

# Environmental Assessment

## CertainTeed Gypsum Horse Center II Plan of Operations (WYW-165917) and Amendment to WDEQ Permit 358C for Gypsum Mining

DOI-BLM-WY-WR02-2011-0023-EA

August 2011

BLM

Cody Field Office, Wind River/Bighorn Basin District, Wyoming



The BLM's multiple-use mission is to sustain the health and productivity of the public lands for the use and enjoyment of present and future generations. The Bureau accomplishes this by managing such activities as outdoor recreation, livestock grazing, mineral development, and energy production, and by conserving natural, historical, cultural, and other resources on public lands.

**BLM/WY/PL-11/049+1330**

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**Table of Contents**

Table of Contents..... 3

1.1 Background..... 5

1.2 Purpose and Need ..... 5

1.3 Issues identified during scoping ..... 7

1.4 Relationship to Statutes, Regulations, Policies, Plans or Other Environmental Analyses ..... 7

2.0 PROPOSED ACTION AND ALTERNATIVES ..... 8

2.1 Alternative I – No Action ..... 8

2.2. Alternative II – Proposed Action ..... 8

3.0 AFFECTED ENVIRONMENT ..... 12

Introduction..... 12

3.1 Air Quality ..... 13

3.2 Cultural Resources and Native American Religious Concerns ..... 13

3.3 Water Quality (Surface and Ground)/Floodplains..... 15

3.4 Wetlands/Riparian/Aquatic Resources ..... 15

3.5 Geology/Minerals ..... 15

3.6 Paleontological Resources ..... 16

3.7 Soils ..... 16

3.8 Vegetation..... 17

3.9 Invasive, Non-native Plant Species ..... 17

3.10 Wildlife/Migratory Birds/Raptors ..... 17

3.11 Threatened & Endangered Species/ BLM Sensitive Species ..... 19

3.12 Livestock Grazing and Range..... 19

3.13 Recreation ..... 20

3.14 Socioeconomics ..... 20

4.0 ENVIRONMENTAL EFFECTS ..... 21

4.1 Direct and Indirect Impacts ..... 21

4.1.1 Alternative I - No Action..... 21

4.1.2 Alternative II - Proposed Action..... 22

4.2 Mitigation/Monitoring/Stipulations..... 30

4.2.1 Mitigation and Monitoring ..... 30

4.2.2 Stipulations ..... 32

4.3 Residual Impacts..... 34

4.4 Cumulative Impacts ..... 35

4.4.1 Past, Present, Reasonably Foreseeable Future Actions, and Incremental Effects ..... 35

5.0 List of Preparers:..... 43

6.0 U.S. Bureau of Land Management – Cody Field Office ..... 43

7.0 Consultation.....	43
8.0 References.....	43
Appendix A – Climate.....	44
Appendix B – Air Quality Data.....	46
Appendix C – BLM seed policy in IM-2006-073 .....	47

## 1.0 INTRODUCTION

### **1.1 Background**

The Bureau of Land Management (BLM) has received a Plan of Operations Amendment (WYW-165917) from CertainTeed Gypsum, seeking approval to expand their mining operations located five miles south of Cody, Wyoming. Prior to submitting the Plan of Operations, CertainTeed Gypsum collected baseline data on vegetation, wildlife, soils, overburden, and hydrology. This Plan of Operations would add a total of 51.9 acres of disturbance to their existing Wyoming Department of Environmental Quality – Land Quality Division (WDEQ-LQD) Permit 358C located in Park County, Wyoming, over the life of the operation (see map 1). The 51.9 acres of proposed mining would be located entirely on federal lands, on the unpatented Half Moon and Horse Center claims within the amended WDEQ State Permit 358C mine area. CertainTeed Gypsum’s mine originally began operating in 1961 and has been owned by multiple companies since that time.

### **1.2 Purpose and Need**

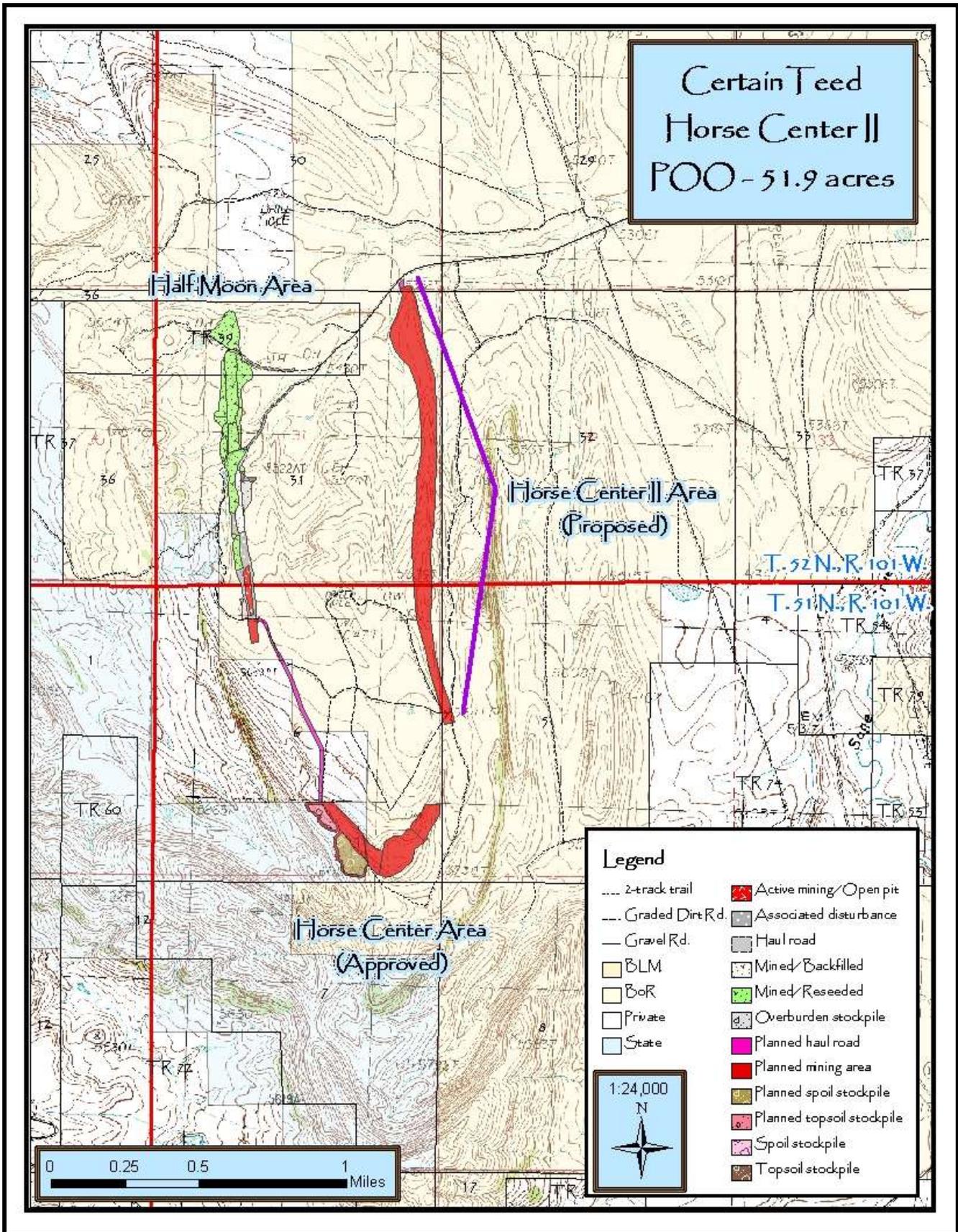
The Federal Land Policy and Management Act of 1976 (43 USC 1732) requires the Secretary to prevent unnecessary or undue degradation of the public lands from operations conducted under the Mining Laws (1872), as amended. BLM regulations at 43 CFR 3809 were developed to prevent unnecessary or undue degradation, and require that claimants/operators mining on public (BLM) lands submit a Plan of Operations, post a reclamation bond with the State of Wyoming and the BLM, obtain approval prior to conducting operations, and adhere to the performance standards described in 43 CFR 3809.420.

CertainTeed Gypsum has submitted a Plan of Operations seeking approval to expand their gypsum mining operations. In accordance with the rights of entry and use under the Mining Laws as amended, and the requirements in the regulations at 43 CFR 3809, the BLM must review the Plan of Operations to determine whether it is adequate to prevent unnecessary or undue degradation.

### ***Decision to be Made***

The Authorized Officer (AO), in this case the BLM-Cody Field Manager, must determine whether or not the Proposed Action with attached stipulations, mitigation and monitoring measures, or the No Action Alternative, could result in significant impact to the human environment. If not, this determination would be documented in a “Finding of No Significant Impact” (FONSI) as a part of the EA. If impacts are determined to be significant, preparation of an acceptable Environmental Impact Statement would be necessary, prior to Plan of Operations approval.

- (1) Approve the Plan of Operations as submitted, with necessary stipulations, mitigation and monitoring measures determined during review;
- (2) Disapprove/withhold approval of the Plan of Operations because it would result in unnecessary or undue degradation.



**Map 1. CertainTeed Gypsum's Horse Center II Plan of Operations area (Planned mining area and Planned haul road).**

### **1.3 Issues identified during scoping**

Internal scoping was conducted in the BLM Cody Field Office beginning in March 2009, and concluding in June 2011. No mine plan revisions were requested during internal scoping. No other unusual environmental issues were identified relative to the proposed mine plan. Internal scoping resulted primarily in the following BLM specialist concerns:

- 1) Air quality could be affected by the dust and exhaust generated by the burning of fossil fuels associated with the proposed gypsum mining.
- 2) The proposed gypsum mining could increase sedimentation and water run-off into surface and ground water as well as into riparian areas and floodplains.
- 3) Revegetating areas disturbed by mining would be difficult due to changes in post-mining soil characteristics, the area's dry climate, and the presence of invasive weeds.
- 4) Invasive weed species could spread through the proposed mining process.
- 5) A golden eagle nest is present in the area and nesting success could be affected by the proposed mining disturbance.
- 6) The disturbance caused by the proposed gypsum mining would affect habitat used by sage-grouse; an active sage-grouse lek is located within one mile of the proposed mine area.
- 7) Gypsum mining would affect wildlife habitat and use in the proposed mining area.
- 8) Gypsum mining would increase the number of roads into the proposed mining area.
- 9) An allotment boundary fence runs through part of the mine area and is proposed to be mined through; the fence would need to be maintained at the time livestock are grazing and after the completion of mining, so that trespass livestock issues wouldn't evolve.
- 10) The proposed mining would cause a temporary loss of forage for livestock and wildlife.

### **1.4 Relationship to Statutes, Regulations, Policies, Plans or Other Environmental Analyses**

This Plan of Operations has been reviewed to determine if the Proposed Action conforms with the approved Cody Resource Management Plan (RMP)/Land Use Plan relative to locatable minerals actions, as required by 43 CFR 1610.5. The Cody RMP provides that, except for specific areas identified as closed, the planning area is open to staking of mining claims and operation of the mining laws for locatable minerals (pg. 21, Record of Decision (ROD)/RMP). The area proposed for new mining under this Plan Modification has not been withdrawn from mineral entry, and is therefore open to mining claim location, and subsequent mineral development, after proper review and approval. The Proposed Action is in conformance with the Cody RMP ROD, signed November 8, 1990.

The No Action Alternative (Alternative D) would not be against the mining laws, and would require an amendment to the Cody RMP as it would not be in conformance with the RMP/ROD. The BLM is required under the mining laws, and regulations at 43 CFR 3809, to review mining Plans of Operation for compliance with the surface management regulations, and to ensure that the mine plan would not cause unnecessary and undue degradation. *Mining laws* means the Lode Law of July 26, 1866, as amended (14 Stat. 251); the Placer Law of July 9, 1870, as amended (16 Stat. 217); and the Mining Law of May 10, 1872, as amended (17 Stat. 91); as well as all laws supplementing and amending those laws, including the Building Stone Act of August 4, 1892, as amended (27 Stat. 348); the Saline Placer Act of January 31, 1901 (31 Stat. 745); the Surface Resources Act of 1955 (30 U.S.C. 611–614); and the Federal Land Policy and Management Act of 1976 (43 U.S.C. 1701 *et seq.* ).

The WDEQ-LQD administers and enforces all state statutes and regulations on land disturbances dealing with mining and reclamation within Wyoming. The WDEQ-LQD has the authority to require permitting and licensing of all operator actions of surface mines.

Each mine and mine/permit area is required by statute and regulation to be covered by a reclamation bond in the event the operator is unable to fulfill reclamation requirements. CertainTeed Gypsum is covered by such a bond, which is reviewed annually by the WDEQ-LQD and the BLM to ensure it is adequate to cover reclamation of all mining disturbance. The WDEQ-LQD's authority derives from the Wyoming Environmental Quality Act. The WDEQ-LQD permits non-coal mines under the LQD Non-Coal regulations which are related to Title 35, Article 4 of the Wyoming Environmental Quality Act (Wyoming Statute (W.S.) 35-11-401 through 437).

If implementation of the proposed action would result in the placement of fill or dredge material in a pond, wet meadow, stream channel, or any other water feature, CertainTeed Gypsum would coordinate with the U.S. Army Corps of Engineers (COE) to determine if the feature is a "jurisdictional" wetland or a "Water of the U.S." and whether a Clean Water Act (CWA) Section 404 Permit would be needed. The WDEQ-WQD is responsible for administering Section 401 of the CWA in the State of Wyoming. According to Federal and State law, activities that will result in surface disturbance in excess of one acre, require a Storm Water Discharge Permit (SWDP), and associated Storm Water Pollution Prevention Plan (SWPPP) from the State of Wyoming. The mining plans analyzed in this EA propose to disturb more than one acre, and therefore the project proponent (CertainTeed Gypsum) coordinated with the WDEQ-LQD, to obtain the necessary SWDP(s) and associated SWPPP(s).

## **2.0 PROPOSED ACTION AND ALTERNATIVES**

### **2.1 Alternative I – No Action**

The No Action Alternative would be that the BLM would not approve CertainTeed Gypsum's Horse Center II Plan of Operations. CertainTeed Gypsum's proposed mining in the proposed area would not be approved, no mining would occur, and impacts to resources would stay as current condition. This alternative would result in non-conformance with the Cody RMP and 43 CFR 3809 regulations.

### **2.2. Alternative II – Proposed Action**

#### **(1) Operator Information (as per 43 CR 3809.401(b)(1)):**

The operator for the proposed Plan of Operations is CertainTeed Gypsum.

#### **(2) Description of operations (as per 43 CFR 3809.401(b)(2)):**

The Horse Center II Plan of Operations would have an eight-year mine life. This Plan proposes surface mining for gypsum that would disturb a total of approximately 51.9 acres of public land, including associated disturbance, in T. 51 N., R. 101 W., Sections 5 and 6, and T. 52 N., R. 101 W., Sections 30 and 31, Park County, Wyoming. This Plan area lies approximately five miles south of Cody, Wyoming where CertainTeed Gypsum's processing plant is located. Approximately 6 acres per year would be disturbed over the life of the mine. The proposed mining would begin at the north end of the proposed area and progress south.

The mine would be an open pit operation mining steeply-dipping gypsum seams. Test drilling and previous mining in the same structure indicated a maximum mining depth of approximately 60 feet, beyond which, the presence of anhydrite and salts make the gypsum uneconomical to mine.

Topsoil would be stripped using dozers and scrapers. When necessary, topsoil would be placed in temporary stockpiles and marked with topsoil signs. Small berms would be constructed around the bottoms of topsoil stockpiles to prevent erosion and loss of soil. Topsoil stockpiles left in place for more than one year would be seeded with the Horse Center II seed mix described in the Reclamation Plan below. Most topsoil would be placed directly on backfilled and contoured portions of the reclaimed pit through castback mining.

After the completion of topsoil stripping, dozers and scrapers would be used to remove the softer, upper layers of overburden along the outcrop. In locations with harder overburden, overlaying layers would be drilled and shot with explosives. The dozers and scrapers would then resume stripping the overburden to a depth of up to 40 feet. During the initial stages of operation, topsoil and overburden would be stripped and stored out-of-pit.

Once exposed, the gypsum surface would be cleaned, then drilled, and shot with explosives. All blasting would be done in accordance with applicable State and Federal regulations. The uppermost, 30-foot seam and an intermediate, 14-foot seam could be blasted and brought directly to the wallboard plant. A five-foot intermediate seam and the bottommost 24-foot seam are composed of smaller gypsum beds interbedded with shale. After these seams would be blasted, the material would be run across a non-motorized screen. When screened, the shale tends to fragment and pass through the screen. The larger gypsum material left behind would be crushed onsite and then hauled as ore to the wallboard plant. The reject material would be used as backfill or in-pit road base. Some of the finer material could be rescreened and sold for coal bed methane well-water treatment.

After enough of the recoverable portion of the gypsum seam would be removed (after approximately one year), overburden would be placed directly back into the mined portion of the pit. At that point, the mining operation would consist of a series of stages; stripping topsoil and overburden, mining the gypsum, backfilling with overburden, equipment staging, and final reclamation. The mine would operate beginning from the north end. Highwalls would be bermed.

Access to the mine would be from Highway 120, west across the old, existing oilfield road across BLM-managed land, then south on the proposed road to the mine area. The proposed road to the mine area would be approximately 600 feet long and would contain two 30-inch culverts where it crosses the ephemeral drainage. Roads would be built and culverts would be installed according to BLM Road Standards. Haul roads would be bermed. Gypsum would be hauled from the proposed mine, to the CertainTeed Gypsum wallboard plant located on the north side of the town of Cody.

Markers would be erected to delineate the plan area. Signs would be posted at all entrances with warnings describing the mining and blasting activity. Existing livestock fencing would remain except where current mining would occur. New fencing and/or cattle guards would be placed as needed to protect livestock, wildlife, and humans from hazardous operations. A lockable steel gate would be constructed across the main access road to the permit area.

All blasting would be accomplished by blasters certified as shotfirers in the State of Wyoming and would be conducted in accordance with all relevant Federal, State, and local regulations. The following blasting procedures would be used at the site:

- (1) The blaster in charge would ensure all personnel and equipment are removed to a safe location prior to blasting. The blaster would also coordinate with the truck drivers to ensure the trucks are not driving into the blast area.

- (2) The audible warning procedure would be posted at the entrance to the mine, and the warnings would be sounded prior to the blast.
- (3) Blasting warning signs would be posted.
- (4) All explosives and detonators would be handled in accordance with manufacturer's instructions.
- (5) Before any persons would be allowed to return to the blast area, the blaster would perform an inspection to determine that all charges exploded.
- (6) All blasts would be designed to minimize the fly-rock and air-blast. Hold directions, spacing, delay sequence, and explosive weight-per-delay would be considered. Stemming would be maximized and maintained at a minimum of twelve times the hole diameter.
- (7) The scale-distance equation from Chapter 6, Section 4 of the WDEQ-LQD Coal Rules and Regulations would be used to calculate the maximum allowable charge weight of explosives to be detonated in any eight millisecond delay period.
- (8) With the exception of emergency situations, shots would only be fired between sunrise and sunset hours.

Stationary liquid storage containers would be placed within secondary containment systems capable of holding at least ten percent more liquid than the capacity of the container. Containment methods may include berms or incised pits lined with impermeable material. Fuel trucks would be parked in bermed pits or in locations that would control spills.

**(3) Reclamation Plan (as per 43 CFR 3809.401(b)(3):**

The mine reclamation plan was designed to minimize any disturbance footprint that would be created by the mining process and to restore the land to a condition that would be at least as good as it was prior to the proposed mining disturbance. Post-mining land uses would be livestock grazing and wildlife habitat.

The initial mining operations for the area would require stockpiling topsoil and overburden out of pit. After approximately one year of mining, enough area would have been mined that all the subsequent overburden would be placed directly into backfill. Shortly after the backfill begins, topsoil would be either directly placed or stockpiled in previously disturbed areas.

Due to the low overburden to ore strip ration, reclamation would include backfilling the excavation by dozing material from the ridge on the east side of the outcrop into the pit. The resulting topography would be slightly lower than the pre-mine contours. The backfilling operation would be kept as close as practical to the active mine area. All slopes would be returned to a 3:1 angle or less, which in some cases, would be less steep than some of the ridges natural slopes.

By the fourth year of operation, the mine would have advanced into an area in which the previous out of pit spoil would be placed back into the pit as backfill. At that point, most of the stockpiled topsoil would also be used for reclamation, leaving only the staging area and the road unreclaimed at the north end of the proposed mine area. When possible, topsoil would be cast back, or placed directly from the stripped area onto recontoured areas. The topsoil would be approximately six to eight inches thick, based on the pre-mine baseline soil estimates of available, suitable topsoil. Should the stripping process uncover larger amounts of topsoil, the placement thickness would increase accordingly.

The area would be drill seeded on the contour in the fall or spring (after September 15 and before May 15). The optimum seed depth would be between one-quarter and one-half inch below the surface. Where drill seeding would not be feasible, the area would be broadcast seeded at double the seeding rates listed in the seed mix. Most of the mining disturbance would be on or near the gypsum outcrop where sagebrush cover is less than five percent.

In the interest of improving sage-grouse habitat, Wyoming big sagebrush would be hand-broadcast throughout the reclamation at a rate of one pound Pure Live Seed (PLS) per acre. The following seed mix would be used in the Horse Center II area:

<b>Seed Species</b>	<b>Rate-lb PLS/acre</b>
‘Covar’ Sheep Fescue ( <i>Festuca ovina</i> )	1.0
‘Critana’ Thickspike Wheatgrass ( <i>Elymus lanceolatus lanceolatus</i> )	2.0
Streambank Wheatgrass ( <i>Elymus lanceolatus riparius</i> )	4.0
‘Secar’ Bluebunch Wheatgrass ( <i>Pseudoroegneria spicata</i> )	4.0
Indian Ricegrass ( <i>Oryzopsis hymenoides</i> )	1.0
‘Natrona’ Fourwing Saltbush ( <i>Atriplex canescens</i> )	1.0
Wyoming Big Sagebrush ( <i>Artemisia tridentata</i> )	1.0
Scarlet Globemallow ( <i>Sphaeralcea coccinea</i> )	0.25
Annual Sunflower ( <i>Helianthus annuus</i> )	1.0
Rocky Mountain Beeplant ( <i>Cleome serrulata</i> )	0.25
	15.5 PLS lb/acre

Seedlings of woody species would be planted to replace any removed during the mining. Erosion would initially be controlled by adequate slope angles. After the topsoil would be replaced, the area would be scarified along contour to help collect precipitation and reduce erosion. The area would be seeded in a timely manner to use plant growth to reduce erosion. Oats would potentially be planted with the seed mix at up to 20 pounds per acre to provide a quick-growing nurse crop that would stabilize the soil. Sediment fences and rock check dams would be used in drainage areas as needed to trap sediment. Rock would be placed in the bottom of the drainages as rip-rap where necessary for erosion control.

Noxious weed encroachment on reclaimed areas would be controlled by CertainTeed Gypsum. On BLM-managed public lands, a Pesticide Use Permit (PUP) and written permission would be obtained from the Authorized Officer prior to the use of herbicides. Cheatgrass spraying, if necessary, would be applied in late summer or early fall using BLM-approved chemicals at BLM-approved rates using calibrated spray tank, truck, backpack sprayer, and/or ATV sprayer. All label restrictions would be followed, and a PUP would be submitted to the BLM-CYFO prior to application. The use of these pesticides and their application on cheatgrass was analyzed in the Vegetation Treatments Using Herbicides on Bureau of Land Management Lands in 17 Western States Programmatic EIS (2007).

The mine road would remain in place through the area already disturbed by mining throughout the operation. While most of the disturbance would be reclaimed, the road would remain in use through the completion of mining operations, as well as to provide access to the already permitted Horse Center Plan area at the south end of the Horse Center Anticline. During final reclamation of the haul road, the culverts placed in the north drainage would be removed. The channel would potentially be armored to prevent additional erosion. The banks would be restored to approximate original condition and the disturbed portions of the channel would be seeded.

**(4) Monitoring Plan (as per 43 CFR 3809.401 (b)(4)):**

A CertainTeed Gypsum representative would inspect the mine site at least twice a month during operating hours. The representative would check all erosion control structures and look for evidence of runoff per CertainTeed Gypsum’s Storm Water Pollution Prevention Plan (SWPPP) and Stormwater Permit, and check general mine safety. During the inspection, the representative would inspect highwalls, rock faces, and stockpiles for stability.

The representative would arrange for any deficiencies to be corrected. The representative would also inspect the mine and reclamation areas for weeds, and arrange for weed control, using BLM-approved herbicides and methods found in the BLM Programmatic Environmental Impact Statement, *Vegetation Treatments using Herbicides in 17 Western States* (2007). Mine contractors would designate personnel to perform daily safety and environmental checks.

The golden eagle nest site east of the proposed mine area would be monitored for nesting eagles. Should eagles nest at the site, CertainTeed Gypsum would work with the U.S. Fish and Wildlife Service (USFWS) to protect the site. CertainTeed Gypsum would coordinate with the Wyoming Game and Fish Department to ensure monitoring of the three sage grouse leks near the proposed mine area. CertainTeed Gypsum would also conduct annual migratory bird nesting surveys; the USFWS and the BLM would be consulted if any migratory birds would be found.

**(5) Interim Management Plan (as per 43 CFR 3809.401(b)(5)):**

Prior to any temporary closure, CertainTeed Gypsum would stabilize any excavations or workings and ensure that all appropriate erosion controls would be in place. Highwalls or stockpile slopes that show signs of instability or potential failure would be reduced or filled against to angle-of-repose. Any deleterious overburden would be properly contained and covered. Arrangements would be made for the removal of powder magazines, petroleum product containers, and other potentially harmful materials. During any temporary closures, a CertainTeed Gypsum representative would inspect the mine site at least once each quarter. The representative would check all erosion control structures, look for evidence of runoff per CertainTeed Gypsum’s SWPPP and Stormwater Permit. The representative would inspect highwalls, rock faces, and stockpiles for stability, as well as the entire mine site for weeds. The representative would arrange for any deficiencies to be corrected. The BLM and WDEQ-LQD would be notified in writing prior to any temporary closures.

**3.0 AFFECTED ENVIRONMENT**

**Introduction**

This chapter presents the potentially affected existing environment (i.e., the physical, biological, social, and economic values and resources) of the impact area as identified during scoping and/or the Interdisciplinary Team process. This chapter provides the baseline for comparison of impacts/consequences described in Chapter 4.

Resource issues or concerns, which may be affected by the proposed action, and are further described in this EA, are presented in Table 1 (below).

<b>Table 1.</b>	
<b>Resource, Issue, and/or Concern</b>	<b>May Affect</b>
Air Quality	X
Cultural Resources and Native American Religious Concerns	X
Water (Surface and Ground)/Floodplains	X
Wetlands/Riparian/Aquatic Resources	X
Geology/Minerals	X
Paleontological Resources	X
Soils	X
Vegetation	X

<b>Table 1.</b>	
<b>Resource, Issue, and/or Concern</b>	<b>May Affect</b>
Invasive, Non-native Plant Species	X
Wildlife/Migratory Birds/Raptors	X
Threatened & Endangered/ BLM Sensitive Species	X
Livestock Grazing and Range	X
Recreation	X
Socioeconomics	X

### **3.1 Air Quality**

No site-specific air quality data are available from the Horse Center II area; however, air quality in the area is considered to be good, and is in compliance with state and national ambient air quality standards. The air-shed within the Horse Center II Plan area is classified as Class II, which allows concentrations of some air pollutants to increase to accommodate regional economic development.

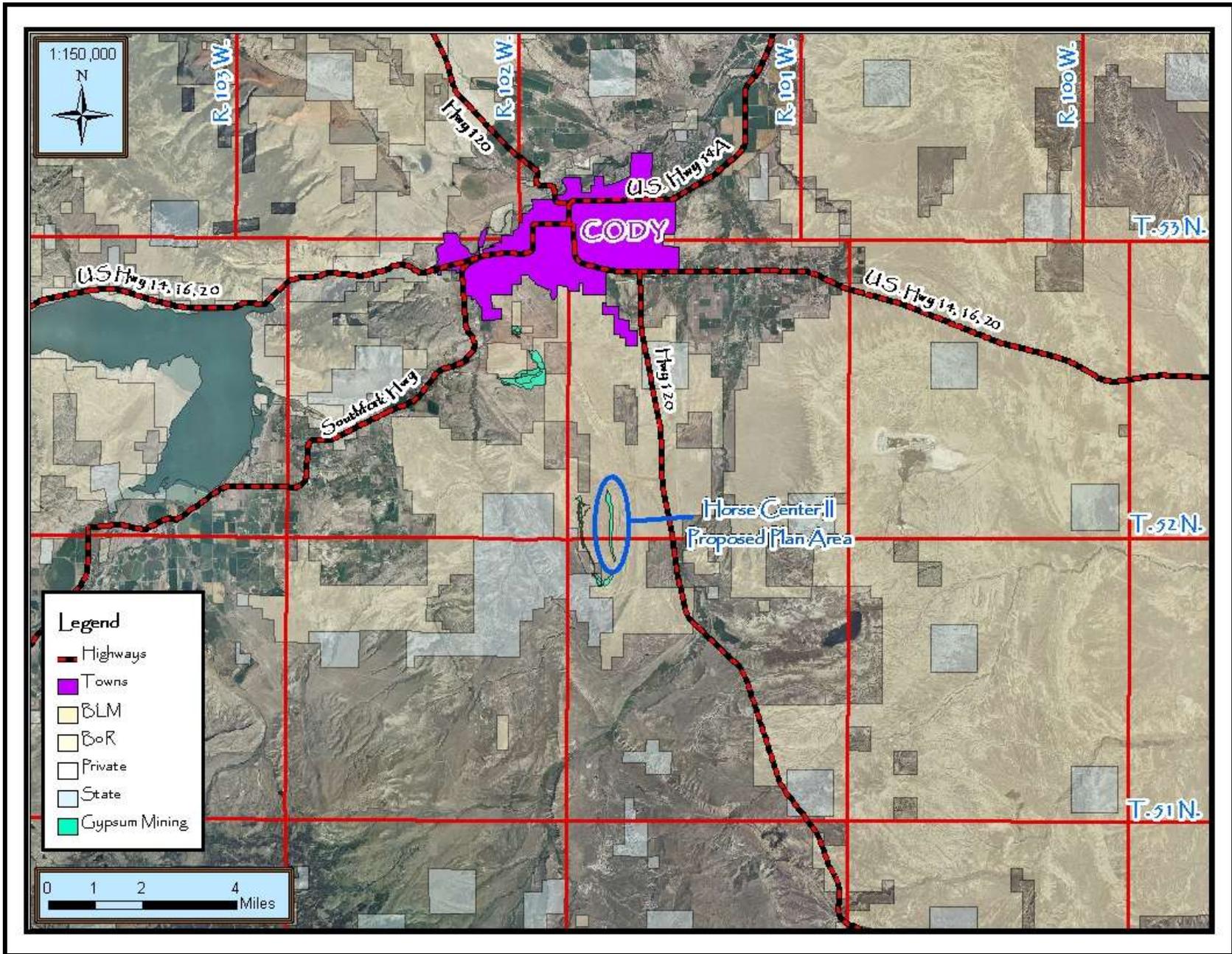
The primary air-borne pollutant in the area is Particulate Matter (PM) in the form of fugitive dust (uncontrolled wind-carried particulates) generated from natural and human sources. Particulate matter includes dust, soot and other tiny bits of solid materials that are released into and move around in the air. Particulates are produced by many sources, including burning of gasoline and diesel fuels, incineration of garbage, mixing and application of fertilizers and pesticides, road construction, industrial processes such as steel making, mining operations, oil and gas fields, agricultural and forest burning, and operation of fireplaces and woodstoves. Emission levels in northwest Wyoming are much lower than levels in highly developed and industrialized areas.

Other contaminants that may be present in trace to small amounts include hydrogen sulfide (H<sub>2</sub>S), sulfur dioxide, nitrogen oxide, carbon dioxide, and vaporous hydrocarbons. Visibility in the region is typically very good (>70 miles) and fine particulates (PM) are generally considered to be the main source of visibility degradation. Additional climate data can be found in Appendix A and additional air quality data can be found in Appendix B.

### **3.2 Cultural Resources and Native American Religious Concerns**

A Class III cultural inventory was conducted of the proposed project area by Archaeological Energy Consulting; the cultural contractor's report was reviewed by the BLM – Cody Field Office Archaeologist in June 2011. Two prehistoric sites and three historic site were found, which were determined not to be eligible for nomination to the National Register of Historic Places according to the 2011 National Historic Preservation Act compliance document provided by the Cody Field Office Archeologist who reviewed this Plan of Operations. The Class III report was found to meet the Secretary of the Interior's Standards for Archaeology and Historic Preservation, and resulted in a No Effect determination in accordance with the Wyoming State Protocol between the BLM State Director, and the Wyoming State Historic Preservation Office.

The area under consideration to be disturbed contains no known or identified areas or locations of religious or cultural concern to Native Americans.



Map 2. Lands surrounding the CertainTeed Gypsum Horse Center II Plan area.

### **3.3 Water Quality (Surface and Ground)/Floodplains**

The watersheds surrounding the proposed plan area are typical of the mid-elevations in the arid west, as they support a shrub steppe vegetation type and contain topography shaped by fluvial erosion. Water flowing from these watersheds form Spring Creek, an ephemeral drainage that includes some water from an irrigation ditch, which flows into Sage Creek approximately eight miles downstream of the proposed mine area. Sage Creek flows into the Shoshone River approximately two and a half miles below the confluence of Spring Creek and Sage Creek. Cody has an annual mean precipitation of 10.52 inches, of which roughly 50 percent falls between April and July, the majority as rain showers and thunderstorms. Flow in all channels results from precipitation within the watershed. Following summer rains, all channels will flow. However, without significant precipitation falling, the channels will be dry for most of the year. Infrequent high-magnitude storms will cause large amounts of water to flow down these channels. Most of the ephemeral streams are well-defined single channels with steep banks. The channel beds contain coarse to fine material such as cobble, sand, and silt; vegetation such as Wyoming big sagebrush, greasewood, and bunchgrasses are present in the banks. Information obtained from the State Water Engineer's Office online database indicates that there are several reservoirs that have current water rights within one mile of the proposed Horse Center II area. The database indicates that there are no ground water wells located within a one mile radius.

### **3.4 Wetlands/Riparian/Aquatic Resources**

There are no wetlands located within the proposed mining area. There are areas along unnamed, ephemeral drainages around the proposed mining area that support riparian-wetland vegetation. These drainages are located downstream of the proposed mining area and flow into Spring Creek and Sage Creek, which have well-developed riparian and wetland areas along their banks, and support a diverse assemblage of aquatic and semi-aquatic flora and fauna including game and non-game fish, mammals, birds, reptiles, amphibians, and invertebrates. There are several stock reservoirs located within one mile of the proposed mine area. These reservoirs are located upstream of the proposed mine area and support wetland vegetation.

### **3.5 Geology/Minerals**

The Bighorn Basin is bounded by the Bighorn Mountains to the east, the Owl Creek Mountains to the south, and the Absaroka Mountains to the west. The Bighorns and the Owl Creeks are a result of the Laramide Orogeny that occurred from the end of the Cretaceous Period through the beginning of the Tertiary Period. The various anticlines and synclines found in the Bighorn Basin formed during the Laramide Orogeny, a mountain-building event that took place during Late Cretaceous to Eocene time approximately 80 to 40 million years ago (mya). The Absarokas are a result of volcanic activity that began about 50 mya. The center of the basin is filled with flat-lying Eocene sediments (55-34 mya), with progressively more complex folding and faulting in Mesozoic (250-65 mya) and Paleozoic (542-251 mya) strata as the flanks of the mountains are approached.

In the Bighorn Basin, commercial gypsum is limited to Jurassic Gypsum Springs Formation. The Gypsum Springs Formation consists of red shales, carbonates, and multiple gypsum beds, representative of evaporitic conditions in transitional marine environments.

MINERAL RESOURCES: Bentonite mine claims exist around the Horse Center II Plan area. Along with other claims in the area, Bentonite Performance Minerals, LLC, (BPM) holds mining claims in T. 52 N., R. 101 W., Section 32 and T. 51 N., R. 101 W., Section 5. Portions of the Horse Center II proposed mine are located within BPM's claims, however no bentonite beds would be affected by the proposed operations. BPM has acknowledged CertainTeed Gypsum's proposed mine plan and accepts the proposed gypsum mining located on their claims.

No commercially valuable mineral materials such as sand and gravel are located in the proposed Horse Center II area. No active oil and gas leases exist within this area. No solid leasable minerals such as coal or trona occur in the area.

### **3.6 Paleontological Resources**

The Potential Fossil Yield Classification (PFYC) for the Gypsum Springs Formation, which is proposed to be mined, is rated as a Class 5. This formation represents a transitional marine environment in an arid Jurassic climate. Vertebrates did occupy this seaway, notably marine and terrestrial reptiles, and various types of fish. Different types of invertebrates also occupied these ancient environments. The Jurassic Gypsum Springs Formation is known for its trace fossils of vertebrate tracks that can be found in the limestone beds in certain units. The commercial gypsum beds of the Gypsum Springs Formation typically do not contain vertebrate fossils.

### **3.7 Soils**

The U.S. Natural Resources Conservation Service (NRCS) and the BLM soils mapping and map unit descriptions were used to describe the soils in the Horse Center II plan area. Soil samples were collected by horizon and submitted to the laboratory for analysis. The soil laboratory analyses included: pH, electrical conductivity (EC); saturation percent; calcium, magnesium, and sodium (meq/l); calculation of Sodium Adsorption Ratio (SAR); organic matter percent; soil texture (percent sand, silt, and clay), Boron and Selenium (ppm). Much of the Horse Center II area is characterized by very shallow soils on rock outcrop.

**Table 2. Soil depths and suitability in the Horse Center II Plan area.**

<b>Map Unit Name</b>	<b>Acres</b>	<b>Percent</b>	<b>Topsoil Salvage (In.)</b>	<b>Salvage Volume (cubic yards)</b>
Gypsum Rock Outcrop	28.7	55.3	0	0
Zigweid Loam	6.3	12.1	40	34,000
Zigweid Clay Loam	1.1	2.1	20	3,000
Spearfish Loam	15.8	30.5	36	76,000
<b>Total</b>	<b>51.9</b>	<b>100</b>		<b>113,000</b>

The Gypsum Rock Outcrop unit is found along ridges and on moderately steep to steep slopes. Materials are variable but generally consist of gypsum outcrops, exposed sandstone, shale, or other parent materials. Very little suitable topsoil exists on these sites.

The Zigweid Loam unit is found on gently to moderately sloping uplands and ridges. This unit is 80 percent Zeigweid Loam, with inclusions of up to 10 percent Thedalund Loam and 10 percent Shingle Loam. The Zigweid series consists of deep, well-drained, moderately permeable soils on gently to moderately sloping hills and ridges where shale bedrock is near the surface. Runoff is medium to rapid and the hazard of water erosion is moderate to severe. The hazard of blowing soil is slight. The Thedalund series consists of moderately deep, well-drained, moderately permeable soils in alluvial fans and basins. They form in alluvium derived from sedimentary rock. The Shingle soil is moderately deep and well-drained. It is formed in residuum derived dominantly from interbedded shale and sandstone.

The Zigweid Clay Loam unit is found on alluvial fans and basins and residual uplands. This unit is 90 percent Zigweid Clay Loam with minor inclusions of similar soils making up the remaining 10 percent. The Zigweid Clay Loam consists of deep, well-drained, moderately permeable soils on gently to moderately sloping upland hills, alluvial fans, and basins. They formed in calcareous, moderately fine-textured sediments derived from sedimentary rock. Runoff is medium to rapid and the hazard of water erosion is moderate to severe. The hazard of blowing soil is slight.

The Spearfish Loam unit is found on gently sloping to steep upland hills and ridges. This map unit is 70 percent Spearfish Loam with inclusions of 10 percent Rock Outcrop and 10 percent Zigweid Loam. The Spearfish Loam is shallow to deep and well to excessively well-drained. It formed in residuum weathered from reddish colored gypsiferous siltstone, sandstone, and shale on uplands. Permeability is medium to slow. Runoff is medium to rapid and hazard of water erosion is moderate to very severe. The hazard of soil blowing is slight.

### **3.8 Vegetation**

Vegetation community types were defined and delineated by CertainTeed Gypsum based on dominant vegetation species and physical site characteristics. The following vegetation units were identified and mapped in the study area: Sagebrush Shrubland and Gypsum Rock Outcrop.

#### **1) Sagebrush Shrubland:**

The sagebrush shrubland vegetation unit is found in a mosaic within the gypsum rock outcrop. The sagebrush shrubland type is dominated by perennial grasses and shrubs. Big sagebrush is the most common species followed by threadleaf sedge (*Carex filifolia*) prairie junegrass (*Koeleria macrantha*). This vegetation unit is actually a mixture of sagebrush shrublands and upland grasslands found on deeper soils. Vegetation cover is generally fair and ground cover is good due to the abundance of litter.

#### **2) Gypsum Rock Outcrop:**

The gypsum rock outcrop vegetation unit is found as a mosaic within the sagebrush shrubland type (see Map 3 on the following page). The gypsum rock outcrop type is dominated by perennial grasses, perennial forbs, and grass-like species. Bluebunch wheatgrass (*Pseudoroegneria spicata*) is the most common species, followed by threadleaf sedge, and moss phlox (*Phlox muscoides*). This vegetation unit is actually upland grasslands found on shallow soils. Vegetation cover is generally poor. Ground cover is fair due to the abundance of rock. A few limber pine (*Pinus flexilis*) reside on these outcrops.

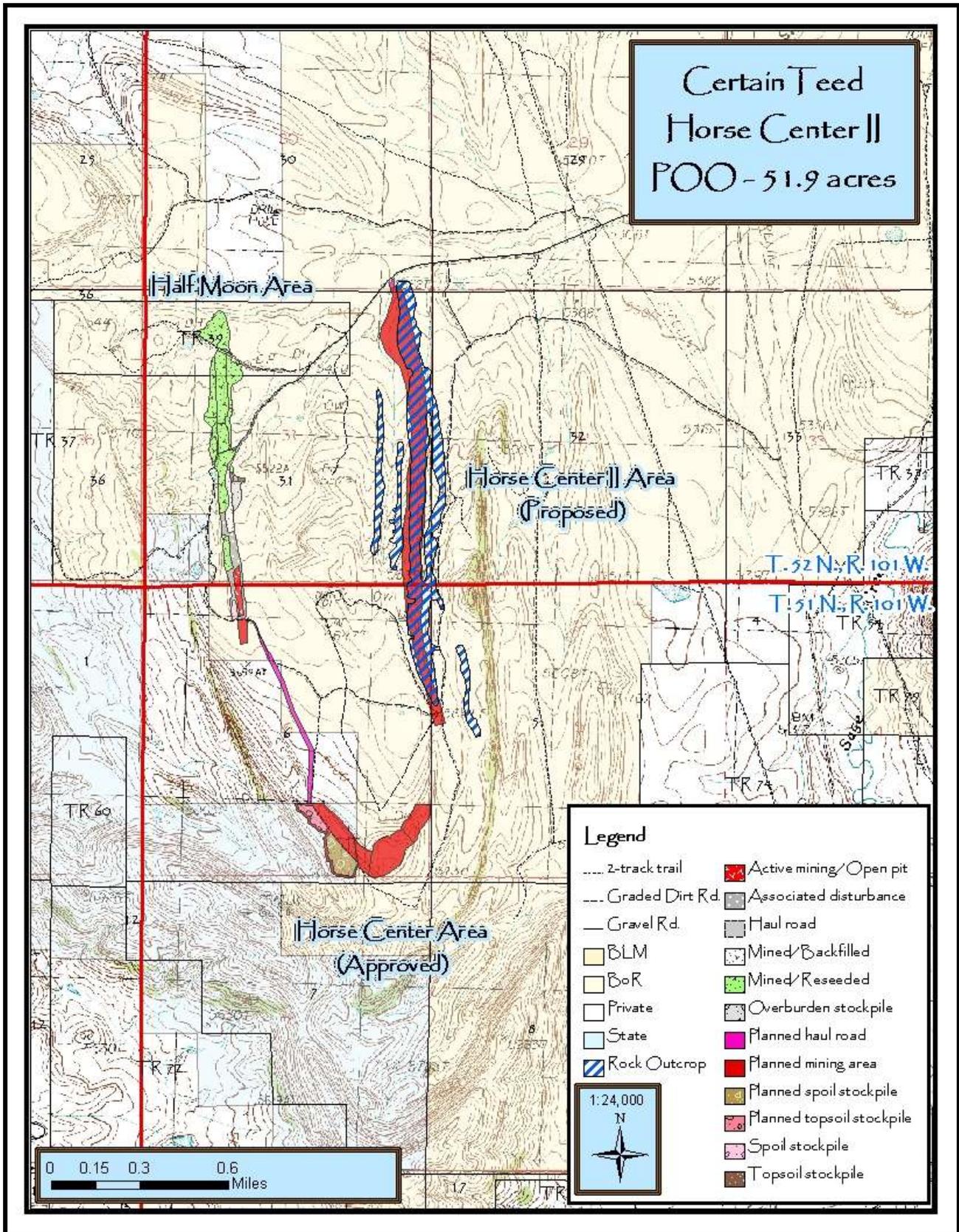
The majority of land within the proposed mining area lies within two ecological site descriptions, all in the eight to ten inch precipitation zone for the Bighorn Basin, as follows: Shallow Loamy (SwLy), which correlates with the “Sagebrush Shrubland Unit” and Rock Outcrop (RO), which correlates with the “Gypsum Rock Outcrop Unit.”

### **3.9 Invasive, Non-native Plant Species**

Though there are invasive weed species present, including cheatgrass, halogeton, and other non-natives, native plants are still the dominant species in the proposed mining area. The noxious weed species hoary cress (*Cardaria draba*), Canada thistle (*Cirsium arvense*) and musk thistle (*Carduus nutans*), are located in the proposed Horse Center II area. Weed species are most common in disturbed areas. Weed species present are capable of quickly invading an area after a surface disturbance.

### **3.10 Wildlife/Migratory Birds/Raptors**

WILDLIFE: CertainTeed Gypsum conducted wildlife surveys, compiled a species list, and provided this list to the U.S. Fish and Wildlife Service as well as the Wyoming Game and Fish Department. Agency responses indicated concern for the following: sage-grouse, brown trout in Sage Creek, nesting raptor golden eagles, and migratory birds.



**Map 3. Vegetation communities around the Horse Center II area. The blue-striped “Rock Outcrop” shows the location of the Gypsum Rock Outcrop vegetation unit described above. Areas in the proposed Horse Center II proposed mining area that are not distinguished as part of the Rock Outcrop unit are part of the Sagebrush Shrubland vegetation unit described above.**

A few of the non-BLM-Sensitive wildlife species that use this area include mule deer, pronghorn antelope, coyote, jackrabbits, cottontail rabbits, Ord's kangaroo rats, olive-sided pocket mice, short horned lizards, sagebrush lizards, prairie rattlesnakes, golden eagles, red-tailed hawks, horned larks, and vesper sparrows. For many of the small mammals and reptiles, the proposed mine area contains their whole home range. Songbirds migrate to the area to breed, nest and spend the summer. The horned lark, corvids, and raptors are some of the few species that spend the full year in the region, however they still migrate to different habitats and are still considered migratory. Ungulates typically move through the area, utilizing it, as well as other habitat in the region as corridors, places to find food, and places to rear young. This area is used by the Carter Mountain Antelope Herd and the Upper Shoshone Mule Deer Herd Unit throughout the year. The area is not crucial winter range for either of these species, though crucial winter habitat was delineated several miles to the west.

**RAPTORS:** One golden eagle nest has been identified in the cliffs within one-quarter mile of the proposed mining area. Ferruginous hawks, northern harriers, American kestrels, rough-legged hawks, prairie falcons, and red-tailed hawks were noted in the area during the CertainTeed Gypsum wildlife surveys, though there were not found to be nesting there.

**MIGRATORY BIRDS:** Many migratory sagebrush obligate species use this area including the following: sage sparrows, sage thrashers, horned larks, vesper sparrows, Brewer's sparrows, and loggerhead shrike. These songbirds mate, nest, and over-summer in the areas proposed to be mined. They also frequently return to the same area year after year.

### **3.11 Threatened & Endangered Species/ BLM Sensitive Species**

**THREATENED & ENDANGERED SPECIES:** Site surveys have determined that no Threatened or Endangered plant or animal species (gray wolf, lynx, grizzly bear, black-footed ferret and Ute's ladies tresses) or the Candidate species yellow-billed cuckoo, are located in the proposed Horse Center II mine area. Another Candidate species, the greater sage-grouse, is found in the area. One active lek exists within three-quarter miles of the proposed mine area; three other inactive leks exist within two miles. The proposed mine area is located in sage-grouse habitat.

**BLM SENSITIVE SPECIES:** Several BLM Sensitive species use habitat in the general area including the following: sage-grouse, sage sparrows, sage thrashers, Brewer's sparrows, loggerhead shrike, Townsend's big-eared bats, and spotted bats. A few scattered limber pine trees (*Pinus flexilis*) can be found growing along the rocky ridges. Persistent sepal yellowcress (*Rorippa calycina*) could also be present in reservoirs and drainages in the area, though it was not identified in the site surveys.

### **3.12 Livestock Grazing and Range**

The Horse Center South BLM grazing allotment #03114 and the Coal Creek Allotment #03006 contain the proposed mining. In the Horse Center Allotment, about 42 of the 6,647 acres (5,531 acres of BLM managed land) in the allotment are proposed to be mined. There are 572 animal unit months (AUMs) currently permitted for livestock grazing in this allotment, stocked at 10.3 acres/AUM. This allotment has a three-year grazing rotation: spring, summer, fall. In the Coal Creek Allotment, around 10 of the 2,812 acres (1,730 acres of BLM managed land) in the allotment are proposed to be mined. There are 185 public AUMs permitted for livestock grazing in this allotment, stocked at 9.3 acres/AUM. This allotment is grazed annually from May through September. CertainTeed Gypsum proposes to mine through a portion of the fence that marks the boundary between these two allotments.

### **3.13 Recreation**

Due to its location near the town of Cody, the area north of the proposed mining has always been a well-used recreation area. This area is frequently used for mountain biking, hiking, photography, wildlife viewing, driving for pleasure, rock hounding, and hunting. Because of these values, the Bighorn Basin Draft RMP includes a Beck Lake Special Recreation Management Area (SRMA) under Alternatives B and D. This SRMA was originally proposed by Cody residents. Designated mountain biking trails are all currently located north of the proposed mine area. The area is currently listed as a Visual Resource Management (VRM) of a Class III. The objective of this class is to partially retain the existing character of the landscape. The level of change to the characteristic landscape should be moderate. Management activities may attract attention but should not dominate the view of the casual observer. Changes should repeat the basic elements found in the predominant natural features of the characteristic landscape. The proposed VRM in Alternative D of the Draft RMP is a Class IV. The objective of this class is to 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. These management activities may dominate the view and be the major focus of viewer attention. However, every attempt should be made to minimize the impact of these activities through careful location, minimal disturbance, and repeating the basic landscape character elements. Class IV areas are not necessarily of low scenic quality. Neither Class III nor Class IV VRM areas are prohibitive of mining.

### **3.14 Socioeconomics**

The proposed mining area is located in Park County, Wyoming. The closest community is the town of Cody. Cody is located about 5 miles south of the proposed Horse Center II area and has a population of 9,309 people. In 2010, the estimated population of Park County was 28,205 people. Communities in Park County include Cody (the county seat), Powell, Frannie, Meeteetse, Garland, Ralston, and Wapiti. Park County covers 6,942 square miles and has a population density of 4.1 people per square mile. Since 2000, its population increased by 9.4 percent. The area has a strong agricultural economy, which includes farming (corn, sugar beets, alfalfa, barley, beans, hay) and ranching (cattle, sheep, horses). This area is also used for recreational purposes, such as hiking, hunting, fishing, and off-highway vehicles; it also is home to Yellowstone National Park and the Shoshone National Forest.

Data from the State of Wyoming Economic Analysis Division indicate that mining accounts for 3% of the jobs, and 6% of the personal income in Park County. This statistic indicates that employment in the mining sector is higher-paying than the county average. Mining had an average wage of \$70,127.

In 2006 in Park County, approximately 444 people were employed directly by the mining industry. CertainTeed Gypsum has numerous employees in Park County, the majority of which live in Cody or Powell, Wyoming. CertainTeed Gypsum contracts with at least one Park County service company to conduct mining activities within their permitted areas. This service company provides heavy equipment and labor to strip and salvage soil and overburden, mine and haul the gypsum, and conduct reclamation and seeding.

Livestock grazing has been, and continues to be, a major resource-use activity on BLM-administered public lands in the Cody Field Office and around the proposed mining areas analyzed in this EA. Grazing has occurred in the proposed mining area for over 100 years.

## **4.0 ENVIRONMENTAL EFFECTS**

### **4.1 Direct and Indirect Impacts**

#### **4.1.1 ALTERNATIVE I - NO ACTION**

##### **Air Quality**

There would be no additional effect on current air quality under Alternative I, because the proposed Horse Center II Plan would not be approved.

##### **Cultural and Historical Resources and Native American Religious Concerns**

Currently, potential impacts to cultural resources include unauthorized surface collection and looting. Under the No Action Alternative, these potential impacts would remain at similar levels to the existing. There would be no additional impacts on Cultural Resources under Alternative I, because surface disturbance under the proposed Horse Center II Plan would not be approved. No impacts to Native American Religious concerns would occur under the No Action alternative, as the BLM would take no action that would adversely affect these areas or locations without consultation with the appropriate Native Americans.

##### **Water (Surface and Ground)/Floodplains**

There would be no effect on surface water, ground water, or floodplains because the proposed Horse Center II mining would not be approved. Alternative I, proposes the least affect on surface water, as there would be no surface disturbance, leaving the vegetation, soil, and natural drainage patterns in place to naturally control surface water.

##### **Wetlands/Riparian/Aquatic Resources**

There would be no effect on wetlands, riparian areas, or other aquatic resources under Alternative I, because the proposed Horse Center II mining would not be approved.

##### **Geology/Minerals**

There would be no effect on the geology or minerals of the area under Alternative I, because the proposed Horse Center II mining would not be approved.

##### **Paleontological Resources**

There would be no effect on paleontological resources under Alternative I, because the proposed Horse Center II mining would not be approved.

##### **Soils**

There would be no effect on soils under Alternative I, because the proposed Horse Center II mining would not be approved.

##### **Vegetation**

There would be no effect on vegetation under Alternative I, because the proposed Horse Center II mining would not be approved.

##### **Invasive, Non-native Plant Species**

There would be no new effects on invasive and non-native species under Alternative I, because the proposed Horse Center II mining would not be approved. By choosing Alternative I, there would be a lesser chance that this area would be affected by invasive weed species, as no new disturbance would occur.

### **Wildlife/Migratory Birds/Raptors**

There would be no effect on wildlife under Alternative I, because the proposed Horse Center II mining would not be approved. Wildlife use of the area would continue at current levels because the disturbance and habitat loss would not occur. There would be no effect on migratory birds under Alternative I, because the proposed Horse Center II mining would not be approved. Nesting raptors would neither be disturbed by mining nor temporarily lose habitat near their nests.

### **Threatened and Endangered Species/BLM Sensitive Species**

There are no known Threatened or Endangered species located in the proposed mining area. Also, BLM Sensitive Species, such as the greater sage-grouse, would not lose any habitat or potential suitable habitat.

### **Livestock Grazing and Range**

There would be no effect on livestock, grazing, or range because the proposed Horse Center II mining would not be approved. Cattle grazing in the area would not decrease and the forage vegetation species would remain the same.

### **Recreation**

There would be no effect on recreation activities such as mountain biking, hunting, or driving for pleasure under Alternative I, because the proposed Horse Center II mining would not be approved. The Beck Lake SRMA, identified in the Bighorn Basin Draft RMP would not be affected if Alternative I would not be selected. The scenic values of the area, which is rated as a VRM Class III under the current RMP, and potentially a Class IV under the draft RMP, would not be affected as the proposed mine plan would not be approved.

### **Socioeconomics**

There would be an affect to CertainTeed Gypsum and its employees if Alternative I, was selected because the company would not have access to the gypsum resource; if the gypsum could not be mined, the workers could lose their jobs. No impact to livestock grazing or farming would occur. If the proposed mine plan would not be approved, the many recreation activities that are included in the area would not be affected. The Beck Lake SRMA, identified in the Bighorn Basin Draft RMP would not be affected if the proposed mining would not be selected.

## **4.1.2 ALTERNATIVE II - PROPOSED ACTION**

### **Air Quality**

The air quality of the local area would be impacted for the life of the mine (eight years) due to the effects of the Proposed Action. Soil and overburden stripping, blasting, and gypsum mining and hauling would result in an increase in the amount of particulate matter, fugitive dust, and fossil fuel combustion-related air pollution entering the air in the local area. Dust suppression measures would be required of CertainTeed Gypsum in order to control fugitive dust emissions. These measures would include the application of dust suppression water or other BLM-approved dust suppressants to the mine area and haul roads, using water trucks as needed, during mining and hauling activities. The reduction in vegetation and related soil disturbance would result in a lowered capacity for carbon sequestration. In areas that have been reclaimed but have not fully revegetated, dust would be kicked up by wind until enough vegetation was present to stabilize soils and particulates. Trucks on the haul roads would continue to increase the amount of dust in the air until the roads were reclaimed or were no longer used as haul roads. There is no proposed mitigation included in the Plan for the release of combustion-related byproducts of operating heavy equipment and haul trucks to mine and transport the gypsum.

The Air Quality Standard #6 for Healthy Rangelands in Wyoming could fail if the WDEQ determined that the air quality associated with the proposed mining activity was impaired. If the air quality would be impaired, and the proposed mining would be found to be the cause, BMP's would be implemented.

### **Cultural and Historical Resources and Native American Religious Concerns**

There would be no impacts to significant cultural resources under the Proposed Action. Any other unknown cultural resources that exist in the proposed mining area that were not detected by the Class III cultural survey would be reported to the BLM when found by CertainTeed Gypsum, as required in the Cultural Resources Stipulations found below in Section 4.2.2. Improvement of haul roads could facilitate access to and within the project area, thereby increasing potential for additional unauthorized surface collection and looting. If any areas or locations of traditional gathering areas, or religious or of cultural concern to Native Americans are subsequently identified or become known through the Native American notification or consultation process they would be considered during the implementation phase. The BLM would take no action that would adversely affect these areas or locations without consultation with the appropriate Native Americans.

### **Water (Surface and Ground)/Floodplains**

Surface water could be affected by the Proposed Action. During the proposed mining process, natural drainage patterns would be temporarily disrupted, altering drainages and modifying overland flow. Due to the loss of vegetation, biological crusts, and desert pavement, run-off from the proposed mining areas may transport more sediment and other pollutants to downstream water features than the area did before it was mined. CertainTeed Gypsum would adhere to sediment discharge controls such as the placement of filter fabric or berms where water could carry sediment from the mine or reclamation site; the placement of energy dissipaters such as straw bales or rock in impacted and reclaimed channels, and by minimizing impacts to the soil surface.

These actions would begin at the commencement of the mining and continue through reclamation until soil and vegetation would be able to resist accelerated erosion. During reclamation, the pre-mine watershed slope and contours would be replicated as much as possible, thus restoring watershed flow and retention characteristics. CertainTeed Gypsum would also return the stream channels to approximate pre-mine contours and slope during reclamation. Any drainage control structures constructed during the mining operation would be removed. The culverts placed in the northern, primary drainage that the entrance road crosses would be removed, and the channel may be armored to prevent additional erosion. The banks would be restored to approximate original condition, and the disturbed areas would be seeded.

Floodplains would be also affected during the reclamation process; until vegetation establishes and holds the soil and water in place, there would be more overland water flow and sedimentation onto floodplains than there had been prior to the proposed mining. Prior to seeding, CertainTeed Gypsum would disk the soil surface. This contouring method slows or traps flowing water and sediment, slowing runoff and erosion, creating micro-environments that encourage seed germination and growth.

Ground water may be affected by the proposed mining. It could be affected either by water infiltration in the proposed mining area or by pollutants in haul road run-off that may find its way into the ground water. If seeded vegetation does not grow well on reclaimed areas, runoff could increase, and there would be less water infiltration into the soil. This would have long-term effects on ground water recharge and discharge to area drainages, springs, and seeps. If water escapes CertainTeed Gypsum's berms and runs off site, it may eventually make it into the groundwater. Sediment and other pollutants could be transported from the site by wind, water, or mining related activities, and could introduce mining related pollutants into water that may eventually make it into ground water.

The Wyoming Water Quality Land Health Standard #5 could fail if the WDEQ determined that the quality of the waters associated with the proposed mining activity were impaired. Water resource mitigation is included in CertainTeed Gypsum's Plan of Operation submission. CertainTeed Gypsum would also follow the specifications of their current Storm Water Discharge Permit (SWDP) and Storm Water Pollution Prevention Plan (SWPPP) to facilitate compliance with Section 401 of the CWA.

### **Wetlands/Riparian Areas/Aquatic Resources**

The Proposed Action may affect downstream riparian areas, wetlands, aquatic habitat, and associated biota by modifying water flow regimes. This may include increasing or decreasing peak and/or base flows, sediment and nutrient regimes, and natural watershed inputs, or by introducing new pollutants such as petroleum products, or herbicides. CertainTeed Gypsum would minimize this by diverting storm water away from and around disturbed areas. Invasive, non-native plant species that become established on or near the proposed mine area may spread to downstream or downwind riparian areas wetlands, and/or aquatic habitat which could weaken the plant communities and ultimately system stability and functionality. Water relations in areas infested by invasive, non-native plant species may be modified causing additional flow and sediment disruptions.

If the riparian-wetland areas associated with the proposed mine area were affected due to the proposed mining (determined to be Functioning at Risk or Non-functional), they could fail the Wyoming Riparian-Wetland Land Health Standard #2. Mitigation that addresses these potential effects is incorporated in CertainTeed Gypsum's Storm Water Discharge Permit (SWDP) and Storm Water Pollution Prevention Plan (SWPPP).

### **Geology/Minerals**

**LOCATEABLE MINERALS:** Under the Proposed Action, the commercial quantities of gypsum would be removed from beds in the Jurassic Gypsum Springs. Mining would disrupt the natural stratigraphic order of beds within the open pit areas, and disturb overburden, as well as top and subsoil profiles, as described in the mine plan. No other locateable mineral resources would be affected by the Proposed Action.

**SALEABLE MINERAL MATERIALS:** The Proposed Action would have a minimal impact on the limited saleable mineral resource located on public lands proposed to be mined. No commercially important deposits of sand and gravel, decorative rock, or other saleable materials are known in the Horse Center II Plan area.

**LEASEABLE MINERALS:** Because no active leaseable minerals/oil and gas leases are present in the Horse Center II Plan area, access to leaseable mineral resources would not be impacted as a result of the Proposed Action.

### **Paleontological Resources**

Paleontological resources in the proposed mining area may be affected under the Proposed Action, which would involve mining in the Gypsum Springs Formation. This formation is rated as a Potential Fossil Yield Classification (PFYC) of 5, meaning that it occasionally contains significant vertebrate fossils, though they are not found with much frequency. Standard paleontological stipulation, found in Section 4.2.2, would protect any paleontological resources that might be found on the proposed mine area. If scientifically significant vertebrate fossil materials are discovered, CertainTeed Gypsum would be required to suspend all operations that might further disturb such materials, and immediately contact the BLMs Authorized Officer (Cody Field Manager) so the fossil resource could be investigated and assessed.

Significant scientifically valuable fossil resources would be removed from the area prior to resumption of mining. Stipulations to protect paleontological resources would be attached to any plan of operations approval letter.

### **Soils**

Soils in the area would be temporarily affected by the proposed mining activity. When soils would be disturbed, a complex ecosystem would be disrupted. The integrity of the soils would be preserved by properly separating and storing suitable topsoil from subsoil and overburden.

Organisms living in the topsoil have a relatively short lifespan when soil is stockpiled, due to the disturbance of normal processes including the following: lack of oxygen, lack of new organic material, lack of water, and the increase in depth to surface. Because of this, topsoil must be redistributed within a few months of being stockpiled in order for the soil to maintain a functioning ecosystem. These microorganisms prevent water and wind erosion, hold water in the soil, and prevent weed establishment. Live-spreading topsoil is currently the best method for reclamation because topsoil that is removed from an opening pit is immediately placed on the area that has already been mined, backfilled and recontoured. This preserves many of the topsoil's important biological and physical qualities.

CertainTeed Gypsum would attempt to use live-spreading of topsoil and seed topsoil stockpiles that would be left in place for more than one year to prevent weed growth, reduce erosion, and maintain the soil's biological integrity. The loss of topsoil biological viability, as a result of stripping and stockpiling, would increase as the length of stockpiling time increases (loss would occur very rapidly at first and then gradually taper off), depth of stockpile, and having no or little deeply-rooted plant growth.

Impacts of the Proposed Action to soils would require mitigation (required by both the BLM and the WDEQ-LQD), as per the terms of any approved mining and reclamation plan(s) and as presented in the CertainTeed Gypsum Horse Center II Plan application, discussed above under Section 2.2, and any accompanying mitigation measures. Associated disturbance relative to proposed mining would be kept to a minimum in order to prevent unnecessary and undue disturbance of native soil profiles. Erosion of spread topsoil would be controlled through appropriate contouring and contour-scarifying the "topsoiled" areas. The areas would be seeded in a timely manner to promote speedy plant growth and further reduce erosion. Also, oats may also be planted with the seed mixture to provide a quick-growing nurse crop to stabilize the soil. If CertainTeed Gypsum proposes to add soil amendments to the soil, they would have to first acquire approval from the BLM Cody Field Office and the WDEQ-LQD.

Until successful reclamation of the soil occurs, the disturbed areas would have reduced soil stability and would fail Standard #1 for Healthy Rangelands in Wyoming.

### **Vegetation**

Vegetation would be directly affected by the Proposed Action. Native vegetation in all areas to be mined would be removed, along with the suitable topsoil that has established over time. After mining would be complete, subsoil and topsoil would be placed back on the surface. If the mining and livespreading of topsoil proceeds along in a timely manner, some of the soil biota and other microorganisms associated with healthy, living soil would still be alive to help the newly planted seeds reestablish.

If the topsoil was left sitting in a stockpile for more than a few months, the likelihood that there would be any life left in the soil would be much lower, thus decreasing the ability of the soil to support plant life. The success of the vegetation reclamation depends largely on the timeliness and cleanliness of the topsoil replacement process. Also, future topsoil quality and quantity depends on the establishment of vegetation.

Clearing many acres of land at a time leaves areas open to invasive weed species that establish quickly and flourish in disturbed areas. Speedy revegetation with native plants would be necessary to prevent a non-native weed invasion. Any islands of native vegetation that would be left in the mined area would aid in the spread of native plants throughout the disturbance. Also, if topsoil would be replaced quickly, viable native seeds could sometimes still be present to reestablish themselves in the reclaimed areas.

If reclamation would not be done correctly, a potentially different plant community could replace the native one. Often, even successful reclamation results in a change from the existing native plant community for decades. Until vegetation on disturbed sites consist of plant communities appropriate to the site, which are resilient, diverse, and once again able to recover from disturbances, they would fail Standard #3 for Healthy Rangelands of Wyoming.

Impacts of the Proposed Action to vegetation would require mitigation (required by both BLM and WDEQ-LQD), as per the terms of the Horse Center II mining and reclamation plan, discussed above under Section 2.1, and any accompanying mitigation measures. According to CertainTeed's proposed reclamation plan, the post-mining vegetative community would be developed to support livestock grazing and wildlife habitat. Mitigation measures would include the use of proper seed mixtures and seeding application rates, to help reestablish vegetation over time to pre-mine or better conditions. All seed used on public lands would be certified to be noxious weed and cheatgrass seed free by laboratory testing and would conform to BLM seed policy IM No. 2006-073; any hay or straw used for check-dam construction or mulching would be certified to be weed seed and cheatgrass seed free. According to CertainTeed Gypsum's reclamation plan, seeded areas would be fenced to exclude livestock from grazing too heavily on newly-germinated or established seedlings in these areas.

### **Invasive, Non-native Plant Species**

Invasive and non-native plant species in the area would increase under the Proposed Action. To expose the gypsum beds, topsoil would be scraped and stockpiled, and all vegetation would be removed from that disturbed area as well. The reclamation process would involve revegetation of the area with a BLM-approved seed mix containing seeds of plant species similar to the native vegetation removed during mining. It would be less likely that invasive weed species would enter or return to the area if seeding would be completed quickly and properly to establish desirable vegetation.

If the reclamation seeding would have a difficult time establishing, annual, invasive and/or non-native weed species would be more likely to spread throughout the disturbed area. Seeding the topsoil stockpiles, which would be a required mitigation measure for this Plan, would decrease the potential for weeds to spread to and contaminate topsoil. Weed species that could establish in post-mining areas are as follows: cheatgrass (*Bromus tectorum*), halogeton (*Halogeton glomeratus*), Kochia (*Kochia scoparia*), hoary cress, Canada thistle, musk thistle, and Russian thistle (*Salsola kali*). If cheatgrass establishes, it could form a monoculture, outcompeting native species, reducing species diversity, decreasing sagebrush establishment, and creating a volatile fuel source for fires. Halogeton can pull salt to the surface, creating a saline environment few native plants can survive. These weeds would be controlled/eradicated by use of BLM-approved methods and herbicides, and their management would be the sole responsibility of CertainTeed Gypsum.

Vegetation would be reestablished and cheatgrass seed and noxious weed-free seeds and hay for mulch would be used in the proposed mining area. Cleaning vehicles, equipment, and materials before they enter public land would help reduce the spread of invasive, non-native plant species.

The following is a list of Wyoming State Listed Noxious Weeds that would need to be controlled should they begin to grow on the Horse Center II Plan area lands during mining and/or reclamation (WWPC, 2011). Cheatgrass would also need to be controlled in the area proposed under this Plan, should it begin to grow in mined or reclaimed areas.

- |   |  |
|---|--|
| 1) Field bindweed ( <i>Convolvulus arvensis</i> L.)           | 14) Musk thistle ( <i>Carduus nutans</i> L.)             |
| 2) Canada thistle ( <i>Cirsium arvense</i> L.)                | 15) Common burdock ( <i>Arctium minus</i> (Hill) Bernh.) |
| 3) Leafy spurge ( <i>Euphorbia esula</i> L.)                  | 16) Plumeless thistle ( <i>Carduus acanthoides</i> L.)   |
| 4) Perennial sowthistle ( <i>Sonchus arvensis</i> L.)         | 17) Dyers woad ( <i>Isatis tinctoria</i> L.)             |
| 5) Quackgrass ( <i>Agropyron repens</i> (L.) Beauv.)          | 18) Houndstongue ( <i>Cynoglossum officinale</i> L.)     |
| 6) Hoary cress ( <i>Cardaria draba &amp; pubescens</i> )      | 19) Spotted knapweed ( <i>Centaurea maculosa</i> Lam.)   |
| 7) Perennial pepperweed ( <i>Lepidium latifolium</i> L.)      | 20) Diffuse knapweed ( <i>Centaurea diffusa</i> Lam.)    |
| 8) Ox-eye daisy ( <i>Chrysanthemum leucanthemum</i> L.)       | 21) Purple loosestrife ( <i>Lythrum salicaria</i> L.)    |
| 9) Skeletonleaf bursage ( <i>Franseria discolor</i> Nutt.)    | 22) Saltcedar ( <i>Tamarix</i> spp.)                     |
| 10) Russian knapweed ( <i>Centaurea repens</i> L.)            | 23) Common St. Johnswort ( <i>Hypericum perforatum</i> ) |
| 11) Yellow toadflax ( <i>Linaria vulgaris</i> L.)             | 24) Common Tansy ( <i>Tanacetum vulgare</i> )            |
| 12) Dalmation toadflax ( <i>Linaria dalmatica</i> (L.) Mill.) | 25) Russian olive ( <i>Elaeagnus angustifolia</i> L.)    |
| 13) Scotch thistle ( <i>Onopordum acanthium</i> L.)           |  |

CertainTeed Gypsum would be responsible for managing all noxious and undesirable invading plant species in the reclaimed areas, including cheat grass, Russian olive, Canada thistle, musk thistle and tamarisk, until revegetation activities would be determined to be successful, and the bond has been released for a given area. If noxious or invasive weeds would be encountered in the mine area or on the haul roads, the BLM Cody Field Office and/or the Park County Weed and Pest Department would be consulted by CertainTeed Gypsum for control and eradication methods. A Pesticide Use Proposal (PUP) and written approval from the BLM Authorized Officer for the use of herbicides would be obtained prior to the use of herbicides on public land.

### **Wildlife/Migratory Birds/Raptors**

**WILDLIFE:** The Proposed Action would affect wildlife that live in, nearby, or move through the proposed mining area. It may also affect the flora and fauna that use aquatic environments within and downstream of the proposed mining area. Movement through the area would become difficult as pits appear and disappear in places animals may have used to travel. Larger wildlife species, such as mule deer, pronghorn, and coyotes, would have to adapt and change their movement patterns to avoid the proposed mining area. Large areas of suitable habitat exist on public lands surrounding the mining areas to which game animals can move; big game populations would be affected by fragmentation and disruption from mining activities. The habitat would become less suitable for pronghorn and mule deer.

Smaller animals such as badgers, rabbits, rodents, and reptiles whose home range is much smaller would be directly affected by the mining. Displaced animals would have to try to move to a new area, which may already be fully occupied, resulting in stress, extra competition, and probable mortality. An unknown number of these small animals would be lost during the mining either directly by machinery or indirectly through habitat loss; their numbers would probably not rise to current levels again until the disturbed area would be fully reclaimed to pre-mine conditions. Their returned presence in the reclaimed area would help increase the aeration and permeability of the soil and improve the overall health of the soils and vegetation.

If the Proposed Action were to be approved, wildlife would likely avoid the area until reclamation success was complete. If the vegetative community would be drastically changed post-mining, wildlife species using the area would change as well. The change in vegetative community from pre-mine conditions to post-mine conditions may result in a shift to plant species not specifically adapted to the local site and would provide different and lesser quality habitat across all acres affected.

**RAPTORS:** The Proposed Action would affect golden eagles that have used the nest in the area, which was selected for as quality habitat to produce chicks. Proposed mining would temporarily destroy nearby hunting areas, forcing the parents to travel further to find food. This would be a factor until the affected area would be reclaimed and small prey species have returned. CertainTeed Gypsum would be required to notify the BLM and/or the U.S. Fish and Wildlife Service if any nesting raptors are spotted; a biologist would then advise them to halt mining activity in that area until the young raptors have fledged and left the nest. This would provide short term protection of the nesting habitat only; over the long term, this habitat would be degraded for many decades.

**OTHER MIGRATORY BIRDS:** Migratory birds, including sagebrush obligate species would avoid the area until successful reclamation would be achieved. If the area would be fully reclaimed to conditions similar to pre-mining in one to many decades, the habitat may once again be suitable for these species, although different and possibly less suitable than before. In conformance with the BLM and USFWS suggestions, CertainTeed Gypsum would conduct nest searches in migratory bird habitat prior to, and during ground disturbing activities between April 15<sup>th</sup> and July 15<sup>th</sup>. If nesting migratory birds are found, mining operations would halt until BLM and USFWS would be consulted for further action. Through this monitoring, no migratory birds would be knowingly harmed during the proposed mining process. Since CertainTeed Gypsum would agree to implement mitigation measures, this modification would not cause “take” of migratory birds, which is prohibited by the Migratory Bird Treaty Act.

### **Threatened & Endangered Species/BLM Sensitive Species**

**THREATENED & ENDANGERED SPECIES:** Site surveys have determined that no Threatened or Endangered plant or animal species (gray wolf, lynx, grizzly bear, black-footed ferret and Ute ladies’-tresses) or the Candidate species yellow-billed cuckoo, are known to exist in the Horse Center II area and therefore would not be affected by the Proposed Action. The Proposed Action would disturb land near sage-grouse habitat until reclamation of the mined area would be complete. Greater sage-grouse are both a Candidate species and a BLM Sensitive species. One active lek exists within three-quarter miles of the proposed mine area; three other inactive leks exist within two miles. Full reclamation of the habitat would take one to many decades. CertainTeed Gypsum’s seed mix includes Wyoming big sagebrush which would help reestablish sage-grouse habitat. There is potential for Ute ladies’-tresses to be in the area, although no population has ever been observed in the Bighorn Basin. The proposed mining would not occur in riparian areas, specifically wet floodplains that are commonly inundated, where these plants grow, thus making the potential these plants being present extremely low. There would be no effect on any listed or candidate species.

**BLM SENSITIVE SPECIES:** The Proposed Action would remove habitat, and cause fragmentation and wildlife avoidance of larger habitat areas for several BLM Sensitive species, including the following: sage sparrows, Brewer’s sparrows, sage thrashers, loggerhead shrike, and sage-grouse. If the area would be fully reclaimed to conditions similar to pre-mining in one to many decades, the habitat may once again be suitable for these BLM Sensitive species although not as suitable as it was before it was mined. Habitat would also be fragmented, making adjacent habitat less suitable. Haul road traffic would also be introduced into an area where this disturbing activity has not been before.

Additional weeds, disturbance, human activity, changes in water quality, modified hydrologic and sediment regimes, and habitat destruction would have negative impacts on BLM Sensitive species. CertainTeed Gypsum included a seed mix with native forbs, grasses, and shrubs, that would help to reclaim the proposed mine area back to habitat suitable for these BLM Sensitive species. A few limber pine may be lost during the proposed mining. CertainTeed Gypsum would plant seedlings to replace any limber pine removed.

Past and present gypsum mining is a factor in grazing allotment failure of Standard #4 for Healthy Rangelands of Wyoming during the Standards and Guidelines Interdisciplinary review for wildlife habitat quality.

### **Livestock Grazing and Range**

The Proposed Action would temporarily affect grazing allotments in the proposed mining areas. Until reseeded of the area would be successful, each year four AUMs would be removed from the Horse Center grazing allotment and one AUM would be removed from the Coal Creek grazing allotment. Since castback mining takes place in stages, the areas disturbed first would be the furthest along in the reclamation process. Reclamation could be successful if proper topsoil handling and drought do not make it exceptionally difficult for seedlings to germinate and grow. Once the reseeded would be successful, which can take one to many decades, vegetation would be reestablished well enough to provide forage for wildlife and livestock once again.

Reclaimed mine areas would be fenced by CertainTeed Gypsum to prevent cattle from grazing on reclaimed lands where seeds are trying to germinate and establish. Grazing immediately after seeding can be detrimental to both grazing and the mine reclamation effort. Grazing before plants have established stresses seedlings and makes it very difficult for them to survive, spread, or create healthy rangeland. Grazing during the early stages of revegetation can lead to an increase of weed growth; native seeds in the seed mix are more desirable to cattle and are often quickly grazed off, leaving the barren area open to potential weed establishment. CertainTeed Gypsum would be responsible for installation, maintenance, and removal of these reclamation fences.

CertainTeed Gypsum would be responsible for successful seeding and would be held accountable for the seeding by the WDEQ-LQD and the BLM until an acceptable vegetative community has established. When CertainTeed Gypsum mines through the fence that marks the allotment boundary, CertainTeed Gypsum would be responsible to maintain a working barrier, which may include using electric fencing or a cattleguard that acts as the allotment boundary while the cows are out. CertainTeed Gypsum would maintain the allotment boundary's integrity to prevent trespass issues during and after the proposed mining.

### **Recreation**

The proposed action could temporarily disturb recreational use in the area. The proposed mine area is located within view of the current, active CertainTeed Gypsum mine, so the visual resource would not be altered much from the existing conditions, however the east flank of the Horse Center Anticline would look slightly different after the mine is reclaimed. There are many nearby ridges that would block the view of the proposed mine from Highway 120, the City of Cody, as well as much of the nearby surrounding area. The proposed mining would not disturb any two-track trails, therefore, no mountain biking or pleasure driving routes would be affected, however the mine would temporarily affect the immediate view from trails near the proposed mine area until reclamation is successful. The new disturbance from mining would disturb additional wildlife habitat, which would temporarily affect hunting and wildlife watching opportunities until the reclaimed land is restored to suitable wildlife habitat again.

## Socioeconomics

Under the Proposed Action, the proposed Horse Center II Plan would be approved and gypsum mining would proceed into the proposed mining area. The proposed mining area would be a job site for CertainTeed Gypsum workers in future years once CertainTeed Gypsum begins mining the area. AUMs available for livestock grazing would be temporarily reduced, as gypsum mining would remove available forage until reclamation would be considered successfully completed. Until reseeding of the area would be successful, each year four AUMs would be removed from the Horse Center grazing allotment and one AUM would be removed from the Coal Creek grazing allotment.

## 4.2 Mitigation/Monitoring/Stipulations

The following items are mitigation measures and monitoring requirements that would be attached to any approval of the Proposed Action and are included in the Horse Center II Plan of Operations:

### 4.2.1 MITIGATION AND MONITORING

#### *Air Quality*

To control fugitive dust generated by haul trucks, roads would be kept watered by using a truck equipped with a spray bar or other BLM-approved method. When blasting, proper technique would be used so that fly rock and other particles would be kept to a minimum.

#### *Reclamation Seed Mix*

Within 3-5 years following the mining of gypsum, the proposed Horse Center II mine area will be recontoured, deep ripped, and seeded using the following PLS (pure live seed) mix:

<u>Seed Species</u>	<u>Rate-lb PLS/acre</u>
'Covar' Sheep Fescue ( <i>Festuca ovina</i> )	1.0
'Critana' Thickspike Wheatgrass ( <i>Elymus lanceolatus lanceolatus</i> )	2.0
Streambank Wheatgrass ( <i>Elymus lanceolatus riparius</i> )	4.0
'Secar' Bluebunch Wheatgrass ( <i>Pseudoroegneria spicata</i> )	4.0
Indian Ricegrass ( <i>Oryzopsis hymenoides</i> )	1.0
'Natrona' Fourwing Saltbush ( <i>Atriplex canescens</i> )	1.0
Wyoming Big Sagebrush ( <i>Artemisia tridentata</i> )	1.0
Scarlet Globe Mallow ( <i>Sphaeralcea coccinea</i> )	0.25
Annual Sunflower ( <i>Helianthus annuus</i> )	1.0
Rocky Mountain Beeplant ( <i>Cleome serrulata</i> )	0.25
	15.5 PLS lb/acre

***Prior to any seed mix revisions, CertainTeed Gypsum will contact the BLM for approval of the proposed changes.***

Wyoming big sagebrush will be hand-broadcast throughout the reclamation at a rate of one pound Pure Live Seed (PLS) per acre. Seedlings of woody species will be planted to replace any removed during the mining. Seed will usually be planted in the fall or early winter (occasionally in early spring) as soon as possible after topsoiling. **All seed will be certified to be cheatgrass seed and noxious weed-free.** Changing market conditions and/or new vegetation species information will potentially require adjustments to the seed mix at the time of actual seeding. Any variation from the proposed mix or listed substitutions will have approval from the BLM and the WDEQ-LQD.

The amount of seed applied to public land will be calculated on a Pure Live Seed (PLS) basis. Pounds of PLS equals the pounds of seed divided by the ratio of pure live seed in the mix; the result will always be less than 1.0. PLS is derived by multiplying purity by germination (example: 0.95 purity x 0.95 germination = 0.9 PLS). Thus, to have two pounds PLS of Indian Ricegrass in the mix, divide “two” by the PLS ratio, which will always increase the quantity needed (example: 2 lbs of seed/0.9 PLS = 2.2 lbs PLS). PLS determinations must be made for each plant species in a specific mix. Seed would be stored properly to preserve its viability and would be used within three months of the most recent viability test. Seed that has been stored longer than three months beyond the last viability test would be tested for viability again and the bulk pounds/acre rates would be adjusted to reflect any new PLS values before being applied to public land. All seed applied on BLM administered public lands will comply with the current BLM seed policy in IM-2006-073 (see Appendix C).

### ***Reclamation and Visual Aesthetics***

Reclamation will be concurrent with mining as much as possible. After mining, disturbed areas under this Plan will be contoured to blend in with the adjacent surroundings and reseeded to support similar vegetation. Proper topsoil and subsoil salvage will be essential to ensure successful reclamation. Unnecessary and undue degradation of native soils and vegetation will not be allowed to occur as a result of gypsum mining under this Plan of Operations.

Within 3-5 years following completion of mining, disturbed areas will be recontoured to match the surrounding topography, reestablish drainages, and minimize erosion. The entire disturbed area with the exception of the main haul roads will be “topsoiled” and seeded using the seed mixes provided previously in this document. Topsoil stockpiles left in place for more than one year will be seeded in the fall or spring following placement.

### ***Grazing***

When CertainTeed Gypsum mines through the fence that marks the allotment boundary, CertainTeed Gypsum will maintain a working barrier, which may include using electric fencing or a cattleguard, that acts as the allotment boundary. CertainTeed Gypsum will maintain the allotment boundary’s integrity to prevent trespass issues during and after the proposed mining.

### ***Sensitive Wildlife Species and Migratory Birds***

Nest searches will also be conducted for migratory birds between April 15th and July 15th. Mining will stop if nesting migratory birds are detected until the migratory birds have fledged and can leave the nesting area. Through this monitoring and mitigation, no migratory birds will be knowingly harmed during the proposed mining process.

### ***Raptor Nesting Sites***

In conformance with the USFWS consultation and BLM suggestions to not “take” protected species under the Migratory Bird Treaty Act and the Bald and Golden Eagle Protection Act, on the ground surveys will be conducted prior to any surface disturbing activities to ensure that no active raptor nests would be disturbed. CertainTeed Gypsum personnel agree to mitigate potential impacts to raptors and raptor nesting sites by monitoring any nearby raptor nests in the spring of the year according to the USFWS recommendations to determine species and activity status. The USFWS and the BLM will be notified if nest sites are discovered during mining activities; any active nest site will be evaluated for appropriate mitigation measures and buffer distance based on circumstances including: raptor species, nesting stage, activity, topography, and disturbance type. Generally, the Cody Field Office RMP states a ¾ mile buffer (or closer visual horizon) seasonal restriction, which could be applied depending on circumstances, from February 1st through July 31st for raptors and three zones of buffer restrictions for bald eagles. Results of monitoring will be reported and provided to the USFWS and the BLM.

The golden eagle nest located in T. 52 N., R. 101 W., Section 32 NWSW should be intensely monitored to ensure no disturbance or “take.” This nest will likely be disturbed without good monitoring.

Along with normal raptor surveys, the following monitoring plan was recommended by the USFWS in their September 24, 2010 letter ES-61411/WY10CPA0248 to CertainTeed Gypsum:

- (1) *Obtain information from the Wyoming Game and Fish Department and/or a private wildlife consultant to verify the status of the nest (e.g., active, inactive) during the nesting period. This will require multiple site visits to the nest throughout the nesting season (typically through May). For the initial year, we recommend avoiding activities until the nest status is determined.*
- (2) *In the event that surveys, conducted by a qualified biologist, determine that the nest is active, we recommend immediately contacting our office for specific guidance. If the nest is determined as inactive by the end of the nesting season, then no further monitoring would be necessary until it resumes the following February.*
- (3) *If the nest is inactive, begin excavation nearest the nest site, with mining progressing away from the nest.*
- (4) *Finally, your survey information should be routed through our office annually in order for us to review the data.*

#### ***Noxious or Invasive Weeds***

CertainTeed Gypsum will be responsible for managing all noxious and undesirable invading plant species in the disturbed areas including, but not limited to cheat grass, Russian olive, musk thistle, Canadian thistle, and tamarisk, until the revegetation activities have been determined to be successful, and the bond has been released for a given area. If noxious or invasive weeds are encountered, the BLM and the Park County Weed and Pest Department will be consulted by the operator for control and eradication methods. Written approval of the Pesticide Use Proposal submitted by CertainTeed Gypsum, from the BLM Authorized Officer must be obtained prior to usage of herbicides on public land. Newly arriving equipment will be cleaned free of plant material off site prior to arriving to the proposed Horse Center II area.

#### ***Roads***

All new roads will be constructed, and existing roads will be upgraded, according to BLM Manual Section 9113. Exceptions to this must be approved in writing by BLMs Authorized Officer.

#### **4.2.2 STIPULATIONS**

Stipulations relative to the Proposed Action are discussed below. The best mitigation for the site has been included in the Proposed Action and described above.

(Note: The Authorized Officer as referred to below is the Field Manager of the BLM Cody Field Office)

**Cultural Resources, Standard Stipulation:** The holder of this authorization shall immediately bring any objects or resources of cultural value discovered as a result of operations under this authorization to the attention of the authorized officer. The holder shall suspend all activities in the vicinity of such a discovery until notified to proceed by the authorized officer.

**Cultural Resources Standard Stipulations (compatible with the current 43 CFR 3809 regulations):**

The operator is responsible for informing all persons associated with this project that they may be subject to prosecution for knowingly disturbing, altering, injuring, excavating, removing or destroying any historical or archaeological site, structure, building, or object on Federal lands.

The operator shall immediately bring to the attention of the Authorized Officer any cultural resources that might be altered or destroyed on Federal lands by his/her operations. If archaeological, historical, or Native American resources are discovered, the operator is to suspend all operations that further disturb such materials and immediately contact the Authorized Officer. Any such discovery shall be left intact until the operator is told to proceed by the Authorized Officer.

The Authorized Officer shall evaluate the discoveries brought to his/her attention, take action to protect or remove the resource, and allow operations to proceed within 10 working days after notification to the Authorized Officer of such discovery. The decision as to the appropriate measures to mitigate adverse effects to cultural or paleontological resources shall be made by the Authorized Officer after consulting with the operator.

Before a Plan of Operations is approved, the operator is responsible for the cost of any investigations necessary, and any mitigation measures required by the Authorized Officer. The Authorized Officer would provide technical and procedural guidelines for the conduct of the required evaluation and mitigation. After the Plan of Operations is approved, or where a Plan of Operations is not involved, the Federal Government (BLM) shall have the responsibility and bear the cost of investigations and salvage of any cultural (and paleontological) values discovered by the operator.

***Native American Resources***

The area under consideration contains no known areas or locations of religious or cultural concern to Native Americans. If such areas are subsequently identified or become known through the Native American notification or consultation process they will be considered during the implementation phase. The BLM will take no action that would adversely affect these areas or locations without consultation with the appropriate Native Americans.

***Human Remains***

If human remains are discovered or suspected the operator shall suspend operations immediately, physically guard the area, and notify BLM immediately.

**Paleontological Resources Stipulations:**

1. **Collecting:** The Operator is responsible for informing all persons associated with this project including employees, contractors and subcontractors under their direction that they shall be subject to prosecution for damaging, altering, excavating or removing any vertebrate fossils or other scientifically significant paleontological resources from the project area. Collection of vertebrate fossils (bones, teeth, turtle shells) or other scientifically significant paleontological resources is prohibited without a permit. Unlawful removal, damage, or vandalism of paleontological resources will be prosecuted by federal law enforcement personnel.

2. **Discovery:** If vertebrate or other scientifically significant paleontological resources (fossils) are discovered on BLM-administered land during operations, the Operator shall suspend operations that could disturb the materials, stabilize and protect the site, and immediately contact the BLM Cody Field Office Manager (Authorized Officer). The Authorized Officer would arrange for evaluation of the find within an agreed timeframe and determine the need for any mitigation actions that may be necessary.

Any mitigation would be developed in consultation with the Operator, who may be responsible for the cost of site evaluation and mitigation of project effects to the site. If the operator can avoid disturbing a discovered site, there is no need to suspend operations; however, the discovery shall be immediately brought to the attention of the Authorized Officer.

3. **Avoidance:** All vertebrate or scientifically significant paleontological resources found as a result of the project/action will be avoided during operations. Avoidance in this case means “No action or disturbance within a distance of at least 50 feet of the outer edge of the paleontological locality”.

#### **4.3 Residual Impacts**

##### *Alternative I: No Action*

There would be no residual impacts under the No Action Alternative, as the proposed mining would not be approved; there would be no new disturbance or impact on the land.

##### *Alternative II: Proposed Action*

The following are potential residual impacts that could occur as a result of the Proposed Action:

1) Though recontouring and reseeding of the land would follow the proposed mining process, the landscape would not look as it did prior to mining. Ridges would be lost or changed, reclaimed road beds may be present, drainages would be altered, and vegetation would be modified. This change in the Visual Resource may not be as aesthetically pleasing as the pre-mine landscape had been.

2) Reseeding would be done during the reclamation process of the Proposed Action, but the seeded species may not all reestablish. There would be residual effects on vegetation, as similar species to what existed pre-mining may not return over the short term or long term. Changes in soil characteristics would change the types of vegetation able to grow in the area. The proposed mine area could take decades after initiation of reclamation to achieve vegetative production and species diversity comparable to pre-mine conditions. It may take longer than 10 years to get bond release based on current methods, and pre-mine vegetative diversity and productivity may not be achievable as long as 20 to 40 years after initial disturbance. Also, the disturbed area would be very accommodating to weed species; some weed species cannot be eradicated from an area once they establish and would be present in the reseeded areas for the future. Changes in vegetation would also affect surface water, soil stability and health, wildlife habitat quality and grazing.

3) The Proposed Action would involve the removal and then replacement of topsoil on the mined areas. This handling of topsoil would cause residual effects, as the biota within the soil and the soil's structure and chemistry would be modified during the process. Also, some of the soil would be lost to erosion during the proposed mining process. It may take decades before the soils would be able to function as they did before the area was mined and support a vegetative community. Changes in topsoil quality would have a residual effect on vegetation, surface water and related resources, wildlife habitat and grazing.

4) The Proposed Action would cause residual effects to wildlife populations, including those of migratory birds and BLM Sensitive Species, for decades. Even though the area would be reseeded, if the vegetation does not reestablish well or result in species similar to pre-disturbance conditions, wildlife would not be able to use the area as they did prior to mining. Also, habitat fragmentation will continue to occur throughout this, and surrounding, mine areas.

Many wildlife species may not use undisturbed habitat within one mile or greater, of active mining areas. Over time, this would result in a much larger area in which use by wildlife could be lost, or greatly reduced.

5) The Proposed Action may have residual effects on livestock grazing if the vegetation does not reestablish after reclamation. Invasive weed species will also be given a chance to establish in the area, replacing native vegetation. If this happens, the number of AUMs in the allotments included in the proposed mining would likely be reduced for years until desirable vegetation reestablishes.

6) The Proposed Action would not result in any unavoidable residual impacts to cultural resources, unless such resources were located during mining or road construction and *not* reported to the BLM authorized officer. The Cultural Resource Stipulations listed in Section 4.2.2 would mitigate this residual impact. Improvement of haul roads could facilitate access to and within the project area, thereby increasing the potential for additional unauthorized surface collection and looting.

7) Removal of the gypsum resource under the Proposed Action would constitute an unavoidable long term, post-mining, irreversible and irretrievable (residual) impact on the locateable gypsum resource.

#### **4.4 Cumulative Impacts**

Cumulative impacts are discussed in the Cody Resource Management Plan (RMP) and Final Impact Statement, (1990). Typical activities are described in that document and are incorporated by reference into this environmental analysis.

Cumulative impacts are those that would result from the incremental impacts of the Proposed Action or Alternative I, when added to other past, present and reasonably foreseeable future actions regardless of what agency (Federal or non-Federal) or person undertakes such other actions (40 CFR 1508.7). Cumulative impacts can result from individually minor, but collectively significant actions taking place over a period of time. These reasonably foreseeable future actions refer to future action projections, or estimates, of what is likely to take place when a given proposed action is implemented. They are not part of the proposed action, but are projections being made so that future impacts, cumulative and otherwise, can be estimated as required by NEPA.

This Environmental Assessment has attempted to combine the results of internal scoping, describing the Affected Environment, and determining the Environmental Consequences, with incorporation of a Cumulative Effects Analysis (CEA), as per CEQ guidelines. The geographic area analyzed for this CEA includes a relatively large area that spans approximately 3 miles in each direction around the proposed mine area (shown in CEA Maps 4, 5, and 6, below).

##### **4.4.1 PAST, PRESENT, REASONABLY FORESEEABLE FUTURE ACTIONS, AND INCREMENTAL EFFECTS**

The general analysis area selected for the Cumulative Effects Analysis (CEA) includes an area of approximately 6 miles in diameter, 28.3 square miles, or 18,096 acres out radially from the area of the Proposed Action (Maps 4, 5, and 6). This approach of generally delineating a CEA area has been accepted by the BLM field office management for the past 3 years as part of BLM's cumulative effects analyses. CEA area delineation will most likely be refined in the future, and use more of a watershed-based analysis area.

***Past Actions:***

**GYP SUM and BENTONITE MINING:** CertainTeed Gypsum is the only company that has mined gypsum in this area south of Cody. Within the CEA area, approximately 47 acres have been directly affected by gypsum mining. Approximately 30 acres (64%) of the 47 have been reclaimed and 17 acres (36%) remain as active mine areas. No areas that have been disturbed by gypsum mining around Cody have yet been released from bond. Claims were staked for bentonite near the CertainTeed Gypsum mine by Lynn Grooms in the 1980s and 1990s. Less than 10 acres of disturbance resulted from the mining of these claims.

**LIVESTOCK GRAZING:** Livestock grazing has been, and continues to be, a major resource-use activity on BLM-administered public lands in the Cody Field Office and around the proposed mining areas analyzed in this EA. BLM grazing allotments are located throughout the entire field office, and grazing has occurred for over 100 years by cattle and sheep. It is difficult to quantify the actual direct and indirect impact that livestock grazing has had on the landscape, because much grazing occurred prior to BLM quantifying pre-grazing conditions. Improper grazing practices in general can have long-term effects to vegetative communities, including reduced species diversity, altered species composition, altered vegetative structure, altered abiotic processes (e.g., mean fire return interval), loss of topsoil, and increased invasions of sagebrush communities (Crawford et al. 2004; Miller and Eddleman 2000). In the eighties and nineties, the livestock grazing was changed in the Cody Field Office grazing allotments. Rotational grazing strategies, reductions in authorized use, and utilization limits for key plant species were implemented. These management changes have provided for adequate plant recovery time and leave ample residual vegetation following livestock grazing for watershed protection and wildlife habitat needs. Reclaimed areas can be impacted by livestock grazing if livestock are not fenced out of such areas.

**OTHER:** State Highway 120 also runs through this area on its way from Thermopolis to Montana. It is a well-used trucking and tourist travel route. The Windy Flats BLM Community Pit, a busy sand and gravel pit, has disturbed about 35 acres of land on the east side of Highway 120. There are old oil wells scattered around the Horse Center II CEA, most of which are plugged and abandoned. The Park County Landfill is located approximately two miles north of the proposed plan area. The town of Cody was established five miles north of the proposed mine area over 100 years ago. Recreation in the area has included hiking, hunting, mountain biking, rock hounding, horseback riding, bird watching, and OHVing, among other activities.

***Present Actions:***

**GYP SUM AND BENTONITE MINING:** CertainTeed Gypsum has currently affected 47 acres of land, of which, about 30 acres (64%) have been reseeded and reclaimed. Of these reclaimed acres, none have reestablished a native vegetative community sufficient enough to be bond released by the WDEQ-LQD and the BLM. Currently, CertainTeed Gypsum is the only company actively mining locateable minerals in this area. Bentonite Performance Minerals and Wyo-Ben, Inc, both hold active mining claims nearby, however, neither have submitted mine plans to develop their claims.

**LIVESTOCK GRAZING:** Within the cumulative effects analysis area analyzed in this EA (Maps 4, 5, and 6), are several active grazing allotments. The Horse Center II Plan area is located within the Horse Center and Coal Creek Allotments. The Horse Creek Allotment #03114 would temporarily lose about four AUMs until reclamation would be successful and the Coal Creek Allotment #03006 would temporarily lose about one AUM. Currently in the Horse Creek Allotment, there are about 40 acres of land disturbed by gypsum mining and 42 acres proposed under the Horse Center II Plan of Operations.

In the Coal Creek Allotment, there are about 4 acres of land disturbed by gypsum mining, 39 more acres of approved mining that has not yet occurred, and 10 acres proposed under the Horse Center II Plan of Operations. Disturbance from mining has temporarily removed about 4 AUMs from livestock grazing in the Horse Creek Allotment, while the approved mining will remove four more AUMs; in the Coal Creek Allotment, less than one AUM has been temporarily lost, while the approved Horse Center Plan would remove about 3 AUMs and the proposed Horse Center II Plan would remove another one. Since reclamation of the mine areas occurs concurrently with mining, some AUMs are restored for grazing use, however as new land is disturbed, those AUMs are temporarily lost. The present kind and number of livestock and the number of days/seasons they graze are expected to continue. The effects of grazing can change from year to year depending upon how heavily the vegetation is grazed in relation to that year's vegetative forage produced. Annual forage produced varies depending on precipitation, and effects from previous years of grazing.

OTHER: State Highway 120 continues to be a well-used trucking and tourist travel route; the number of tourists visiting Cody increases each year. The Windy Flats BLM Community Pit continues to be used by construction companies, the Wyoming Department of Transportation, as well as the local public. There are no new oil and gas leases or active wells located in the area at the present time. The Park County Landfill remains active. The population of the town of Cody grows each year. Recreation in the area continues to include hiking, hunting, mountain biking, rock hounding, horseback riding, bird watching, and OHVing, among other activities. Cody residents are beginning to develop mountain biking trails as near as two miles from the proposed mine area.

***Reasonably Foreseeable Future Actions:***

**GYPSUM AND BENTONITE MINING:** Gypsum has become a commonly used locatable mineral, being used for plaster, wallboard, Portland cement, fertilizer, chalk, and some foods. The BLM estimates another one hundred acres may be proposed for future gypsum mining in the Cody area in the reasonably foreseeable future. If the bentonite companies choose to mine the claims they have located near the Horse Center II area, a few hundred acres of bentonite mining may someday occur in the area.

**LIVESTOCK GRAZING:** Livestock grazing on public lands has been occurring for over 100 years in the Bighorn Basin. The present kind and number of livestock and the number of days/seasons they graze are expected to continue in the future.

OTHER: State Highway 120 will continue to be a well-used route. The Windy Flats BLM Community Pit will run out of material within a few years. With new methods of retrieving oil and gas becoming popular, new leases could be sought within the CEA. The Park County Landfill will remain active for many years. The town of Cody will likely continue to grow. Recreation in the area will continue and may increase as the town of Cody grows.

***Incremental effect of each Alternative***

***Alternative I***

Alternative I would not add to the incremental effects that already exist in the area because the proposed gypsum mining would not take place.

## Alternative II

### **Horse Center II CEA Area - Incremental Impact of the Proposed Action**

The BLM Cody Field Office staff conducted a general cumulative effects analysis (CEA) for the Proposed Action under this EA, using GIS overlays and field inspections. The general analysis area selected for the CEA includes an area of approximately 28.3 square miles, or 18,096 acres (roughly one Township and Range) out radially from the area of the Proposed Action (Maps 4, 5, and 6). This approach of generally delineating a CEA area has been accepted by the BLM field office management for the past 3 years as part of BLM's cumulative effects analyses. CEA area delineation will most likely be refined in the future, and use more of a watershed-based analysis area. Within this CEA area, approximately 47 acres have been disturbed by gypsum mining (~0.3% of the total area); and approximately another 94 acres are planned for new mining (0.5% of the total area) over the next 10-15 years. The Proposed Action incrementally adds 51.9 acres of mining disturbance within the analysis area, or 0.3% of the total CEA area.

Several maps were generated using ArcMap 9 GIS software, to overlay existing and known projected land uses, known wildlife/Threatened and Endangered species/BLM Sensitive species habitats and nesting sites, and general vegetation communities, along with past, current and proposed gypsum mining and other land uses, in the area south of Cody, WY. These maps are provided below as CEA Maps 3, 4 and 5.

Generally about 94% of the amount of land mined for gypsum in the whole Cody area has been reclaimed since gypsum mining began in the 1960's. One hundred percent of the land disturbed by gypsum mining is either "reclaimed" but not released from bond because it doesn't yet meet reclamation bond release standards, or in active mining, or proposed mining status. CertainTeed Gypsum continues to post larger and larger reclamation bonds each year in order to continue to mine, which is all that is required by the regulations. The BLM and the WDEQ-LQD will not release bonds until the reclamation meets specific standards.

### **Effect of Mining on Livestock Grazing**

Gypsum mining incrementally reduces the amount of vegetation, wildlife habitat, and livestock forage, and can affect ranching families and their life styles. Presently in this CEA there are approximately 47 acres disturbed by mining, equating to some financial and operational losses to the permittees that graze livestock within the CEA area.

A total of 51.9 acres of public lands and the forage it produces for livestock grazing annually would be directly affected by the proposed Horse Center II Plan over time. Generally, AUMs available for livestock grazing would most likely continue to be temporarily reduced, as gypsum mining continues to remove available forage until reclamation is considered successfully completed. Depending on the number of acres of mining approved in the area, and the number of those acres that are disturbed at one time, local grazing allotments would potentially lose a couple of AUMs prior to successful reclamation. It also equates to a loss of wildlife forage/habitat and ground cover.

If bentonite companies begin to develop their claims here, depending on bentonite market conditions, loss of forage in the CEA area could increase by dozens of acres. If the amount of disturbed acreage increases, coupled with the amount of time needed for vegetation to reestablish after land reclamation, cumulative impacts will not only increase on the mined/disturbed areas, but also on the remaining undisturbed lands as demands increase for forage from those undisturbed lands.

### **Effect of Mining on Wildlife**

Wildlife habitat is lost and made less suitable through habitat loss, fragmentation, and degradation, until reclamation is successful. Wildlife populations were more resilient with higher populations and more available habitat prior to mining; impacts had less effect on wildlife and populations could compensate better to habitat loss. Species most affected by these incremental mining actions have been listed as BLM Sensitive species and now require conservation actions to stop further decline or possible placement on the Threatened and Endangered species list. The incremental effect of the Proposed Action, in addition to past and present disturbances, may further fragment and reduce population size and connectivity, possibly adding to the justification to warrant species listing under the Threatened and Endangered Species Act. Through these mining impacts, and other factors on the landscape, many allotments fail Standard 4 of Healthy Rangelands in Wyoming for wildlife habitat quality. Past, present, and future actions may cause more allotments to fail Standard 4. This proposed action would be a major consideration when assessing Rangeland Health.

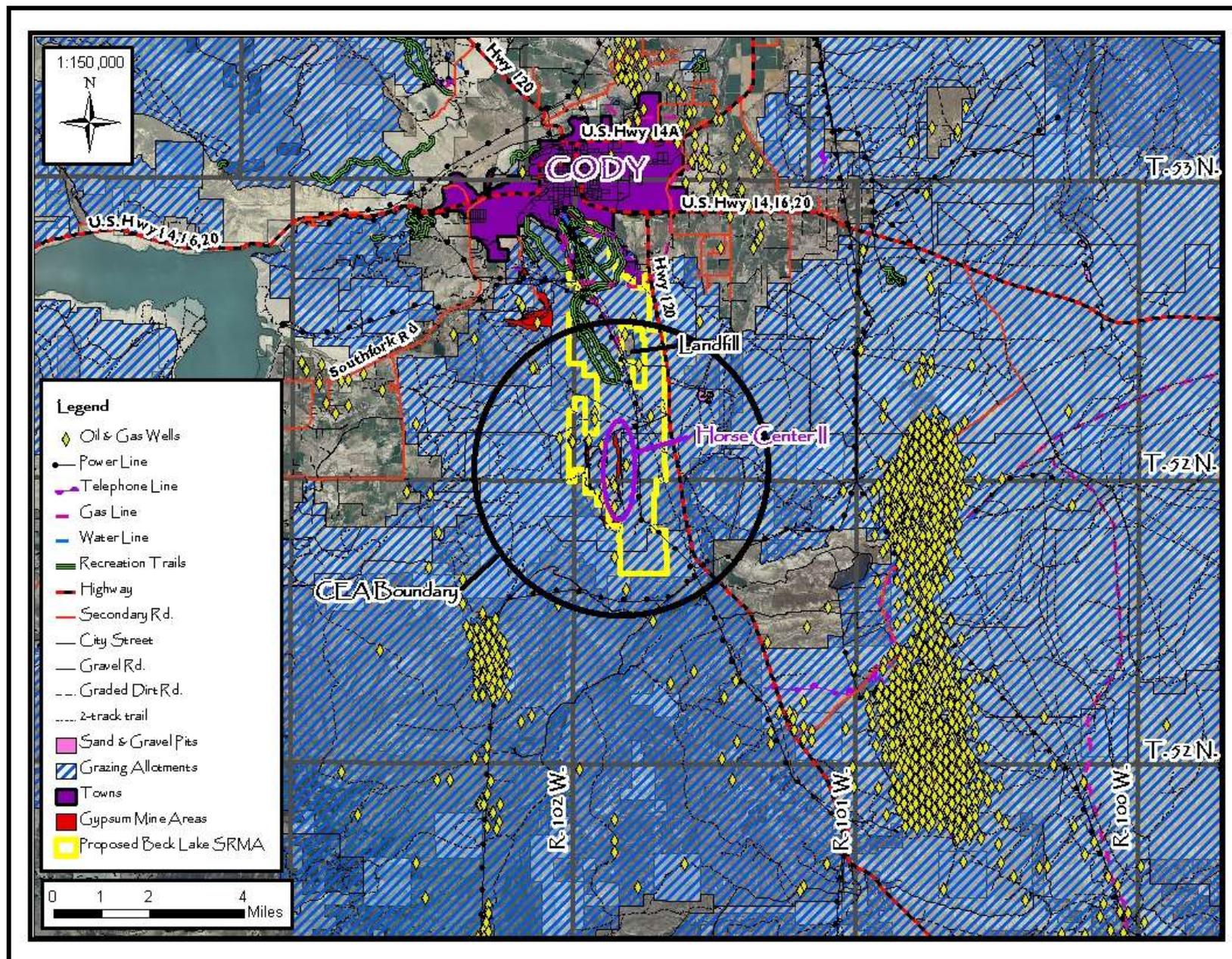
### **Effect of Mining on Soil, Water, Riparian-Wetland Areas, and Aquatic Habitats**

The mining and attendant road system disturbance and other environmental affects modify hydrology, sediment regimes, and water chemistry which can cause impacts to water, riparian-wetland areas, aquatic habitats and the species that use them. Soil modifications would affect its important biological and physical viability. As the surface disturbance associated with mining increases (and is not successfully reclaimed) soil and water-related impacts incrementally accrue inside and outside of the CEA boundary.

### **Cumulative Effects Analysis Summary**

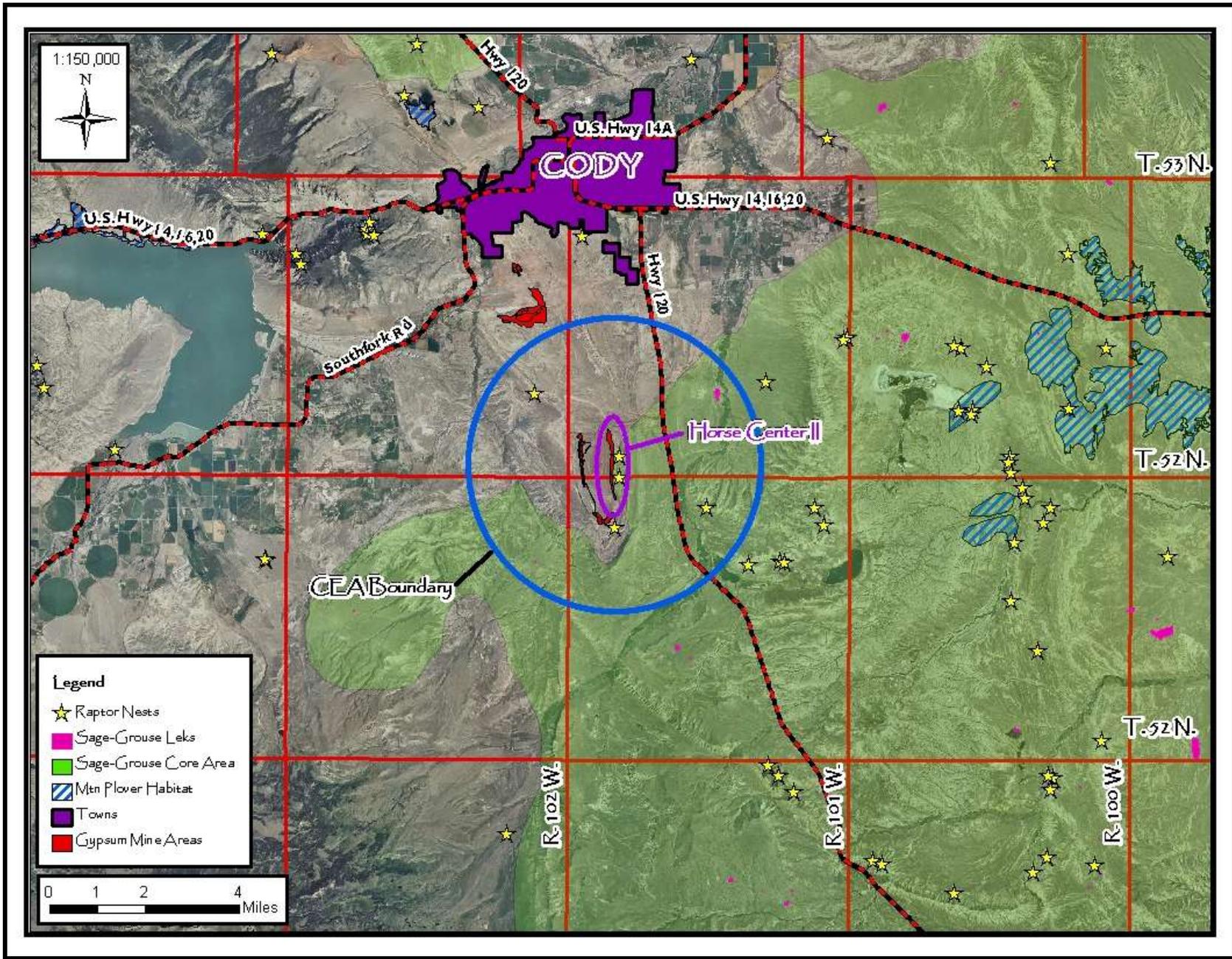
Relative to the chosen geographic scope for the Horse Center II Plan analysis, the following analysis is presented. Under the Proposed Action, the projected maximum incremental amount of new disturbance per year by CertainTeed Gypsum would be approximately six acres, anticipated over the eight-year life of the mine. The Proposed Action would incrementally add 51.9 acres of mining disturbance within the CEA area, or 0.3% of the total CEA area. There are approximately 42 acres of already-approved mining in the CEA area, which will be mined over the next decade.

Under the Proposed Action, mining and reclamation occur concurrently as part of the castback method. Based on the known affected environment and environmental consequences of the Proposed Action; the cumulative effects analysis relative to the Proposed Action indicates that, at this time, the incremental effects of the Proposed Action, coupled with other existing and planned land uses on wildlife habitats/species, vegetation, and soils, could be mitigated or reduced over time, depending on recovery time, adequate precipitation, and reclamation success, using the stipulations, BMPs, mitigation and monitoring measures outlined in the proposed Mine and Reclamation Plans, if approved by the WDEQ-LQD and the BLM, and properly implemented by CertainTeed Gypsum.



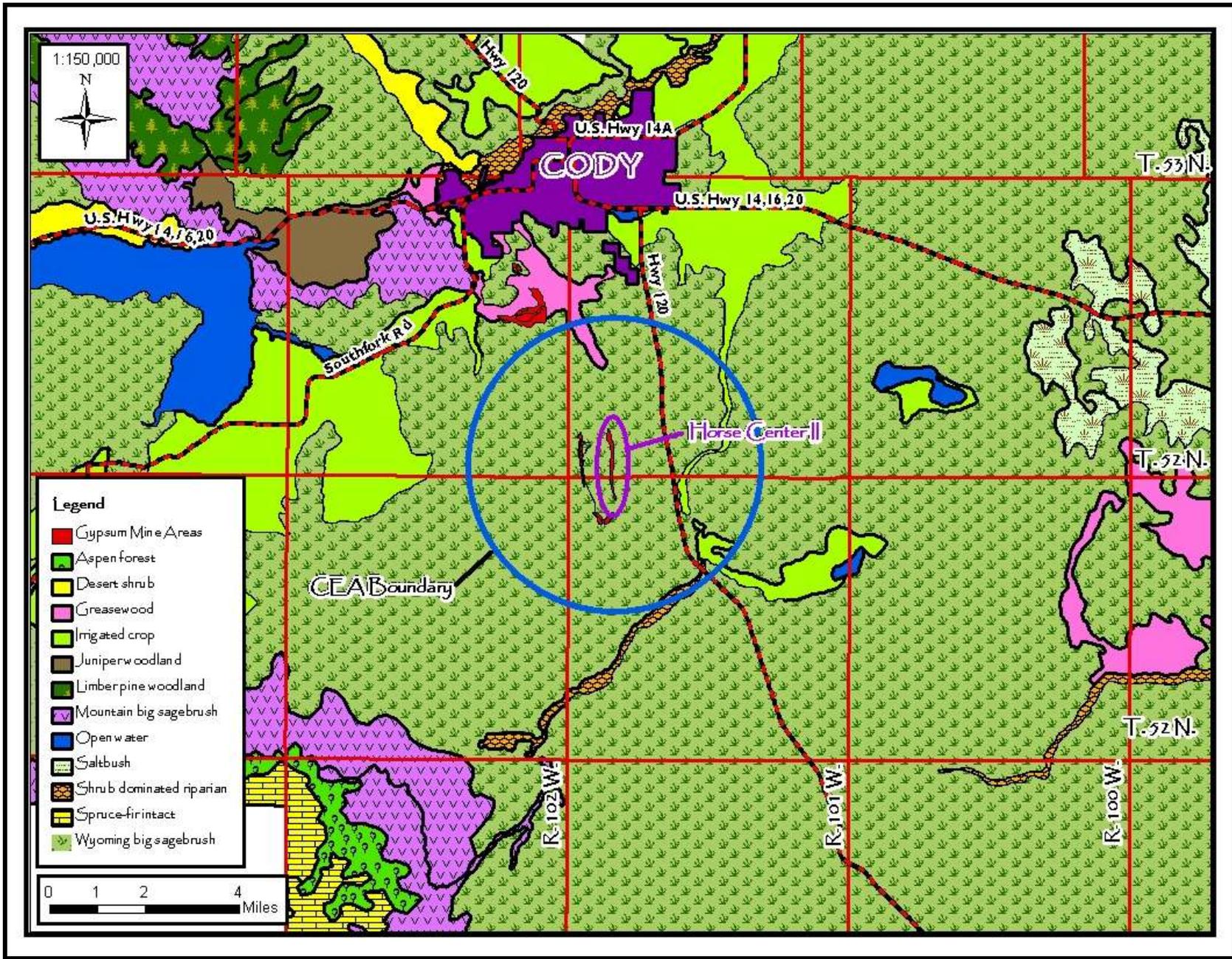
**Map 4. Land uses (existing and proposed) within the Horse Center II Cumulative Effects Analysis Area**  
 Grazing, bentonite mining (present and reasonably foreseeable future), sand and gravel mining, roads, and oil field development were analyzed.

*No warranty is made by the BLM for use of this data for purposes not intended by the BLM*



**Map 5. Raptor nest sites, Mountain Plover Habitat, and Sage-grouse Core Areas in the Horse Center II Cumulative Effects Analysis Area**  
 The whole map frame, except for residential areas, includes potential sage-grouse habitat.

*No warranty is made by the BLM for use of this data for purposes not intended by the BLM*



**Map 6. Vegetation Types within the Horse Center II Cumulative Effects Analysis Area**

*No warranty is made by the BLM for use of this data for purposes not intended by the BLM*



## Appendix A – Climate

CLIMATE: Climate of the area is typical of cold desert regions of the inter-mountain west. The Horse Center II Plan of Operations area falls under normal conditions, in a 5 to 10 inch precipitation zone. However, the entire Bighorn Basin has been experiencing a severe drought since 1999 with precipitation rates generally much lower than average (NCDC, 2011). Outside of drought conditions, climate in this area was typical of cold desert regions of the inter-mountain west, with long, cold winters; hot, dry summers and moderate to high winds.

Average maximum temperatures for the Horse Center II area are during the months of June, July and August as expected, and average minimum temperatures are during the months of December, January and February. Between 1915 and 2010, the mean average annual high temperature in the area was 58.9°F, and the mean average annual low temperature is 32.9°F (See Table 3 below). Average total precipitation for the area is 9.94 inches/year with most of this precipitation falling during the months of May and June. This area has average annual precipitation of 5 to 10 inches, approximately 80% of which falls between April and October. The remainder falls during the months of December through February in the form of snow and/or rain. The growing season for cool season species is approximately April 15 to June 30.

The following table provides a summary of climatic data for Cody, Wyoming from 1915 to 2010 as recorded by the Cody, Wyoming HPRCC station (2011):

**Table 3. Cody, Wyoming (481840) Period of Record Monthly Climate Summary**

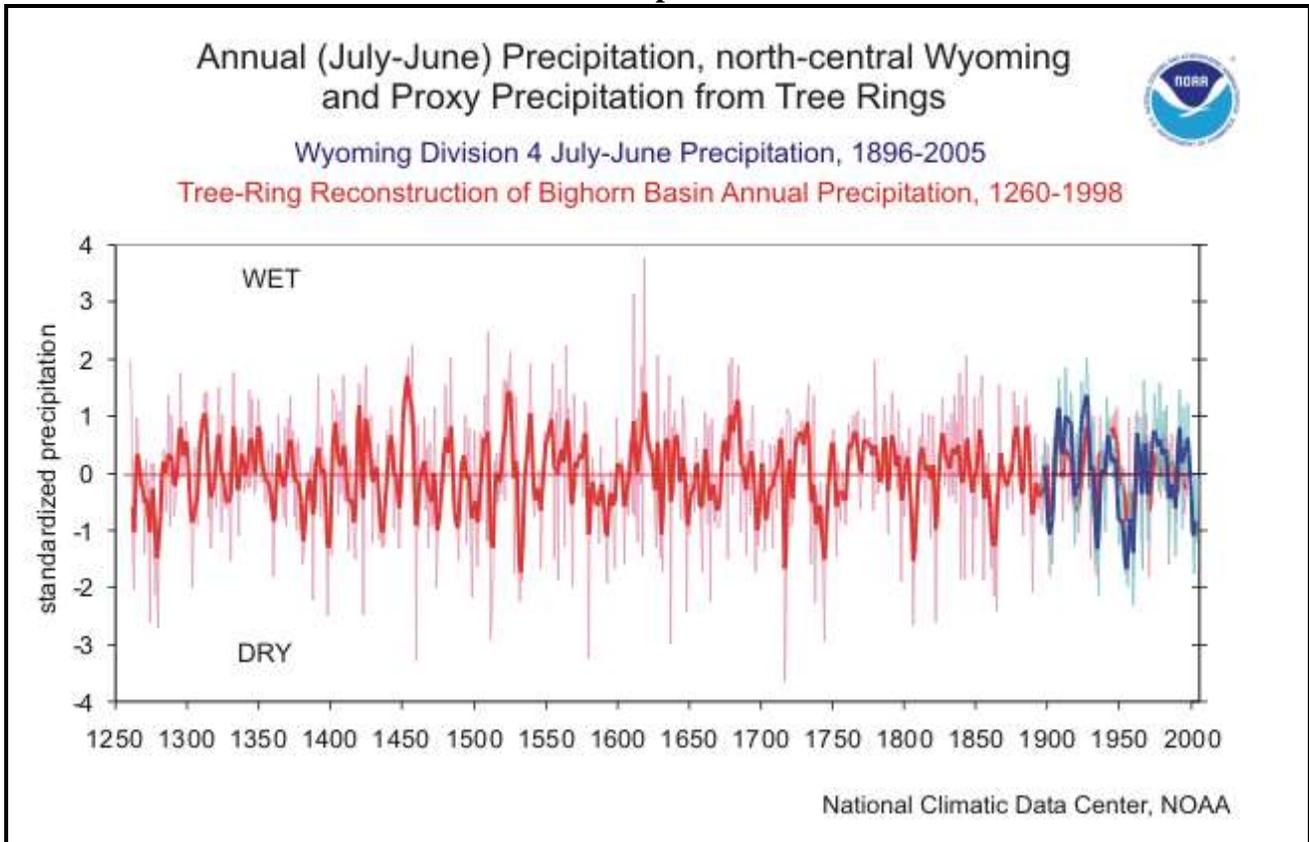
Period of Record: 1/ 2/1915 to 09/30/2010

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual
Average Max. Temperature (F)	35.9	40.2	47.5	56.8	66.2	75.7	84.9	82.7	72.2	60.7	46.0	37.9	58.9
Average Min. Temperature (F)	12.8	16.4	22.8	31.4	40.1	48.0	54.7	52.5	43.4	34.3	23.2	15.7	32.9
Average Total Precipitation (in.)	0.34	0.30	0.53	1.07	1.62	1.64	1.04	0.81	1.03	0.77	0.48	0.31	9.94
Average Total Snow Fall (in.)	6.2	5.1	6.6	5.2	0.7	0.0	0.0	0.0	0.4	3.7	5.6	6.0	39.5
Average Snow Depth (in.)	1	1	0	0	0	0	0	0	0	0	0	0	0

A National Climatic Data Center (NCDC) is located at the Buffalo Bill Dam in Cody, Wyoming. Graph 1 below shows the average annual (July-June) precipitation, 1896-2005, for Wyoming Division 4 (5-year annual values in light blue, 5-year weighted average in dark blue). “Several severe multi-year drought events can be seen in this record: around 1900; the mid-1930s Dust Bowl; the 1950s; and the last six years (1999-2005), all of which have been below the long-term average.” Also shown on Graph 1 below is a 739-year tree-ring reconstruction (1260-1998) of Bighorn Basin annual precipitation (annual values in light red; 5-year smoothed values in dark red). As per NCDC: “...this reconstruction is based on four long tree-ring chronologies (one Douglas-fir, three limber pine) from the Bighorn Basin, and was calibrated on an instrumental precipitation record (1907-1996) averaged from five long-term weather stations in the Bighorn Basin, four of which are within Wyoming Division 4: Buffalo Bill Dam, WY; Lovell, WY; Powell Field Station, WY; Worland, WY; and Bridger, MT. The reconstruction was calibrated on a 13-month "annual" period (June-June), but it correlates well with the Wyoming Division 4 annual (July-June) precipitation.”

“Over their common period (1896-1996) the correlation is 0.602, indicating a high degree of shared variance. The precipitation units shown are standardized for comparison; negative values indicate below-average precipitation, and positive values indicate above-average precipitation.”

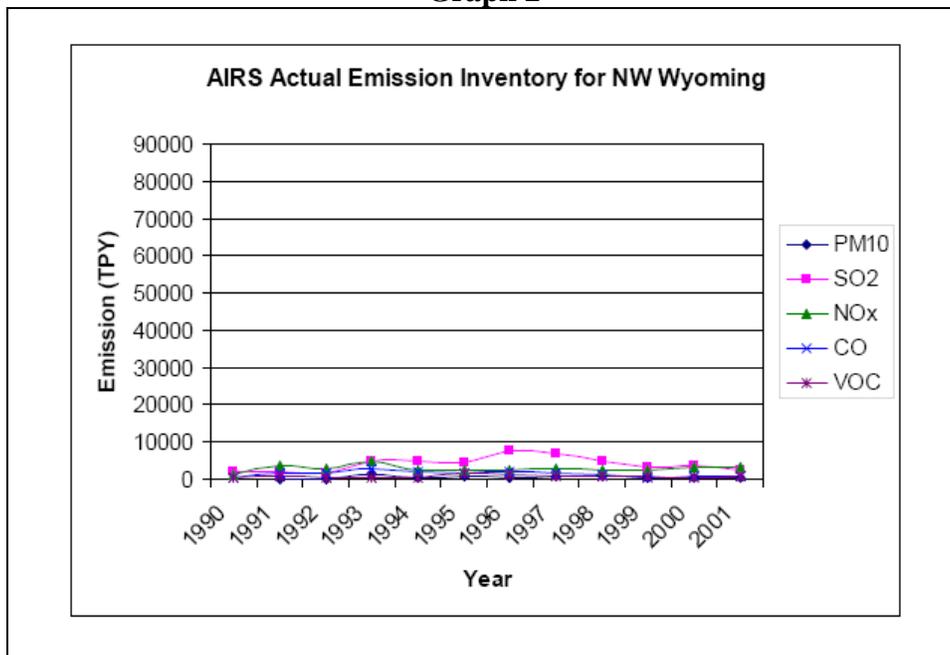
**Graph 1**



## Appendix B – Air Quality Data

Graph 2 and Table 4 below (1990-2001) are provided in Appendix G, Emissions Data Assessment of the WDEQ Air Quality Division report entitled “2003 Review Report on Wyoming Long Term Strategy for Visibility Protection in Class I Areas”. This report provides some general baseline data on air quality in northwest Wyoming. Emissions shown on the graph are particulate matter 10 (PM10), sulfur dioxide, carbon dioxide, nitrogen oxides, and volatile organic compounds. Most of these emissions are due to industry and the use of vehicles and equipment. PM10 is particulate matter with an aerodynamic diameter of up to 10 micrometers (about 1/7 the diameter of a single human hair). Particulate matter includes dust, soot and other tiny bits of solid materials that are released into and move around in the air. Particulates are produced by many sources, including burning of diesel fuels by trucks and buses, incineration of garbage, mixing and application of fertilizers and pesticides, road construction, industrial processes such as steel making, mining operations, agricultural and forest burning, and operation of fireplaces and woodstoves. Emission levels in northwest Wyoming are much lower than levels in highly developed and industrialized areas.

**Graph 2**



**Table 4**

NW WY Actual Emissions (tons per year) Big Horn, Hot Springs, Park, Teton, Washakie counties					
Year	PM10	SO2	NOx	CO	VOC
1985		3696	1784	325	76
1990		2149	1374	277	272
1991	38	2029	3434	1670	690
1992	143	1605	2855	1508	452
1993	1089	4842	4842	2920	393
1994	556	4967	2578	2167	504
1995	737	4316	2410	1480	1428
1996	603	7794	2378	1952	1259
1997	791	6975	2638	1639	919
1998	618	5021	2416	1334	732
1999	553	3342	2483	560	708
2000	542	3590	3027	644	602
2001	473	2532	3086	990	650

## Appendix C – BLM seed policy in IM-2006-073

UNITED STATES DEPARTMENT OF THE INTERIOR  
BUREAU OF LAND MANAGEMENT  
WASHINGTON, D.C. 20240  
January 20, 2006

EMS TRANSMISSION 01/27/2006  
Instruction Memorandum No. 2006-073  
Expires: 09/30/2007

To: All Field Officials

From: Director

Subject: Weed-Free Seed Use on Lands Administered by the Bureau of Land Management

Program Area: All programs which place seed, or approve the placement of seed on public lands.

Purpose: This Instruction Memorandum (IM) describes Bureau of Land Management (BLM) policy for the quality of seed purchased by BLM for use on public lands.

Background: The BLM Manual Section 1745 (1992) establishes policy and guidance for transplantation, augmentation, and reestablishment of habitat on public land utilizing native, and when necessary, introduced plant species. This action will comply with all Federal and State regulations, restrictions, and requirements governing the release and distribution of non-native exotic plants, including weed seeds.

BLM's Partners Against Weeds – An Action Plan for the Bureau of Land Management, January 1996, outlines BLM's plan to prevent and control the spread of noxious and invasive weeds on BLM lands. In addition, the 1999 Executive Order No. 13112 on Invasive Species states that each Federal agency shall not authorize, fund, or carry out actions that are likely to cause or promote the introduction or spread of invasive species in the United States.

The BLM obtains/purchases native or introduced plant seed, from seed producers and collectors for stabilization, rehabilitation, or restoration of public land. Prior to BLM accepting seed from any source, all seed must be tested for noxious weed seed at official state seed analysis labs. Noxious weed seed is not allowed in certified seed according to individual State's Department of Agriculture seed law and the Federal Seed Act. It has been acceptable for the seed lot (excluding species on the State and Federal noxious weed seed list) to contain from 0.5 percent to 2.0 percent of other "weed" seed depending on the State. "Other weed seed" is defined as any non-noxious weed seed, such as cheatgrass (downy brome) or Russian thistle, in the State(s) of concern. When purchased, all seed must also be of certified quality or source-identified.

Policy/Action: All Field Offices are required to use seed on public lands that contain no noxious weed seed and meets certified seed quality. All seed to be applied on public land must have a valid seed test, within one year of the acceptance date, from a seed analysis lab by a registered seed analyst (Association of Official Seed Analysts). The seed lab results shall show no more than 0.5 percent by weight of other weed seeds; and the seed lot shall contain no noxious, prohibited, or restricted weed seeds according to State seed laws in the respective State(s). The seed procured for use on public land will meet the Federal Seed Act criteria. Seed may contain up to 2.0 percent of "other crop seed" by weight which includes the seed of other agronomic crops and native plants; however, a lower percent of other crop seed is recommended. Copies of the seed lab test results, including purity and germination (viability) rate, must be forwarded to the appropriate BLM office prior to seed application. If the seed does not meet the BLM and State/Federal standard for noxious weed seed content or other crop seed allowances, it shall not be applied to public land. All seed test results must be retained in the seeding project file.

The BLM State contracts for seed may be more restrictive with "other weed seeds" of concern as deemed necessary.

All donated seed or seed used for "mitigation or restoration" by contractors per a reclamation plan must meet BLM's noxious weed seed policy prior to use on public lands.

An exemption will be allowed for small reclamation projects, less than 20 acres or not to exceed 200 pounds of seed, which have an approved BLM reclamation or rehabilitation plan or permit. The seed will be accepted if accompanied by

an official seed analysis report that provides documentation to show no noxious weed seed per State(s) weed law and no more than 0.5% other weed seeds. For this exception, any one of three seed test documents will be accepted:

1. A certified "blue" tag or tags.
2. An independent seed lab test.
3. A seed lab analysis supplied by a vendor either by seed lot or by seed mix.

Straw or mulches applied as part of seeding, stabilization, rehabilitation, or restoration projects on public lands must be certified to be weed seed-free.

Timeframe: Effective immediately.

Budget Impact: Approximately 80% of the seed used on public lands is purchased during a National Seed Buy (three times a year average) via a national seed contract. Under this contract, the seed must be tested prior to acceptance and payment. Therefore, there will be no new costs associated with the National Seed Buy. For offices and programs not currently testing their seed for noxious weeds or are approving project proponents to apply seed on public land without first testing for noxious weeds there will be a slight increase in the cost of seeding treatments. A typical seed test costs between \$120-220 per lot for purity, germination, and noxious weed seed analysis.

Manual/Handbook Sections Affected: None.

Coordination: Coordination for this IM has been with WO-200, WO-220, WO-230, WO-270, WO-310, ID-930, BC-660.

Contact: If you have any questions on policy, please contact Jack Hamby, National ES&R Program Lead, at (202) 452-7747 or via email at [Jack\\_Hamby@blm.gov](mailto:Jack_Hamby@blm.gov). Questions pertaining to seed test, viability, seed lot tags, or weed seeds should be directed to Scott M. Lambert, National Seed Coordinator, Idaho State Office, at (208) 373-3894 or by e-mail [Scott\\_Lambert@blm.gov](mailto:Scott_Lambert@blm.gov).

Signed by:  
Lawrence E. Benna  
Acting, Director

Authenticated by:  
Robert M. Williams  
Policy and Records Group,WO-560