

INTRODUCTION

The following section supplements the analysis found in Chapter Three, [Section 3.11 - Invasive Species](#) of the Draft EIS on pages 3.204-3.206.

Perhaps the greatest effect of oil and gas leasing and development impacts on vegetation is the potential introduction and spread of noxious weeds around project facilities. Removal of native vegetation due to well pad, compressor station, and road construction could increase the potential for invasion and establishment of noxious weeds. The extent of these invasions is difficult to predict and would be influenced by many factors. These factors include the extent of disturbed areas, the extent of existing infestations of weeds that could provide a source of seeds, the amount of equipment moving from areas that are infested with weeds to areas that are not yet infested, the effectiveness of measures designed to prevent infestations of noxious weeds, and the time lag between the end of disturbance and successful completion of restoration. Impacts from such factors are also analyzed at the field development or site specific development stages.

Motor vehicles are one of the primary mechanisms for dispersal of seeds for noxious weeds. Historically, recreational vehicles (motorcycles, All-Terrain Vehicles (ATVs), and 4-wheel drive vehicles) have been a main vector for the spread of undesirable seed. When vehicles are driven through weed-infested areas, seed may become lodged in the treads of tires or the undercarriage, or may stick to vehicles that are splattered with mud. For this reason, vehicles that traverse any portion within areas of prospective oil and gas development could become potential spread vectors.

Noxious weeds have the ability to displace native vegetation and hinder restoration efforts. Minimizing establishment and spread of unwanted invasive species on or near disturbed areas would, therefore, be of critical importance after restoration efforts have begun. Effective disturbed site restoration is best achieved when natural vegetative succession develops unimpeded by undesirable plant invasions. Desirable species, such as those found in native seed mixes or pioneer species surrounding the site, are not able to successfully compete when disturbed sites are infested with noxious weeds, thereby disrupting the successional balance necessary to restore the native plant community. The use of an approved native seed mix, and subsequent successful stand establishment, as discussed, would reduce the potential for noxious weed invasion.

Implementation of standards, guidelines, additional referenced guidance and BMPs to reduce invasive species would be required under all alternatives and are made part of surface use plans of operation. All development activities, including the GSGP area, must be in compliance with the Draft LMP, Part Three [Design Criteria](#) (including standards, guidelines and additional referenced guidance beginning on pages 249 through 293).

DIRECT AND INDIRECT IMPACTS

Weed seeds may be introduced accidentally with any project activity under any alternative.

The probability that noxious weeds would be introduced cannot be quantitatively predicted; however, infestations of noxious weeds have been found in association with ground disturbance from existing oil and gas development on federal and private lands. Control and containment of many noxious weed infestations on federal lands has generally been successful. The potential for noxious weeds to establish and spread

could generally be highest for alternatives that cause the greatest amount of ground disturbance, such as Alternative A, and lowest for alternatives that cause less ground disturbance, such as Alternative C. In general, development of the GSGP could result in approximately four times than the amount of disturbed acres than analyzed in the Draft EIS (see comparison tables in Chapter Two of this Supplement). Because no additional lands would be leased under the No Lease Alternative, there would be no additional development or ground disturbance from oil and gas development. Hence, the No Lease Alternative would not contribute to spread of noxious weeds. Measures designed to prevent the introduction and spread of noxious weeds would be implemented under all alternatives and are made part of surface use plans of operation; however, complete prevention and control of weeds is unlikely.

CUMULATIVE IMPACTS

For cumulative effects, the area of analysis is the Paradox Basin within the planning area out to surrounding States over a 15 year period. In addition to the potential acres of disturbance described above for unleased lands, there are also projections for more development on lands already leased. An additional 1,786 acres of disturbance could result from future development on lands currently held under lease on BLM and USFS mineral estate (1,166 acres from future gas shale development, and approximately 620 acres from conventional gas development). There are currently more BLM lands than USFS lands currently held under lease within the Paradox Basin of the planning area; hence future development on lands currently leased would affect more BLM lands. Furthermore, an additional 2,720 acres could be disturbed from potential development on private and state land leases. Cumulatively, a total of 8,428 acres could be disturbed throughout the area from conventional and shale gas development on federal leases (including disturbance from existing wells and projections for leased and unleased lands) and from existing development and potential development on private and state leases.

Using the same rationale described in the direct and indirect effects section above, the amount of potential disturbance could result in Alternative A having the greatest disturbance, followed in decreasing order by Alternatives D, B and C. Existing populations of noxious weeds could also increase should treatment not be effective and/or budgets not allow for recurring management of these populations.

Individual noxious weed species currently found within the Paradox Basin should not change strictly due to additional mineral development. There is however, an increased risk that new noxious weed species, such as camelthorn, sulphur cinquefoil, and African rue, not currently found within the planning area, could become established shortly after lease development begins due to increased traffic from out of the local area. Again, as long as appropriate mitigation measures are employed, the introduction and spread of noxious weeds should be slowed over time.

Finally, air quality impacts could affect the rate of spread of annual invasive species through increased depositions of nitrogen (Brooks 2003). Specifically, cheatgrass, a winter annual invasive weed, could increase its rate of spread due to increased available nitrogen amounts. This could affect existing noxious weed populations and could increase in magnitude by the amount of planned disturbance by alternative. Therefore, Alternative A followed by Alternatives D, B, and C would have the greatest amount of ground disturbance.