

## 5.0 Mitigation

### 5.1 INTRODUCTION

The previous chapter described potential environmental consequences from implementing each of the alternatives, including the No Action Alternative. This chapter describes mitigation measures designed to offset adverse environmental impacts that may result from implementing either of the action alternatives. The chapter also discusses additional potential conservation measures the WID might take to further reduce the impacts of the conveyance of federal lands to private ownership and the connected actions. The mitigation measures proposed to offset adverse impacts are those associated with the conveyance of the land from public ownership to private ownership, or the BLM federal action. The potential conservation measures are those associated with the private action of conversion of the land to agricultural purposes. The measures associated with the WID's private actions are primarily land management recommendations to help offset impacts and are voluntary.

### 5.2 PRIMARY MITIGATION

Public Law 106-485 (November 9, 2000; 114 Stat. 2199), that directs the BLM to convey to the WID approximately 16,050 acres of public lands located in Big Horn and Washakie Counties, Wyoming, and authorizes the proceeds from the sale to be held in a special account and used for acquisition of land and interests in land in the Worland BLM District that will benefit public recreation, public access, fish and wildlife habitat, or cultural resources. Based on this guidance, the acquisition of land is the primary mitigation measure proposed to offset identified adverse impacts from the BLM action.

Adverse environmental impacts identified in Chapter 4 associated with the conveyance of the land include:

- land ownership would be conveyed from public land to private land;
- loss of Wyoming big sagebrush and riparian vegetation;
- loss of crucial winter range for pronghorn antelope and mule deer due to conversion of native habitat to cropland;
- loss of public land recreational opportunities such as hunting, hiking and wildlife watching due to conversion of public land to private ownership;
- impacts related to the visual changes due to the loss of public land and ultimate conversion to cropland from native vegetation;
- impacts to historic and prehistoric sites within the project area.

#### 5.2.1 Land Ownership

Using the proceeds to acquire additional public lands would help offset the loss of public lands associated with this land conveyance. Proceeds from the sale may be utilized for the acquisition of land and interests in land in the Worland Field Office of the BLM in the State of Wyoming that will benefit public recreation, public access, fish and wildlife habitat, or

cultural resources. It is unlikely that the proceeds from the sale would allow complete replacement of all lands conveyed; however, the functional values associated with public lands that are lost to the private ownership would be replaced at least partly by acquisition of additional public land.

## **5.2.2 Biological Resources**

### **5.2.2.1 Vegetation**

Alternative 1 would result in the maximum loss of native vegetation from federal protection while Alternative 2 and Alternative 3 conveys lands primarily suitable for irrigation to private ownership and reduces the amount of native plant community in the area that would be removed from BLM management. The loss of these plant communities could be partially alleviated by the acquisition of private lands with similar vegetation.

Additional mitigation of the impacts could be achieved if the BLM specifically manages the newly acquired lands to increase their functional value to the natural environment.

### **5.2.2.2 Wildlife**

Conversion of the area from native habitat to cropland for Alternatives 1 and 2 will result in the loss of approximately 3.5 percent of the crucial winter range available to the Fifteen Mile pronghorn antelope herd and approximately 1.6 percent of the crucial winter range of the Basin mule deer herd. Alternative 3 will result in the loss of approximately 2.8 percent of the crucial winter range available to the Fifteen Mile pronghorn antelope herd and approximately 1.3 percent of the crucial winter range of the Basin mule deer herd. Alternatives 2 and 3, which would only convey lands suitable for irrigation to private ownership, would insure that a larger portion of the crucial winter range for both pronghorn and mule deer would remain under BLM management, primarily in the central portion of the WID where these ranges overlap. Pronghorn antelope would lose approximately 14.6 percent under Alternative 2 and 14.2 percent under Alternative 3 of the identified available parturition range as a result of the conversion to cropland.

Mitigation measures to offset the loss of the crucial winter range would include the acquisition of land or interest in land for other crucial winter range held in private ownership with the revenue generated from the conveyance of the WID property. When possible, lands also providing parturition range would be purchased. While the purchase of private lands containing crucial and parturition habitat would not physically offset the lost acres, converting these acres to public ownership would provide long-term protection. In addition, the acquired lands could be managed to improve the functional value of the land as crucial winter and parturition range through land management strategies that improve wildlife habitat.

## **5.2.3 Cultural Resources**

Under all three alternatives cultural resources would be adversely impacted by the land conveyance due to the associated farming activities. The potential adverse effects to sites with prehistoric and/or historic components can be mitigated by 1) excluding the properties from the land conveyed, or 2) developing and implementing a data recovery plan prior to the conveyance.

Consultations with the Northern Arapaho should be undertaken to determine how to best protect the sites they regard as important. Pending consultations with the Shoshone-Bannock will also have to be taken into consideration once the consultations are completed.

The BLM, prior to the conveyance of any lands, will meet with the consulting and concurring parties to a cultural resource Programmatic Agreement (PA) and discuss treatment options available for the historic properties affected by the conveyance, based on the final cultural resources report. Treatment options will include but not be limited to recovery of scientific information, retention in federal ownership, alternative site location, or other measures.

Based on the results of the discussions regarding treatment options, the BLM will provide information to be incorporated into a Treatment Plan formulated by the WID. The Treatment Plan, will address all historic properties for which effects are anticipated. The Treatment Plan will include, but not be limited to: specification of all historic properties and portions of historic properties to be affected by the project, including a description of the nature of the effects; a detailed description of the treatments proposed for historic properties eligible for the National Register with an explanation or rationale provided for the choice of the proposed treatments; an archaeological research design developed for those historic properties which are eligible for the National Register; a listing of all historic properties that will be affected by the project for which no further treatment is proposed, with a justification or rationale; and an explanation of the methods for involving the interested public in the data recovery, and for disseminating the results of the data recovery to the interested public.

#### **5.2.4 Recreational Resources**

The conversion of public lands to private ownership will result in the loss of public recreational opportunities such as non-consumptive uses and hunting. This impact would be mitigated by acquiring new public land or access rights to other lands for public recreation from the proceeds of the land sale.

### **5.3 POTENTIAL VOLUNTARY CONSERVATION MEASURES**

The connected actions of the WID associated with conversion of the land from native rangeland to irrigated agriculture will also have adverse environmental impacts. Some adverse impacts identified may be avoided or reduced by implementing conservation practices for protecting resources or through land management practices associated with the land conversion. Impacts that may be offset by conservation or land management practices include:

- impacts from increased soil erosion due to grading of topography and water application;
- impacts from mass wasting of salts during reclamation of the high saline soils;
- impacts to roadside vegetation due to trenching;
- loss of individual small mammals, birds, and herpetofauna due to tilling and farming activities;
- loss of habitat for a variety of wildlife;

- impacts to seasonal ranges of big game;
- impacts to wetlands in close proximity of the project area; and
- impacts to recreational resource values.

### **5.3.1 Geology and Soils**

Soil losses resulting from wind and water erosion, due to the conversion to cropland and associated activities, can be reduced through conservation measures recommended by the NRCS. These practices would ensure long-term sustainability of agriculture in the project area.

In areas with highly saline soils, soil treatment in some capacity would be necessary to insure adequate agricultural production. One option includes adequately flooding the area to leach salts to below the root zone. Addition of soil amendments such as gypsum or sulfuric acid is a common agricultural practice for soils with shallow, relatively impermeable clay layers within the root zone which inhibits the effectiveness of leaching efforts. In theory, soil mitigation strategies can be accomplished with minimal effects on the groundwater system or to downstream users by systematically leaching the salts down to a specific soil horizon. Technical assistance for determining appropriate and cost-effective soil management strategies may be requested of the Soil Conservation Service or the State Extension Service. A useful reference also includes a 1990 ASCE Manual (No. 71), "Agricultural Salinity Assessment and Management."

Even with best management practices, it remains possible that leaching of salts in the area can affect the local groundwater system or result in salt loading to down-gradient lands and waters. Groundwater monitoring should be conducted prior to project development to establish baseline standards, with additional monitoring once agricultural production is in place to assess any adverse effects. Agricultural drains could be installed if problems develop.

### **5.3.2 Surface Hydrology**

No measurable reduction in water volume in the Bighorn River is anticipated due to implementation of the WID project. However, Boysen Reservoir storage water is available which could be used to offset water quantity impacts such as instream flow requirements during years of extreme drought conditions.

### **5.3.3 Biological Resources**

#### **5.3.3.1 Vegetation**

Maintenance of section corners outside the reach of the center pivot irrigation structures in native vegetation communities.

Reseeding disturbed areas, such as areas associated with pipeline construction, with native species.

#### 5.3.3.2 Wildlife

Where fencing would be installed or needed around the WID, fencing recommendations of the WGFD could be employed to allow movement of pronghorn antelope and mule deer. Proper fence design would insure that big game animals may move through the property during periods of severe winter when access to crucial winter range is essential.

In most years under normal winter conditions, access to crucial winter range is not essential to the survival of individual animals which may over-winter on winter range or yearlong range. Acquisition and retirement of 200 AUMs from surrounding grazing allotments would allow habitat recovery from domestic livestock grazing and presumably provide additional forage for big game species.

The WID has indicated a further condition of the sale of land may include a requirement that all persons who purchase lands within the project area to indemnify and hold harmless the WGFD for any wildlife damage to crops, as long as big game populations do not exceed the WGFD's stated population objectives by more than 10 percent. While this action would not serve to offset losses of habitat or wildlife, it would reduce the financial burden on the WGFD to pay for the potential damage to standing crops such as alfalfa.

### 5.3.4 Aquatic Resources

#### 5.3.4.1 Fisheries and Invertebrate Community

No measurable reduction in water volume in the Bighorn River is anticipated due to implementation of the WID project. However, Boysen Reservoir storage water is available which could be used to offset water quantity impacts such as instream flow requirements during years of extreme drought conditions.

### 5.3.5 Special Status Species

#### 5.3.5.1 Migratory Birds

To the extent practical, removal of native vegetation from the site should be confined to the non-breeding season for bird species when loss of nests and young nestling birds would not occur.

#### 5.3.5.2 BLM Sensitive Species

To the extent practical, removal of native vegetation from the site should be confined to the non-breeding season to minimize impacts to BLM sensitive bird species that may nest in sagebrush shrubland vegetation.

### 5.3.6 Recreational Resources

The conveyance of public land to private ownership would result in the loss of public recreation opportunities. This impact could be offset by insuring that the WID or at least the non-farmed portions within the WID would remain open to public hunting under management programs of the WGFD such as the Walk-in Access or Hunter Management programs.

The creation of irrigated fields, access roads and facilities will reduce the remoteness and solitude that some recreational users desire. This impact could be slightly reduced by locating roads and facilities in close proximity of the agricultural fields.