

FINAL REPORT

**STATEWIDE PROGRAMMATIC  
BIOLOGICAL ASSESSMENT  
FOR THE WYOMING TOAD  
(*BUFO BAXTERI*)**

*Submitted to:*

BLM Wyoming State Office  
5353 Yellowstone Road  
Cheyenne, Wyoming 82003-1828

March 2005  
With Minor Revisions - 29 June 2005



# TABLE OF CONTENTS

|     |  |      |
|-----|--|------|
| 1.0 | INTRODUCTION.....  | 1-1  |
|     | Purpose.....   | 1-1  |
|     | Report Organization .....  | 1-1  |
|     | Methods.....   | 1-2  |
| 2.0 | SPECIES INFORMATION .....  | 2-1  |
|     | Listing Status.....  | 2-1  |
|     | Distribution.....  | 2-1  |
|     | Ecology.....   | 2-1  |
|     | Habitat Description .....  | 2-1  |
|     | Prey/Forage .....  | 2-2  |
|     | Behavior .....   | 2-2  |
|     | Threats.....   | 2-2  |
| 3.0 | ANALYSIS OF RAWLINS RMP.....   | 3-1  |
|     | Introduction .....   | 3-1  |
|     | Environmental Baseline .....   | 3-1  |
|     | Analysis of Proposed Management Actions and Effects.....                 | 3-3  |
|     | Planning and Management for Areas of Critical Environmental Concern..... | 3-3  |
|     | Management Actions .....   | 3-3  |
|     | Effects Analysis .....   | 3-4  |
|     | Determination .....  | 3-4  |
|     | Cultural Resources Management.....                                       | 3-4  |
|     | Management Actions .....   | 3-4  |
|     | Effects Analysis .....   | 3-5  |
|     | Determination .....  | 3-5  |
|     | Paleontological Resources.....   | 3-5  |
|     | Management Actions .....   | 3-5  |
|     | Fire Management.....   | 3-6  |
|     | Determination .....  | 3-7  |
|     | Forest Management .....  | 3-7  |
|     | Management Actions .....   | 3-7  |
|     | Effects Analysis .....   | 3-8  |
|     | Determination .....  | 3-8  |
|     | Lands Program Management.....  | 3-8  |
|     | Management Actions .....   | 3-8  |
|     | Effects Analysis .....   | 3-9  |
|     | Determination .....  | 3-9  |
|     | Livestock Grazing Management .....                                       | 3-9  |
|     | Management Actions .....   | 3-9  |
|     | Effects Analysis .....   | 3-11 |
|     | Determination .....  | 3-11 |
|     | Minerals Management.....   | 3-11 |
|     | Management Actions .....   | 3-11 |
|     | Effects Analysis .....   | 3-12 |
|     | Determination .....  | 3-12 |
|     | Recreation Management.....   | 3-13 |
|     | Management Actions .....   | 3-13 |
|     | Effects Analysis .....   | 3-14 |

|     |  |      |
|-----|--|------|
|     | Determination .....                            | 3-14 |
|     | Sensitive Plants Management.....               | 3-14 |
|     | Management Actions .....                       | 3-14 |
|     | Effects Analysis .....                         | 3-15 |
|     | Determination .....                            | 3-15 |
|     | Soil, Water, and Air Management.....           | 3-15 |
|     | Management Actions .....                       | 3-15 |
|     | Effects Analysis .....                         | 3-16 |
|     | Determination .....                            | 3-16 |
|     | Visual Resource Management.....                | 3-17 |
|     | Management Actions .....                       | 3-17 |
|     | Effects Analysis .....                         | 3-17 |
|     | Determination .....                            | 3-17 |
|     | Wild Horse Management.....                     | 3-17 |
|     | Management Actions .....                       | 3-17 |
|     | Effects Analysis .....                         | 3-18 |
|     | Determination .....                            | 3-18 |
|     | Wildlife Habitat and Fisheries Management..... | 3-18 |
|     | Management Actions .....                       | 3-18 |
|     | Effects Analysis .....                         | 3-19 |
|     | Determination .....                            | 3-19 |
|     | Summary of Determinations .....                | 3-20 |
| 4.0 | CONSERVATION STRATEGIES .....                  | 4-1  |
|     | Existing Protections in the Rawlins RMP .....  | 4-1  |
|     | Conservation Measures Committed to by BLM..... | 4-1  |
|     | Best Management Practices.....                 | 4-2  |
| 5.0 | REFERENCES.....                                | 5-1  |

**TABLES**

---

|          |  |      |
|----------|--|------|
| Table 1: | Distribution of Breeding Sites and Primary and Secondary Habitats Across Land Ownership Within the Rawlins FO..... | 3-2  |
| Table 2: | Summary Of Determinations for the Rawlins RMP .....  | 3-20 |

**MAPS**

---

|        |  |     |
|--------|--|-----|
| Map 1: | Wyoming Toad Distribution .....                                  | 1-4 |
| Map 2: | Wyoming Toad Distribution and Primary and Secondary Habitat..... | 1-5 |

## ABBREVIATIONS/ACRONYMS

|       |   |
|-------|---|
| ACEC  | Areas of Critical Environmental Concern |
| AML   | Appropriate Management Level            |
| AMP   | Allotment Management Plan               |
| AUM   | Animal Unit Month                       |
| AZAA  | American Zoo and Aquarium Association   |
| BA    | Biological Assessment                   |
| BLM   | Bureau of Land Management               |
| COA   | Condition of Approval                   |
| DNA   | deoxyribonucleic acid                   |
| EIS   | Environmental Impact Statement          |
| EPA   | Environmental Protection Agency         |
| ESA   | Endangered Species Act                  |
| F     | Fahrenheit                              |
| FO    | Field Office                            |
| GIS   | Geographic Information System           |
| HMA   | Herd Management Area                    |
| HMP   | Habitat Management Plan                 |
| mtDNA | mitochondrial DNA                       |
| NNL   | National Natural Landmark               |
| NSS1  | Native Species Status 1                 |
| NWR   | National Wildlife Refuge                |
| RA    | Resource Area                           |
| RMP   | Resource Management Plan                |
| RPS   | Rangeland Program Summary               |
| SRMA  | Special Recreation Management Area      |
| USFS  | U.S. Forest Service                     |
| USFWS | U.S. Fish and Wildlife Service          |
| USGS  | U.S. Geological Survey                  |
| VRM   | Visual Resource Management              |
| WYNDD | Wyoming Natural Diversity Database      |

# 1.0 INTRODUCTION

---

## PURPOSE

This programmatic biological assessment (BA) assesses the potential effects to the Wyoming toad (*Bufo baxteri*) from management actions included in Resource Management Plans (RMPs) approved by the Wyoming Bureau of Land Management (BLM). The Wyoming toad is currently federally listed as an endangered species (U.S. Fish and Wildlife Service [USFWS] 1984). The Great Divide (Rawlins) RMP (BLM 1990) was identified as the only RMP, of the 12 RMPs covered by the BLM in Wyoming, with the potential to affect the Wyoming toad because the area covered under this RMP encompasses the only known area of current and historical Wyoming toad populations.

The objectives of this BA are to:

- Summarize the biology of the Wyoming toad, including its known and potential distribution in Wyoming;
- Review pertinent RMPs, RMP amendments, and RMP maintenance actions and identify management actions with the potential to affect the Wyoming toad or its habitat;
- Assess the potential effects of actions proposed in the RMP on the Wyoming toad and its habitat;
- Prepare an effects determination for the Wyoming toad on each program identified in the RMP; and
- Recommend conservation measures to reduce or eliminate adverse effects on the species.

The analysis area for each management action is based on the boundaries specified in the Rawlins RMP. The determination is based on the nature of each management action as described in the RMP and on the available data for the Wyoming toad in the area that is affected by the management action.

## REPORT ORGANIZATION

This BA is organized into five sections, as described below:

1.0 Introduction – describes the purpose of the analysis, the scope of the biological assessment, the action area, and the methods used for this BA.

2.0 Species Information – summarizes the current listing status, species ecology, known abundance and distribution in Wyoming, and threats to the Wyoming toad.

3.0 Analysis of Resource Management Plan – summarizes the Rawlins RMP, describes habitat and occurrence of the Wyoming toad within the area affected, analyzes the effects from management actions authorized under each program, and includes an effects determination specific to each management action for the RMP.

4.0 Conservation Strategies – provides management direction to further reduce potential effects to the Wyoming toad. These strategies were prepared in coordination with the U.S. Fish and Wildlife Service (USFWS) office in Cheyenne, Wyoming.

5.0 References – provides a list of documents that were reviewed in preparing this report.

## METHODS

Literature was reviewed to gather information on the ecology and habitat of the Wyoming toad. Biologists from the Rawlins FO of the BLM were contacted as part of this review. In an effort to collect the most recent information on ecology, occurrence, and listing status, USFWS personnel in the Cheyenne, Wyoming, office were contacted. The *Endangered and Threatened Wildlife and Plants: Final rule to classify the Wyoming toad as endangered* was reviewed (USFWS 1984). Several documents were used to provide current data on element occurrence and habitat distribution. The documents included:

- Wyoming Toad Recovery Plan (USFWS 1991),
- Wyoming Natural Diversity Database (WYNDD)
- Annual Narrative Report Calendar Year 2001 Arapahoe National Wildlife Refuge, Bamforth, Hutton Lake, Mortenson Lake, and Pathfinder National Wildlife Refuges (USFWS 2001), and
- Population and Habitat Viability Assessment for the Wyoming toad (*Bufo baxteri*) (Jennings et al. 2001).

In addition, the Rawlins RMP was reviewed to identify proposed actions and mitigation measures with the potential to affect the Wyoming toad. Pertinent amendments and maintenance actions were also considered as part of this review.

Following the RMP review, an analysis was performed to identify potential effects of proposed actions on the Wyoming toad. Identification of potential effects involved several steps. The first step was to create a geographic information system (GIS) database to allow for spatial analysis of potential effects of management actions on the Wyoming toad. The Rawlins BLM office was then contacted to obtain spatial data on areas affected by proposed management actions. In some cases, digital data were not available to document areas affected by proposed management actions. In these cases, hard copies of maps showing areas affected by various management actions were reviewed to assess their potential effects on Wyoming toad populations and habitat.

Coverages for the Wyoming toad were then integrated into a GIS database. Wyoming toad coverages included habitat, known collection sites (for both negative and positive collection results), and potential habitat. Historic Wyoming toad distribution is shown on **Map 1**. Current Wyoming toad breeding sites and areas identified as potential primary and secondary habitats are depicted on **Map 2**.

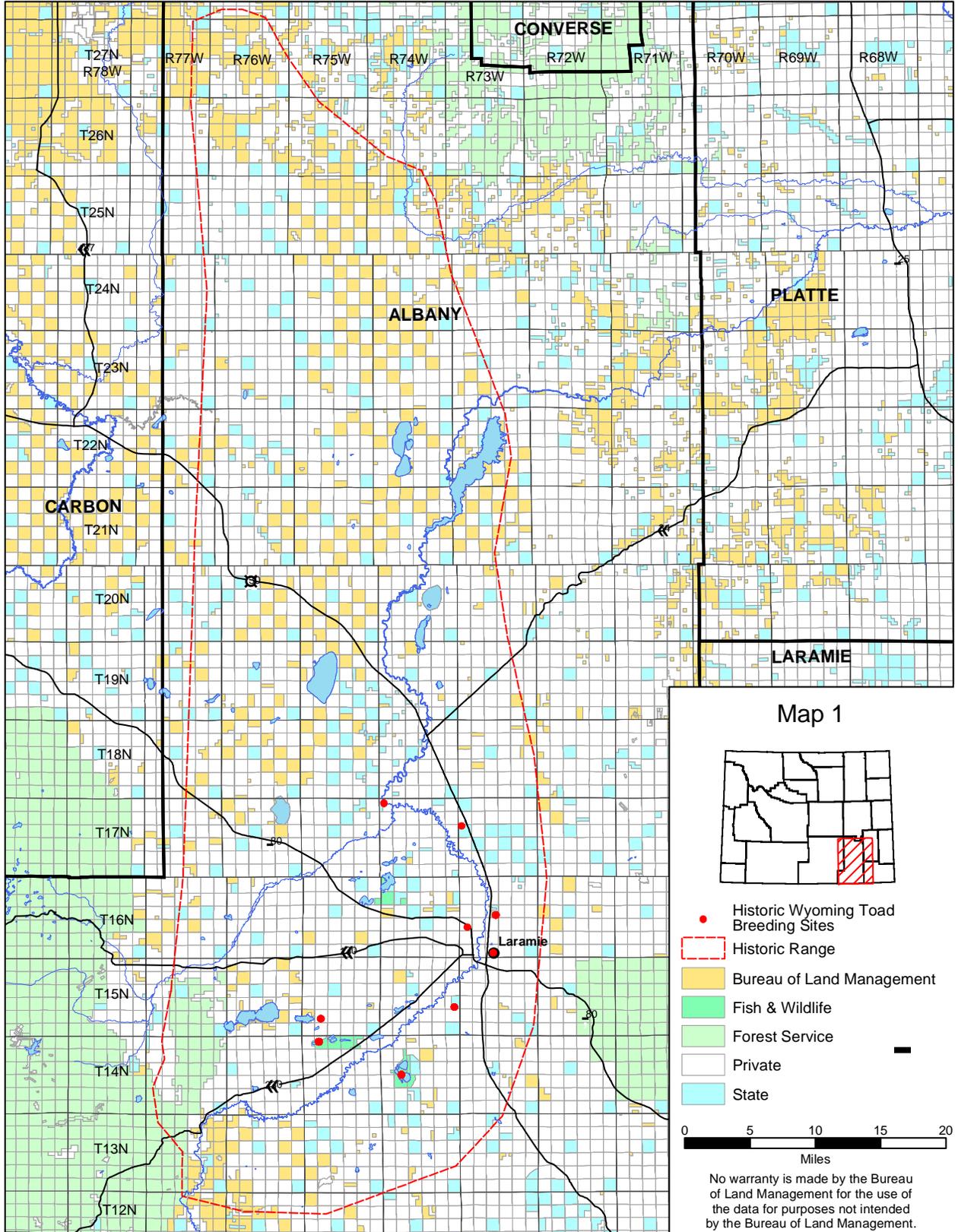
Where overlap areas were identified, the potential effects of management actions on the Wyoming toad were evaluated for each management action. Proposed federal actions were evaluated in terms of their potential indirect and direct effects to the Wyoming toad.

The results of the effects analysis were used to develop a determination of effects on the Wyoming toad for each program described in the Rawlins RMP. Each determination was based on the management prescription described and any measures set forth to minimize the effects specified in the RMP. Conservation measures presented in the Conservation Strategies section of this BA were not included in the RMP; however, the BLM has committed to implementing these.

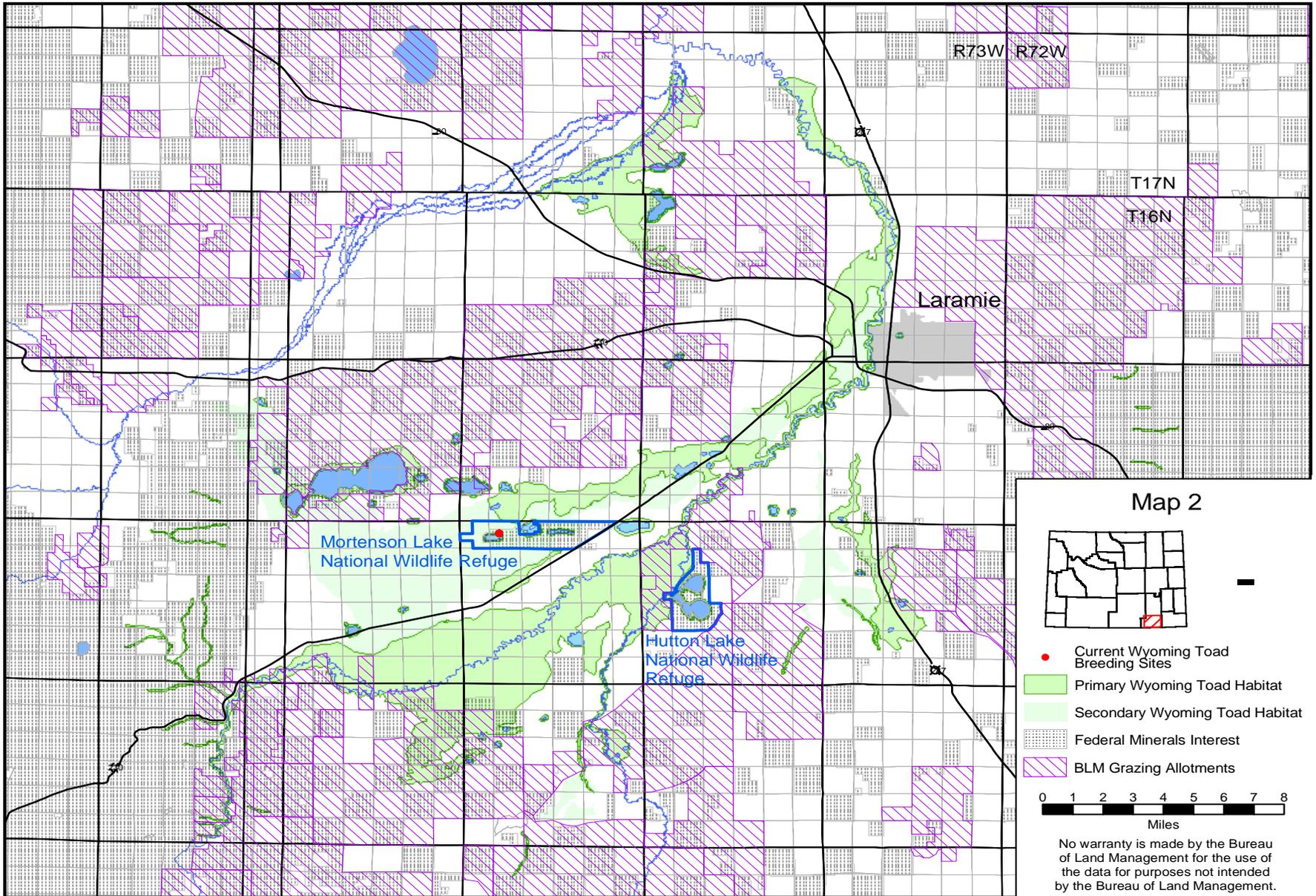
These measures are considered in the effects determinations if the BLM commits to their implementation. The following three categories are possible effects determinations:

- No effect;
- May affect, but is **not likely to adversely affect** due to:
  - Beneficial effects,
  - Discountable effects,
  - Insignificant effects; or
- May affect, is **likely to adversely affect**.

**Map 1: Wyoming Toad Distribution**



Map 2: Wyoming Toad Distribution and Primary and Secondary Habitat



## 2.0 SPECIES INFORMATION

---

### LISTING STATUS

The Wyoming toad is considered to be one of the most endangered amphibians in North America. Dr. George Baxter of the University of Wyoming first discovered the Wyoming toad in 1946. The Wyoming toad was originally known as *Bufo hemiophrys baxteri* until 1998 when it was given the full species status of *Bufo baxteri*. The Wyoming toad was considered abundant in the 1950s and 1960s, although it was restricted to a relatively small range of less than 600 square miles. During the 1970s, Wyoming toad populations declined drastically. An extensive survey of the Laramie Basin in 1980 found only one population (Jennings et al. 2001). The Wyoming toad was listed as federally endangered on February 16, 1984, (USFWS 1984) and the recovery plan was approved in 1991.

The Wyoming toad has a rangewide and statewide heritage ranking of critically imperiled. Species are listed as critically imperiled because of their extreme rarity (often known from five or fewer extant occurrences or very few remaining individuals) or because some factors of the species' life history make it vulnerable to extinction.

### DISTRIBUTION

The Wyoming toad was originally found from many breeding sites in the floodplains of the Big and Little Laramie rivers. During the mid-1970s, declines in both range and abundance were noted (USFWS 1991). Since 1983, all Wyoming toad observations have come from an area, approximately 30 square miles, located 10 to 15 miles southwest of Laramie around Mortenson Lake (USFWS 1991). Attempts have recently been made to introduce the Wyoming toad at several locations, including Mortenson Lake in the Mortenson Lake National Wildlife Refuge (NWR), Lake George, and Rush Lake at the Hutton Lake NWR (Jennings et al. 1991). Historic Wyoming toad distribution is shown on **Map 1** and areas identified as potential primary and secondary habitats are depicted on **Map 2**.

### ECOLOGY

#### Habitat Description

The Wyoming toad is endemic to Wyoming and is thought to be a glacial relict found only in the Laramie Basin (Jennings et al. 2001). Historically, Wyoming toad habitat included floodplain ponds, small ponds and lakes produced by irrigation runoff, and many small seepage lakes within the Laramie Basin (Jennings et al. 2001). When Wyoming toads were abundant, they were mostly restricted to sedge and grass wet meadows at the margins of these lakes and ponds on the floodplain of streams in the Basin. The habitat has been described as bogs created by underground water collecting into seepage lakes at the base of plateaus in "hollows" created by wind erosion (Baxter 1987). Wyoming toads typically breed on the borders of bays, ponds, and irrigated meadows where water is shallow and vegetation is abundant. Vegetative cover provides important protection from summer evaporation. Numerous small seepage lakes, river courses, and impoundments for delivery of irrigation water provide the moist areas essential to toad survival (USFWS 1991).

## Prey/Forage

Adult Wyoming toads are insectivorous and eat ants, beetles, and other invertebrates (USFWS 1991). Ants and beetles are commonly referenced as preferred foods for the toad. Toad larvae primarily feed on periphytic algae. Observations indicate that active foraging is not restricted to the night in the early summer. Adults display nocturnal habits at times during the dry part of late summer (USFWS 1991).

## Behavior

The activity level of Wyoming toads varies seasonally. In early summer, Wyoming toads are active during the daylight hours. By late July, toad activity during the daytime is less common. Wyoming toads may become nocturnal during the dry portion of summer (starting late July) and are thought to remain mostly underground during the day. Hibernation patterns have not been well studied for the Wyoming toad. There is some speculation that Wyoming toads burrow into softer soils, such as areas that have been tilled by pocket gophers (USFWS 1991). Toads may also use the pocket gopher burrows for hibernation. Toads have been observed using rodent burrows and areas of high vegetation at night. During the warmer parts of the afternoon, toads were found to dig shallow impressions in the open substrate possibly for thermo- and osmo-regulation and predator avoidance (Parker 2000). When the toad was common, it was observed to emerge from winter dormancy in late May or early June when temperatures approached 80° Fahrenheit (F).

Breeding typically occurs in water that is less than six inches deep. Adult toads typically appear at breeding sites in May after daytime temperatures reach 70° F. Males appear first and use their calls to attract females. Breeding occurs from mid-May to mid-June, depending on weather conditions. Tadpoles typically complete their development by late August. The breeding age in captive populations is three years. However, in wild populations, males begin breeding at three years of age while females begin breeding at two years of age (USFWS 1991).

## Threats

There are a number of factors believed to have contributed to the population decline of the Wyoming toad. These factors include: disease, use of insecticides to control mosquitoes, predation, habitat alteration because of irrigation and haying practices, and climatic changes.

Chytridiomycosis, a disease caused by the amphibian chytrid fungus *Batrachochytrium dendrobatidis*, represents a significant threat to the Wyoming toad. Chytridiomycosis has been associated with significant declines of amphibian populations and was recently identified in both captive and wild populations of Wyoming toad (Jennings et al. 2001).

Several other diseases have also been observed in Wyoming toad populations, including “red-leg,” “short tongue syndrome,” and adult enema syndrome. Red-leg, which has symptoms that include red legs and anus, is a fatal bacterial infection. Short tongue syndrome is a disease where animals miss their target when attempting to capture food items. Adult enema syndrome is a condition where high mortality occurs in tadpoles and adults prior to three years of age (USFWS 1991).

Another factor likely contributing to population decline is changes in the quality and quantity of water at Mortenson Lake. Sufficient wetland habitat exists at Mortenson Lake. However, it is believed that the quality of water in this area may have been affected by the widespread use of pesticides to control mosquitoes in Albany County. The use of pesticides may have also affected food sources for the Wyoming toad.

Predation is not thought to have significantly contributed to the decline of Wyoming toad populations. In general, predators avoid Wyoming toads because their skin glands produce a bad taste. However, the presence of predators such as California gulls and raccoons has increased in the Laramie Basin. There is also some evidence that badgers eat adult Wyoming toads. The general consensus of the Wyoming Toad Recovery Team was that predation has not likely been the primary cause of population decline, but could represent a major factor in Wyoming toad recovery (Jennings et al. 2001).

Wyoming toad habitat alteration has occurred through the increase use of irrigation water and haying of wetland areas formerly occupied by the toad. The extent and quality of floodplain wetlands, where the toad formerly resided, have been reduced (USFWS 1991).

Changes in weather patterns, in the form of a series of late, cold springs, may result in successive years of reproductive failure. However, the relatively short duration of temperature records prevents accurate comparisons with historical conditions (USFWS 1991).

## 3.0 ANALYSIS OF RAWLINS RMP

---

### INTRODUCTION

The only known populations of Wyoming toads occur within the Rawlins FO. Therefore, programs included in the Rawlins RMP were reviewed and assessed for their potential to affect the Wyoming toad. The remaining RMPs in Wyoming were not assessed for their potential to affect this species because the Wyoming toad is not known to occur within their administrative boundaries.

The *Record of Decision and Approved Resource Management Plan for the Great Divide Resource Area* was signed in November 1990 (BLM 1990). The Rawlins RMP provides the management direction for 3.4 million acres of public land surface and 4.6 million acres of federal mineral estate administered by the BLM in the Rawlins FO (BLM 1990). The Rawlins FO covers portions of Laramie, Albany, Carbon, and Sweetwater Counties in south-central Wyoming. Approximately 11.2 million acres are within the administrative boundary of the Rawlins FO. On approximately 1 million acres, the federal mineral estate is administered by the BLM, whereas the surface acres are administered by other agencies, primarily the U.S. Forest Service. The Rawlins RMP does not address these areas because the plans proposed by the Forest Service and other agencies provide the basis for BLM's administration of subsurface resources.

The Rawlins RMP describes each management action applied within the Rawlins FO. The following text briefly summarizes the activities and any specific mitigation measures associated with each management action. The *Wyoming BLM Mitigation Guidelines for Surface Disturbing and Disruptive Activities* (BLM 1990) will be applied to all surface-disturbing or disruptive activities. These guidelines include timing limitations and restrictions on surface occupancy that will minimize potential effects to the western boreal toad and its habitats. Refer to the Rawlins RMP for a complete description of each action. The following management actions are analyzed in this document:

- Areas of Critical Environmental Concern
- Cultural and Paleontological Resources
- Fire Management
- Forest Management
- Lands Program Management
- Livestock Grazing Management
- Minerals Management
- Recreation Management
- Sensitive Plants Management
- Soil, Water, and Air Management Decisions
- Visual Resource Management
- Wild Horse Management
- Wildlife Habitat and Fisheries Management

### Environmental Baseline

The environmental baseline describes past and current factors in the area that may have contributed to the status of the species. It also describes protective measures that are currently in place. This section presents a summary of the known habitats for the Wyoming toad in the Rawlins FO area and an analysis of the effects of past and ongoing human activities (including federal, state, tribal, local, and private) that may have influenced Wyoming toads and their habitats.

Within the Rawlins FO, there are no historic breeding sites on lands under BLM surface or sub-surface jurisdiction. No active breeding sites are known to occur on lands administered by BLM. In addition, a relatively small proportion of primary (5 percent, 2,393 acres) and secondary (less than 0.1 percent, 29 acres) habitats are located on lands administered by BLM (**Map 2**). Within this FO, 88 percent of the primary and secondary Wyoming toad habitats are found on privately owned lands. A summary of the number of breeding sites and acreages of primary and secondary habitats is provided in **Table 1**.

**TABLE 1: DISTRIBUTION OF BREEDING SITES AND PRIMARY AND SECONDARY HABITATS ACROSS LAND OWNERSHIP WITHIN THE RAWLINS FO**

| <i>Known Historical Breeding Sites</i> |                           |
|--|---------------------------|
| <b>Surface Owner</b>                   | <b>Rawlins FO</b>         |
| BLM                                    | 0                         |
| USFS                                   | 0                         |
| State                                  | 4                         |
| Private                                | 4                         |
| Other*                                 | 1                         |
| <i>Primary Habitat</i>                 |                           |
| <b>Surface Owner</b>                   | <b>Range-wide (Acres)</b> |
| BLM                                    | 2,393                     |
| USFS                                   | 714                       |
| State                                  | 1,509                     |
| Private                                | 41,699                    |
| Other*                                 | 867                       |
| <i>Secondary Habitat</i>               |                           |
| <b>Surface Owner</b>                   | <b>Range-wide (Acres)</b> |
| BLM                                    | 29                        |
| USFS                                   | 1,277                     |
| State                                  | 1,310                     |
| Private                                | 27,834                    |
| Other*                                 | 1,006                     |

\*Including Bureau of Reclamation and U.S. Fish and Wildlife Service

Agricultural practices, especially irrigation regimes, have likely contributed to the decline of the Wyoming toad by reducing available habitat. In the Laramie Basin, floodplains of the streams are used for agriculture. In spring, the hayfields are flooded for several miles during the same period as the breeding season for the Wyoming toad. Irrigation waters are turned off to dry out meadows for hay harvest and the hay fields are harvested soon thereafter. There is some speculation that at the time of harvest, larvae have not matured and are subjected to high evaporation rates resulting in high rates of mortality. In addition, waters from private lands feed into Mortenson Lake, Lake George, and Rush Lake. Because there is no secured water source, these lakes are not guaranteed to receive adequate water for toad development.

Another factor that may have contributed to population decline is reproductive failure related to changes in weather patterns. The Laramie Basin has experienced drought conditions for several years. In 2001 and 2002, Mortenson Lake and Lake George did not receive any water flow as a result of drought conditions (Jennings 2002).

There is also some indication that two other distinct weather events may have contributed to Wyoming toad population decline. In the fall of 1988, a total of 450 young were observed during sampling, but no yearlings were observed the following year. It has been hypothesized that a weather event referred to as the “Alberta Clipper,” which resulted in 10 to 15 days when temperatures failed to climb above  $-15^{\circ}\text{F}$  between December 1988 and January 1989, may be one explanation for the absence of yearlings (USFWS 1991). Spring blizzards may have also contributed to recent population declines. In some years, an early spring thaw may cause the Wyoming toad to come out of hibernation. If a late spring blizzard follows, all egg masses could freeze, thus eliminating the chance for any reproduction that year (USFWS 1991).

The Rawlins RMP (BLM 1990) contains no specific measures intended to protect this species. However, the *Wyoming BLM Standard Mitigation Guidelines for Surface Disturbing Activities*, Appendix I (2)(d) (BLM 1990), requires any lessee or permittee to conduct inventories or studies in accordance with BLM and USFWS guidelines to verify the presence or absence of threatened or endangered species before any activities can begin on site. In the event the presence of one or more of these species is verified, the operation plans of a proposed action will be modified to include the protection of the species and its habitat, as necessary. Possible protective measures may include seasonal or activity limitations, or other surface management and occupancy constraints (BLM 1990).

## **Analysis of Proposed Management Actions and Effects**

The proposed actions include management actions or prescriptions described in the Rawlins RMP. The Rawlins RMP represents a selection of management actions that attempt to resolve planning issues and provide for sustained multiple use of public lands and resources (BLM 1990). The following sections describe the management actions in the Rawlins RMP that may affect the Wyoming toad. Direct and indirect effects are presented after each management action. Indirect effects, such as altering known or potential habitat, can result in direct effects to the Wyoming toad, such as reductions to Wyoming toad populations. The Rawlins RMP provides a complete description of each management prescription (BLM 1990).

## **Planning and Management for Areas of Critical Environmental Concern**

### **Management Actions**

Four Areas of Critical Environmental Concern (ACECs) are designated in the Rawlins FO, including Como Bluff, Sand Hills, Jep Canyon, and the Shamrock Hills Raptor Concentration Area. Each ACEC is managed to achieve goals and objectives specific to the area and to its special resource values. These ACECs are designated to protect unique resources such as cultural values (Como Bluff), unique vegetation and wildlife habitats (Sand Hills), big game crucial winter range (Jep Canyon), and raptor nests (Jep Canyon and Shamrock Hills).

Management actions for other programs in the ACECs will be guided by the general decisions found in the other sections of the RMP. Management actions for ACECs include appropriate application of the *Wyoming BLM Standard Mitigation Guidelines for Surface Disturbing Activities*.

## Effects Analysis

No known Wyoming toad breeding sites are located near the ACECs. In addition, no Wyoming toad primary or secondary habitats or breeding sites occur within the designated ACECs. It is also unlikely that any future ACECs would be created near Wyoming toad habitats. Activities in each of the ACECs will be similar to those contemplated under the various other management actions in this RMP, except that additional restrictions on ground-disturbing activities will be applied. Special restrictions will be applied to management actions in ACECs that include cultural and paleontological resources, minerals, fire, off-road vehicles (ORV), vegetation and soils, and wildlife habitats. None of these additional restrictions is specifically directed toward protecting habitats for the Wyoming toad, but they may indirectly benefit potential habitat and individual toads by minimizing surface disturbances.

## Determination

Implementation of ACEC management actions, as presented in the Rawlins RMP (1990), will have **no effect** on the Wyoming toad or its habitats. This determination is based on the absence of known Wyoming toad populations or habitats in areas identified as Areas of Critical Environmental Concern.

## Cultural Resources Management

### Management Actions

The objectives of cultural resources management are to:

- Protect and preserve representative samples of the full array of cultural resources for the benefit of scientific and socio-cultural use;
- Ensure that cultural resources receive full consideration in all land-use planning and management decisions;
- Manage cultural resources so that scientific and socio-cultural values are not diminished, but rather are maintained or enhanced;
- Ensure BLM's undertakings avoid inadvertent damage to both federal and nonfederal cultural resources;
- Stabilize and protect significant sites and segments along the Overland Trail, the Cherokee Trail, and the Rawlins-Fort Washakie Trail; and
- Maintain the integrity of existing and proposed National Natural Landmarks (NNLs).

The BLM is required to conduct Class I, II, or III inventories for actions involving BLM-administered public land or federal minerals that may cause surface disturbance. Class I surveys involve compiling existing cultural resources data, including a review of Wyoming State Historic Preservation Office records. Class II inventories include transect surveys with a spacing that is typically greater than 30 meters. Class III inventories include surveys that are more intensive than Class II surveys and typically have a 30-meter transect spacing.

The BLM will seek listing on the National Register of Historic Places for eligible sites along the Overland, Cherokee, and Rawlins-Fort Washakie Trails. The BLM will take appropriate actions (such as protective fencing of segments of the trails or stabilization of deteriorating buildings) to meet the objectives for significant trail segments. Where appropriate, the BLM will pursue acquisition of legal access to trail segments. The BLM will categorize cultural resources for management purposes (such as public use, scientific, and socio-cultural). These actions will be carried out in accordance with law, policy, and guidance to meet the objectives for cultural resources management.

Lands in the proposed Gangplank NNL, Big Hollow NNL, and Sand Creek NNL will be considered for disposal to organizations or agencies that would manage these areas in accordance with their NNL status. The Big Hollow NNL encompasses the re-introduced population of Wyoming toads at Mortenson Lake.

## Effects Analysis

Cultural resource surveys have the potential to impact Wyoming toads if Class II or Class III surveys are conducted in primary or secondary habitats. However, inventories or studies would be completed in accordance with BLM and USFWS guidelines to verify the presence or absence of threatened or endangered species such as the Wyoming toad before any ground-disturbing activities begin. In the event that an occurrence of the Wyoming toad is identified, surface-disturbing activities would be modified to ensure that this species and its habitats are protected.

None of the known breeding locations for the Wyoming toad are located on lands under BLM jurisdiction. Surface disturbing activities that occur in suitable toad habitats can cause soil compaction, damage to vegetation, and habitat fragmentation. These potential effects would not likely be important, as they would be localized and limited in extent.

Designation of the Big Hollow NNL has the potential to indirectly affect the Wyoming toad and its habitat at Mortenson Lake by making it more known to the public and increasing its accessibility to recreational users. Increased use of this lake may lead to disturbance or destruction of habitats that may be suitable for future reintroductions.

## Determination

Implementation of cultural resource management actions, as presented in the Rawlins RMP (1990), may affect, but is **not likely to adversely affect** the Wyoming toad, due to **discountable effects**. This determination is based on absence of breeding sites near the NNLs and historic trails, the very low likelihood that management actions would take place in habitat for the Wyoming toad. If in the future, management actions were planned in any primary or secondary Wyoming toad habitats, the BLM would implement all appropriate conservation measures to ensure the protection of the species.

## Paleontological Resources

### Management Actions

The objective of paleontological resource management is to maintain the integrity of the scientific value of paleontological resources. Inventories will be conducted on a case-by-case basis for each proposed surface disturbance to ensure maintenance or integrity of paleontological values.

## ***Effects Analysis***

Class I paleontological surveys do not entail any fieldwork and would therefore, not impact the Wyoming toad. Class II and Class III paleontological surveys have the potential to impact Wyoming toads if conducted in primary or secondary habitats because they could disturb or remove habitat during excavation. Potential loss of primary and secondary habitats caused by Class II and III paleontological surveys is difficult to quantify, but is expected to be highly localized and uncommon.

## ***Determination***

Implementation of paleontological resource management actions, as presented in the Rawlins RMP (BLM 1990), may affect, but is **not likely to adversely affect** the Wyoming toad, due to **discountable effects**. This determination is based on the very low likelihood that Class II or Class III paleontological management actions would take place in habitat for the Wyoming toad, and if in the future, management actions are planned in any primary or secondary Wyoming toad habitats, the BLM would implement all appropriate conservation measures to ensure the protection of the species.

## **Fire Management**

### ***Management Actions***

The objectives of fire management are to concentrate fire suppression efforts in areas that contain high resource or human values and have intermingled land ownership patterns. In addition, fire management uses prescribed fire to help meet the objectives of other programs such as the reduction of fuels or the maintenance or improvement of wildlife habitat or range conditions. Approximately 60 percent of the FO is designated as a full suppression area where there are no equipment restrictions. Approximately 3 percent of the FO is designated as a full fire suppression area “with management options.” Restrictions may be imposed on the use of standard full suppression firefighting techniques in these areas. Approximately 36 percent of the FO is designated as a limited fire suppression area.

The remaining 1 percent of the FO is proposed for a limited suppression classification; the classification would be assigned after consultation and agreement with landowners in the area. If agreement cannot be reached to allow limited suppression of wildfires, the area will be managed under a full suppression classification.

A fire management plan will be prepared, specifying criteria for protecting high-value resources, such as significant cultural resources, crucial winter range for big game, high-priority watersheds, and high-value scenic areas. The fire management plan will include operational aspects of implementing limited suppression designations. An escaped fire analysis will be conducted to determine the appropriate course of action if fires cannot be contained within the first burning period or if they exceed the criteria established for limited suppression. Prescribed burning will be used to achieve management objectives such as those for allotment management plans (AMPs) and habitat management plans (HMPs). Proposals for prescribed fire will be considered case-by-case to ensure environmental integrity and consistency with multiple resource objectives and activity plans.

## **Effects Analysis**

Wildland fires are not expected to directly impact the Wyoming toad because it historically occurred on the Big and Little Laramie River floodplains. Additionally, fire management could also have a positive effect on Wyoming toads by diminishing the risk of catastrophic wildfire in primary and secondary Wyoming toad habitat occurring on lands administered by the BLM. However, unrestricted operation of fire suppression equipment could result in damage or alteration of primary and secondary Wyoming toad habitat. Damage or alteration of primary and secondary habitats, and the very remote possibility of crushing a toad, as the result of fire management actions, would be localized and uncommon.

## **Determination**

Implementation of fire management actions, as presented in the Rawlins RMP (BLM 1990), may affect, but are **not likely to adversely affect** the Wyoming toad due to **discountable effects**. This determination is based on the lack of Wyoming toad occurrences on BLM land and the low potential for fires to occur in primary and secondary habitats. In addition, Conservation Measures (section 4.0) would be implemented for any actions occurring in primary or secondary Wyoming toad habitats to ensure the protection of the toad.

## **Forest Management**

### **Management Actions**

The objective of forest management is to enhance the health, productivity, and diversity of the forestlands. The allowable harvest level specified in the RMP is 20 million board feet (MMBF) per decade. Harvest will occur on commercial forestlands in the FO designated for intensive or restricted management of forest products (about 25,900 acres or 23 percent of the total forestland in the Rawlins FO). The following are the types of actions proposed to meet the forest management objectives on these lands.

About 19,200 acres will be intensively managed for forest products. These lands will be managed to achieve a highly productive forest by implementing activities for enhancing tree growth and health. Multiple-use values will be fully considered. Timber sales will be concentrated in these areas. About 6,700 acres will be managed restrictively for forest products. Included in this category are areas such as steep slopes and riparian areas surrounded by buffer zones.

Forest management practices, such as timber harvesting, regeneration of disturbed sites, stand replacement, and pre-commercial thinning, will be carried out to meet the forest management objectives. Stands of unmerchantable, nonproductive lodgepole pine will be replaced with young, vigorous trees. Minor wood products such as fuel wood, posts and poles, Christmas trees, and wildings will be available on demand.

The BLM will pursue acquisition or maintenance of legal access to certain areas of public land to support intensive management of commercial forestland. Consolidation of land ownership on Elk Mountain and Shirley Mountain will be considered as opportunities arise. About 85,200 acres of other forestlands will be managed only to enhance other uses. Aspen, juniper, and other noncommercial tree species are included in this category. About 300 acres are not available for management of forest products because the timber is not harvestable, the stands are too small, their locations are scattered, or the terrain does not allow appropriate access.

## Effects Analysis

The majority of Wyoming toad breeding sites and potential habitat are associated with riparian and wetland communities within the Laramie Basin. Vegetation types that would represent potential harvestable timber resources, such as ponderosa pine and lodgepole pine forests, are not present in the Laramie Basin. As a result, timber harvest activities would not result in adverse effects to the Wyoming toad.

## Determination

Implementation of forest management actions, as presented in the Rawlins RMP (BLM 1990), will have **no effect** on the Wyoming toad. This determination is based on the absence of forest management areas within or near habitat for the Wyoming toad.

## Lands Program Management

### Management Actions

The objectives of lands program management are to support the goals and objectives of other resource programs for managing the BLM-administered public lands and to respond to public demand for land use authorizations.

All BLM administered public lands will be open to consideration for utility and transportation systems, but these systems will be located next to existing facilities whenever possible. Areas with important resource values will be avoided where possible in planning for placement and routes of new facilities. Effects will be intensively mitigated if it becomes necessary for facilities to be placed within avoidance areas (BLM 1990).

Communication site plans will be developed for all existing and any new sites. New sites may be established, with appropriate analysis, on a case-by-case basis. Site categories will be established for all communication sites according to the following criteria: High-power communication sites will be reserved for broadcast television and radio transmitters of 100 watts or more. Low-power communication sites will be reserved for microwave, mobile telephone and radio, and other transmitters that use fewer than 100 watts. A 2-mile buffer will be maintained around all communication sites to ensure their integrity.

About 66,000 acres in the Rawlins FO are identified as available for consideration of disposal under the criteria set forth in the Federal Land Policy and Management Act (FLPMA) (BLM 1990). These lands may be disposed by any appropriate means permitted under the land laws, including desert land patent, exchange, sale, and recreation and public purpose (R&PP) patent. These lands were identified during the planning effort for the Rawlins RMP as meeting the FLPMA criteria for disposal. The inventory of public lands that meet the FLPMA disposal criteria was not completed for the entire FO, however. Therefore, no decision has been made in the RMP that any of these lands will be disposed of or that these are the only public lands in the FO that may be considered for disposal. In addition, proposals for disposal of lands that have not been identified as meeting the FLPMA criteria will be considered only if they are consistent with the objectives of the RMP.

Before any disposal action can be taken, BLM will consider each individual tract and will include public involvement. The preferred method of disposal or acquisition of lands by BLM will be through exchange. (BLM 1990)

Withdrawn lands in the FO, under section 204(1) of FLPMA, will be reviewed to evaluate whether existing withdrawals are serving or needed for their intended purposes. These reviews are not a part of developing the RMP. Thus, no decisions are made on the termination of any withdrawals in this RMP. The existing withdrawals in the FO will remain in place unless or until it is determined they should be terminated and, if necessary, a plan amendment to the Rawlins RMP is written. This determination or amendment will be based on a full examination of the issues associated with withdrawal terminations. These issues may include the land use, environmental and other factors associated with opening public lands now closed to entry under the public land laws or to mineral location under the mining laws. The BLM will initiate new withdrawals, which would include recreation sites (650 acres); historic sites (1,320 acres); and a rare plant population (10 acres) (BLM 1990).

### Effects Analysis

There is the potential for utility lines to be routed near or within potential Wyoming toad habitat. In general, locations of existing communication sites are not located close enough to known/historic breeding sites to adversely impact Wyoming toad populations. Therefore, no adverse effects are expected to result from maintenance of existing communication sites. If new communication sites are located adjacent to or within primary or secondary Wyoming toad habitat, their construction and maintenance could result in effects to this species and its habitat. Potential effects that may occur include habitat loss and fragmentation resulting from construction of new roads and utility lines (above- and below-ground) and related increases in human presence (vehicle traffic and construction activity). However, adverse effects are expected to be very limited because most communication sites are generally located along major highways or adjacent to major cities, which do not represent suitable habitat for Wyoming toads.

No BLM lands with potential Wyoming Toad habitat are being considered for disposal. In addition, lands that are not under BLM jurisdiction that are potential habitats for the Wyoming toad may be targeted for acquisition and subsequent management by BLM. Such acquisitions would benefit habitats for the Wyoming toad that may not be afforded protection under non-federal ownership.

### Determination

Activities associated with lands program management, as presented in the Rawlins RMP (BLM 1990), may affect, but are **not likely to adversely affect** the Wyoming toad, due to **discountable effects**. This determination is based on the low likelihood that land resource management actions would take place in primary and secondary Wyoming toad habitats. Land acquisition actions may have **beneficial effects** to the Wyoming toad by maintaining or acquiring potential habitats.

### Livestock Grazing Management

#### Management Actions

The objective of livestock grazing management in the Rawlins FO is to enhance livestock grazing while maintaining a balance among economic uses, enhancement of wildlife habitat, watershed,

and riparian areas, while maintaining or improving range conditions over the long term. Livestock grazing will also be managed to protect or enhance other resource values.

Three separate grazing environmental impact statements (EISs) cover the Rawlins FO. Two of these EISs (the Divide Grazing and the Seven Lakes Grazing EISs) were completed before BLM developed the Rawlins RMP. The livestock grazing management decisions for the Divide Grazing and the Seven Lakes Grazing EIS areas will continue in effect as outlined in the Divide and Seven Lakes Rangeland Program Summaries (RPS). These two RPSs are incorporated into the Rawlins RMP by reference. In conjunction with the RPSs, a single set of priorities encompassing all three grazing EIS areas will be developed to coordinate the entire rangeland management program for the Rawlins FO. The total authorized livestock grazing use will not exceed the recognized active preference in the FO. Currently, this preference represents a maximum of 480,754 Animal Unit Months (AUMs) of annual forage (161,340 AUMs are in the Medicine Bow Grazing EIS area; 262,101 are in the Divide Grazing EIS area; and 57,313 are in the Seven Lakes Grazing EIS area).

The current amounts, types, and seasons of livestock grazing will be authorized until monitoring indicates that an adjustment is necessary, or that a class of livestock or seasonal use modification can be accommodated. Requests for changes in seasons of use or type of livestock will be considered on a case-by-case basis. Requests for conversions from sheep to cattle will be considered along with management actions to maintain or improve riparian conditions. Any adjustments in livestock grazing will be consistent with current policies and procedures. These adjustments will result from inventories, monitoring studies, and consultation, coordination, or negotiation with grazing permittees. Adjustments may also result from decisions to change the allocation of land uses, or from transfers of BLM-administered public lands to other agency jurisdictions or into non-federal ownership. Furthermore, the Rawlins rangeland monitoring plan will be reviewed and updated annually. This monitoring plan, which details the type and purpose of monitoring at the allotment level, is on file in the Rawlins administrative office.

Grazing systems will be designed to achieve the livestock-grazing objective. Existing allotment management plans (AMPs) will be maintained and updated as necessary. In addition, new AMPs will be developed for selected grazing allotments as funding allows. "I" allotments have first priority. Existing types and levels of grazing use will be continued in "M" allotments. Proposals to change existing use may also require changes in the allotment categorization, and level of management attention and monitoring. Range improvements may be maintained or developed to enhance multiple-use values. Private investment will be encouraged and authorized when consistent with the multiple-use objectives for the allotment. Grazing use in "C" allotments will continue at present levels. Proposals for changes in use will be reviewed and allowed if they do not conflict with other values. Private investment in range improvements will be allowed when it does not conflict with multiple use of the public land.

Within the Medicine Bow EIS area, livestock grazing will be excluded from the Pennock Mountain Wildlife Habitat Area (6,285 acres), the Wick Wildlife Habitat Area (320 acres), the Laramie Peak Wildlife Habitat Area (2,858 acres), and the Sybille Wildlife Research Unit (680 acres). A grazing agreement has been negotiated in the Split Rock/Duck Creek Agreement Area (1,760 acres) accommodating the bighorn sheep that use the area for lambing. A projected 1,725 acres of riparian habitat will be developed for grazing treatments. Special riparian needs will be the primary consideration in the location and design of range improvements and grazing systems in these areas. If deemed necessary by BLM personnel, in coordination with USFWS, livestock will be excluded from riparian areas until they improve sufficiently to support limited seasonal grazing. Furthermore, special attention will be given to maintaining wildlife habitat on 13,140

acres containing crucial winter range for big game and other important habitat. These areas will also receive special attention for developing and implementing AMPs and other activity plans.

Historic populations and potential habitat for the Wyoming toad are located within the Medicine Bow Grazing Area. Although grazing restrictions exist in other portions of the Medicine Bow Grazing Area, no grazing restrictions exist for BLM-managed lands located adjacent to the Mortenson Lake NWR or the Hutton Lake NWR, or within areas designated as potential habitat for the Wyoming toad.

## Effects Analysis

Trampling and over-grazing caused by livestock in areas occupied by Wyoming toad or in suitable habitats could result in negative effects to Wyoming toad populations and habitat. The magnitude of these potential effects would vary with intensity and duration of livestock grazing in these areas. Potential indirect effects to Wyoming toad habitat from livestock grazing may include soil compaction, damage to vegetation, sedimentation of suitable aquatic habitats, and introduction of noxious weeds. Overall effects from grazing are not expected to be adverse because a relatively small portion of primary (5 percent) and secondary habitat (less than 0.1 percent) is located on BLM lands. Managed grazing techniques may also benefit the Wyoming toad (and other wildlife) and are currently used at Mortenson Lake as a management tool (USFWS 2001). Moderate grazing increases habitat structure and patchiness important to amphibian abundance (Samson et al. 1999).

## Determination

Implementation of livestock grazing management actions, as presented in the Rawlins RMP (BLM 1990), may affect, but is **not likely to adversely affect** the Wyoming toad, due to **insignificant effects**. This determination is based on the relatively small portion of BLM lands that occur within primary or secondary Wyoming toad habitat (**Map 2**). Additionally, moderate livestock grazing in some riparian areas may produce **beneficial** effects on Wyoming toad habitats.

## Minerals Management

Minerals addressed as part of the Rawlins RMP include coal, oil and gas, and other minerals. Management actions are established as part of the RMP for leasable, locatable, and salable minerals.

## Management Actions

The management objective for coal resources is to provide for short- and long-range development of federal coal in an orderly and timely manner, consistent with the policies of the federal coal management program, environmental integrity, national energy needs, and related demands. The objective is also intended to protect important resources by specifying whether federal coal can be leased for surface, subsurface, or in situ mining methods; and to allow analysis of alternative areas for consideration of future leasing. A north-to-south coal development sequence will be followed in the entire area west of Rawlins and south of Interstate 80 as needs are identified. The BLM will process all applications for leasing in areas designated acceptable for further consideration for coal leasing. For each application, BLM will conduct a site-specific

environmental analysis and will consider the development sequence described above and other environmental and socioeconomic factors.

The management objective for oil and gas is to provide opportunity for leasing, exploration, and development while protecting other resource values. The entire FO is open to oil and gas leasing. Leases will be issued with the restrictions needed to protect resources. Surface disturbance will be restricted and intensively managed to maintain important resource values in the ACECs, the Baggs Elk Crucial Winter Range, and in overlapping crucial winter ranges for the various big game species. All lands open to oil and gas leasing are also open to geophysical exploration. The restrictions or requirements may be included in approving subsequent exploration and development in cases where federal oil and gas leases are issued (1) without stipulated restrictions or requirements later found to be necessary; or (2) with stipulated restrictions or requirements later found to be insufficient. These restrictions or requirements may be included only as reasonable measures or as conditions of approval (COA) in authorizing applications for permit to drill (APD), sundry notices, or plans of development (POD).

The management objective for other leasable minerals is to provide opportunity for leasing, exploration, and development of oil shale, geothermal resources, and non-energy leasable minerals while protecting other resource values. The entire FO is open to leasing of oil shale, geothermal resources, and non-energy leasable minerals (BLM 1990). Lease applications will be considered on a case-by-case basis. Stipulations to protect important surface values will be based on interdisciplinary review of individual proposals and environmental analysis.

The management objective for locatable minerals is to provide opportunity for location of mining claims and mineral development while prohibiting these types of activities on lands that are not compatible. The entire FO is open to location of mining claims and mineral development, except for areas that are closed or are to be closed and withdrawn from mineral location (BLM 1990).

The management objective for salable minerals is to provide availability of mineral materials in convenient locations while protecting surface resources. The FO is open to the sale of mineral materials. Sales will be considered on a case-by-case basis. Stipulations to protect important resource values will be based on interdisciplinary review and analysis of individual proposals.

## Effects Analysis

Wyoming toad habitats could be affected in the event that oil and gas exploration and development activities occur within primary or secondary habitats. However, BLM has limited rights to subsurface minerals that coincide with potential Wyoming toad habitats (**Map 2**) and no mineral activity occurs in Wyoming toad habitat at this time. In addition, known Wyoming toad distribution is not located in areas having BLM subsurface ownership within this FO (**Map 2**) and mineral potential is very low. Based on the limited amount of habitat that coincides with BLM subsurface ownership along with restrictions that limit surface disturbing activities within riparian areas and within 500 feet of streams, potential effects to the Wyoming toad as the result of oil and gas management are expected to be minimal or nonexistent. Actual impacts due to mineral operations would be minimal or nonexistent, as they would not be allowed in Wyoming toad habitat, although access roads might bisect toad habitat along a stream or river course.

## Determination

Implementation of minerals management actions, as presented in the Rawlins RMP (BLM 1990), may affect, but is **not likely to adversely affect** the Wyoming toad, due to **discountable effects**.

This determination is based on the limited amount of Wyoming toad habitats located within known areas of subsurface mineral resources, the very low potential for mineral development in Wyoming toad habitat, and the implementation of the integrated Conservation Measures in section 4.0 intended to minimize disturbance to potentially suitable Wyoming toad habitats if surface disturbance is planned to occur.

## **Recreation Management**

### **Management Actions**

The objectives of recreation management are to ensure the continued availability of outdoor recreational opportunities, to meet legal requirements for the health and safety of visitors, and to mitigate conflicts with other resource values.

Activity plans for the Nine Mile Hill and Big Creek sites will be revised before they are implemented. Maintenance of existing developed and undeveloped recreation sites will be continued. Development of new recreation sites will be prioritized as follows: (1) a boat launch and a picnic area at Prospect Creek, (2) a recreation site at Jelm Mountain, and (3) a recreation site in the Shirley Mountains. Additional sites will be considered for development as opportunities arise.

The Continental Divide National Scenic Trail Special Recreation Management Area (SRMA) covers 80 miles of trail through BLM-administered public land. The area will be managed to provide opportunities for trail users to view the diverse topographic, geologic, vegetative, and scenic phenomena and wildlife that characterize the Continental Divide and to observe examples of human use of the natural resources. The exact trail route will be identified through activity planning, which will also determine where easements or rights-of-way will be needed on private or state-owned land.

The North Platte River SRMA covers 3,550 acres, and will be managed to provide high-quality recreation, especially for boating, fishing, camping, and sightseeing (BLM 1990). Management will also be aimed at providing public facilities and continued access. Surface disturbance within ¼ mile on either side of the river will be restricted to maintain the quality of the visual resources.

The Shirley Mountains SRMA covers 24,800 acres and will be managed to protect the cave system while other resource uses will be allowed aboveground. Specific guidelines for recreation management and surface use will be developed during activity planning.

An Off-Road Vehicle (ORV) implementation plan will be prepared for the Rawlins FO (BLM 1990). ORV designation areas are identified throughout the FO. With some exceptions, the FO is open to use of motorized over-the-snow vehicles, provided they do not adversely affect wildlife or vegetation (BLM 1990). With some exceptions, all other motorized vehicle use in the FO is limited to existing roads and trails.

Because of the mixed land ownership pattern and multiple resource concerns, completion of an effective ORV implementation plan for the Dune Ponds area depends entirely on close coordination with owners of adjacent private property, the Wyoming State Land Board, the Wyoming Game and Fish Department (WGFD), and other interested parties. The plan will also be closely coordinated with the wildlife, soils, and livestock grazing programs to ensure multiple resource concerns are addressed.

The BLM will coordinate and cooperate with owners of adjacent properties, interested individuals, organizations, and agencies when preparing plans to implement ORV designations (BLM 1990). Plans for rehabilitation or mitigation of ORV use will be developed and implemented for specific problem areas within the Sand Hills area and the Dune Ponds Cooperative Management Area.

Consistent with the Wyoming BLM access policy, the BLM will pursue acquisition of legal access to certain areas to ensure continued availability of outdoor recreation (BLM 1990). Consolidation of land ownership will be pursued in the following areas to increase recreational opportunities for the public. Areas of high priority include: Bennett Peak, Dugway, Miracle Mile, and North Platte River area. Areas of moderate priority include: Dune Ponds, Elk Mountain, and Shirley Mountains caves. Areas of low priority include: Bennett Mountains, Encampment River Canyon, and Ferris Mountains. The preferred method of consolidation is through exchange.

No developed recreation sites or special recreation areas are located near potential Wyoming toad habitat. Potential Wyoming toad habitat is all located within an ORV use area that limits travel to existing roads and trails.

### **Effects Analysis**

Since reintroduced toad populations are currently protected within USFWS wildlife refuges, which are not administered by BLM, these populations are not likely to be impacted by recreational management actions authorized by BLM. Primary and secondary habitats located adjacent to existing roads and trails may be affected by off-road vehicle use. However, the majority of potential habitat is located where off-road vehicle use is restricted to roads and therefore, ORV use is not likely to impact toad habitats. Restricting off-road vehicle use to roads will help to reduce the potential for effects to habitat.

### **Determination**

Implementation of recreation management actions, as presented in the Rawlins RMP (BLM 1990), may affect, but is **not likely to adversely affect** the Wyoming toad, due to **insignificant effects**. This determination is based on the low likelihood that recreation activities managed by the BLM would take place in the same area as known populations of the Wyoming toad, conservation measures found in section 4.0, and the restricted off-road vehicle use in areas containing primary or secondary Wyoming toad habitat.

### **Sensitive Plants Management**

#### **Management Actions**

The objectives of sensitive plants management are to maintain or enhance the population of two plant species and one community within the Rawlins FO. The protection goals apply to Gibben's beardtongue (*Penstemon gibbensii*), persistent sepal yellowcress (*Rorippa calycina*), and the Muddy Gap cushion plant community. Proposed surface-disturbing activities will be examined on a case-by-case basis to determine the potential adverse effects (BLM 1990). Any proposed developments, uses, and facilities will be managed to avoid damage to sensitive plant species and communities.

## Effects Analysis

Areas specifically addressed in the RMP do not include potential Wyoming toad habitat. As a result, management actions targeted for sensitive plant management are not expected to directly benefit or adversely impact the Wyoming toad. Actions associated with management of sensitive plant resources will have no effect on the Wyoming toad or its habitat within the Rawlins FO because of the absence of known occurrences and suitable habitats in the areas identified for sensitive plants management.

## Determination

Implementation of sensitive plant management actions, as presented in the Rawlins RMP (BLM 1990), will have **no effect** on the Wyoming toad. This determination is based on the absence of known Wyoming toad populations or habitats in areas identified for sensitive plants management.

## Soil, Water, and Air Management

### Management Actions

The BLM has established a number of management actions to maintain soil, water, and air quality. These management actions have been established to accomplish the following:

- Prevent deterioration of air quality beyond applicable local, state, or federal standards;
- Prevent impairment of important scenic values that may be caused by declining air quality;
- Maintain or improve soil cover and productivity;
- Maintain or improve riparian areas;
- Control flood and sediment damage from natural or human-induced causes;
- Reduce salt loading in watersheds that lie within the Colorado River Basin;
- Meet or exceed established surface water and ground water quality standards where water quality has been affected by human-related activities; and
- Provide physical and legal availability of water for use by the public and by federal, state, and local government agencies for fisheries and wildlife, and for livestock, recreational, municipal, and industrial uses.

The objective of air quality management is to maintain or enhance air quality, protect sensitive natural resources and public health and safety, and minimize emissions that cause acid rain or degraded visibility. Typical air quality management program activities include dust control, weather monitoring, and air quality data monitoring. The air quality management program may evaluate or restrict surface development activities. Activities associated with air quality management would include installing and maintaining air monitoring stations and reading instrumentation at these stations. Currently, there are no air quality monitoring stations within any Wyoming Toad habitat in the Rawlins FO area, precluding any impacts.

The objective for soil resources management is to maintain soil cover and productivity and provide for improvement in areas where soil productivity may be below potential on surface lands administered by BLM and collection of baseline data through soils surveys to assess management objectives

The BLM will implement intensive land-use practices to mitigate salt and sediment loading caused by surface disturbance. These practices will be carried out in the following areas, by priority: (1) Muddy Creek, (2) Sage Creek, (3) Second and Third Sand Creeks, and (4) the Little Snake River Basin (excluding the Muddy Creek watershed). Watershed or other activity plans will address site-specific problems and will include monitoring for salt and sediment loading. In other areas, the BLM will carry out watershed management practices designed to meet objectives for the soils, water, and air resources. These practices will be included in activity plans such as AMPs and HMPs. Surface disturbance will be prohibited on unstable areas unless the instability can be alleviated. Specific unstable areas such as landslides, slumps, and areas exhibiting soil creep will be identified individually.

## Effects Analysis

**Air Quality:** Actions related to air quality management will not result in impacts to Wyoming toad habitat. The actions associated with air quality management are extremely small in scope, of short duration, and very unlikely to occur in Wyoming toad habitat.

**Soil Management:** Activities associated with soil mapping/sampling may include surveying, core drilling, use of pick-up truck mounted soil augers and core samplers (1 ½” to 2” in diameter) and back-hoes (usually around 12-24” in width and pits may be up to 6’ deep) for digging soil characterization pits and trenches, using hand held shovels to dig holes or pits, and associated human and vehicle disturbances. These trenches are backfilled and revegetated/reseeded when surveys are complete. Disturbances are usually very small of short duration in nature and will reclaim to the native terrain/vegetation quickly. Surface soil erosion studies may also be conducted. These soil resource related activities in the planning area are mainly in support of other programs. Soil mapping and identification may require the digging of trenches to identify and measure soil horizons below the surface. Formal soil surveys are usually conducted under a contract with the Natural Resource Conservation Service (NRCS).

**Water Quality Management:** Implementation of management actions to accomplish water quality goals would benefit both reintroduced Wyoming toad populations as well as potential Wyoming toad habitat by helping to provide for the recovery of the species. However, most of these actions are focused on reducing salt and sediment loading in sensitive areas affected by surface-disturbing activities. Areas specifically addressed in the RMP do not include inhabited or potential Wyoming toad habitat. As a result, management actions targeted at maintenance of air and water quality are not expected to directly benefit or adversely impact the Wyoming toad.

## Determination

**Air Quality:** Implementation of air management actions, as presented in the Rawlins RMP (1990), will have **no effect** on the Wyoming toad and its habitats. This determination is based on the absence of air monitoring stations and other activities requiring monitoring of air quality occurring in Wyoming toad habitat.

**Soil Management:** Implementation of the soil, water, and air management actions, as presented in the Rawlins RMP (1990), may affect, but is **not likely to adversely affect** the Wyoming toad, due to **discountable effects**. This determination is based on the low likelihood that soil activities managed by the BLM would take place in the same area as known populations of the Wyoming toad or its habitat and protections from the conservation measures found in section 4.0 for soil surveying activities.

**Water Quality Management:** Implementation of the soil, water, and air management actions, as presented in the Rawlins RMP (1990), will have **no effect** on the Wyoming toad and its habitats. This determination is based on the absence of known Wyoming toad populations or the presence of potential habitats in areas identified for salt and sediment management.

## Visual Resource Management

### Management Actions

Visual Resource Management (VRM) is a system for minimizing the visual impacts of surface-disturbing activities and maintaining scenic values for the future. The objective of VRM is to minimize adverse effects to visual resources, while maintaining the effectiveness of land use allocations. A portion of the Mortenson Lake NWR is located within a Class IV VRM area and the remainder is in a Class II VRM. Class IV VRM objectives provide for management activities that require major modification of the existing character of the landscape. The level of change to the characteristic landscape can be high under this designation, and activities in these areas may attract attention, and may dominate the view, but are still mitigated.

### Effects Analysis

Designation of some areas as Class II VRMs could provide some benefit to the Wyoming toad by minimizing the level of adverse effects to visual resources, and therefore, it follows that less surface disturbing activities might occur. While the current designation of VRM Class IV does not provide any added protections for the species, the VRM program as a whole, does provide another method by which intensive management of the landscape can benefit listed species and their habitats through careful consideration and project implementation. Actions associated with VRM will not directly impact Wyoming toad habitat. Potentially, a request for movement of a structure or project due to VRM classification out of a higher classification area to a lesser classified area might suggest the project be moved into Wyoming toad habitat. Impacts to Wyoming toad habitat by such moves would be precluded by the conservation measures. Therefore, implementing this program and excluding some activities and structures from designated view sheds may have a secondary positive effect of limiting disturbance to Wyoming toad habitat and could possibly lead to a beneficial effect on the Wyoming toad.

### Determination

Implementation of visual resource management actions, as presented in the Rawlins RMP (BLM 1990), may affect, but is **not likely to adversely affect** the Wyoming toad, due to **beneficial effects**. This determination is based on the fact that no surface disturbing activities occur under this program, and that if any surface disturbing activities do occur, the VRM management system would likely serve to minimize the impacts by reducing the amount of visible disturbance, and thereby likely reducing the amount of disturbance taking place in these habitats.

## Wild Horse Management

### Management Actions

The objectives of wild horse management are to protect, maintain, and control a viable, healthy herd of wild horses while retaining their free-roaming nature and to provide adequate habitat. There are three wild horse herd management areas (HMAs) within the Rawlins FO. They are the

Adobe Town HMA, the Lost Creek HMA, and the Stewart Creek HMA. Appropriate Management Levels (AMLs) for these areas are: Adobe Town, 700; Lost Creek, 70; and Stewart Creek, 150. These HMAs and AMLs were established in 1994 through analysis and interpretation of the results of extensive monitoring. The boundaries of the HMA were adjusted as a result of additional monitoring since 1994. Inventory, population monitoring, and wild horse management are the responsibility of the Rawlins FO. In addition, a portion of the Antelope Hills HMA is within the Rawlins FO. Habitat monitoring for this portion of the Antelope Hills HMA is the responsibility of the Lander FO. Herd management area plans for each of the three Rawlins HMAs will be revised and updated to reflect current policies and circumstances.

The Adobe Town HMA includes land within the administrative boundaries of the Rawlins and Rock Springs FOs. The northern boundary of the Adobe Town HMA corresponds to the southeastern boundary of the Salt Wells HMA in the Rock Springs FO. Included within the Adobe Town HMA is the Adobe Town Wilderness Study Area and all or portions of 14 grazing allotments. The AMLs for the two HMAs are unaffected by this maintenance action. None of these HMAs are located within or near potential habitat for the Wyoming toad.

### **Effects Analysis**

Wild horse management actions are not expected to have any impacts on reintroduced Wyoming toad populations or potential habitat because they are not located within or near primary or secondary habitat.

### **Determination**

Implementation of wild horse management actions, as presented in the Rawlins RMP (1990), would have **no effect** on the Wyoming toad or its habitats. Areas specifically addressed in the RMP do not include potential Wyoming toad habitat. As a result, management actions targeted at management of wild horses are not expected to directly benefit or adversely impact the Wyoming toad.

### **Wildlife Habitat and Fisheries Management**

#### **Management Actions**

There are 29 standard habitat types in the Rawlins FO, and they have been ranked by management priority into three categories. High-priority habitat types, which usually support a large number of wildlife species, are not common in the FO. Sound management is required to ensure maintenance or improvement of the vegetative composition and structure of moderate-priority habitat types, which are usually less important to wildlife but are more abundant than high-priority types. There is less vegetative diversity in low-priority habitat types. Because of their abundance and lower wildlife value, these habitat types can be more heavily used by conflicting resources without significant impacts to wildlife. In general, western boreal toad habitat is designated either as high- or medium-priority habitats. While the RMP identifies high- and medium-priority habitat types, it does not include specific management actions for these habitats.

The general objectives for wildlife habitat and fisheries management are to:

- Provide habitat quality adequate to support a natural diversity of wildlife and fisheries, including big game; upland game; waterfowl; non-game species; game fish; sensitive, threatened, and endangered species; and species of special management interest in Wyoming; as well as to assist in meeting the goals of established recovery plans.
- Maintain or improve vegetation condition and avoid long-term disturbance in high-priority standard habitat sites.
- Maintain or improve overall ecological quality, thus providing good wildlife habitat, within the constraints of multiple-use management in moderate- and low-priority standard habitat types.

There are 16 habitat management areas within the Rawlins FO. Site-specific management actions will be implemented in these areas to improve wildlife habitat. These site-specific management actions will be identified in existing, revised, or proposed HMPs. The HMPs will also address transplants or augmentations of endemic wildlife species. Wildlife and wildlife habitat inventory and monitoring will be implemented in all HMP areas, cooperative management areas, and other portions of the FO. These inventories and monitoring studies will conform to BLM policy and standards found in BLM manuals, Wyoming state office supplements, and Wyoming instruction memoranda. The estimated areas involved in management actions in HMP areas include 60 miles of streams (fisheries); 545 acres of reservoirs; 271,000 acres of raptor habitat; 243,000 acres of high-priority habitat (including wetlands and riparian zones); and crucial winter range for big game species as follows: antelope, 375,000 acres; bighorn sheep, 23,000 acres; deer, 288,000 acres; and elk, 153,000 acres.

In general, potential Wyoming toad habitats, such as open aquatic habitat and riparian habitat, are designated as high-priority habitats. While the RMP identifies high-priority habitat types, it does not include specific management actions for these habitats.

## Effects Analysis

The designation of some Wyoming toad habitat as high-priority habitat is not expected to result in any adverse effects to the Wyoming toad since no specific management actions have been developed for medium- and high-priority habitats. In addition, wildlife and fisheries management actions may benefit Wyoming toad habitat because riparian areas have been afforded medium to high-priority management status.

## Determination

Implementation of the wildlife habitat and fisheries resource management actions, as presented in the Rawlins RMP (1990), may affect, but is **not likely to adversely affect** the Wyoming toad or its habitats, due to **beneficial affects**. This determination is based on the overall management goals for medium- and high-priority habitats within the resource area under this program.

**Summary of Determinations**

**Table 2** is a summary of the effects determinations developed for each of the Rawlins RMP management actions.

**TABLE 2: SUMMARY OF DETERMINATIONS FOR THE RAWLINS RMP**

| <i>Resource</i>                                       | <i>Determination</i>   |
|---|--|
| Management of Areas of Critical Environmental Concern | No effect  |
| Cultural Resources Management                         | Not likely to adversely affect, due to discountable effects  |
| Paleontological Resources Management                  | Not likely to adversely affect, due to discountable effects  |
| Fire Management                                       | Not likely to adversely affect, due to discountable effects  |
| Forest Management                                     | No effect  |
| Lands Program Management                              | Not likely to adversely affect, due to discountable effects  |
| Livestock Grazing Management                          | Not likely to adversely affect, due to insignificant effects |
| Minerals Management                                   | Not likely to adversely affect, due to discountable effects  |
| Recreation Management                                 | Not likely to adversely affect, due to insignificant effects |
| Sensitive Plants Management                           | No effect  |
| Soil, Water, and Air Management                       | -----  |
| - Air Quality Management                              | No effect  |
| - Soil  | Not likely to adversely affect, due to discountable effects  |
| - Water Quality Management                            | No effect  |
| Visual Resource Management                            | Not likely to adversely affect, due to beneficial effects    |
| Wild Horse Management                                 | No effect  |
| Wildlife and Fisheries Management                     | Not likely to adversely affect, due to beneficial effects    |

## 4.0 CONSERVATION STRATEGIES

---

Implementation of the following BLM-Committed Conservation Strategies would serve to minimize potential impacts of the management actions provided in the Rawlins RMP. In addition to the existing conservation measures in the Rawlins RMP (items 1 through 3), the BLM has committed to implement conservation measures 4 through 15. The BLM will also consider implementing best management practices (BMPs) (items 16 through 28). The BMPs will be considered on a case-by-case basis at the project level, and are intended to further protect the species, its habitat, and aid in the recovery of the species.

### Existing Protections in the Rawlins RMP

1. The *Wyoming BLM Standard Mitigation Guidelines for Surface Disturbing Activities*, Appendix I (2)(d) (BLM 1990), requires any lessee or permittee to conduct inventories or studies in accordance with BLM and USFWS guidelines to verify the presence or absence of threatened or endangered species before any activities can begin on site. In the event the presence of one or more of these species is verified, the operation plans of a proposed action will be modified to include the protection of the species and its habitat, as necessary. Possible protective measures may include seasonal or activity limitations, or other surface management and occupancy constraints (BLM 1990).
2. Before any land disposal action can be taken, BLM will consider each individual tract and will include public involvement. The preferred method of disposal or acquisition of lands by BLM will be through exchange (BLM 1990).
3. The BLM will coordinate and cooperate with owners of adjacent properties, interested individuals, organizations, and agencies when preparing plans to implement ORV designations (BLM 1990).

### Conservation Measures Committed to by BLM

4. Rawlins FO biologists will conduct or oversee surveys (following established protocol), or assume species presence, for all likely affected Wyoming toad habitat, or potential habitat prior to authorizing surface disturbing activities. Proposed projects will be designed and locations selected to minimize disturbances to species and habitat and if the avoidance of adverse affects is not possible, the BLM will re-initiate consultation with the USFWS. Projects will not be authorized during critical time periods to reduce impacts to this species (*supersedes #1 above in Existing Protections*).
5. When project proposals are received, BLM will initiate coordination with the USFWS at the earliest possible date so that both agencies can advise on project design. This should minimize the need to redesign projects at a later date to include Wyoming toad conservation measures, determined as appropriate by the USFWS.
6. The BLM will participate with development of species specific recovery plans in coordination with the USFWS and other agencies. Populations and habitat on BLM-administered lands will be monitored to determine if recovery objectives are being met.
7. The BLM will place a No Surface Occupancy (NSO) stipulation on any new leases on sites where toads are released. These Wyoming toad release sites will be withdrawn from mineral claims and development under the new regulations developed under 43 CFR 3809.

8. Roads that have the potential to impact the Wyoming toad and are not required for routine operations and maintenance of developed and abandoned projects will be reclaimed as directed by the BLM. As necessary, these roads will be permanently blocked, re-contoured, reclaimed, and re-vegetated to benefit habitat for the Wyoming toad.
9. Construction activities located within potential and/or known Wyoming toad habitat will be minimized through construction site management by using previously disturbed areas, using existing ROWs, and designating limited equipment/materials storage yards and staging areas.
10. Construction activities located within 500 feet of open water and/or 100 feet of intermittent or ephemeral channels in potential and/or known habitat for the Wyoming toad will be avoided. Stream crossings for roads and pipelines will be constructed during the period of lowest flow (i.e., late summer or fall) and perpendicular to flow. No surface water or shallow ground waters in connection with surface waters will be utilized for proposed projects. Proper erosion control techniques, such as water bars, netting, rip-rap, and mulch will be implemented.
11. Riparian habitats will be maintained, improved or restored to provide wildlife habitat, improve water quality and enhance forage conditions. When planting or seeding vegetation in areas identified as Wyoming toad habitat, only native species will be selected.
12. Pesticide applications and biological control agents will be allowed within known Wyoming toad habitat on a case-by-case basis. Where possible, biological control of pests would be used rather than chemical control. Where needed, pesticide use will be applied by hand within ¼-mile of habitat and only in cases where insect or weed outbreaks have the potential to degrade area ecological health. Outside the ¼-mile buffer, aerial application of pesticides will be carefully planned to prevent drift. The BLM will work with the Animal and Plant Health Inspection Service (APHIS) and the USFWS to select a pesticide and method of application that will most effectively manage the infestation and least affect the species.
13. The FO policy for OHV restrictions to existing/designated roads and vehicle routes or closures, if required, will be implemented to protect Wyoming toad populations and habitat (*supersedes #3 above in Existing Protections*).
14. If a Wyoming toad is documented during project construction activities, project activities will cease until sufficient protection measures are developed by the BLM and in coordination with the USFWS. In the event that a Wyoming toad is found, killed, or injured during project activities, or a dead individual is encountered, the USFWS Wyoming Field Office (307-772-2374) and the USFWS Law Enforcement Office (307-261-6365) will be notified within 24 hours of discovery.
15. BLM-administered public lands that contain identified habitat for the Wyoming toad will not be exchanged or sold, unless it benefits the species (*supersedes #2 above in Existing Protections*).

### **Best Management Practices**

16. Train enforcement personnel on protection of the Wyoming toad and its habitat, its status, and current threats to its existence.
17. Educate resource specialists, rangers, and fire crews about the Wyoming toad and its habitat, particularly for fire suppression projects planned for this general area.
18. Educate resource specialists and promote practices to minimize the spread of Wyoming toad diseases including chytridiomycosis.

19. Develop and prioritize management practices through a steering committee and assist the USFWS with research.
20. Establish monitoring, biological, ecological, and life history studies as funding and staffing allow, such as studies regarding monitoring the success of reintroduction efforts and occurrence of disease in new Wyoming toad populations.
21. Monitor primary and secondary Wyoming toad habitats for changes in water quality.
22. Linear crossings, such as pipelines or roads across the above areas, should be considered on a case-by-case basis with intensive management to protect habitat for the Wyoming toad. Intensive management may vary from year to year and includes the use of proper distance restrictions, seasonal or timing restrictions, rehabilitation standards, and use of BMPs.
23. Buffers should be established around water bodies and wetlands within in the Laramie basin for pesticide use (taking into account their toxicity, intended use, and method of application) until areas are searched for two consecutive years and cleared (no toads present in either year).
24. The BLM should work towards developing reintroduction sites in coordination with the USFWS and WGFD and maintain the integrity of these sites for the survival of the toad.
25. Coordinate with the USFWS and private landowners to ensure that the toad and its habitat are adequately protected.
26. When applicable, pursue withdrawals in habitat where there is identified historic and/or current toad breeding locations, as well as in areas where toads have been released. In addition, implementing NSOs to these areas may be required to achieve toad recovery objectives.
27. Develop recreational activity restrictions in accessible areas located within or adjacent to primary or secondary Wyoming toad habitats.
28. Establish grazing restrictions within and adjacent to primary and secondary habitat as well as the Mortenson Lake NWR and Hutton Lake NWR.

## 5.0 REFERENCES

---

- Baxter, G. T. 1987. Personal Observation. Laramie, Wyoming 82070. Cited in the Draft Endangered Species Index System. Draft Taxonomy for the Wyoming toad. Species ID ESIS206001. <http://fwie.fw.vt.edu/WWW/esis/lists/e206001.htm>. Dated March 14, 1996.
- Bureau of Land Management (BLM). November 1990. Record of Decision and Approved Resource Management Plan for Great Divide Resource Area. Great Divide Resource Area. Rawlins District. Bureau of Land Management, Rawlins, Wyoming.
- Jennings, M., R. Beiswinger, S. Corn, M. Parker, A. Pessier, B. Spencer, and P. S. Miller (editors). 2001. Population and Habitat Viability Assessment for the Wyoming toad (*Bufo baxteri*). Final Workshop Report. Apple Valley, MN: IUCN/SSC Conservation Breeding Specialist Group.
- Jennings, M. 2002. Personal communication regarding status of recovery plan for Wyoming toad. Telephone conversation on April 11, 2002.
- Parker, J. M. 2000. Thesis. Habitat Use and Movements of the Last Wild Population of Wyoming Toads (*Bufo baxteri*). University of Wyoming, Laramie, Wyoming.
- Samson, F., F. Knopf, and W. Ostlie. 1999. Grasslands. *In* Status and Trends of the Nation's Biological Resources. United States Geological Survey [Web Page]. Located at <http://biology.usgs.gov/s+t/SNT/index.htm>. Accessed: December 17, 2004.
- U.S. Fish and Wildlife Service (USFWS). 1984. Final rule to classify the Wyoming toad as endangered. Federal Register 49:01992-01994.
- U.S. Fish and Wildlife Service (USFWS). 1991. Wyoming Toad Recovery Plan. U.S. Fish and Wildlife Service, Denver, Colorado. 28 pages.
- U.S. Fish and Wildlife Service (USFWS). 2001. Annual Narrative Report. Calendar Year 2001. Arapahoe National Wildlife Refuge, Bamforth, Hutton Lake, Mortenson Lake, and Pathfinder National Wildlife Refuges administered from Walden, Colorado.