CONSEQUENCES

4.1. INTRODUCTION

This chapter presents the environmental consequences of the management actions proposed under the five alternatives and the Proposed RMP described in Chapter 2. These management actions were developed as alternative ways of resolving the issues that pertain to current Vernal Field Office (VFO) management and allocation of public land resources, their use, and protection. Decisions by the Bureau of Land Management (BLM) about resource use and management in the Vernal Planning Area (VPA) will be based on this issue analysis.

Alternative A would protect important environmental values and sensitive resources while allowing the development of oil and gas resources, recreational facilities, and other human uses. Alternative B would emphasize direct human actions. Alternative C would minimize human activities within the VPA. Alternative D (No Action) would be a continuation of existing management practices defined in the Diamond Mountain Resource Management Plan (RMP) and in the Book Cliffs RMP. Alternative E would emphasize the protection of all non-Wilderness Study Area (WSA) lands with wilderness characteristics. The Proposed RMP is a combination of decisions pulled from the various alternatives that best meet the goals and objectives of the plan.

This RMP/environmental impact statement (EIS) provides a landscape-scale, "big picture" level of analysis, and in most cases, the exact locations of projected development and other changes are not known at this time. Impacts for each specific resource or resource use presented in Chapter 3 are described under each alternative and by each issue that would affect that resource. Impacts are defined as modifications to the existing environment brought about by implementing an alternative. Impacts can be beneficial or detrimental, can result from the action directly or indirectly, and can be long-term, short-term, temporary, or cumulative in nature.

For the analysis, BLM staff has used existing data, current methodologies, professional judgments, and projected actions and levels of use. The analysis takes into account the mitigation measures and stipulations described in Chapter 2. If impacts are not discussed, the analysis has indicated that none would occur or their magnitude would be negligible.

Impacts from actions to be carried out under more than one alternative are discussed under the first applicable alternative and the Proposed RMP. This discussion then is referenced under the other pertinent alternatives and the Proposed RMP.

4.1.1. ANALYTICAL ASSUMPTIONS

The following are the general assumptions used for issue assessment under all alternatives and the Proposed RMP. Assumptions associated with a single issue (e.g., wildlife habitat) are included within the alternative discussion for that issue.

- All resource actions recognize valid existing rights.

- The entire planning area is assigned one of the following leasing constraints for oil and gas development:
 - Open to oil and gas leasing subject to standard lease terms
 - Open to oil and gas leasing subject to moderate constraints (TL/CSU)
 - Open to oil and gas leasing subject to major constraints (NSO)
 - Administratively closed to oil and gas leasing
- The BLM would have the funding and workforce to implement the selected alternative.
- There would be no management decision-related restrictions in the RMP that apply to Utah's State Institutional and Trust Lands Administration (SITLA) lands. The BLM would continue to guarantee reasonable access to inholdings as required by law. Therefore, there should be negligible or minimal economic impact of BLM decisions on SITLA lands.
- Additional National Environmental Policy Act (NEPA) analysis would be required to determine the impacts from site-specific actions (activity plans) and to identify additional mitigating measures.
- All lands identified for disposal are free of encumbrances and can be disposed. This includes cultural resource clearances.
- Demand for recreational activities (both dispersed and concentrated), energy production, vegetative resources and wildlife (non-consumptive and consumptive) use would increase.
- Short-term impacts are those that would last for fewer than five years.
- Long-term impacts are those that would last for five years or more.
- State highways and county roads through the VPA will remain open for access.
- All decisions, projects, activities, and mitigation for the alternatives would be completed as described in Chapter 2 and Appendix K (Surface Stipulations Applicable to all Surface-disturbing Activities).
- Acreages were calculated using GIS technology and there may be slight variations in total acres between disciplines. These variations are negligible and will not affect analysis.
- The Hill Creek Extension (188,500 acres) was not leased in the Book Cliffs RMP and therefore is not included in the total acreage calculations of Alternative D (No Action).
- Reasonable access to state lands, across BLM lands, would be provided under all alternatives.

4.1.2. ASSUMPTIONS AND METHODOLOGY FOR MINERALS DEVELOPMENT

In 2002, the BLM prepared a projected reasonable foreseeable development (RFD) scenario to project environmental impacts across a 15-year period; this RFD has been modified (2008) for oil and gas development only to project environmental impacts for up to 5 years. Development projections included in-depth reviews of potential for occurrence, past well production, current well production, and future potential for production. During the pendency of this planning effort (beginning with public meetings in 2001 and 2002 for scoping purposes through the notification in the Federal Register on January 14, 2005, of the availability of the Draft RMP/EIS), the RFD

scenario, which is a planning tool and not a prediction or limit to development, did not track completely with the pace of development in the Uinta Basin. The BLM has carefully monitored industry trends and believes that the RFD used as an analytical tool in this Proposed RMP can be considered accurate up to approximately 5 years from the time the Record of Decision (ROD) is signed. Within the next five-year timeframe, the BLM will monitor the impacts to resources of continued development in the VPA and ensure that the impacts disclosed in this Proposed RMP are not exceeded by the pace of development.

The potential for occurrence and future oil and gas activity is presented in Table 4.1.2. This activity includes potential mineral development on state, private, U.S. Forest Service (USFS), tribal, BLM, and U.S. Fish and Wildlife Service (USFWS) administered lands within the planning area. Table 4.1.3 shows present and historic cumulative surface disturbance for all lands. Tables 4.1.4a and 4.1.4b describe the cumulative surface disturbance for the RFD.

Predicted surface disturbance for oil and gas development by alternative and the Proposed RMP on BLM lands only was calculated by multiplying the percent of BLM lands open for development under each of the alternatives and the Proposed RMP by the total number of wells predicted for all lands. The resultant number of wells was multiplied by surface disturbance assumptions per well (Table 4.1.1) to arrive at total disturbance (See specific resource chapters for applicable calculations). It should be noted that the total number of wells cited in the RFD report do not represent upper limits on the number of wells that could be drilled in the VPA during the life of the plan. The RFD well totals were developed for the purposes of assessing impacts for decision-making. The total number of wells permitted will be determined through site-specific NEPA analysis of field development projects.

Table 4.1.1. Disturbance Assumptions

Management Activity	Disturbed Acres
Access road construction	0.20 mile per well (0.73 acres surface disturbance per well)
Well pad construction	2.4 acres surface disturbance per well 0.9 acre surface disturbance per well will be reclaimed within 1 year after completion of operations
Existing pipeline systems	Gathering/Injection Lines: 0.47 acre surface disturbance per well (producing, shut-in, temporarily abandoned, and service wells) Transmission Lines: 0.15 mile per well (producing, shut-in, temporarily abandoned, and service wells). 0.79 acre surface disturbance per well (producing, shut-in, temporarily abandoned, and service wells). Approximately 1/3 of pipeline surface disturbance will be reclaimed in short term.
Power lines	Ten (10) percent of wells (producing, shut-in, temporarily abandoned, and service wells) will have electrification. Where power lines are present, the length will approximate access road length. Existing activity accounts for approximately 73 miles of power lines. Future development activity will result in approximately 119 additional miles of power lines. There will be approximately 0.25 acre of surface disturbance per mile of power line.

Table 4.1.2. Potential for Occurrence and Future Oil and Gas Activity

Development Area	Predicted Gas Wells	Predicted Oil Wells	Predicted Coal-bed Natural Gas Wells
Manila-Clay Basin	45	0	0
Tabiona-Ashley Valley	0	30	0
Altamont-Bluebell	250	175	0
Monument Butte - Red Wash	3,100	1,700	0
West Tavaputs	350	75	50
East Tavaputs	600	75	80
Totals	4,345	2,055	130

Table 4.1.3. Related Oil and Gas Activity Surface Disturbance—Present and Historic Activity

Type of Disturbance	Short-term		Life of Activity	
	Miles	Acres	Miles	Acres
Producing Oil Wells		1,146		1,718
Producing Gas Wells		1,212		1,818
Shut-In Oil Wells		198		296
Shut-In Gas Wells		157		235
Service Wells		336		504
Shut-In Service Wells		30		44
Temporarily Abandoned Wells		167		251
Abandoned Wells		284		426
Plugged and Abandoned Wells		1,080		1,621
Access Roads			1,043	8,688
Pipeline Gathering Systems				1,906
Transportation Pipeline Systems	608	1,057	608	2,147
Compressor Stations				66
Power Lines			73	18
Totals	608	5,667	1,724	19,738

Table 4.1.4.a Related Oil and Gas Activity Surface Disturbance—Future Activity

Type of Disturbance	Manila-Clay Basin				Tabiona-Ashley Valley				Altamont-Bluebell			
	Short-term		Life of Activity		Short-term		Life of Activity		Short-term		Life of Activity	
	Miles	Acres	Miles	Acres	Miles	Acres	Miles	Acres	Miles	Acres	Miles	Acres
Producing Oil Wells						27		45		158		262
Producing Gas Wells		41		67						225		375
Access Roads			9	33			6	22			85	309
Pipeline Gathering Systems				21				14				200
Transportation Pipeline Systems	7	12	7	24	5	8	5	16	64	112	64	224
Compressor Stations				2				2				10
Power Lines			1	<1			1	<1			8	2
Totals	7	53	17	147	5	35	12	99	64	495	157	1,382

Table 4.1.4.b Related Oil and Gas Activity Surface Disturbance—Future Activity, continued

Type of Disturbance	Monument Butte - Red Wash				West Tavaputs Plateau				East Tavaputs Plateau			
	Short-term		Life of Activity		Short-term		Life of Activity		Short-term		Life of Activity	
	Miles	Acres	Miles	Acres	Miles	Acres	Miles	Acres	Miles	Acres	Miles	Acres
Producing Oil Wells		1,530		2,550		67		113		67		113
Producing Gas Wells		2,790		4,650		360		600		612		1,020
Access Roads			960	3,491			95	346			151	549
Pipeline Gathering Systems				2,256				223				355
Transportation Pipeline Systems	720	1,264	720	2,528	72	125	72	250	113	199	113	398
Compressor Stations				118				13				22
Power Lines			86	22			9	2			14	4
Totals	720	5,584	1,766	15,615	72	552	176	1,547	113	878	278	2,461

4.1.3. ASSUMPTIONS AND METHODOLOGY FOR AIR QUALITY MODELING

Air quality modeling for this document is based on the initial acreages proposed for Alternatives A, B, C, and D in June and July 2004. Alternative E was formulated later than the other Alternatives and was determined to be the same as C, but managing for non-WSA lands with wilderness characteristics. For the purposes of the air quality analysis, Alternative E is assumed to be the same as C. Similarly, the assumptions relevant to oil and gas development as they pertain to air quality are identical for the Proposed RMP and Alternative A. Projected well numbers and road-related air quality impacts were based on these proposed acreages. The total acreages for potential mineral development for Alternatives A, B, C and D have changed somewhat over time as additional considerations and information has been brought forward through the assessment process. For Alternatives A, B and C/E, and the Proposed RMP, the changes are very small and represent less than 1% difference from the acreages and well numbers modeled for air quality impacts. In the case of Alternative D (No Action), the acreage used in the modeling assessment is approximately 6% greater than that currently available for leasing. This difference is specific to air quality modeling. When the air quality modeling was undertaken, the Hill Creek extension (encompassing approximately 188,500 acres in total) was included in the acreage totals for modeling. However, in the intervening timeframe, it was decided that because the Hill Creek Extension was not leased in the Book Cliffs RMP this acreage should have not been included in the modeling for Alternative D (No Action). Air quality modeling for Alternative D (No Action) does not reflect the withdrawal of the 188,500 acres and therefore exhibits a slight overestimation of air quality impacts for this alternative. Given the conservative nature of the assumptions used and boundary conditions employed for the air quality modeling, these differences are considered to be minor at most and the modeled air quality impacts for these alternatives remain valid.

4.1.4. TYPES OF IMPACTS TO BE ADDRESSED—DIRECT, INDIRECT, AND CUMULATIVE

Direct impacts are attributable to implementation of an alternative that affect a specific resource and generally occur at the same time and place. Indirect impacts can result from one resource affecting another (e.g., soil erosion and sedimentation affecting water quality) or can be later in time or removed in location, but are still RFD. Long-term impacts are those that would substantially remain for many years or for the life of the project. Temporary impacts are short-term or ephemeral changes to the environment that return to the original condition once the activity is stopped, such as air pollutant emissions caused by earthmoving equipment during construction. Short-term impacts result in changes to the environment that are stabilized or mitigated rapidly and without long-term effects, such as surface disturbance that is revegetated immediately after earthmoving is completed. Impacts can vary from a slightly discernible change to a full modification or elimination of the environmental condition. Cumulative impacts could also occur as the result of past, present, and RFD future actions by federal, state, and local governments, private individuals and entities in or near the VPA.

4.1.5. IMPACTS TO CRITICAL ELEMENTS

4.1.5.1. IMPACTS OF ALTERNATIVES ON PRIME AND UNIQUE FARMLANDS

All alternatives and the Proposed RMP in this Final EIS are consistent with the intent of the Secretary of Agriculture Memorandum 1827 for prime land. The project does not include any use of prime farmland nor does it impact any prime farmland soils (NRCS 1990).

4.1.5.2. IMPACTS OF ALTERNATIVES ON INVASIVE AND/OR NOXIOUS NON-NATIVE PLANTS

Vegetation and surface-disturbing activities would occur under all alternatives and the Proposed RMP in this Final EIS. These disturbances all increase the risk of propagation of invasive or noxious non-native plants. However, effective implementation of management actions common to all of the alternatives would prevent the risk from becoming greater than at present and would help to reduce risk in the long-term.

4.1.5.3. INCOMPLETE OR UNAVAILABLE INFORMATION

This analysis was done using the best-available information that is believed to be sufficient for a programmatic analysis of the impacts of multi-discipline decisions on management direction on a planning area-wide basis. This includes but is not limited to landscape level data such as GAP-level vegetation data, State Soil Geographic (STATSGO) data, and field-office information on wildlife habitat boundaries. Additional site-specific data (including cultural resource surveys, TES surveys, etc.) will be required to complete site-specific NEPA analysis necessary prior to implementation of fire and fuel management activities.