ENVIRONMENTAL ASSESSMENT

Pseudomonas fluorescens strain D7 Field Project

DOI-BLM-MT-B050-2016-0007-EA

Dillon Field Office

November 10, 2015

CHAPTER 1: INTRODUCTION

This Environmental Assessment (EA) has been prepared to disclose and analyze the environmental impacts of the establishment of the *Pseudomonas fluorescens* strain D7 biopesticide field study as proposed by the Dillon Field Office (FO). The EA is a field office site-specific analysis of potential effects that could result with the implementation of the Proposed Action. The EA assists the BLM in project planning and ensuring compliance with the National Environmental Policy Act (NEPA), and in making the determination as to whether any "significant" impacts could result from the analyzed actions. "Significance" is defined by NEPA and is found in regulation 40 CFR 1508.27.

An EA provides evidence for determining whether to prepare an Environmental Impact Statement (EIS) or a statement of "Finding of No significant Impact (FONSI). If the decision maker determines that this project has "significant" impacts following the analysis in the EA, then an EIS would be prepared for the project. If not, a Decision Record may be signed for the EA approving the selected alternative, whether the proposed action or another alternative. A Decision Record, including a FONSI statement documents the reasons why implementation of the selected alternative would not result in "significant" environmental impacts (effects) beyond those already addressed in the Dillon Resource Management Plan (*February 7, 2006*).

Background

Invasive plants are defined as "non-native plants whose introduction does, or is likely to cause economic or environmental harm or harm to human health," based on the definition provided in Executive Order 13112[1]. Invasive plants are compromising the ability to manage BLM administered lands for a healthy native ecosystem. Invasive plants can create a host of environmental and other effect, most of which are harmful to native ecosystem processes, including: displacement of native plants and habitat for native species; reduction in functionality of habitat and forage for wildlife and livestock; increased potential for soil erosion and reduced water quality; alteration of physical and biological properties of the soil; loss of long-term riparian area function; loss of habitat for culturally significant plants, high economic costs of controlling invasive plants; and increased cost of keeping systems and recreational sites free of invasive species.

This EA will analyze the incorporation of a biopesticide into an overall integrated pest management approach. Biopesticides are a certain type of pesticide derived from such natural materials as animals, plants, bacteria, and certain minerals. They are broken down into three major classes:

- **Microbial pesticides** are microorganisms (e.g., a bacterium, fungus, virus, or protozoan) which consist as the active ingredient.
- **Plant-Incorporated-Protectants (PIPs)** are pesticidal substances that plants produce from genetic material that has been added to the plant.
- **Biochemical pesticides** are naturally occurring substances that control pests by non-toxic mechanisms.

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[1]EXECUTIVE ORDER 1311 INVASIVE SPECIES (1999) – directs federal agencies to prevent the introduction of invasive species and provide for their control, and to minimize the economic, ecological, and human health impacts that invasive species cause.

Purpose and Need for the Action

The need for action is to determine the effectiveness of the microbial pesticide; *Pseudomonas fluorescens* strain D7, in controlling a number of invasive grass species. The purpose is to establish a field demonstration project involving the management of downy brome/cheatgrass (*Bromus tectorum* L.), medusahead rye (*Taeniatherum caput-medusae* [L.] Nevski), and/or jointed goatgrass (*Aegilops cylindrical* L.) with the microbial pesticide; *Pseudomonas fluorescens* strain D7 on 25 acres in the Trapper Springs / Bear Trap Road area. The objective is to determine whether or not the *Pseudomonas fluorescens* strain D7 will provide suitable control of the targeted invasive species, downy brome/cheatgrass, medusahead rye, and jointed goatgrass, when incorporated into an integrated effort including potential revegetation and the use of herbicides.

Public Participation, Scoping, and Issues:

- This project has been mentioned at numerous public meetings and has been met with positive comments.

Tiering to Existing Land Use Plan/Environmental Impact Statement:

This EA tiers to the analysis contained in the *Vegetation Treatments Using Herbicides in 17 Western States, Programmatic Environmental Impact Statement* (BLM, 2007) for the herbicide active ingredients listed under the *Proposed Action*. This EA also Tiers to the Dillon RMP EIS.

- Control noxious weeds by various methods that include chemical, cultural, physical, mechanical, and biological control treatments or other land practices. (Dillon RMP ROD 2006, page 49)
- Evaluate treatment and control of invasive species such as cheatgrass in site specific projects associated with the watershed analysis. (Dillon RMP ROD 2006, page 49)
- The Rangeland Management program is responsible for upland health management, assessment, and restoration; rangeland improvement planning and implementation; allotment planning and administration; and resource monitoring. (PEIS 2007, page 2-3)
- Vegetation treatments on public lands also include activities to control invasive species such as noxious weed (of which downy brome/cheatgrass and medusahead rye have been identified as such). PEIS 2007, page 2-3. The goal of [the] integrated vegetation management, [the process utilized by the BLM], is to control invasive and unwanted vegetation, to prevent the spread of noxious weeds, to eradicate early-detected noxious weed species in areas where certain weeds have not yet become established, and to control weeds where they have become established. (PEIS 2007, page 2-3).
- Though not tiered to the DRAFT PEIS 2015, the project meets the BLM's overarching goals for vegetation management are to improve biological diversity and ecosystem function, promote and maintain native and resilient plant communities, and reduce invasive vegetation and the risk of wildfire. Public lands are administered under the principles of multiple use and sustained yield. Thus, vegetation must be managed to protect and enhance the health of the land. (DRAFT PEIS 2015, pages 2-1).

Relationship to Statutes, Regulations, and Plans:

1. Federal Land Policy and Management Act of 1976
    - Federal Land Policy and Management Act of 1976 (43 U/S.C. 1701-1712) - The act states that the BLM must manage public lands according to the principles of multiple use and sustained yield. These principles are further

qualified in the act by the statutory duty that the BLM prevent unnecessary degradation of the public lands.

2. The Federal Insecticide, Fungicide, and Rodenticide Act, as amended (Public Law PL) 92-516
    - The Federal Insecticide, Fungicide, and Rodenticide Act, as amended (Public Law (P.L.) 92-516) - The act requires all pesticide to be registered with the Environmental Protection Agency (EPA). The Federal Environmental Pesticide Control Act of 1972 amends the Federal Insecticide, Fungicide, and Rodenticide Act, as amended, and requires the basis for registration to be whether or not a pesticide causes unreasonable adverse effects on man or the environment. The act also makes it illegal to use a registered pesticide in a manner inconsistent with its labeling. It also requires the certification of all personnel who supervise or apply restricted pesticides. The degree of certification must meet the classification requirements for proper storage, transportation, or disposal of pesticides. The responsibility for administering the act is vested in the EPA.

3. Federal Noxious Weed Act of 1974, as amended by Sec. 15, Management of Undesirable Plants on Federal Lands, 1990.
    - Federal Noxious Weed Act of 1974 (7 U.S.C. 2801-2813), as amended by Sec. 15, Management of Undesirable Plants on Federal Lands, 1990 - This bill requires that each Federal Agency: (1) Designates a lead office and person trained in the management of undesirable plants; (2) Establish and fund an undesirable plant management program; (3) Complete and implement cooperative agreements with State agencies; and (4) Establish integrated management systems to control undesirable plant species.

4. Departmental Manual 517
    - Departmental Manual 517 - Prescribes the Department's guidance for the use of pesticides on the lands and waters under its jurisdiction and for compliance with the Federal Insecticide, Fungicide, and Rodenticide Act, as amended.

CHAPTER 2: PROPOSED ACTION AND ALTERNATIVES:

Alternative 1 – No Action/Continue Present Management:

No treatments would be established to study an integrated approach for the management of downy brome/cheatgrass involving the biopesticide *Pseudomonas fluorescens* strain D7.

Alternative 2 – Proposed Action:

Establishment of a field study involving the incorporation of the biopesticide *Pseudomonas fluorescens* strain D7 into an integrated approach for the management of downy brome/cheatgrass involving the use of revegetation activities and herbicides. Study areas will not exceed 50 acres per field office, with the potential for more than one study area in the field

office. Herbicide active ingredients identified for inclusion in the integrated effort include, 2, 4-D, clopyralid, dicamba, glyphosate, imazapic, and metsulfuron methyl.

CHAPTER 3: AFFECTED ENVIRONMENT AND ENVIRONMENTAL EFFECTS:

The following issues are not analyzed because they are either not present in the project area or are not affected by the project due to, not only the size of the area (< 50 total acres), but also the nature of the project or due to avoidance of the resource, as stated in the project protocol; Air Quality, Areas of Critical Environmental Concern, Cultural Resources, Environmental Justice (E.O. 12898), Farm Lands (prime or unique), Fish Habitat, Flood Plains, Native American Religious Concerns, Social and Economic, Waste, Hazardous or Solid, Water Quality, and Wetlands/Riparian Zones.

Environmental effects will include direct and indirect impacts of the Proposed Action and alternative. The impacts are analyzed to determine if the effects of an action are such that they trigger further analysis in an environmental impact statement. The No Action alternative is the baseline against which the other alternative is compared.

Cumulative impacts are impacts which result from the incremental impact of the action when added to other past, present, and reasonably foreseeable future actions regardless of what agency (Federal or non-federal), or persons undertake such actions. Cumulative impacts can result from individually minor but collectively significant actions taking place over a period of time. If no direct or indirect impacts are identified, there will be no cumulative effects for that resource.

VEGETATION:

A. Affected Environment:
The proposed treatment area burned in the Bear Trap II wildfire in June, 2012, and most shrubs and trees have not been recruited back into the site. Current native vegetation occurring on the site includes, bluebunch wheat grass, Sandberg's bluegrass, blue grama, june grass, needle and thread grass, western wheatgrass, Idaho fescue, false dandelion, cut-leaf daisy, lupine, common pepperweed, death camas, and white sagebrush. Wyoming big sagebrush also occurred on this site prior to the burn and may slowly be recruited back into the site as long as cheatgrass and noxious weeds within the site are controlled.

B. Environmental Effects:
   a. Impacts of Alternative 1:
   This alternative would allow herbicide treatments of cheatgrass to continue. These treatments would gradually reduce the size of the cheatgrass infestations with some impact to native desirable grasses.
   b. Impacts of Alternative 2 – Proposed Action:
   The Pseudomonas bacterium is not able to injure standing plants, as it suppresses seed and seedlings. It is specific to cheatgrass because of a compound it produces that inhibits certain lipid combinations in the root cell membrane, which inhibit cell elongation. These combinations are associated to the three targeted invasive species, downy brome/cheatgrass, medusahead rye, and jointed goatgrass. The suppressive compound produced decomposes readily and does not persist in the soil or the soil solution.

C. Cumulative Impacts:
Through the action of the bacterium the amount of cheatgrass in the area would decline over time.

INVASIVE, NONNATIVE SPECIES:

A. Affected Environment:
The area containing the test plot contains infestations of spotted knapweed, hoary alyssum and common mullein. These noxious weeds are treated on an annual basis with herbicide to prevent their spread. There has not been any herbicide applications made in this area to control the cheatgrass / downy brome. Herbicide treatments of the cheatgrass infestations have been discussed and are planned in the future.

B. Environmental Effects:
   a. Impacts of Alternative 1:
   Herbicide treatment of existing noxious weed infestations would continue resulting in the infestations to gradually reduce in size. Cheat grass infestations would be treated with herbicide as funding permits.

   b. Impacts of Alternative 2 – Proposed Action:
   Initial impacts of the Pseudomonus bacterium would be minimal but over the next few years the number of cheatgrass plants would be reduced. The bacterium would have no effect on the other noxious weeds in the area, therefore, herbicide treatments on these plants would continue. Herbicide treatments on the other noxious weeds would slowly reduce their size and density.

C. Cumulative Impacts:
The effects of the bacterium on cheatgrass would be most evident after five years or more. It takes this many years for the bacterium to produce enough of the compound to have a major impact on the cheatgrass. Through the action of the bacterium and the continued herbicide treatments the native grasses would gain a competitive advantage.

SOILS:

A. Affected Environment:
The area to be treated, according to the NRCS's Web Soil Survey website, is a Beaverell cobbly loam, cool with 0-6% slopes. It is composed of 22.3% clay, 39.5% sand and 38.2% silt.

B. Environmental Effects:
   a. Impacts of Alternative 1:
   This alternative would not impact the soil composition.
   b. Impacts of Alternative 2 – Proposed Action:
   The *Pseudomonas fluorescens* bacterium is a naturally occurring organism in the soil profile. This alternative would just be increasing the bacterium's population in the soil. This process would not have any impact on the soil composition.

C. Cumulative Impacts:

The suppressive compound produced decomposes readily and does not persist in the soil or the soil solution preventing off site movement.

WILDLIFE:

A. Affected Environment: The project area provides mule deer winter range, small mammal habitat, as well as migratory bird and raptor foraging and nesting habitat. The area is highly utilized by humans, with associated roads and campground infrastructure. Timing of biopesticide application is outside nesting season, and the majority of migratory birds have left the area for the winter.

B. Environmental Effects:
   a. Impacts of Alternative 1:
      Treatment of cheatgrass by established means can damage other existing grasses and reduce the amount of forage available to wildlife.
   b. Impacts of Alternative 2 – Proposed Action:
      The compound produced by the bacterium colonizes the intracellular spaces outside the Casparian strip, does not enter the cell, and therefore is not mobile in the plant vascular system. This makes consumption of the bacterium by plant eating animals almost impossible.
      Studies submitted in support of EPA registration indicated that there was no impact on the growth and development of; daphnia, lemna, mites, ladybugs, honeybees, fish, birds or mice.
      Since application is outside migratory bird nesting season, there are no anticipated effects. No impacts to mule deer winter range are expected and the surrounding area provides adequate winter range for any deer displaced by application actions.

C. Cumulative Impacts:
   Cumulative actions to control cheatgrass would likely result in native perennial vegetation gaining a competitive advantage, resulting in more nesting habitat and forage available for wildlife.

CHAPTER 4: CONSULTATION, COORDINATION, AND PUBLIC PARTICIPATION:

A. List of Preparers:
   a. Michael Mooney, Weeds Specialist
   b. Pat Fosse, Assistant Field Manager for Renewable Resources
   c. Katie Benzel, Wildlife Biologist

B. List of Agencies, Organizations, and Individuals Consulted:
   a. Richard Lee, BLM Integrated Pest Management Specialist
   b. Margie Edsall, Madison County Weed Coordinator

C. Public Participation:
   a. Presented at the Southwest Montana Weed Coordinators meeting
   b. Discussed at a meeting with the Madison Valley Ranchlands weed coordinator
   c. Mentioned at 32 county spray days, which were attended by: Montana Fish, Wildlife and Parks, The Nature Conservancy, Red Rock Wildlife Refuge, and the National Resources Conservation Service (NRCS).
   d. Discussed at the Madison County Inter-Agency Meeting on October 8,2015

CHAPTER 5: LITERATURE CITED:

USDI. 2004. Bureau of Land Management. Dillon Resource Management Plan and Environmental Impact Statement (DRAFT), Volume 1. Dillon Field Office. Dillon, Montana. 389 pp.

USDI. 2006. Bureau of Land Management. Record of Decision and Approved Dillon Resource Management Plan. 227 pp.

USDI. 2007. Bureau of Land Management. Vegetation Treatments Using Herbicides in 17 Western States, Programmatic Environmental Impact Statement.