

EXECUTIVE SUMMARY

1.0 INTRODUCTION

This Draft Environmental Impact Statement (DEIS) analyzes the impacts of drilling and production operations in the Desolation Flats natural gas producing area of southcentral Wyoming. The Desolation Flats project area (DFPA) is located in Townships 13 through 16 North and Ranges 93 through 96 West in Carbon and Sweetwater counties, Wyoming as shown on Figure 1-1. The DFPA is located approximately 21 miles south of Wamsutter, Wyoming and 14 miles west of Baggs, Wyoming. The project area encompasses approximately 233,542 acres of mixed federal, state, and private lands. Of this total, 225,205 acres are federal, 1,677 acres are State of Wyoming, and 6,660 acres are private lands.

This DEIS has been prepared pursuant to the National Environmental Policy Act (NEPA) and addresses two field development scenarios (Proposed Action and Alternative A), and a "No Action" alternative (Alternative B). Details of the Proposed Action and its alternatives are described in the DEIS according to the following chapters. Chapter 1 defines the Purpose and Need for the proposed project. Chapter 2 details the parameters of the Proposed Action and other alternatives as well as providing a summary of mitigation measures and agency-required procedures on public lands to avoid or mitigate resource or other land use impacts proposed by the project operators. Chapter 3 of the DEIS discusses the existing environment of the areas and resources that would be affected under each alternative. Chapter 4 examines the environmental consequences to each resource under each alternative and also provides a summary of additional mitigation measures by resource discipline which were identified during the analysis process. The measures and requirements in the DEIS describe how implementation of the Proposed Action or alternatives should be managed to assure minimal impacts in the DFPA and adjacent lands. Chapter 5 discusses the cumulative impacts on the environment which results from the incremental impact of the proposed project when added to past, present, and reasonably foreseeable actions within the cumulative impacts analysis (CIA) area. Chapter 6 of the DEIS summarizes the consultation and coordination accomplished with various federal, State, county, and local agencies, elected representatives, environmental and citizen groups, industries, and individuals potentially concerned with issues regarding the proposed drilling action and alternatives.

The DFPA is located within the administrative boundaries of the Rawlins Field Office (RFO) and the Rock Springs Field Office (RSFO). Approximately 94 percent of the DFPA is located within the RFO area, with the remaining 6 percent located within the RSFO area. The documents that direct management of federal lands within these areas are the RFO Great Divide Resource Management Plan (RMP) (November 1990) and the RSFO Green River RMP (October 1997). The DFPA natural gas development is in conformance with management objectives provided in the Record of Decision (ROD) and approved Great Divide and Green River RMP's, subject to implementation of prescribed mitigation measures proposed by the Operators in Chapter 2 of the DEIS and mitigation measures derived through analysis of impacts in Chapter 4, Environmental Consequences.

Past drilling attempts within the DFPA have been successful. As of January 1, 2002, 63 producing and shut-in natural gas wells, authorized under individual applications for permit to drill (APD's), have been drilled in the DFPA.

The DEIS addresses a Proposed Action and two alternatives that are described in greater detail in the DEIS and briefly summarized here.

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1.1 PROPOSED ACTION AND ALTERNATIVES

1.1.1 Proposed Action

The Proposed Action consists of drilling approximately 385 natural gas wells at 361 well locations, with a forecasted success rate of 65 percent (250 producing wells). The Proposed Action was determined by summarizing drilling plans projected by the Desolation Flats Operators over the next twenty-year planning period. Drilling estimations were based on reasonably foreseeable spacing and drilling projections into areas within the project area where the planned production and development activities would occur. The drilling proposal is in addition to existing drilling and production operations. Under the Proposed Action, development would begin in 2003 (subsequent to the release of the ROD) within the DFPA and continue for approximately 20 years, with a LOP of 30-50 years. Drilling would typically occur at 2 to 4 wells per section where hydrocarbons are encountered. Development would likely occur sporadically and not be uniformly spaced throughout the DFPA. Various associated facilities (e.g., roads, pipelines, power lines, water wells, disposal wells, evaporation ponds, compressor stations, gas processing facility) would also be constructed throughout the DFPA. The technical requirements for the Proposed Action are summarized in Chapter 2, Section 2.5 - Plan of Operations. The Operators anticipate that 237 of the 250 producing wells would be located within the RFO area, with the remaining 13 wells located within the Monument Valley Management Area (MVMA), RSFO area. Existing disturbance within the DFPA is approximately 1,506 acres, or around 0.6 percent of the 233,542 acres comprising the project area. During the 20-year construction phase, the Proposed Action would disturb approximately 4,923 acres. Disturbance areas within the DFPA would be reduced following reclamation of pipeline ROW's and unused portions of the drill pad, access road, and ancillary facility disturbances during the production phase. Under the Proposed Action, reclamation would reduce disturbance to 2,139 acres for a total disturbance of 3,645 acres or 1.6 percent of the DFPA.

1.1.2 Alternative A

Alternative A consists of an increase of surface well pads, beyond that described in the Proposed Action, to 592 natural gas wells at 555 locations. Alternative A would be similar to the Proposed Action in that development would begin in 2003 (subsequent to the release of the ROD) within the DFPA and continue for approximately 20 years, with an LOP of 30-50 years. Also, drilling would typically occur at 2 to 4 wells per section where hydrocarbons are encountered. Development would likely occur sporadically and not be uniformly spaced throughout the DFPA. Various associated facilities (e.g., roads, pipelines, power lines, water wells, disposal wells, evaporation ponds, compressor stations, gas processing facility) would also be constructed throughout the DFPA. The technical requirements for Alternative A are the same as described for the Proposed Action (Chapter 2, Section 2.5 - Plan of Operations); however, more overall site disturbance requirements would be necessary for the additional well sites, access roads, pipelines, and ancillary facilities. Assuming a success rate of 65 percent (385 producing wells), the Operators anticipate that 372 of the 385 new producing wells would be located within the RFO administrative area, with the remaining 13 wells located within the MVMA, RSFO administrative area. Total new short-term surface disturbance resulting from Alternative A would be 7,582 acres (approximately 3.2 percent of the DFPA). With Implementation of reclamation, disturbance would be reduced to 3,300 acres for a total disturbance of 4,806 acres or about 2.1 percent of the DFPA.

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1.1.3 Alternative B - No Action

Under the No Action Alternative, oil and gas development activities associated with currently held leases would continue and there would be no change to the management practices and levels of activity. Leaseholders would be able to exercise the terms and conditions of leases within the DFPA. Alternative B would allow leaseholders to submit individual APD's and ROW actions. On a case-by-case basis each APD or ROW application would continue to be subject to site specific environmental review prior to authorization by the BLM. Authorizations granted in previously approved projects located within the DFPA would remain in effect. These projects include the Mulligan Draw natural gas project (Mulligan Draw EIS and ROD, USDI-BLM 1992b), and the Dripping Rock Unit/Cedar Breaks oil and gas field development (Dripping Rock Unit/Cedar Breaks Oil and Gas Field Development EA and DR, USDI-BLM 1985). The Mulligan Draw ROD authorized the Mulligan Draw operators to drill and develop a maximum of 45 wells on 640-acre spacing. The Dripping Rock Unit/Cedar Breaks Decision Record (DR) authorized the operators to drill and develop a maximum of 58 wells on 640-acre spacing.

Under Alternative B, additional surface disturbance would occur only on a case-by-case basis. In order to estimate future drilling activity under the No Action Alternative, it was assumed that wells drilled in the DFPA would be drilled at the same rate as the existing wells in the DFPA. As noted in Chapter 2 of the DEIS, 63 producing wells (65 percent success rate) have been drilled within the DFPA to date. Of the 63 wells drilled, 46 (73 percent) were drilled in the Mulligan Draw and Dripping Rock fields. Currently, there are 57 wells left to be authorized in the Mulligan Draw and Dripping Rock fields (Table 1-5). Based on past drilling history, 23 additional wells could be drilled in the Mulligan Draw project area (two of which could be drilled in the MVMA), and 34 additional wells could be drilled in the Dripping Rock/Cedar Breaks project area. Assuming that the operators would drill the 57 wells left to be authorized, the remaining 27 percent of the wells (21 wells) would be drilled in the DFPA outside the Mulligan Draw and Dripping Rock fields. Drilling outside the Mulligan Draw and Dripping Rock/Cedar Break project areas, but within the DFPA, could continue on a case-by-case basis until BLM made a determination that further drilling activities would result in field development. At that point, additional environmental analysis to determine the effects of field development would be necessary. Total wells anticipated to be drilled under the No Action Alternative is estimated at 78 wells.

The technical requirements for Alternative B are the same as described for the Proposed Action (Chapter 2, Section 2.5 - Plan of Operations). The No Action Alternative would have approximately 731 acres of total new short-term surface disturbance (9.37 acres per well) from well locations, new roads or upgrades of existing roads, and new pipelines. Total disturbances would be reduced to 112 acres (1.43 acres of disturbance per well) following reclamation of the pipelines and portions of the well pad not needed for production operations. It is anticipated that the existing natural gas production infrastructure within the DFPA (e.g., compressors, water disposal wells, etc.) would support the No Action Alternative during the 30 - 50 year LOP.

Under any of the alternatives, development could occur on State and private lands within the project area under authorizations granted by the Wyoming Oil and Gas Conservation Commission (WOGCC).

1.1.4 Major Impact Conclusions

The Desolation Flats Natural Gas Development project would cause direct and indirect, short-term and long-term, as well as cumulative disturbance of the human and natural environments. Potential

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environmental impacts that would result from implementation of the Proposed Action, Alternative A, or Alternative B are detailed in Chapter 4 of the DEIS. A summary of proposed mitigation measures and agency required procedures on public lands to avoid or mitigate resource or other land use impacts is presented in Chapter 2 of the DEIS. Chapter 4 summarizes the environmental impacts for each resource discipline and mitigation measures identified to avoid or reduce the impacts. These impacts, which were identified during the analysis process, are summarized below.

2.0 RESOURCE ELEMENTS ANALYZED

The following sections summarize impacts to the various resource elements identified during the analysis process for each alternative. Under the No Action Alternative, authorizations granted in previously approved projects located within the DFPA would remain in effect. These projects include the Mulligan Draw natural gas project and the Dripping Rock Unit/Cedar Breaks oil and gas field development (Figure 1-6). The Mulligan Draw ROD authorized the Mulligan Draw operators to drill and develop a maximum of 45 wells on 640-acre spacing. The Dripping Rock Unit/Cedar Breaks Decision Record (DR) authorized the operators to drill and develop a maximum of 58 wells on 640-acre spacing. Other exploratory and development activities could occur outside these previously approved projects within the DFPA following site-specific analysis.

2.1 Geology/Mineral Resources/Paleontology

Implementation of the Proposed Action, Alternative A, or Alternative B would result in construction excavation associated with the development of well pads, access roads, pipelines and other production facilities which could directly result in the exposure and damage or destruction of scientifically significant fossil resources. Construction-related disturbances could result in new fossil resources being discovered and properly recovered and catalogued into the collections of a museum repository, so that they are available for study and scientific evaluation. The potential magnitude of impact to fossil resources associated with the action alternatives (the Proposed Action and Alternative A) varies proportionally with the total number of wells which would be developed under each alternative. The magnitude of impact for Alternative B - No Action, which may allow additional APD's and ROW action on a case-by-case basis, is unknown at present and would depend on the specific action taken and the specific area involved. Under the Proposed Action and Alternatives A and B, areas of proposed ground disturbance would be surveyed by a qualified paleontologist prior to disturbance as required by the authorized officer (AO).

Potential for impacts to project facilities as a result of seismic activity is low, as is the potential for landslides and road subsidence that would temporarily close access roads.

With the exception of petroleum reserves, no major mineral resources would be impacted by implementation of the proposed action or alternative to the proposed action within the DFPA. The proposed project would allow recovery of federal natural gas resources per 43CFR 3162(a) and generation of private and public revenues, if drilling leads to gas discovery and development.

No significant impacts to important surface resources or other geologic resources would occur under the Proposed Action. Mitigation measures discussed in Chapters 2 and 4 should reduce potential impacts to geologic/mineral/paleontologic resources.

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2.2 Air Quality

Gaseous air pollutant emissions discharged from the wellhead (e.g.; venting and flaring) and from natural gas compressor activities, as well as dust and exhaust from construction and maintenance activities, have been identified as issues of concern.

No significant adverse impacts to air quality are anticipated as a result of the implementation of the Proposed Action, Alternative A or the No Action Alternative. Localized increases in criteria pollutants would occur, but maximum concentrations would be below applicable federal and state standards. Similarly, hazardous air pollutant concentrations and incremental increases in cancer risk would also be below applicable significance levels. Potential impacts to visibility and acid neutralizing capacity would be below the levels of acceptable change.

Under the Proposed Action, 385 wells would be developed with an expected success rate of 65 percent or 250 producing wells. Alternative A represents a 35 percent increase in well development when compared to the Proposed Action and it is expected that compression requirements for the Proposed Action would also be increased by a similar percentage. Potential air quality impacts resulting from the implementation of the Proposed Action would be less than for Alternative A. No significant adverse impacts to air quality are anticipated as a result of the implementation of the Proposed Action.

Impacts to air quality under the No Action Alternative would occur at allowable levels and no significant impacts are anticipated. Actions approved under the Mulligan Draw EIS and Dripping Rock/Cedar Breaks EA may still be completed within the project area. Completion of the previously approved actions would involve the development of approximately 71 wells, therefore the impacts are expected to be less than Alternative A or the Proposed Action. In the absence of further development in the DFPA, no additional project related air quality impacts would occur.

2.3 Soils

Impacts resulting from drill pad, access road, facility site, and pipeline ROW construction could include removal of vegetation, exposure of the soil, mixing of soil horizons, soil compaction, loss of topsoil productivity, and increased susceptibility of the soil to wind and water erosion.

Construction of the Proposed Action would variously disturb approximately 4,923 acres of soil. This total area of temporary disturbance would comprise approximately 2.1 percent of the 233,542 acre project area. Combined with the existing disturbance of 1,506.4 acres, total disturbance would be approximately 6,429.4 acres or 2.8 percent of the 233,542 acre project area. This total area of temporary disturbance would be reduced through successful reclamation.

During the life of the project (30-50 years), total disturbances would be reduced to 2,139 acres (336 acres associated with 235 wells having 1.4 acres of remaining disturbance per well site, 1,706 acres of roads [this assumes a 65 percent drilling success rate with roads to unsuccessful wells being reclaimed] and 97 acres of surface disturbance associated with ancillary facilities) or approximately 0.92 percent of the 233,542 acre project area.

Well pads would be reclaimed to the 1.4 acre of disturbance/well and remaining disturbed road dimensions would be approximately 16.0 feet wide, or 0.6 acres per well, and 0.0 acres for pipelines. The ancillary facility would not be reclaimed since the full size of the site would be needed during production. These remaining disturbance areas would represent approximately

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2,139 acres or 0.92 percent of the total project area. This disturbance would be combined with the existing disturbance of approximately 1,506.4 acres for a total of 3,645.4 acres, or 1.6 percent of the 233,542 acre project area. This long-term disturbance would not preclude achievement of the objectives of the Great Divide and Green River RMP's and significance criteria described in Chapter 4 for soils.

Construction under Alternative A would variously disturb approximately 7,582 acres of soils. This total area of temporary disturbance would comprise approximately 3.2 percent of the 233,542 acre project area. Combined with the existing disturbance of 1,506.4 acres, total project area disturbance would be approximately 9,088.4 acres or 3.9 percent of the 233,542-acre project area.

During the life of the project (30-50 years), total disturbances would be reduced by reclamation to 3,300 acres or approximately 1.4 percent of the 233,542-acre project area. This disturbance would be combined with the existing disturbance of approximately 1,506.4 acres for a total of 4,806.4 acres, or 2.1 percent of the project area.

Under the No Action Alternative, soils would be impacted as described for the action alternatives as APD's are granted by the BLM pursuant to previous authorizations. Similar erosion, runoff, and sediment control and revegetation measures would be applied to minimize adverse impacts to soils. Such methods would likely reduce impacts of the No Action Alternative to non-significant levels.

2.4 Water Resources

Potential impacts due to the proposed project include increased surface water runoff and off-site sedimentation due to soil disturbance; increased salt loading and water quality impairment of surface waters; and channel morphology changes due to road and pipeline crossings. The magnitude of impacts to water resources would depend on the proximity of the disturbance to the drainage channel, slope aspect and gradient, degree and area of soil disturbance, soil character, duration of time within which construction activities would occur, and the timely implementation and success/failure of mitigation measures. Impacts would likely be greatest after the start of construction activities and would likely decrease in time due to natural stabilization, reclamation, and revegetation efforts. Construction activities would likely occur within a 20-year period. Petroleum products and other chemicals could be accidentally spilled resulting in surface and groundwater contamination. Similarly, reserve and evaporative pits could leak and degrade surface and groundwater if liners were punctured or liners were not installed. Authorization of the proposed project would require full compliance with RMP management directives that relate to surface and groundwater protection, Executive Order 11988 (flood plains protection), and the Federal Clean Water Act (CWA) in regard to protection of water quality and compliance with Section 404.

The proposed state-of-the-art drilling and completion techniques make it unlikely that aquifer contamination would occur during drilling. Should aquifer mixing occur, the magnitude of mixing would be relatively small due to the relatively short period of time drilling is conducted. A Spill Prevention, Control, and Countermeasure Plan would be implemented to prevent petroleum products and other chemicals from contaminating groundwater aquifers. If deemed necessary, reserve and evaporative pits would be lined to prevent drilling fluids and produced water from contaminating aquifers.

Authorization of the Proposed Action or Alternative A would require full compliance with RMP management directives that relate to surface and groundwater protection, EO 11990 (floodplains protection), and the CWA in regard to protection of water quality and compliance with Section 404.

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These regulations require that certain permits/authorizations be obtained for project authorization including an NPDES permit; a surface runoff, erosion, and sedimentation control plan; an oil spill containment and contingency plan; and CWA Section 404 permits. Most of the ephemeral drainage channels within the DFPA are classified as Waters of the U.S. and are often associated with jurisdictional wetlands. Crossings of these channels and associated wetlands would require authorization from the COE through the CWA Section 404 permitting process. However, these channel crossings would likely receive expedited authorization from the COE through General Permit 98-08. Other project facilities such as well sites and/or facilities sites could not be located in Waters of the U.S. and therefore, Section 404 permitting would not be necessary for such facilities. Each individual channel crossing would be reviewed during the APD/ROW permitting process for specific permit requirements under Section 404 of the CWA. No significant impacts would likely result given the assumptions and compliance with management direction identified previously. Most adverse impacts to water resources would be avoided or reduced through implementation of mitigation measures identified in Chapter 2.

Under the No Action Alternative, individual APD's would continue to be approved by the BLM on a case-by-case basis.

2.5 Vegetation/Wetlands

Implementation of the Proposed Action or Alternative A would result in vegetation removal and soil handling associated with the construction and installation of well pads, pipelines, access roads, and other facilities as described in Chapter 2 of the DEIS. Direct impacts would include the short-term loss of vegetation (modification of structure, species composition, and areal extent of cover types). Indirect impacts would include the short-term and long-term increased potential for invasive plant establishment and expansion; exposure of soils to accelerated erosion; shifts in species composition and/or changes in vegetative density; reduction of wildlife habitat; and changes in visual aesthetics.

The duration and magnitude of impacts to vegetation cover types would depend on the locations of well sites and access roads, the success of mitigation and revegetation efforts. In terms of successful site stabilization, necessary time should be on the magnitude of 3-5 years. Revegetation success would depend on the amount and quality of topsoil salvaged, length of time stockpiled, and respread depth over disturbed areas, as well as seed quality and post-seeding weed control efforts.

The likelihood of impact is greatest for the primary vegetation cover types of Wyoming big sagebrush, desert shrub, and basin exposed rock/soil types which occupy 83.8 percent of the project area. Except for habitats occupied by plant species of concern, clearing of upland cover types would not be significant because upland cover types are generally abundant and widely distributed throughout the region and/or have been previously impacted (e.g., disturbed land).

Under the No Action Alternative, vegetation would continue to be impacted as individual APD's are granted by the BLM. Loss of upland cover types would not be significant. If present, impacts to wetlands would be assessed and mitigated on a case-by-case basis similar to the action alternatives. Rare plant surveys would continue to be performed prior to earth-surface disturbance activities associated with individual projects. Invasive plant programs would be implemented per stipulations in individual APD's.

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2.6 Range Resources and Other Land Uses

Construction of the Proposed Action would temporarily affect 4,923 acres (1,444 acres for well locations and associated facilities, 97 acres for ancillary facilities, 758 acres for pipelines, and 2,624 acres for road ROW's). Assuming that reclaimed areas would be suitable for grazing after five years, a maximum of 2,871 acres would be disturbed at any one time. Once reclamation has been satisfactorily completed on all disturbed areas, the total area of impact would be reduced to approximately 2,139 acres.

Stocking rates for the 12 RFO-administered grazing allotments affected by the Proposed Action and alternatives average 12 acres per AUM. The one affected grazing allotment administered by the RSFO averages 9 acres per AUM. Depending on the actual locations of the drilling and ancillary facilities with respect to forage productivity, lost forage could result in an average annual loss of 158 AUM's (over the 30-50 year LOP) in the RFO portion of the project area (about one-half of one percent of the 31,000 total AUM's in these allotments) and an average annual 12 AUM's in the RSFO portion. The portion of the RSFO-administered allotment (the Rock Springs Allotment) that lies within the DFPA receives little or no use because of terrain and access considerations, so temporary loss of forage in that area would not be likely to impact grazing levels in that allotment. The estimated average annual loss of 12 AUM's would represent a negligible portion of the 109,442 AUM's permitted for the Rock Springs Allotment.

The increased activity associated with drilling and field development would result in increased opportunities for vehicle/livestock collisions, particularly in the period immediately after lambing and calving season when young animals are active and difficult to see. Given the low traffic volumes associated with field operations, vehicle/livestock collisions are of less concern for the long term. There is also increased potential for damage to livestock control structures and concern for the timely repair of structures to BLM standards. Construction of roads in the project area could allow livestock operators additional access for livestock management operations.

Drilling and construction activities could allow introduction of invasive/non-native species into the DFPA. Invasive/non-native species compete with desirable species, rendering an area less productive as a source of forage for livestock and wildlife.

The area removed from forage production under Alternative A could result in an average annual loss of 248 AUM's (over the 30-50 year LOP) in the RFO portion of the DFPA (about 0.8 of one percent) and 18 AUM's in the RSFO portion. The potential for livestock/vehicle accidents, damage to livestock control structures and spread of invasive/non-native species would increase along with the 55 percent increase in drilling and construction activity associated with Alternative A.

Under Alternative B (No Action), development would proceed on a case-by-case basis. Development within the Mulligan Draw and Dripping Rock Unit/Cedar Breaks areas would be authorized not to exceed one well per 640 acres. The amount of forage lost, the potential for livestock/vehicle accidents, damage to livestock control structures and spread of invasive/non-native species would depend on the actual level of drilling and construction activity that would occur under Alternative B.

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2.7 Wildlife

The implementation of either the Proposed Action or Alternative A would result in direct loss of wildlife habitat from surface disturbance associated with the construction of well sites and related access roads and pipelines. In addition, some wildlife species would be indirectly impacted by temporary displacement from habitats in the vicinity of disturbed areas. The potential for collisions between wildlife and motor vehicles would also increase due to the construction of new roads and increased traffic levels on existing roads. The nature of impacts to wildlife is similar between the Proposed Action and Alternative A. However, the magnitude of potential impacts would be greater under Alternative A, because of the greater number of well sites and increased number of miles of associated access roads and pipelines. These impacts are not expected to be significant under either action alternative and would decrease after completion of construction and successful reclamation. Potential impacts to wildlife under the No Action Alternative would be similar in nature to those under the action alternatives, but at a reduced level. Significant impacts to wildlife species under the action alternatives would be avoided through application of the Wildlife Monitoring/Protection Plan (Appendix H) and all appropriate mitigation measures identified in this document.

The DFPA contains yearlong and crucial winter range for pronghorn, elk, and mule deer. A small percentage of seasonal big game ranges are expected to be impacted directly and big game species may be indirectly impacted through displacement. Direct, indirect, and cumulative impacts to big game species would be greater under Alternative A than the Proposed Action, but are not expected to be significant under either action alternative. Potential impacts to wild horses are not expected to be significant under any alternative.

Leks and nesting habitat of greater sage-grouse leks are present on the DFPA. Active leks would be avoided, and therefore, would not be disturbed. A small percentage of nesting habitat may be disturbed, but impacts are not expected to be significant. Direct, indirect, and cumulative impacts to greater sage-grouse would be greater under Alternative A than the Proposed Action, but are not expected to be significant under either action alternative.

Raptor nests occur in and adjacent to the DFPA. Activity status of raptor nests located near project related developments would be monitored as development occurs. Significant impacts to raptors are not expected given the application of mitigation measures that would preclude nest abandonment or reproductive failure. Direct, indirect, and cumulative impacts to raptors would be greater under Alternative A than the Proposed Action, but are not expected to be significant under either action alternative.

The application of prescribed avoidance, monitoring (Wildlife Monitoring/Protection Plan, Appendix H) and mitigation measures in this document would reduce the impact potential and allow for either of the action alternatives to be performed without significant impacts to wildlife resources.

2.8 Special Status Plant and Wildlife Species

Threatened, endangered, candidate, and proposed plant and wildlife species that may potentially occur on the DFPA include: Ute ladies'-tresses, mountain plover, black-footed ferret, bald eagle, and Canada lynx. The Ute ladies'-tresses is not expected to occur on the DFPA due to lack of suitable habitat. A small percentage of potential mountain plover and potential black-footed ferret habitat may be disturbed. The potential for collisions between bald eagles and motor vehicles may increase due to the construction of new roads and increased traffic levels on existing roads. The

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Canada lynx is not expected to occur on the DFPA due to a lack of suitable habitat. Threatened, endangered, and proposed fish species that occur downstream of the DFPA in the Colorado River System include: Colorado pikeminnow, humpback chub, bonytail, and razorback sucker. None of the threatened, endangered, and proposed wildlife and fish species are expected to be adversely affected under either action alternative.

A total of 35 BLM State of Wyoming sensitive wildlife and fish species may occur on the DFPA. State of Wyoming sensitive species, as defined by the BLM, are those that could become endangered or go extinct within the State. A small percentage of potential habitat for several sensitive wildlife species may be disturbed. However, none of the sensitive wildlife and fish species are expected to be adversely affected under either action alternative.

The application of prescribed avoidance, monitoring (Wildlife Monitoring/Protection Plan, Appendix H) and mitigation measures in this document would reduce the impact potential and allow for either of the action alternatives to be performed without significant impacts to special status wildlife species.

2.9 Recreation

Well drilling, testing and production operations, and associated site preparation and construction activities would cause alterations to the recreation setting and recreation opportunities available to persons using the area. Some recreationists could be temporarily or permanently displaced from certain locations associated with drilling and production activities. Displacement of recreationists could also result from changes in the numbers or distribution patterns of wildlife that attract hunters and wildlife observers to the area. The presence of construction and drilling equipment and associated increase in industrial activities in the area could reduce opportunities for recreationists seeking to experience solitude and isolation from human activity. Such changes could also result in displacement or redistribution of recreationists who would choose to avoid such conditions, as well as result in reduced satisfaction among others who might continue to engage in recreation activities in the area.

There would be no significant adverse impact to recreation resources if recommended mitigation measures are employed, with the exception of that part of the project area located inside the MVMA. However, some users would be temporarily or permanently displaced and for some that continue to recreate in the area, the experience would be diminished. Several generations of recreationists could be affected.

MVMA and WSA

The MVMA is located within the checker board land pattern within the project area. Drilling and possible production activities in the 14 square miles of BLM administered lands in the DFPA inside the MVMA would have significant adverse impacts to the future recreation potential of those 14 sections; impacts would include surface disturbance, changes to general landscape character and visual resources. Future generations of recreationists would be denied the possibility of experiencing isolation and solitude afforded by those 14 sections as part of a potential future special management area.

Also, drilling within the MVMA and along the 21 mile long common boundary between the DFPA and the Adobe Town WSA could preclude quality recreation opportunities for those seeking

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solitude and isolation within the northern and western portion of the adjacent Adobe Town WSA until all wells have been abandoned and fully reclaimed. Attempts to mitigate by screening and distancing the project components from the edge of the WSA would not completely eliminate the influence of oil and gas development on the WSA. This is considered a significant impact.

2.10 Visual Resources

Both short-term and long-term impacts to the visual resources would occur where patterns of area, line, form, color, and texture in the characteristic landscape would be contrasted by drilling equipment, production facilities, and/or construction related damage to vegetation, topography or other visible features. The severity of impact depends upon scenic quality, sensitivity level, and distance zone of the affected environment, reclamation potential of the landscape disturbed, and the level of disturbance to the visual resource created by the Proposed Action.

Adverse impacts from well construction would occur within the short term due to contrast in line, form, color and textures associated with equipment, surface disturbance, and fugitive dust juxtaposed with the existing landscape. Long-term impacts would result from production facilities, access roads, and fugitive dust.

With the exception of the 23 square miles of project area inside the MVMA (14 square miles of BLM administered lands), there would be no significant adverse impact to visual resources if recommended mitigation measures are employed. However, some users would be temporarily or permanently displaced and for some that continue to recreate in the area, the visual experience would be diminished because of noise, dust and a general degradation of visual quality.

MVMA and WSA

Drilling in the MVMA could preclude high visual quality recreation opportunities for those seeking solitude and isolation within the northern and western portion of the DFPA and adjacent Adobe Town WSA until all wells have been abandoned and fully reclaimed. Several generations of recreationists could be affected. This is considered a significant adverse impact.

2.11 Cultural Resources

Potential impacts to specific eligible or unevaluated properties are unknown at this time. In general, the DFPA has a moderate to high site density, and therefore, high archaeological sensitivity. Certain geomorphic situations have a greater archaeological potential than other areas especially in terms of significant cultural resources. These situations include eolian deposits (sand dunes, sand shadows and sand sheets) and alluvial deposits along major drainages.

Although the DFPA has a high degree of archaeological sensitivity, impacts to known cultural properties would not be significant with implementation of the Proposed Action or alternatives. Potential impacts to known and anticipated cultural resources can be alleviated through appropriate mitigation measures. If cultural resources on, or eligible to, the National Register are to be adversely impacted by the proposed development, then the applicant, in consultation with the surface managing agency and the SHPO, shall develop a mitigation plan. Construction would not proceed until terms of the mitigation plan are satisfied.

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2.12 Socioeconomics

Economic effects of the drilling and field development phase of the Proposed Action would include an estimated \$840 million in direct expenditures to the Operators, which would generate an estimated total of \$1.145 billion in total economic impact (including \$154 million in earnings) in southwestern Wyoming over the 20-year field development period. The operations phase of the Proposed Action would generate \$2.977 billion in total economic impact including \$218.4 million in earnings over the 30 to 50 year LOP. This positive economic impact would be offset slightly by reductions in grazing activity. Under the estimates and assumptions used for this assessment, these reductions would total \$442,000 including \$80,000 in earnings over the life of the project. It is possible that the Proposed Action would result in reductions in economic activity associated with hunting and other recreation activities in the DFPA, although the increased access afforded by development of roads may attract some new hunters and recreation visitors. Displaced hunters and recreationists may relocate to other areas within southwest Wyoming, although opportunities for solitude and isolation are becoming increasingly limited within the region.

The Proposed Action would result in an estimated 246 drilling and field development annual job equivalents (direct and indirect) and 156 production-related annual job equivalents in southwest Wyoming. Some of these jobs would be filled by existing residents, however, an estimated peak in-migrant population of 442 workers is anticipated for the year 2021. This population would be disbursed throughout southwest Wyoming but likely concentrated in Rock Springs and, to a lesser extent, Rawlins. These communities could accommodate anticipated population growth with existing housing resources and infrastructure, but small communities closer to the DFPA (Wamsutter and Baggs) would need to develop housing and improve some infrastructure before being able to absorb substantial additional population. Wamsutter and Baggs would receive minimal tax revenues from the Proposed Action and would be required to seek other sources of funding to develop infrastructure to accommodate growth.

The Proposed Action would generate an estimated \$123 million in property tax revenues for Sweetwater County over the life of the project and \$15.5 million in Carbon County. The Proposed Action would also generate an estimated \$5.3 million in sales and use tax revenue for the State of Wyoming, \$3.4 million for Sweetwater County and \$471,000 for Carbon County. Proposed Action-related Mineral Severance Tax revenues to the State of Wyoming would total an estimated \$119 million, and Wyoming's share of Federal Mineral Royalties would total an estimated \$283 million.

Community acceptance of the Proposed Action would be mixed. Some residents, particularly those with direct and indirect interests in oil and gas development, would likely be supportive. Those who believe that recreation resources, wildlife habitat and relatively undisturbed landscapes in the project area would be negatively impacted would be dissatisfied with implementation of the Proposed Action.

The economic, employment, population and fiscal effects of Alternative A would be about 54 percent greater than those associated with the Proposed Action. Under current conditions, the communities of Rock Springs and Rawlins could accommodate this growth with existing resources. If new housing were to be developed in the communities of Wamsutter and Baggs and a substantial number of Project employees were to relocate to these communities, existing infrastructure could be strained under Alternative A.

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Community acceptance would likely remain mixed under Alternative A, but an increased number of residents might believe that recreation, wildlife habitat and undisturbed landscapes would be negatively impacted by the increased level of development.

Economic, employment, population and fiscal effects of Alternative B (No Action) would be dependent on the level of drilling and field development which actually occurs in the Mulligan Draw and Dripping Rock Unit/Cedar Breaks areas coupled with that approved by the BLM on a case-by-case basis, and by the WOGCC on private and State-owned lands. Similarly, community acceptance of the No Action Alternative would remain mixed and dependent on the level of development actually approved. Those that support oil and gas development would likely be dissatisfied with the foregone economic opportunities associated with the Proposed Action and Alternative A. Hunters and recreationists who use the Project Area would experience less dissatisfaction with loss of isolation, solitude and undisturbed landscapes under Alternative B, unless development occurs in areas that are routinely used by these groups.

2.13 Health and Safety

Potential risks associated with the proposed action include the normal risks associated with traffic, construction activities, and drilling and production operations. In most instances, exposure to these hazards would be limited to the project-related workforce. Implementation of environmental protection and mitigation measures described in Chapters 2 and 4 would minimize the risk of exposure to these hazards. H₂S is not present within the DFPA, and therefore, is not a safety concern for this area. A Hazardous Materials Management Plan has been prepared by the Operators and is appended to this DEIS (Appendix D).

The Proposed Action and alternatives would not result in any substantial, increased risks to public health and safety; nor would they introduce any unusual occupational hazards or threats to the health and safety of oil and gas field workers.

2.14 Noise

Noise associated with drilling, field development and production could potentially affect human comfort and safety (at extreme levels) and modify animal behavior. Noise levels in excess of the 55 dBA maximum standards can occur during construction and maintenance of well sites, access roads, ancillary facilities such as compressor sites and pipelines. However, perception of sound varies with intensity and pitch of the source, air density, humidity, wind direction, screening/focusing by topography or vegetation, and distance to the observer. Under typical conditions, excess levels decline below the level of significance (55 dBA) at 3,500 feet from the source. Drilling and field development-related noise impacts would be short-term, occurring on an intermittent basis at different locations throughout the DFPA throughout the estimated 20-year drilling and field development cycle. Substantially lower and less frequent noise disturbances would occur throughout the productive life of the field.

Construction-related impacts would be short-term, lasting as long as construction activities were ongoing at well sites, access roads, pipelines, and other ancillary facilities such as compressor sites. Noise would be created over a longer term at the individual well sites as a result of drilling activities.

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Overall, noise produced by drilling and field development operations would be moderate because of the dispersed and short-term nature of these activities. Given the remoteness and isolation of the DFPA, drilling, field development and production operations would not affect noise sensitive locations for humans. Other users of the DFPA would be affected infrequently for periods of short duration as they move through the area. Affects on noise sensitive locations for animals would be avoided by implementation of the preconstruction planning and design measures described in Chapter 2 of the DEIS.

3.0 SCOPE OF ANALYSIS

The purpose of the scoping process, as stipulated (40 CFR, Parts 1500-1508), is to identify important issues, concerns, and potential impacts that require analysis in the EIS and to eliminate insignificant issues and alternatives from detailed analysis. Public participation, consultation, and coordination have occurred throughout the planning process for this EIS through *Federal Register* notices, press releases, scoping meetings, individual contacts, and informal consultation. Contact dates and actions taken by BLM are summarized in Chapter 6 - Consultation and Coordination. All information received during the scoping process is available for review at the Rawlins and Rock Springs Field Offices.

Also, during preparation of the DEIS, the BLM and consultant Interdisciplinary Team (IDT) have communicated with, and received input from various federal, state, county, and local agencies, elected representatives, environmental and citizen groups, industries, and individuals potentially concerned with issues regarding the proposed drilling action.

4.0 SUMMARY OF CUMULATIVE EFFECTS

The Proposed Action and alternatives have the potential to create cumulative impacts when combined with past, present and reasonably foreseeable future activities (RFFA's). The cumulative impact analysis (CIA) conducted for this DEIS applies to the Proposed Action and Alternative A.

Chapter 5 of the DEIS identifies potential cumulative impacts for each of the resources assessed in this document.

The CIA assumes compliance with all applicable federal, state and local regulations and permit requirements, compliance with the Great Divide and Green River RMP's, and successful implementation of the mitigation measures identified in Chapters 2 and 4 of the DEIS.

Potential cumulative impacts are assessed at the resource level for four CIA areas: (1) within the Desolation Flats Project Area, (2) within the watersheds that contain the DFPA, (3) within the southeastern Sweetwater County and southwestern Carbon County area, and (4) within the southwestern Wyoming and northeastern Colorado region.

Past and present activities and RFFA's within the DFPA include livestock grazing; dispersed recreation; and oil and gas exploration, development, production and product transportation. Total disturbance (after reclamation) within the DFPA would comprise an estimated 1.6 percent of total land area within the Project Area for the Proposed Action and 2.1 percent for Alternative A.

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Past and present activities within the Barrel Springs Draw and Sand Creek drainage basins, the two basins that contain the DFPA, also include livestock grazing; dispersed recreation; and oil and gas exploration, development, production and product transportation. Utility, communication and transportation corridors also traverse these basins, and portions of the Creston/Blue Gap, Continental Divide/Greater Wamsutter II and South Baggs natural gas project areas are contained in the basins. Cumulative post-reclamation disturbance is projected to equal 0.89 percent of total land area within the two basins. Significant cumulative impacts are not anticipated for any resource within the Barrel Springs or Sand Creek basins.

Cumulative socioeconomic effects were assessed for Sweetwater and Carbon counties and the communities near the Project Area. The current potential for cumulative socioeconomic impacts in these counties is associated with the Proposed Action and alternatives coupled with ongoing and proposed natural gas drilling and field development (including coalbed methane development). Assuming that natural gas development levels will continue to be cyclic (i.e., periods of accelerated development followed by periods of moderate development levels), potential cumulative impacts on area socioeconomic conditions would include substantially positive effects on local economic conditions, increased employment opportunities, and increased federal, state and local tax revenues. Potential negative effects include increased demand on housing resources and community services in Wamsutter and Baggs from in-migrating employees and families associated with drilling and field development projects. The communities of Rock Springs and Rawlins could accommodate cumulative natural gas development at historic levels with existing housing and infrastructure, but Wamsutter and Baggs would need to add housing resources and some infrastructure to accommodate any increase in demand over current levels. Neither Wamsutter nor Baggs would receive significant tax revenues from natural gas development or production; these communities would need to obtain funding from other sources to finance infrastructure improvements required to accommodate growth.

Community attitudes toward cumulative natural gas development are likely to be positive for those community members who benefit directly or indirectly from the associated economic activity, but less positive or negative for those whose activities (grazing, hunting, dispersed recreation) or values (undisturbed landscapes and opportunities for solitude and isolation) would be affected by cumulative natural gas development.

Recent national and world events suggest the possibility that the future pace of development of natural gas resources in southwest Wyoming could exceed historic cyclic levels. Dramatic and sustained increases in natural gas demand and prices brought about by world events, changes in national energy policy or sustained high levels of economic growth could result in corresponding dramatic increases in the pace of development in Sweetwater and Carbon counties.

Given the number of wells authorized in the two counties, dramatic increases in the pace of development could result in socioeconomic impacts substantially larger than those identified above. It is conceivable that population increases associated with accelerated development could exceed housing resources and community facility and service capacity even in larger communities such as Rock Springs and Rawlins. In the case of such an extreme scenario, negative community impacts could be avoided or mitigated by the development and implementation of a coordinated industry/local government impact plan.

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Cumulative impacts to recreation and visual resources would occur within southeastern Sweetwater County and southwestern Carbon County. Activities associated with the Proposed Action and alternatives would add to the substantial level of impact to visual and recreation resources already existing in the area. Although natural gas projects occur in different viewsheds, the composite experience for those traveling through the area, particularly on back roads, is one of a highly modified landscape. Contrasts in line, form, color and texture begin to dominate the viewer's experience. Views of large, relatively undisturbed patches of the characteristic Wyoming Red Desert landscape are becoming less common. These conditions would increase the likelihood that viewers, particularly back country recreationists, would be dissatisfied with the visual component of their recreation experience.

The substantial level of natural gas development and activity in the area also limits the ability of hunters and non-consumptive recreationists to adapt to changing patterns of wildlife use of the landscape, find more pristine environments, and relocate their activities in nearby areas. Disturbance in 23 square miles of the existing MVMA, an important area for recreationists seeking solitude and isolation, would substantially reduce relocation options. These conditions increase the probability that hunters and other recreationists would be displaced, dissatisfied, or have a less enjoyable recreation experience. It is important to note that development could occur in the privately held portions of this area regardless of the approval of the Proposed Action.

Cumulative climate and air quality impacts were assessed for the region that contains southwestern Wyoming and northwestern Colorado. The cumulative impact analysis conducted for climate and air quality predicts that the maximum criteria pollutant concentrations would not exceed federal or state ambient air quality standards. In addition, cumulative impacts are predicted to be less than the prevention of significant deterioration (PSD) Class I increments. Potential impacts to sensitive lake acid neutralizing capacity would be less than the applicable limits of acceptable change.

Visibility impacts of up to 25 days exceeding 0.5 delta-deciview () dv) and 7 days exceeding 1.0) dv. are predicted as a result of cumulative emissions (0.5) dv and 1.0) dv. are the two thresholds of visibility change used for reporting purposes). However, the presence or absence of the Proposed Action or alternatives does not significantly change the cumulative visibility impact. On only 2 of the 25 days would the absence of the Proposed Action change the visibility impacts to levels below the thresholds, and these are only for days slightly over 0.5) dv. None of the) dv days over 1.0 would be changed to below the 1.0 threshold with the absence of the Proposed Action. Of the predicted two days that the Proposed Action would contribute to 0.5) dv impacts, one occurs at Dinosaur National Monument and the second occurs at Rawah Wilderness, both located in Colorado.

5.0 AGENCY-PREFERRED ALTERNATIVE

The Proposed Action is the BLM's Preferred Alternative for the Desolation Flats Natural Gas Development Project. The selection of the Proposed Action incorporates compliance with the Great Divide RMP, Green River RMP and implementation of various mitigation measures. Such measures include the following: (1) proponent-committed and BLM required project-wide measures for preconstruction planning and design and specific resources, (2) BLM Standard Mitigation Guidelines (Appendix A), (3) Reclamation Plan (Appendix C), (4) Hazardous Materials Management Plan (Appendix D), (5) Wildlife Monitoring/Protection Plan (Appendix H), and (5)

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additional mitigation measures recommended in Chapter 4 (Mitigation Summary of each resource element). The BLM has concluded that these detail a complete listing of practicable measures to reduce environmental harm resulting from the development and management in the DFPA. The BLM also feels that the analyses demonstrate that the Proposed Action would meet the requirements of Federal Regulation 43 CFR 3162(a), which directs the Operators to conduct "...all operations in a manner which ensures the proper handling, measurement, disposition, and site security of leasehold production; which protects other natural resources and environmental quality; which protects life and property; and which results in maximum ultimate economic recovery of oil and gas with minimum waste and with minimum adverse effect on ultimate recovery of other mineral resources."

Selection of the Proposed Action as the Agency-Preferred Alternative does not imply that this will be the BLM's final decision. Additional information acquired during the DEIS public comment period, and public and BLM internal review comments, may result in the selection of an alternative in the ROD that combines components of the Proposed Action and the other alternatives to provide the best mix of operational requirements and mitigation measures needed to reduce environmental harm.